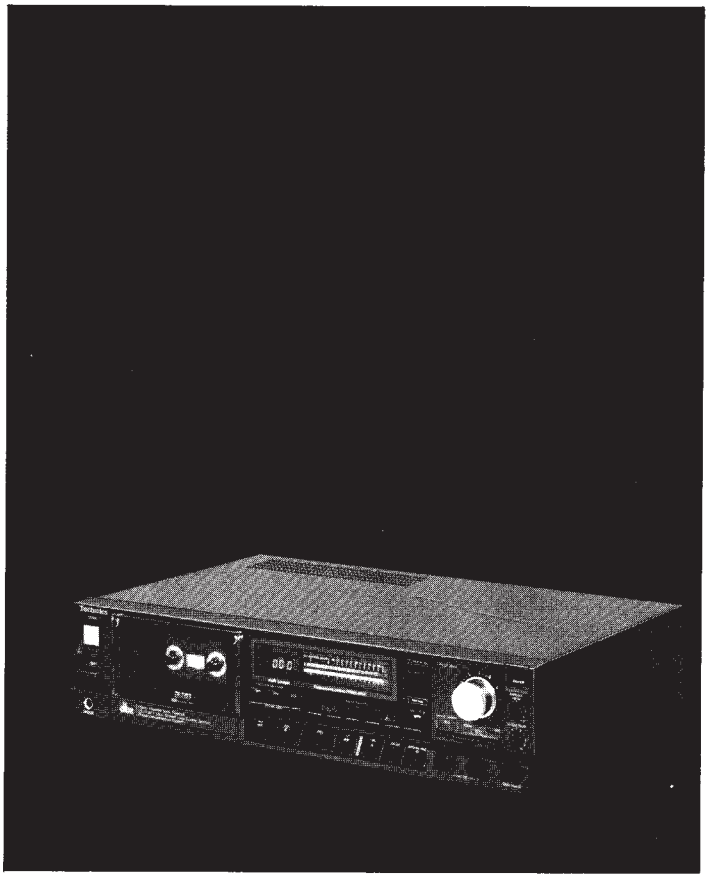
Technics

TAPE DECK
MAGNETOCASSETTE

RS-B100

OPERATING INSTRUCTIONS
MODE D'EMPLOI



- Before operating this set, please read these instructions completely.
- Avant de mettre l'appareil en service, lire le mode d'emploi jusqu'au bout.

IMPORTANT (For United Kingdom)

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.

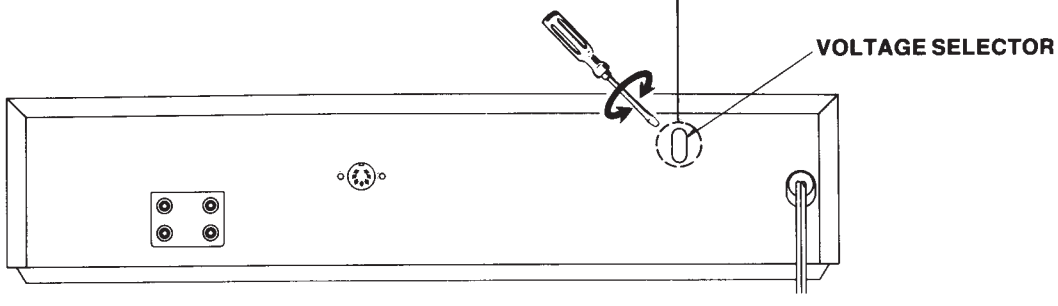
If a 13-amp (B.S. 1363) plug is used, a 3-amp fuse must be fitted, or if any other type of plug is used, a 5-amp fuse must be fitted either in the plug or adaptor or at the distribution board.

POWER VOLTAGE
TENSION
NETZSPANNUNG
NETSPANNING
TENSIONE D'ALIMENTAZIONE
NÄTSPÄNNING
NETSPÆNDING
AJUSTE DE LA TENSION

•The voltage selector is adjustable.
Please be sure to check the preset power voltage before using.

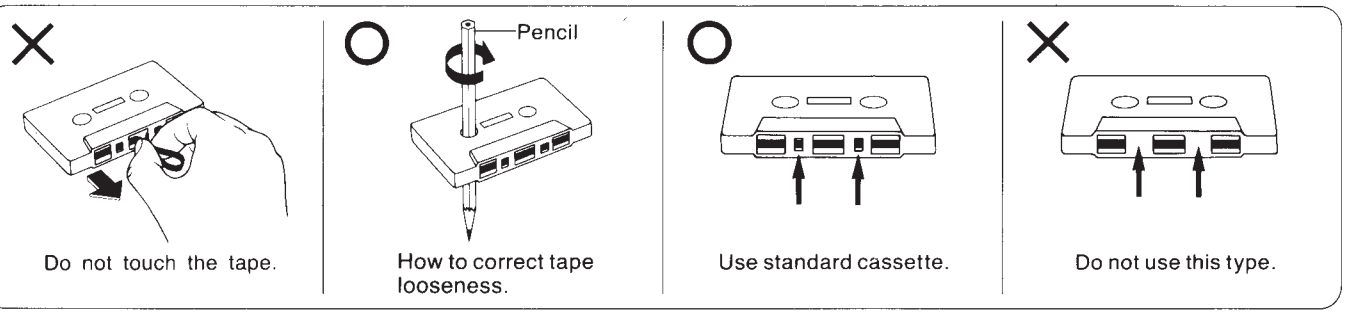
Europe: **AC 220 V, 50–60 Hz**
United Kingdom: **AC 240 V, 50 Hz**
Australia: **AC 240 V, 50–60 Hz**
Other area: **AC 240 V (See table below).**

•SETTING OF VOLTAGE SELECTOR •REGLAGE DU SELECTEUR DE TENSION •EINSTELLUNG DES SPANNUNGSWÄHLERS •STAND VAN DE NETSPANNINGSSELEKTOR •REGOLAZIONE DEL SELETTORE DI TENSIONE •INSTÄLLNING AV SPÄNNINGSVÄLJAREN •SPÆNDINGSVÆLGERENS STILLING •AJUSTE DEL SELECTOR DE TENSION	110 V 110 V	125 V 125 V	220 V 220 V	240 V 240 V
•LOCAL VOLTAGE •TENSION LOCALE • ÖRTLICHE NETZSPANNUNG •PLAATSELIJKE NETSPANNING •TENSIONE LOCALE •LOKAL SPANNING •DEN STEDLIGE NETSPÆNDING • TENSION LOCAL	AC: 100, 105, 110 V 50–60 Hz	AC: 115, 117, 120, 125 V 50–60 Hz	AC: 200, 210, 220 V 50–60 Hz	AC: 225, 230, 240, 250 V 50–60 Hz



1

- **ABOUT CASSETTE TAPE**
- **LES CASSETTES**
- **DIE CASSETTE**
- **CASSETTE BAND**
- **NOZIONI CIRCA LE CASSETTE**
- **KASSETTBAND**
- **OM KASSETTEBÅND**
- **NOCIONES ACERCA DE LOS CASETES**



Do not touch the tape.

How to correct tape looseness.

Use standard cassette.

Do not use this type.

2

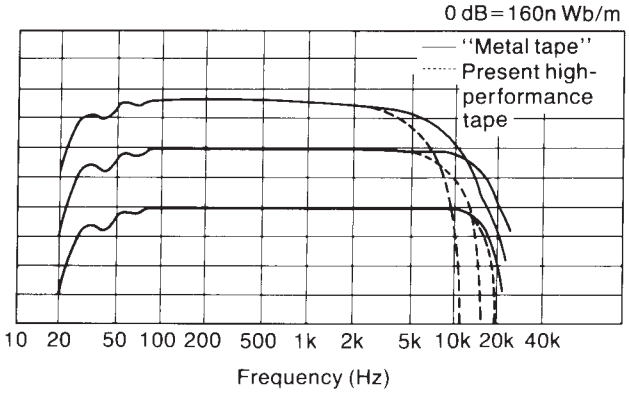
- **TAPE SELECTOR SETTINGS FOR VARIOUS TAPES**
- **POSITION DU SELECTEUR DE BANDE POUR LES DIFFERENTES CASSETTES**
- **WAHLSCHALTERSTELLUNG FÜR VERSCHIEDENE CASSETTEN**
- **STANDEN VAN DE BANDSOORTSELECTOR VOOR VERSCHILLENDE BANDSOORTEN**
- **POSIZIONI DEL SELETTORE DEL NASTRO PER I VARI TIPI DI CASSETTE**
- **BANDVÄLJARENS LÄGE FÖR OLIKA TYPER AV KASSETTER**
- **INDSTILLING AF BÅNDVÆLGEREN FOR FORSKELLIGE KASSETTETYPER**
- **POSICIONES DEL SELECTOR DE CINTAS PARA DIVERSAS CINTAS**

Tape indicator	Tape brand	Recording time
Normal	**Technics XD**	C-60, C-90
	Technics LN	C-60, C-90
	BASF LHI	C-60, C-90
	BASF PROFESSIONAL I	C-60, C-90
	BASF SLH	C-60, C-90
	FUJI FX I	C-60, C-90
	MAXELL UD	C-60, C-90
	MAXELL UDXL I	C-60, C-90
	SONY AHF	C-60, C-90
	TDK AD	C-60, C-90
CrO_2	**Technics XA**	C-60, C-90
	MAXELL UDXL II	C-46, C-60
	SCOTCH MASTER II	C-46, C-60
	TDK SA	C-46, C-60
	FUJI FX II	C-60
Metal	**Technics MX**	C-60, C-90
	FUJI SR	C-46, C-60, C-90
	MAXELL MX	C-46, C-60, C-90
	SCOTCH METAFINE	C-46, C-60, C-90
	SONY METALLIC	C-46, C-60, C-90
	TDK MA	C-46, C-60, C-90

