DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DRS-640

STEREO CASSETTE TAPE DECK

— TABLE OF CONTENTS —

NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:

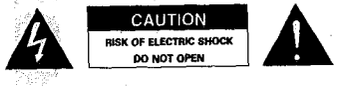
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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 it from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the top cover. If problems occur, contact your DENON DEALER.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside the cassette tape 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. DRS-640 Serial No. _____



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

- **FOR U.S.A. & CANADA MODEL ONLY**

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

- **POUR LES MODELES AMERICAINS ET CANADIENS UNIQUEMENT**

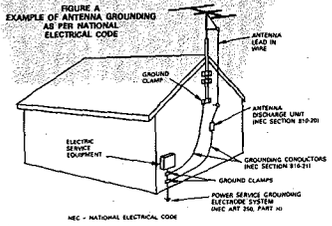
ATTENTION
POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

SAFETY INSTRUCTIONS

1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

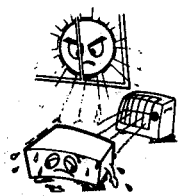
6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.



12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
14. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
15. Power Lines – An outdoor antenna should be located away from power lines.
16. Outdoor Antenna Grounding – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
17. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
18. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
19. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
20. Servicing – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

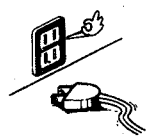
NOTE ON USE/OBSERVATIONS RELATIVES A L'UTILISATION/NOTAS SOBRE EL USO



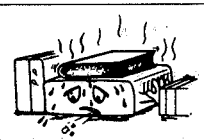
- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack.
- Eviter des températures élevées
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.
- Evite altas temperaturas
  Permite la suficiente dispersión del calor cuando está instalado en la consola.

- Handle the power cord carefully.
  Hold the plug when unplugging the cord.
- Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.
- Maneje el cordón de energía con cuidado.
  Sostenga el enchufe cuando desconecte el cordón de energía.

- Keep the set free from moisture, water, and dust.
- Protéger l'appareil contre l'humidité, l'eau et la poussière.
- Mantenga el equipo libre de humedad, agua y polvo.

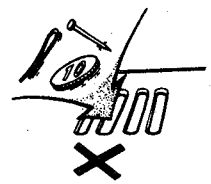


- Unplug the power cord when not using the set for long periods of time.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
- Desconecte el cordón de energía cuando no utilice el equipo por mucho tiempo.

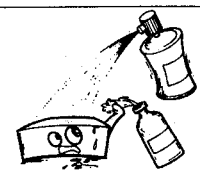


*(For sets with ventilation holes)

- Do not obstruct the ventilation holes.
- Ne pas obstruer les trous d'aération.
- No obstruya los orificios de ventilación.



- Do not let foreign objects in the set.
- Ne pas laisser des objets étrangers dans l'appareil.
- No deje objetos extraños dentro del equipo.



- Do not let insecticides, benzene, and thinner come in contact with the set.
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.
- No permita el contacto de insecticidas, gasolina y diluyentes con el equipo.

- Never disassemble or modify the set in any way.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
- Nunca desarme o modifique el equipo de ninguna manera.

Thank you very much for purchasing the DENON component stereo cassette tape deck.
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.

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Please check to make sure the following items are included with the main unit in the carton:

(1) Operating Instructions 1
(2) Connection Cords 2
(3) Mini-Plug Cable 1

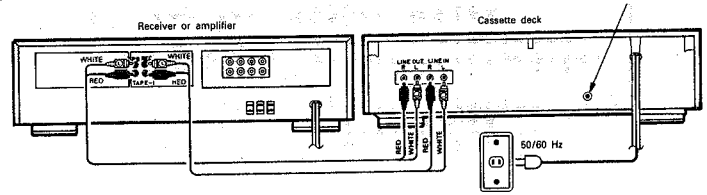
FEATURES

- Computer controlled mechanism
- Non-Slip Reel Drive for Stabilizing Tape Tension
- Dual Power Supply
- Dolby HX-Pro Headroom Extension System
- Dolby B & C Noise Reduction Systems
- Manual Bias Adjustment Control
- Computing Linear Tape Counter with 4-Digit Readout and Memory Stop
- Cassette Stabilizer
- Remaining Tape Counter
- Music Search System
- REC Return System
- FL Peak Level Meters
- Auto Tape Selector
- Synchronized Recording Function
- Optional Remote Control System

CONNECTION

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

This jack is for the synchronized recording function only.
Do not plug in microphones, headphones nor other plugs.



■ Connecting the Deck to an Amplifier
- Before connecting the deck to your amplifier, please review your amplifier's instruction manual.
- Use the white plugs for the left channel and red plugs for the right channel.

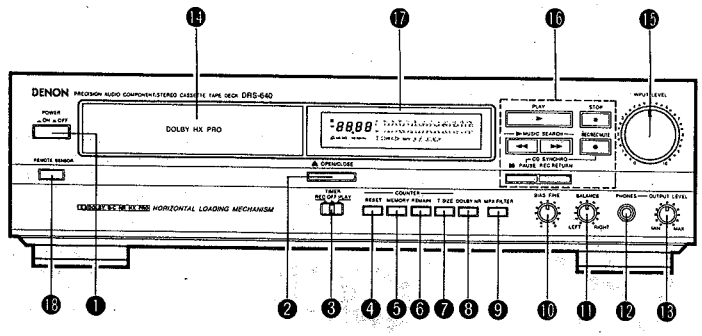
■ Tape Dubbing
- Many stereo amplifiers and receivers have tape dubbing circuitry so that tape duplication can be performed between two or more tape decks. Review your amplifier's instruction manual for a full explanation of this mode of operation.

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

■ Installation Precautions
If the deck is placed near an amplifier or tuner, noise (induced hum) or beat interference may result, especially during FM or AM reception. If this occurs, place the deck further away from other components or reorient its position.

■ Systems remote control
Each of "PLAY, FF, REW, STOP, REC/REC MUTE and REC PAUSE" functions can be remote controlled with the wireless handset of the receiver (DRA series receivers for !S).

NAMES AND FUNCTIONS OF PARTS



❶ Power Switch (POWER)
Press once to turn the power to deck on, and once more to turn the power off.
The deck remains in a stand-by (non-operative) mode for approximately 2 seconds after it is switched on.

❷ Open/Close Button (⏏ OPEN CLOSE)
Press this button to open and close the cassette tray.
The cassette tray can be closed even if the deck is in the standby mode.

❸ Timer Switch (TIMER)
This switch is provided for use with an optional audio timer for unattended recording or morning-alarm playback.
For non-timer operation, this switch should be set in the "OFF" position. See page 13.

❹ Counter Reset Button (RESET)
Press this button to reset the tape counter to zero.

❺ Counter Memory Button (MEMORY)
During rewinding operations, the tape will stop at the "00.00" counter point automatically when this button is pressed in.

❻ Remain Button (REMAIN)
Pressing this button will set Remaining Counter Mode.

❼ Tape Size Button (T. SIZE)
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 →

❽ Dolby NR Button (DOLBY NR)
To record or playback tapes with Dolby B- or C-type noise reduction, set this switch to "B" or "C". Turn it off when not using the Dolby NR system.

❾ MPX Filter Button (MPX FILTER)
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.

❿ Bias Fine Control (BIAS FINE)
(For Normal, CrO_2 and Metal tape)
Use this control to fine-adjust the bias. Standard bias is obtained at the center click-stop position. See page 10.

⓫ Balance Control (BALANCE)
This knob adjusts the recording level balance between the left and right channels. Turn it counter-clockwise to reduce the recording level for the right channel and clockwise to reduce the level for the left channel.
Normally the knob should be set to the center click-stop position.

⓬ Headphones Jack (PHONES)
For private music enjoyment without disturbing others, or for monitoring a recording, a headphones set may be connected to this jack. Use headphones with an impedance rating of 8 to 1200 ohms.

⓭ Output Level Control (OUTPUT LEVEL)
This control adjusts playback, recording monitor, and headphones output levels for the both channels simultaneously.

⓮ Cassette Tray
The cassette tray opens forward when the OPEN/CLOSE button is pressed.
Place the cassette tape with the exposed side facing away from you.
To close the cassette tray, press the OPEN/CLOSE button again.

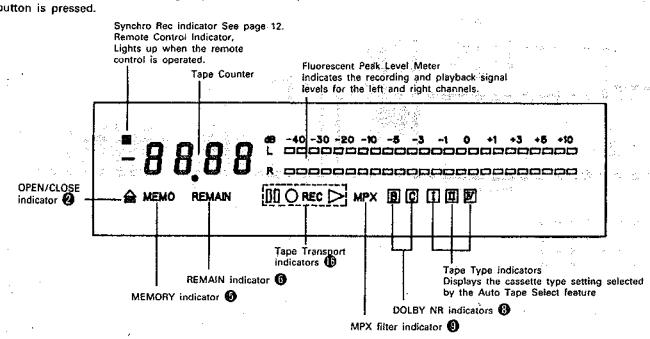
⓯ Input Level Control (INPUT LEVEL)
This knob adjusts the recording input level. It affects the level in both channels. See page 10.

⓰ Remote Control Sensor (REMOTE SENSOR)
This sensor receiver the infrared light transmitted from the wireless remote control unit.
For remote control point the wireless remote control unit at the sensor.

⓰ Tape Transport Buttons

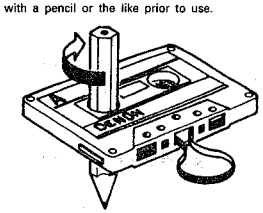
▶	Play Button	Press to playback tape.
■	Stop Button	Press to stop the tape in any mode.
◀◀	REW Button	Press for fast rewind.
▶▶	FF Button	Press for fast forwarding.
●	REC/REC MUTE Button	Press the REC/REC MUTE (●) button and PLAY buttons simultaneously to start recording. If only the REC/REC MUTE (●) button is pressed, the deck enters the Recording Pause mode. Pressing this button in the Recording Pause mode will start Auto Rec Mute, and a 5-second silent space is recorded onto the tape. See page 10.
II	Pause Button	Press this button to enter the recording pause mode from the recording or recording mute mode. Press this button to enter the playback pause mode from playback mode.
REC RETURN	REC Return Button	When this button is pressed during recording, the tape is rewound to the point at which recording started. Upon reaching this point, the recording standby mode (REC Pause) is engaged. See page 9.

⓱ Display
Indicators with an encircled number light up when the corresponding button is pressed.



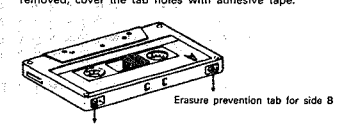
CASSETTE TAPES

■ Handling Precautions
- C-120 Cassettes
  C-120 cassette tapes 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 sets or speakers)
- To eliminate tape slack, store your cassettes in cassette cases with hub stops

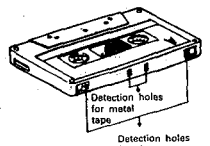
■ Accidental Erasure Prevention
- All cassettes have erasure prevention tabs for each side. To protect valuable recordings from accidental or inadvertent erasure, remove the tab for the appropriate side with a screwdriver or another tool.
- To record on a tape whose erasure prevention tabs have been removed, cover the tab holes with adhesive tape.



AUTO TAPE SELECT FEATURE

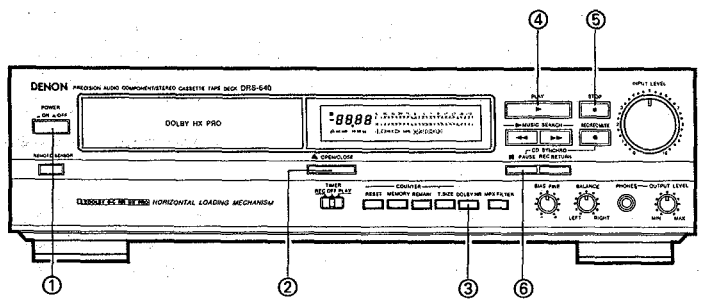
This Stereo Cassette Deck contains an Auto Tape Select feature which automatically selects the optimum bias and equalization for the tape in use. This is accomplished by detection of tape type detection holes in the cassette housing.

- If a tape without tape type detection holes is used, the deck will automatically adjust itself for normal tapes.



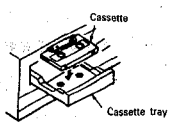
PLAYBACK

- Switch on your amplifier or receiver.
- Set the Tape Monitor switch on your amplifier or receiver to the TAPE position.



① Press the POWER switch to the ON (▬) position.

② Press the OPEN/CLOSE button and set the cassette in the cassette tray.



③ When listening to a tape that has been recorded with Dolby noise reduction, set the DOLBY NR button to match the system used at the time of recording.
Pressing the DOLBY NR button selects Dolby noise reduction type B (and the B indicator lights up).
One more press of the DOLBY NR button selects Dolby noise reduction type C (and the C indicator lights up).
Pressing the DOLBY NR button once again switches Dolby noise reduction off.

Dolby NR type B → Dolby NR type C → Dolby NR off →

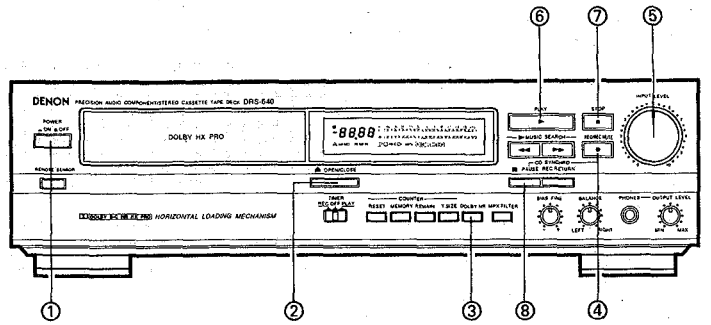
④ Press the PLAY button to begin playback. The PLAY (▶) indicator will light during playback.

⑤ Press the STOP (■) button to stop the playback.

⑥ To pause the playback, press the PAUSE (⏸) button.
Press the PLAY button to resume playback.
- If different types of Dolby noise reduction are used for record and playback, playback response will be adversely effected.
- If the PLAY, ▶▶ (FF) or ◀◀ (REW) PAUSE, REC/REC MUTE button is pressed while the cassette tray is open, the cassette tray will close and the operation will start.

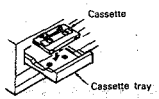
RECORDING

- Switch on your amplifier or receiver and the source component.
- Set the Tape Monitor switch on your amplifier or receiver to the SOURCE position.



① Press the POWER switch to the ON (▬) position.

② Press the OPEN/CLOSE button and set the cassette in the cassette tray.



(Check that the accidental erasure prevention tabs are intact.)

③ Press the DOLBY NR button and select the Dolby NR type that suits the recording.

Recording with Dolby NR type B →
(The B indicator will light up.)
↓
Recording with Dolby NR type C
(The C indicator will light up.)
↓
Recording without Dolby NR

④ Press the REC/REC MUTE (●) button to set the recording pause mode. The ●○ REC indicator will light up.

⑤ Adjust the recording level with the INPUT LEVEL control while watching the Peak Level Meter, than adjust the balance of the left and right channels with the BALANCE control.

⑥ Press the PLAY button to start the recording.
The PLAY (▶) and the ○ REC indicator will light during recording.

⑦ To stop recording, press the STOP (■) button.

⑧ To pause the recording, press the PAUSE (⏸) button. Press the PLAY button to resume recording.

Caution:
- Be careful not to erase important recordings by mistake. Inadvertent start of recording will happen in the following cases:
  1. If the PLAY button is pressed while the ○ REC indicator lights, recording starts.
  2. If the PLAY (▶) and REC/REC MUTE (●) button are pressed at the same time, recording starts.

  The best way to avoid accidental erasure is to break off the two erasure prevention tabs on the cassette housing.

REC RETURN Button
Use of the recording return function is convenient when recording or when cancelling a recording. When pressed during recording, the tape is rewound to the position where recording started, and the deck will enter the recording standby mode.

Caution:
The return position arrived at with the recording return function will be where rewinding has continued about 2 seconds beyond the recording start position. Caution is in order here since it is possible that the end of the previous selection might be erased on tapes that have been recorded without at least 5 seconds of blank spaces between the songs.

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 reproduceable state.

1. For cueing the next melody while the present melody is being reproduced:
   At PLAY mode, depress the PLAY button and the FF button 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.
2. For hearing again the melody being reproduced:
   At PLAY mode, depress the PLAY button and the REW button 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 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.

PROPER RECORDING LEVEL

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

Guideline for maximum recording level

TYPE I (Normal)	+1 dB level on peaks
TYPE II (CrO_2)	+3 dB level on peaks
TYPE IV (Metal)	+5 dB level on peaks

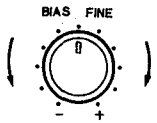
Note: The optimum recording level differs depending on the program source and the type of tape used.

