BM-60

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

SPECIFICATIONS

Recording system	2-track 1-channel monaural
Tape speed	Average 4.16 cm/s (1 $^{11}/_{16}$ ips)
Fast winding time	Approx. 65 sec. with Sony minicassette CM-30MN
Frequency response	400 Hz - 3500 Hz
Speaker	Approx. 5.7 cm (2 $^{1}/_{4}$ inches) dia.
Power output	0.4 W
Input	TELEPHONE PICKUP (minijack) Sensitivity 0.4 mV Input impedance 10 kohms
Output	EARPHONE (minijack) for 8 ohm earphones
CONTROL UNIT connector	For FS-75
HAND UNIT connector	For HU-60
Power requirements	12V DC DC IN 12V jack accepts the supplied AC power adaptor for use on 120V AC, 60Hz (Canadian model) 220—230V AC, 50Hz (AEP model) 240V AC, 50Hz (UK model)
Power consumption	20W (Canadian model) (with the supplied AC power adaptor) 20W (AEP, UK model)
Dimensions	Approx. 200 x 70 x 244 mm (w/h/d) (7 $^{7}/_{8}$ x 2 $^{7}/_{8}$ x 9 $^{3}/_{4}$ inches) including projecting parts and controls
Weight	Approx. 1.2 kg (2 lb 11 oz)
Supplied accessories	AC power adaptor (1)

Design and specifications subject to change without notice.

Note
This appliance conforms with EEC Directive, 87/308/EEC regarding interference suppression.

MINICASSETTE DICTATOR/TRANSCRIDER

SONY®

TABLE OF CONTENTS

Features

The Sony BM-60 minicassette dictator/transcriber is designed for both dictation and transcription.

As a dictator

- The Sony HU-60 hand control unit (not supplied) remotely controls the BM-60 minicassette dictator/transcriber.
- Electronic indexing function signal — "LTR" (end of letter) signal — can be recorded on a tape during dictating or in the stop mode.
- An alarm sounds when any button is pressed without a cassette inside the unit, the tape reaches the end, or the TEL REC button is pressed without the TL-2 telephone pickup connected.
- The REC/ERASE lamp blinks in response to the voice.
- Recording of telephone calls can be performed with the use of the TL-2 telephone pickup (not supplied).
- With the DE-35, DE-36 or MDR-U10M earphones (not supplied), you can monitor the sound with the desired sound level during recording.

As a transcriber

- The Sony FS-75 foot control unit (not supplied) makes transcribing easier.
- The scanning function allows the LTR signals to be found in the fast forward mode.
- Auto backspace function with the REVERSE TIME control makes transcribing easy by enabling a review of the last recorded words each time listening is resumed.
- Rapid erasing function with the ERASE and FF/REW buttons.

Precautions

- Operate the unit only on 12 V DC.
- For AC operation, use the AC power adaptor supplied with this unit. Do not use any other AC power adaptor as it may cause malfunction.
  Before operating the unit, check that the operating voltage of your AC power adaptor is identical with the voltage of your local power supply.

Where purchased	Operating voltage
UK model	240 V AC
AEP model	220-230 V AC
Canadian model	120 V AC

- The unit should be connected to an easily accessible mains outlet socket so that it may be disconnected quickly from the mains if required.
- Unplug the AC power adaptor from the wall outlet when it will not be used for an extended period of time. To disconnect the adaptor, pull it out by grasping the adaptor (Canadian model) or the AC plug (AEP, UK model).
  Never pull it by the cord.
- Do not install the unit in a location near heat sources such as radiators or airducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration, or shock.
- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit near materials (curtains, draperies) that may block the ventilation holes.
- Should any solid object or liquid fall into the unit, unplug the unit and have it checked by qualified personnel before operating it any further.
- The AC power adaptor which has been supplied becomes hot if it is connected to an AC outlet for a long period of time. But, this will not cause any trouble.

If you have any question or problem concerning your unit that is not covered in this manual, please consult the Sony dealer from whom you purchased the unit.

Operation Flow Chart

For details, refer to the pages indicated in ●.

[ ] : Necessary step [ ] : Optional step

Dictation

Connect the AC power adaptor to the unit and to an AC outlet. ●

Connect the optional HU-60 hand control unit. ●

Set POWER to ON.

Insert a cassette. ●

If the TAPE COUNTER is not reset to zero, press the reset button.

Set the function selector of the HU-60 to DICT. Speak into the microphone.

Quick review playback and correct the dictated material.
Keep the function selector of the HU-60 pressed up toward B. SPACE to rewind the tape until the desired point on the tape is reached. Release the selector and playback of the dictation begins. When the reviewing is completed, set the function selector to DICT to proceed with dictation.

Record the LTR signal at the end of each document. ●

Set the function selector of the HU-60 to STOP.

Press the OPEN button and remove the cassette.

Hand the cassette to your secretary or transcriptionist.

Transcription

Disconnect the HU-60 hand control unit.

Connect the optional FS-75 foot control unit. ●

Set POWER to ON.

Insert the cassette. ●

Set SPEAKER to BUILT-IN. or connect earphone. ●

Press SCAN. (The tape advances in the FF mode.)
When the tape reaches the beginning of the dictated material, the unit automatically shuts off. ●

Keep the right side of the pedal depressed. ●
(When the FS-75 is connected.)
or
Set the function selector of the HU-60 to LISTEN. ●
(When the HU-60 is connected.)
or
Press LISTEN ▶. ●
(When the BM-60 is used for operation.)

Adjust VOLUME and TONE.

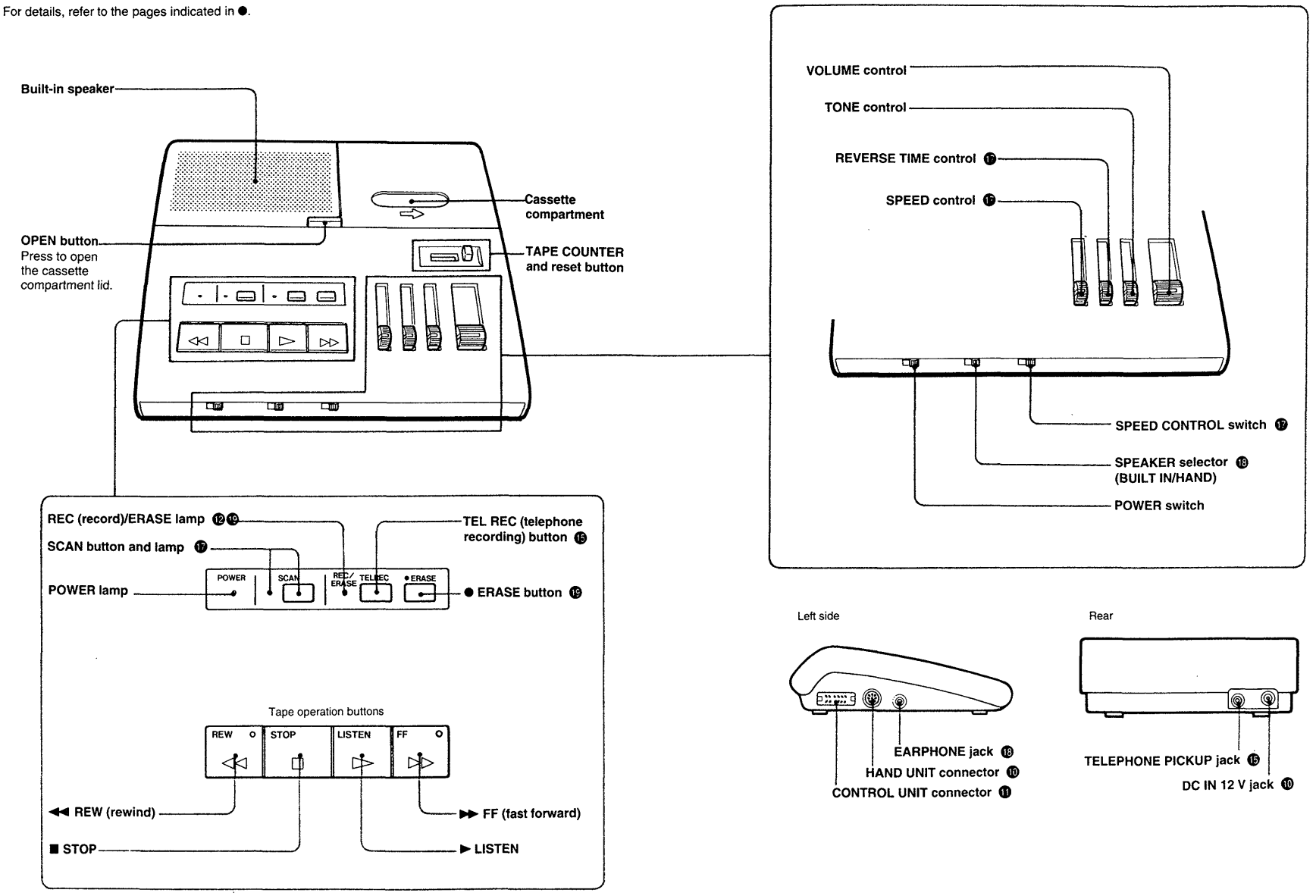
Adjust the starting portion for playback with the use of REVERSE TIME. (only when the FS-75 is used.)

After transcribing, stop the tape.
Release the pedal. (When the FS-75 is used.) ●
or
Set the function selector to STOP. (When the HU-60 is used.) ●
or
Press STOP. (When LISTEN on the BM-60 is pressed to play back the tape.) ●

Erase the tape. ●

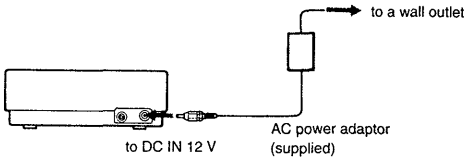
Location and Function of Controls

For details, refer to the pages indicated in ●.



Preparation

Power Connection



Note on the AC power adaptor

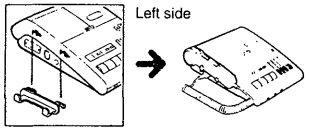
Use only the AC power adaptor supplied. Do not use any other AC power adaptor.

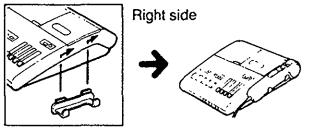
Polarity of the plug

Connecting the HU-60 Hand Control Unit (not supplied)

Attaching the cradle

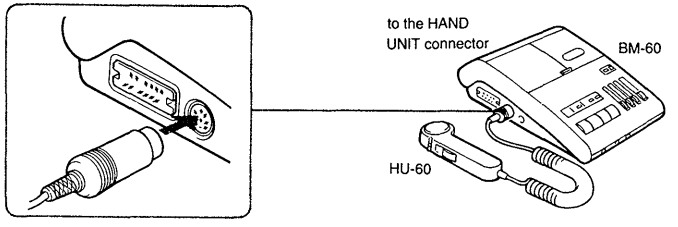
Attach the supplied cradle with the HU-60 first to the left or right side of the unit. Place the HU-60 hand control unit on the cradle while not in use. Insert the cradle into the slots and slide to secure it.





