STEREO CASSETTE TAPE DECK
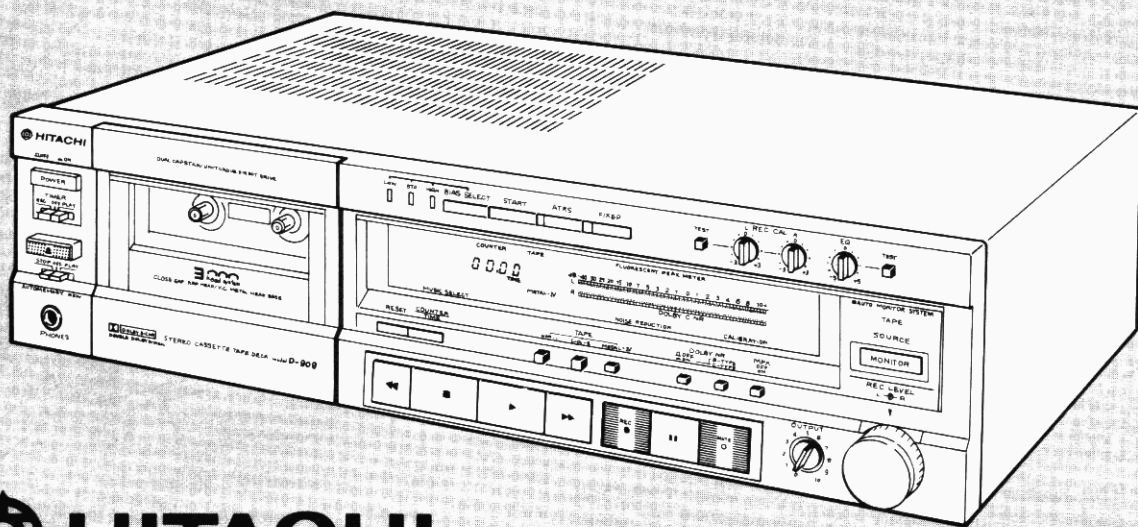# STEREO-CASSETTEN-TONBANDGERÄT
PLATINE D'ENREGISTREMENT A CASSETTES STEREO
PIASTRA DI REGISTRAZIONE A CASSETTA STEREO
STEREO CASSETTEDECK

Model
Modell
Modèle
Modello
Model

D-909

INSTRUCTION MANUAL   BEDIENUNGSANLEITUNG   MODE D'EMPLOI
MANUALE DELLE ISTRUZIONI   GEBRUIKSAANWIJZING

⊚ HITACHI

For U.S.A.

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

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELEC-TRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PER-SONNEL.

Explanation of Graphical Symbols
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 main-tenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT FOR U.K.:
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 coloured markings identifying the terminals in 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.

IMPORTANT SAFEGUARDS
## SAFETY POINTS YOU SHOULD KNOW ABOUT YOUR AUDIO EQUIPMENT.

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.

7. **Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

8. **Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

9. **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.

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"
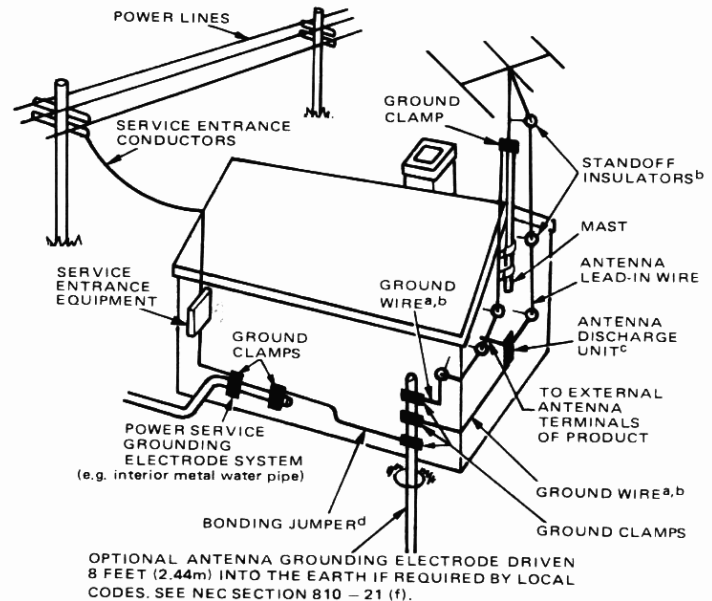
OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44m) INTO THE EARTH IF REQUIRED BY LOCAL CODES. SEE NEC SECTION 810 – 21 (f).

[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] 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.

For Canada

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

FEATURES

- **Automatic monitor switching**
  The monitor switch is automatically changed over to TAPE in the record and play modes and to SOURCE in the record pause mode. (Manual operation is also possible as used.)
- **New ATRS (Automatic Tape Response Search) System**
  The microprocessor corrects the uneven reponse of each tape in only 6 seconds and ensures optimum Hi-Fi recording. Moreover, since the saturation level is displayed by the peak level indicator, recording level setting becomes easier.
- **Record/play independent double Dolby NR**
  Dolby NR circuits with independent record and play amplifiers are provided. In addition, Dolby C NR which can obtain an improved high-frequency response as well as superb NR (noise reduction) starting from a low frequency is provided together with the conventional Dolby-B NR.
- **Remote control terminal**
  D-909 can be freely controlled from some distance away by connecting to remote control unit RB-100 available separately.
- Two-motor system with uni-torque DD motor
- Metal-tape compatible 3-head system
- 4-digit digital counter
- Light and swift operation by computerized IC logic with slim and feather touch buttons

- Auto/Memory Rewind function
- **A wide variety of functions available for music playing**
  - Self-Program Search System (SPSS)
  - Linear time counter
    A linear time counter which shows the amount of tape used at a glance is incorporated so that tapes can be used effectively.
  - Manual equalizer (REC. CAL, EQ)
    The deck can be set to match the characteristics of each tape by manual operation. This makes it possible to obtain the desired tone quality as well as flat frequency response and Dolby NR calibration. (REC. CAL: Record Calibration)
- Computer automatic recording mute function
- Tape standby function which automatically advances the tape
- Tape counter automatic reset function
- Full-automatic stop function
- Remaining scanning function
- 19-segment wide range two-coloured FL peak meter (with an automatic peak holder)

Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

PRECAUTIONS

- This unit is designed so that other units can be stacked on it, but do not stack extremely heavy objects on it.
- Never use any strong detergent or solvent for cleaning the cabinet of this unit, because it could lead to damage of the surface finish.
- Protect the unit against excessive heat (e.g. direct sunlight), dust and moisture.
- Be sure not to open the cabinet.
- Be careful not to damage the power cord. Be sure to take hold of the plug when pulling it out; do not pull the cord.

- When using with other components, any component which can produce induction noise which can induce hum should be as far as possible from this deck. Bias leakage from this deck during recording may cause beats during reception of AM broadcasts, so be careful in placement of this deck with respect to the tuner; when beats occur, move them away from each other as far as possible. There is no problem in FM-reception.
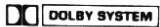
CONNECTIONS

See diagram (B) on page 48.