Meter reading differences between Left and Right channels

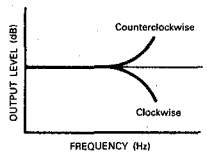
The left and right channel readings of the Peak Level Meter can differ due to variations in the input signal levels. In such cases, use the BALANCE control to adjust the channel input balance until identical meter readings are obtained for both channels.

RECORDING BIAS ADJUSTMENT

For best recording results, monitoring during recording and comparing different recordings using your own judgement are essential.
The DRS-640 is equipped with a BIAS FINE control to assist you in setting the proper bias for different types and brands of tape. At the center stop-click position, the deck is set to the reference bias level for Normal, CrO_2 and Metal tape. If the resulting recording in this position has too much or too little high frequency content, adjusting the BIAS FINE control can be useful to achieve better results.



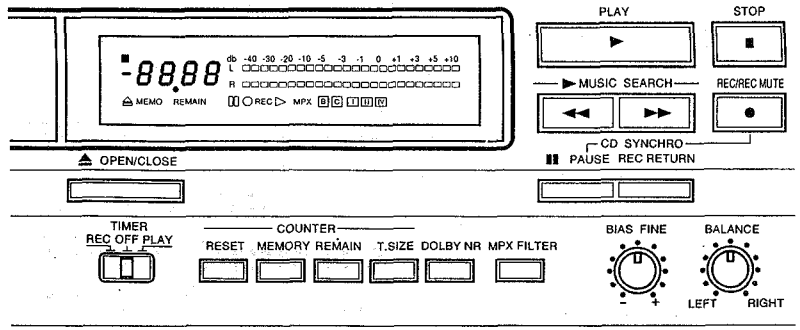
If the high frequencies (treble sounds) are to the boosted, turn the BIAS FINE control counter-clockwise to decrease the bias current. Turn the control clockwise to increase bias current.
By the use of this control, you can record tapes with a frequency response that will perfectly match your listening taste.



REC / REC MUTE AND PAUSE BUTTON

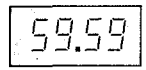
1. To record a 5-second blank section during recording:
   Press the REC/REC MUTE (●) button. A 5-second blank will be recorded and the deck will enter the recording standby mode.
2. To record a 5-second blank section during the recording standby mode:
   Press the REC/REC MUTE (●) button from the recording standby mode. A 5 second blank will be recorded and the deck will enter the recording standby mode again.
3. To cancel recording of blank space:
   Press the PAUSE (❚❚) button. Blank space recording will be cancelled and the deck enters the recording standby mode.
4. To extend the blank section with another 5 seconds or more:
   Simply press the REC/REC MUTE (●) button and the blank section will be increased with another 5 seconds.

TAPE COUNTER AND MEMORY STOP



1) Tape Counter Indicators

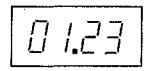
(1) Linear Tape Counter



- The tape transport during all modes is indicated in minutes and seconds.
- Press the RESET button to reset the Tape Counter to *"00.00"*.

Note: During recording or playback, the counter indication is useful for noting the location of existing selections or the position from where recording is to start.

(2) Remaining Tape Counter



- The remaining time until the end of the tape is displayed.
- The seconds are not displayed when the remaining time is still more than 8 minutes.

- When playback or recording is started, "-- . --" will flash for about 10 seconds.
- The time display does not appear during fast forward winidng (FF) or rewinding (REW) of the tape.

CAUTION

The linear tape counter and remaining tape counter of this unit are set in accordance with the selected tape size C-90 C-75 C-60 or C-100. When using a tape of a special size, select the TAPE SIZE which is nearest to that of the used tape. (The tape counter error will than be smaller.) Note also that the linear tape counter and remaining tape counter do not work as accurately as a clock. Samll deviations may occur because the thickness of the tape differs depending on the type (position, tape length) of the used cassette. Slight errors may also be caused by the difference between cassettes with a large hub and cassettes with a small hub.

2) Operation of MEMORY STOP

(1) 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 " *00.00* ". With the MEMORY STOP button in the "ON" position, the deck will stop at the " *00.00* " point (actually " *-00.02* " and " *00.00* ") during REWIND operations.

(2) The MEMORY indication will light when this function is activated.

(3) 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 " *-00.02* " and " *00.00* ".
- The MEMORY STOP is released by pressing the OPEN/CLOSE button.
- The MEMORY STOP does not operate during the REC RETURN.

3) Display Back-up

The functions DOLBY NR, MPX FILTER, TAPE SIZE and the counter content are protected by 24-hour memory back-up. After 24 hours, DOLBY NR and MPX FILTER are set to "OFF", TAPE SIZE is set to "C-90" and the counter content is reset to *"00.00"*.

DOLBY B AND 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 increases the level of low volume mid and high frequency signals 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 Dolby B NR except for the encoding/decoding response curves. The noise reduction effect obtained with Dolby C NR is up to 20 dB, compared to 10 dB with Dolby B NR. In addition, Dolby C NR uses an anti-saturation network and spectral skewing circuitry for a significant improvement in the dynamic range of 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, CrO_2 or Metal tapes.

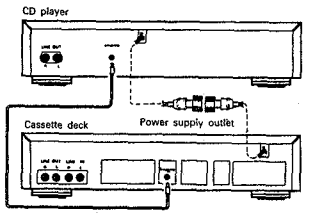
The Dolby HX-PRO headroom extension system functions during recording to lift up the saturation level in the treble range. Therefore, most of the treble range components distorted or lost during recording on conventional cassette decks are more faithfully recorded on the new DRS-640 cassette deck.

Features of the DOLBY HX-PRO headroom extension system

(1) Performance of Normal and CrO_2 tapes can be upgraded 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.

SYNCHRONIZED RECORDING FUNCTION

- Convenient synchronized recording can be performed when used in combination with a DENON CD player equipped for the synchronized recording function.
- SYNCHRO Jack Connection Connect the SYNCHRO Jack with a DENON CD player which is equipped with a SYNCHRO jack, then make a synchronized recording. Use the connection cord supplied with this cassette deck.
- Switch on your amplifier or receiver and the CD player.
- Set the tape Monitor switch on your amplifier or receiver to the source position.



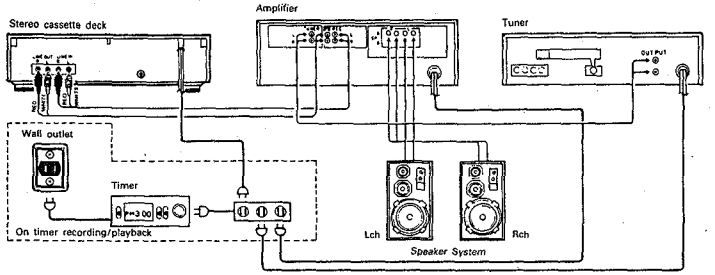
① Load the tape, the disc you want to record into the CD player.
② Following the recording instructions on page 9, set the Dolby NR mode, and the input level.
③ Set the CD player to the stop or pause mode.
④ Press the REC/REC MUTE (●) button and REC PAUSE (II) button *simultaneously*. The cassette deck and CD player are automatically set to the synchronized recording mode. The "■" indicator flashes on the cassette deck and the synchronized recording mode is indicated on the CD player.
(For details, refer to the CD player's operating instructions.)
⑤ To stop synchronized recording, press the stop button.
The synchronized recording mode is cancelled for both the cassette deck and CD player.
⑥ To stop synchronized recording temporarily, press the stop button on the CD player. A 5-second blank space is created on the tape, after which the recording pause mode is set. The "■" indicator flashes. To resume synchronized recording, press the PLAY button on the CD player.

Note:
- If synchronized recording is started when the CD player is in a mode other than the stop or pause mode or when no disc is set, the "■" indicator on the cassette deck flashes and the recording pause mode is set until synchronized recording is possible on the CD player.
- In the synchronized recording mode, only the STOP button will function.

Caution:
- Do not set the cassette deck to the synchronized recording mode when the CD player is in the play mode. Also, do not turn off the power of the cassette deck or the CD player during synchronized recording. Doing so can result in malfunction.
- During the editing operation, when using the editing functions on the CD player, be sure to select a tape with a sufficiently long recording time.
For the CD player's editing functions, refer to the CD player's operating instructions.

TIMER RECORDING / PLAYBACK

Timer recording/playback can be made using any audio timer available on the market.



● Timer recording procedure
1. Make sure the connections are correct, especially the power supply connections.
2. Turn "on" the power switch of each appliance.
3. Tune the desired station on the tuner.
4. Load the tape for recording. (Make sure the erase prevention tab is not broken off; if it is, cover the hole with plastic tape).
5. Set the Dolby NR switch to the appropriate position.
6. Make sure the monitor switch to the SOURCE position.
7. Adjust the recording input level.
8. Set the starting position of the tape.
9. Set the timer switch (TIMER) to the "rec" side.
10. Set the audio timer to the desired time. The audio timer will turn the power supply on at the desired time.

* With the above procedures, timer controlled recording can be made. When the preset time comes, the power is supplied and the FM broadcast can be recorded.

● Timer playback procedure
1. Make sure the connections are correct, especially the power supply connections.
2. Turn "on" the power switch of each appliance.
3. Load the pre-recorded tape to be played back.
4. Set the Dolby NR switches to the appropriate positions.
5. Set the monitor switch of the Amplifier to the TAPE position.
6. Press the PLAY (▶) button and playback the tape; adjust the playback level.
7. Set the timer switch (TIMER) to the "play" side.
8. Set the audio timer to the desired time. The audio timer will turn the power supply on at the desired time.

* With the above procedures, timer playback can be accomplished. When the preset time comes, the power is supplied and playback will start.

Note:
- Please read the operating instructions for the timer before use.
- If the timer recording or playback is not desired, be sure to switch the timer switch (TIMER) to "off".
- When using timers that allow several "on/off" operations, timer start functioning can continue an unlimited number of times until the tape in the machine is finished.

INPORTANT INFORMATION

Condensation
- Water droplets may form on the such important parts of the deck as the rotating parts or head when the deck is used in humid places or exposed to sudden temperature changes, such as if it is moved suddenly from a cold place to a warm place.
- The tape can be damaged or the deck may not operate if it is used under these conditions. If condensation forms, let the deck sit at room temperature for about one hour before using it.

Cleaning the Head
- A head cleaning cassette is needed to clean the recording/playback head on this deck.
- The quality of the playback or recording sound will be poor if the head is dirty. Always keep the head clean.
- Clean the head periodically, about every 10 hours of use, in order to take full advantage of the deck's performance and enjoy quality sound.

Demagnetizing the Head
- The head becomes magnetized after it are used for a long period of time or if it is exposed to magnetic forces. This results in noise and reduced treble.
- If the head is magnetized, use a cassette type head demagnetizer, available in stores, and demagnetize it.

TROUBLESHOOTING

Check the following before you draw the conclusion that your Stereo Cassette Deck is malfunctioning.

1. Are all the connections correct?
2. Are all system components being operated correctly in accordance with the operating instructions?
3. Are the speakers and amplifier/receiver functioning correctly?

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

Problem	Cause	Remedy
Tape does not run	• Power cord is disconnected. • Tape is loose. • Cassette is not loaded properly. • Defective cassette.	• Check power cord. • Tighten tape with a pencil, etc. • Load cassette properly. • Replace cassette.
Tape is not recorded when REC/REC MUTE (●) button is pressed.	• No cassette is loaded. • Erase prevention tabs are broken off.	• Load cassette. • Cover holes with adhesive tape.
Sound is warbled and distorted.	• Heads, capstan or pinch roller are dirty. • 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 pinch roller are dirty. • Heads are magnetized. • Recording input level is too low.	• Replace them. • Clean them. • Demagnetize heads. • Adjust recording input level.
High frequency range (treble) is emphasized.	• Dolby NR switch is set improperly.	• Set Dolby NR Switch properly.
High frequency range (treble) is lost.	• Heads are dirty. • Tape is worn.	• Clean them. • Replace tape.

SPECIFICATIONS

Type	Horizontal tape loading; 4-track 2-channel stereo cassette deck
Heads	Recording/Playback head × 1 Erase (Double gap ferrite head) × 1
Motors	Capstan (DC servo motor) × 1 Reel (DC motor) × 1 Loading (DC motor) × 1
Tape Speed	4.8 cm/sec.
Fast Forward, Rewind Time	Approx. 110 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 74 dB (CCIR/ARM)
Overall Frequency Response	25 ~ 18,000 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	0.06% wrms (JIS method), ±0.14% w. peak
Input	
LINE	80 mV (–20 dBm) input level at maximum Input impedance: 50 kohm unbalanced
Output	
LINE	775 mV (0 dB) output level at maximum (with 47 kohm load, recorded level of 200 pwb/mm)
PHONES	1.2 mW output level at maximum (optimum load impedance 8 ohm ~ 1.2 kohm)
Power Supply	Voltage is shown on rating label
Power Consumption	18 W
Dimensions	434 (W) × 122 (H) × 310 (D) mm (17-8/32" × 4-51/64" × 12-13/64")
Weight	4.4 kg

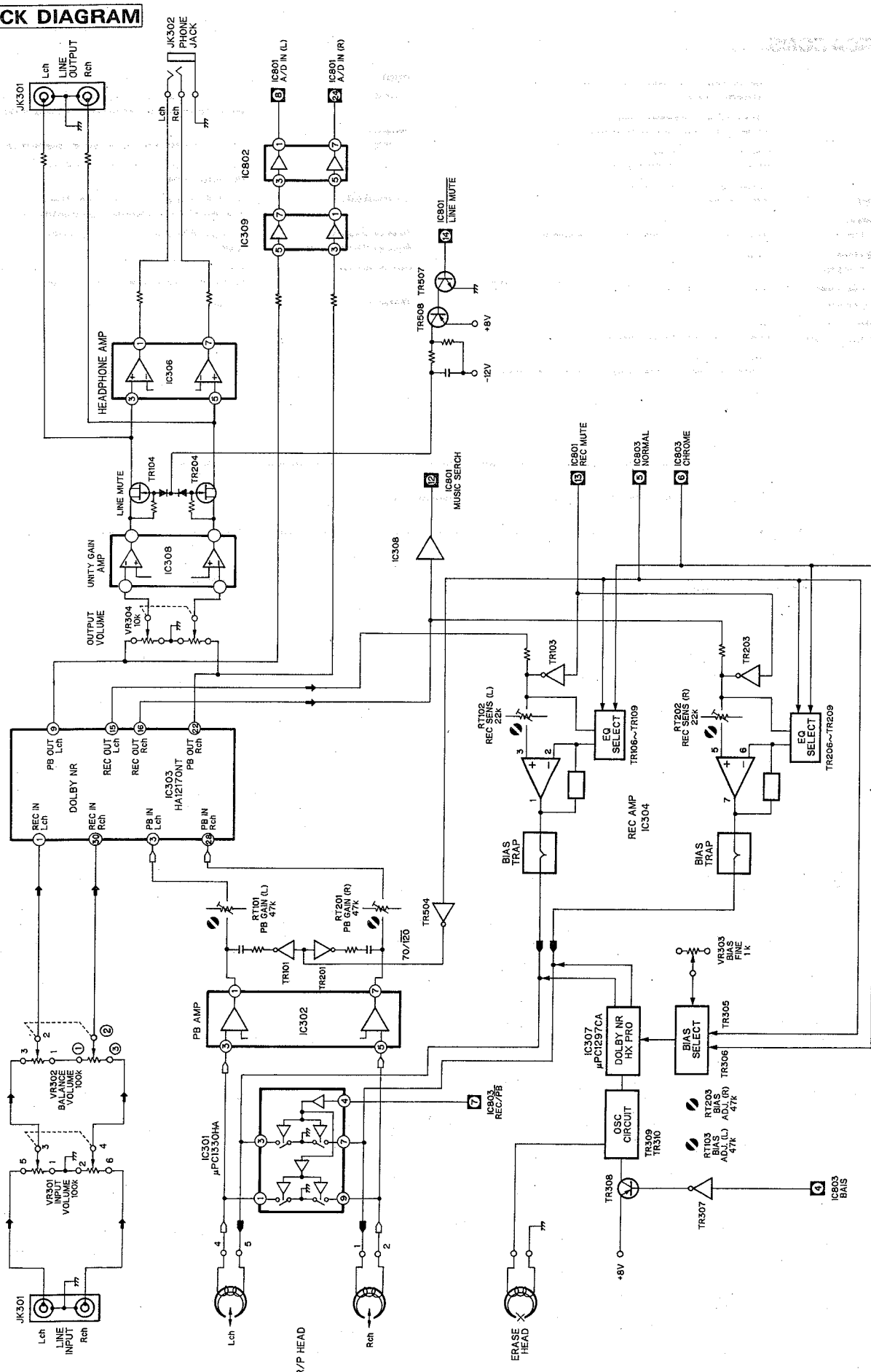
* Above specifications and design are subject to change without prior notice.

