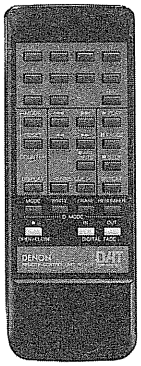
# DENON

Hi-Fi Component

# SERVICE MANUAL

## DIGITAL AUDIO TAPE DECK

## MODEL DTR-2000



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NIPPON COLUMBIA CO., LTD.

**WARNING:**

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

Please, record and retain the Model name and serial number of your set shown on the rating label
Model No. DTR-2000 Serial No. _____

**IMPORTANT** (BRITISH MODEL ONLY)

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

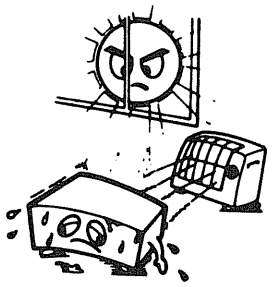
Blue: Neutral Brown: Live

The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

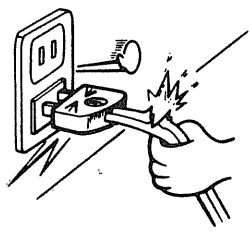
**FOR YOUR SAFETY**
(AUSTRALIAN MODEL ONLY)

To ensure safe operation, the three-pin plug supplied must be connected only with a standard three-pin power point which is effectively earthed through the normal household wiring.
Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, contact a qualified electrician.

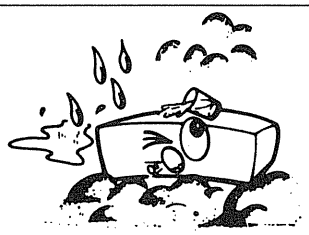
## NOTE ON USE/HINWEISE ZUM GEBRAUCH/OBSERVATIONS RELATIVES A L'UTILISATION



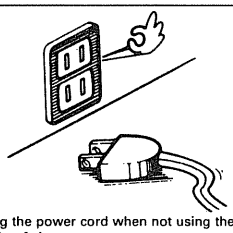
- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack.
- Vermeiden Sie hohe Temperaturen
  Sehen Sie zu, daß eine zureichende Luftzirkulation gewährleistet wird, wenn das Gerät auf ein Regal gestellt wird.
- Eviter des températures élevées
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.



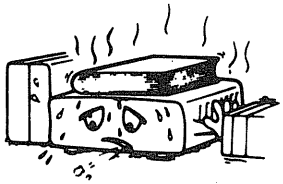
- Handle the power cord carefully.
  Hold the plug when unplugging the cord.
- Gehen Sie vorsichtig mit dem Netzkabel um.
  Halten Sie das Kabel am Stecker, wenn Sie den Stecker herausziehen.
- Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.



- Keep the set free from moisture, water, and dust.
- Halten Sie das Gerät fern von Feuchtigkeit, Wasser und Staub.
- Protéger l'appareil contre l'humidité, l'eau et la poussière.

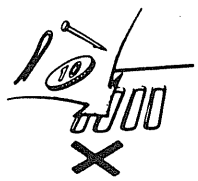


- Unplug the power cord when not using the set for long periods of time.
- Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzkabel vom Netzstecker.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.



*(For sets with ventilation holes)

- Do not obstruct the ventilation holes.
- Die Belüftungsöffnungen dürfen nicht verdeckt werden.
- Ne pas obstruer les trous d'aération.



- Do not let foreign objects in the set.
- Keine fremden Gegenstände in das Gerät kommen lassen.
- Ne pas laisser des objets étrangers dans l'appareil.

- Do not let insecticides, benzene, and thinner come in contact with the set.
- Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen.
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.

- Never disassemble or modify the set in any way.
- Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.

- **Be sure to read this manual carefully before operating the DTR-2000 in order to ensure full use of all the features this deck has to offer. Retain this manual for future reference should any questions arise.**

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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) Remote Control Unit RC-409 ..... 1
(4) R03/AAA Dry Cell Batteries ..... 2

## FEATURES

**(1) Real 20-bit ΛS.L.C. (Super Linear Converter)**
The use of DENON's unique system for preventing zero cross distortion, the main factor in loss of sound quality in the PCM plyaback section, plus real 20-bit D/A converters with superior resolution, offers reproduction of the original sound field with rich musical expression.

**(2) Various Subcode Functions**
The DTR-2000 offers a variety of functions using subcodes, a major feature of the DAT. These include high speed direct search, skip search for finding programs (selections) in either direction, after-recording of start ID and skip ID which come in handy when editing tapes, a fine cue function, a renumbering function, end search for convenience when recording, and display of the remaining time on the tape.

**(3) Digital Fade-in and Fade-out Function**
With the DTR-2000, the sound can be faded at the digital stage without affecting the quality. Fading in and out is possible even when the input source is analog.

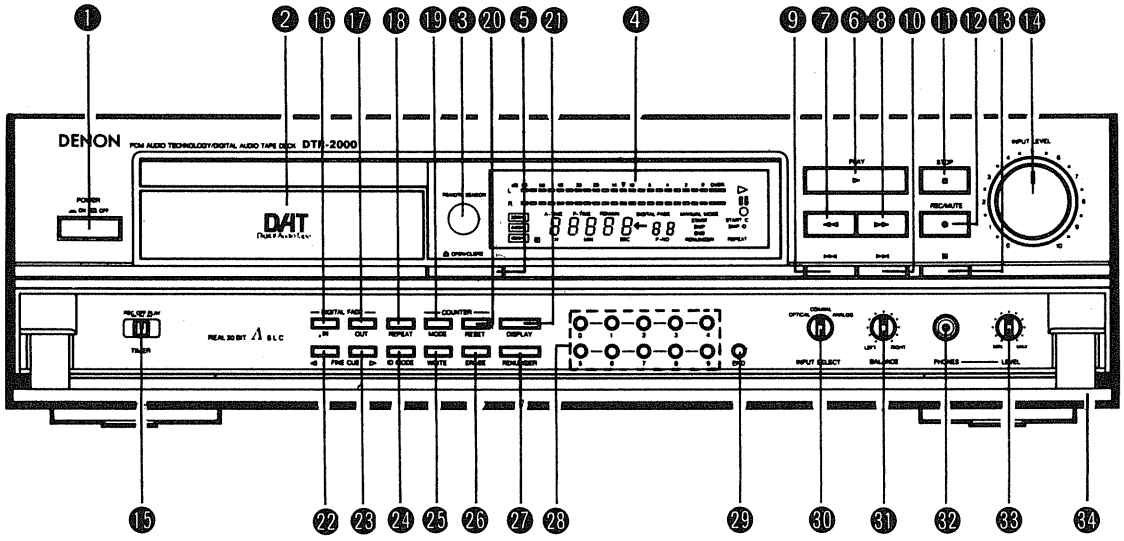
**(4) DAT Mechanism for High-speed Fast-forwarding and Rewinding**
The tape can be fast-forwarded and rewound at about 400 times the normal speed, cutting the time required for rewinding the tape in about half as compared to conventional digital audio tape decks.

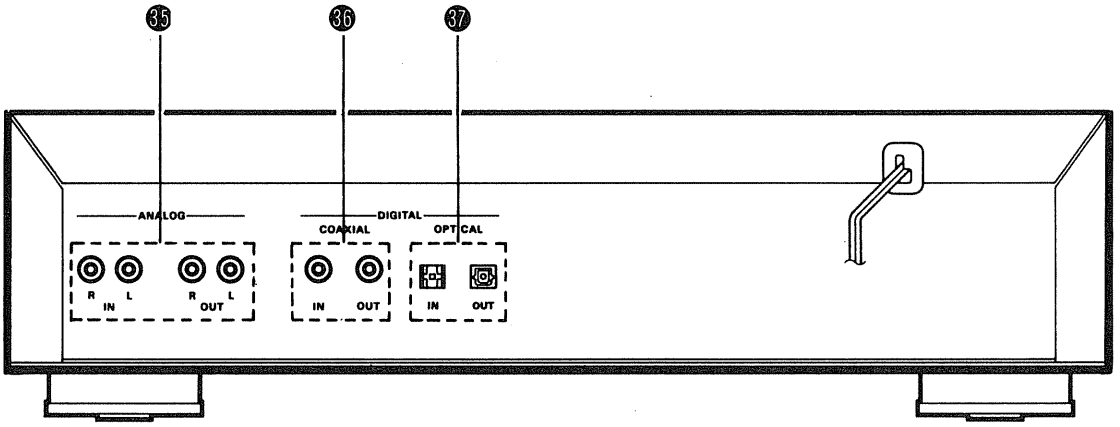
**Serial Copy Management System (S.C.M.S.)**
The DTR-2000 uses a new system called the Serial Copy Management System (SCMS). The SCMS makes it possible to make digital copies of compact disk or DAT prerecorded tape for the first generation only. In other words, it prohibits serial copying (making a copy in digital format from a tape which is itself a digital copy of a CD player or DAT). (Refer to Page 10.)

**Condensation**
Water droplets may form on such important parts as the rotating sections or the heads when the temperature changes suddenly, such as when the deck is moved from a cold place into a warm place, or when the deck is used in humid places. This is called condensation or dew. When condensation occurs, E'RROR dE flashes on the display and all operations stop. If this happens, let the deck set with the power off for several hours until it becomes accustom to room temperature.

**CLEANING**
- The heads may become dirty after using the DTR-2000 for a long time. If so, the sound may become distorted or not be produced at all. To assure quality recording and playback, we recommend using a DAT cleaning cassette (available in stores) to clean the heads periodically.

## 1 Front and Back Panels




**❶ POWER (Power switch)**
- Press this switch to turn the power on ( ▬ ON) and off ( ■ OFF). The deck can be operated about four seconds after the power is turned on.

**❷ Cassette tray**
- Load the cassette here.
- Press the ⏏ OPEN/CLOSE (Open/close button) ❺ to open and close the cassette tray.

**❸ REMOTE SENSOR**
- This is where the signals from the wireless remote control unit are received.
- Point the wireless remote control unit (RC-409) at this sensor when operating it.
- The indicator on the display window ❹ which shows that remote control signals have been received lights when the remote control unit is operated.

**❹ Display window**
- Refer to "Display Window" on Page 6.

**❺ ⏏ OPEN/CLOSE (Open/close button)**
- Press this button to open and close the cassette tray ❷.

**❻ ▶ PLAY (Play button)**
- Press this button to start playback.

**❼ ◀◀ (Rewind button)**
- Press this button to rewind the cassette tape. The tape is rewound at about 250 times the normal speed when this button is pressed once, about 400 times the normal speed when pressed twice.
- When pressed during playback, the tape is rewound at about 3 times the normal speed and the sound can be heard.

**❽ ▶▶ (Fast-forward button)**
- Press this button to fast-forward the cassette tape. The tape is fast-forwarded at about 250 times the normal speed when this button is pressed once, about 400 times the normal speed when pressed twice.
- When pressed during playback, the tape is fast-forwarded at about 3 times the normal speed and the sound can be heard.

**❾ I◀◀ (Automatic search reverse button)**
- Press this button in the play, pause or stop mode to search for programs (selections) in the reverse direction.
- The tape is rewound to the beginning of the program located the number of programs before the current program equal to the number of times the button is pressed.

⑩ **▶▶I (Automatic search forward button)**
- Press this button in the play, pause or stop mode to search for programs (selections) in the forward direction.
- The tape is fast-forwarded to the beginning of the program located the number of programs after the current program equal to the number of times the button is pressed.

⑪ **■ STOP (Stop button)**
- Press this button to stop the tape in any mode.

⑫ **● REC/MUTE (Rec/mute button)**
- Press this button to set the deck to the recording standby mode.
- Next, press the ▶ PLAY (Play button) ⑥ to begin recording.
- When pressed during the recording or recording standby mode, a blank section of about 4 seconds is recorded on the tape, after which the deck is set to the recording standby mode.

⑬ **II (Pause button)**
- Press this button to stop playback or recording temporarily.
- Press the ▶ PLAY (Play button) ⑥ to cancel the pause mode.
- The deck will automatically be set to the stop mode if the pause button is left pressed for about two hours.

⑭ **INPUT LEVEL (Input level control knob)**
- Use this control to adjust the recording input level.

⑮ **TIMER (Timer switch)**
- Set this switch to the "REC" or "PLAY" position to use the audio timer.
- Usually keep this switch at the "OFF" position.

⑯ **DIGITAL FADE IN (Digital fade in button)**
- Press this button to fade in from the recording standby mode.

⑰ **DIGITAL FADE OUT (Digital fade out button)**
- Press this button to fade out from the recording mode.

⑱ **REPEAT (Repeat button)**
- Press this button to repeat from the beginning to the end of the cassette tape.

⑲ **COUNTER MODE (Counter mode button)**
- Press this button to set the display window ④ to the counter mode. (Refer to Page 6.)

⑳ **COUNTER RESET (Counter reset button)**
- Press this button to reset the four-digit tape counter to "00 00". (Refer to Page 6.)

㉑ **DISPLAY (Display button)**
- Press this button to turn off the display window ④.
- When pressed once, the counter and program number are displayed. When pressed again, only the program number is displayed. (In the playback and recording modes, the entire display turns off.) Press once again to set the display back to normal.

㉒ **FINE CUE ◁ (Fine cue button)**
- When this button is pressed in the pause mode, the tape is rewound at about 1/2 the normal speed until the button is released, and the sound can be heard.

㉓ **FINE CUE ▷ (Fine cue button)**
- When this button is pressed in the pause mode, the tape is forwarded at about 1/2 the normal speed until the button is released, and the sound can be heard.

㉔ **ID MODE (ID Mode button)**
- Press this button to select the type of subcode ID to be recorded or erased. (Refer Page 7.)

㉕ **WRITE (ID Record button)**
- Press this button to record subcode IDs manually.

㉖ **ERASE (ID Erase button)**
- Press this button to erase subcode IDs.

㉗ **RENUMBER (Renumber button)**
- Press this button to automatically rewind the tape and renumber the programs starting from 1.

㉘ **0 ~ 9 (Number button)**
- Use these numbers for direct search.

㉙ **END (End button)**
- Use this button to search for the end ID or for non-recorded sections on the tape.

㉚ **INPUT SELECT (Input select knob)**
- Use this knob to select the input source for recording.

㉛ **BALANCE (Balance control knob)**
- Use this control to adjust the recording input level balance between the left and right channels.
- Usually keep this button at the center (click) position.

㉜ **PHONES (Phones jack)**
- Connect headphones here.

㉝ **PHONES LEVEL (Phones level control knob)**
- Use this control to adjust the volume over the headphones.

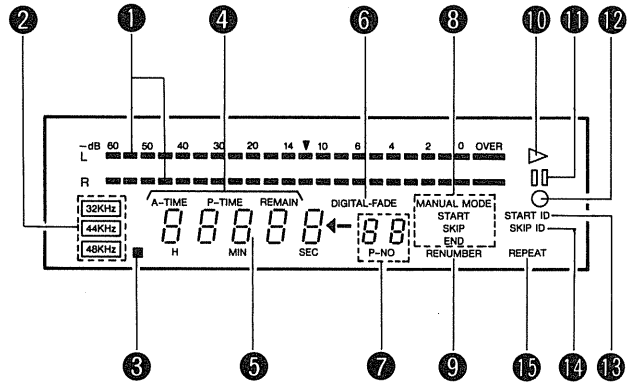
㉞ **Trap door**
- Press the right edge of this door to open it.
- To close the door, press on it until you hear a click to make sure the door is locked.

㉟ **ANALOG (Analog input/output jacks)**
- Use pin-plug cords to connect these jacks. (Refer to "CONNECTIONS" on Page 8.)

㊱ **COAXIAL (Digital input/output jacks)**
- Use coaxial cables to connect these jacks. (Refer to "CONNECTIONS" on Page 8.)

㊲ **OPTICAL (Digital input/output jacks)**
- Use optical fiber cords to connect these jacks. (Refer to "CONNECTIONS" on Page 8.)

## 2 Display Window




❶ **Peak level meter**
- This indicates the playback level during playback and the recording level during recording. The peak level is held for about 2 seconds.

❷ **Sampling frequency indicators**
- These indicate the sampling frequency during playback and recording.

❸ **Remote control indicator**
- This indicator lights when the remote control unit is operated.

❹ **Counter mode indicators**
- Refer to "Counter Mode Indicators" on Page 6.

❺ **Digital counter**
- The various counter data are displayed here.
- Refer to "Counter Mode Indicators" on Page 6.

❻ **DIGITAL-FADE indicator**
- This flashes during the fade-in and fade-out operations.

❼ **P-NO (program number) display**
- This displays the number of the program currently being played or recorded.

❽ **MANUAL MODE (ID mode) indicators**
- Refer to "ID Mode Indicators" on Page 7.

❾ **RENUMBER indicator**
- This lights during the renumbering operation.

❿ **▷ (play) indicator**
- This lights during the play and recording modes.
- The indicator flashes during the fade-in operation.

⓫ **▯▯ (pause) indicator**
- This lights during the pause and recording standby modes.
- The indicator flashes while blank spaces are being recorded and during the fade-out operation.

⓬ **○ (recording/mute) indicator**
- This lights during the recording and recording standby modes.

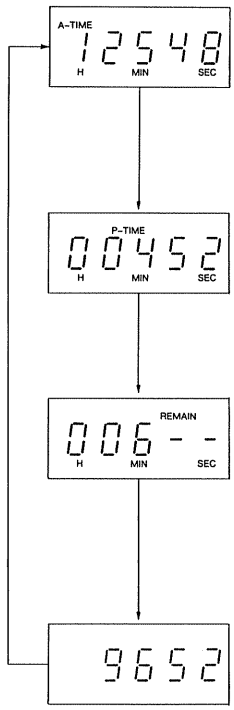
⓭ **START ID indicator**
- This lights while recording and playing start ID.

⓮ **SKIP ID indicator**
- This lights while recording and playing skip ID.

⓯ **REPEAT indicator**
- This lights when the repeat mode is set.

## 3 Counter Mode Indicators

- **The counter mode indicators and digital counter display change as follows each time the COUNTER MODE button is pressed:**




**Absolute time**
- The elapsed time from the beginning of the tape is displayed.
- If the absolute time is not recorded on the tape, the display will read as follows:

| H | MIN | SEC |
|---|---|---|

**Program time**
- The elapsed time per program (selection) is displayed.
- If playback is started from the middle of a program or if the cue/review operation is performed during playback, the display will read as follows:

| H | MIN | SEC |
|---|---|---|

**Remaining time**
- The time remaining up to the end of the tape is displayed.
- The seconds are not displayed.
- For the first 10 seconds of playback or recording, the display will read as follows:

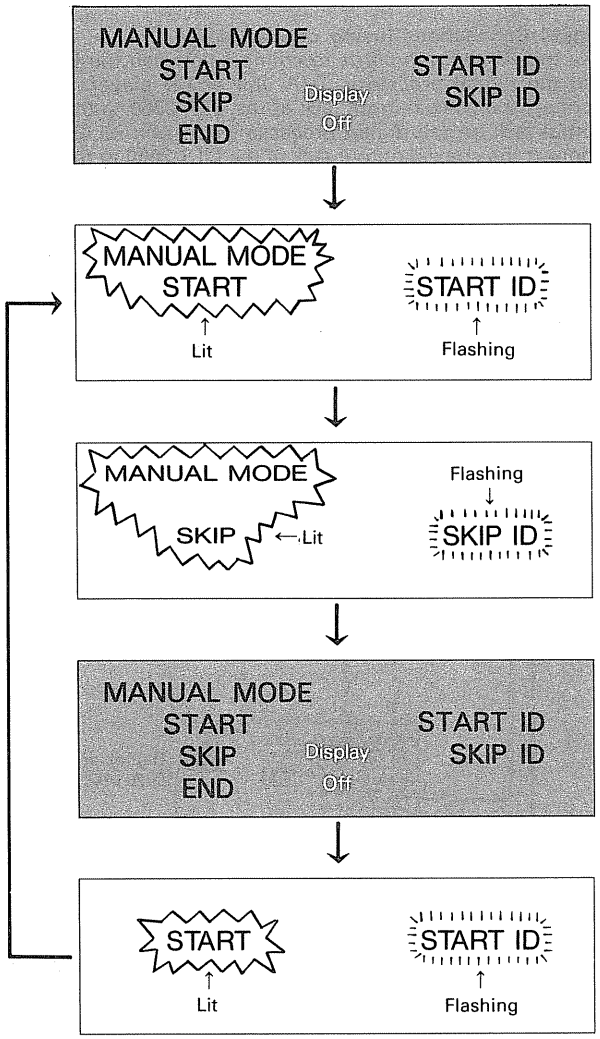
| H | MIN | SEC |
|---|---|---|

- The remaining time display is not accurate as a clock, and differs slightly depending on the type of tape being used.

