

Technics

TAPE DECK

RS-1520

OPERATING INSTRUCTIONS



Before operating this set, please read these instructions completely.

We thank you for selecting the model RS-1520 Technics open-reel tape deck for your recording and playback enjoyment. To obtain the maximum benefit of the many features of this deck, please read these operating instructions carefully.

FEATURES

1. Direct-Drive Three-Motor Tape Transport
2. "Single-Capstan" Isolated Loop Transport System
3. IC Logic Control for Electronic Braking/Quick Play and Transport System
4. Quartz-Phase-Locked Servo Control
5. Automatic Tape Tension Control
6. Stable Tape Transport Mechanism with Stroboscope
7. Pitch Control Varies Tape Speed up to $\pm 6\%$ in Record and Play
8. 4-Head Construction and Interchangeable Head Block
9. Variable and 3-Position Bias and Equalization Adjustment
10. Professional Functions for Editing and Cue Lever/ Edit Switch
11. VU Meters
12. Built-in Test-tone Oscillator (1 kHz/ 10 kHz)
13. Meter Sensitivity Selector
14. Playback Equalization Selector (NAB/IEC)
15. Balanced Type Connectors
16. Load Impedance Selector (600 Ω / 10k Ω or more)

The serial number of this product may be found on the back cover of the unit.

You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model no. _____

Serial no. _____

WARNING:

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

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UNPACKING & PLACEMENT

1. Unpacking

Save packing cartons and spacers for future use, to protect the units in the event that they are transported.

When unpacking, do not overlook the empty 26.7cm (10-1/2-inch) Reel, the two Stereo Connection Cords, the two Reel Adaptors, the two Reel Spacers, the Dust Cover, and the Head Cleaner packed with the unit.

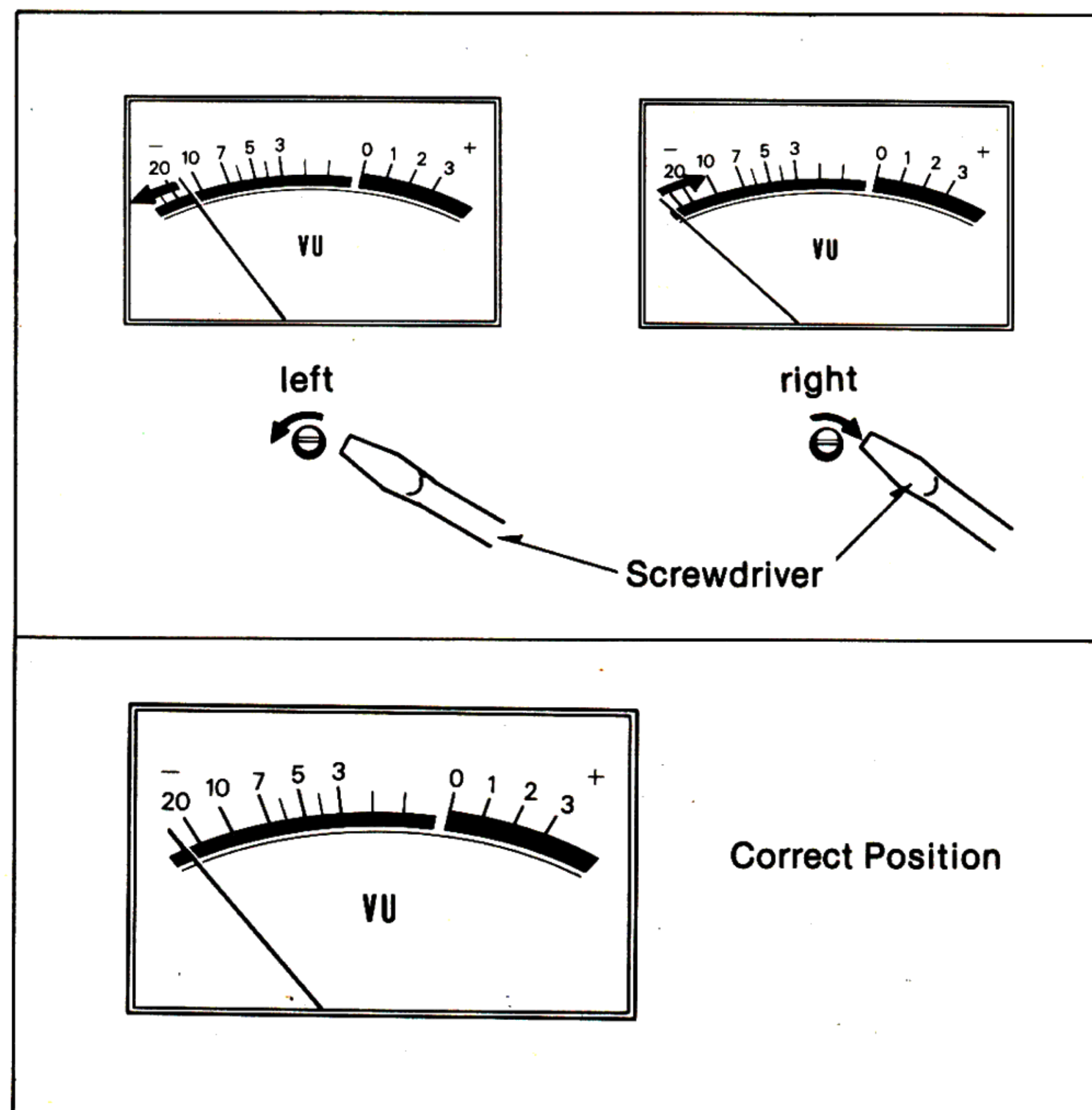
2. Placement

- Avoid extremely hot [above 35°C (95°F)] or cold [below 5°C (40°F)] locations. Do not place in direct sunlight.
Avoid unstable locations (such as slanted or vibrating locations).
- Avoid humid and dusty locations.
- To assure good heat dissipation, avoid blocking of the ventilation holes by curtains, carpet, etc.
- Use a power source frequency of either 50 Hz or 60 Hz
Because this unit has a Direct-Drive DC motor a power frequency of either 50 Hz or 60 Hz may be used.
- Power should be within $\pm 5\%$ of the rated voltage
Note that the unit's performance will be uneven, or the unit may be damaged, if the power exceeds $\pm 10\%$ of the rated voltage.
- Cleaning of the head assembly
One of the most important factors in determining good tape recorder performance is regular cleaning of the head assembly. Refer to "SERVICING" on page 14 and be sure to always keep the head surfaces clean.

VU Meter Zero-point Adjustment Screws

These screws are to be adjusted when the Power Switch is set to the "off" position.

Adjust these screws so that the indication needles deflect to the mark near the left end of the scale.



POWER

The unit will become operative approximately 3 seconds after the Power Switch is set to the "ON" position.

AC Power Line

Plug the Power Cord into an AC socket. This unit can be used on either 50Hz or 60Hz 120V AC, power.

TAPE

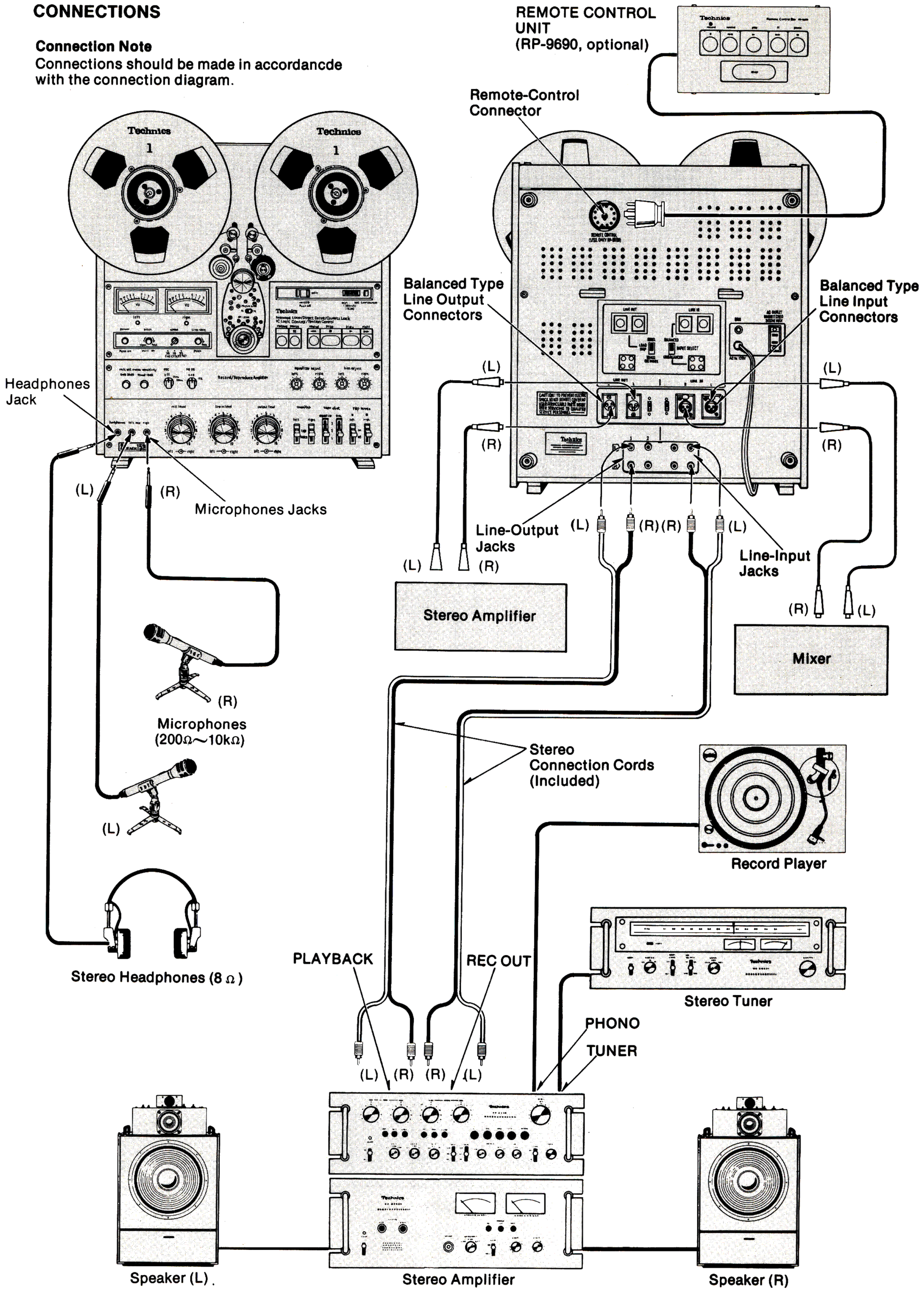
- Never use tape that is creased, curled, dirty, worn stretched or old.
Such tapes are noisy and may damage the head or produce poor recordings.
- When new tape or tape that has not been used for a long period of time is used, run the entire tape at fast-forward and then rewind it before actual recording. The winding of tape that has not been used for an extended period will become loose and recording quality will be poor.
- Do not use paper tape.
Such tape will result in unstable running and contamination of the head by the dust.
- Make sure the reels are not warped.
- Do not place tape near magnetic fields (near speakers, amplifiers, television sets, etc.).
- Avoid storing tape in high temperature, high humidity locations.
- Place the tape in a polyethylene bag and then a box when storing.

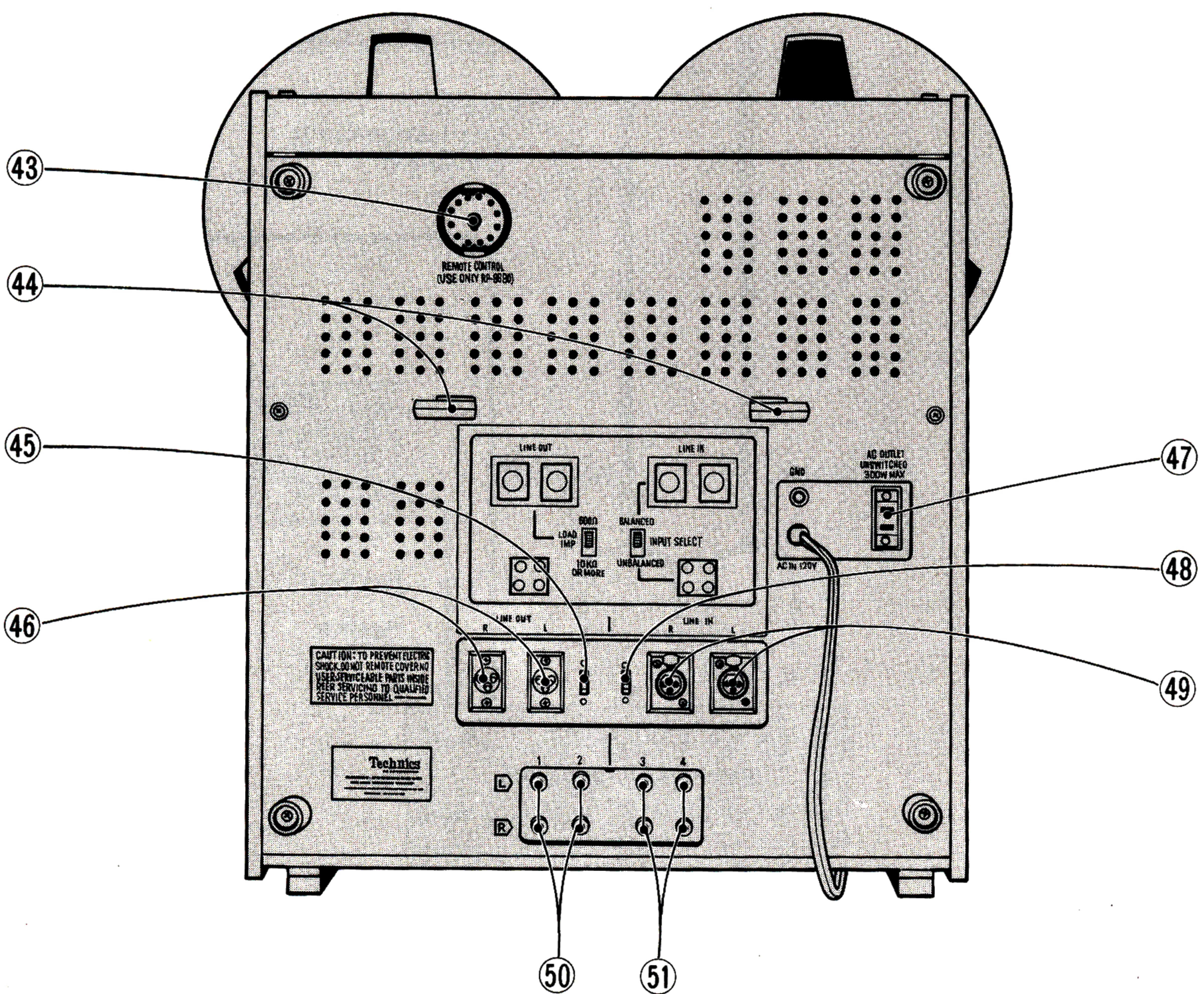
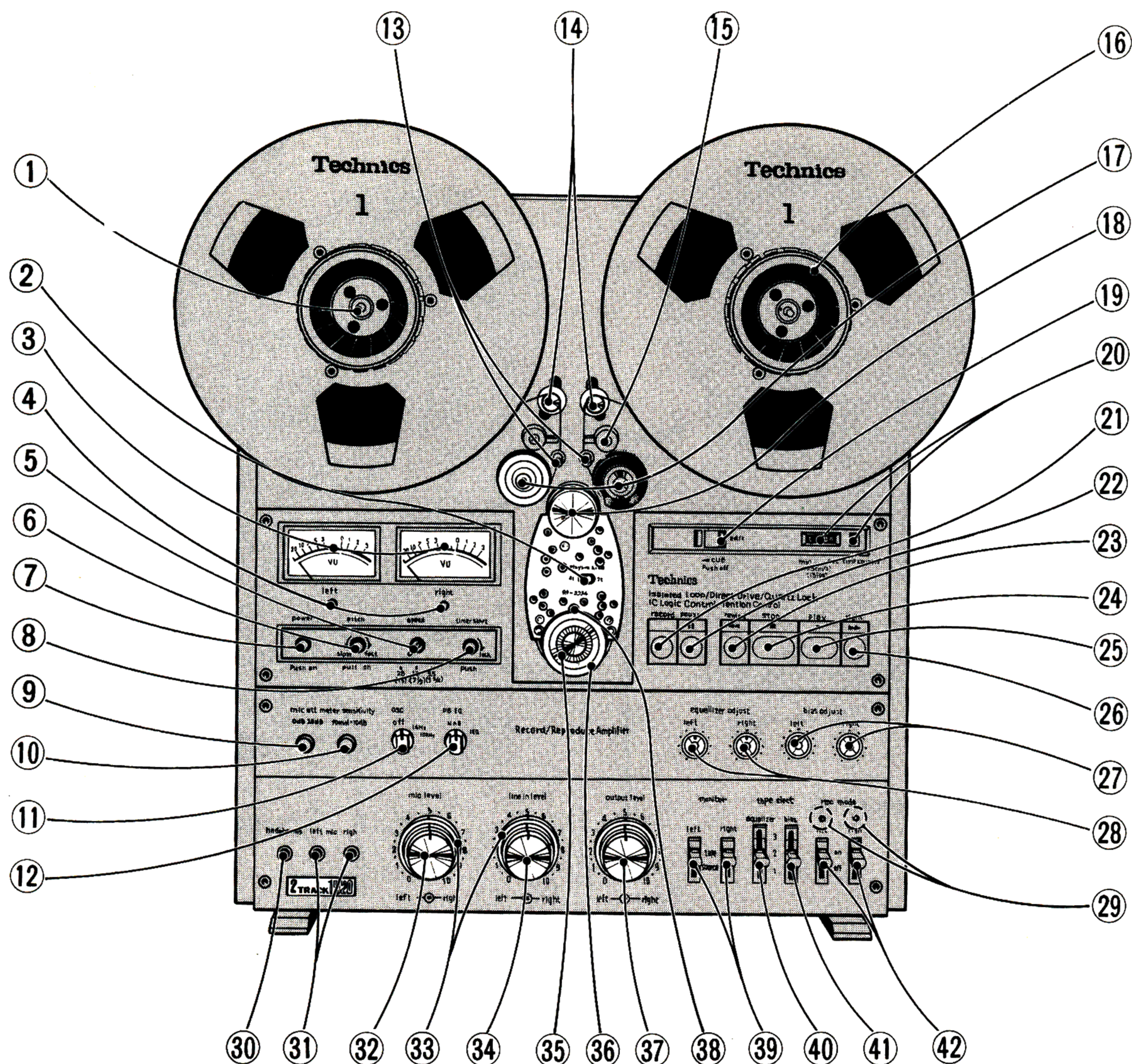
CONNECTIONS

Connection Note

Connections should be made in accordance with the connection diagram.

