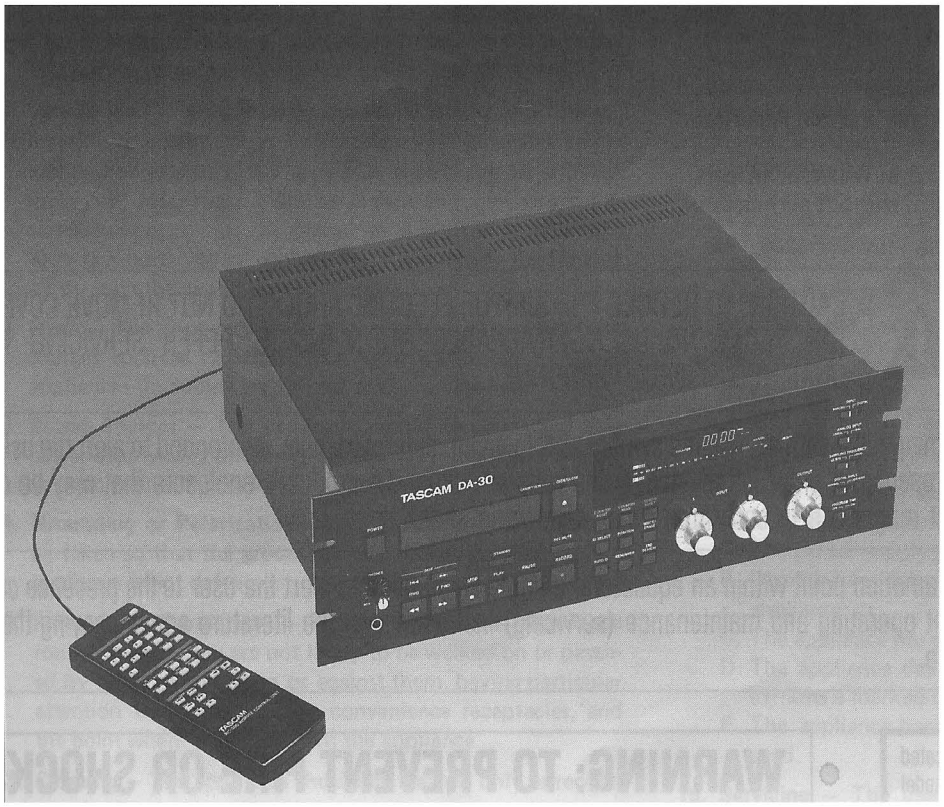
TASCAM

TEAC Professional Division

DA-30

Digital Audio Tape Deck



OWNER'S MANUAL

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Introduction

Thank you for choosing the TASCAM DA-30 digital audio tape deck. The DA-30 was designed for professional and its features include the following:

- Digital audio interface conforming to AES/EBU standards.
- 3 sampling rates supported: 32 kHz, 44.1 kHz, and 48 kHz.
- Balanced +4 dBm analog inputs/outputs for professional connections
- Individual A/D and D/A converters for the L and R channels using the latest converter technology (64x oversampling Delta-Sigma A/D, 8x oversampling 18 bit D/A)
- Mountable in a 19" EIA rack
- Wired-remote controls
- I/O port (pararell, as distinct from serial) for the DA-30 to be controlled from edit controllers or other external units
- MARGIN display digitally shows in dB the available headroom before distortion occurs
- Standby mode for automatic PAUSEs at Start IDs
- Variety of Start and Skip ID editing capabilities (positioning within 5 frames, automatic ID recording, program renumbering and others)
- Digital copy from digital sources ("Copy Prohibited" or not) possible (but third generation copying of that copy prohibited)

Before actually using the DA-30, read this manual thoroughly at least once, so you will know where to return when you need answers.

Use of capital letters: In general, we use all upper case type to designate a particular switch, control or jack label or indication appearing in the display window.



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.

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SAFETY INSTRUCTIONS

CAUTION:

- **Read all of these instructions.**
- **Save these instructions for later use.**
- **Follow all warnings and instructions marked on the audio equipment.**

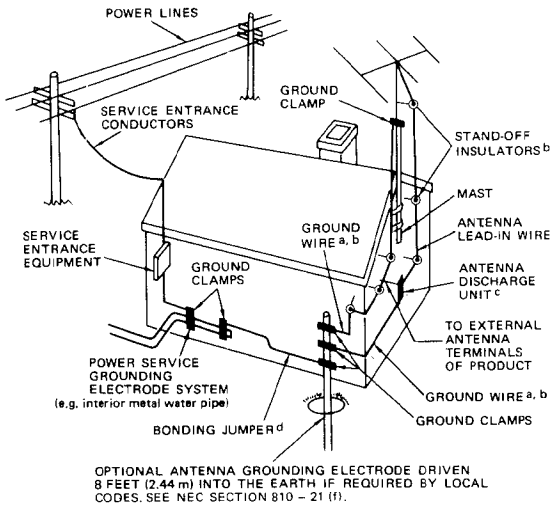
1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions 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.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 – "RADIO AND TELEVISION EQUIPMENT"



a. Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.

b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 m) to 6 feet (1.83 m) apart.

c. C mount antenna discharge unit as close as possible to where lead-in enters house.

d. Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21(j).

16. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
17. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
18. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
19. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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Set-up

1. UNPACKING AND INSPECTION

During unpacking, be careful not to damage the DA-30. Save the carton and packing material. You may need them to transport your DA-30 sometime in the future.
In addition to the DA-30 the package should contain the following:

- RC-30D Remote Control Unit
- Rack mount screw kit

After unpacking, check the units for any evidence of damage due to rough handling during transport. Contact your dealer if you have any questions.

2. INSTALLATION SITE

The DA-30 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 Centigrade (41 to 95 degrees Fahrenheit).

2) Relative humidity should be 30 to 60% (non-condensing).

3) Strong magnetic fields should not exist nearby.

3. RACK MOUNTING

The DA-30 can be mounted in a standard 19" EIA rack. Use the supplied mount screws.

4. INITIAL CONNECTIONS

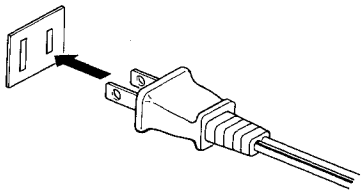
CAUTION: To prevent problems, before attempting any cable connection check to make sure that all units involved in your system are turned off.

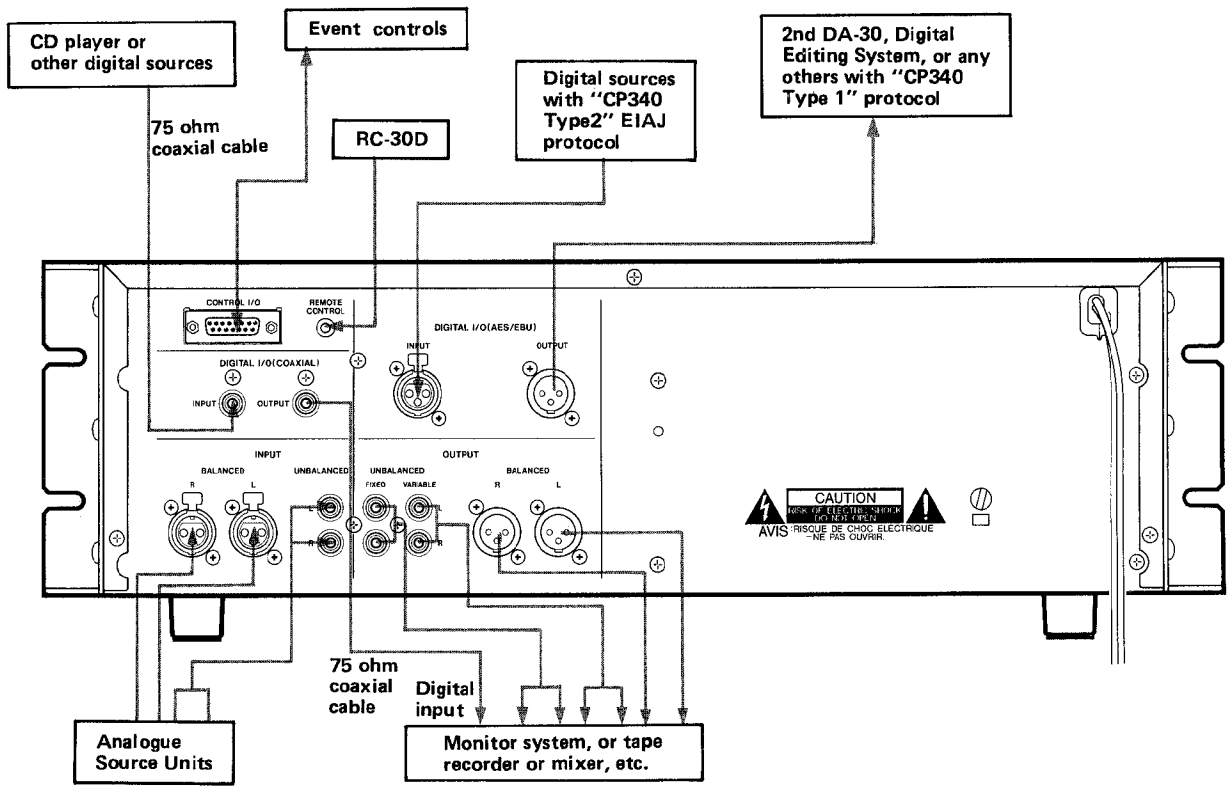
A. Input/Output Connections
Make the appropriate cable connections by referring to the connection diagram below and pages 5 and 14.

B. Remote Control Connection
Plug the remote control cable into the REMOTE CONTROL mini-plug on the back of the DA-30. There are a number of functions available on the remote control that are NOT available on the front panel.

The RC-30D remote unit is powered from the DA-30, and *cannot* be battery powered. Disregard the word OPEN on the back of the remote.

C. AC Power Cord Connection
The supplied power cord has polarity. The negative (ground) side is indicated by a white line running along one of the two leads of the cord. Whether or not the power cord polarity matches that of your AC outlet affects the sound quality. Try reversing the negative and positive connections to find the best sound.





