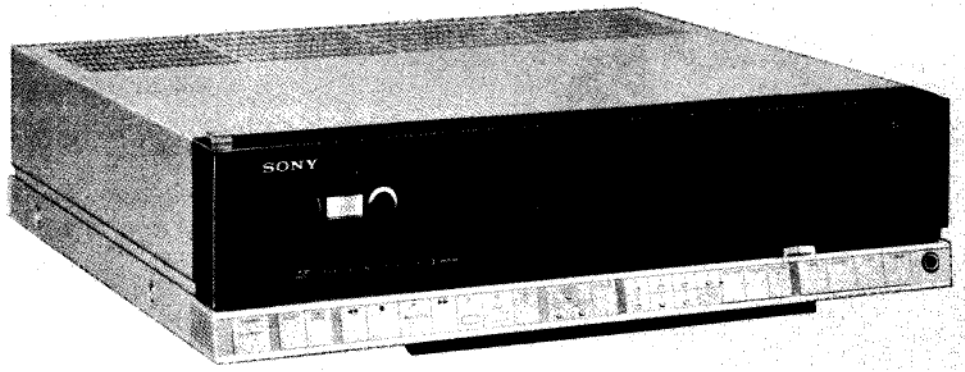
XO-1001

AEP Model



TIMER DECK RECEIVER

SPECIFICATIONS

FM tuner section

Tuning range	87.5 MHz–108 MHz
Antenna terminal	75 ohms, unbalanced
Intermediate frequency	10.7 MHz
Sensitivity at 46 dB quieting (40 kHz deviation)	4.5 μV (mono) 45 μV (stereo)
Usable sensitivity	1.7 μV (S/N = 26 dB, 40 kHz deviation) 11.2 dBf, 2 μV (IHF)
Signal-to-noise ratio (40 kHz deviation)	77 dB (mono), 70 dB (stereo)
Harmonic distortion (40 kHz deviation)	0.15% (mono), 0.25% (stereo) at 1 kHz
IM distortion (40 kHz deviation)	0.15% (mono), 0.25% (stereo)
Separation	45 dB at 1 kHz
Frequency response	30 Hz–15 kHz $^{+0}_{-2}{}^{.5}$ dB
Selectivity	60 dB at 300 kHz
Capture ratio	1.0 dB
AM suppression ratio	54 dB

AM tuner section

Tuning range	522–1,602 kHz
Antenna	Ferrite-bar antenna External antenna terminal
Intermediate frequency	450 kHz
Usable sensitivity	46 dB/m, ferrite-bar antenna (at 999 kHz) 100 μV, external antenna (at 999 kHz)
Signal-to-noise ratio	55 dB
Harmonic distortion	0.3%
Selectivity	50 dB (9 kHz)
Image response ratio	45 dB (at 999 kHz)

— Continued on page 2 —

0 dB = 0.775 V (AF)
0 dB = 1 μV } (RF)
0 dB/m = 1 μV/m

Tape Transport Mechanism	TCM-110V8

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MICROFILM

SONY

SERVICE MANUAL

Amplifier section

Continuous RMS power output
(Less than 0.1% THD, both channels driven simultaneously) At 1 kHz
40 + 40 watts (8 ohms)

Harmonic distortion Less than 0.1% at rated output

Frequency response PHONO: RIAA equalization curve ±1.0 dB
CD/AUX: 20 Hz - 40 kHz $^{+1}_{-3.0}$ dB

Inputs
PHONO
Sensitivity 2.0 mV
Impedance 47 k ohms
CD/AUX
Sensitivity 150 mV
Impedance 47 k ohms

Outputs
REC OUT
Voltage 150 mV
Impedance 4.7 k ohms
TUNER OUTPUT
Voltage 150 mV
Impedance 4.7 k ohms
TAPE OUTPUT
Voltage 140 mV
Impedance 4.7 k ohms
SPEAKER
Accepts speakers of 8 - 16 ohms.
HEADPHONES
Accepts low and high impedance headphones.

Tone controls
BASS
±10 dB at 100 Hz (turnover freq. 500 Hz)
TREBLE
±10 dB at 10 kHz (turnover freq. 2 kHz)

Loudness
+6 dB at 100 Hz
+3 dB at 10 kHz

Cassette deck section

Recording system 4-track 2-channel stereo

Fast-forward and rewind time
Approx. 90 sec. (with C-60 cassette)

Bias frequency 105 kHz

Signal-to-noise ratio (NAB, at peak level)

Cassette \ Dolby NR switch	OFF	ON
TYPE IV (Sony METALLIC)	58 dB	65 dB
TYPE III (Sony FeCr)	58 dB	65 dB
TYPE II (Sony CD-α)	56 dB	63 dB
TYPE I (Sony BHF)	54 dB	61 dB

Frequency response DOLBY NR OFF
- With TYPE IV cassette (Sony METALLIC)
  30 - 17,000 Hz
  30 - 15,000 Hz (±3 dB)
  30 - 15,000 Hz (DIN)
- With TYPE III cassette (Sony FeCr)
  40 - 16,000 Hz
  40 - 15,000 Hz (±3 dB)
  40 - 15,000 Hz (DIN)
- With TYPE II cassette (Sony CD-α)
  40 - 16,000 Hz
  40 - 15,000 Hz (±3 dB)
  40 - 15,000 Hz (DIN)
- With TYPE I cassette (Sony BHF)
  40 - 14,000 Hz
  40 - 13,000 Hz (DIN)

Wow and flutter 0.05% WRMS (NAB)
±0.07% (DIN)

Timer section

Clock Quartz-locked

Time display 12-hour system

Control time 24-hour cycle

Time accuracy ±15 seconds/month

Timer setting Up to two on/off programs a day, day setting and every-week repeat are possible with an accuracy measured in minutes.

Power backup duration
30 minutes with the built-in nickel-cadmium battery (charged at least 48 hours)

FEATURES

A multi-function timer is a very useful unit but its setting has been considered rather complicated. To simplify its use, the XO-1001 has a bar code system with specially-designed bar codes and bar code reader for clock and timer setting. Just read the desired codes on the bar code sheet following the diagram, and the setting is done. As you read the codes, you can know what you have set by checking the display panel of the XO-1001.
Its main features are:

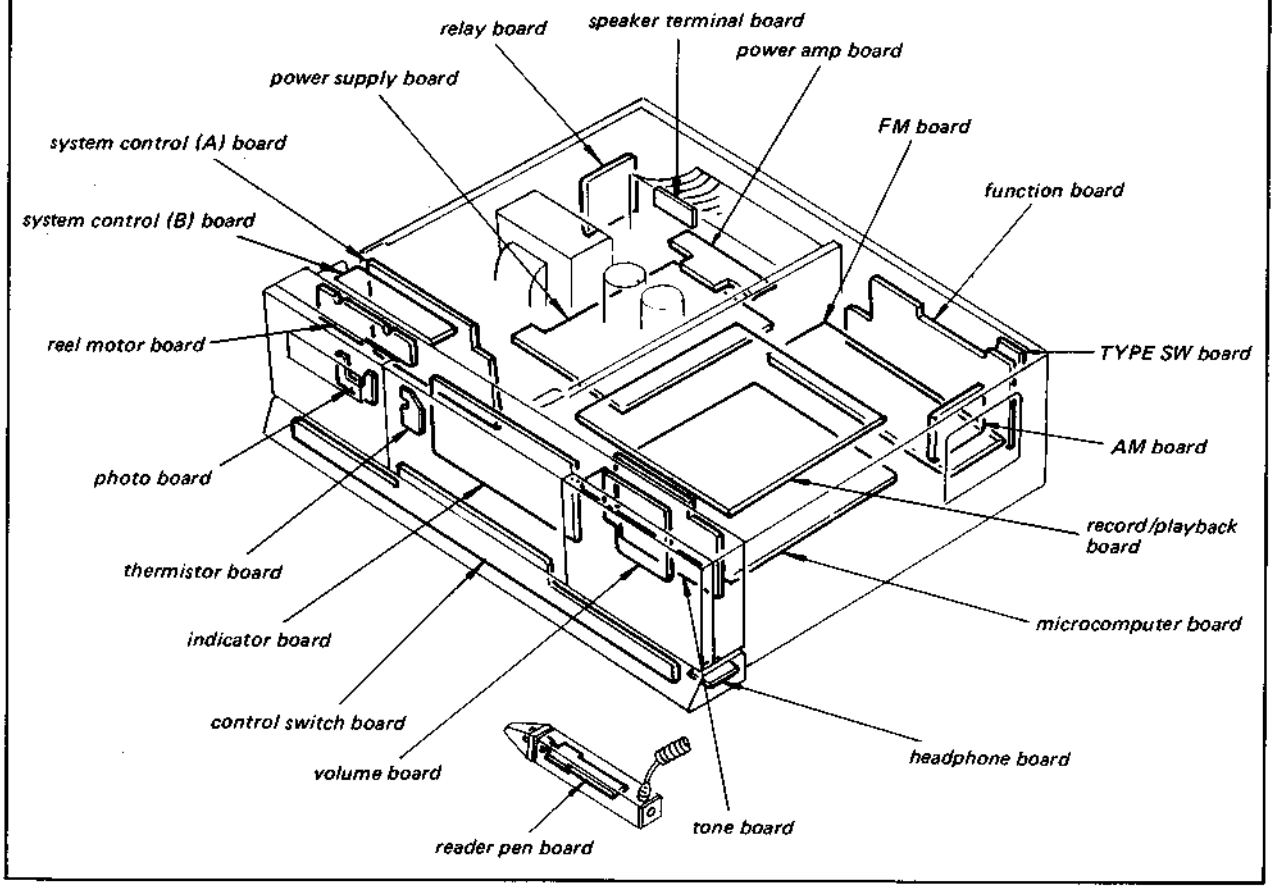
Receiver section
- The high-power amplifier reproduces dynamic sound with high fidelity.
- The quartz-locked digital synthesizer system allows accurate and stable tuning.
- Quick station selection is possible with the memory preset tuning system, which can memorize 7 FM and 7 AM stations.
- The tuner output jacks and tape output jacks always supply signals from the tuner and the cassette deck.

Cassette deck section
- The S&F (Sendust and Ferrite) record/playback head provides a wider dynamic range and a more extended frequency response.
- The automatic tape select system detects the type of tape inserted and adjust the deck to attain its optimum recording and playback characteristics.
- The digital linear counter allows you to index your tapes and provides a guide to how much recording time is left.
- The AMS (Automatic Music Sensor) and Memory functions allow you to locate a desired point on a tape easily.
- The peak program meters follow the transient peaks of the music and make it easy to set critical recording levels precisely.

Timer section
- Clock and timer settings can be easily done using the bar code sheet and bar code reader, even while you are recording or listening to another program you like.
- Two-event weekly timer make possible two paired turn-on/off operations on any particular day, on several days or on every day of the week.
- The sleep timer allows you to fall asleep listening to music, knowing the power will be turned off automatically in 60 minutes.

TABLE OF CONTENTS

CIRCUIT BOARD LOCATION



NOTES ON REPAIR

The microcomputer and display in this set operates off the T701 voltage supply even when the POWER ON/STAND BY key on the panel is OFF, when connected to AC power supply.
Further, even when the AC power supply is disconnected, the back-up battery provides MEMORY maintenance.
Please observe the following precautions:

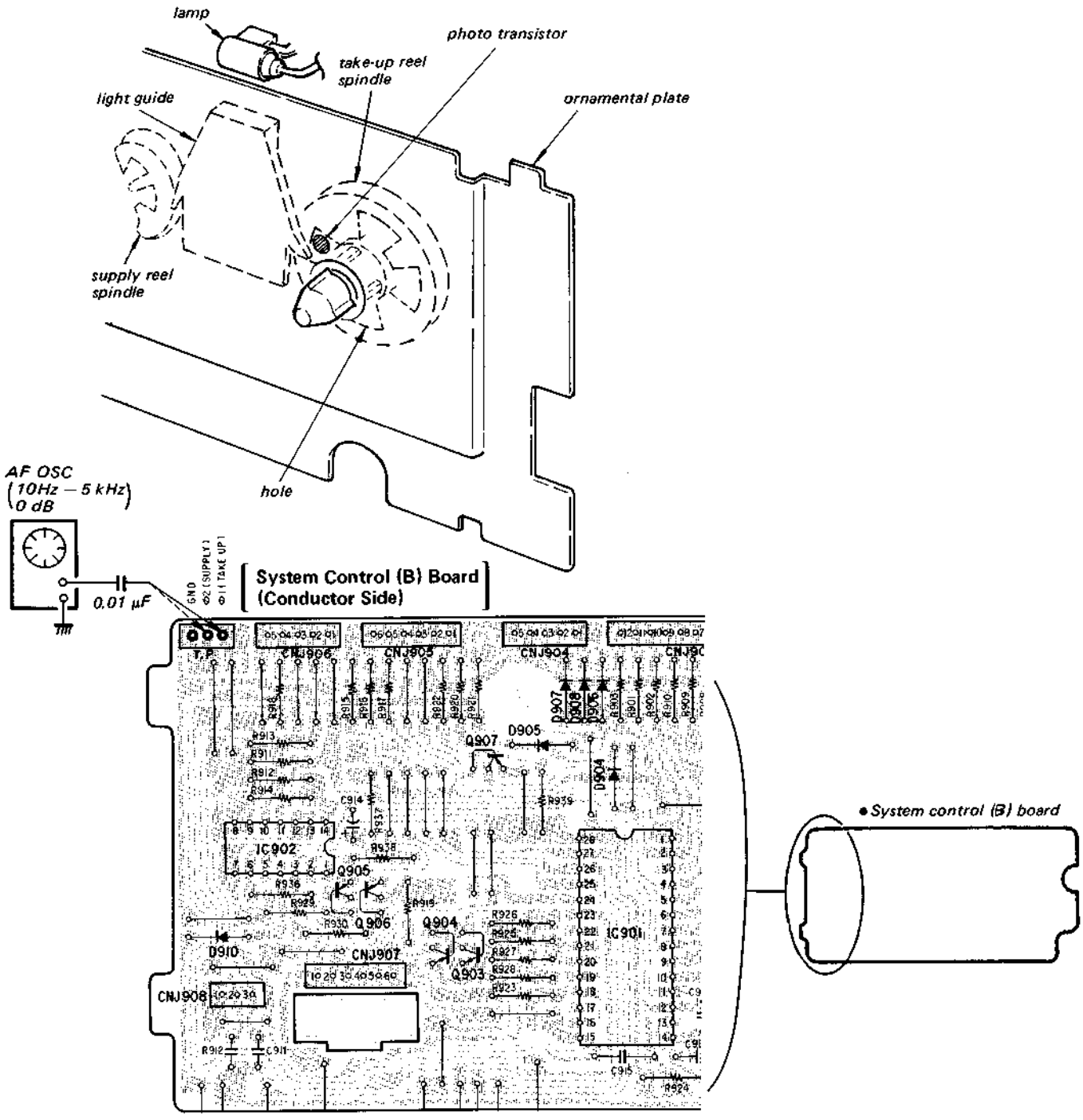
1. DO NOT short the pattern, etc. even when the POWER ON/STAND BY key is OFF if the AC plug is connected to AC power supply.
2. When replacing ICs and other parts, BE SURE to disconnect the AC plug and back-up battery lead wire (connector).
   When power is cut by disconnecting the back-up battery, all setting content is erased, and initial state results.

SERVICING NOTE

Shut-Off Detection and Precaution On Repairing

In this set, the shut-off detection is made optically. The take-up reel spindle has the four holes. The light of the lamp received by the light guide is intermittently applied to the photo transistor by means of the rotaion of the reel spindle. The pulse generated by the photo transistors Q901 and Q911 is amplified by IC902 and is fed to the mechanism control IC901 and the system control IC352.

Accordingly, when it is necessary to repair the unit after removing the ornamental plate, temporarily connect an af oscillator to each input terminal of IC902 (test point (T-P) terminal ϕ 1 and ϕ 2 on system control (B).) as shown below, so as not to operate the shut-off mechanism.



Handling Precautions for Schottky-barrier Diodes (11DQ03)

The Schottky-barrier diode has the following features.