Best result will be obtained with use of DENON DX and HD Series Cassette tapes.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol DD and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

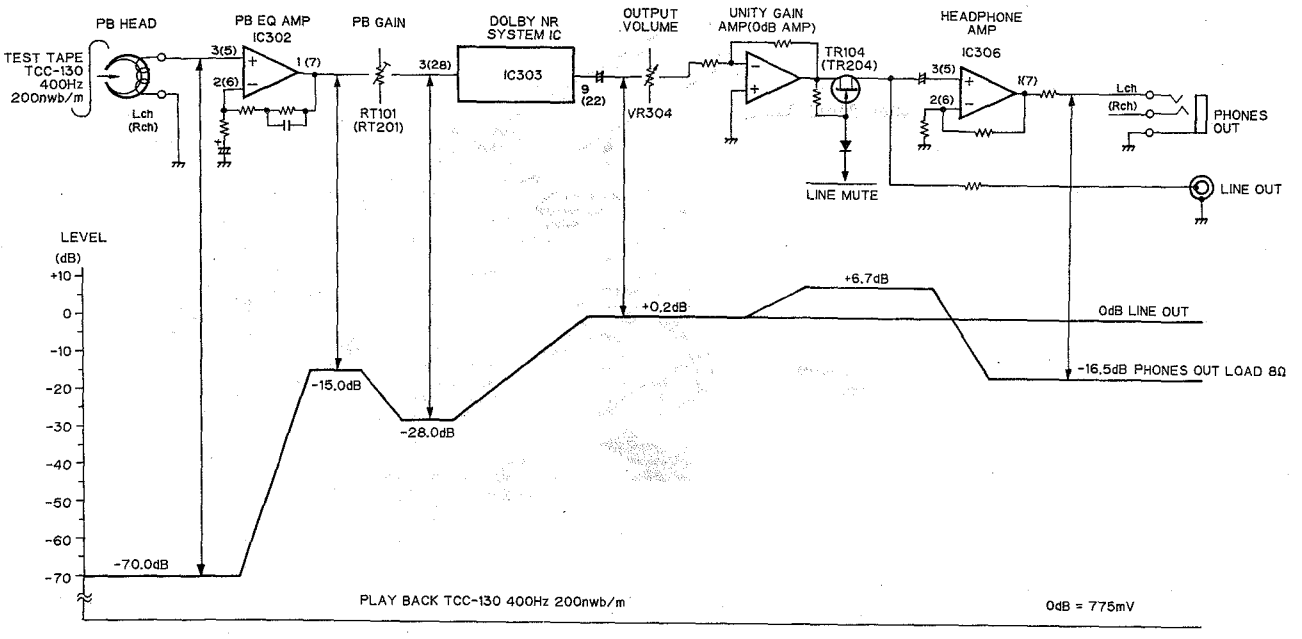
BLOCK DIAGRAM



LEVEL DIAGRAM

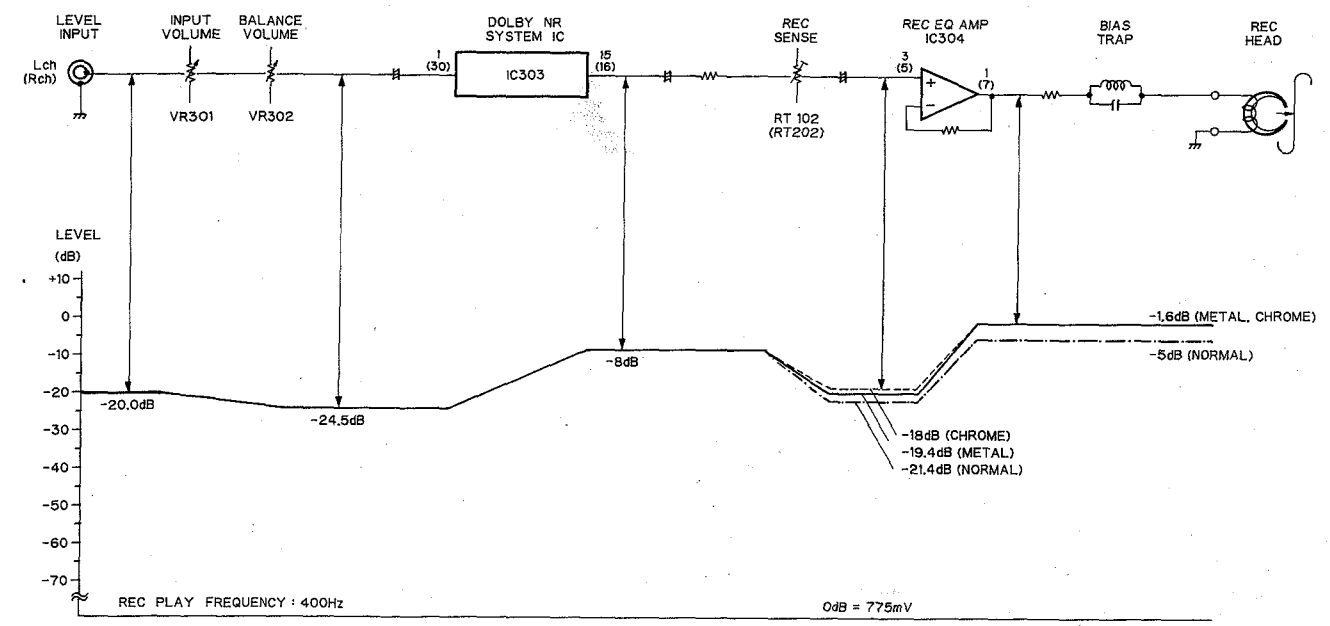
PLAY BACK SYSTEM

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



RECORDING SYSTEM

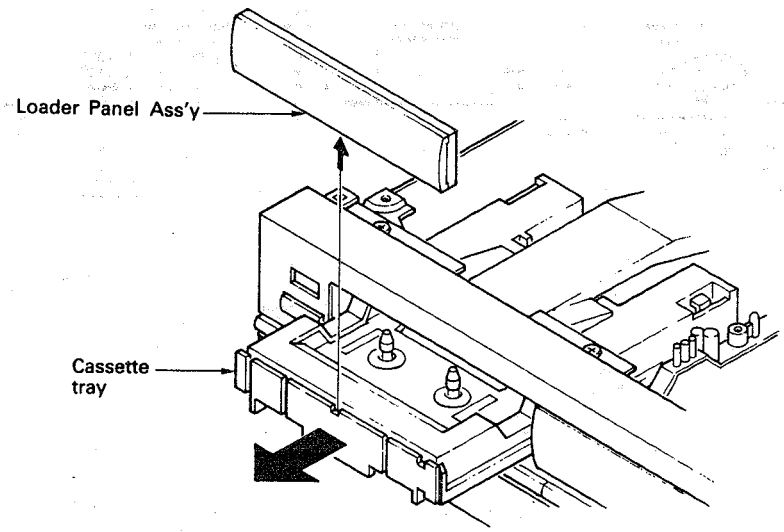
FREQUENCY
400 Hz



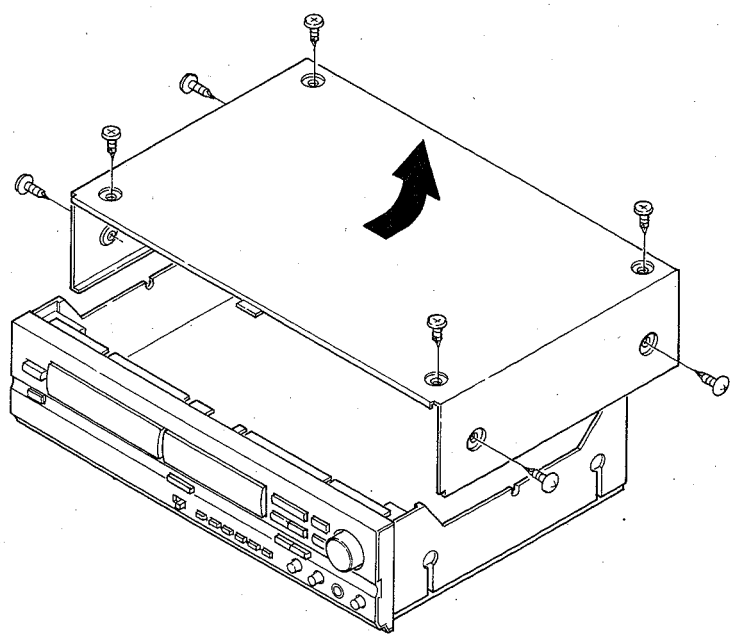
DISASSEMBLY INSTRUCTIONS

1. Removing the front panel Ass'y

1-1 Turn on the power and move the cassette tray out of the front of the set. Turn off the power and remove the loader panel from the front of the unit.



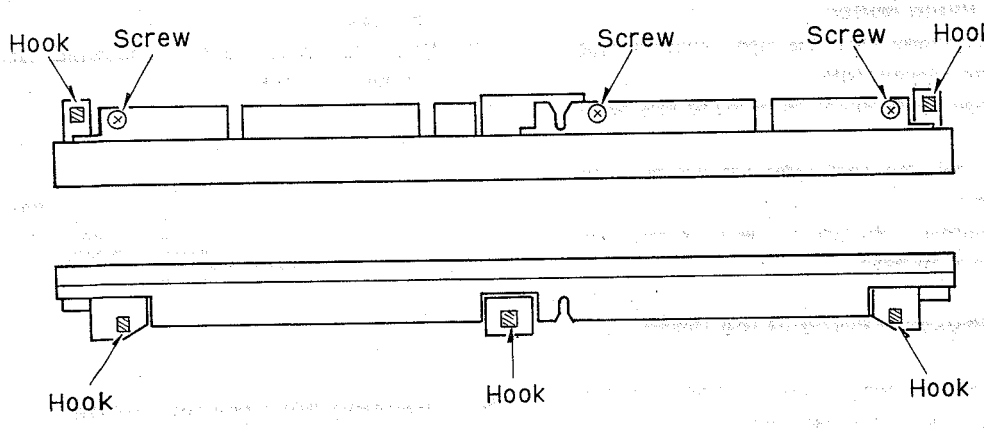
1-2 Remove the four screws (4 X 8CBTS(S)-B) from the side of the top cover, the four screws (3 X 8CBTS(S)-B) from the top of the top cover and one screw (3 X 8CBTS(S)-B) from the rear side. Raise the top cover and lift it towards the rear of the unit to detach it.



Disconnect lead connectors

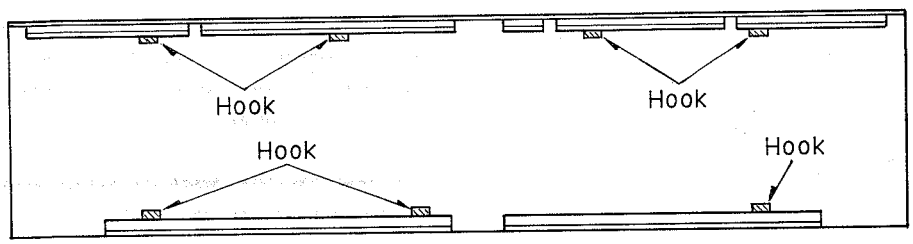
Meter circuit board
VR circuit board
{ W122 (25P) → CN122
  W121 (5P) → CN121 }
Audio circuit board

1-4 Pull the input knobs away from the front of the unit to remove them.
Remove the three screws (3 × 8CBTS(S)-B) from the upper section of the panel, three hooks from the bottom of the panel and three hooks from the top of the panel. Pull the front panel away from the unit to remove it.



2. Removing the front panel

Remove the seven hooks from the top section of the subpanel.
Raise the front panel to remove it from the main unit.



3. Remove the mecha. assembly (HM100D)

3-1 Disconnect lead connectors

Mecha. unit → CN141 (3P), CN142 (3P), CN143 (3P), CN144 (3P), CN151 (4P), CN152 (5P), CN153 (7P), CN301 (5P), CN302 (3P) → Audio circuit board

3-2 Remove the four mounting screws (3 × 8CBTS(S)-B) that secure the meche unit and then detach the mecha unit.

Note: When the loader panel and the four screws (3 × 8 CBTS (P)-B) are removed, the mechanism unit can be removed without removing the front assembly. To do so, first lift the back of the mechanism unit, then detach first the right front side then the left front side from the chassis.

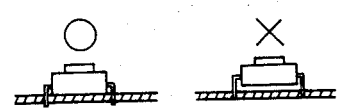
4. Remove the cassette mechanism

Remove the four mounting screws (3 × 10CBTS(P)-B) that secure the cassette mechanism and then detach the cassette mechanism.

5. Remove the meter circuit board

Pull the meter circuit board and remove it.

Note: When replacing the tact switch, check to make sure that it is not floating above the circuit board. If it is floating, the switch will be in the on condition when the set is assembled.



6. Remove the audio circuit board

6-1 Remove the conectors with lead wires which run from the audio circuit board and the connectors on top of the audio circuit board.

6-2 Remove the seven screws (3 × 8CBTS(S)-B) that secure the audio circuit board and the 4P pin jack mounting screw (3 × 10CBTS(P)-B) on the back panel. Remove the audio circuit board.

Note: The audio circuit board can be lifted with the power-turned on by doing only step 6-2.

7. Remove the power supply circuit board

Remove the five screws (3 × 8CBTS(S)-B) that secure the power supply circuit board, remove the bushing from the chassis and then remove the power supply circuit board.

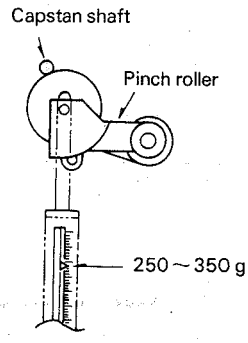
ADJUSTING AND CHECKING THE MECHANISM SECTION

1. Replacing the Pinch Roller

Before replacing the pinch roller, clean the tape contact surface of the pinch roller and the capstan shaft.
Most causes of poor tape transport can be traced to dirty pinch roller and capstan shaft.
Remove the clips that press the pinch roller and pull the pinch roller forward to remove it.
After replacing, run a padless C-90 tape to check for tape curls at the tape guide section of the head.

2. Checking the Pressure Force of the Pinch Roller.

In the playback mode, hook a spring weight onto the bracket at the center of the pinch roller. After separating the pinch roller from the capstan shaft, allow the pinch roller to contact the capstan shaft again. Check to make sure the spring weight reads between 250~350 g when the pinch roller starts to rotate.
Replace the pinch roller when it does not conform to the standard specification values.



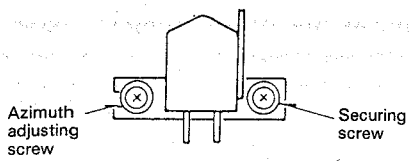
3. Replacing the Record/Playback Head

(1) How to remove the R/P HEAD.
   1) Remove securing screw and azimuth adjusting screw from the record/playback head.
   2) Remove the soldered head wire and disassemble the mechanical unit to remove the record/playback head.

(2) How to assemble the R/P HEAD.
   Reverse the above (1) procedures for removing the R/P HEAD.

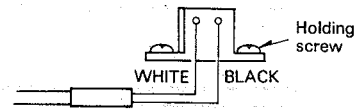
* Solder the HEAD WIRE according to the diagram.

mechanism (recording/playback head)



4. Replacing the ERASE HEAD

(1) Unscrew the erase head holding screws.
(2) By unsoldering the HEAD WIRES can be taken off the mechanism unit.
(3) When the replacement is completed, secure the screws with the screw lock.



5. Checking the Take-up Torque

Load the cassette type torque meter (SONY TW2111).
Check to make sure that the average torque meter reading is within 30-70 g-cm during playback. If it is not within this range, check the voltage (approx. 4V) of the reel motor. If the voltage is low, the torque will be weak: if it is high, the torque will be strong.

6. Checking the FF and REW Torques

Load the cassette type torque meter (SONY TW2231). Check to make sure the torque meter indicates within 90~180 g-cm at the end of FF and REW.

7. Checking the Back Tension Torque During Record/Playback

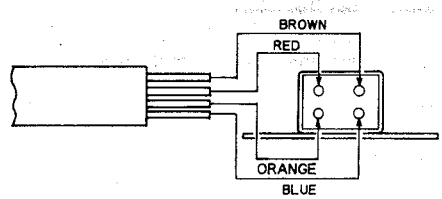
Load the cassette type torque meter (SONY TW2111); check to make sure the torque meter reads between 2~6 g-cm during playback and that there is no unevenness.
If it is not within this range, replace the reel ass'y or Washer.

8. Checking the FF and REW Times

Load a C-60 cassette tape (DENON HD7E/60); check to make sure the tape is fast forwarded or rewound within 110 seconds.
If it is not within this range, check sections 5 and 6.

9. Checking the Existence of a Cassette Housing and the Operation of the Erase Prevention, Metal and Chrome Switch

Confirm that the sensor arm properly detecting the tape type detection holes on the cassette housing.



