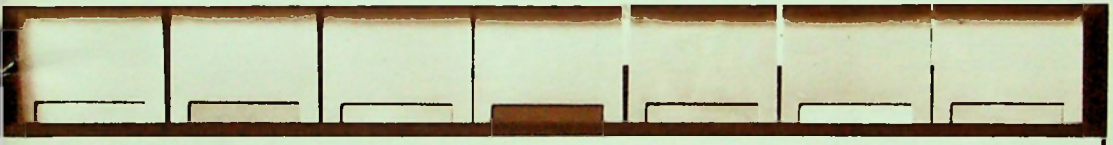
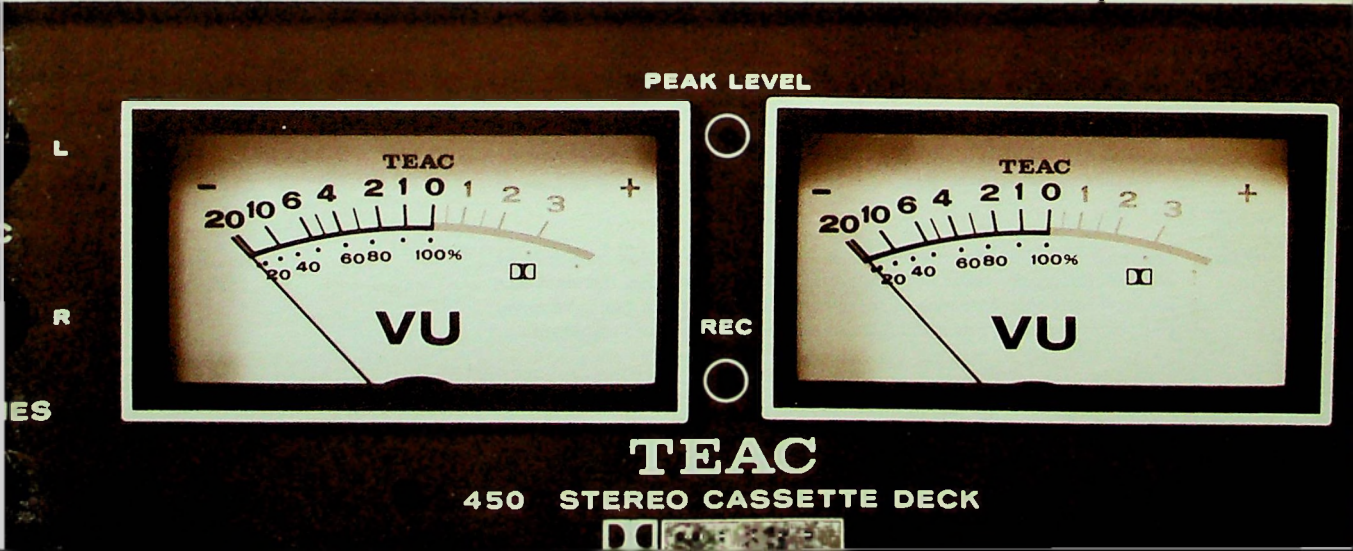
TEAC®

450

INSTRUCTION MANUAL Stereo Cassette Deck





Congratulations on your purchase of the TEAC 450 Cassette deck! You now own one of the most versatile home-use stereo cassettes ever designed for the discriminating audiophile.

The TEAC 450 with the widely acclaimed Dolby Noise Reduction System represents a quantum increase in cassette sound quality, bringing you recording quality, features and performance to equal or surpass that of high quality open reel recorders.

Until this time the quality of cassette recordings was limited by the inherent noise of the tape itself. The revolutionary Dolby System, although commercially available to and in use by almost all major recording studios, was not available to the home tape recordist.

The introduction of the Dolby System now brings to the home tape hobbyist all the benefits of the Dolby System at sharply reduced cost and with a simplicity of operation not possible with the commercial systems. The New TEAC 450 enables you to make recordings from any source with a dramatic gain in signal to noise ratio, as much as 10 dB! The resultant reduction of noise and tape hiss produces a recording of breath-taking clarity. The expanded dynamic range gives greater sound impact without coloration or attenuative filtering.

The Dolby System as incorporated into the TEAC 450 operates both during recording and playback. During the recording phase, low amplitude high frequency signals are expanded by a precise amount, during playback they are compressed by exactly the same amount by a mirror image circuit. By this process all noise from both the cassette electronics and from the tape is eliminated or reduced to an inaudible level. This entire process is accomplished without in any way affecting the original sound quality, since no attenuative filtering is used. The original signal is reproduced with true fidelity but without annoying tape hiss or amplifier noise.

We know you will want to begin using your 450 immediately, however we urge you to take a few moments to read this instruction manual. The short time required to familiarize yourself with the many unique features and proper operating techniques of this superb cassette deck will result in more professional recording and many years of uninterrupted enjoyment.

Service

Should the equipment need repair, contact the dealer where it was purchased, the TEAC Sales Office or Service Center nearest you. Addresses and telephone numbers of these are listed on the rear cover of this manual.

1. The Warranty period is described on the enclosed warranty card, read the card for complete details.
2. For repairs after expiration of the warranty period, a service charge will be required in addition to the cost of repair parts.
3. If only repair parts are required, please contact the dealer or the nearest authorized Service Center.

Note: Although the unit may still be under the warranty period you may be charged for repairs made necessary due to misuse or damage incurred as a result of improper operation. Therefore it is important that you thoroughly read and understand this manual prior to placing the unit into operation.

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The 450 provides 3 switch positions for BIAS and EQ selection. Generally, choose the right position for the tape used according to the chart below.

BIAS EQ SW	Brand	Type or model
CrO_2	FUJI FILM	FC · C-60 FC · C-90
	MAXELL	CHROME DIOXIDE C-60 C-90
	T D K	KR · C-60 KR · C-90
	SONY	C-60 · CR
	BASF	Chromdioxid C-60 C-90
	AGFA GEVAERT	Chromdioxid C-60 C-90
	MEMOREX	Chromium dioxide C-60 C-90
HIGH	SONY	C-60 · HF C-90 · HF C-60
	T D K	SD · C-60 D · C-60
	FUJI FILM	FM · C-60 FM · C-90 FL · C-60 FL · C-90
	MAXELL	C-60 · UD C-90 · UD C-60 C-90
NORMAL	SONY	C-90
	T D K	D · C-90 SD · C-90
	BASF	C-60 · LH C-90 · LH
	AGFA GEVAERT	C-60 C-90

Positions of a switch might be altered because of a change in the specifications by a tape manufacture.

