



TASCAM

TEAC Professional Division

3030

Stereo Tape Deck



OWNER'S MANUAL

5700110400

The guarantee provided for the 3030 has several restrictions. The 3030 will perform properly only if it is adjusted properly and we guarantee that such adjustment is possible. Setup is not covered by Warranty. If your attempts at internal adjustments are unsuccessful, we will charge you for readjustments.

Recording is an art as well as a science. As a result, your finished product may be judged more by artistic criteria than technical performance. Art is the province of the artist and TASCAM can make no guarantee that the 3030, *by itself*, will assure the quality of your work.

Your skill as a technician and your abilities as an artist will be significant factors in the results you achieve.

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

MAGNETTONBANDGERÄT TASCAM 3030

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

AMTSBLATT 163/1984, VFG 1045/1984, VFG 1046/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

TEAC CORPORATION

Name des Herstellers/Importeurs

This product is manufactured to comply with the radio interference of EEC directive "82/499/EEC."



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This appliance has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.

Model number _____
Serial number _____

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

SAFETY INSTRUCTIONS

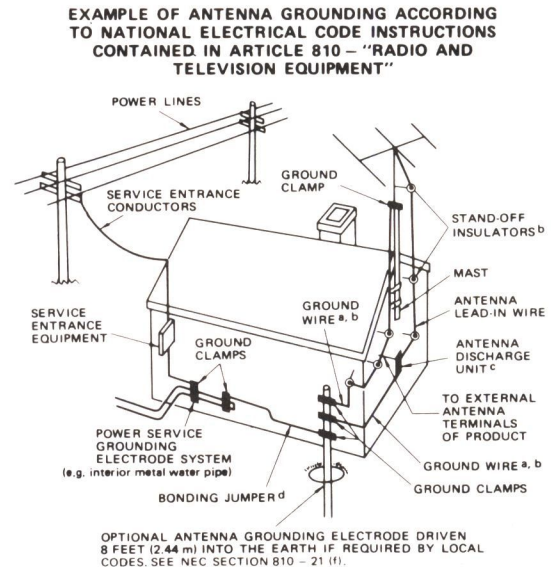
CAUTION:

- Read all of these instructions.
 - Save these instructions for later use.
 - Follow all warnings and instructions marked on the audio equipment.
1. **Read Instructions** — All the safety and operating instructions should be read before the appliance is operated.
 2. **Retain Instructions** — The safety and operating instructions should be retained for future reference.
 3. **Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.
 4. **Follow Instructions** — All operating and use instructions should be followed.
 5. **Water and Moisture** — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
 6. **Carts and Stands** — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
 - 6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



7. **Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.
14. **Power Lines** — An outdoor antenna should be located away from power lines.

15. **Outdoor Antenna Grounding** — If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70 — 1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure below.



Introduction

The TASCAM 3030 incorporates a variety of functions and features including dbx Noise Reduction (Type I), an Auto-Locator function which is convenient in replay and editing and block repeat. To maintain very stable tape motion with optimum tape tension, it uses a full tension servo control system in which a photo-interrupter senses the position of the tension arm so that the servo mechanism can adjust the torque of the reel motor. This mechanism eliminates the need for manual switching when using different types of reels. In the design of the electronic circuits the same concepts were applied, especially for the high level recording required by professionals. So that you get the best possible results from your deck and realize its full potential as a master tape deck, please read this manual carefully.

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Specifications

MECHANICAL CHARACTERISTICS

Tape Format 2-track, 2-channel recording/
reproduce
4-track, 2-channel reproduce
Max. Reel Size 10-1/2", NAB hub
Tape Speed 38 cm/s (15 ips) and 19 cm/s
(7.5 ips)
Speed Accuracy ± 0.5 % deviation
Pitch Control ± 6 %
Wow and Flutter ± 0.07 % peak weighted
(DIN 45507) at 15 ips,
 ± 0.08 % peak weighted
(DIN 45507) at 7.5 ips
Fast Wind Time approx. 100 sec. for
1,800 ft.
Motors
Capstan FG servo DC motor
Reel 2 DC slotless motors
Head Configuration 4 heads; 2-track
2-channel erase, record, reproduce
and 4-track 2-channel reproduce
Dimensions 432 x 456 x 268 mm (17" x
17-5/16" x 10-9/16")
Weight (net) 21 kg (46-5/16 lbs)

ELECTRICAL CHARACTERISTICS

Mic Input
Input Impedance 10 kohms, balanced
Applicable Mic Impedance 200 ohms or
more
Minimum Input Level -72 dBV
(0.25 mV)
Line Input

	Balanced / Unbalanced
Input Impedance	10 kohms/ 50 kohms
Maximum Source Impedance	2 kohms/10 kohms
Nominal Input Level	+4 dBm (1.23 V)/ -10 dBV (0.3 V)
Maximum Input Level	+28 dBm (19.5 V)/ +18 dBV (8.0 V)

Line Output

	Balanced / Unbalanced
Output Impedance	100 ohms/ 500 ohms
Minimum Load Impedance	600 ohms/ 3 kohms
Nominal Load Impedance	10 kohms/ 10 kohms
Nominal Output Level	+4 dBm (1.23 V)/ -10 dBV (0.3 V)
Maximum Output Level	+28 dBm (19.5 V)/ +18 dBV (8.0 V)

Headphone Output Level
(where applicable)
50 mW max. into 8 ohms
Bias Frequency 150 kHz
Equalization 3,180 + 50 μ s at 15 ips and
7.5 ips
Operating Level 320 nWb/m or 250 nWb/m
switchable

Power Requirements

USA/CANADA 120 V AC, 60 Hz
U.K./AUSTRALIA 240 V AC, 50 Hz
EUROPE 220 V AC, 50 Hz
GENERAL EXPORT 100/120/220/240
V AC, 50/60 Hz
Power Consumption 120 Watts

TYPICAL PERFORMANCE

Frequency Response

(Record/Reproduce) 40 Hz – 22 kHz
 ± 2 dB (0 VU, 15 ips)
30 Hz – 20 kHz ± 2 dB
(-10 VU, 7.5 ips)

Total Harmonic Distortion (THD)

0.6 % at 0 VU, 1 kHz

Signal-to-Noise Ratio (overall) (Referenced 3 % THD at 1 kHz)

dbx-in 98 dB (NAB A Weighted) at 15
and 7.5 ips
dBx-out 68 dB (NAB A Weighted) at
15 and 7.5 ips