ADJUSTING AND CHECKING THE ELECTRICAL SECTION

• Caution on adjusting

(1) Before adjusting, clean the head surface, capstan and the pinch roller with a gauze or a cotton swab moistened with alcohol.
(2) Demagnetize the R/P HEAD and the E. HEAD with a head eraser.
(3) Completely demagnetize the adjustment screwdriver.
(4) Unless instructed otherwise, set the various controls as follows.
- ○ INPUT volume ..... maximum
- ○ DOLBY NR switch ..... OFF
- ○ BIAS FINE volume ..... Center click position
- ○ BALANCE volume ..... Center click position

1. Tape Transport Check

Load the transport check cassette. In the operational mode, illuminate the fixing guides of the R/P HEAD with a lamp and check to make sure the tape edge does not come in contact with the tape guide section.
The tape transport is the most important element in determining the performance of a cassette deck.
Avoid moving the various adjustment screws, nuts, etc., as much as possible. Refer to the pages on "Adjusting and Checking the Mechanism Section" when replacing or adjusting the R/P HEAD.

2. Adjusting the Azimuth

(1) After completing the tape transport check, load the test tape (A-BEX TCC-153). **Fig. 2-1**
(2) Playback the test tape; adjust the azimuth screw so that section A of the resurge wave form is maximum and section B is minimum. **Fig. 2-2,3**

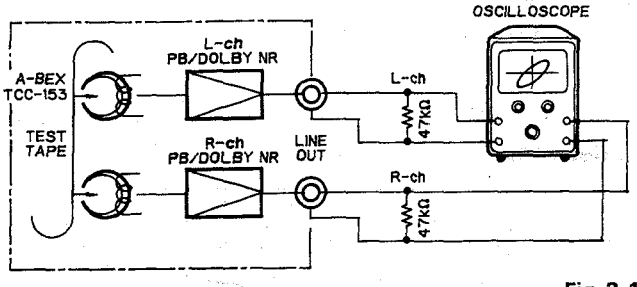


Fig. 2-1

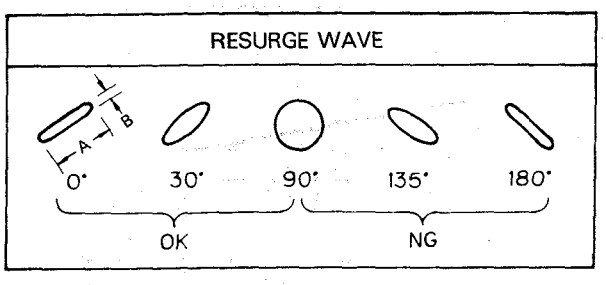


Fig. 2-2

EQUIPMENT FOR ADJUSTING AND CHECKING

1) MEASURING TAPE ..... TYPE NAME, BRAND AND USES

TYPE NAME	BRAND	USES
TW-2111A/2121A	SONY	Checking the Take-up Torque and Back Tension.
TY-2231	SONY	Checking the FF and REW Torque.
HD-7E/60	DENON	Checking the FF and REW Times.
TCC-153	A-BEX	Adjusting the Azimuth.
TY-224	SONY	Checking and Adjusting the Tape Speed.
TCC-130	A-BEX	Adjusting the Playback Level.
TCC-162/262B	A-BEX	Checking the Playback Frequency Response.
TCC-902	A-BEX	Transport checking cassette tape.

2) MEASURING INSTRUMENT
Tension gauge
Audio signal generator
Variable resistance attenuator
Electronic voltmeter
Oscilloscope
Frequency counter
Adjustment screwdriver
Trap coil adjustment square stick

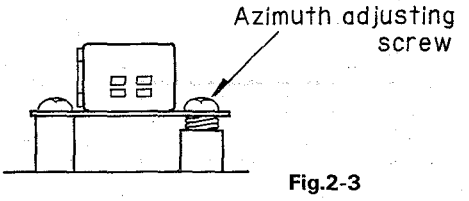
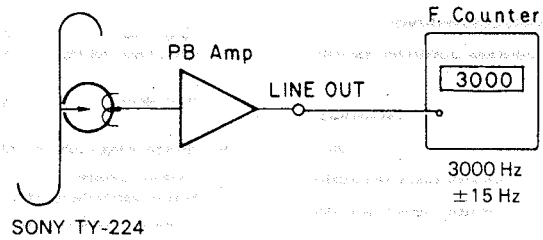


Fig.2-3

3. Checking and Adjusting the Tape Speed

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

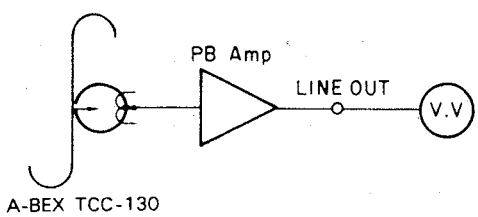
(2) Playback a test tape. At about halfway through the tape, where the tape transport is stable, adjust RT-501 so that the frequency counter will have a reading within the range of 3,000 Hz ± 15 Hz.



4. Adjusting the Playback Section

(1) Adjusting the playback level

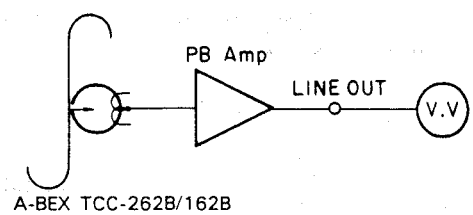
Playback the Dolby standard level test tape (A-BEX TCC-130) and adjust RT-101 (L ch), RT-201 (R ch) so that the LINE OUT voltage becomes 0 dB (775 mV).



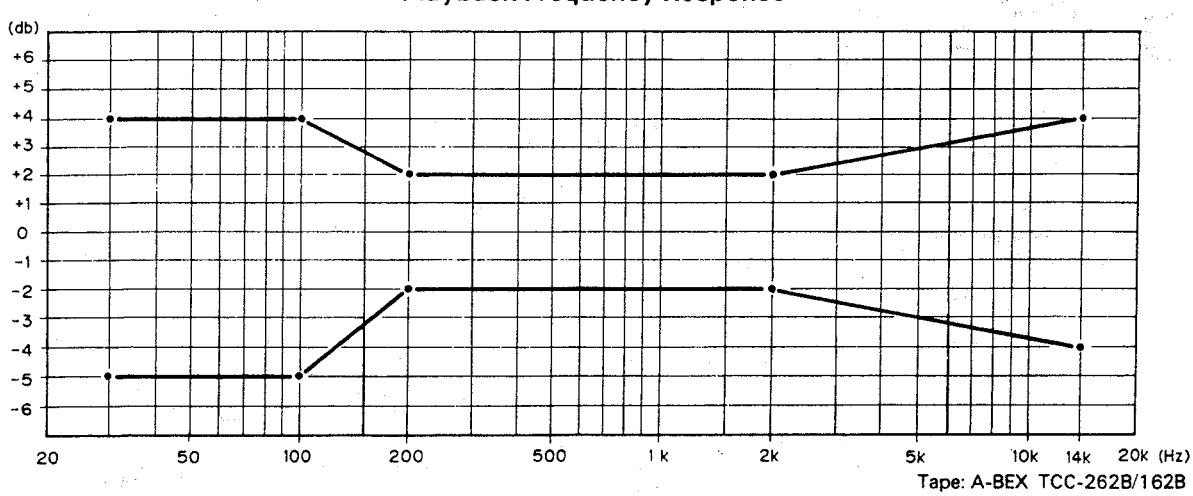
(2) Adjusting the playback frequency response

Playback the test tape (A-BEX TCC-262B/162B) and check to make sure that the frequency response meets the specifications in the diagram.

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 Response

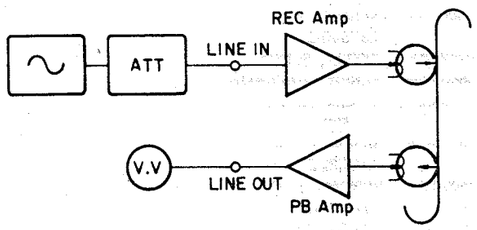


Tape: A-BEX TCC-262B/162B

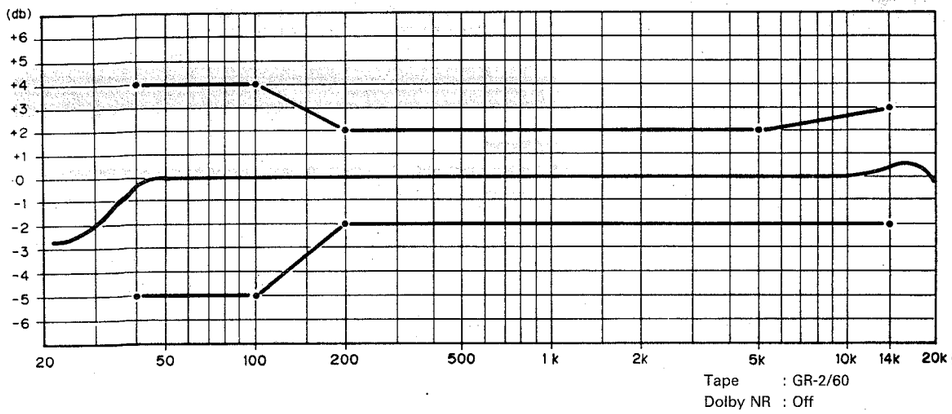
5. Adjusting the Recording Section

(1) Adjusting the record/playback overall frequency response. (CrO_2)

1) Load the test tape GR-2/60, record a signal with an input level of −40 dB, 1 kHz at the LINE IN terminal; playback this recording.
2) Change the frequency of the input signal to 10 kHz, record and playback; adjust RT-103 (L ch), RT-203 (R ch) so that the characteristic standards meet the following diagram when compared to the 1 kHz signal output level.
(The other TAPE POSITIONS will automatically be adjusted by finishing of the foregoing adjustments.)



Record/Playback Overall Frequency Response



Tape : GR-2/60
Dolby NR : Off
Level : −20 dB From Dolby Level

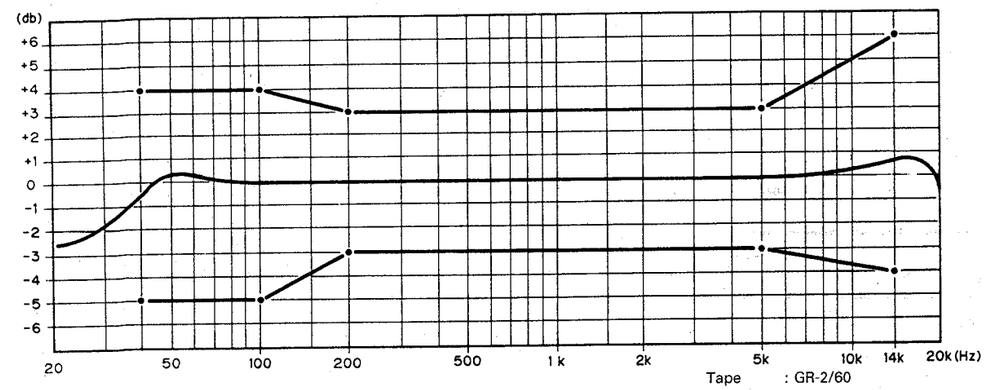
(2) Adjusting the record/playback levels (CrO_2)

1) Load a GR-2/60 tape and after having recorded a signal of 1 kHz (−20 dB), play it back.
2) Adjust RT-102 (L ch) and RT-202 (R ch) so that the output from the line out terminal has the same value as the output when monitoring the recording.

(3) Checking the Dolby C record/playback overall frequency response

1) Set the DOLBY NR switch to the "C" position.
2) Using the test tapes GR-2/60, perform record/playback in the same manner as 5-(1).
3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.

Dolby C Record/Playback Overall Frequency Response



Tape : GR-2/60
Dolby NR : On C
Level : −20 dB From Dolby Level

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
◉ 1	411 1147 450	CHASSIS	
◉ 3	105 0828 118	BOTTOM COVER	
5	104 0208 201	FOOT ASS'Y	
◉ 6	KU- 9293 ZT	POWER TRANS UNIT	Europe
◉	KU- 9293 UT	POWER TRANS UNIT	U.S.A., Canada
◉	KU- 9293 KT	POWER TRANS UNIT	U.K., Australia
◉	KU- 9293 MT	POWER TRANS UNIT	Asia (Multi-Voltage)
⚠ 7	233 5985 005	POWER TRANSFORMER	Europe, U.K. Australia
⚠	233 5758 009	POWER TRANSFORMER	U.S.A., Canada
⚠	233 5760 000	POWER TRANSFORMER	Asia (Multi-Voltage)
⚠ 8	206 2063 009	AC CORD WITH PLUG	Europe
⚠	206 2060 002	AC CORD	U.S.A., Canada
⚠	206 2127 000	AC CORD WITH LABEL	U.K.
⚠	206 2122 005	AC CORD	Australia
⚠	200 6031 026	AC CORD	Asia (Multi-Voltage)
⚠ 9	212 0286 003	POWER SWITCH	SW901
⚠ 10	445 0056 008	CORD BUSH	
11	113 1498 001	POWER SWITCH LEVER ASS'Y	
	113 1498 014	POWER SWITCH LEVER ASS'Y	U.S.A.
	113 1498 027	POWER SWITCH LEVER ASS'Y	(Gold)
◉ 12	KU- 9291	AUDIO/METER UNIT	
◉ 12-1		AUDIO UNIT	
◉ 12-2		METER UNIT	
13	204 8261 003	4P PIN JACK	JK301
◉ 14	412 2008 012	BUSHING PLATE	
15	393	FL TUBE	FL801
16	212 1087 007	SLIDE SWITCH	SW816
17	204 8264 026	HEAD PHONE JACK	JK302
18	211 0570 004	IN PUT VR (V14V25FA104R)	VR301
19	499 0150 008	REMOTE SENSOR (SBX1610-52)	
20	211 0706 001	BIAS VR (V09V25FB102K)	VR303
21	211 0746 003	BALANCE VR (V09V25FW104-)	VR302
22	211 0736 000	OUT PUT VR (V09V25FA103)	VR304
23	113 8155 237	SLIDE KNOB (B)	
	113 8155 240	SLIDE KNOB (B)	(Gold)
◉ 24	144 9196 008	FRONT PANEL ASS'Y	
◉	144 9196 011	FRONT PANEL ASS'Y	(Gold)
◉ 25	103 1519 404	FRONT ESCUTCHEON ASS'Y	Europe
	103 1519 417	FRONT ESCUTCHEON ASS'Y	U.S.A.
	103 1519 420	FRONT ESCUTCHEON ASS'Y	(Gold)
◉ 26	414 3748 009	EARTH BRACKET	
27	009 0065 000	25P FFC CABLE	
28	204 8416 007	MINI JACK	JK303
32	113 1298 311	OPEN/CLOSE KNOB	
	113 1298 324	OPEN/CLOSE KNOB	(Gold)
33	113 1397 018	SERIES KNOB	
	113 1397 021	SERIES KNOB	U.S.A.
	113 1397 034	SERIES KNOB	(Gold)
34	113 1224 246	FUNCTION KNOB (A)	
	113 1224 259	FUNCTION KNOB (A)	U.S.A.
	113 1495 004	FUNCTION KNOB (A)	(Gold)
35	113 1299 019	MANUAL SEARCH KNOB	
	113 1299 022	MANUAL SEARCH KNOB	(Gold)
37	112 0702 009	INPUT KNOB	
	112 0702 012	INPUT KNOB	U.S.A.
	112 0702 025	INPUT KNOB	(Gold)
38	112 0727 000	VOLUME KNOB (C)	
	112 0727 013	VOLUME KNOB (C)	(Gold)
◉ 39	102 0408 319	TOP COVER	
◉	102 0408 209	TOP COVER	(Gold)
40	146 1343 101	LOADER PANEL ASS'Y	
	146 1343 114	LOADER PANEL ASS'Y	U.S.A.
	146 1343 127	LOADER PANEL ASS'Y	(Gold)
◉ 49	414 0595 015	EARTH PLATE	
◉ 50	HM1 00G	CASSETTE MECHA. UNIT	
◉ 51	411 0987 705	CASSETTE MECHA. BASE	
◉ 52	461 0581 012	PAD	
53	463 0663 004	CASSETTE SPRING	
◉ 54	338 9023 006	CASSETTE MECHA.	
◉ 55	414 0629 004	SHIELD SHEET	
56	412 3082 309	LEVER P. ASS'Y	
◉ 57	203 0288 007	1P CONTACT ASS'Y	
58	463 0646 005	LEVER P. SPRING	
59	GEN 1162	LOADING M. SUB ASS'Y	
60	424 0130 008	PULLEY GEAR	
61	443 0999 004	COLLAR	
62	423 0050 004	BELT	
63	424 0131 007	GEAR	
64	424 0155 203	CLAMPER CAM	
65	463 0644 007	CLAMPER A. SPRING	
66	433 0553 508	CLAMPER ARM	
67	461 0613 003	PAD MARU	
68	431 0295 307	LOADER FRAME	
69	461 0581 009	PAD	
70	424 0158 103	STOPPER CAM	
71	463 0647 004	STOPPER C. SPRING	
72	412 3084 200	CAM PLATE	
73	424 0157 405	SLIDE CAM (R)	
74	424 0156 105	SLIDE CAM (L)	
75	431 0296 306	CASSETTE TRAY	
76	461 0593 000	TRAY PAD	
◉ 77	203 4507 001	3P PH CONNECTOR CORD (BLK)	
◉ 78	203 4508 000	3P PH CONNECTOR CORD (BLU)	
◉ 79	203 4434 006	3P PH CONNECTOR CORD (RED)	
◉ 80	203 4736 005	3P PH CONNECTOR CORD	
◉ 81	203 8298 057	5P KR-KR CONNECTOR CORD	
◉ 82	204 6267 093	4P KR-KR CONNECTOR CORD	
◉ 83	204 2424 024	7P KR-KR CONNECTOR CORD	
85	212 4650 004	LEAF SWITCH	
86	212 6011 007	LEAF SWITCH	
87	414 0651 001	SHIELD COVER	
100	473 7508 017	SCREW 3×10 CBTS(P)-B	
101	473 7508 017	SCREW 3×10 CBTS(P)-B	
	473 7510 005	SCREW 3×10 CTTS(P)-NI	(Gold)
102	473 7502 013	SCREW 4×10 CBTS(P)-Z	
103	473 7500 015	SCREW 3× 8 CBTS(P)-Z	
104	477 0242 019	SPECIAL SCREW	
105	473 3808 009	SCREW 3×25 CBTS(1)	
106	473 7505 007	SCREW 2.6 × 8 CBTS(P)-Z	
107	473 7501 014	SCREW 3 × 14 CBTS(P)-Z	
108	473 7503 033	SCREW 4 × 10 CBTS(P)-BK	
	473 7503 041	SCREW 4 × 10 CTTS(P)-NI	(Gold)
110	473 7002 018	SCREW 3 × 8 CBTS(S)-Z	
◉ 111	IU-2758	FL UNIT	