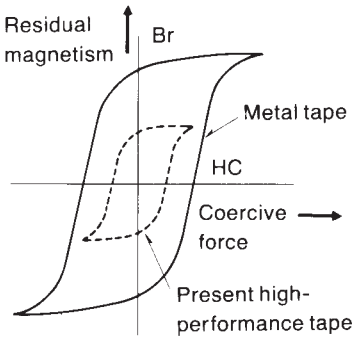
3

- **METAL TAPE**

- Metal tape frequency response example
- Exemple de courbe de réponse d'une bande "Metal"
- Frequenzgang des "Metal tape"
- Voorbeeld van weergavekarakteristiek van "Metal tape"
- Esempio di risposta di frequenza del nastro metal
- Exempel på frekvensgång med "Metal tape"
- Frekvensgang for et "Metal tape"
- Ejemplo de respuesta en frecuencia de las cintas de metal



- Metal tape magnetic characteristics
- Caractéristiques magnétiques d'une bande "Metal"
- Magnetisierungskennlinie des "Metal tape"
- Magnetische karakteristieken van de "Metal tape"
- Caratteristiche magnetic e del nastro metal
- Magnetisk karakteristik för "Metal tape"
- Magnetiske egenskaber ved "Metal tape"
- Características magnéticas de las cintas de metal

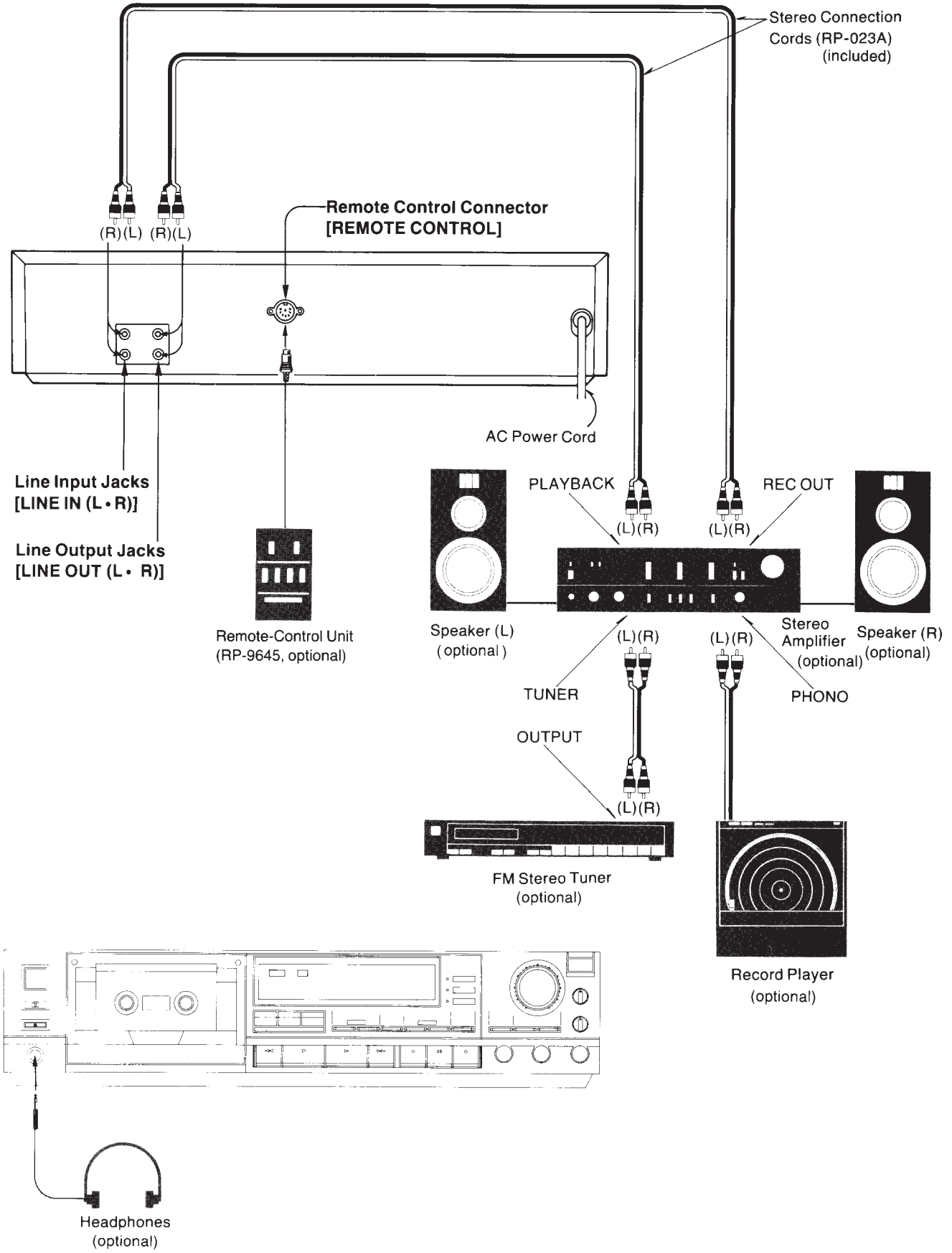


4

●CONNECTIONS
●CONNEXIONS
●ANSCHLÜSSE

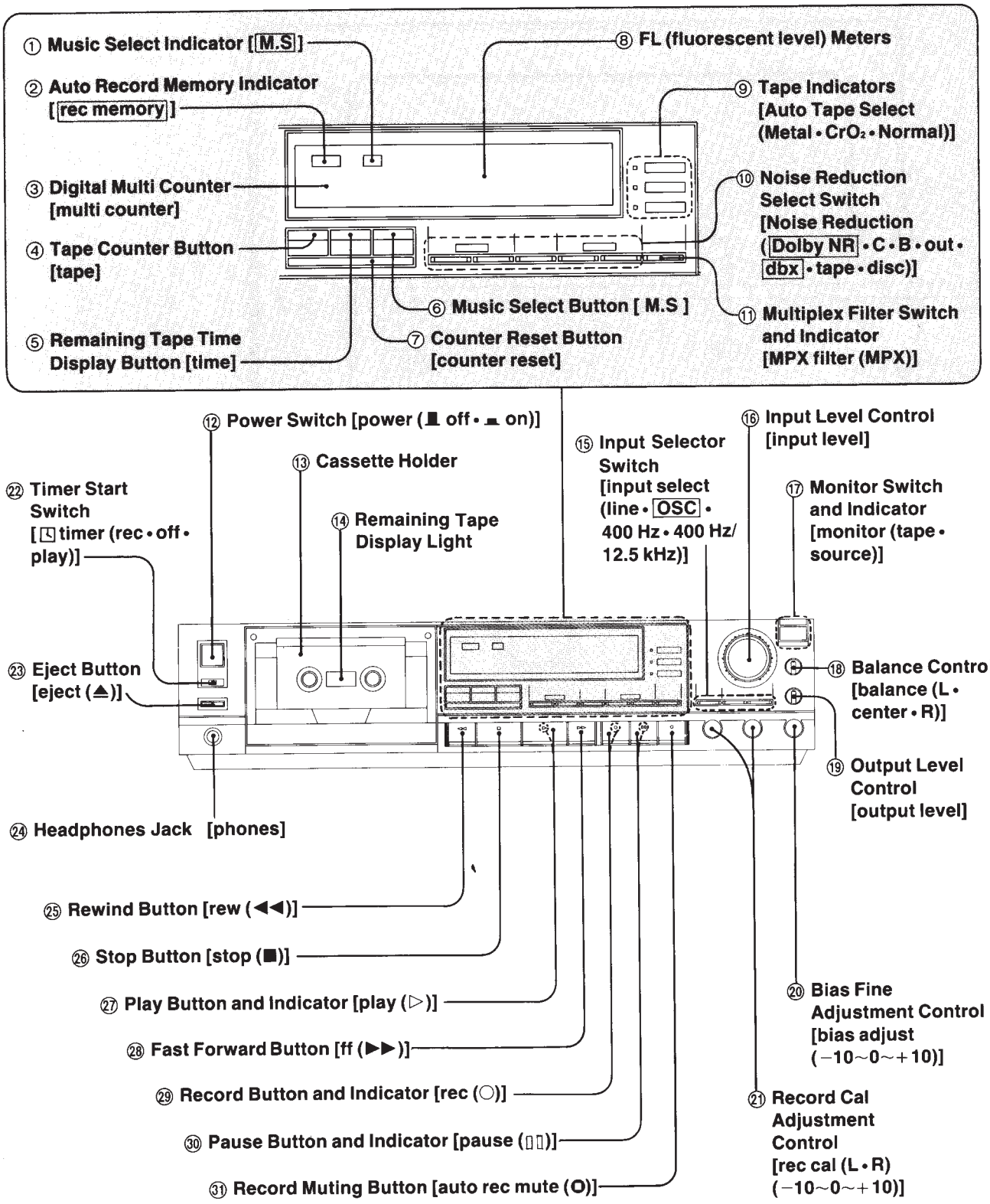
●AANSLUITINGEN
●COLLEGAMENTI
●ANSLUTNINGAR

●TILSLUTNING
●CONEXIONES



5

●CONTROLS
●LES COMMANDES
●BEDIENUNGSELEMENTE
●BEDIENINGSKNOPPEN
●CONTROLLI
●KONTROLLER
●BETJENING
●CONTROLES



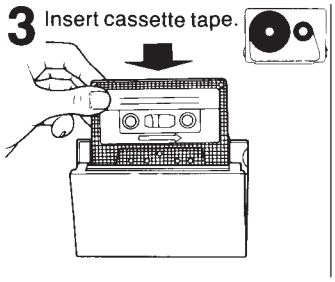
6

- **CASSETTE INSERTION AND REMOVAL**
- **MISE EN PLACE ET RETRAIT DE LA CASSETTE**
- **EINLEGEN UND ENTNEHMEN DER CASSETTEN**
- **INLEGGEN EN UITNEMEN VAN DE CASSETTE**
- **INTRODUZIONE ED ESPULSIONE DELLA CASSETTA**
- **ILÄGGNING OCH UTTAGNING AV KASSETTEN**
- **ISÆTNING OG UDTAGING AF KASSETTEN**
- **CARGA Y DESCARGA DEL CASETE**

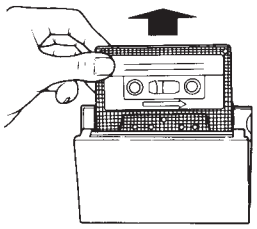
1

2 Press to open the Cassette Holder.

3 Insert cassette tape.

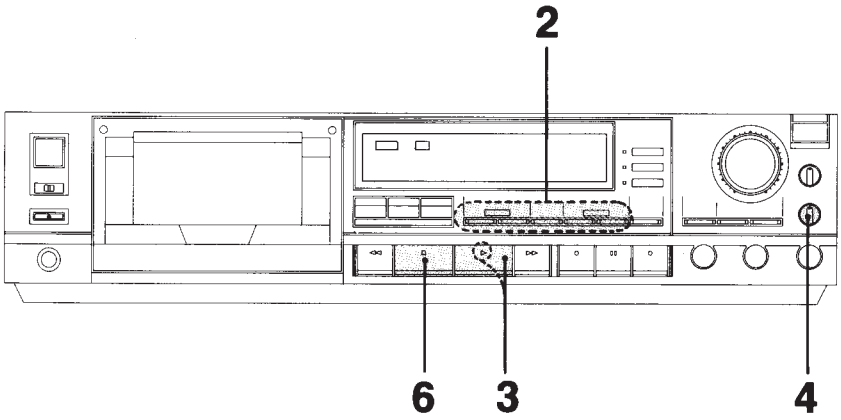


Remove cassette tape.