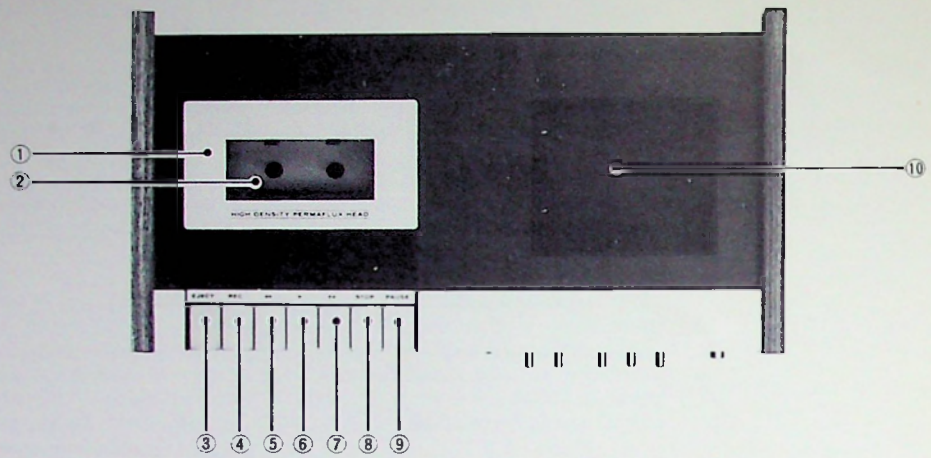
What is Chrome (CrO_2) Tape?

The magnetic material the chrome tape is coated with is CrO_2 (chromium dioxide.) The tape gives such an outstanding performance as to be very comparable to that of the low-noise tape used by professionals. The features include:

1. The frequency response characteristic is excellent.
2. It gives wider dynamic range and superb high-frequency characteristic.
3. It minimizes distortion and improves the S/N ratio.

The overall performance of the chrome tape is thus said to be remarkably superior to that of an ordinary tape.
Provided with the BIAS and EQ selector switches, your 450 can readily be set to appropriate position for either the ordinary or Chrome tape so that any type of tape may be played with maximum performance. Note that the magnetic characteristics differ between ordinary tape and chrome tape, so use of the chrome tape may not be permitted with a tape deck not equipped with BIAS and EQ selector switches.

Function of Controls



①Cassette Holder Lid
Press the Eject Button ③lightly to open this lid. Push the lid from above with your finger to close it.

②Cassette Holder
This holds the cassette tape in place when the cassette is inserted and ejects the cassette when the Eject Button is pressed. Press the Eject Button ③ fully and this Cassette Holder will come up to eject the cassette. Simply press it from above with your finger to close it.

③EJECT (Eject Button)
This is a 2-step pushbutton control. Push it halfway and the Cassette Holder Lid will open. Press it further to the bottom of its travel and the Cassette Holder will come up to eject the cassette. When the tape deck is operating in Playback, Record, Fast Forward or Rewind, first bring it to a complete stop by depressing the STOP Button prior to depressing the EJECT Button.

④REC (Record Button)
Depress this button for recording. Unless a cassette tape that permits recording is installed in the tape deck, this RECORD Button will not function. Must be depressed simultaneously with the PLAY Button to record.

⑤ ◄◄ (Rewind Button)
Depress the Button halfway and the tape will rewind as long as you hold it down. Depress it fully until it locks and the tape will rewind rapidly onto the left hub of the cassette. Depress the Stop Button to release the Rewind Button from the locked position and the tape will stop rewinding. You can depress ►► (Fast Forward Button) ⑦ anytime during rewinding to change mode of operation directly from Rewind to Fast Forward. However, ► (Play Button) should not be pressed when the tape deck is in Rewind with ◄◄ (Rewind Button) depressed.

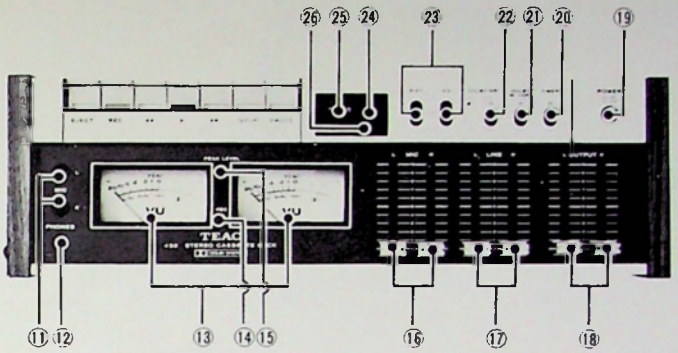
⑥ ► (Play Button)
Depress this button fully and tape will run to the right at the normal (1-7/8 ips) speed. Used it for playback or recording. Slightly depressing this button provides Fast Forward cueing.

⑦ ►► (Fast Forward Button)
Press this button halfway and the tape will be running to the right hub at high speed as long as you hold it down halfway. Depress it fully until it locks and the tape will keep on running to the right at high speed. You can depress ◄◄ (Rewind Button) ⑤ for rewinding anytime during Fast Forward operation. Do not depress ► (Play Button) while the tape deck is in Fast Forward.

⑧STOP (Stop Button)
Press this button to release other control buttons from their depressed positions. Always depress it before operating the EJECT Button or the PLAY Button.

⑨PAUSE (Pause Button)
Use this button for quick stop/start control of the tape during recording or playback. The recording or playback settings of other controls will not be disturbed. Depress it until it locks and the tape travel will come to a halt. Depress it again to unlock it and the recording or playback will be resumed at once.

⑩Cassette Tray
This is a cassette storage compartment that can store up to 6 cassette tapes.



⑪ **MIC (Microphone Jacks)**
The MIC jack marked L is for the left-channel microphone and R for the right-channel microphone. Use 600 ~ 10,000 ohms microphones.

⑫ **PHONES (Headphone Jack)**
Provided for connection of stereo headphones. Use 8-OHM Type Stereo Headphones.

⑬ **VU Meters**
They indicate output level during Playback and input level during Record operation.

⑭ **REC (Record Indicator Lamp)**
When the Record Button is depressed, this indicator lamp lights up to indicate that the tape deck is in the Record mode.

⑮ **Peak Level Indicator**
This indicator lamp lights up to warn you that the input level is too high. When this lamp illuminates, it indicates that the input signal is being recorded with distortion, and the input level should be decreased until the light goes out. May illuminate during playback.

⑯ **MIC (Microphone Input Volume Control)**
This adjusts input levels taken through the microphone or DIN (IN/OUT) terminals.

⑰ **LINE (Line Input Volume Control)**
This is the volume control designed to adjust levels of the line input from a tuner, record player or tape recorder.

⑱ **OUTPUT (Output Volume Control)**
This adjusts playback volume or recording monitor levels.

⑲ **POWER (Power On-Off Switch)**
Set this switch to ON and the tape deck will be turned on. The pilot lamps of the VU Meters illuminate when this switch is turned ON. Set the switch to OFF and the deck will be turned off. (See ⑳ below.)

⑳ **TIMER (Timer Selector Switch)**
When combined with a commercially available timer, this cassette deck can automatically start recording or playback at a preset time. (For the operating procedures on recording or playback with a timer, refer to page 8 and 10 of this manual.
The Power On-Off Switch can be turned on only when this Timer Selector Switch is set to OUT. Be sure to keep the Timer Selector Switch set to OUT except when the deck is to be set for the automatic timer controlled recording or playback. When the Selector Switch is IN, the deck will be OFF unless activated by the timer accessory.