**Tape counter**
- A 4-digit counter displays the tape travel.
- The counter is reset to "0000" when the COUNTER RESET button is pressed. (The RESET button will not function in other counter modes.)

## 4 ID Mode Indicators

- **During the play, pause and stop modes, the display changes as follows each time the ID MODE button is pressed:**




**AUTO REC**
- Start IDs can be recorded automatically (during recording).

**MANUAL START**
- Start IDs can be recorded manually (during recording).

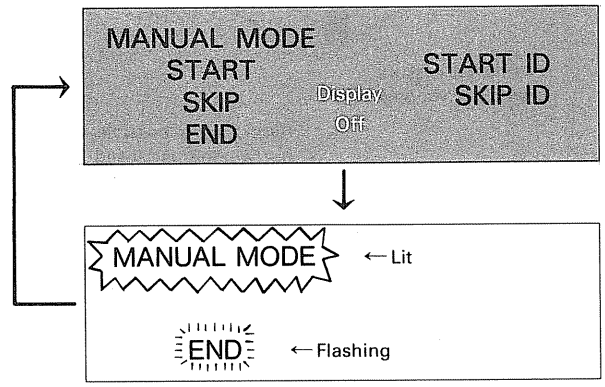
**MANUAL SKIP**
- Skip IDs can be recorded manually.

**AUTO REC**
- Skip IDs can be recorded automatically.

**AUTO PLAY**
- Start IDs can be recorded automatically (during playback).
- The absolute time can be corrected.

- The "AUTO REC" mode is set when the power is turned on and when the STOP button is pressed.
- In the recording mode, the mode switches between "AUTO REC" and "MANUAL START".

- **During the recording standby mode, the display changes as follows each time the ID MODE button is pressed:**




**AUTO REC**
- Start IDs can be recorded automatically (during recording).

**MANUAL END**
- End IDs can be recorded manually.

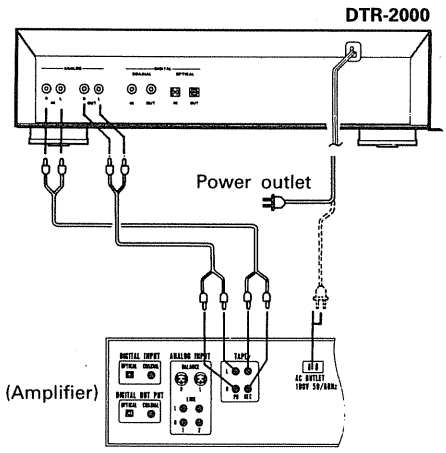
## CONNECTION

- **Do not plug the power cord into a power outlet until all connections to the DTR-2000 and other components have been completed.**
- **Read this manual and the manual for other components carefully to make sure connections are proper.**
- **Check the left and right channels before plugging the included pin-plug cords securely in the jacks.**

**(1) Analog Connections (using pin-plug cords)**

- Connect the DTR-2000 to the amplifier's DAT/TAPE jacks using the included pin-plug cords.

| DTR-2000 | | Amplifier's DAT/TAPE jacks |
|---|---|---|
| IN (input) | L → L | REC (recording) |
| | R → R | |
| OUT (output) | L → L | PLAYBACK |
| | R → R | |




**(2) Digital Connections (using coaxial cable)**

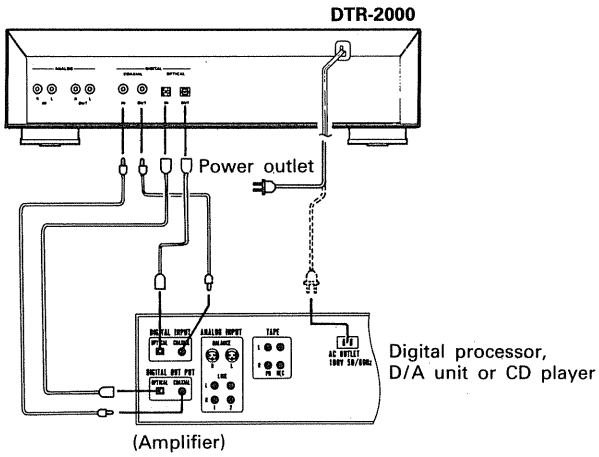
Use the 75-ohm pin cords to connect between the DTR-2000 and the digital processor, D/A unit or CD player.

- Connect the coaxial input jack of the DTR-2000 to the coaxial output jack on the digital processor, D/A unit or CD player.
- Connect the coaxial output jack of the DTR-2000 to the coaxial input jack on the digital processor or D/A unit.

**(3) Digital Connections (using optical fiber cable)**

Use the optical fiber cable to connect between the DTR-2000 and the digital processor, D/A unit or CD player.

- Connect the optical input jack of the DTR-2000 to the optical output jack on the digital processor, D/A unit or CD player.
- Connect the optical output jack of the DTR-2000 to the optical input jack on the digital processor or D/A unit.




## DAT CASSETTE TAPES

- **Unlike regular compact cassettes, DAT cassette tapes are housed in a sealed case like video cassettes. This protects the tape from scratches and dust so that you can always enjoy digital sound with excellent quality. Handle DAT cassettes properly, being careful of the points described below.**

**(1) Cautions on Handling**

- The back side cannot be used.
  As with video tapes, only the front side of DAT tapes can be used.
- Do not pull the tape out of the case.
  If the tape is pulled out of the case, it might be damaged from scratches or dirt.

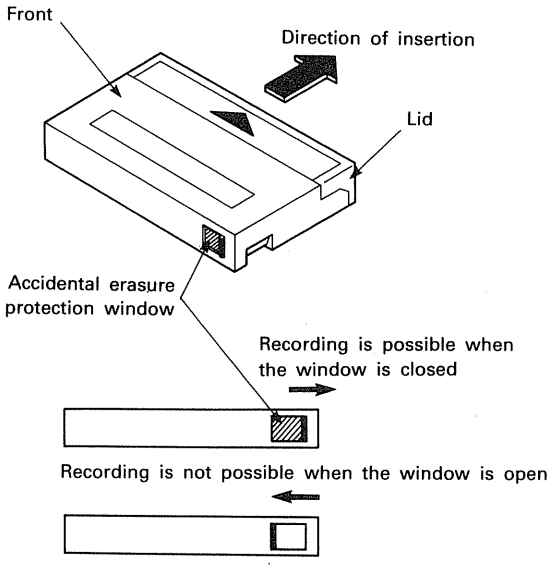
**(2) Cautions on Storage**

Do not store DAT cassettes in the following places:

- Places exposed to direct sunlight
- Hot (35°C 95°F or greater) or humid (80% RH or greater) places
- Near strong magnetic forces, such as speakers, TVs, magnets, etc.

**(3) Accidental Erasure Protection**

- DAT cassette tapes are equipped with accidental erasure protection windows. Open these windows after recording to prevent the tape from being erased accidentally.
- If you want to record a tape over again, simply close the window.
  (Recording is not possible if the window is open.)
- Close this window when recording or erasing subcodes (start and skip ID) or when renumbering.



## OPENING AND CLOSING THE CASSETTE TRAY AND LOADING CASSETTE TAPES

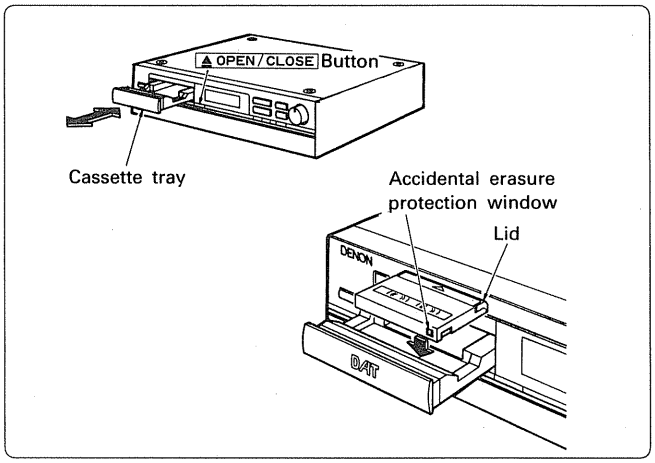
**(1) Opening and Closing the Cassette Tray**

(The tray cannot be opened and closed if the power is off.)

① Press the POWER switch to turn the power on.
② Press the ≜ OPEN/CLOSE button.
The cassette tray slides out.
③ Press the ≜ OPEN/CLOSE button again to close the cassette tray.

**(2) Loading Cassette Tapes**

① Open the cassette tray and set the cassette tape in it as shown in the diagram, with the lid to the back.
② Press the ≜ OPEN/CLOSE button to close the cassette tray.
③ The digital counter on the display window will read [0 H 00 MIN 00 SEC] and flash while the cassette tape is being loaded.
④ The cassette tape is loaded when [0 H 00 MIN 00 SEC] stops flashing.

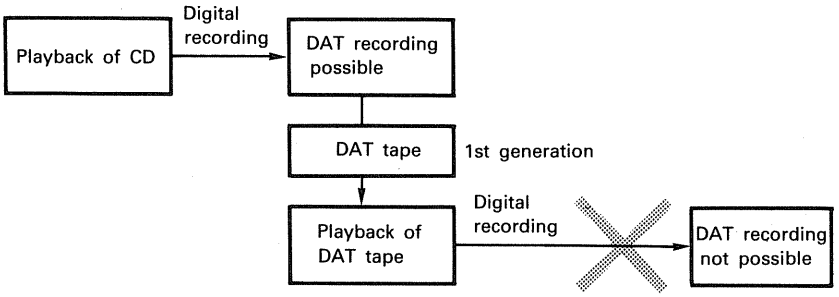



**NOTES:**

- The cassette tray can also be closed by pressing any of the operation buttons other than ● REC/MUTE.
  When this is done, the deck is automatically set to the corresponding mode once the cassette tape is loaded.
  The cassette tray can also be closed by pressing on it.
- Do not operate buttons by tapping them with a pencil, etc.
- If you should get a finger caught, remain calm, and press the ≜ OPEN/CLOSE button.
- Do not set objects other than cassette tapes in the cassette tray, as this could result in damage.
- Do not press on the cassette tray when the power is off, as this could result in damage.

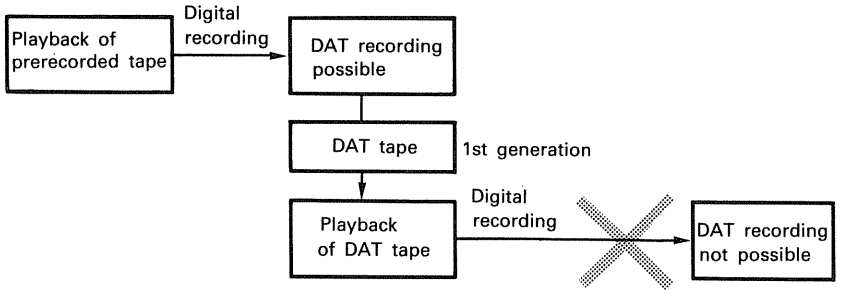
- **This deck is compatible with serial copy management systems (S.C.M.S.).**
  **There are limitations to digital recording. Study the following carefully to ensure proper recording.**

**1. Tapes recorded in digital format from a CD player**



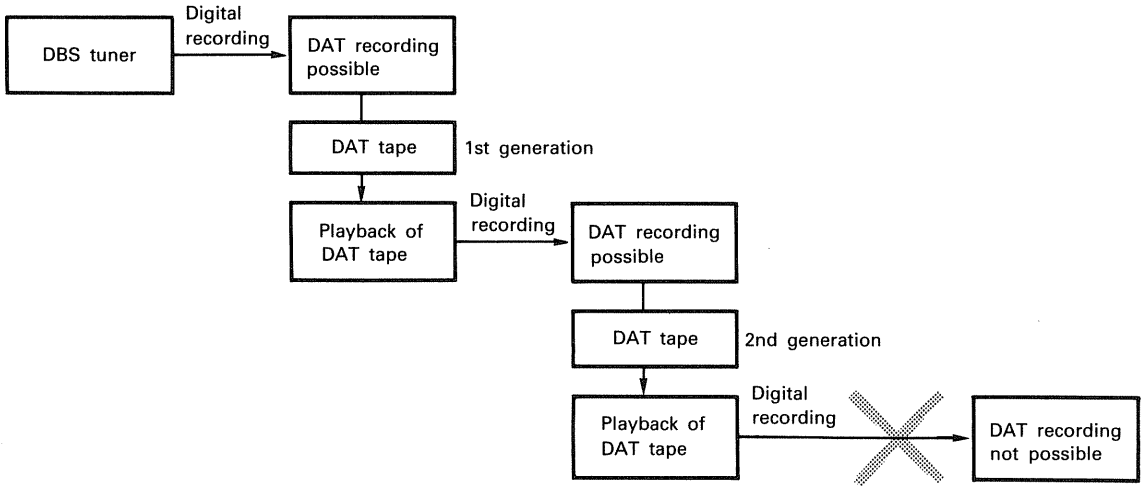

Recording in digital format (digital copying) from CDs is only possible for the first generation.
It is not possible to make digital copies of a (first generation) tape recorded in digital format.

**2. Tapes recorded in digital format from a prerecorded tape**



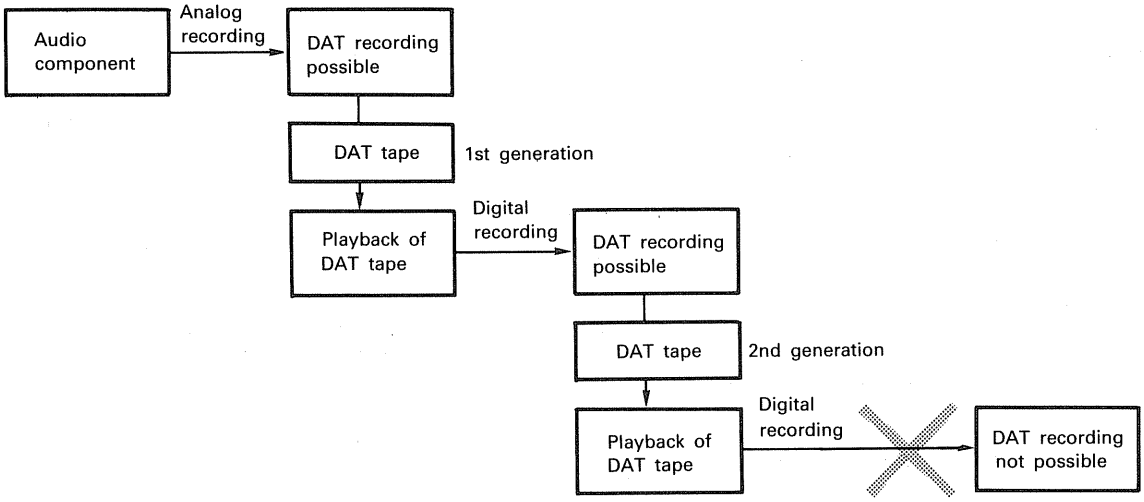

Recording in digital format (digital copying) from prerecorded tapes is only possible for the first generation.
It is not possible to make digital copies of a (first generation) tape recorded in digital format.
In some cases, it is not possible to record prerecorded tapes not compatible with the SCMS in digital format.

**3. Tapes recorded in digital format from DBS tuners**



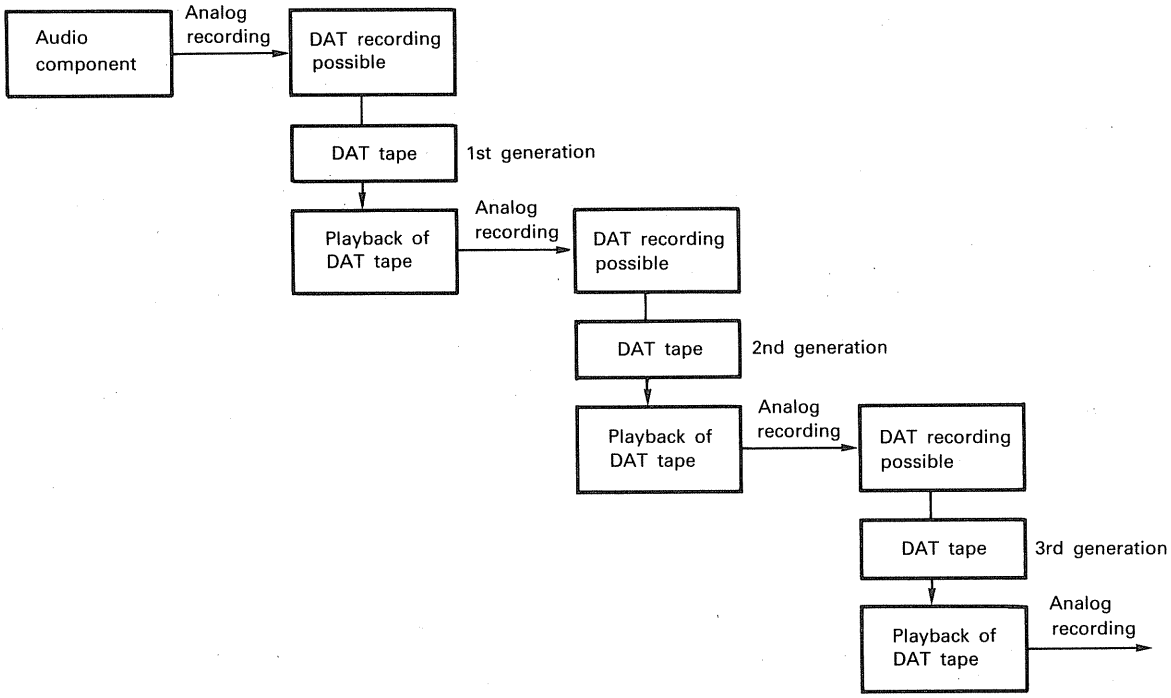

For tapes recorded in digital format from DBS tuners, it is possible to make digital copies only up to the second generation.
However, this principle does not apply to some DBS tuners.

**4. Tapes recorded from analog input jacks (and subsequently copied in digital format)**




For tapes recorded in analog format, it is possible to make digital copies only up to the second generation. It is not possible to make digital copies of (second generation) tapes recorded in digital format.

**5. Tapes recorded from analog input jacks (and subsequently copied in analog format)**




As with conventional DAT and cassette decks, there are no limits to copying tapes recorded in analog format. Thus, when recording in digital format is not possible, copying is possible by using the analog input and output jacks.

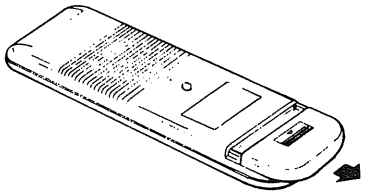
**NOTE:** In some cases, it is not possible to record in digital format from DATs not compatible with the SCMS.

## OPERATIONS USING THE REMOTE CONTROL UNIT

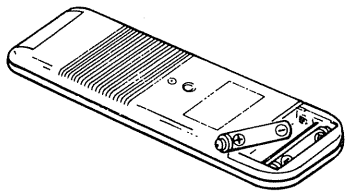
The accessory RC-409 remote control unit can be used to control the Digital Audio Tape Deck from a convenient distance.

**(1) Inserting the dry cell batteries**

① Remove the battery cover on the back of the remote control unit.



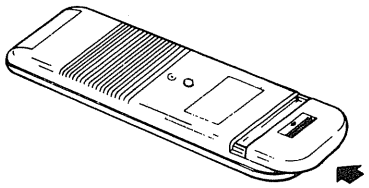
② Insert two R03 (standard size AAA) dry cell batteries with correct polarity as indicated inside the battery compartment.



**Notes on the Batteries**

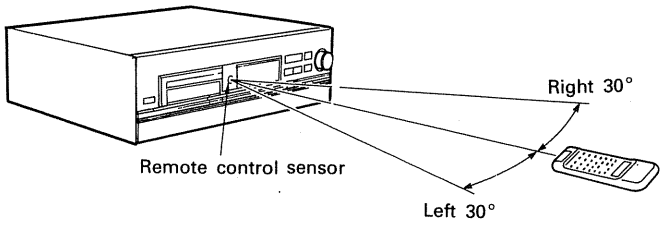
- The remote control unit uses standard size AAA dry cell batteries.
- The batteries will need to be replaced approximately once a year. Replacement may be necessary earlier depending on how much the remote control unit is used.
- If, in less than a year from the time new batteries were inserted, the remote control fails to operate the Digital Audio Tape Deck from a near-by position, it is time to replace the batteries.
- Insert the batteries properly, following the polarity diagram inside the battery compartment, in other words make sure (+) and (–) terminals are properly aligned.
- Batteries are prone to damage and leakage. Therefore:
  - Do not combine new batteries with used ones.
  - Do not combine different types of batteries.
  - Do not jumper opposite poles of the batteries, expose them to heat, break them open nor expose of them in open fire.
- If the remote control unit is not to be used for a long period of time, remove the batteries from the unit.
- If the batteries have leaked, remove any traces of battery fluid from the battery compartment, wiping thoroughly with a dry cloth. Then insert new batteries.