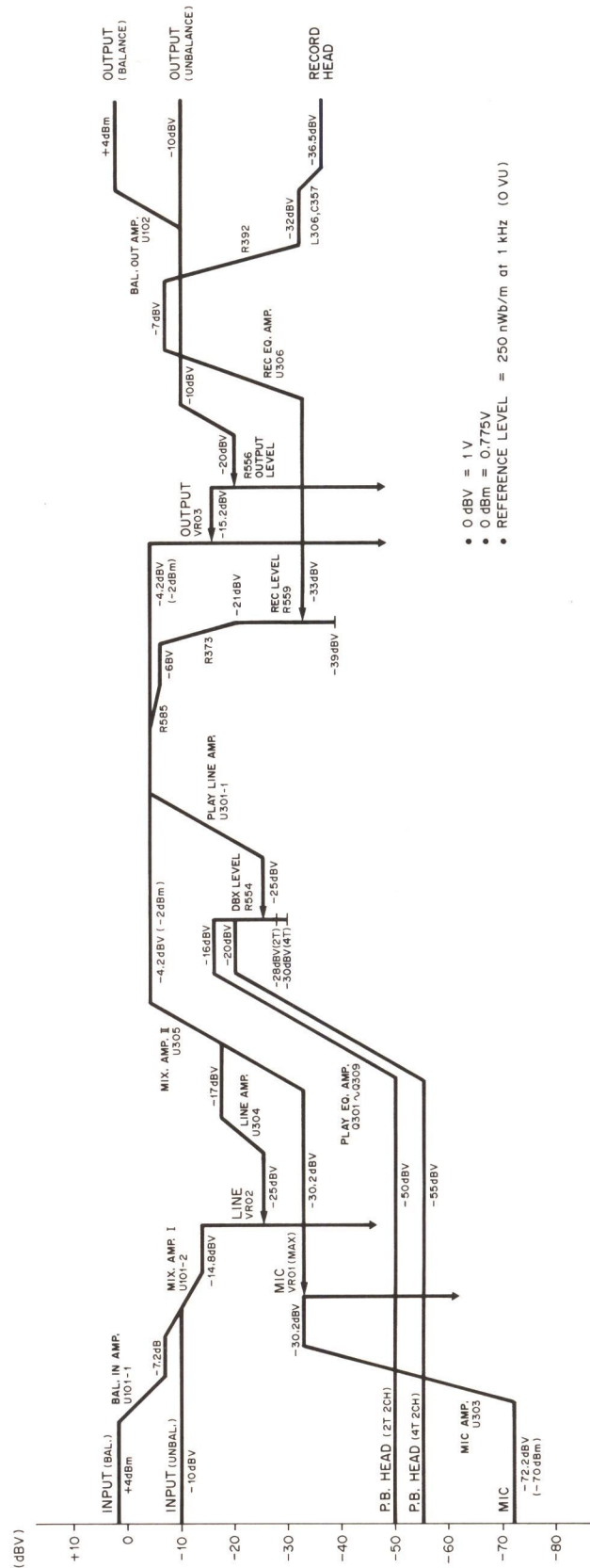
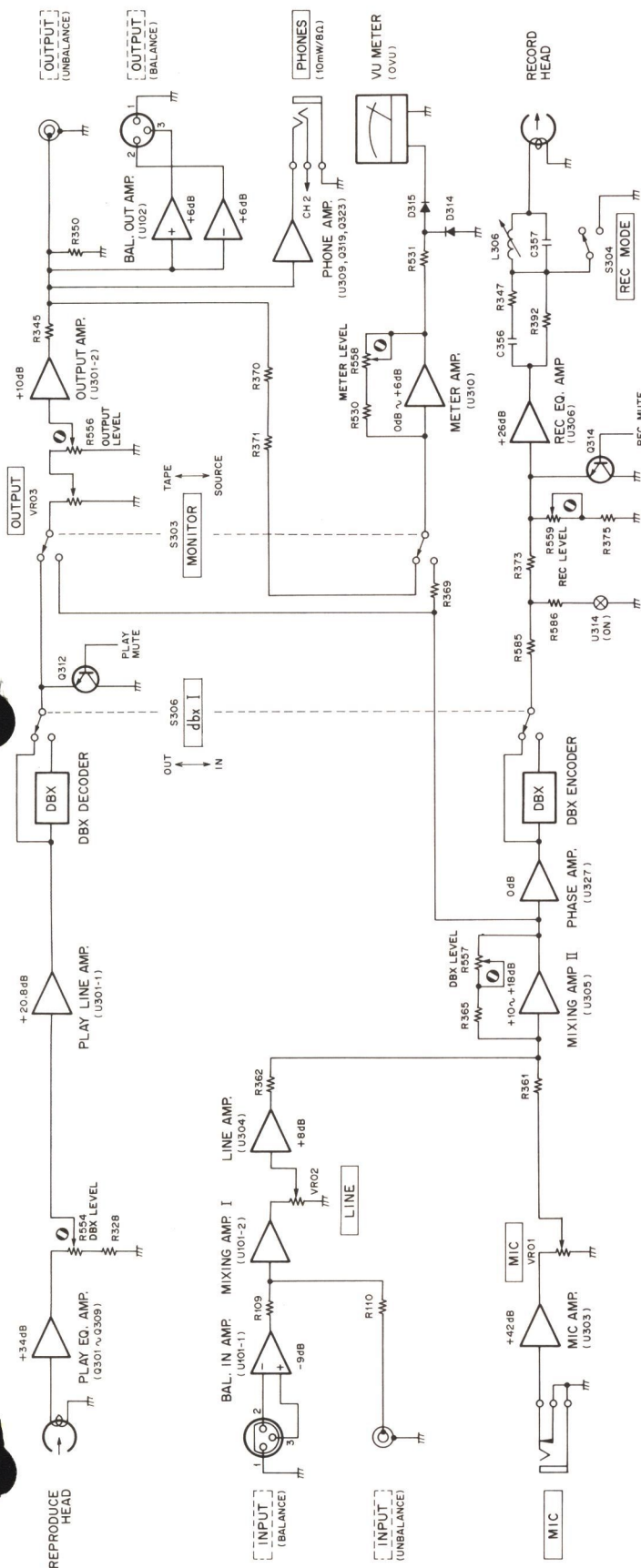
Adjacent Channel Crosstalk better than
55 dB (1 kHz)

Erasure better than 70 dB (1 kHz, +10 VU)

In these specifications, 0 dBm is referenced
to 0.775 Volt. 0 dBV is referenced
to 1.0 Volt. Actual voltage levels are also given
in parentheses.

Changes in specifications and features may
be made without notice or obligation.

dbx is a trademark of dbx Incorporated.



- 0 dBV = 1 V
- 0 dBm = 0.775V
- REFERENCE LEVEL = 250 nWb/m at 1 kHz (OVU)

Pre-operating Procedures

1. Unpacking and Inspection

During unpacking, be careful not to damage the 3030. Save the carton and packing materials. You may need them to transport your 3030 at some time in the future. After unpacking check the unit for any evidence of damage due to rough handling during shipment. Contact your dealer if you have any questions.

2. Environmental Conditions

The 3030 may be used in most areas, but to maintain top performance and prolong operating life, observe the following environmental limitations:

- 1) Nominal temperature should be 5 to 35 degrees C (41 to 95 degrees F).
- 2) Relative humidity should be 30 to 90 % (non-condensing).
- 3) Strong magnetic fields should not exist nearby.