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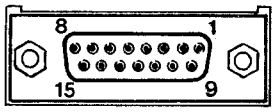
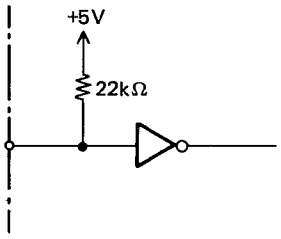
CONTROL I/O Port Pin Assignment

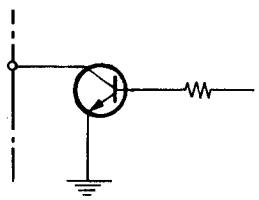


Pin#	IN(put) – OUT(put) signal		Function
1	$\overline{\text{STOP}}$	IN	External command reception; active at low level
2	$\overline{\text{FWD PLAY}}$	IN	
3	$\overline{\text{F. FWD}}$	IN	
4	$\overline{\text{REW}}$	IN	
5	$\overline{\text{PAUSE}}$	IN	
6	$\overline{\text{START ID WRITE}}$	IN	
7	$\overline{\text{REC/PLAY}}$	IN	
8	GND		
9	$\overline{\text{FWD PLAY}}$ TALLY	OUT	Transmission of transport status-indicating signals; in open collector
10	$\overline{\text{F. FWD}}$ TALLY	OUT	
11	$\overline{\text{REW}}$ TALLY	OUT	
12	$\overline{\text{STOP}}$ TALLY	OUT	
13	$\overline{\text{REC/PLAY}}$ TALLY	OUT	
14	$\overline{\text{REC/PAUSE}}$ TALLY	OUT	
15	$\overline{\text{TAPE END}}$ TALLY	OUT	

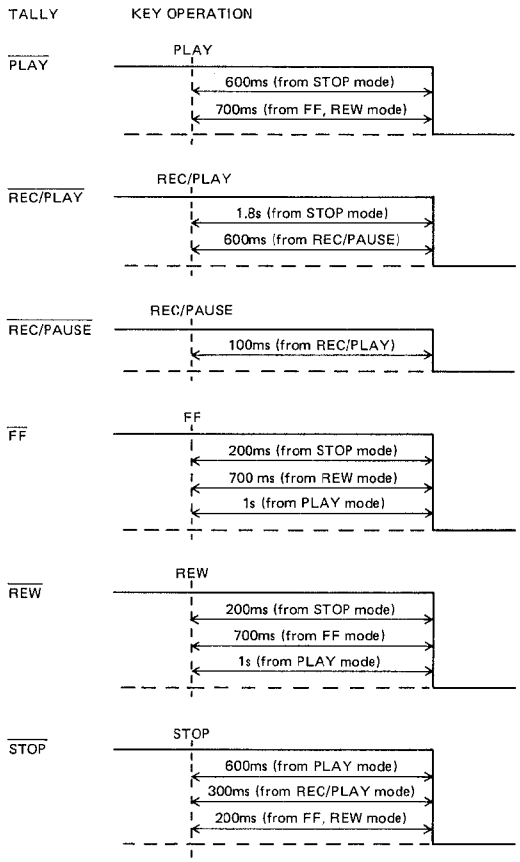
- **Input:** effective when lasted 100 ms or more.



- **Output:** maximum allowable voltage 15 V in open collector. I_{OL} = 80 mA (where $V_{OL} \leqq 3V$)



Tally Signal Timing Chart



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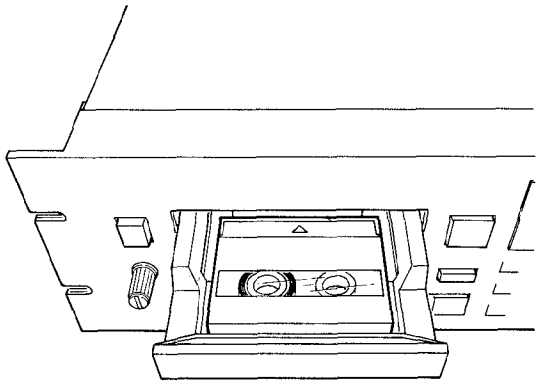
DAT Cassette Tape

- **How to Load a DAT Cassette**

The hinged part of the cassette must go in first, with the clear window facing up. Similar to a VCR tape, the label surface of the cassette will be visible.

Make sure no foreign objects or dirt falls into the tray which can contaminate the transport.

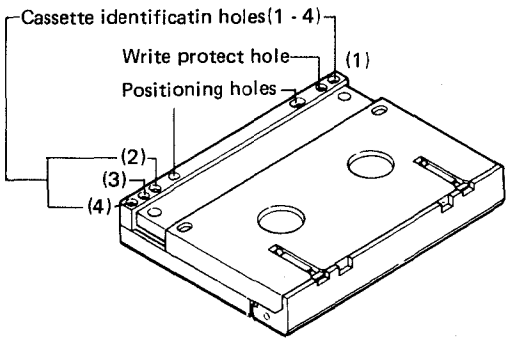


BEWARE OF CONDENSATION

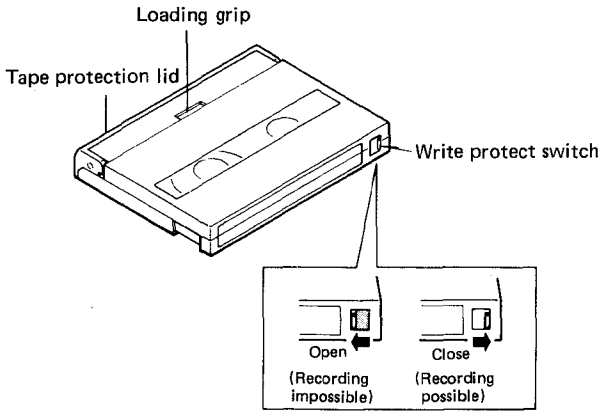
When the DA-30 is moved from a cold to a warm place or used after sudden temperature change, there is the danger of condensation; water vapor in the air could condense on the internal mechanism, making correct operation impossible. To prevent this, or if this occurs, leave the DA-30 for 1 or 2 hours with the power turned on, then turn the power off and again on.

- **Structure of DAT Cassettes**

Bottom view



Top view



- Dimensions: 73 x 54 x 10.5 mm (W x D x H)
- Tape width: 3.81 mm

Notes:

- Cassette shells are designed so as to prevent touching the tape dirctly by hand.
- DAT cassettes can be loaded and unloaded only when the DA-30 is switched on.
- DAT cassettes record and play in one direction only. Do not load DAT cassettes upside down.
- DAT cassettes have a tape protection lid on the front edge to protect the tape. Do not open this lid forcibly, and do not pull the tape out from the cassette or touch it with your fingers.
- Be sure to replace DAT cassettes in their plastic cases for storage.
- Do not place DAT cassettes on a television, speaker or near equipment which could generate a magnetic field.

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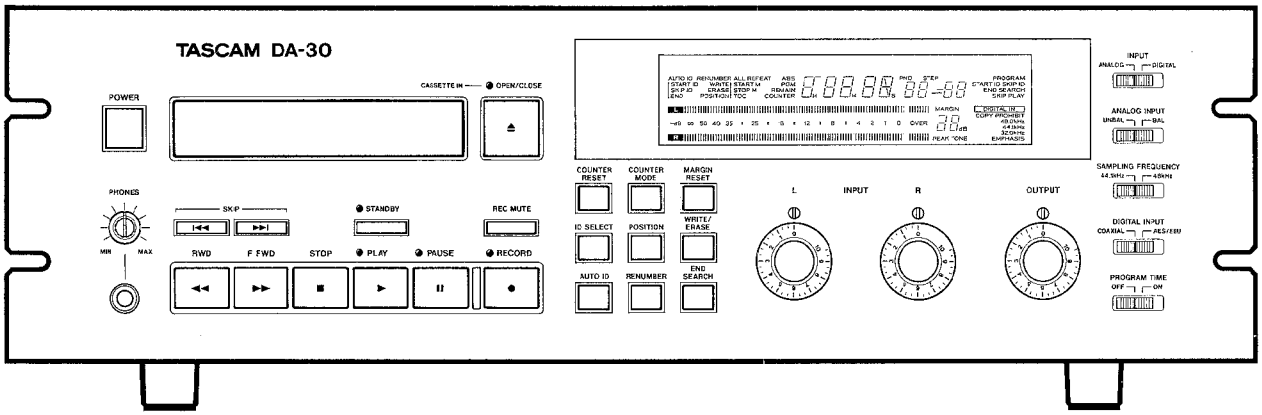

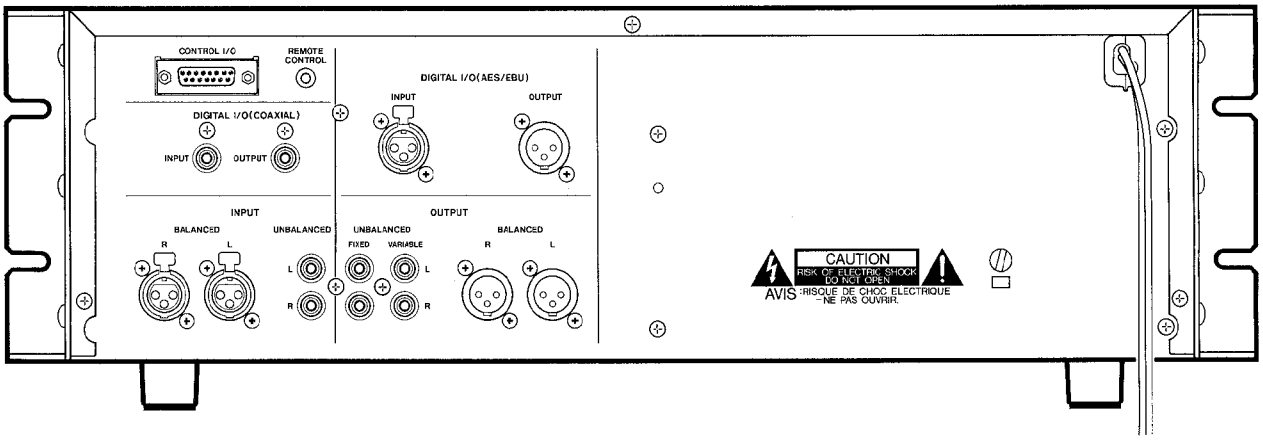

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Operations: Playback

1. GETTING STARTED

1. Check to see all the connections have been made correctly.

2. Turn the power on.

3. Press the OPEN/CLOSE button. The tray will slide out, the "CASSETTE IN" indicator will blink and in the display window "OPEN" will also blink.