㉑ **DOLBY FM/COPY (IN/OUT Switch)**
When this switch is IN, the Dolbyized source material is copied intact while the output is de-coded for listening. Normal position is OUT unless the source program is already encoded. (See page 8 and 10 for details).

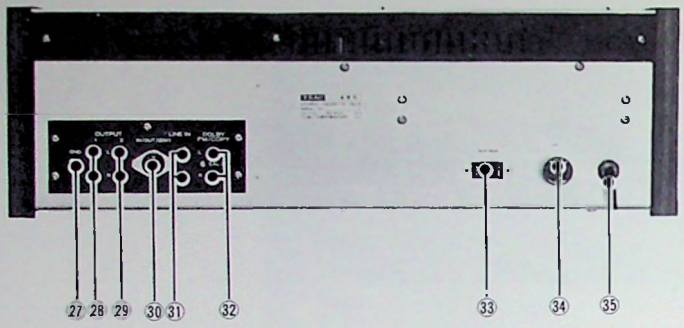
㉒ **DOLBY NR (Noise Reduction Selector Switch)**
Equipped with the Dolby noise reduction circuit, your 450 reduces the tape hiss noise by 10 dB, max. (For details of this system, see page 5 of this manual.)

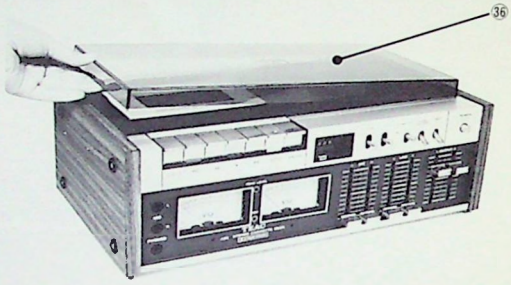
㉓ **BIAS-EQ (Equalization/Bias Selector Switches)**
These switches select between three positions, CrO_2, HIGH and NORMAL according to type of the tape used. Set the BIAS and EQ switch when recording and set the EQ switch for playback. See pages 1 and 10 for details.

㉔ **Tape Counter Reset Button**
Press this button to clear the Tape Counter and reset it to "000". Clear and reset the Tape Counter at the beginning of the tape before starting to record or playback.

㉕ **Tape Counter**
The amount of tape run is indicated by this counter.

㉖ **TAPE RUN (Tape Travel Indicator Lamp)**
This indicator lamp illuminates to indicate the tape is moving.





㉗ GND (Grounding Terminal)

For grounding, connect a vinyl-coated or enameled wire to this terminal, attach a piece of copper to the other end of the grounding wire and then bury the copper deeply underground.

When a record player and/or amplifier are connected to this set, connect their grounding wires to this GND terminal and all the component units of the system will be grounded. (Note: Grounding is not normally needed unless noise or hum develops.)

㉘ ㉙ OUTPUT (Output Terminals)

Two pairs (1 and 2) of output terminals are provided, one pair for the playback output and the other pair for the monitor output, thus enabling the tape deck to supply output to two 2-channel systems simultaneously.

Connect L (white) of one of these terminals to the L input terminal (TAPE DECK, PLAY or AUX) of a stereo amplifier and R (red) to the amplifier's R input terminal.

㉚ IN/OUT (DIN Jack)

Using a DIN connector cord (such as WR-134 available as an option), connect this input/output jack to a similar DIN connector terminal of a stereo amplifier and you can record from or reproduce through the amplifier with a single cable connection.

CAUTION: Do not connect this IN/OUT Jack to a similar DIN jack on another tape recorder or tape deck. Do not have both a DIN cord and pin-jack cords simultaneously connected between the deck and an amplifier.

㉛ LINE IN (Line Input Terminals)

Use these input terminals for connections when recording from another amplifier or tape deck.

㉜ DOLBY FM/COPY CAL (Dolby FM/Dolby Copy Calibration Level Adjustment)

Use these calibration controls to set your 450 Dolby circuitry for reception of Dolby FM broadcasts. While receiving the standard Dolby-level calibration signal of the Dolby FM broadcasts, adjust the controls with your finger or a common (−) screw-driver until the pointer of the VU Meter ⑬ points to the Dolby mark (DD).

Once adjusted properly, it need not be readjusted unless the antenna is moved, the tuner is replaced, or the meter fails to indicate the Dolby mark during subsequent test tone transmissions.

㉝ AC Outlet (150W Max.)

AC power needed to operate an amplifier, tape deck, tuner or record player can be taken from this AC power outlet. Output capacity of this power outlet is 150W, maximum.

㉞ FUSE 2A (Fuse Holder)

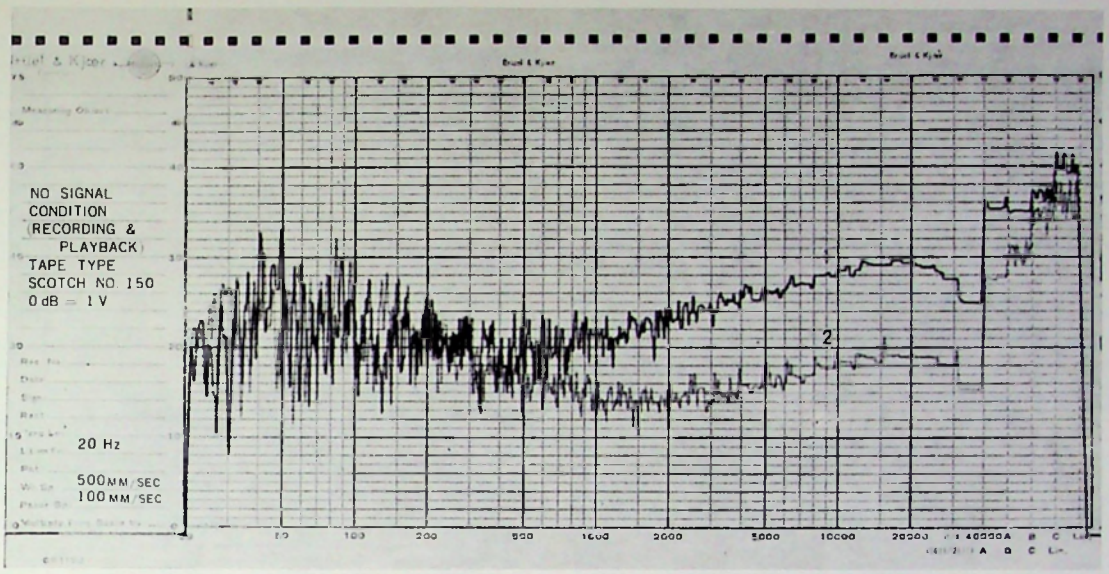
㉟ AC Power Cord

Connect this power cord to an AC wall outlet.

㊱ Dust Cover

Cover the top side of the tape deck with this dust cover during and after use. It protects the cassette tray and top panel of the deck from outside dust.