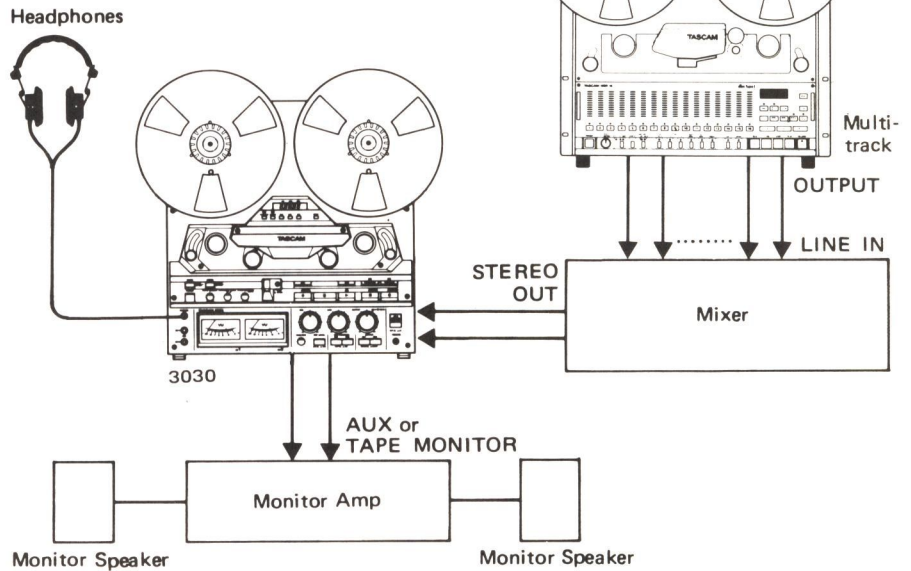
3. Rack Mounting the 3030

The 3030 may be mounted to a standard EIA 19" rack, such as the TASCAM CS-607B, using the optional RM-10A mount bracket.

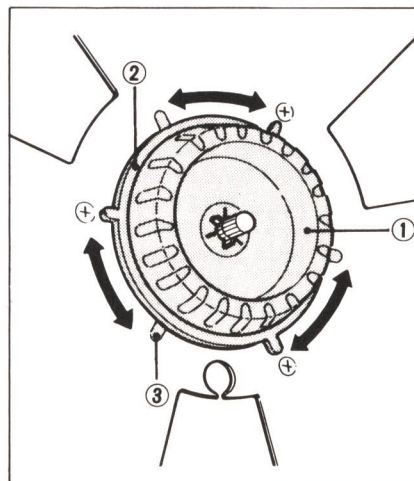
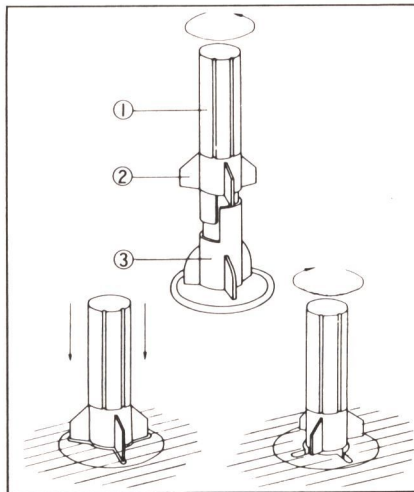


4. Initial Connections

CAUTION: Before attempting any cable connection, check to make sure that all the units involved in your system are turned off.



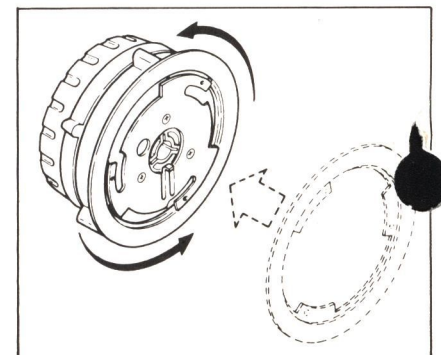
5. Reel Installation



It is vital to secure the reels firmly to the reel tables. 7-inch reels are clamped directly using the "QUIK-LOK" reel holders. Turning the top part of the reel holders counterclockwise lines up the tabs so that reels can be inserted and removed. Turn the top portion clockwise to "unalign" the tabs and lock the reel onto the reel table.

Large diameter 10-1/2 inch reels have large center holes and cannot be used directly on the reel tables. First you must fit the supplied reel adaptors in exactly the same way as ordinary reels. When the reel adaptor is firmly in place, the large reels can be mounted as follows:

1. Rotate the outer part of the adaptor fully counterclockwise. This will line up the small tabs which fit into the three notches in the reels.
2. Insert the reels and rotate the outer part of the adaptor clockwise. This will "unalign" the tabs.



3. Continue turning the outer part clockwise until the tabs are drawn down tightly onto the reels.

4. Reels can be removed by reversing the above procedure.

Note: A metal spacer is mounted on the back of these reel adaptors and it must be in place when NAB standard 10-1/2 inch metal reels are used. For large plastic reels, this spacer must be removed. It twists out and twists in quite easily.

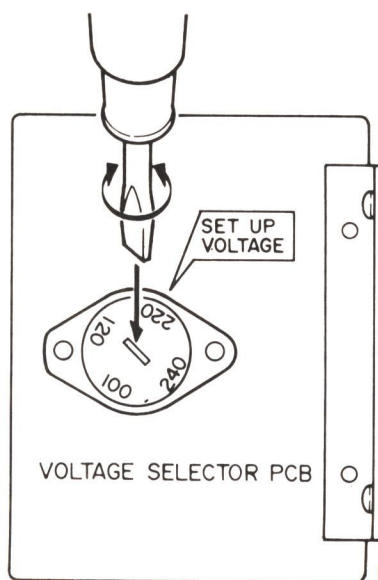
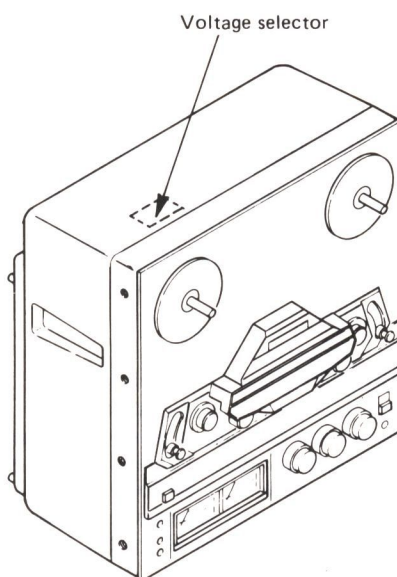
Caution: Be careful not to fasten the tape to the reels with reel holders (reel adaptors). The tape ends must be released easily from the reels, otherwise high inertia torque will be applied when the ends of tape is reached in fast-forward or fast-rewind which could damage the tape transport mechanism.

6. Voltage Conversion

For General Export Model only:

When it is necessary to change the voltage of this tape deck to match that in your area, the following procedure: **ALWAYS DISCONNECT POWER LINE CORD BEFORE MAKING THESE CHANGES.**

1. First remove the two feet by removing the screws in each one.
2. Unscrew the left and right sides of the cabinet.
3. Remove the cabinet and locate the voltage selector as seen from the top side of the deck.
4. Turn the slotted center post of the selector with a screwdriver to match the numerals corresponding to the voltage requirement of your area to the point marked "SET UP VOLTAGE" (click sound is heard).
5. Replace the cabinet and feet.