7

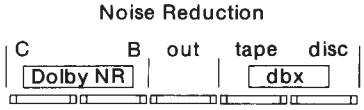
- **PLAYBACK**
- **LECTURE**
- **WIEDERGABE**
- **WEERGAVE**
- **RIPRODUZIONE**
- **AVSPELNING**
- **AFSPILNING**
- **REPRODUCCION**



1

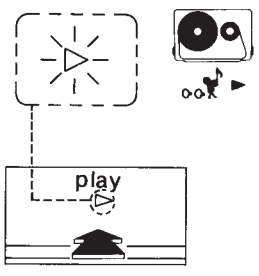
- Perform the operations in Section. 6.
- Effectuer les démarches de la Fig. 6.
- Die in Absch. 6. gezeigten Bedienungsvorgänge ausführen.
- Volg de aanwijzingen in Fig. 6.
- Effettuare le operazioni della Fig. 6.
- Förfar enligt Fig. 6.
- Betjen apparatet som vist på Fig. 6.
- Efectuar las operaciones indicadas en la Figura. 6.

2 Select noise reduction systems.

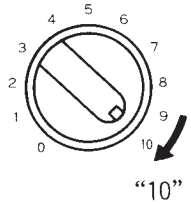


- See page 16.
- Voir page 25.
- Siehe Seite 34.
- Zie blz. 43.
- Vedre a pag 53.
- Se sid 61.
- Se side 69.
- Véase en la pag. 78.

3



4 output level

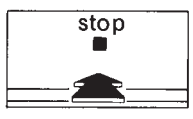


"10"

5 Adjust to desired listening levels.

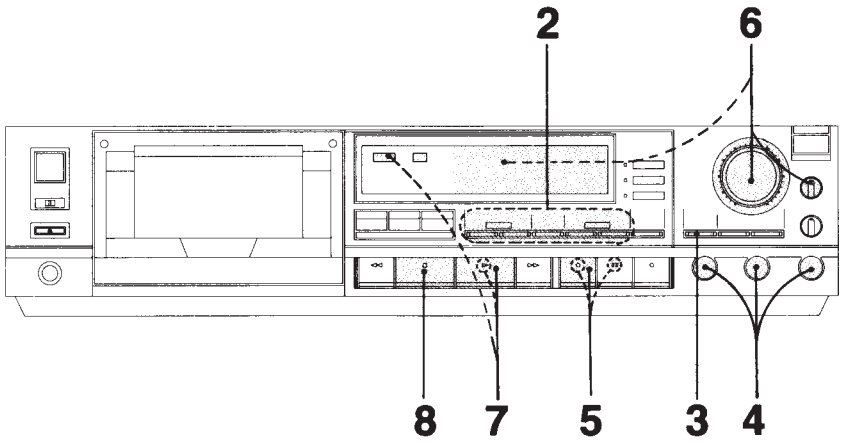
Stereo Amplifier

6



8

●RECORDING
●ENREGISTREMENT
●AUFNAHME
●OPNAME
●REGISTRAZIONE
●INSPELNING
●OPTAGELSE
●GRABACION



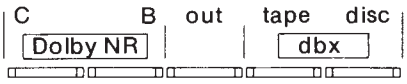
1

●Perform the operations in Section. 6.
●Effectuer les démarches de la Fig. 6.
●Die in Absch. 6. gezeigten Bedienungsvorgänge ausführen.
●Volg de aanwijzingen in Fig. 6.
●Effettuare le operazioni della Fig. 6.
●Förfar enligt Fig. 6.
●Betjen apparatet som vist på Fig. 6.
●Efectuar las operaciones indicadas en la Figura. 6.

2

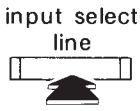
Select noise reduction systems.

Noise Reduction

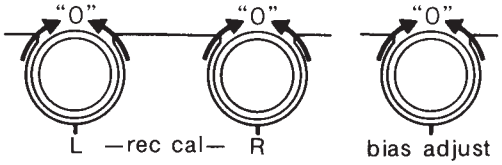


●See page 16.
●Voir page 25.
●Siehe Seite 34.
●Zie blz. 43.
●Vedre a pag 53.
●Se sid 61.
●Se side 69.
●Véase en la pag. 78.

3



4



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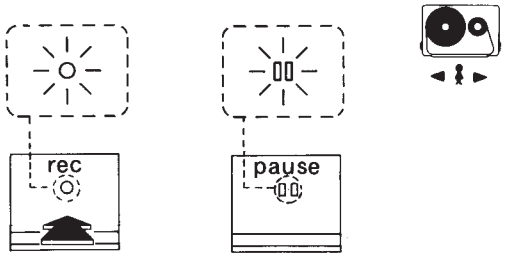
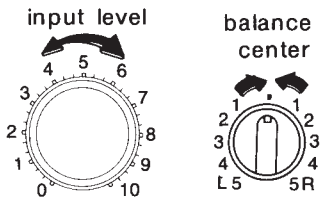
●Voir page 24.
●Siehe Seite 33.
●Zie blz. 42.
●Vedre a pag 51.
●Se sid 60.
●Se side 68.
●Véase en la pag. 77.

5



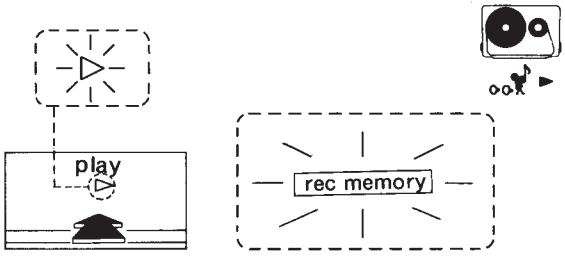
6

Set input levels.

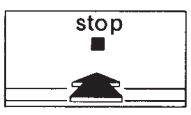


●See page 14.
●Voir page 23.
●Siehe Seite 32.
●Zie blz. 41.
●Vedre a pag 50.
●Se sid 59.
●Se side 67.
●Véase en la pag. 76.

7



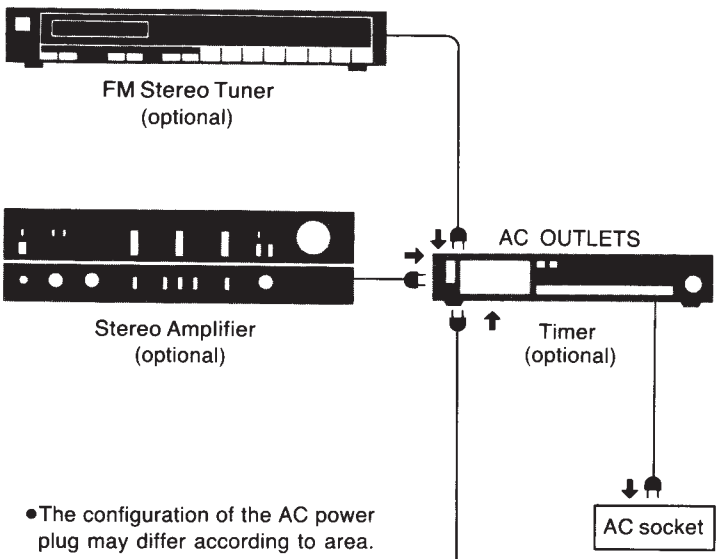
8



9

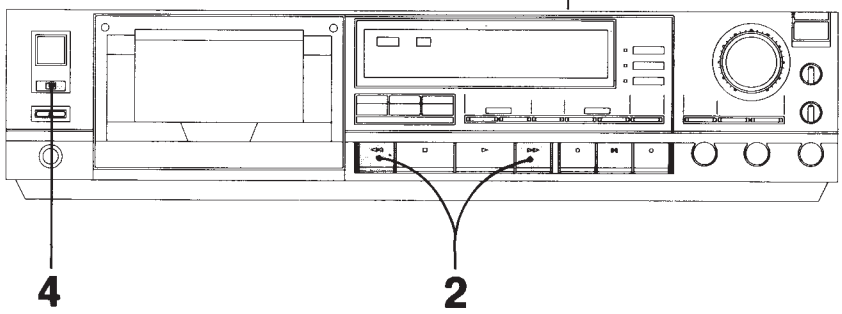
- **TIMER RECORDING AND PLAYBACK**
- **ENREGISTREMENT ET LECTURE AVEC MINUTERIE**
- **AUFNAHME UND WIEDERGABE MIT EINER SCHALTUHR**
- **OPNAME EN WEERGAVE MET BEHULP VAN EEN SCHAKELKLOK**
- **REGISTRAZIONE E RIPRODUZIONE USANDO IL "TIMER"**
- **INSPELNING OCH AVSPELNING MED TIDUR**
- **INDSPILNING OG AFSPILNING MED PROGRAMUR**
- **REPRODUCCION Y GRABACION USANDO EL TEMPORIZADOR**

- Connections to the power source
- Connexions à l'alimentation
- Anschluß ans Netz
- Aansluitingen aan het voedingsnet
- Collegamenti alla sorgente elettrica
- Nätanslutning
- Strømforsyningsmuligheder
- Connexiones a la fuente de alimentación



- The configuration of the AC power plug may differ according to area.