- Switching period of time is short.
- Compared as the structure of PN-junction diode, either of the electrodes consists of the metal. For this reason, the rising voltage and its series resistance are low. On the contrary, the static voltage present on clothes and the human body will be enough to cause a breakdown of the insulating layer when handling the diodes.
  The following precautions should be taken while handling these diode.
  (Particular care should be taken under conditions of low humidity.)

Precautions in Replacing Schottky-barrier Diodes

1. Store new diode by wrapping it in aluminum foil, so that the both leads are at the same potential. (The diode should be stored in that manner until mounted on the circuit board.)

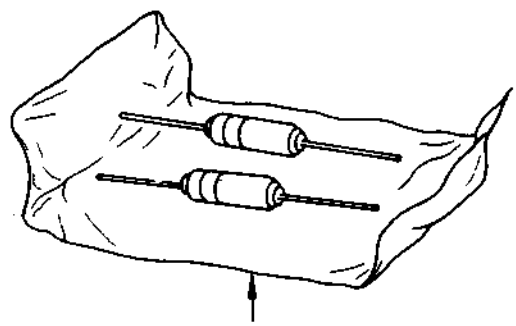


Fig. A

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. B. If there is a leakage path, use some other soldering iron.

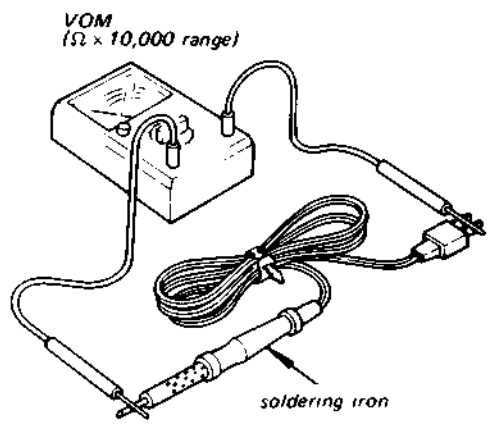


Fig. B

3. Equalize any potential difference between clothes, the tools in use, the work bench, the pattern of PC board where the diode is to be mounted and the aluminum foil packing the diode by touching them all in succession with the hands, a conductive wire or tool.
4. The following is effective methods for handling diode that remove the potential difference between the both leads of the diode.

- Take a short length of fine bare wire and wind it around the leads of the diode so that it shorts the both leads of the diode, while it is still in the urethanepolyester cushion or aluminum foil. This ensures that the both leads are at the same potential.

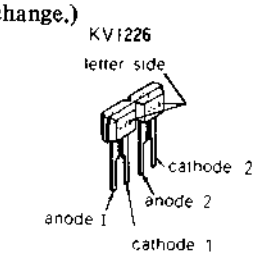
Fig. C

5. Method of Mounting
   Insert the diode on the PC board and solder both leads while the bare shorting wire is still wound around it. Remove the bare shorting wire only after the both leads have been soldered.

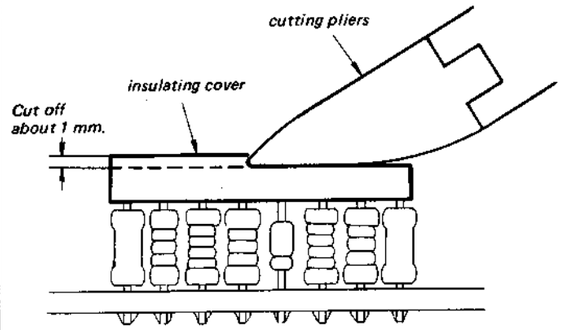
Handling Precautions for Variable Capacitance Diod D51 (KV1226) for AM

Variable capacitance diode D51 is a pair. In this set, D51 is used separately – one for the antenna tuning circuit and the other for OSC circuit.

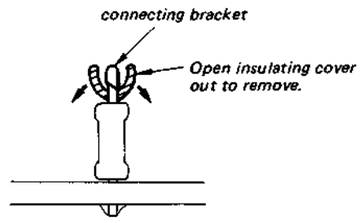
When replacing this capacitance diode, be sure to replace both of them. (to avoid causing tracking slip and sensitivity change.)

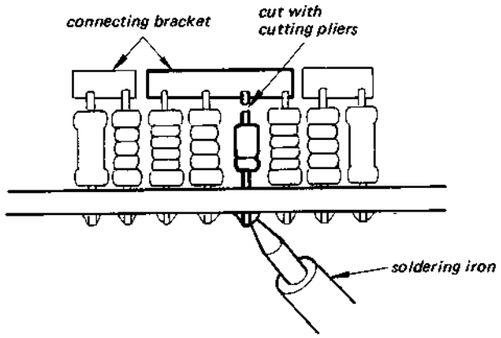


REPAIR METHOD FOR HYBRID CIRCUIT BLOCK

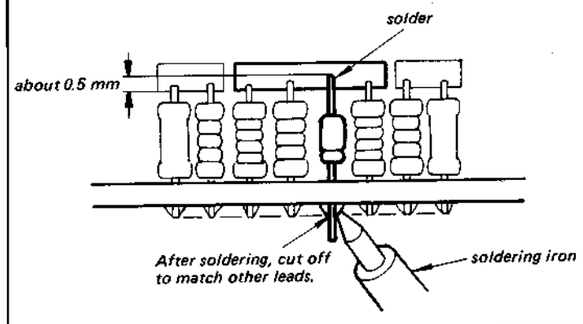


Using a cutting pliers, cut off the upper portion of the insulating cover about 1 mm, exposing the top of the connecting brackets.

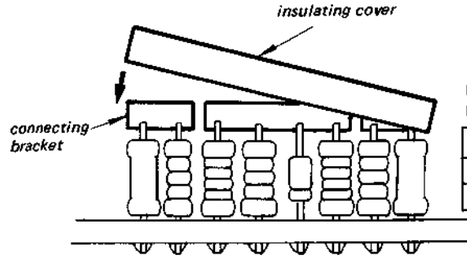




Cut off the lead of the defective part with cutting pliers. Remove solder and take out the defective part.

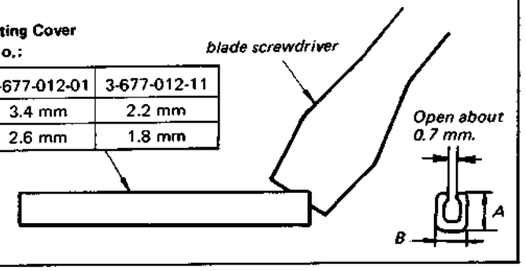


Insert the new part on the board and solder the lead to the board. Cut off the lead on the connecting bracket side so that it overlaps by about 0.5 mm, and solder to the connecting bracket.



Insulating Cover Part No.:

	3-677-012-01	3-677-012-11
A	3.4 mm	2.2 mm
B	2.6 mm	1.8 mm



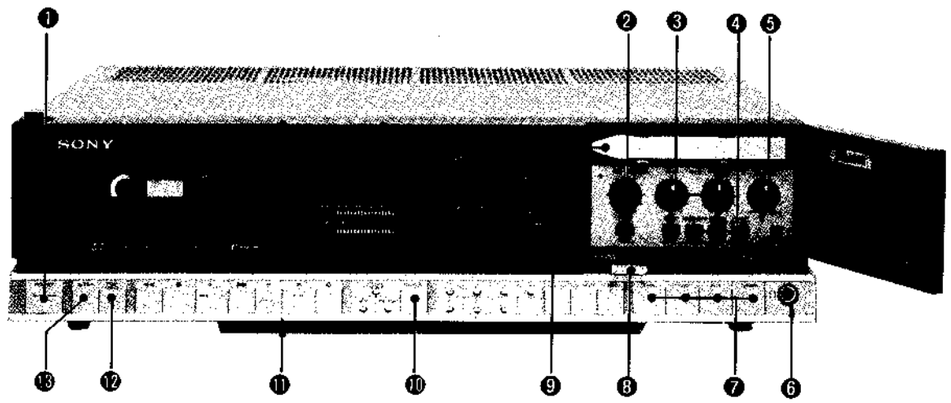
Open the insulating cover groove about 0.7 mm and place over the connecting brackets, positioning one end first.

MEMO

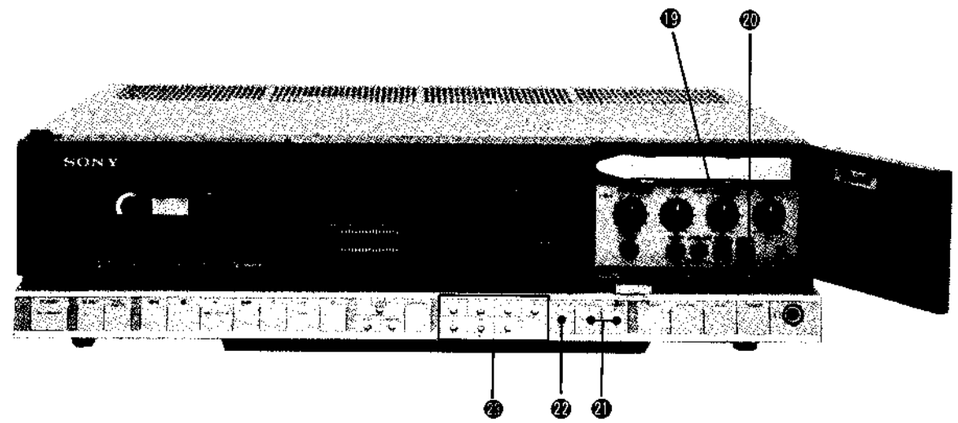
SECTION 1
OUTLINE

1-1. LOCATION AND FUNCTION OF CONTROLS

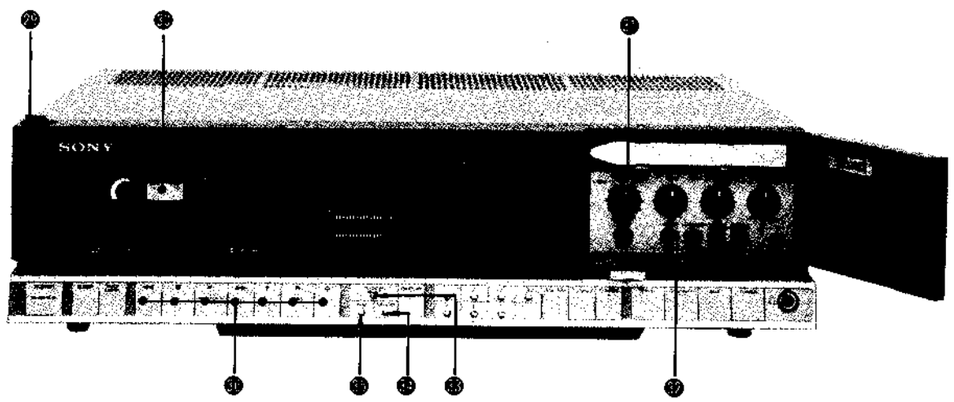
Control Section and Timer Section



Tuner Section



Cassette Deck Section



The numbers in the photos on page 3 are keyed to the following explanations.

CONTROL SECTION AND TIMER SECTION

❶ POWER ON/STAND BY key
Press the key to turn on the power. The cassette holder will be illuminated and the multi-purpose display will appear (POWER ON). Press it again so that the unit stands by. Only the clock and timer will continue operating in the STAND BY mode.

❷ TIMER SKIP switch
Depress the switch to skip the next timer program once. To release the switch, press it again.

❸ BASS and TREBLE TONE controls
Adjust the tone quality of the reproduced sound. Turn clockwise (to +) for more bass or treble and counterclockwise (to −) for less.

❹ LOUDNESS switch
Normally keep this switch released (□ OFF). When listening to program sources at a low volume, depress the switch (■ ON).
The loudness control compensates for the human ear's reduced response to very high and low frequency sound at low volume levels, and provides an apparently uniform response at these levels.
The effect on this control gradually decreases as the volume increases.

❺ BALANCE control
Regulates the sound balance between right and left channels for optimum stereo effect. Clockwise rotation (to R) decreases the left-channel sound, and vice versa.
Normally set the control to the center position.

❻ ∩ (headphone) jack
Accepts any low or high impedance stereo headphones. When the headphones are connected, the speakers will be disconnected automatically.

❼ Function selector keys
Press one of these keys to select a desired program source. The program in use will be displayed on the multi-purpose display.
TUNER: For off-the-air programs received by the built-in tuner.
CD/AUX: For auxiliary programs (connected to CD/AUX inputs).
PHONO: For record programs (connected to PHONO inputs).
TAPE: For taped programs with the built-in cassette deck.

❽ VOLUME control
Slide to the right for more volume.

❾ Bar code reader
Used for clock setting and timer setting.

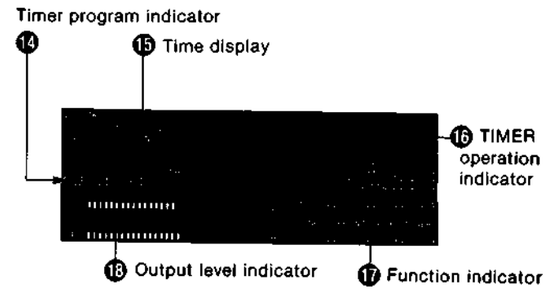
❿ DISPLAY selector key
Each time the key is pressed, the display will be changed in sequence to the actual time (CLOCK), the tape counter (TAPE COUNTER) and the sleep timer setting (SLEEP).

⓫ Bar code sheet
Used for clock setting and timer setting.

⓬ TIMER CHECK key
Press the key to check the preset timer program. Each time the key is pressed, TIMER 1 or TIMER 2 program will be displayed alternately.

⓭ SLEEP timer key
Used for sleep timer setting. Each time the key is pressed, the displayed digits in minutes will be increased by 10. See page 20.

Display for the control and timer sections



⓮ Timer program indicator
Indicates the preset timer number.

⓯ Time display
The clock continues operating even in the STAND BY mode.

⓰ TIMER operation indicator
Indicates the operation mode of the timer program.
When the TIMER SKIP switch is depressed, "SKIP" will appear.

⓱ Function indicator
Indicates the program source selected by the function selector keys.

⓲ Output level indicator
Indicates the output level supplied to the REC OUT jacks on the rear.

TUNER SECTION

⑲ STEREO/MUTING switch
Normally keep this switch depressed. "MUTING" appears on the frequency display and when tuning from station to station during manual tuning, interstation noise is eliminated. During FM reception, when a stereo signal of sufficient strength is received, the receiver operates in the stereo mode, and "STEREO" will appear. If the signal changes to mono, the receiver will be switched to the mono mode automatically.
When very weak stations are to be tuned in, or when an FM program is too noisy, press to receive the weak station, although the stereo feature is sacrificed. When this switch is released, keep the volume down to avoid possible speaker damage from interstation noise.

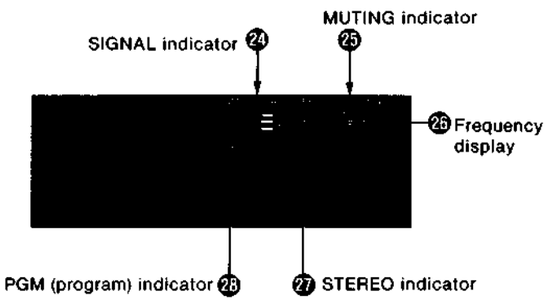
⑳ PRESET MEMORY switch
Used for memorizing FM or AM stations on the station preset buttons. While pressing this switch, press one of the station preset buttons.

㉑ TUNING keys
Press either the "+" or "−" key to change the frequency: Press the "−" key to go to a lower frequency and the "+" key to go to a higher.
- To change the frequency one step (0.05 MHz for FM, and 9 kHz for AM) at a time, press and immediately release the key.
- To change the frequency continuously, keep the key depressed. When a signal is received, scanning will stop for 2 seconds approximately, then will restart.
- To start automatic frequency scanning, keep the key depressed for one or two seconds.

㉒ FM/AM band selector key
Each time the key is pressed, FM or AM band is selected alternately.