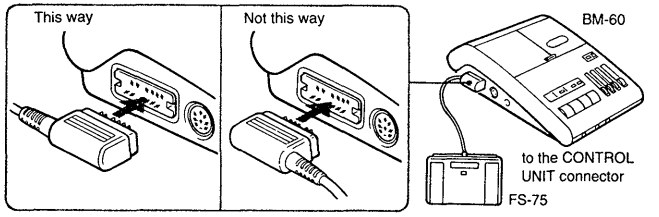
Connecting the hand control unit

For operation, refer to "Dictation" on page 12.

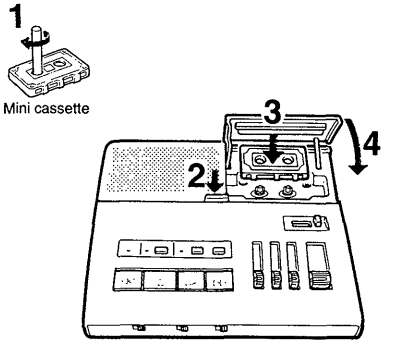


Connecting the FS-75 Foot Control Unit (not supplied)

For operation refer to "Transcription" on page 16.



Cassette Insertion



We recommend to use the Sony CM-30MN minicassette tape.

1 **Take up any slack in the tape.**

2 **Press OPEN to open the cassette compartment lid.**

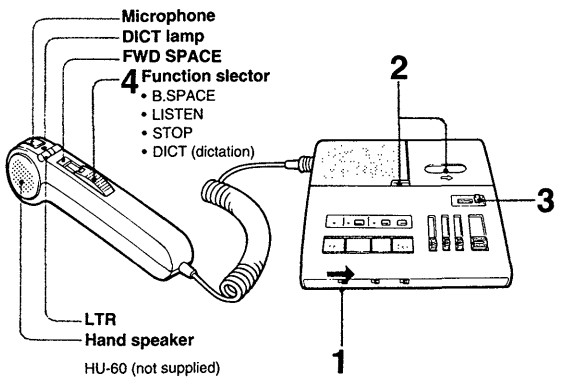
3 **Insert a cassette into the cassette holder with the tape side first and with the side to be recorded on or played back facing upward.**

4 **Close the cassette compartment lid.**

Dictation

To use the unit as a dictating machine, connect the HU-60 hand control unit (not supplied).
For connection, see page 10.

Operation



1 **Set POWER to ON**

2 **Insert a cassette. (See page 11.)**

3 **Press the reset button to set the TAPE COUNTER to zero.**

4 **Set the function selector to DICT.**
Recording starts. Speak into the microphone.
The lamp on the hand control unit lights up and REC/ERASE lamp on the BM-60 blinks when the microphone picks up sound.

To stop the tape
Set the function selector to STOP.

Notes

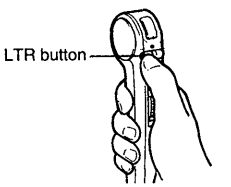
- Keep the HU-60 away from the BM-60 during recording.
  If not, noise may be recorded.
- When using the HU-60 hand control unit, be sure to set the BM-60 to the stop mode.

Convenient Functions

■ Recording LTR (letter) signals

You can record electronic index signals on the tape while the unit is set in the recording (dictation), stop mode. This is convenient to find a specific position while transcribing.

To record the LTR signal
Press LTR on the HU-60. Each time the button is pressed, the lamp on the HU-60 and the REC/ERASE lamp on the BM-60 go off for about one second at the same time when the SCAN lamp lights up for about one second. While recording the LTR signals on the tape, no sound will be recorded.



■ Monitoring while dictating

The recording can be monitored through earphones. Connect a Sony DE-35, DE-36 or MDR-U10M earphones (not supplied) to the EARPHONE jack located on the left side of the unit. Adjust VOLUME if required.

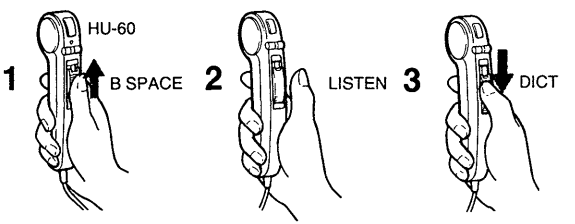
■ Quick reviewing (playback)/correcting the dictated material

You can easily listen to the dictated material and correct it if required.

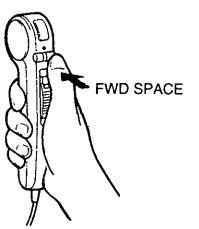
1 Keep the function selector of the HU-60 pressed up toward B. SPACE to rewind the tape.

2 Release the selector. Playback of the dictation begins.

3 When the reviewing is completed, set the function selector to DICT to proceed with the dictation.



For fast winding of the tape, keep the FWD SPACE button of the HU-60 pressed until the desired portion is reached.



■ When you have finished dictating

Hand the cassette to your secretary without rewinding the tape.

Dictation

Tips for More Efficient Dictation

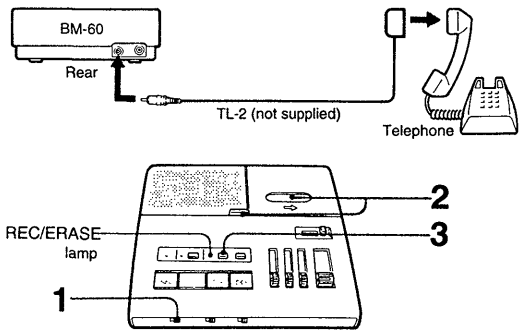
Before you start dictation
- Organize your thoughts.
- Make notes or an outline of what you want to dictate.
- Check that the cassette is erased. (See page 19.)

When you dictate
- Identify yourself. (Name, department, phone number)
- Indicate the type of dictation. (Memo, letter, etc.)
- Give transcribing instructions. (Type of stationery, number of copies and who they are for, envelopes, etc.)
- Specify distribution. (Names, addresses, etc.)

During dictation
- Relax and speak clearly, at normal speed.
- Short sentences are best.
- Include punctuation.
- Spell difficult or unusual words.
- Correct your mistakes. (Review and redictate.)
- At the end of each document, record an LTR signal.

Telephone Recording

To record telephone conversation, connect the optional TL-2 telephone pickup* to the TELEPHONE PICKUP jack. For further details, refer to the instruction manual of the telephone pickup.



* The TL-2 telephone pickup cannot be used on some telephones.

1 Set POWER to ON.

2 Insert a cassette.

3 Press TEL REC.
Telephone recording begins. REC/ERASE lamp flashes.

To stop the tape
Press ■ STOP.

During telephone recording
Only the STOP button on the BM-60 is operative.

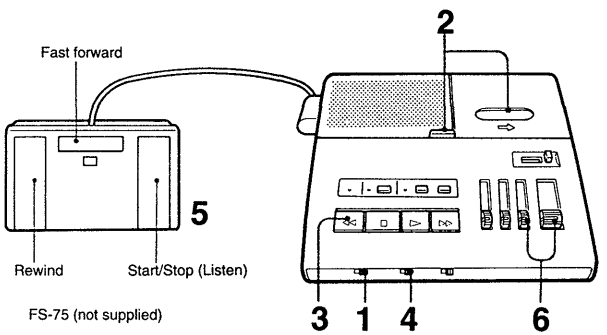
Note

If the TEL REC button is pressed when the telephone pickup is not connected, an alarm will sound.

Transcription

To use the unit as a transcribing machine, connect the FS-75 foot control unit (not supplied).
For connection, see page 11.

Operation



1 **Set POWER to ON.**

2 **Insert the dictated tape. (See page 11.)**

3 **Rewind the tape.**

4 **Set SPEAKER to BUILT-IN.**

5 **Keep the right side of the FS-75 pedal depressed to listen to the tape.**

6 **Adjust VOLUME and TONE.**

7 **Erase the tape when transcription is finished.**

To stop the tape
Release the pedal.

To rewind the tape
Keep the left side of the FS-75 pedal depressed.

To advance the tape rapidly
Keep the center top of the FS-75 pedal depressed.

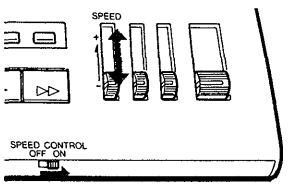
Convenient Functions

■ SCAN function

You can find the positions of the recorded electronic index signals by using the SCAN button.
Press SCAN; the SCAN lamp lights up and the tape advances rapidly, automatically stopping at the electronic index signals previously recorded on the tape.
This function is convenient to locate the beginning of each recorded document or special instruction.
To scan for the next electronic index signal, press SCAN again or FF.

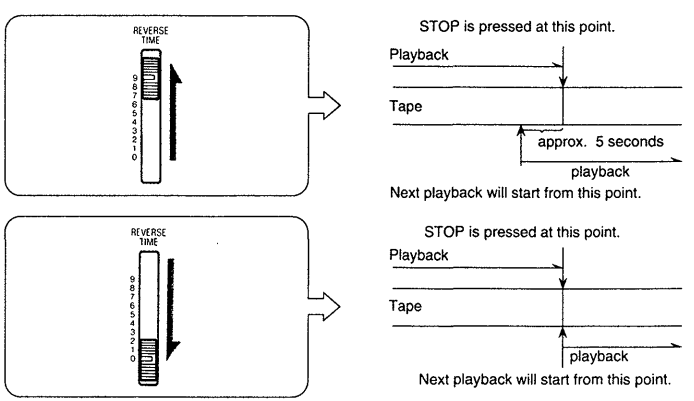
■ Speed control

Set the SPEED CONTROL switch * to ON to adjust the tape speed.
The tape can be played back at a speed faster or slower than normal. Set the SPEED CONTROL switch to OFF to transcribe the dictated material at the normal speed.
* Tape speed can be changed in the range of approximately −10% to +50% with the use of the SPEED control.



■ Auto backspace function

This control operates only when the FS-75 foot control unit is connected.
With the use of the REVERSE TIME control, the tape is rewound a little each time it is stopped. Then, the last few recorded words can be reviewed when you resume listening. Adjust the REVERSE TIME control to determine the length of tape to be rewound.
At "9" position, the tape is rewound so that the dictated material can be reviewed for about 5 seconds. At "0" position, the tape stops without being rewound at all.



Set the REVERSE TIME control to the desired position and keep the right side of the pedal depressed to listen to the tape.

Transcription

■ Tape transport operation

	BM-60	HU-60	FS-75
Rewind	Press ◀◀ REW.	Keep the function selector pressed up toward B.SPACE.	Keep the left side of the pedal depressed.
Stop	Press ■ STOP.	Set the function selector to STOP.	Release the pedal.
Listen	Press ▶ LISTEN.	Set the function selector to LISTEN.	Keep the right side of the pedal depressed.
Fast forward	Press ▶▶ FF.	Keep the FWD SPACE button pressed.	Keep the top center of the pedal depressed.

■ Private listening

Connect a Sony DE-35, DE-36 or MDR-U10M earphones (not supplied) to the EARPHONE jack.
The sound will be heard through the earphones and speaker sound will be disconnected.