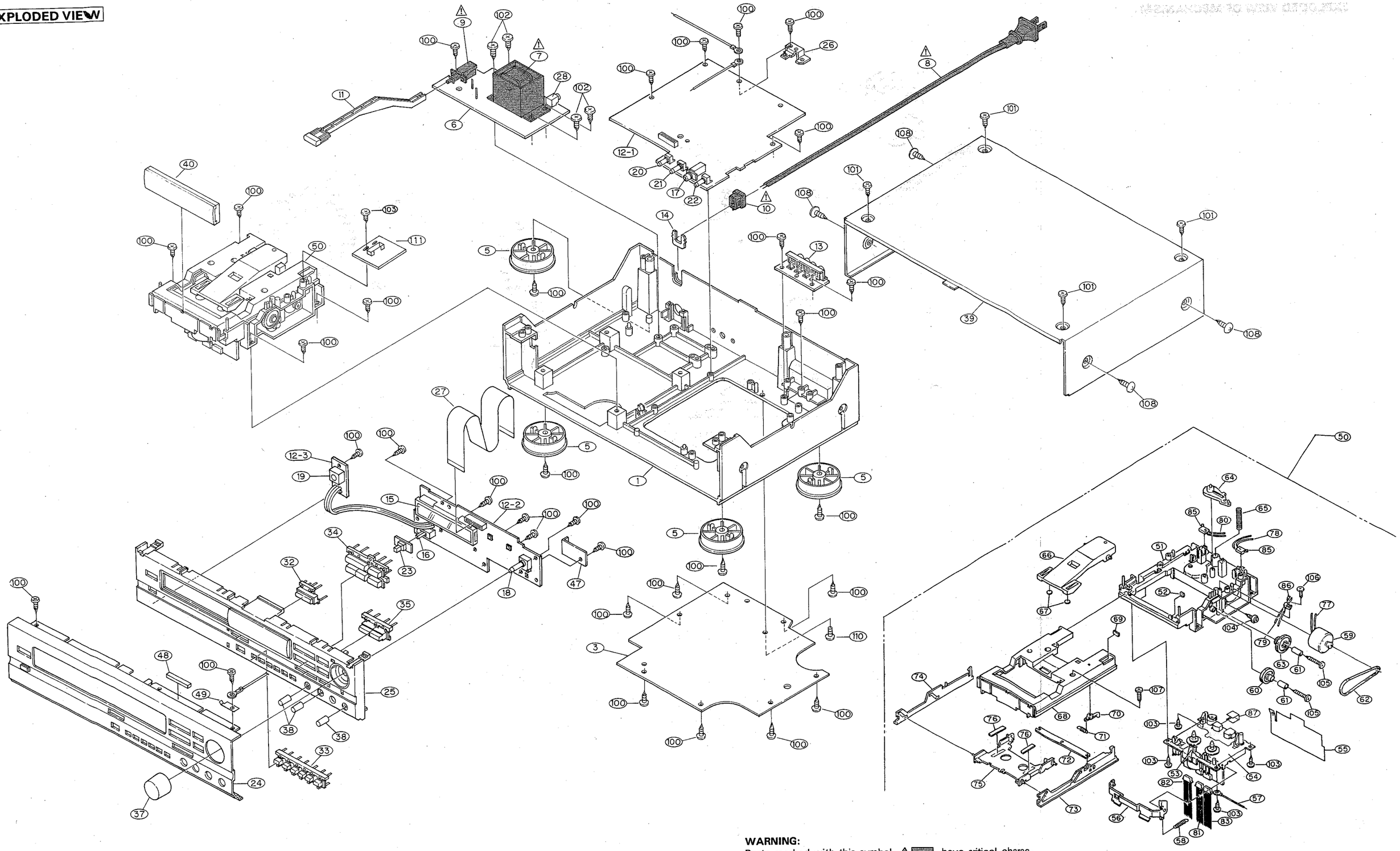
WARNING:
- Parts marked with ⚠ and/or shading have special characteristics important to safety.
  Be sure to use the specified parts for replacement.
- Part indicated with the mark "◉" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- (Gold) in the Remarks column refers with gold front panels.

PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	504 0092 060	STYLEN PAPER		1
	505 0131 050	CABINET COVER		1
	503 0794 022	CUSHION		2
	501 1514 027	CARTON CASE		1
	505 0038 030	ENVELOPE		1
	511 9368 007	INST. MANUAL	Europe, Australia	1
	511 9367 008	INST. MANUAL	U.S.A., U.K., Canada, Multi. Voltage	1
	511 9369 006	INST. MANUAL	Multi. Voltage Only	1
	203 2223 002	2P PIN CORD		2
	203 2227 008	2P MINI PLUG CORD		1
	515 0455 005	TAPE CATALOG (E2)	Europe, U.S.A. Only	1
⚠	203 3667 007	PLUG ADAPTER	Multi. Voltage Models Only	1

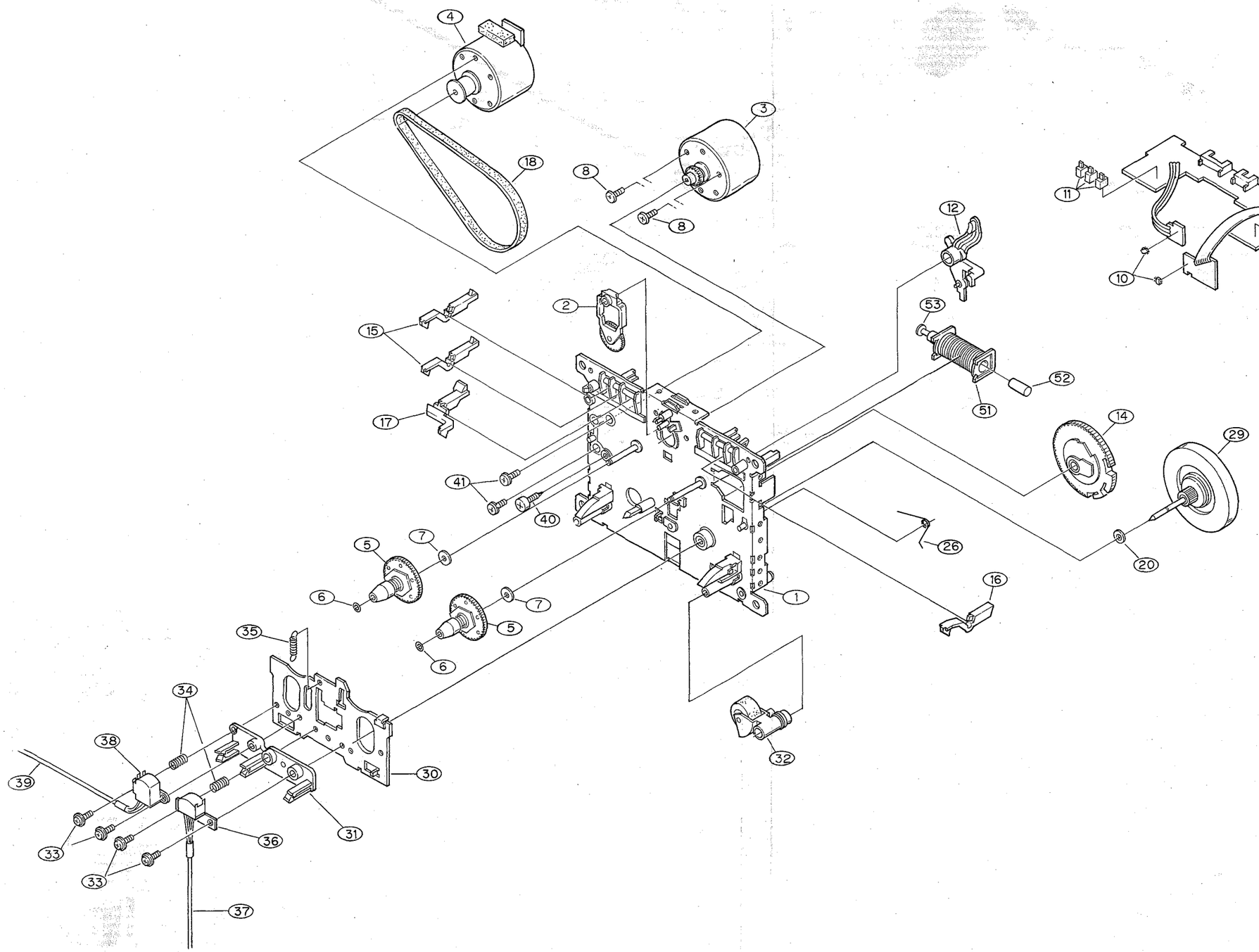
WARNING:
- Parts marked with ⚠ and/or shading have special characteristics important to sefty.

EXPLODED VIEW



WARNING:
Parts marked with this symbol ⚠▩ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

EXPLODED VIEW OF MECHANISM



PARTS LIST OF CASSETTE MECHANISM EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
⊙ 1	9DF 511 520	CHASSIS BASE BLK	
⊙ 2	9DF 5170 49	IDLER BLK	
3	9DF 5642 80	REEL MOTOR BLK	
4	9DF 5252 56	MAIN MOTOR BLK	
5	9DF 564 280	REEL BASE BLK	
6	9DF J111 17	WASHER 1.7×0.25	
7	9DU J12V 11	POLY. WASHER 2.1×0.25	
8	9DF G156 11A	SCREW 2.6×6.4 ZN	
⊙ 9	9DF 5673 52	CONTROL P.W.B. BLK	
10	9DA W13F 00	SP1-335-34-FG	
11	9DU E16E 11	PUSH SWITCH	
12	9DF D45G 13	PLAY ARM	
14	9DF D45B 15	CAM GEAR	
15	9DF D44T 14	REC DETECT LEVER	
16	9DF D44Y 12	PACK DETECT LEVER (R)	
17	9DF D44V 12	METAL DETECT LEVER (L)	
18	9DF F17W 31	MAIN BELT	
20	9DF J111 30	POLY. WASHER 2.6×0.25	
26	9DF K28R 11	SLIDE SPLING	
29	9DF R22H 11	FLY WHEEL ASS'Y	
⊙ 30	9DF C52E 46	HEAD BASE	
31	9DF D45T 16	HEAD SPACER	
32	9DF R20L 22	PINCH ROLLER ASS'Y	
33	9DF G137 18	SCREW 2.0×9 ZN	
34	9DF K21U 11	AZIMUTH SPRING	
35	9DF K26N 14	HEAD BASE SPRING	
36	9DF U19U 11	R/P HEAD (MS15R-AA2N1)	
⊙ 37	9DW H51U 04	CONNECTOR WIRE (R/P)	
38	9DF U192 11	ERASE HEAD	
⊙ 39	9DW H51V 03	CONNECTOR WIRE (E)	
40	9DU G20B 11	SCREW 3.0×8 ZN	
41	9DF G114 14	SCREW 2.6×5 ZN	
51	9DF 7652 63	SOLENOID BLK	
52	9DF L39H 12A	IRON CORE	
53	9DF L39K 12	PLUNGER	

WARNING:

- 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.

PARTS LIST OF KU-9291 AUDIO/METER UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC301	263 0590 001	IC UPC1330HA	
IC302	262 0864 006	IC UPC4570C	
IC303	263 0720 004	IC HA12170NT	
IC304	263 0565 007	IC BA15218	
IC306	263 0711 000	IC M5218AP	
IC307	263 0354 001	IC UPC1297CA	
IC308	263 0711 000	IC M5218AP	
IC309	263 0565 007	IC BA15218	
IC502	262 1362 002	IC BA6238A	
IC801	262 1994 108	µComputer UPD75212ACW-A94	
IC802	263 0620 007	IC BA10393	
IC803, 804	262 1295 001	IC UPD4094BC	
IC805	499 0150 008	Remote Sensor SBX1610-52	
IC901	263 0810 008	IC NJM7808A (S)	
IC902	263 0503 001	IC NJM7908A	
IC903	263 0793 002	IC NJM7806A (S)	
TR101	269 0074 907	Transistor DTC114TS (10K) T	Built in Resistor
TR102	269 0062 906	Transistor DTC124ES (22K-22K) T	Built in Resistor
TR103	273 0245 900	Transistor 2SC2603E/F T	
TR104	275 0048 912	Transistor 2SK381 (B)/(C)-T	
TR107 ~109	269 0074 907	Transistor DTC114TS (10K) T	Built in Resistor
TR201	269 0074 907	Transistor DTC114TS (10K) T	Built in Resistor
TR202	269 0062 906	Transistor DTC124ES (22K-22K) T	Built in Resistor
TR203	273 0245 900	Transistor 2SC2603E/F T	
TR204	275 0048 912	Transistor 2SK381 (B)/(C)-T	
TR207 ~209	269 0074 907	Transistor DTC114TS (10K) T	Built in Resistor
TR305, 306	269 0015 908	Transistor DTC124XS (22K-47K) T	Built in Resistor
TR307	269 0040 902	Transistor DTC144ES (47K-47K)	Built in Resistor
TR308	272 0025 907	Transistor 2SB562 (C) TF	
TR309, 310	273 0245 900	Transistor 2SC2603E/F T	
TR331, 332	269 0082 902	Transistor DTC114EKT96	Built in Resistor
TR501 ~503	274 0036 905	Transistor 2SD468 (C) TF	
TR504	269 0040 902	Transistor DTC144ES (47K-47K)	Built in Resistor
TR505, 506	269 0099 908	Transistor DTC143TS (4.7K) T	Built in Resistor
TR507	269 0062 906	Transistor DTC124ES (22K-22K) T	Built in Resistor
TR508	269 0016 907	Transistor DTA144WS (47K-22K) T	Built in Resistor
TR509 ~511	269 0015 908	Transistor DTC124XS (22K-47K) T	Built in Resistor
TR512	269 0022 904	Transistor DTA143ES (4.7K-4.7K) T	Built in Resistor
TR513	269 0018 905	Transistor DTC143ES (4.7K-4.7K) T	Built in Resistor
TR514	269 0040 902	Transistor DTC144ES (47K-47K)	Built in Resistor
TR515	269 0018 905	Transistor DTC143ES (4.7K-4.7K) T	Built in Resistor
TR904	272 0025 907	Transistor 2SB562 (C) TF	
TR906	269 0112 908	Transistor DTC144WS (47K-22K) T	Built in Resistor
D155, 156	276 0432 903	Diode 1SS270A TE	
D255, 256	276 0432 903	Diode 1SS270A TE	
D301	276 0461 903	Zener Diode HZS6A-1TD	
D304, 305	276 0468 906	Zener Diode HZS9B-1TD	
D315, 316	276 0432 903	Diode 1SS270A TE	
D501	276 0432 903	Diode 1SS270A TE	
D502	276 0553 905	Diode 1SR35-200A (T93X)	
D503 ~505	276 0432 903	Diode 1SS270A TE	
D506	276 0457 904	Zener Diode HZS4C-1TD	
D507	276 0454 907	Zener Diode HZS3C-1TD	
D508	276 0451 900	Zener Diode HZS2C-1TD	
D509	276 0465 909	Zener Diode HZS7B-1TD	
D510 ~512	276 0432 903	Diode 1SS270A TE	
D513	276 0432 903	Diode 1SS270A TE	
D514 ~516	276 0432 903	Diode 1SS270A TE	
D528	276 0468 906	Zener Diode HZS9B-1TD	
D529	276 0432 903	Diode 1SS270A TE	
D531	276 0468 906	Zener Diode HZS9B-1TD	
D532	276 0432 903	Diode 1SS270A TE	
D801 ~816	276 0432 903	Diode 1SS270A TE	
D817	276 0432 903	Diode 1SS270A TE	
D901 ~904	276 0553 905	Diode 1SR35-200A (T93X)	
D905, 906	276 0432 903	Diode 1SS270A TE	
D907	276 0463 901	Zener Diode HZS6C-1TD	
D908	276 0432 903	Diode 1SS270A TE	
D909 ~911	276 0553 905	Diode 1SR35-200A (T93X)	
D912	276 0483 907	Zener Diode HZS30-1TD	
D913	276 0472 905	Zener Diode HZS11C-1TD	
D915, 916	276 0553 905	Diode 1SR35-200A (T93X)	
RESISTORS GROUP (not included Carbon Film ±5% 1/4W type)			
VR301	211 0570 004	Valiable 100 Kohm (INPUT)	V14V25FA104R
VR302	211 0746 003	Valiable 100 Kohm (BALANCE)	V09V25FW104-
VR303	211 0706 001	Valiable 1 Kohm (BIAS)	V09V25FB102K
VR304	211 0736 000	Valiable 10 Kohm (OUT PUT)	V09V25FA103
RT101	211 6093 967	Adjust 47 Kohm	V06PB473T
RT102	211 6047 049	Adjust 22 Kohm	V06PB223
RT103	211 6093 967	Adjust 47 Kohm	V06PB473T
RT201	211 6093 967	Adjust 47 Kohm	V06PB473T
RT202	211 6047 049	Adjust 22 Kohm	V06PB223
RT203	211 6093 967	Adjust 47 Kohm	V06PB473T
RT501	211 6093 912	Adjust 4.7 Kohm	V06PB472T
R001 ~005	247 1018 904	Chip 0 ohm	RM73B20R0KT
R007 ~011	247 1018 904	Chip 0 ohm	RM73B20R0KT
R013	247 1018 904	Chip 0 ohm	RM73B20R0KT
R015 ~022	247 1018 904	Chip 0 ohm	RM73B20R0KT
R023 ~036	247 0018 905	Chip 0 ohm	RM73B--0R0KT
R101	247 0010 987	Chip 27 Kohm	RM73B--273JT
R102	247 0011 973	Chip 62 Kohm	RM73B--623JT
R103	247 0005 947	Chip 150 ohm	RM73B--151JT
R104	247 0010 974	Chip 24 Kohm	RM73B--243JT
R105	247 0014 912	Chip 620 Kohm	RM73B--624JT