㉓ Station preset buttons
An FM and AM station can be memorized on each station preset button. To call up a pre-memorized station, press the appropriate button.

Display for the tuner section



㉔ SIGNAL indicator
Indicates the strength of the tuned signal by the amount of indicator illumination. The fullest illumination means the antenna input signal is strong.

㉕ MUTING indicator
Illuminates when the STEREO/MUTING switch is depressed.

㉖ Frequency display
Indicates the frequency being received.

㉗ STEREO indicator
This indicator will light when an FM stereo program of sufficient signal strength is tuned in with the STEREO/MUTING switch depressed.

㉘ PGM (program) indicator
When the station preset button is pressed, the PGM number corresponding to the button will appear.

CASSETTE DECK SECTION

㉙ ⏏ (eject) button
Press this button to open the cassette holder.

㉚ Cassette holder

㉛ REC LEVEL (recording level) controls
These controls adjust the recording level. The outer knob is for the left channel and the inner for the right channel.

㉜ DOLBY NR switch
To record with the Dolby NR* (Noise Reduction) process, depress this switch (⎍ ON). To record without the Dolby NR process, press again and release this switch (⎍ OFF).
When playing back, set this switch to the same position used in recording.

*The Dolby NR system reduces tape hiss and improves the signal-to-noise ratio. During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are audible above any tape noise. When these signals are played back, the level is lowered to the original input level so that the level of any tape noise is reduced to the same extent.

"Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

㉝ COUNTER RESET button
Press this button to reset the tape counter to "0.00".

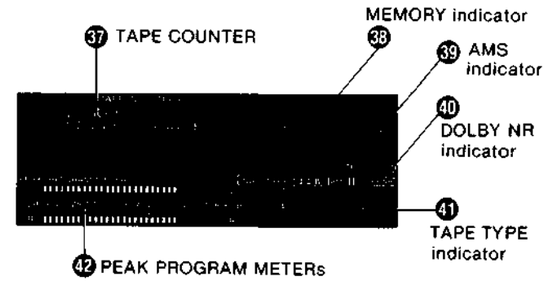
㉞ MEMORY (memory counter) button
Used for memory stop and memory play functions. See page 22.

㉟ AMS (Automatic Music Sensor) button
Used for the AMS operation. See page 22.

㊱ Cassette deck function keys
It is possible to switch directly from one mode to another. The indicators light when the cassette deck is in the forward, record or pause mode.
- ◀◀ (rewind) key: Press this key to rewind the tape.
- ■ (stop) key: To stop the tape, press this key.
- ▶ (forward) key: Press this key to play the tape back. To record, press this key while holding the ● key down.
- ▶▶ (fast-forward) key: Press this key to advance the tape rapidly.
- ● (record) key: Press this key together with the ▶ key to start recording.
- ▮▮ (pause) key: Press this key to stop the tape for a moment during recording and playback. To restart, press the key again. This key is also used to release the record muting mode.
- ○ (record muting) key: Press this key to eliminate unwanted material and to insert a blank space during recording.

TAPE SELECT switch (rear panel)
Generally set this switch to AUTO. The automatic tape select system will then operate. When using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots, set this switch to the Fe-Cr or METAL position. See page 15.

Display for the cassette deck section



㊲ TAPE COUNTER
When the cassette deck function key is pressed, the time display will change to the tape counter. The counter indicates approximate tape running time in minutes and seconds (−99.59 to 0.00 to 99.59). Several seconds after the tape stops, the tape counter will automatically change to time display.
(Even while the time is displayed, the counter digits are memorized until the COUNTER RESET button is pressed.)

㊳ MEMORY indicator
Illuminates when the MEMORY button is engaged (ON).

㊴ AMS indicator
Illuminates when the AMS button is engaged (ON).

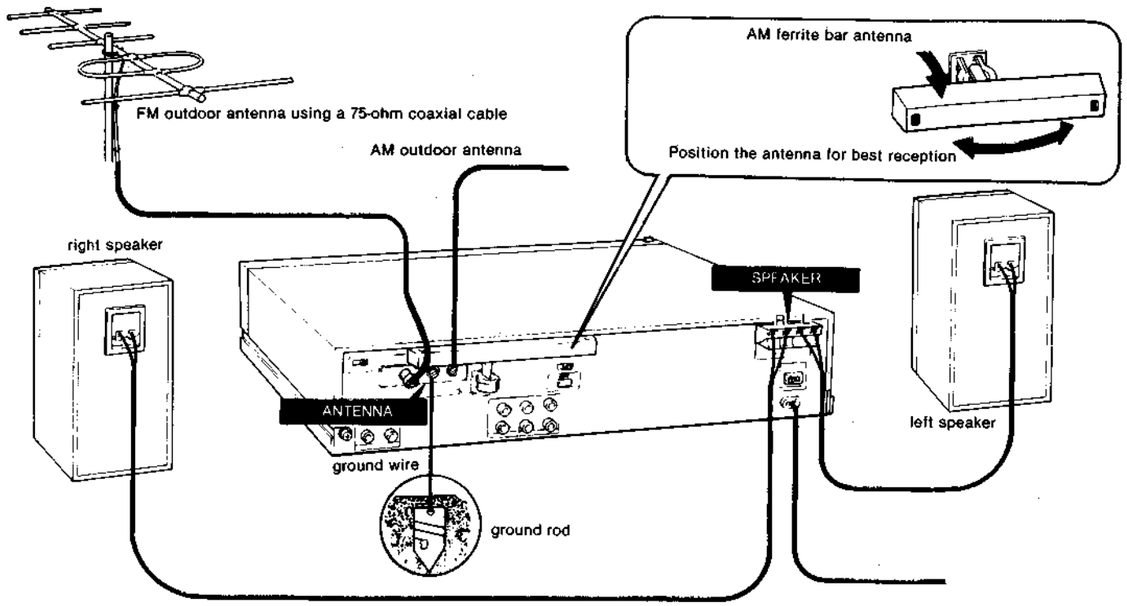
㊵ DOLBY NR indicator
Illuminates when the DOLBY NR switch is depressed.

㊶ TAPE TYPE indicator
Illuminates the indicator corresponding to the type of tape inserted.

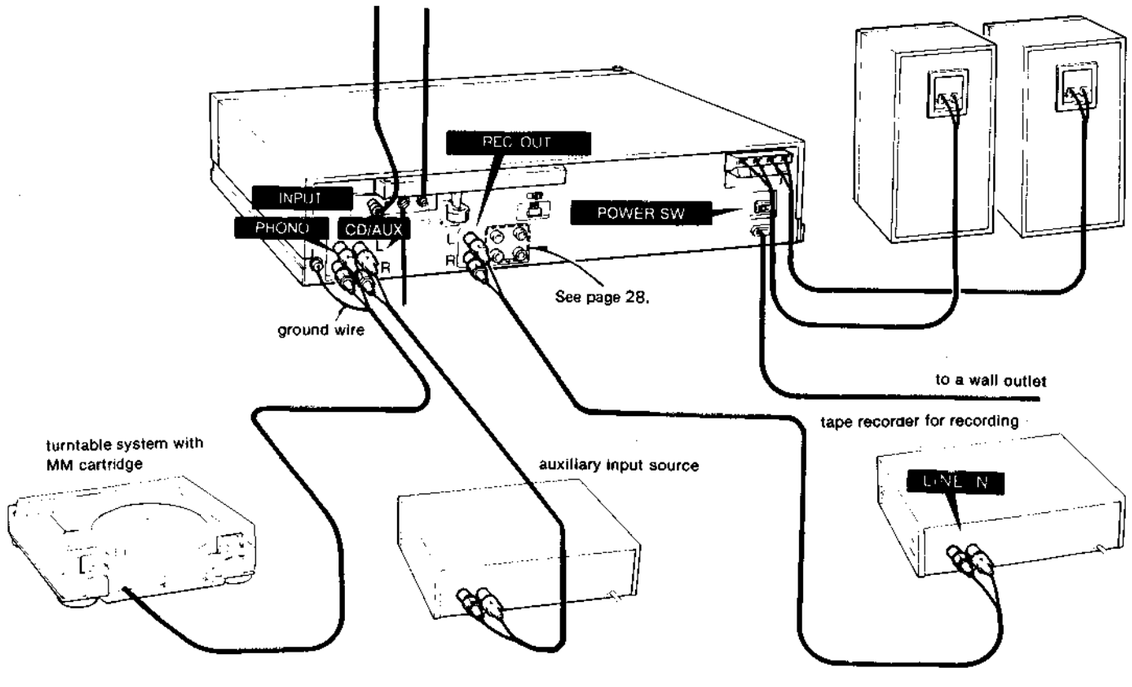
㊷ PEAK PROGRAM METERs
When the ● key is pressed, the output level indicators will be changed to the peak program meters which show the peak input level of each channel during recording.
For easy reading the highest input of each channel is held for about 4 seconds on the scale, except when a higher peak occurs before 4 seconds have passed, in which case that peak is immediately indicated.

1-2. CONNECTION DIAGRAM

Antenna and speaker connections



Program source connections



SPEAKER CONNECTION

Speaker power capacity

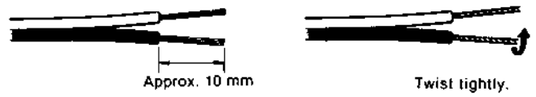
The receiver is rated at 40 watts minimum RMS per channel with an 8-ohm load at 1 kHz and may deliver an instantaneous peak power much greater than the rated power. Be sure to use speakers with adequate power handling capabilities. Always reduce the volume, when setting down or removing a tonearm or when tuning across the band. Speaker damage may result if these precautions are not observed.

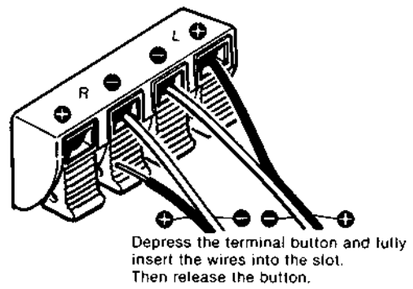
Speaker impedance

This receiver is designed to work best with speakers having nominal impedance ratings from 8 to 16 ohms.

Connections

Connect each speaker to the corresponding speaker terminals, i.e. right speaker to the R terminals and left speaker to L. Note that the colored or marked lead of a speaker cord goes to the ⊕ terminal and the other lead to the ⊖ terminal.





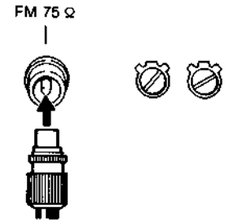
Depress the terminal button and fully insert the wires into the slot. Then release the button.

Caution: Check that no loose strand of the wire shorts across the terminals.

ANTENNA CONNECTION

FM antenna

The 75-ohm coaxial receptacle is an IEC standard pin-connector (male). Attach an optional IEC standard socket-connector (female) to the 75-ohm coaxial cable and insert it firmly into the FM 75 Ω ANTENNA receptacle.



The quality of received signal will be greately improved with suitable FM antenna. For further imformation about FM antennas, see page 30.

AM antenna

In most areas, the built-in ferrite bar antenna will provide satisfactory AM reception. In difficult reception areas, it may be necessary to connect a length of wire 10 to 20 meters (30 to 60 feet) long to the AM ANTENNA terminal. Extend this out of doors if possible, keeping as much of the antenna horizontal as possible.

PROGRAM SOURCE CONNECTIONS

The PHONO INPUT jacks: accept a turntable system with a typical moving-magnet (MM) cartridge.
The CD/AUX INPUT jacks: accept various input sources such as a tape recorder (for playback only), an additional tuner, or a CD (Compact Disc) player available in the future.
The REC OUT jacks: accept a tape recorder for recording.
The TUNER OUTPUT jacks: accept a tape recorder for recording of off-the-air programs. See page 29.
The TAPE OUTPUT jacks: accept a tape recorder for duplicating taped programs. See page 28.

GROUND CONNECTION

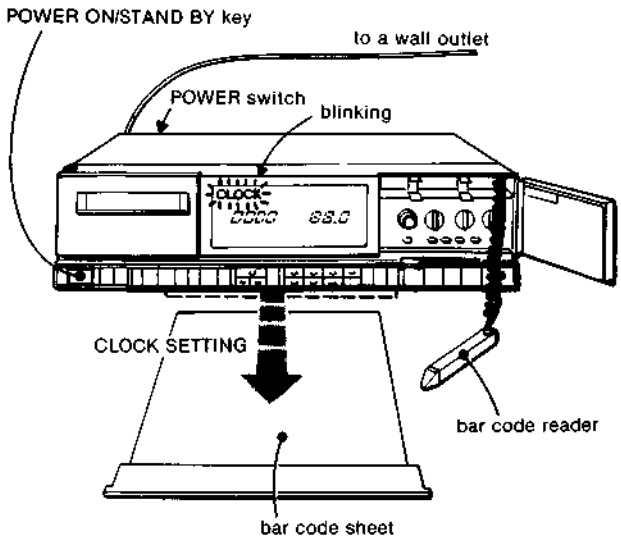
When an outdoor antenna is installed, the direct connection of the ground terminal [⏚] on the antenna terminal plate to a good ground is recommended for lightning protection. The use of a lightning arrester is recommended for any outdoor antenna.
To prevent hum, be sure to connect the ground wire of the turntable system to the ground terminal. If hum still exists, it may be helpful to connect the ground terminal directly to earth via a ground rod or other good ground, such as a clamp of a cold water pipe.

1-3. OPERATIONS

CLOCK SETTING

After the connection is made, first set the clock using the bar code sheet.

1 Connect the ac power cord to a wall outlet, set the POWER switch on the rear to ON and press the POWER ON/STAND BY key. The "CLOCK" will blink.
2 Take out the bar code reader and the bar code sheet.



3 Run the reader over the codes following the diagram arrow on the sheet. A single short beep means you can proceed to the next step.

How to run the reader

● Run the reader **over the entire code**, either from left to right or from right to left.

● Run the reader **lightly**, **rapidly** and **with uniform force**. Do not press it against the sheet.
● Keep the reader at an angle as illustrated. Do not tilt it too much.

● Always keep the reader tip clean. Remove the dust using a small soft brush like a stylus cleaner of the turntable.

When the clock setting is finished, "CLOCK" stops blinking and the other display appear.

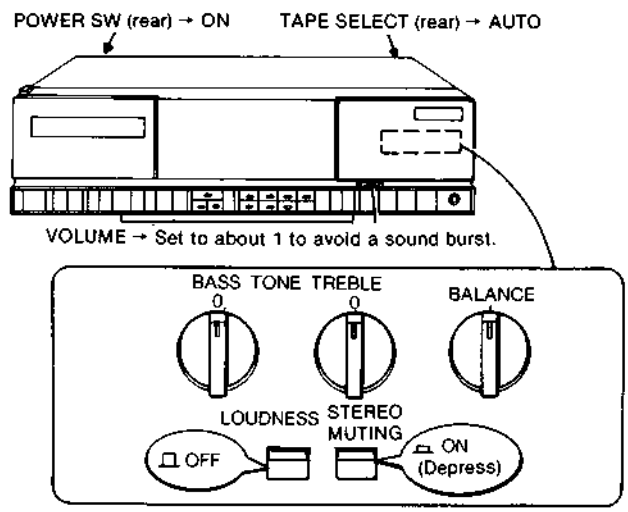
After the clock setting, replace the bar code sheet and the bar code reader.
The "TIMER SETTING" on the rear of the bar code sheet will be explained on page 22 in this manual.

When the power is turned off...

The clock keeps operating even when the POWER ON/STAND BY key is pressed to STAND BY.
When the POWER switch on the rear is set to OFF and/or when the ac power cord is unplugged from the wall outlet or when a power interruption occurs, the clock will keep operating for about 30 minutes with the built-in back-up battery*, then display will disappear.
In this case, reset the clock when the power is turned on again.

*The built-in back-up battery is charged automatically while the power cord is connected to the wall outlet and the POWER switch is set to ON. The fully charged battery (after 48 hours of charging) will operate the clock about 30 minutes.

