

DENON

Hi-Fi Component

SERVICE MANUAL STEREO CASSETTE TAPE DECK MODEL DRM-800

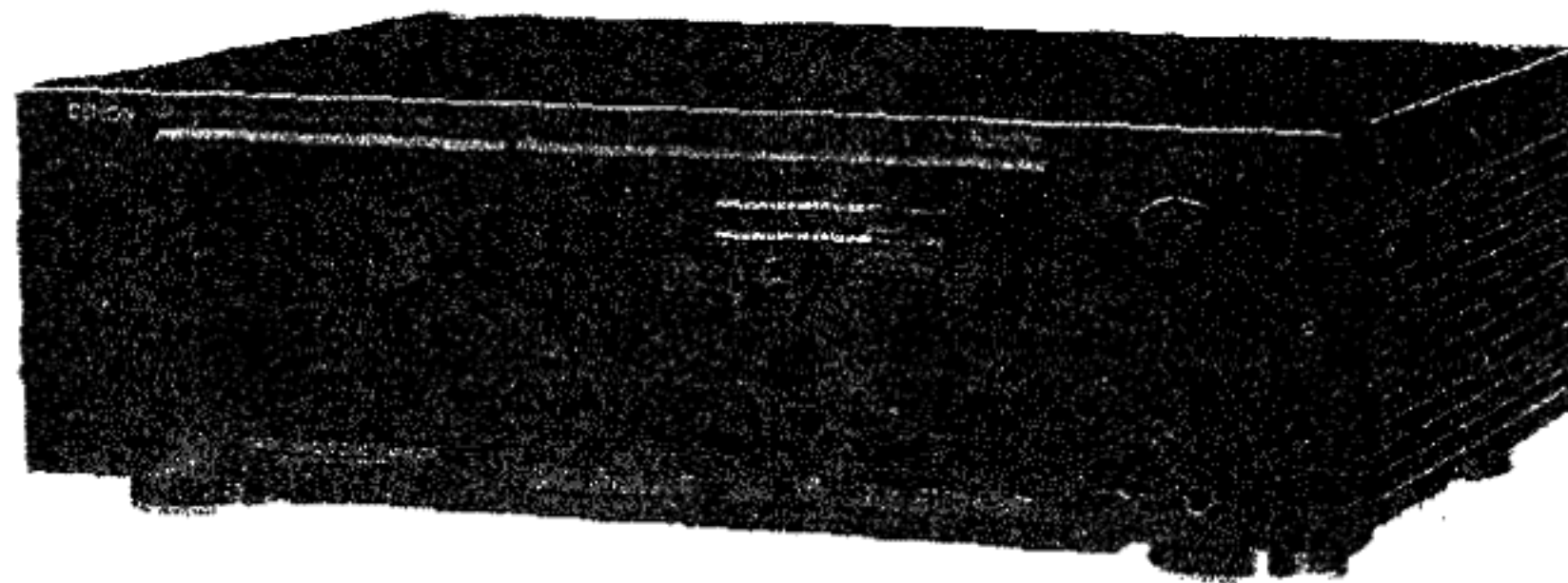


TABLE OF CONTENTS

OPERATING INSTRUCTIONS.....	2~11
SPECIFICATIONS.....	11
BLOCK DIAGRAM.....	12
LEVEL DIAGRAM.....	13
DISASSEMBLY INSTRUCTIONS.....	14~15
ADJUSTING AND CHECKING THE MECHANISM SECTION.....	15~17
ADJUSTING THE ELECTRICAL SECTIONS.....	17~19
PARTS LIST OF EXPLODED VIEW.....	20
EXPLODED VIEW OF CABINET AND CHASSIS GROUP.....	21
PARTS LIST OF 4U-1817/4U-1823/MECHANISM EXPLODED VIEW.....	22
EXPLODED VIEW OF MECHANISM.....	23
PARTS LIST OF 4U-1816.....	24
WIRING DIAGRAM.....	25
SCHEMATIC DIAGRAM.....	26~27
P.W.BOARD OF 4U-1816.....	28
P.W.BOARD OF 4U-1817/4U-1823.....	29
SEMICONDUCTORS.....	30

NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:

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

CAUTION:

- 1. Handle the power supply cord carefully**
Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
- 2. Do not open back plate**
In order to prevent electric shock, do not open the back plate. If problems occur, contact your DENON dealer.
- 3. Do not place anything inside**
Do not place metal objects or spill liquid inside the cassette deck. Electric shock or malfunction may result.

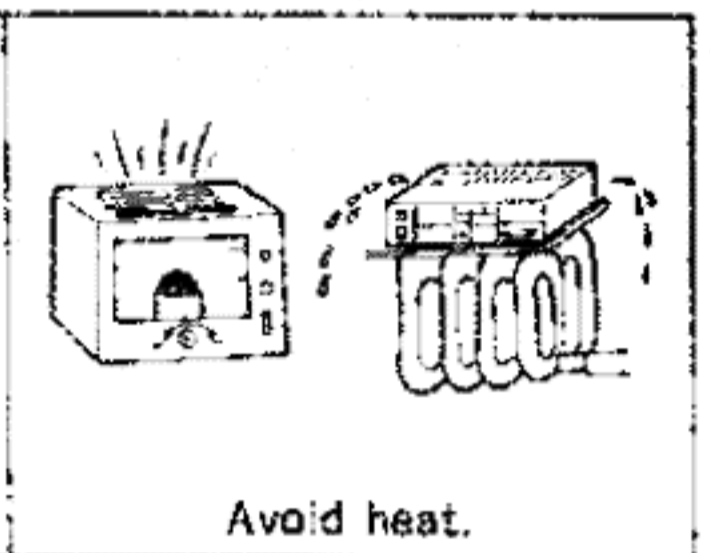
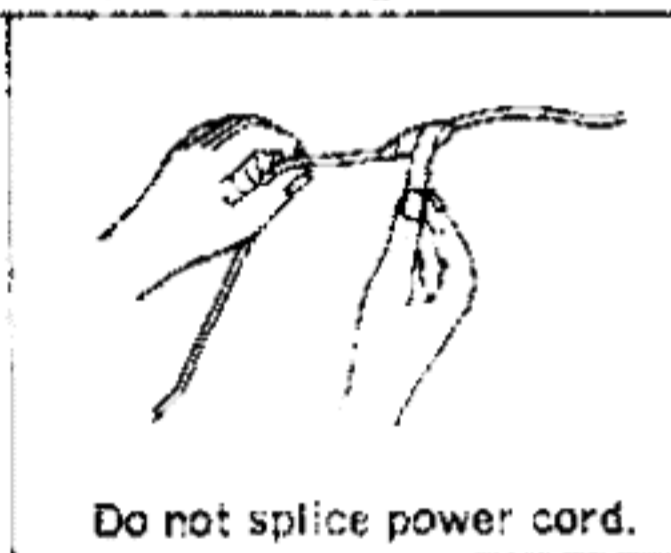
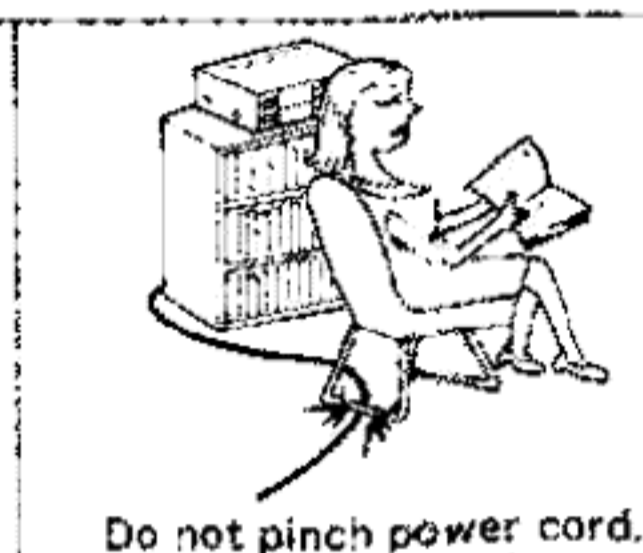
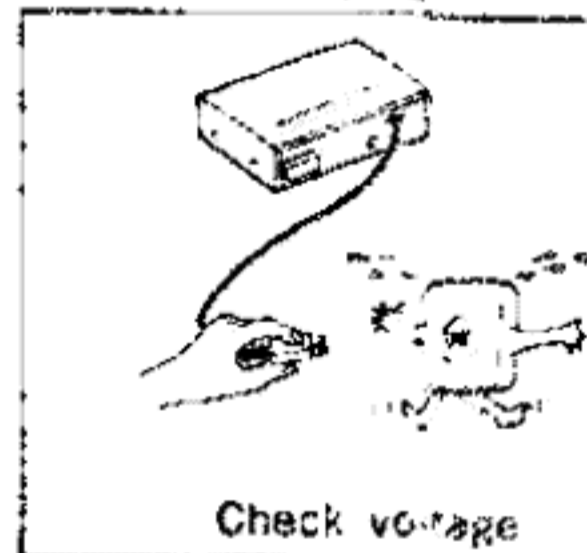
Please, record and retain the Model name and serial number of your set shown on the rating label.
Model No. DRM-800 Serial No. _____

SAFETY INSTRUCTIONS FOR AUDIO SET

■ INSTALLATION

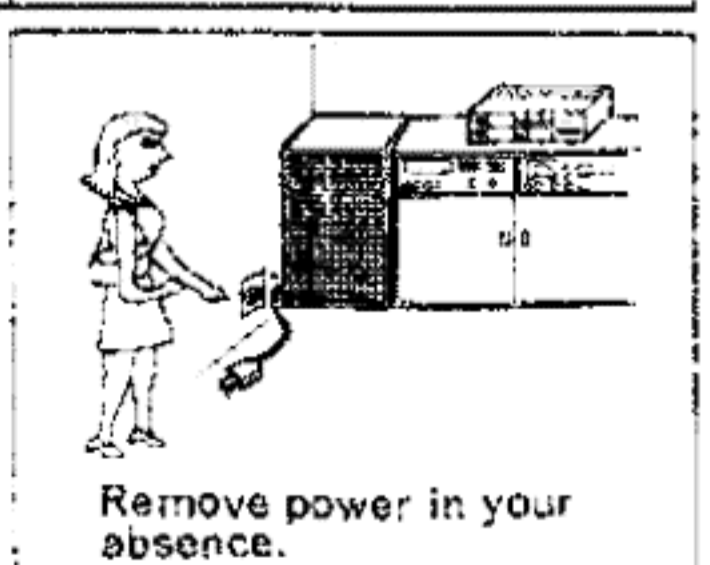
1. Operate the set only from a power source which is indicated on the rating label (indication) at the back of the set.
2. Frayed cords and broken plugs may cause a fire or shock hazard. Do not damage the power cord.
 - Do not cut and splice the power cord.
 - When removing the power cord from wall outlet, be sure to unplug by holding the plug attachment and not by pulling the cord. Do not hold the plug by wet hand.
 - Call your service technician for replacement of damaged cords and plugs.

3. Select a place so that the location or position does not interfere with the proper ventilation of the set for releasing heat generated during operation.
 - Select a flat and level surface allowing enough space for setting up and operation.
 - Never block the bottom ventilation holes placing the set on a bed, sofa, rug, etc.
 - Never place the set in a "builtin" enclosure unless proper ventilation is provided.
 - Never place the set near or over a radiator, heat register or stove.
 - Avoid locations where the set is exposed directly to the sun light.



■ USE

1. Do not expose the set to rain or water (liquid). Do not spill liquid or insert metal objects inside the set. Rain, water or liquid such as cosmetics as well as metal may cause electric shorts which can result in fire or shock hazard. If any thing gets inside, unplug the power cord and have a DENON service technician check your set before further use.
2. Never leave your set switched on when leaving the house. For added protection of your audio system during lightning storm or when the set is to be left unused for a long period of time, be sure to unplug the power cord from the wall outlet.
3. Take care so that the set is not dropped to avoid damaging the cabinet which defeats safeguards or injuring yourself. If the set has been dropped or the cabinet has been damaged, unplug the set and have it checked by a DENON service technician to restore the safeguards.



■ SERVICING

1. The servicing of set must not be attempted by yourself beyond that described in the operating instructions. In case of problems that cannot be settled by referring to your operating instructions, unplug the power cord and contact your DENON dealer. No user-serviceable parts are inside the set. Only qualified service inside your set.
2. Refer to the operating instructions for maintenance and cleaning.



IMPORTANT

(BRITISH MODEL ONLY)

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

Blue: Neutral
Brown: Live

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.

FOR YOUR SAFETY

(AUSTRALIAN MODEL ONLY)

To ensure safe operation, the three-pin plug supplied must be connected only with a standard three-pin power point which is effectively earthed through the normal household wiring.

Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.

The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, contact a qualified electrician.

— TABLE OF CONTENTS —

FEATURES	3
CONNECTION	3
FRONT PANEL SWITCHES AND CONTROLS	4~5
PLAYBACK	5
RECORDING	6
PROPER RECORDING LEVEL	6
RECORDING BIAS ADJUSTMENT	7
REC/REC MUTE KEY	7
AUTO TAPE SELECT FEATURE	7
MUSIC SEARCH SYSTEM	8
TAPE COUNTER AND MEMORY STOP	8
MONITOR BUTTON	9
DOLBY C NOISE REDUCTION SYSTEM	9
DOLBY HX PRO HEADROOM EXTENSION SYSTEM	9
MAINTENANCE	10
CASSETTE TAPE	10
SYMPTOMS OFTEN MISTAKEN AS BREAKDOWNS	11
SPECIFICATIONS	11

Thank you very much for purchasing the DENON component DRM-800.

THE DENON DRM-800 is a top-line stereo cassette tape deck, capable of outstanding performance in combination with high grade hi-fi systems.

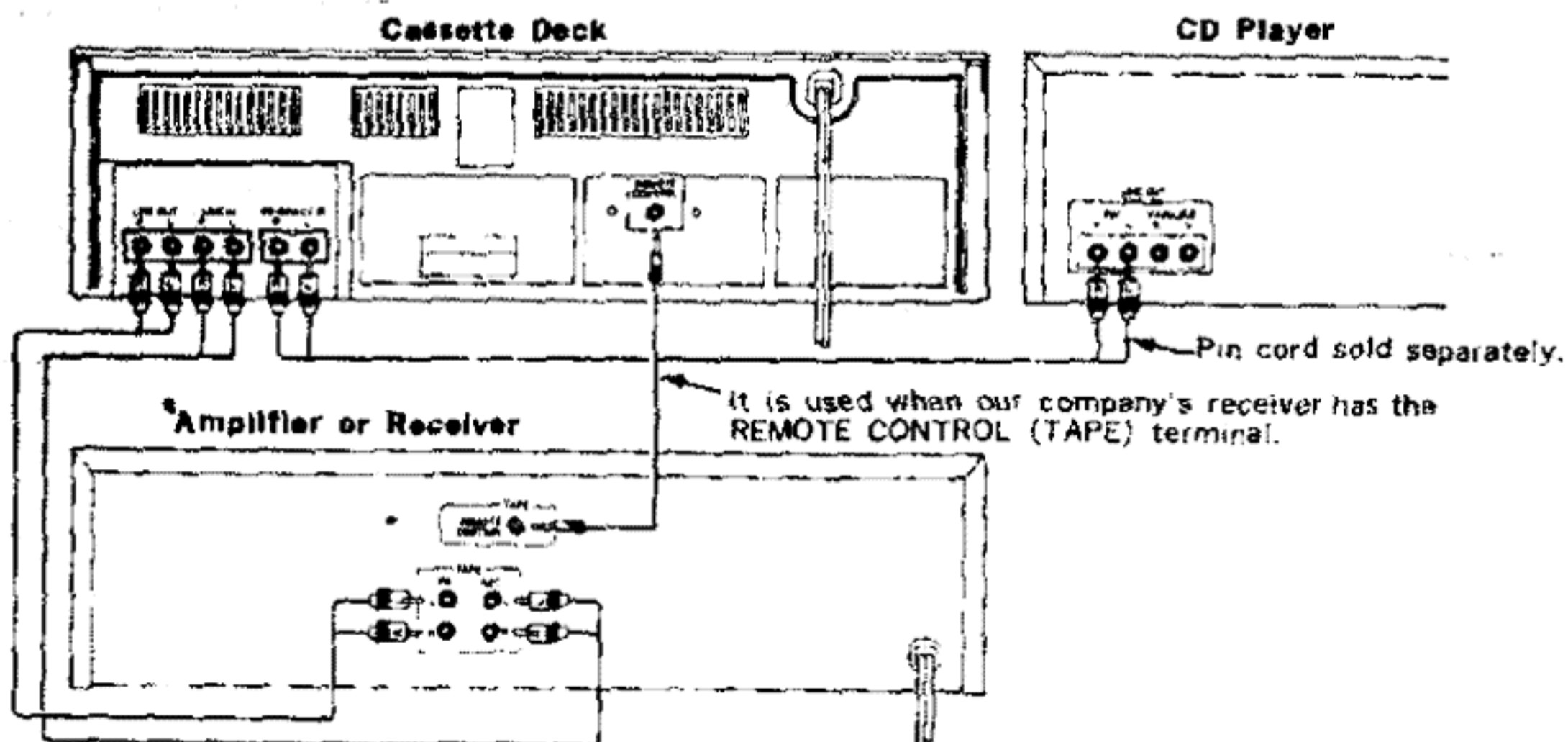
DENON proudly presents this advanced tape deck to audiophiles and music lovers as a further proof of DENON's non-compromising pursuit of the ultimate in sound quality. The high quality performance and easy operation are certain to provide you with many hours of outstanding listening pleasure.

FEATURES

- Computer-controlled servo technology.
 - Closed-loop dual-capstan tape transport.
 - Silent, soft-touch controls provide maximum ease-of-use.
 - Computer-controlled, full-logic tape controls enable fool-proof operation.
 - Automatic eliminating the slack of the tape.
- Three-head design utilizes the SF Amorphous record/playback combination head assembly.
- Dolby HX PRO headroom extension.
- Dolby C noise reduction systems (Double Dolby System).
- Computing linear tape counter with 4-digit readout and memory stop.
- Wide-range FL peak level meters.
- Auto tape selector.
- Recording Bias adjustment control.
- Cassette stabilizer.

CONNECTION

- Leave your entire system (including this cassette deck) turned off until all connections between the deck and other components have been made.



■ Connecting the deck to an amplifier

- Before connecting the deck to your amplifier, it is a good practice to review your amplifier's instruction manual.
- Use the white plugs for the left channel, and the red plugs for the right channel.

■ Connecting the deck to CD player (CD DIRECT)

Use the separately sold pin cord to connect the CD DIRECT IN terminal of the cassette deck to the LINE OUT (ANALOG) FIX terminal of the CD player.

■ Systems remote control

When you use our company's receiver and the cassette deck having the REMOTE CONTROL (TAPE) terminal, connect their REMOTE CONTROL terminals with the attached mini-plug cable. ("PLAY, FF, REW, STOP, REC/REC MUTE AND REC PAUSE" can be operated by the wireless remote controller attached to the receiver.)

■ Tape dubbing

- Many stereo amplifiers and receivers have tape dubbing circuitry so that tape duplication can be performed between two or more tape decks. Review your amplifier's instruction manual for a full explanation of this mode of operation.

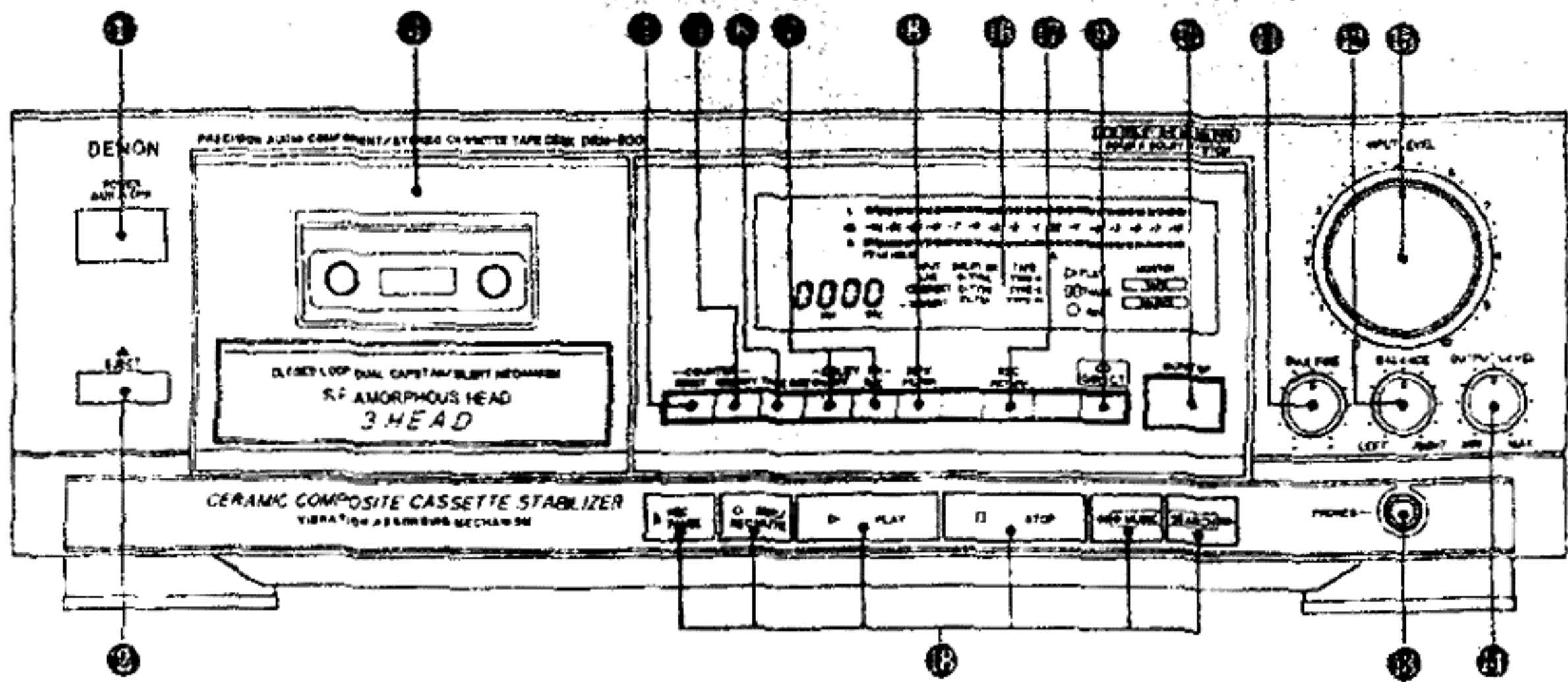
■ Connecting Headphones

To listen through headphones, plug your headphones into the PHONES jack.

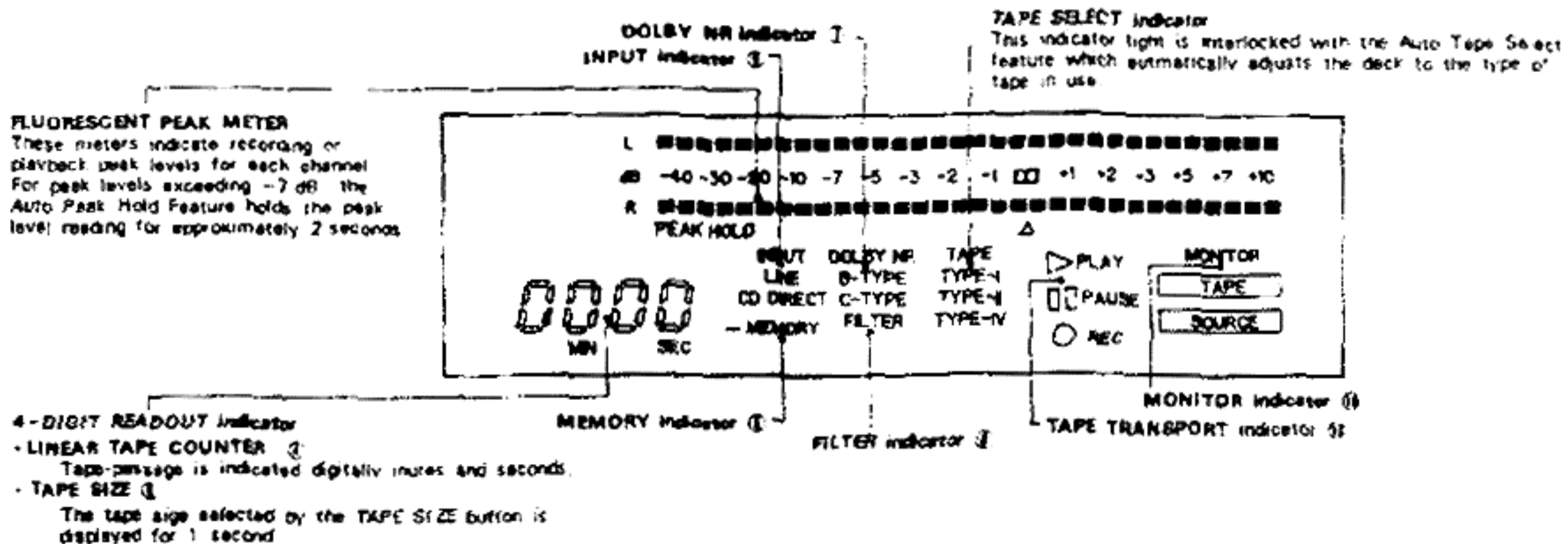
■ Installation Precautions

If the deck is placed on or too near an amplifier or tuner, noise (induced hum) or beat interference may result (especially during AM reception). If this occurs, separate the deck from other components or reorient its position.

FRONT PANEL SWITCHES AND CONTROLS



- 1 POWER switch**
Controls the supply of AC power to the deck. One push turns the deck on, a second push turns it off. The deck remains in a stand-by (non-operative) mode for approximately 2 seconds after it is switched on.
- 2 EJECT button**
Press this button to eject the cassette. When the deck is operating (tape is running), press the stop (■) key first to stop the tape transport; then press the EJECT button.
- 3 Cassette compartment cover**
If this compartment cover is not closed completely, the deck's transport controls will remain inoperative.
- 4 COUNTER RESET button**
Operation of the button resets the counter to all zero.
- 5 MEMORY button**
During rewinding operations, the tape will stop at the "0000" counter point automatically when this button is pressed in.
- 6 TAPE SIZE button**
You can know accurate elapsed time of the tape by adjusting the TAPE SIZE button to the tape size used. When the TAPE SIZE button is pressed, the current tape size is displayed for 1 sec in the 4-figures counter. If you further press the button during the display, the tape size will change in the following cycle.
C-90 C-75 C-60 C-100
- 7 DOLBY NR button**
Immediately after the power source is turned off, DOLBY NR becomes the "OFF" state. When the left-side DOLBY NR button is pressed once with DOLBY NR being at the "OFF" state, DOLBY NR B-TYPE is preferred and turned on. Every time when the right-side B/C button is pressed, B-TYPE and C-TYPE are selected alternatively.
- 8 MPX FILTER button**
The MPX FILTER button should be used to prevent interference with the Dolby NR circuit when making Dolby NR encoded recordings of FM stereo programs. When making Dolby NR encoded recordings from any program source other than FM stereo, leave this button in the "OFF" position.
- 9 CD DIRECT button**
If you connect the CD player as the CONNECTION (CD DIRECT) shown on page 3, the signals are directly input without passing through the stereo amplifier, and thus the signal route can be shortened improving the sound quality. Press this button for the CD DIRECT recording.
- 10 MONITOR button**
The SOURCE position of this button allows you to monitor the source program before it is recorded. The TAPE position of this button is used for tape playback monitoring or simultaneous monitoring during recording.
- 11 BIAS FINE control**
(for NORMAL, CrO₂, and METAL tape)
Adjust the bias according to the tape characteristics. Standard biasing is obtained at the center click-stop position.
- 12 BALANCE control**
This is the knob to adjust the recording level balance between the left and right channels. Turn it counter-clockwise to reduce the right channel's level and clockwise to reduce the left channel's. Usually, put the knob at the center click position.
- 13 PHONES jack**
For private music enjoyment without disturbing others, or for monitoring a recording, a set of headphones may be plugged in. Impedance should be from 8 to 1200 ohms.
- 14 OUTPUT LEVEL control**
This control adjusts playback, recording monitor, and headphones output levels for the both channels simultaneously.
- 15 INPUT LEVEL control**
The recording input level is adjusted by this knob. The levels in the left and right channels can be changed simultaneously.
- 16 DISPLAY**
The indicators with an encircled number light up by pressing the corresponding button.