NAMES OF INDIVIDUAL PARTS AND THEIR FUNCTIONS

(1) **Power switch**

(2) **Timer switch**

Be sure to set the timer switch to "OFF" except when using it to record or play back.

> • When power is supplied with the switch set to the REC or PLAY position before starting recording or playback, the playback indicator flashes a warning for approx. 4 sec. The unit then enters the record or playback mode automatically, so be careful.

(3) **Auto/Memory rewind switch**

(4) **Cassette holder**

(5) **Bias select button/Bias indicator**

When testing a tape using the ATRS system, the bias can be selected in 3 steps (LOW/STD/HIGH). When recording using FIXED button (8), the bias is automatically set to the "STD" position. This button is not concerned with playback.

(6) **ATRS start button**

(7) **ATRS button/ATRS indicator**

(8) **FIXED button/FIXED indicator**

(9) **Recording calibration test switch**

(10) **Recording calibration controls (left/right)**

(11) **Equalization control**

(12) **Equalization test switch**

(13) **Recording level control**

(14) **Monitor switch/Monitor indicator**

Because of the automatic monitor system, this switch is automatically changed over to "TAPE" in the record and play modes (the monitor indicator displays "TAPE") and to "SOURCE" in the record pause mode (the indicator displays "SOURCE"). The monitor switch is changed over between "TAPE" and "SOURCE" every time the switch is pressed in any condition.

TAPE: Use this position when playing back a tape or monitoring sound during recording (playback of sound just recorded).
Be sure to set the switch to "TAPE" for playback; if it is set to "SOURCE", no sound will be heard.

SOURCE: Use this position to set the recording level or listen to the source sound (input signal from the LINE IN (REC)).

(15) **Output level control**

This is used to adjust the output levels of line out jacks and headphones jack. For convenience, use this control to set the output to the same level as that of the tuner, etc.

(16) **Recording mute button**

(17) **Pause button/Pause indicator**

(18) **Record button/Recording indicator**

(19) **Fast forward button**

(20) **Playback button/Playback indicator**

(21) **Stop button**

(22) **Rewind button**

(23) **Headphones jack**

(24) **Eject button**

(25) **SPSS indicator**

(26) **Tape/Time counter**

This counter displays the tape transport amount or tape transport time. (This is selected by the Counter display select switch (37).)

Tape Counter: Counted up in the playback and fast forward modes and counted down in the rewind mode. (It is set to 9999 when counting down from 0000.)

Time Counter: The time counter indicator lights and the transport time is displayed in minutes and seconds. In fast forward and rewind it is converted to an elapsed time counter during play. It is counted up in the playback and fast forward modes and counted down in the rewind mode. (It is set to negative when it is counted down from 00,00.)

(27) **Time counter indicator**

(28) **Tape indicator**

(29) **Dolby NR indicators**

(30) **Peak level indicator**

It displays the recording level in recording and the playback level in playback. −40 dB to +10 dB is displayed in 19 segments.

(31) **Recording calibration indicator**

(32) **Multiplex switch**

Press this switch when recording an FM stereo broadcast using the Dolby NR circuit.

(33) **Dolby NR B/C select switch**

(34) **Dolby NR switch**

ON (◣): Set to this position when recording utilizing the Dolby NR system or playing back cassette tapes recorded through a Dolby NR system.

OFF (◻): Set to this position when playing back cassette tapes not recorded through a Dolby NR system or making a recording not utilizing the Dolby NR system.

Dolby encoded pre-recorded cassette releases are widely available, and should be played back with appropriate Dolby noise reduction selected. Cassettes recorded with Dolby B-type noise reduction are identified on the box's spine and the cassette label with the ▯◻ symbol, and on the liner's front cover with the ▯◻ DOLBY SYSTEM ® symbol.

Cassettes recorded with Dolby C-type noise reduction are identified with the ▯◻ and ▯◻ DOLBY C NR symbols.

(35) **Tape select switches**

Set these switches, matching them to the tape to be recorded or played back. In order to avoid faulty recording, these switches should be checked before a recording is made.

(36) **Remaining scan indicator**

(37) **Counter display select switch**

Selects the counter display, tape counter or time counter mode.

(38) **Counter reset button**

The tape counter or time counter display (only the current display) is reset to "0000" when this button is pressed.

(39) **Line in jacks**

(40) **Line out jacks**
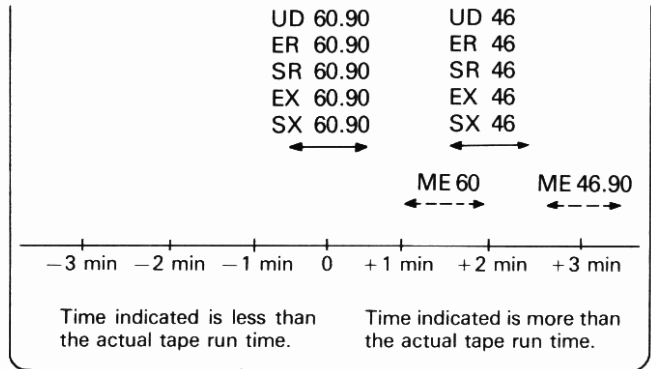
(41) **Remote control jack**

Accuracy of Time counter 26
The time counter used in this deck is not a clock, so there will be an error between real tape running time and counter indication.
The error will differ depending on the type and length of the tape.
The table below shows the error range of the counter indication with respect to the actual running when one side of a Hitachi tape is run.
Use this table as a standard when using the counter.

```
UD 60.90          UD 46
ER 60.90          ER 46
SR 60.90          SR 46
EX 60.90          EX 46
SX 60.90          SX 46
   ←——→           ←——→
             ME 60        ME 46.90
             ←----→       ←----→

 —3 min  —2 min  —1 min   0   +1 min  +2 min  +3 min
```

Time indicated is less than the actual tape run time.   Time indicated is more than the actual tape run time.

CASSETTE INSERTION

When the Eject button 24 is pressed **with the unit in the STOP mode**, the cassette holder comes out toward you. Insert the cassette with the exposed tape down, then close the cassette holder.
For cassette removal, press the Eject button 24 **with the unit in the STOP mode**.

RECORDING

1. Supply power to the amplifier and set the Function switch to the source (broadcast, disc, etc.) to be recorded.
2. Switch the Power switch 1 ON (■) and insert the cassette tape in the Cassette holder 4, then close the Cassette holder 4.
3. Set the Auto/Memory Rewind switch 3 to the required position. Generally set it to "OFF".
4. Set the Tape select switches 35 according to the tape to be recorded.
5. Set the Dolby NR switch 34 to desired position.
6. Set the Dolby NR B/C select switch 33 to desired position.
7. Press the ATRS button 7 when recording using the tape characteristics data stored in the ATRS system. (Refer to page 8 for details.) Press the FIXED button 8 when recording without the ATRS system.
8. When the Record 18 and Pause 17 buttons are pressed simultaneously, the unit is set to the recording standby mode. (The Record and Pause indicators light.) The automatic monitor system switches the monitor to "SOURCE" automatically.
9. Adjust the Recording level control 13 so that the Peak level indicator 30 does not exceed +3 dB (Metal: +6 dB) at maximum input.
10. Press the Playback button 20 and recording starts. (The automatic monitor system switches the monitor to "TAPE". Press the Monitor switch for manual operation.)
11. When it is desired to stop recording temporarily, press the Pause button 17. Press the Playback button 20 to continue recording.
12. To stop recording, press the Stop button 21.
    Caution: Bias may leak from this unit during recording; when receiving an AM broadcast in this state, a whistling noise may occur due to beat interference. When this occurs, separate the tuner or radio from this deck. (There is no problem when receiving an FM broadcast.)