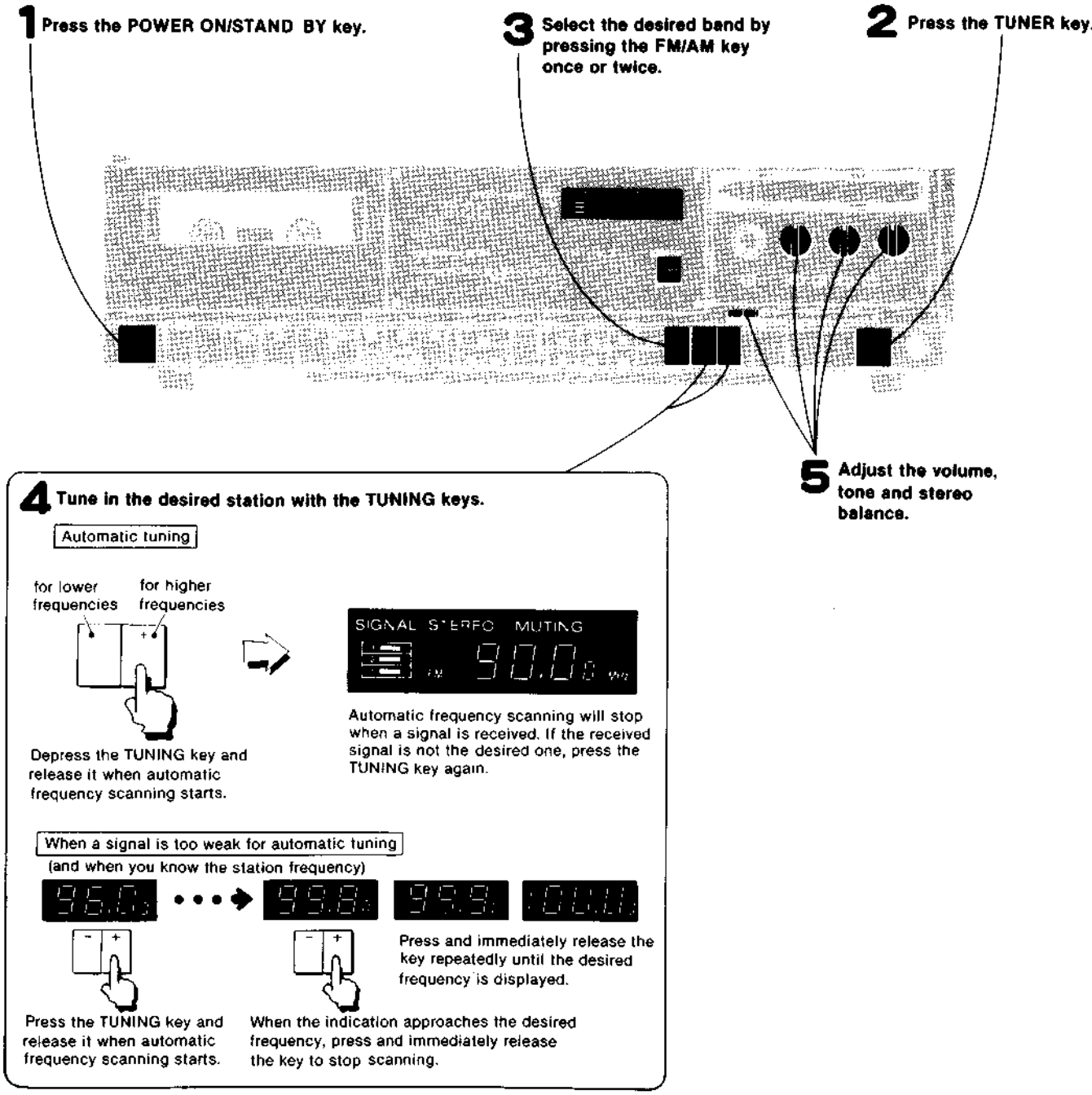
PRELIMINARY OPERATION



Abbreviations of the days
SUN—Sunday MON—Monday TUE—Tuesday
WED—Wednesday THU—Thursday FRI—Friday
SAT—Saturday
AM 0:00—midnight PM 0:00—noon

BROADCAST RECEPTION

Follow the numbered sequence.



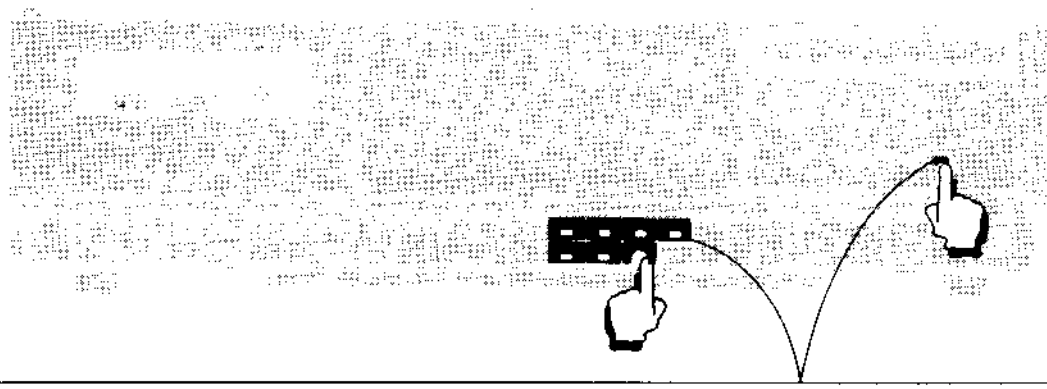
To tune in a very weak and noisy FM station
Press to release the STEREO/MUTING switch (⊓ OFF). This will result in better reception, at the sacrifice of the stereo effect of the FM stereo program. When the STEREO/MUTING switch is released, keep the volume down while tuning to avoid possible speaker damage from interstation noise.

MEMORY PRESET TUNING

Once you assign the frequencies to the memory, all you need do to select a desired station is press the appropriate station preset button.
For each station preset button, you can memorize an FM and an AM station. A total of 14 stations (7 FM and 7 AM stations) can be memorized.

To memorize a frequency

1 **Tune in a station to be memorized. (See page 16.)**



2 **While pressing the PRESET MEMORY switch, press the desired station preset button.**
With a beep sound the frequency is memorized.

PGM number: shows the number of the preset station button.

Repeat steps 1 and 2 for each button and each band.

To receive a memorized station
Select the FM or AM band with the FM/AM key and press the station preset button of the station you want to tune in.

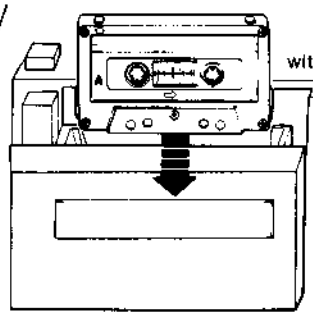
To change a memorized station
When you assign a new station frequency to a station preset button, the station on the same band which was previously memorized is automatically erased.
An erasure cannot be made without a new input.

RECORDING

Follow the numbered sequence.

1 Press the POWER ON/STAND BY key.
The logic-controlled function keys do not activate until 4 seconds after the power is turned on. Wait until the ▮▮ indicator goes off.

2 Press the ⏏ button and insert a cassette.



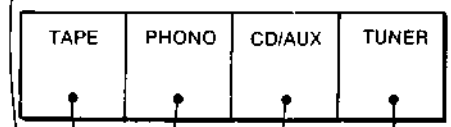
with the tape surface down.

The indicator corresponding to the type of tape inserted lights.

TAPE TYPE I

Set the TAPE SELECT switch on the rear to the appropriate position when using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots. See page 19.

3 Select the desired program source and play the program.

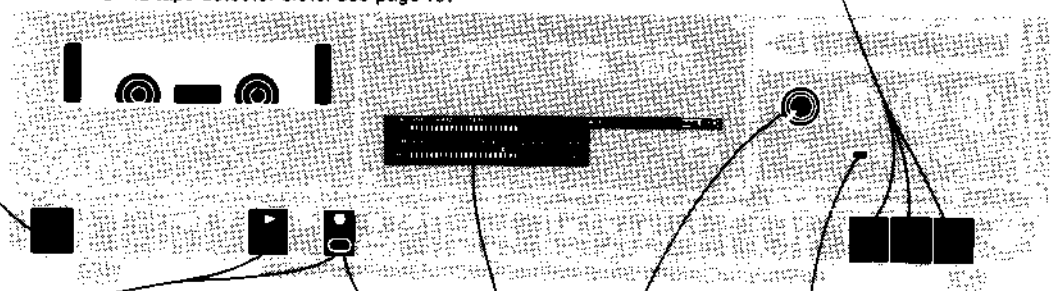


For record programs

For auxiliary sources connected to the CD/AUX jacks

For off-the-air programs

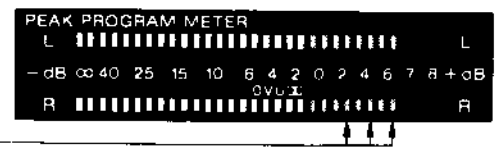
If the TAPE key is pressed, the ● (record) key cannot be activated.



4 Depress for recording with the Dolby NR process.
DOLBY NR lights.
For recording without the Dolby NR process, press to release the DOLBY NR switch.

5 Press the ● key and adjust the recording level with the REC LEVEL controls.

Adjust the recording level so that the peaks fall **momentarily** within the proper setting level depending on the type of tape being used.

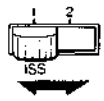


Proper setting level: +2 dB for TYPE I and TYPE II cassettes, +4 dB for TYPE III cassettes, or +6 dB for TYPE IV cassettes.

6 Press the ● and ▶ keys simultaneously.
Recording will begin.

The recording level is not affected by the VOLUME, TONE and BALANCE control settings, so you can listen to the program at any volume and with any tone adjustments you want while recording.

ISS (Interference suppress switch)
If interference is encountered while recording AM programs, use the ISS switch on the rear to suppress the interference. Slide the switch to 1 or 2 position, depending on which best reduces the noise.



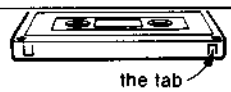
MORE ACCURATE RECORDING STARTS

You can use the ❚❚ key to start recording more accurately than is possible when recording is started by pressing both the ● and ▶ keys.

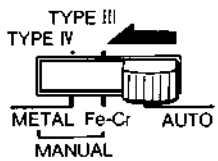
1 After completing step 5 in the chart on page 14, press the ❚❚ key.
2 Hold the ● key down and press the ▶ key.
3 At the moment you wish to start recording, you need only press the ❚❚ key again.

AUTOMATIC TAPE SELECT SYSTEM

With the TAPE SELECT switch at the AUTO position, this automatic tape select system is actuated by the detector slots of certain cassettes and automatically sets the optimum recording and playback characteristics.
The tape type detected will be shown by the indicator.

Type of tape	Tape detector slots	TAPE indicator
TYPE I (NORMAL) TYPE III (Fe-Cr)	 the tab	
TYPE II (CrO_2)	 CrO_2 tape detector slots	
TYPE IV (METAL)	 METAL tape detector slots	

As shown in the above illustrations, when inserting TYPE III (Fe-Cr) cassettes and TYPE IV (METAL) cassettes which have no METAL tape detector slots, the correct TAPE indicator does not light up and the automatic tape select system cannot work properly.
Set the TAPE SELECT switch at the rear to the TYPE III (Fe-Cr) or TYPE IV (METAL) position when using these cassettes.

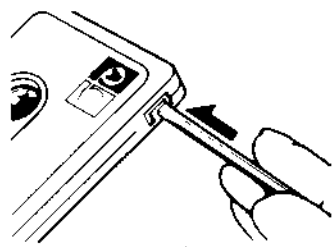


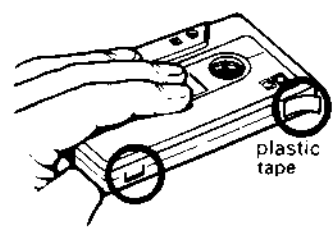
Tape list

Tapes (C-60 and C-90)		Type of tape
SONY: AHF, BHF, CHF BASF: LH-X, Professional I MAXELL: UD, UD-XL I, XL I-S SCOTCH: MASTER I	AGFA: SUPER FERRO DYNAMIC FUJI: FX-I PHILIPS: SUPER FERRO-I TDK: AD	TYPE I (NORMAL)
SONY: UCX-S, CD-α BASF: Professional II MAXELL: UD-XL II, XL II-S SCOTCH: MASTER II	AGFA: STEREO CHROM FUJI: FX-II PHILIPS: CHROMIUM TDK: SA, SA-X	TYPE II (CrO_2)
SONY: FeCr BASF: Professional III SCOTCH: MASTER III	AGFA: CARAT PHILIPS: FERRO CHROMIUM	TYPE III (Fe-Cr)
SONY: METALLIC	Other metal tapes	TYPE IV (METAL)

NOTES ON CASSETTES

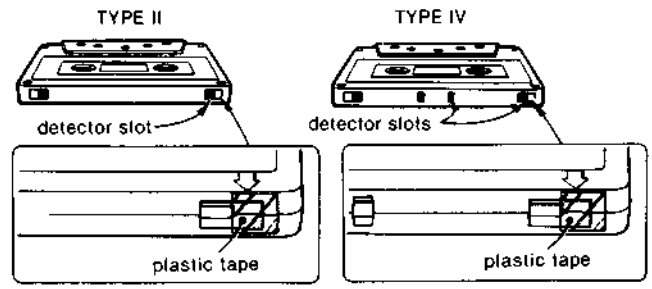
To protect cassettes from accidental erasure
Remove the tab as illustrated so that the record mode does not function when the key is pressed. To record on a cassette once tabs have been removed, simply cover the slot with plastic tape.


To protect side A recording



Do not stick any material on the cassette except for tape on the circled portions

● Be careful not to cover the detector slots of the TYPE II (CrO_2 tape) and TYPE IV (metal tape) cassettes.



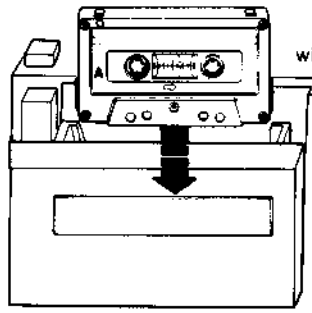
Cassette care
● Do not stick thick paper or tape onto the cassette, as this may affect proper cassette alignment and prevent proper tape contact with the head.
● Keep cassettes away from magnetic equipment such as speakers, amplifiers, etc., as erasure or distortion on your recorded tape could occur.
● Do not expose a cassette to direct sunlight, extremely cold temperatures or moisture.

PLAYBACK

Follow the numbered sequence.

1 **Press the POWER ON/STAND BY key.**

2 **Press the ⏏ button and insert a recorded cassette.**



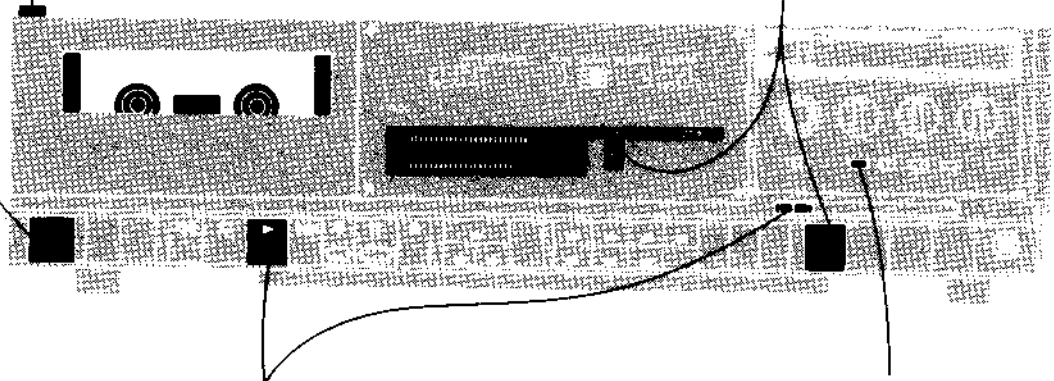
with the tape surface down

The indicator corresponding to the type of tape inserted lights.

Set the TAPE SELECT switch on the rear to the appropriate position when using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots.