REC RETURN Button

When this key is pressed at the recording state, the tape is rewound to the starting point. When the starting point is

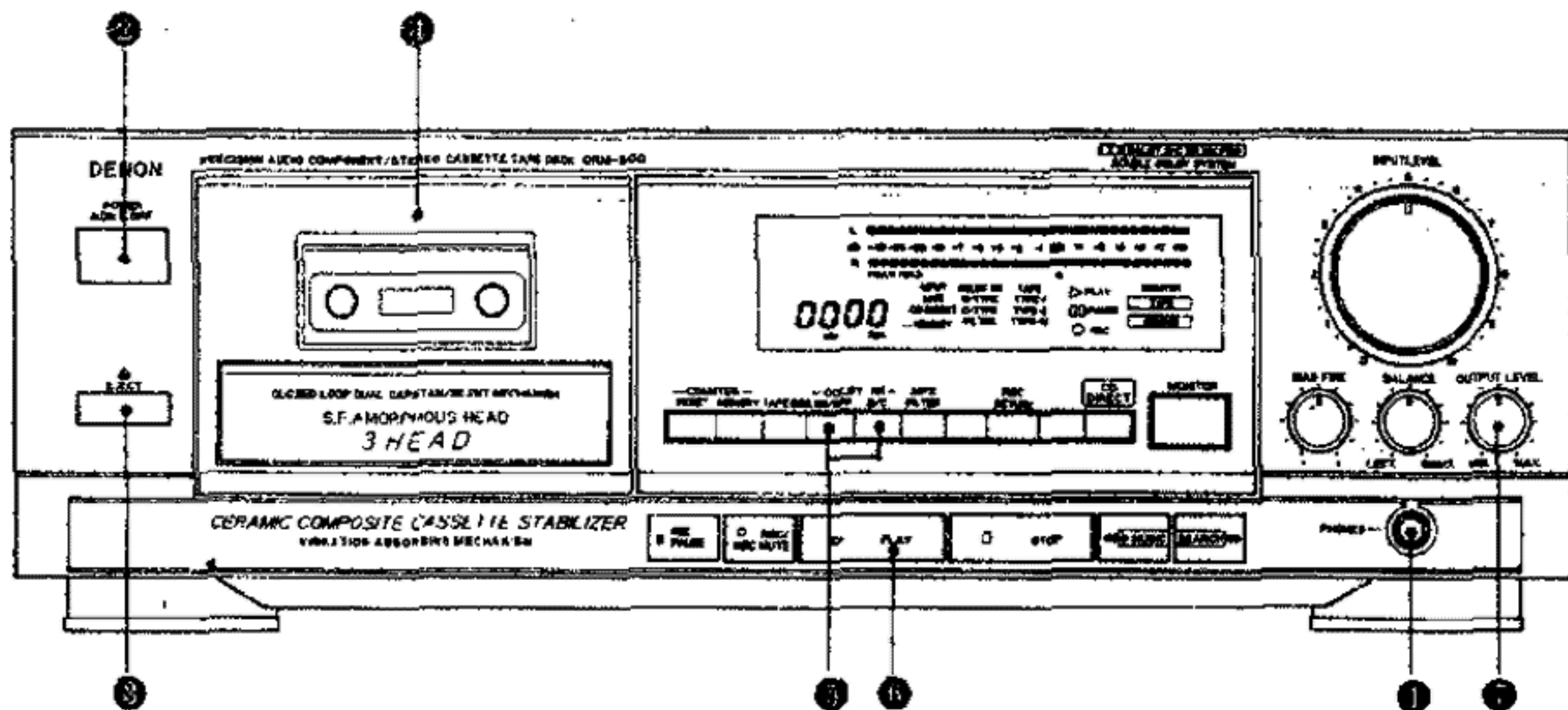
automatically reached, the record standby mode (rec pause state) comes.

Tape transport controls

▶	PLAY	PLAY KEY	Press to playback tape.
■	STOP	STOP KEY	Press to stop tape in any mode.
◀◀		REW KEY	Press for fast rewind.
▶▶		FF KEY	Press for fast forward tape winding.
●	REC/REC MUTE	RECORD/MUTE KEY	To begin recording, press the RECORD and PLAY keys simultaneously. If only the RECORD key is pressed, the deck is placed in the REC PAUSE (record standby) mode. When this key is pressed under the REC PAUSE state, the mode shifts to the Auto Rec Mute. When this key is pressed for making a non-recorded part between two melodies, about 5 sec of non-recorded part can automatically be created.
⏸	REC PAUSE	REC PAUSE KEY	Press this key if you want to change from the rec mute or recording state into the rec pause state. "Pause" is effective during "RECORDING" only.

PLAYBACK

- Switch on your amplifier or receiver.
- Set the TAPE MONITOR switch on your amplifier or receiver to the TAPE position.
- Operate the deck in numerical order as illustrated below:



1 PHONES

Playback sound is fed into the headphone set.

2 POWER

Push the switch to turn "ON" (▲) the power.

3 EJECT

Press the EJECT button to open the cassette compartment.

4 Cassette Compartment Cover

When a cassette tape is inserted and the door is closed, the tape is automatically wound up for about 0.2 sec. to eliminate the slack.

5 DOLBY NR

For recordings made without Dolby NR, set to "OFF".
For recordings made with Dolby B NR, set to "ON" and "B". (The B-TYPE indicator will light up.)
For recordings made with Dolby C NR, set to "ON" and "C". (The C-TYPE indicator will light up.)

6 ▶PLAY

Push the PLAY KEY (The ▶ PLAY and TAPE indicators will light up).

7 OUTPUT

Check to make sure the OUTPUT LEVEL.

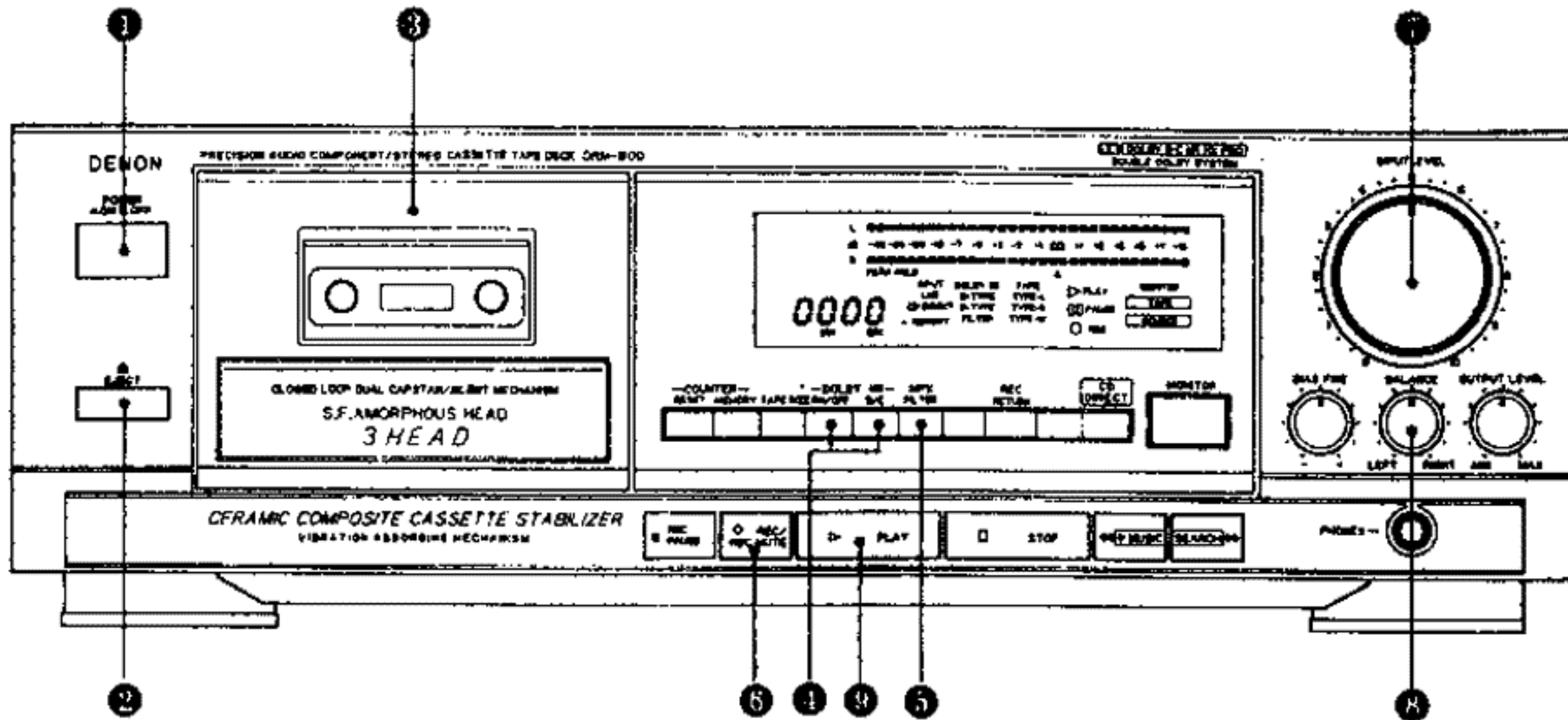
- When playback is finished, press the stop (■STOP) key.
- To restart the tape, press the PLAY (▶PLAY) key.
- If different types of Dolby Noise Reduction are used for record and playback, playback response will be adversely effected.

Note :

If the power switch is turned OFF in either the recording or playback mode, the cassette cannot be removed, even if the EJECT button is pressed. Please turn the power switch ON again, and then in stop mode, press the EJECT button to remove the cassette tape.

RECORDING

- Switch on the source component (tuner, amplifier, etc.).
- Set the TAPE MONITOR switch on your amplifier or receiver to the SOURCE position.



1 POWER

Push the switch to turn "ON" (=) the power.

2 EJECT

Press the EJECT button to open the cassette compartment.

3 Cassette Compartment Cover

When a cassette tape is inserted and the door is closed, the tape is automatically wound up for about 0.2 sec. to eliminate the slack. (Confirm that the claw of the cassette half is not broken.)

4 DOLBY NR

Set, in accordance with the recording to be made. For recordings without Dolby NR, set to "OFF". For recordings with Dolby B NR, set to "ON" and "B" (The B-TYPE indicator will light up). For recordings with Dolby C NR, set to "ON" and "C" (The C-TYPE indicator will light up). Future mistakes during playback can be avoided if the cassette is so marked for Dolby NR encoded recordings.

5 MPX FILTER

Button it "ON" for the DOLBY NR recording of FM broadcasts (The FILTER indicator will light up).

6 REC/REC MUTE

When pressed, the deck goes into the record standby mode. The \circ REC and II PAUSE indicators will light up, and both recording/playback and erase heads will come into contact with the tape. Initial setting of recording levels should be made in the record standby mode. (The source monitor mode comes automatically.)

7 INPUT LEVEL

Used to set the recording level.

8 BALANCE

Adjust the recording level balance between the left and right channels.

9 \triangleright PLAY

When pressed, the recording will start. The \triangleright PLAY and \circ REC indicators will light up. (The tape monitor mode comes automatically.)

- When recording is finished, press the STOP (■STOP) key.

PROPER RECORDING LEVEL

A too high recording level can saturate the tape and cause distortion. On the other hand, if recording levels are set too low, soft passages will be marked by residual noise. Proper recording level is the single most important factor for making well balanced recordings.

Guideline for maximum recording level

Normal tape (TYPE I)	+1 dB levels on peaks
CrO ₂ tape (TYPE II)	+3 dB levels on peaks
Metal tape (TYPE IV)	+5 dB levels on peaks

Note: Optimum recording levels can differ depending on program sources or the type of tape used. Make trial recordings using the simultaneous monitoring. Refer to the description under "MONITOR BUTTON".

■ Meter reading difference between L and R channels

The left and right channels readings of the PEAK METER can differ due to variations in input signal levels. In such cases, adjust the individual channels of the BALANCE control until identical meter readings are obtained for both channels.

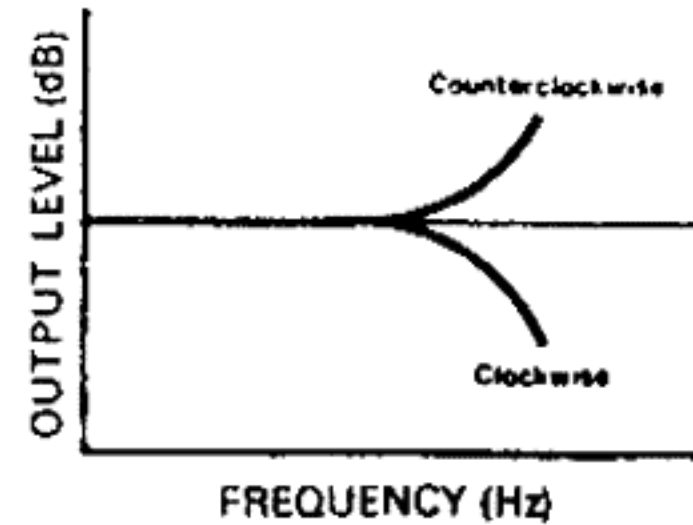
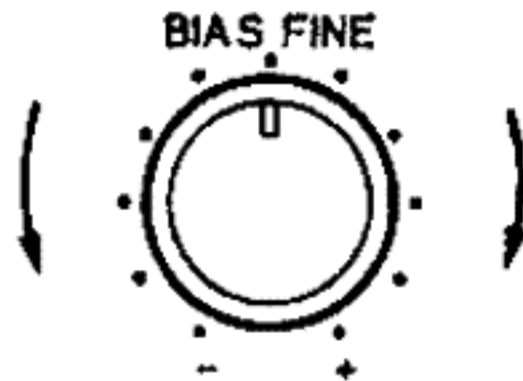
RECORDING BIAS ADJUSTMENT

For best recording results, monitoring during the recording process and comparing various recordings using your own judgement are essential.

The DRM-800 is equipped with a bias adjustment control to assist you in setting the proper bias for different types and brands of recording tape. At the center-stop position, the deck is set for a reference bias level for NORMAL, CrO₂ and METAL tapes. If the resulting recording in this position has too much or too little high frequency

content, varying the bias adjustment control can be useful to achieve better results.

If the high frequencies (treble sounds) are to be boosted, turn the bias control counterclockwise to decrease bias current. If distortion is of more concern than high frequency response, turn the control clockwise to increase bias current. By the use of this control, you can record tapes with response that matches your personal listening tastes.



REC/REC MUTE KEY

REC/REC MUTE is the DENON's unique and convenient function. By using this key, it is easily possible to insert a suitable space (the non-recorded part) between two melodies.

1. When you want to make about 5 sec of non-recorded part after the recording state:
Press the REC/REC MUTE key. The recorder will automatically create about 5 sec of non-recorded part and will stay in the recording standby state.
2. To create about 5 sec of non-recorded part after the standby state:

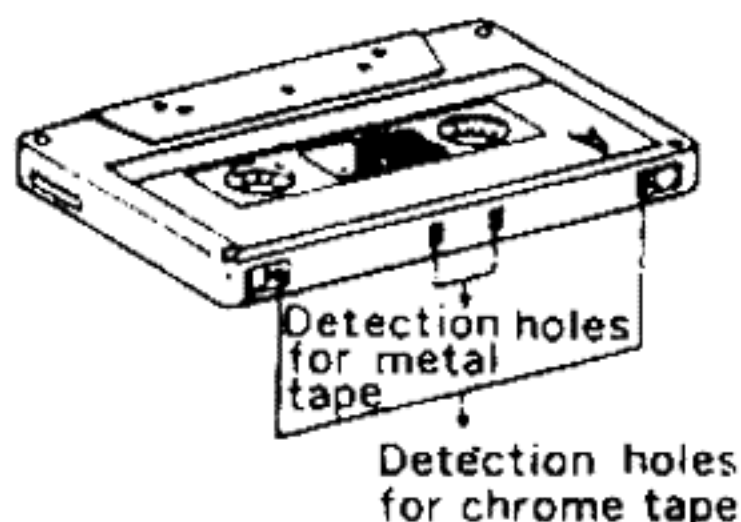
Press the REC/REC MUTE key, and the recorder will enter the non-recording state, automatically create about 5 sec of non-recorded part and stay in the standby state.

3. To cancel the non-recording state (the REC MUTE state):
Press the REC PAUSE key, and the recorder will cancel the non-recording state and will stay in the standby state.
4. To extend the non-recording state (the REC MUTE state) for further 5 sec or more:
Press the REC/REC MUTE key, and the non-recorded part will automatically be extended for another 5 sec.

AUTO TAPE SELECT FEATURE

This Stereo Cassette Deck contains an Auto Tape Select feature which automatically selects the optimum bias and equalization for the tape in use. This is accomplished by detection of tape type detection holes in the cassette housing. The Tape type (TYPE-I, TYPE-II or TYPE-IV) is indicated by the TAPE SELECT indicator.

- If a tape without tape type detection holes is used, the TAPE SELECT indicator will not indicate the correct tape type and the deck will automatically adjust itself for normal tapes.



MUSIC SEARCH SYSTEM

This device is a convenient system which detects the non-recorded part of more than 4 seconds between melodies, cues the next melody while the present melody is being reproduced or automatically detects the beginning of the melody now being reproduced and makes it into the reproducible state.

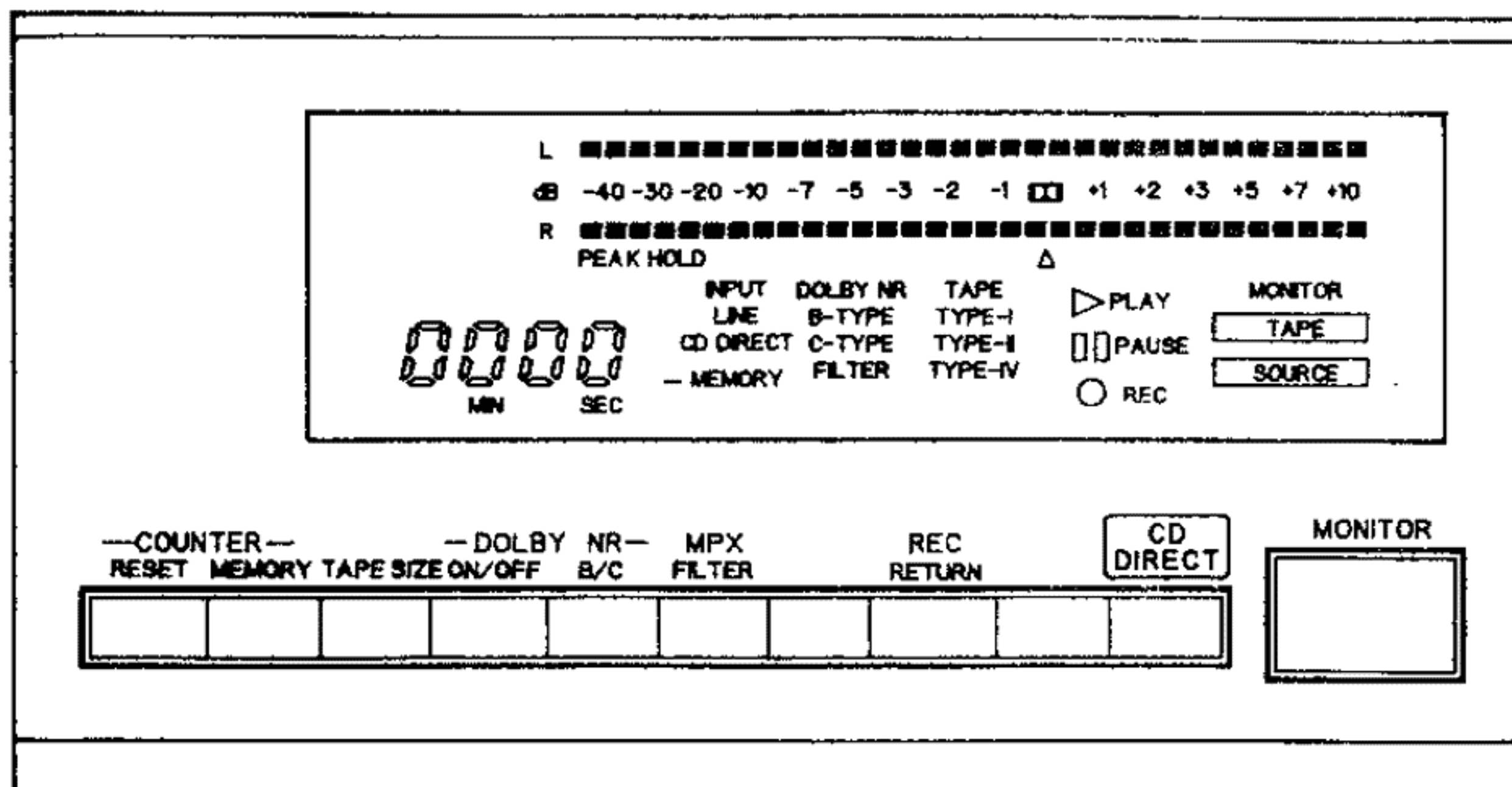
- For cueing the next melody while the present melody is being reproduced:
At PLAY mode, depress the PLAY key and the FF key simultaneously. This device will detect the interval between melodies with the CUE state on, automatically become the PLAY mode and begin performing the next melody.
- For hearing again the melody now being reproduced:
At PLAY mode, depress the PLAY key and the REW key simultaneously. This device will detect the interval between melodies with the REVIEW state on, automatically become the PLAY mode, detect the beginning of the melody now being performed and play it from the first again.

Note: Note about MUSIC SEARCH action:

MUSIC SEARCH is a function which operates by detecting a comparatively long non-recorded part on the tape. Therefore, MUSIC SEARCH may not operate normally in the following cases.

- Sound on the tape is interrupted by speech or conversation.
- Long periods of pianissimo (softly played music) or non-recorded intervals occur on the tape
- The tape has picked up noise in a non-recorded interval.
- Non-recorded intervals on the tape are less than 4 seconds in length.
- Noise-emitting electrical appliances are in operation nearby. i.e.: Electric razors, drills, refrigerators, etc.

TAPE COUNTER AND MEMORY STOP



1) Operation of the Linear Tape Counter

- Press the RESET button to reset the counter to "0000".
- By using the PLAY, FF, or REW function, the reading of the counter indicate in minutes and seconds.
 - During recording and playback operations, the counter is useful for noting the location of existing programs or positions where recording is to be started.
 - The reading of this counter does not correspond with that of any other deck.
 - The linear counter of this machine is designed to be suitable for the cassette tape with a small hub. Therefore if a cassette tape with a large hub is used in this machine, some error will occur in the display on the counter.

2) Operation of MEMORY STOP

- During recording or playback operations, MEMORY STOP can be used to locate a particular point on the tape. At the desired point, reset the counter to "0000". With the MEMORY STOP button in the "ON" position, the deck will stop at the "0000" point (actually "5955" and "0000") during REWIND operations.
- The MEMORY indication will light when this function is activated.
- Notes:
 - When the power is turned "OFF", this function is automatically deactivated.
 - The MEMORY STOP is accurate to ± 5 on the counter, and will stop between "5955" and "0000".
 - The MEMORY STOP is released by pressing the EJECT button.
 - The MEMORY STOP does not operate during the REC RETURN.

MONITOR BUTTON

This Stereo cassette deck uses a three-head system which permits simultaneous "off-the-tape monitoring" during recording. Use the MONITOR button to select monitoring sources. Incidentally, as this Stereo Cassette Deck adopts an automonitor system, **TAPE** or **SOURCE** can automatically be activated according to the operation conditions. These modes can also be activated manually. The MONITOR indicator shows the selected monitoring source, **TAPE** or **SOURCE**.

Recording	<p>Monitor button → TAPE</p>	The signal recorded on the tape is monitored simultaneously "off-the-tape". This monitoring mode enables you easy check for optimum recording levels. In the TAPE mode, the FL PEAK METER indicates the signal levels played back off-the-tape.
	<p>Monitor button → SOURCE</p>	The SOURCE position enables you to monitor the input source signal before it is recorded on the tape. Using the FL PEAK METER, this mode is convenient for setting recording levels or input level monitoring during recording.
Playback	<p>Monitor button → TAPE</p>	During playback, the MONITOR button must be placed in the TAPE position. If it is set in the SOURCE position, the signal from the tape won't be heard.

DOLBY C NOISE REDUCTION SYSTEM

- The Dolby noise reduction system substantially reduces the tape background noise (hiss) inherent in the cassette medium. Dolby B NR is most widely in use. However, Dolby C NR is a much more recent development and represents a significantly improvements over Dolby B NR.
- Tape background noise consists primarily of high frequency information which is particularly annoying during soft passages. The Dolby NR system increase the level of low volume mid and high frequency signal during recording and reduces the level of these signals by an identical amount during playback. As a result, the playback signal is identical to the original source signal, but the level of background noise generated by the tape is greatly reduced.

- The operating principle of Dolby C NR is similar to that of B except for the encoding/decoding response curves. The noise reduction effect obtained by Dolby C NR is up to 20dB, compared to 10dB with Dolby B NR. In addition, Dolby C NR uses an antisaturation network and spectral skewing circuit, and significantly improves the dynamic range in the mid to high frequencies.

DOLBY HX-PRO HEADROOM EXTENSION SYSTEM

This deck is equipped with the DOLBY HX-PRO headroom extension system. Since the system functions automatically during recording, no switching operation or adjustment is required. The system is effective with any type of Normal, CrO₂ or Metal tapes.

The Dolby HX-PRO headroom extension system functions during recording to lift up the saturation level in the treble range. Therefore, most of the treble range components distorted or lost during recording on conventional cassette decks are more faithfully recorded on the new DRM-800 cassette deck.

Features of the DOLBY HX-PRO headroom extension system

- (1) Performance of Normal and CrO₂ tapes can be up-graded closer to that of Metal tapes.
- (2) The dynamic range in the treble is improved significantly.
- (3) Since no decoding in playback is necessary, the improvement can be obviously heard on any hi-fi playback system including portable components and car systems.
- (4) The system functions whether the Dolby B/C NR is engaged or not.

MAINTENANCE

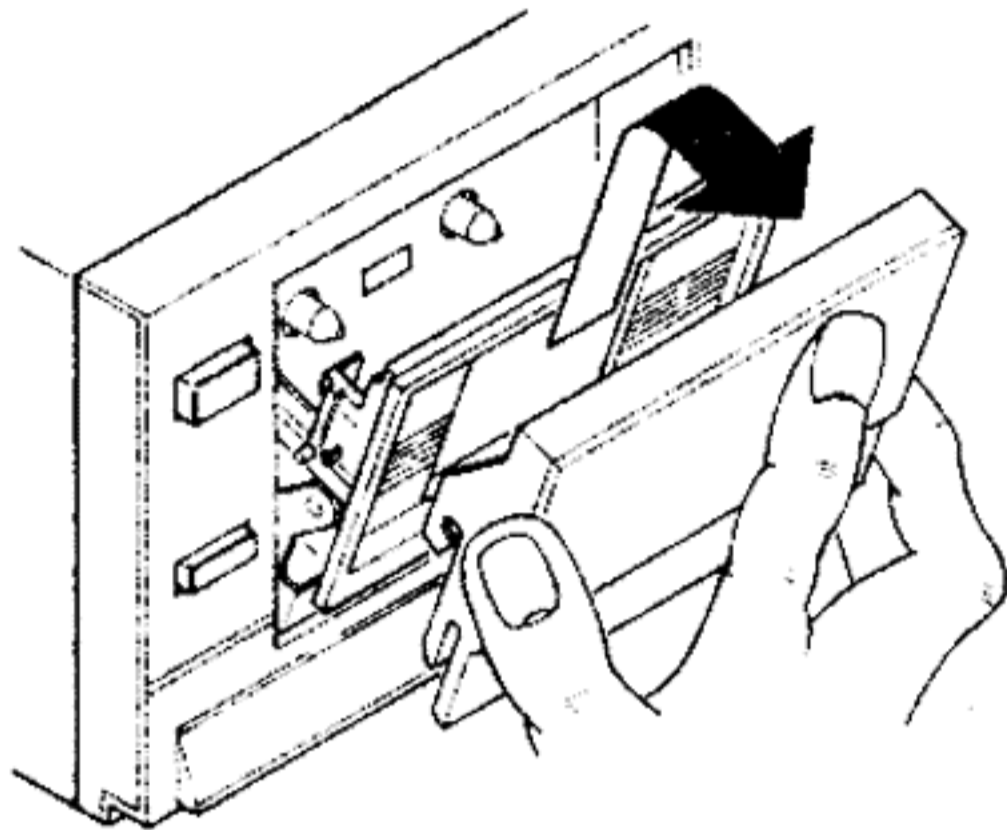
■ Removing the cassette compartment cover

It will be more convenient if the cassette compartment cover is removed during the cleaning of the pinchroller and heads, or during demagnetizing of heads.

Follow these procedures:

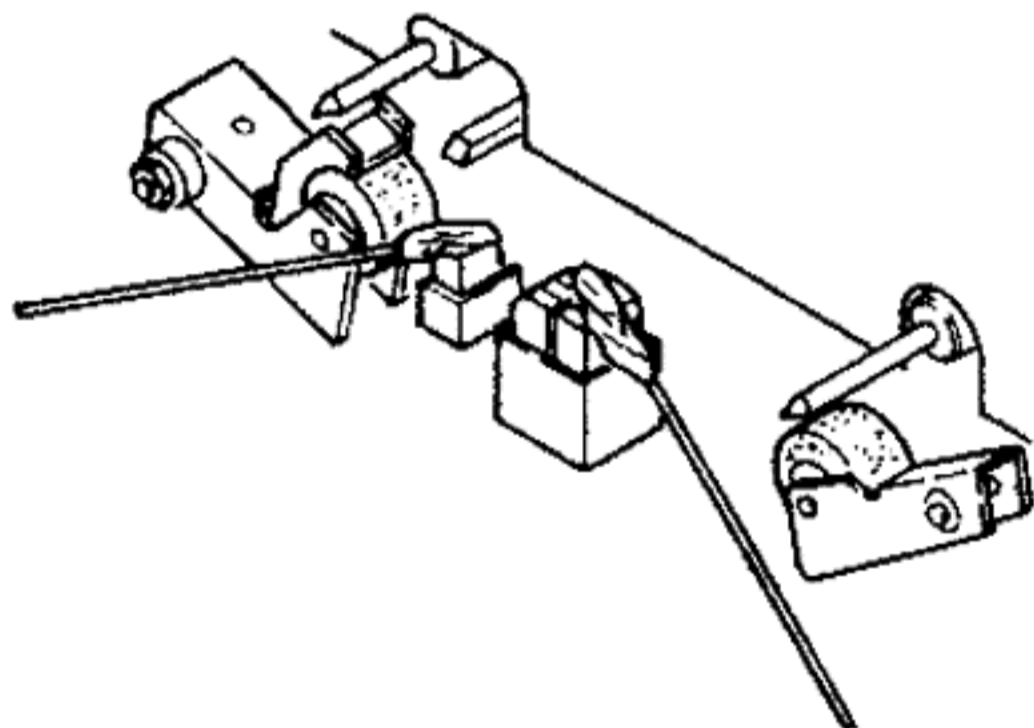
1. Press the EJECT button to open the cassette compartment.
2. Hold only the cover of the cassette compartment and pull it up. The compartment cover is removed from the front.

When attaching the cassette compartment cover, reverse the above procedure.



■ Head Cleaning

After long usage, tape coating or dust may adhere to the heads causing deterioration of sound. Clean them regularly. Use a cotton swab moistened with cleaning solution (such as alcohol).