Getting Started

1. Setting the Record Level

1. With the POWER switch OFF, connect the source you want to record to an appropriate jack/connector. If your source is a microphone or an instrument such as an electric guitar, choose a MIC jack on the front panel. With a line level source such as an output from synthesizers, tuners or multitrack recorders, use a rear panel INPUT RCA jack or XLR type connector.
2. Plug in stereo headphones, but don't put them on yet.
3. Check to make sure that all the level controls, MIC, LINE and OUTPUT, are turned fully counterclockwise (to MIN position), then turn the 3030 on by pressing the POWER switch.
4. Produce the type of sound you want to record. You may want to try the following:

For your mic, use a portable radio as a source of sound. Select a station broadcasting the type of material you want to record, and experiment with mic positioning. When you want to record an organ, you can weigh down a key or wedge piece of cable between keys for a continuous sound. With synthesizers you can use LFO trigger modes or hold functions. Finally, we come to actual record level setting.

5. Gradually turn the LINE or MIC level control up to around "7" on the scale. If at this "nominal" setting the VU meters does not peak at around 0 VU, adjust the volume of your source.
6. Put on the headphones and turn up the OUTPUT level control until the desired listening level is achieved over the headphones or monitor speaker system.

2. Recording the First Track(s)

1. Turn off the power and connect your source to MIC jack(s) or Line INPUT connector(s).
2. With connections made, turn on power again.
3. Reset the tape counter to zero so you will know where your recording began, and press the RTZ (Return To Zero) button.
4. Press the REC FUNCTION key or keys depending on your source connection.

The RECORD LED will begin blinking. Before performing the next step check to see the following are set to the appropriate positions:

1) TIMER (Off), 2) SPEED (HIGH or LOW), 3) AUTO SPACER (see "Features and Controls" #13), 4) PITCH CONTROL (Off), 5) dbx 1 (IN or OUT), 6) REF LEVEL (see "Features and Controls", #27)

5. Press the RECORD and Play buttons simultaneously to start recording. The RECORD LED that was blinking will go on solid.
6. Press the OUTPUT monitor key(s) to set them to REPRO position. The monitor will switch from source to tape.

When recording is complete, press RTZ. The tape will rewind stopping at counter zero.

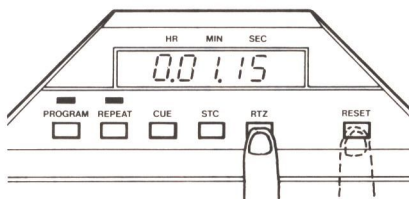
First Playback

1. Disengage the REC FUNCTION keys. This will make the tracks safe and ensure that you will not accidentally erase what you have just recorded.
2. Check to see that the OUTPUT monitor keys are in REPRO, and press the play button (▶).

Using the Auto-Locator Function

The capability of being able to search out designated positions is a real advantage in tape deck operations. For instance, you may want to search for a particular selection for replay, copying or editing purposes, this can be easily accomplished in the following ways.

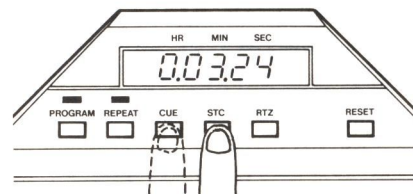
• RTZ (Return-to-Zero):



Press the RESET button when so desired to memorize the "00.00" indication. The position is automatically searched out by simply pressing the RTZ pushbutton from any mode at high speed. After which, the search speed is slowed down near the memorized position. If the ▶ key is pressed while the transport is fast winding to the location, the transport will automatically go into the playback mode when the memorized position is reached. If not pressed, the transport will stop. Pressing

stop (■), ◀ or ▶ key during the search operation cancels the search operation and causes the transport to go into that respective mode.

• STC (Search-to-Cue) Operation:

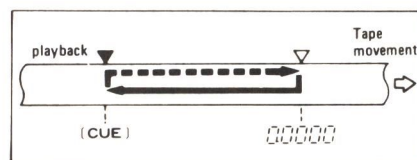


Search operation can also be accomplished without losing the original counter index.

The deck is operated exactly as in the RTZ operation.

Press the CUE pushbutton to memorize the tape position, and then press the STC pushbutton as required. The TAPE LIFTER can also be used to memorize particular positions during the cue operation by simply releasing it and allowing it to return to the off position. The memorizing function is completed the moment the TAPE LIFTER is switched off. When both CUE and TAPE LIFT are used together, the STC selects the memorized position which was last entered.

Block Repeat Operation



1. Press the ▶ key for playback and press the RESET button at the beginning of the block you wish to repeat to reset the counter index to "00.00"
2. Press the REPEAT switch (LED lights), and then press the CUE pushbutton when the tape reaches the end of the block.

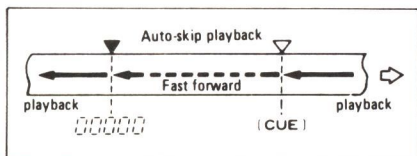
Now that "Block Repeat" has been set, the deck will automatically rewind the tape and repeat the playback of the block designated when the CUE pushbutton was pressed.

Another way that this repeat playback operation can be performed is to:

1. Press the RESET button at the beginning of the block you wish to repeat. Then locate the end of the block by using the ▶ or ▶▶ keys, and press the CUE pushbutton.

2. Press the REPEAT switch to initiate the block repeat mode and press the RTZ pushbutton. The deck will enter the return-to-zero mode of operation and the transport will fast-wind to the "00.00" position on the counter to allow replay operations to begin from that point.

Auto-Skip Playback Operation



During playback, you may perhaps want to skip a certain section of the tape. This can be accomplished by conforming to the following procedures. The unwanted block which is to be skipped should be set before playback operations. Press the ► key and then press the CUE pushbutton at the beginning of the block you wish to skip. Press the REPEAT switch and then, press the RESET pushbutton at the end of the unwanted block. This "block" will be automatically skipped in playback as long as the REPEAT switch is on.