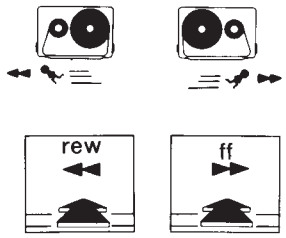
- **Playback with a timer**
- **Lecture avec minuterie**
- **Wiedergabe mit einer Schaltuhr**
- **Weergave met behulp van een schakelklok**
- **Riproduzione col timer**
- **Avspelning med tidur**
- **Afspilning med programur**
- **Grabación usando el temporizador**



1

- Perform the operations in Section. 7. 1~5.
- Effectuer les démarches de la Fig. 7. 1~5.
- Die in Absch. 7. 1~5. gezeigten Bedienungsvorgänge ausführen.
- Volg de aanwijzingen in Fig. 7. 1~5.
- Effettuare le operazioni della Fig. 7. 1~5.
- Förfar enligt Fig. 7. 1~5.
- Betjen apparatet som vist på Fig. 7. 1~5.
- Efectuar las operaciones indicadas en la Figura. 7. 1~5.

2

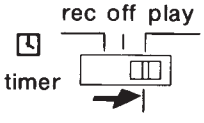


- Stop the tape exactly where you want it to start.

3 Set the timer to the desired time.

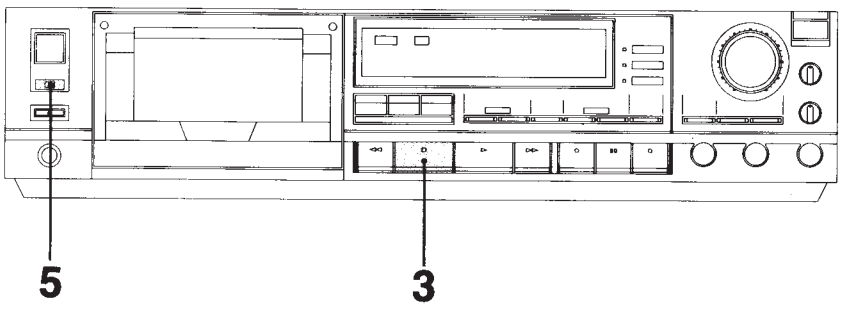
- See page 19.
- Voir page 28.
- Siehe Seite 38.
- Zie blz. 47.
- Vedre a pag 56.
- Se sid 64.
- Se side 72.
- Véase en la pag. 81.

4



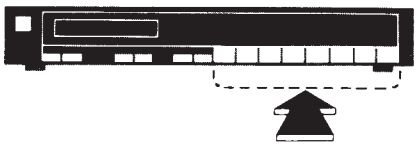
- At the desired time, the timer playback will begin.

■ **Recording with a timer**
■ **Enregistrement avec minuterie**
■ **Aufnahme mit einer Schaltuhr**
■ **Opname met een schakelklok**
■ **Registsrazione col timer**
■ **Inspelning med tidur**
■ **Indspilning med programur**
■ **Reproducción usando el temporizador**



1 Select desired radio station.

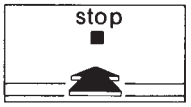
Stereo Tuner



2

- Perform the operations in Section 8.1~6.
- Effectuer les démarches de la Fig. 8.1~6.
- Die in Absch. 8.1~6, gezeigten Bedienungsvorgänge ausführen.
- Volg de aanwijzingen in Fig. 8.1~6.
- Effettuare le operazioni della Fig. 8.1~6.
- Förtar enligt Fig. 8.1~6.
- Betjen apparatet som vist på Fig. 8.1~6.
- Efectuar las operaciones indicadas en la Figura. 8.1~6.

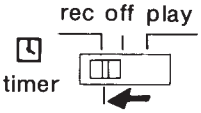
3



4 Set the timer to desired time.

- See page 19.
- Voir page 28.
- Siehe Seite 38.
- Zie blz. 47.
- Vedre a pag 56.
- Se sid 64.
- Se side 72.
- Véase en la pag. 81.

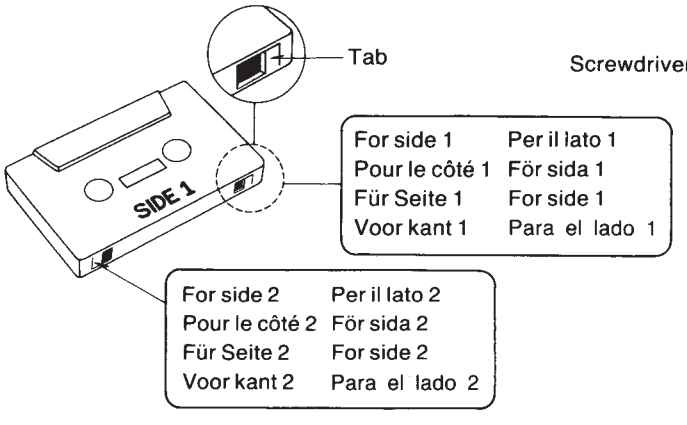
5



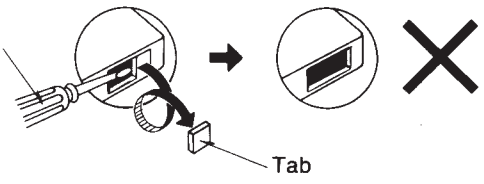
- At the desired time, the timer recording will begin.

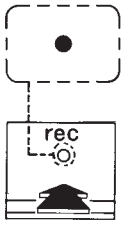
10

- **ACCIDENTAL-ERASE PREVENTION**
- **DISPOSITIF DE PREVENTION D'ENREGISTREMENT**
- **LÖSCHSCHUTZVORRICHTUNG**
- **VOORKOMEN VAN ABUSIEVELIJK WISSEN**
- **PREVENZIONE DELLE CANCELLAZIONI INVOLONTARIE**
- **SKYDD MOT OAVSIKTLIG RADERING**
- **BESKYTTELSE MOD SLETNING**
- **PREVENCION CONTRA BORRADOS ACCIDENTALES**

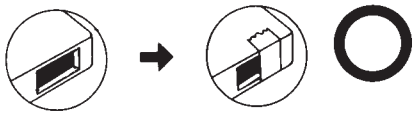


■ **Record prevention**

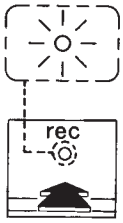




■ **New recording**

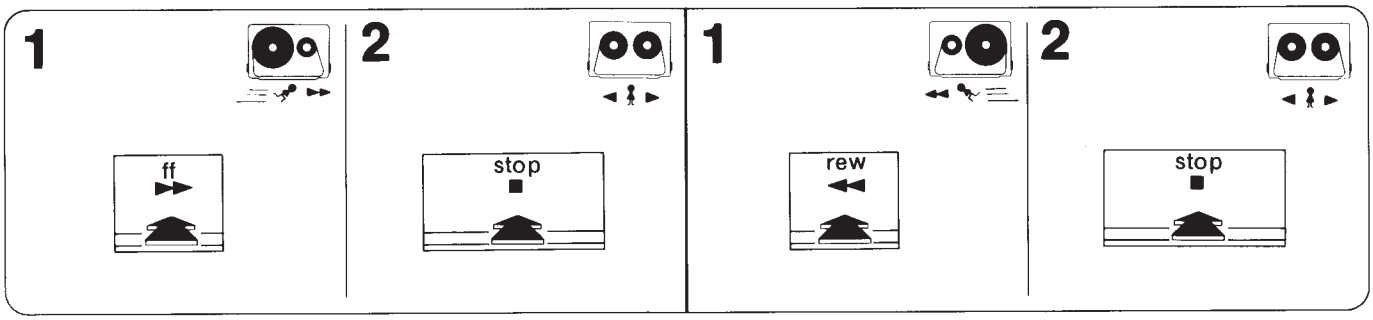


Cover hole with cellophane tape.



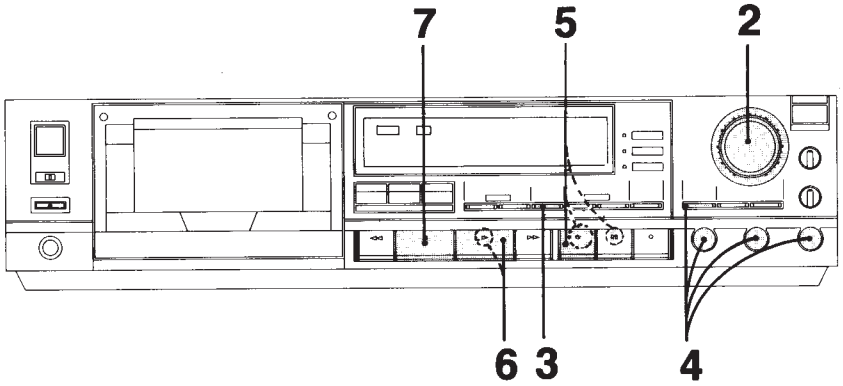
11

- **FAST FORWARD AND REWIND**
- **AVANCE RAPIDE ET REBOBINAGE**
- **SCHNELLVORLAUF UND RÜCKLAUF**
- **SNEL OPSPOELEN EN TERUGSPOELEN**
- **AVVOLGIMENTO RAPIDO E RIAVVOLGIMENTO**
- **FRAM- OCH ÅTERSPOLNING**
- **HURTIG FREMSPOLING OG TILBAGESPOLING**
- **AVANCE RAPIDO Y REBOBINADO**



12

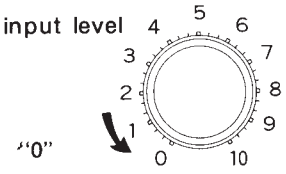
- **ERASING**
- **EFFACEMENT**
- **LÖSCHEN**
- **WISSEN**
- **CANCELLAZIONE**
- **RADERING**
- **SLETNING**
- **BORRADO**



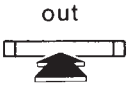
1

- Perform the operations in Section 6.
- Effectuer les démarches de la Fig. 6.
- Die in Absch. 6 gezeigten Bedienungsvorgänge ausführen.
- Volg de aanwijzingen in Fig. 6.
- Effettuare le operazioni della Fig. 6.
- Forfar enligt Fig. 6.
- Betjen apparatet som vist på Fig. 6.
- Efectuar las operaciones indicadas en la Figura. 6.