• **Record monitoring**
Since this unit's REC and PLAY heads are independent, the original sound being recorded can be monitored by pressing the Monitor switch to display "SOURCE" during recording, and the sound already recorded on the tape can be monitored when "TAPE" is displayed.

• **AUTOMATIC RECORDING MUTE FUNCTION**
When the Recording mute button is pressed during recording, the unit enters into nonsignal mode for approx. 4 seconds flashing the Pause indicator, and then automatically enters the recording pause mode. Press Playback button 20 to continue recording. When Recording mute button 16 is pressed continuously, nonsignal mode continues for more than 4 seconds then, when released, the unit automatically enters the recording pause mode. When a non-recorded section of 4 seconds or shorter is desired, press Pause button 17 at the position desired after pressing Recording mute button 16.
This is convenient for cutting narrations or leaving gaps between tunes.
Caution: The source sound can be heard from the headphones or speakers when the Monitor switch is pressed to the "SOURCE" position in the non-signal recording mode.

• **REMAINING SCANNING FUNCTION**
C-60 and C-90 tapes are standard for remaining scan. When a new recording is desired to be added to the end of a recorded tape, press the Counter display select switch to obtain the time counter mode, then press the record and fast forward buttons simultaneously. The tape is fast forwarded to the end and the non-recorded portion is searched while being rewound. (The Remaining scan indicator lights at this time.) Upon detecting the recorded portion, the tape advances for about 4 seconds (equivalent to replay status) and enters the recording pause state. The tape remaining time (recordable time) is indicated.

Add a new recording referring to this.
When the additional recording is completed, press the Counter reset button in the time counter display mode to release the remaining scan indicator and the tape remaining time indicator.

■ **ERASING**
When a recording is being made, any sound already on the tracks is automatically erased before the new recording is made. Erasure is accomplished only when the deck is in the recording mode. If you wish to erase a tape without making a new recording, set the Recording level control ⑬ at minimum "0" and the Tape select switches ㉟ to the position matching with each tape. Press the Playback button ⑳ and Record button ⑱ simultaneously.

PLAYBACK

1. Switch the Power switch ① ON (▃) and insert the cassette tape in the Cassette holder ④ , then close the Cassette holder ④ .
2. Set the Tape select switches ㉟ according to the tape to be played back.
3. Set the Dolby NR switch ㉞ to ON or OFF and the Dolby NR B/C select switch ㉝ to B-TYPE or C-TYPE depending on whether the tape has been recorded with Dolby OFF or Dolby B, Dolby C type NR system.
4. Press the Playback button ⑳ to start playback.
5. When a temporary halt is desired during playback,

press the Pause button ⑰ , then press the Playback button ⑳ to restart playback.
6. To stop playback at any other time, press the Stop button ㉑ . The Tape/Time counter indicates "End" when auto-stop occurs at tape end. The "End" indication disappears when operation buttons other than Pause and Recording mute are pressed.

Caution:
● This unit cannot use endless tapes.
● When the Output level control ⑮ is set to minimum, no sound comes out.

FAST FORWARD AND REWIND

To advance a tape rapidly to any desired point, press the Fast forward button ⑲ .
To stop the tape, press the Stop button ㉑ .
Tape may be rewound rapidly by pressing Rewind button ㉒ . To stop tape rewind, press Stop button ㉑ .

■ **TAPE COUNTER AUTOMATIC RESET FUNCTION**
Press Rewind button ㉒ to rewind the tape to its start

and to automatically reset the Tape/Time counter ㉖ to "0000".
When the power is turned on, "0000" is indicated.

■ **TAPE STANDBY FUNCTION**
Press both Fast forward button ⑲ and Rewind button ㉒ simultaneously.
The Pause indicator blinks. The tape is rewound to the start and the leader tape is fast forwarded, then it stops.

VARIOUS TUNE SELECTIONS

■ **SPSS (Self Program Search System)**
Detecting the beginning of the tune played back at present or the next tune
1. Play back the tape.
2. When it is desired to listen to the present tune again, press the Rewind button ㉒ while pressing the Playback button ⑳ . When it is desired to listen to the next tune, press the Fast forward button ⑲ while pressing the Playback button ⑳ .
   ● During the SPSS operation, the SPSS indicator lights and the Playback indicator blinks.
   ● When the Pause button is pressed during SPSS, the Pause indicator lights and the unit enters the pause mode after a tune is selected.

For the Search function to operate properly, there must be non-recorded portions of tape for the function to detect and operate on. Comparatively long non-recorded portions are needed for this purpose (longer than 3 seconds). The following are examples of possible causes of incorrect operation:
● Tapes on which recorded sections (conversations, meetings, etc.) are not clearly distinguishable.
● Tapes where the interval between tunes is short (less than 3 seconds).
● When the unit is operated close to a TV set.
● When the search operation has started close to the beginning or end of a tune.
● When the Tape select switch ㉟ is not properly set for the tape.
When making a tape to use with the Search function, use the Recording mute button ⑯ to leave gaps between tunes.

AUTO REWIND/MEMORY REWIND

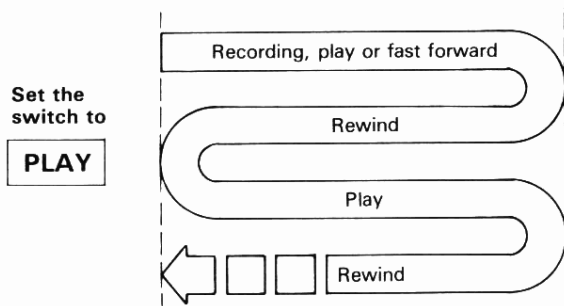* Set the Auto/Memory rewind switch ③ to "STOP" or "PLAY".

■ Auto Rewind

When the tape is taken up to the end, it can be rewound up to the start and then automatically stopped (Auto Rewind Stop), or it can be rewound to the start and then played back (Auto Rewind Play) depending on the position of the Auto/Memory rewind switch ③.