4. Load a prerecorded DAT cassette in the tray, then close the tray:

   a) Press the OPEN/CLOSE button again or push the tray closed with your hand.
   OR
   b) Directly press the PLAY button. The tray will close and the tape will start playing.

   As soon as the tray starts retracting, "CLOSE" will start blinking instead of "OPEN". Once the tray has closed, "CLOSE" will turn off and "CASSETTE IN" that was blinking will go on solid.

   After the tray has closed with a cassette in it, the tape automatically runs for a short period of time and rewinds back to the original location, during the interval of which the DA-30 reads absolute time and program number data (if available) off the tape into its display.

5. Adjust the PHONES and/or the OUTPUT control for the desired listening level.

- To interrupt play press PAUSE. To resume play press PLAY. Remember, STANDBY cannot be pressed instead of PAUSE. (As for the STANDBY function, see page 16.)

6. To advance to the next selection, press SKIP FWD. The tape will fast-forward to the next START ID, and then automatically go into PLAY mode (if STANDBY is not on). You may press SKIP FWD or SKIP REW a number of times to advance or rewind past several selections.

7. To play a specific program on the tape, enter a number on the remote control (for example, press "5") and press START. If there are PGM numbers and Start IDs on the tape, it will fast wind to that selection and play.

- To definitely stop play press STOP.

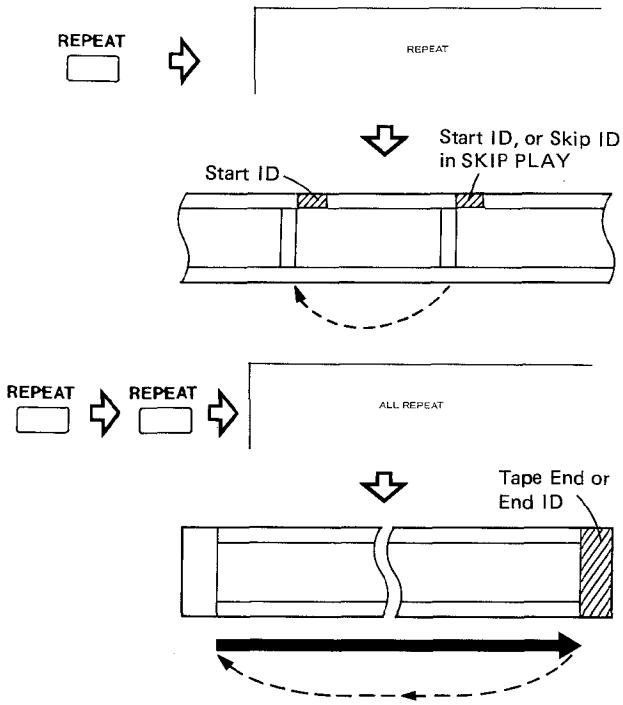
2. REPEAT PLAY

The following can be programed to play over and over up to 16 times or until you press PAUSE or STOP:

- One Selection – Press the remote REPEAT button once during play or before starting play. "REPEAT" will light up in the display. The current program will play over and over.

- Whole Cassette - Press the remote REPEAT button TWICE during play or before starting play. "ALL REPEAT will light up in the display. The entire length of the tape will continue to play.

- Sequence of Programs – Press the remote REPEAT button ONCE when a "PROGRAM" sequence (see below) is playing or before strating the sequence. "ALL REPEAT" will light and the sequence of programs will continue to repeat.

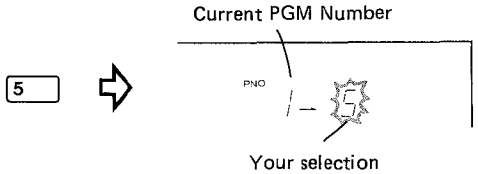


3. PROGRAMED SEQUENCE PLAY

Up to 50 programs can be loaded into memory for them to be played in their order of entry. Playback of the sequence of programs can be continuously or once thru.

Programing a sequence is only possible in STOP.

1. Using the numeric keys enter the number of the program you want to play before any other programs. The numerals entered will be blinking in the display.



- If you make a mistake press CLEAR and enter the correct numerals.

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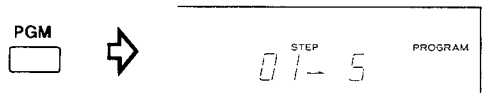
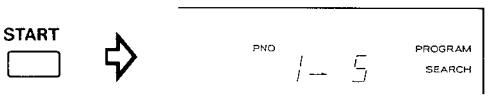
2. Press the remote PGM key. "STEP 01" will be displayed instead of the current program number ("PNO"), and the word "PROGRAM" will turn on solid in the display.



3. In a similar way, put the other desired programs into memory in their order of play.

- If you want to check the sequence press CHECK. Each time you press CHECK, the number of the next program in memory will be displayed. When you have browsed through the whole sequence "EE" (stands for End) will appear in the display window.
- To erase an entire program — To quit program play, press STOP, and the entire PROGRAM memory will be cleared so you can start again.
- To delete only the last PGM in a sequence, press CLEAR.
- You can't delete a PGM in the middle of a sequence, without pressing CLEAR to remove all of the PGMs following it first, or deleting all the program memories by pressing STOP. You can then re-enter the programs that *were* behind that particular program.
- To change the whole sequence — Press STOP to clear all the memories, and try again from the beginning.

4. To start the sequence play — Press the remote START button. "SEARCH" will light up in the display. When the start point of the first program in memory is located, "SEARCH" will disappear and play will start.



- You can use **SKIP** to fast wind the tape to the start point of the next or the last program in memory. In PROGRAM play SKIP disregards all programs that are not in memory.
  INTRO CHECK and **SEARCH** have no effect when a sequence of programs is playing.
- To stop the sequence, press PAUSE or STOP.
- To clear the program memories, press STOP (not CLEAR) in STOP. Pressing CLEAR has only the effect of clearing the last program in memory.

  CAUTION: Use care not to accidentally press STOP twice if you are in PROGRAM mode, unless you want to delete the entire PGM memory.

1. DIGITAL/ANALOGUE AUDIO RECORDING

1. Refer to the connection diagrams on page 4, and connect your recording source to the correct inputs of the DA-30.
2. Turn the system on.
3. Load a blank DAT cassette tape; or, if you inted to add a new recording to the existing recordings, load the tape containing those recordings.
4. **Set the INPUT select switch** to the correct position: ANALOGUE or DIGITAL, depending on the source connected.
   - *If you intend to record an analogue source*, set the following as well:
     a) ANALOG INPUT: BAL for selection of the XLR type input connection; UNBAL for selection of the RCA jack connection.
     b) SAMPLING FREQUENCY: Set to 48 kHz for standard DAT recording, or to 44.1 kHz if the recording will be used as a digital CD master recording.
   - *If your recording source is digital*, set the DIGTAL INPUT select switch in accordance to the connection. If the digital source is transmitting, the correct sample frequency will automatically be chosen and displayed.
5. **Set the PROGRAM TIME switch to the OFF position** unless you are quite sure that the recording you intend to perform does not entail any subsequent Start Index ("ID") editing whatever.
6. *For Analog Source recording only* — Put the deck into "Input Monitor" (or "sampling monitor") mode by holding the remote's STOP and pressing its RECORD (or, altarnatively, press the sole RECORD on the DA-30 in STOP). Then, adjust the INPUT L and R level controls until the meters read the desired level. The nominal control setting is approximately at 7.

   Press MARGIN RESET to see the instantaneous peak level of the current signal. The maximum level will read "0" in the MARGIN display, meaning that you have recorded to the maximum level allowable and there is no headroom left. If you exceed the maximum level, the "0" will blink, indicating the tape is distorted.

   If you must change the relative levels of Left and Right, hold one knob still while you adjust the other.

   - Recording digital sources does not require any input level adjustment.

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7. *If you are using a new blank tape* – Press REW (regardless of the current tape position). The tape will be located to a point 100 mm ahead of the end of the leader tape. If you do not perform this step, or record from the middle of a blank tape, ABS time will not be recorded in the subcode area for later reference, and the ABS display will be blank.

   If you are using a tape containing some programs previously recorded – Locate the tape to the end of the existing recordings using the END SEARCH function. This will locate to the first "unformatted" section.

   - Note that "blank" tape that has never been recorded is different from "blank" tape that has been recorded with silence – the latter is recorded with subcode information such as ABS and PROGRAM time information. END SEARCH will locate the DA-30 to the first totally blank unformatted section, not the first "silent" section.

   - If the recorded section of the tape was recorded with ABS time in the subcode, ABS time will continue recording from the END SEARCH point.

8. Hold RECORD and press PAUSE.

   - Automatic Lead-in Feature: If you are using a new blank tape, the PAUSE LED indicator on the DA-30 will blink for a short period of time, during which the DA-30 will advance, recording a "lead-in" mark on the tape. The tape will be located to that "lead-in" mark and not directly to the beginning of audio recordings, so the first part of the music recorded will be played back without being clipped off. See also the diagram below.

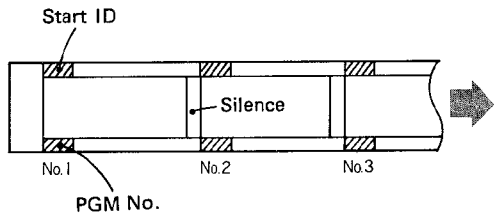
   - Directly entering RECORD-PLAY mode (without first passing through RECORD-PAUSE mode) will also automatically record the "lead-in" mark before actually starting normal audio recording.

     CAUTION: While the "lead-in" mark is recording (PAUSE LED blinking), no audio can be recorded. To follow a tight audio record start, first record the "lead-in" in RECORD-PAUSE instead of directly going into RECORD-PLAY mode.