The Dolby noise reduction system



S/N RATIO IMPROVEMENT ACHIEVED BY DOLBY SYSTEM

1. WITHOUT THE DOLBY SYSTEM
2. WITH THE DOLBY SYSTEM

Tape hiss and transistor noise from the cassette deck itself are problems inherent in any cassette tape recording. The magnetic coating of a cassette tape is so thin that its magnetic saturation point is very low. This makes it difficult to improve the S/N ratio through high-level recordings as often practiced with an open-reel tape.

Numerous ways have been contrived and tested over the years to reduce tape hiss and transistor noises. Nevertheless, most of the noise reduction systems marketed today employ a high-frequency filter for reducing these noises. Use of a filter results in a somewhat changed tone quality, especially in the treble range, the frequency range considered most important in music recording and playback.

The newly perfected Dolby system is an epoch-making noise reduction system in that the noise level itself is lowered to improve the S/N ratio. The best of the noise reduction systems available today, it enables you to make recording and playback featuring extra-low noise and wider dynamic range.

Your 450 is a Dolby-system cassette tape deck and therefore assures you of the revolutionarily noise-free recording and playback which only the Dolby system can provide.

Principle and Outline of the Dolby System

Dolby System comes in two types, A Type and B Type. The A Type is designed for studio use and comprises a complex and enormous circuitry structure which divides the record/playback frequency band (20Hz – 20 kHz) into four bands. The B Type, designed for popular use, features simpler circuitry and is easy to handle.

The principle of the Dolby System can be described as follows:

When the input level is lower than a certain reference level in Record, the recording level is raised higher than the input level to "compress" the input signal, thereby enlarging the difference between the input level and the noise level inherent in the tape and amplifier. When playing back this recording, the reproduction level is lowered to the original input level or "expanded." Through this unique manipulation, the tape noise is reduced below normal levels to inaudibility.

Effects of the Dolby System

In the frequency range of 1 kHz. or higher where the tape hiss and transistor noises are more conspicuous, the B Type Dolby system incorporated in the 450 can reduce such noises by 5 dB at 1 kHz and 10 dB at 10 kHz (in terms of S/N ratio) by compressing and expanding the signals of 1 kHz or higher. (Refer to the diagram above.)

Thanks to the Dolby system incorporated, your 450 gives dynamic, clear-tone recording and playback practically free of the tape hiss and transistor noises formerly considered unavoidable in a cassette system.

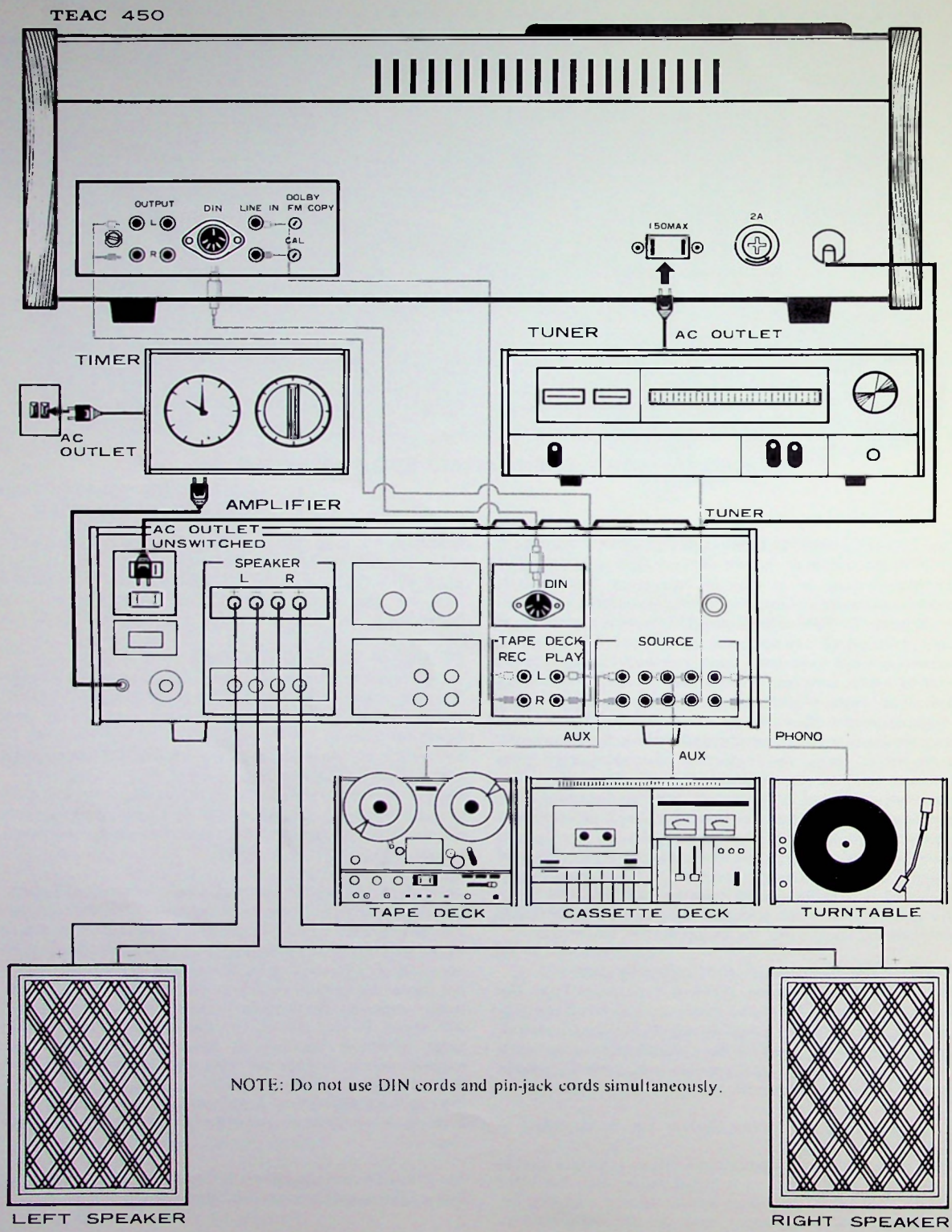
Inter-deck Compatibility of Dolby-encoded Tapes

Cassette tapes recorded by a Dolby-system recorder (Dolby-encoded cassette tapes) give the best results when reproduced by a similar Dolby-system recorder or player. Needless to say, no Dolby effects will be demonstrated when such tapes are played back by an ordinary cassette tape deck, but the treble range may be heard somewhat emphasized when very soft signals are reproduced. This slight emphasis of the treble range is almost unnoticeable unless compared with the original source program or with the sound reproduction made through the Dolby circuit.

For playback of Dolby-encoded tapes with an ordinary tape deck, it is advisable to somewhat de-emphasize the treble range.

The Dolby System mentioned in this manual refers to B-Type Dolby System unless otherwise indicated.

Examples of TEAC 450-centered connections



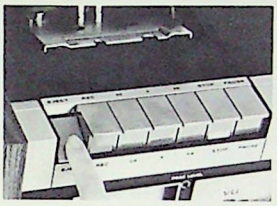
NOTE: Do not use DIN cords and pin-jack cords simultaneously.