● **To rewind the tape to its start after recording (or playing) the tape to its end:**
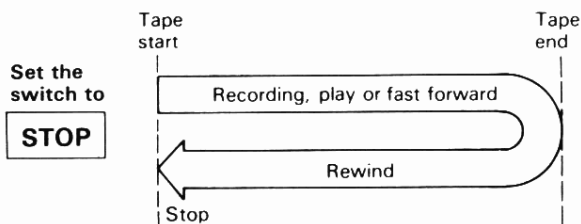
● **To rewind the tape to its start and play after recording (or playing) to the end:**
**(Tape is played back repeatedly 16 times.)**

Auto rewind operation list

| OPERATION MODE	AUTO/ MEMORY REWIND SWITCH SETTING	AT TAPE END .....
Recording	OFF	Stop (AUTO STOP)
	STOP	Rewind ➡ Stop (AUTO STOP)
	PLAY	* Rewind ➡ Play ➡ Rewind ➡ Play .... (repeated)
Play	OFF	Stop (AUTO STOP)
	STOP	Rewind ➡ Stop (AUTO STOP)
	PLAY	* Rewind ➡ Play ➡ Rewind ➡ Play .... (repeated)
Rewind	OFF	Stop (AUTO STOP)
	STOP	
	PLAY	* Play ➡ Rewind ➡ Play ➡ Rewind ➡ Play .... (repeated)
Fast forward	OFF	Stop (AUTO STOP)
	STOP	Rewind ➡ Stop (AUTO STOP)
	PLAY	* Rewind ➡ Play ➡ Rewind ➡ Play .... (repeated)

* Tape is played back repeatedly 16 times.

■ Memory Rewind

Rewinding to a specified position (where the play button was pressed) during recording or play is possible. The deck enters the stop or play mode depending on the position of the Auto/Memory rewind switch after rewinding. This function is very convenient for checking the recording level or when it is desired to listen to the same section repeatedly.

● **To rewind the tape to the position where recording or play started and then stop:**
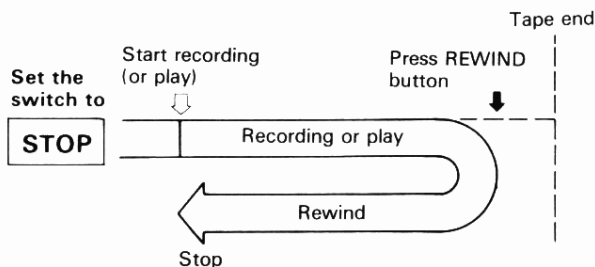
● **To rewind the tape to the position where recording or play started and then play:**
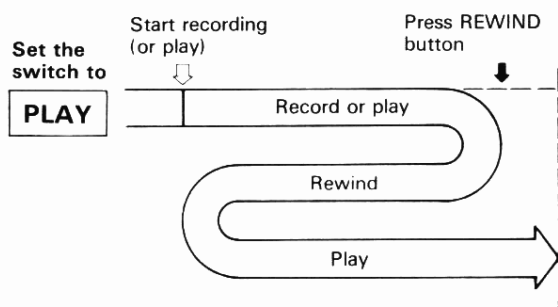
● **To play part of the tape repeatedly:**
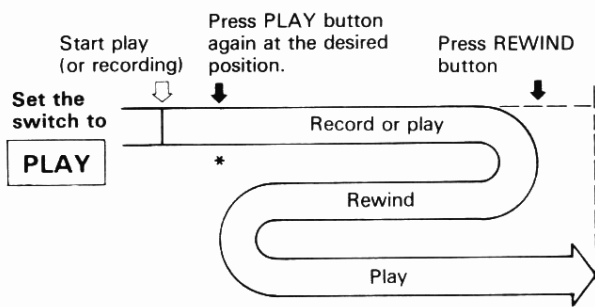
* The desired start position can be set by pressing the play button again wherever required.

Notes:
● The Auto/Memory rewind functions do not work when the Auto/Memory rewind switch is set to OFF.
● The memory rewind function is not possible during automatic play using the SPSS
● When the tape is taken up to its end, the memory function is released and the deck starts the auto rewind operation.
● The memory rewind function is released when a button (stop, fast forward, etc.) other than the rewind button is pressed after memory rewind is instructed.

NEW ATRS SYSTEM

The microprocessor in new ATRS system sets the bias, equalization and recording sensitivity to optimum values for various tapes in only 6 seconds and, moreover, it detects the saturation level of each tape and displays it using the peak level indicator. These operations improve the frequency response and greatly reduce distortion and result in recordings with less difference in output.

Bias can be selected between 3 values — LOW, STD, HIGH — and optimum Hi-Fi recording can be made, balancing with the frequency response of the music source. The data stored in the microprocessor can be recalled at any time.

Since the saturation level of each tape is displayed by the peak level indicator, the recording level can be set more easily.

■ The effect of bias selection on the frequency response balance

The bias can be selected in 3 steps using the bias select button. Switch the bias select button according to the music source to be recorded.

Bias	LOW	STD	HIGH
Saturation level at medium-frequencies	Low	Medium	High
Saturation level at high-frequencies	High	Medium	Low
Music source	Synthesizer, etc.	Popular, etc.	Classic, etc.

Note:
- The bias select button is not concerned with playback.
- When recording using the FIXED button, the "STD" position is selected automatically.

ATRS (AUTOMATIC TAPE RESPONSE SEARCH) SYSTEM

■ ATRS test (Tape charactristics data input)

1. Set the Power switch ① to ON (☐) and load a cassette tape.
2. Change over the Tape select switches ㉟ according to the type of tape to be recorded (tested).
3. Select the bias using the Bias select button ⑤.
4. Press the Record ⑱ and Pause ⑰ buttons simultaneously to set the unit to the recording stand-by mode.
5. Press the ATRS start button ⑥. (The ATRS indicator blinks.)

When the ATRS operation is completed correctly after approx. 6 seconds, the ATRS indicator remains lit and the saturation level is displayed by the peak level indicator to show that data of the tape is stored in the microprocessor. The tape is automatically rewound to the position where the ATRS start button was pressed and then it stops.

Tape characteristic data can be stored for one NOR-I, one CrO2-II and one METAL-IV tapes by operating as shown in items 1 — 5 in each tape selection position.

Notes:
- Change over the tape select switch to match the tape.
- When a tape with extremely poor sensitivity or a non-standard tape is used, the optimum output cannot be obtained, so the ATRS test operation is automatically released and the FIXED indicator ⑧ lights.
- When the ATRS test operation is performed with the leader tape at the tape start, the deck automatically enters the fast forward mode, and enters the ATRS test mode again after the leader tape is taken up.
- Be careful; the ATRS test mode is released when an operation button, Tape select switch, FIXED button and Power switch, etc. of the deck is pressed during the ATRS test operation.
- When the ATRS test operation is performed at the end of tape and the tape ends before the

ATRS test operation is completed, the full-auto stop mechanism operates, the ATRS test operation is released and the deck automatically enters the stop mode.
- When the ATRS test operation is done again after operation is completed, the previously stored tape characteristic data is cleared and the new characteristic data is stored.
- Be careful in that the previously recorded sound is erased because the ATRS test is performed by recording/playing back a test signal.
- When the ATRS indicator ⑦ is lit, it shows that recording is possible in the optimum state obtained by the ATRS test.
  When the FIXED indicator ⑧ is lit, it shows that the deck is set to match a Hitachi cassette tape.
- The data input via the ATRS test is stored in the battery backed-up memory when the power of this unit is set to OFF, and it returns to the state before the power was switched OFF when the power is set to ON again, so the deck can be used with both ATRS button and FIXED button settings in timer recording. The data is held by an ultra-large capacitor for approx. one week.