REMOTE CONTROL
UNIT
(RP-9690, optional)





CONTROLS

- ① Reel Clamper
- ② 2-4 Track Selector
- ③ VU Meters
- ④ VU Meter Zero-point Adjustment Screws
- ⑤ Tape Speed Selector (speed)
- ⑥ Pitch Control (pitch control)
- ⑦ Power Switch (power)
- ⑧ Timer Start Switch (timer start)
- ⑨ Microphone Attenuator Switch (mic att)
- ⑩ Meter Sensitivity Selector (meter sensitivity)
- ⑪ Oscillator Test-Tone Selector (osc)
- ⑫ Playback Equalization Selector (PB EQ)
- ⑬ Guide Pins
- ⑭ Tension Rollers
- ⑮ Tape Edit Marker
- ⑯ Reel Adaptor
- ⑰ Pinch Rollers
- ⑱ Capstan
- ⑲ Cue Lever/ Edit Switch (edit)
- ⑳ Time Counter, Reset Button
- ㉑ Record Button (record) (●)
- ㉒ Pause Button (pause) (II)
- ㉓ Rewind Button (rewind) (◀◀)
- ㉔ Stop Button (stop) (■)
- ㉕ Playback Button (play) (▶)
- ㉖ Fast-Forward Button (f fwd) (▶▶)
- ㉗ Bias Adjustment Controls (bias adjust)
- ㉘ Equalization Adjustment Controls (equalizer adjust)
- ㉙ Record Mode Indication Lamps
- ㉚ Headphones Jack (headphones)
- ㉛ Microphone Jacks (mic)
- ㉜ Microphone Level Controls (mic level)
- ㉝ Preset Markers
- ㉞ Line-Input Level Controls (line in level)
- ㉟ Edit Dial
- ㊱ Reversing Roller
- ㊲ Output Level Controls (output level)
- ㊳ Stroboscope LED
- ㊴ Monitor Switches (monitor)
- ㊵ Equalization Selector (equalizer)
- ㊶ Bias Selector (bias)
- ㊷ Record Mode Switches (rec mode)
- ㊸ Remote-Control Connector (REMOTE CONTROL)
- ㊹ Power Cord Holders
- ㊺ Load Impedance Selector (LOAD IMP)
- ㊻ Balanced Type Line-Output Connectors
- ㊼ AC Outlet
- ㊽ Input Selector (INPUT SELECT)
- ㊾ Balanced Type Line-Input Connectors
- ㊿ Unbalanced Type Line-Output Jacks (LINE OUT) (1, 2)
- ① Unbalanced Type Line-Input Jacks (LINE-IN) (1, 2)

Fast Forward

1. Push the Fast Forward Button.
2. To stop, push the Stop Button.

Rewind

1. Push the Rewind Button.
 2. To stop, push the Stop Button.
- Cueing is possible by operating the Cue Lever during fast forward and rewind. (See the editing section on page 12.)

Pitch Control

The recording and playback tape speed can be varied approx. $\pm 6\%$ with this control.

The speed decreases when the control is pulled out and turned counterclockwise, and increases when the control is turned clockwise. This is especially convenient when playing an instrument (guitar, etc.) along with a music tape.

Note:

Always push this control in during normal recording and playback.

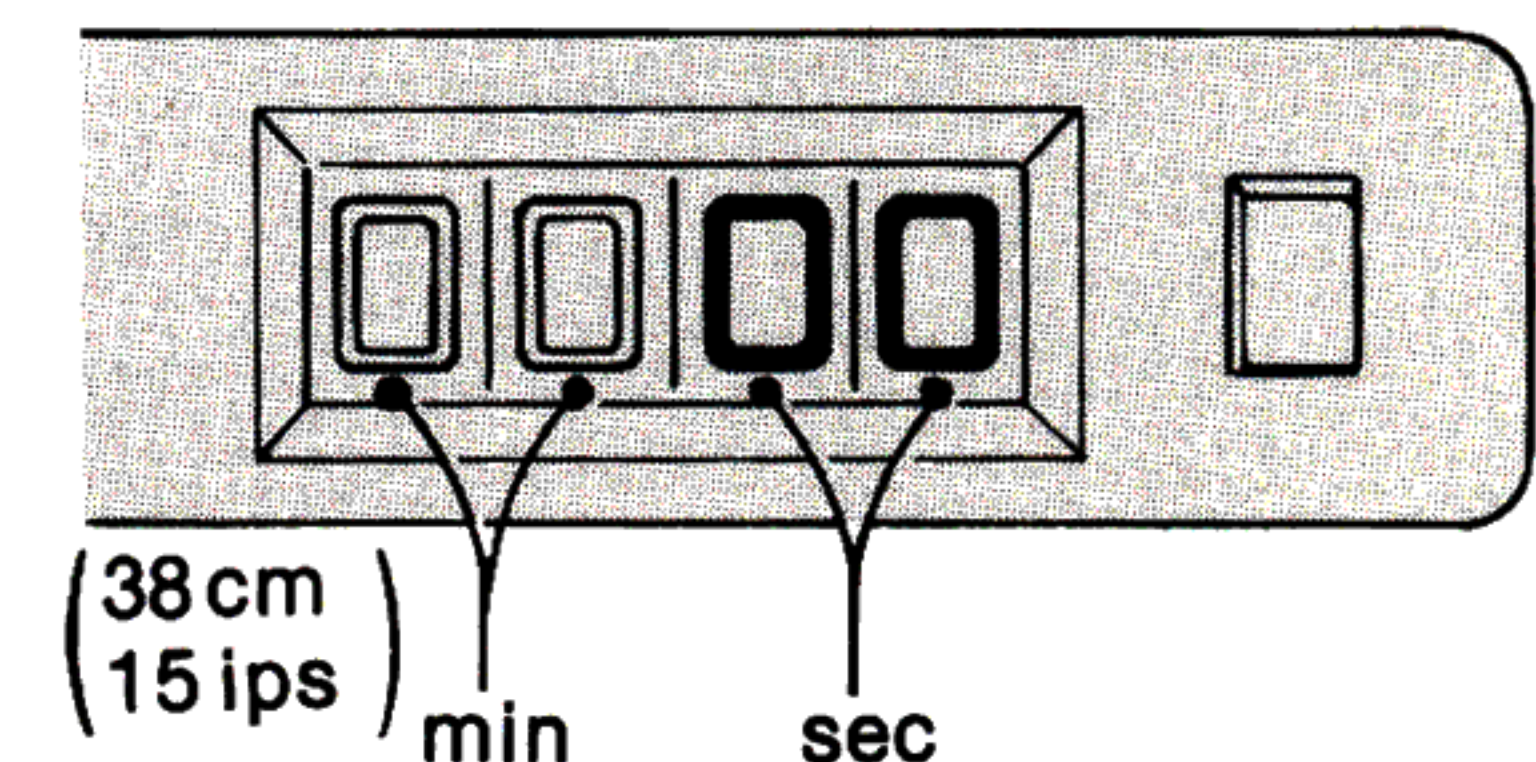
Microphone Attenuator Switch

Low-distortion recording is possible by adjusting the Microphone Attenuator Switch to the 20dB position. When excessive inputs enter the microphone, such as for recording by placing the microphone near musical instruments, the Attenuator will eliminate distorted recording.

Time Counter

This unit employs a Time Counter for the 38cm/s (15 ips) tape speed.

* At 19cm/s (7-1/2 ips) 1/2 of the actual time is shown. (For example, when the tape has run for 1 minute, 00.30 is displayed.) At 9.5cm/s (3-3/4 ips) 1/4 the actual time is displayed.



VU Meters

These VU meters are based on ASA standards for attack time, frequency response, scale precision, etc.

Line Input Connection Terminals and The Input Selector

There are 3 pairs of Line-Input Connection Terminals: one pair of balanced Line-Input Connectors and two pairs of unbalanced Line-Input Jacks (phono plug type). The Input Selector can be used to select either unbalanced type or balanced type inputs.

Line Output Connection Terminals and The Load Impedance Selector

These are 3 pairs of Line-Output Connection Terminals: one pair of balanced Line-Output Connectors and two pairs of unbalanced Line-Output Jacks (phono plug type). Output can be taken from all 3 pairs at the same time.

The Load Impedance Selector can be used to select the impedance appropriate to the equipment connected to the balance Line-Output Connectors.

"600 Ω " position: Set to this position if the impedance of the connected equipment is 600 ohms.

"10k Ω over" position: Set to this position if the impedance of the connected equipment is 10 kilohms or more. Also set to this position if no connection is made to the balanced connectors (when only the unbalanced connectors are used).

LOADING TAPE

26.7 cm (10-1/2-inch) metal reels (See the figure at the right.)

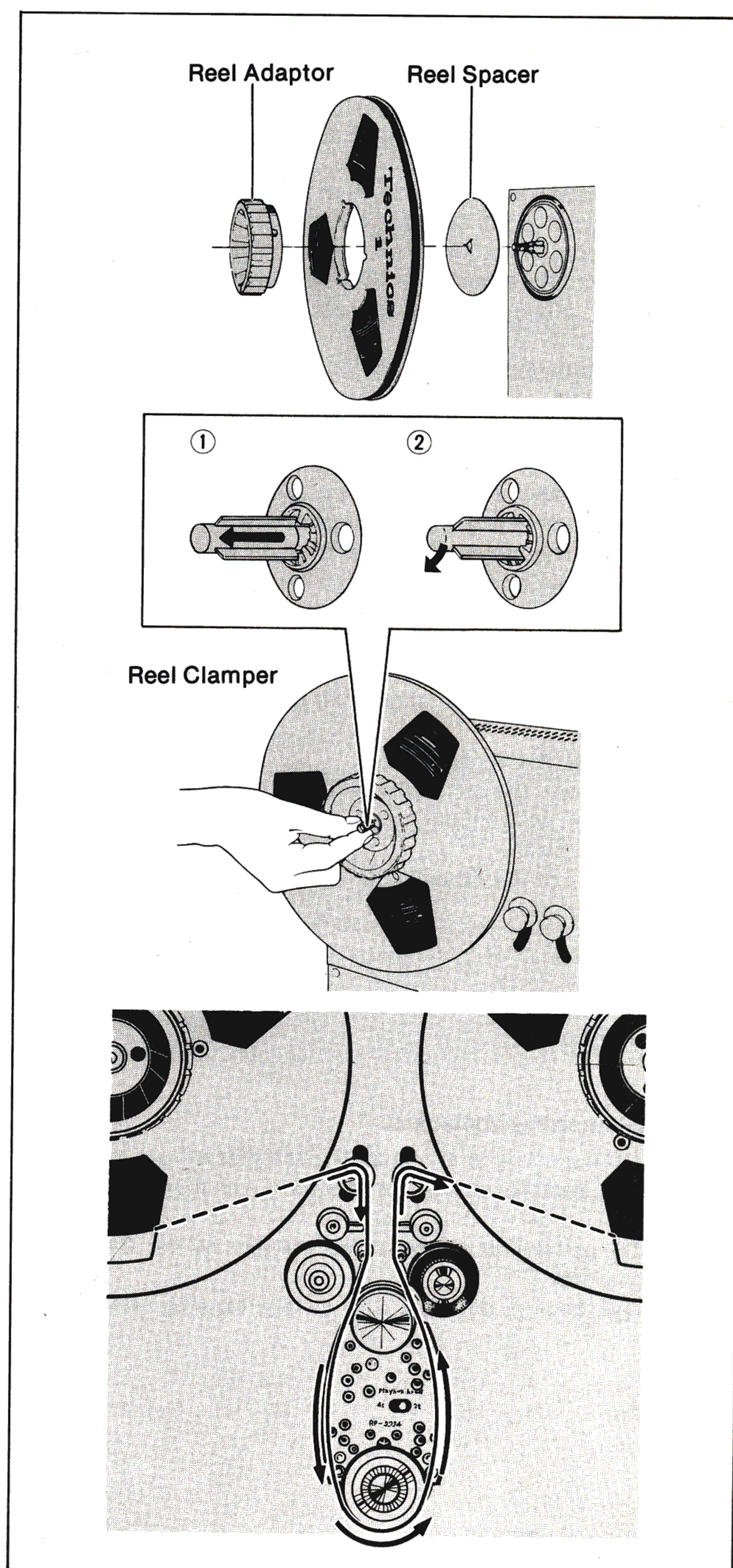
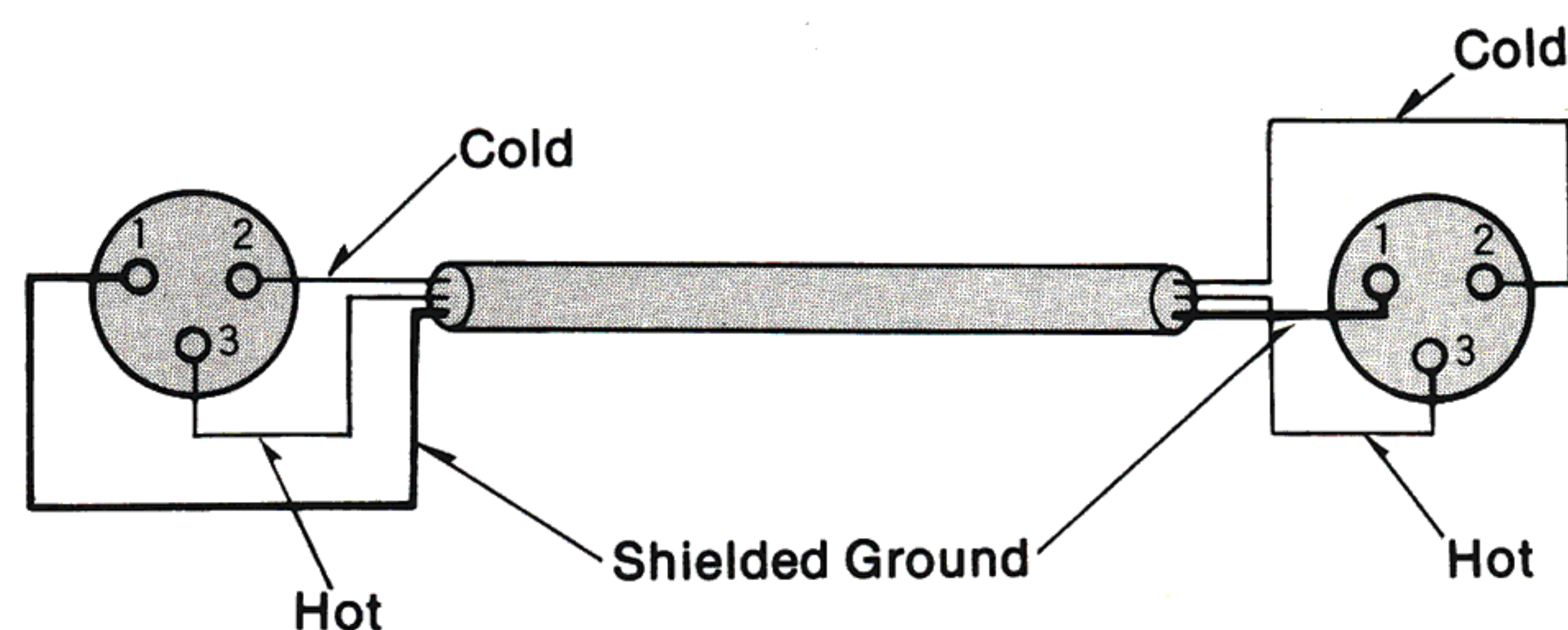
1. Place a Reel Spacer onto the left and right Reel Tables.
2. Fit a Reel Adaptor to the 26.7cm (10-1/2-inch) full reel of tape and place the reel onto the Reel Table along the fins of the Reel Clamper of the left Reel Table.
3. Pull the end of the Reel Clamper out slightly and lock the reel in place by turning the Reel Clamper clockwise.
4. Place an empty 26.7cm (10-1/2-inch) reel onto the right Reel Table and lock in place as described above.
5. Unwind a little of the tape by turning the reel by hand, grasp the end of the tape, pass the tape through the left Tape Guide from the inside of the left Tension Roller, between the left Pinch Roller and Capstan, through the head block from the left side and upward around the bottom of the Reversing Roller.

Pass the tape from the right side of the head between the right Pinch Roller and Capstan, wind it onto the right Reel from bottom to top from the right Tension Roller and wind it around the reel by turning the reel 2 or 3 turns.

Notes:

1. Be sure that the magnetic side of the tape touches the Heads.
2. Note that the tape will not move, even if the operation controls are pushed, if the tape is loose and is not touching the Tension Rollers when threaded.
3. 38cm/s (15 ips) 2-track recorded tape generally must be rewound before use.
In this case, thread the tape by reversing the positions of the full reel and empty reel and rewind the tape once before playing it.
4. 18 μ thick 300% tape is extremely thin and may stretch or be wound irregularly. Its use must be avoided.
 - Do not use any reel Thickness Correction Sheets except those supplied as accessories.
 - Use left and right reels having the same shape.
 - The use of 26.7cm (10-1/2-inch) and 17.8cm (7-inch) reels is recommended.
 - Do not use the Reel Thickness Correction Sheets except when using 26.7cm (10-1/2-inch) metal reels. They are not necessary when plastic reels are used.

For connection to the Balanced-Type Line Connectors (input and output) of this unit, use the type of connection cord shown in the figure below.



PLAYBACK

2-track 2-channel playback

Note:

Set the volume control of the stereo amplifier to minimum when connecting this unit to a stereo amplifier, etc. Otherwise, the tweeter of the speaker system may be damaged by the abrupt entry of an excessive input.