3 **Press the TAPE key.**

"TAPE" lights.



4 **Depress the DOLBY NR switch for Dolby NR processed tape.**

DOLBY NR lights.

For non-Dolby NR processed tapes, press to release the switch.

5 **Press the ▶ key.**

Playback will begin.

Adjust the volume.

TO RECORD MATERIAL ONTO A SPECIFIC PORTION OF TAPE

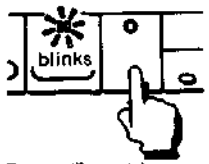
When you want to re-record a specific portion of tape or to insert new material between two points on a tape you will find it handy to be able to change directly from the playback to the record mode by pressing the ● key while holding the ▶ key down.

RECORD MUTING

By pressing the O (record muting) key during recording, four seconds interspacing is provided automatically, eliminating unwanted program material such as broadcasting commercials. While the record muting is operating, the incoming signal is not recorded on the tape but it continues to register on the meters and feed to the monitor so that you know exactly what is going on.

To insert a 4-second blank automatically

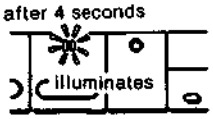
When the segment you do not wish to record begins,



A blank is made while the tape continues to run.

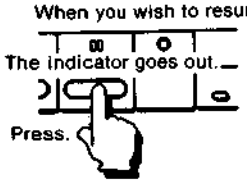
Press. (Do not keep pressing.)

after 4 seconds



The tape pauses automatically.

When you wish to resume recording.



The tape starts to run.

To insert a blank less than four seconds long
Press the O key to mute recording. Press the ▮▮ key when you want to resume recording.

To insert a blank over four seconds long
Hold down the O key for as long as you want the blank segment on the tape to be. After four seconds, the indicator of the ▮▮ key will blink more rapidly. When you release the O key, the tape deck will be in the pause mode. When you want to resume recording, press the ▮▮ key to release the pause mode.

ERASING

When the tape deck functions in record mode, the erase head automatically erases any previously recorded material.
To erase without recording:

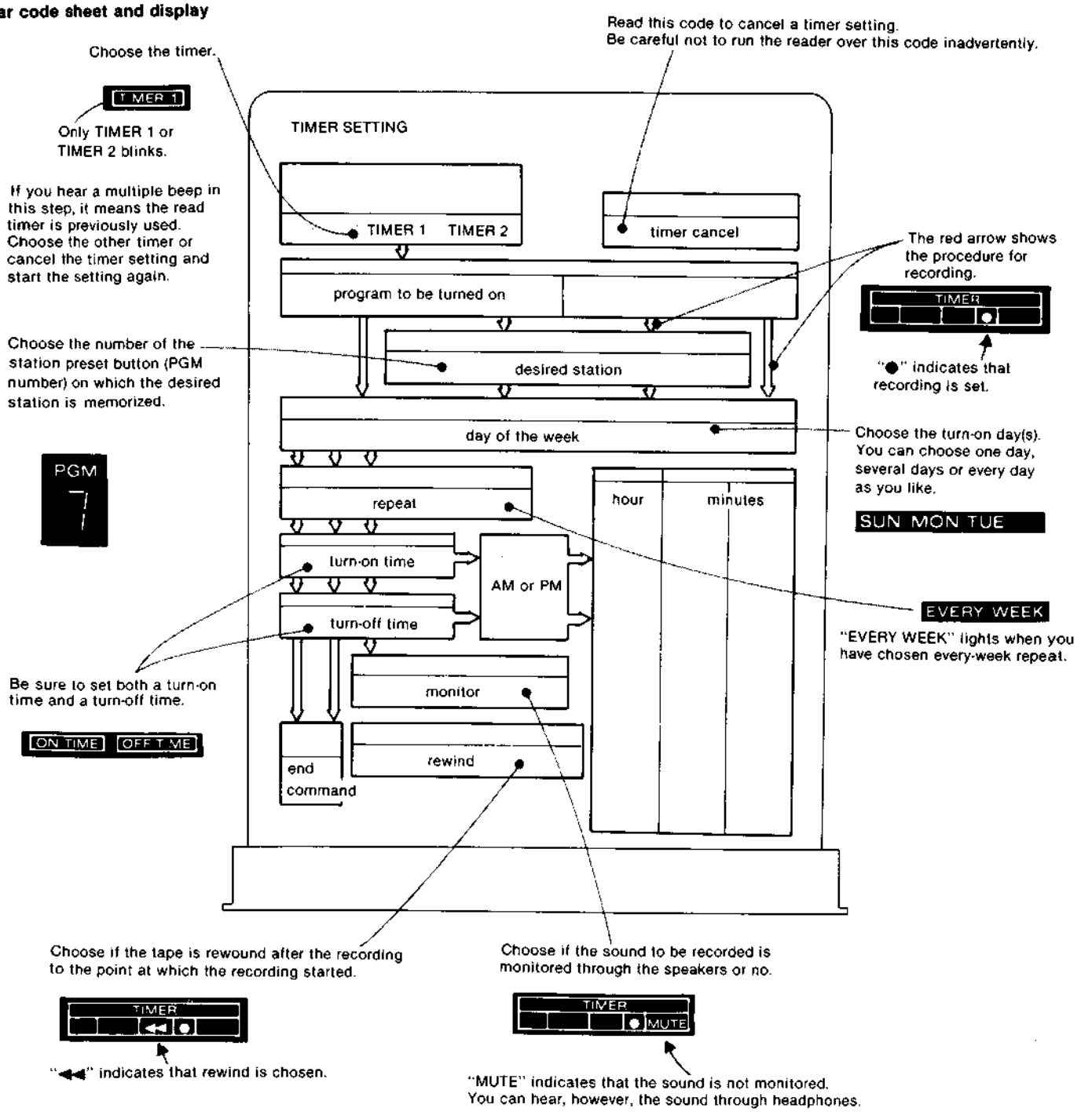
1 Make sure that the safety tab of the cassette is in place, or that the tab slot is covered with plastic tape.
2 Insert the cassette to be erased and check that the TAPE indicator corresponds to the inserted tape. Change the TAPE SELECT switch if the indicator and the tape do not correspond.
3 Set the REC LEVEL controls fully to "0". (Disconnecting all inputs will result in a more complete erasure.)
4 Press a function selector key other than the TAPE and press the ● and ▶ keys simultaneously.

TIMER SETTING

The built-in timer can control two pairs of turn-on and turn-off operations for any desired program.
To set the timer, use the bar code sheet.

Take out the bar code sheet and the bar code reader, and run the reader over the codes following the diagram arrow on the sheet.
A single, short beep means you can proceed to the next step.
A multiple beep means you have proceeded in an incorrect order.

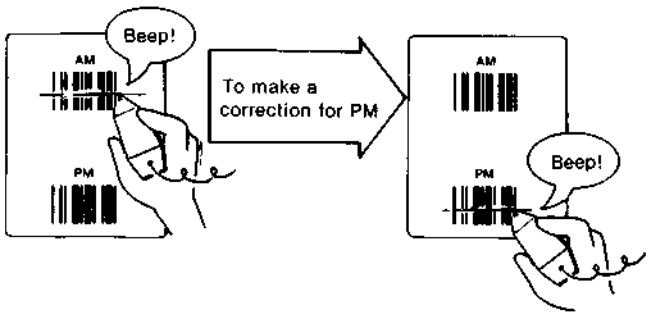
Bar code sheet and display



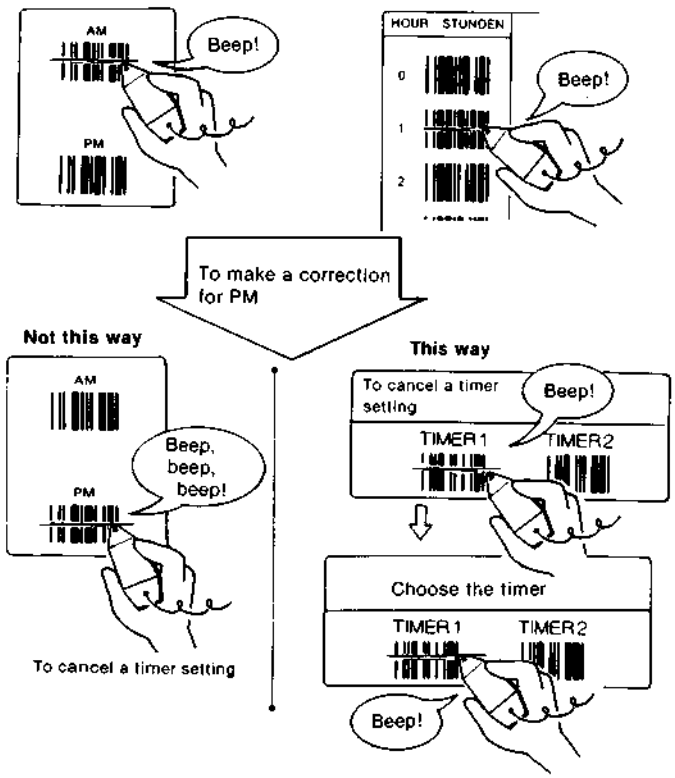
After 4 or 5 seconds, the display will revert to the clock.
The preset timer indicator(s) remain displayed.
Replace the bar code sheet and the bar code reader.

When a power interruption occurs or when the ac power cord is unplugged from the wall outlet, the timer settings will be retained for about 30 minutes with the built-in back-up battery (after 48 hours of charging).

If you ran the reader over an incorrect code...
To make a correction at the same step: Read the correct code at that step. The incorrect code will be automatically cancelled.



To make a correction is a previous step: First read the code "To cancel a timer setting" and start all over again.
The read codes will be automatically cancelled.



To cancel the MUTE setting for muting the sound during recording
Press the TIMER SKIP switch while the timer is being activated. The sound will come on.

To cancel all the settings on the TIMER 1 or TIMER 2
Run the bar code reader over the code "To cancel a timer setting" on the sheet. All the settings on the code you read either TIMER 1 or TIMER 2 will be cancelled.

To check the timer setting

Press the TIMER CHECK key.
The turn-on time preset on the TIMER 1 or TIMER 2 will be displayed. (If neither of the timers is preset, no display will appear.)

after 5 seconds ⇩

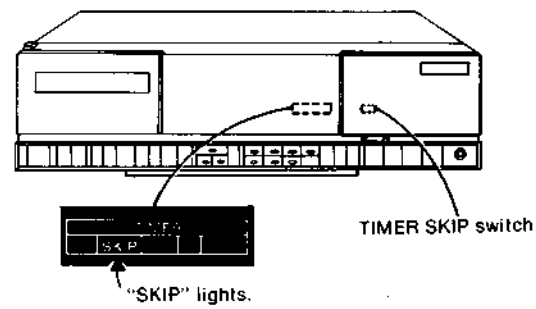
The display will change to the turn-off time with a single short beep.

after 5 seconds ⇩

The display will revert to the clock.

● To check the other timer setting, press the TIMER CHECK key again.

To skip the next timer setting momentarily
By pressing the TIMER SKIP switch, you can skip the next timer setting to be turned on without changing the setting. This skip will effective once.

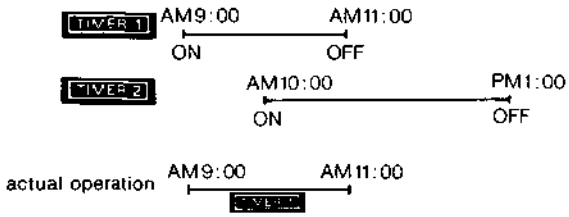


To continue listening to the program after the turn-off time
Press the TIMER SKIP switch while the timer is being activated.

What is "CD/AUX" on the bar code sheet?
The "CD/AUX" means the program connected to the CD/AUX inputs on the rear of the receiver. To turn on the CD/AUX program at the preset time, set the power switch of that program source to ON.

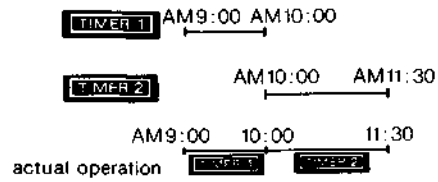
Can I set the timer while listening to or recording another program?
Yes. Since the bar code system is dependent on the keys on the receiver, you can set the timer at any time. The display will be changed for timer setting but the recording or playing will continue. When the turn-on time comes, the program will be changed automatically to the one preset on the timer.

Can I set the turn-on time of a program before the turn-off time of the other program?
No. For example, if you set the two programs as follows,



The TIMER 2 will not be activated.

But, if you set,



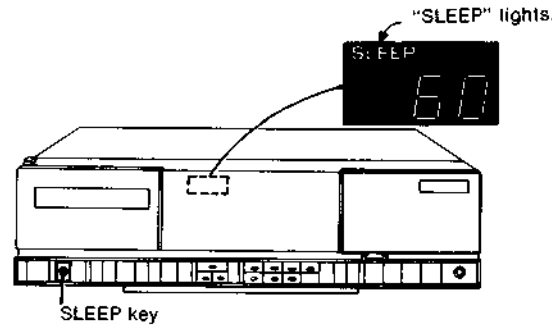
The TIMER 2 will be activated at 10:00 a.m.

Can I set the turn-off time after midnight?
Yes. For example, if you set the turn-on time at PM 11:30 on Saturday and the turn-off time at AM 1:00 while the "SAT" (Saturday) is displayed, the program will be turned off correctly at 1:00 a.m. on Sunday.

SLEEP TIMER—to turn off the power automatically

Using the SLEEP key, you can turn off the power automatically after up to 60 minutes (sleep timer function). This function is convenient when you go to sleep while listening to a tape or recording an FM program.

To set the sleep timer
While listening to or recording the desired program, press the SLEEP key. The display shows the sleep timer operation time in minutes.
Each time the SLEEP key is pressed, the digits will increase by 10. (After 60 the digits will disappear. With another push, 10 will appear again.)



To turn off the power before the preset time
Press the POWER ON/STAND BY key.

To cancel the sleep timer setting before the preset time
Press the SLEEP key several times until the digits disappear. To reset to clock display, press the DISPLAY key.

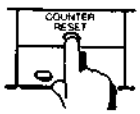
USING THE TAPE COUNTER

When the cassette deck function key (◀◀, ▶, ▶▶ or ●) is pressed, the time display will be changed to the tape counter.
When the deck is in stop mode, press the DISPLAY key to change the display to the tape counter.
The first two digits of this tape counter show the approximate recording or playback time in minutes, and the last two digits show the seconds.
The digits on the tape counter are memorized even when the time is displayed and the receiver is in the STAND BY mode.

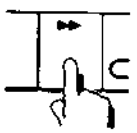
TO INDEX THE WHOLE TAPE

Before recording or playback, set the counter to "0.00" by pressing the COUNTER RESET button.
As the tape runs, the figures of the counter change. Note the numbers and the program being recorded or played back. Any point of the tape can thus be readily located later by reference to these numbers.

TO CHECK THE AVAILABLE RECORDING TIME ON ONE SIDE OF A CASSETTE



At the beginning of the tape, set the counter to "0.00".

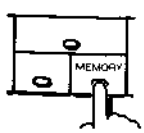


Fast-forward the tape to the end.
The digits will show the approximate available recording time.

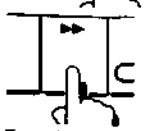
TO DETERMINE THE REMAINING RECORDING TIME

Stop the tape at the point at which you wish to begin recording.

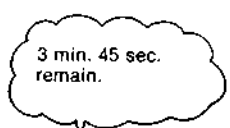
Set the counter to "0.00".



Activate the memory counter.



Fast-forward the tape to the end.



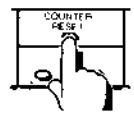
The digits will show the approximate remaining recording time.

Rewind the tape.
The tape will stop at "0.00".

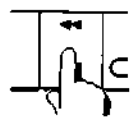
TO MONITOR THE REMAINING RECORDING TIME WHILE RECORDING—Using the minus display

This counter shows the recording or playback time from the "0.00" point preceded by a minus sign when the tape is rewound beyond "0.00".

Fast-forward the tape to the end.