General operating suggestions

Inserting the cassette

Depress the Eject Button ③ fully and both the Cassette Holder Lid ① and the Cassette Holder ② will open. Place a cassette tape on the Cassette Holder so that the open end (where tape is partly exposed) of the cassette will face toward you. Press the cassette downward with your fingers until it locks in place. This completes loading the tape deck with a cassette tape, making the tape deck ready to start in either playback or recording.

Whether or not the Cassette Holder Lid is closed does not matter as far as the recording or playback operation is concerned. To close the Cassette Holder Lid, simply press it from above with your finger. Keep it closed for the purpose of keeping dust out of the compartment.

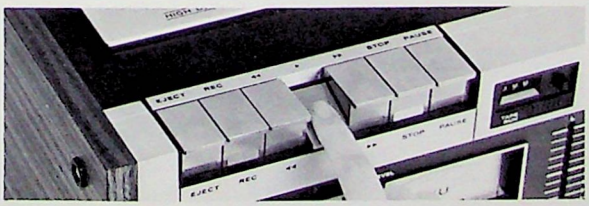


1. A cassette has two sides, Side 1 (or A) and Side 2 (or B). The side you wish to record or play back should be up when that cassette is installed in the tape deck.
2. When one side of a cassette has completely been recorded or played back and you want to record or play back the other side, take out the cassette from the tape deck, turn it over and re-insert it in the tape deck.
3. When the tape winding is very loose, the hub that has no tape slack should be turned to restore proper tension.

To Start Playback

Press the Power On-Off Switch ⑲ to prepare your 450. This tape deck can not be turned on unless the Timer Selector Switch ⑳ is set to OUT except when the deck is prepared for Timer-controlled recording or playback.

Fully depress ▶ (Play Button) ⑥ and the tape will be wound up onto the right hub at the regular speed, with the head and amplifiers engaged, thus starting playback.



Equipped with the built-in end stop mechanism, the 450 automatically releases the control button from the depressed position to change the functional mode to STOP when the tape end is reached.

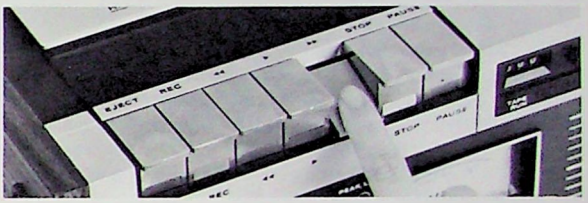
The power supply circuit is automatically turned off with the Timer Selector Switch ⑳ set to IN. Since the AC Outlet ㉝ is part of this power supply circuit, power taken from this AC Outlet for an external audio component (such as a tuner connected to it) is also cut off at the same time.

Fast Forward and Rewind

The Fast Forward and Rewind functions are conveniently used when you want to skip over unnecessary portions of the tape or play back the same program several times.

Lightly press ▶▶ Button ⑦ (or ◀◀ Button ⑤) halfway and the tape will be wound onto the right hub (or left hub) at faster speed. Press ▶▶ (or ◀◀) Button fully and it will lock in depressed position. Lock the Button in the depressed position when you want the tape completely wound onto the right (or left) hub.

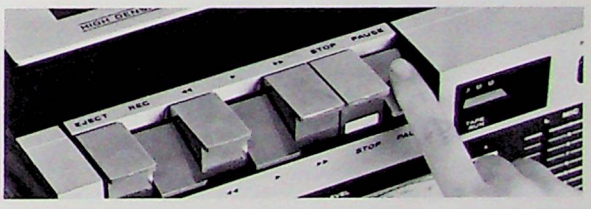
Mode of operation can be changed directly from Fast Forward to Rewind or vice versa. To change mode of operation from Fast Forward or Rewind to Play, however, the Stop Button should be pressed before pressing ▶ (Play Button.)



PAUSE

Depress the PAUSE Button ⑨ during recording or playback and it will lock in the depressed position to temporarily halt the travel of the tape.

Depress it again to unlock it and the recording or playback will be resumed immediately. The PAUSE function is useful in that one quick touch on the PAUSE Button immediately stops or resumes recording or playback. You do not need to release or reset the Record and/or Play buttons each time the recording or playback is stopped or started.



Headphone Listening

Connect an 8-ohm type stereo headphone (such as a TEAC HP-101) to the PHONES Jack ⑫ and you can enjoy private listening through the headphone.

Dolby Terminology

* Dolby-encode: The term refers to processing to obtain the Dolby-level recording characteristic. It is generally synonymous with output of, or processing by, a Dolby processor when recording.
* Dolby-decode: The term refers to processing to convert or "decode" the Dolby-encoded signal to its original form.

PLAYBACK, USING LINE IN AND OUTPUT TERMINALS

1. For proper connections, refer to "EXAMPLES OF 450-CENTERED CONNECTIONS" shown on page 6.

2. Load the 450 with a prerecorded cassette tape and set the switches and controls to the positions indicated below:
   - POWER (Power On-Off Switch) ⑲ . . . . . ON
     The VU Meters will illuminate.
   - TIMER (Timer Selector Switch) ⑳ . . . . . OUT
     When the Time Selector Switch ⑳ is set to IN, the deck can not be turned on.
   - DOLBY FM/COPY (Dolby FM/Copy Selector Switch) ㉑ . . . . . OUT
   - DOLBY NR (Dolby NR Selector Switch) ㉒ . . . . . OUT
   - EQ (Equalization Selector Switch) ㉓ . . . . . .
     Set to proper position according to type of the playback tape as indicated below and on page 1:
     - CrO_2: For playback of chrome tape
     - HIGH: For playback of high-performance Hi-Fi tape
     - NORMAL: For playback of ordinary tape.
   - BIAS (Bias Selector Switch) ㉓ . . . . . .
     No effect on playback
   - MIC (Microphone Input Volume Control) ⑯ . . . . .
     No effect on playback, but set to Minimum.
   - LINE (Line Input Volume Control) ⑰ . . . . . .
     No effect on playback
   - OUTPUT (Output Volume Control) ⑱ . . . . . .
     Both L and R set to minimum initially.
3. Turn on your stereo amplifier connected to the 450 and set the amplifier's controls and switches to normal playback settings.
4. Depress ▶ (Play Button) ⑥. Tape then runs forward at the regular speed and the TAPE RUN (Tape Travel Indicator Lamp) ㉖ illuminates.
5. While watching the volume level indicated by the VU Meter, increase the volume level gradually with the OUTPUT controls ⑱ to obtain the optimum playback level. (Max. 0 VU)
6. Adjust listening volume and the tone quality using the stereo amplifier controls.
   For proper operation and connections of the stereo amplifier, please read the operating instructions manual of the amplifier.

PLAYBACK, USING IN/OUT (DIN TYPE REC/PB CONNECTOR) JACK

1. For proper connections, refer to "EXAMPLES OF 450 CENTERED CONNECTIONS" shown on page 6.
2. The other operating procedures are the same as those given in "PLAYBACK, USING LINE IN AND OUTPUT TERMINALS" above.

NOTE: Never use both a DIN cord and pin-jack connections simultaneously.