■ Selecting the speaker

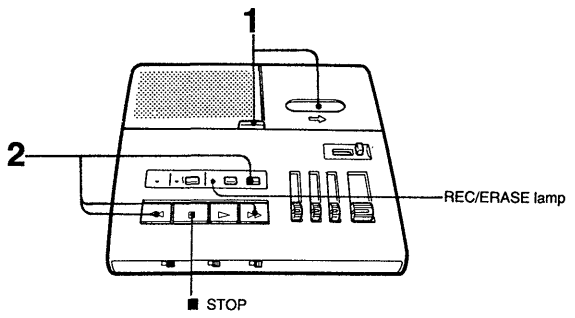
You can listen to the dictated material through the built-in speaker or the speaker on the HU-60 by switching the SPEAKER selector to BUILT-IN or HAND.

Note

E-IDX signal of the Sony BM-610 minicassette dictator corresponds to the LTR signal of the BM-60.

Erasing

The recording can be erased rapidly.



1 Insert the cassette with the side to be erased up.

2 Keep ● ERASE pressed and then press ◀◀ REW or ▶▶ FF.

The REC/ERASE lamp lights up. Tape portion of the being rewound (when ◀◀ REW is pressed) or being advanced (when ▶▶ FF is pressed) is erased.

To stop the tape

Press ■ STOP.

SECTION 2
ELECTRICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/palyback head capstan
   erase head rubber belts
2. Demagnetize the record/palyback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. The adjustments should be perfomed with the rated power supply voltage unless otherwise noted.

Test tape

Type	Signal	Used for
S-2-A030	3kHz, −20dB	Head Azimuth Adjustment
WS-24	3kHz, −10dB	Tape Speed Adjustment

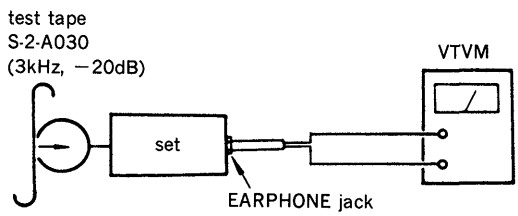
Record/playback Head Azimuth Adjustment

Setting:

VOLUME control : mechanical mid

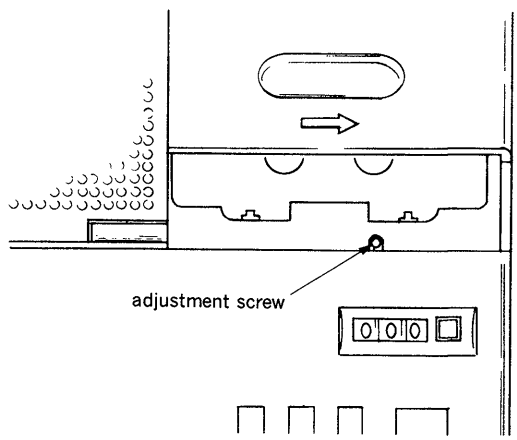
Procedure:

1. Mode: Playback (LISTEN)



2. Turn the adjustment screw to obtain the maximum reading on VTVM.
   Note: Several peaks may appears, but take the maximum.

Adjustment Location:



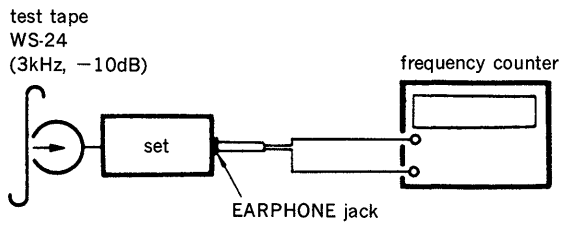
Tape Spped Adjustment

Setting:

VOLUME control: mechanical mid

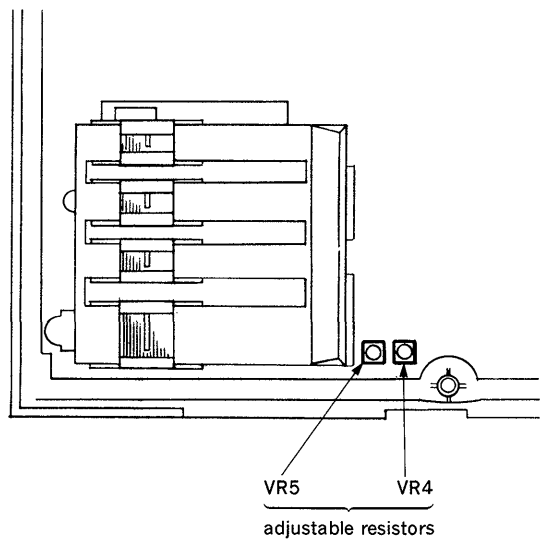
Procedure:

1. Mode: Playback (LISTEN)



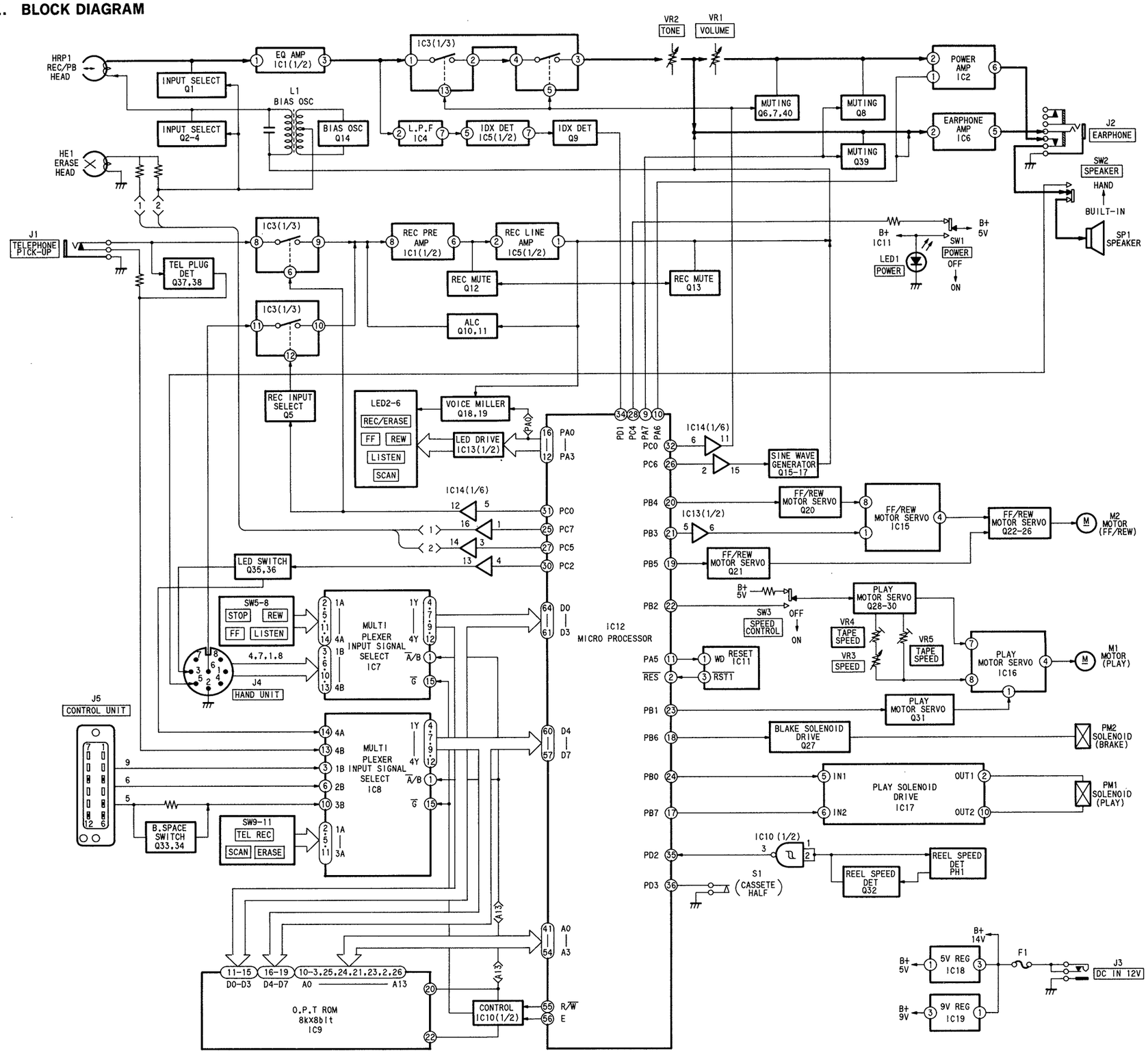
2. SPEED CONTROL switch: OFF
   Adjust VR5 so that the reading on frequency counter is 3,000Hz.
3. SPEED CONTROL switch : ON
   SPEED control : mechanical mid
   Adjust VR4 so that the reading on frequency counter is 3,000Hz.

Adjustment Location: Main board



SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM



Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ▒▒ : Pattern on the side which is seen.
- ▒▒ : Pattern of the rear side.
- □ : Chip components extracted from the rear side.

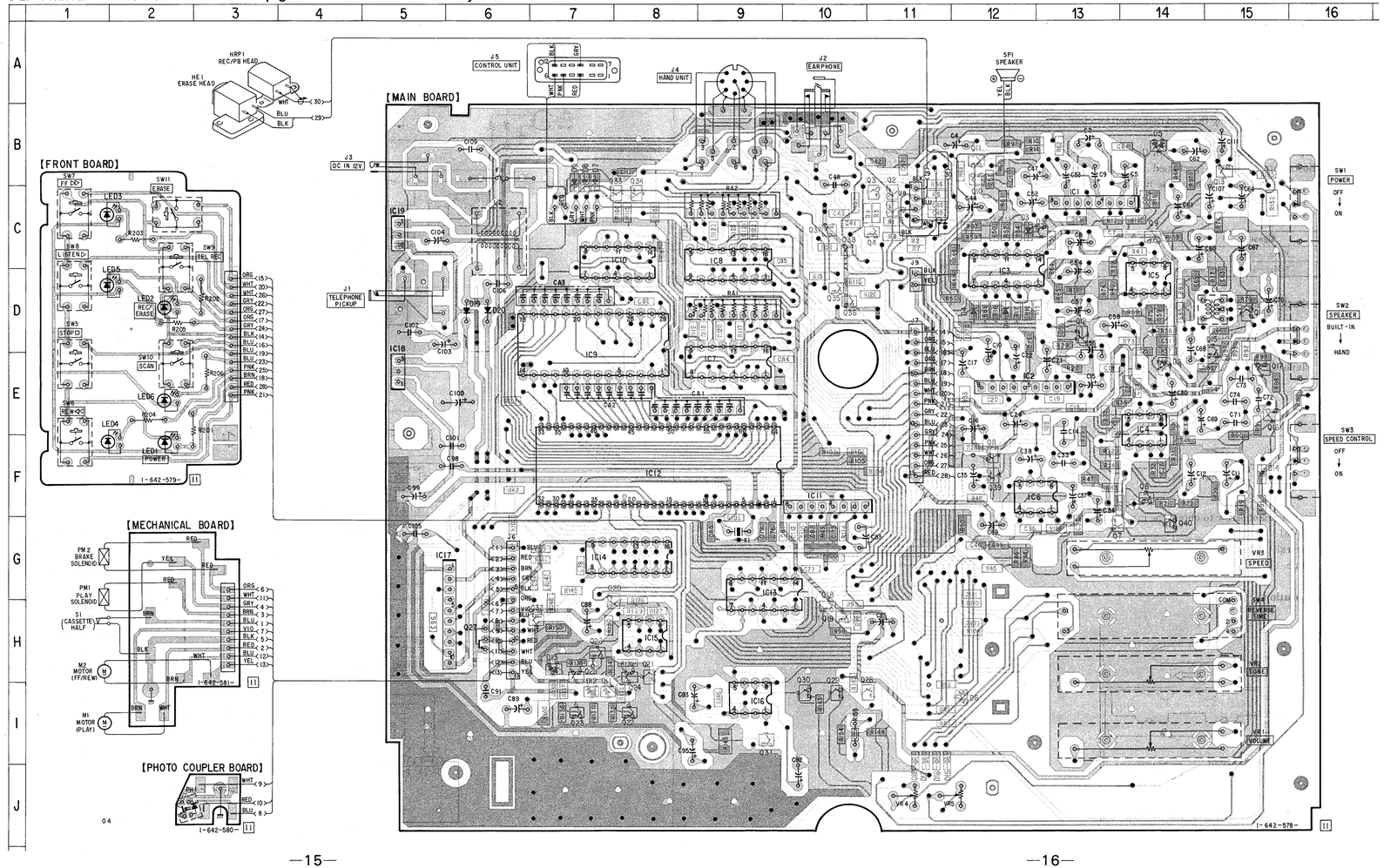
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : adjustment for repair.
- Power voltage is dc 12V and fed with regulated dc power supply from external power voltage jack.
- Voltage is dc with respect to ground under no-signal conditions.
  no mark : PLAY
  ( ) : REC
  ✳ : Impossible to measure the voltage at the marked points.
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB
  ▷▷ : REC