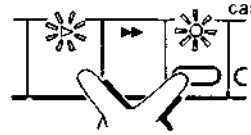


Set the counter to "0.00".



Rewind the tape to the beginning.

The digits will show the approximate recording time on one side of the cassette.



Start the recording.

The digits will change from −30.00 to −29.59, −29.58 ... as the recording goes on, and you can monitor the remaining recording time at any point on the tape.

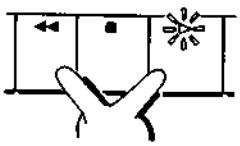
The accuracy of the counter
This counter is not actually a digital clock, so that the displayed figures are not exactly equal to the actual elapsed time. The accuracy will vary depending on the type of tape being used.
This counter has been designed using C-60 and C-90 cassettes as the standard. Make sure that the displayed time is greater than the time required when using a C-46 cassette and a metal tape.

TO LOCATE A PARTICULAR POINT OF A TAPE

1 **To play from the beginning of the tape** ..... **AUTO PLAY**
2 **To rewind the tape to the desired point** ..... **MEMORY STOP**
3 **To play from a desired point** ..... **MEMORY PLAY**
4 **To play from the beginning of the selection** ..... **AMS (Automatic Music Sensor)**

1 AUTO PLAY

Make sure that the MEMORY indicator is not blinking. If it is blinking, press the MEMORY button to cancel the previous memory.



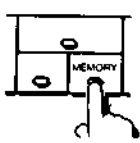
Press simultaneously.

After the tape is completely rewound, the tape will automatically replay.

2 MEMORY STOP 3 MEMORY PLAY

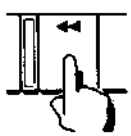
1 

Start recording or playback. At the point which you want to locate later, set the counter to "0.00"

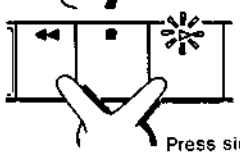
2 

Activate the memory counter function.

3 After playback or recording,

MEMORY STOP 

The tape begins to rewind and stops at the "0.00" automatically.

MEMORY PLAY 

The tape will replay automatically after rewinding up to the "0.00" point.

Press simultaneously.

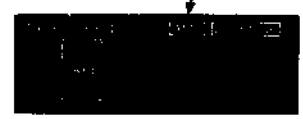
- The tape stops around "–0.03" in order to avoid cutting off the starting point.
- If you want to rewind further than the "0.00" point, press the ◀◀ key again.
- If you hold the ◀◀ key down while the tape rewinds past "0.00," the tape will not stop automatically at the desired point.

4 AMS (Automatic Music Sensor)

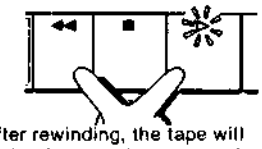
During playback, use the Automatic Music Sensor (AMS) to locate the beginning of the selection being played or the following selection. The AMS searches either forward or in reverse for the blank space between selections. Playback will begin automatically from the beginning of the selection.

1 Press the AMS button.

"AMS" lights.



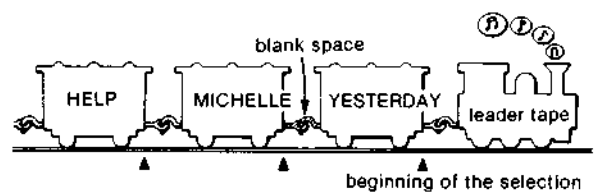
2 **To replay the selection being played**



After rewinding, the tape will replay from the beginning of the selection.

To play the following selection

After fast-forwarding, the tape will play from the beginning of the following selection.



- If you press the ▶ and ▶▶ keys at the beginning of a tape, playback will start from the beginning of the first selection.
- If you press the ▶ and ▶▶ keys at a blank space, which is too short to be detected by the AMS, the playback will start from the beginning of the selection after the following one.

Notes on AMS operation

- Since AMS works by searching out the blank spaces on a tape, it may not operate if there is noise in the space between selections, or if the space is too short to be detected.

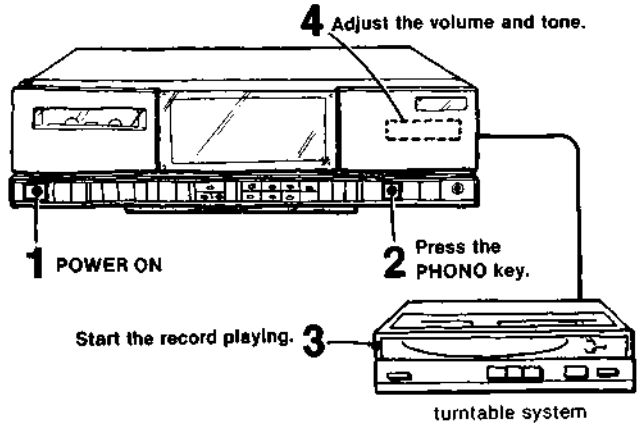
The record muting facility of this cassette deck can make a four second blank space that will assure AMS operation on any recorded tape.

- If the recorded music includes a long pause, or if it continues for a time as sufficiently low volume, as may happen for instance with classical music, the AMS will treat this space as a blank.

OPERATION WITH AN OPTIONAL TURNTABLE SYSTEM

LISTENING TO RECORD

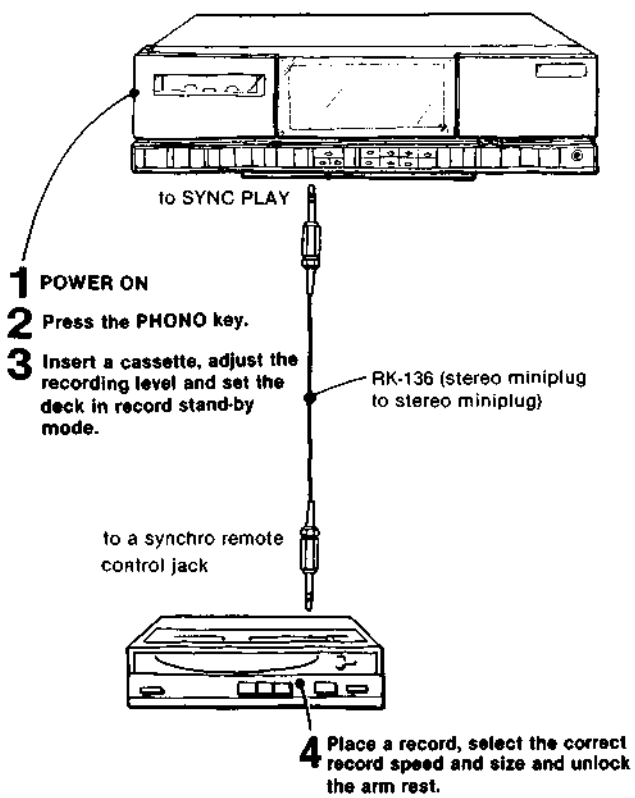
Connect a turntable system as shown on page 13.



SYNCHRONIZED OPERATION OF THE BUILT-IN CASSETTE DECK WITH THE TURNTABLE SYSTEM

When the XO-1001 is connected to a Sony stereo turntable system equipped with a synchro remote control jack using the optional RK-136 connecting cord, the start and stop of recording will be synchronized with the turntable operation.

Connection and preparation



Recording

	Turntable operation	Synchronized operation of the XO-1001
To start recording	Bring the tonearm over the desired point and press the START/STOP button.	When the tonearm lowers to the record, the pause mode is released and recording begins.
To stop recording	Press the START/STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	

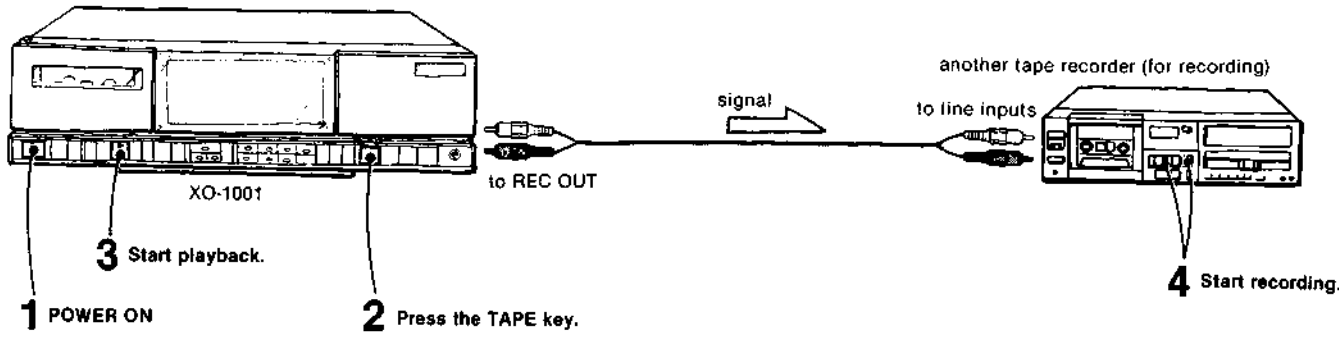
Note: When the tonearm is lifted from or lowered on the turntable connected to the SYNC PLAY jack, a synchro signal is transmitted to the XO-1001 and causes the ▮▮ indicator to blink. This is not a problem.

OPERATION WITH AN EXTERNAL TAPE RECORDER

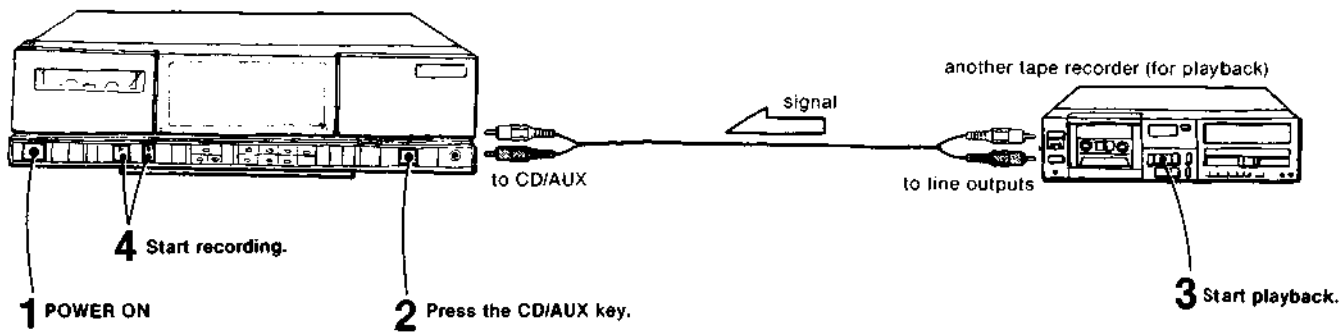
TO COPY A TAPE

Connect an optional tape recorder as shown below.

1 Tape copy from the XO-1001 to another tape recorder

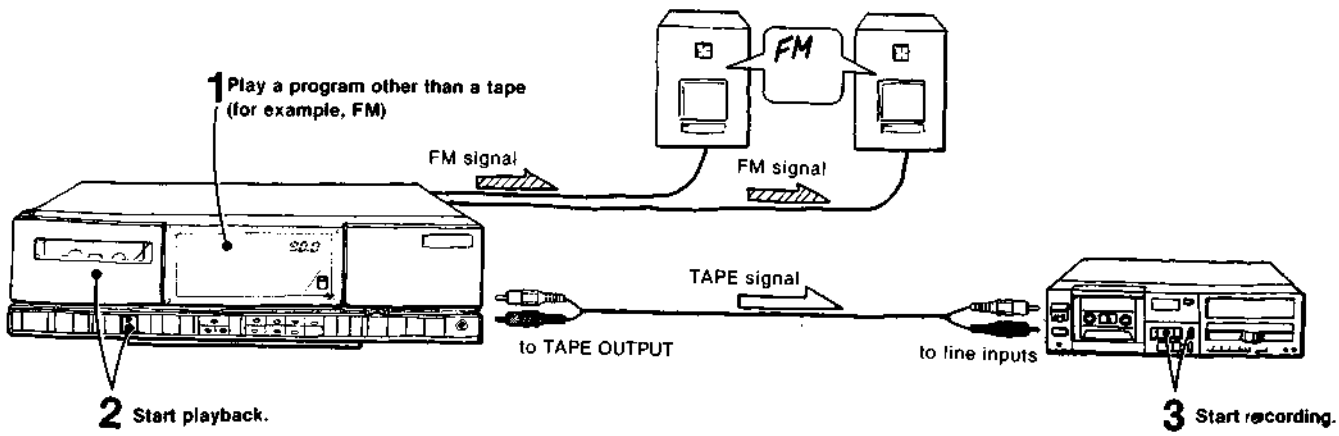


2 Tape copy from another tape recorder to the XO-1001



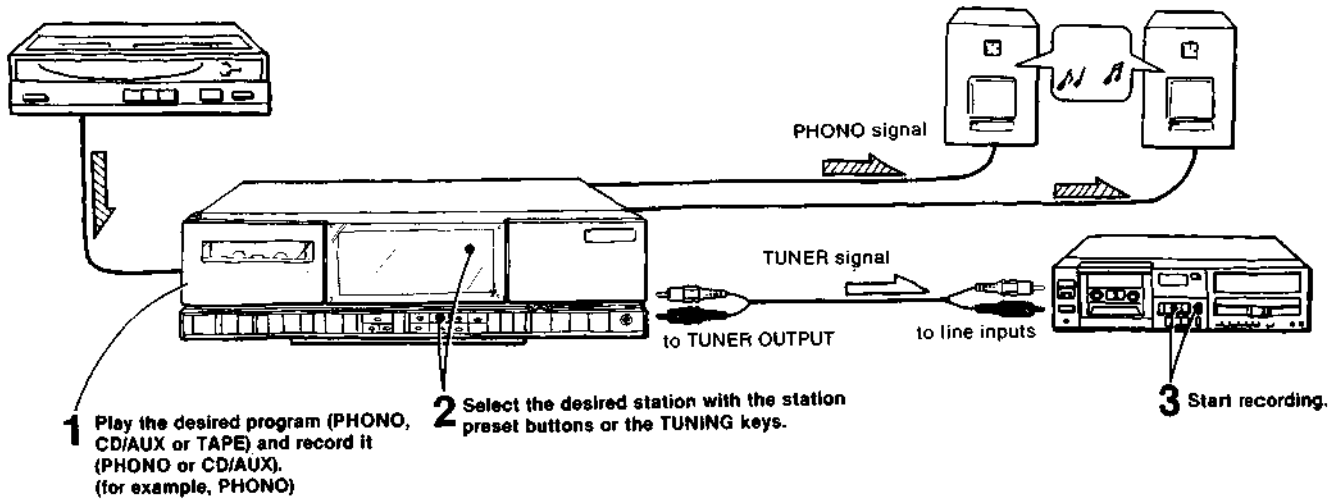
3 Tape copy while listening to a record, a broadcast, or an auxiliary program

The TAPE OUTPUT jacks always supply the output of the built-in cassette deck, independently of the engaged function selector key. If you connect another tape recorder as shown below, you can copy a tape while listening to another program.



TO RECORD A BROADCAST WHILE LISTENING TO OR RECORDING ANOTHER PROGRAM

The TUNER OUTPUT jacks always supply the output of the built-in tuner independently of the engaged function selector key. If you connect another tape recorder as shown below, you can record a broadcast while listening to a record, a tape or an auxiliary program or even while recording a record or an auxiliary program with the built-in cassette deck.



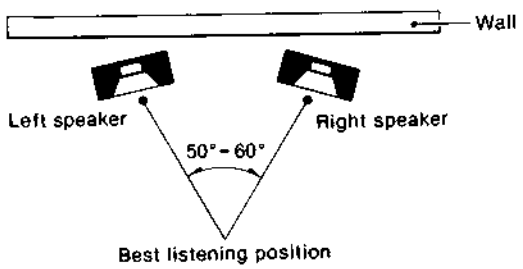
TO OBTAIN AN OPTIMUM SOUND

SPEAKER PLACEMENT

Here are a few suggestions for speaker placement that will assist you in obtaining an installation with satisfactory stereo sound.