PLAYBACK WITH THE DOLBY SYSTEM

For playback of cassette music tapes recorded by the Dolby system set the DOLBY NR (Dolby NR Selector Switch) ㉒ to IN. The other operating procedures are the same as those for "PLAYBACK, USING LINE IN AND OUTPUT TERMINALS" instructed earlier. Keep the DOLBY FM/COPY switch in the OUT position.

DOLBY NR Switch functions

IN: This position is used for Dolby recording and playback. The indicator lamp will illuminate.

OUT: Bypasses the Dolby circuitry for ordinary recording and playback.

PLAYBACK, USING A COMMERCIALLY AVAILABLE CLOCK TIMER CONTROL:

Combined with a timer, your 450 can automatically start playback at a preset time to awaken you to your favorite music, for example. The required settings are as follows:

1. Playback the tape and set volume in advance to your ordinary listening level. Rewind the tape.
2. Depress the PAUSE Button ⑨. Depress the PLAY ▶ Button ⑥.
3. Following the procedures instructed in the operating instructions manual of the timer, set the desired time on the timer.
4. Now, set the TIMER (Timer Selector Switch) ⑳ of the 450 to IN.
5. The other operating procedures are as instructed previously in "PLAYBACK, USING LINE IN AND OUTPUT TERMINALS," "PLAYBACK, USING IN/OUT (DIN TYPE CONNECTOR) JACK" and "PLAYBACK WITH THE DOLBY SYSTEM."
6. The timer is automatically switched on at the preset time to start the 450.
   The tape forward mechanism becomes activated with the 450 turned on and, in a few seconds, the PAUSE Button ⑨ is automatically released from the locked position to start playback.
7. When the playback is completed at the end of the tape, the end-stop mechanism works and every button will be unlocked automatically.

Preliminary recording instructions

To Set Recording Level

The VU Meter ⑬ indicates output level in Playback and input level in Record. For the recording level adjustment, first depress the PAUSE Button and then, depressing the REC (Record Button), press ► (Play Button) simultaneously. The VU Meter is now ready to indicate the input level, that is, the recording level. Set as above, your 450 permits you to monitor the input signals through the headphone.

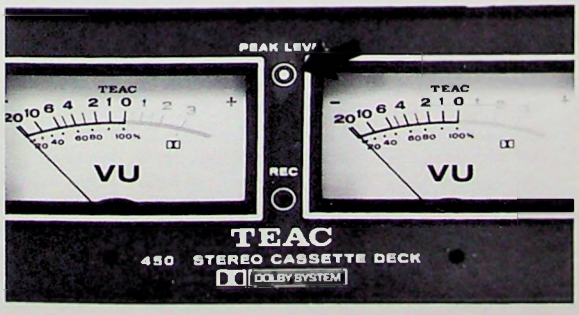
While watching the VU Meter, adjust the recording level with MIC (Microphone Input Volume Control) ⑯ for the microphone or DIN input or with LINE (Line Input Volume Control) ⑰ for other inputs. Set the recording level to a level where the VU Meter's pointer will not deflect too far to the maximum even with the momentary maximum input. Recording that gives the best S/N ratio can be obtained when the recording level is set to such a level that the VU Meter's pointer will be deflecting as fully as possible within the range marked by "0" for Dolby recording or ordinary recording. If the recording level is so high that the VU Meter's pointer deflects too far to the maximum, the recording may have distortion. Such a distorted recording is unpleasant to hear when reproduced.

How to Use the Peak Level Indicator

Compared with the peak level meter of a professional model, the transient characteristics of VU Meters used in popular-use tape deck, are generally not so good. (The transient characteristic referred to herein represents how faithfully the VU meter can react to rapid changes in the input signals.)

When the level variation of an input signal is gradual, the VU meter can deflect quite faithfully in proportion to the input signal strength. When the variation is drastic, however, the meter fails to follow in time the changing levels of the input signal, thus giving the level indication that is often lower by a few dB than the actual input level. For example, the meter may indicate 0 dB for an actual input signal of +6 dB.

The Peak Level Indicator has been provided to compensate for such a short-coming. It is useful especially for cassette tape recording in that the cassette tape has a narrower dynamic range than an open-reel tape and is, therefore, subject to more sound distortion when recorded with an extra high input level setting (saturation).



The Peak Level Indicator of the 450 has been preset to indicate at the level from where recording generally begins to distort. It may also illuminate during playback.

When the input signal level is too high, this Peak Level Indicator lamp illuminates to indicate that the input signal is being recorded with distortion. When it illuminates, lower the input level until the lamp light stays out. With the input level adjusted properly, you will have the input signal recorded clearly and without distortion.

To Monitor Recording

Connect an 8-ohm type stereo headphone to PHONES (Headphone Jack) when the tape deck is in Record position, and you can monitor through the headphone the input signals being recorded. The headphone monitoring combined with the check by the VU Meter provides an excellent recording level check.

Effect of PAUSE Button

Use the PAUSE Button for better cueing when recording. First, install a cassette tape properly and then depress the PAUSE Button ⑨. Now, depressing the REC (Record Button), press ► (Play Button). This makes your 450 set ready for recording. Adjust recording level properly and wait for a chance to start recording.

Set as above, your 450 starts recording immediately when the PAUSE Button is pressed again. With the PAUSE Button pressed again as mentioned above, the tape starts moving forward to record. To temporarily halt the travel of the tape during recording, press the PAUSE Button once again, not the Stop Button.

Tape Counter

Before beginning to record or playback from the beginning of the tape, reset the Counter to "000" by pressing the Reset Button. The counter adds when the tape travels in the forward direction. Log the numbers indicated on the Counter for each particular recorded selection, so that those selections may be easily relocated later.

How to Use BIAS and EQ (Bias and Equalization Selector Switches)

When in Record, the BIAS and EQ selector switches select the appropriate recording bias and equalization according to the type of tape used. The EQ switch is set to the proper position in Playback according to type of the tape used, as indicated below:

CrO_2	For use with chrome tape (CrO_2)
HIGH . . .	For use with high-performance Hi-Fi tape
NORMAL. .	For use with ordinary tape

See page 1 for specific settings.

Recording instructions

Recording, Using LINE IN and OUTPUT Terminals

1. Load the 450 with a cassette tape and set the switches and controls as indicated below:

   POWER (Power On-Off Switch) ⑲ . . . . . ON
   The VU Meters illuminate with the POWER turned to ON.
   Note that the 450 can not be turned on if the Timer Selector Switch ⑳ is set to IN.
   TIMER (Timer Selector Switch) ⑳ . . . . . OUT
   (For Timer Recording where this switch should be set to IN, refer to the page 12 of this manual.)
   DOLBY FM/COPY (Dolby FM/Copy Selector Switch) . . . . . OUT
   EQ (Equalization Selector Switch)
   BIAS (Bias Selector Switch) ㉓ . . . . .
   Set as indicated below according to type of the tape used:
   CrO_2: For recording on chrome tape
   HIGH: For recording on high-performance Hi-Fi tape
   NORMAL: For recording on ordinary tape.