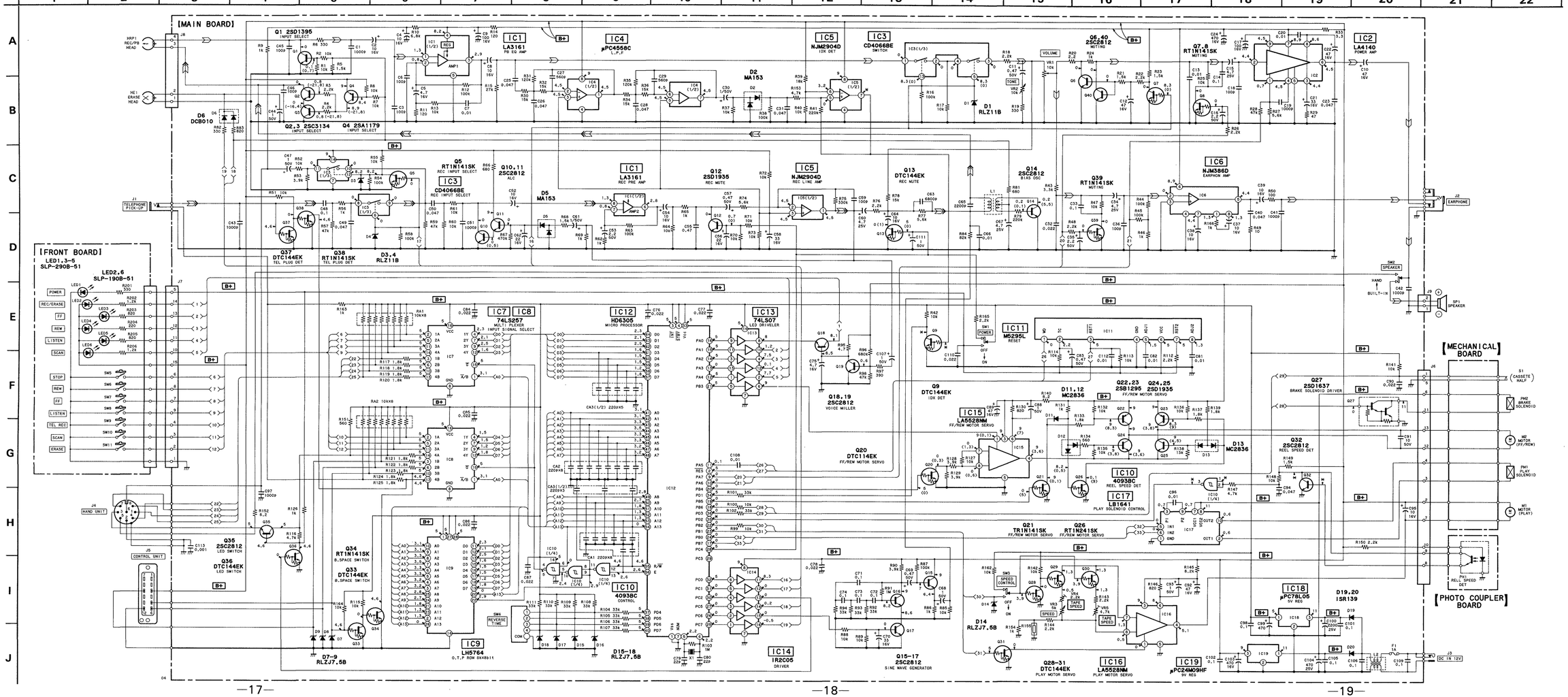
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D1	D-12	IC19	C-5
D2	E-14		
D3	C-12	PH1	J-2
D4	D-12		
D5	B-14	Q1	C-11
D6	I-12	Q2	C-11
D7	B-7	Q3	C-11
D8	B-7	Q4	C-11
D9	B-7	Q5	C-13
D11	I-7	Q6	F-14
D12	I-7	Q7	G-13
D13	H-7	Q8	F-12
D14	F-15	Q9	C-14
D15	I-11	Q10	B-12
D16	I-11	Q11	B-12
D17	I-11	Q12	D-13
D18	I-11	Q13	B-15
D19	D-6	Q14	D-15
D20	D-6	Q15	D-15
		Q16	E-15
LED1	F-2	Q17	E-15
LED2	D-2	Q18	H-10
LED3	C-2	Q19	H-10
LED4	F-2	Q20	G-7
LED5	D-2	Q21	H-8
LED6	E-2	Q22	I-8
		Q23	I-7
IC1	C-13	Q24	H-8
IC2	E-12	Q25	H-7
IC3	C-12	Q26	H-7
IC4	E-14	Q27	H-6
IC5	D-14	Q28	I-10
IC6	F-12	Q29	I-10
IC7	E-9	Q30	I-10
IC8	C-9	Q31	I-9
IC9	D-7	Q32	H-7
IC10	C-8	Q33	B-8
IC11	F-10	Q34	B-8
IC12	F-8	Q35	D-10
IC13	G-9	Q36	D-10
IC14	G-7	Q37	C-10
IC15	H-8	Q38	C-10
IC16	I-9	Q39	F-12
IC17	G-5	Q40	G-14
IC18	E-5		

3-2. PRINTED WIRING BOARDS • Refer to page 20 for Semiconductor Lead Layouts.

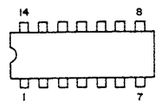


3-3. SCHEMATIC DIAGRAM • Refer to page 20 for IC Block Diagrams.



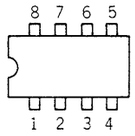
3-4. SEMICONDUCTOR LEAD LAYOUTS

CD4066BE
μPD4093BC
74LS07



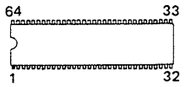
(TOP VIEW)

LA5528NM
NJM2904D
NJM386D
μPC4558C



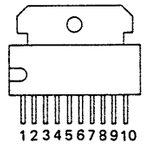
(TOPVIEW)

HD6305



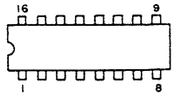
(TOP VIEW)

LB1641



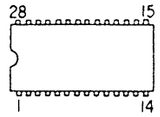
MARKING SIDE VIEW

IR2C05
74LS257



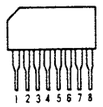
(TOP VIEW)

LH5764

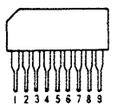


(TOP VIEW)

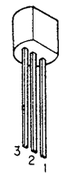
LA3161
M5295L



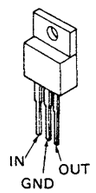
LA4140



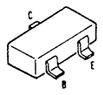
RC78L05A



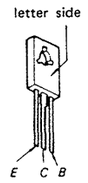
μPC24M09HF



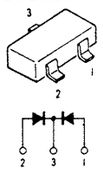
DTC144EK
RT1N141SK
RT1N241SK
2SA1179-M5M6
2SB1295-UL5
2SC2812-L5
2SC3143
2SD1935-CT6