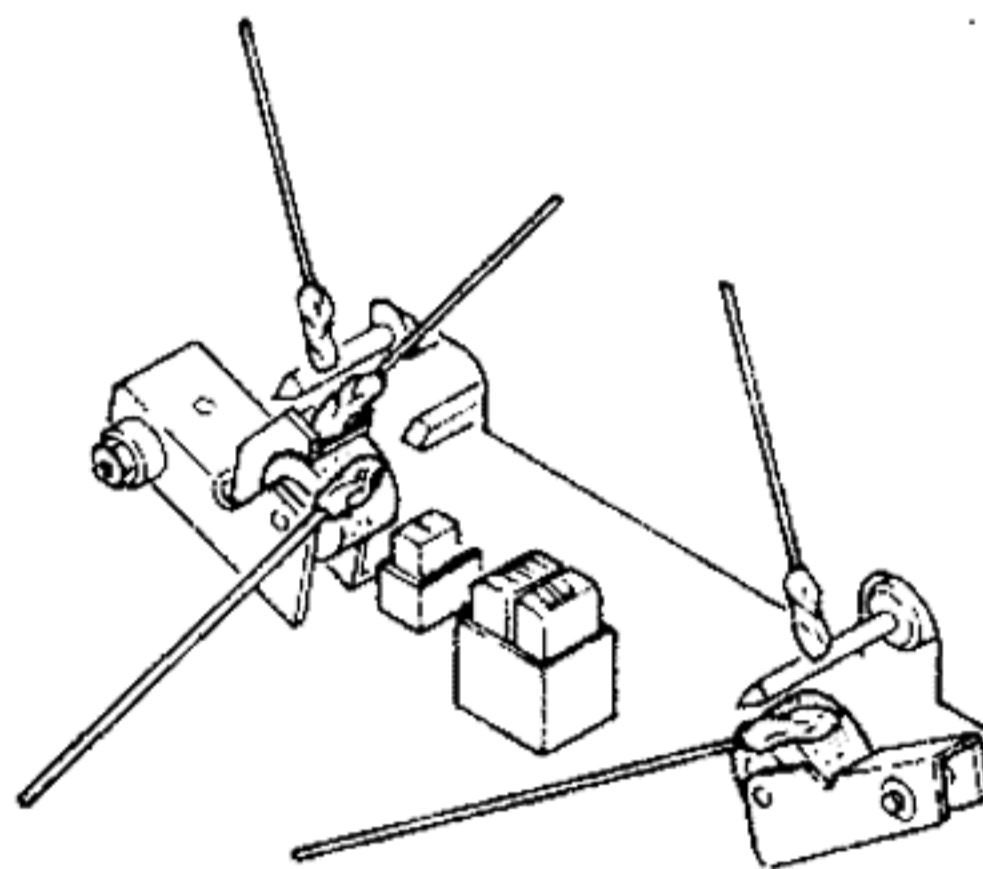
■ Note:

1. Some cleaning cassettes on the market have a strong abrasive effect and scratch the heads. Use cotton swabs instead of cleaning cassettes.
2. Since the use of metal tapes is apt to collect more dust on the heads, clean the heads more often to enjoy optimum sound.

■ Cleaning the pinchroller and the capstan

If the pinchroller or the capstan accumulate dust, tape transport may become unstable resulting from slippage during recording or playback. The tape can also be damaged by being rolled up around the capstan.

Clean them with a cotton swab or a soft cloth moistened with cleaning solution (such as alcohol).



■ Demagnetizing the heads

The heads may become magnetized after long usage or by having a strongly magnetized object brought near them. The result is a generation of noise, loss of the high frequency range, or erasing the treble components of pre-recorded tapes and adding noise.

Demagnetize the heads on a regular basis.

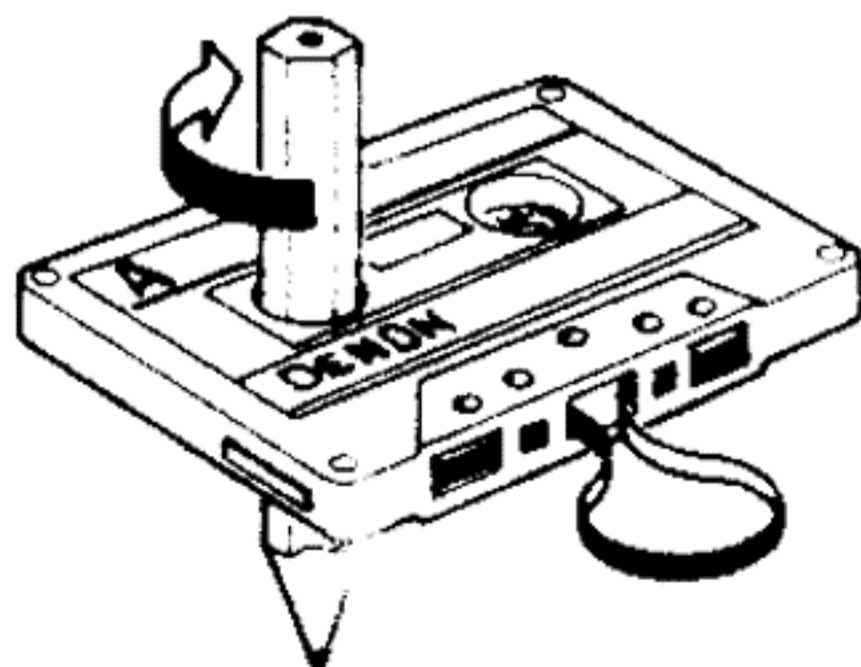
■ Procedure

1. Be sure to turn "off" the power supply.
2. Turn the demagnetizer "on" while it is more than 30cm away from the heads. Bring the demagnetizer near the heads and slowly move it in a small circle four or five times.
3. Slowly move the demagnetizer away from the heads and turn "off" the power of the demagnetizer when it is about 30cm away from the heads.

CASSETTE TAPE

■ Handling Precautions

- C120 cassettes
C120 cassettes are not recommended as they use a very thin tape base which may become tangled around the capstan or pinchroller.
- Tape slack
This cassette deck incorporates an automatic tape slackness preventive mechanism, but it can not prevent such a slackness as shown below. Remove it with a pencil or the like prior to use.

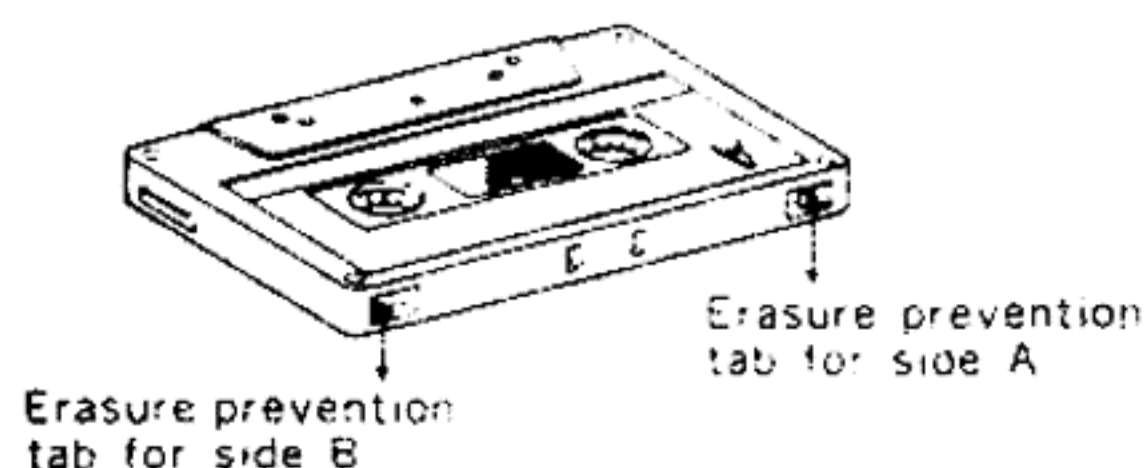


■ Storage Precautions

- Do not store cassette tapes in a place where they will be subject to:
 - Extremely high temperature or excessive moisture
 - Excessive dust
 - Direct sunlight
 - Magnetic fields (near TV set or speakers)
- To eliminate tape slack, store your cassettes in cassette cases with hub stops.

■ Accidental Erasure Prevention

- Every cassette has erasure prevention tabs for each side. To protect your valuable recorded tapes from accidental or inadvertent erasure, remove the tab for the appropriate side with a screwdriver or other tools.
- To record on a tape with the erasure prevention tabs removed, cover the tab holes with plastic tape.



SYMPTOMS OFTEN MISTAKEN AS BREAKDOWNS

Make sure of the followings before you consider as any malfunctions:

1. Are all the connections correct?
2. Is the set being operated correctly in accordance with the operating instructions?
3. Are the speakers and amplifiers functioning correctly?

If the tape deck still does not function properly, check it again, using the check list below. If the symptom does not correspond to the check list, please contact your DENON dealer.

Symptom	Cause	Remedy
Tape does not run	Power cord is off. Tape is completely wound up. Tape is loose. Cassette is not loaded properly. Defective cassette.	Check power cord. Rewind tape. Tighten tape with pencil, etc. Load cassette properly. Replace cassette.
Tape is not recorded when recording button is pressed.	No cassette is loaded. Erase prevention tab is broken off.	Load cassette. Cover hole with plastic tape.
Sound is warbled or distorted.	Heads, capstan or pinchroller are contaminated. Tape is wound too tight. Recording input level is too high. Tape is worn out and has "drop-outs".	Clean them. Fast forward or rewind to loosen tape winding. Adjust recording input level. Replace tape.
Excessive noise.	Tape is worn. Heads, capstan or pinchroller are contaminated. Heads are magnetized. Recording input level is too low.	Replace tape. Clean them. Demagnetize heads. Adjust recording input level.
High frequency (treble) is emphasized.	Dolby NR button is set improperly.	Set Dolby NR button properly.
High frequency (treble) is lost.	Heads are contaminated. Tape is worn.	Clean them. Replace tape.
When a CrO ₂ or metal tape is placed in the deck, a different tape indicator comes on.	The cassette housing is of an older design without tape type detection holes.	Use the latest cassettes with tape type detection holes.
The cassette tape cannot be removed.	If the power switch is turned off in either the recording or playback mode, and the unit is stopped, there may be cases when the cassette cannot be removed, even if the EJECT button is pressed.	Turn the power switch ON again, and then press the stop (■) key. Then, in the stop mode, press the EJECT button to remove the cassette tape.

SPECIFICATIONS

- Type Vertical tape loading 4-track 2-channel stereo cassette deck
- Heads..... SF Record/Playback Combination head × 1
Erase head (Double gap ferrite) × 1
- Motors..... Capstan (DC servo motor) × 1
Reel (DC motor) × 1
Actuator (DC motor) × 1
- Tape Speed 4.8 cm/sec.
- Fast forward, rewind time Approx. 90 sec. with a C-60 cassette
- Recording bias Approx. 105 kHz
- Overall S/N ratio (at 3% THD level) Dolby C NR on ... more than 75 dB (CCIR/ARM)
- Overall frequency response 20~21,000 Hz ±3 dB (at -20 dB METAL tape)
- Channel separation more than 40 dB (at 1 kHz)
- Crosstalk more than 65 dB (at 1 kHz)
- Wow & flutter 0.038% wrms (JIS method)
- Inputs
line 80 mV (-20 dBm) input level at maximum
input impedance : 50 kohm unbalanced

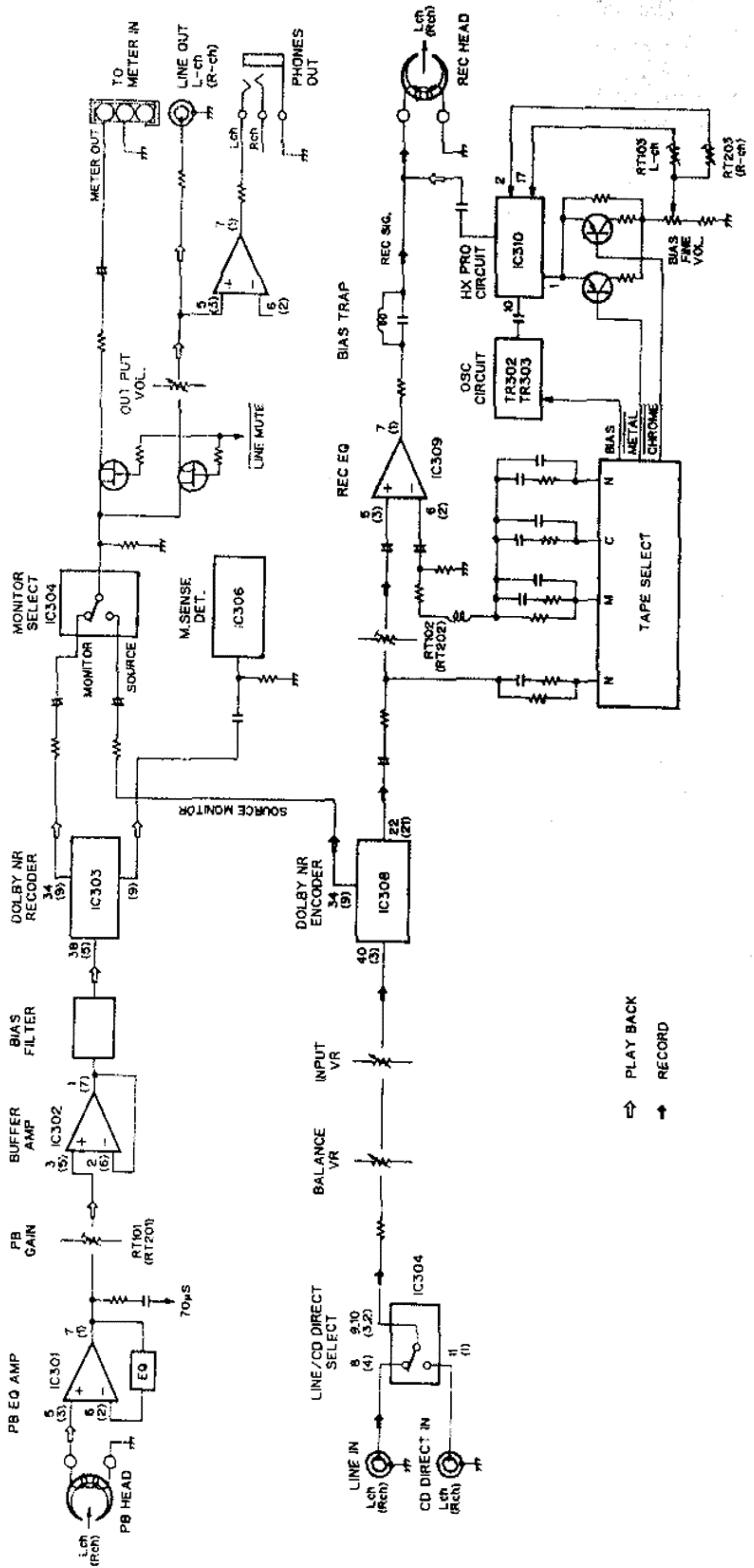
- Outputs
line 620 mV (0 dB) output level at maximum (with 47 kohm load, recorded level of 200 pwb/mm)
- headhone 1.2 mW output level at maximum (optimum load impedance 8 ohm~1.2 kohm)
- Accessories Parallel pin cord × 2
Mini-plug cable × 1
- Power supply 50 Hz/60 Hz compatible, voltage is shown on rating label
- Power consumption 18 W
- Dimensions 434 (W) × 135 (H) × 303 (D) mm
- Weight 4,6 kg

■ Above specifications and design styling are subject to change for improvement.

■ Dolby noise reduction and HX PRO headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX PRO originated by Bang and Olufsen. "Dolby", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Best results will be obtained with use of DENON DX and HD Series cassette tapes.

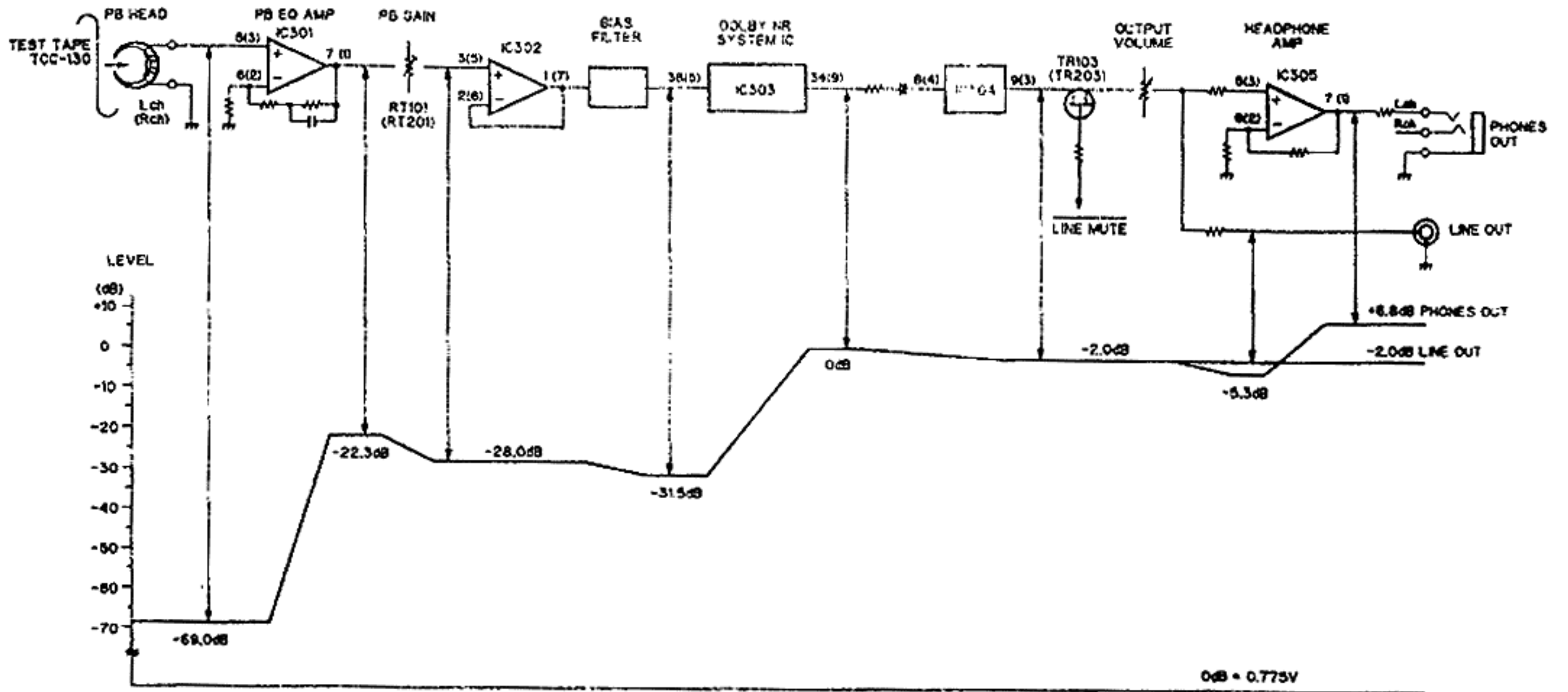
BLOCK DIAGRAM



LEVEL DIAGRAM

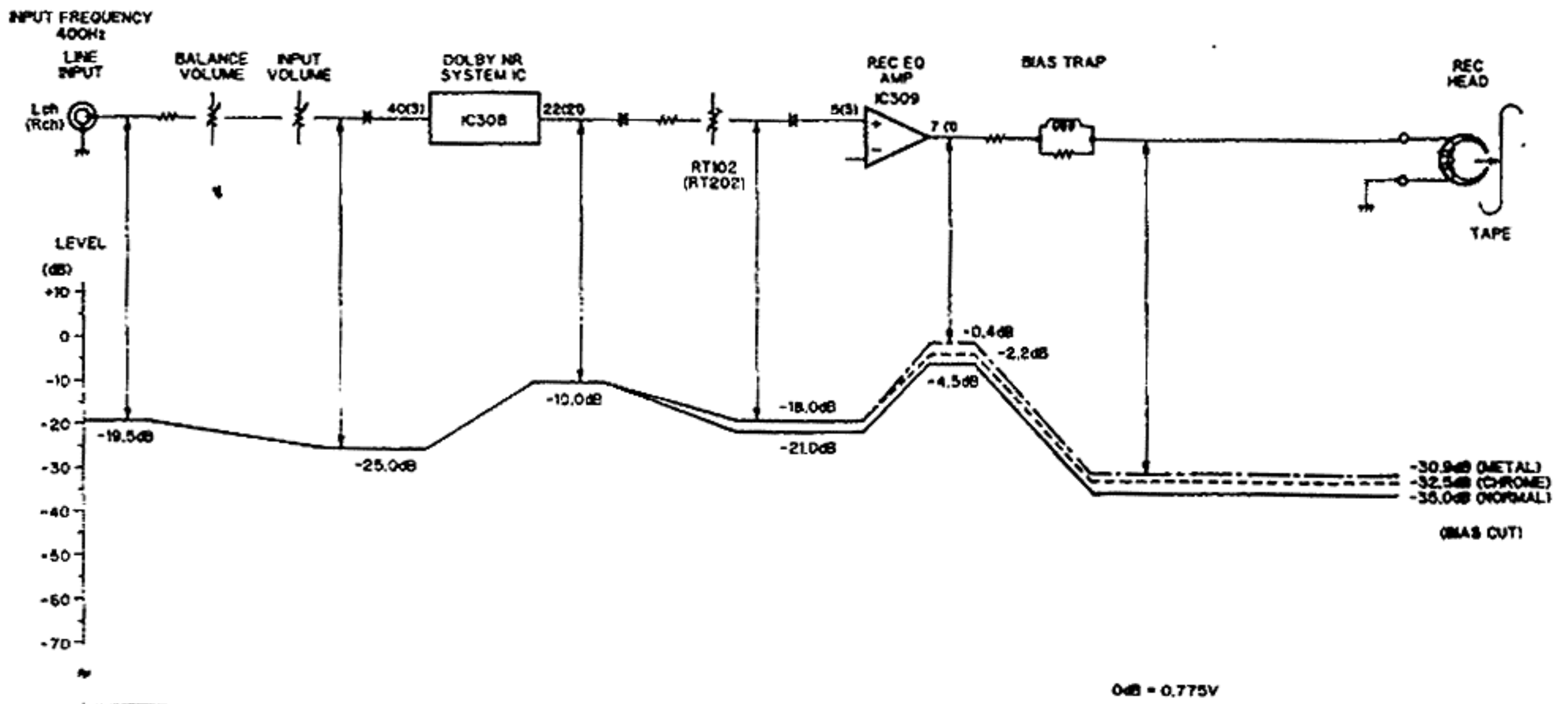
PLAYBACK SYSTEM

TCC-130 DOLBY B-TYPE
400 Hz 200 nwb/m



RECORDING SYSTEM

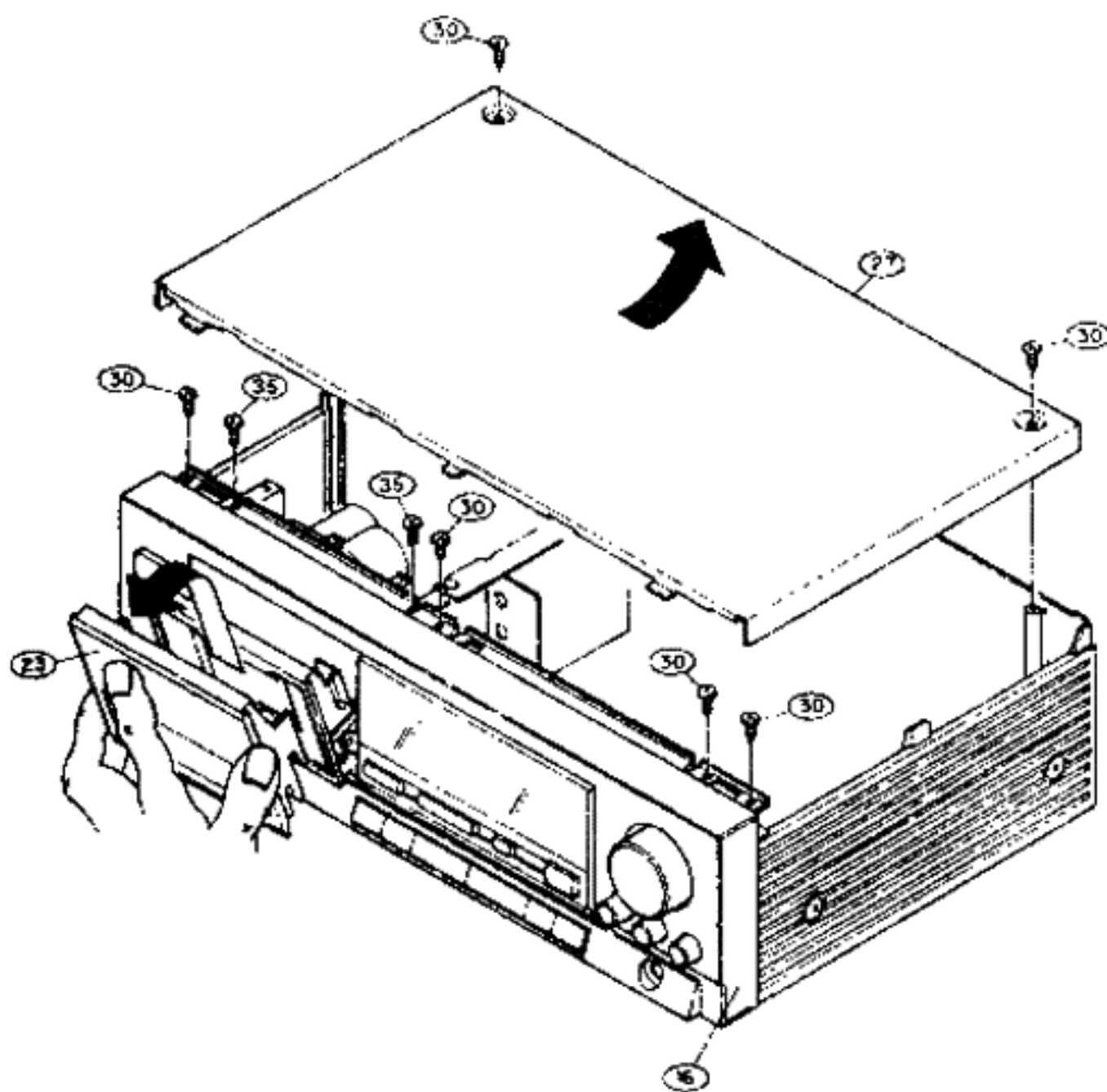
INPUT FREQUENCY
400 Hz



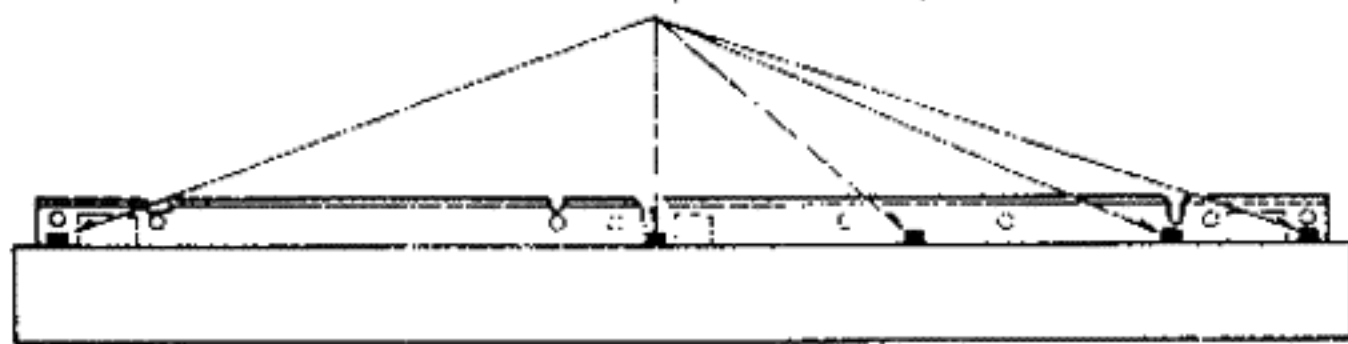
DISASSEMBLY INSTRUCTIONS

1. How to Remove the Front Panel

- (1) Remove the two screws (3 × 10 CBTS-P) (30) in the top side of the top cover (27). Move the top cover to the rear and rise it to remove it.
- (2) Press the eject knob (14), open the cassette window (23) and remove the mechanism as shown in the figure.
Note: Handle the cassette window with care because it can be scratched easily.
- (3) Remove the four screws (3 × 10 CBTS-P) (30) and the two screws (3 × 6 CBTS-S) (35) on top of the front panel (16), the five hooks on the top, the three hooks on the bottom and pull the unit forward to detach it.



5 hooks on the top of the front panel



3 hooks on the bottom of the front panel

2. How to Remove the Mechanism

- (1) Remove the top cover (27) and front panel (16). (Refer to Step 1.)
- (2) Remove the screw (3 × 10 CBTS-P) (30) on the shield bracket (18) and the screws (3 × 8 CBTS-S) (31) and detach the shield bracket. (Refer to the disassembly figure.)
- (3) Remove the two securing screws (3 × 10 CBTS-P) (30) for the mechanism.

- (4) Remove the connectors attached to the leads from the mechanism that are attached to the audio board and the power supply board. Remove the style pins that secure the wires.