   MIC (Microphone Input Level Control) ⑯ . . . .
   While watching the input level indicated by the VU Meter, adjust the microphone input with this input volume control. The 450 permits MIC/LINE mixing for recording.
   LINE (Line Input Level Control) ⑰ . . . . . .
   While watching the input level on the VU Meter, adjust the input level from a tuner, record player or tape player by means of this input volume control. The 450 permits MIC/LINE mixing for recording.
   OUTPUT (Output Volume Control) ⑱ . . . . . .
   Adjust monitoring volume to your desired listening level, using this volume control.

2. Turn on your stereo amplifier connected to the 450 and set the amplifier's switches and controls for Record operation.
3. Depress the PAUSE Button ⑨ of the 450 until it locks. Next, depressing the REC (Record Button), press the (Play Button) ⑥ until both control buttons lock. Then, adjust the recording level properly, referring to "To Set Recording Level" as instructed on the preceding page.
4. Press the PAUSE Button ⑨ again to release it from the locked position and recording will start right away. The TAPE RUN (Tape Travel Indicator) lamp then illuminates to indicate the tape is running. Use the PAUSE Button to temporarily halt the travel of the tape during recording or playback. Quick stop/start control of the tape is easily accomplished with the PAUSE Button.

   For proper operations and connections of the stereo amplifier, please read the operating instructions manual of the amplifier.

Recording, Using IN/OUT (DIN Type REC/PB Connector) Jack

1. For the proper connection, refer to the page 5 of this manual.
2. Adjust the recording level with the MIC (Microphone Input Volume Control) ⑯
3. The other operating procedures are same as those given in "Recording, Using LINE IN and OUTPUT Terminals."

   When the IN/OUT (DIN Type REC/PB Connector) Jack is used, do not connect pin-jack cables to the LINE IN or OUTPUT Terminal.

Recording with the Dolby System

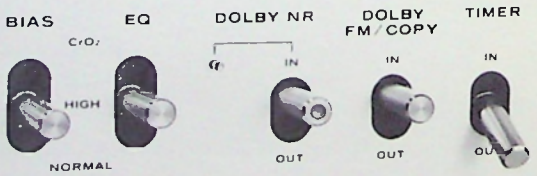
1. Set the DOLBY NR (Dolby NR Selector Switch) ㉒ to IN.
2. Adjust the recording level so that the VU Meters' pointers will be deflecting as fully as possible up to "0" VU. The other operating procedures are same as those given in "Recording, Using LINE IN and OUTPUT Terminals."
3. The use of DIN cords is not recommended for Dolby recordings.

DOLBY NR Switch functions

IN: This position is used for Dolby recording and playback. The indicator lamp will illuminate.
OUT: Bypasses the Dolby circuitry for ordinary recording and playback.

To Record a Dolby FM Broadcast

1. Set both the DOLBY FM/COPY (Dolby FM/Copy Selector Switch) ㉑ and DOLBY NR (Dolby NR Selector Switch) ㉒ to IN.



2. Depress the PAUSE Button ⑨ until it locks. Next, depressing the REC (Record Button), press the ▶ (Play Button) ⑥ until both control buttons lock. The 450 is now record-ready.
3. While receiving the standard Dolby-level signal at the beginning of the Dolby FM broadcast, adjust the DOLBY FM/COPY CAL (Dolby FM/Dolby Copy Calibration Level Adjustment) ㉜ with your finger or a common (−) screwdriver until the VU Meters' pointers point to the Dolby mark (DD). Once properly adjusted, they need not be readjusted for Dolby calibration unless the antenna position is moved, the tuner is replaced with another, or the meters' needles fail to indicate the Dolby mark (DD) during subsequent broadcasts of the Dolby test tone.
   When the DOLBY FM/COPY switch ㉑ is set to IN, the MIC (Microphone Input Volume Control) ⑯ and the LINE (Line Input Volume Control) ⑰ have no effect on the volume adjustment.

4. Now that the recording level adjustment has been completed, wait for the program to begin.
5. Press the PAUSE Button again to release it from the locked position and recording will start immediately.
6. Set the DOLBY NR (Dolby NR Selector Switch) to IN for monitoring the Dolby-decoded signal and to OUT for monitoring the Dolby-encoded signal. Never move the DOLBY FM/COPY switch (21) during recording.

To Copy or Duplicate Dolby-encoded Cassettes. (Transcribing Dolby to Dolby without re-encoding)

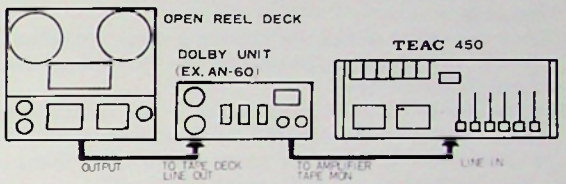
1. Set both the DOLBY FM/COPY (Dolby FM/Copy Selector Switch) (21) and the DOLBY NR (Dolby NR Selector Switch) (22) to IN.
2. Depress the PAUSE Button (9) until it locks. Next, depressing the REC (Record Button) (4), press the ▶ (Play Button) (6) to set the 450 to the Record mode.
3. Using the other cassette deck, play back the standard Dolby-level tape (MTT-150 available as an option), and adjust the output volume of the playback deck until the pointers of the 450's VU Meters point to the Dolby Mark (DD).
4. Play back the original Dolby-encoded tape with the other cassette deck. When the DOLBY FM/COPY (21) is set to IN, the MIC (Microphone Input Volume Control) (16) and the LINE (Line Input Volume Control) (17) have no effect on the volume adjustment.
5. Depress the PAUSE Button (9) again to start recording.
6. Set the DOLBY NR (Dolby NR Selector Switch) to IN to monitor the Dolby-decoded signal and to OUT to monitor the Dolby-encoded signal.

When the cassette playback system has no output volume control, the required Dolby-level calibration must be performed by means of the DOLBY FM/COPY CAL Calibration adjustment controls.

To copy Dolby-encoded open reel tape onto cassette with Dolby encoding

Open-reel Dolbyized tapes are sometimes recorded at a higher signal level than cassettes. If a direct copy is attempted, the cassette tape is liable to sound distorted because of high-level saturation. Therefore, the open reel tape must be decoded through a separate Dolby Noise Reduction Unit and then re-encoded on the 450 to preserve the desired quality. There is no appreciable loss of sound by this method, and the Dolby process maintains the hiss—and noise-free recordings very affectively.

1. Connect the Dolby Noise Reduction Unit's outputs to the 450 LINE IN terminals, either directly or through the stereo amplifier.



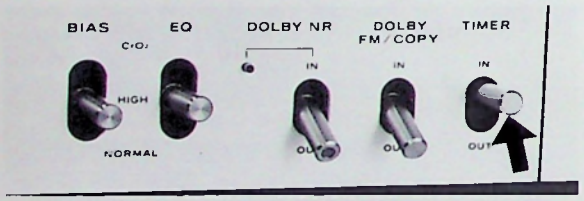
Note: Prepare the open reel tape deck and separate Dolby Noise Reduction unit as outlined in their Operating Instructions. Place the Dolby NR switch IN with the Dolby unit in Play mode and perform Playback Calibration as required.