③ Replace the battery cover.



**(2) Direction for Use**

- Operate the remote control unit while pointing it towards the remote control sensor on the Digital Audio Tape Deck (see below).




When a remote control signal is received, the remote control indicator on front of the Digital Audio Tape Deck lights briefly.

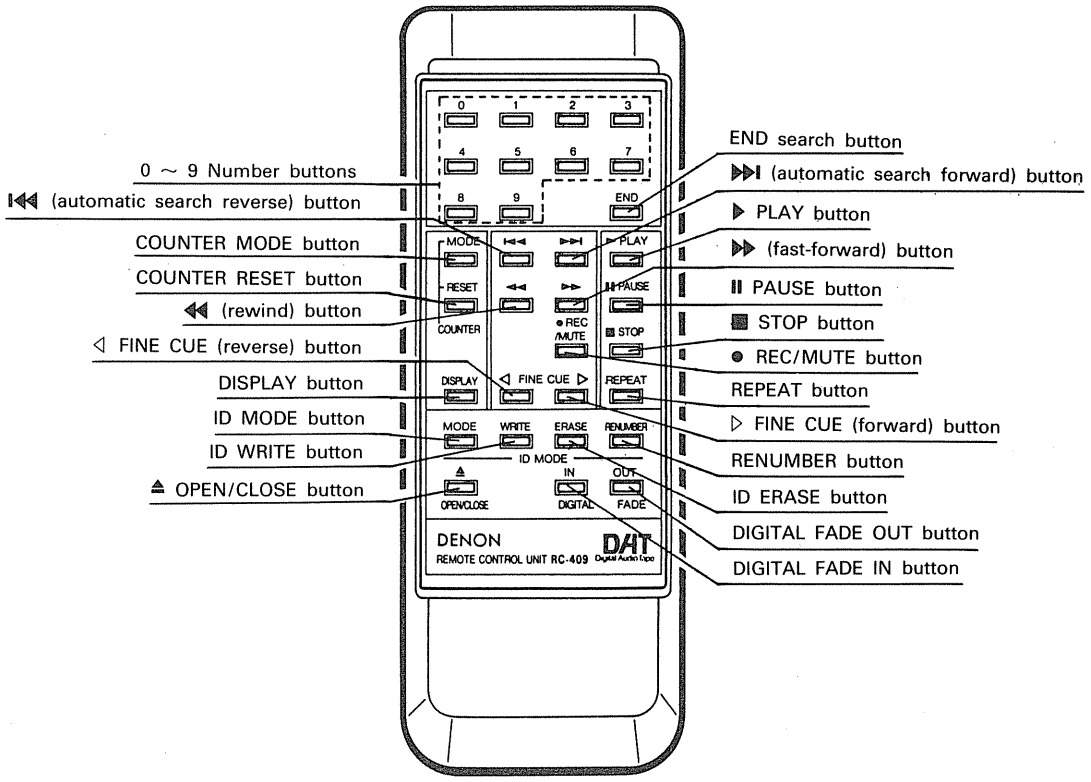
- The remote control unit can be used at a distance up to 7 meters in a straight line from the Digital Audio Tape Deck. This distande decreases if there are obstructions blocking the signal path or when the remote control unit is operated at an angle from the remote control sensor.

**Cautions on Use**

- Do not press the operation buttons on the main unit and on the remote control unit simultaneously, as this will result in malfunction.
- The remote control unit may not operate properly if the remote control sensor is exposed to direct sunlight or strong artificial lighting, or if there is an object between the remote control unit and the remote control sensor.

**(3) Names of Buttons**

- The buttons on the remote control unit operate in the same way as the corresponding buttons on the main unit. For descriptions of their operation, refer to the explanations of the main unit buttons.




Note that the following operations cannot be performed from the remote control unit:

1. Turning the power on and off
2. Adjusting the input level
3. Opening the trap door
4. Switching the timer
5. Adjusting the balance
6. Switching the input
7. Adjusting the headphones level

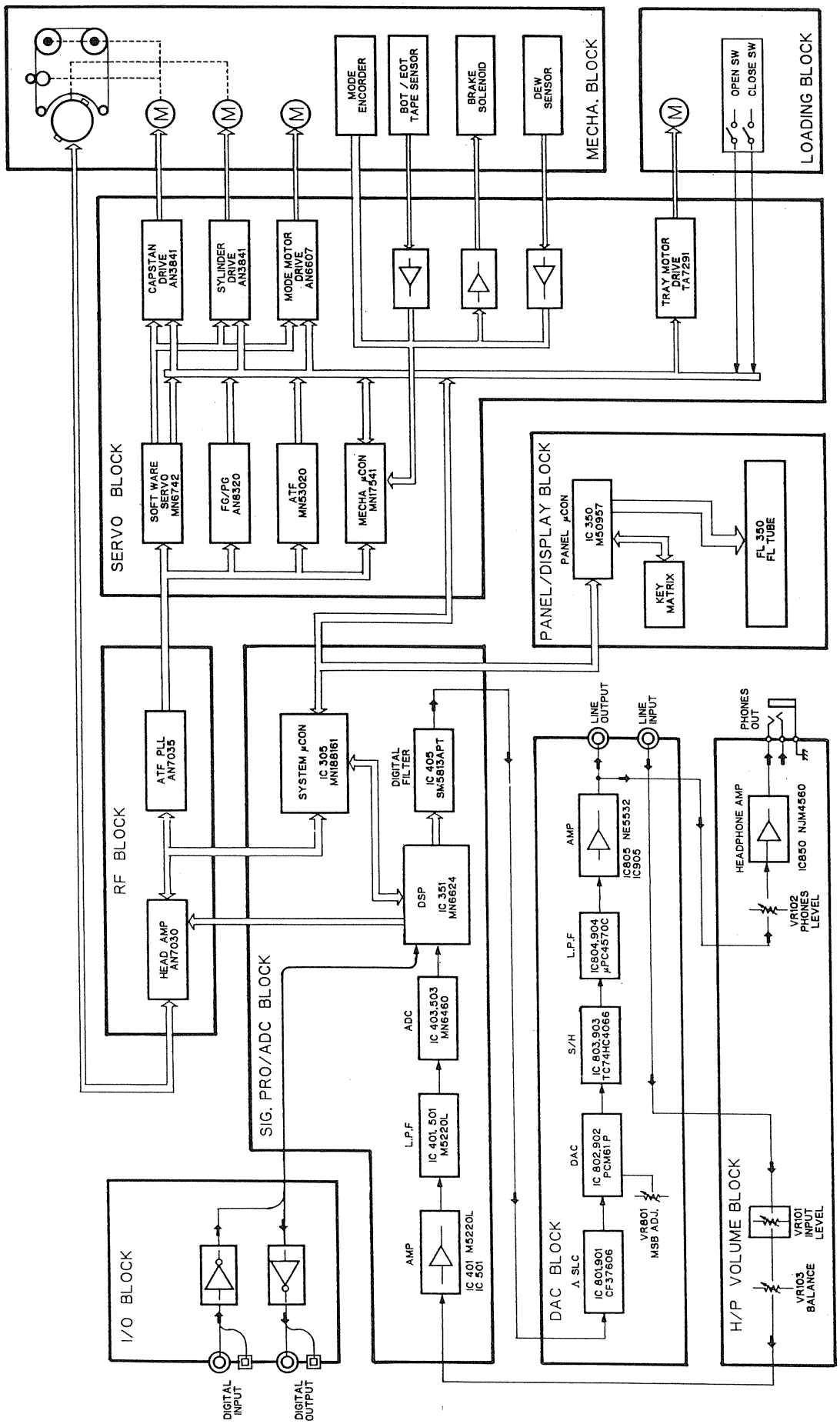
## SPECIFICATIONS

| | |
|---|---|
| **Type:** | Rotary head DAT deck |
| **Tape speed:** | 8.15mm/s |
| **Sampling frequencies:** | Recording: 32kHz<br>48kHz, 44.1kHz<br>Playback: 32 kHz, 44.1 kHz and 48 kHz |
| **Head:** | Amorphous head |
| **Total frequency response (standard mode):** | 2Hz to 22kHz ±0.5dB |
| **Total S/N ratio:** | 90dB |
| **Total dynamic range:** | 90dB |
| **Total harmonic distortion:** | 0.008% |
| **Wow and flutter:** | Below measurable limits |
| **Power supply:** | 50 Hz/60Hz, voltage is shown on rating label |
| **Power consumption:** | 18 W |
| **Dimensions:** | 434 (W) × 122 (H) × 320 (D) mm (17-3/32" × 4-51/64" × 12-19/32") |
| **Weight:** | 7.2 kg |

| | |
|---|---|
| **Remote control unit:** | RC-409 |
| **Remote control system:** | Infrared pulse system |
| **Power supply:** | 3 V DC; two R03 (standard size AAA) dry cell batteries |
| **External dimensions:** | 60 (W) × 165 (H) × 17 (D) mm (2-23/64" × 6-29/64" × 43/64") |
| **Weight:** | 90 g (Including batteries) |

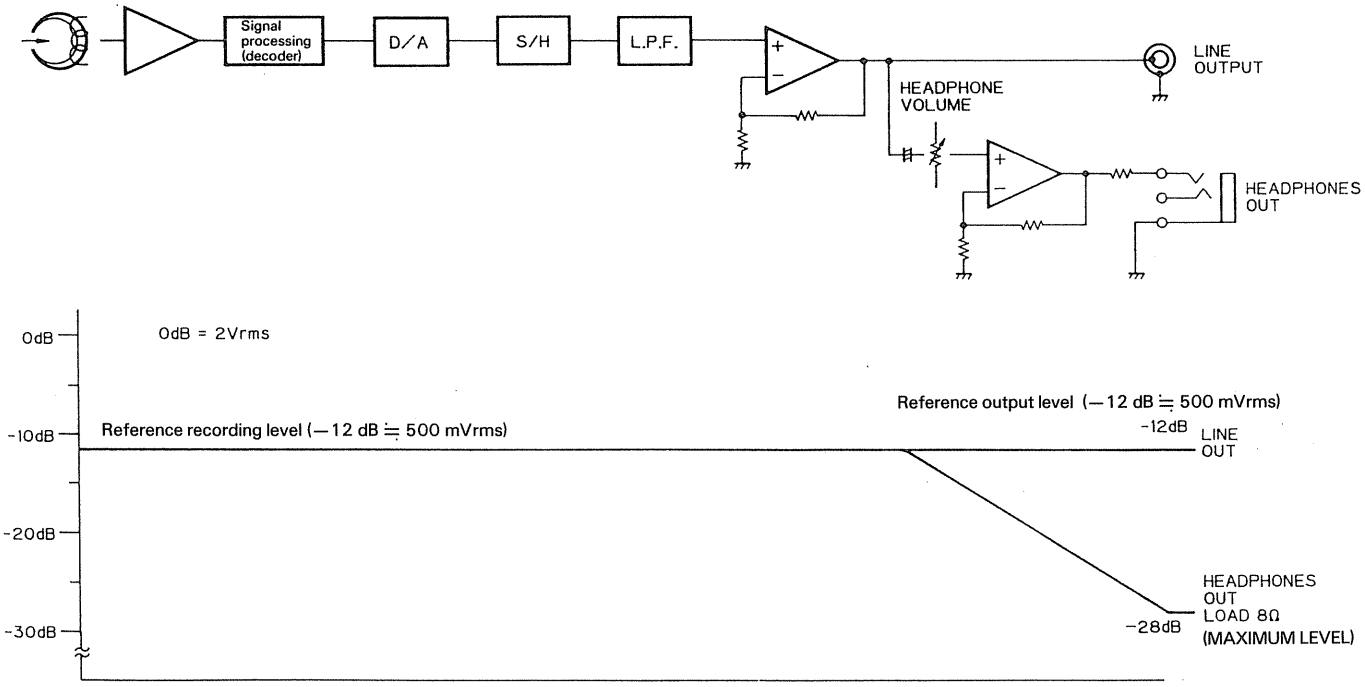
* Above specifications and design are subject to change without prior notice.

## BLOCK DIAGRAM

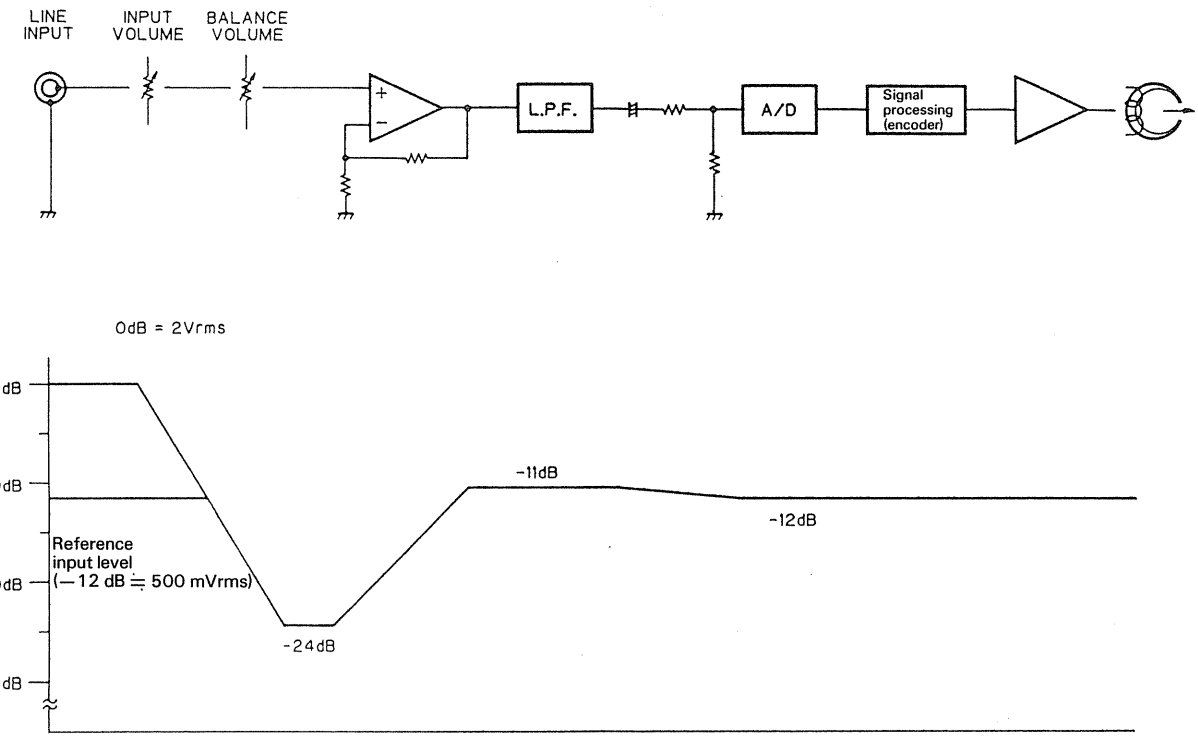


## LEVEL DIAGRAM

### PLAYBACK SYSTEM



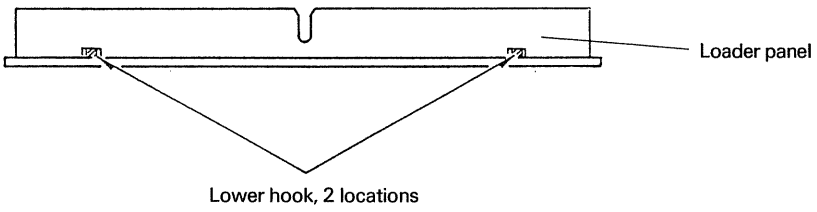

### RECORDING SYSTEM



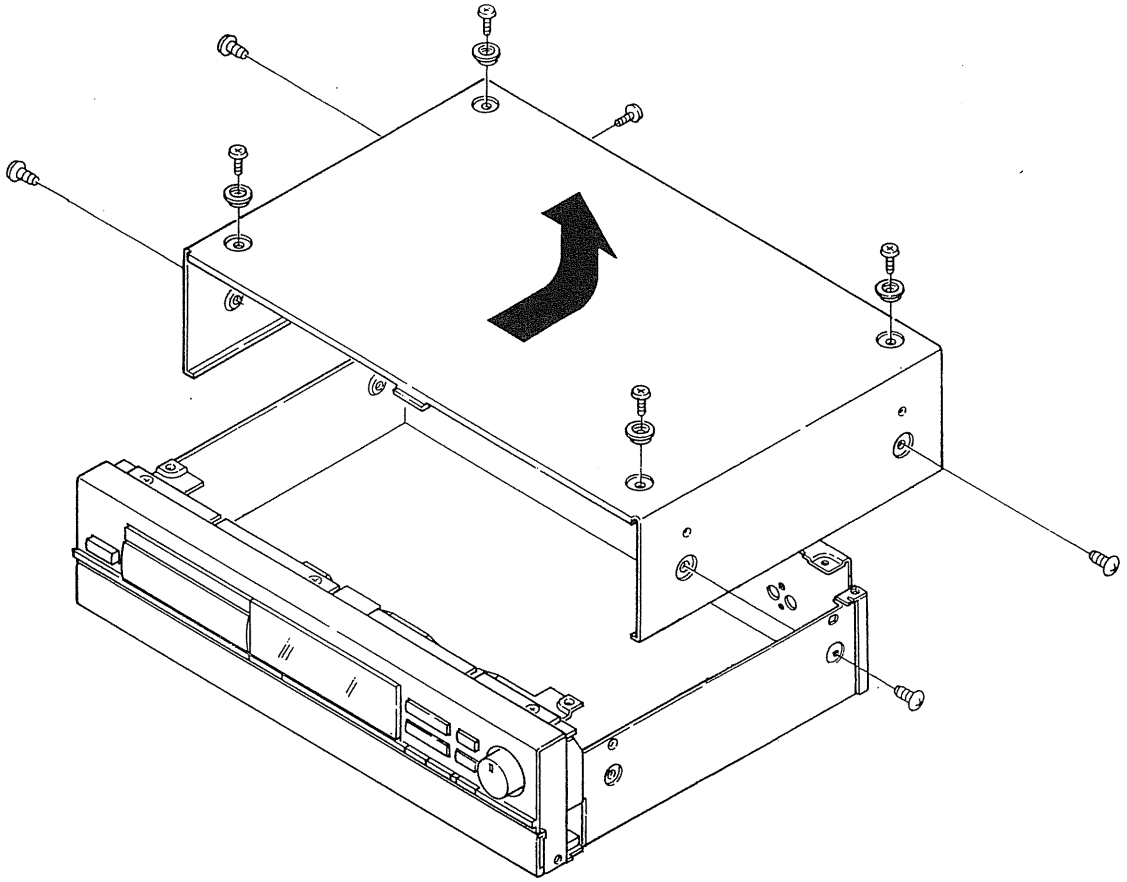
## DISASSEMBLY INSTRUCTIONS

### 1. Removing the front panel

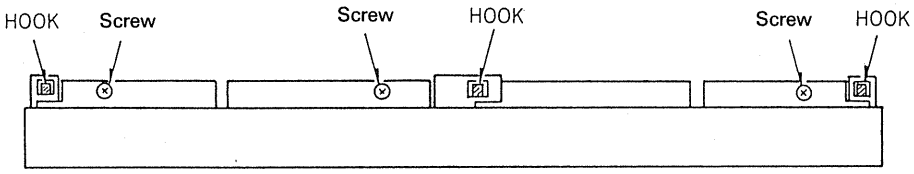
1-1 Turn on the power and move the cassette tray out of the front of the set. Turn off the power and remove the two hooks from the bottom of the loader panel. Remove the loader panel from the front of the unit.



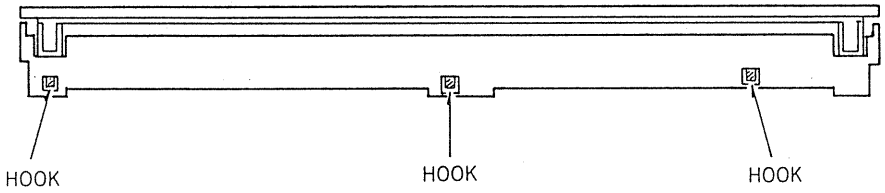

1-2 Remove the four screws (4 × 8 CTTS(S)-B) from the side of the top cover, the four screws (3 × 8BTS(S)-B) from the top of the top cover and one screw (3 × 8BTS(S)-B) from the rear side. Raise the top cover and lift it towards the rear of the unit to detach it.