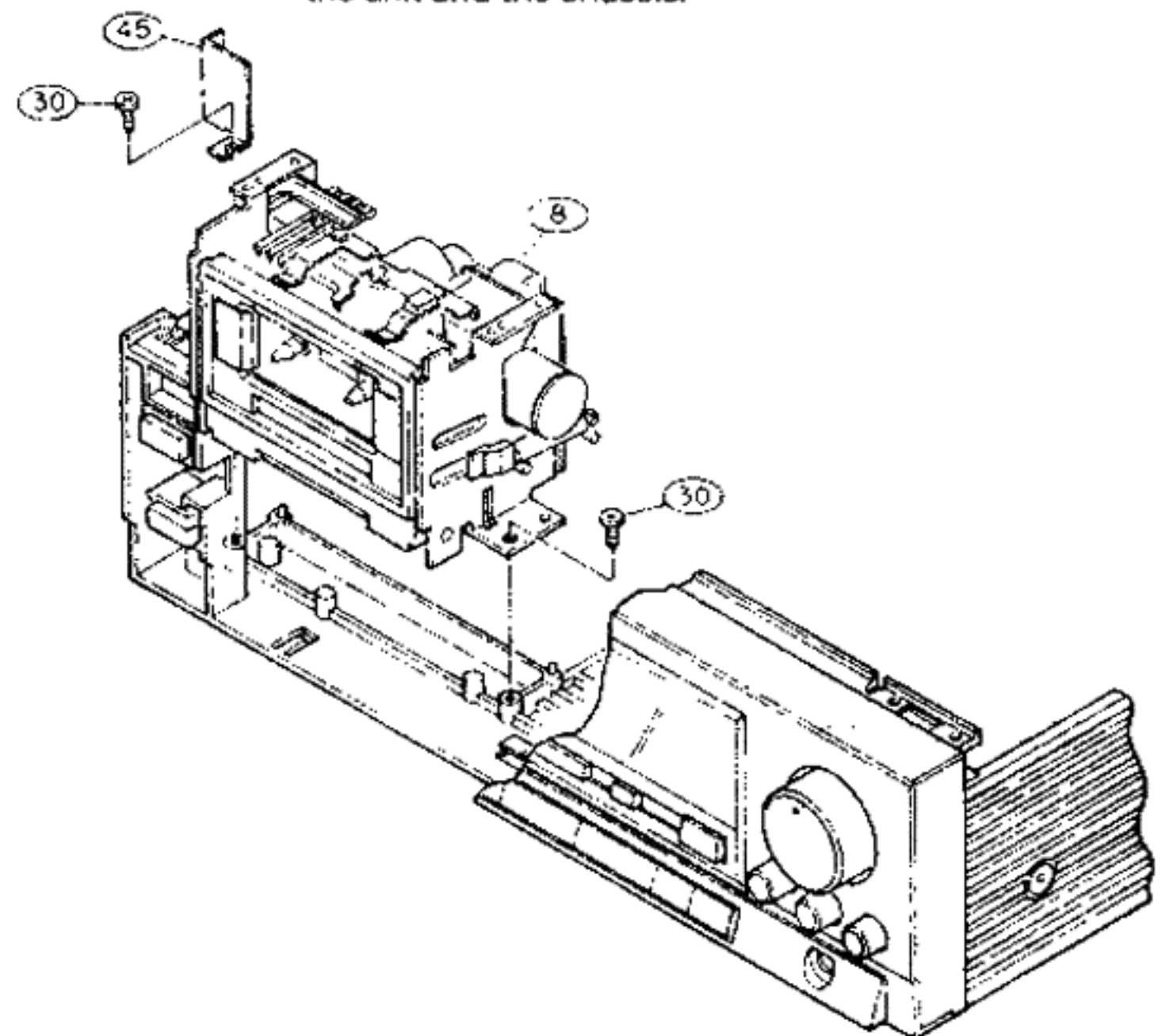
Mechanism

W891 → (8P) → CN891 (WHITE)	Power supply
W892 → (7P) → CN892 (WHITE)	circuit board
W171 → (6P) → CN171	Audio circuit board
W172 → (4P) → CN172	

Note: Be sure to check that the connectors are reconnected correctly when the unit is reassembled.

- (5) Lift the unit up to remove it.

Note: When the reassembly is performed make sure that the stays at the bottom of the unit enter the slots in the chassis and that no wires are pinched between the unit and the chassis.



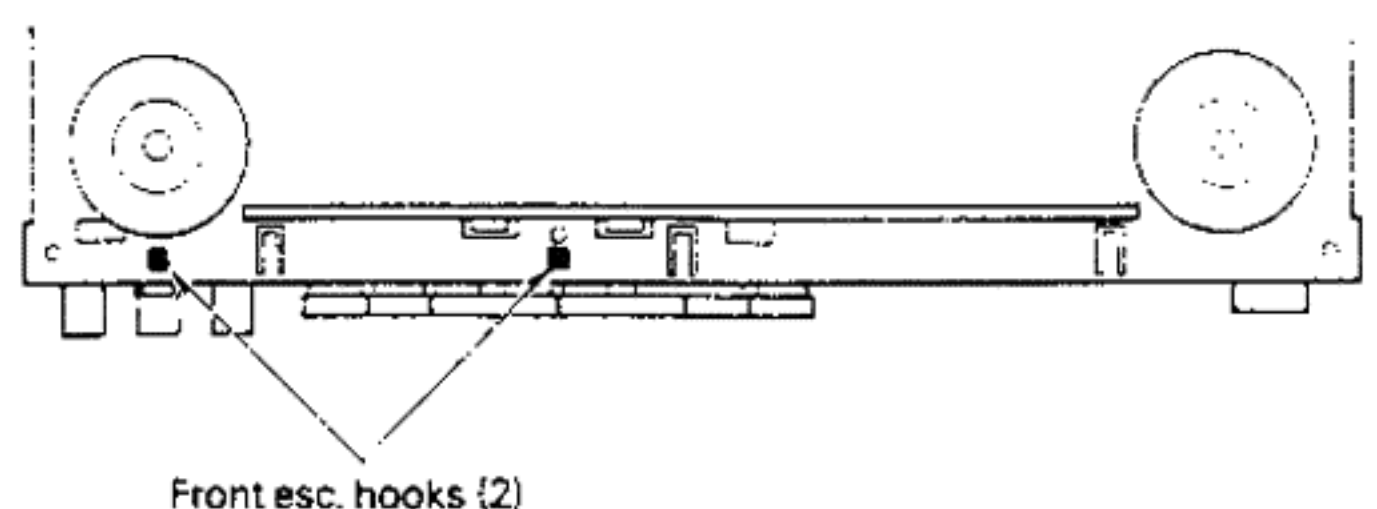
3. How to Remove the Front Esc. Assembly

- (1) Remove the top cover (27) and the front panel (16). (Refer to Step 1.)
- (2) Remove the wires from the front esc. assembly (9) that are connected to the audio board and power supply board.

Front Esc. Assembly

W141 → (13P) → CN141	Audio circuit board
W151 → (3P) → CN151	
W121 → (3P) → CN121 (Blue)	Power supply
W291 → (25P) → CN291	

- (3) Remove the two front esc. hooks from the bottom of the chassis and the front esc. assembly can be removed towards the front.



4. How to Remove the Meter Circuit Board

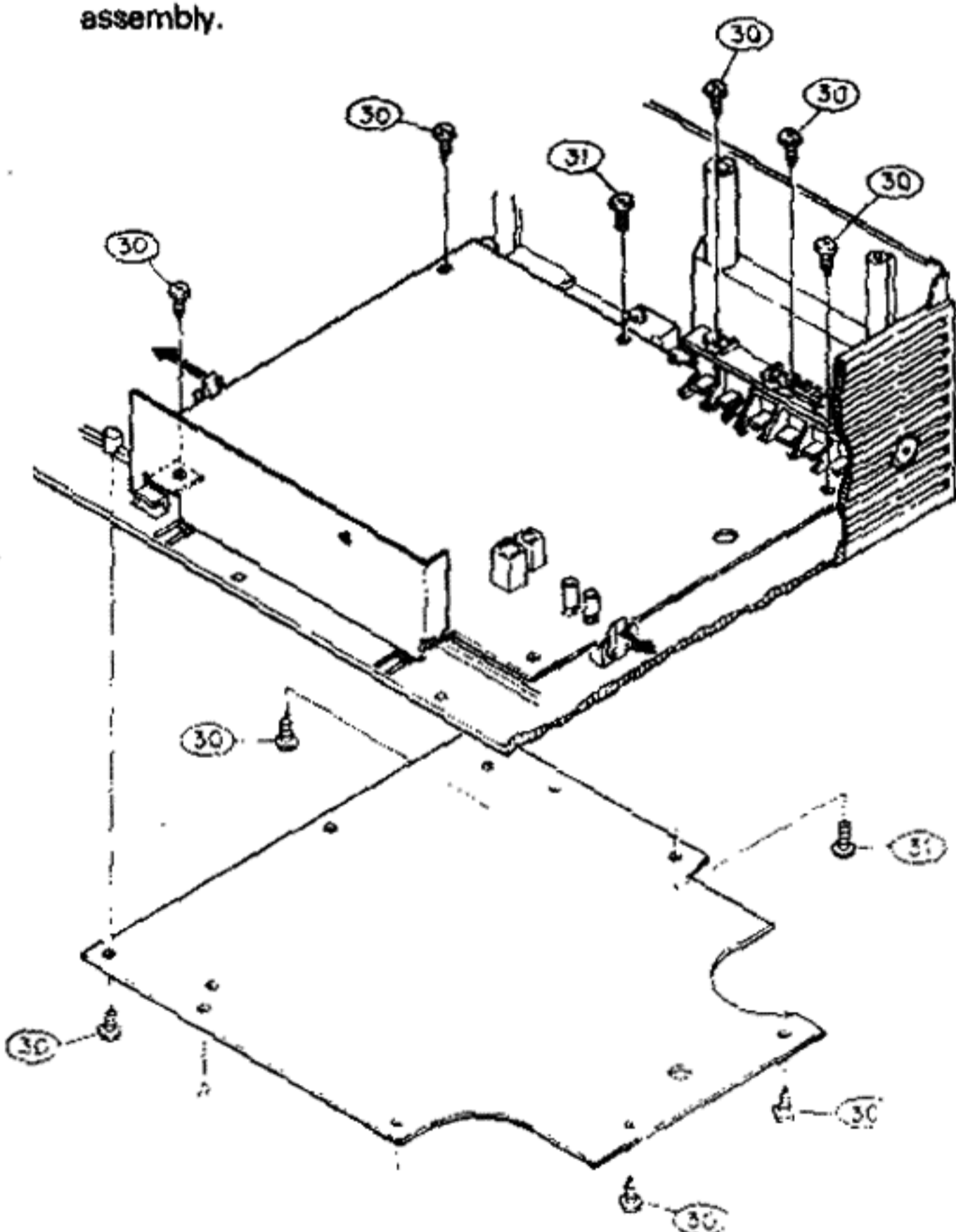
- (1) Remove the top cover (27) and front panel (16). (Refer to Step 1.)
- (2) Remove the front esc. assembly (9). (Refer to Step 3.)
- (3) Remove the three screws (3 × 10 CBTS-P) (30) that secure the unit board, the seven hooks and remove the meter board.

Note: When replacing the (tactile-takuto) switch (X) insert it so it is not raised after assembly.



5. How to Remove the Audio Circuit Board

- (1) Remove the top cover (27) and the front panel. (Refer to Step 1.)
- (2) Remove the two cushions (26) attached to the chassis and the shield bracket (18).
- (3) Remove the front esc. assembly. (Refer to Step 3.)
- (4) Remove the shield bracket (18).
- (5) Remove the wires from the power supply board that are connected to the unit.
- (6) Remove the two screws (3 × 10 CBTS-P) that press the 4-pin jack and 2-pin jack, the three screws (3 × 10 CBTS-P) that secure the circuit board and the two hooks that secure the board to the chassis and the board can be pulled out of the assembly.

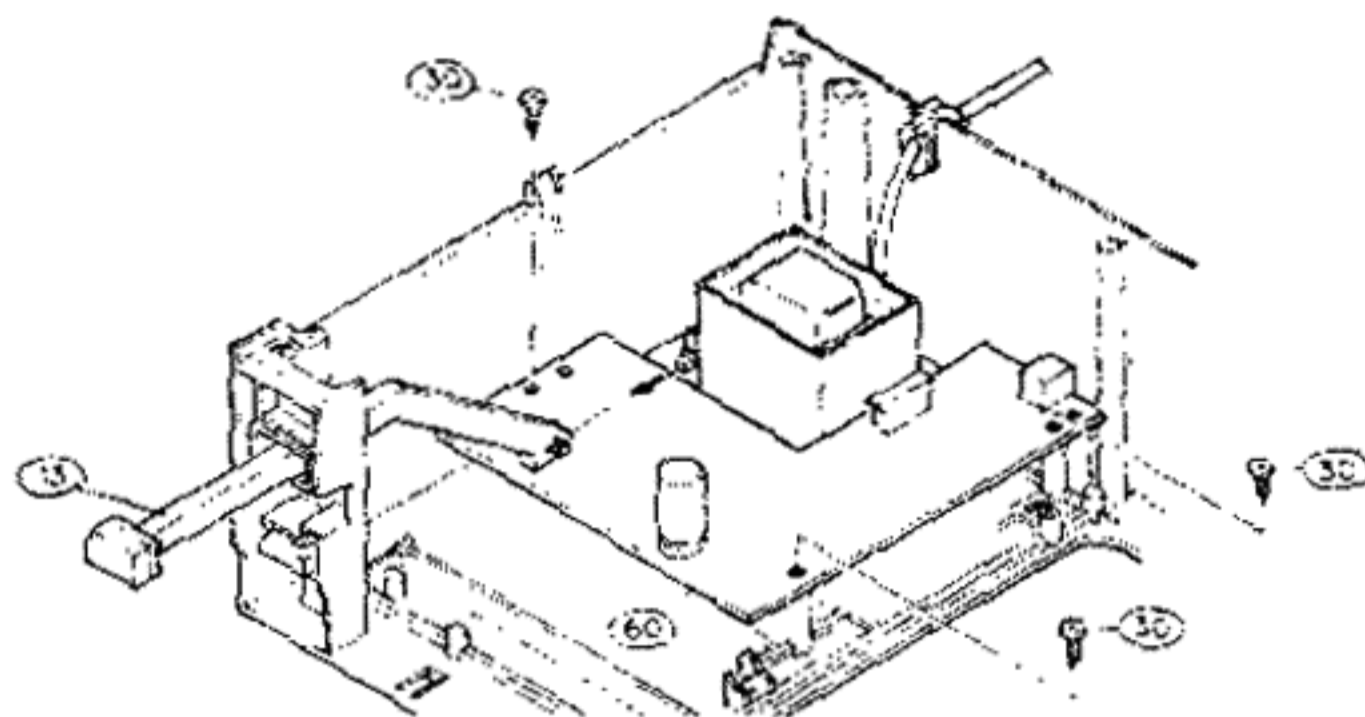


Note: Most service operations for the audio board can be performed by removing the bottom plate from the rear of the chassis. Refer to the previously described disassembly procedures if it is necessary to remove the entire unit.

Assembly is the reverse of disassembly. Each part must be mounted in the correct position or the unit may not be able to be installed. Make sure that each part is mounted correctly during assembly.

6. How to Remove the Power Supply Board

- (1) Remove the top cover and front panel. (Refer to Step 1.)
- (2) Pull out the power switch lever (13) from the power switch.
- (3) Remove the wires from the unit that are attached to the audio board or power supply board.
- (4) Remove the three screws (3 × 10 CBTS-P) (30) that secure the power supply circuit board and raise the board to remove it.



ADJUSTING AND CHECKING THE MECHANISM SECTION

1. Exchanging pinch roller

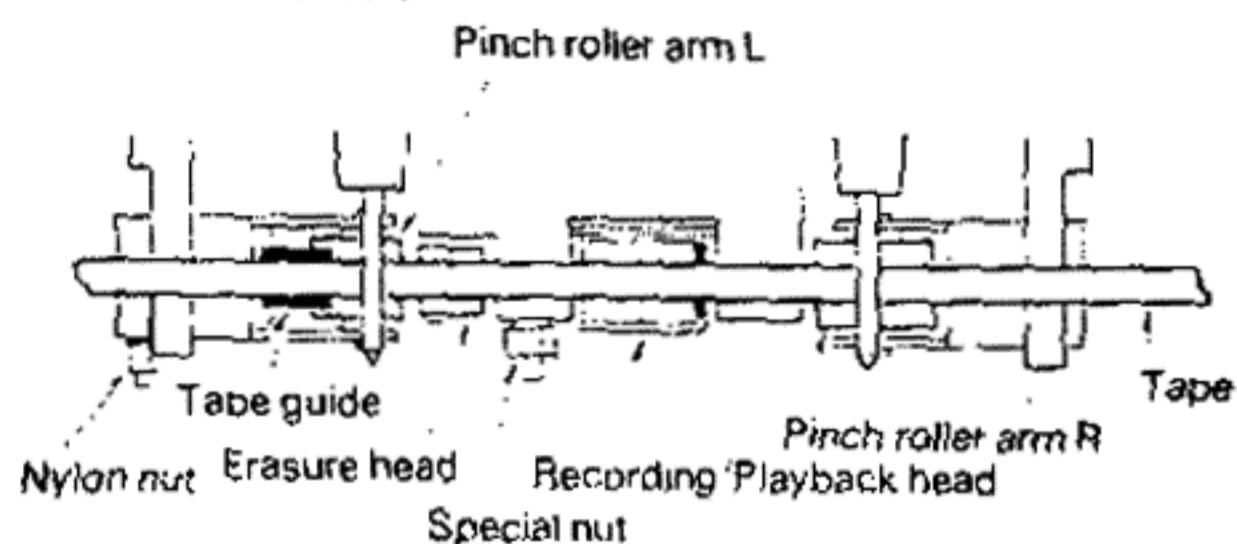
Before exchanging the pinch roller, clean the tape contact surfaces of the pinch roller and of the capstan shaft.

Defects on tape playing are primarily caused by a dirty pinch roller or capstan shaft.

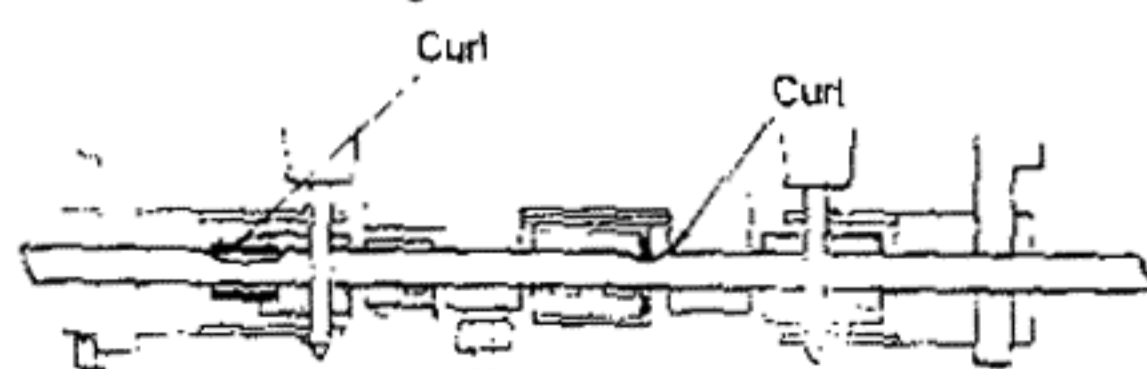
The right pinch roller arm (23) can be detached by removing the spring (24) and the slit washer (317). The left pinch roller arm (104) can be taken out by removing (106), the nylon nut (315) and washers (107) and (108).

After exchanging the pinch roller, run a tape without a C-90 butt and verify that no tape curling occurs at the tape guide (103) and the tape guide part on the record/playback head.

Normal condition

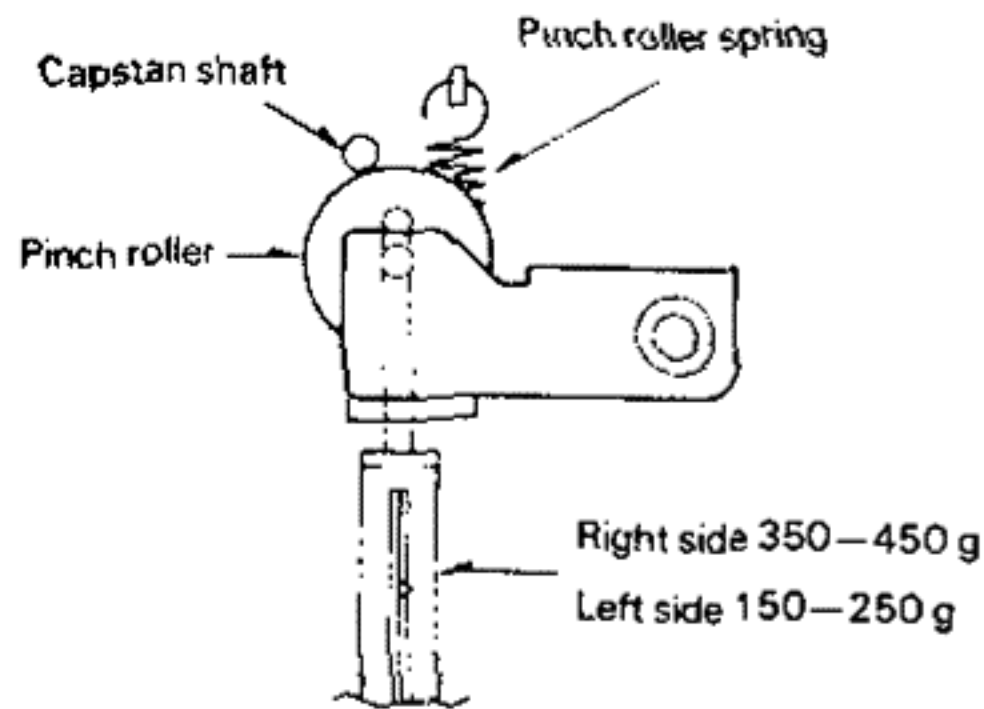


Defective running condition



2. Verifying pinch roller crimping

In the playback condition, hook a stick type spring balance to the bracket on the central axis of the pinch roller. After pulling the pinch roller away from the capstan shaft, let the pinch roller contact the capstan shaft as it is and verify that the readings on the stick type spring balance are 350 to 450 g on the right side and 150 to 250 g on the left when the pinch roller starts turning. If the readings exceed the standard values, replace spring (24) or (106).



3. Exchanging recording/playback head (9)

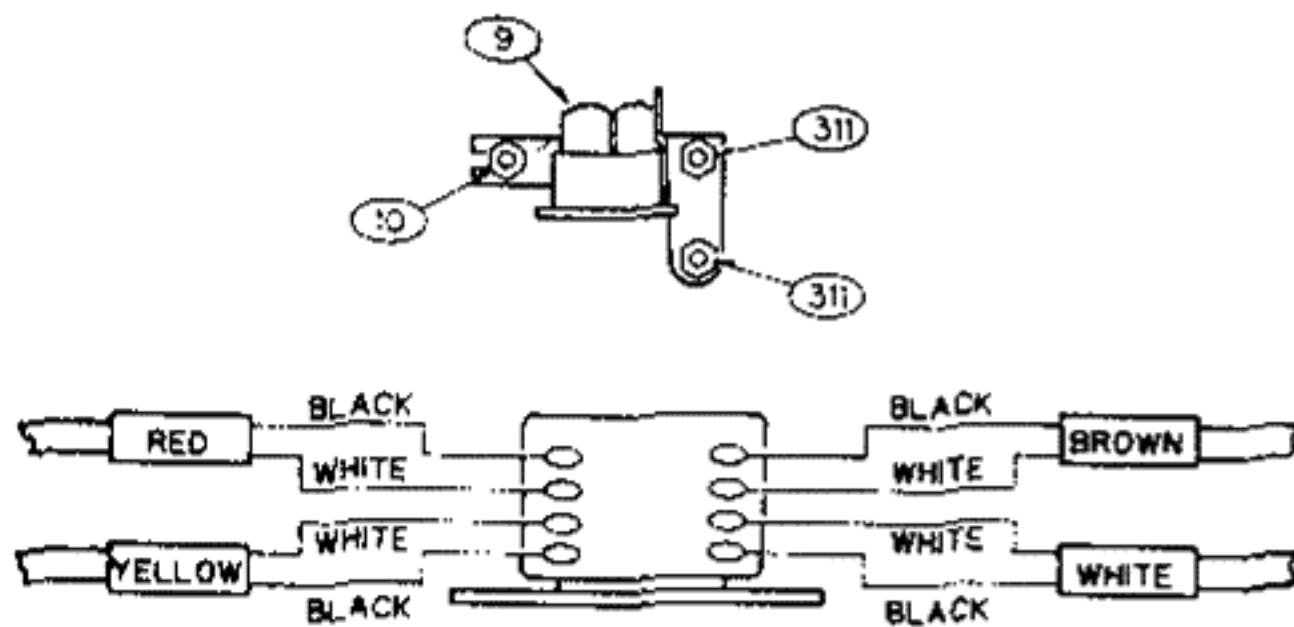
Detach the front panel first.

3-1 Dismounting recording/playback head

- (1) Detach the recording/playback head locking screw (311) and the azimuth adjusting nut (10).
- (2) Remove soldering on the head wire and separate the mechanical unit to dismount the recording/playback head.

3-2 Recording/playback head installation

Assembly is the reverse of the installation procedure described in section 3-1. The soldering for the head wire is performed as shown in Figure 3-1.



4. Recording/playback head Adjustment

4-1 Height adjustment (adjust with head adjustment jig THG-801)

- (1) Set THG-801 (jig board) on the mechanical unit and perform the adjustment by turning the special height adjustment nut (10) so the 3.8 mm part on THG-801 (jig shaft) can move without touching the tape guide on the recording/playback head (9).
- (2) Turn the azimuth adjusting nut (311) so that the recording/playback head does not tilt while adjusting the height, and make a rough visual adjustment.

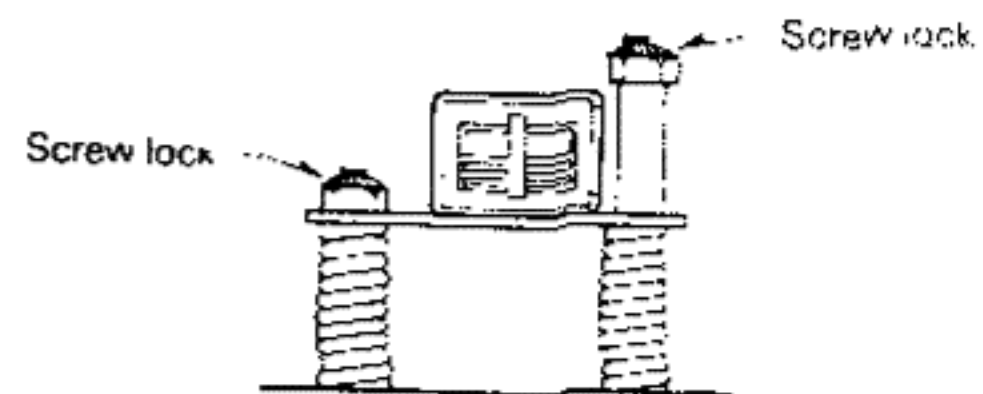
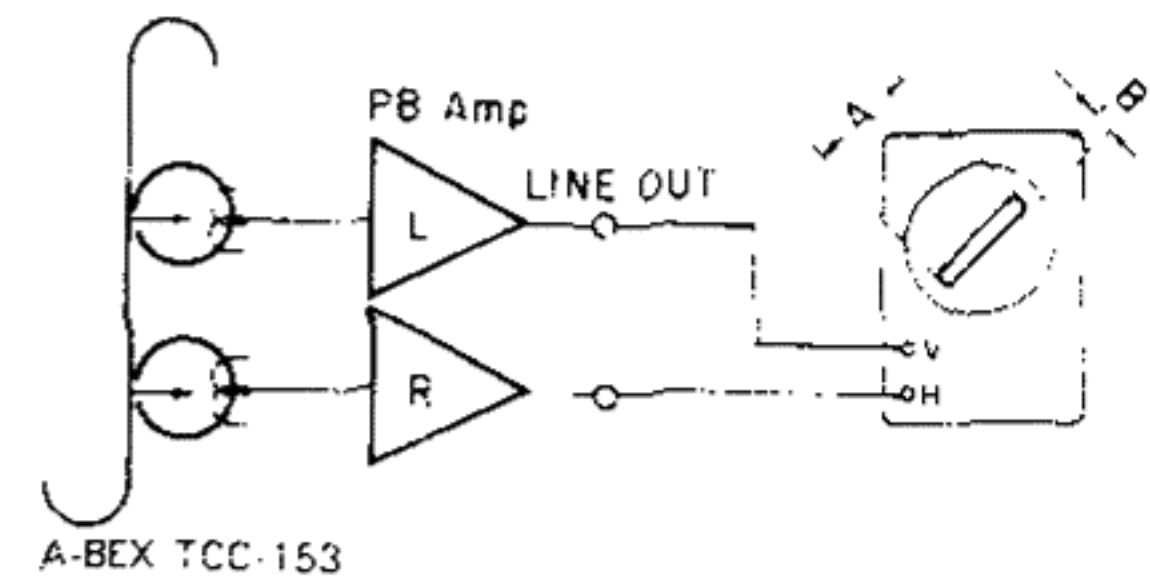
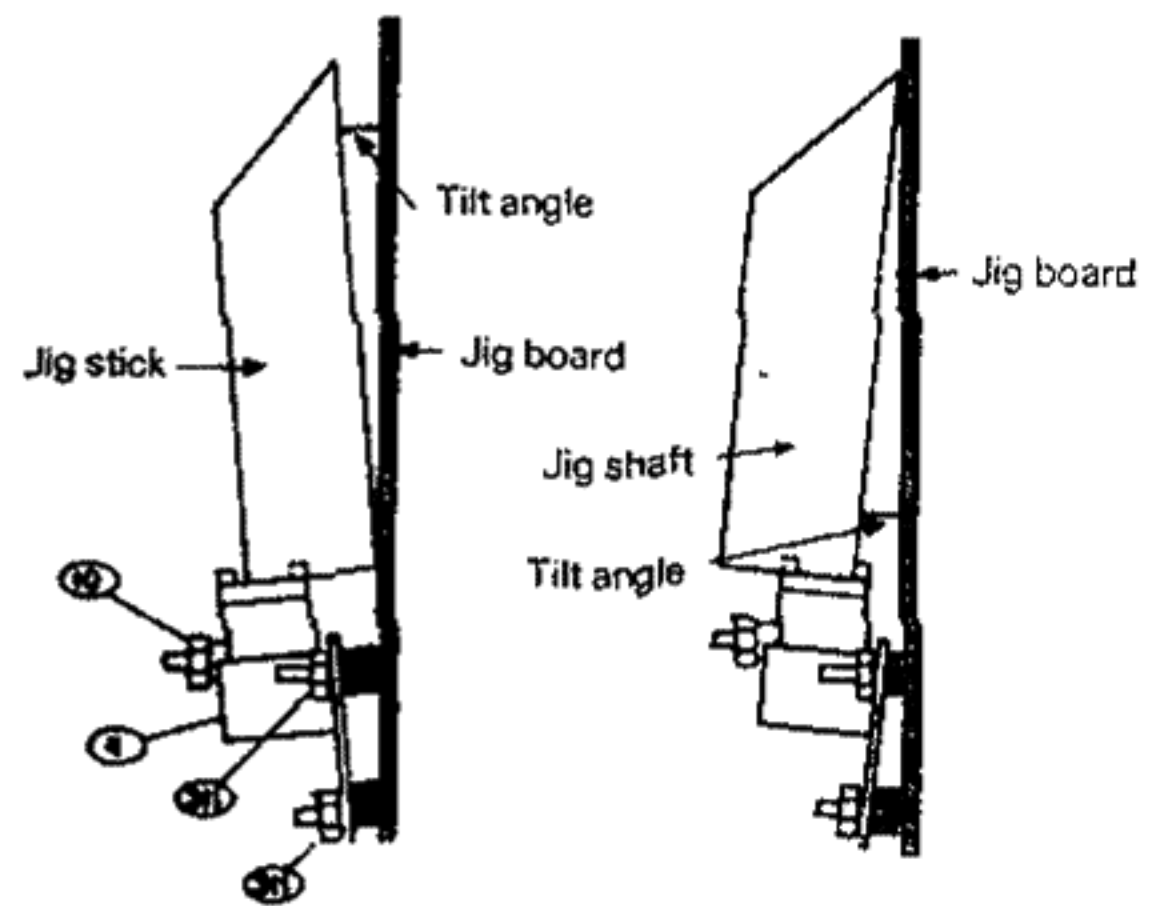
4-2 Adjustment of tilt angle

- (1) Set THG-801 (jig board) in the mechanical unit and place THG-801 (jig shaft) on the recording head to inspect the gap between the jig board. If the jig shaft is tilted forward, the tilt screw (311) is too tight. Loosen it slightly and adjust the tilt screw (311) until the jig stick is parallel to the jig board and the gap is completely eliminated.
- (2) Readjusting the tilt may cause the height adjustment to slip. After adjusting the tilt, be sure to verify the height. If the height is misaligned, turn the special height adjustment nut (10) and the tilt screw (311) to the same angle to shift the recording/playback head so it is parallel to the jig board for height readjustment. After the adjustment is completed, tighten the lock nuts.