9. START ID marking options: Start IDs are electronic index marks in the subcode area of the tape that make it easy to find the start of each selection on the tape. You can make START ID marks during the initial audio recording, or add them to the recording later. Consider the following possibilities before actually initiating audio recording:

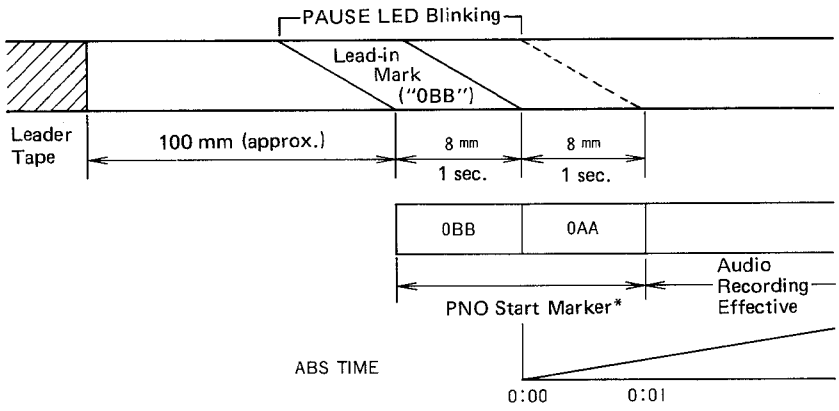
   AUTO ID: In this mode, a Start ID and Program Number will be automatically recorded when audio signal resumes after a period of silence. To enter this mode:

   - Press the AUTO ID key, and check to see "AUTO ID" lights in the display.



   Note that a quiet passage ("pianissimo") might cause the beginning of the next passage to be indexed and numbered as if it was a new program. Don't worry. You can correct it (with "Start Erase") later.

   CAUTION: Use AUTO ID from the beginning of tape. If you use the function from an intermediate point, Start IDs are recorded but not Program Numbers.



* Recorded at the same time as the "lead-in" mark

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MANUAL START ID WRITE:)You can manually index the beginning of each program. Program time is automatically recorded together with START IDs. This is done with AUTO ID turned OFF.

- In PLAY or RECORD modes, press the ID SELECT button until "START ID WRITE" lights in the display.
- At the desired starting point, press the WRITE/ERASE button. START ID WRITE mode cannot be entered from STOP mode.

  Start ID recroding is noted by "START ID" flashing on the right hand side of the display. Start IDs last approximately 9 seconds. They can be recorded anywhere on a tape, as long as there is at least 9 seconds between them.
- While a START ID is being written, all transport buttons except for STOP are locked out.

10. **Press PLAY.** Recording will initiate.

    If you have turned on "AUTO ID", the instant the first note of the music is actually fed to the tape, recording of the following starts at the same time:

    Start ID reference;
    Program Time; and
    Absolute Time.

    The first two items are recorded over a length of 9 seconds each time a new audio recording is made. On playback, the DA-30 will "extrapolate" from the program time recorded, displaying the elapsed time continuously after the tape has run through the first 9 seconds of each program.
    As opposed to the program time, the absolute time is recorded for as long as audio recording continues. There can't be any discontinuity of absolute time data how many times recordings are repeated.

    Absolute time is recorded regardless of the On/Off switching of "AUTO ID".

- **To interrupt audio recording temporarily,** press PAUSE. A subsequent pressing of PLAY will resume the recording.
- **To definitely end recording,** press STOP. Or, you may want to end recording by indexing that point as explained below.
- **To insert a "no-signal" silent interval of 4 seconds while recording,** press the REC MUTE button. The RECORD LED indicator will start blinking. After 4 seconds the deck will go back to Record Ready mode.

  If you have already stopped recording, hold RECORD and press PAUSE, then press REC MUTE.

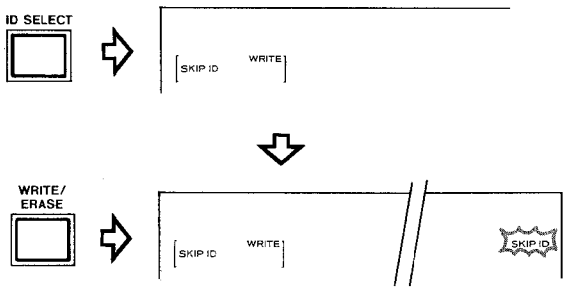
- When recording Digital Sources – **If "32 kHz" and "48 kHz" blink alternately** in the display, it shows the following:

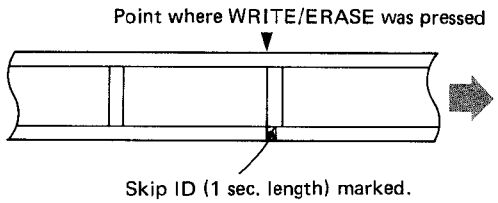
  a) The DIGITAL INPUT select switch is not set to the correct position;
  b) There is an improper connection somewhere in your recording system;
  c) Your system includes a unit or units that are not turned on.

- While audio recording is taking place, you can lay Skip ID and End ID references on the tape at the desired moment, manually.

  <u>To record Skip ID references</u> – Press the ID SELECT button repeatedly until the display shows "SKIP ID WRITE". At the desired moment, hit the WRITE/ERASE button. "SKIP ID WRITE" will blink for 1 second, during which a Skip ID reference is recorded on the tape. When this tape is played back later in SKIP PLAY, as soon as that Skip ID reference is detected, the tape will fast forward and play will resume from the next Start ID reference point.

  If SKIP PLAY mode is off, the DA-30 ignores Skip IDs.





<u>To record End ID references</u> – (Important: Recording an End ID results in stopping the deck.)
Press the ID SELECT button until "END WRITE" lights in the display. At the desired moment, hit the WRITE/ERASE button. "END WRITE" will blink showing an End ID reference is recording. After 9 seconds the indication will go out and the tape will automatically rewind, stopping at the

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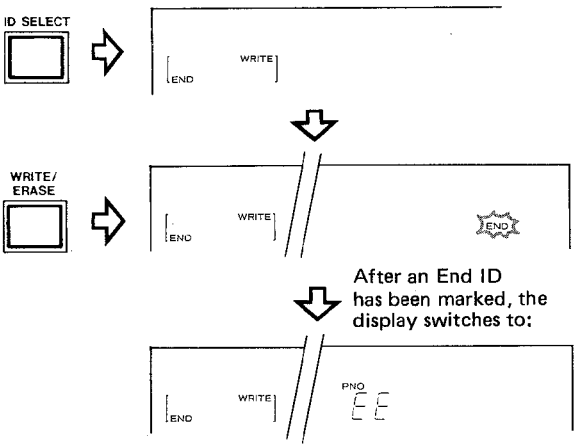
beginning of that End ID reference recorded. The tape may be located from whatever the current position is to that point simply by pressing the END SEARCH button.



2. EDITING START IDs, SKIP IDs, AND PROGRAM NUMBERS

NOTE: Before anything else, check to see the write prohibit tab and hole on the cassette are NOT open.

1. INDEX EDITING

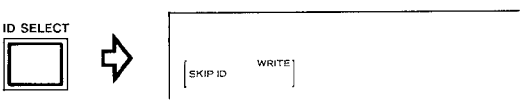
1-1. Positioning Start and Skip IDs

Both the start and skip indexes can be placed with 5 frame (150 milisecond) accuracy using the POSITION feature.

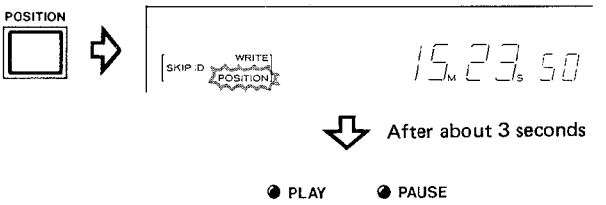
Preliminary Notes:

1) POSITION cannot "move" a START or SKIP ID already marked in the subcode. You must first erase the ID mark and use POSITION to write a new mark. If you press POSITION too close to an existing ID mark, the deck will go to STOP (in step 3 below).
2) POSITION relies on Absolute Time (ABS) data recorded on the tape. You can't "position" any point where ABS data is not previously recorded.
3) When Start/Skip Indexes are actually recording in POSITION mode, all transport controls are locked out except for STOP.

1. In PLAY mode, press the ID SELECT button repeatedly until "START ID WRITE" (or "SKIP ID WRITE") appears in the display window.

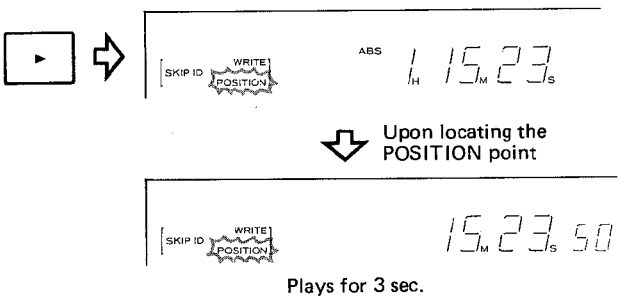


2. As you hear the appropriate point, **press POSITION.**
   - The absolute time of that point will be read out in the time counter window and "POSITION" will blink. After 3 seconds the deck will go to pause mode.

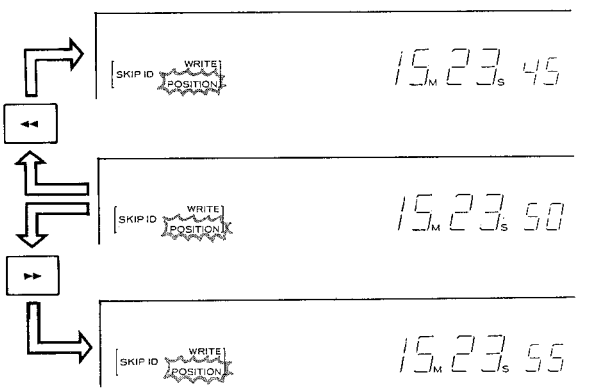


3. To audition your original cue point, **press PLAY.** The tape will rewind back to the point where the POSITION button was pressed, during which the absolute time display will decrement. You will hear the approximate starting point of the cue, and then the deck will go back into PAUSE mode. You can audition the cue point as often as you wish.