Ref. No.	Part No.	Part Name	Remarks
R106	247 0008 960	Chip 3.3 Kohm	RM73B--332JT
R112	247 0009 943	Chip 6.8 Kohm	RM73B--682JT
R115	247 0012 927	Chip 100 Kohm	RM73B--104JT
R120	247 0010 929	Chip 15 Kohm	RM73B--153JT
R121	247 0009 914	Chip 5.1 Kohm	RM73B--512JT
R122	247 0010 929	Chip 15 Kohm	RM73B--153JT
R124	247 0010 961	Chip 22 Kohm	RM73B--223JT
R125	247 0009 901	Chip 4.7 Kohm	RM73B--472JT
R126	247 0005 992	Chip 240 ohm	RM73B--241JT
R132	247 0005 905	Chip 100 ohm	RM73B--101JT
R133	247 0015 940	Chip 2.2M ohm	RM73B--225JT
R135	247 0018 505	Chip 4.7 Kohm	RM73B--0R0KT
R138	247 0010 990	Chip 0 ohm	RM73B--303JT
R140	247 0011 986	Chip 68 Kohm	RM73B--683JT
R141	247 0011 944	Chip 47 Kohm	RM73B--473JT
R142	247 0012 927	Chip 100 Kohm	RM73B--104JT
R143	247 0010 929	Chip 15 Kohm	RM73B--153JT
R144	247 0011 902	Chip 33 Kohm	RM73B--333JT
R146	247 0010 987	Chip 27 Kohm	RM73B--273JT
R147, 148	247 0010 929	Chip 15 Kohm	RM73B--153JT
R149	247 0006 920	Chip 330 ohm	RM73B--331JT
R150	247 0012 969	Chip 150 Kohm	RM73B--154JT
⚠ R152	241 2315 912	Carbon (Fusible) 10 ohm	RD1482E100GFRST
R153	247 0009 972	Chip 9.1 Kohm	RM73B--912JT
R155	247 0010 987	Chip 27 Kohm	RM73B--273JT
R156	247 0005 905	Chip 100 ohm	RM73B--101JT
R157	247 0014 967	Chip 1 Mohm	RM73B--105JT
R160	247 0010 961	Chip 22 Kohm	RM73B--223JT
R161	247 0012 927	Chip 100 Kohm	RM73B--104JT
R162	247 0010 961	Chip 22 Kohm	RM73B--223JT
R163	247 0006 988	Chip 560 ohm	RM73B--561JT
R164	247 0011 931	Chip 43 Kohm	RM73B--433JT
R201	247 0010 987	Chip 27 Kohm	RM73B--273JT
R202	247 0011 973	Chip 62 Kohm	RM73B--623JT
R203	247 0005 947	Chip 150 ohm	RM73B--151JT
R204	247 0010 974	Chip 24 Kohm	RM73B--243JT
R205	247 0014 912	Chip 620 Kohm	RM73B--624JT
R206	247 0008 960	Chip 3.3 Kohm	RM73B--332JT
R212	247 0009 943	Chip 6.8 Kohm	RM73B--682JT
R215	247 0012 927	Chip 100 Kohm	RM73B--104JT
R220	247 0010 929	Chip 15 Kohm	RM73B--153JT
R221	247 0009 914	Chip 5.1 Kohm	RM73B--512JT
R222	247 0010 929	Chip 15 Kohm	RM73B--153JT
R224	247 0010 961	Chip 22 Kohm	RM73B--223JT
R225	247 0009 901	Chip 4.7 Kohm	RM73B--472JT
R226	247 0005 992	Chip 240 ohm	RM73B--241JT
R232	247 0005 905	Chip 100 ohm	RM73B--101JT
R233	247 0015 940	Chip 2.2 Mohm	RM73B--225JT
R235	247 0009 901	Chip 4.7 Kohm	RM73B--472JT
R238	247 0018 905	Chip 0 ohm	RM73B--0R0KT
R240	247 0011 986	Chip 68 Kohm	RM73B--683JT
R241	247 0011 944	Chip 47 Kohm	RM73B--473JT
R242	247 0012 927	Chip 100 Kohm	RM73B--104JT
R243	247 0010 929	Chip 15 Kohm	RM73B--153JT
R244	247 0011 902	Chip 33 Kohm	RM73B--333JT
R246	247 0010 987	Chip 27 Kohm	RM73B--273JT
R247, 248	247 0010 929	Chip 15 Kohm	RM73B--153JT
R249	247 0006 920	Chip 330 ohm	RM73B--331JT
R250	247 0012 969	Chip 150 Kohm	RM73B--154JT
⚠ R252	241 2315 912	Carbon (Fusible) 10 ohm	RD1482E100GFRST
R253	247 1009 971	Chip 9.1 Kohm	RM73B2B912JT
R255	247 0010 987	Chip 27 Kohm	RM73B--273JT
R256	247 0005 905	Chip 100 ohm	RM73B--101JT
R257	247 1014 966	Chip 1 Mohm	RM73B2B105JT
R260	247 0010 961	Chip 22 Kohm	RM73B--223JT
R261	247 0012 927	Chip 100 Kohm	RM73B--104JT
R262	247 0010 961	Chip 22 Kohm	RM73B--223JT

Ref. No.	Part No.	Part Name	Remarks
R263	247 0006 988	Chip 560 ohm	RM73B--561JT
R264	247 0011 931	Chip 43 Kohm	RM73B--433JT
R301	247 0010 961	Chip 22 Kohm	RM73B--223JT
R321	247 0010 945	Chip 18 Kohm	RM73B--183JT
R331	247 0009 985	Chip 10 Kohm	RM73B--103JT
R332	247 0008 931	Chip 2.4 Kohm	RM73B--242JT
R333	247 0009 985	Chip 10 Kohm	RM73B--103JT
R340	247 0009 985	Chip 10 Kohm	RM73B--103JT
R352	247 0007 974	Chip 1.3 Kohm	RM73B--132JT
R360, 361	247 0012 943	Chip 120 Kohm	RM73B--124JT
⚠ R362, 363	241 2315 925	Carbon (Fusible) 22 ohm	RD1482E220GFRST
R364	247 0009 901	Chip 4.7 Kohm	RM73B--472JT
R365	247 0009 985	Chip 10 Kohm	RM73B--103JT
R367	247 1008 927	Chip 2.2 Kohm	RM73B2B222JT
R370, 371	247 0001 983	Chip 4.7 ohm	RM73B--4R7KT
R501	247 0009 985	Chip 10 Kohm	RM73B--103JT
R503	247 0009 985	Chip 10 Kohm	RM73B--103JT
R507	247 0011 944	Chip 47 Kohm	RM73B--473JT
R508	247 0013 900	Chip 220 Kohm	RM73B--224JT
⚠ R509	244 2043 937	Metal oxide film 10 ohm 1W (Non-burning type)	RS1483A100JNBST (S)
R510	247 0007 945	Chip 1 Kohm	RM73B--102JT
⚠ R511	247 2055 970	Metal oxide film 56 ohm 1W (Non-burning type)	RS1483A560JNBST (S)
R512, 513	247 1007 944	Chip 1 Kohm	RM73B2B102JT
R514 ~516	247 0009 985	Chip 10 Kohm	RM73B--103JT
R517	247 0009 985	Chip 10 Kohm	RM73B--103JT
R518	247 0009 985	Chip 10 Kohm	RM73B--103JT
R532	247 0010 961	Chip 22 Kohm	RM73B--223JT
R533	247 0008 931	Chip 2.4 Kohm	RM73B--242JT
R534	247 0009 985	Chip 10 Kohm	RM73B--103JT
R535	247 0010 961	Chip 22 Kohm	RM73B--223JT
R554, 555	247 0009 985	Chip 10 Kohm	RM73B--103JT
R803, 804	247 0009 985	Chip 10 Kohm	RM73B--103JT
R805, 806	247 0009 985	Chip 10 Kohm	RM73B--103JT
R807 ~809	247 0018 905	Chip 0 ohm	RM73B--0R0KT
R810	247 0011 944	Chip 47 Kohm	RM73B--473JT
R811 ~817	247 0012 927	Chip 100 Kohm	RM73B--104JT
R819 ~826	247 0012 998	Chip 200 Kohm	RM73B--204JT
R827	247 0012 927	Chip 100 Kohm	RM73B--104JT
R829, 830	247 0012 927	Chip 100 Kohm	RM73B--104JT
R831, 832	247 0012 927	Chip 100 Kohm	RM73B--104JT
R833	247 0009 985	Chip 10 Kohm	RM73B--103JT
R834, 835	247 0009 985	Chip 10 Kohm	RM73B--103JT

CAPACITORS GROUP

C101	257 0006 943	Chip (Ceramic) 560pF/50V	CC73SL1H561JT
C102	254 4250 916	Electrolytic 47 µF/6.3V	CE04W0J470MT SME
C103	255 1209 905	Film 0.0056 µF/50V	CQ93M1H562JT
C104	254 3056 917	Electrolytic 1 µF/50V (Bipolar)	CE04D1H010M8PT SME
C106	255 1214 903	Film 0.015 µF/50V	CQ93M1H153JT
C107, 108	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME

Ref. No.	Part No.	Part Name	Remarks
C109	257 0009 937	Chip (Ceramic) 0.0027 µF/50V	CK73B1H272KT
C111, 112	255 1204 900	Film 0.0022 µF/50V	CQ93M1H222JT
C115	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME
C116	254 4260 935	Electrolytic 0.47 µF/50V	CE04W1HR47MT SME
C121	254 4254 909	Electrolytic 10 µF/16V	CE04W1C100MT SME
C122	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME
C123	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C124	254 4258 905	Electrolytic 4.7 µF/35V	CE04W1V4R7MT SME
C125	256 1034 966	Metallized 0.082 µF/50V	CF93A1H823JT
C126	257 0009 995	Chip (Ceramic) 0.0082 µF/50V	CK73B1H822KT
C127	253 1179 929	Ceramic 150pF/50V	CK45B1H151KT DD-3
C131	257 0009 953	Chip (Ceramic) 0.0039 µF/50V	CK73B1H392KT
C132	257 0009 924	Chip (Ceramic) 0.0022 µF/50V	CK73B1H222KT
C134	254 4252 927	Electrolytic 47 µF/10V	CE04W1A470MT SME
C140	254 4258 905	Electrolytic 4.7 µF/35V	CE04W1V4R7MT SME
C142	257 0005 944	Chip (Ceramic) 220pF/50V	CC73SL1H221JT
C150	257 0008 996	Chip (Ceramic) 0.0012 µF/50V	CK73B1H122KT
C151	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C152	257 0004 961	Chip (Ceramic) 100pF/50V	CC73SL1H101JT
⚠ C153	253 1131 909	Ceramic 390pF/500V	CK45B2H391KT
C154	257 0011 967	Chip (Ceramic) 0.033 µF/25V	CK73B1E333KT
C155	257 0010 942	Chip (Ceramic) 0.022 µF/25V	CK73B1E223KT
C160	254 4260 935	Electrolytic 0.47 µF/50V	CE04W1HR47MT SME
C161	255 1204 900	Film 0.0022 µF/50V	CQ93M1H222JT
C162	254 4260 906	Electrolytic 0.1 µF/50V	CE04W1H0R1MT SME
C163	254 4260 906	Electrolytic 0.1 µF/50V	CE04W1H0R1MT SME
C164	257 0008 983	Chip (Ceramic) 0.001 µF/50V	CK73B1H102KT
C165	257 0004 961	Chip (Ceramic) 100pF/50V	CC73SL1H101JT
C166	257 0005 928	Chip (Ceramic) 180pF/50V	CC73SL1H181JT
C201	257 0006 943	Chip (Ceramic) 560pF/50V	CC73SL1H561JT
C202	254 4250 916	Electrolytic 47 µF/6.3V	CE04W0J470MT SME
C203	255 1209 905	Film 0.0056 µF/50V	CQ93M1H562JT
C204	254 3056 917	Electrolytic 1 µF/50V (Bipolar)	CE04D1H010M8PT SME
C206	255 1214 903	Film 0.015 µF/50V	CQ93M1H153JT
C207, 208	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME
C209	257 0009 937	Chip (Ceramic) 0.0027 µF/50V	CK73B1H272KT
C211, 212	255 1204 900	Film 0.0022 µF/50V	CQ93M1H222JT
C215	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME
C216	254 4260 935	Electrolytic 0.47 µF/50V	CE04W1HR47MT SME
C221	254 4254 909	Electrolytic 10 µF/16V	CE04W1C100MT SME
C222	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME

Ref. No.	Part No.	Part Name	Remarks
C223	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C224	254 4258 905	Electrolytic 4.7 µF/35V	CE04W1V4R7MT SME
C225	256 1034 966	Metallized 0.082 µF/50V	CF93A1H823JT
C226	257 0009 995	Chip (Ceramic) 0.0082 µF/50V	CK73B1H822KT
C227	253 1179 929	Ceramic 150pF/50V	CK45B1H151KT DD-3
C231	257 0009 953	Chip (Ceramic) 0.0039 µF/50V	CK73B1H392KT
C232	257 0009 924	Chip (Ceramic) 0.0022 µF/50V	CK73B1H222KT
C234	254 4252 927	Electrolytic 47 µF/10V	CE04W1A470MT SME
C240	254 4258 905	Electrolytic 4.7 µF/35V	CE04W1V4R7MT SME
C242	257 0005 944	Chip (Ceramic) 220pF/50V	CC73SL1H221JT
C250	257 0008 996	Chip (Ceramic) 0.0012 µF/50V	CK73B1H122KT
C251	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C252	257 0004 961	Chip (Ceramic) 100 pF/50V	CC73SL1H101JT
⚠ C253	253 1131 909	Ceramic 390pF/500V	CK45B2H391KT
C254	257 0011 967	Chip (Ceramic) 0.033 µF/25V	CK73B1E333KT
C255	257 0010 942	Chip (Ceramic) 0.022 µF/25V	CK73B1E223KT
C260	254 4260 906	Electrolytic 0.1 µF/50V	CE04W1H0R1MT SME
C261	255 1204 900	Film 0.0022 µF/50V	CQ93M1H222JT
C262	254 4260 906	Electrolytic 0.1 µF/50V	CE04W1H0R1MT SME
C263	254 4260 906	Electrolytic 0.1 µF/50V	CE04W1H0R1MT SME
C264	257 0008 983	Chip (Ceramic) 0.001 µF/50V	CK73B1H102KT
C265	257 0004 961	Chip (Ceramic) 100 pF/50V	CC73SL1H101JT
C266	257 0005 928	Chip (Ceramic) 180 pF/50V	CC73SL1H181JT
C302, 303	254 4252 927	Electrolytic 47 µF/10V	CE04W1A470MT SME
C305 ~308	254 4254 909	Electrolytic 10 µF/16V	CE04W1C100MT SME
C313, 314	254 4254 909	Electrolytic 10 µF/16V	CE04W1C100MT SME
C323	253 9031 917	Ceramic 0.068 µF/25V	CK45-1E683KT
C350	253 9031 904	Ceramic 0.047 µF/25V	CK45-1E473KT
C351	255 4120 900	Film 0.0068 µF/100V	CQ93P2A682JT
C352	257 0002 921	Chip (Ceramic) 10pF/50V	CC73SL1H100DT
C353, 354	257 0009 940	Chip (Ceramic) 0.0033 µF/50V	CK73B1H332KT
C355	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C356	257 0009 995	Chip (Ceramic) 0.0082 µF/50V	CK73B1H822KT
C357	254 4256 936	Electrolytic 47 µF/25V	CE04W1E470MT SME
C359, 360	254 4254 909	Electrolytic 10 µF/16V	CE04W1C100MT SME
C501	254 4260 951	Electrolytic 2.2 µF/50V	CE04W1H2R2MT SME
C507	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C508	259 0007 715	Electrolytic 4700 µF/5.5V	SB CAP--472-C
C509	257 1012 907	Chip (Ceramic) 0.068 µF/50V	CK73B1H683KT
C511	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C519, 520	257 0010 942	Chip (Ceramic) 0.022 µF/25V	CK73B1E223KT
C530	254 4260 948	Electrolytic 1 µF/50V	CE04W1H010MT SME
C531	257 0010 900	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C803	257 0008 983	Chip (Ceramic) 0.001 µF/50V	CK73B1H102KT
C811 ~814	257 0008 983	Chip (Ceramic) 0.001 µF/50V	CK73B1H102KT

Ref. No.	Part No.	Part Name	Remarks
C820	257 1011 908	Chip (Ceramic) 0.01 µF/50V	CK73B1H103KT
C902, 903	254 4403 718	Electrolytic 1000 µF/25V	CE04W1E102MC SMG
C904, 905	254 4252 930	Electrolytic 100 µF/10V	CE04W1A101MT SME
C906, 907	253 9031 917	Ceramic 0.068 µF/25V	CK45-1E683KT
C908	254 4403 721	Electrolytic 2200 µF/25V	CE04W1E222MC SMG
C909	254 4403 718	Electrolytic 1000 µF/25V	CE04W1E102MC SMG
C910	254 4250 796	Electrolytic 4700 µF/6.3V	CE04W0J472MC SME
C911	253 9031 917	Ceramic 0.068 µF/25V	CK45-1E683KT
C913	254 4414 707	Electrolytic 470 µF/50V	CE04W1H471MC SMG
C914	254 4258 947	Electrolytic 47 µF/35V	CE04W1V470MT SME
C915	254 4258 950	Electrolytic 100 µF/35V	CE04W1V101MT SME
C916	254 4256 952	Electrolytic 220 µF/25V	CE04W1E221MT SME
C917	254 4256 907	Electrolytic 10 µF/25V	CE04W1E100MT SME
C920	254 4260 948	Electrolytic 1 µF/50V	CE04W1H010MT SME
C922	254 4260 964	Electrolytic 3.3 µF/50V	CE04W1H3R3MT SME
OTHER PARTS			
JK301	204 8261 003	4P Pin Jack	
JK302	204 8264 026	Head Phone Jack	
SW801 ~814	212 4388 907	Tact Switch	
SW816	212 1087 007	Slide Switch (L=12)	
L101	232 0109 003	:MPX Filter	
L103	235 0020 945	Inductor 153JT	
L104	235 0020 916	Inductor 822JT	
L105	239 0010 009	:HX Step up coil	
L201	232 0109 003	:MPX Filter	
L203	235 0020 945	Inductor 153JT	
L204	235 0020 916	Inductor 822JT	
L205	239 0010 009	:HX Step up coil	
L301	231 0078 005	:Oscilleator Coil	
FL801	393 4130 001	FL Tube	FIP7TM6
XT801	399 0107 007	Ceramic Resonator	CTS4.19MGW
CN121	205 0343 058	5P Connector Base (KR-PH)	
CN122	205 0491 036	25P FFC Connector Base	
CN141	205 0321 038	3P Connector Base (RED)	Open
CN142	205 0323 036	3P Connector Base (BLK)	Motor
CN143	205 0406 034	3P Connector Base (KR-PH)	Close
CN144	205 0543 036	3P Connector Base (YEL)	Speed
CN151	205 0343 045	4P Connector Base (KR-PH)	
CN152	205 0343 058	5P Connector Base (KR-PH)	
CN153	205 0343 074	7P Connector Base (KR-PH)	
CN301	205 0343 058	5P Connector Base (KR-PH)	R/P Head
CN302	205 0343 032	3P Connector Base (KR-PH)	E Head
W121	203 8328 008	5P-6P PH-SAN Connector Cord	
W131	204 2234 036	9P DA-DA Connector Cord	
W191	205 0321 009	10P Connector Base (RED)	
W801	203 4735 019	3P SAN-SAN Connector Cord	

WARNING:
- Parts marked with ⚠ and/shading have special characteristics important to sefty.
  Be sure to use the specified parts for replacemenht.

PARTS LIST OF KU-9293 POWER TRANS UNIT

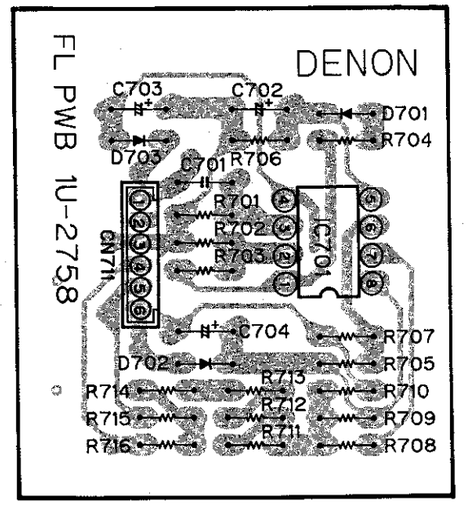
Ref. No.	Part No.	Part Name	Remarks
⚠ C901	253 8014 702	Ceramic Capacitor 0.01 µF/400VAC	CK45F2GAC103MC
C923, 924	253 9039 003	Ceramic Capacitor 0.1 µF/25V	CK45-1E104ZT
⚠ SW901	212 6286 003	Power Switch	
JK303	204 8416 007	Mini Jack	CD-CYNCRO
CN191	204 2686 008	10P PH-SAN Cord	
⚠ T901	233 5985 005	Power Transformer	Europe, U.K., Australia
⚠ T901	233 5768 009	Power Transformer	U.S.A., Canada
⚠ T901	233 5760 000	Power Transformer	Multi-Voltage (Asia)
⚠	212 4698 006	Voltage Selector (D)	Multi-Voltage

WARNING:
- Parts marked with ⚠ and/shading have special characteristics important to sefty.
  Be sure to use the specified parts for replacement.

PARTS LIST OF 1U-2758 FL UNIT

Ref. No.	Part No.	Part Name	Remarks
IC701	263 0565 007	IC BA15218	CK45F2GAC103MC
D701 ~703	276 4260 948	Diode 1SS270A TE	
C701	253 9031 920	Ceramic Capacitor 0.1 µF/25V	CK45-1E104ZT
C702	254 4260 948	Electrolytic Capacitor 1 µF/50V	CE04W1H010MT SME
C703, 704	254 4254 941	Electrolytic Capacitor 100 µF/16V	CE04W1C101MT SME
CN711	205 0343 061	6P Connector Base (KR-PH)	

WARNING: (not included Carbon Film Resistor ±5% 1/4W type)



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 "I" (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 (Type) 14K (Shape and performance) 2E (Power) 182 (Resistance ★) G (Allowable error) FR (Others)

RD : Carbon RC : Fixed RS : Metallic film RW : Winding RN : Metal film RK : Metal mixture	2B : 1/8W 2E : 1/4W 2H : 1/2W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse resistor F : Lead wire forming

★**Resistance**
1 8 2 ⇨ 1800Ω = 1.8kΩ
- 1 8 2: Indicates number of zeros after effective number
- 1 8: 2-digit effective number, decimal point indicated by R.
- Units: Ω

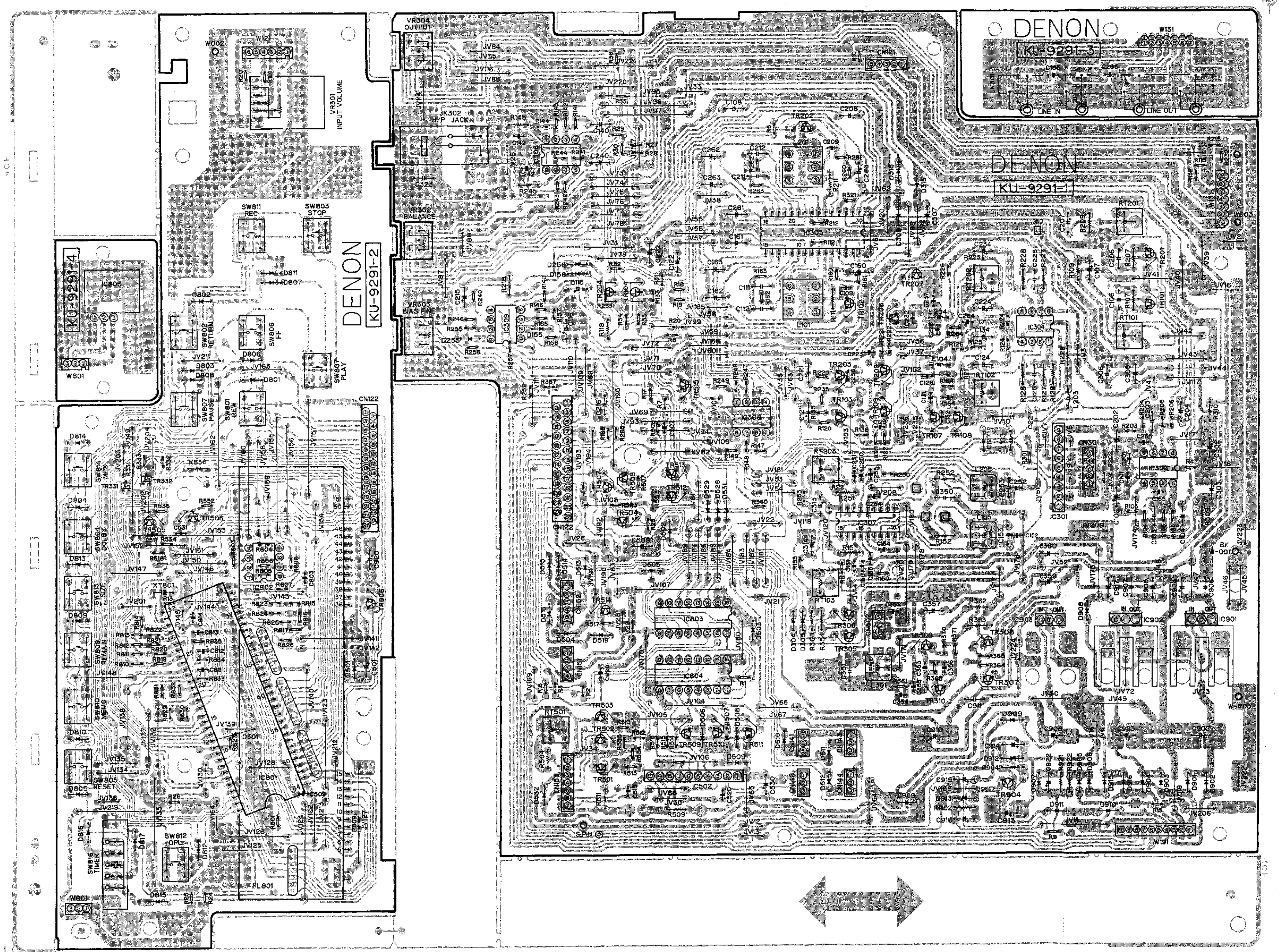
• Capacitors

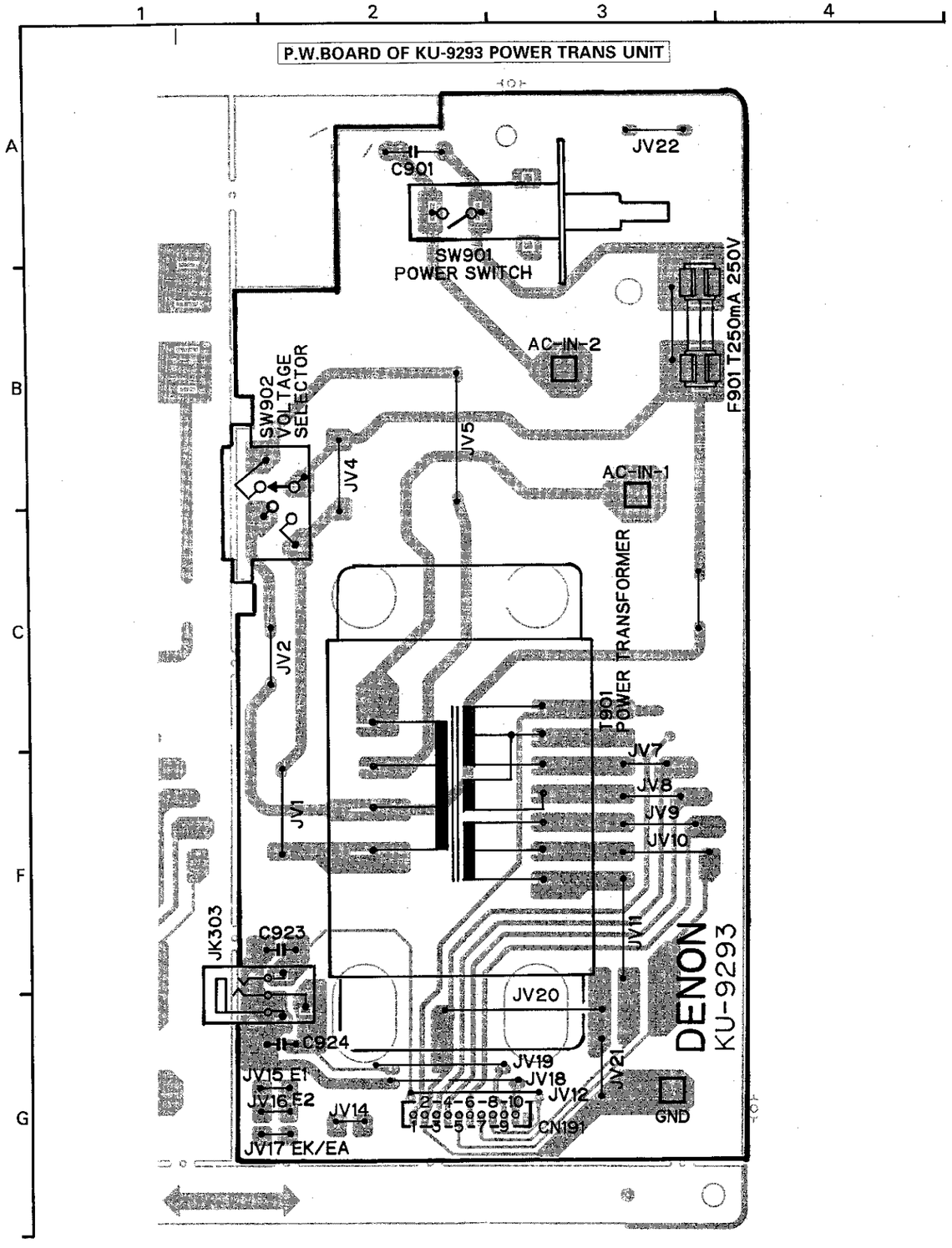
Ex.: CE (Type) 04W (Shape and performance) 1H (Dielectric strength) 2R2 (Capacity ★) M (Allowable error) BP (Others)

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

★**Capacity**
2 R 2 ⇨ 2.2µF
- 2 R 2: 1-digit effective number, decimal point indicated by R.
- 2: 2-digit effective number, decimal point indicated by R.
- Units: µF, (for P, pF (µµF)
- When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