2 Set to the minimum position.



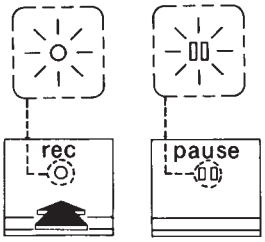
3 Noise Reduction



4 input select line

- Record Cal Adjustment Control and Bias Fine Adjustment Control are set to the center click position.

5



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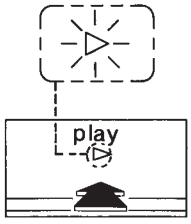

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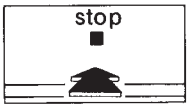
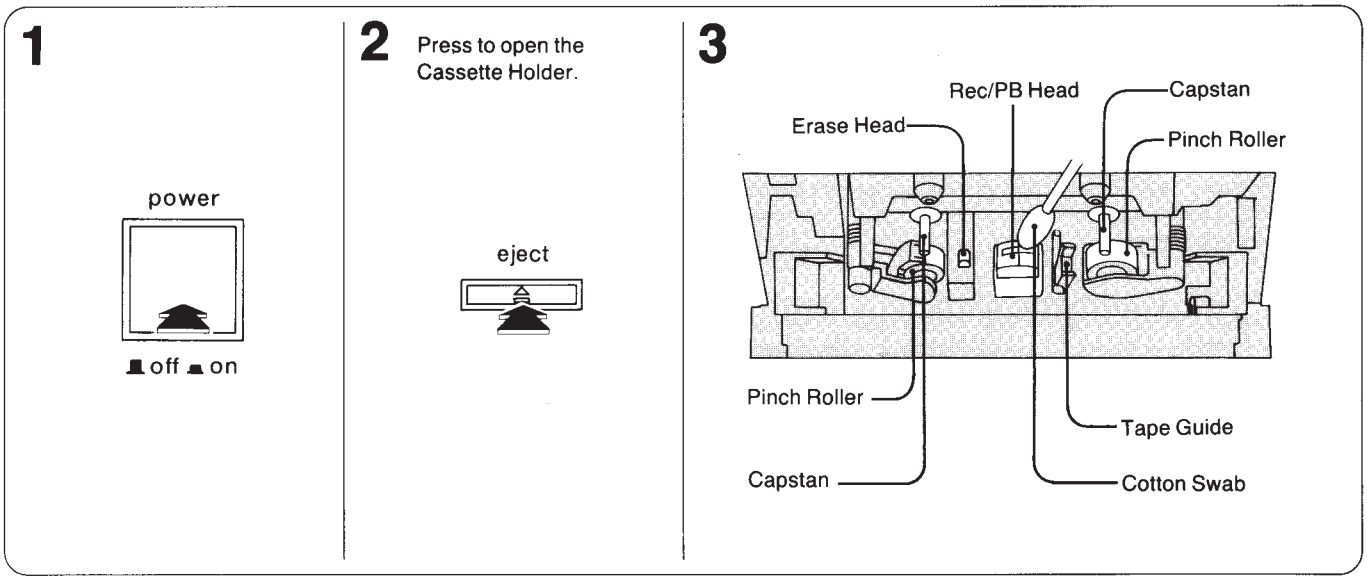


13

●MAINTENANCE ●ONDERHOUD ●VEDLIGEHOLDELSE
●ENTRETIEN ●MANUTENZIONE ●MANTENIMIENTO
●WARTUNG ●VÅRD

- Cleaning the head section
- Nettoyage des têtes
- Reinigen des Tonkopfteils
- Reinigen van de koppen
- Pulizia del complesso della testina-
- Rengöring av bandhuvuddelen
- Rensning of tonehoveddelen
- Limpieza de la sección de las cabezas



Input Level Knob

The unit comes with a spare black input level knob. Change the silver knob attached to the unit according to fancy or to match the system used.

Method of Changing

Pull out the knob attached to the unit and insert the new one.

Commande de niveau d'entrée

Cet appareil est fourni avec un bouton de niveau d'entrée noir supplémentaire. D'après sa fantaisie ou pour convenir aux appareils utilisés, il pourra servir à remplacer le bouton argenté.

Méthode de changement

Tirer sur le bouton fixé sur l'appareil et installer l'autre à sa place.

Knopf für den Eingangspegelregler

Das Gerät wird mit einem schwarzen Ersatzknopf für den Eingangspegelregler geliefert. Wechseln Sie den Silberknopf, mit dem das Gerät ausgestattet ist, gegen diesen Knopf aus, wenn dies Ihrem Geschmack enspricht oder besser zu der Stereoanlage paßt, die Sie verwenden.

Verfahren zum Auswechseln

Den am Gerät angebauten Knopf abziehen und den neuen Knopf aufstecken.

Ingangsniveauknop

Een zwarte reserve ingangsniveauknop is bijgeleverd. U kunt de op het apparaat gemonteerde zilveren knop vervangen door de zwarte knop naar eigen smaak om bijvoorbeeld de kleuren van uw stereo-componenten aan elkaar aan te passen.

Vervangingsmethode

Trek de op het apparaat gemonteerde knop uit en steek de nieuwe knop in.

Manopola del livello d'ingresso

L'apparecchio è dotato di una manopola del livello d'ingresso di ricambio. Cambiare a piacere la manopola di colore argento dell'apparecchio o per armonizzarlo col sistema usato.

Modo di cambiamento

Estrarre la manopola attaccata all'apparecchio e inserire la nuova.

Inspelningsnivåratt

En extra, svart, inspelningsnivåratt medföljer apparaten, att montera i stället för den silverfärgade, om man så önskar. Drag bara ut den silverfärgade och sätt dit den svarta.

Indgangsniveauknap

Apparatet er forsynet med en ekstra sort indgangsniveauknap. Udskift sølvknappen, som sidder på apparatet, hvis De har lyst, eller for at få det til at passe til det anvendte anlæg.

Fremgangsmåde for udskiftningen

Træk den knap af, som sidder på apparatet, og sæt den nye på istedet.

Control del nivel de entrada

El aparato se entrega con un mando de control de entrada negro de repuesto. Cambiar el mando plateado montado en el aparato de acuerdo con los gustos personales.

Método de cambio

Sacar el mando unido al aparato e insertar el nuevo.

ENGLISH

We want to thank you for selecting the model RS-B100 Technics cassette tape deck for your recording and playback enjoyment. To obtain the maximum benefit of the many features of this deck, please read these operating instructions carefully.

OPERATION NOTES

Horizontal placement
For best performance, place this unit in a horizontal position.

Location
Performance may be adversely affected by extremely hot [above 100°F. (35°C.)] or extremely cold [below 40°F. (5°C.)] locations, direct sunshine, or excessive vibration.

Power source
This unit features a DC operated motor which makes it possible to operate on 50 Hz or 60 Hz AC power without any conversion. The voltage source should be within ±10% of the unit's rated voltage. Variations in excess of ±15% of rated voltage may cause uneven performance, or possible damage to the unit.

Clean the head assembly
One of the most important factors in the determination of good tape deck performance is regular cleaning of the head assembly.

Function buttons
This model comes with soft fingertip touch controls for enhanced operational ease.
When two or more function buttons have been pressed, the operation mode of the button pressed first takes precedence, and the deck will not be transferred to the mode corresponding to the button that was pressed afterward. This is to prevent malfunctions arising from improper operation.
When a button has been pressed, the deck will not be transferred to the corresponding mode unless 0.3 sec. has been left as the interval between selection.
In cases like this, the deck will enter the desired mode when the button is pressed again. This is to ensure that the operations of the mechanism are stable and reliable.

Automatic stop operation
During recording, fast forward or rewinding, the tape deck automatically returns to the stop mode when the tape reaches the end.

Refer to section 1.

ABOUT CASSETTE TAPE

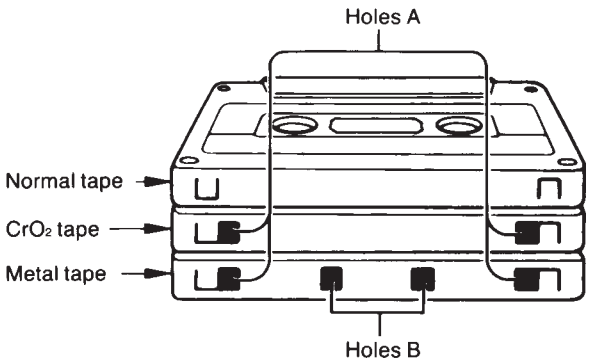
- Do not pull the tape out of the cassette openings.
- If the tape is loose in the cassette, the tape may become wound onto the Pinch Roller and result in breakage or damage. Tighten looseness of the tape, if necessary, by using a pencil as shown in the section 1.
- Avoid using C-120 cassette tape with this unit because this tape can easily become broken, stretched or twisted if not used with extreme care.
- Avoid storing cassette tapes in places where the temperature is high and/or where the humidity is high.
- If the tape is very tightly wound or unevenly wound, fast forward it and then rewind it before use.

Refer to section 2.

AUTO TAPE SELECTOR FUNCTION

The auto tape selector function automatically selects the types of tape as soon as a tape is loaded, and it sets the bias and equalization.

Detection holes of various tapes



Tapes permitting automatic setting of bias and equalization

Type of tape	Tape indicator lighting	Equalization	Bias
Normal tape	Normal	120 μs	Low
CrO_2 tape (with holes A)	CrO_2	70 μs	High
Metal tape (with holes A and B)	Metal	70 μs	Metal

1. "Metal" lights when no tape has been loaded.
2. Do not record sound onto Metal tapes which are not provided with holes B (since this will result in a recording with a high proportion of distortion).
   Playback is perfectly normal even if there are no holes B. (Equalization is 70 μs, the same as for a CrO_2 type tape. In this case, the "CrO_2" Tape Indicator lights.)

- Do not use ferri-chrome (Fe-Cr) tapes with this unit.

Refer to section 3.