■ When recording using ATRS system

Perform the ATRS test shown to store the characteristics of the tape to be recorded. Confirm that the ATRS indicator ⑦ is lit before performing the "RECORDING" operation.

■ When recording using characteristic data stored previously

1. Change over the Tape select switch to match the type of tape to be recorded.
2. Press the ATRS button ⑦. Confirm that the ATRS indicator is lit.
3. Perform the "RECORD" operation.
* When the ATRS indicator does not light, data is not stored, so perform the ATRS test before recording.

RECORDING CALIBRATION CONTROL/EQUALIZATION CONTROL

The recording calibration control sets the best calibration level for the tape and matches the level during recording/play. As a result, unevenness of the output level of individual tapes is eliminated and recording/play with higher precision is possible as well as maximizing the effects of the Dolby NR system.

The equalization control can control the tone quality during recording by adjusting so the frequency response of the tape to be recorded is flat or changing the tone to your requirements.

- Perform recording calibration adjustment and the equalization control operation with the FIXED indicator lit.
  Operation is not possible while the ATRS indicator is lit.
- The level of the test signal for each adjustment is varied by the Recording level control, so adjust it to the desired position.

■ Recording Calibration Adjustment

Perform operations of 1 to 10 in RECORDING.

1. Press the Recording calibration test switch ⑨ to set it to ON (▬). (The Recording calibration indicator ㉛ lights.)
2. Adjust the recording calibration level using the Recording calibration controls ⑩ .
   A 400 Hz test signal is recorded, so change over the Monitor switch between SOURCE and TAPE and adjust so that the sound volumes are equal. (Adjust Lch and Rch independently.)
3. Press the Recording calibration test switch ⑨ to set it to OFF (⊓).
   * Do not set the Recording level control ⑬ to minimum during these adjustments.
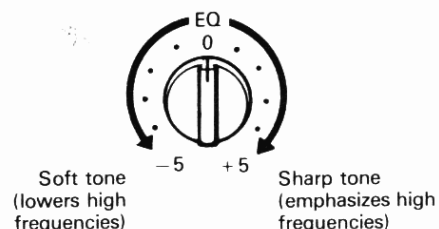
■ Equalization control operation

Perform the following operations after operating as shown in items 1 — 3 described in "Recording Calibration Adjustment".

4. Press the Equalization test switch ⑫ to set it to ON (▬).
5. White noise is recorded, so change over the monitor switch SOURCE and TAPE and adjust using the Equalization control ⑪ so that tone quality does not differ.
   Now, the best calibration for Dolby NR and a flat frequency response have been obtained.
6. Press the Equalization test switch ⑫ to set it to OFF.

Convenient use:
When it is desired to record with a sharp tone emphasizing high frequencies or to record with a soft tone for different sources, adjust the equalization control as shown in the figure; recording with the desired tone is possible.

Soft tone (lowers high frequencies)   Sharp tone (emphasizes high frequencies)

The above describes the recording calibration adjustment and the equalizer control operation. The same results as with the ATRS indicator lit can be obtained with the FIXED indicator lit and recording with the desired tone quality is possible by this operation.

RECORDING AND PLAYBACK USING EXTERNAL AUDIO TIMER

With this tape deck, recording and playback can be done automatically at any desired time by connecting to an external audio timer.

■ Timer recording of radio broadcasts

1. Insert power cord of this unit into AC jack of the amplifier. (Insert the power cord of the amplifier into the timer's AC jack.)
2. Turn power for amplifier and tuner ON.
3. Insert a recording tape and set the Tape select switches ㉟ according to the tape to be recorded.
4. Set the Dolby NR switch ㉞ to the desired position.
5. Set the Dolby NR B/C select switch �33 to the desired position.
6. Press the Record ⑱ and Pause ⑰ buttons simultaneously and then adjust the recording level.
7. Press the ATRS button ⑦ when recording using the tape characteristics data stored in the ATRS system. Confirm that the ATRS indicator is lit. (Press the FIXED button when recording without the ATRS system.)
8. Set the timer to the desired time. (This turns the

power OFF until the set time is reached.)
9. Set the Timer switch ② to "REC".
10. Recording starts automatically at the set time.

■ Timer Play

1. Connect the timer in the same way as in the "Timer recording of radio broadcasts".
2. Insert the tape you desire to playback, adjust the volume knob of the amplifier to determine the level and press Stop button ㉑.
3. Set timer to desired time. (This turns the power OFF until the set time is reached.)
4. Set the Timer switch ② to "PLAY".
5. Play starts automatically at the set time.

Cautions:
- Be sure to set the Timer switch to OFF except for timer recording or playback.
- Be sure to use a cassette without the erasure protection tab broken off, for unattended recording. When a cassette with the erasure protection tab broken off is used, the unit enters the play mode when the timer operates. (Refer to CASSETTE TAPES.)

MAINTENANCE

Head cleaning (See diagram ⓒ on page 49.)
Clean the heads, capstan and pressure roller periodically with a head cleaning stick moistened with alcohol, or methylated spirits.
When Metal tapes are either recorded and played for several hours, the tape running surface must be cleaned.

Never use a sharp or metallic instrument or tool for cleaning these parts.

Demagnetization
The head inevitably becomes magnetized slightly after long use. As a result, high-frequency sound may be lacking or noise may be generated. Perform head demagnetization occasionally with a head eraser.

CASSETTE TAPES

Recording protection: If the plastic tabs on the side of the cassette are removed (using a screwdriver or similar tool), recordings can be protected against accidental erasure. If recording is to be made again, cover the hole of removed tab with adhesive plastic tape. (See diagram ⓓ on page 49.)
Precautions: If a tape is played several times continuously, especially a thin tape (C-90), it may wind too

tightly on the reel and cause the tape speed to fluctuate. To avoid this, simply tap the cassette several times lightly on a hard surface to loosen the tape on the reel. However, it should not be too loose. Especially after fast forward or rewind of a C-90 cassette, take up slack by inserting a pencil or similar object in the spindle hole and tighten the tape to prevent looping.

DOLBY NR (Noise Reduction) SYSTEM

This cassette deck is equipped with both Dolby C-type and B-type noise reduction.
The new Dolby C-type NR system provides noise reduction beginning at 100 Hz and rising to 20 dB at 1 kHz and above. The standard Dolby B-type NR system, used in virtually every high-performance cassette deck for the past several years, provides noise reduction beginning at about 500 Hz, rising to 10 dB at 4 kHz and above.
With Dolby C NR and a good tape formulation, tape noise is below that of just about any program material you might record, including music with very wide dynamic range. Even when you play Dolby C recordings at very high volume levels, any remaining noise is likely to be that of the original program material, not noise from the tape or recorder. Standard Dolby B-type NR will allow you to play back cassettes previously recorded with it, and to make cassettes you know will be played back primarily on machines equipped only with Dolby B.
Both Dolby noise reduction systems work in a similar

way. Neither system improves what is being recorded, but rather prevents the addition of noise by the tape recording process. When a recording is made, the Dolby noise reduction circuit makes higher frequencies on quiet passages louder than normal. When the encoded tape is then played back with Dolby noise reduction, the circuit lowers the previously-boosted frequencies to where they were in the original program material, thereby reducing the noise added by the taping process.
Dolby C-type noise reduction achieves more noise reduction than Dolby B by boosting low-level higher frequencies, and lowering them again in playback, by a greater amount than Dolby B. In addition, the noise reduction extends about two octaves lower, so that the noise reduction effect is subjectively uniform across the audible spectrum. Dolby C also incorporates two further features, called spectral skewing and anti-saturation, which permit more accurate recording of high-level high frequencies, among other benefits.