1. Connect the stereo amplifier, stereo set or other playback equipment.
(See the connection diagram on page 3.)
Furthermore, set the monitor switch on the connected stereo amplifier or stereo set to the "tape" position. No sound will be heard if set to the "source" position.
2. Confirm that the 2-4 Track Selector is set to the "2t" position.
3. Set the Playback Equalization Selector to the "NAB" or "IEC" position (Refer to the Section "Playback Equalization Selector").
4. Load and thread the tape you wish to hear and set the Tape Speed Selector to the speed at which that tape was recorded.
5. Set the Record Mode Switches to the "off" position.
(Playback is also possible at the "on" position, but set them to the "off" position so that the recorded tape is not erased by mistake.)
6. Set the Monitor Switches to the "tape" position.
7. Set the Output Level Controls to "8." At this position they are adjusted for a standard output when a standard tape level signal (400 Hz 185 nWb/m) is played back.
8. Push the Playback Button to start playback.
Adjust the volume and tone at the connected stereo amplifier.
9. To listen to the playback sound through headphones, connect stereo headphones (8Ω) to the Headphones Jack.
The headphones volume can be adjusted with the Output Level Controls.
(Some of the various types of stereo headphones available are high impedance, but, since their output is insufficient, do not use them.)
10. To stop, push the Stop Button.
 - * When the Pause Button is pushed, the tape will stop, but the pilot lamp will not be illuminated. To continue playback, push the Playback Button.
 - * The positions of the Equalization and Bias Selectors have no effect on playback.

Note:

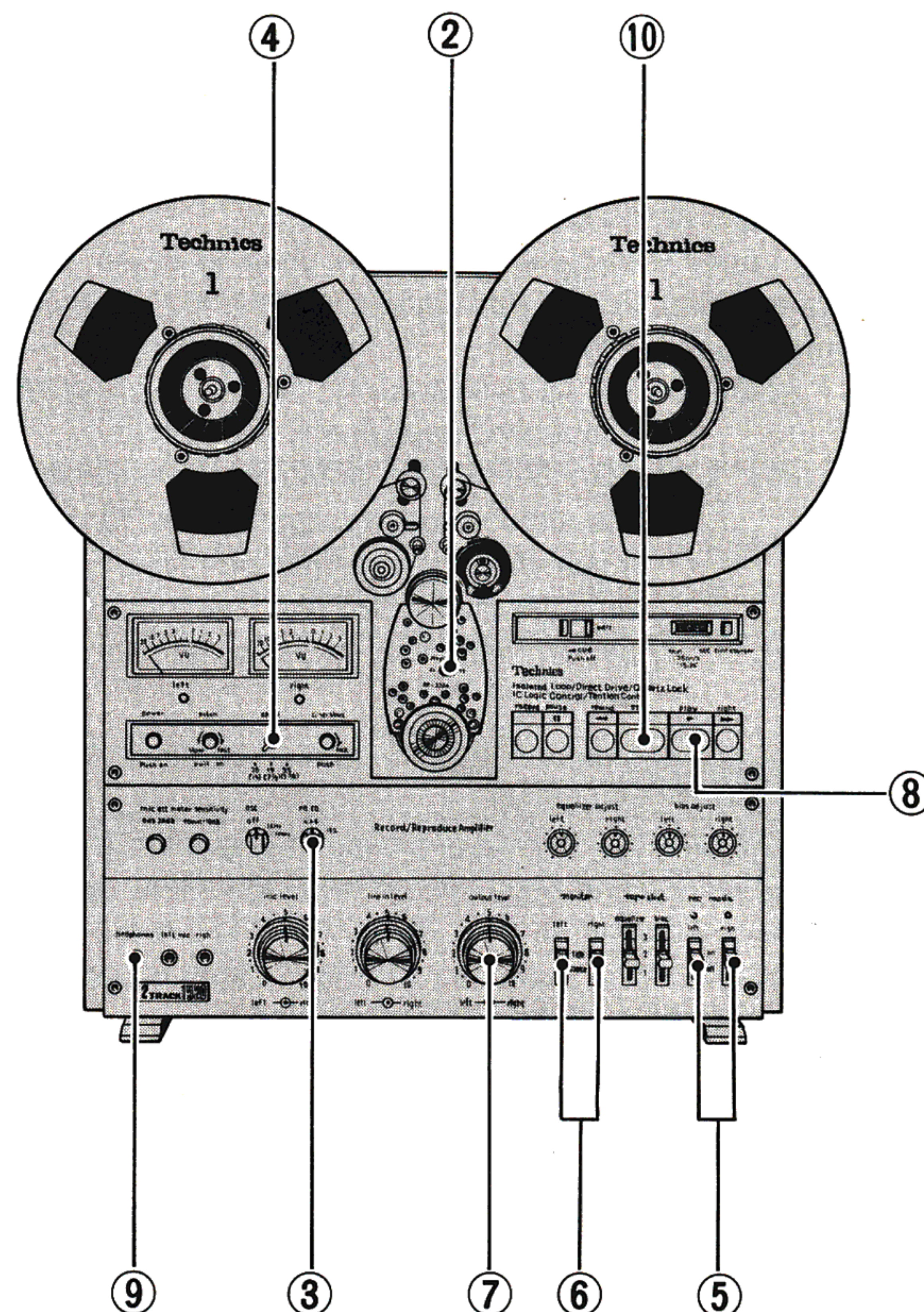
Set the Oscillator Test-Tone Selector to the "off" position during playback.

4-track 2-channel playback

To playback commercial music tape and other 4-track tape, set the 2-4 Track Selector to the "4t" position and then begin playback.

Playback is performed in the same manner as for 2-track 2-channel playback.

Two-way playback is possible with 4-track tape by rethreading the tape.



Playback Equalization Selector

At the 15 ips (38 cm/s) tape speed, this selector can be used to select either "NAB" or "IEC" playback equalization.

NAB:

Because the recording equalizer of this unit is adjusted to NAB specifications, the Playback Equalization Selector should be set to the "NAB" position when this unit is used for both the recording and the playback.

IEC (CCIR):

When a tape which has been recorded on another unit using the IEC recording equalization characteristic is played back on this unit, set the playback Equalization Selector to the "IEC" position.

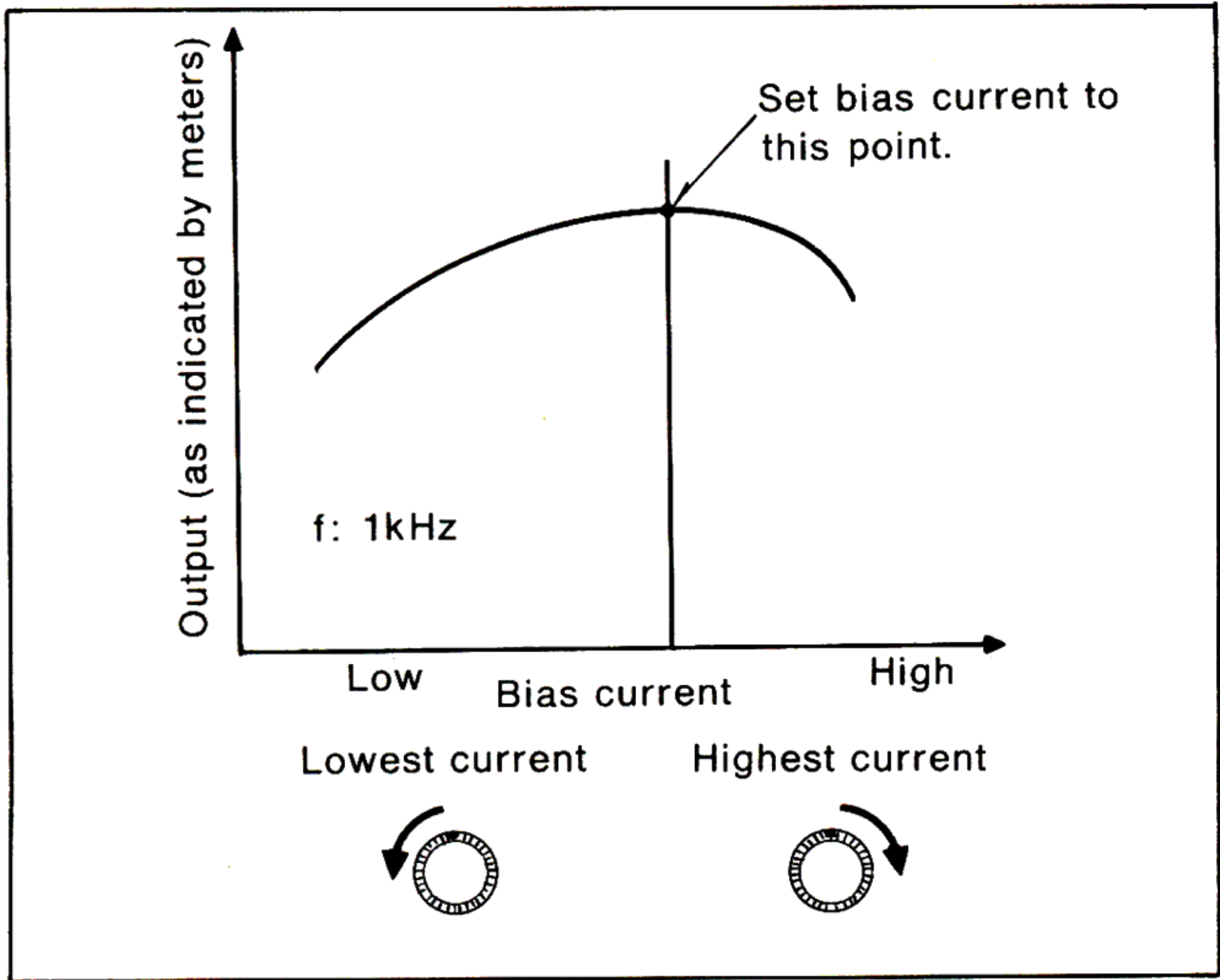
BEFORE BEGINNING RECORDING

Bias and Equalization Selectors

For easy setting to the optimum position, set the Bias Adjustment Controls and Equalization Adjustment Controls to their center (“click”) position, and set the Bias Selector and Equalization Selector to the appropriate position (as shown in the table at the right). For details concerning fine adjustments of bias and equalization, refer to the sections “Equalization Adjustment Controls” and “Bias Adjustment Controls.”

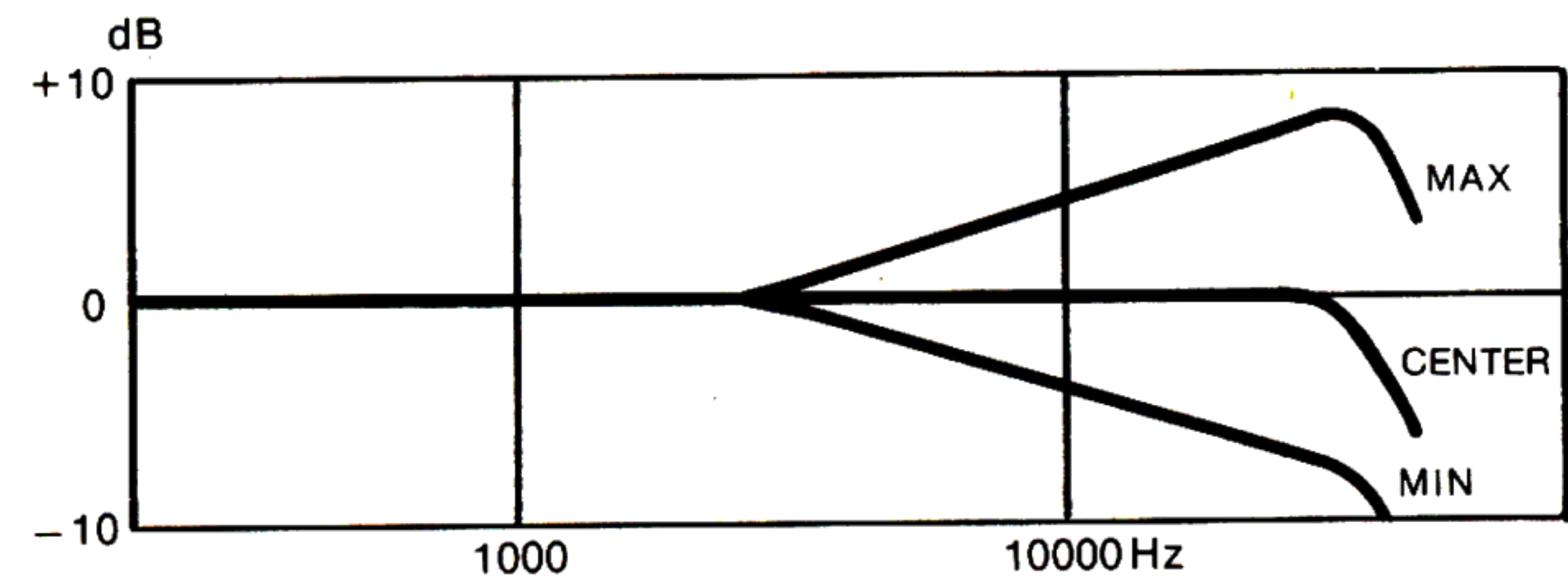
Bias Adjustment Controls

These controls can be used to make separate left and right adjustments, within a range of about + 20% ~ – 50% (from the center “click” position), of the bias current value. When the Bias Selector is set from the “2” position to the “3” position, the bias current value is increased by 10% ; and, when it is set from the “2” position to the “1” position, the bias current value is reduced by 10% . This means that, with the Bias Selector set to the “2” position as the reference standard, the bias current can be continuously varied within a range of from + 30% to – 60% .



Equalization Adjustment Controls

These controls can be used to separately vary the left and right equalization characteristic. The Equalization Selector can also be used to change the recording equalization characteristic as shown in the figure.



Technics ISOLATE LOOP TAPE DECK SERIES
POSITION OF BIAS & EQUALIZATION

BRAND	TAPE	BIAS	EQUALI-ZATION
Agfa	PE-36	1	3
Agfa	PEM268	2	3
Agfa	PEM368	2	3
AMPEX	GRAND MASTER	2	2
AMPEX	20/20 + (372,373)	2	2
BASF	STUDIO SERIES	2	2
BASF	PROFESSIONAL SERIES (SPR50LH, LPR35LH, DPR26LH)	2	2
BASF	LH SUPER SERIES (LP35LHS, DP26LHS)	2	3
FUJI	FM SERIES	1	2
FUJI	FG SERIES	1	3
FUJI	FB SERIES	3	2
MAXELL	UD-XL SERIES	2	3
MAXELL	UD SERIES	3	2
MAXELL	LN SERIES	3	2
MEMOREX	Quantum SERIES	1	3
REVOX	# 601	2	2
SCOTCH	# 211, #212, #213	1	3
SCOTCH	# 218, #206, #207	2	2
SCOTCH	CLASSIC	2	3
SCOTCH	# 1500, #2000	2	3
SCOTCH	# 250	3	2
SONY	DUAD (Fe-Cr) SERIES	2	2
SONY	SLH SERIES	2	3
TDK	S SERIES	2	1
TDK	AUDUA SERIES	3	3

This unit is adjusted for use with Scotch #207 tape.

Meter Sensitivity Selector

When the test-tone oscillator is used to adjust the bias and equalization, the standard reference level is – 10dB. To make adjustments easier, the Meter Sensitivity Selector can be used to increase the sensitivity of the meters by 10dB. The sensitivity of the meters automatically returns to the normal (10dB lower) condition when recordings other than test-tone recordings are made (with the Oscillator Test-Tone Selector set to the “off” position).

Oscillator Test-Tone Selector

This unit is equipped with a 1 kHz and 10kHz oscillator. It can be used to produce test tones to make adjustment of the bias and equalization.

"OFF" position: Set to this position when recording input signals from the ordinary "LINE IN" terminals.

"1 kHz" and "10 kHz" positions: At either of these positions, the internal test oscillator is connected and its output is emitted.

- The recording level of the test signal from the oscillator can be adjusted by using the Line-Input Level Controls.
- An oscillator output of about "–10VU" can be obtained with the Line-Input Level Controls at about the "5" position setting, and "0VU" or higher with the Line-Input Level Controls set to the "10" (maximum) position (with the Meter Sensitivity Selector set to the "normal" position).
- Because the oscillator output can also be taken from the Line-Output Jacks, the oscillator can also be used as a test oscillator for other equipment connected to these jacks. The oscillator output level from the Line-Output jacks can be adjusted with the Output Level Controls.
- The distortion ratio of the test oscillator is 3% or less.

Note:

Set the Oscillator Test-Tone Selector to the "off" position when bias and equalization adjustments are not being made.

RECORDING

Stereo Recording

1. Connect the tuner, stereo amplifier record player, microphone or other recording source to this unit. (See page 3 for connections.)
2. Load and thread the tape, and set the tape speed according to the recording source.
3. Set the 2-4 Track Selector to the "2t" position.
4. Push in the Pitch Control.
5. Set the Equalization and Bias Selectors to match the characteristics of the tape. (See the "Bias and Equalization Selectors" section on page 8.)
6. Set the Record Mode Switches, both L and R, to the "on" position. The Record Mode Indication Lamps will then illuminate.
7. Set the Monitor Switches to the "source" position and adjust the recording level.
Adjust the recording level from the line input with the Line Input Controls and the recording level from microphones with the Microphone Input Level Controls.
Adjust so that the needles of the level meters deflect to within the range at which they do not enter the red zone. (See the figure at the right.)
8. Lightly depress the Playback Button while simultaneously pushing the Record Button and Pause Button. When the Playback Button is released and the Record Button and Pause Button are then released, the Record Lamp and Pause Lamp will illuminate. (The Record Lamp will not illuminate when only the Pause Button is pushed.)
9. When the Playback Button is pushed, the tape and recording will start. (Recording can be started by pushing the Playback Button while depressing the Record Button.)
10. Set the Monitor Switches to "source" and "tape," and confirm that the recording is being made. At the "source" position, the sounds of the sound source can be monitored, and at the "tape" position the sounds recorded on the tape can be monitored.
11. To temporarily suspend recording, push the Pause Button. To start recording again, push the Playback Button.
12. To stop recording, push the Stop Button.