1-3 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.



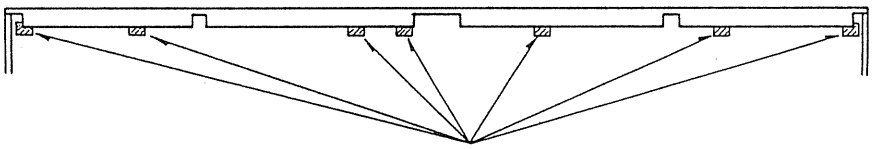

Top of panel




Bottom of panel

## 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.



Location of the seven hooks on the rear surface of the subpanel

## 3. Remove the DAT mechanism

Remove the four mounting screws that secure the DAT mechanism and then detach the mechanism.

## 4. Remove the meter PCB.

Raise the meter PCB and remove it.

## 5. Remove the audio PCB.

Remove the five screws (3 × 8CBTS(S)-B) that secure the audio PCB and the two 2P pin jack mounting screws (3 × 8CBTS(S)-B) on the back panel. Remove the audio PCB from the unit.

## 6. POWER I/O PCB

Remove the five screws (3 × 8CBTS(S)-B) that secure the power I/O PCB, the PCB holder hook in one location, and the two screws (3 × 10CBTS(P)-B) that secure the back panel 1P pin jack. Remove the two screws (3 × 10CBTS(P)-B) that secure the optical unit and remove the power I/O PCB from the unit.

## 7. Remove the SIG. AD PCB.

Remove the four screws (3 × 8CBTS(S)-B) that secure the SIG.AD PCB and remove the PCB.

## 8. Remove the power transformer PCB.

Remove the six screws (3 × 8CBTS(S)) that secure the power transformer PCB, remove the bushing from the chassis and then remove the power transformer PCB.

## ADJUSTING AND CHECKING THE MECHANISM SECTION

### 1. Before performing the adjustment

Perform the error rate verification before performing the mechanism unit (including the servo PCB and RF PCB) adjustment.

♦ Tools: Error rate measurement tape (RD-ER01)

**(1) Verification Procedures**

① Press the MODE, RESET and END keys at the same time. At this time, the error rate is displayed on the counter display of the display tube.

② The following displays appear each time the MODE key is pressed.

ⓐ A+B head error rate display
↓
ⓑ A head error rate display
↓
ⓒ Operation mode display for the system controller and mechanism controller
↓
ⓓ Error code display for the system controller and mechanism controller
↓
ⓔ The ⓐ display appears again.

③ If the RESET key is pressed, the normal display (A-TIME) appears again.

**(2) Verification Item**

① Adjustment is not necessary if the A+B head error rate is less than $90 \times 10^{-4}$ (counter display: 0090). Perform the adjustment shown in the following page if the rate is greater than $90 \times 10^{-4}$.

### 2. PG Phase Adjustment

♦ Tools: PG phase adjustment tape (RD-PG01)
Oscilloscope

♦ Adjustment: Adjust VR201 so the time interval between the R3CP signal rising edge and the RPRF signal Ⓐ waveform rising edge has a setting time of ±20 μsec. (Refer to Figure 1-2 for the positions of the test point and adjustment volume locations.) The setting time is the value indicated in the RD-PG01 cassette. (Approximately 170 μsec.)

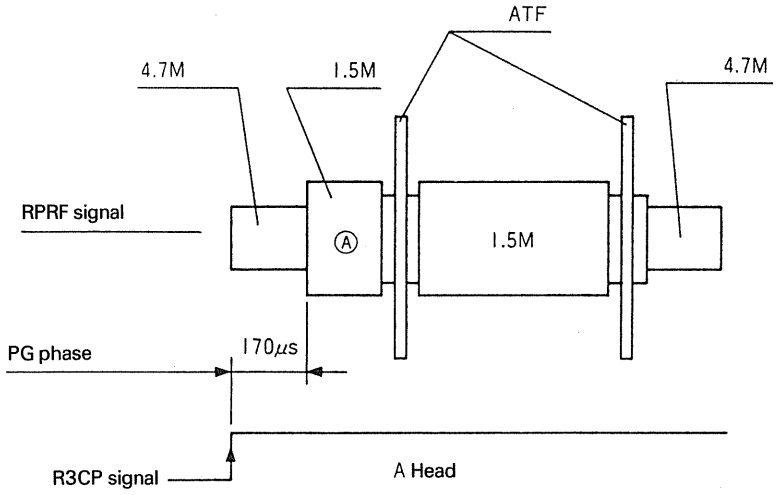



**Figure 1-1**

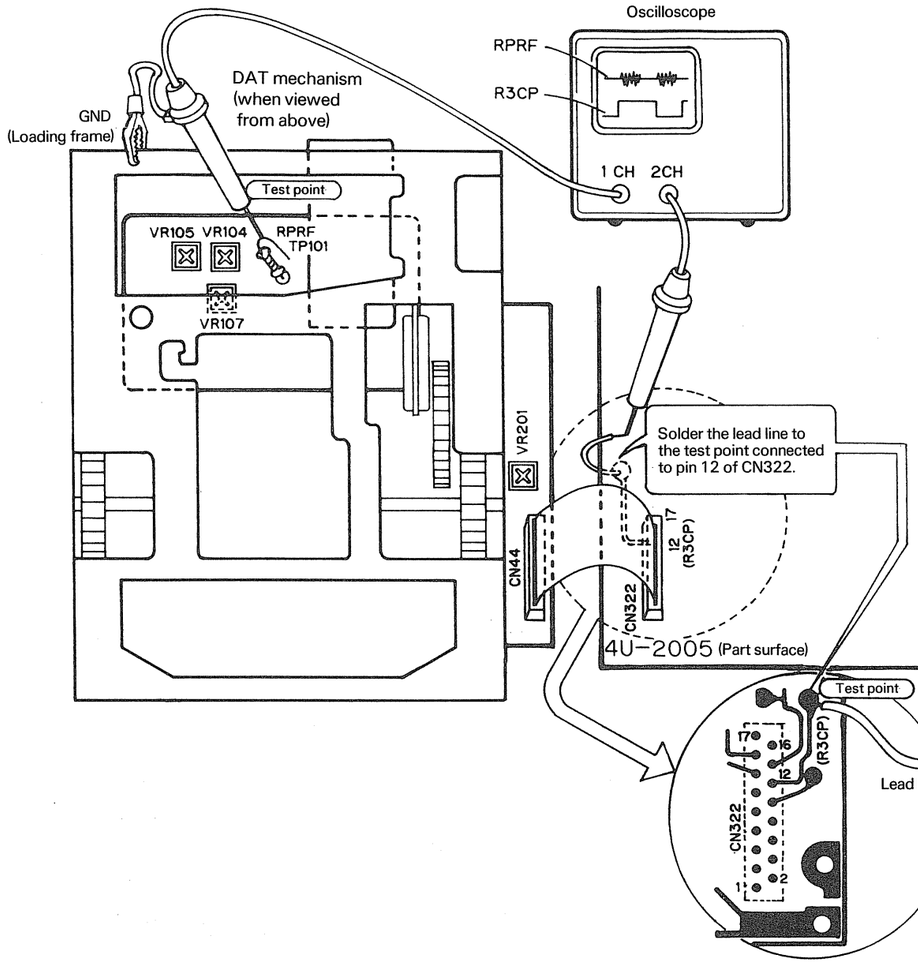



**Figure 1-2**

Enlarged figure of CN322 when viewed from rear surface (pattern surface)

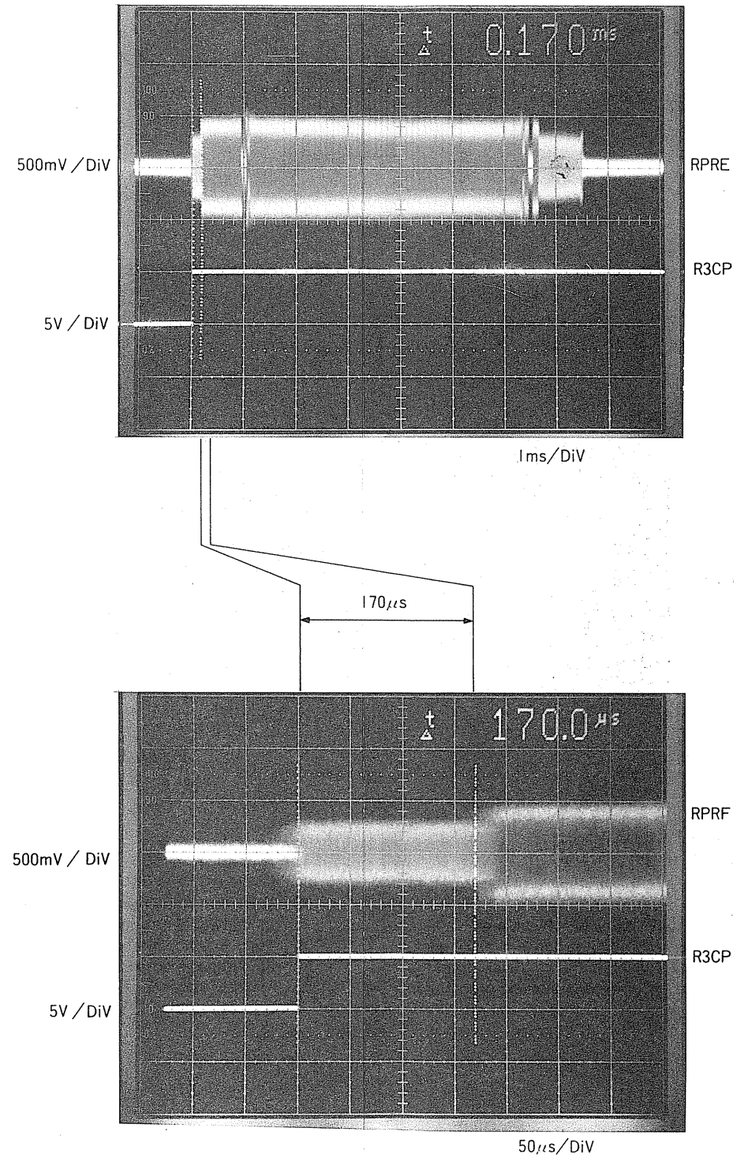



**Figure 1-3**

## 3. ATF Amplifier Gain Adjustment

- ♦ Tools: Error rate measurement tape (RD-ER01)
  Oscilloscope
- ♦ Adjustment:
  (1) Play back the error rate measurement tape.
  (2) Adjust VR107 so the A-head playback level is 1.4 ±0.2 Vpp for the PILOT signal (130 kHz). (Refer to Figure 1-2 and 1-3 for the positions of the test point and adjustment volume locations.) (Confirm that the pilot signal level difference between the A-head and B-head is within ±200 mV. (Refer to Figure 3.)

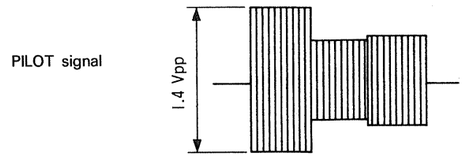



**Figure 2-1**

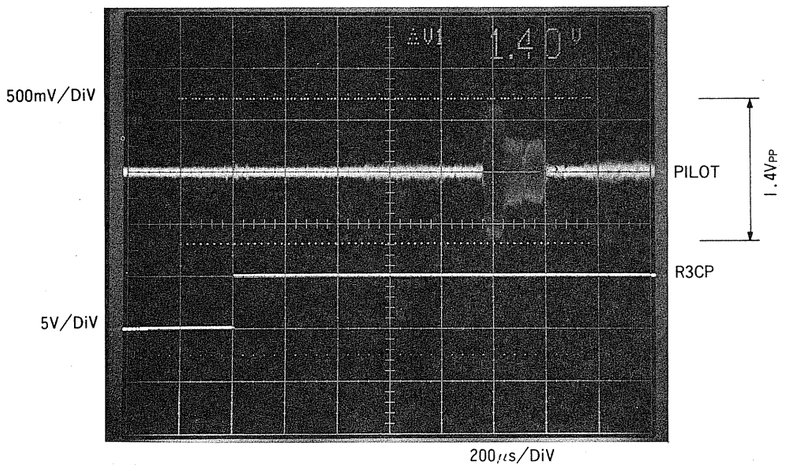



**Figure 2-2**

## 4. RF Recording Level Adjustment

- ♦ Tools: Blank tape (RD-RP32)
  Oscilloscope
- ♦ Adjustment:
  (1) Make a recording without a signa on a blank tape.
  (2) Rewind the tape to the recorded position and play it back.
  (3) Make sure that the pilot level of the playback output is within 1.4 ± 0.2 Vpp. Perform the following procedures if it is outside this range.
  A-head . . . VR104
  B-head. . . . VR105
  (4) Turn the adjustment clockwise (approximately 30°) if the voltage exceeds 1.6 V.
  (5) Turn the adjustment counterclockwise (approximately 30°) if the voltage is less than 1.2 V.
  (6) Perform steps (1), (2) and (3) again after the adjustment is completed.



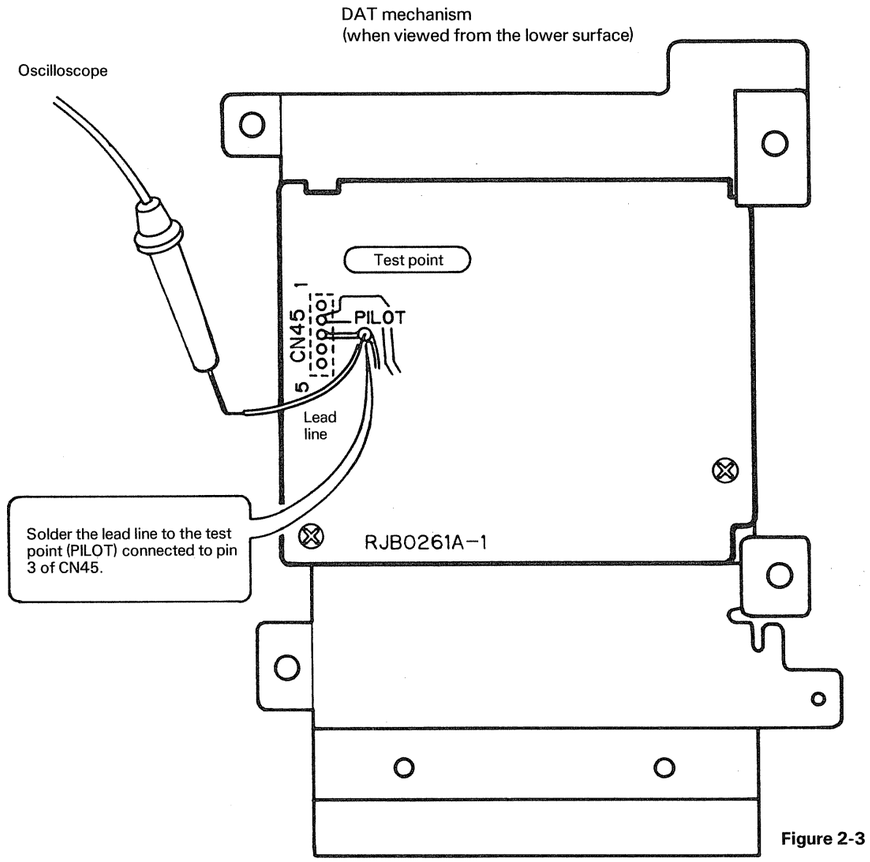



**Figure 2-3**

## SIGNAL TIME RELATION

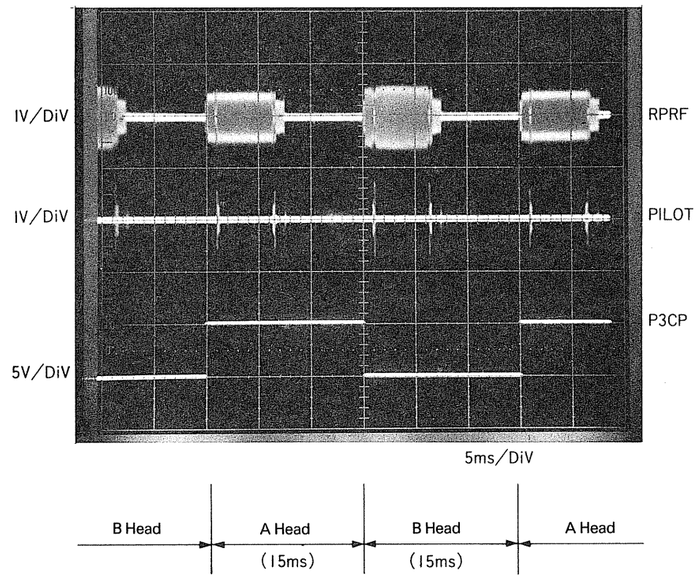


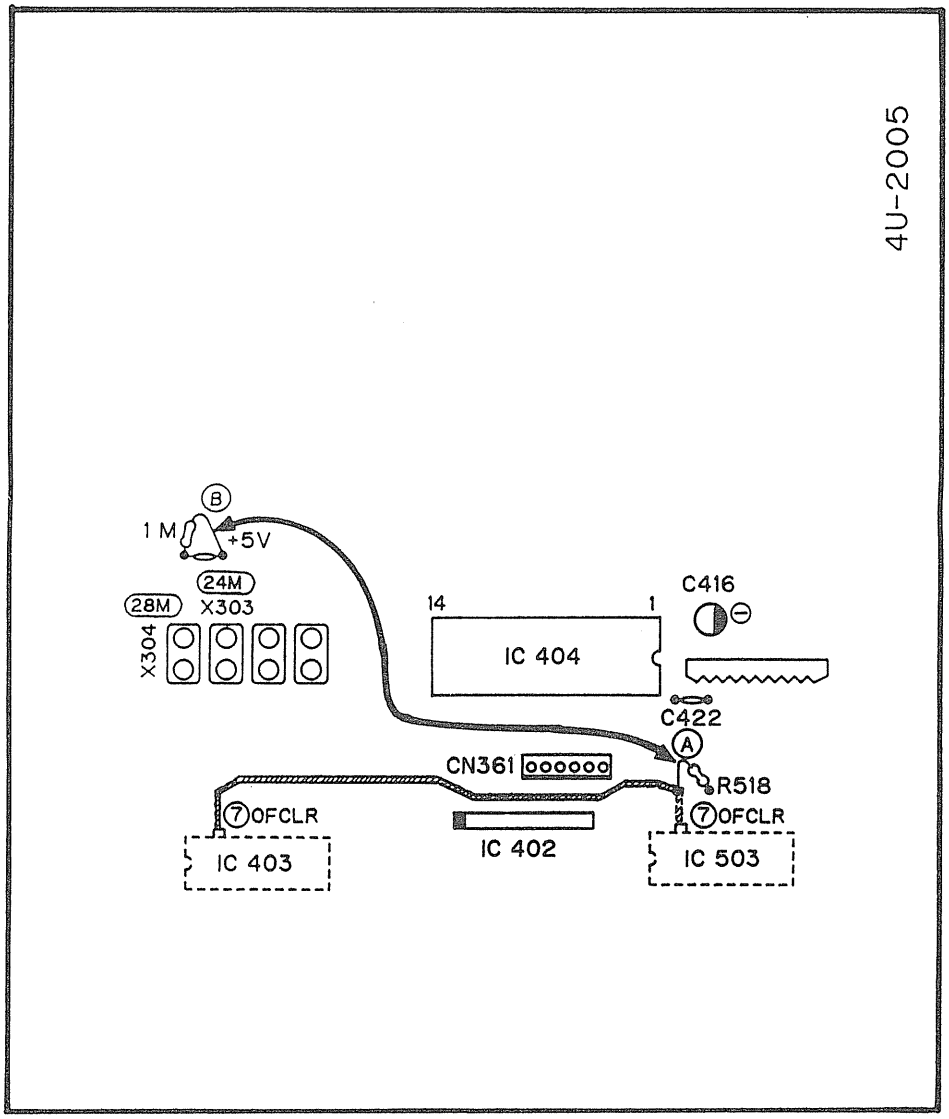

**Figure 3**

## ADJUSTING THE ELECTRICAL SECTIONS

### [1] A/D Converter DC Offset Adjustment

1. The adjustment should be performed when the level meter lights even if a signal is not input to the audio input terminal during recording or recording standby.
   ① MN6460 IC503..... RCH
   IC403..... LCH
   Connect OFCLR terminal ⑦ pin to +5 V (the position in the separate PCB discription). The adjustment will be easy to perform because the display level of the level meter is set high.
   ② Adjust the adjustment volume so the level meter display is at the minimum level (—60 dB max.).
   RCH..... VR501
   LCH..... VR401