Normally, the speakers are placed on the floor against the narrower wall of a room. The bass sounds can then be increased by moving the speakers toward the corners, or decreased by raising the speakers off the floor on suitable pedestals, and/or moving them away from the wall a moderate distance. If the speakers are positioned above the floor, do not place them higher than ear-level while seated, since this produces an unnatural effect.

The distance between speakers, or the speakers and a listener depends mainly on the room size. Generally it is recommended that the speaker/listener relationship be an equilateral triangle configuration (as illustrated).
If the speaker separation is too wide, an undesirable "hole in the middle" effect occurs.



Place the right and left speakers in similar acoustic environments, otherwise you will obtain unbalanced sound. For example, placing one speaker near an open door or archway will decrease the apparent bass from that speaker.

Best sound is usually obtained in a room with carpeting on the floor, heavy draperies and upholstered furniture. Since each room has its own individual acoustic characteristic, which is a function of its size, construction and furnishing, some experimentation with speaker placement is generally necessary before the correct balance on stereo image and bass response is obtained. This will be time we spent, resulting in your enjoyment of the maximum capabilities of your music system.

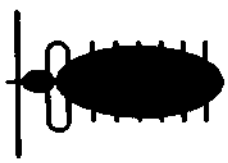
FM ANTENNAS

To get the best from your tuner, it is important to use an outdoor antenna. Be sure to pick an outdoor antenna which suits your location. This is determined by the signal strength, the presence of multipath signals*, and the location of the FM stations.

A sony table-top type AN-300 helical FM antenna (optional), which incorporates a tuning circuit, has the same pick-up pattern, with equal front and rear sensitivity, as a ribbon dipole antenna, but it is also liable to pick up extraneous noise. When this antenna is used with this tuner, with the antenna's TUNING MODE switch set to AUTO, the antenna is automatically tuned to the same station as the tuner. This type of antenna is convenient when it is not practical to install an FM outdoor antenna and where the signals are sufficiently strong.

A dipole antenna with reflector has increased sensitivity to front signals and reduced sensitivity to rear signals.

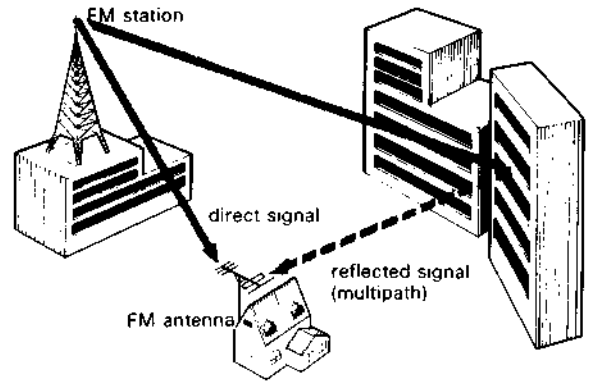
A multi-element type has a narrower pick-up pattern with high frontal sensitivity and superior rejection or rear signals.



FM antenna installation and orientation

- Install the FM antenna as high as possible, keeping it away from TV antennas or others operating in roughly the same frequency range.
- The antenna should be located on the side of your house away from heavy auto traffic to avoid ignition noise interference.
- To obtain good reception from all directions, the use of a remotely-controlled rotatable antenna, or an omnidirectional antenna which picks up signals equally well in all directions, is recommended.

*Multipath signals reflect from hills or structures, reach the receiving antenna perceptibly later in time and cause severe distortion and complete loss of channel separation. Multipath signals can be avoided to a great extent by using a coaxial cable, and a good directional antenna that is correctly oriented.

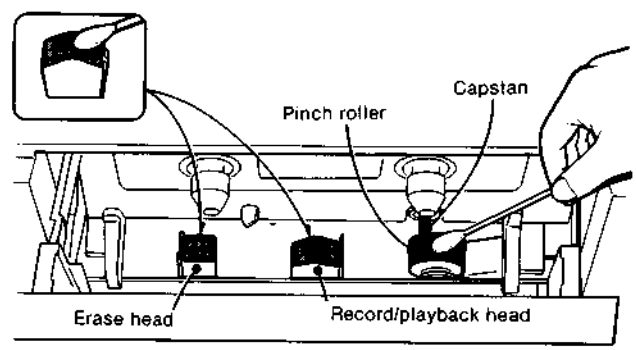


MAINTENANCE

CLEANING OF HEADS AND TAPE PATH

We recommend cleaning after every 10 hours of operation. To make the best possible recordings, however, you should clean all surfaces over which the tape travels before every recording.

1 Press the ⏏ button to open the cassette holder.
2 Wipe the heads, the pinch roller and the capstan with a cleaning tip slightly moistened with cleaning fluid or alcohol.



After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

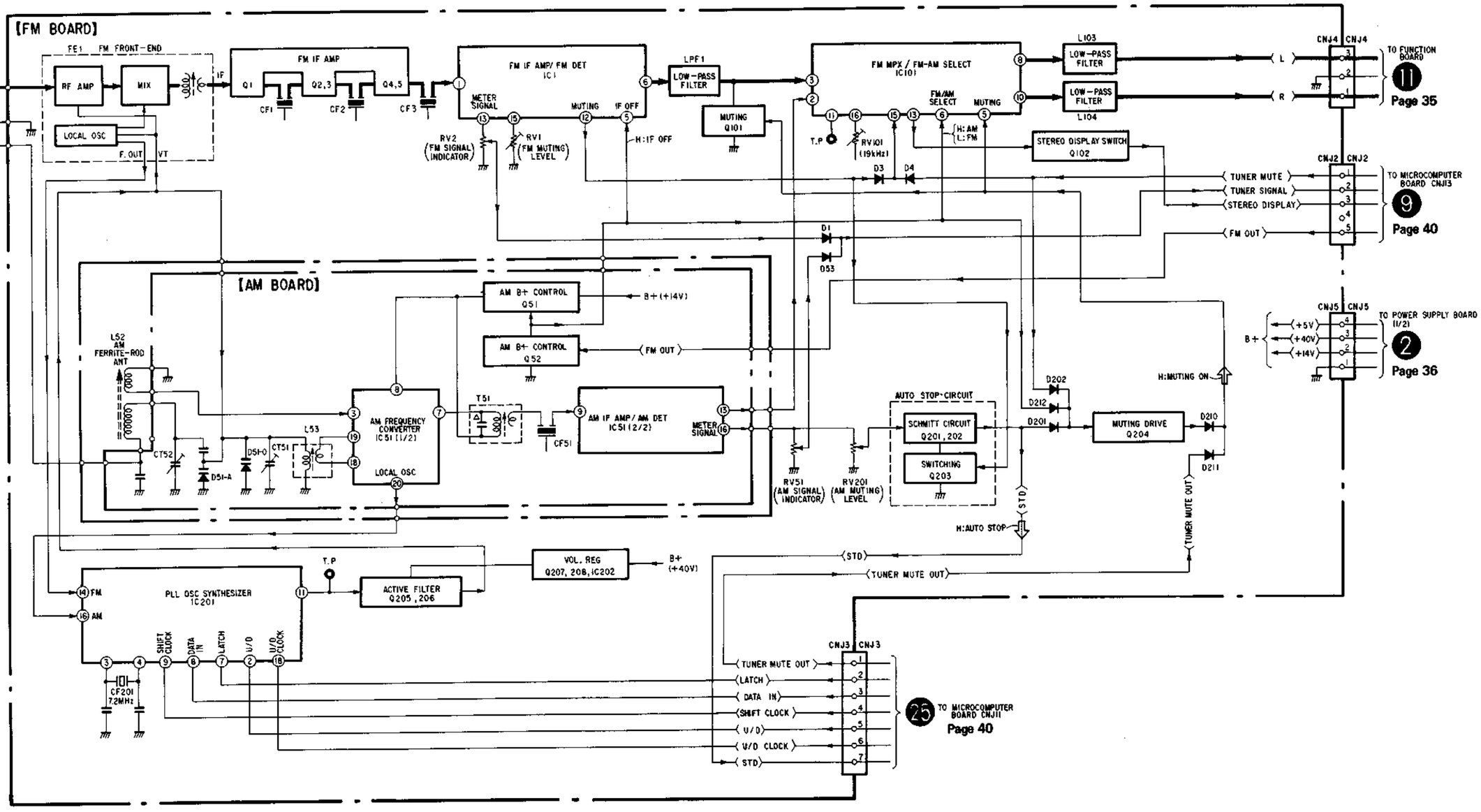
DEMAGNETIZING HEADS

After 20 to 30 hours of use, enough residual magnetism will have built up on the heads to begin to cause loss of high frequencies and hiss. At this time you should demagnetize the heads and all metal parts in the tape path with a commercially available head demagnetizer. Be sure that the receiver POWER ON/STAND BY key is set to STAND BY while you demagnetize.