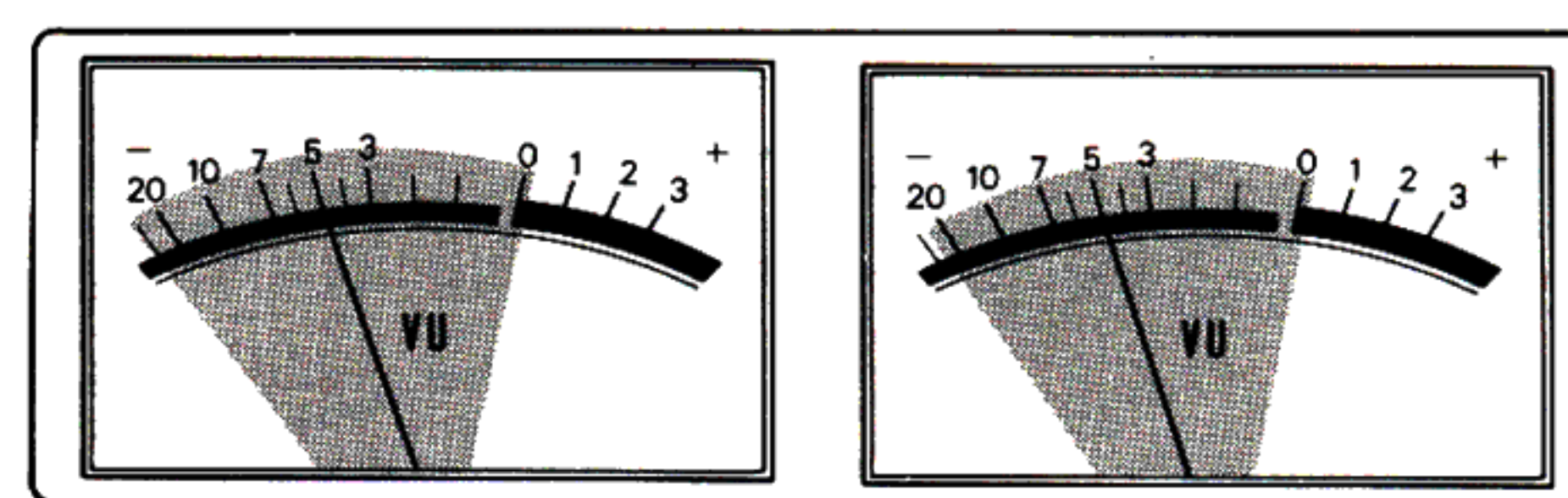
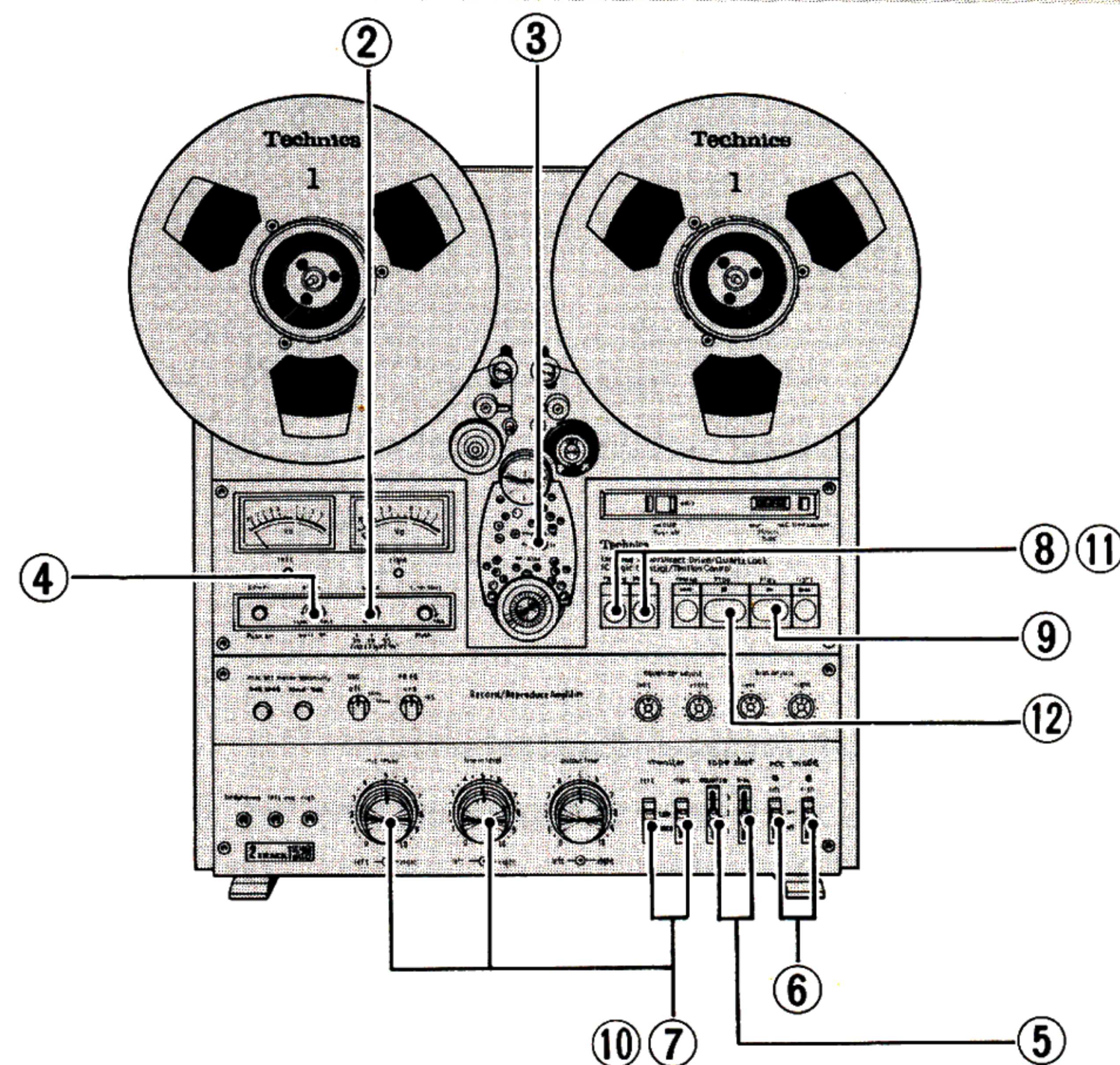
How to Use the Oscillator

1. Thread the tape, and prepare the unit for recording.
2. Set the Bias Selector and Equalization Selector to match the characteristics of the tape (See the "Bias and Equalization Selectors" section on page 8.)
3. Set the Monitor Switches to the "source" position.
4. Set the Output Level Controls to the "8" position.
5. Set the Oscillator Test-Tone Selector to the "1 kHz" position.
6. Set the Meter Sensitivity Selector to the "+10dB" position.
7. Press the Playback Button to start the tape moving in the recording mode, and then set the Monitor Switches to the "tape" position.
8. Turn the Line-Input Level Controls to set the Indication needles of the VU Meters to the "0VU" position.
9. Use the Bias Adjustment Controls to get the peak point on both meters. (See fig. at left on page 8.)
10. Use the Line-Input Level Controls to once again set the indication needles to the "0VU" position.
11. Set the Oscillator Test-Tone Selector to the "10kHz" position, and turn the left and right Equalization Adjustment Controls so that the level is the same as for the "1 kHz" setting of the Oscillation Test-Tone Selector.

The unit is now adjusted to the optimum condition. Turn off the Oscillator Test-Tone Selector and begin the recording.

Note:

An abnormal noise may be heard during recording and playback of test tones. This is caused by uneven coating of the tape surface.

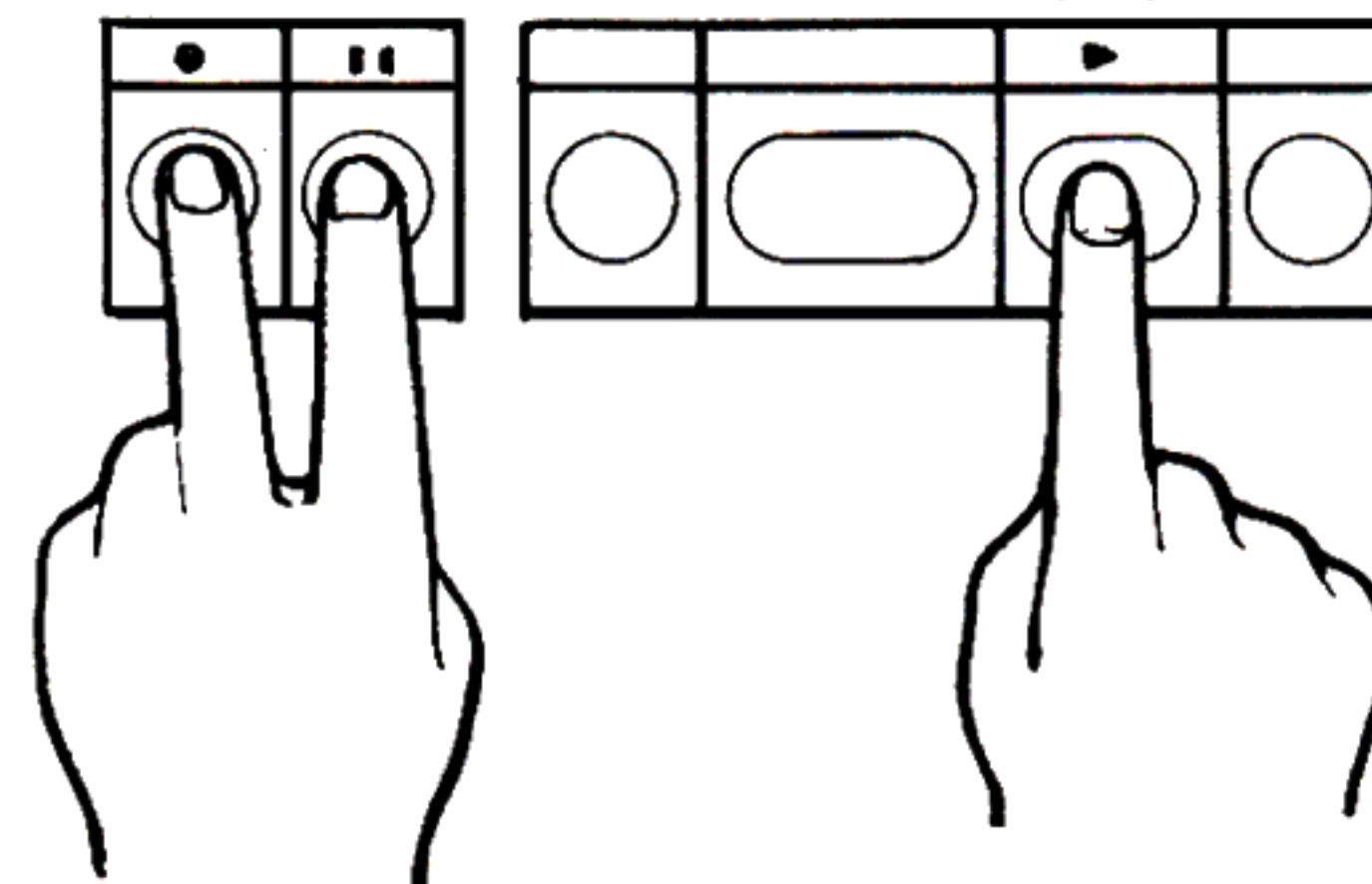


left

right

record pause

play



Note:

Since this unit is designed for 4-track 2-channel play, and for 2-track 2-channel record and playback, 4-track 2-channel (two-way) recording is, therefore, impossible. Recording from the fast forward and rewind state is also impossible.

Monaural Recording

For monaural recording, the usual method is to set the Record Mode Switch of only the channel (L or R) to be recorded to the "on" position, record the tape, and then turn the reels over to record the other side in the same way. The recording operation is identical to that for stereo recording.

Re-Recording

Recording can be performed while playing back a recorded tape, without halting the tape, as follows:

1. Set the Recording Mode Switches to the "on" position in the playback state.
 2. When the Record Button is pushed while the Playback Button is being depressed, the unit is placed in the record state and recording is started.
- * The unit can be switched to the record mode by merely pushing the Record Button during playback. Confirm that the Record Lamp is illuminated and that the recording is being made.

Pause Button

When the Pause Button is pushed during recording, the tape will stop but the Record Lamp will remain illuminated. When the Playback Button is then pushed, the tape will begin to move again. When the Pause Button is pushed during playback, the tape is stopped and the lamp will not illuminate.

* The Pause Button is inoperative during fast forward and rewind.

Record Mode Switches and Indication Lamps

These switches are used to select the channel to be recorded. When the switch (left or right) is set to the "on" position, that channel is recorded. When recording in stereo, set both switches (left and right) to the "on" position, and when recording in monaural set only the switch of the channel to be recorded to the "on" position. When the left and right Record Mode Switches are set to the "on" position, the Record Mode Indication Lamps will illuminate individually. This indicates that the recording will start when the Record Button and Playback Button are pressed.

When playing back, set both switches (left and right) to the "off" position. A valuable recorded tape will not be erased even if the recording operation is performed by mistake.

Preset Marker

Fade-in and fade-out are possible by using the marker while recording.

Since memorizing the setting is unnecessary even when the controls are operated (fade-in, fade-out) when the marker slit is aligned with the control slit after the Microphone Level controls and Line-Input Level Controls have been adjusted, they can be easily returned to their original positions.

Mixing Recording

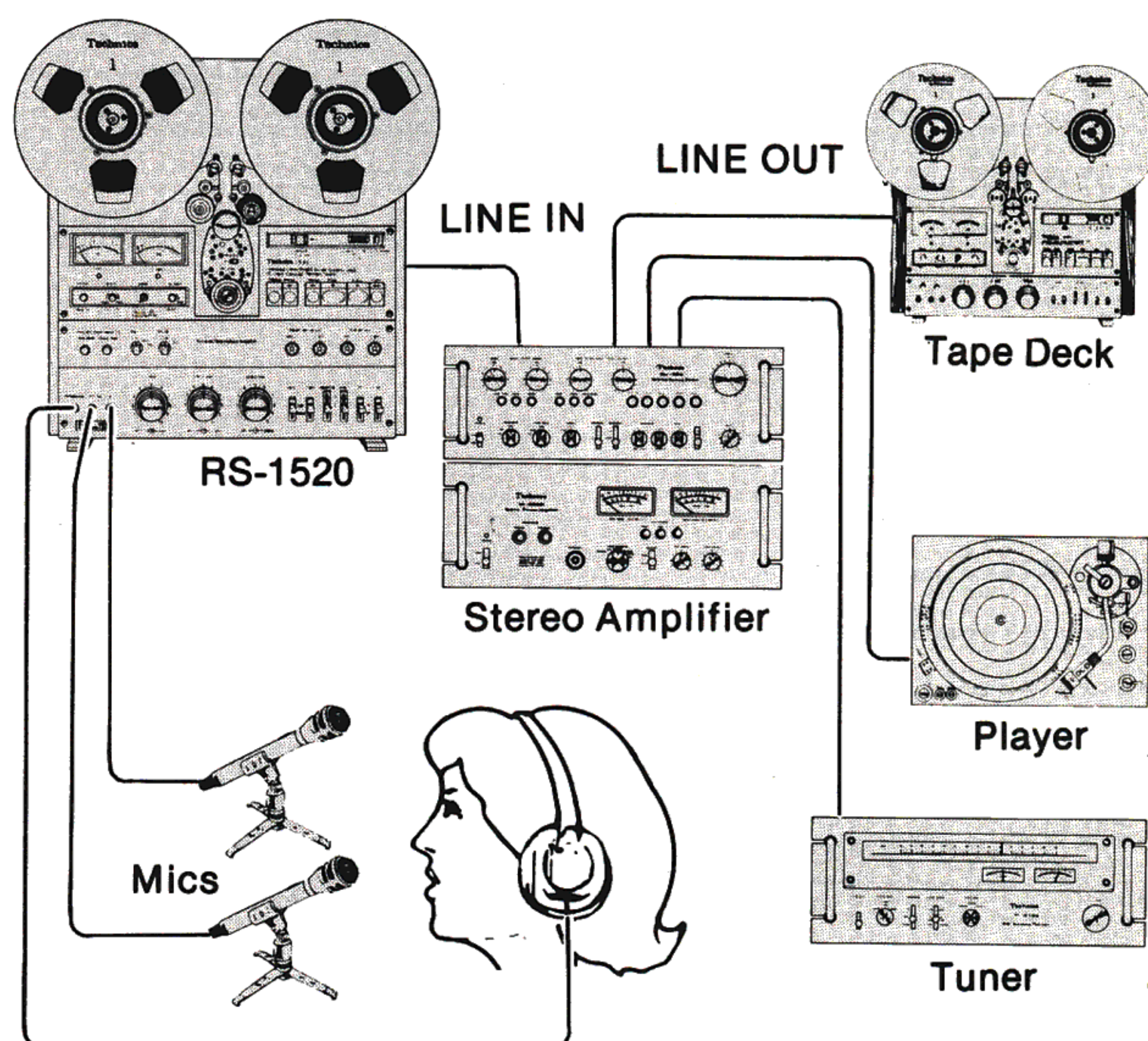
Recording by mixing microphone input and line input is possible as follows:

1. Connect the microphone(s) to Microphone Jack(s) and the Input from a stereo amplifier to Line Input Jacks.
2. Adjust the microphone input recording level with the Microphone Level Controls and the line input recording level with the Line-Input Level Controls.
Balance by adjusting the microphone input, line input and L and R channels while listening with headphones.
3. After adjustment is complete, record according to the stereo recording procedure.