4-3 Azimuth Adjustment

Playback test tape A-BEX TCC-153 and perform the adjustment by turning the azimuth adjustment nut (311) until A and B in the Lissajous wave figure are at the maximum and the minimum positions respectively. After azimuth adjustment is completed, check again to make sure there is no dislocation on the head height with the readjusting jig THG-801. After the adjustment is completed, secure the lock nuts on the adjusted parts.

Figure 4-2.1 Forward tilt case Figure 4-2.2 Backward tilt case



Note: Be sure to mount the head adjust spacer

5. Erasure Head & Exchange

- 5-1 Remove the locking screw (171) for the erasure head.
- 5-2 Remove the solder on the head wire, and separate the mechanical unit to dismount the erasure head.

6. Tape guide height verification

Set the jig board THG-801 on the mechanical unit. Adjust it by turning the verification adjustment nut (315) so that the 3.8 mm part on the jig stick THG-801 jig shaft move without contacting the tape guide part of the tape guide (103).

7. Verifying fast-forwarding torque

Load a cassette-type torque meter and verify that the reading on the torque meter at the median value is 30–80 g-cm during playback.

If the reading is outside the standard, verify the voltage of the reel motor (3.3 V ± 0.3 V). If the voltage is low the torque is weak and when the voltage is high the torque is strong.

Also verify the reel thrusting gutter in Item 8.

8. Verification Reel Driver Thrust Movement

Verify that the thrust movement is 3.0 to 4.0 mm.

9. FF and REW Torque Verification

- When using cassette-type torque meter:
Verify that the readings at the end of the fast-forward and rewind is 80–160 g-cm.
- Load the cassette half-modified jig and hook the tip of a dial tension meter (full scale 100–300 g) on the triangle part. Switch to the FF (REW) position and feed a tape at a somewhat slower pace than the speed of the tape that is rolled in. Verify that the value on the dial tension meter at that time is more than 80 g-cm.

10. Back tension torque verification for recording/playback

Load a cassette-type torque meter to verify that the reading on the torque meter for recording/playback is 6 to 15 g-cm and there is no unevenness.

If the reading is outside the standard values, verify the reel thrust gutter or replace the spring (7).

11. FF and REW Time Verification

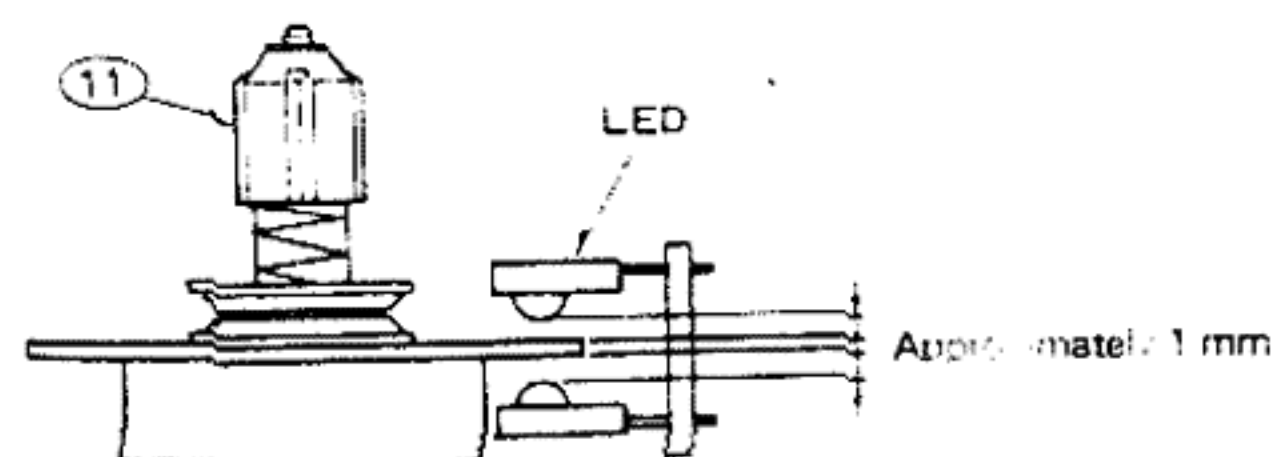
Load a DENON HD-7E/60 cassette tape and verify that the FF and REW time is 80 to 110 seconds. If the reading is outside the standard values, verify Items 8 and 10.

12. Accidental erasure prevention, metal and chrome switch function verification

Verify that switch (83) is functioning normally depending on whether the hole is present or not.

13. Pulse detection LED and reel table clearance verification

Verify that the gap between the surface of the shutter part of the reel table and LED is approximately 1 mm.



ADJUSTING THE ELECTRICAL SECTIONS

ELECTRICAL SYSTEM ADJUSTMENT

● Gauges necessary for adjustment

- (1) Low frequency oscillator
- (2) Variable resistance attenuator
- (3) Electronic voltmeter
- (4) Oscilloscope
- (5) Frequency counter
- (6) Adjustment driver
- (7) Trap coil adjustment square regulation shaft
- (8) Test tape (SONY TY224)
(A-BEX TCC-153, TCC-130, TCC-262B/162B)
(DENON HD-7E/60)
- (9) Mirror cassette for playing (A-BEX TCC-902)

● Adjustment Notes

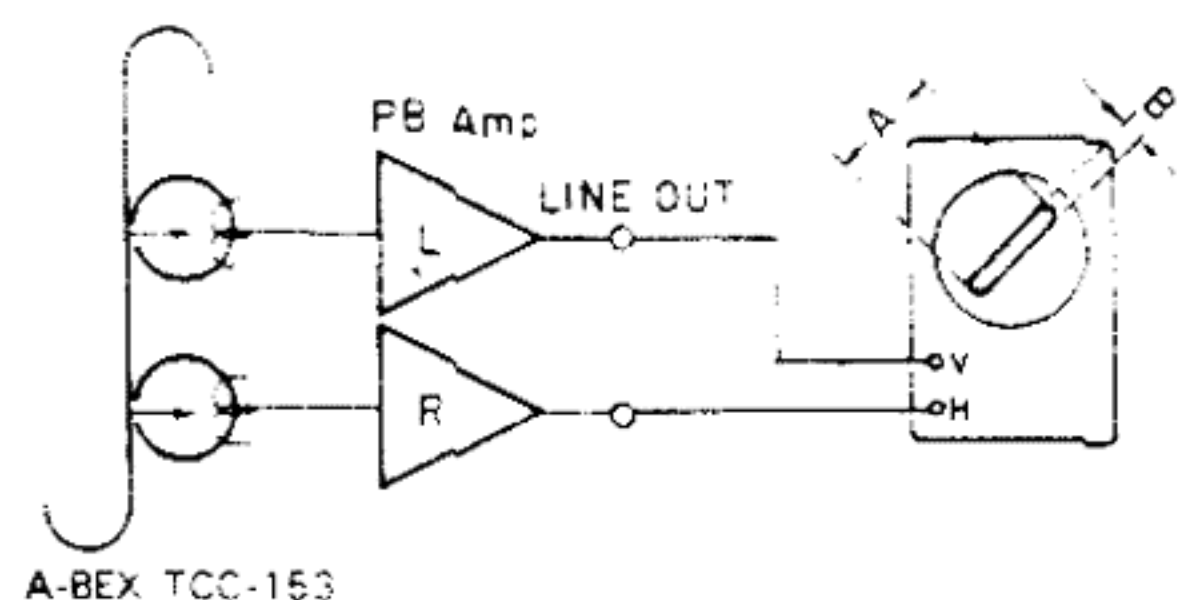
- (1) Clean the head surface, capstan axis, pinch roller, etc. with gauze or cotton swabs soaked with alcohol before adjusting.
- (2) Demagnetize the recording head and erasure head with the head eraser.
- (3) Completely demagnetize the adjusting driver.
- (4) Set function switches as follows unless specifically indicated.
 - MONITOR switch: TAPE
 - INPUT volume: Maximum (right side)
 - DOLBY NR switch: OFF
 - BIAS volume: Center (clicking detent in center)
 - OUT PUT volume: Maximum (right side)
 - BALANCE volume: Center (clicking detent in center)

1. Tape playing check

Load a mirror cassette for playing and examine the area around the fixed guide of the recording/playback head at playing condition with lighting and verify that the tape edge is not contacting the tape guide part. The tape playing is the most important element that determines the capacity of the entire cassette deck. Make every effort to avoid moving the adjusting part. Also, refer to "Adjustment and verification of mechanical system" for exchanging and adjusting the recording/playback head.

2. Azimuth adjustment

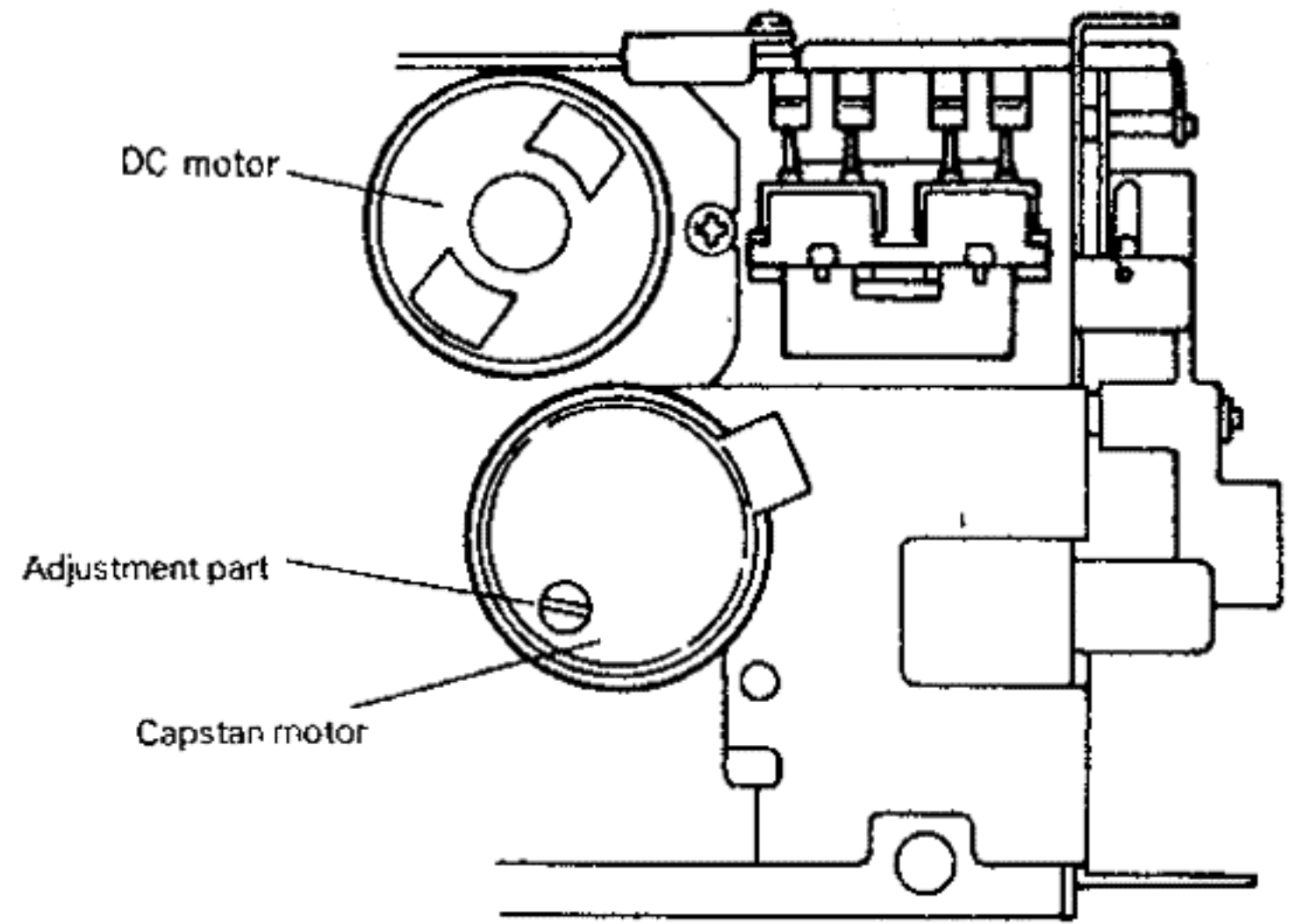
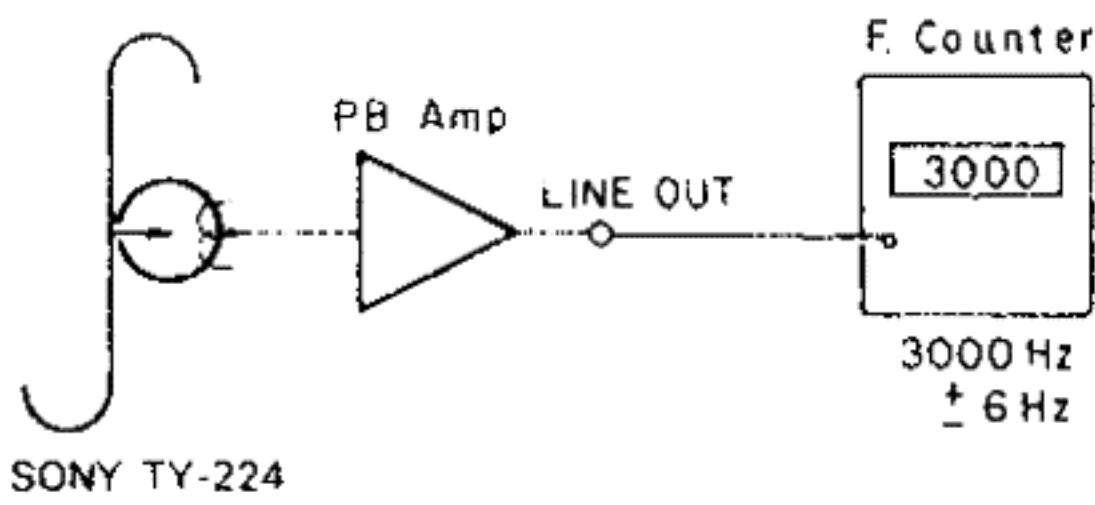
- 2-1 After verifying the tape playback, load the test tape (A-BEX TCC-153).
- 2-2 Playback the test tape and make any necessary adjustment by turning the azimuth adjustment nut so that A and B in the Lissajous wave figure are at the maximum and minimum levels respectively.



3. Tape Speed Verification and Adjustment

3-1 Connect the frequency counter to the LINE OUT terminal and load a test tape (SONY TY-224)

3-2 Playback the test tape. When the test tape playback stabilizes at the center part of the tape, adjust the regulator on the back side of the capstan motor so that the frequency counter reading is set within the range of $3000 \text{ Hz} \pm 6 \text{ Hz}$.



4. Playback System Adjustment

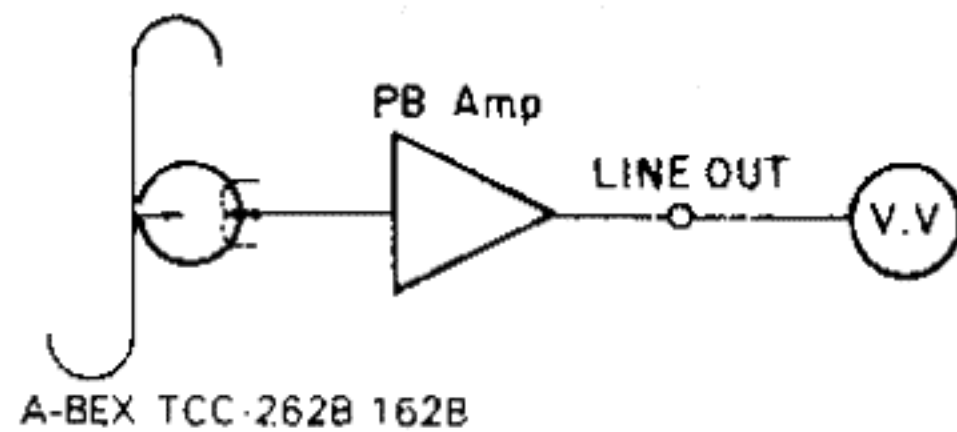
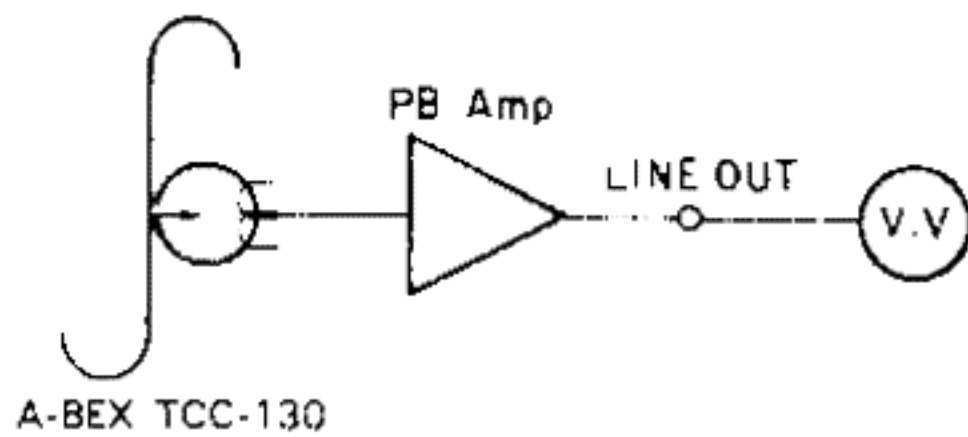
4-1 Playback level

Playback a test tape for Dolby standard level (A-BEX TCC-130). Adjust RT101 (Lch) and RT201 (Rch) so that the LINE OUT terminal level is at -2 dB (0.620 V).

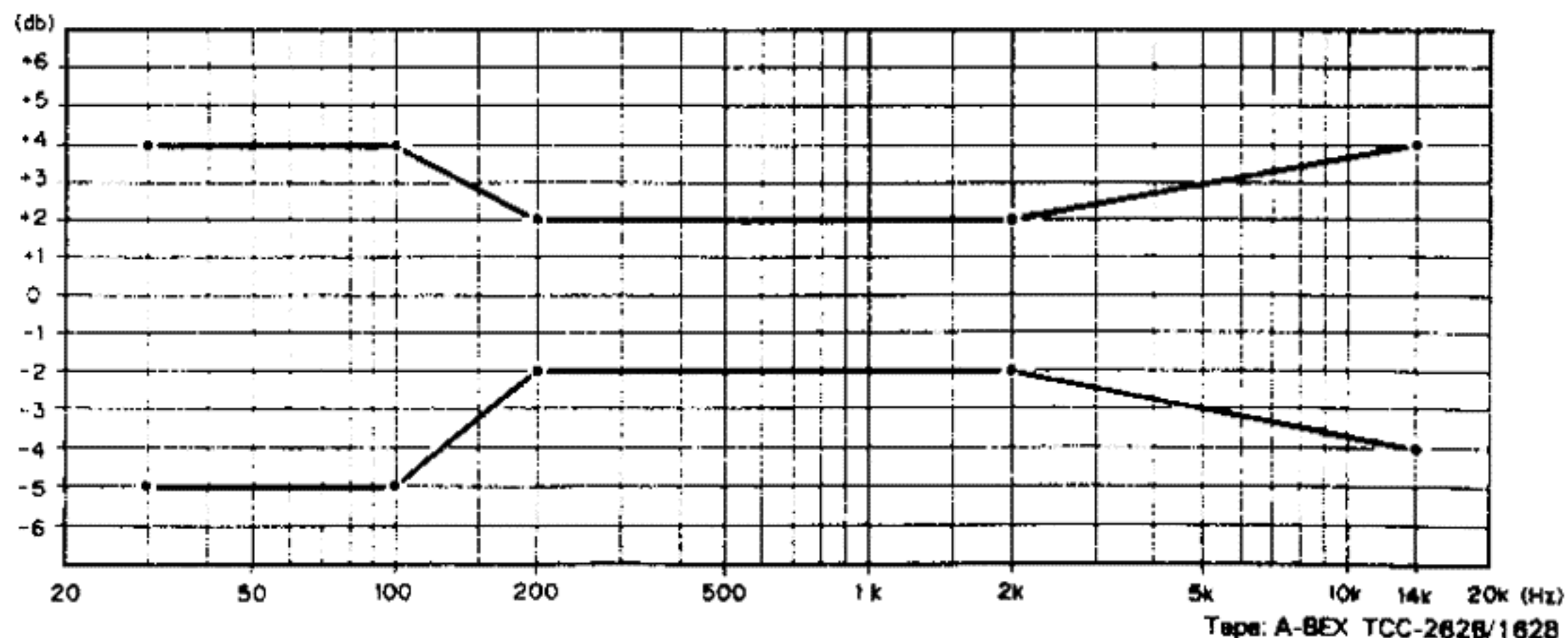
4-2 Verifying playback frequency characteristics

Playback the test tape (A-BEX TCC-262B/162B) and verify that the frequency characteristics conform to the specified standard.

Note: Before checking the playback frequency response, first adjust the azimuth using the 8 kHz signal at the beginning of the test tape (A-BEX TCC-262B). Also, after checking the playback frequency, make sure to readjust the azimuth with the test tape (A-BEX TCC-153) and then lock the adjustment screw.



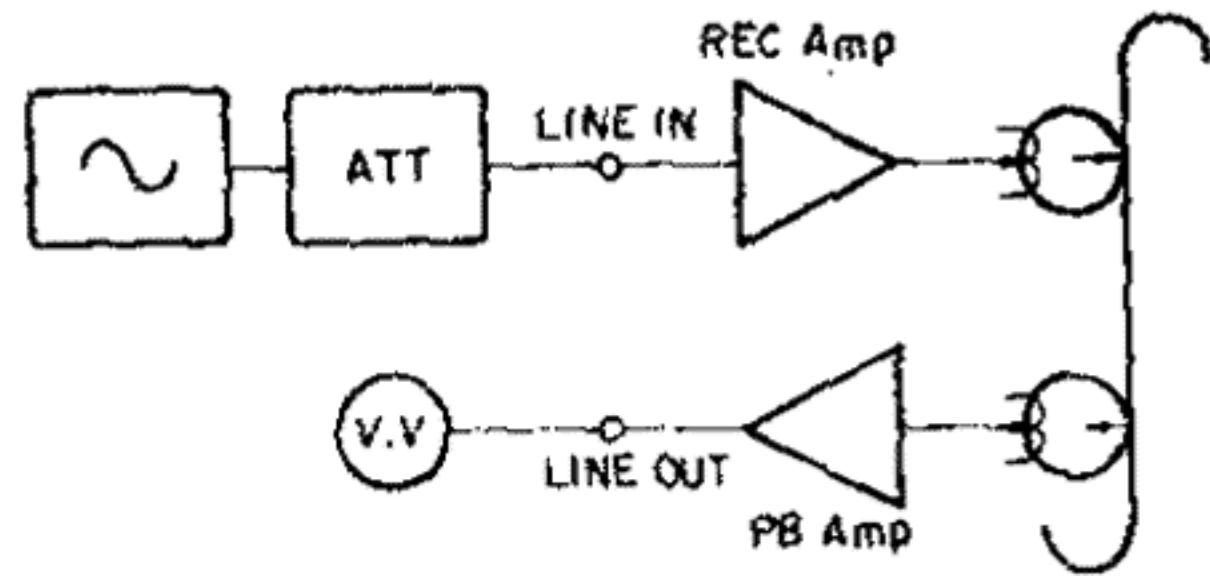
Playback frequency characteristics



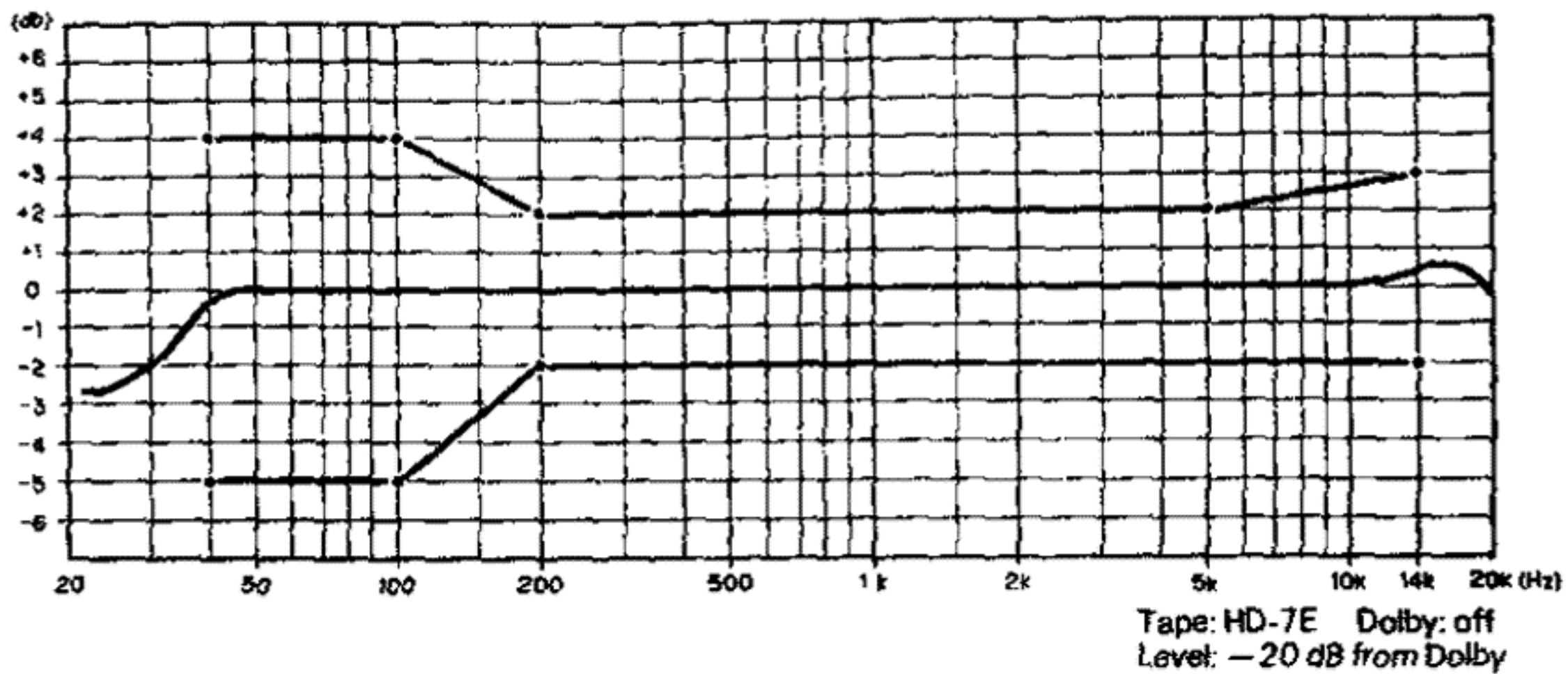
5 Recording System Adjustment

5-1 Adjusting recording/playback comprehensive frequency characteristics

- (1) Load a test tape DENON HD-7E/60. Record with a -38 dB 1 kHz input level signal into the LINE IN terminal and playback.
- (2) Make a sample recording using a 10-kHz input signal and playback this recording. Adjust RT103 (left channel) and RT203 (right channel) so that they conform to the following specified characteristics.