METAL TAPE

A word about "Metal tape"
Conventional cassette tapes can be broadly classified into 2 categories according to the magnetic material coated on the tape surface: the ferric-oxide (γ-Fe_2O_3) type, including ordinary LH tape, etc.; and the chromium-dioxide (CrO_2) type, including XA tape, etc.
Continued technological advances have been made in an attempt to develop these tapes to a high level of performance, but recently there has been a recognized need for the development of a new material to improve performance much further.
In response to this need, "Metal tape" has been developed as a

new kind of tape, employing a magnetic alloy of pure iron (Fe) as the main component in the magnetic substance. In comparison with conventional cassette tape, "Metal tape" can record a far greater amount of information at a high density. As a result, the maximum output level (MOL) has been improved throughout the entire range, and, in particular, the frequency response characteristics at high levels and the dynamic characteristics in the high range have been greatly improved. This means, therefore, that a remarkable improvement of sound quality has been made possible. (It should be noted that the tape base and parts of the tape other than the magnetic substance are composed of the same material as previously used.)

Refer to section 4.

CONNECTION NOTES

Location of this unit and stereo amplifier

If this unit is placed on top or next to the stereo amplifier, a "hum" noise may be heard during tape playback. Refer to the information below in order to avoid this.

- If the stereo amplifier and this unit are placed one above the other, leave as much space as possible between them, and place them where there is the least amount of hum.
- If the stereo amplifier and this unit are placed one beside the other, try reversing their positions, and place them where there is the least amount of hum.

A "click" noise may be heard when the Power Switch is turned on or off. To avoid this, be sure to set the volume control of the amplifier to the minimum position.

Remote Control

The unit incorporates an IC-based electronic control operation system and so it can be operated remotely using the Remote Control Unit. (RP-9645)

Refer to section 5.

CONTROLS

① Music Select Indicator [M.S]

② Auto Record Memory Indicator [rec memory]

③ Digital Multi Counter [multi counter]

④ Tape Counter Button [tape]

⑤ Remaining Tape Time Display Button [time]

⑥ Music Select Button [M.S]

⑦ Counter Reset Button [counter reset]

⑧ FL (fluorescent level) Meters

⑨ Tape Indicators [Auto Tape Select (Metal • CrO_2 • Normal)]

⑩ Noise Reduction Select Switch [Noise Reduction (Dolby NR • C • B • out • dbx • tape • disc)]

⑪ Multiplex Filter Switch and Indicator [MPX filter (MPX)]

⑫ Power Switch [power (off • on)]

⑬ Cassette Holder

⑭ Remaining Tape Display Light

⑮ Input Selector Switch [input select (line • OSC • 400 Hz • 400 Hz/12.5 kHz)]

⑯ Input Level Control [input level]

⑰ Monitor Switch and Indicator [monitor (tape • source)]

⑱ Balance Control [balance (L • center • R)]

⑲ Output Level Control [output level]

⑳ Bias Fine Adjustment Control [bias adjust (−10~0~+10)]

㉑ Record Cal Adjustment Control [rec cal (L • R) (−10~0~+10)]

㉒ Timer Start Switch [timer (rec • off • play)]

㉓ Eject Button [eject (⏏)]

㉔ Headphones Jack [phones]

㉕ Rewind Button [rew (◀◀)]

㉖ Stop Button [stop (■)]

㉗ Play Button and Indicator [play (▷)]

㉘ Fast Forward Button [ff (▶▶)]

㉙ Record Button and Indicator [rec (○)]

㉚ Pause Button and Indicator [pause (▯▯)]

㉛ Record Muting Button [auto rec mute (▢)]

Refer to section 6.

CASSETTE INSERTION AND REMOVAL

- Be sure the cassette is placed so that the edge with the holes is facing downward.
  The Cassette Holder cannot be closed if the cassette is inserted incorrectly.
  Be sure to close the Cassette Holder gently.
- The Tape Indicator corresponding to the type of tape used lights.
- This deck does not allow the tape to be ejected when it has been set to the recording, playback or pause mode. Therefore do not press the Eject Button while the tape is running or while the deck is set to the pause mode.

- This deck will return to the stop mode if the power is switched off during recording or playback.
  However, in low temperature or low power line voltage conditions, it may not be possible to eject the tape since the deck will not return properly to the stop mode. In cases like this, switch on the power again.

Refer to section 7.

PLAYBACK

- Note that the operation buttons will not function until about 5 seconds have passed after the power is turned on. The muting circuitry is used in order to make playback starts better.
- No playback sound will be heard from this unit if, during playback, the Output Level Control is set to its minimum position, even though the volume control of the amplifier to which this unit is connected is set to its maximum position.

Music selector

The music selector function automatically finds the start of a program when the Rewind or Fast Forward Button is pushed during playback and it starts playback again from that position.

- When the Music Select Button is pressed, the Music Select Indicator lights up until the end of the introduction to the tune.

To listen to the programme after the programme being heard
Push the Fast Forward Button between programmes or in the middle of a programme. (At the next programme interval, the Fast Forward Button will be released, and the unit will return to the play mode).

To listen again to the same programme just heard (repeat play)
Push the Rewind Button between programmes or during a programme. (At the previous programme interval, the Rewind Button will be automatically released, and the current programme will be played again from the beginning).

Notes:

- This may not operate correctly with the following kinds of tape: programs with passages of extremely low volume level, music tapes with non-recorded passages, recordings with sections of fade-in or fade-out recording.
- Unrecorded blanks of about 4 seconds in length between the program must be created in order for the music selector function to work properly.
  The function may not work if the blanks are too short.
  The function may not work properly with prerecorded music tapes which have passages where the sound level is particularly low or which have passage of unrecorded sound.
- In cases such as classical music, when a low level of sound continues in the programme.
- If the Rewind Button is depressed immediately after the start of the programme has been found and playback has begun, the tape may go beyond the start and not stop at the interval between programmes.

Refer to section 8.

RECORDING

Record Button

When the Record Button of this unit is pressed, the deck automatically enters the "rec. pause" mode and the Recording Indicator and Pause Indicator light. This is to facilitate the adjustment of the recording level with the Input Level Control.
Press the Play Button to start recording.

Record level setting

- Adjust the recording level while observing the lighting of the Fluorescent Level Meters and referring to the setting level table below.

Noise Reduction (NR)	Normal Tape CrO_2 Tape	Metal Tape
dbx	+6 dB (+8)	+8 dB (+12)
Dolby NR B•C NR out	+4 dB (+6)	+6 dB (+8)

- The level meter may light momentarily as far as the level indicated in parentheses ( ) without causing any complications in the setting.

Balance Control

When the Fluorescent Level Meters light to indicate a difference in input level between the left and right channels, a proper balance can be achieved with this control.
The right channel level is reduced when the control is slid toward "left" and the left channel level is similarly reduced when it is slid toward "right".
Normally, the control is set to the centre click position. This control does not function during playback.

Notes:

- After making a valuable recording, it is suggested that the accidental-erase prevention tabs be broken out, using a screwdriver or similar tool, in order to prevent accidental erasing of the recording by later re-recording over it.
- For recording, therefore, be sure that the cassette has the tabs intact, or that the holes (where the tabs were) are covered by cellophane tape.

Auto record memory

When the Play Button is pressed in the Record standby mode, recording begins and the time when recording begins is memorized (the Auto Record Memory Indicator then lights up and auto record memory function works for approx. 30 seconds).
If the record timing was incorrect and the Rewind Button is pressed directly, the tape rewinds to the beginning of the recording, stops automatically and the Auto Record Memory Indicator goes off. Then begin recording again.

Notes:

- If any button other than the Rewind Button is pressed during recording, the auto record memory goes off.
- If this is repeated in the same place, the non recorded interval will become shorter.

Multiplex Filter Switch and Indicator

Press this switch to record an FM stereo broadcast with noise reduction.
(The indicator will light up).
This eliminates the 19 kHz pilot signal and 38 kHz sub-carrier in the FM stereo broadcast, and prevents incorrect operation of the NR circuit. Do not press the switch when making recordings other than FM stereo.

Fluorescent level (FL) meter display and function

- The meter scale is designed for easy use with indication ranging from "−40 dB" to "+18 dB".
- The meter indicates the music signal peaks. The meter responds sensitively to pulsive sound such as that from percussion instruments. It has a peak hold function (auto reset type) which holds the peak level on the meter for about 2 seconds. This makes it easy to read momentary peak levels.
- Three colours are used for the actual indication: white as far as "0 dB", orange from "0 dB" to "+8 dB" and red for more than "+8 dB".
- The red bar lights when the Noise Reduction Select Switch is set to " dbx ".
- When the Input Selector Switch is set to "400 Hz" or "400 Hz/12.5 kHz" in the recording mode during calibration, the FL Meter and the display change over to Record cal/bias adjustment level.

Monitoring

To listen to the recording as it is being made, simply connect stereo headphones (8Ω~600Ω) to the Headphones Jack. You may also listen to the programme being recorded if your receiver or amplifier is equipped with a tape-monitor switch.

Monitor Switch and Indicator

This unit employs a 3-head system with a separate recording head and playback head. This means that when the Monitor Switch is pressed to "tape" during recording, it is possible to monitor the reproduced sound (the sound that is recorded onto the tape).

- "source" position: For monitoring the input signals during recording (the sound before it is recorded). [the "source" indicator (orange) lights.]
- "tape" position: For monitoring the sound recorded onto the tape during recording. [The "tape" indicator (green) lights.]

Notes:

- Normally, the switch is pressed to "source" during recording and to "tape" during playback due to the activation of the auto monitor function.
- When the Monitor Switch is pressed to the "source" position during playback, it will no longer be possible to hear the sound reproduced on the tape.

Automatic record muting

When the Record Muting Button is pressed once (press and release the finger immediately), an unrecorded portion of approximately 4 seconds is automatically created, after which the tape deck is set at recording standby mode.

- If the Record Muting Button is kept pressed for over 4 seconds, an unrecorded portion (the length of which corresponds to the time the button was pressed) is created. When the finger is removed, the tape deck is set at recording standby mode.

- **Your attention is drawn to the fact that recording pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.**

CALIBRATION

This unit features calibration by means of a 400 Hz/12.5 kHz test oscillator and bias adjustment.
This makes it possible to set the optimum bias value and correct for sensitivity, thus obtaining the finest performance from any tape depending on its recording characteristics. In order, therefore, to get the best out of every tape and make fine recordings, first adjust the recording level with the Record Cal Adjustment Control. Then adjust the frequency characteristics with the Bias Adjustment Control.