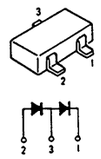
2SD1637



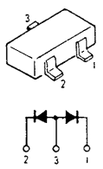
DCB010



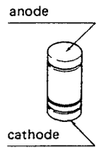
MA153



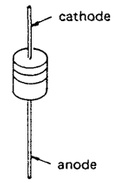
MC2836



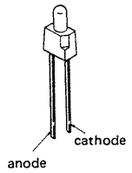
RLZ11B
RLZ7.5B



1SR139-100

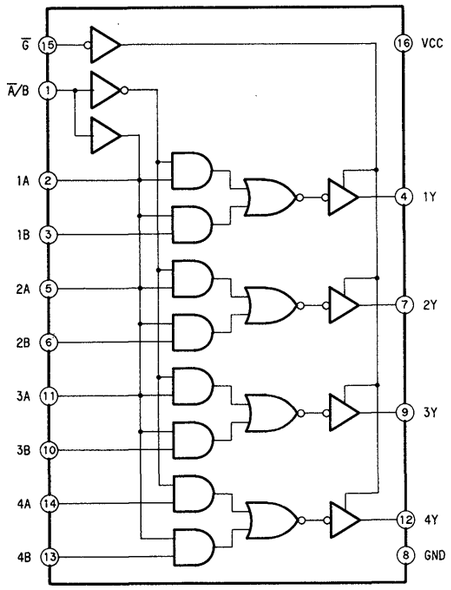


SLP190B-51
SLP290B-51

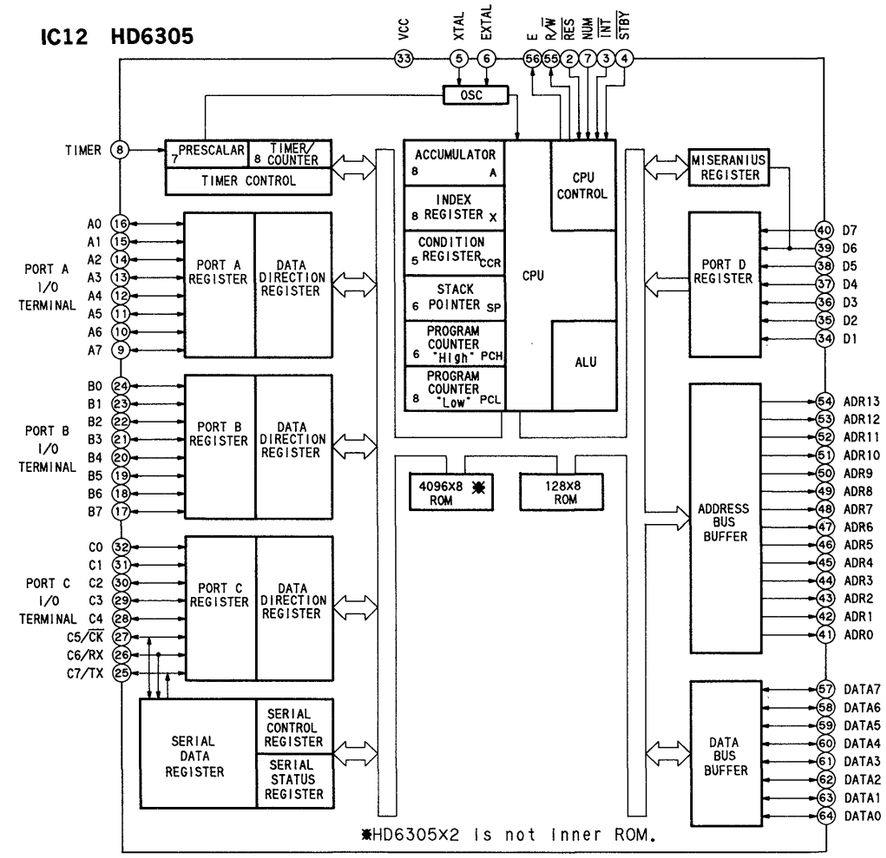


3-5. IC BLOCK DIAGRAMS

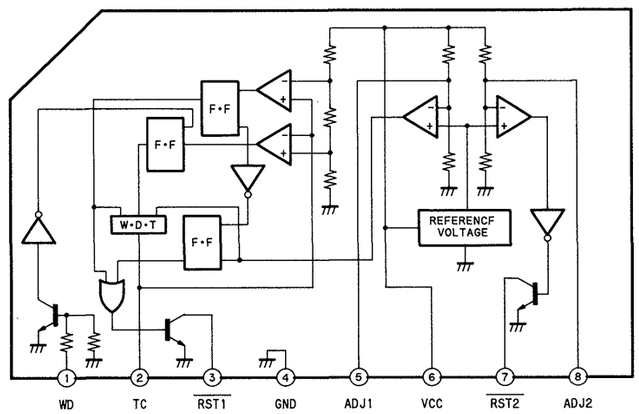
IC7, 8 74LS257



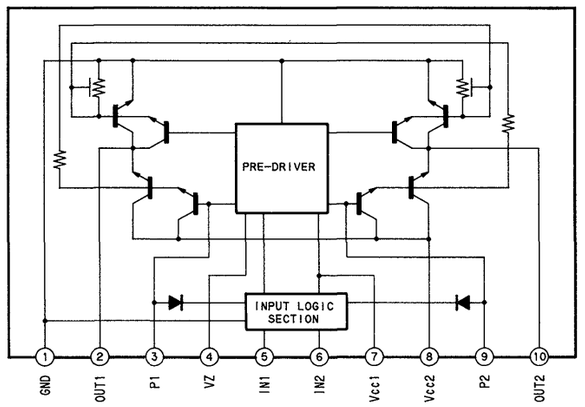
IC12 HD6305



IC11 M5295L



IC17 LB1641

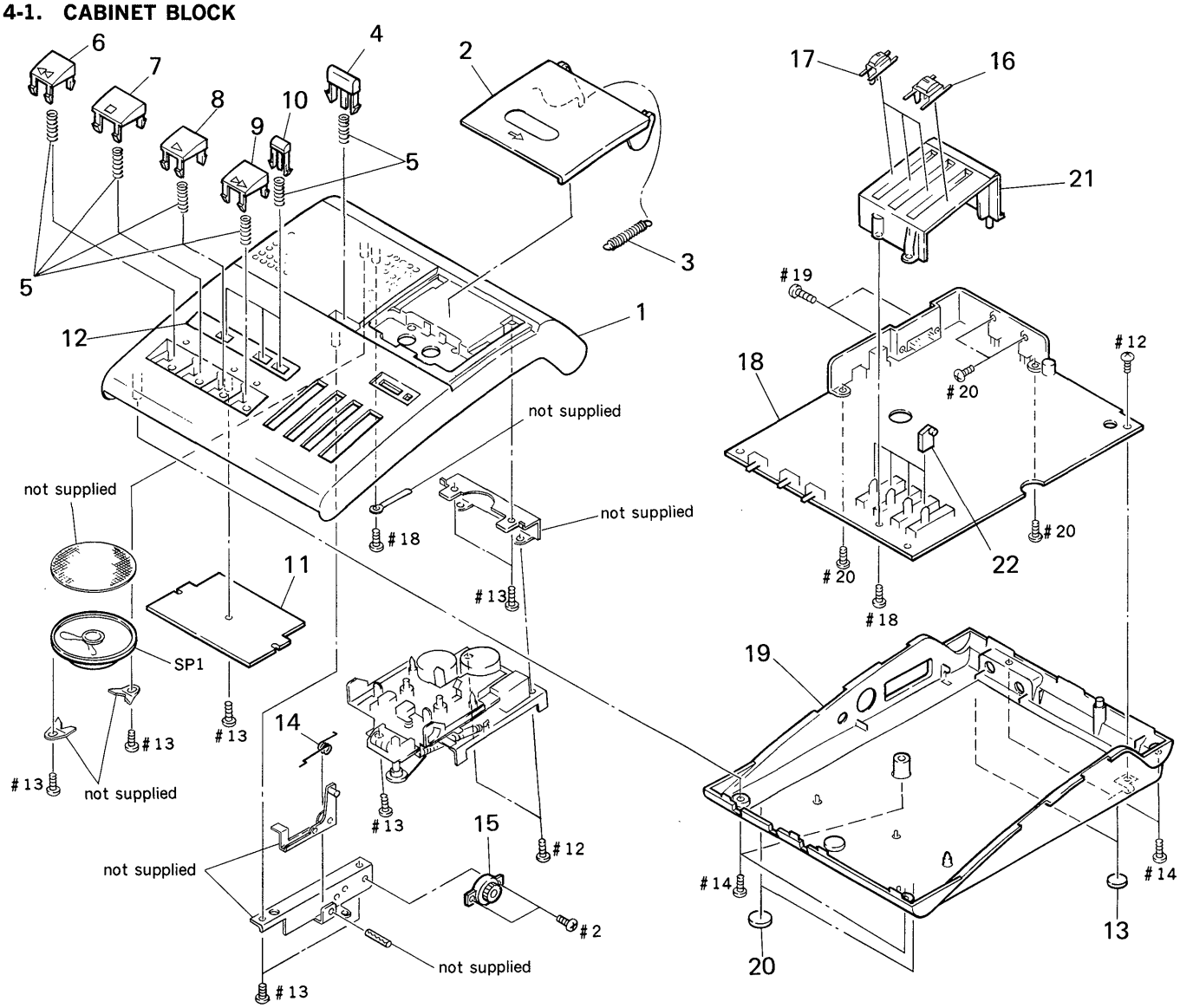


SECTION 4
EXPLODED VIEWS

NOTE:

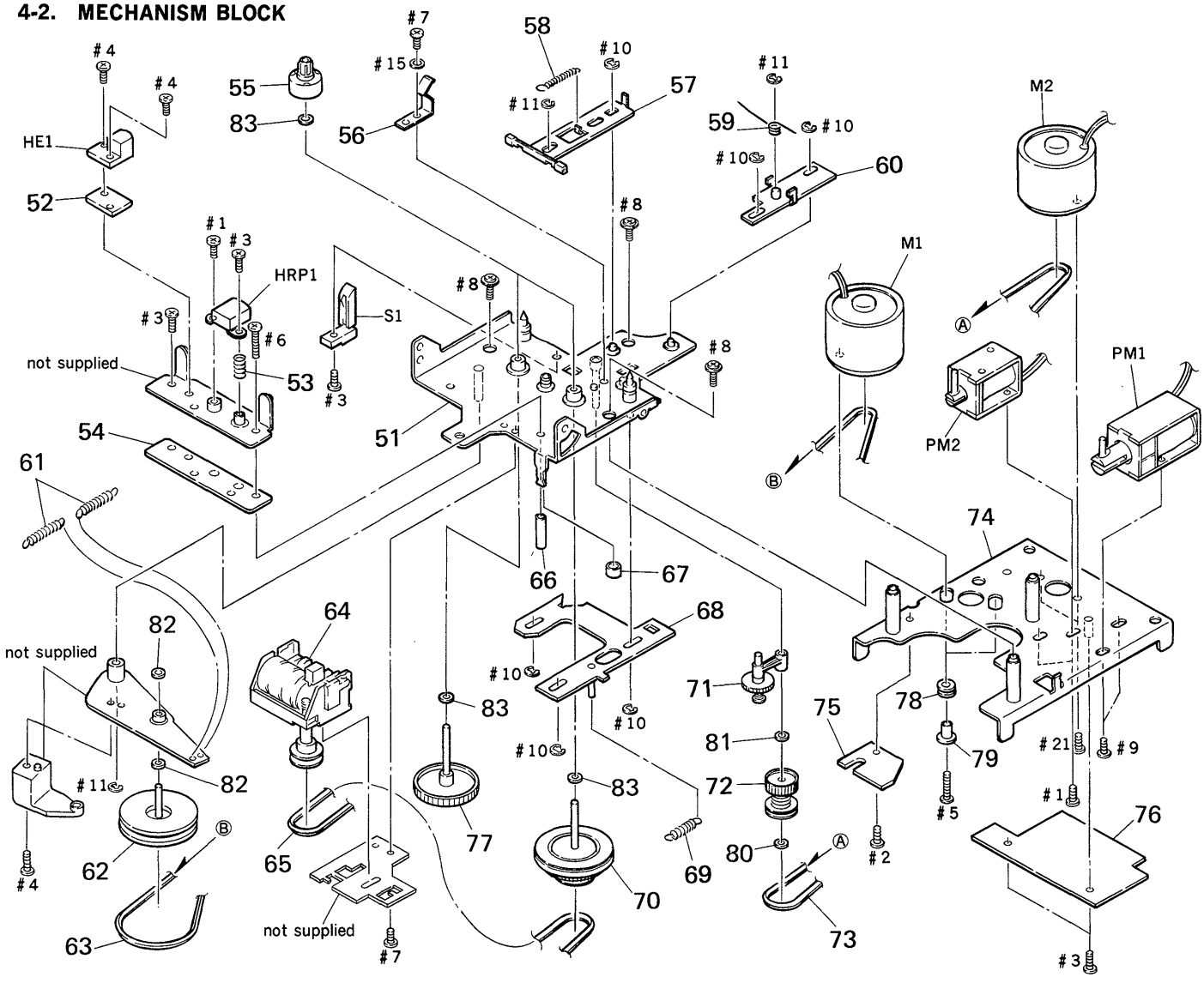
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ Parts Color ↑ Cabinet's Color
- Hardware(# mark) list is given in the last of this parts list.