A/D Converter DC Offset Adjustment (AUDIO UNIT)

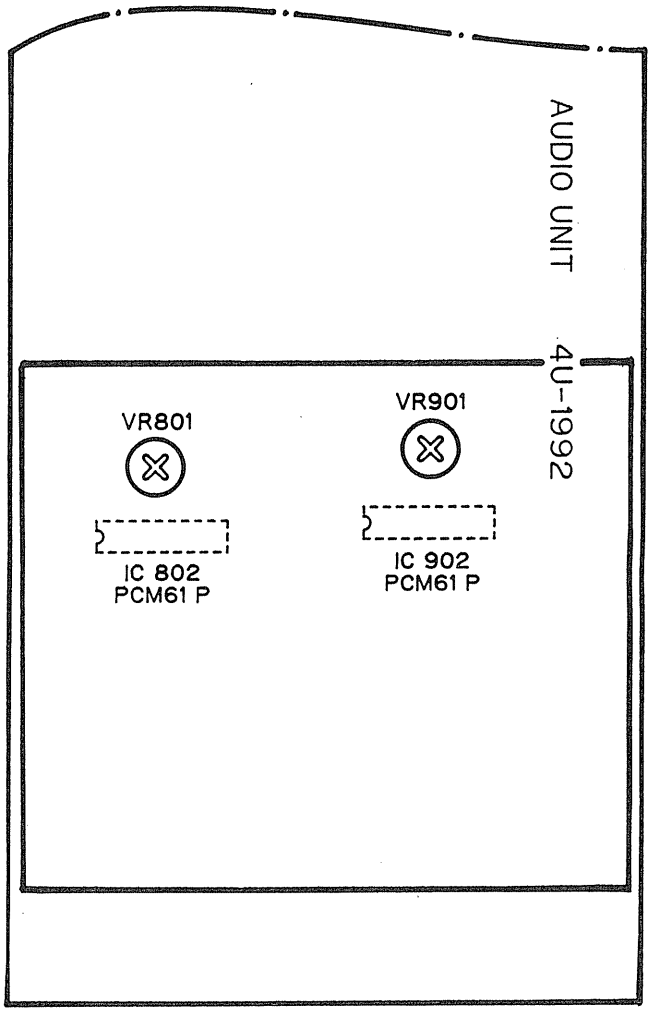



Connect points Ⓐ and Ⓑ

## [2] A/D Converter S.LC Adjustment

1. Perform this adjustment when the distortion level is high during playback.
   ① Connect the DAT audio output terminal to the distortion ratio measurement device.
   ② Playback the P. No. 2 (1 kHz, 0 dB) of the tape recorder (EIAJ) for the DAT recorder measurement.
   ③ Adjust the volume so the T.H.D. is at the minimum level.
   RCH..... VR901
   LCH..... VR801

D/A Converter SCL Adjustment (AUDIO UNIT)



## PARTS LIST OF 4U-1992 AUDIO UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTOR GROUP** | | | |
| IC601 | 263 0644 009 | MC7805CT | |
| IC602 | 263 0554 005 | NJM7805FA | |
| IC603 | 263 0516 001 | NJM7812FA | |
| IC604 | 263 0644 009 | MC7805CT | |
| IC605 | 263 0554 005 | NJM7805FA | |
| IC606 | 263 0656 000 | MC7808 | |
| IC651 | 262 1265 002 | TC74HCU04AP | |
| IC652 | 262 0591 007 | HD74HC00P | |
| IC801 | 262 1180 006 | CF37606 | |
| IC802 | 262 1171 002 | PCM61P | |
| IC803 | 263 0568 004 | TC74HC4066 | |
| IC804 | 262 0864 006 | UPC4570C | |
| IC805 | 263 0565 007 | BA15218 | |
| IC806 | 262 0591 007 | HD74HC00P | |
| IC807 | 262 1265 002 | TC74HCU04AP | |
| IC808 | 262 0594 004 | HD74HC74P | |
| IC850 | 263 0118 001 | NJM4560D | |
| IC901 | 262 1180 006 | CF37606 | |
| IC902 | 262 1171 002 | PCM61P | |
| IC903 | 263 0568 004 | TC74HC4066 | |
| IC904 | 262 0864 006 | UPC4570C | |
| IC905 | 263 0565 007 | BA15218 | |
| IC906 | 262 0591 007 | HD74HC00P | |
| TR601 | 271 0101 925 | 2SA933 (Q) T-70 | |
| TR801, 802, 803 | 273 0253 918 | 2SC2878 (A/B) TPE2 | |
| TR804 | 269 0025 901 | RN1202 (10K-10K) T | |
| TR805 | 269 0026 900 | RN2202 (10K-10K) T | |
| TR806 | 271 0183 901 | 2SA933 (Q/R/S) T-93 | |
| TR850, 901, 902, 903, 950 | 273 0253 918 | 2SC2878 (A/B) TPE2 | |
| D601 | 276 0519 907 | 1SR35-200AT82 | |
| D602 | 276 0553 905 | 1SR35-200A (T93X) | |
| D603 | 276 0519 907 | 1SR35-200AT82 | |
| D604 ~608 | 276 0553 905 | 1SR35-200A (T93X) | |
| D609, 610 | 276 0519 907 | 1SR35-200AT82 | |
| D611 | 276 0482 924 | HZS27-3TD | |
| D612 | 276 0464 900 | HZS7A-1TD | |
| D651 ~654 801, 802, 901 | 276 0432 903 | 1SS270A TE | |
| **RESISTOR GROUP** | | | |
| VR101 | 211 0652 003 | V1620V30FA203 | 20 k Ω INPUT |
| VR801, 901 | 211 6077 938 | V06PB104 | 100 k Ω |
| **CAPACITOR GROUP (Ceramic)** | | | |
| C609, 612 ~616 | 253 1181 904 | CK45F1H103DT | 0.01 μF/50 V |
| C651 | 253 4538 949 | CC45SL1H101JT | 100 PF/50 V |
| C652 | 253 4536 941 | CC45SL1H150JT | 15 PF/50 V |
| C653 | 253 9037 908 | CK45=1H104ZT | 0.1 μF/50 V |
| C654 | 253 4537 966 | CC45SL1H470JT | 47 PF/50 V |
| C655, 656 | 253 1181 904 | CK45F1H103DT | 0.01 μF/50 V |
| C657 | 253 4537 966 | CC45SL1H470JT | 47 PF/50 V |
| C659, 660, 661, 801, 804 | 253 1181 904 | CK45F1H103DT | 0.01 μF/50 V |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| C807 | 253 4442 909 | CC45SL1H181JT | 180 PF/50 V |
| C812 | 253 4443 908 | CC45SL1H201JT | 200 PF/50 V |
| C813 | 253 1122 905 | CK45B1H682KT | 0.0068 μF/50 V |
| C814 | 253 4537 995 | CC45SL1H620JT | 62 PF/50 V |
| C823, 825 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C826, 827 | 253 1181 001 | CK45F1H103ZT | 0.01 μF/50 V |
| C831 | 253 4446 905 | CC45SL1H271JT | 270 PF/50 V |
| C852 | 253 4444 907 | CC45SL1H221JT | 220 PF/50 V |
| C901 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C907 | 253 4442 909 | CC45SL1H181JT | 180 PF/50 V |
| C912 | 253 4443 908 | CC45SL1H201JT | 200 PF/50 V |
| C913 | 253 1122 905 | CK45B1H682KT | 0.0068 μF/50 V |
| C914 | 253 4537 995 | CC45SL1H620JT | 62 PF/50 V |
| C931 | 253 4446 905 | CC45SL1H271JT | 270 PF/50 V |
| C952 | 253 4444 907 | CC45SL1H221JT | 220 PF/50 V |
| **(Film)** | | | |
| C811, 911 | 255 1221 909 | CQ93M1H102KT | 0.001 μF/50 V |
| **Electrolytic** | | | |
| C601, 602 | 254 4261 772 | CE04W1H222MC | 2200 μF/50 V |
| C603, 604 | 254 4261 921 | CE04W1H101MT | 100 μF/50 V |
| C605, 606 | 254 4259 739 | CE04W1V682MC | 6800 μF/35 V |
| C607, 608 | 254 4254 909 | CE04W1C100MT | 10 μF/16 V |
| C610 | 254 4261 918 | CE04W1H470MT | 47 μF/50 V |
| C611 | 254 4260 980 | CE04W1H100MT | 10 μF/50 V |
| C617, 658 | 254 4254 909 | CE04W1C100MT | 10 μF/16 V |
| C815, 816 | 254 4261 921 | CE04W1H101MT | 100 μF/50 V |
| C820 | 254 4254 954 | CE04W1C221MT | 220 μF/16 V |
| C821 | 254 4260 964 | CE04W1H3R3MT | 3.3 μF/50 V |
| C822, 824 | 254 4252 930 | CE04W1A101MT | 100 μF/10 V |
| C850, 851 | 254 4252 901 | CE04W1A220MT | 22 μF/10 V |
| C854, 855 | 254 4254 941 | CE04W1C101MT | 100 μF/16 V |
| C915, 916 | 254 4261 921 | CE04W1H101MT | 100 μF/50 V |
| C950, 951 | 254 4252 901 | CE04W1A220MT | 22 μF/10 V |
| **OTHER PARTS** | | | |
| T651 | 231 8060 002 | PULSE TRANS | |
| JK651, 652 | 204 8356 002 | 1P PIN JACK | DIG. IN/OUT |
| JK801, 802 | 204 8357 001 | 2P PIN JACK | |
| JK803 | 204 8335 007 | HEAD PHONE JACK | |
| PT651 | 269 0097 007 | GP1F32R | OPT. INPUT |
| PT652 | 269 0098 006 | GP1F32T | OPT. OUTPUT |
| CN381 | 205 0279 009 | 10P PH SIDE CN BASE | |
| CN441 | 205 0343 045 | 4P CONN. BASE (KR-PH) | |
| CN442 | 205 0323 049 | 4P CONN. BASE (BLK) | |
| CN601 | 205 0343 090 | 9P CONN. BASE (KR-PH) | |
| CN861 | 205 0343 058 | 5P CONN. BASE (KR-PH) | |
| CN862 | 205 0343 032 | 3P CONN. BASE (KR-PH) | |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| CN881 | 205 0343 061 | 6P CONN. BASE (KR-PH) | |
| CN897 ~899 | 205 0623 011 | BTK-S-CONN. BASE | |
| CN997 ~999 | 205 0622 012 | BTK-P-CONN. BASE | |
| W361 | 204 0305 006 | 6P PH-SAN CONN. CORD | |
| W362 | 204 0265 094 | 6P KR-DA CONN. CORD | |
| W363 | 203 6310 005 | 4P SHIELD WIRE | |
| W382 | 203 6309 003 | 4P SHIELD WIRE | |
| W441 | 203 6313 002 | 4P PH-SAN CONN. CORD | |
| W442 | 203 6312 003 | 4P SHIELD WIRE | |
| W621 | 204 0304 007 | 6-4P CONN. CORD | |
| W861 | 203 8278 006 | 5P PH-SAN CONN. CORD | |
| W862 | 203 4580 015 | 3P KR-DA CONN. CORD | |
| W881 | 204 0247 009 | 6P KR-DA CONN. CORD | |
| W999 | 203 4579 013 | 3P DA-DA CONN. CORD | |

## PARTS LIST OF 4U-1990 PANEL UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| IC350 | 262 1300 103 | M50957 | |
| IC351 | 499 0088 002 | QH3031H0 | R/C RECEIVER |
| TR350, 351 | 269 0047 905 | DTA143EK-T96 | |
| D350 | 276 0438 910 | MA151A | |
| ~356 | | | |
| R350 | 247 0009 985 | RM73B-103JT | 10 k Ω |
| ~353 | | | |
| R355, 356 | 247 0012 927 | RM73B-104JT | 100 k Ω |
| R357 | 247 0008 960 | RM73B-332JT | 3.3 k Ω |
| R358 | 247 0012 927 | RM73B-104JT | 100 k Ω |
| R359 | 247 0008 960 | RM73B-332JT | 3.3 k Ω |
| R360 | 247 0009 901 | RM73B-472JT | 4.7 k Ω |
| R362 | 247 0012 927 | RM73B-104JT | 100 k Ω |
| ~365 | | | |
| C350 | 254 4213 021 | CE04W0J470M | 47 μF/6.3 V |
| C351 | 257 0010 900 | CK73B1H103KT | 0.01 μF/50 V |
| C352 | 254 4195 042 | CE04W1V330M | 33 μF/35 V |
| C353 | 257 0010 900 | CK73B1H103KT | 0.01 μF/50 V |
| C354, 355 | 257 0007 900 | CC73SL1H102JT | 0.001 μF/50 V |
| C356, 359 | 257 0010 900 | CK73B1H103KT | 0.01 μF/50 V |
| FL350 | 393 4095 008 | FIP7BLM7 | FL TUBE |
| SW350 | 212 4699 900 | TACT SWITCH | |
| ~381 | | | |
| SW382 | 212 4707 009 | SLIDE SWITCH | |
| XT350 | 399 0069 006 | CST 6.00 MG | |
| CN322 | 205 0279 038 | 3P PH CNN. BASE SIDE | |
| CN331 | 205 0279 054 | 5P PH SID. CONN. BASE | |
| CN362 | 205 0279 067 | 6P PH SID. CONN. BASE | |

## PARTS LIST OF 4U-2046 LINE UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| SW001 | 212 4697 009 | POWER SWITCH | |
| L001 | 239 8019 002 | LINE FILTER COIL | |
| C001 | 253 8014 702 | CK45F2GAC103MC | 0.01 μF/AC 400 V |
| | 206 2002 031 | AC CORD WITH PLUG | Europe |
| | 206 2024 006 | AC CORD WITH LABEL | U.K. |
| | 206 2061 001 | AC CORD | U.S.A., Canada |
| | 445 0056 008 | CORD BUSH | |
| | 233 5835 003 | POWER TRANS. (E2) | Europe, U.K. |
| | 233 5836 002 | POWER TRANS. (Eu) | U.S.A., Canada |

## PARTS LIST OF 4U-2005 SIG./AUDIO UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTOR GROUP** | | | |
| IC301 | 262 1298 008 | MN6624 | |
| IC302 | 262 1301 005 | HM62256LPF10TE | |
| IC303 | 262 1299 007 | MN188161 | |
| IC304, 305 | 262 0591 007 | HD74HC00P | |
| IC306 | 262 1358 003 | MN1280-R | |
| IC351 | 263 0714 007 | M5238L | |
| IC352 | 262 0591 007 | HD74HC00P | |
| IC401, 402 | 263 0226 003 | M5220L | |
| IC403 | 262 1297 009 | MN6460 | |
| IC404 | 262 1378 009 | SM5813APT | |
| IC501 | 263 0226 003 | M5220L | |
| IC503 | 262 1297 009 | MN6460 | |
| TR301 | 269 0020 906 | DTC114ES (10K-10K) T | |
| TR351 | 271 0248 901 | 2SA1309 | |
| TR352 | 273 0397 900 | 2SC1047 | |
| TR353, 354 | 269 0020 906 | DTC114ES (10K-10K) T | |
| TR401 | 269 0089 905 | RN2205 (TPE4) | |
| TR402 | 269 0020 906 | DTC114ES (10K-10K) T | |
| D401 | 276 0432 903 | 1SS270A TE | |
| D351 | 276 0302 017 | SVC 321SP-ABCD | |
| **RESISTOR GROUP** | | | |
| VR401, 501 | 211 6064 064 | V06PB102 | 1 kΩ |
| **CAPACITOR GROUP (Ceramic)** | | | |
| C301, 302 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C304 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C306, 307 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C309 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C310, 311 | 253 4536 909 | CC45SL1H100DT | 10 PF/50 V |
| C312, 313 | 253 4535 942 | CC45SL1H040DT | 4 PF/50 V |
| C314, 315 | 253 4535 926 | CC45SL1H020CT | 4 PF/50 V |
| C316 | 253 1180 921 | CK45B1H102KT | 0.001 μF/50 V |
| C317 | 253 4535 939 | CC45SL1H030CT | 3 PF/50 V |
| C318 | 253 4536 941 | CC45SL1H150JT | 15 PF/50 V |
| C319, 320, 321 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C351 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C352 | 253 1181 917 | CK45F1H223ZT | 0.022 μF/50 V |
| C353 | 253 4538 923 | CC45SL1H820JT | 82 PF/50 V |
| C355 | 253 4448 903 | CC45SL1H331JT | 330 PF/50 V |
| C356 | 253 4444 907 | CC45SL1H221JT | 220 PF/50 V |
| C357 | 253 4538 949 | CC45SL1H101JT | 100 PF/50 V |
| C358 | 253 3635 005 | CC45SL1H221J | 0.022 μF/50 V |
| C359 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C361 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C363 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C364 | 253 1181 917 | CK45F1H223ZT | 0.022 μF/50 V |
| C366, 367 | 253 1181 904 | Ck45F1H103ZT | 0.01 μF/50 V |
| C368 | 253 1181 014 | CK45F1H223Z | 0.022 μF/50 V |
| C402 | 253 4456 908 | CC45SL1H681JT | 680 PF/50 V |
| C404 | 253 1115 909 | CK45B1H182KT | 0.0018 μF/50 V |
| C407 | 253 4538 949 | CC45SL1H101JT | 100 PF/50 V |
| C409 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C411 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C413 | 253 1180 921 | CK45B1H102KT | 0.001 μF/50 V |
| C417 | 253 4538 949 | CC45SL1H101JT | 100 PF/50 V |
| C421 | 253 1181 904 | CK45F1H103ZT | 0.01 μF/50 V |
| C502 | 253 4456 908 | CC45SL1H681JT | 680PF/50V |
| C504 | 253 1115 909 | CC45B1H182KT | 0.0018 μF/50V |
| C507 | 253 4538 949 | CC45SL1H101JT | 100PF/50V |
| C509 | 253 1181 904 | CK45B1H103KT | 0.01 μF/50V |
| C511 | 253 1181 904 | CK45B1H103KT | 0.01 μF/50V |
| C513 | 253 1180 921 | CK45B1H102KT | 0.001 μF/50V |
| C517 | 253 4538 949 | CC45SL1H101JT | 100PF/50V |
| C519 | 253 1181 904 | CK45B1H103KT | 0.01 μF/50V |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **Electrolytic** | | | |
| C303 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C305 | 254 4254 925 | CE04W1C330MT | 33 μF/16V |
| C308 | 254 4250 903 | CE04W0J330MT | 33 μ/6.3V |
| C360 | 254 4250 903 | CE04W0J330MT | 33 μF/6.3V |
| C362 | 254 4250 903 | CE04W0J330MT | 33 μF/6.3V |
| C401 | 254 4254 925 | CE04W1C330MT | 33 μF/16V |
| C405 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C406 | 254 4254 912 | CE04W1C220MT | 22 μF/16V |
| C408 | 254 4260 977 | CE04W1H4R7MT | 4.7 μF/50V |
| C410 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C412 | 254 4254 912 | CE04W1C220MT | 22 μF/16V |
| C414 | 254 4250 932 | CE04W0J221MT | 220 μF/6.3V |
| C416 | 254 4250 932 | CE04W0J221MT | 220 μF/6.3V |
| C418 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C420 | 254 4254 912 | CE04W1C220MT | 22 μF/16V |
| C424 | 254 4250 932 | CE04W0J221MT | 220 μF/6.3V |
| C427 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C501 | 254 4254 925 | CE04W1C330MT | 33 μF/16V |
| C505 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C506 | 254 4354 912 | CE04W1C220MT | 22 μF/16V |
| C508 | 254 4260 977 | CE04W1H4R7MT | 4.7 μF/50V |
| C510 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| C512 | 254 4254 912 | CE04W1C220MT | 22 μF/16V |
| C514 | 254 4250 932 | CE04W0J221MT | 220 μF/6.3V |
| C518 | 254 4250 929 | CE04W0J101MT | 100 μF/6.3V |
| **OTHER PARTS GROUP** | | | |
| XT301 | 399 0110 010 | XTAL (16M) | |
| XT302 | 399 0110 023 | XTAL (22M) | |
| XT303 | 399 0110 036 | XTAL (24M) | |
| XT304 | 399 0110 049 | XTAL (28M) | |
| XT305 | 399 0095 001 | CST8.00MT | |
| L351 | 235 0080 202 | INDUCTOR (0.47 MH) | |
| CN321 | 205 0627 004 | 10P M14 CON. BASE | |
| CN322 | 205 0491 023 | 17P FFC CON. BASE | |
| CN361 | 205 0343 061 | 6P CON. BASE (KR-PH) | |
| CN363, 382 | 205 0343 045 | 4P CON. BASE (KR-PH) | |