{ **Deutsch** }

MERKMALE

- **Automatischer Monitorschalter**
  Das Umschalten des Monitorschalters erfolgt automatisch auf Position TAPE bei Aufnahme oder Wiedergabe bzw. auf Position SOURCE bei Aufnahme-Pause (manuelles Umschalten ist natürlich ebenfalls möglich).

- **Neues Automatisches Tonband-Respons-Such-laufsystem (ATRS)**
  Das ATRS-System ist mit einem Mikroprozessor bestückt, der innerhalb von 6 Sekunden die Frequenzgangeigenschaften des jeweiligen Tonbandes feststellt und danach die Aufnahme-

parameter automatisch auf die richtigen Werte einstellt, um optimale HiFi-Klangqualität zu erhalten. Und da der Sättigungspegel von den Spitzenwert-Pegelmessern angezeigt wird, ergibt sich einfachste Aussteuerung des Aufsprechpegels.

- **Duo-Dolby-NR-Rauschunterdrückung für Aufnahme/Wiedergabe**
  Dieses Modell ist mit separaten Dolby-NR-Schaltkreisen für die Aufnahme- und Wiedergabeverstärker ausgerüstet. Neben der konventionellen Dolby-B-Rauschunterdrückung verfügt dieses Modell auch über das Dolby-C-NR-System,

Beveiligen van opnamen: Voor het beveiligen van opnamen tegen abusievelijk wissen worden de veiligheidsnokjes uitgebroken. (Gebruik hiervoor een kleine schroevedraaier of iets dergelijks.) Als u de cassette later voor nieuwe opnamen geschikt wilt maken, worden de ontstane uitsparingen met plakband bedekt. (Zie diagram ⓓ op blz. 49.)

Voorzorgsmaatregelen: Als een band enige malen achtereen wordt afgespeeld, met name een dunne band (C-90), gebeurt het weleens dat de band te strak om de spoel wordt gespoeld, waardoor de bandsnelheid onregelmatig wordt. Om dit te verhelpen wordt de cassette een paar keer lichtjes tegen een hard oppervlak getikt, opdat de band losser komt te zitten. De band mag echter ook weer niet te los zitten. Na vooruit- of terugspoelen van een C-90 cassette worden eventuele lusjes strakgetrokken. Steek hiervoor een potlood of iets dergelijks in de spoelopening.

DOLBY NR (Ruisonderdrukking) SYSTEEM

Dit cassettedeck is uitgerust met het Dolby-C en het Dolby-B ruisonderdrukkingssysteem.
Bij het nieuwe Dolby-C NR systeem begint de ruisonderdrukking reeds by 100 Hz en loopt op tot 20 dB bij 1 kHz en hoger. Het standaard Dolby-B NR systeem waarmee practisch ieder cassettedeck van goede kwaliteit in de laatste jaren is uitgerust, levert ruisonderdrukking die bij ongeveer 500 Hz begint en oploopt tot 10 dB bij 4 kHz en hoger.
Met het Dolby-C NR systeem en een cassette van goede kwaliteit is de bandruis lager dan het niveau van bijna ieder programma dat u op kunt nemen, inclusief muziek met een zeer breed dynamisch bereik. Zelfs als u Dolby-C opnamen afspeelt op zeer hoge niveaus, zal eventuele ruis waarschijnlijk niet veroorzaakt worden door de band of recorder, maar eigen zijn aan het oorspronkelijk programmamateriaal. Het standaard Dolby-B NR systeem is eveneens ingebouwd om u de mogelijkheid te verschaffen cassettes af te spelen die met dit systeem zijn opgenomen en ook zelf opnamen te maken die u later hoofdzakelijk wilt afspelen op apparaten die alleen van het Dolby-B NR systeem zijn voorzien.
De werking van beide Dolby ruisonderdrukkingssystemen zijn nagenoeg aan elkaar gelijk. Geen van de systemen verbetert het geluid dat opgenomen wordt. Ze verhinderen alleen dat er tijdens het opnameproces ruis bijkomt. Tijdens het maken van een opname worden door het Dolby ruisonderdrukkingscircuit de hogere frekwenties van laag niveau versterkt opgenomen. Als een aldus voorbespeelde cassette later afgespeeld wordt op een apparrat die voorzien is van een Dolby ruisonderdrukking, worden deze versterkte frekwenties door het circuit weer tot het oorspronkelijke niveau verzwakt, zodat de ruis die tijdens het opnameproces is bijgekomen, onderdrukt wordt.
Met het Dolby-C NR systeem wordt een effectievere ruisonderdrukkingseffect verkregen dan met het Dolby-B NR systeem, aangezien het eerstgenoemde de hogere frekwenties van laag niveau tijdens de opname in grotere mate versterkt en tijdens het afspelen eveneens in grotere mate verzwakt dan het laatstgenoemde.
Bovendien reikt de ruisonderdrukking bij Dolby-C twee octaven lager, zodat een meer uniforme ruisonderdrukking over het gehele hoorbare frekwentiebereik verkregen wordt. Twee andere kenmerken van het Dolby-C NR systeem, de zogenaamde spectral skewing en anti-verzadiging, openen meerdere mogelijkheden, waaronder nauwkeuriger registratie van de hogere frekwenties van hoog niveau.
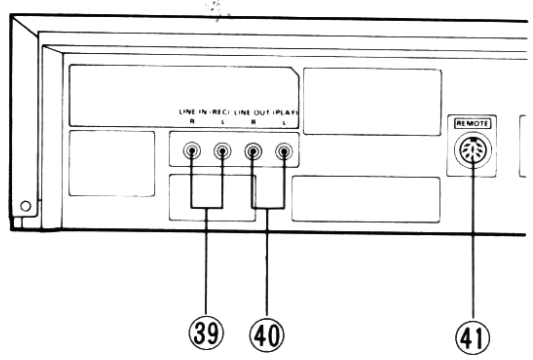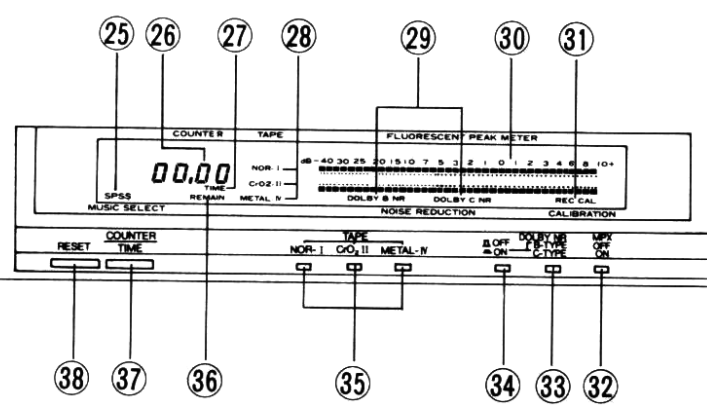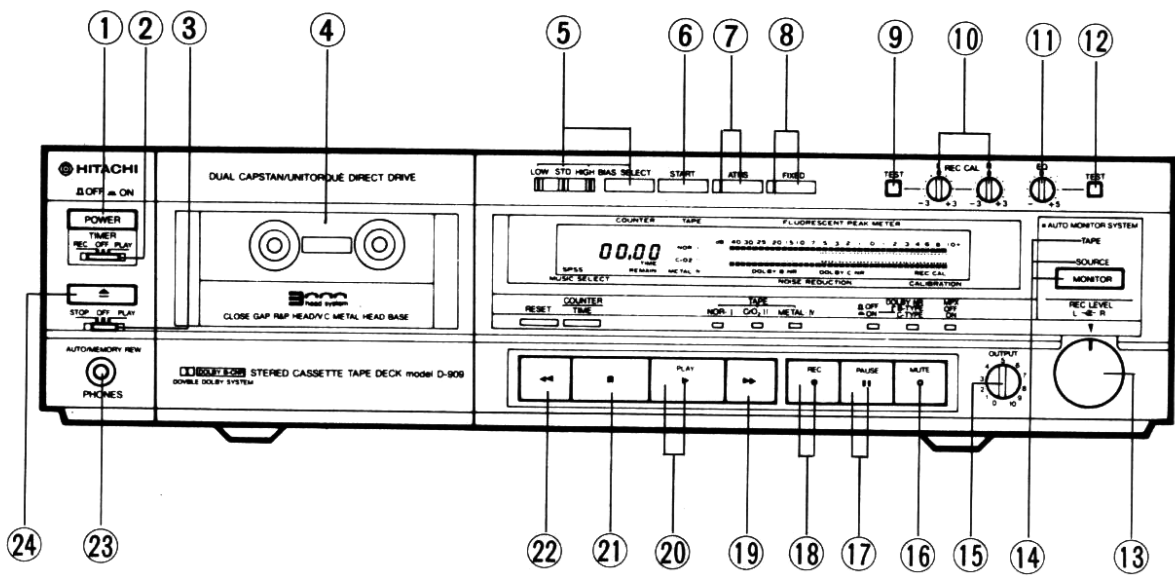
SPECIFICATIONS