4-1. CABINET BLOCK



Ref. No.	Part No.	Description	Remark
1	X-3363-897-1	CABINET (FRONT) ASSY	
2	X-3363-895-1	LID ASSY, CASSETTE	
3	3-374-168-01	SPRING (CASSETTE LID)	
4	3-374-162-01	BUTTON (CASSETTE DOOR)	
5	3-374-169-01	SPRING (BUTTON)	
6	3-374-164-21	BUTTON (REW)	
7	3-374-165-01	BUTTON (STOP)	
8	3-374-164-11	BUTTON (LISTEN)	
9	3-374-164-01	BUTTON (FF)	
10	3-374-163-01	BUTTON (FUNCTION)	
11	* 1-642-579-11	FRONT BOARD	
12	3-374-240-01	SHEET, ORNAMENTAL	
13	3-343-250-01	CUSHION	
14	3-374-171-01	SPRING (CASSETTE), HOOK	
15	3-374-205-01	DAMPER	
16	X-3323-535-1	KNOB (VOL) ASSY	
17	X-3323-536-1	KNOB (TONE) ASSY	
18	* A-3016-149-A	MAIN BOARD, COMPLETE	
19	3-374-241-01	CABINET (REAR)	
20	3-329-013-01	FOOT, RUBBER	
21	3-374-245-01	GUIDE, KNOB	
22	3-374-246-01	BUSHING	
SP1	1-544-615-11	SPEAKER	

4-2. MECHANISM BLOCK



Ref. No.	Part No.	Description	Remark
51	* 3-374-218-01	CHASSIS, SUB	
52	* 3-374-224-01	SPACER, HEAD	
53	3-374-223-01	SPRING, AZIMUTH	
54	* 3-374-228-01	SPACER, HEAD (BASE)	
55	3-374-225-01	CAP, REEL	
56	3-374-222-01	RETAINER (REAR), CASSETTE	
57	* 3-374-213-01	LEVER, BRAKE	
58	3-374-235-01	SPRING (BRAKE LEVER)	
59	3-374-234-01	SPRING (SOLENOID)	
60	* 3-374-214-01	LEVER, SOLENOID	
61	3-374-231-01	SPRING (WHEEL ARM)	
62	3-374-237-01	FLYWHEEL	
63	3-374-238-01	BELT (FLY)	
64	1-548-615-11	COUNTER, TAPE	
65	3-374-230-01	BELT, COUNTER	
66	* 3-374-227-01	SPACER	
67	* 3-374-226-01	CUSHION	
68	* 3-374-216-01	LEVER, PLAY	
69	3-374-229-01	SPRING (PLAY LEVER)	
70	3-374-217-01	REEL, T	

Ref. No.	Part No.	Description	Remark
71	3-374-212-01	ARM	
72	3-374-211-01	GEAR, SLIP	
73	3-374-236-01	BELT	
74	* 3-374-220-01	CHASSIS, MAIN	
75	* 1-642-580-11	PHOTO COUPLER BOARD	
76	* 1-642-581-11	MECHANICAL BOARD	
77	3-374-215-01	GEAR, S REEL	
78	3-374-232-01	CUSHION, MOTOR	
79	3-374-233-01	COLLAR, MOTOR	
80	3-341-753-11	WASHER, POLYETHYLENE	
81	3-701-436-01	WASHER, 1.6	
82	3-701-437-51	WASHER	
83	3-701-437-61	WASHER	
HE1	1-543-892-11	HEAD, MAGNETIC (ERASE)	
HRP1	1-543-891-11	HEAD, MAGNETIC (REC/PB)	
M1	1-541-943-11	MOTOR	
M2	1-541-943-11	MOTOR	
PM1	1-454-575-11	SOLENOID, PLUNGER	
PM2	1-454-574-11	SOLENOID, PLUNGER	
S1	1-692-017-11	SWITCH, LEAF (CASSETTE HALF)	

FRONT | MAIN

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- CAPACITORS
  uF: μF
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD....

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
*	1-642-579-11	FRONT BOARD			
		**********			
		< LED >			
LED1		LED SLP290B-51			
LED2	8-719-945-66	LED SLP190B-51			
LED3		LED SLP290B-51			
LED4		LED SLP290B-51			
LED5		LED SLP290B-51			
LED6	8-719-945-66	LED SLP190B-51			
		< RESISTOR >			
R201	1-216-186-00	METAL GLAZE	330	5% 1/8W	
R202	1-216-200-00	METAL GLAZE	1.2K	5% 1/8W	
R203	1-216-196-00	METAL GLAZE	820	5% 1/8W	
R204	1-216-196-00	METAL GLAZE	820	5% 1/8W	
R205	1-216-196-00	METAL GLAZE	820	5% 1/8W	
R206	1-216-200-00	METAL GLAZE	1.2K	5% 1/8W	
		< SWITCH >			
SW5	1-552-539-11	SWITCH, KEY BOARD (STOP)			
SW6	1-552-539-11	SWITCH, KEY BOARD (REW)			
SW7	1-552-539-11	SWITCH, KEY BOARD (FF)			
SW8	1-552-539-11	SWITCH, KEY BOARD (LISTEN)			
SW9	1-552-539-11	SWITCH, KEY BOARD (TEL REC)			
SW10	1-552-539-11	SWITCH, KEY BOARD (SCAN)			
SW11	1-552-539-11	SWITCH, KEY BOARD (ERASE)			

****

Ref. No.	Part No.	Description			Remark
*	A-3016-149-A	MAIN BOARD, COMPLETE			
		**********			
	1-540-231-11	SOCKET, IC			
		< CAPACITOR >			
C1	1-163-205-00	CERAMIC CHIP	0.001uF	5% 50V	
C2	1-126-157-11	ELECT	10uF	20% 16V	
C3	1-163-181-00	CERAMIC CHIP	100PF	5% 50V	
C4	1-126-157-11	ELECT	10uF	20% 16V	
C5	1-124-589-11	ELECT	47uF	20% 16V	
C6	1-163-181-00	CERAMIC CHIP	100P	5% 50V	
C7	1-163-059-00	CERAMIC CHIP	0.01uF	10% 50V	
C8	1-126-157-11	ELECT	10uF	20% 16V	
C9	1-124-455-00	ELECT	100uF	20% 16V	
C10	1-124-589-11	ELECT	47uF	20% 16V	
C11	1-124-465-00	ELECT	0.47uF	20% 50V	
C12	1-124-589-11	ELECT	47uF	20% 16V	
C13	1-163-059-00	CERAMIC CHIP	0.01uF	10% 50V	
C14	1-130-495-00	MYLAR	0.1uF	5% 50V	
C15	1-126-163-11	ELECT	4.7uF	20% 50V	
C16	1-124-257-00	ELECT	2.2uF	20% 50V	
C17	1-124-455-00	ELECT	100uF	20% 16V	
C18	1-163-181-00	CERAMIC CHIP	100PF	5% 50V	
C19	1-163-205-00	CERAMIC CHIP	0.001uF	5% 50V	
C20	1-163-059-00	CERAMIC CHIP	0.01uF	10% 50V	
C21	1-124-034-51	ELECT	33uF	20% 16V	
C22	1-124-589-11	ELECT	47uF	20% 16V	
C23	1-164-493-11	CERAMIC CHIP	0.047uF	10% 50V	
C24	1-126-103-11	ELECT	470uF	20% 16V	
C25	1-164-493-11	CERAMIC CHIP	0.047uF	10% 50V	
C26	1-164-493-11	CERAMIC CHIP	0.047uF	10% 50V	
C27	1-163-199-00	CERAMIC CHIP	560PF	5% 50V	

Ref. No.	Part No.	Description			Remark
C28	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C29	1-163-199-00	CERAMIC CHIP	560PF	5%	50V
C30	1-126-301-11	ELECT	1uF	20%	50V
C31	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C32	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C33	1-130-495-00	MYLAR	0.1uF	5%	50V
C34	1-126-163-11	ELECT	4.7uF	20%	50V
C35	1-124-257-00	ELECT	2.2uF	20%	50V
C36	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C37	1-126-157-11	ELECT	10uF	20%	16V
C38	1-126-157-11	ELECT	10uF	20%	16V
C39	1-126-157-11	ELECT	10uF	20%	16V
C40	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C41	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C42	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C43	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C44	1-126-301-11	ELECT	1uF	20%	50V
C45	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C46	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C47	1-126-301-11	ELECT	1uF	20%	50V
C48	1-130-495-00	MYLAR	0.1uF	5%	50V
C49	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C50	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C51	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C52	1-126-157-11	ELECT	10uF	20%	16V
C53	1-124-257-00	ELECT	2.2uF	20%	50V
C54	1-126-157-11	ELECT	10uF	20%	16V
C55	1-164-493-11	CERAMIC CHIP	0.47uF	10%	50V
C56	1-124-234-00	ELECT	22uF	20%	16V
C57	1-124-465-00	ELECT	0.47uF	20%	50V
C58	1-124-034-51	ELECT	33uF	20%	16V
C59	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C60	1-126-163-11	ELECT	4.7uF	20%	50V
C61	1-126-301-11	ELECT	1uF	20%	50V
C62	1-124-234-00	ELECT	22uF	20%	16V
C63	1-163-057-00	CERAMIC CHIP	0.0068uF	10%	50V
C64	1-126-157-11	ELECT	10uF	20%	16V
C65	1-163-981-00	CERAMIC CHIP	0.0022uF	5%	25V
C66	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C67	1-126-163-11	ELECT	4.7uF	20%	50V
C68	1-126-301-11	ELECT	1uF	20%	50V
C69	1-124-465-00	ELECT	0.47uF	20%	50V
C70	1-124-034-51	ELECT	33uF	20%	16V
C71	1-130-495-00	MYLAR	0.1uF	5%	50V
C72	1-130-495-00	MYLAR	0.1uF	5%	50V
C73	1-130-495-00	MYLAR	0.1uF	5%	50V
C74	1-130-495-00	MYLAR	0.1uF	5%	50V
C75	1-124-589-11	ELECT	47uF	20%	16V
C76	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V

Ref. No.	Part No.	Description			Remark
C77	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C78	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C79	1-163-887-00	CERAMIC CHIP	22PF	5%	50V
C80	1-163-887-00	CERAMIC CHIP	22PF	5%	50V
C81	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C82	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C83	1-124-465-00	ELECT	0.47uF	20%	50V
C84	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C85	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C86	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C87	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C88	1-126-301-11	ELECT	1uF	20%	50V
C89	1-124-589-11	ELECT	47uF	20%	16V
C90	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C91	1-124-907-11	ELECT	10uF	20%	50V
C92	1-124-589-11	ELECT	47uF	20%	16V
C93	1-126-301-11	ELECT	1uF	20%	50V
C94	1-164-493-11	CERAMIC CHIP	0.047uF	10%	50V
C95	1-126-157-11	ELECT	10uF	20%	16V
C96	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C97	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C98	1-130-495-00	MYLAR	0.1uF	5%	50V
C99	1-126-103-11	ELECT	470uF	20%	16V
C100	1-124-563-11	ELECT	2200uF	20%	25V
C101	1-130-495-00	MYLAR	0.1uF	5%	50V
C102	1-130-495-00	MYLAR	0.1uF	5%	50V
C103	1-126-103-11	ELECT	470uF	20%	16V
C104	1-124-480-11	ELECT	470uF	20%	25V
C105	1-130-495-00	MYLAR	0.1uF	5%	50V
C106	1-130-495-00	MYLAR	0.1uF	5%	50V
C107	1-126-301-11	ELECT	1uF	20%	50V
C108	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C109	1-130-495-00	MYLAR	0.1uF	5%	50V
C110	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C111	1-126-301-11	ELECT	1uF	20%	50V
C112	1-163-059-00	CERAMIC CHIP	0.01uF	5%	50V
C113	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V