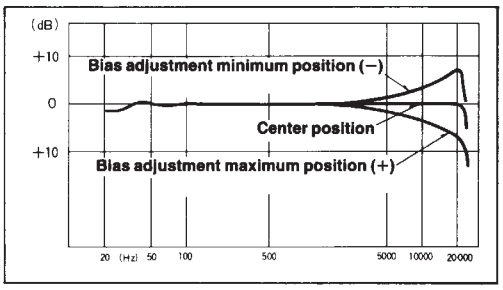
Record Cal Adjustment Control

If the tape has a low sensitivity, the recorded sound output—i.e. the tape playback level—will drop, and the recording level will be different even if the setting is the same. To correct for tape sensitivity, the recording level should be increased as required with the Record Cal Adjustment Control so as to obtain good recordings.
This adjustment is particularly neccessary when making recordings with the Dolby NR system to prevent incorrect operation of the Dolby NR circuit.

Bias Adjustment Control

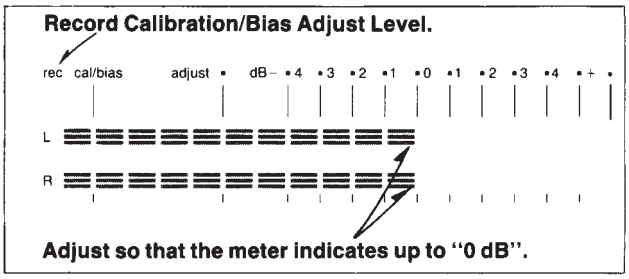
To obtain low distortion and a flat frequency response when recording with normal tapes or CrO_2 tapes, use this control to set bias current according to the tape being used. If the bias is too low, high frequencies will be emphasized and distortion will increase. If bias is increased, high frequencies become less intense and distortion decreases.

- Bias adjustment is not possible with metal tapes.
- **The diagram below depicts the frequency characteristics when the bias current is adjusted. (During normal tape use.)**



Calibration

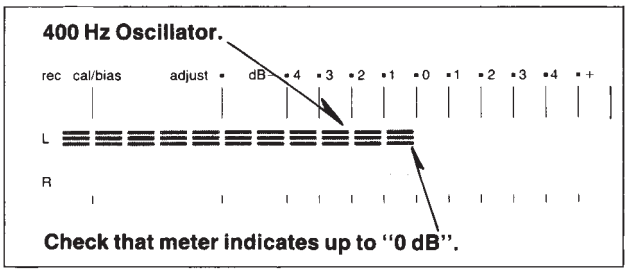
1. Insert a tape, and press the Noise Reduction Select Switch "out" Button.
2. Press the Record Button.
   (The Recording Indicator and Pause Indicator light up, and the unit enters the Record standby mode).
3. Press the Input Selector Switch "400 Hz" Button.
   (The FL Meter then changes to the record cal/bias adjustment level display mode).
4. Set the Balance Control to the centre position.
5. Adjust the Input Level Control such that the FL Meter reads "0 dB".



6. Press the Play Button and begin recording.

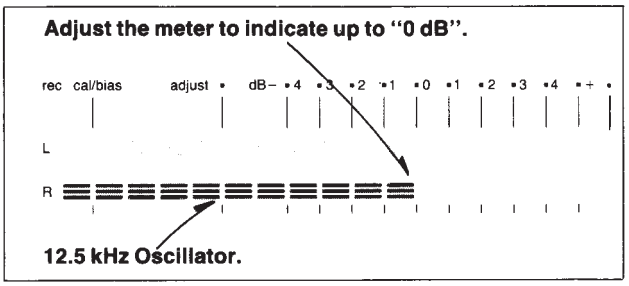
7. Press the Monitor Switch to select the tape monitor mode, and adjust the Record Cal Adjustment Control such that the FL Meter reads "0 dB".
(the Record Cal Adjustment Control can be adjusted by approx. ±3 dB for left and right channels respectively).

8. Press the Input Selector Switch 400 Hz/12.5 kHz Button, then press the Monitor Switch to select the source monitor mode. Check that the FL Meter reads "0 dB".
(The FL Meter shows the level at 400 Hz for the L channel and the level at 12.5 kHz for the R channel).

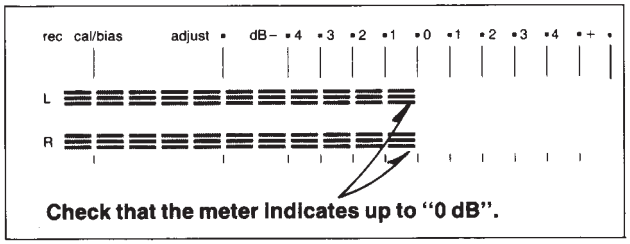


9. Press the Monitor Switch to select the tape monitor mode. Adjust the bias control such that the FL Meter reads "0 dB".
(when the Bias Control is rotated to the right, the bias increases and high frequencies become less intense. When it is rotated to the left, the bias decreases and high frequencies are emphasized).

●It may not be possible, depending upon the type of tape, to adjust to "0 dB".



10. Press the Input Selector Switch "400 Hz" Button, then Press the Monitor Switch to select alternately tape monitor or source monitor. Check that the FL Meter reads "0 dB".
(when the FL Meter reads not "0 dB", press the Monitor Switch to select the tape monitor mode and adjust again with the Record Cal Adjustment Control).



11. Press the Input Selector Switch "line" Button, rewind the tape and begin recording.

Notes:

- The test oscillator oscillates in the record mode.
- The peak hold does not operate during calibration.
- The test oscillator level is "approx. −20 dB", but during calibration the meter range is increased by "20 dB" such that it reads "0 dB".

NOISE REDUCTION SYSTEMS

Why use a noise reduction system?

When tapes are played back, the hiss which is inherent in the tape is rather irritating but this noise can be greatly reduced by recording and playing back the tape through a noise reduction system.
This unit is provided with three such systems (dbx NR, Dolby NR Type B and Dolby NR Type C) and so the preferred system can be used.

Typical applications

Dolby Type B Noise Reduction
This is used to provide compatibility with conventional decks and to play back prerecorded music tapes which have been recorded with the Dolby NR system.

dbx/Dolby Type C Noise Reduction

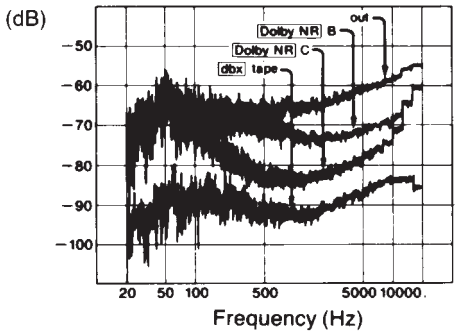
- For recording from program sources with a high signal-to-noise ratio and providing master tapes for building up a tape library.
- For playing back tapes which have been recorded using the dbx system or the Dolby NR Type C system.
- For playing back prerecorded music tapes or discs which have been made using the dbx NR system (" dbx " position).

Use the system which you think best suits your purposes.
In order to make the most of the features of these noise reduction systems, select a recording source which has a good signal. It is not possible to reduce the amount of noise contained in the program source using the noise reduction system.

Noise reduction effects with NR systems

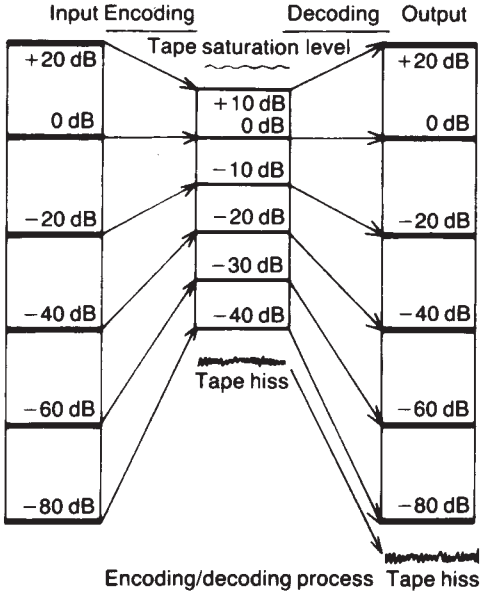
The noise reduction effect yielded by the Dolby NR Type B system is about 10 dB in the high-frequency range, about 20 dB by the Dolby NR Type C in the mid- and high-frequency ranges and more than 30 dB by the dbx NR system across the entire frequency spectrum.

Noise Levels Reductions Produced by the NR Systems



dbx Noise Reduction

dbx is a noise reduction system which expands the dynamic range by compressing (or encoding) and expanding (or decoding) the signals across the entire frequency spectrum. As in the figure, the input signal level is compressed to half during recording and the signals are recorded onto the tape. During playback, the signals which were compressed to half are expanded 2-fold so that they are restored to the original signals. Strong signals are greatly expanded and weak signals are expanded in a small way so that the dynamic range is greatly improved and, at the same time, the tape hiss is greatly reduced.



Dolby Noise Reduction

The Dolby Noise Reduction system functions to boost the high-frequency parts and record them at a low level, and then reduce the level by an amount equivalent to the rise during recording when the tape is played back. In this way, the tape noise is reduced by the amount equivalent to this reduced level.

- The Dolby NR Type B system is effective for high-frequency range noise. It reduces the tape hiss and expands the dynamic range.
- The Dolby NR Type C system is effective for frequencies starting with the mid-range, and it displays a much better noise reduction effect than Dolby NR Type B.
  This system has a built-in anti-saturation network. By passing the signals through this circuit, the saturation level of the tapes is improved (by about 3.5 dB at 10 kHz for the tape saturation characteristics [MOL]), and the high-range distortion is reduced.

Since the noise reduction system reduces noise only when the signals are passed through the system during both recording and playback, the Noise Reduction Select Switch must be set to the same position during playback as for recording.

- It's a good idea to make a note of the position used during recording on an index card.

Noise Reduction Select Switch

- dbx tape: Used for dbx NR recording and for replaying dbx NR recorded tapes.
- dbx disc: Used for playing dbx NR encoded discs on a turn table and for recording such discs.
- Dolby NR B: When recording with the Type B Dolby Noise Reduction system and for playing back such tapes.
- Dolby NR C: When recording with the Type C Dolby Noise Reduction system and for playing back such tapes.
- out: For ordinary recording and playback.