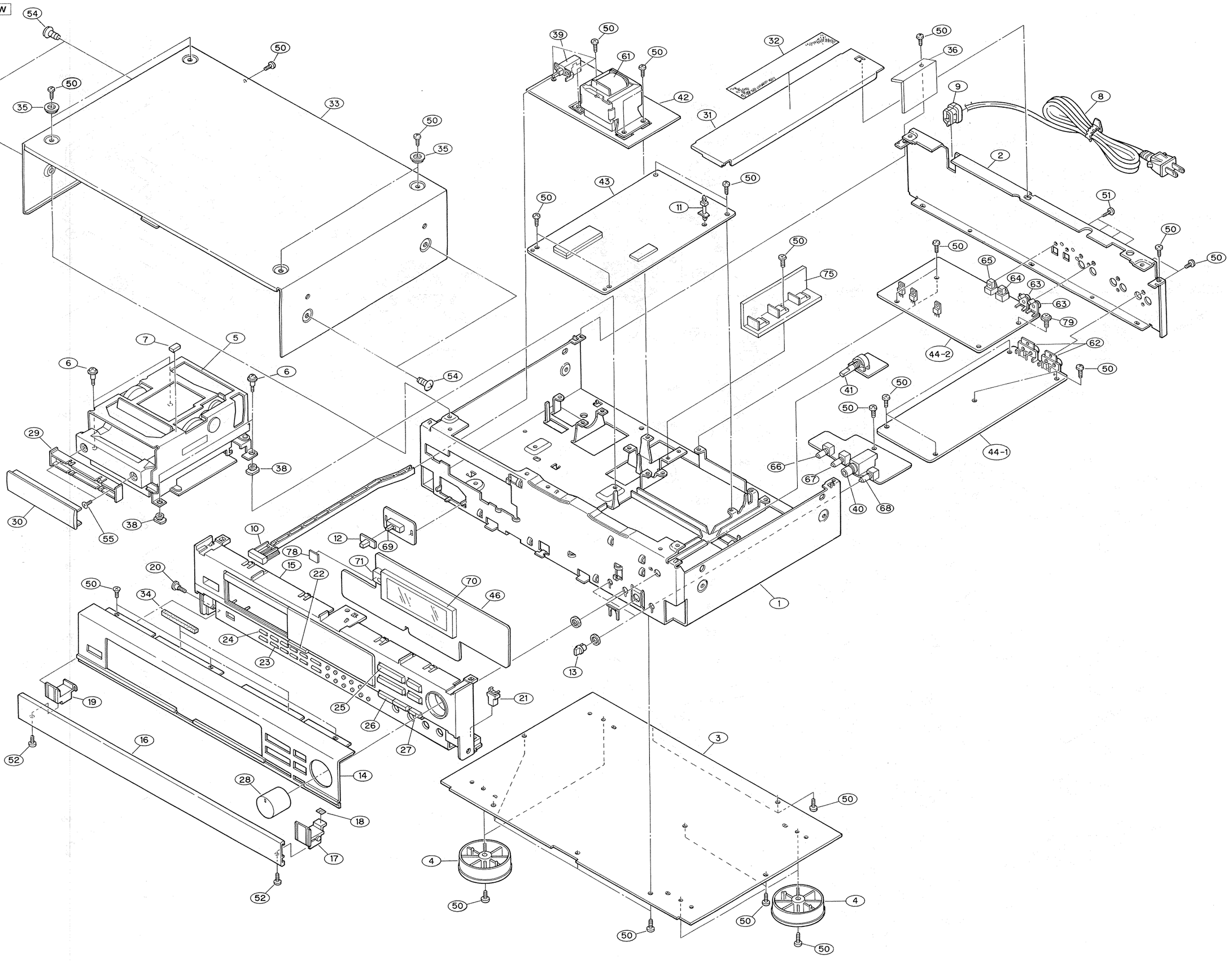
## PARTS LIST OF EXPLODED VIEW

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| ◉ 1 | 411 0934 101 | CHASSIS | |
| ◉ 2 | 105 0884 107 | BACK PANEL | |
| ◉ 3 | 105 0900 104 | BOTTOM COVER | |
| ◉ 4 | 104 0194 001 | FOOT ASS'Y | |
| ◉ 5 | 338 0128 104 | DAT MECHA. UNIT | RD-E001-JOL |
| 6 | 473 8036 009 | SPECIAL SCREW | |
| ◉ 7 | 461 0390 038 | SUBBER SHEET | |
| 8 | 206 2002 031 | AC CORD WITH PLUG | Europe |
| | 206 2024 006 | AC CORD WITH LABEL | U.K. |
| | 206 2061 001 | AC CORD | U.S.A., Canada |
| 9 | 445 0056 008 | CORD BUSH | |
| 10 | 113 1067 238 | P. SW. LEVER ASS'Y | |
| ◉ 11 | 415 0335 029 | P.W.B. SUPPORT | |
| 12 | 113 0753 006 | SLIDE KNOB | |
| 13 | 112 0485 009 | VOL. KNOB (B) | |
| ◉ 14 | 144 1969 013 | FRONT PANEL | |
| ◉ 15 | 146 1146 117 | SUB PANEL ASS'Y | |
| ◉ 16 | 144 1955 014 | TRAP DOOR | |
| 17 | 401 0161 210 | HINGE (R) | |
| ◉ 18 | 122 0165 009 | HIMERON SHEET | |
| 19 | 401 0162 219 | HINGE (L) | |
| 20 | 471 9020 018 | SPECIAL SCREW | |
| 21 | 435 0113 009 | LATCH (Y3Y18) | |
| 22 | 113 1344 210 | OPEN CLOSE KNOB | Europe, U.K. |
| | 113 1344 223 | OPEN CLOSE KNOB | U.S.A., Canada |
| 23 | 113 1223 027 | SERIES KNOB (12) | |
| 24 | 113 1223 030 | SERIES KNOB (11) | |
| 25 | 113 1224 149 | FUNCTION KNOB | Europe, U.K. |
| | 113 1224 152 | FUNCTION KNOB | U.S.A., Canada |
| 26 | 113 1299 019 | MANUAL SEARCH KNOB | |
| 27 | 113 1316 112 | PAUSE KNOB | Europe, U.K. |
| | 113 1316 125 | PAUSE KNOB | U.S.A., Canada |
| 28 | 112 0625 018 | INPUT KNOB ASS'Y | Europe, U.K. |
| | 112 0625 021 | INPUT KNOB ASS'Y | U.S.A., Canada |
| ◉ 29 | 146 1115 119 | LOADER SUB PANEL | Europe, U.K. |
| ◉ | 146 1115 122 | LOADER SUB PANEL | U.S.A., Canada |
| ◉ 30 | 144 1970 112 | LOADER PANEL | |
| ◉ 31 | 412 2882 005 | TOP PLATE | |
| ◉ 32 | 122 0181 009 | SOUND RUBBER | |
| ◉ 33 | 102 0404 212 | TOP COVER | |
| ◉ 34 | 129 0155 104 | RUBBER SHEET | |
| 35 | 146 0772 003 | TOP COVER WASHER | |
| 36 | 412 3168 003 | GUIDE BRACKET | Europe, U.K. |
| 37 | | | |
| 38 | 462 0106 005 | RUBBER CUSHION | |
| 39 | 212 4697 009 | POWER SWITCH | |
| 40 | 204 8335 007 | HEAD PHONE JACK | |
| 41 | 211 0652 003 | V1620V30FA203 | INPUT VOL. |
| ◉ 42 | 4U-2046 | LINE UNIT | |
| ◉ 43 | 4U-2005 | SIG./AUDIO UNIT | |
| ◉ 44-1 | 4U-1992 | AUDIO UNIT | |
| ◉ 44-2 | | POWER/ID UNIT | |
| ◉ 46~49 | 4U-1990 | PANEL UNIT | |
| 50 | 473 7002 021 | 3 × 8 CBTS(S)-B | SCREW |
| 51 | 473 7508 017 | 3 × 10 CBTS(P)-B | SCREW |
| 52 | 473 7500 015 | 3 × 8 CBTS(P)-Z | SCREW |
| 54 | 473 7018 002 | 4 × 8 CTTS(S)-B | SCREW |
| 55 | 471 3303 016 | 3 × 6 CBS-Z | SCREW |
| 61 | 233 5835 003 | POWER TRANS (E2) | Europe, U.K. |
| | 233 5836 002 | POWER TRANS (Eu) | U.S.A., Canada |
| 62 | 204 8357 001 | 2P PIN JACK | |
| 63 | 204 8356 002 | 1P PIN JACK | |
| 64 | 269 0097 007 | GP1F32R | OPT. INPUT |
| 65 | 269 0098 006 | GP1F32T | OPT. OUTPUT |
| 66 | | INPUT SELECTOR SWITCH | |
| 67 | | BALANCE VOL. | |
| 68 | | HEAD PHONE VOL. | |
| 69 | 212 4707 009 | SLIDE SWITCH | |
| 70 | 393 4094 008 | F1P7BLM7 | FL TUBE |
| 71 | 499 0088 002 | QH3031H0 | REMOTE SENSOR |
| 75 | 417 0410 102 | RADIATOR | |
| 78 | 143 0568 001 | FILTER | |
| 79 | 473 8007 025 | 3 ×8 CAP SCREW | |

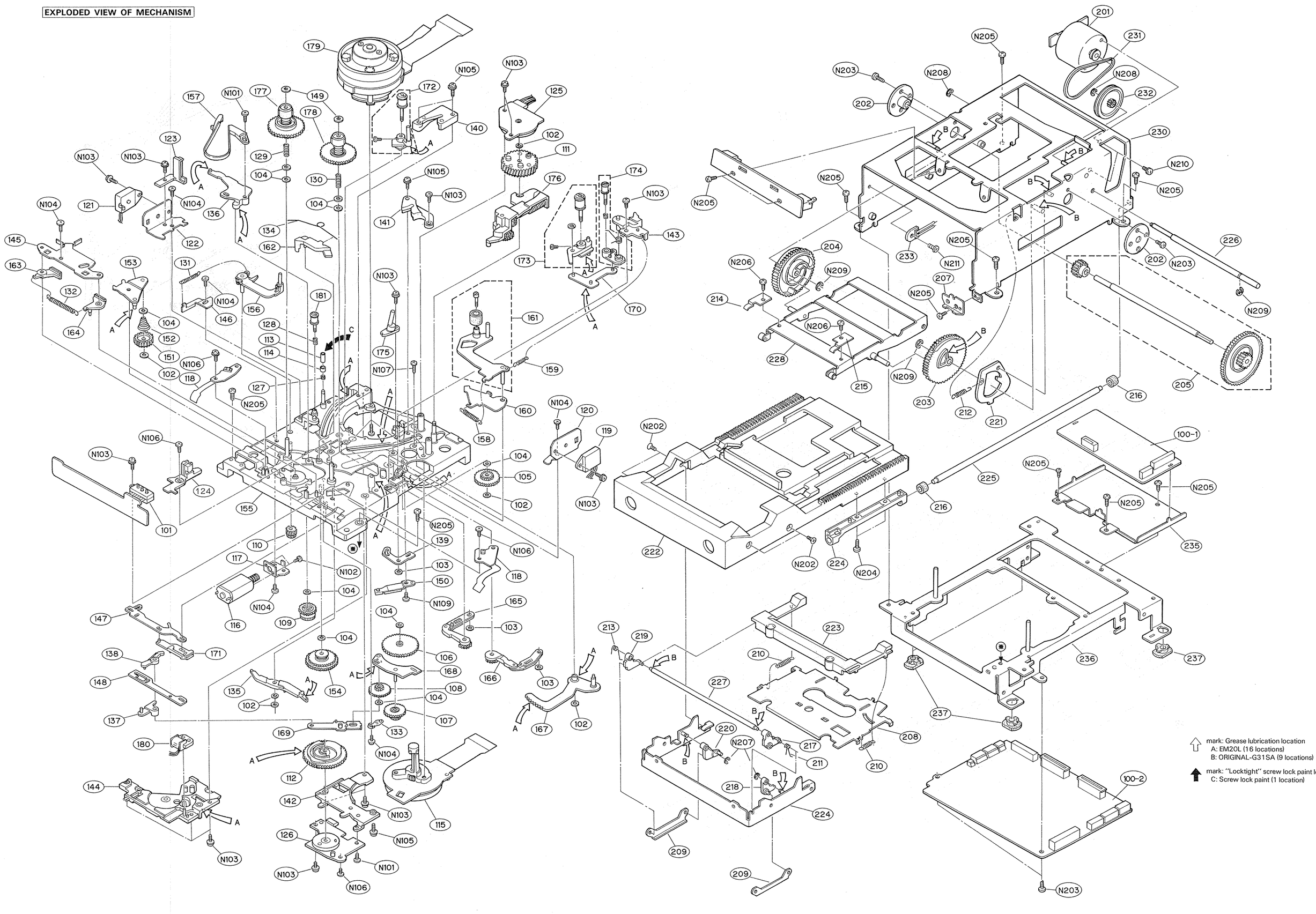
## PARTS LIST OF PACKING & ACCESSORIES

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| | 504 0092 060 | STYLEN PAPER | (AC CORD) |
| | 505 0131 050 | CABINET COVER | |
| | 503 0794 006 | CUSHION | |
| | 501 1454 006 | CARTON CASE | |
| | 505 0038 030 | POLY COVER | (ACCESSORIES) |
| | 204 8121 004 | 2P PIN CORD | |
| | 511 1994 000 | INST MANUAL (E2) | Europe, U.K. |
| | 511 2015 001 | SPANISH INST. MANUAL | Europe, only |
| | 511 1995 009 | INST. MANUAL (Eu) | U.S.A., Canada |
| | 499 0155 003 | RC-409 | |

EXPLODED VIEW



## EXPLODED VIEW OF MECHANISM




⇧ mark: Grease lubrication location
A: EM20L (16 locations)
B: ORIGINAL-G31SA (9 locations)

⬆ mark: "Locktight" screw lock paint loca
C: Screw lock paint (1 location)

## PARTS LIST OF MECHANISM EXPLODED VIEW

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| 101 | 934 6005 003 | CASSETTE SWITCH | |
| 102 | 934 6005 100 | WASHER | |
| 103 | 934 6005 113 | WASHER | |
| 104 | 934 6005 126 | WASHER | |
| 105 | 934 6005 207 | MAIN GEAR A | |
| 106 | 934 6005 210 | MAIN GEAR B | |
| 107 | 934 6005 304 | IDLER GEAR P | |
| 108 | 934 6005 317 | IDLER GEAR F | |
| 109 | 934 6005 401 | COUNTER GEAR | |
| 110 | 934 6005 508 | MODE RELAY GEAR | |
| 111 | 934 6005 605 | LOAD CAM | |
| 112 | 934 6005 702 | MODE CAM | |
| 113 | 934 6005 809 | FIX POST | |
| 114 | 934 6005 906 | FIX POST FLANGE | |
| 115 | 934 6006 002 | CAPSTAN UNIT ASS'Y | |
| 116 | 934 6006 109 | MODE MOTOR ASS'Y | |
| 117 | 934 6006 206 | MODE MOTOR SUPPORT | |
| 118 | 934 6006 303 | RELAY P.W.B. | |
| 119 | 934 6006 400 | END SENSOR | |
| 120 | 934 6006 504 | END SENSOR ANGLE | |
| 121 | 934 6006 400 | END SENSOR | |
| 122 | 934 6006 604 | END SENSOR ANGLE | |
| 123 | 934 6006 701 | LID OPENER | |
| 124 | 934 6006 808 | END LED ASS'Y | |
| 125 | 934 6006 905 | LOAD SWITCH | |
| 126 | 934 6006 918 | MODE SWITCH | |
| 127 | 934 6007 001 | FIX POST SPRING | |
| 128 | 934 6007 108 | SIDE ROLLER SPRING | |
| 129 | 934 6007 205 | S. REEL SPRING | |
| 130 | 934 6007 302 | T. REEL SPRING | |
| 131 | 934 6007 409 | TENSION REGULATER SPRING | |
| 132 | 934 6007 506 | BLAKE SPRING | |
| 133 | 934 6007 603 | RF. IDLER HOLDER | |
| 134 | 934 6007 700 | BT. SPRING | |
| 135 | 934 6007 807 | PINCH LEVER | |
| 136 | 934 6007 904 | TENSION REGULATER LEVER | |
| 137 | 934 6008 000 | S. BLAKE LEVER | |
| 138 | 934 6008 107 | T. BLAKE LEVER | |
| 139 | 934 6008 204 | ROD CHANGE LEVER | |
| 140 | 934 6008 301 | S. STOPPER | |
| 141 | 934 6008 408 | T. STOPPER | |
| 142 | 934 6008 505 | LOAD GUIDE HOLDER | |
| 143 | 934 6008 602 | GUIDE ARM STOPPER | |
| 144 | 934 6008 709 | MODE GUIDE PLATE | |
| 145 | 934 6008 806 | IDLER GUIDE | |
| 146 | 934 6008 903 | TENSION SPRING HOOK | |
| 147 | 934 6009 009 | S. BLAKE PLATE | |
| 148 | 934 6009 106 | T. BLAKE PLATE | |
| 149 | 934 6009 203 | NYLON WASHER | |
| 150 | 934 6009 300 | EARTH TERMINAL | |
| 151 | 934 6009 407 | IDLER GEAR | |
| 152 | 934 6009 504 | IDLER SPRING | |
| 153 | 934 6009 601 | IDLER ARM ASS'Y | |
| 154 | 934 6009 708 | DRIVING GEAR | |
| 155 | 934 6009 805 | CHASSIS UNIT | |
| 156 | 934 6009 902 | TENSION ARM ASS'Y | |
| 157 | 934 6006 001 | TENSION REGULATER BAND ASS'Y | |
| 158 | 934 6010 108 | PINCH ROLLER PRESSURE SPRING | |
| 159 | 934 6010 205 | PINCH ROLLER RETURN SPRING | |
| 160 | 934 6010 302 | PINCH ROLLER PRESSURE LINK | |
| 161 | 934 6010 409 | PINCH ROLLER ARM ASS'Y | |
| 162 | 934 6010 506 | BT. LEVER ASS'Y | |
| 163 | 934 6010 603 | S. BLAKE ASS'Y | |
| 164 | 934 6010 700 | T. BLAKE ASS'Y | |
| 165 | 934 6010 807 | S. LOAD ARM ASS'Y | |
| 166 | 934 6010 904 | T. LOAD ARM ASS'Y | |
| 167 | 934 6011 000 | LOAD LEVER ASS'Y | |
| 168 | 934 6011 107 | PF. IDLER ASS'Y | |
| 169 | 934 6011 204 | PF. CHANGE LEVER ASS'Y | |
| 170 | 934 6011 301 | GUIDE LINK ASS'Y | |
| 171 | 934 6011 408 | PLUNGER LINK ASS'Y | |
| 172 | 934 6011 505 | S. POST ROLLER ASS'Y | |
| 173 | 934 6011 602 | T. POST ROLLER ASS'Y | |
| 174 | 934 6011 709 | T. GUIDE ROLLER ASS'Y | |
| 175 | 934 6011 806 | T. INCLINED BASE ASS'Y | |
| 176 | 934 6011 903 | LOAD HOLDER ASS'Y | |
| 177 | 934 6012 009 | S. REEL ASS'Y | |
| 178 | 934 6012 106 | T. REEL ASS'Y | |
| 179 | 934 6012 203 | CYLINDER HEAD ASS'Y | |
| 180 | 934 6012 300 | PLUNGER | |
| 181 | 934 6012 407 | GUIDE ROLLER | |
| 201 | 934 6012 902 | LOADING MOTOR ASS'Y | |
| 202 | 934 6013 008 | GEAR SHAFT HOLDER | |
| 203 | 934 6013 105 | MAIN GEAR A | |
| 204 | 934 6013 202 | MAIN GEAR C | |
| 205 | 934 6013 309 | GEAR SHAFT ASS'Y | |
| 206 | 934 6013 406 | CONNECTOR (CN72) | |
| 207 | 934 6013 503 | SHAFT FRAME | |
| 208 | 934 6013 600 | CASSETTE HOLDER PLATE | |
| 209 | 934 6013 707 | HOLDER ARM | |
| 210 | 934 6013 804 | SPRING | |
| 211 | 934 6013 817 | SPRING | |
| 212 | 934 6013 820 | SPRING | |
| 213 | 934 6013 833 | SPRING | |
| 214 | 934 6013 901 | FIX PLATE | |
| 215 | 934 6014 007 | FIX PLATE | |
| 216 | 934 6014 104 | STOPPER RUBBER | |
| 217 | 934 6014 201 | SHAFT SUPPORT (R) | |
| 218 | 934 6014 308 | CASSETTE HOLDER SUPPORT | |
| 219 | 934 6014 405 | SHAFT SUPPORT (L) | |
| 220 | 934 6014 502 | CASSETTE HOLDER SUPPORT | |
| 221 | 934 6014 609 | MAIN GEAR HOLDER | |
| 222 | 934 6014 706 | TRAY | |
| 223 | 934 6014 803 | CASSETTE HOLDER | |
| 224 | 934 6014 900 | SHAFT SUPPORT | |
| 225 | 934 6014 006 | SHAFT | |
| 226 | 934 6015 103 | SHAFT | |
| 227 | 934 6015 200 | SHAFT | |
| 228 | 934 6015 307 | SUB FRAME | |
| 229 | 934 6015 404 | CASSETTE HOLDER | |
| 230 | 934 6015 501 | FRAME | |
| 231 | 934 6015 608 | BELT | |
| 232 | 934 6015 705 | PULLEY GEAR | |
| 233 | 934 6015 802 | DEW SENSOR | |
| 236 | 934 6016 102 | MECHA. FRAME | |
| 237 | 934 6016 209 | RUBBER CUSHION | |
| N101 | 934 6012 504 | SCREW | |
| N102 | 934 6012 601 | SCREW | |
| N103 | 934 6012 708 | SCREW | |
| N104 | 934 6012 711 | SCREW | |
| N105 | 934 6012 724 | SCREW | |
| N106 | 934 6012 737 | SCREW | |
| N107 | 934 6012 740 | SCREW | |
| N108 | 934 6012 805 | SCREW | |
| N109 | 934 0002 701 | SCREW | |
| N201 | 934 6016 306 | SCREW | |
| N202 | 934 6016 403 | SCREW | |
| N203 | 934 6016 500 | SCREW | |
| N204 | 934 6016 607 | SCREW | |
| N205 | 934 6016 610 | SCREW | |
| N206 | 934 6016 623 | SCREW | |
| N207 | 934 6016 704 | WASHER | |
| N208 | 934 6016 717 | WASHER | |
| N209 | 934 6016 720 | WASHER | |
| N210 | 934 6016 801 | SCREW | |
| N211 | 934 6016 319 | SCREW | |
| N212 | 934 6016 908 | SCREW | |