< NETWORK >

CA1	1-239-233-11	CAPACITOR, NETWORK
CA2	1-239-233-11	CAPACITOR, NETWORK
CA3	1-239-233-11	CAPACITOR, NETWORK

< DIODE >

D1	1-809-570-11	DIODE RLZ11B
D2	8-719-400-16	DIODE MA153
D3	1-809-570-11	DIODE RLZ11B
D4	1-809-570-11	DIODE RLZ11B
D5	8-719-400-16	DIODE MA153

MAIN

Ref. No.	Part No.	Description	Remark
D6	8-719-990-39	DIODE DCB010	
D7	8-719-972-92	DIODE RLZJ7.5B	
D8	8-719-972-92	DIODE RLZJ7.5B	
D9	8-719-972-92	DIODE RLZJ7.5B	
D11	8-719-000-07	DIODE MC2836	
D12	8-719-000-07	DIODE MC2836	
D13	8-719-000-07	DIODE MC2836	
D14	8-719-972-92	DIODE RLZJ7.5B	
D15	8-719-972-92	DIODE RLZJ7.5B	
D16	8-719-972-92	DIODE RLZJ7.5B	
D17	8-719-972-92	DIODE RLZJ7.5B	
D18	8-719-972-92	DIODE RLZJ7.5B	
D19	8-719-974-59	DIODE 1SR139-100	
D20	8-719-974-59	DIODE 1SR139-100	
		< FUSE >	
F1	1-532-078-00	FUSE, TIME-LAG (1A) (AE1, AE5, UK)	
F1	1-532-536-00	FUSE, TIME-LAG (1A) (Canadian)	
		< IC >	
IC1	8-759-800-66	IC LA3161	
IC2	8-759-841-40	IC LA4140	
IC3	8-759-511-85	IC CD4066BE	
IC4	8-759-145-58	IC uPC4558C	
IC5	8-759-700-42	IC NJM2904D	
IC6	8-759-700-89	IC NJM386D	
IC7	1-809-573-11	IC 74LS257	
IC8	1-809-573-11	IC 74LS257	
IC9		IC LH5764	
IC10	8-759-240-93	IC TC4093BC	
IC11	1-809-572-11	IC M5295L	
IC12	1-809-569-11	IC HD6305	
IC13	1-809-574-11	IC 74LS07	
IC14	1-809-575-11	IC IR2C05	
IC15	8-759-055-63	IC LA5528NM	
IC16	8-759-055-63	IC LA5528NM	
IC17	8-759-822-09	IC LB1641	
IC18	8-759-982-21	IC RC78L05A	
IC19	8-759-144-83	IC uPC24M09HF	
		< JACK >	
J1	1-569-215-11	JACK (TELEPHONE PICK-UP)	
J2	1-566-891-21	JACK (EARPHONE)	
J3	1-568-727-31	JACK, DC (DC IN 12V)	
J4	1-691-334-11	CONNECTOR, DIN (HAND UNIT)	
J5	* 1-561-533-00	SOCKET, CONNECTOR 12P (CONTROL UNIT)	
		< CONNECTOR >	
J6	* 1-691-332-11	HOUSING, CONNECTOR 13P	
J7	* 1-691-333-11	HOUSING, CONNECTOR 15P	
J8	* 1-691-331-11	HOUSING, CONNECTOR 4P	
J9	* 1-691-330-11	HOUSING, CONNECTOR 2P	
		< COIL >	
L1	1-433-392-11	TRANSFORMER, BIAS OSCILLATION	
L2	1-424-605-11	COIL, CHOKE	
		< TRANSISTOR >	
Q1	8-729-809-46	TRANSISTOR 2SD1935-CT6	
Q2		TRANSISTOR 2SC3143	
Q3		TRANSISTOR 2SC3143	
Q4	8-729-820-76	TRANSISTOR 2SA1179-M5M6	
Q5	8-729-661-94	TRANSISTOR RT1N141SK	
Q6	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q7	8-729-661-94	TRANSISTOR RT1N141SK	
Q8	8-729-661-94	TRANSISTOR RT1N141SK	
Q9	8-729-901-01	TRANSISTOR DTC144EK	
Q10	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q11	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q12	8-729-809-46	TRANSISTOR 2SD1935-CT6	
Q13	8-729-901-01	TRANSISTOR DTC144EK	
Q14	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q15	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q16	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q17	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q18	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q19	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q20	8-729-901-01	TRANSISTOR DTC144EK	
Q21	8-729-661-94	TRANSISTOR RT1N141SK	
Q22	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q23	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q24	8-729-809-46	TRANSISTOR 2SD1935-CT6	
Q25	8-729-809-46	TRANSISTOR 2SD1935-CT6	
Q26	8-729-661-95	TRANSISTOR RT1N241SK	
Q27	1-809-571-11	TRANSISTOR 2SD1637	
Q28	8-729-901-01	TRANSISTOR DTC144EK	
Q29	8-729-901-01	TRANSISTOR DTC144EK	
Q30	8-729-901-01	TRANSISTOR DTC144EK	
Q31	8-729-901-01	TRANSISTOR DTC144EK	
Q32	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q33	8-729-901-01	TRANSISTOR DTC144EK	
Q34	8-729-661-94	TRANSISTOR RT1N141SK	
Q35	8-729-881-21	TRANSISTOR 2SC2812-L5	
Q36	8-729-901-01	TRANSISTOR DTC144EK	
Q37	8-729-901-01	TRANSISTOR DTC144EK	
Q38	8-729-661-94	TRANSISTOR RT1N141SK	
Q39	8-729-661-94	TRANSISTOR RT1N141SK	
Q40	8-729-881-21	TRANSISTOR 2SC2812-L5	

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R1	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R2	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R3	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R4	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R5	1-216-202-00	METAL GLAZE	1.5K	5%	1/8W
R6	1-216-186-00	METAL GLAZE	330	5%	1/8W
R7	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R8	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R9	1-216-198-00	METAL CHIP	1K	5%	1/8W
R10	1-216-218-00	METAL GLAZE	6.8K	5%	1/8W
R11	1-216-176-00	METAL GLAZE	120	5%	1/8W
R12	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R13	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R14	1-216-176-00	METAL GLAZE	120	5%	1/8W
R15	1-216-232-00	METAL GLAZE	27K	5%	1/8W
R16	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R17	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R18	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R19	1-216-186-00	METAL GLAZE	330	5%	1/8W
R20	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R21	1-216-202-00	METAL GLAZE	1.5K	5%	1/8W
R22	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R23	1-216-202-00	METAL GLAZE	1.5K	5%	1/8W
R24	1-216-198-00	METAL CHIP	1K	5%	1/8W
R25	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R26	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R27	1-216-216-00	METAL GLAZE	5.6K	5%	1/8W
R28	1-216-238-00	METAL GLAZE	47K	5%	1/8W
R29	1-216-166-00	METAL GLAZE	47	5%	1/8W
R30	1-216-226-00	METAL GLAZE	15K	5%	1/8W
R31	1-216-248-00	METAL GLAZE	120K	5%	1/8W
R32	1-216-226-00	METAL GLAZE	15K	5%	1/8W
R33	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R34	1-216-226-00	METAL GLAZE	15K	5%	1/8W
R35	1-216-248-00	METAL GLAZE	120K	5%	1/8W
R36	1-216-226-00	METAL GLAZE	15K	5%	1/8W
R37	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R38	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R39	1-216-228-00	METAL GLAZE	18K	5%	1/8W
R40	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R41	1-216-254-00	METAL GLAZE	220K	5%	1/8W
R42	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R43	1-216-210-00	METAL GLAZE	3.3K	5%	1/8W
R44	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R45	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R46	1-216-198-00	METAL CHIP	1K	5%	1/8W
R47	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R48	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R49	1-216-150-00	METAL GLAZE	10	5%	1/8W
R50	1-216-174-00	METAL GLAZE	100	5%	1/8W
R51	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R52	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R53	1-216-212-00	METAL GLAZE	3.9K	5%	1/8W
R54	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R55	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R56	1-216-198-00	METAL GLAZE	1K	5%	1/8W
R57	1-216-238-00	METAL GLAZE	47K	5%	1/8W
R58	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R59	1-216-238-00	METAL GLAZE	47K	5%	1/8W
R60	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R61	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R62	1-216-198-00	METAL CHIP	1K	5%	1/8W
R63	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R64	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R65	1-216-198-00	METAL CHIP	1K	5%	1/8W
R66	1-216-194-00	METAL CHIP	680	5%	1/8W
R67	1-216-262-00	METAL GLAZE	470K	5%	1/8W
R68	1-216-202-00	METAL CHIP	1.5K	5%	1/8W
R69	1-216-198-00	METAL CHIP	1K	5%	1/8W
R70	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R71	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R72	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R73	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R74	1-216-216-00	METAL GLAZE	5.6K	5%	1/8W
R75	1-216-258-00	METAL GLAZE	330K	5%	1/8W
R76	1-216-206-00	METAL CHIP	2.2K	5%	1/8W
R77	1-216-216-00	METAL GLAZE	5.6K	5%	1/8W
R78	1-216-226-00	METAL GLAZE	15K	5%	1/8W
R79	1-216-254-00	METAL GLAZE	220K	5%	1/8W
R81	1-216-194-00	METAL GLAZE	680	5%	1/8W
R82	1-216-186-00	METAL GLAZE	330	5%	1/8W
R83	1-216-196-00	METAL GLAZE	820	5%	1/8W
R84	1-216-244-00	METAL GLAZE	82K	5%	1/8W
R85	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R86	1-216-198-00	METAL CHIP	1K	5%	1/8W
R87	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R88	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R89	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R90	1-216-212-00	METAL GLAZE	3.9K	5%	1/8W
R91	1-216-270-00	METAL GLAZE	1M	5%	1/8W
R92	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R93	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R94	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R95	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W
R96	1-216-266-00	METAL GLAZE	680K	5%	1/8W
R97	1-216-188-00	METAL GLAZE	390	5%	1/8W