   NOTE: Due to transport ballistics, the actual play starting point will shift slightly depending on whether the deck is started from a STANDBY PAUSE mode, or DIRECT SEARCH/PLAY mode. If start times are critical for your application, you will need to experiment with different offsets depending on which search/play you will use.



4. To change the edit point in either direction, trim the absolute time display by pressing F.FWD and REW. Each time they are pressed, the display will increment/decrement in steps of 5 frames (150 milliseconds), up to a limit of one second ahead or behind the original POSITION.



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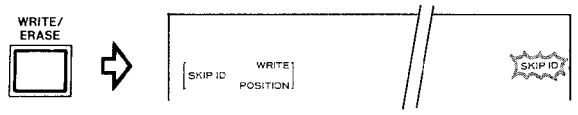
5. Audition the new cue point by pressing PLAY. Repeat steps 4 and 5 until you are sure that the POSITION point is correct.

6. To actually write the chosen point, press the WRITE/ERASE button to begin indexing.



IMPORTANT: After Start ID references have been added, RENUMBER can be used to add the correct PGM number to each Start ID on the tape. However, under some circumstances this can shift the cue point of the Start IDs slightly.

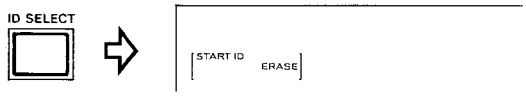
1-2. Erasing Start/Skip Indexes

Effects of erasing ID marks: Erasing a Start ID will also erase its Program Number at the same time. This will make any following PGM numbers out of sequence (for example, if you erase Start ID #4, the following PGM still carries the PGM number 5 unless you go through the RENUMBER operation).

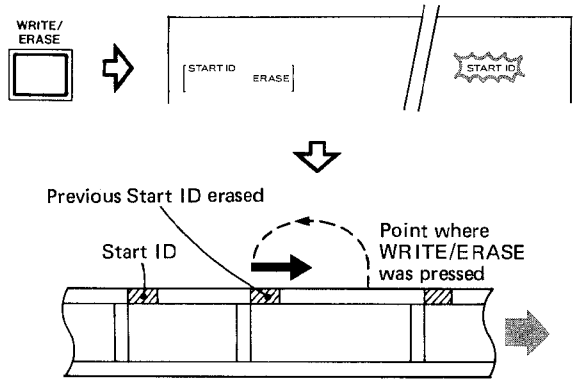
In addition, if a skip index exists somewhere on the length of a start index, that skip index also will be erased together with the start index.

Note, however, that a Start or Skip ERASE operation should not affect any of the audio data recorded on the tape.

1. During play or in STOP, press the ID SELECT button until "START ID ERASE" (or "SKIP ID ERASE") lights up in the display.



2. Press the WRITE/ERASE button. The tape will rewind back to the beginning of the last start (or skip) index mark, and begin erasing the mark in PLAY mode. "START ID ERASE" (or "SKIP ID ERASE") will blink in the display. When erasing is complete, the tape will continue to play normally.



1-3. End Indexes

Indexing an end of programs can only be possible in Record mode (see above, page 11, "To record End ID references").
When a new audio recording starts from the beginning of the previous end index recording, (i.e., after an END SEARCH operation), the old END ID will be erased.

CAUTION: Don't write an END ID at an intermediate point of the existing audio recordings, which invalidates all the recordings that follow the End ID. For example, if your tape contains 10 PGMs and you re-record PGM #3 and terminate it by writing an End ID mark, then the tape will not run past that point and you can't gain access to PGMs #4-10 unless you erase that End ID by re-recording PGM #4.

2. PROGRAM NUMBERS

2-1. Numbering Programs

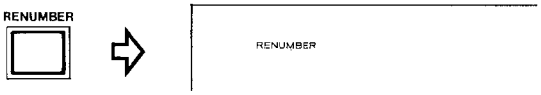
Each time a new audio recording is added with AUTO ID on to the end of the existing recordings, they are automatically numbered in sequence provided that the DA-30 has "read" a valid PGM number from the previous start ID.

2-2. Renumbering

Under certain circumstances, the PGM numbers on a tape will fall out of order:

1. After a STRAT ID is added in-between existing IDs
2. If a previous START ID is erased
3. If a Start ID is added to the end of a recorded section before the tape has passed a previous Start ID with a valid PGM number

In any case, all programs need to be renumbered in order. In play or STOP, press RENUMBER.



- The tape will rewind to the beginning of the tape, and will write the PGM Number "1" at the first Start ID it finds. It will then automatically advance to each Start ID on the tape, and write the next program number into the subcode until all the existing Start IDs have PGM numbers in the proper order.

Do not press STOP to interrupt the machine while "RENUMBER" is showing in the display.

- Program numbers are automatically erased as you erase their start index. You can't erase program numbers only.

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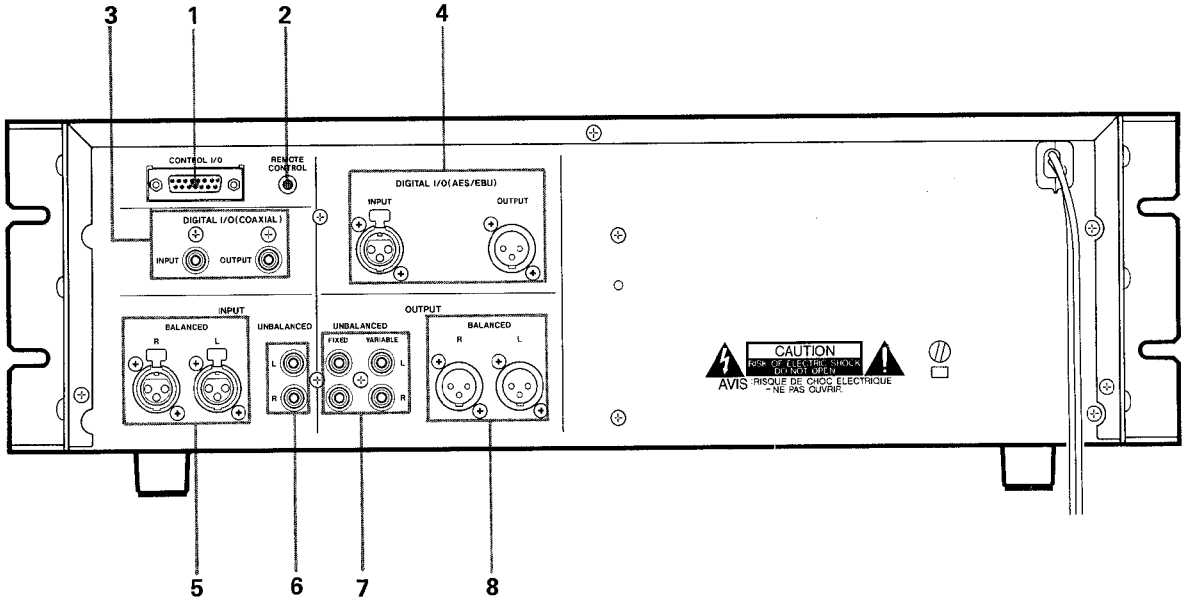


REAR PANEL

1. **CONTROL I/O Connector:** This is a contact-closure type parallel port for controlling the DA-30 transport from external devices such as the event relays of synchronizers, fader start switches, electric timers and sensors, and custom-made applications. Only the basic transport functions, plus Start ID Write, are available via this port. A momentary trigger pulling the appropriate pin to ground will activate that function. In addition, the output pins provide voltages to indicate what the current status of the DA-30 is.

IMPORTANT: This is not a serial control port. Do not connect it to the RS-232 port of any computer, or to the TASCAM MTS-1000 MIDiiZER synchronizer.

2. **REMOTE CONTROL Connector:** For connection of the provided RC-30D remote control unit. With the remote you can control the DA-30 from distance up to 15 ft (5 m).

3. **DIGITAL I/O Port (COAXIAL):** These RCA INPUT and OUTPUT jacks are for connection to the consumer type digital I/O ports of external digital audio equipment throught a 75 ohm coaxial cable. The data from this port conforms to the "CP340 Type 2" EIAJ protocol defined by the DAT conference, and is largely compatible with the "SPDIF" format.

4. **DIGITAL I/O Port (AES/EBU):** These are electronically balanced ports with XLR connectors conforming to the AES/EBU professional digital protocol ("CP340 Type 1"). They are for connection to external digital equipment with I/O ports conforming to AES/EBU standards.

5. **BALANCED INPUT Connectors:** These electronically balanced XLR type connectors accept balanced analog sources. Nominal input level is +4 dBm (1.23 V).

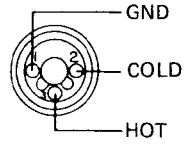
6. **UNBALANCED INPUT Jacks:** These RCA jacks are for plugging unbalanced analog sources into the DA-30. Nominal input level is -10 dBV (0.316 V).

7. **UNBALANCED OUTPUT RCA Jacks, FIXED and VARIABLE:** For connection to the unbalanced analog signal inputs of external equipment.

   The OUTPUT level control on the DA-30 has effect only on the VARIABLE RCA connections. The FIXED jacks send out a signal unaffected by the output level control. Nominal output level is -10 dBV (0.316 V).

8. **BALANCED OUTPUT XLR Connectors:** For connection to the balanced XLR-type analog inputs of external units. These jacks are electronically balanced and follow the OUTPUT LEVEL control. Nominal output level is +4 dBm. Maximum output level is +22 dBm.

XLR-type Input/Output Connectors (Balanced): Pin 1 is GND (Shield), Pin 2 is Cold (Low) and Pin 3 is Hot (High).



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ON THE FRONT

9. **POWER Switch:** Controls the power to the DA-30/ RC-30D. When POWER is turned on with a tape loaded, the counter display will show the following indications:

   - Absolute Time ("ABS")
     If the tape is blank and contains no ABS information, the counter will switch to Tape Counter mode, as indicated by "COUNTER".
   - Current Program Number ("PNO")

     If "––" is indicated instead of any number, it shows the program is not numbered or the tape is located at an point in-between PNO marks.
   - "AUTO ID" indicator (unless the cassette's write protect switch is on).
   - The sampling rate of the prerecorded tape will be displayed.
   - If the INPUT switch is in the DIGITAL position, "DIGITAL IN" will be lit.