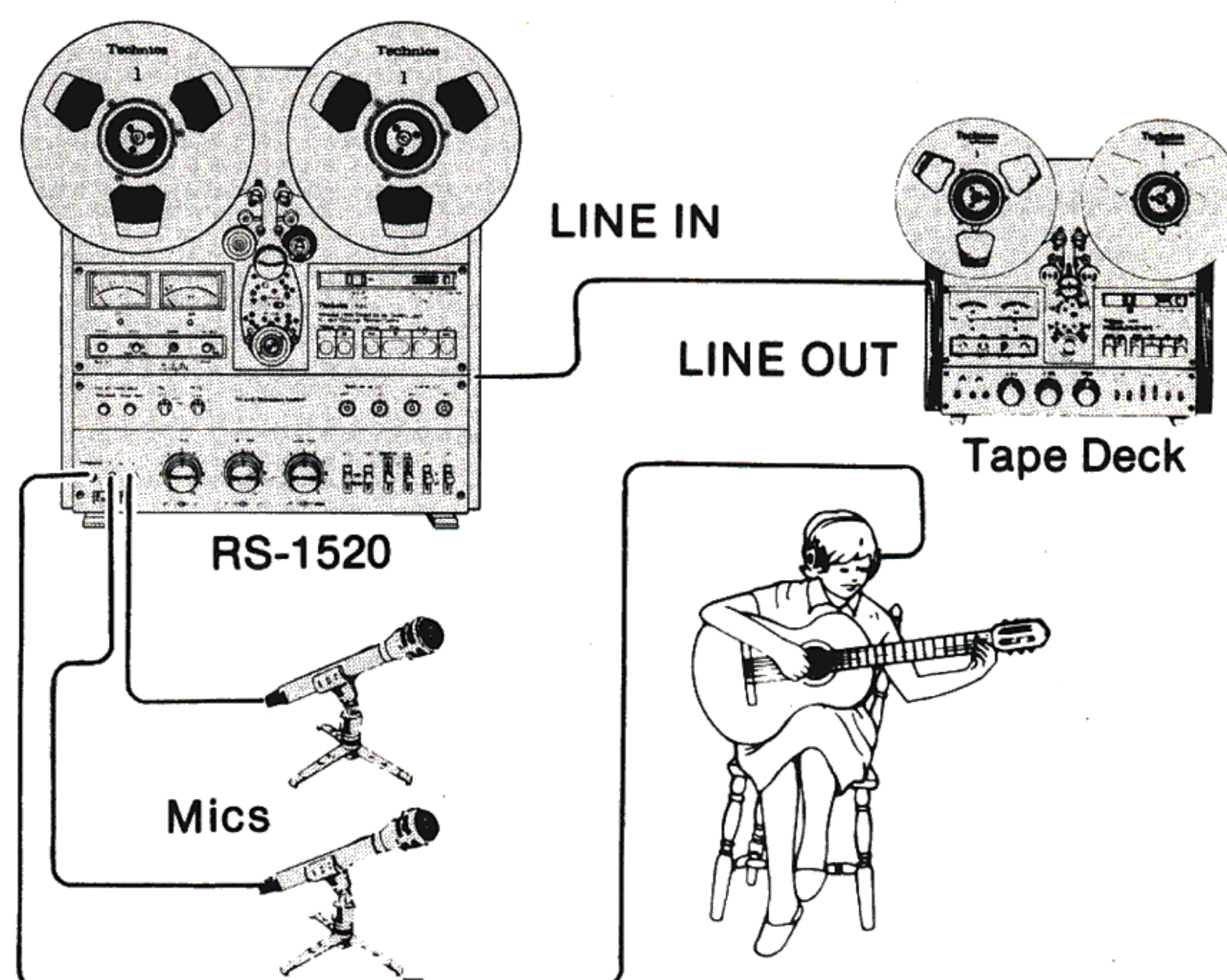
Type of Mixing

—Mixing With Phonograph Record or FM Broadcast—

A narrator can add commentary to recorded music; useful for DJ work, etc.

**Sound-On-Sound**

By use of a second tape deck, one can record again over a recording of his own performance, to attain the effect of a duo., trio, etc.

**Caution:**

Some audio material is copyrighted, and recordings of such material must be limited to personal use and enjoyment.

TIMER RECORDING AND PLAYBACK

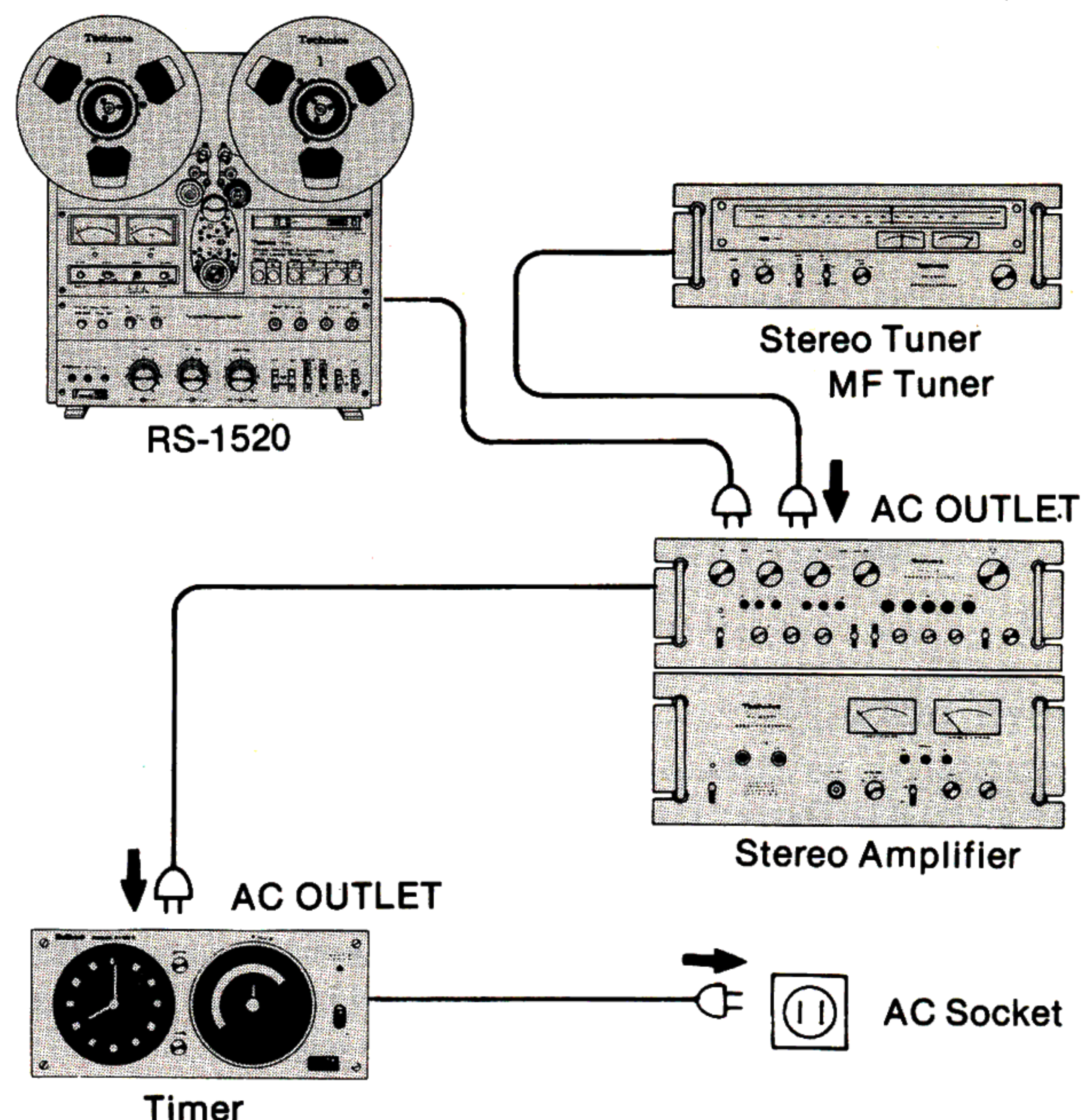
Timer Start Switch

This is used when timer recording and timer playback are performed by using the unit in conjunction with a timer.

Timer Recording (for example, recording from FM broadcasts)

Refer to "CONNECTIONS" on page -3- for the connection of the sound source.

1. Connect to the power source as shown in the figure at the right.
2. Thread the tape to be recorded, being careful that there is no slack in the tape. Turn the Power Switches on and set the Record Mode Switches to the "on" position.
3. Tune to the FM broadcast to be recorded, set the Monitor Switches to the "source" position, and adjust the recording level.
4. Push the Timer Start Switch and lock it by turning it clockwise.
5. Set the timer to the desired time (with the Power Switch of this unit set to the "on" position). (The power is turned off by the timer at this time.) (See the timer instruction manual.)
Timer recording preparations are now complete.
At the desired time, the power is turned on and recording is started automatically.



Timer Playback

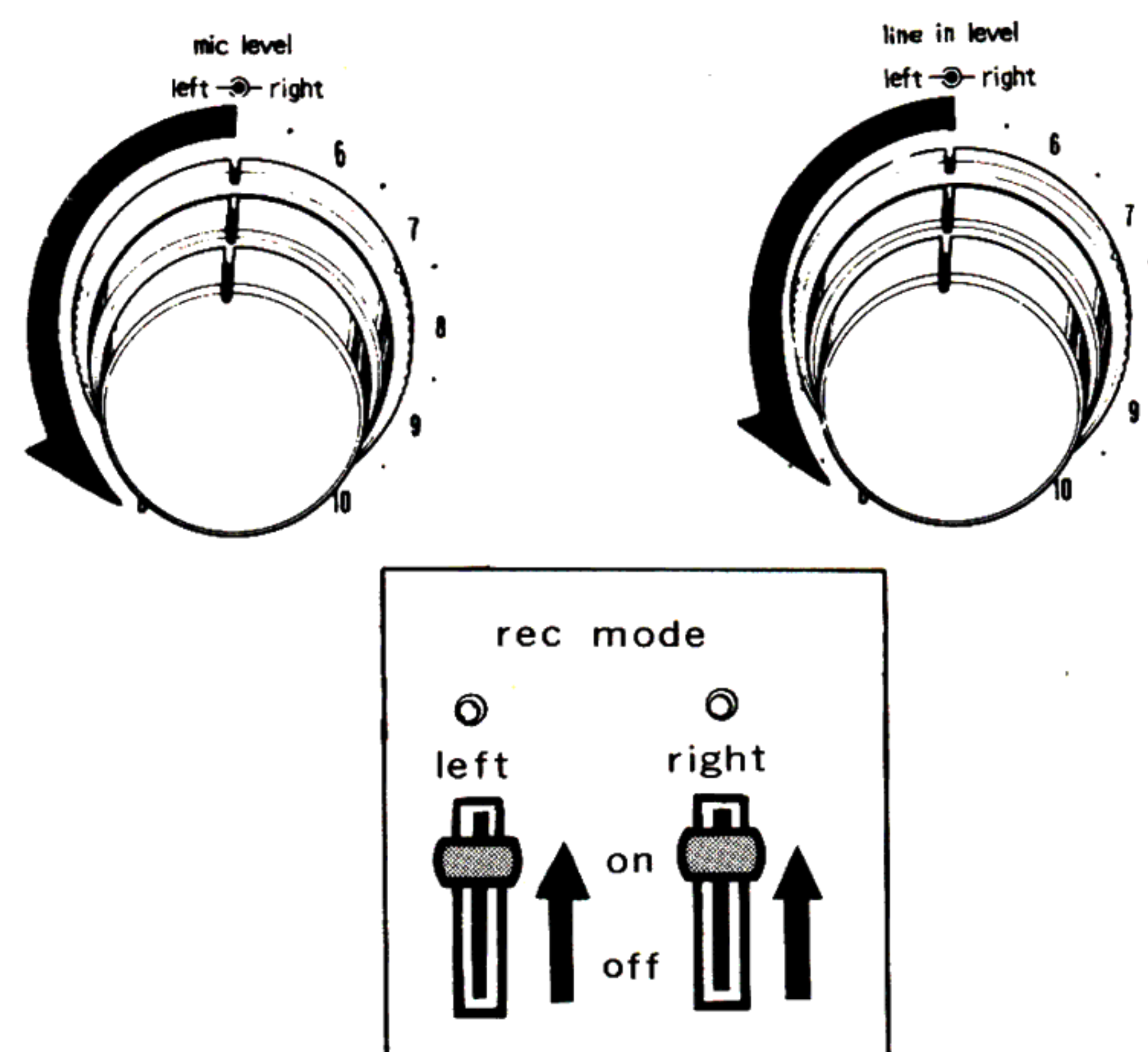
1. Thread the tape to be played back. Make power connections and connections to other equipment in the same way as for timer recording.
2. Set the Record Mode Switches to the "off" position.
3. Playback the tape one time and adjust the stereo amplifier to the volume level and tone quality desired when timer playback begins.
4. Rewind the tape to the desired position. Push the Timer Start Switch and turn it to the right to lock it.
5. Set the timer to the desired time.
(Depending upon type of timer, the power to other equipment will then be turned off.)
This completes preparations for timer playback. When the desired time is reached, the power will be turned on and the playback will begin.

ERASING

Thread the tape to be erased and set the Line-Input and Microphone Level Controls to the "0" position. Set the Record Mode Switches to the "on" position, and run the tape as described for recording.

Note:

The Oscillator Test-Tone Selector should be set to the "off" position.



- * Always release the Timer Start Switch at the end of timer recording and playback.
- * The Record Button and Playback Button need not be pushed when the Timer Start Switch is locked. Timer recording and playback are performed by merely setting the Record Mode Switches.
- * Several timer recordings can be made by means of the timer. (See the timer instruction manual.)
- * If the Cue Lever/Edit Switch is locked on at the time of timer start, timer recording and timer playback cannot be accomplished.

TAPE EDITING

Since editing is the process of cutting out unnecessary parts and splicing in necessary parts of a recorded tape, the necessary parts must first be located.

Items Required for Editing

- Splicing tape
(Never use cellophane tape or similar material.)
- Scissors
Nonmagnetic scissors for tape editing use are suggested.
- Use Editing Block for easy splicing.

Editing

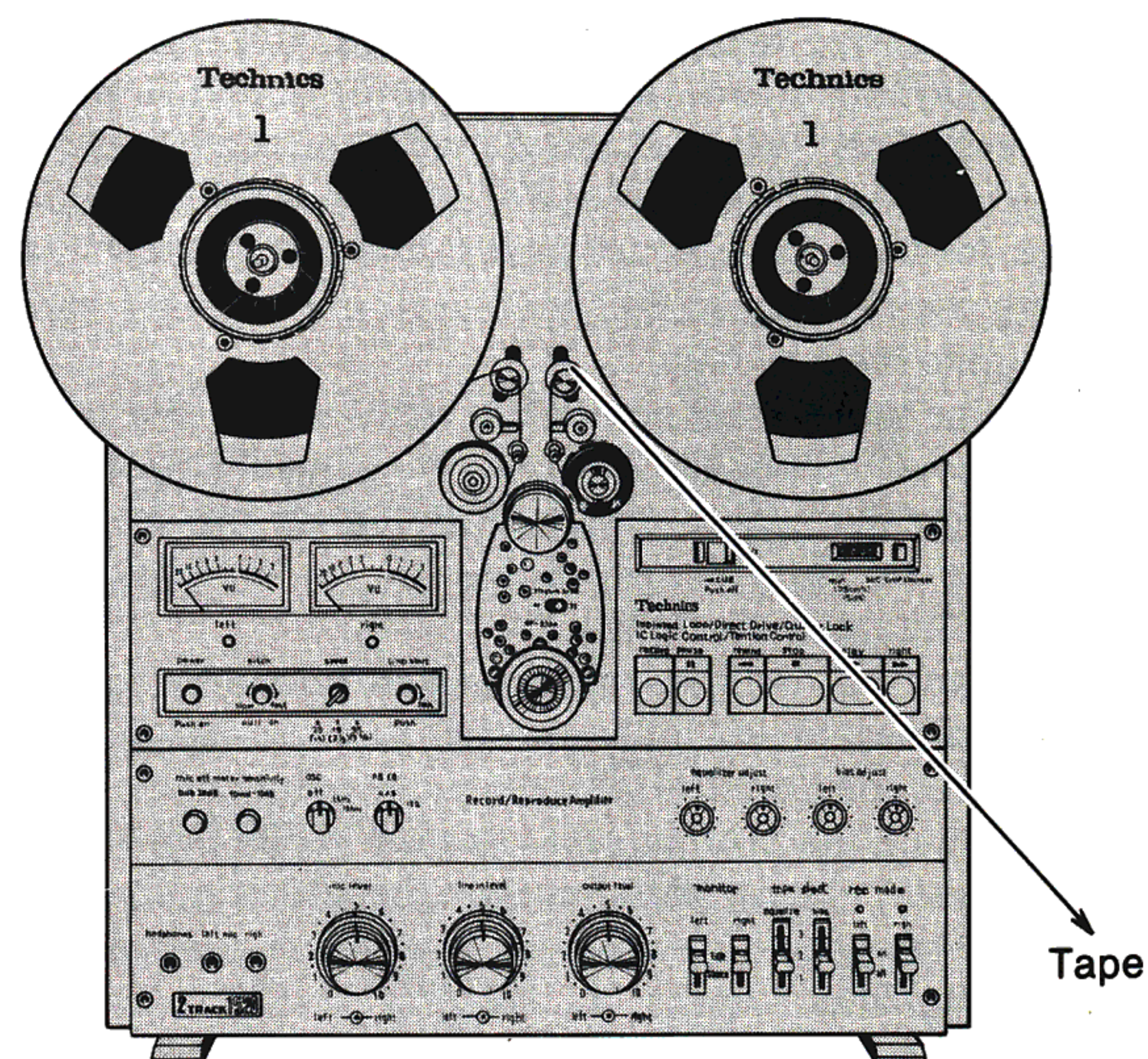
1. Thread the tape to be edited, and listen to the tape to find the approximate place to be edited (by playing back the tape, or by using the Cue Lever/Edit Switch).
2. After the approximate place to be edited is found, push the Stop Button and mark the place to be edited. If there is not much space between musical selections, or if it is necessary to cut the tape at a very precise place for any other reason, use the Edit Dial to find the exact place to make the cut.
(Refer to the section "Edit Dial.")
3. Move the Cue Lever/Edit Switch to the left (locked) position, and then apply tension to the tape (so that the tension rollers will move down slightly). The tape can then be unreeled (while you listen to it) by pressing the Playback Button.
4. When the tape reaches the place where it should be cut, press the Stop Button, cut the tape, and then splice together the parts to be kept.

Notes:

- When the Stop Button is pressed while the tape is unreeling on the take-up side, the unit will change to the stop mode, the left and right tension rollers will both move completely upward, the internal shut-off switch will function, the capstan will stop rotating, and no subsequent operations can be performed even if an operation button is pressed.
In the same way, if, during editing, one of the operation buttons (Fast Forward Button, Rewind Button, etc.) other than the Stop Button is pressed in error, the capstan will be stopped in order to protect the tape from damage.
- During editing, always pull the unreeled tape in the direction of the arrow, as shown in the figure, in order to prevent the tape from getting caught by the moving Capstan or pinch rollers.
(Pull very gently, especially if the tape is particularly thin.)
- The tape will be unreeled if the Cue Lever/Edit Switch is moved to the left during playback.