Dubbing

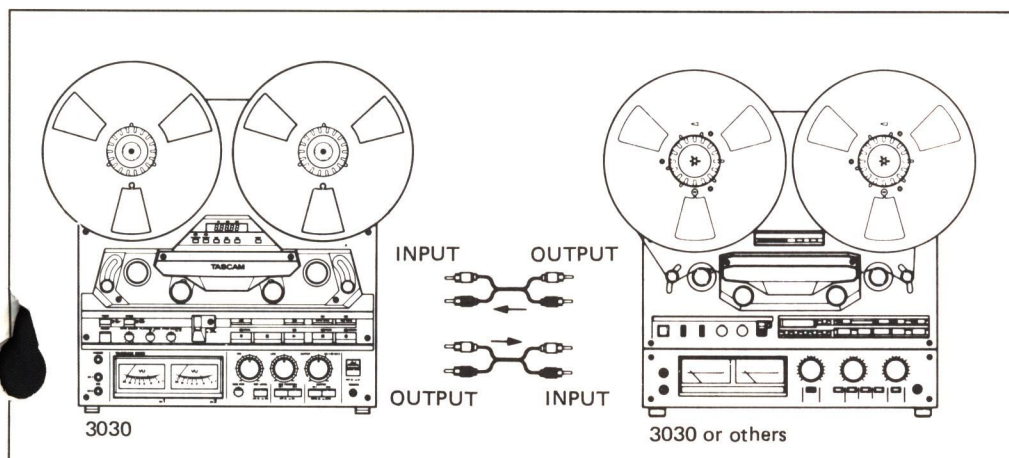
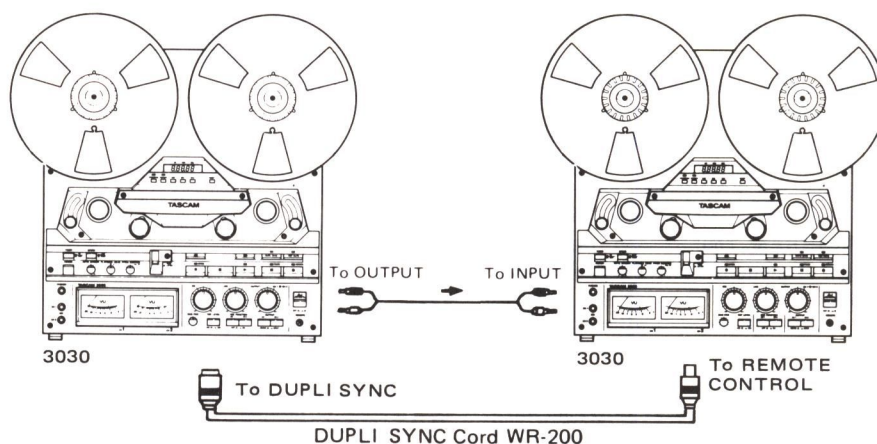
Deck-to-deck copying of tapes (dubbing) can be done without using an external amplifier. Either deck can be used as the source recorder ("master") with a second recorder used as the target recorder ("slave"). Connect the output of the master recorder to the input of the slave recorder as illustrated. To use the master recorder and the second recorder in opposite roles, simply reverse the input and output connections. DUPLI SYNC much facilitates the dubbing procedure. See the next section.

Dubbing with DUPLI SYNC

With DUPLI SYNC the target deck ("slave") starts to record and stop as the source deck ("master") starts to play and stop. If AUTO SPACER is active the slave will stop at the end of the preset REC MUTE period of time leaving a "blanc space" on the tape.

1. Connect the output of the master 3030 to the input of the slave 3030 (if your amplifier has dubbing facility connect that between the 3030s).
2. Connect the optional WR-200 DUPLI SYNC cable between the master's DUPLI SYNC and slave's REMOTE connectors.

3. Put the slave into Record pause.
4. Press the master's DUPLI SYNC switch (LED on), then press the play button (►). The slave will start recording.
5. To stop recording press the master's PAUSE or Stop button.



Spooling

The spooling mode is used to transfer tape from one reel to the other at a constant speed, slower than normal fast winding, to obtain a uniform tape pack. Generally, spooling will be done onto the takeup reel at the end of a recording or editing session so the tape can be stored "tails out", which reduces audible print-through effects (pre-echoes). Fast winding is not recommended here, because the tape pack will be less uniform, and edge damage to the tape will therefore be more likely during storage. When you use the tape again, first rewind it onto the supply reel at normal rewind speed.

Monophonic Recording/Playback

To record those conferences or parties that require a long recording time, you may want to use two tracks sequentially, not simultaneously as in stereo recordings.

Connect the source to CH1 (front MIC or rear line INPUT). Set the CH1's REC FUNCTION switch to ON and the CH2's switch to OFF. Set the record and monitor levels and start recording. When the end of the tape reaches, stop the tape motion and interchange the left and right reels. Then continue to record. The second pass will be recorded on track 2. The way track 1 runs in one direction and track 2 in the opposite direction, as opposed to stereo recordings that use the whole tape width in one direction. To play track 1, reduce the CH2 OUTPUT level control to MIN (fully counterclockwise rotation). When reaching the end of track 1, stop the tape motion and interchange the left and right reels as you did during recording. Then start again to play with the CH2 OUTPUT level control still set to MIN. Track 2 will be played back.

Sound-on-Sound Recording

Record original sound on track 1 (CH1) then rewind the tape to the beginning. Connect the channel 1 OUTPUT to the channel 2 INPUT, plug a microphone into CH2 MIC jack. Record the mic sounds on track 2 while monitoring track 1. The mic sounds will be recorded together with playback sounds from track 1.

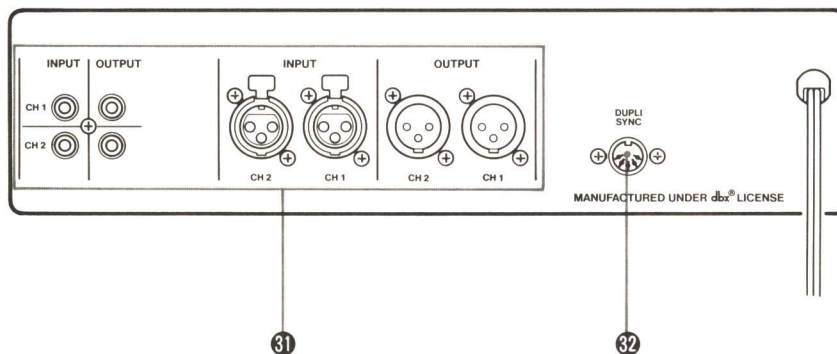
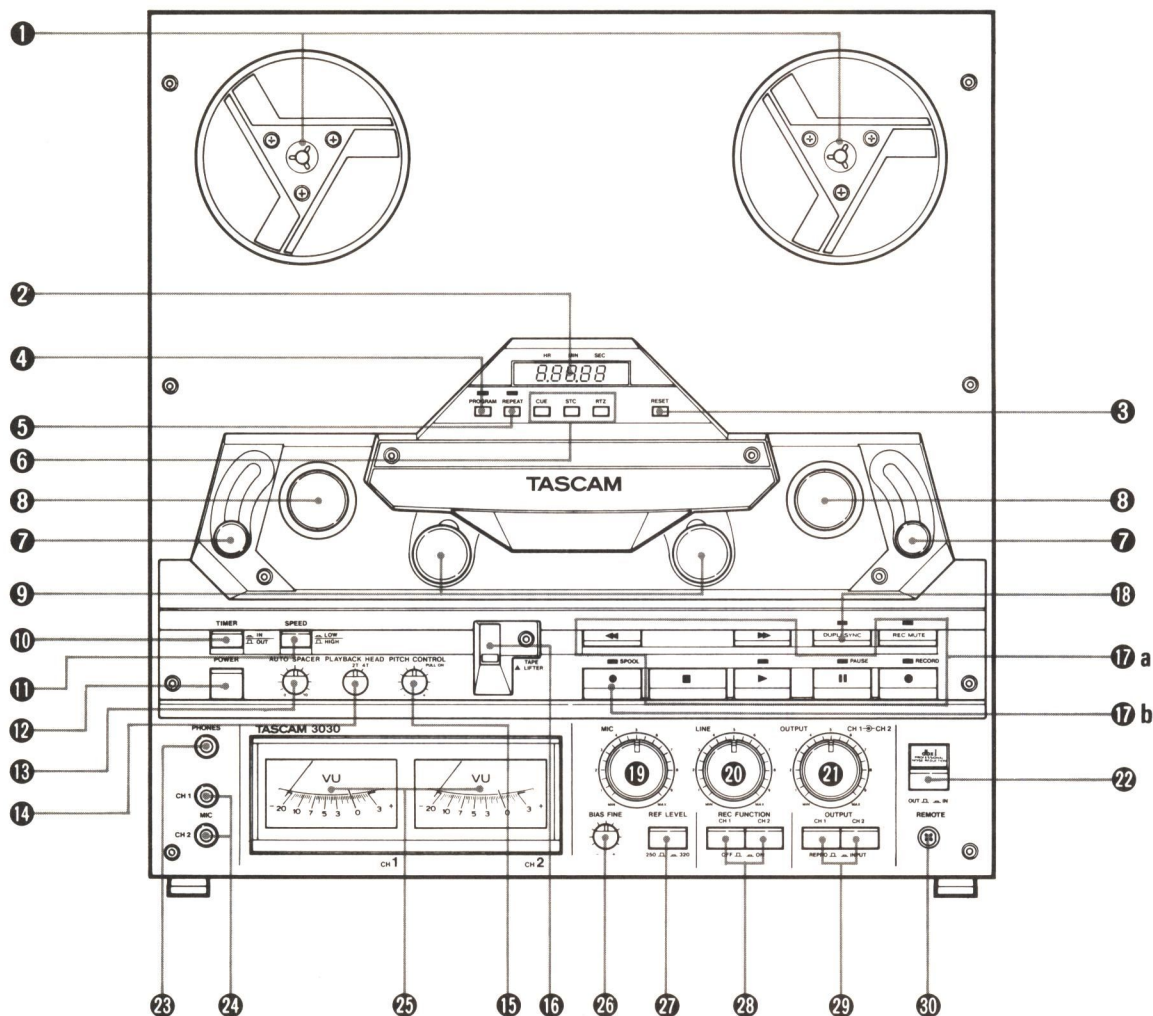
Using the BIAS FINE Control