   When POWER is turned off all memories (PGM and STOP M) are cleared.

10. **Cassette Tray:** For loading the DAT cassettes only. Normal audio cassettes not acceptable.

11. **OPEN/CLOSE Button and CASSETTE IN Indicator:** When the button is first pressed the cassette tray will slide out and the CASSETTE IN indicator will start to blink. After a caseette has been loaded, pressing the button again will retract the tray and the indicator will turn on solid.
    The OPEN/CLOSE button can open the tray even when a tape is currently playing. Use care not to accidentally press this button.

12. **Display Window:** Provides you with a variety of information/messages, keeping you aware of what is currently taking place.

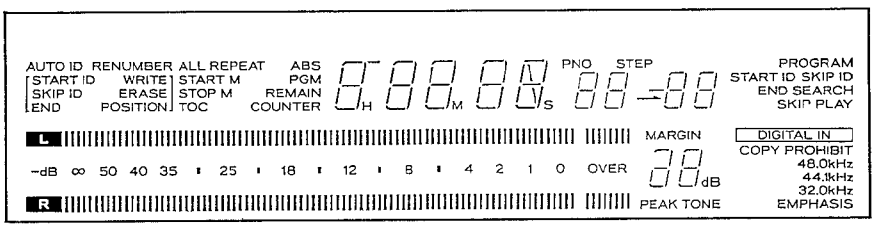
    ABS: Indicates the elapsed time from the beginning of the tape up to the current position. If "------" is displayed in ABS mode, the tape was not recorded with ABS data.

    During POSITION mode, the DAT frame position is displayed in smaller numbers next to the Seconds display. There are 33 frames per second, and POSITION can adjust this point in 5 frame increments.

    PGM: Indicates the elapsed time from the start of the program currently being played back. PGM time is of two types: calculated, and recorded. If PGM time was not recorded along with the audio originally, the DA-30 will switch to calculating elapsed time since the previous Start ID. In this mode, PGM will display "------" if the tape is inserted in-between Start IDs. If Program Time is of the recorded type (see #41, Program Time Switch), PGM time will always be displayed.

    REMAIN: When a prerecorded music tape (encoded with "TOC") is being played back, this indicates the time remaining, from the current position to the end of tape. If a TOC is not present, an approximate remaining time will be calculated between the ABS time and the tape length sensors provided on the DAT shell.

    PNO Search/STEP number: This number, coupled with the direction arrows next to it, shows the numbers of times the SKIP button has been pressed during a SKIP SEARCH. In DIRECT SEARCH mode, it shows the specified PNO being searched for. In PROGRAM and CHECK modes, it shows the order of a program in the sequence.



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13. **Peak Level Meters, L and R:** These meters register input levels during Record Ready, Input Monitor (see #25) or Record mode and, output levels during Play.

14. **MARGIN** is a digital peak-hold meter, showing the available headroom before digital saturation is reached and distortion occurs. It holds the highest reading since MARGIN RESET was last pressed, (or since a new tape has been inserted). It ranges between -39 and 0 dB. During recording, if "0 db' is flashing, it indicates that the meter reached the OVERload point and distortion occured. The OVER indication can not appear while in playback.

15. **PHONES Level Control:** Adjusts the listening leve in the headphones plugged into the jack just below the control.

16. **Headphone Jack:** For connection to the stereo headphones only. Don't use a 2 conductor mono headphones with this jack.
The built-in headphone amplifier is rated at 100 mW into an 8 ohm load.

17. **SKIP Buttons:** Effective in PLAY, PAUSE, and STOP.
When pressed once, the left button rewinds the tape to the beginning of the **current** program. Press the button repeatedly to skip over several programs.

    Similarly, each time the right SKIP button is pressed, the tape will be located to the beginning of the next program.

    - During a PROGRAM play, the function is limited to the programs in memory.

18. **STANDBY Button:** When this indicator is lit, the DA-30 will automatically enter PAUSE mode instead of play after any of these search operations: PROGRAM PLAY, SKIP, or DIRECT SEARCH. Play will start when PLAY is pressed on the front panel, the remote, or through the Control I/O port.

    NOTE: The DA-30 will automatically leave PAUSE mode after 8 minutes.

19. **REC MUTE Button:** Pressing this button during record or record ready (RECORD PAUSE) causes an LED indicator to blink above the RECORD button and the tape to run for 4 seconds, leaving a "no-signal" recording on the tape. Thereafter the deck will automatically enter record ready mode.

20. **RWD Button:**
    a) Winds the tape at high speed in reverse if pressed in STOP.
    b) If held down during PLAY, the button rewinds the tape at 3X (three times) normal play speed with high speed sound available at the outputs for review and cueing.

21. **F.FWD Button:** Similar to REW.
    a) If pressed in STOP the button winds the tape at high speed in the forward direction.
    b) Holding the button while in PLAY offers a forward tape cueing.

22. **STOP Button:** Stops any tape motion and disables any function that was on. *Pressing STOP twice erases the PROGRAM memories.* STOP also stops the DAT head drum from spinning against the tape.

23. **PLAY Button:**
    a) If pressed while in STOP, starts tape playback.
    b) If pressed while in record ready (RECORD PAUSE), starts recording.
    c) If pressed after PAUSE, resumes playback from the point of interruption.
    d) If pressed while the tray is open, closes the tray and starts play.

24. **PAUSE Button:**
    a) Pressing this button in record or play mode temporarily stops the tape. Pressing PLAY resumes record or play accordingly.
    b) If PAUSE is pressed in stop mode, the deck enters Play Ready mode, waiting for you to press PLAY to start playback.

    NOTE: If you leave the deck with PAUSE engaged, it will automatically go to STOP after 8 minutes to avoid tape wear.

25. **RECORD Button:**
    a) Pressing this button together with PLAY initiates recording.
    b) If PAUSE is pressed while RECORD is hold pressed, the deck enters "Record Ready" mode.
    c) Pressing RECORD alone in STOP mode activates "Input Monitor" (or "Sampling Monitor") mode.

    Difference between the "Record Ready" and the "Input Monitor" mode:

    Record Ready is a mode accessible by holding RECORD and pressing PAUSE, or by pressing PAUSE after RECORD. The head drum is in motion in this mode. After 8 minutes, the mode is automatically cancelled.

    Input Monitor is a mode accessible only from STOP by pressing RECORD. The drum is not in motion in this mode. Unlike Record Ready, the Input Monitor mode is effective until you deliberately switch the deck to any another mode.

    In either mode, the proper recording levels can be set. The digital outputs of the DA-30 are transmitting data in either mode, but are not affected by the INPUT level controls.

    NOTE: Pressing the *remote* RECORD button alone in STOP has no effect. To activate Input Monitor mode from the remote, hold the remote RECORD and press STOP or, inversely, hold STOP and press RECORD.

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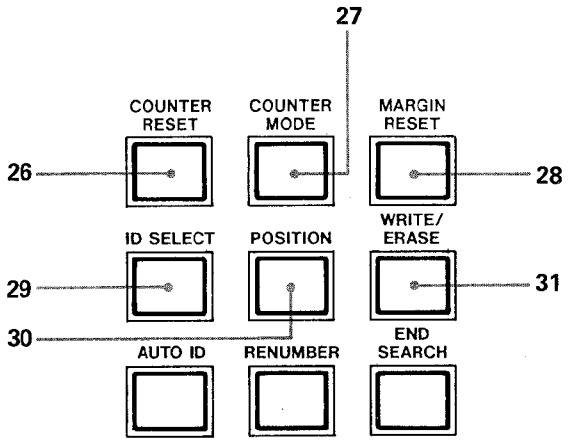


26. COUNTER RESET Button: Resets the tape counter to 0000. This button has effect only when the display is switched to Tape Counter mode, as indicated by the appearance of "COUNTER" in the display window.

27. COUNTER MODE Switch: Each time this switch is pressed the display shows the following information in sequence:

1. Absolute Time: Elapsed time from the beginning of the tape, shown in hours, minutes and seconds. "ABS" lights up in the display.

2. Program Time: Elapsed time from the beginning of each program, shown in hours, minutes and seconds. "PGM" lights up in the display.

3. Remaining Time: Total time remaining on the tape, shown in hours and minutes. "REMAIN" lights up in the display.

   - Available recording time cannot always exactly be the same despite the same time label on the tapes if the manufacturers differ, and the time displays may differ accordingly.

   - If TOC ("Table Of Contents") exists on the tape, the Remain Time is indicated in second accuracy.

4. Counter: The distance the tape has moved from a zero reference point. "COUNTER" lights up in the display.

28. MARGIN RESET Button: Defeats a MARGIN (headroom available) indication so new readings can be taken (see no. 14 above).

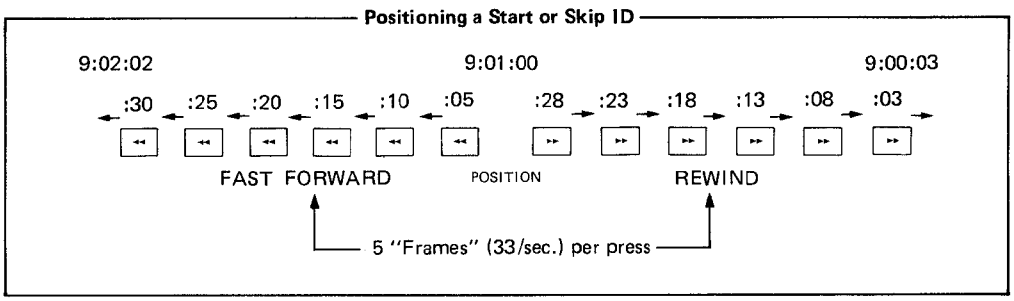
29. ID SELECT Switch: Each time this switch is pressed (when tape is moving or not) the following ID ("Index") modes are selected in sequence, as indicated by the displays. The modes that can be entered differs depending on the current transport mode as shown.