Note:

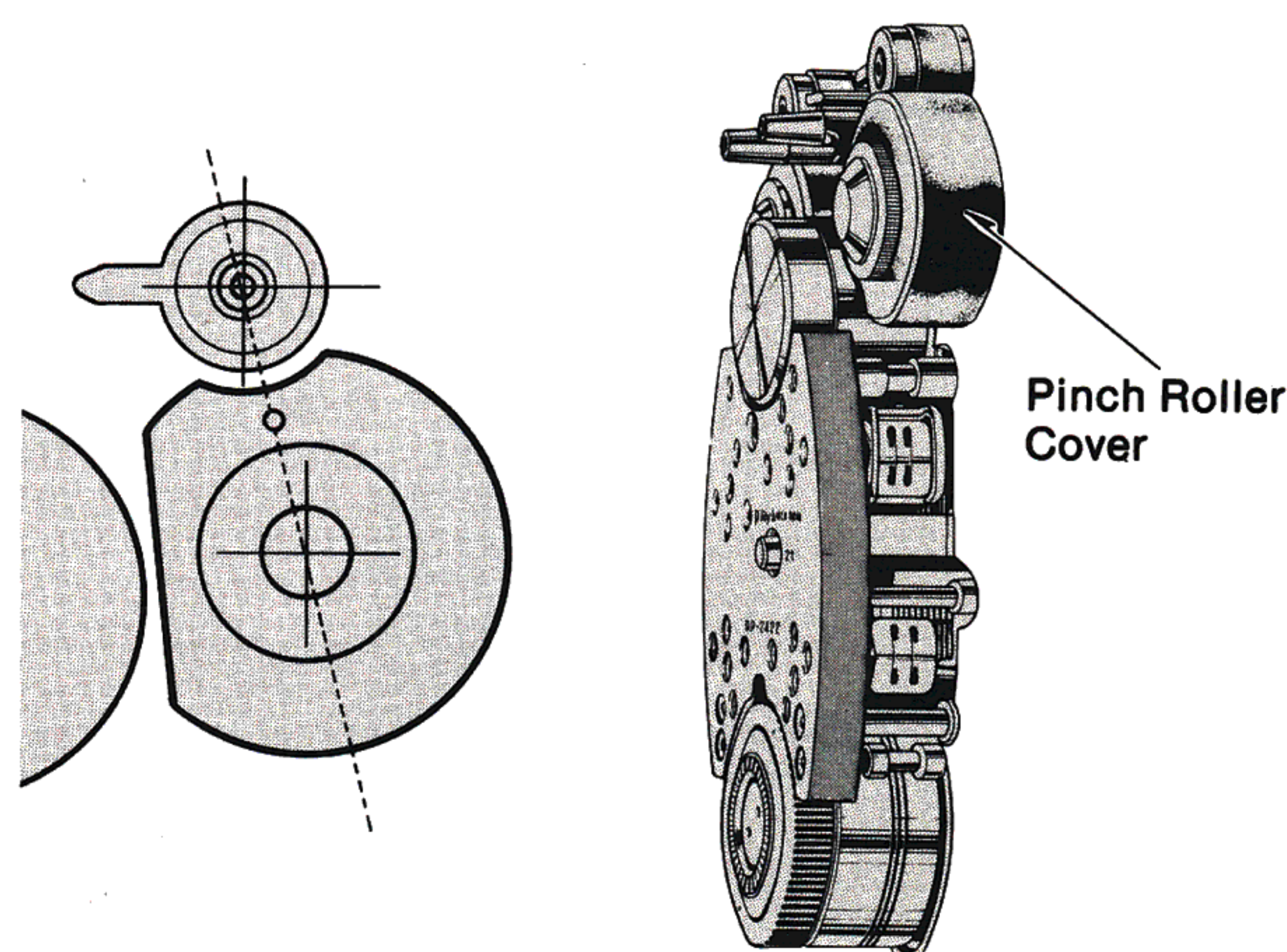
Since the output level is increased in the cue state, set the Line-Output Level Controls to a lower setting.



Pinch Roller Cover

Tape is apt to become wrapped around the right pinch roller, during unreeling for editing, if the tape is thin and/or the humidity is low.

This is not so apt to occur, however, if the pinch roller cover is used. It can be attached, as shown in the figure, by removing the cap of the right pinch roller (turning it counterclockwise), installing the cover (included), and then re-attaching the cap. The cover should be attached so that the dot (at the center of the notch) is on a straight line with the center of the Tape Edit Marker and the center of the Pinch Roller. Be sure that the cover does not touch the tape itself when the tape is moving.

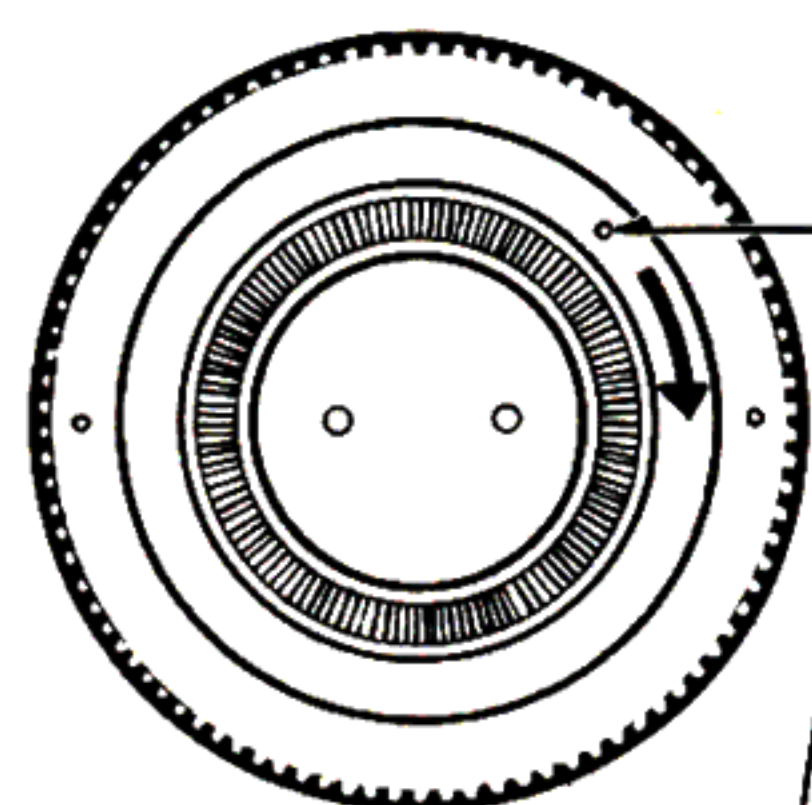
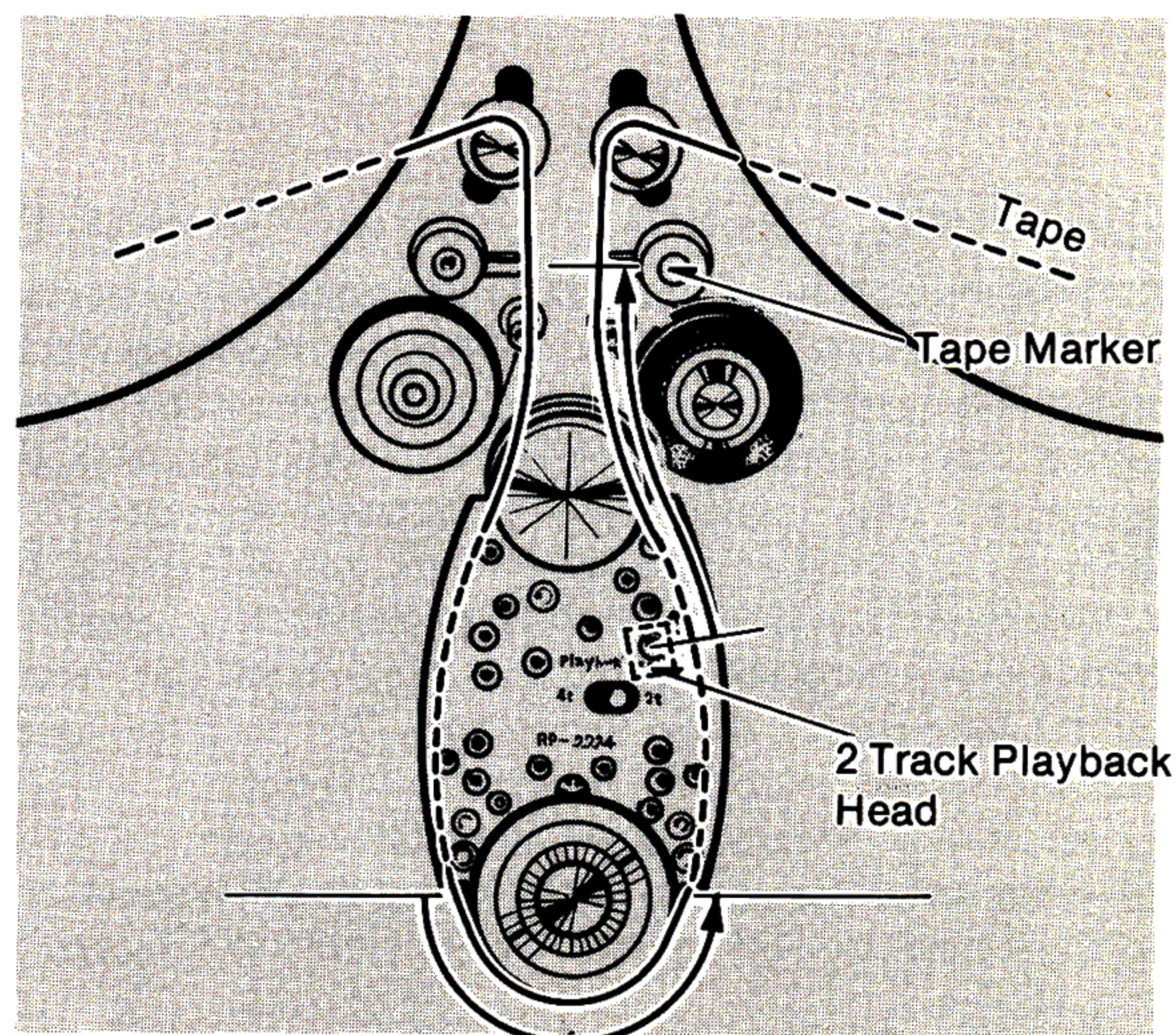
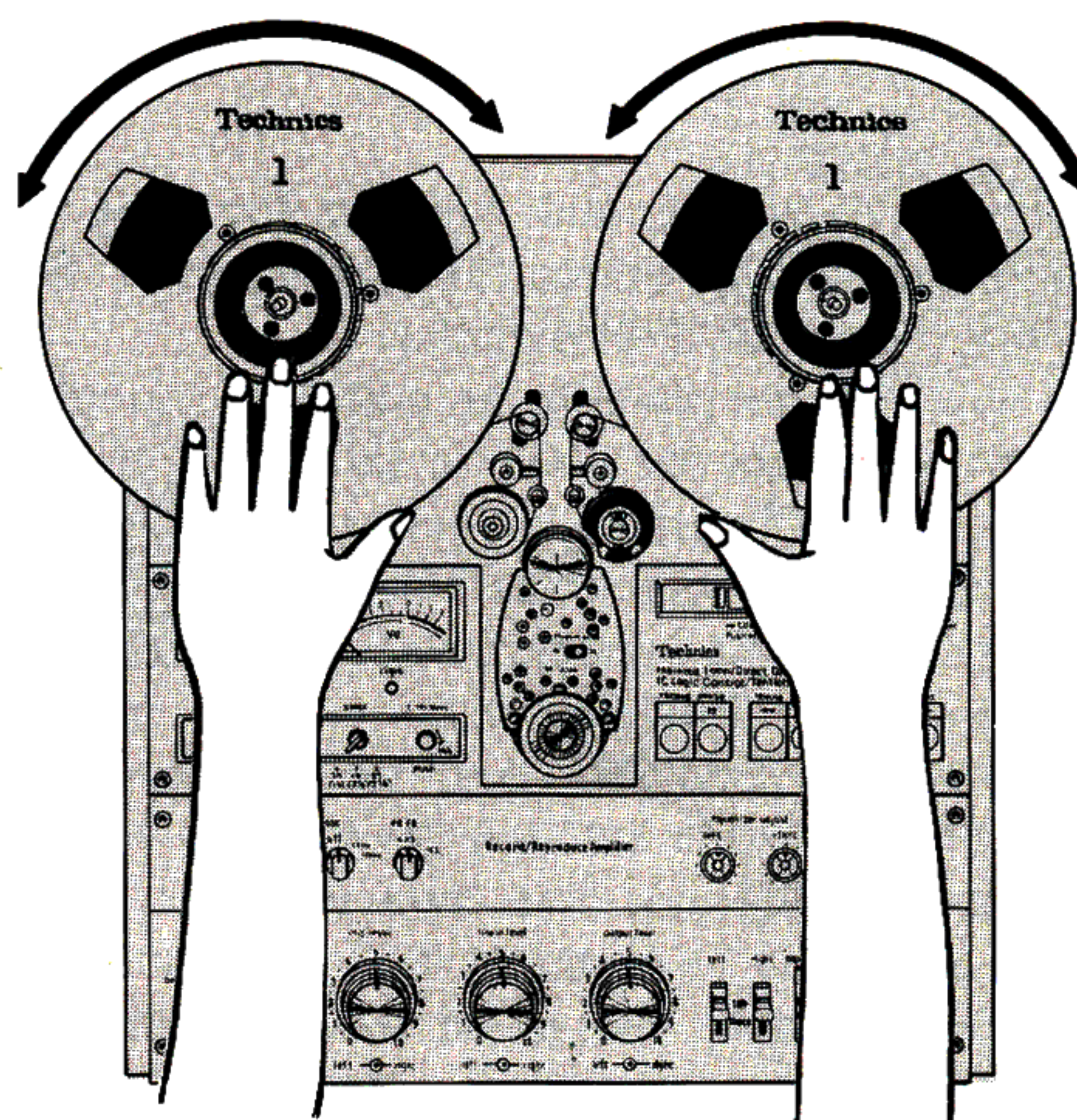
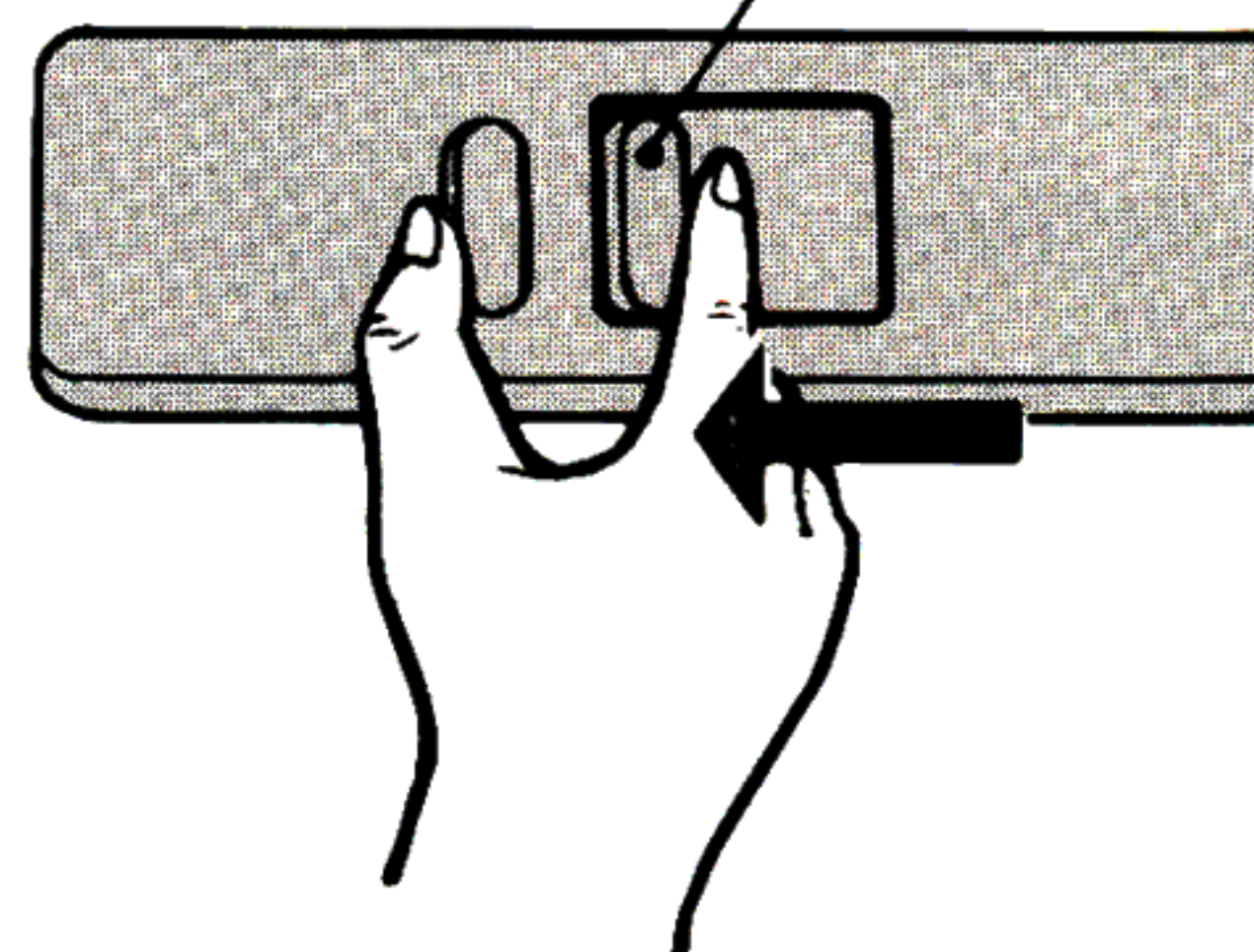


Edit Dial

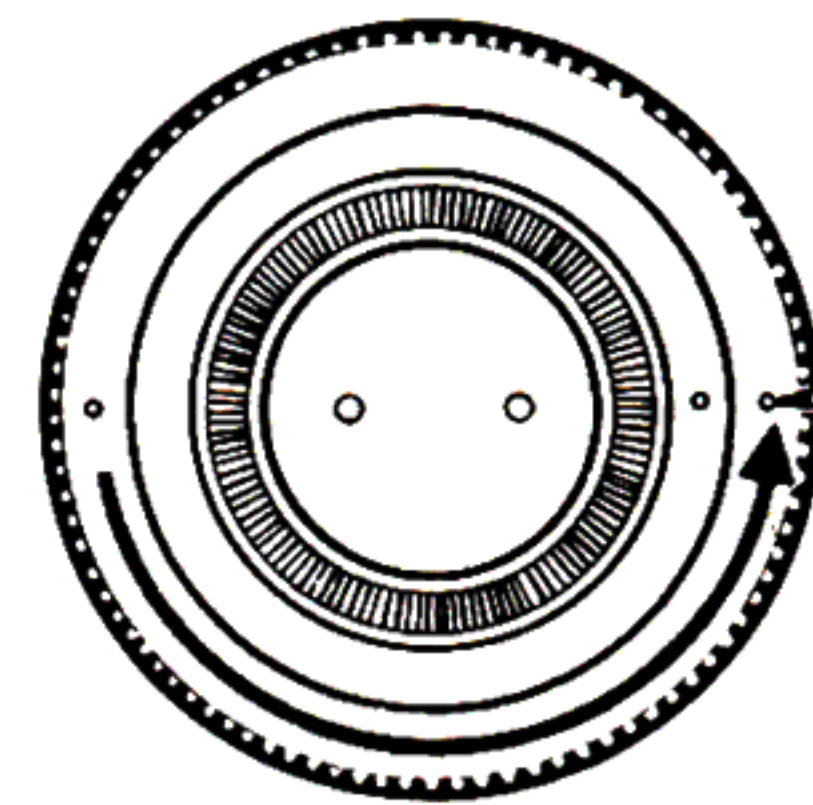
The Cue Lever/Edit Switch is convenient for tape cueing and marking the recording points.