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

★ **Resistance**

1 8 2 ⇨ 1800Ω = 1.8kΩ
- 2: Indicates number of zeros after effective number
- 18: 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)

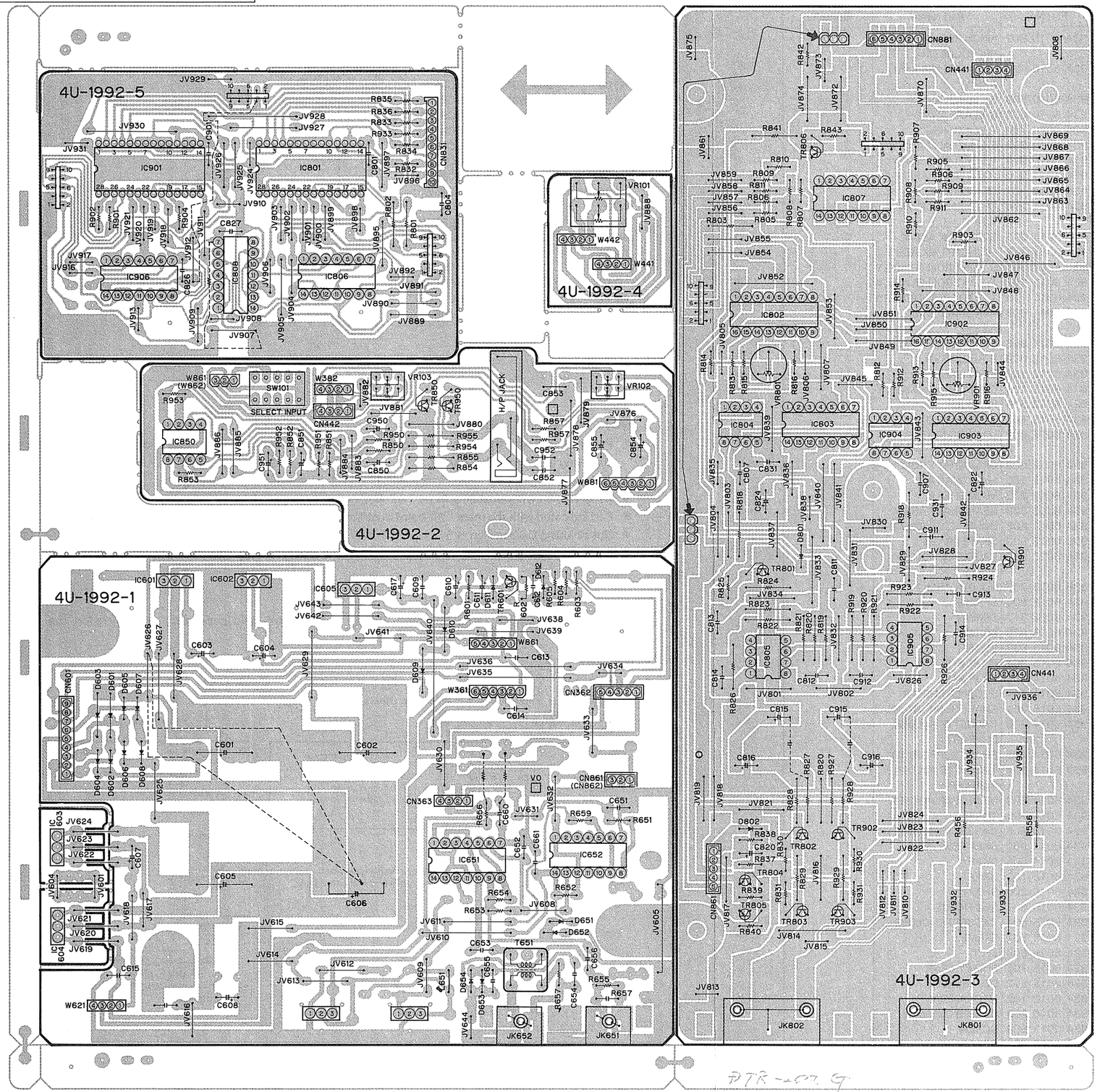
| | | | |
|---|---|---|---|
| CE : Aluminum foil electrolyte<br>CA : Aluminum solid electrolyte<br>CS : Tantalum electrolyte<br>CQ : Film<br>CK : Ceramic<br><br>CC : Ceramic<br>CP : Oil<br>CM : Mica<br>CF : Metallized<br>CH : Metallized | 0J : 6.3V<br>1A : 10V<br>1C : 16V<br>1E : 25V<br>1V : 35V<br>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

★ **Capacity**

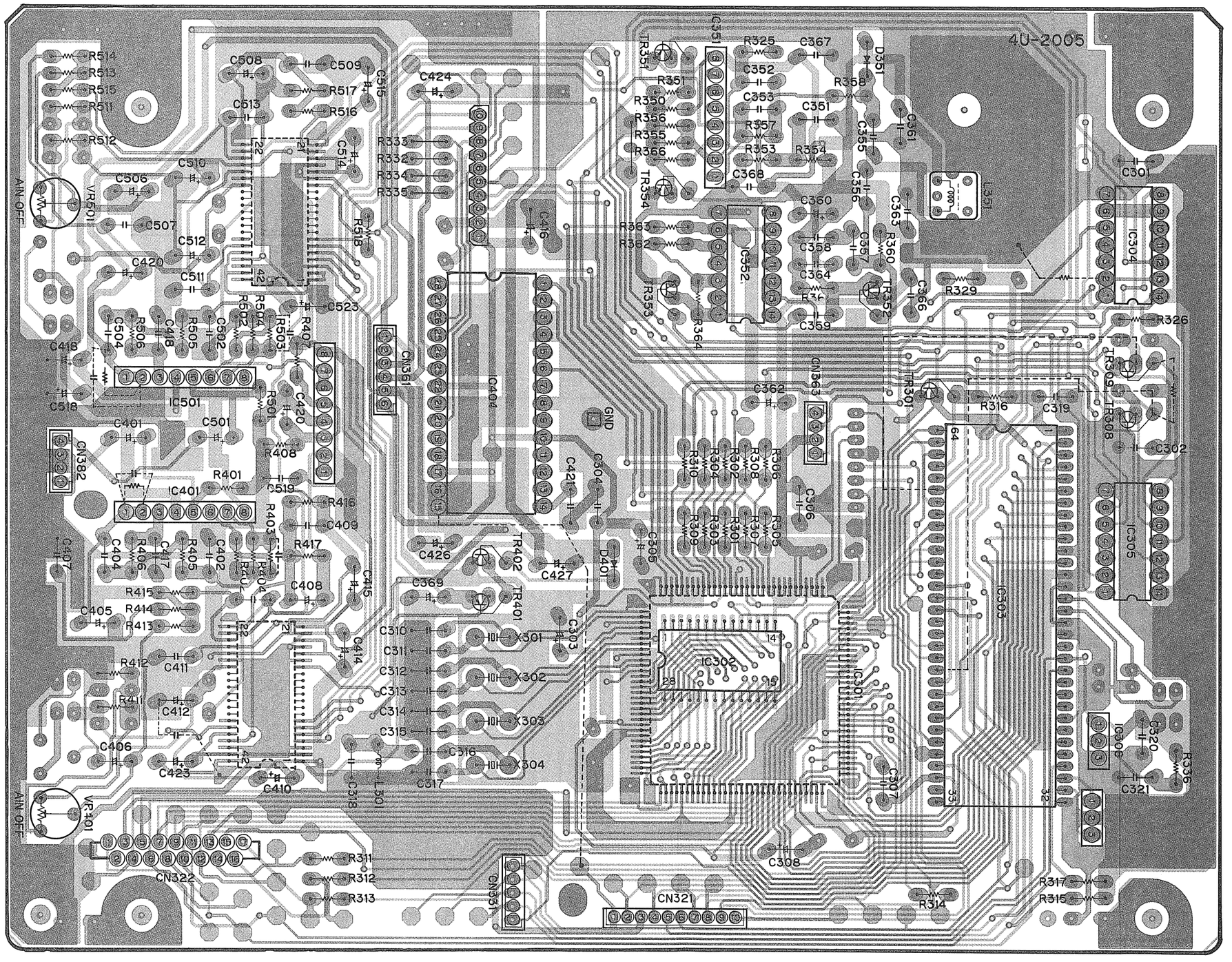
2 R 2 ⇨ 2.2μF
- 2: 1-digit effective number, decimal point indicated by R.
- 2R2: 2-digit effective number, decimal point indicated by R.