Transport	ID Mode
Record	START ID WRITE SKIP ID WRITE END ID WRITE
Play	START ID WRITE SKIP ID WRITE START ID ERASE SKIP ID ERASE
Stop	START ID ERASE SKIP ID ERASE

After you have had the display indicate the desired ID mode, pressing the WRITE/ERASE button (no. 31) will actually execute that ID mode selected. See also the operation section, "Recording".

30. POSITION Button: This allows you to precisely locate a START or SKIP ID marker within 5 frames before performing the WRITE/ERASE operation. It sets a tentative marker point, allows you to shift the Start/Skip ID marker using the F.FWD and RWD buttons (within the limits of +/- 40 frames), and allows you to audition the point. POSITION can only be entered from PLAY, after entering START (or SKIP) ID WRITE mode. See also pages 12-13.

31. WRITE/ERASE Button: Actually executes the ID modes selected by the ID SELECT switch (no. 29).



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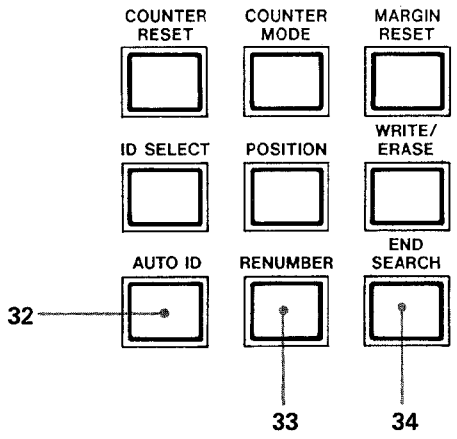


32. **AUTO ID Button:** When "AUTO ID" is displayed, Start IDs and Program Numbers will be automatically marked in the subcode area of the tape each time a new selection (a silent period followed by signal) begins during recording. AUTO ID works with both digital and analog inputs.

    Each time POWER is turned on, the "AUTO ID" indicator should light up in the display, unless the cassette's record protect switch is on.

    If you turn the indication off by pressing the AUTO ID button, both Start ID references and Program Numbers are not recorded.

    For further details on the indexing and the program numbering, see pages 10-13.

33. **RENUMBER Switch:** Press to begin the RENUMBER operation and label each START ID with its own Program Number (PNO) in order.

34. **END SEARCH Button:** Pressing this button in play, play pause or stop, will fast forward the tape, stopping it at the beginning of End ID reference. If this index does not exit, the tape will be located to the end of the previous audio recordings.

35. **INPUT Level Controls, L and R:** Valid only for the record level of analogue inputs.
    Both controls are linked with each other. Hold one and rotate the other if the indivisual channels need to be adjusted separately.

    - These controls have no effect during digital source recording.

36. **OUTPUT Level Control:** Adjusts the analogue signal level feeding the XLR balanced OUTPUT connectors and the RCA unbalanced OUTPUT jacks of the DA-30.

37. **INPUT Select Switch:** Selects either the digital input or the analogue input as the source of the DA-30. When the switch is set to the DIGITAL position "DIGITAL IN" will light up in the display window, and the signal at the analogue inputs are ignored.

38. **ANALOG INPUT BAL/UNBAL Select Switch:** If set to BAL, this switch turns on the XLR type INPUT connectors. Setting this switch to UNBAL selects the RCA INPUT jacks.

39. **SAMPLING FREQUENCY Select Switch:** This selects the sampling frequency that will be used for recording analog inputs only. The two frequencies are 44.1 kHz or 48 kHz. 44.1 kHz is the same as the Compact Disc sampling rate, and should be used if the tape will be used as a digital master for CD production. 48 kHz is used in other professional applications.

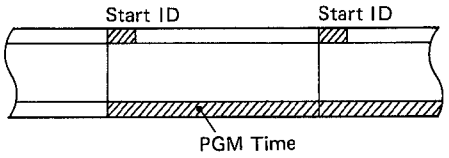
    This switch has no effect when recording from the digital inputs or during playback. In these cases, the DA-30 will automatically switch for the frequency at which those sources were originally recorded, as indicated by 48.0, 44.1, or 32.0 kHz below the word DIGITAL INPUT in the display.

40. **DIGITAL INPUT Select Switch:** COAXIAL for activating the RCA jack digital connection (as found on most consumer digital equipment), and AES/EBU for selecting the XLR type connector for interface to professional digital devices.

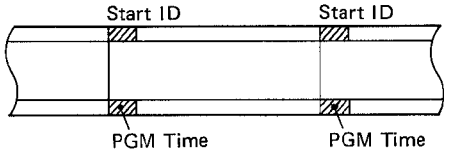
41. **PROGRAM TIME Switch:** If audio recordings are achieved with this switch on, Program Time is recorded over the full length of each program, and can be displayed when the counter is in PGM COUNTER mode. Advantage: Elapsed time from the beginning of programs is displayed even if you start play from any intermediate point. Disadvantage: If start IDs are edited after recording, the time data becomes incongruous, and this error cannot be corrected without re-recording the selection. *Use this switch when and only when any start index editing whatever is surely not expected,* or if you do not need the PGM display to be accurate.

    - If audio recordings are made **with PROGRAM TIME Off,** the PGM COUNTER will act as a "stopwatch" counting the elapsed time from the beginning of the Starts IDs. If such a tape is inserted in-between selections, the PGM COUNTER will read "-- ---" until the next Start ID is encountered.

PROGRAM TIME Switch ON
Over the full length of every programs



PROGRAM TIME Switch OFF
First 9 seconds only



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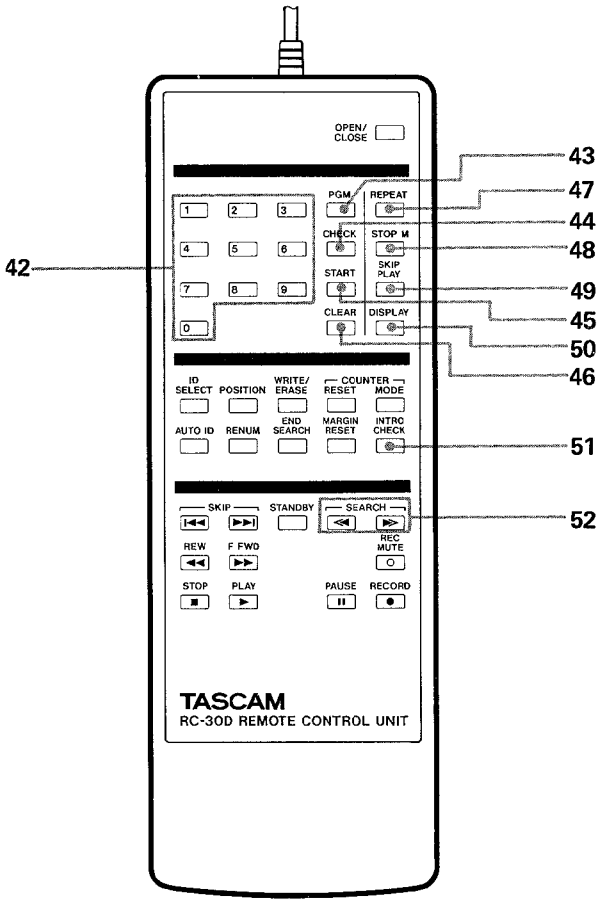

RC-30D REMOTE CONTROL UNIT

Descriptions are limited to the functions whose duplicate is not on the DA-30 deck.

42. **Numeric Keypad:** Used to designate program numbers for direct search, or for programed play.

43. **PGM Key:** Puts into memory the programs you designate with the numeric keypad for programed play.

44. **CHECK Key:** This key is active in PROGRAM mode. Each time this key is pressed the next program number in memory appears in the display, next to its STEP number in a sequence (for example, "STEP 09 4" means the ninth selection in the sequence will be song #4 on the tape).

    NOTE: CHECK has no effect when a PROGRAM sequence is playing.

    For more information see page 8, Programed Sequence Play.

45. **START Button:**
    1) PROGRAM PLAY START: Pressed after you have put into memory the desired programs, this button have them start playing in sequence.
    2) DIRECT SEARCH START: Pressed after you have designated the desired single program with the numeric keypad, this button causes the tape to locate to the beginning of that program ("SEARCH" blinking), and as soon as that point is reached, the deck will automatically enter play mode (or, if STANDBY is on, go into PAUSE).

46. **CLEAR Button:** Used to erase the last entered program from memory.
    (To erase the entire PROGRAM sequence and re-enter normal status, press STOP.)

    CLEAR is also used to clear any number displays you entered with the numeric keypad.

47. **REPEAT Button:** Initiates a repeat play. When pressed once, the button enables a single program to play over and over. Pressing the button twice enables the whole tape repeat. Or, in a PROGRAM play, pressing once the REPEAT button has the same effect as pressing the button twice and the whole sequence of programs currently in memory will repeat.

    REPEAT can be pressed during play or before starting play.

48. **STOP M(emory) Button:** Establishes an autolocation point in the DA-30's memory system. Pressing again the button erases the memory. A third press, establishes a new memory point. Can be pressed both in record and play. A fast-forwarding or rewinding tape will stop at that memory point.

49. **SKIP PLAY Button:** Causes the tape to interrupt play each time a skip index is detected and fast wind to the next start index. A second press disables the function.

50. **DISPLAY Switch:** Varies the display contrast in 4 steps.

51. **INTRO CHECK Button:** Enables the tape to play only the first 10 seconds of each program. Programs having no Start ID are ignored.
    Pressing STOP or PLAY will end an INTRO CHECK and the function pressed will be activated.

    - Pressing PLAY when an introduction is playing, the deck will go into normal play mode.
    - If PLAY is pressed when the tape is being located to the next program, the tape will rewind back to the previous program and will start playing.

52. **SEARCH Buttons:** Pressing these buttons in play causes the tape to run at 9X normal play speed in the corresponding directions for as long as you hold the buttons. Normal play will resume as you release the buttons.