1. When the Cue Lever/Edit Switch is pushed in the direction of the arrow during fast forward or rewind, the tape approaches the playback head, and the monitor sound is heard. The Cue Lever/Edit Switch is locked when pushed fully. Search for the recording point by listening to the monitor sound.
2. Search for the part recorded first or the part recorded last by locking the Cue Lever/Edit Switch in the stopped state and turning the reels by hand.
3. Search for the cutting point. The point where the tape is to be cut should be positioned over the playback head.
4. Next, align the "point" of the Edit Dial at the inside of the Reversing Roller with the "point" of the Reversing Roller. (See the Figure at the right.)
5. Then, turn the reels in the playback direction by hand to rotate the Reversing Roller another half revolution and align the point of the Edit Dial with the other point of the Reversing Roller. Since the cutting point is now at the position of the Tape Marker, place a mark on the tape with a colored pencil, etc. (The tape can be marked by pushing it against the Tape Marker with your finger.)
6. Turn the reels by hand to loosen the tape and cut the tape at the position of the mark. Locating and cutting the tape is simple if performed in this manner.

Cue Lever/Edit Switch



Edit Dial



Reversing Roller

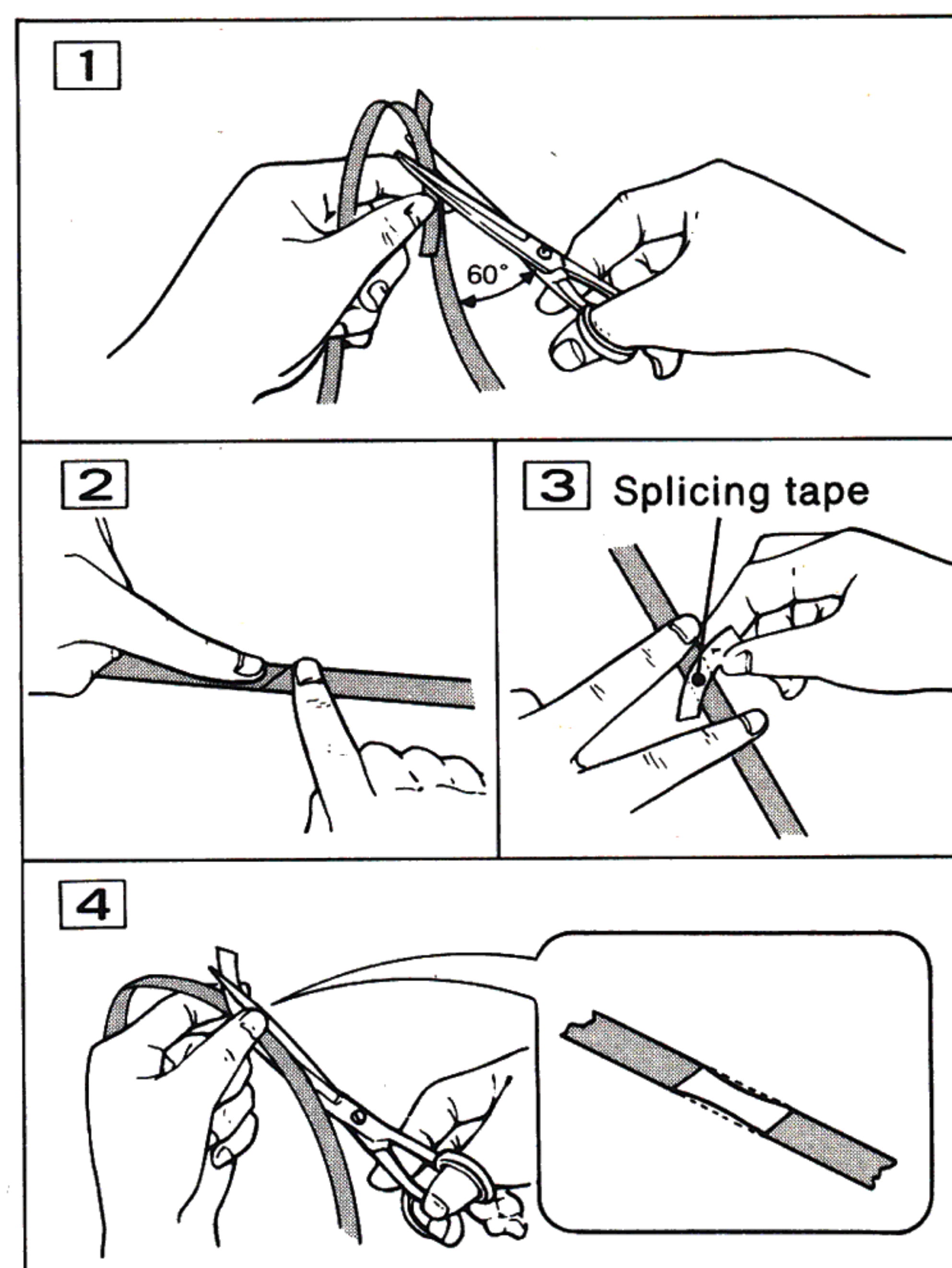
How to splice the tape

1. Place one end of the broken tape over the other and cut at an angle of approximately 60° (figure 1).
2. With the side of the tape which does not contact the head (the glossy side) facing upward, align the cut ends of the tape on a flat surface. Be sure not to overlap the ends or to leave any space between them (figure 2).
3. Cut a piece of splicing tape to an appropriate length and apply it to the place where the two ends meet. Rub the splicing tape with a fingernail to assure complete adhesion (figure 3).
4. Trim away any splicing tape which protrudes over the edges of the tape, cutting slightly into the tape itself (figure 4).

Note:

Be sure to use genuine splicing tape. Never use cellophane tape or vinyl tape because its binding agent may later "bleed" out, adhere to the heads, and seriously affect the performance. If a particularly valuable tape is broken and it is feared that cutting it as described above might affect the contents, simply align the two broken tape ends and apply splicing tape without cutting the tape.

5. If the leader tape or recording tape breaks, splice as shown in the figure.



SERVICING

Servicing the Heads

The heads, capstan and pinch rollers constantly contact the tape and become dirty easily, thus adversely affecting the sound quality and volume, and causing noise, faulty erasure, and deterioration in the frequency response.

When dust and dirt collect on the surface of the heads, the superior sound quality and characteristics of the unit will not be sufficiently displayed. To maintain the unit in top condition at all times, clean the heads as described below (after every 5~10 hours of use.)

The heads are the 4-Track Playback Head and 2-Track Erase Head from the top left and 2-Track Playback Head and 2-Track Recording Head from the top right.

Wipe the heads with the cotton swabs (supplied) immersed in a small amount of alcohol.

In addition, also carefully wipe the left and right Tension Rollers, Tape Guides, Tape Shifters, Reversing Roller, and Capstan. Wipe the Pinch Rollers with a soft cloth.

Notes:

1. Do not bring magnets or magnetic metal (screwdrivers, tweeters, etc.) near the heads. If the heads become magnetized, noise will occur during playback.
2. Do not lubricate any of the parts of the transport mechanism.
3. Do not use heavy rubbing to clean the heads.

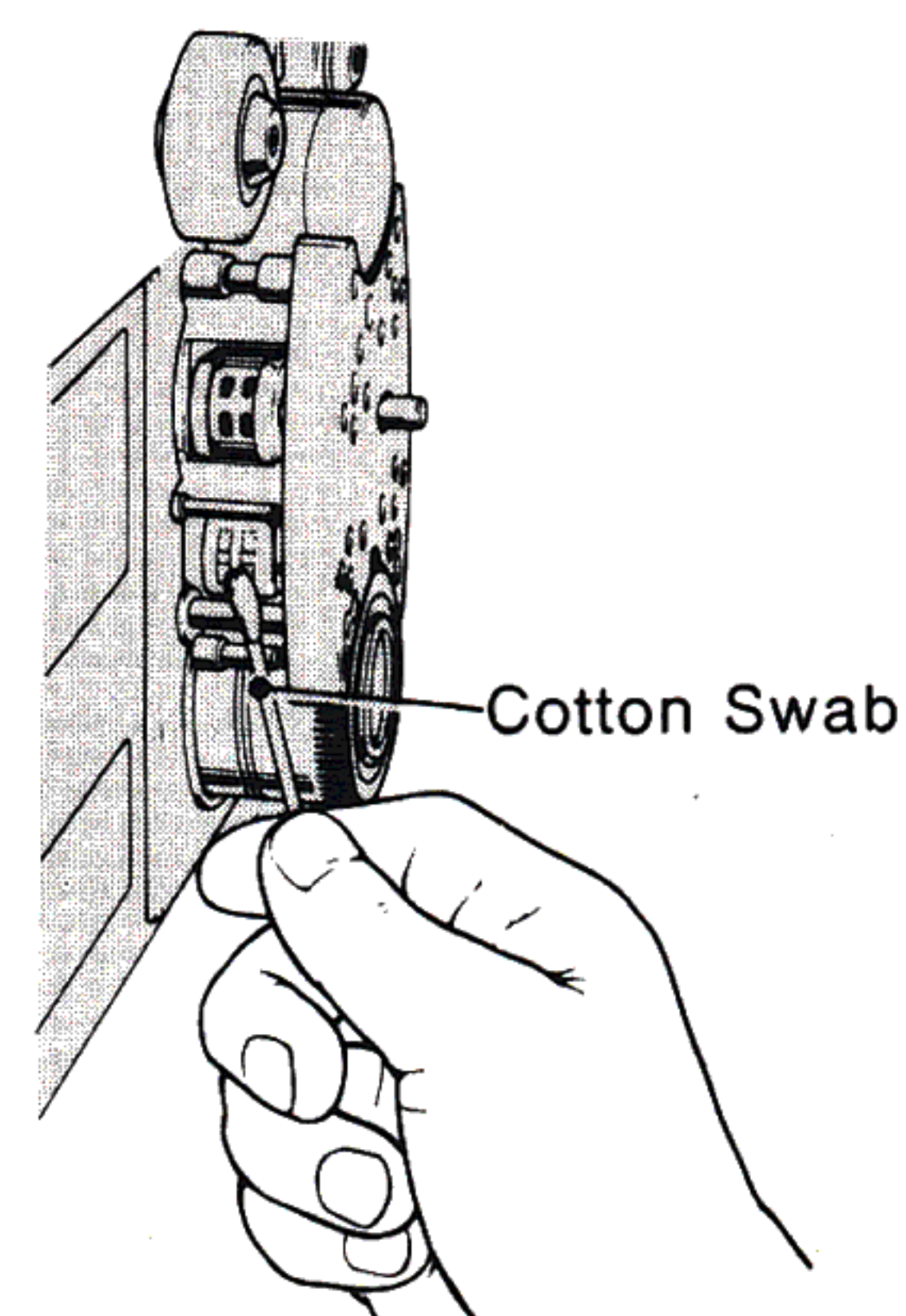
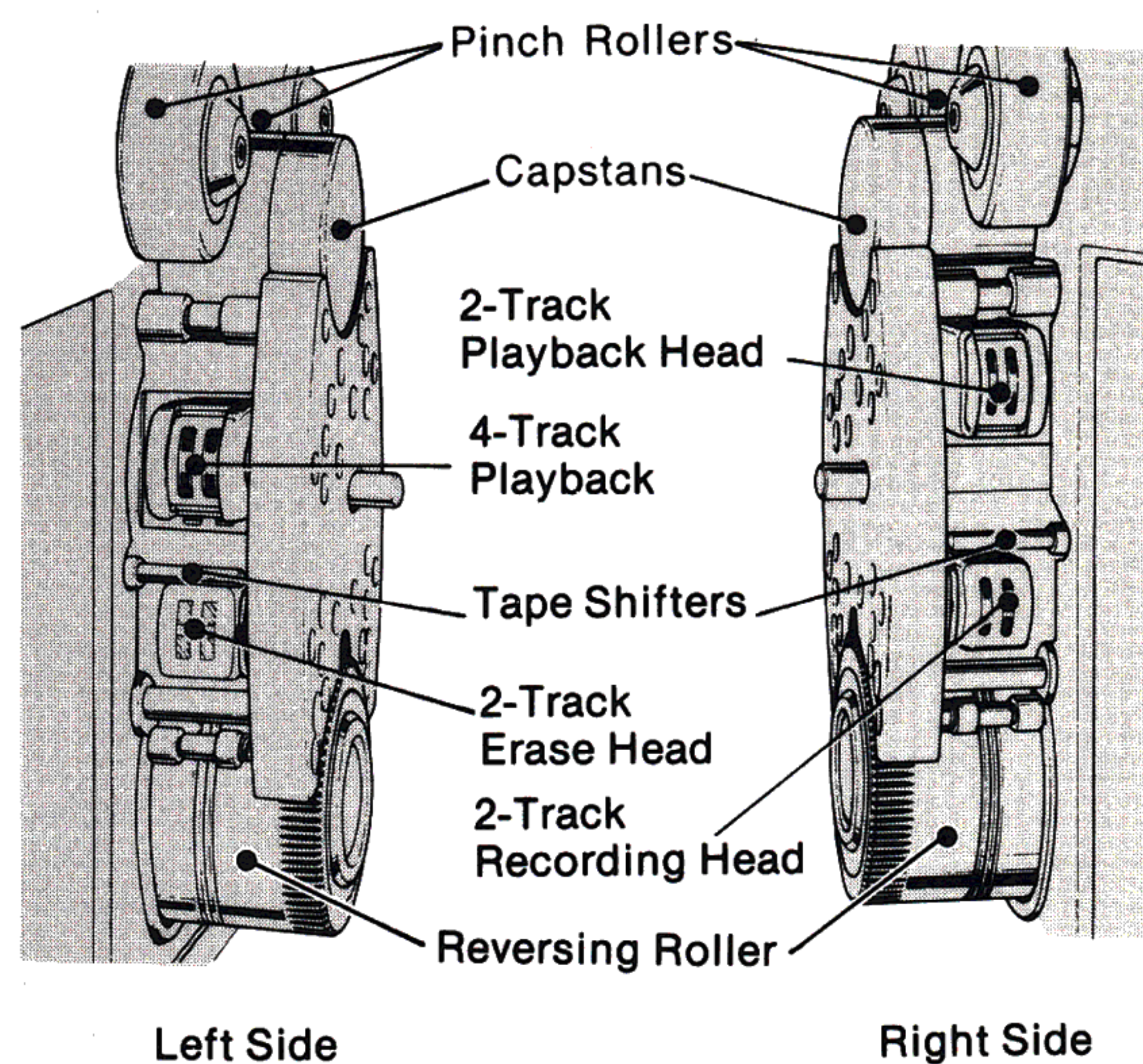
Servicing the Panels

Wipe the panels with a soft cloth.

If the panels are extremely dirty, wipe them with a cloth dipped in soapy water and then wipe dry.

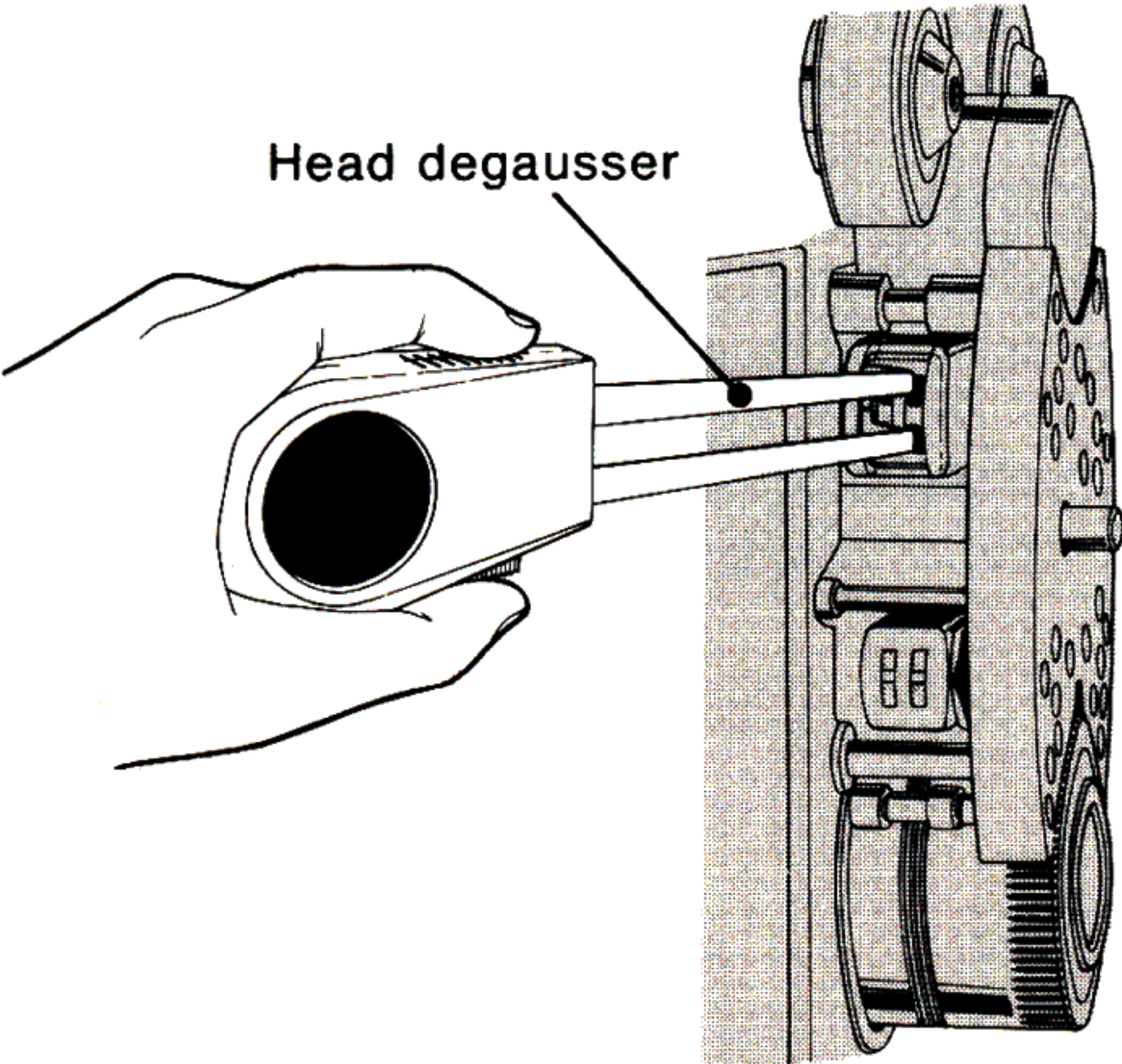
Note:

Do not bring benzene, insecticides, or other harsh chemicals into contact with the cabinet finish, because discoloration or deformation may occur.