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

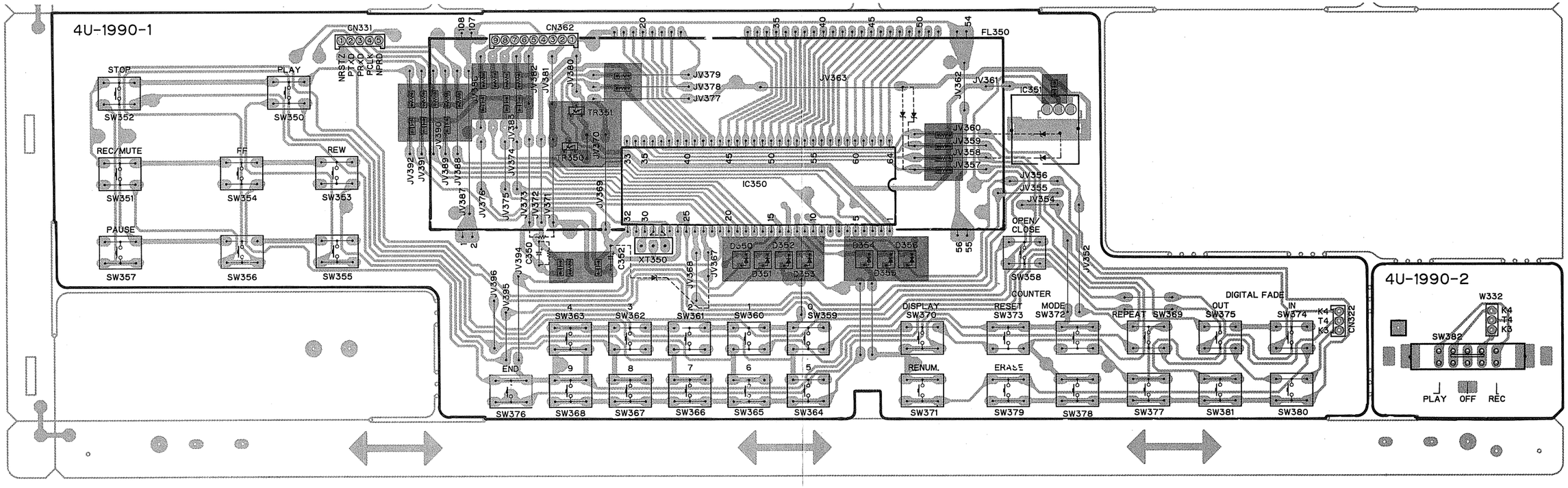
## P.W. BOARD OF 4U-1992 AUDIO UNIT



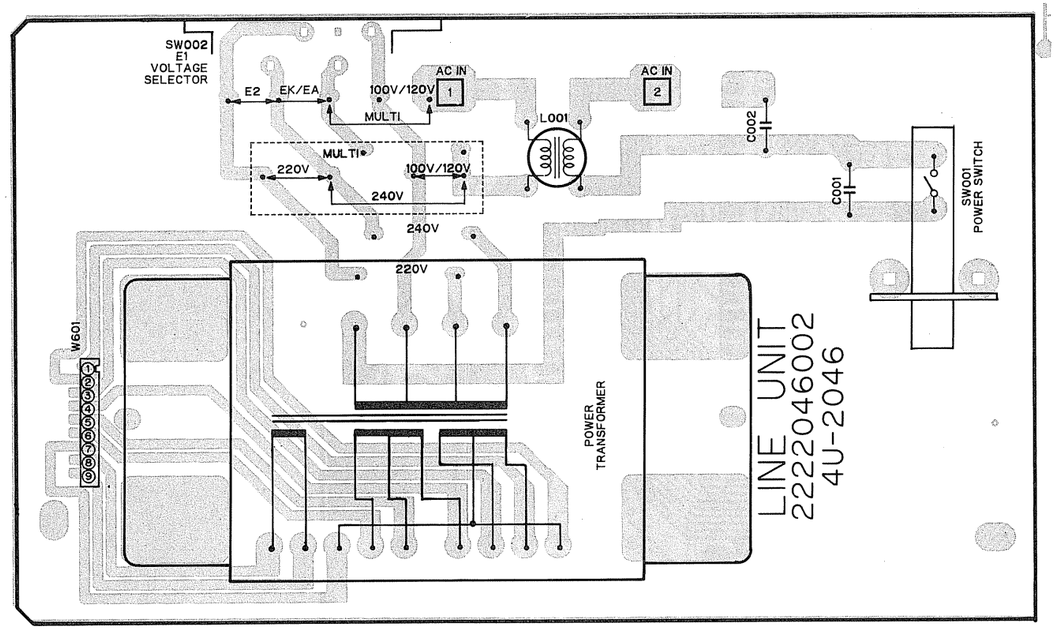
P.W. BOARD OF 4U-2005 SIG./AUDIO UNIT



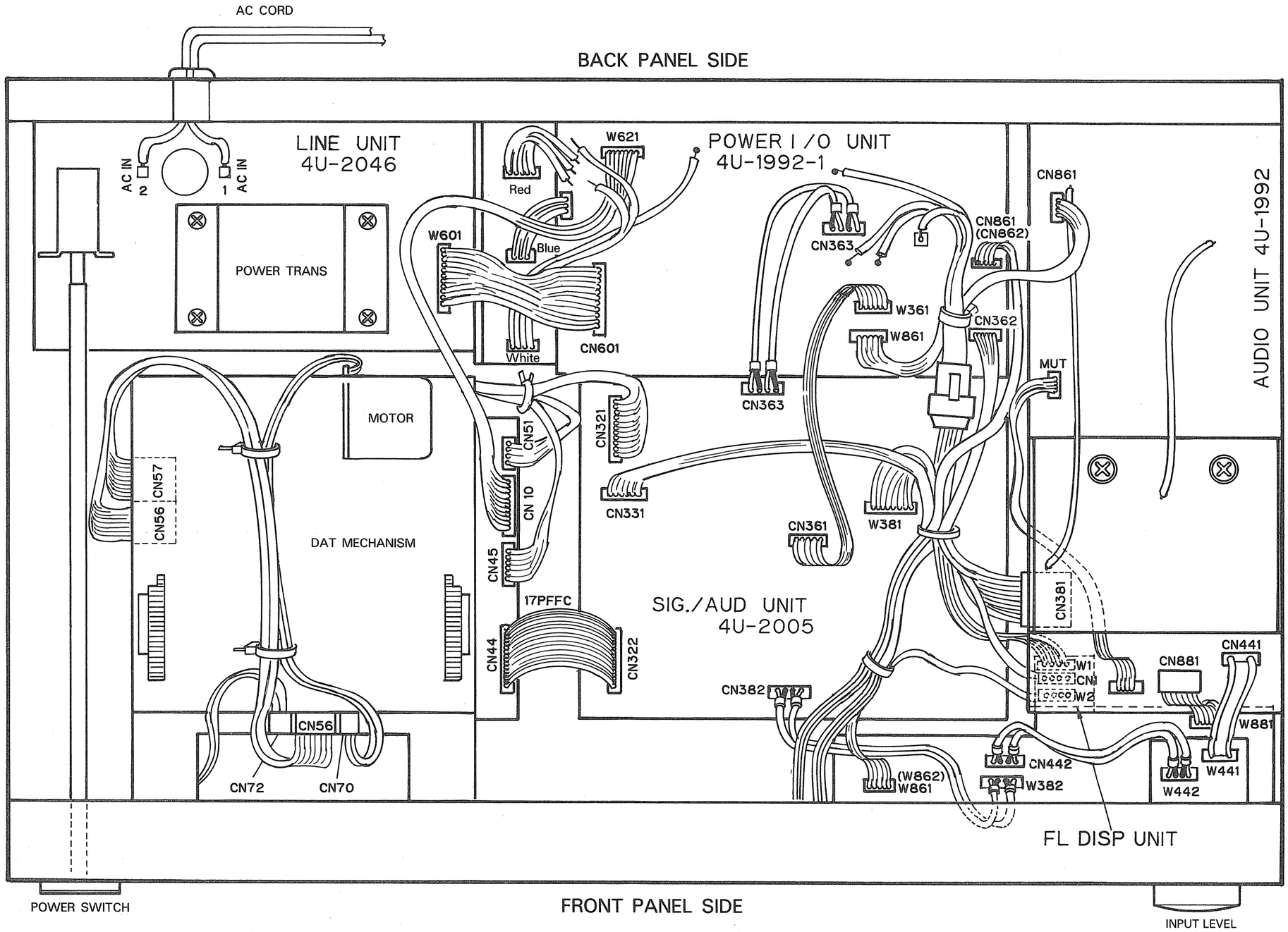
## P.W. BOARD OF 4U-1990 PANEL UNIT



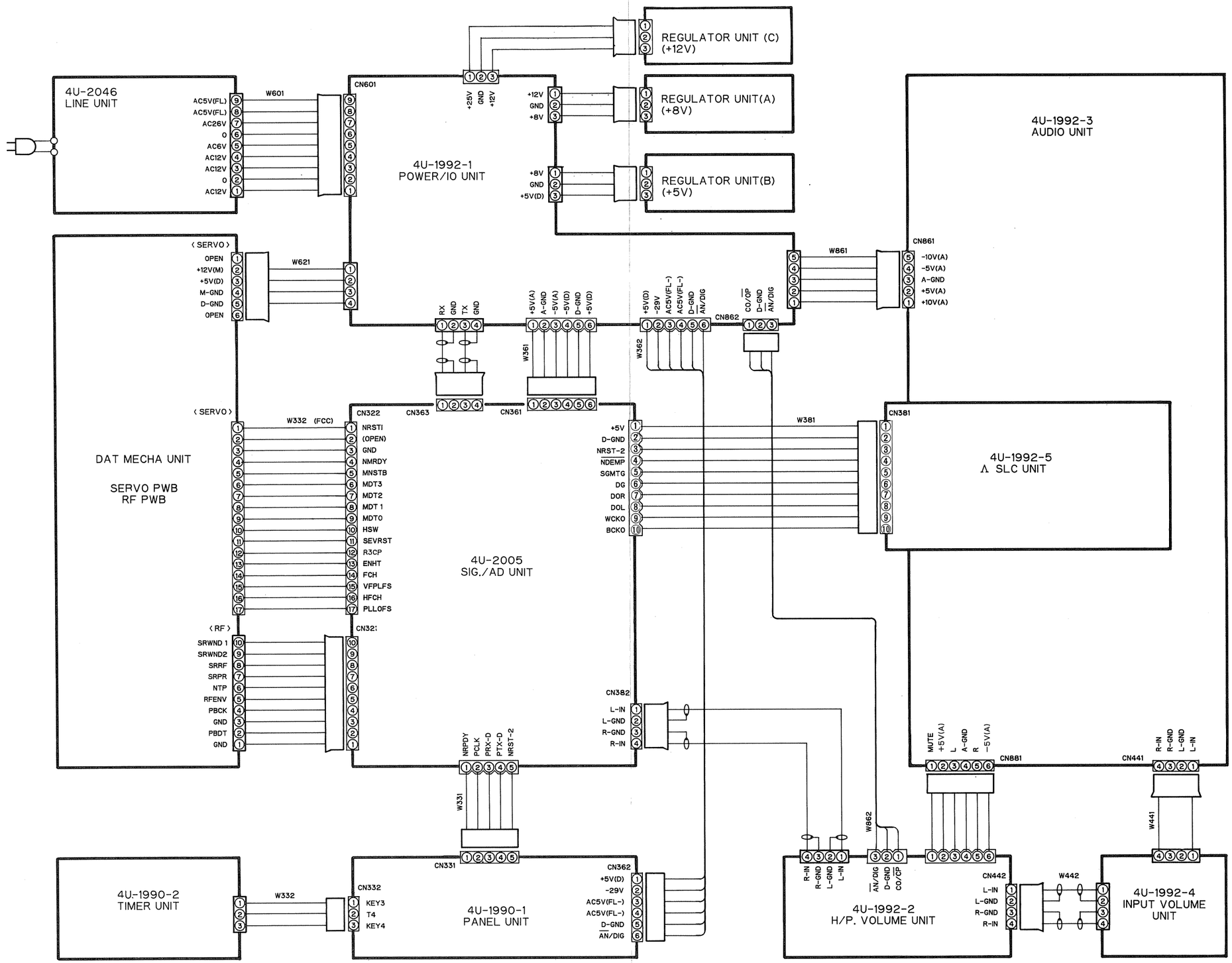

## P.W. BOARD OF 4U-2046 LINE UNIT

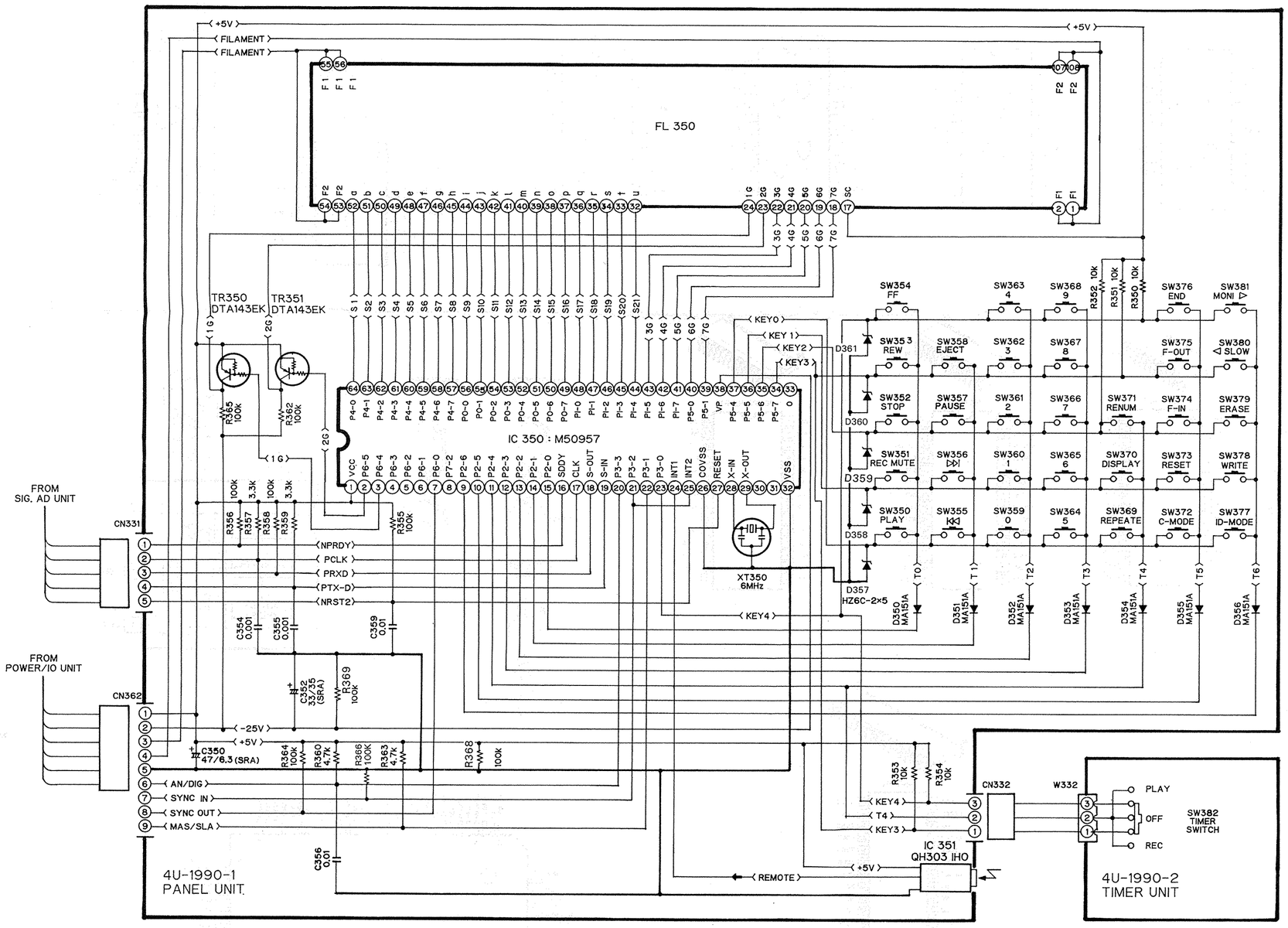


**BUNDLE DIAGRAM**

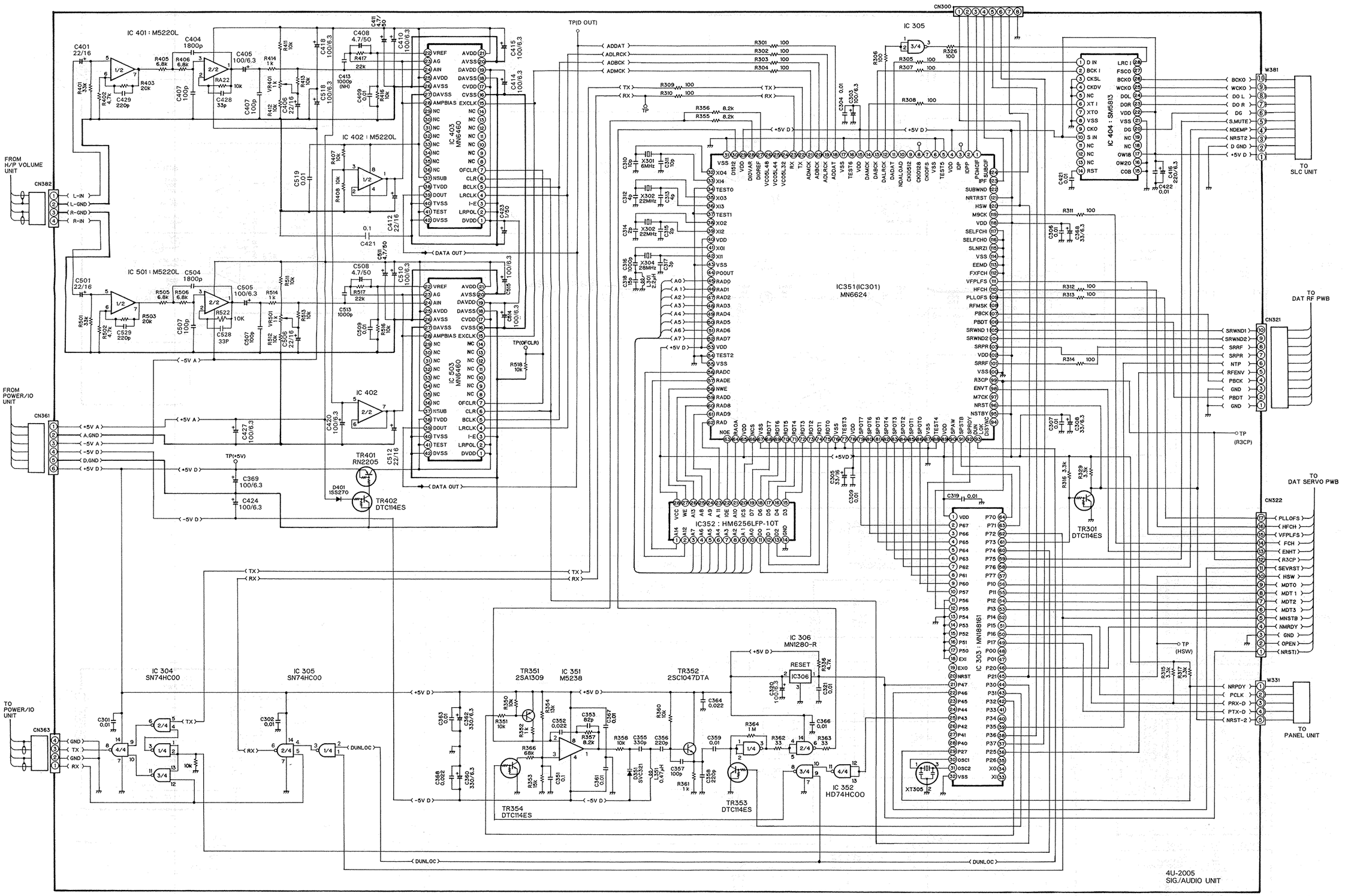


# WIRING DIAGRAM

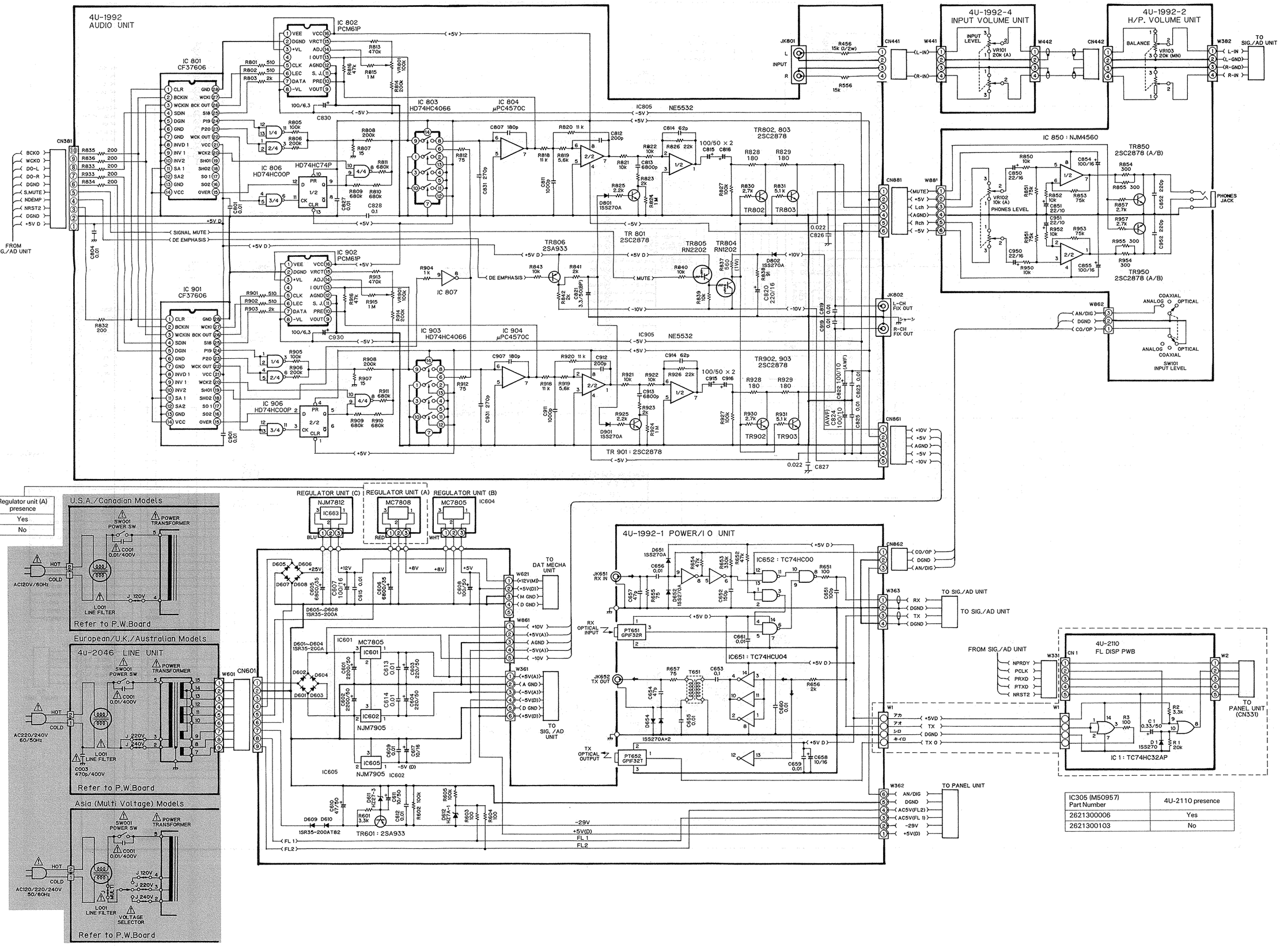



FL 350
IC 350 : M50957
TR350 DTA143EK
TR351 DTA143EK
IC 351 QH303 IHO
XT350 6MHz
D357 HZ6C-2×5
SW354 FF
SW353 REW
SW352 STOP
SW351 REC MUTE
SW350 PLAY
SW363 4
SW358 EJECT
SW357 PAUSE
SW356
SW355
SW368 9
SW362 3
SW361 2
SW360 1
SW359 0
SW367 8
SW366 7
SW365 6
SW364 5
SW376 END
SW375 F-OUT
SW374 F-IN
SW373 RESET
SW372 C-MODE
SW371 RENUM
SW370 DISPLAY
SW369 REPEATE
SW381 MONI
SW380 SLOW
SW379 ERASE
SW378 WRITE
SW377 ID-MODE
SW382 TIMER SWITCH
PLAY
OFF
REC
FROM SIG. AD UNIT
FROM POWER/IO UNIT
CN331
CN362
CN332
W332
4U-1990-1 PANEL UNIT
4U-1990-2 TIMER UNIT
+5V
FILAMENT
-25V
REMOTE
KEY0
KEY1
KEY2
KEY3
KEY4
NPRDY
PCLK
PRXD
PTX-D
NRST2
AN/DIG
SYNC IN
SYNC OUT
MAS/SLA

## SCHEMATIC DIAGRAM



## SCHEMATIC DIAGRAM

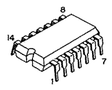



| PCB Number | Regulator unit (A) presence |
|---|---|
| 2221992005 | Yes |
| 2221992102 | No |

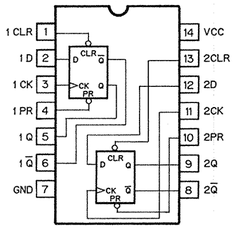
| IC305 (M50957) Part Number | 4U-2110 presence |
|---|---|
| 2621300006 | Yes |
| 2621300103 | No |

## SEMICONDUCTORS

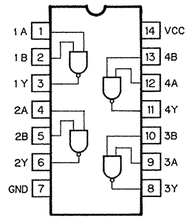
### ● IC



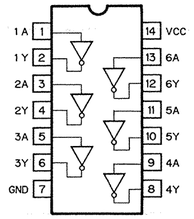
HD74HC74P



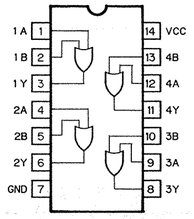

HD74HC00P



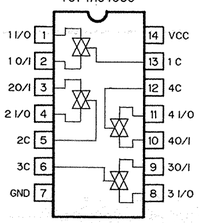

TC74HCU04P

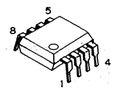



TC74HC32AP/AF

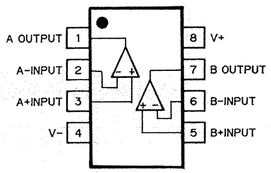


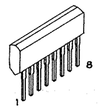

TC74HC4066



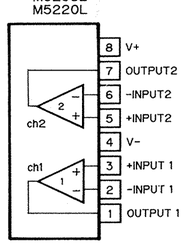



NE5532
μPC4570C
NJM4560D



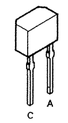
M5238L
M5220L



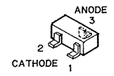

### ● Diodes

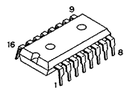
1SR35-200A
1SS270A
HZS27-3
HZS7A-1


SVC321SPA

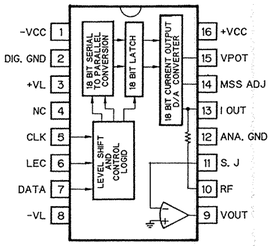


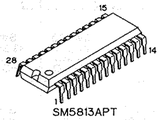

MA151A



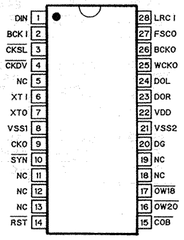



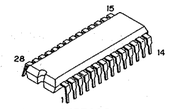
PCM61 P



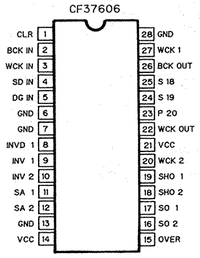



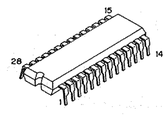
SM5813APT



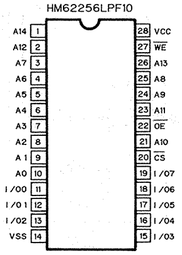



CF37606

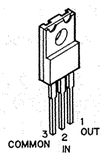


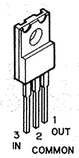
HM62256LPF10



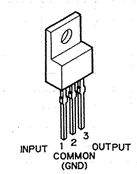

NJM7905FA

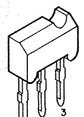



NJM7812FA

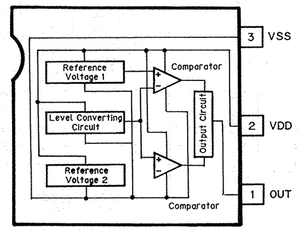



MC7805CT
MC7808



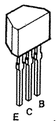



MN1280-R

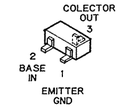


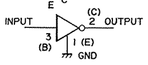

### ● Transistors

RN2202
RN2205
RN1202

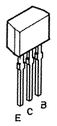



DTA143EK




DTC114ES




2SA933 0
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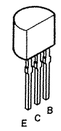
2SC1047

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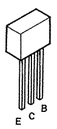


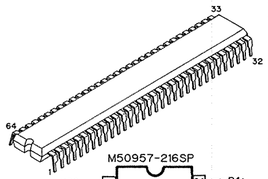

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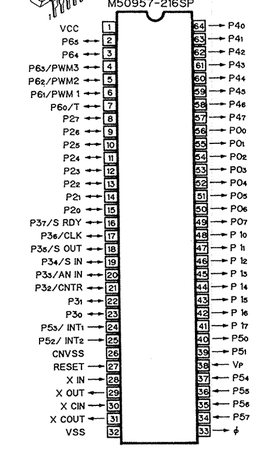


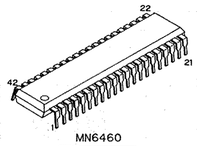

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