Record/Playback Overall Frequency Response



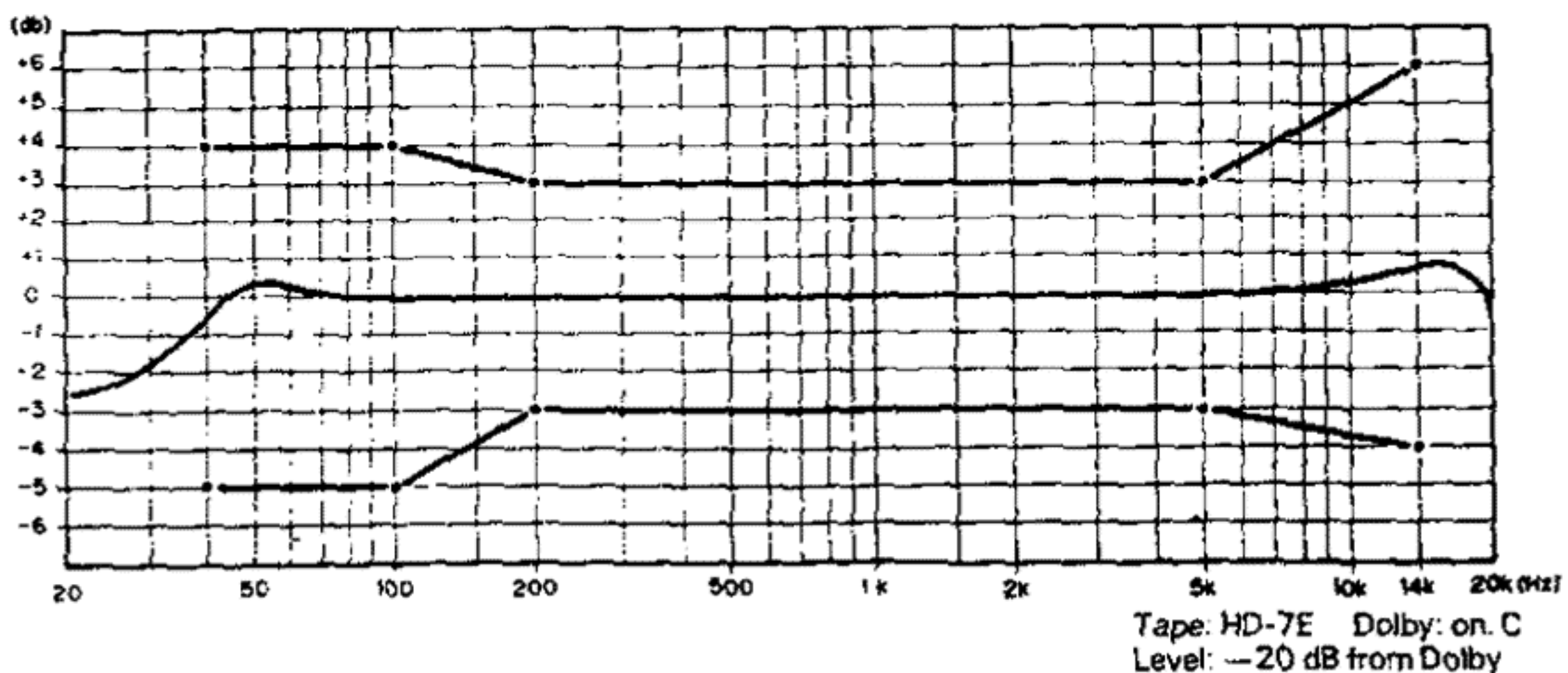
5-2 Recording/Playback Level Adjustment

- (1) Load the test tape DENON HD-7E/60. Make a sample recording with the 1 kHz (-38 dB) signal and play this section back.
- (2) Adjust RT-102 (Lch) and RT-202 (Rch) so that the output from LINE OUT terminal is the same as the output at recording monitoring time.

5-3 Dolby C recording and playback comprehensive frequency characteristics verification

- (1) Set the Dolby NR switch at "C" position.
- (2) Use a test tape DENON HD-7E/60 and record and playback as in Item 5-1 to verify that they satisfy the characteristics standards.

Dolby C Record/Playback Overall Frequency Response



PARTS LIST OF EXPLODED VIEW

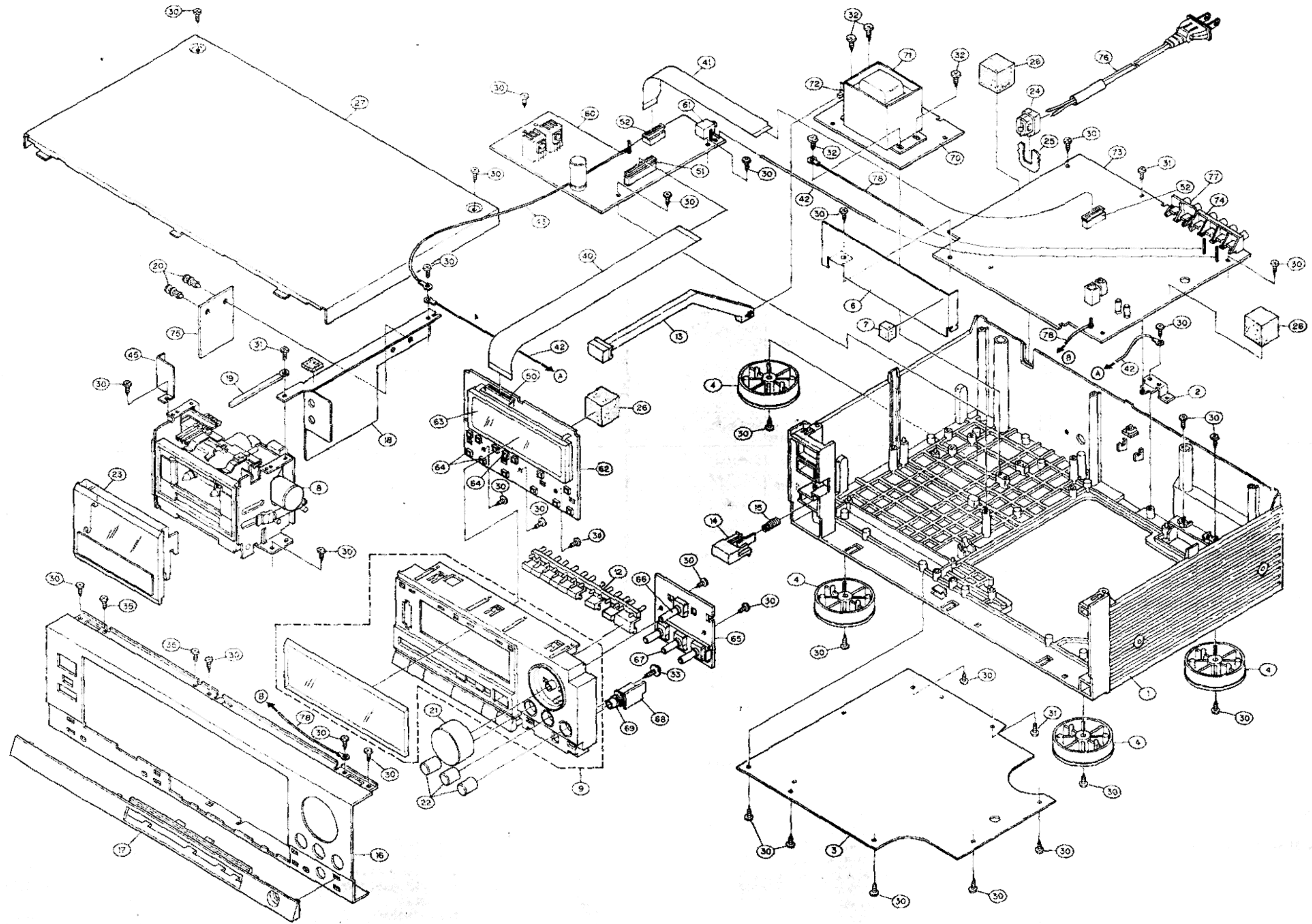
Ref. No.	Part No.	Part Name	Remarks
1	411 0857 356	CHASSIS	Europe, U.K. Australia
	411 0857 372	CHASSIS	Europe (Gold)
	411 0857 369	CHASSIS	U.S.A., Canada
	411 0857 385	CHASSIS	Asia
2	414 0525 001	EARTH BRACKET	
3	105 0828 105	BOTTOM COVER	
4	104 0183 119	FOOT ASS'Y	
	104 0183 122	FOOT ASS'Y	U.S.A. only
6	412 2782 008	SHIELD PLATE	
7	461 0178 001	RUBBER SHEET	
8	VM864	CASSETTE MECHA	
9	103 1224 249	FRONT ESC ASS'Y	
	103 1224 265	FRONT ESC ASS'Y	Europe (Gold)
	103 1224 252	FRONT ESC ASS'Y	U.S.A., Canada
10	103 1225 235	FRONT ESC	
	103 1225 251	FRONT ESC	Europe (Gold)
	103 1225 248	FRONT ESC	U.S.A., Canada
11	143 0615 200	WINDOW	
	143 0615 213	WINDOW	U.S.A., Canada
12	113 1190 134	PUSH KNOB (A)	
	113 1190 147	PUSH KNOB (A)	Europe (Gold)
	113 1190 150	PUSH KNOB (A)	U.S.A. only
13	113 1188 104	P.S. LEVER ASS'Y	
	113 1188 117	P.S. LEVER ASS'Y	Europe (Gold)
	113 1188 120	P.S. LEVER ASS'Y	U.S.A. only
14	113 1187 202	EJECT KNOB	
	113 1187 215	EJECT KNOB	Europe (Gold)
	113 1187 228	EJECT KNOB	U.S.A. only
15	463 0617 005	SPRING	
16	144 1844 235	FRONT PANEL	
	144 1844 248	FRONT PANEL	Europe (Gold)
17	103 1223 240	ESC BAR	
	103 1223 253	ESC BAR	Europe (Gold)
	103 1223 266	ESC BAR	U.S.A., Canada
18	414 0527 106	SHIELD BRACKET	
19	445 0048 016	CORD HOLDER	
20	477 0210 003	PUSH RIVET	
21	112 0515 131	VOL KNOB	
	112 0515 144	VOL. KNOB	Europe (Gold)
	112 0515 128	VOL KNOB	U.S.A. only
22	112 0555 007	VOL KNOB (B)	
	112 0555 010	VOL KNOB (B)	Europe (Gold)
23	103 1226 137	C. WINDOW	
	103 1226 140	C. WINDOW	Europe (Gold)
	103 1226 153	C. WINDOW	U.S.A. only
24	445 0056 008	CORD BUSH	
25	412 2008 012	BUSHING PLATE	
26	461 0502 004	CUSHION	
	461 0502 017	CUSHION	U.S.A. only
27	102 0385 225	TOP COVER	
	102 0385 238	TOP COVER	(Gold)
30	473 7508 017	3 x 10 CBTS(P)-B	
	473 7510 005	3 x 10 CBTS(P)-N	Europe (Gold)
31	473 7002 018	3 x 8 CBTS(S)-Z	
32	473 7502 013	4 x 10 CBTS(P)-Z	
33	477 0262 006	SPECIAL SCREW	

Ref. No.	Part No.	Part Name	Remarks
35	473 7002 005	3 x 6 CBTS(S)-Z	
40	009 0027 006	25P FFC CABLE	
41	009 0028 005	17P FFC CABLE	
42	001 0038 075	VINYL WIRE	
45	441 1128 001	HOOK PROTECTOR	
50	205 0499 025	25P FFC CON. BASE(S)	CN291
51	205 0514 049	25P FFC CON. BASE(S)	CN291
52	205 0514 010	17P FFC CON. BASE(S)	CN191
60	4U- 1817 Z81	PWR LOGIC PWB ASS'Y	
61	204 8260 004	MINI JACK	JK002
62	4U- 1817 Z82	MTR CONTROL PWB ASS'Y	
63	394 4075 001	FIP9BEM8	FL901
64	212 4388 907	TACT SWITCH	
65	4U- 1817 Z84	VOLUME PWB ASS'Y	
66	211 0597 003	V1620P30FA104	VR302
67	211 0595 005	V1103P25C	VR301
68	4U- 1817 Z85	H. PHONE PWB ASS'Y	
69	204 8264 026	H/P JACK	J001
70	4U- 1823 Z8	P. SUPPLY UNIT	Europe
	4U- 1823 U8	P. SUPPLY UNIT	U.S.A., Canada
	4U- 1823 K8	P. SUPPLY UNIT	U.K., Australia
	4U- 1823 M8	P. SUPPLY UNIT	Asia
71	233 5735 005	POWER TRANS	Australia
	233 5737 004	POWER TRANS	Europe, U.K.
	233 5739 002	POWER TRANS	U.S.A.
	233 5738 003	POWER TRANS	Canada
72	212 0288 003	POWER SWITCH	Asia
72	212 0288 003	POWER SWITCH	SW901
73	4U- 1816 Z8	AUDIO PWB UNIT	
74	204 8310 006	4P PIN JACK	JK301
75	4U- 1861 Z	AUTO STOP PWB UNIT	
76	205 0054 005	AC CORD	Europe
	205 2050 001	AC CORD	U.S.A., Canada
	205 2054 008	AC CORD	U.K.
	205 2028 005	AC CORD	Australia
	200 6031 026	AC CORD	Asia
77	204 8311 018	2P PIN JACK	
*	513 8294 000	VDE LABEL	Europe only
*	515 8253 025	APPROVAL MARK	Europe only
*	513 8266 009	DANGEROUS MARK	U.S.A. only
*	513 1222 008	DATE LABEL	U.S.A., Canada
*	513 0772 009	UL LABEL	U.S.A. only
*	515 0439 102	SAFETY INSTRUCTION	U.S.A. only
*	515 0418 107	DAI WARRANTY HOME	U.S.A. only
*	515 0388 004	DCI WARRANTY	Canada only
*	212 4698 008	VOLTAGE SELECTOR	Asia only
*	515 8030 008	PRESET LABEL	Asia only

(Gold) in the Remarks column refers to models with Gold front panels.

1 2 3 4 5 6 7 8

EXPLODED VIEW OF CABINET AND CHASSIS GROUP



**PARTS LIST OF 4U-1817, 4U-1823
(POWER/LOGIC SELECTION)**

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC801	263 0618 006	BA6800A	
IC901	262 1161 008	μPD75206CW	
IC902, 903	262 0447 009	BA6109U1	
TR601, 602	269 0022 904	DTA143ES (4.7K-4.7K)T	
TR800	269 0040 902	DTC144ES (47K-47K)T	
TR901	279 0021 009	2SD985 (L)	
TR902	279 0020 000	2SB794 (L)	
TR903, 905	273 0178 925	2SC1740 (R/S) T-70	
TR904	272 0025 907	2SB562(CIT,F	
TR908, 909 916	269 0015 908	DTC124XS (22K-47K)T	
TR910	269 0019 904	DTA143XS (4,7K-10K)T	
TR911, 912	269 0090 907	DTC143XS-T	
TR913	271 0183 901	2SA933 (Q/R/S) T-93	
D801 ~ 811 813, 814 820 ~ 823 921, 924 925, 928 929	276 0432 903	1SS270A TE	
D901 ~ 908 922, 927	276 0519 907	1SR35-200AT82	
D911, 912	276 0469 918	HZS9C-2TD	
D913	276 0483 910	HZS30-2TD	
D914	276 0466 911	HZS7C-2TD	
D915, 918	276 0463 927	HZS6C-3TD	
D917	276 0455 906	HZS4A-1TD	
D919	276 0469 905	HZS9C-1TD	
D930	276 0519 004	1SR35-200A	
RESISTOR GROUP			
R931	244 0079 026	RS1483D270JNBF	27 Ω 2 W
VR301	211 0595 005	V1103P25C	
VR302	211 0597 003	V1620P30FA104	
CAPACITOR GROUP Ceramic			
C801	253 9030 947	CK45=1E472KT	0.0047 μF/ 25 V
C915, 916 917, 918	253 1180 921	CK45B1H102KT (DC-3)	0.001 μF/50 V
C919	253 9031 917	CK45=1E683KT	0.068 μF/25 V
C923, 924 926, 927	253 9030 963	CK45=1E103KT	0.01 μF/25 V
C933	253 9030 044	CK45=1E472K	0.0047 μF 25 V

Ref No.	Part No.	Part Name	Remarks
Electrolytic			
C602, 702	254 4252 901	CE04W1A220MT	22 μF/10 V
C901, 904	254 4256 790	CE04W1E222MC	2200 μF/25 V
C902, 905 908	254 4252 927	CE04W1A470MT	47 μF/10 V
C903, 906	254 4252 930	CE04W1A101MT	100 μF/10 V
C909	254 4256 952	CE04W1E221MT	220 μF/25 V
C910	254 4261 730	CE04W1H221MC	220 μF/50 V
C911, 912	254 4258 947	CE04W1V470MT	47 μF/35 V
C913	254 4256 907	CE04W1E100MT	10 μF/25 V
C914, 929	254 4260 951	CE04W1H2R2MT	2.2 μF 50 V
C921	254 4250 770	CE04W0J222MC	2200 μF/6.3 V
C925	254 4255 717	CE04W1C472MC	4700 μF/16 V
C931	254 4254 954	CE04W1E100MT	10 μF/25 V
C932	254 4260 948	CE04W1H010MT	1 μF/50 V
OTHER PARTS GROUP			
XT901	399 0079 009	CST4, 19MG	
SW801 ~ 811 813, 814	212 4388 907	TACT SWITCH (IM)	
SW901	212 0286 003	POWER SWITCH	
CN891	205 0343 087	8P CONN. BASE (KR-PH)	
CN892	205 0321 083	8P CONN. BASE (RED)	
CN901	205 0343 074	7P CONN. BASE (KR-PH)	
*	415 0299 000	CONDENSER COVER	
*	202 0022 008	FUSE HOLDER	Asia only
*	206 1031 045	FUSE (0.25)A	Asia only
AUTO STOP GROUP (4U-1861)			
IC551	262 0724 007	HD74HC86P	
TR551	269 0014 909	DTA124XS (22K-47K)T	
D551 ~ 554	276 0432 903	ISS270ATE	
C551	254 4260 948	CE04W1H010MT (SME)	
C552	253 9031 920	CK45=1E104KT	
CN551	205 0343 061	6P CONN. BASE (KR-PH)	

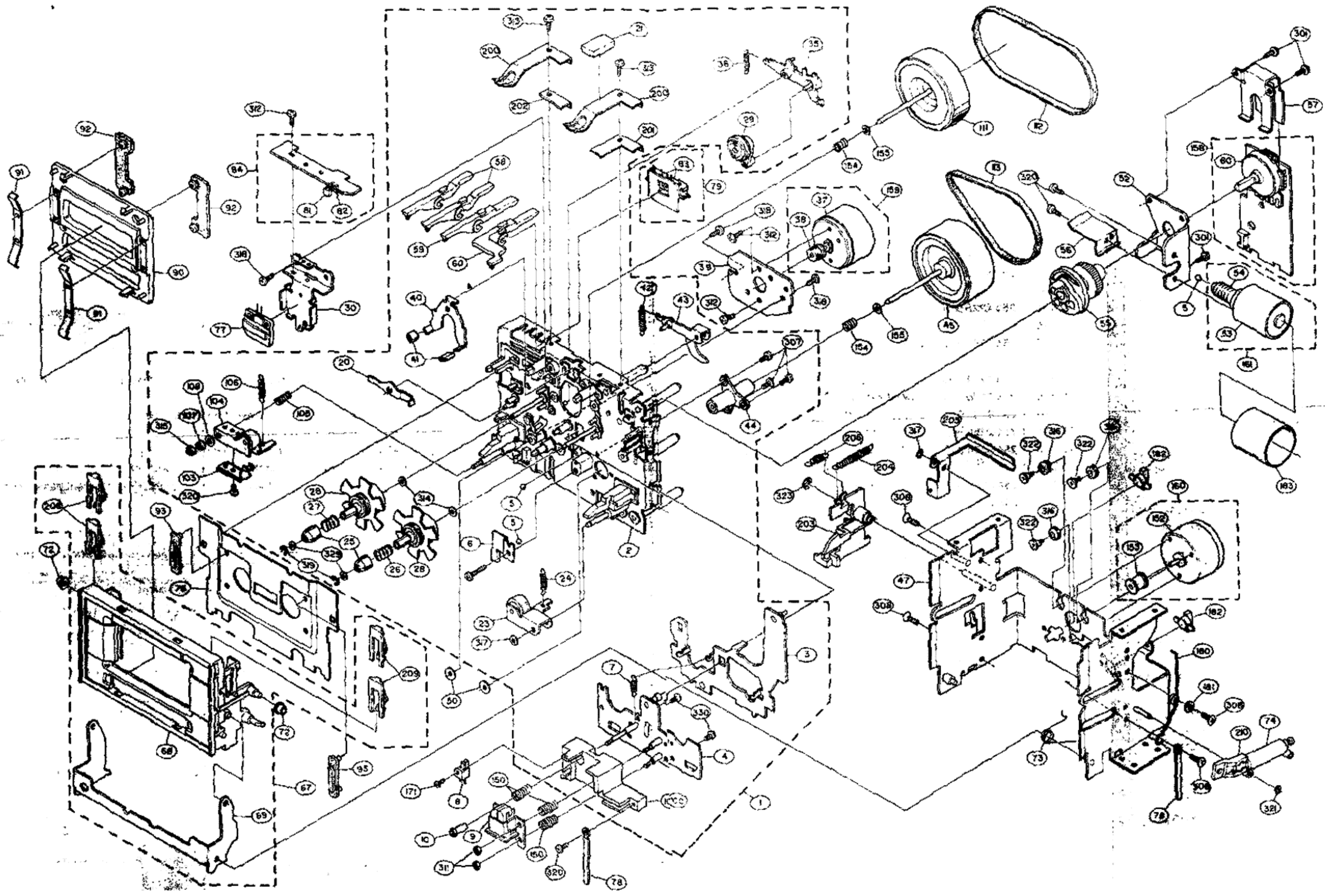
PARTS LIST OF MECHANISM

Ref No	Part No.	Part Name	Remarks
1	411 0858 106	MECHA BASF IG: ASS'Y	
2	411 0679 301	MECHA BASF ASS'Y	
3	431 0242 101	HEAD SLIDER ASS'Y	
4	431 0282 006	HEAD PLATE ASS'Y	
5	425 8011 009	STEEL BALL D3	
6	431 0240 006	BALL GUIDE PLATE	
7	463 8230 002	SPRING	
8	391 8826 001	ERASE HEAD	

Ref. No.	Part No.	Part Name	Remarks
9	391 0267 008	REC/P.B HEAD	
10	443 8671 104	SPECIAL NUT	
11	446 8028 009	CORD HOLDER	
20	433 8224 208	STOPPER	
21	461 0154 083	CUSHION	
23	433 8194 105	PINCH ROLLER ARM ASS'Y	
24	463 8231 108	SPRING	
25	421 0446 104	REEL DRIVER	
26	463 0522 103	SPRING	
27	463 0538 003	SPRING	
28	421 8401 109	REEL DRIVE WHEEL	
29	433 0449 201	IDLER ARM (B) GEAR ASS'Y	
30	441 0692 101	LAMP HOLDER	
35	433 8236 306	IDLER ARM (A) ASS'Y	
36	463 8271 003	SPRING	
37	217 0161 000	REEL MOTOR	
38	421 8403 000	PULLEY	
39	441 0850 008	DC MOTOR FIX PLATE	
40	431 0241 005	BLAKE	
41	461 8127 106	BLAKE SHOE	
42	463 8234 105	SPRING	
43	433 8232 300	BLAKE ARM ASS'Y	
44	443 8648 302	METAL HOUSING ASS'Y	
45	421 0389 106	FLY WHEEL ASS'Y	
47	441 0837 102	MECHA STAY ASS'Y	
50	477 0090 074	WASHER	
52	411 8966 305	CAM MOTOR HOLDER	
53	217 0168 003	DC MOTOR	
54	424 8025 607	WORM GEAR	
55	424 8027 401	CAM	
56	414 0414 109	OIL FENCE	
57	442 8018 308	ENCODE BLAKET	
58	433 0493 105	HOLE SENSOR (A)	
59	433 0494 104	HOLE SENSOR (B)	
60	433 0495 103	HOLE SENSOR (C)	
67	GEN 0410	CASSETTE BOX SUB ASS'Y	
68	103 1209 303	CASSETTE BOX	
69	433 0459 411	CASSETTE BOX HOLDER	
72	431 8097 002	COLLAR	
73	463 0524 101	BOX SPRING	
74	469 8013 104	AIR DUMPER	
76	144 1859 107	ESC. PLATE	
77	393 9179 012	LN0105YP4(YW)	
78	446 8028 009	CORD HOLDER	
79	2U-1515-1	HOLE SENSOR PWB ASS'Y	
80	212 3331 308	ROTARY ENCODER	
81	393 9178 000	LN25RCP	
82	393 9026 000	PN150	
83	212 4665 002	SLIDE SWITCH	
84	2U-1515-2	REEL PULSE PWB ASS'Y	
90	103 1221 310	STABILIZER	
91	463 0609 107	STABILIZER SPRING	
92	461 0491 209	STABILIZER PAD (A)	

Ref. No.	Part No.	Part Name	Remarks
93	461 0488 005	STABILIZER PAD (B)	
100	443 0903 207	HEAD BLOCK	
103	433 0407 308	TAPE GUIDE	
104	433 0408 006	PINCH ROLLER ARM (L) ASS'Y	
105	463 0414 101	SPRING	
106	463 0480 009	SPRING	
107	443 0539 008	WASHER	
108	477 0240 002	WASHER	
111	421 0538 106	CAPSTAN WHEEL ASS'Y	
112	423 8026 108	BELT	
113	423 8030 110	BELT	
150	463 0616 006	SPRING	
152	217 0162 009	CAPSTAN MOTOR	
153	421 8383 007	MOTOR PULLEY	
154	463 0618 004	FLY WHEEL SPRING	
155	477 0090 016	WASHER	
158	4U-1831-4	MECHA. PWB ASS'Y	
159	DRO 4A04	REEL MOTOR SUB ASS'Y	
160	DC0 7A02	CAPSTAN MOTOR SUB ASS'Y	
161	DC0 6A04	CAM MOTOR SUB ASS'Y	
171	471 1822 010	CAMERA SCREW 2x8	
180	463 0628 104	DUMPER SPRING	
181	475 1003 006	WASHER	
182	461 0473 201	THRUST STOPPER	
183	443 0948 000	SHIELD COVER	
200	463 8829 303	CASSETTE SPRING	
201	442 8154 107	CP SUPPORT	
202	441 0897 003	SPRING GUIDE	
203	433 8269 506	HOOK	
204	463 0561 009	SPRING	
205	412 8829 101	ANGLE	
206	463 8257 001	SPRING	
208	103 8243 401	CASSETTE SUPPORT (L)	
209	103 8243 414	CASSETTE SUPPORT (R)	
210	433 8271 400	DUMPER GUIDE	
301	473 7002 005	3x6 CBTS(S)-Z	
307	471 3202 010	2.6x5 CBS	
308	473 7021 002	2.6x6 CFT(S)	
310	471 3802 025	2.6x14 CBS	
311	475 6020 000	2NUT	
312	471 3802 012	2.6x3 CBS-Z	
313	473 7001 006	2.6x5 CBTS(S)-Z	
314	477 0265 016	WASHER	
315	477 0269 009	NYLON NUT	
316	462 0086 015	MOTOR CUSHION	
317	475 1121 108	SLIT WASHER	
318	473 7500 002	3x6 CBTS(P)-Z	
319	476 1114 008	1.5 E RING	
320	471 3801 039	2x3 CBS-Z	
321	475 1120 109	SLIT WASHER	
322	477 0294 003	SPECIAL SCREW	
323	476 1003 009	3 E RING	
329	475 1139 103	2.1 WASHER	

EXPLODED VIEW OF MECHANISM UNIT



PARTS LIST OF 4U-1816 (AUDIO SECTION)

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC301	263 0317 006	M-5220P	
IC302, 305	263 0257 001	M-5218P	
IC303, 308	263 0455 007	CX20187	
IC304	262 0276 005	HD140668P	
IC310	263 0354 001	μPC1297CA	
TR102, 105	273 0245 900	2SC2603E/FT	
107, 202			
205, 207			
302, 303			
TR103, 106	275 0048 909	2SK381 (D)/(E)-T	
203, 206			
TR104, 108	269 0015 908	DTC124XS (22K-47K)T	
~111			
204, 208			
~211			
310, 311			
314, 316			
TR304, 305	269 0014 909	DTA124XS (22K-47K)T	
TR313	272 0025 907	2SB562 (C)TF	
TR319	269 0093 904	DTA144ES (47K-47K)T	
TR320, 321	269 0019 904	DTA143XS (4.7K-10K)T	
TR322	269 0062 906	DTC124ES (22K-22K)T	
D310	276 0459 915	HZS5B-2TD	
RESISTOR GROUP			
R304	244 2036 012	RD14B2H3R9JFRF	3.9 Ω 1/2 W
RT102, 103	211 6077 954	VO6PB223 (M)	REC, CAL
202, 203			
RT101, 201	211 6077 938	VO6PB104 (M)	PB, GAIN
CAPACITOR GROUP			
Ceramic			
C101, 154	253 1179 929	CK45B1H151KT (DD-3)	150 PF/50 V
201, 254			
C111, 138	253 9031 917	CK45=1E683KT	0.068 μF/25 V
211, 238			
C134, 234	253 9031 962	CK45=1E272KT	0.0027 μF/ 25 V
306			
C143, 243	253 9030 934	CK45=1E332KT	0.0033 μF/ 25 V
C146, 246	253 9035 025	CK45=1E823K	0.082 μF/ 25 V *
C149, 249	253 1180 947	CK45B1H152KT (DD-3)	0.0015 μF/ 50 V
C150, 250	253 9031 959	CK45=1E182KT	0.0018 μF/ 25 V
C151, 160	253 1180 918	CK45B1H821KT (DD-3)	820 PF/50 V
251, 260			
C153, 253	253 9030 921	CK45=1E222KT	0.0022 μF/ 25 V
319			

Ref. No.	Part No.	Part Name	Remarks
C156, 256	253 1180 947	CK45B1H152KT (DD-3)	0.0015 μF/50 V
C161, 261	253 9030 989	CK45=1E223KT	0.022 μF/25 V
305			
C162, 262	253 9030 992	CK45=1E333KT	0.033 μF/25 V
C163, 263	253 1179 903	CK45B1H101KT	100 PF/50 V
C164, 264	253 1131 909	CK45B2H391KT	390 PF/500 V
C165, 265	253 9030 983	CK45=1E103KT	0.01 μF/25 V
C170, 270	253 1179 945	CK45B1H221KT (DD-3)	220 PF/50 V
C307	253 4470 900	CC45SL2H100DT	10 PF/500 V
C311	253 9031 904	CK45=1E473KT	0.047 μF/25 V
C360	253 9036 909	CK45=1E104ZT	0.1 μF/25 V
Electrolytic			
C103, 115	254 4254 909	CE04W1C100MT	10 μF/16 V
203, 215			
C105, 205	254 3056 920	CE04D1H2R2MBPT	2.2 μF/50 V
C107, 133	254 4260 935	CE04W1HR47MT	0.47 μF/50 V
207, 233			
C108, 135	254 4228 919	CE04W1HR15MT (LL)	0.15 μF/50 V
208, 235			
C110, 137	254 4260 919	CE04W1HR22MT	0.22 μF/50 V
210, 237			
C115, 215	254 4254 909	CE04W1C100MT	10 μF/16 V
C118, 216	254 4260 948	CE04W1H010MT	1 μF/50 V
C130, 230	254 3056 917	CE04D1H010MBPT	1 μF/50 V
C131, 231	254 3055 905	CE04D1V4R7MBPT	4.7 μF/35 V
C142, 242	254 4254 909	CE04W1C100MT	10 μF/16 V
317, 318			
C144, 244	254 4258 905	CE04W1V4R7MT	4.7 μF/35 V
C145, 245	254 4252 927	CE04W1A470MT	47 μF/10 V
312, 313			
C321	254 4256 910	CE04W1E220MT	22 μF/25 V
C325, 326	254 4252 930	CE04W1A101MT	100 μF/10 V
C601, 701	254 4260 951	CE04W1H2R2MT	2.2 μF/50 V
Film			
C102, 202	255 1209 905	CQ93M1H562JT	0.0056 μF 50 V
C104, 204	255 1211 906	CQ93M1H822JT	0.0082 μF 50 V
C106, 132	255 1208 906	CQ93M1H472JT	0.0047 μF/50 V
206, 232			
C109, 136	255 1214 903	CQ93M1H153JT	0.015 μF 50 V
209, 236			
C112, 139	255 1220 900	CQ93M1H473JT	0.047 μF 50 V
212, 239			
C113, 140	255 1210 907	CQ93M1H682JT	0.0068 μF 50 V
147, 213			
240, 247			
C114, 141	255 1212 905	CQ93M1H103JT	0.01 μF 50 V
214, 241			
C308	255 4079 925	CQ93P2A822JT	0.0083 μF 100 V

PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks
OTHER PARTS GROUP			
L101, 201	231 0825 009	BIAS FILTER	
L102, 104	232 9007 009	SKEWING COIL	
202, 204			
L103, 203	232 0109 003	MPX FILTER	
L105, 205	235 0020 916	INDUCTOR 822JT	
L106, 206	235 0020 945	INDUCTOR 153JT	
L107, 207	239 0010 009	HX STEP UP COIL	
L303	232 0135 006	OSC COIL	
CN121	205 0406 034	3P CONN. BASE (KR-PH)	
CN141	205 0375 039	13P CONN. BASE (KR-PH)	
CN151	205 0343 032	3P CONN. BASE (KR-PH)	
CN171	205 0233 061	6P EH CONN. BASE	
CN172	205 0233 045	4P EH CONN. BASE	
CN191	205 0514 010	17P FFC CONN BASE(S)	
JK301	204 8310 006	4P PIN JACK	

Ref. No.	Part No.	Part Name	Remarks
*	505 0038 030	POLY COVER	
*	203 2223 002	2P PIN CORD	
*	203 2227 008	2P MINI PLUG CORD	
*	511 1796 004	INST MANUAL	
*	511 1800 000	INST MANUAL	U.S.A.
*	511 1797 003	SPANISH INST MANUAL	Europe
*	515 0455 005	TAPE CATALOG (E ₂)	Europe, U.S.A.
*	505 0131 050	CABINET COVER	
*	504 0012 060	STYLEN PAPER	
*	503 0778 006	PACKING	
*	501 1338 009	CARTON CASE	
*	513 1389 008	CONTROL CARD BASE	
*	513 1349 004	THERMAL CARBON FILM	
*	203 3667 007	PLUG ADAPTER	Asia only

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicated "1" and "1" (i) to avoid mis-supplying
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "*" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/6 W, 1/4 W Type in the P. W. Board parts list.
- Parts marked with this symbol! ⚠ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

● Refer to the following table for the codes of the resistors and capacitors appearing on the parts list.