1. Place the deck into the record mode and begin recording by using a disc or a pre-recorded tape of which sound quality you are familiar with.
2. Set the OUTPUT switch to REPRO to monitor the reproduced sound. If the high frequency sound seems higher than the original of which you are comparing, turn the BIAS FINE control clockwise (+) to obtain the best possible monitoring sound by ear. On the other hand, if the high frequency sound seems low, turn the control counterclockwise (-) until the appropriate bias current is obtained.
3. As a final check, alternatively set the OUTPUT switch to INPUT or REPRO to confirm the correct setting of the BIAS FINE control by comparing the recorded sound against the original.

Erasing

When you make a new recording, the old one is automatically erased. Additionally, a tape may be erased by the REC MUTE function, or by recording with the LINE and MIC controls tuned all the way down.

To erase a whole reel of tape in this way would take quite some time and consequently bulk erasing is a technique much used by professionals. Using a bulk eraser, such as the TEAC E-2A, is faster and more thorough than erasing on the tape deck.



① Reel Tables

These support either 7 inch reels or hub adaptors when 10-1/2 inch reels are used. See page 6 for details of the "QUIK-LOK" reel clampers and reel adaptors. Always check that adaptors and clampers are tightened securely before using the deck.

② Electronic Tape Counter

Displays the distance the tape has moved from a zero reference point in terms of hours, minutes and seconds and can be reset to 0.00.00 at any time by simply pressing the RESET button. The three different display functions provided are: (1) ordinary counter (2) program counter in conjunction with the PROGRAM switch (3) AUTO SPACER control ⑬ setting counter.

When used as an ordinary counter, it permits calculation of how much time is remaining on the tape. The tape counts upwards, when the tape is running in the forward direction, while it counts downwards when moving in the reverse direction. The ordinary counter function is retained even while the PROGRAM counter is in use. For further information regarding the PROGRAM counter and the AUTO SPACER functions, see their respective sections.

③ RESET Button

Used to reset the tape counter when functioning as an ordinary counter or when functioning as a PROGRAM counter. When pressed, this resets the displayed counter index to 0.00.00.

④ PROGRAM Switch

Press to turn on. The PROGRAM counter index is displayed. The electronic tape counter counts upwards (increase only) from a zero reference point after RESET is pressed allowing you to measure the length of certain sections on the tape. Press again to return to the ordinary tape counter index while still retaining the PROGRAM counter function.

⑤ REPEAT Switch

Used to control block repeat and auto-skip operations. Press to turn on (LED lights), press again to discontinue. Even though the LED remains lit indicating REPEAT operations, the REPEAT functions are cancelled out when the deck enters the record mode. **Note:** The TIMER switch should be set to (□ OUT), or the REPEAT switch will have no effect. See page 8 for operation.

⑥ Auto-Locator Pushbuttons

• CUE:

Used to set a cue point on the tape and that setting can be changed whenever so desired from any mode. A cue point setting allows a specific point on the tape to be "remembered" and to be immediately located in the Search-to-Cue operation. When the CUE pushbutton is pressed exactly at "0.00.00", a cue point cannot be entered and the one which was previously entered is retained.

An example of operation is described on page 8.

• STC (Search-to-Cue):

Used to activate the "STC" function which causes the transport to fast-wind in either the fast forward or rewind mode to the cue point established when the CUE pushbutton was pressed or through the use of the TAPE LIFTER memory function.

• RTZ (Return-to-Zero):

Used to activate the "RTZ" function which causes the transport to fast-wind in either the fast forward or rewind mode to the "0.00.00" position of the tape counter. An example of operation is described on page 8.

⑦ Tension Arms (Left & Right)

These take up tape slack, stabilize tape movement and stop the deck if the tape breaks or runs out. They contribute greatly to preserving and protecting your tapes.

⑧ Inertia Rollers (Left & Right)

Inertia rollers turn with the tape and help to stabilize tape bounce for smooth tape running.

The right inertia roller also acts as a footage roller, which detects the movement of the tape to display in terms of time on the counter.

⑨ Pinch Rollers (Left & Right)

In the play and record modes, these "pinch" the tape to the capstans to drive the tape at the correct speed past the heads. They retract from the capstans very slightly when the PAUSE key is pressed, allowing the tape to stay in head contact. When the stop (■) key is pressed or the deck is put into fast wind, or the power is cut, the pinch rollers retract fully and the tape is lifted clear of the heads.

⑩ TIMER Switch

IN : For timer recording.

OUT: Set to this position when not using a timer.

⑪ SPEED Switch

LOW (▢) selects a tape speed of 7-1/2 ips and HIGH (□) selects a tape speed of 15 ips.

⑫ POWER Switch

This controls AC power to the deck. Press for on, press again for off.

⑬ AUTO SPACER Control

This controls the muting period (adjustable up to 13 seconds) with the REC MUTE key depressed during recording. The tape counter functions to show the length of the muting period and automatically returns to its normal function when the tape starts up again.

⑭ PLAYBACK HEAD Selector Switch

Setting this switch to the 4T position makes the 3030 possible to play tapes made on 4 track, 2 channel tape machines. To play tapes made on the 3030, set the switch to the 2T position since the 3030 records only on two tracks.

⑮ PITCH CONTROL

When this control is pressed in, the speed of the tape deck is precisely controlled. Sometimes, however, recording or playback slightly different pitches is required. Pull the knob (PULL ON) and rotating it to left or right enables $\pm 6\%$ adjustment in tape speed to be made. Leave it pressed in when this facility is not required.