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SUBCODES

In summary, the following subcodes are available with the DA-30:

Subcode		Identifies:	How Long data and Where:	Recorded Automatically or Not:
Index Data	Start ID	Beginning of each program	9 seconds at the beginning of each program	Auto and Manual
	Skip ID	Point from where tape is made to fast wind to the next Start ID	1 second at the desired point	Manual only
	End ID	End of the existing audio recordings	9 seconds at the end of the last recording	Manual only
Time/ Prg Data	Absolute Time (ABS)	Elapsed time from the beginning of the tape	Full length of the audio recordings	Auto only
	Program Time (PGM)	Elapsed time from the beginning of each program	9 seconds at the beginning of each program*	Auto only
	Program Number (PNO)	How many programs from the beginning of the tape is the current one	9 seconds at the beginning of each program	Auto and Manaul

*Or, entire length of tape if PROGRAM TIME switch is ON.

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Specifications

Category:	Rotary Head Digital Audio Tape Recorder
Tape Speed:	8.15 mm/sec. in play/record (play speed of 12.225 mm/sec. also supported)
Record Time:	120 minutes (with R-120 cassette)
Head Drum Speed:	2,000 rpm (in record/play)
Fast Winding:	70 seconds (approx.) (with R-120 cassette)
Error Correction:	Octet (eightfold) correction
Channel Number:	2
Quantization Bit:	16 bit linear
Sampling Rate:	48 kHz (in play/record) 44.1 kHz (in play/record) 32 kHz (in play, and record with digital inputs)
Frequency Response (Record):	1-22,000 Hz +/-0.5 dB
Signal-to-Noise Ratio:	Better than 94 dB
Dynamic Range:	Better than 94 dB
Total Harmonic Distortion:	Less than 0.05 % (at 1 kHz)
Channel Separation:	Better than 94 dB (at 1 kHz)
Wow and Flutter:	Unmeasurable (less than +/-0.001 %)
Input – Analogue	
BALANCED:	XLR type connector (XLR-3-31) x 2
Nominal Input level:	+4 dBm (1.23 volts)
UNBALANCED:	RCA jack x 2
Nominal Input level:	-10 dBV (0.316 volt)
– Digital	
AES/EBU Port:	XLR type connector (XLR-3-31)
Coaxial Port:	RCA jack
Output – Analogue	
VARIABLE:	
BALANCED:	XLR type connector (XLR-3-32) x 2
Nominal Output Level:	+4 dBm (1.23 volts)
Maximum Output Level:	+22 dBm
UNBALANCED:	RCA jack x 2
Nominal Output Level:	-10 dBV (0.316 volt)
Maximum Output Level:	2.0 volts
FIXED (UNBALANCED):	RCA jack x 2
PHONES:	1/4" jack x 1 Output level: 100 mW or more
– Digital	
AES/EBU Port:	XLR type connector
Coaxial Port:	RCA jack
Remote Connection:	Mini-jack
External Control I/O Port:	D-sub 15 pin (female)
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 Model:	100/120/220/240 V AC, 50/60 Hz
Consumption:	34 Watts
Dimensions (WxHxD):	482 x 150.5 x 346 mm (19" x 6-1/16" x 13-5/8")
Weight:	9.5 kg, 20-15/16 lbs. (remote not included)

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

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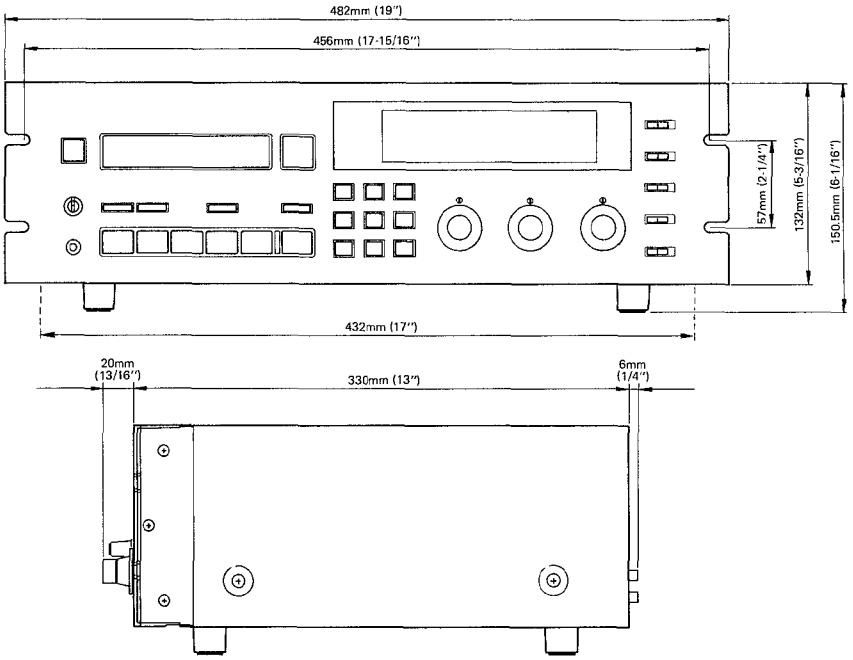
DA-30 External Dimensions



NOTE FOR U.K. CUSTOMERS

U.K. Customers Only:

Due to the variety of plugs being used in the U.K., the DA-30 is equipped with no AC plug. Please request your dealer to install the correct plug to match the mains power outlet where your unit will be used as per these instructions.

IMPORTANT

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

BLUE: NEUTRAL
BROWN: LIVE

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

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

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

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

TASCAM DA-30 DAT-RECORDER

(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 DIGITAL APPARATUS DOES NOT EXCEED THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE B PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

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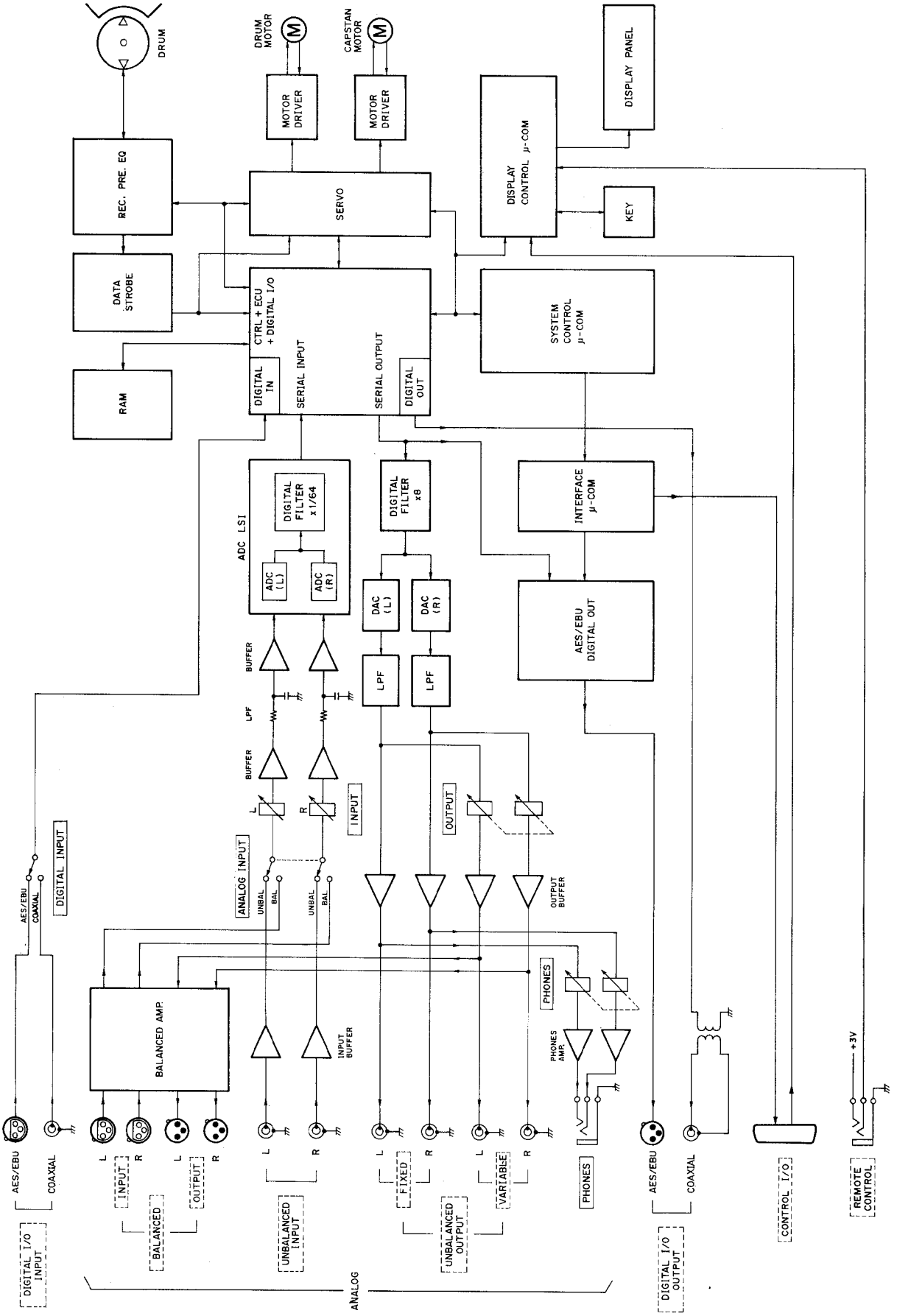
Block Diagram



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TASCAM
TEAC Professional Division
DA-30

TEAC CORPORATION	Musashino Center Bldg., 1-19-18, Nakacho, Musashino-shi, Tokyo 180, Japan Phone: (0422) 52-5081
TEAC AMERICA, INC.	7733 Telegraph Road, Montebello, California 90640 Phone: (213) 726-0303
TEAC CANADA LTD.	340 Brunel RD, Mississauga, Ontario L4Z 2C2, Canada Phone: 416-890-8008
TEAC UK LIMITED	5 Marlin House, Marlins Meadow, The Croxley Centre, Watford, Herts, WD1 8YA, U.K. Phone: 0923-225235
TEAC DEUTSCHLAND GmbH	Bahnstrasse 12, 6200 Wiesbaden-Erbenheim, West Germany Phone: 06121-71580
TEAC FRANCE S.A.	17, Rue Alexis-de-Tocqueville CE 005 92182 Antony Cedex, France Phone: (1) 42.37.01.02
TEAC AUSTRALIA PTY., LTD.	106 Bay Street, Port Melbourne Victoria 3207, Australia Phone: (03) 646-1733

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