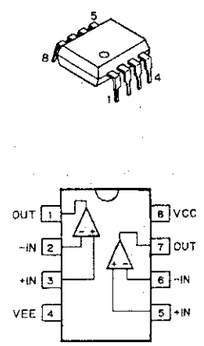
P.W.BOARD OF KU-9291 AUDIO/METER UNIT



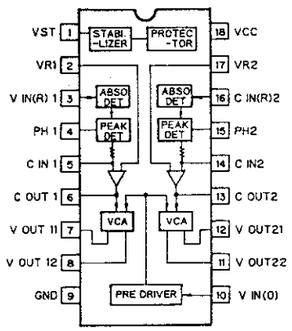


SEMICONDUCTORS

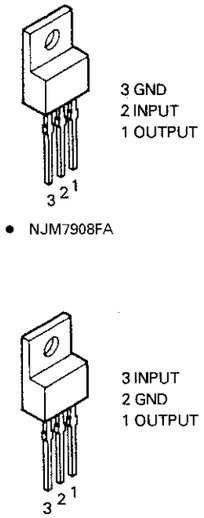
• IC



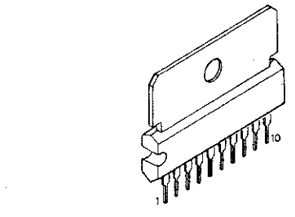
- M5218AP
- BA15218
- BA10393
- UPC4570C



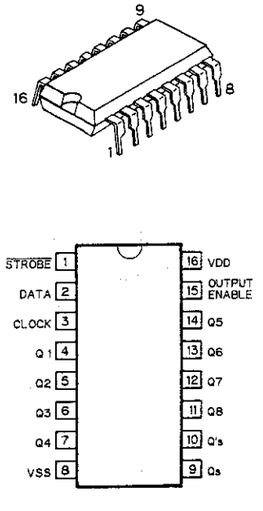
- μPC1297CA



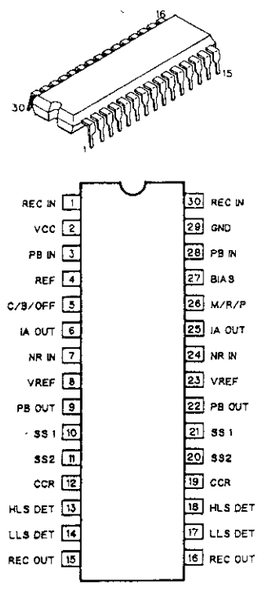
- NJM7908FA
- NJM7806FA(S)
- NJM7808FA(S)



- BA6238A

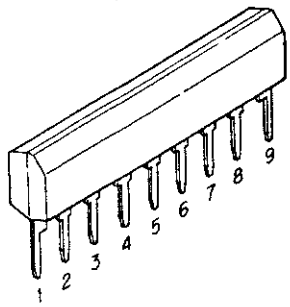


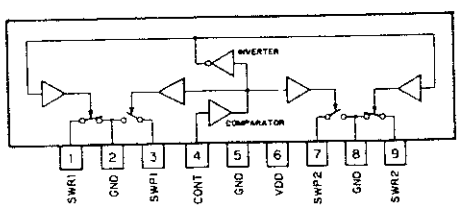
- μPD4094BC



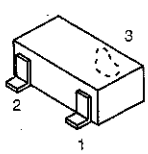
- HA12170NT

• Transistors

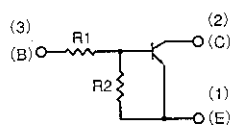




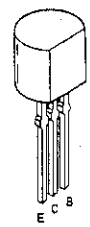
• μPC1330HA



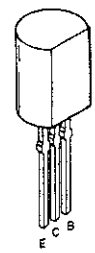
1: Emitter
2: Base
3: Collector



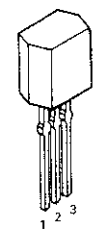
• DTC114EK



• 2SC2603

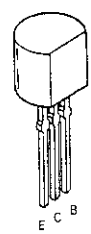


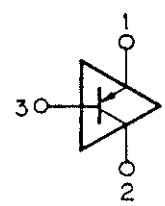
• 2SD468
• 2SB562



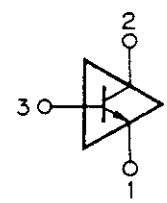
1S (Source)
2G (Gate)
3D (Drain)

• 2SK381



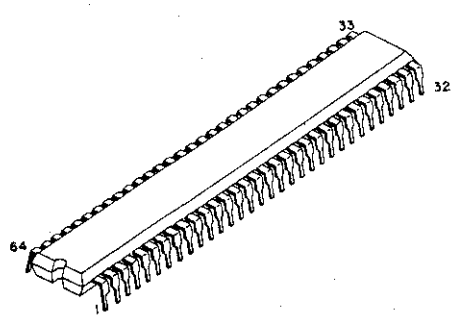


• DTA143ES
• DTA144WS

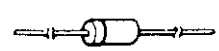


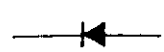
• DTC114TS
• DTC124ES
• DTC124XS
• DTC143ES
• DTC144ES
• DTC144WS

• Diodes



• μPD75212ACW-A94



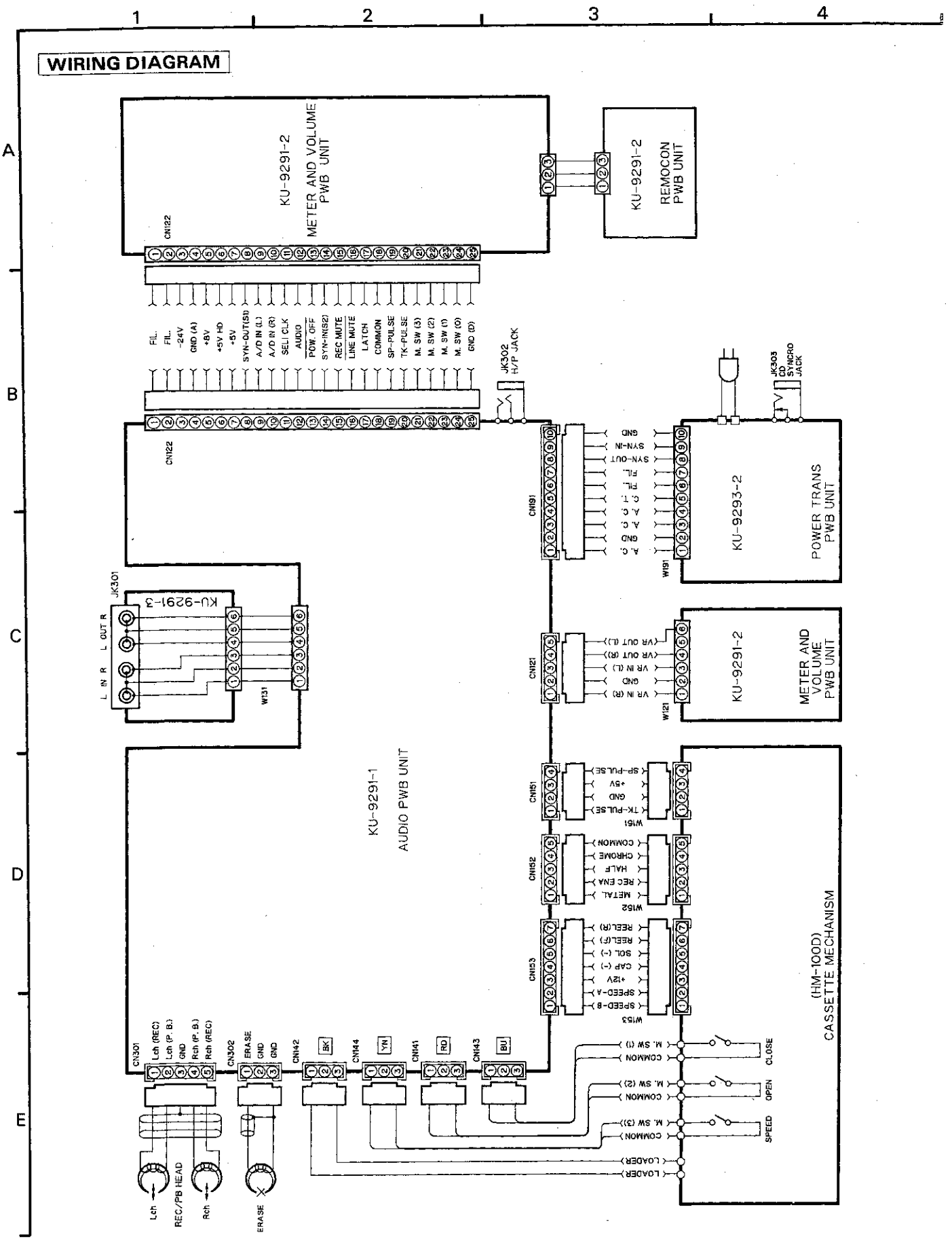


• 1SS270A
• 1SR35-200A

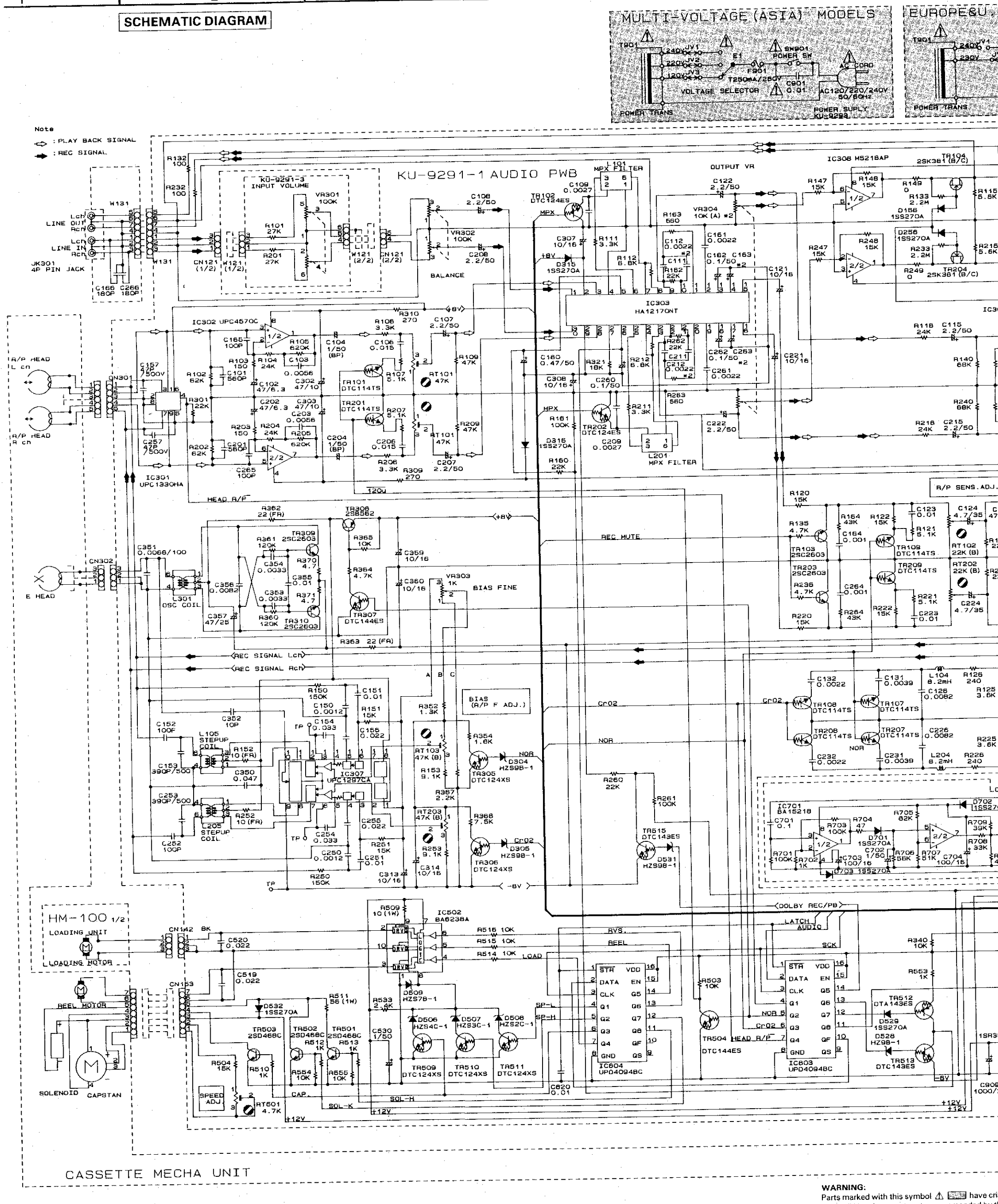
• HZS4C-1
• HZS3C-1
• HZS2C-1
• HZS6C-1
• HZS7B-1
• HZS6A-1

• HZS9B-1
• HZS30-1
• HZS11C-1

WIRING DIAGRAM



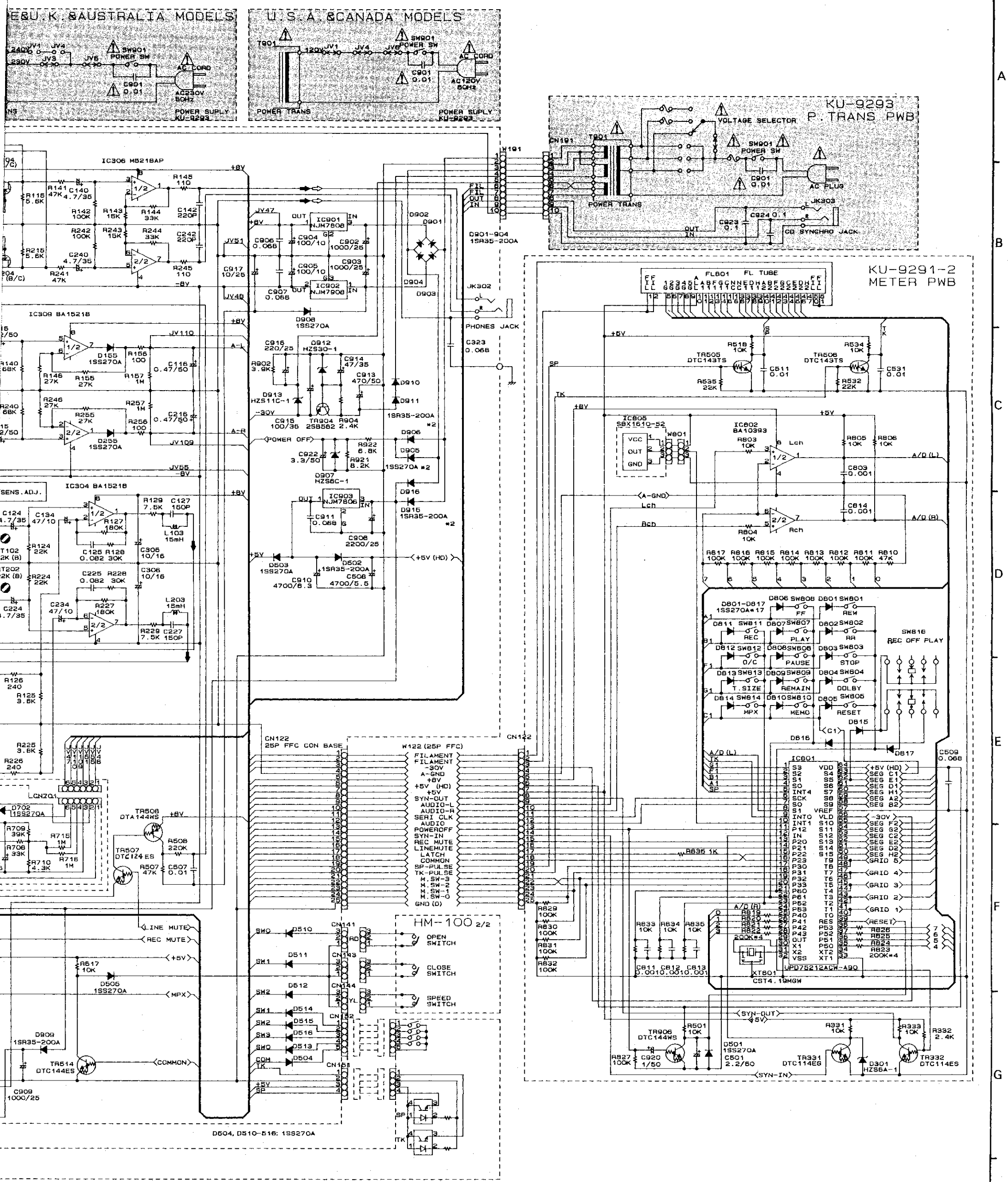
SCHEMATIC DIAGRAM



WARNING:
Parts marked with this symbol ⚠ have cri
Use ONLY replacement parts recommended by t

CAUTION:
Before returning the unit to the customer, make s
check or (2) a line to chassis resistance check. If
or if the resistance from chassis to either side of
unit is defective.

WARNING:
DO NOT return the unit to the customer until the



have critical characteristics.
mended by the manufacturer.

mer, make sure you make either (1) a leakage current
ce check. If the leakage current exceeds 0.5 miliamps,
ther side of the power cord is less than 240 kohms, the

her until the problem is located and corrected.

BUNDLE DIAGRAM