⑯ TAPE LIFTER

During fast wind or rewind, pushing this lever enables the sound recorded on the tape to be monitored if the OUTPUT switch(es) is in the REPRO position. Pushing the lever just a little disables the muting on the replay amplifier and allows the tape to make contact with the heads. Pushing the lever fully up retracts the tape lifter and allows the tape to make contact fully with the replay heads for a stronger monitoring signal.

⑰ a. Tape Transport Control Panel

These soft-touch controls operate with feather-light pressure. Microswitches inform the deck's logic circuits which keys have been pressed and the logic makes solenoids and relays do all the hard work. The controls are:

RECORD (●): Pressing this key alone has no effect. To start recording you have to press the RECORD key together with the Play (►) key after the REC FUNCTION key(s) have been pressed. You can also the following procedure to start recording. Pressing the RECORD and PAUSE keys together puts the 3030 into Record Pause

mode. Setting the OUTPUT source selector switch to INPUT switches the 3030's output and VU meters so you can monitor the input level. After the input level has been properly adjusted press the Play key (►). The 3030 will start recording.

The LED above the RECORD key flashes to show that either or both REC FUNCTION keys are pressed but recording is not taking place since RECORD and Play are not yet pressed. As recording starts the RECORD LED goes on solid.

REC MUTE: Pressing this key while recording will result in a no-signal recording, the length of which may be adjusted by setting the AUTO SPACER. With the REC MUTE switch depressed, the counter measures the muting period. The AUTO SPACER function is cancelled by pressing the REC MUTE switch a second time before the deck enters the record-pause mode, muting will continue until PAUSE is pushed to change to the record-pause mode. If the ► or PAUSE key is pressed before the deck enters the record-pause mode, the muting mode is released to resume normal recordings, or to enter the record-pause mode.

PAUSE (■): Pressing this key in either the record or play mode causes the pinch rollers to retract. Tape motion stops but the selected mode is not disabled. To continue recording or playing, simply press the ► key. A red LED lights to indicate the pause mode.

►►: This is the fast-forward key. Pressing it in any deck mode will cause the tape to wind rapidly from the left reel to the right reel.

►: This is the play key. Pressing it in any deck mode will cause the deck to go into play. Pressing it together with the RECORD key will make the deck go into the record mode if either REC FUNCTION switch is ON (▲). You can go directly from play into record (if the REC FUNCTION switch is ON) by simultaneously pressing the ► (play) and RECORD keys.

■: This key stops the deck and disables the previously selected mode.

◄◄: This is the fast rewind key. Details are exactly the same as for the ►► key except for the direction of tape travel.

17 b. SPOOL Switch

This switch is used to activate and deactivate the spooling mode. To initiate spooling, press this switch on (LED lights) only in the stop or pause mode, and then press either the ◄◄ or ►► key. The spooling mode may be cancelled anytime by pressing the switch again (LED turns off), then normal fast winding will resume. For more information on spooling, see page 10.

18 DUPLI SYNC Switch

This eases tape-to-tape duplication. For more see "Dubbing with DUPLI SYNC", page 9.

19 MIC Control with marker ring

This works just like the LINE control, except that it controls the level from microphones plugged into the MIC jacks. Microphone signals may be combined with line signals by simply using both the MIC and LINE controls. The memory marker ring lets you easily return to a level that has previously been used.

20 LINE Control with marker ring

This knob adjusts the level of the input signal before it is recorded on the tape. Always adjust it so that the signal gives the highest possible average reading on the VU meters in the black zone. Occasional peaks into the red area will not matter, but sustained peaks above 0 VU will cause distortion. CH1 and CH2 levels can be separately adjusted.

21 OUTPUT Control with marker ring

This controls the output fed to the amplifier and to the headphone jack (PHONES). The signal will depend on the setting of the MONITOR switch(es). In the TAPE position the output comes from the tape (off-tape monitoring) and in the SOURCE position it comes directly from the input. CH1 and CH2 levels can be separately adjusted.

22 dbx I Switch

This switch is used to activate and deactivate the dbx encoder and decoder. Press this switch to IN (▲) when you want to use the dbx system for recording or playback. The indicator "dbx I" will light in the IN position. While recording with the dbx system, the encoded signal on the tape can be monitored as a normal sound by positioning the OUTPUT source selector switch to REPRO. Playback of dbx tapes, dbx recording of normal sources and dbx recording of tuner or discs should have the switch in the IN position. For normal playback, normal recording and for direct copying of dbx tapes (in this case the encoded signal is monitored), the switch should be set to the OUT position.

23 PHONES Jack

Connect here for headphone monitoring or private listening. The sound level can be controlled using the OUTPUT control.

24 MIC Jacks

There are two jacks for use with 200 ohm microphones, though 150 – 10 kohm microphones may also be used. CH1 corresponds to the left channel and CH2 to the right. Good microphone recording technique is a skill that takes some acquiring. Three initial tips, however:

1. Always record at the maximum possible level short of overloading the tape (see sections on LINE & MIC controls and VU meters).
2. Record in "dead" rooms full of soft furnishing, not in "live" rooms with lots of hard, reflecting surfaces.
3. To prevent feedback oscillations, use headphones to monitor mic signals.

25 VU Meters

These meters measure the level of the audio signal being fed to the tape or to the output. See page 8 for information on optimum recording level adjustment.

26 BIAS FINE Control

Turn the control clockwise (+) to increase the amount of bias; a minute decrease of high frequency response will be obtained. Turn the control counterclockwise (-) to decrease the amount of bias; a noticeable increase of high frequency response will be obtained.

The center detent position provides a nominal amount of bias current.

Keep this control in the center detent position when it's not to be used.

For more see "Using the BIAS FINE Control", page 10.

27 REF LEVEL Selector Switch

You can select either reference record level: 250 or 320 nWb/m. Generally you can leave the switch at the Up, 250 nWb/m position. Set the switch to the Down, 320 nWb/m position when playing tapes made on machines set at 320 nWb/m to keep level calibration constant.

28 REC FUNCTION Switches (CH1 & CH2)

These switches allow selection of the channels to be recorded. When one switch is set to ON (▲), the corresponding channel alone can be recorded. For stereo recording, both switches must be ON. For monophonic recording either switch can be ON. If one, or both REC FUNCTION switches are ON, the RECORD lamp will flash on and off to indicate that recording is possible. When playing back a tape, set both REC FUNCTION switches to OFF (◻).

29 OUTPUT Source Selector Switches (CH1 & CH2)

They determine what signal is fed to the rear OUTPUT connectors/jacks and front PHONES jack. Setting the switches to REPRO selects the tape. Setting them to INPUT selects the signal plugged into the Line INPUT or MIC Input.

The OUTPUT level controls have effect on the REPRO signal but not on the INPUT signal.

30 REMOTE Connector

For connection of the optional RC-204 remote. With the remote unit you can control all tape motion from a distance of up to 15 feet (5 meters).