2. On the 450, set the DOLBY FM/COPY (Dolby FM/Copy selector switch) (21) OUT and the DOLBY NR (Dolby NR selector switch) (22) IN. Insert a blank cassette.
3. Depress the PAUSE button (9) until it locks. Next, while depressing the REC (record) Button (4), press the ▶ (Play Button) (6), thus placing the 450 in the Record/Pause mode.
4. While the 450 is in the Record/Pause mode, playback the loudest portions of the open reel tape. On the 450, adjust the LINE input level controls so that the VU meters do not exceed 0 VU and the peak level indicator does not illuminate excessively. Obtain the highest recording level possible without exceeding these limitations. Rewind the tape.
5. Release the PAUSE button on the 450 and begin playback on the open reel deck.
6. While copying, make all listening level adjustments with the stereo amplifier's output controls and the 450 OUTPUT controls. Do not change any level on the 450 INPUT or the open-reel deck output.

Recording from a tuner, using a timer control (TIMER selector switch)

Using a timer you can record AM or FM broadcasts automatically at any desired time. Set the 450 and tuner as follows:

1. Refer to the connections on the page 5. Also, connect the Tuner to the AC OUTLET on the 450 For the present,. leave the TIMER switch OUT
2. Perform steps 1 and 2 of the section "Recording, using LINE IN, OUTPUT". When recording using the timer, if you want to monitor from the speaker simultaneously, set the power switch ON on the amplifier. Otherwise leave it OFF (unless you are using an integrated Receiver/ Amplifier.)
3. Depress PAUSE button ⑨ of the 450 to lock. With the REC button ④ depressed, press the PLAY button until it is locked.
4. Turn the power ON on the tuner and select the station. Set the recording level. See the section "Recording, Using LINE IN and OUTPUT)
5. According to the instruction manual of the timer, set the timer control to the desired time. In this condition, the power on the 450 and the tuner will be OFF. Connect the timer control to a wall socket, not the 450.
6. Set the TIMER selector switch ⑳ on the 450 to IN.



7. At the desired time, the timer control turns to ON and electricity will be supplied to the 450 and the tuner. When power is on, a delay circuit begins. After a few seconds, the PAUSE button will be unlocked and start the deck recording.
8. When the recording is completed at the end of the tape, the end-stop mechanism works and every button will be unlocked automatically. The 450 AC OUTLET and tuner turns OFF.

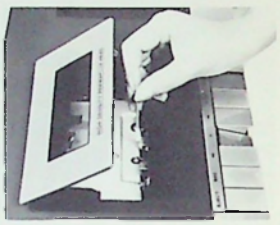
Recording With Microphones

1. Set the POWER (Power On-Off Switch) ⑲ of the 450 to ON.
2. Connect microphones, each a 600–10K Ω type, to the to the MIC terminals ⑪
3. Depress the PAUSE Button ⑨ until it locks. Next, depressing the REC (Record Button) ④, press the ► (Play Button) until both buttons lock. Adjust the recording level properly, referring to the instructions given in "To Set Recording Level," Page 9.
4. Press the PAUSE Button ⑨ again to unlock it and recording will begin. The TAPE RUN (Tape Travel Indicator) lamp then illuminates to indicate the tape is running. Your 450 permits MIC/LINE mixing for recording.

About Cleaning:

When the heads are dirty with dust, the tape deck not only fails to faithfully reproduce highs but there are audible skips of sound. When the pinch roller and/or capstan are dirty, the tape may become entangled with them as it travels. So, clean them periodically and especially before marking any important recordings. The head, pinch roller and capstan can be cleaned comparatively easily if you clean them while the Cassette Holder is pushed in and the (Play Button) is depressed which extends the heads for easy access. TEAC offers the TZ–261, a head and rubber cleaner set for this cleaning job.

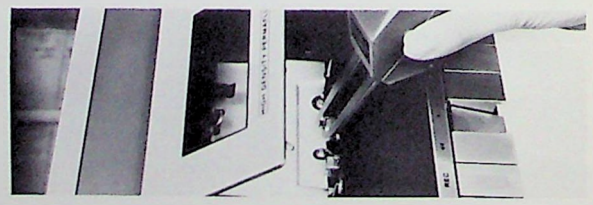
NOTE: Guarantee does not cover tape damage due to improper cleaning of capstan shaft or pinch roller.



Demagnetization of the Head:

After many hours of use, the head and metal parts in the mechanism may become slightly magnetized. As a result, the performance in highs deteriorates or noise increases. In the worst case, your valuable music tapes may become intolerably deteriorated in the treble range and often mixed with noises. Using the TEAC E-1 head eraser (available as an option), demagnetize the head and capstan shaft at least once every 50 hours of use.

1. Turn off the tape deck.
2. Push the Cassette Holder in until it locks in place.
3. Depress the ► (Play Button) until it locks, and the head will be extruded.
4. Turn on the head eraser.
5. Bring the head eraser closer to the tip of the head from above and move the eraser slowly from the front of the head to the rear 4 or 5 times. Then, slowly move the eraser away from the head.
6. Demagnetize the capstan shaft likewise.
7. When the demagnetization treatment is finished, turn off the eraser only after it is 30cm (12") or more away from the head.



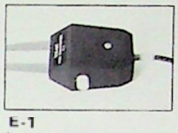
Optional accessories

Optional accessories

MC-201
Electret condenser microphone

MTT-150
Dolby level calibration tape

HP-101
Dynamic headphone (8 ohms)



E-1
Head Demagnetizer

TZ-261
Head and rubber cleaner

WR-134
DIN connector cord

Specifications

Specifications

Heads	Two, erase and record-playback, 4 track 2-channel stereo
Type of Tape	Cassette tape C-60 and C-90 (Philips type)
Tape Speed	1-7/8 ips
Motor	Hysteresis synchronous outer-rotor motor
Wow and Flutter	0.07 %
Frequency Response	Chromium dioxidetape: 30–16,000 Hz (+2, –3dB 40–14,000 Hz)
	Hi-Fi tape: : 30–13,000 Hz (+2, –3dB 40–12,500 Hz)
	Regular tape : 30–10,000 Hz (+2, –3dB 40–10,000 Hz)
Signal to Noise Ratio	52 dB 60 dB (With Dolby process)
Fast Winding Time	Approximately 95 seconds for C-60
Inputs	Microphone : 0.25 mV/-72 dB (600–10,000 ohms)
Outputs	Line : 0.1 V, 100,000 ohms or more
	Line : 0.3 V for load impedance of 10,000 ohms or more
	Headphones : 8 ohms
Power Requirements	117 V AC, 60 Hz, 18 W
Dimensions	6-15/16" (H) x 17-1/2" (W) x10-5/8" (D)
Weight	21 lbs, net

* Specifications were determined using Hi-Fi tape except as noted.
* Feature and specifications subject to change without notice.

Standard Accessories
Input-output connection cord
Fuse
Silicone cloth
Cleaning stick
Plastic cover

Stereo Cassette Deck **450**

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