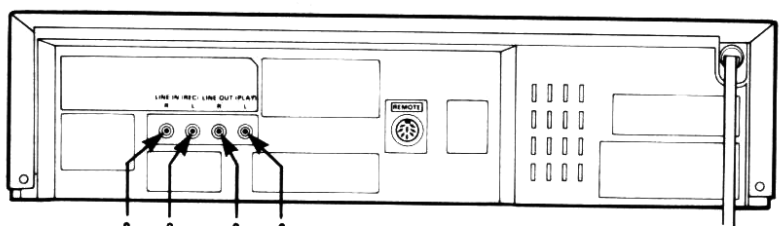|			
Track system:	4-track 2-channel stereo	Output level and	
Tape:	Cassette tape	Impedance:	Line out: 500 mV (Suitable load
Tape speed:	4.75 cm/s		impedance 50 kohms or more)
Recording system and			Headphone: 80 mV (8 ohms)
Bias frequency:	AC bias, 105 kHz		(Suitable load impedance
Erasing system:	AC erase		8 ohms to 2 kohms)
Erase ratio:	65 dB (at 1 kHz) or more	Distortion:	Less than 0.8% (1 kHz,
Frequency response:	NOR-I: 20 Hz to 18 kHz		160 nWb/m)
	30 Hz to 18 kHz ± 3 dB	Crosstalk:	60 dB (at 1 kHz) or more
	30 Hz to 18 kHz*	Power supply:	AC 120V, 60 Hz (U.S.A.
	CrO2-II: 20 Hz to 20 kHz		and Canada)
	30 Hz to 19 kHz ± 3 dB		ᔕ220V, 50 Hz (Europe)
	30 Hz to 19 kHz*		ᔕ240V, 50 Hz (U.K. and
	METAL-IV: 20 Hz to 21 kHz		Australia)
	30 Hz to 20 kHz ± 3 dB	Power consumption:	38W
	30 Hz to 20 kHz*	Dimensions:	435(W) x 115(H) x 279(D) mm
Signal-to-noise ratio:	Dolby NR OFF: 61 dB*	Weight:	6.0 kg
(A weighted, Reference	Dolby B NR ON: 69 dB*		
3% T.H.D.)	Dolby C NR ON: 75 dB*		
Wow & flutter:	0.022% (WRMS)	* According to DIN 45 500	
	0.065%*		
Input sensitivity and		Specifications and designs may be changed without notice for improvement.	
Impedance:	Line in: 80 mV, 50 kohms		

HITACHI

ΔOFF ≈ ON

DUAL CAPSTAN/UNITORQUE DIRECT DRIVE

LOW STD HIGH BIAS SELECT   START   ATRS   FIXED   TEST   REC CAL   EQ   TEST

POWER

TIMER
REC OFF PLAY

STOP OFF PLAY

AUTO/MEMORY REW

PHONES

CLOSE GAP R&P HEAD/VC METAL HEAD BASE

3cm head system

DOLBY HX PRO STEREO CASSETTE TAPE DECK model D-909
DOUBLE DOLBY SYSTEM

COUNTER   TAPE   FLUORESCENT PEAK METER

00.00

dB 40 30 25 20 15 10 7 5 3 2 1 0 2 3 4 6 8 10+

NOR-I
C-O2-II
METAL IV

SPSS   TIME   REMAIN
MUSIC SELECT

DOLBY B NR   DOLBY C NR   REC CAL
NOISE REDUCTION   CALIBRATION

AUTO MONITOR SYSTEM

TAPE
SOURCE
MONITOR

RESET   COUNTER TIME   TAPE NOR-I C/O2-II METAL-IV   ΔOFF ≈ON   DOLBY NR B-TYPE C-TYPE   MPX OFF ON

REC LEVEL
L ≈ R

PLAY   REC   PAUSE   MUTE

OUTPUT

◄◄   ■   PLAY   ►►

D-909 (lower diagram labels)