"disc" position for "dbx encoded discs"

This unit comes with a " dbx disc" position on the Noise Reduction Select Switch for playing "dbx encoded discs".

Playing "dbx encoded discs"

Operate in the following sequence:

1. Set the input selector on the stereo amplifier to the "tape" position and the record selector to the "phono" position. If the amplifier is capable of tape monitor selection, set the tape monitor switch to the "tape" position and the input selector to the "phono" position.
2. Set the unit to the stop mode and then set the Noise Reduction Select Switch to the " dbx disc" position.
3. Operate the turntable.
4. Adjust the unit's Input Level Control so that the fluorescent level meter illumination indicates around "0 dB".
5. Adjust the volume using the control on the stereo amplifier.

- Some dbx-encoded open-reel tapes are sold in audio shops. When playing back these tapes, it is possible to connect the open-reel deck and use the tapes with the same operation as for records.
- Do not set the Noise Reduction Select Switch to the " dbx disc" position during tape playback since the sound will then no longer be heard.

Recording "dbx encoded discs" onto tape

1. Set the Noise Reduction Select Switch to the " dbx disc" position.
2. Adjust the recording level, following the "Recording level setting" instructions.
3. Start the recording.

- The sound of the disc is recorded on the tape still in encoded (compressed) form. The decoded (expanded) sound can, however, be monitored (through both the speakers connected to the amplifier and headphones connected to the unit). When playing back a tape which has been recorded in this way, set the Noise Reduction Select Switch to the " dbx tape" position.
- Unlike ordinary records, "dbx encoded discs" have their sound dbx encoded (compressed) when it is cut into the sound grooves. This means that for replay, the sound must be returned to its original form through a decoder (expander). As a result, the noise level is reduced and the dynamic range is increased for a higher record play quality.

DIGITAL MULTI COUNTER

This multi counter can indicate 3 functions in digits when the respective buttons are selected.

Function buttons

Counter Reset Button

Press to reset to "000" (tape counter) or "00:00" (remaining tape time).

Tape Counter Button

Press this to set the indication mode to the tape counter display.

Remaining Tape Time Display Button
Press this to set the indication mode to the remaining tape time display. Every time it is pressed, the recording time remaining on the tape is set.

Digital multi counter

•Indicates the remaining tape time and record muting time. "min" indicates the minutes and "sec" the seconds.

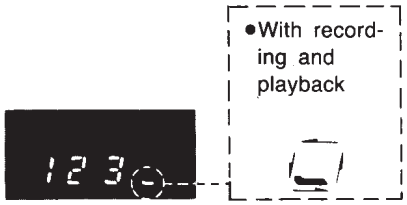
1. Tape counter display

The tape position is indicated by 3 digits, which comes in handy when locating programs on the tape.

1. Set to the tape counter display.

2. Set to "000"

Running display
The rotation direction is the same as the tape running direction. (With each rotation, the running display is increased by a count of 1.)

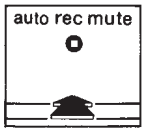


•When the power is switched on, the tape counter display is set to "000". When the tape is made to run, the display starts from " - " although it may sometimes start from " , ".

2. Rec muting time display

Observe the time as indicated by the "sec" units, and create unrecorded blanks between the programmes of about 4 seconds length.

1. Press the button when unwanted materials is to be cut out.



•Tape runs for about four seconds to make a mute portions. After four seconds, the unit enters the recording standby state.

2. The multi counter shows "0 0:0 3", the tape counter display or the remaining tape time display is restored, and the unit enters the pause state.

•When beginning the recording again.

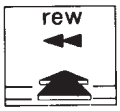
•When blanks between the programmes lasting about 4 seconds are created, programmes can be automatically found by the operation of the music selector function.

•When desiring to make a muted portion of more than 4 seconds:
Keep the auto rec mute button depressed. A muted portion is made corresponding to the length of time of depression. Release the button to restore the unit to the recording standby state.

3. Remaining tape time display

When the time is set before the recording in accordance with the length of the tape, it is possible to find out the remaining tape time at any time during recording.

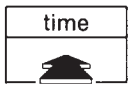
1. Stop the tape at its beginning.



2. Set to remaining tape time display.

•The time settings should be conducted in the stop mode. The time cannot be set during playback, rewinding or other operations.

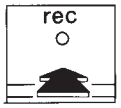
3. Set the time in accordance with the length of the tape (see table below).



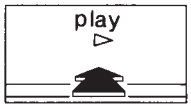
●The display time changes every time the button is pushed.

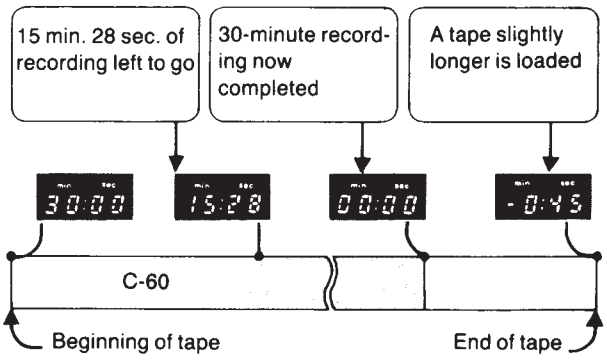
Tape length	Set time (min)	Counter display
C-30	15	15:00
C-46	23	23:00
C-60	30	30:00
C-90	45	45:00
C-120	60	60:00

4. Start recording.



●Adjust the recording level (see page 14).





●If the tape is fast forward or rewind during recording the remaining tape time display will be lost and replaced by the tape counter display.

Refer to section 9.

TIMER RECORDING AND PLAYBACK

●Set the timer to the desired time. (The power to the amplifier, tape deck and tuner will then be turned off.)
Refer to the operating instructions of the timer for further information.
●Set the Timer Start Switch to "play" or "rec". At the preset time the power is switched on and timer playback or recording is performed automatically.

Notes:

●When using the timer for recording or playback operation, remember that the muting circuit is activated for about 5 seconds after the power has been switched on and that the deck will not work during this interval.
●Make sure that the Timer Start Switch is kept at the "off" position if you do not intend to use the timer recording or timer playback function.

Refer to section 11.

FAST FORWARD AND REWIND

●The tape can be wound quickly when the Fast forward Button or Rewind Button is pressed.
●Do not push the Eject Button during the fast forward or the rewind operation. Before pushing the Eject Button, be sure to first stop the tape by pushing the Stop Button.
●The pause function does not work when the unit is set to the fast forward or rewind mode.

Refer to section 13.

MAINTENANCE

Cleaning the head section

Because the head assembly and the Capstan are in constant contact with the moving tape, dirt or residue from the tape on these parts will decrease the sound quality. They should be cleaned after every 10 hours of use, as shown in section 13.

Notes:

●Don't allow magnetic materials, such as a screwdriver or a magnet, near the head assembly.
●When cleaning, be careful not to bend the tape guides.
●Don't attempt to clean the cabinet with alcohol, benzine or thinner, because it may damage the finish. If the cabinet is dirty, clean with a soft cloth dampened with a soap-and-water solution.

TROUBLESHOOTING

If operation of this unit does not seem normal, check the following points before requesting service. If the trouble cannot in this way be determined and corrected, contact the dealer from whom the unit was purchased, or check the Service Information that comes packed with the unit.

After the cassette tape is inserted, the tape does not move when the Play Button is pushed.
- Is the AC Power Cord correctly connected?
- Is the Power Switch pushed in to the "on" position?
- Is the tape inserted correctly?

Sound is louder through the left or right channel.
- Is the Balance Control set properly for recording?

Although the tape moves, no sound is heard.
- Is the tape blank?
- Is the Noise Reduction Select Switch set incorrectly?
- Is the Monitor Switch pressed to "source" during playback?

Sound is distorted.
- Is the recording level too high?

The Record-indicator does not illuminate when the Record Button is pressed.
- Is the tape cassette inserted correctly?
- Have the recording-prevention tabs of the cassette been removed?

Playback sound is poor quality. Recorded sound is not clear.
- Are the head surfaces dirty?
- Is foreign material adhering to the Pinch Roller and/or the Capstan?
- Are you using a "Metal tape" without the tape detection holes? (Refer to "AUTO TAPE SELECTOR FUNCTION" on page 12.)
- Are you using a Fe-Cr tape?

SPECIFICATIONS

Track System:	4-track 2-channel stereo recording and playback
Tape Speed:	4.8 cm/s
Wow and Flutter:	0.022% (WRMS), ±0.038% (DIN)
Frequency Response:	Metal tape; 15~25,000 Hz
	20~24,000 Hz (DIN)
	20~23,000 Hz ±3 dB
	CrO_2 tape; 15~23,000 Hz
	20~22,000 Hz (DIN)
	20~21,000 Hz ±3 dB
	Normal tape; 15~21,000 Hz
	20~20,000 Hz (DIN)
	20~19,000 Hz ±3 dB
Dynamic Range:	110 dB (at 1 kHz) with dbx in
Max. Input Level Improvement:	10 dB or more improved with dbx in (at 1 kHz)
Signal-to-noise Ratio:	dbx in; 92 dB (A weighted)
	Dolby C NR in: 78 dB (CCIR)
	Dolby B NR in; 70 dB (CCIR)
	NR out; 60 dB (A weighted)
	(Signal level=max. input level, CrO_2 type tape)
Fast Forward and Rewind Time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	LINE; sensitivity 60 mV, input impedance 47 kΩ or more
Outputs:	LINE; output level 700 mV, output impedance 820Ω or less
	HEADPHONES; output level 125 mV (at 8Ω) applicable headphone impedance 8Ω~600Ω
Bias Frequency:	105 kHz
Heads:	3-head system
	2-AX head for rec/playback
	1-double-gap sendust head for erasure
Motor:	One quartz locked D.D. motor for capstan drive
	One for reel table drive
	One for mechanical drive
Power Requirements:	AC; 110/125/220/240 V, 50–60 Hz
	Pre-set power voltage 240 V
	220 V, for Europe except United Kingdom
Power Consumption:	35 W
Dimensions (W×H×D):	43 cm×9.8 cm×27.3 cm
Weight:	5.6 kg

Design and specifications are subject to change without notice.

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