Degaussing the Heads

When the tape deck is used for an extended period of time, degauss the heads once a month with a head degausser. (Refer to the head degausser manual for details.) The degauss points are the 4-Track Playback Head, 2-Track Erase Head, 2-Track Playback Head, 2-Track Recording Head and the Guide Pins, Tension Rollers and other metal parts which touch the tape, Never place recorded tapes near the head degausser.



IN CASE OF DIFFICULTY

If this unit does not function normally, turn on the power and check the following points. If operation is still abnormal, consult with the store where purchased.

With tape threaded, tape won't move even when the Play Button is pushed.

- Is Power Cord disconnected ?
- Is Power Switch set to the "off" position ?
- Is tape too loose (Tension Rollers up) ?

Tape moves, but no playback sound is heard.

- Is the tape blank ?
- Are connections to Stereo Amplifier and/or Speakers incorrectly made or disconnected ?
- Are Output Level Controls set to minimum position ?
- Is volume control of Stereo Amplifier set too low ?
- Are Monitor Switches of this unit or of Stereo Amplifier set to "SOURCE" position ?

Sound is distorted.

- Is recording level too high ?
- Is input impedance of Stereo Amplifier improper ?

Recordings can't be made.

- Are connections of Microphones and/or Tuner incorrect or disconnected ?
- Are Microphone or Line-Input Controls set too low ?
- Are Record Mode Switches set to "off" position ?
- Is Microphone Attenuator Switch set to "off" position ?

Playback sound is coarse, wavering; clear recordings can't be made.

- Are head surfaces dirty ?
- Is foreign material attached to Pinch Rollers or Capstan ?
- Is tape creased or wrinkled ?
- Is tape threaded incorrectly ?

Accessories

Empty 26.7 cm (10-1/2-inch) Reel	1
Stereo Connection Cords	2
Reel Adaptors	2
Reel Spacers	2
Head Cleaner	1
Pinch Roller Cover	1
Shelf Adaptors	2

PRODUCT SERVICE

Should your "Technics" product ever require service, refer to the Directory of Authorized Servicenters, or your "Technics" dealer, for assistance. Do not send the unit to the executive or regional sales offices. They are not equipped to make repairs.

If the unit is suddenly brought into a warm room after it has been standing for some time in a very cold location (freezing temperatures), condensation may form on the internal parts, and cause improper operation when first connected. This effect will clear itself if the unit is allowed to stand for about 30 minutes in the warm room before being used.

SPECIFICATIONS

TRANSPORT

Tape Width:	6.3cm (1/4"), 2.0mm (0.078") track width (2 track) 1.0mm (0.039") track width (2 track)
Channel and Track:	2 channel, 2 track rec/PB and 4 track playback (2 channel, 4 track rec/PB and 2 track playback Head Block RP-2422 optional available)
Tape Speeds:	3 speeds; 38.1, 19.05 and 9.53cm/s (15, 7-1/2 and 3-3/4 ips) max. deviation $\pm 0.1\%$ and fluctuation 0.05% at 38cm/s (15 ips) Pitch Control; $\pm 6\%$ (record and playback)
Reel Size:	127 to 267 mm (5 to 10-1/2") EIA or NAB, plastic or metal
Wow and Flutter (overall):	(JIS (DIN (NAB weighted weighted unweighted RMS) peak) RMS)
38cm/s(15 ips);	0.018% $\pm 0.035\%$ 0.045%
19cm/s(7-1/2 ips);	0.03% $\pm 0.06\%$ 0.07%
9.5cm/s(3-3/4 ips);	0.06% $\pm 0.12\%$ 0.15%
Timer Counter:	read-out in minutes and seconds (4 digits), real time indication for 38cm/s (15 ips) accuracy $\pm 1\%$ at 38cm/s (15 ips)
Fast Winding Time:	less than 150 sec. for 762m (2500 feet) tape
Capstan Drive:	Quartz control phase-locked DC brushless servo direct-drive motor
Reel Drive:	2 tape tension controlled DC brushless direct-drive motor
Edit Capability:	Edit marker, tape dump or cue/review using Edit dial and/or Cue switch
Tape Tension:	Constant all speeds and reel size, Supply and Take-up tension controlled
Auto Stop Detection:	Tension roller switches for end of tape running or Tension control circuit stops the operation within 3 sec. for accidental stop of Take-up reel motor
Remote Control:	functions; Rec/Play/Pause/FF/Rew Remote Control box RP-9690 optional available

ELECTRONICS

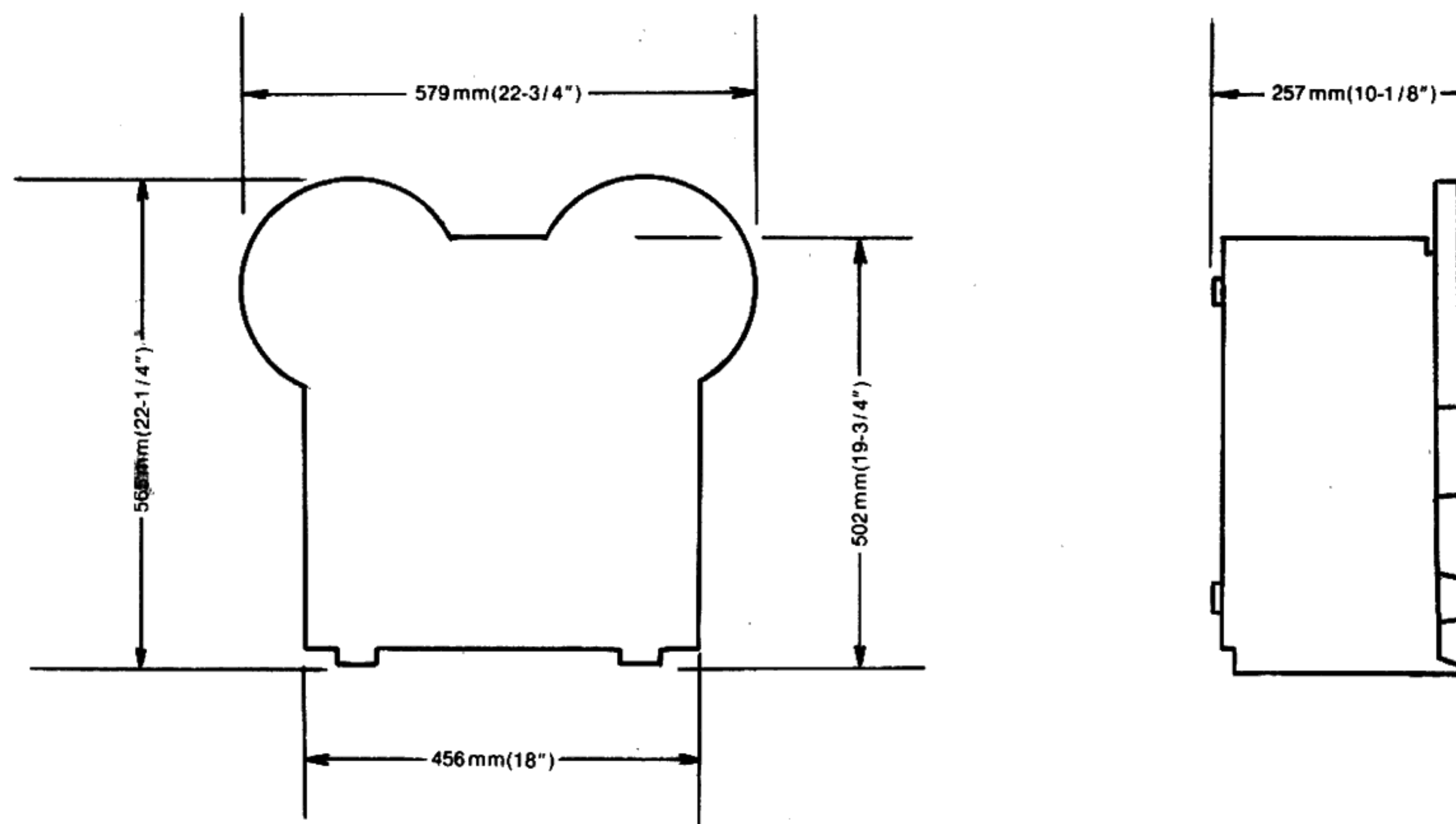
Inputs:	
LINE Balanced;	77.5mV (– 20dBm)/10k Ω max. input level = + 5dBm at 50Hz 1% THD
Unbalanced;	60mV (– 22dBm)/47k Ω (phone type jack) max. input level = infinity (Line input connected to LINE IN level control before pass through the amplifier)
MIC Unbalanced;	0.25mV (– 70dBm)/4.7k Ω (phone type jack) max. input level – 15dBm at 1kHz 1% THD Mic. Attenuation 0/20dB switchable
Outputs:	
LINE Balanced;	1.228V (+ 4dBm) output level control at "8" 2.19V (+ 8dBm) output level control at maximum load impedance 600 Ω /10k Ω or more, switchable
Unbalanced;	0.775V (0dBm) output level control at "8" 1.228V (+ 4dBm) output level control at maximum load impedance 22k Ω over (phono type jack)

HEADPHONE;	65mV output level control at "8" load impedance 8 Ω (stereo phone type jack)
Frequency Response:	(overall) rec. level – 10dB 30–30,000Hz (40 – 22,000Hz ± 2 dB) 0VU 30–20,000Hz (40–20,000Hz ± 2 dB) – 20dB 20–25,000Hz – 10dB 20–20,000Hz (30–20,000Hz ± 2 dB) – 20dB 20–15,000Hz ± 3 dB
Signal-to-Noise Ratio:	(overall A-weighted at 1kHz (650nWb/m) (370nWb/m) 68dB 63dB 68dB 63dB 66dB 61dB 650nWb/m = 11dB above a 0VU of 185nWb/m, 1kHz THD is less than 3% 370nWb/m = 6dB above a 0VU of 185nWb/m measured with bulk erased 3M type 207 tape
Distortion:	(overall) Total Harmonic Distortion (THD) at 400Hz all speed less than 0.8% at 185nWb/m (0VU) less than 2% than 2% at 370nWb/m (+ 6dB)
Channel Sparation:	Better than 50dB at 1kHz
Erase Depth:	Better than 65dB recorded 1kHz + 10dB
Operation Level (0VU):	185nWb/m
Recording Bias:	120kHz
Bias level;	3 position Bias selectors (vari. Bias adj. at "center") "1" 90% "2" 100% "3" 110% Variable Bias adjustment (Bias selectors at each position) – 50% to + 20%
Equalization:	NAB standard for all speeds and switchable IEC (CCIR) standard for 38cm/s (15 ips) playback Recording equalization adjustments; 3 positions EQ selector and variable controls (vary ± 3 dB at 10kHz with variable control) position "2" of EQ, Bias selector and "center click" of variable Bias, EQ adjustment set for 3M type 207 tape 1kHz/10kHz
Test Oscillator:	
PHYSICAL	
Power Requirments:	AC 120V, 50-60Hz (not necessary for conversion) consumption; 120W
Weight:	28kg (61 lbs 11 oz)
Dimensions (H x W x D):	502mm x 456mm x 257mm (19-3/4" x 18" x 10-1/8")
Rack Mounting:	with Shelf Brackets (RP-9130) optional available for a standard 19 inch rack

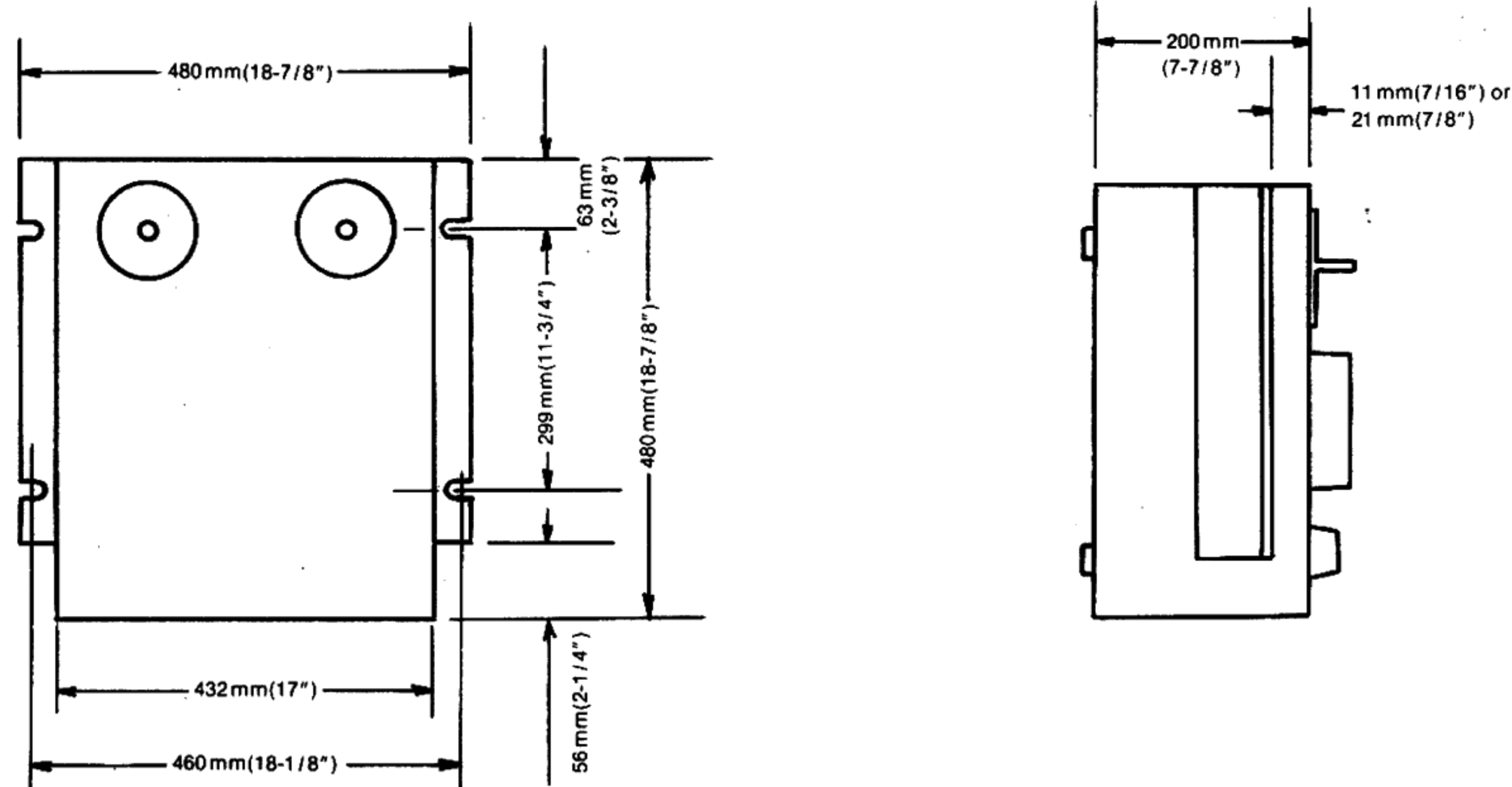
Specifications based on used of 3M type 207 tape.
Specifications are subject to change without notice.

DIMENSIONS

Dimensions with
Black Side Panels



Dimensions with
Shelf Brackets

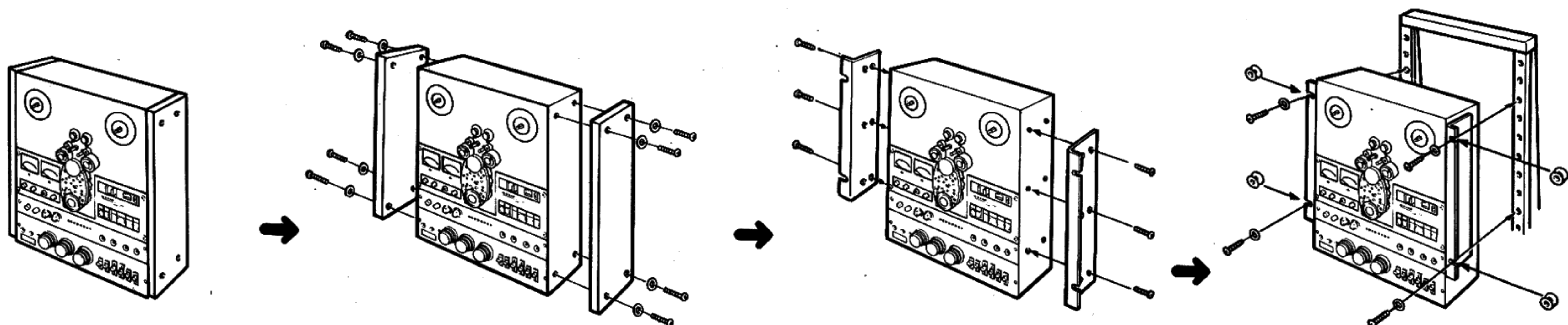


Rack Mounting

This unit is constructed to fit racks of E.I.A. standard specifications (19-inch racks) with the shelf adaptors (included).

If this unit is mounted in a rack, remove the side panels of the unit, and then attach the shelf adaptors

by using the flat-head screws, as shown in the figure. Then fit the collars (included) into the 4 notches of the shelf adaptor, place a washer on each screw, and secure to the rack by using the included hexagonal wrench.



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