COUNTER   TAPE   FLUORESCENT PEAK METER

00.00

dB -40 30 25 20 15 10 7 5 3 2 1 0 1 2 3 4 6 8 10+

NOR-I
C-O2-II
METAL-IV

SPSS   TIME   REMAIN
MUSIC SELECT

DOLBY B NR   DOLBY C NR   REC CAL
NOISE REDUCTION   CALIBRATION

RESET   COUNTER TIME   TAPE NOR-I C/O2-II METAL-IV   ΔOFF ≈ON   DOLBY NR B-TYPE C-TYPE   MPX OFF ON

LINE IN (REC) LINE OUT (PLAY)
R   L   R   L

REMOTE

D-909

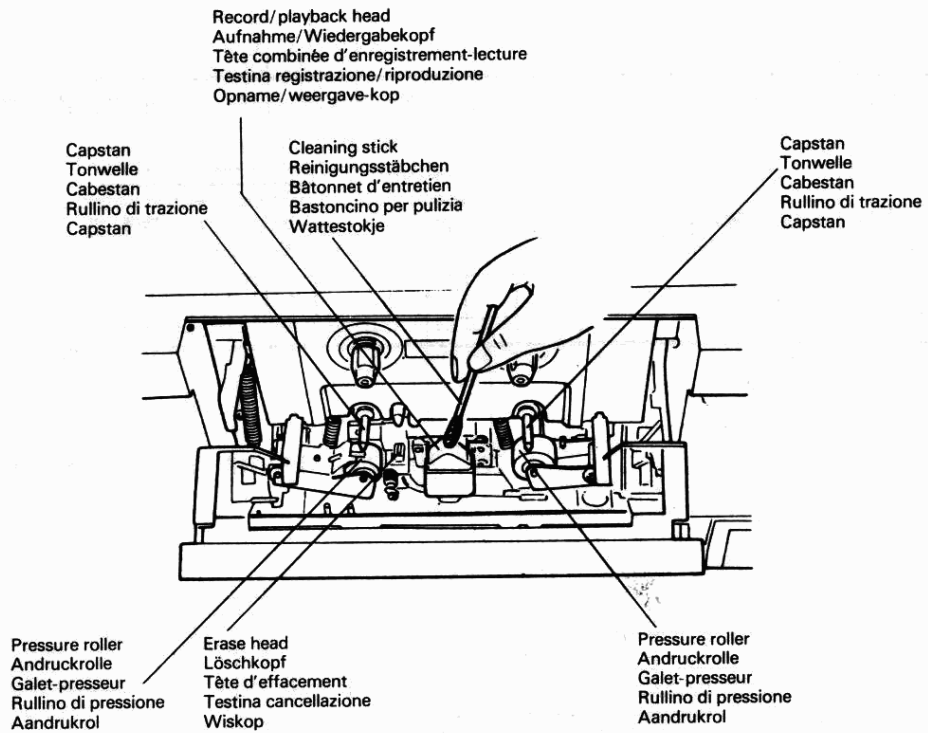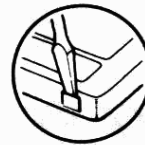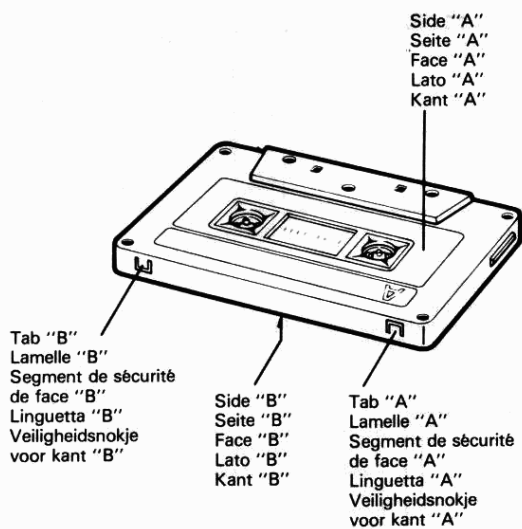LINE IN (REC) LINE OUT (PLAY)
R   L   R   L

REMOTE

To REC OUT or TAPE OUT
Zur REC OUT oder TAPE OUT Buchse
Aux prises de sortie d'enregistrement
(REC OUT) ou de sortie magnétophone
(TAPE OUT)
A REC OUT o TAPE OUT
Naar REC OUT of TAPE OUT

R   L   R   L

To TAPE PLAY, TAPE IN
Zur TAPE PLAY, TAPE IN
Aux prises d'écoute de magnétophone (TAPE PLAY),
d'entrée de magnétophone (TAPE IN)
A TAPE PLAY, TAPE IN
Naar TAPE PLAY, TAPE IN

TAPE
REC   PLAY
L   L
R   R
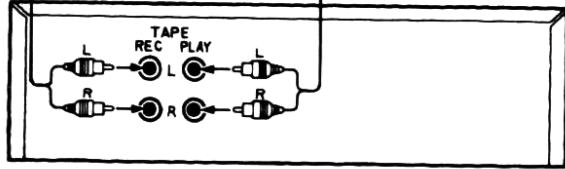
Stereo receiver or stereo amplifier
Stereo-Receiver oder Stereo-Verstärker
Ampli-syntoniseur stéréo ou
amplificateur stéréo
Ricevitore stereo o amplificatore stereo
Stereo tuner-versterker of stereo
versterker

C

Record/playback head
Aufnahme/Wiedergabekopf
Tête combinée d'enregistrement-lecture
Testina registrazione/riproduzione
Opname/weergave-kop

Capstan
Tonwelle
Cabestan
Rullino di trazione
Capstan

Cleaning stick
Reinigungsstäbchen
Bâtonnet d'entretien
Bastoncino per pulizia
Wattestokje

Capstan
Tonwelle
Cabestan
Rullino di trazione
Capstan

Pressure roller
Andruckrolle
Galet-presseur
Rullino di pressione
Aandrukrol

Erase head
Löschkopf
Tête d'effacement
Testina cancellazione
Wiskop

Pressure roller
Andruckrolle
Galet-presseur
Rullino di pressione
Aandrukrol

D

Side "A"
Seite "A"
Face "A"
Lato "A"
Kant "A"

Tab "B"
Lamelle "B"
Segment de sécurité
de face "B"
Linguetta "B"
Veiligheidsnokje
voor kant "B"

Side "B"
Seite "B"
Face "B"
Lato "B"
Kant "B"

Tab "A"
Lamelle "A"
Segment de sécurité
de face "A"
Linguetta "A"
Veiligheidsnokje
voor kant "A"

- When sound recorded is not to be erased, break and remove tab.
- Lamelle ausbrechen, um Cassette vor versehentlichem Löschen zu schützen.
- Casser et jeter le segment de sécurité si le matériel enregistré doit être protégé.
- Quando il suono già inciso non è cancellato, rimuovere la linguetta.
- Veiligheidsnokje uitbreken om opname tegen abusievelijk wissen te beveiligen.
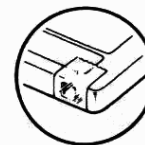
- For re-recording, block with adhesive plastic tape.
- Sollen mit einer so geschützten Cassette wieder Aufnahmen durchgeführt werden, einfach die Öffnung mit einem Stück Klebeband abdecken.
- Recouvrir l'alcôve qui correspond au segment de sécurité qui a été cassé de ruban adhésif pour enregistrer à nouveau cette face.
- Per una nuova registrazione, coprire il foro con nastro adesivo.
- Om voor opname geschikt te maken, de uitsparing met plakband bedekken.