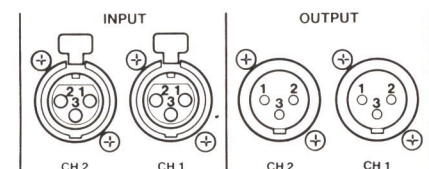
Note: The RC-204 is not a dedicated remote and when using that keep in mind the following:

- 1) Reverse play key (◀) on the remote has no effect on the 3030.
- 2) Duplicate of RTZ (Return-to-Zero) is marked "STZ" (Search-to-Zero).
- 3) Duplicate of RESET is marked "CLEAR".

31 INPUT & OUTPUT Terminals

Line level signals to the deck are connected to the INPUT terminals. Low level signals from a microphone must go to the MIC inputs on the front panel. Low level signals direct from a phono cartridge cannot be used directly and must be fed to a hi-fi amplifier first. The OUTPUT terminals are used for connecting the output of the deck to your amplifier.

Pin Assignments (XLR Type Connector):



Pin 1 is shield (GND), Pin 2 is Low (Cold), and Pin 3 is High (Hot).

32 DUPLI SYNC Socket

Connect optional DUPLI SYNC Cord WR-200. For more see "Dubbing with DUPLI SYNC", page 9.

Other Features

Dual Capstan Closed-loop System

To record and playback tapes, the tape must stay in contact with the heads otherwise drop-outs and impaired performance will result. There are three ways of maintaining this contact — pressure pads, back tension and dual capstan closed-loop systems.

Of the three, pressure pads are the easiest to implement but the performance is generally considered unsatisfactory.

The back tension method is more complex but can give excellent results and has been much used by TEAC.

The most sophisticated method is the dual capstan closed-loop technique used in the 3030 tape deck. The expertise and precision required has hitherto confined the method only to the costliest decks.

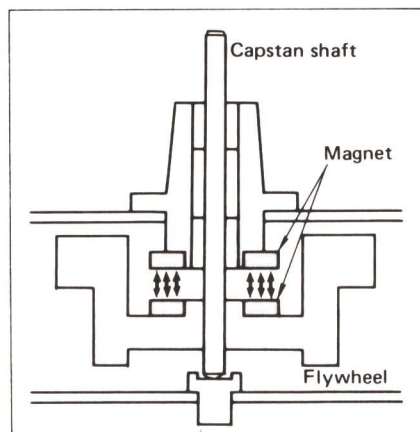
How it works:

The tape is kept taut across the heads by having two pinch rollers/capstans which rotate at very slightly different speeds; the capstan near the take-up reel rotates faster than the one near the supply reel.

Magnefloat Bearings

The bearings used on the two capstans play a vital role in maintaining, or degrading, the wow and flutter performance of the deck. Vertical play is the problem and must be eliminated but the methods usually taken to overcome it — springs and other mechanical devices — often only make the problem worse.

The Magnefloat method uses the principle that the same magnetic poles oppose each other keep the bearings firmly in place and eliminate vertical play with absolutely no mechanical contact. The result — wow and flutter are at an unprecedented low.



Electrical Braking

One of the advantages of large reel decks is that you can get longer play and record times. One of the disadvantages, up till now, has been that those large, heavy reels are also big on inertia and when it comes to stopping them, pretty hefty mechanical brakes were required. And the problem with heavy brakes is that hand-turning the reels for threading the tape, cueing, etc., became a two-hand job.

The 3030 however, has electrical braking. That means that whenever the deck goes from a fast wind mode to any other mode, the tape is slowed down by sending a reverse polarity to the supply reel motor. A magneto-resistive motion-sensing device monitors the speed of the tape, and when it is going slowly enough, a signal is sent to activate the mechanical reel brakes. Because the tape is only going slowly when the brakes are activated they can be very much lighter than conventional brakes and enable the reels to be easily turned using only one hand.

If you use your 3030 creatively you will do a lot of editing and that's when the advantages of electrical braking and light mechanical brakes will really tell.

Real-time Pause

Press the PAUSE control and you will notice that the pinch rollers retract only very slightly from the capstans and that the tape stays in contact with the heads. In playback pause mode, manual cueing is possible by "rocking" the reels by hand in either direction. This provides additional flexibility in tape editing. When you use the PAUSE, the tape stop and start times are so fast as to be virtually instantaneous; that's why we call it "real-time pause".

The DBX is a wide-band compression-expansion system which provides a net noise reduction (broadband, not just hiss) of a little more than 30 dB. In addition, the compression during recording permits a net gain in tape headroom of about 10 dB.

A compression factor of 2:1 is used before recording; then, 1:2 expansion on reproduce. These compression and expansion factors are linear in decibels and allow the system to produce tape recordings with over a 100 dB dynamic range — an important feature, especially when you're making live recordings. The DBX employs RMS level sensors to eliminate compressor-expander tracking errors due to phase shifts in the tape recorder, and provides excellent transient tracking capabilities.

To achieve a large reduction in audible tape hiss, without danger of overload or high-frequency self-erasure on the tape, frequency pre-emphasis and de-emphasis are added to the signal and RMS level sensors.

Subsonics and Interference

The DBX incorporates an effective bandpass filter. This filter suppresses undesirable subsonic frequencies to keep them from introducing errors into the encode or decode process. However, if rumble from trains or trucks is picked up by your microphone and fed to the DBX, modulation of the program material during low level passages may occur. This low-frequency component will not itself be passed through the recorder and so, will not be present at reproduce for proper decoding. If this low-level decoding error is encountered, and subsonics are suspected, we suggest the addition of a suitable high-pass filter in the Microphone Line.

Cleaning

Heads, Pinch Rollers and Capstan Shafts

When the tape deck is used for a long time magnetic oxide from the tape, dirt and dust tend to accumulate on the heads and along the tape movement path. If this happens, the sound quality will begin to worsen, high frequency response will suffer, there will be a loss of output level and drop-outs will occur. Eventually the heads may begin to wear unevenly and much quicker than normal. At an extreme condition, the heads may not be able to erase, record or playback at all.

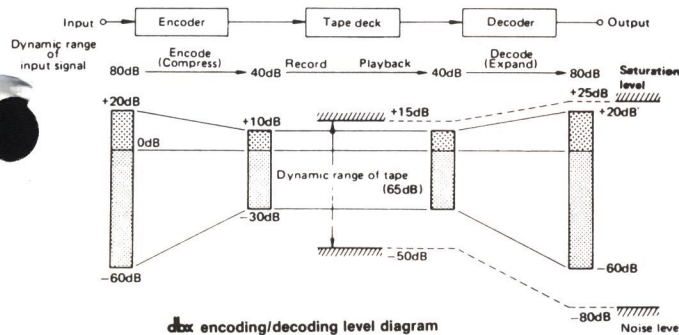
To avoid this unnecessary problem the heads and tape path must be cleaned regularly, at least after about every 8 hours of record or playback operations and before every important recording session. Especially clean the heads and pinch rollers and capstan shafts. TEAC produces a special kit called TZ-261 which contains rubber and head cleaning fluids.

Note: The front panel and other external parts may be cleaned with a cloth dampened with weak, neutral detergent solution. NEVER use benzine or other organic solvents.

Demagnetizing

After long periods of use, the heads can become slightly magnetized. As a result, high-frequency signals may be reduced or lost and noise may build up.

To keep your recorder operating at optimum efficiency, the heads should be demagnetized with a TEAC E-3 or similar demagnetizer. Be sure the deck is turned off during demagnetization.



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