MAIN | MECHANICAL | PHOTO COUPLER

Ref. No.	Part No.	Description			Remark
R98	1-216-238-00	METAL GLAZE	47K	5%	1/8W
R99	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R100	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R101	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R102	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R103	1-216-270-00	METAL GLAZE	1M	5%	1/8W
R104	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R105	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R106	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R107	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R108	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R109	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R110	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R111	1-216-234-00	METAL GLAZE	33K	5%	1/8W
R112	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R113	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R114	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R115	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R116	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W
R117	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R118	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R119	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R120	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R121	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R122	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R123	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R124	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R125	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R126	1-216-198-00	METAL CHIP	1K	5%	1/8W
R127	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R128	1-216-212-00	METAL GLAZE	3.9K	5%	1/8W
R129	1-216-212-00	METAL GLAZE	3.9K	5%	1/8W
R130	1-216-196-00	METAL GLAZE	820	5%	1/8W
R131	1-216-198-00	METAL CHIP	1K	5%	1/8W
R132	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R133	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R134	1-216-192-00	METAL CHIP	560	5%	1/8W
R135	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R136	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R137	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R138	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R139	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W
R140	1-216-148-00	METAL GLAZE	8.2	5%	1/8W
R141	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R142	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R143	1-216-206-00	METAL CHIP	2.2K	5%	1/8W
R144	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R145	1-216-148-00	METAL GLAZE	8.2	5%	1/8W
R146	1-216-196-00	METAL GLAZE	820	5%	1/8W
R147	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W
R148	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R149	1-216-202-00	METAL GLAZE	1.5K	5%	1/8W
R150	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R151	1-216-192-00	METAL CHIP	560	5%	1/8W
R152	1-216-148-00	METAL GLAZE	8.2	5%	1/8W
R153	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W
R154	1-216-198-00	METAL CHIP	1K	5%	1/8W
R155	1-809-579-11	THERMISTOR			
R162	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R163	1-216-198-00	METAL GLAZE	1K	5%	1/8W
R164	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R165	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R166	1-216-198-00	METAL GLAZE	1K	5%	1/8W
		< NETWORK >			
RA1	1-239-240-11	RES, NETWORK			
RA2	1-239-240-11	RES, NETWORK			
		< SWITCH >			
SW1	1-572-251-11	SWITCH, SLIDE (POWER)			
SW2	1-572-251-11	SWITCH, SLIDE (SPEAKER)			
SW3	1-572-251-11	SWITCH, SLIDE (SPEED CONTROL)			
SW4	1-570-361-11	SWITCH, SLIDE (DIGITAL CORD) (REVERSE TIME)			
		< VARIABLE RESISTOR >			
VR1	1-230-564-11	RES, VAR, SLIDE 10K (VOLUME)			
VR2	1-230-564-11	RES, VAR, SLIDE 10K (TONE)			
VR3	1-228-886-00	RES, VAR, SLIDE 5K (SPEED)			
VR4	1-228-991-00	RES, ADJ, METAL 2.2K			
VR5	1-238-589-11	RES, ADJ, METAL GRAZE 4.7K			
		< CRYSTAL >			
X1	1-567-094-00	VIBRATOR, CERAMIC			

****

* 1-642-581-11 MECHANICAL BOARD
****

****

* 1-642-580-11 PHOTO COUPLER BOARD
****

< PHOTO REFLECTOR >

PH1 PHOTO REFLECTOR

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
64	1-548-615-11	COUNTER, TAPE	
HE1	1-543-892-11	HEAD, MAGNETIC (ERASE)	
HRP1	1-543-891-11	HEAD, MAGNETIC (REC/PB)	
M1	1-541-943-11	MOTOR	
M2	1-541-943-11	MOTOR	
PM1	1-454-575-11	SOLENOID, PLUNGER	
PM2	1-454-574-11	SOLENOID, PLUNGER	
S1	1-692-017-11	SWITCH, LEAF (CASSETTE HALF)	
SP1	1-544-615-11	SPEAKER	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
⚠	1-465-980-11	ADAPTOR, AC (AC-1201) (Canadian)	
⚠	1-465-981-11	ADAPTOR, AC (AC-1201) (AE1)	
⚠	1-465-982-11	ADAPTOR, AC (AC-1201) (AE5)	
⚠	1-465-983-11	ADAPTOR, AC (AC-1201) (UK)	
*	3-374-101-01	INDIVIDUAL CARTON	
*	3-374-102-01	CUSHION (L)	
*	3-374-103-01	CUSHION (R)	
	3-754-136-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH) (Canadian, AE5, UK)	
	3-754-136-41	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH) (AE1)	
**********			

HARDWARE LIST

#1	7-621-255-15	SCREW +P 2X3
#2	7-621-255-20	SCREW +P 2X4
#3	7-621-255-25	SCREW +P 2X4
#4	7-621-255-35	SCREW +P 2X5
#5	7-621-255-45	SCREW +P 2X6
#6	7-621-255-75	SCREW +P 2X12
#7	7-621-281-15	SCREW +P 2X2
#8	7-621-770-87	SCREW +P 2.6X5
#9	7-621-775-08	SCREW +P 2.6X3
#10	7-624-102-04	STOP RING 1.5, TYPE -E
#11	7-624-104-04	STOP RING 2.0, TYPE -E
#12	7-685-645-79	SCREW +P 3X6 TYPE2 NON-SLIT
#13	7-685-646-79	SCREW +P 3X8 TYPE2 NON-SLIT
#14	7-685-648-79	SCREW +P 3X12 TYPE2 NON-SLIT
#15	7-688-001-01	W 2, SMALL
#18	7-685-146-19	SCREW +P 3X8
#19	7-621-284-30	SCREW +P 2.6X8
#20	7-685-145-19	SCREW +P 3X6
#21	7-621-255-10	SCREW +P 2X2.5

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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General Audio Group

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91K0434-1
Printed in Japan

Published by Customer Relations and Service Group

BM-60

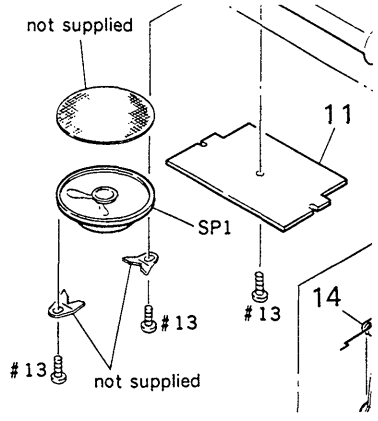
SONY®
SERVICE MANUAL

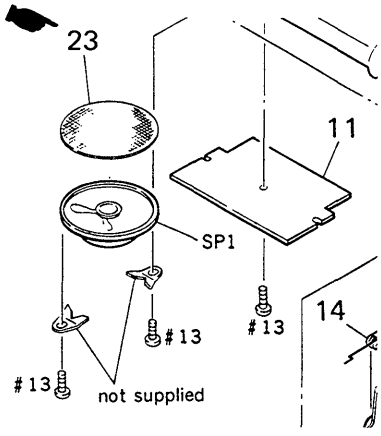
US Model
Canadian Model
AEP Model
UK Model
E Model

CORRECTION-1

Correct your service manual as shown below.

☛ : indicates corrected portion.

<table>
<tr><th>PAGE</th><th>INCORRECT</th><th>CORRECT</th></tr>
<tr><td>22</td><td>


Ref. No. Part No. Description Remark
</td><td>


Ref. No. Part No. Description Remark
23 * 3-375-836-01 NET, SPEAKER
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<tr><td>24</td><td>
< LED >
LED1 LED SLP290B-51
LED2 8-719-945-66 LED SLP190B-51
LED3 LED SLP290B-51
LED4 LED SLP290B-51
LED5 LED SLP290B-51
LED6 8-719-945-66 LED SLP190B-51
< SWITCH >
SW5 1-552-539-11 SWITCH, KEY BOARD (STOP)
SW6 1-552-539-11 SWITCH, KEY BOARD (REW)
SW7 1-552-539-11 SWITCH, KEY BOARD (FF)
SW8 1-552-539-11 SWITCH, KEY BOARD (LISTEN)
SW9 1-552-539-11 SWITCH, KEY BOARD (TEL REC)
SW10 1-552-539-11 SWITCH, KEY BOARD (SCAN)
SW11 1-552-539-11 SWITCH, KEY BOARD (ERASE)
</td><td>
< LED >
LED1 8-719-025-02 LED SLP290B-51
LED2 8-719-945-66 LED SLP190B-51
LED3 8-719-025-02 LED SLP290B-51
LED4 8-719-025-02 LED SLP290B-51
LED5 8-719-025-02 LED SLP290B-51
LED6 8-719-945-66 LED SLP190B-51
< SWITCH >
SW5 1-552-539-00 SWITCH, KEY BOARD (STOP)
SW6 1-552-539-00 SWITCH, KEY BOARD (REW)
SW7 1-552-539-00 SWITCH, KEY BOARD (FF)
SW8 1-552-539-00 SWITCH, KEY BOARD (LISTEN)
SW9 1-552-539-00 SWITCH, KEY BOARD (TEL REC)
SW10 1-552-539-00 SWITCH, KEY BOARD (SCAN)
SW11 1-552-539-00 SWITCH, KEY BOARD (ERASE)
</td></tr>
<tr><td>26</td><td>
IC9 IC LH5764
IC10 8-759-240-93 IC TC4093BC
Q2 TRANSISTOR 2SC3143
Q3 TRANSISTOR 2SC3143
</td><td>
IC9 8-759-067-55 IC LH57A040
IC10 8-759-240-93 IC TC4093BP
Q2 8-729-015-45 TRANSISTOR 2SC3134
Q3 8-729-015-45 TRANSISTOR 2SC3134
</td></tr>
<tr><td>28</td><td>
< PHOTO REFLECTOR >
PH1 PHOTO REFLECTOR
</td><td>
< PHOTO COUPLER >
PH1 8-719-025-04 PHOTO COUPLER NJL5165K
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BM-60

SONY
SERVICE MANUAL

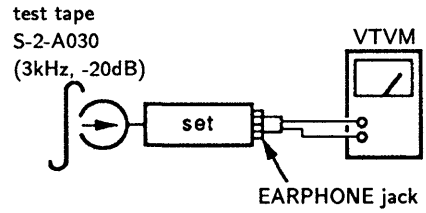
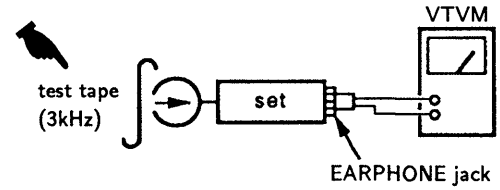
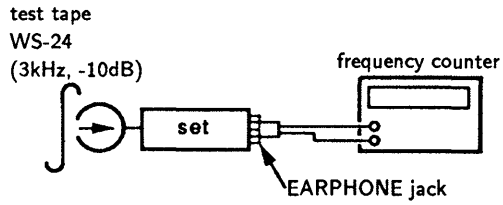
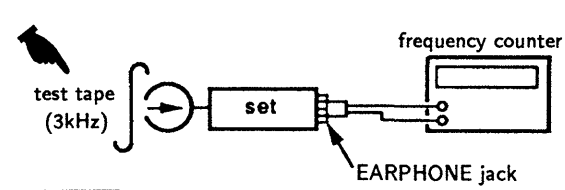
US Model
Canadian Model
AEP Model
UK Model
E Model

CORRECTION-2

Correct your service manual as shown below.

☛ : **indicates corrected portion.**

ELECTRICAL ADJUSTMENTS SECTION

<table>
<tr><th>Page</th><th>INCORRECT</th><th>CORRECT</th></tr>
<tr><td>11</td><td>Test tape
<table>
<tr><th>Type</th><th>Signal</th><th>Used for</th></tr>
<tr><td>S-2-A030</td><td>3kHz, -20dB</td><td>Head Azimuth Adjustment</td></tr>
<tr><td>WS-24</td><td>3kHz, -20dB</td><td>Tape Speed Adjustment</td></tr>
</table></td><td>Test tape ☛
<table>
<tr><th>Type</th><th>Signal</th><th>Used for</th></tr>
<tr><td>MINI CASSETTE
(1-550-745-11)</td><td>3kHz</td><td>Tape Speed
Head Azimuth</td></tr>
</table></td></tr>
<tr><td>11</td><td>Record/playback Head Azimuth Adjustment
Procedure :
1. Mode : Playback (LISTEN)
 
</td><td>Record/playback Head Azimuth Adjustment
Procedure :
1. Mode : Playback (LISTEN)
 
</td></tr>
<tr><td>11</td><td>Tape Speed Adjustment
Procedure :
1. Mode : Playback (LISTEN)
 
</td><td>Tape Speed Adjustment
Procedure :
1. Mode : Playback (LISTEN)
 
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