Resistors

Ex.: RN 14K 2E 182 G FR
Type Shape and performance Power Resistance Allowable error Others

RD	Carbon	2B	1W	F	±1%	P	Pulse-resistant type
RC	Fixed	2E	1W	G	±2%	NL	Low noise type
RS	Metallic film	2H	1W	J	±5%	NB	Non-burning type
RW	Winding	3A	1W	K	±10%	FR	Fuse resistor
RN	Metal film	3D	2W	M	±20%	F	Lead wire forming
RK	Metal mixture	3F	3W				
		3H	5W				

*** Resistance**

1 8 2 1800Ω = 1.8kΩ
Indicates number of zeros after effective number
2-digit effective number, decimal point indicated by R
• Units Ω

Capacitors

Ex.: CE 04W 1H 2R2 M BP
Type Shape and performance Dielectric strength Capacity Allowable error Others

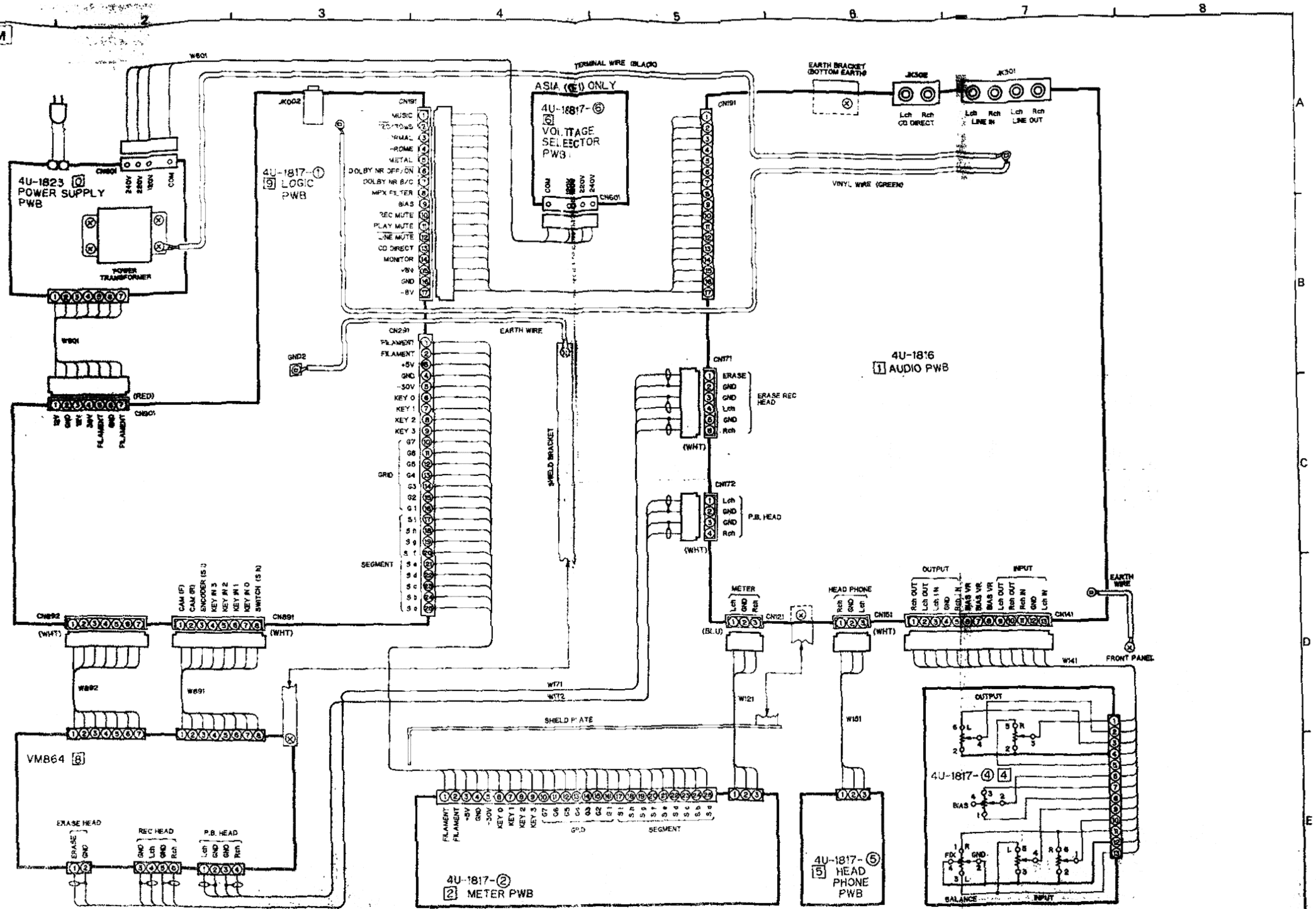
CE	Aluminum foil electrolyte	0J	6.3V	F	±1%	HS	High stability type
CA	Aluminum solid electrolyte	1A	10V	G	±2%	BP	Non-polar type
CS	Tantalum electrolyte	1C	16V	J	±5%	HR	Ripple-resistant type
CQ	Film	1E	25V	K	±10%	DL	For charge and discharge
CK	Ceramic	1V	35V	M	±20%	HF	For assuring high frequency
CC	Ceramic	1H	50V	Z	+80%	U	UL part
CP	Oil	2A	100V		-20%	C	CSA part
CM	Mica	2B	125V	P	+100%	W	UL-CSA type
CF	Metalized	2C	160V		-0%	F	Lead wire forming
CH	Metalized	2D	200V	C	±0.25pF		
		2E	250V	D	±0.5pF		
		2H	500V				
		2J	630V				

*** Capacity**

2 R 2 2.2 μF
1-digit effective number, decimal point indicated by R
2-digit effective number, decimal point indicated by R

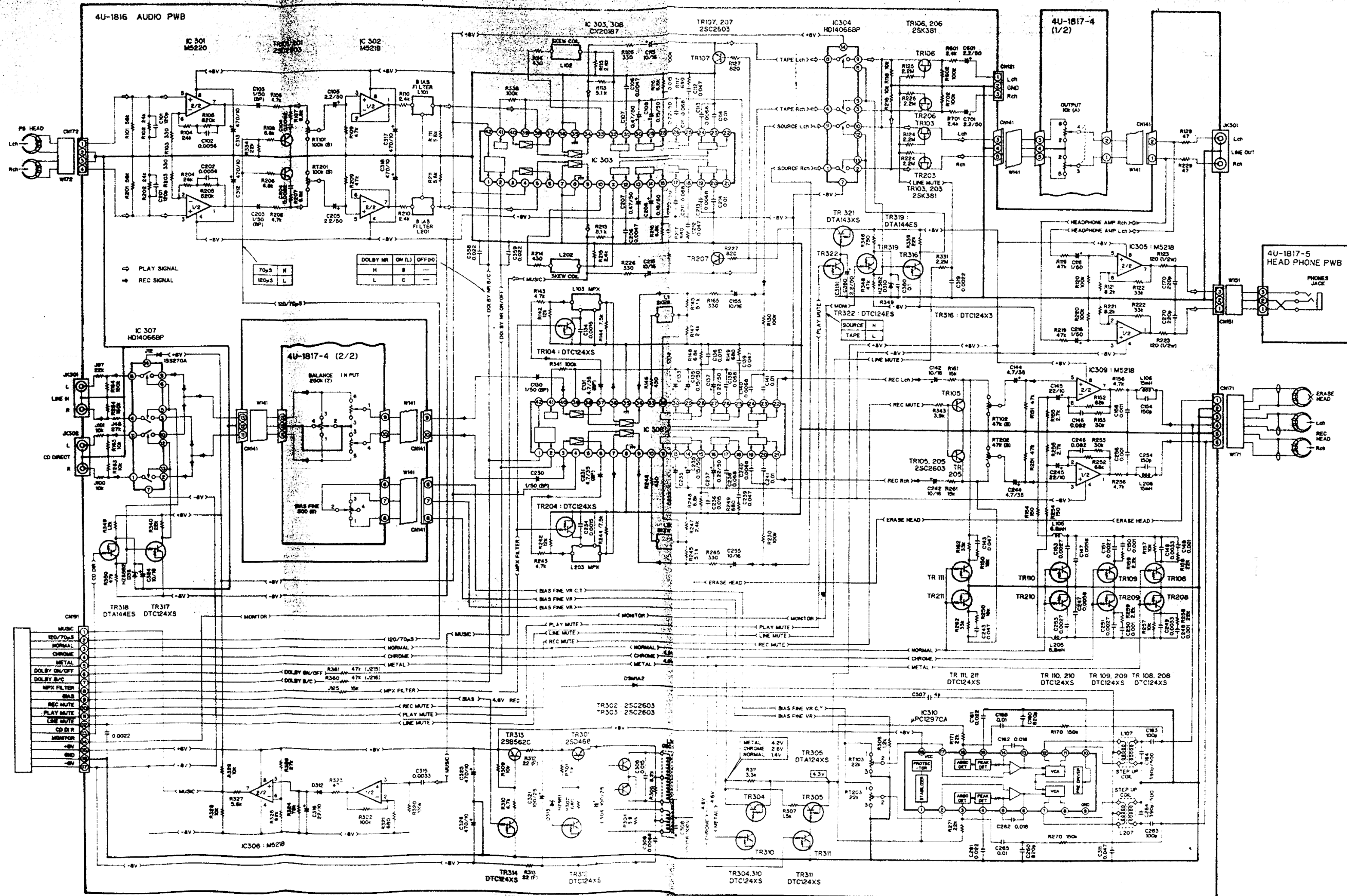
- Units: μF, (for P, PF (pμF))
- When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value

WIRING DIAGRAM



SCHEMATIC DIAGRAM OF AUDIO SECTION

A
B
C
D
E



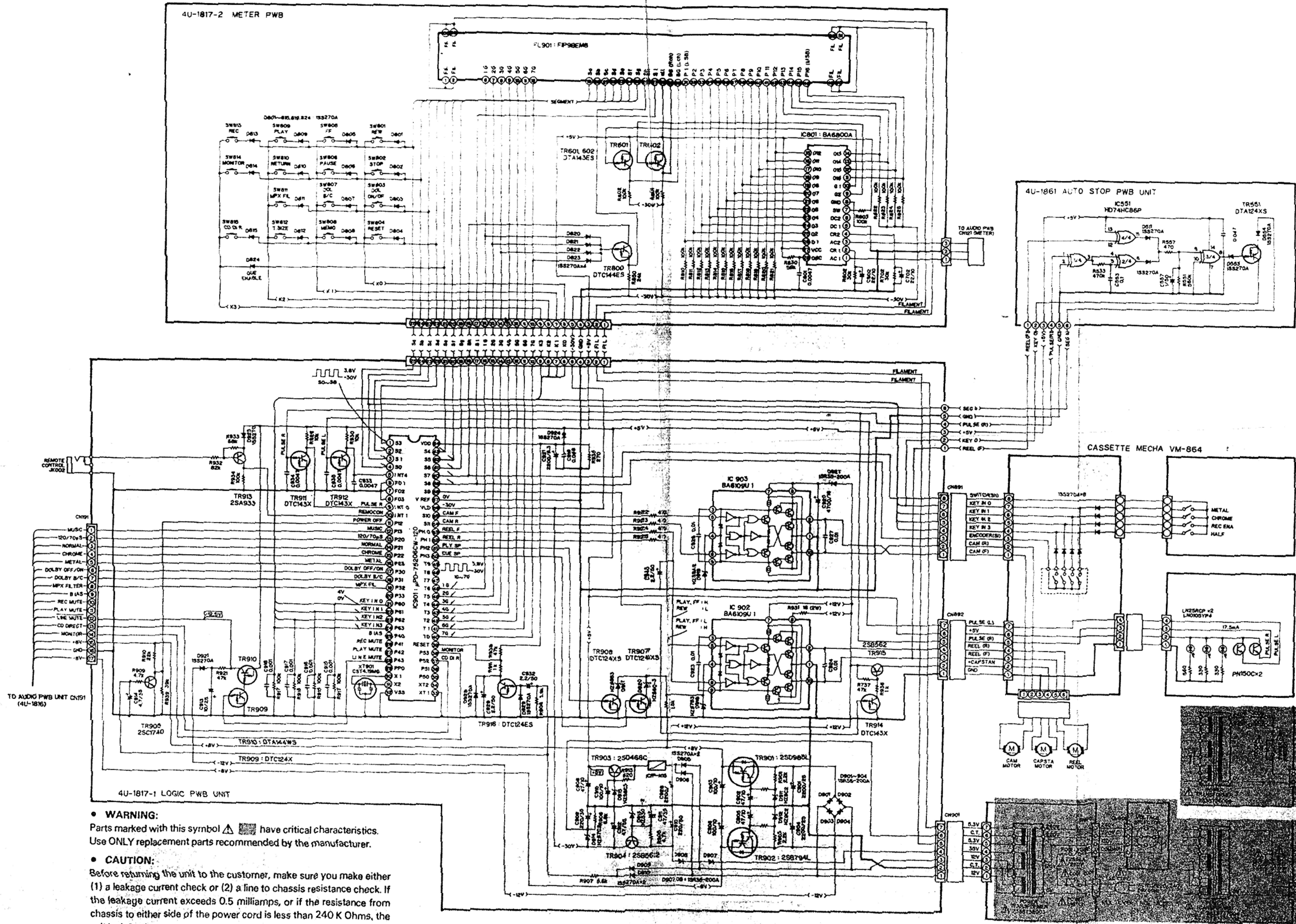
Note:

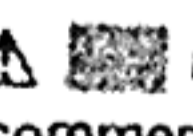
- Resistance shall be 1/4 W unless otherwise specified and the unit is Ω .
- The unit of capacitor is μF , P unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.

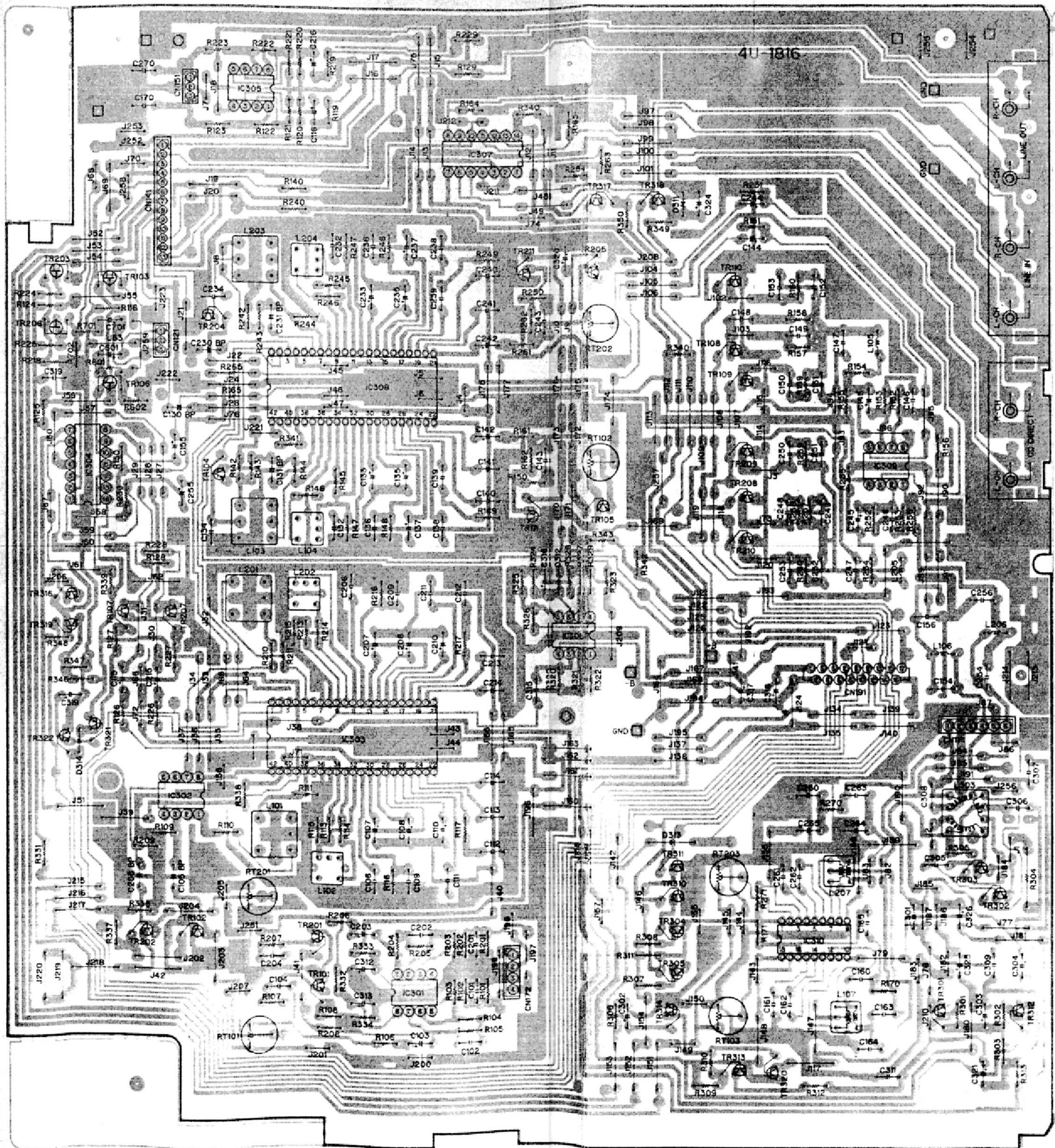
○ : Playback signal line.
 ● : Recording signal line.

1 2 3 4 5 6 7 8

SCHEMATIC DIAGRAM OF POWER & LOGIC SECTION

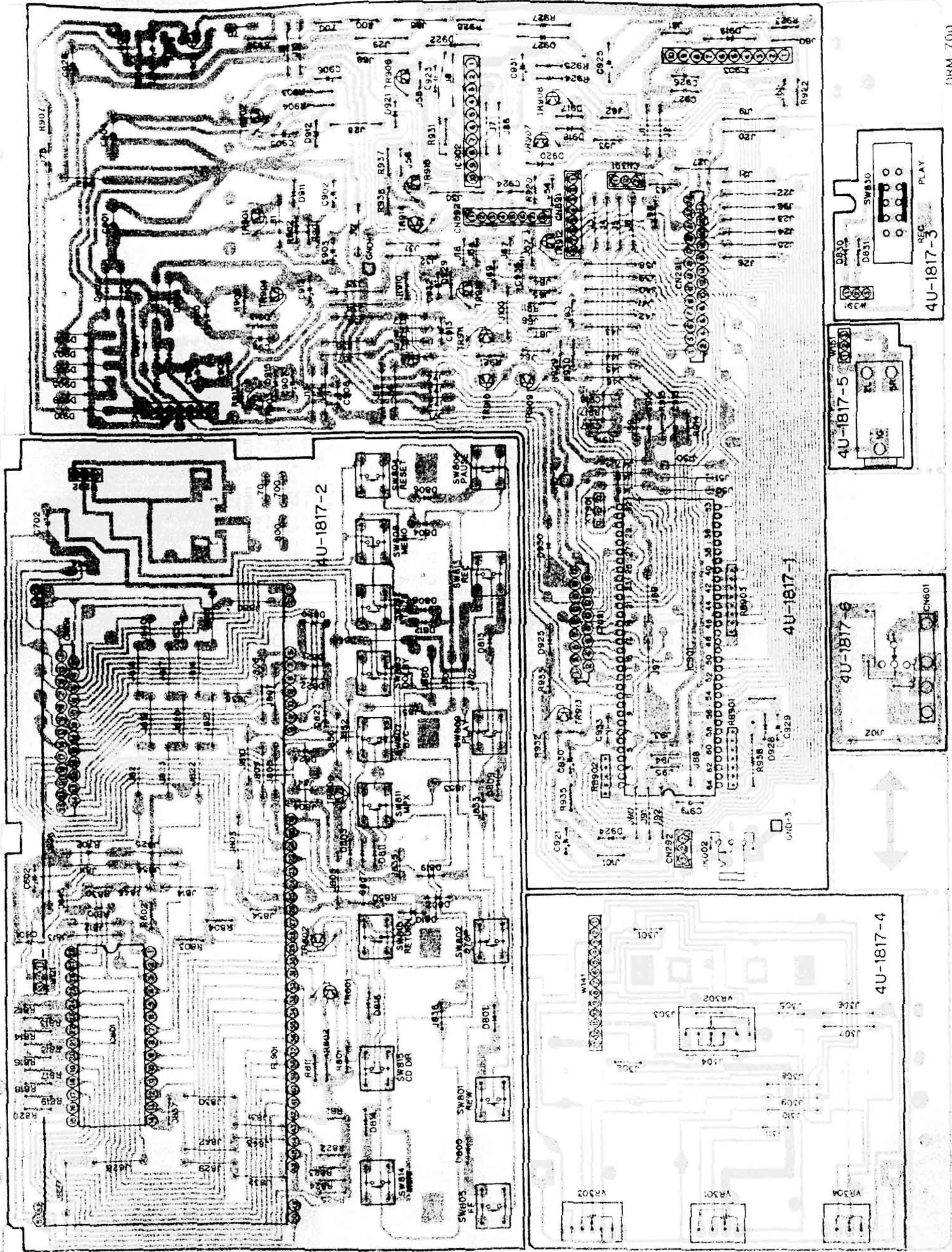


- WARNING:**
Parts marked with this symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.
- CAUTION:**
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 K Ohms, the unit is defective.
- WARNING — DO NOT** return the unit to the customer until the problem is located and corrected.

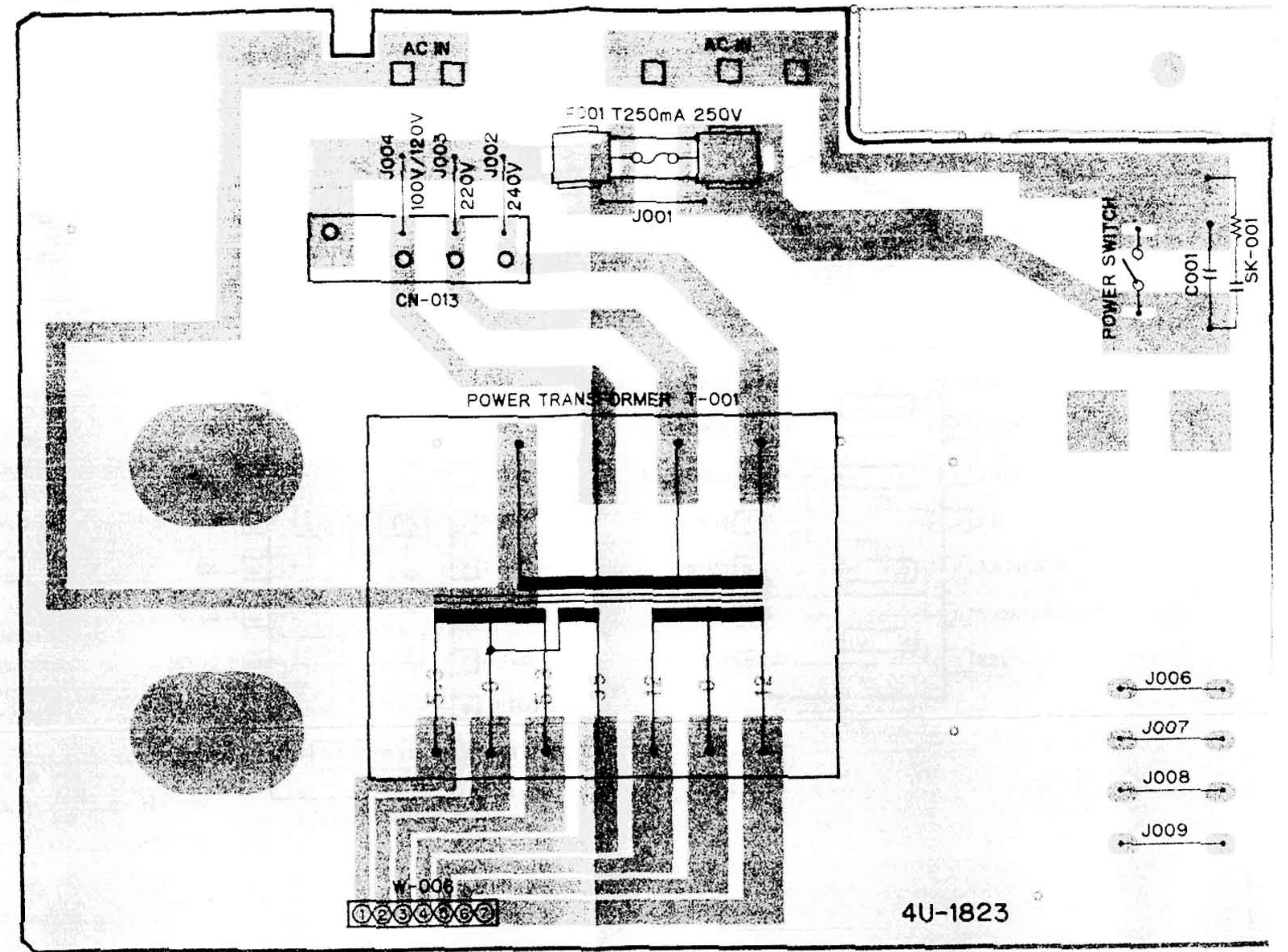


P.W. BOARD

4U-1817

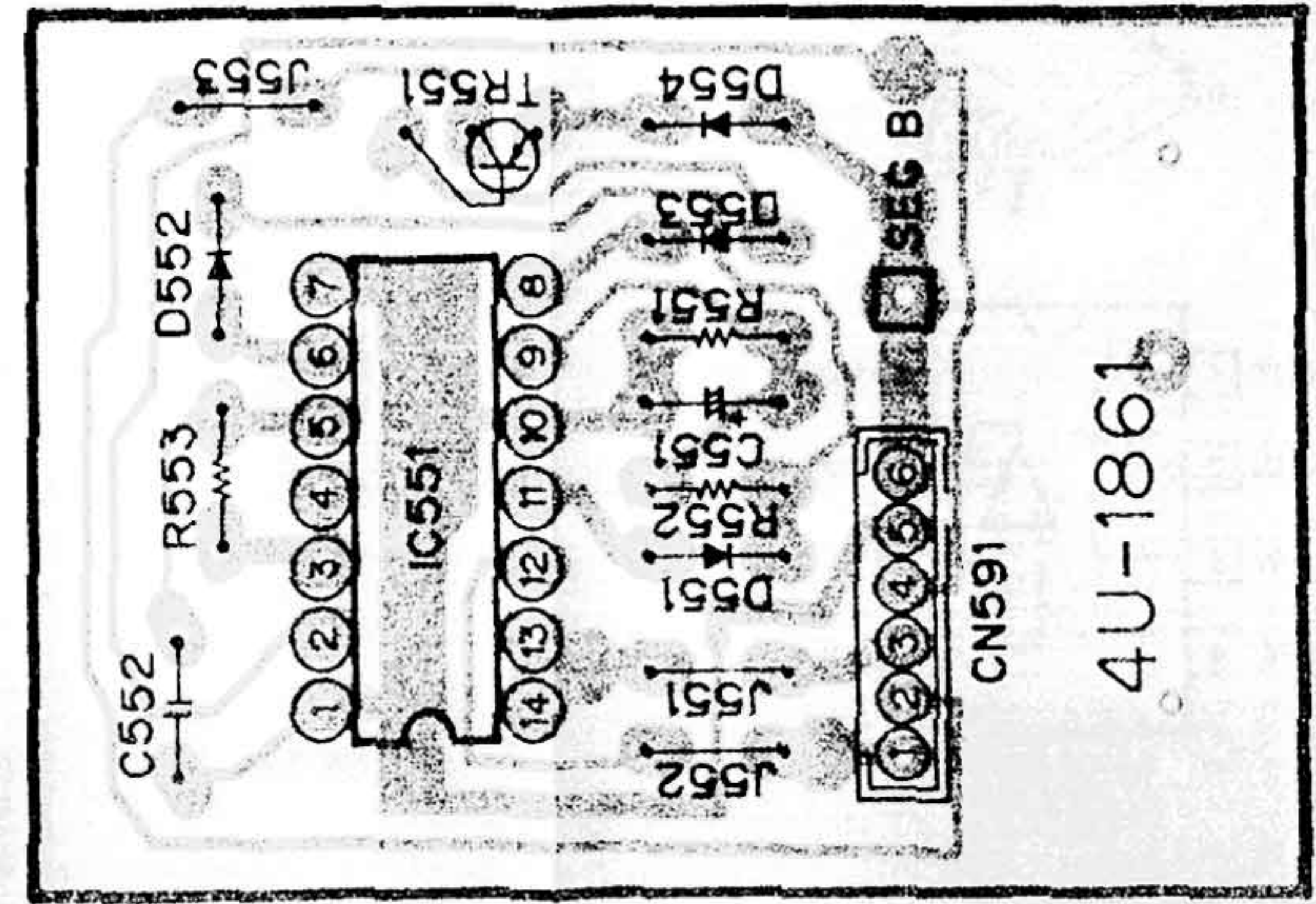


4U-1823

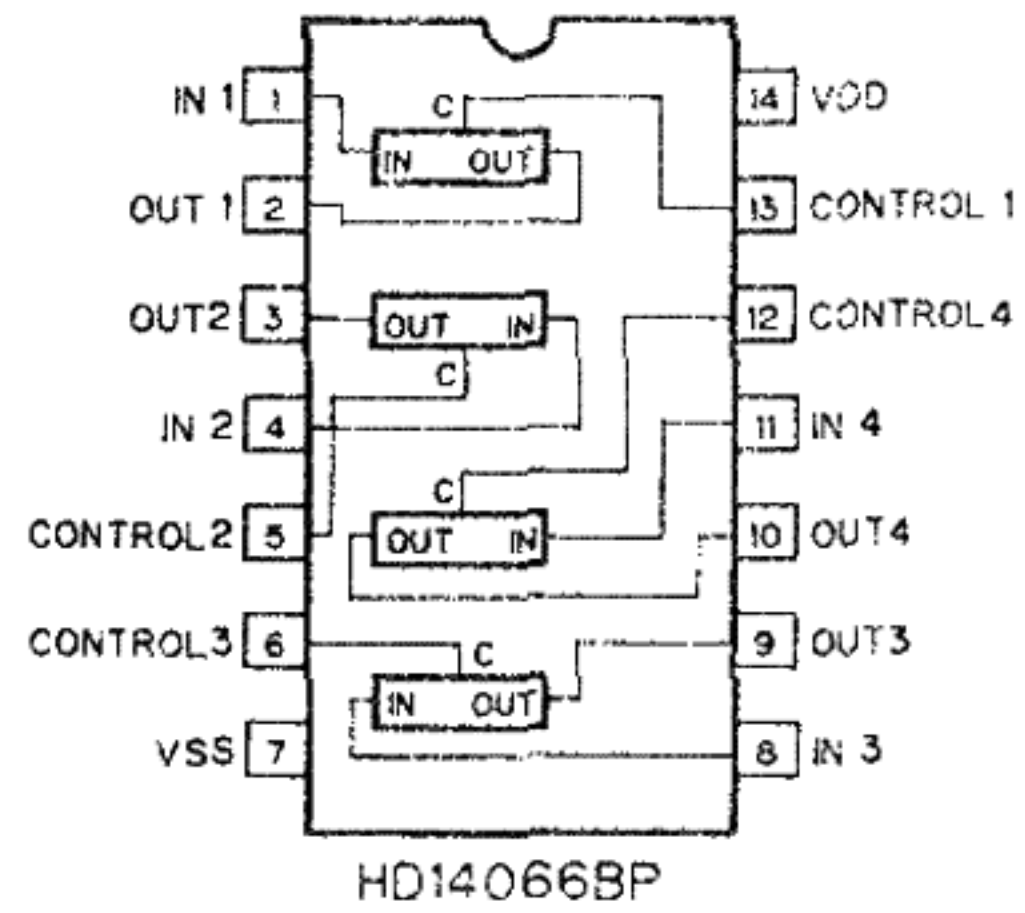
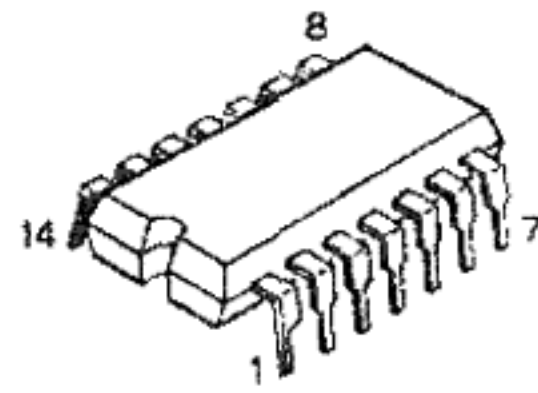


- J006
- J007
- J008
- J009

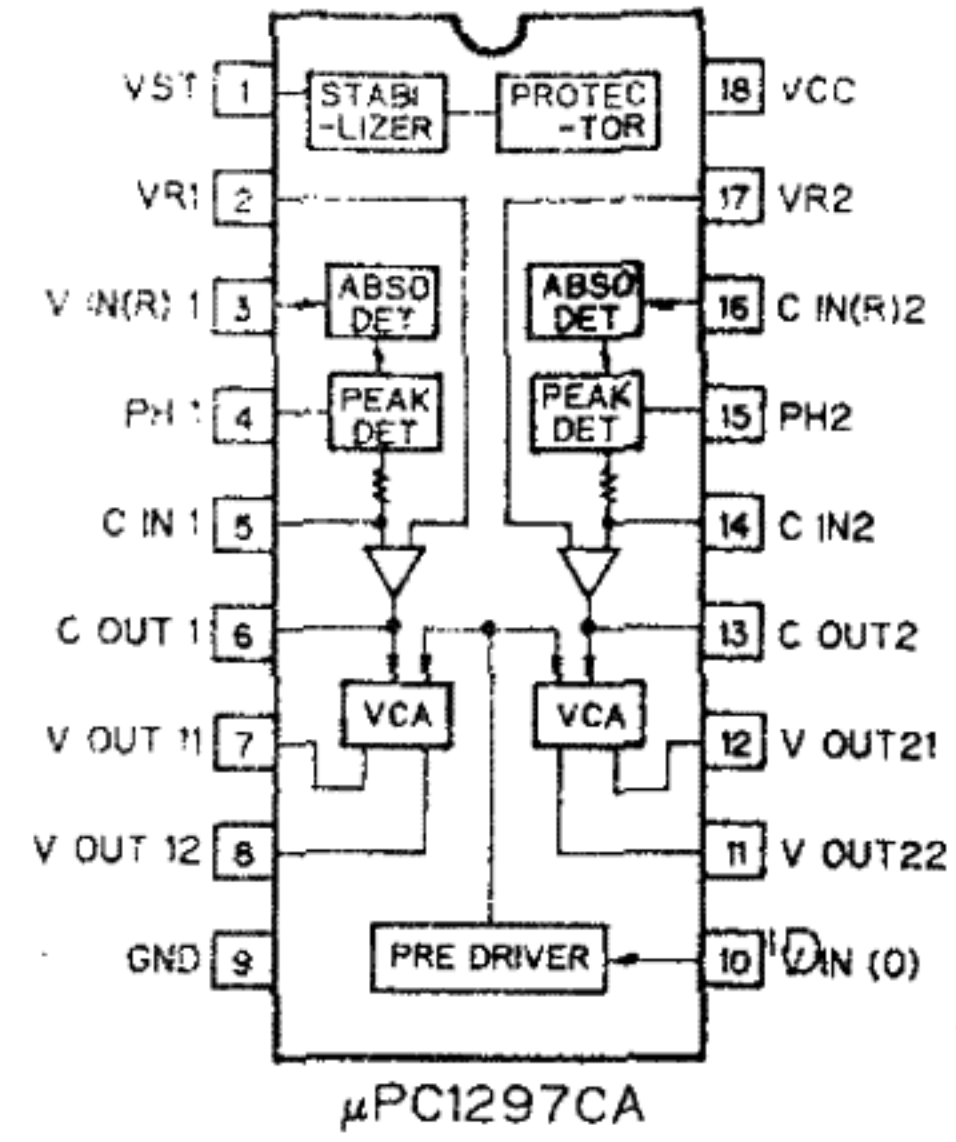
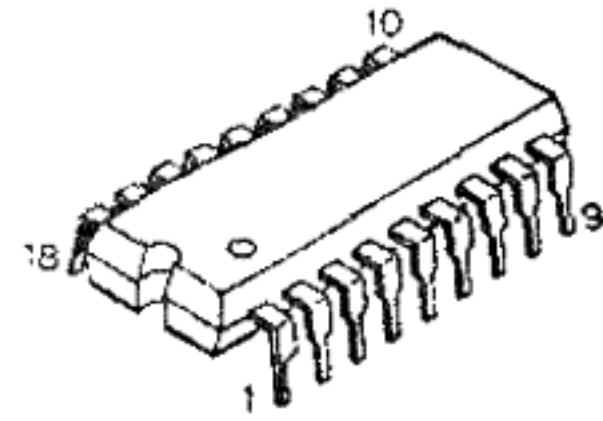
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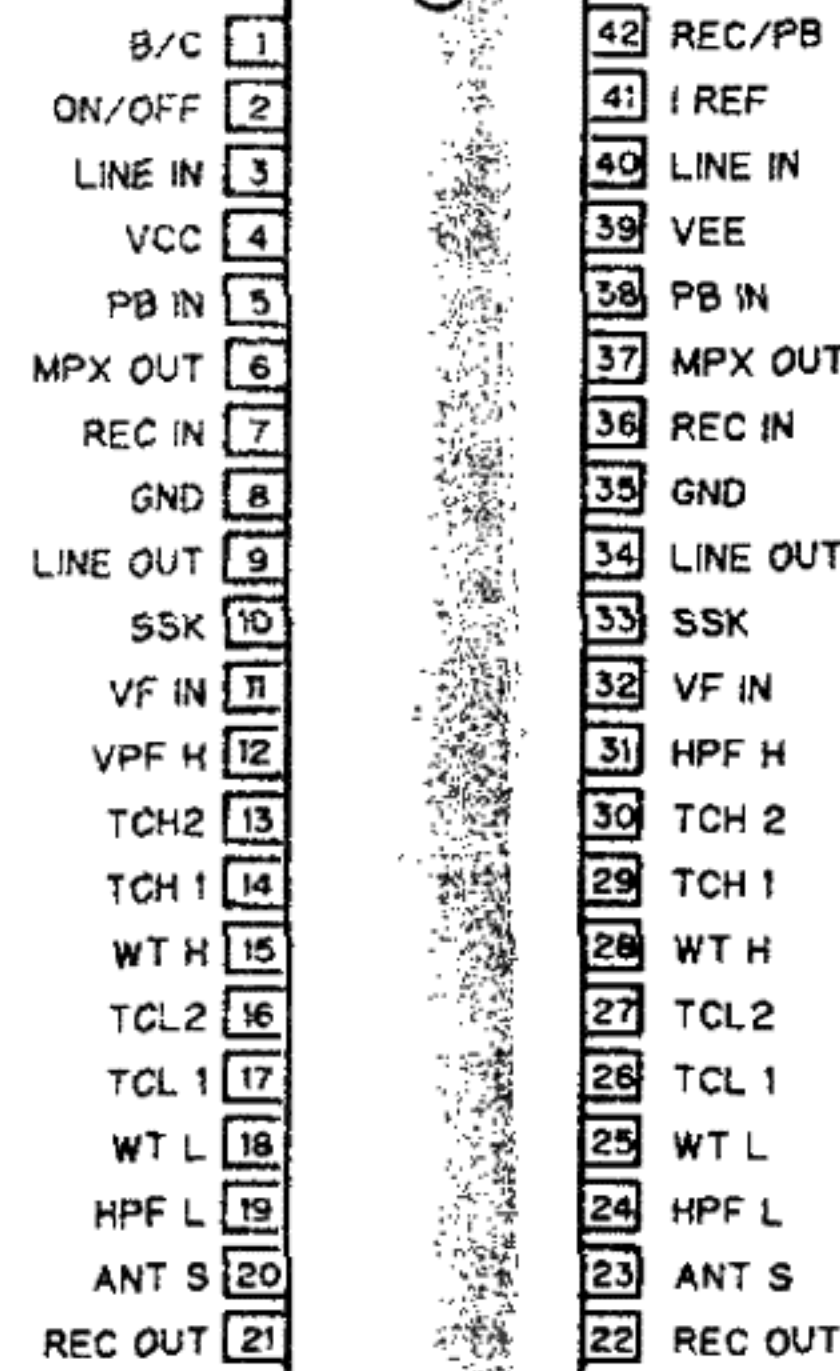
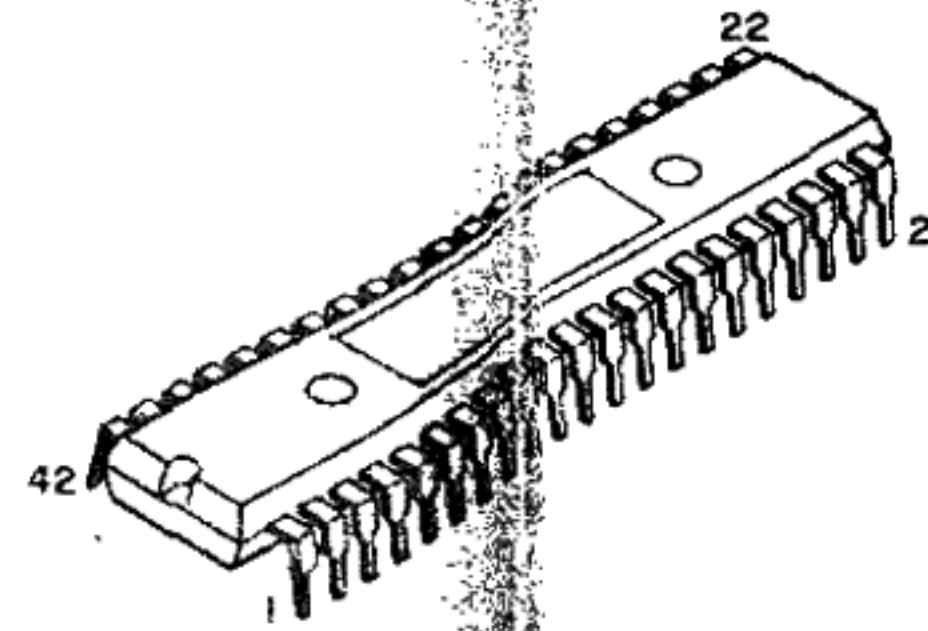
IC



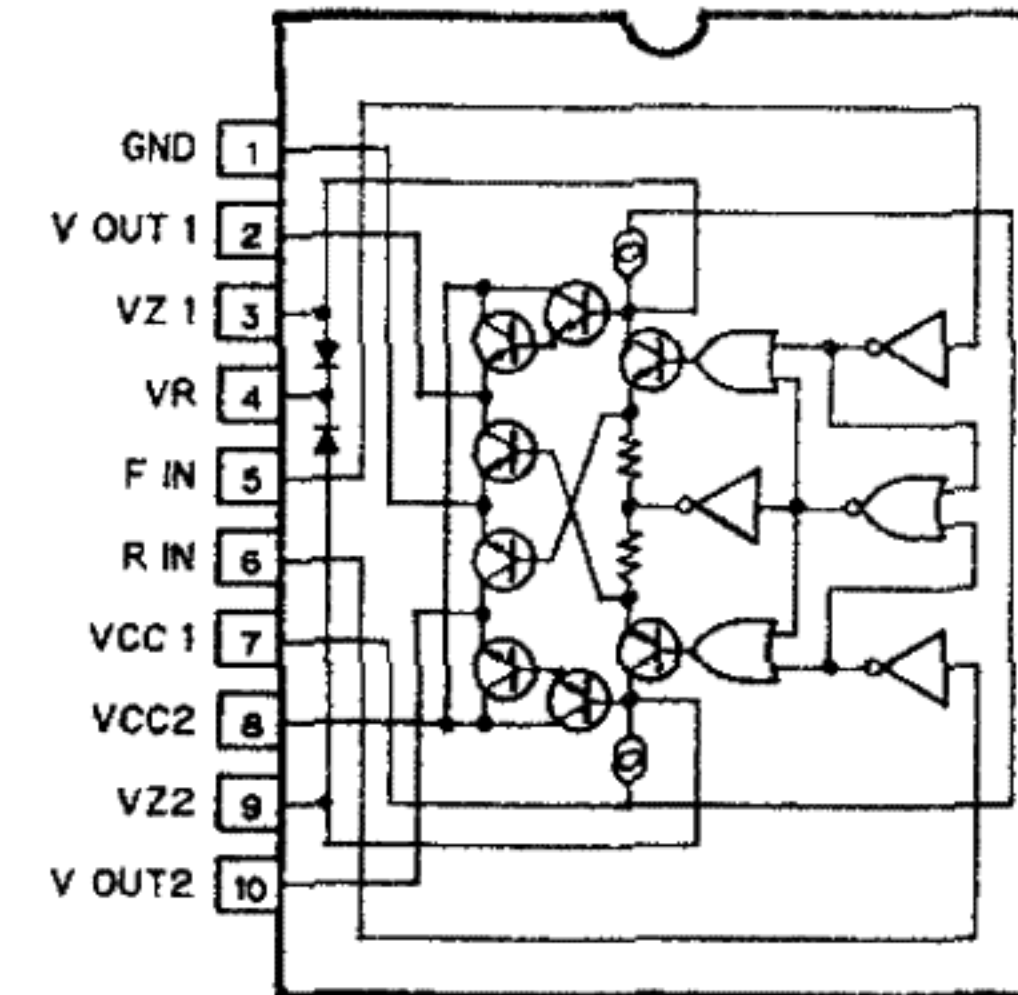
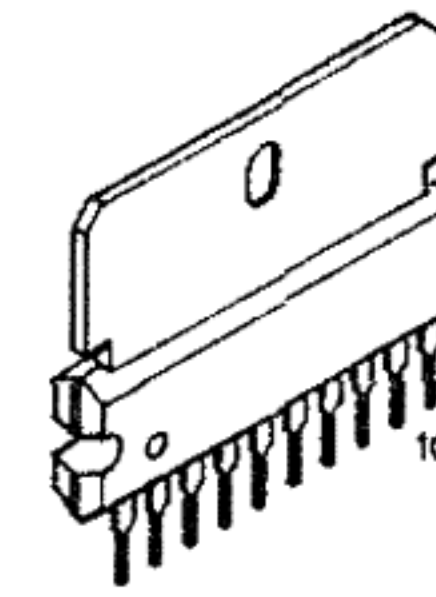
HD14066BP



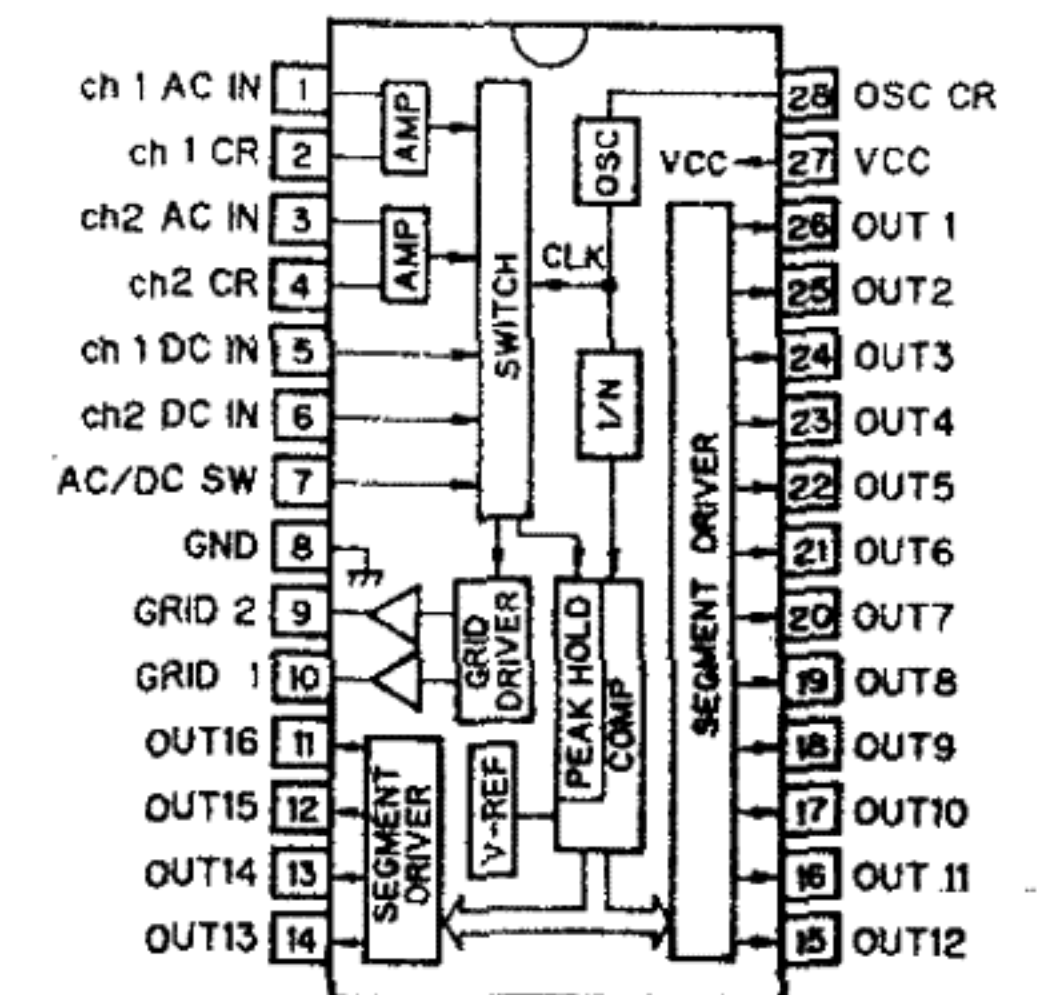
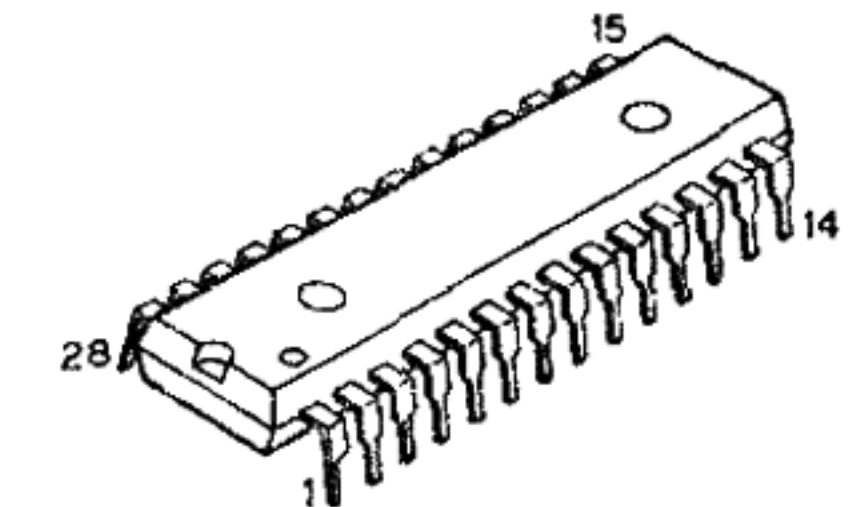
μPC1297CA



CX2015

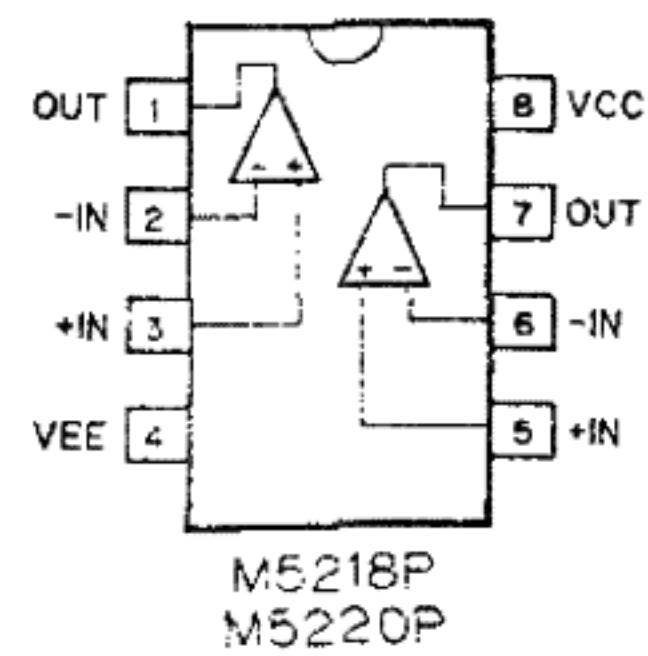
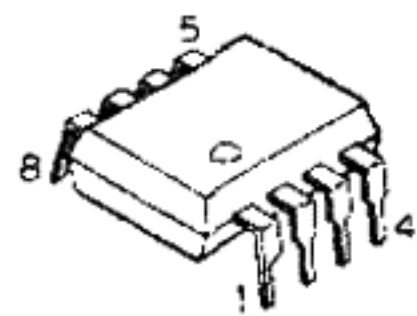


BA6109



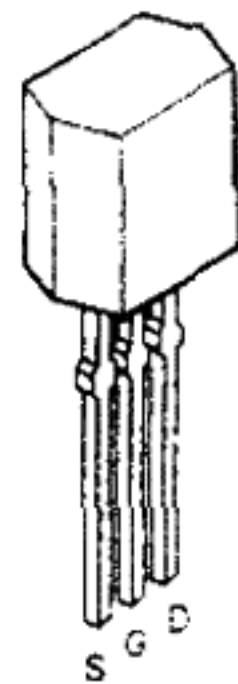
BA6800A

IC

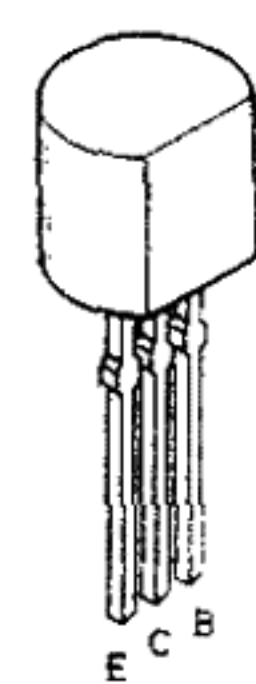


M5218P
M5220P

Transistors



2SK381



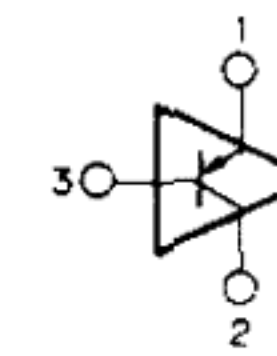
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2SC174C
2SC2603



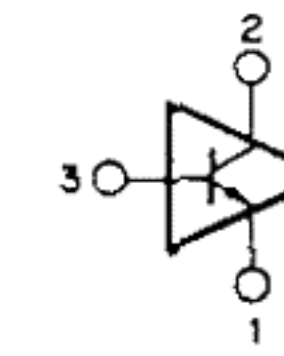
2SB562



2SB794
2SD985

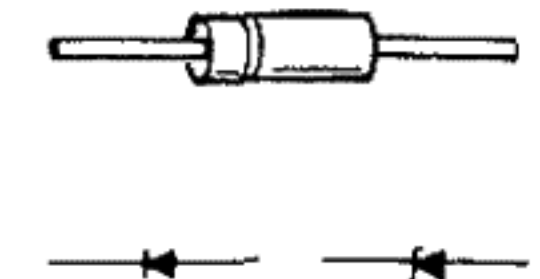


DTA124XS
DTA143ES
DTA143XS
DTA144ES



DTC124ES
DTC124XS
DTC143XS
DTC144ES

Diodes



1SR35
1SS270A

HZ4A-1
HZ6C-3
HZ7C-2
HZ9C-1
HZ9C-2
HZ30-2