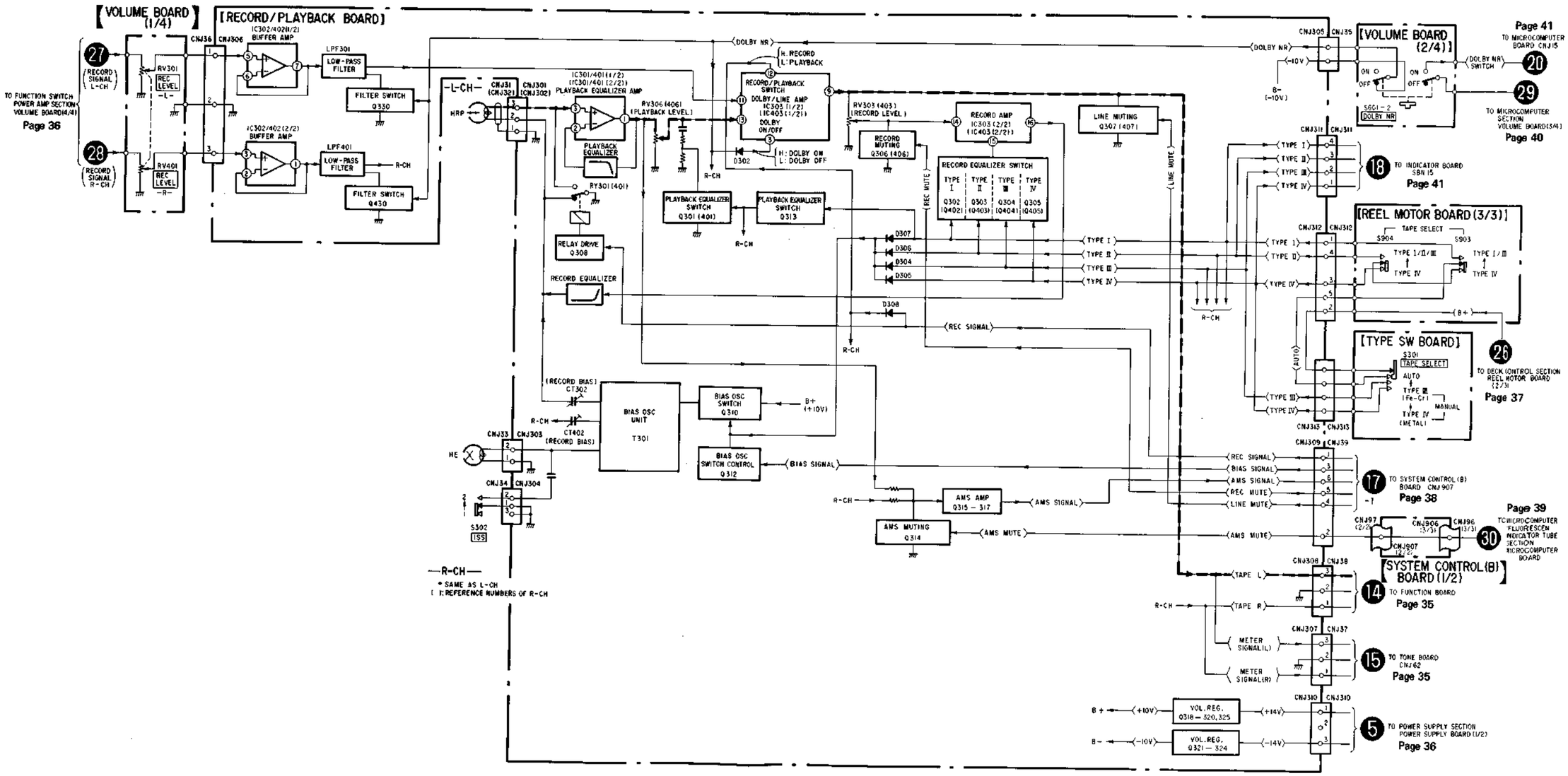
CLEANING THE CABINET

Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

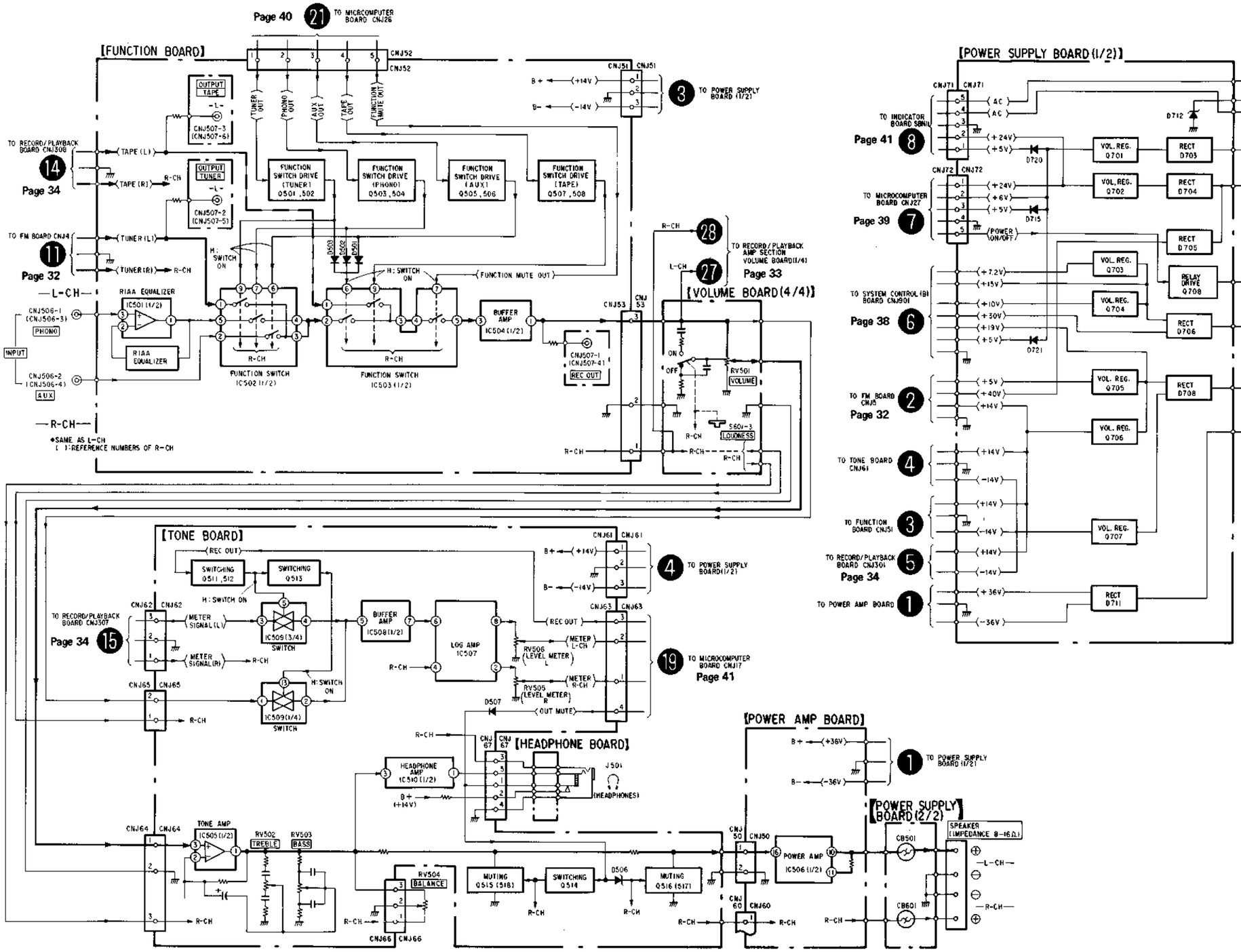
1-4. BLOCK DIAGRAMS – *TUNER SECTION* –



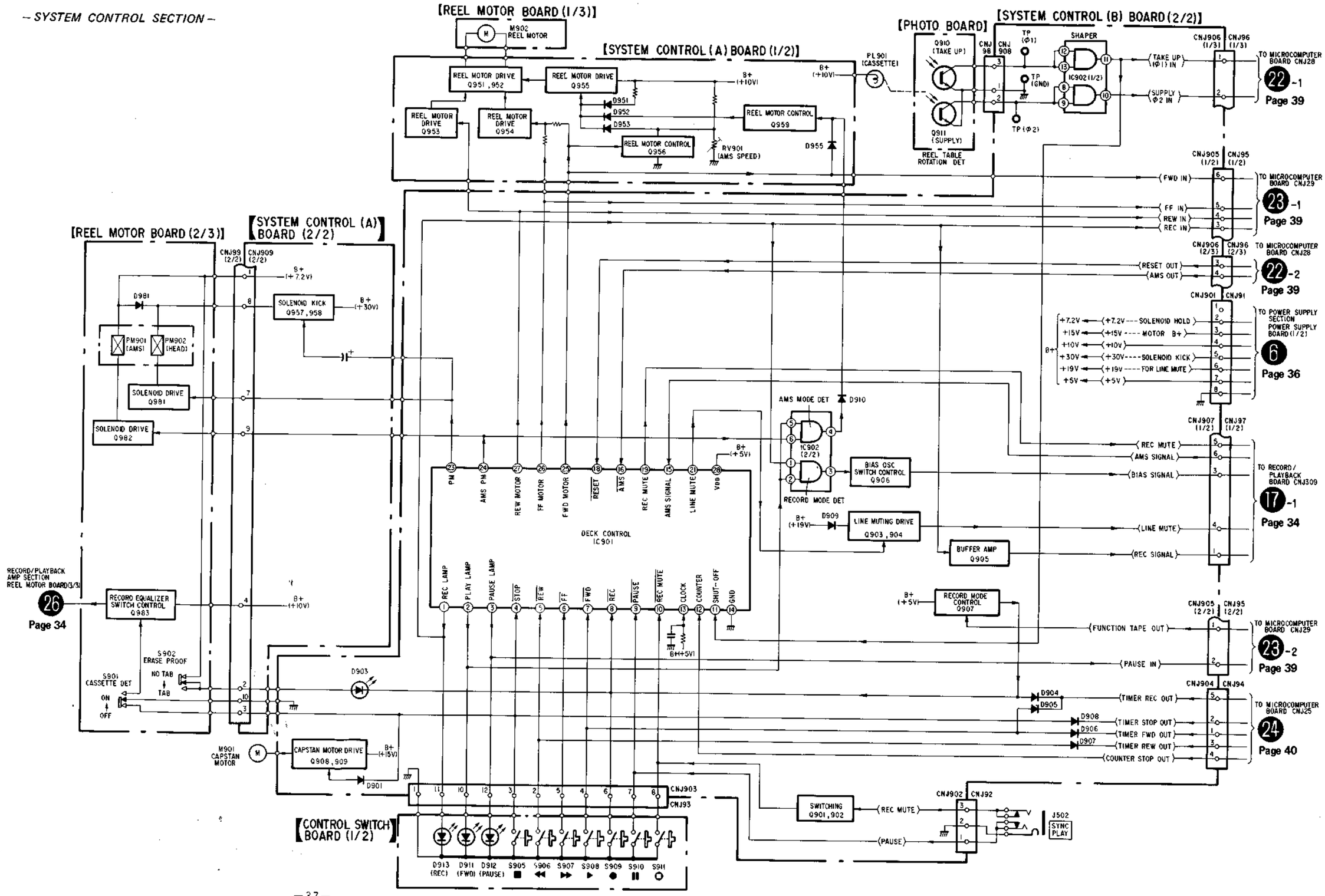
– RECORD/PLAYBACK AMP SECTION –



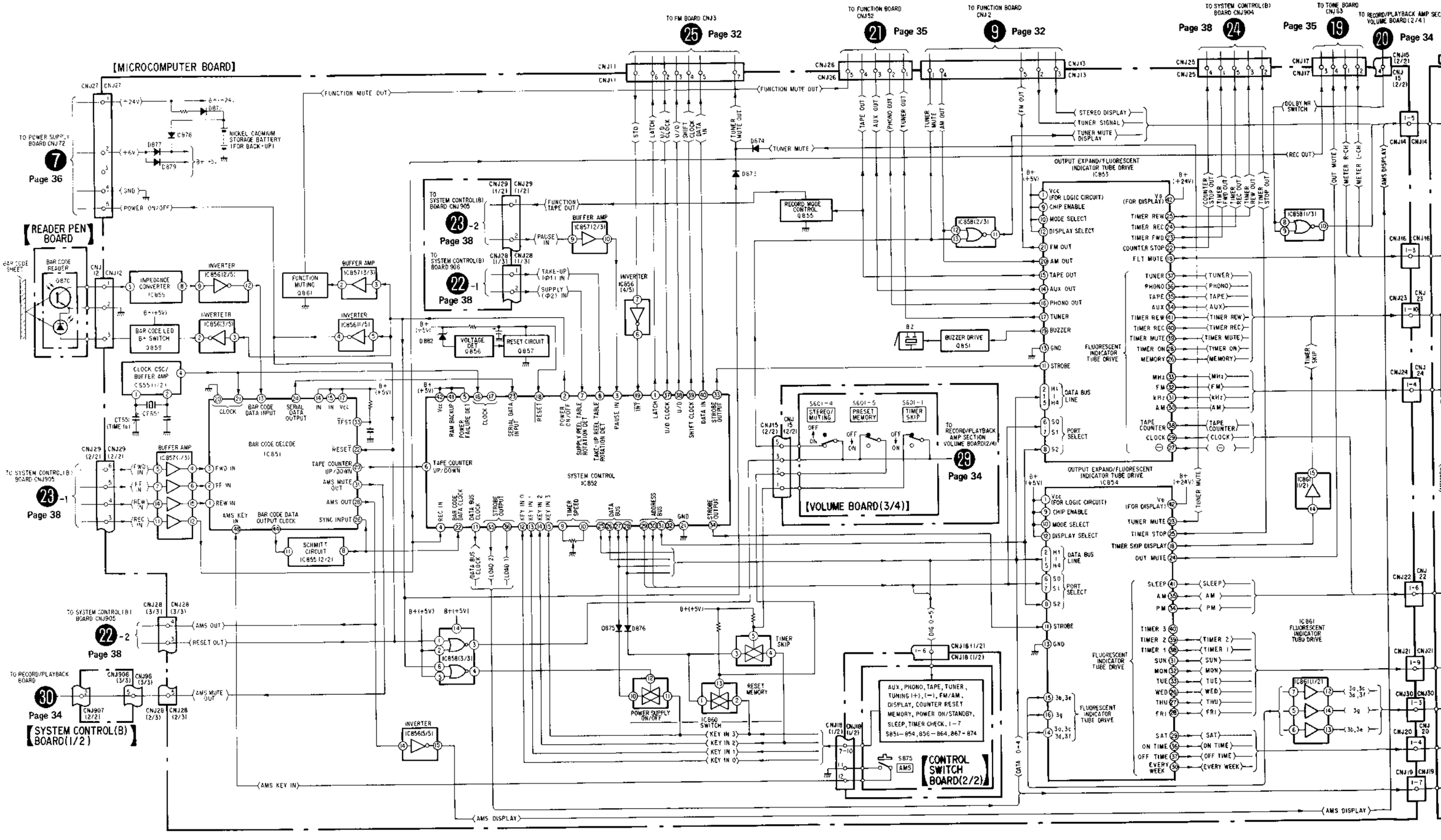
– FUNCTION SWITCH/POWER AMP/POWER SUPPLY SECTION –

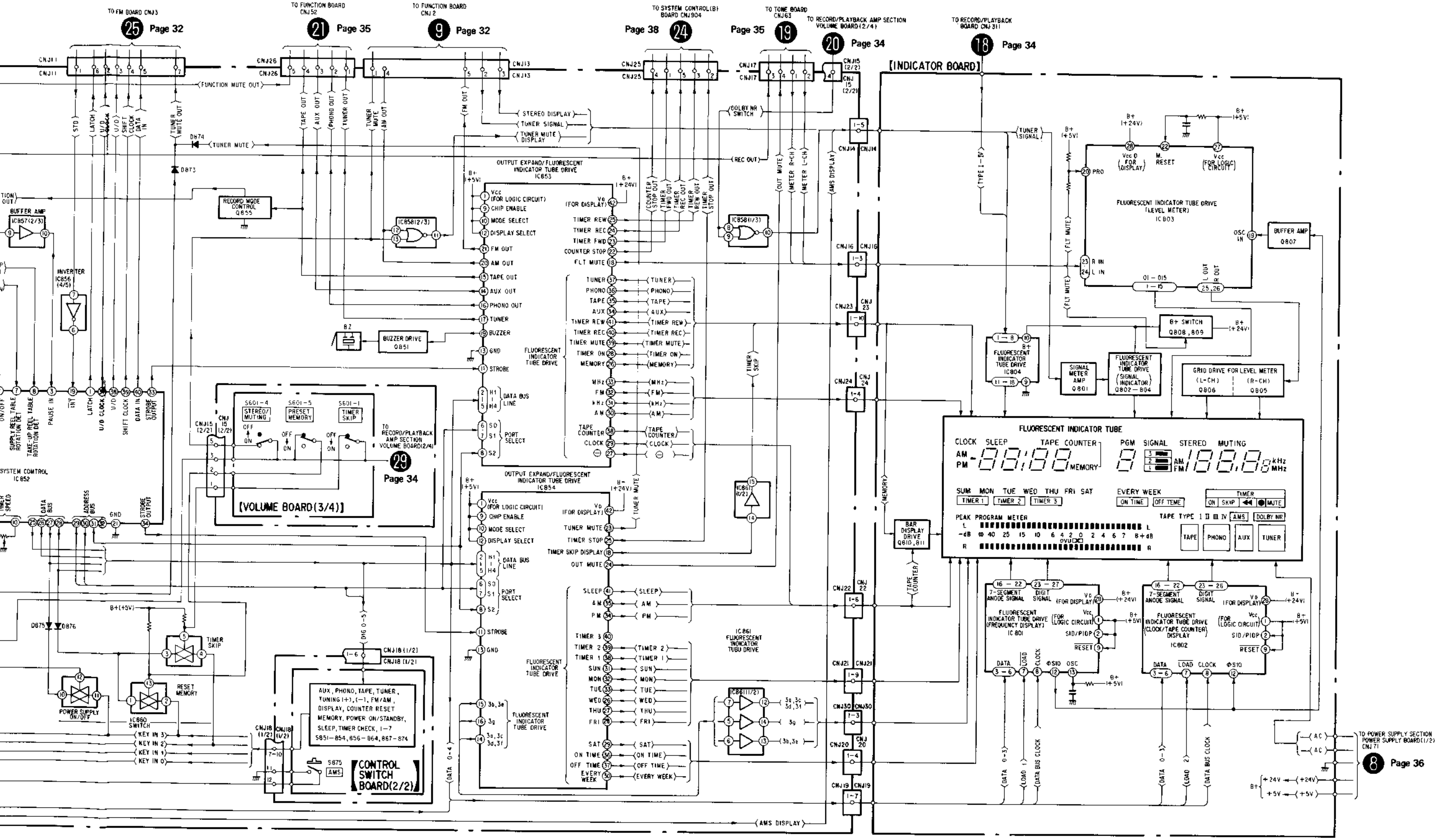


– SYSTEM CONTROL SECTION –



– MICROCOMPUTER/INDICATOR SECTION –



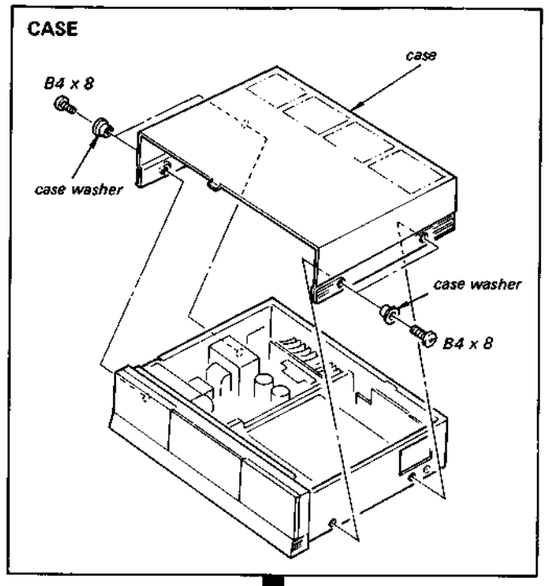

TO FM BOARD CNJ3
Page 32
TO FUNCTION BOARD CNJ52
Page 35
TO FUNCTION BOARD CNJ 2
Page 32
TO SYSTEM CONTROL(B) BOARD CNJ904
Page 38
TO TONE BOARD CNJ63
Page 35
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD(2/4)
Page 34
TO RECORD/PLAYBACK BOARD CNJ 311
Page 34
[INDICATOR BOARD]
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC853
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC854
FLUORESCENT INDICATOR TUBE DRIVE (LEVEL METER) IC803
BUFFER AMP Q807
B+ SWITCH Q808, 809
GRID DRIVE FOR LEVEL METER Q806 Q805
FLUORESCENT INDICATOR TUBE
CLOCK SLEEP TAPE COUNTER PGM SIGNAL STEREO MUTING
SUN MON TUE WED THU FRI SAT EVERY WEEK
PEAK PROGRAM METER
FLUORESCENT INDICATOR TUBE DRIVE (FREQUENCY DISPLAY) IC801
FLUORESCENT INDICATOR TUBE DRIVE (CLOCK/TAPE COUNTER DISPLAY) IC802
SIGNAL METER AMP Q801
BAR DISPLAY DRIVE Q810, 811
RECORD MODE CONTROL Q655
BUFFER AMP IC857(2/3)
INVERTER IC856 (4/5)
BUZZER DRIVE Q851
SYSTEM CONTROL IC852
[VOLUME BOARD(3/4)]
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD(2/4)
Page 34
[CONTROL SWITCH BOARD(2/2)]
AUX, PHONO, TAPE, TUNER, TUNING (+), (−), FM/AM, DISPLAY, COUNTER RESET MEMORY, POWER ON/STANDBY, SLEEP, TIMER CHECK, 1−7 S851−854, 856−864, 867−874
POWER SUPPLY ON/OFF
RESET MEMORY
TIMER SKIP
IC861 FLUORESCENT INDICATOR TUBU DRIVE
TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2) CNJ71
Page 36

SECTION 2
DISASSEMBLY

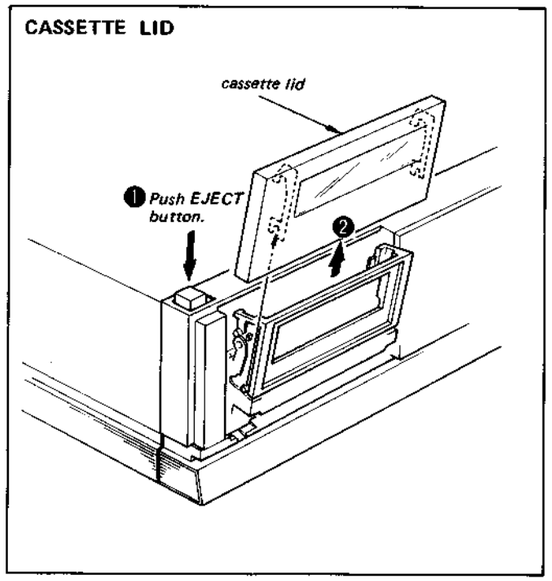
2-1. DISASSEMBLY AND INSTALLATION

Note: Follow the disassembly procedure in the numerical order given.

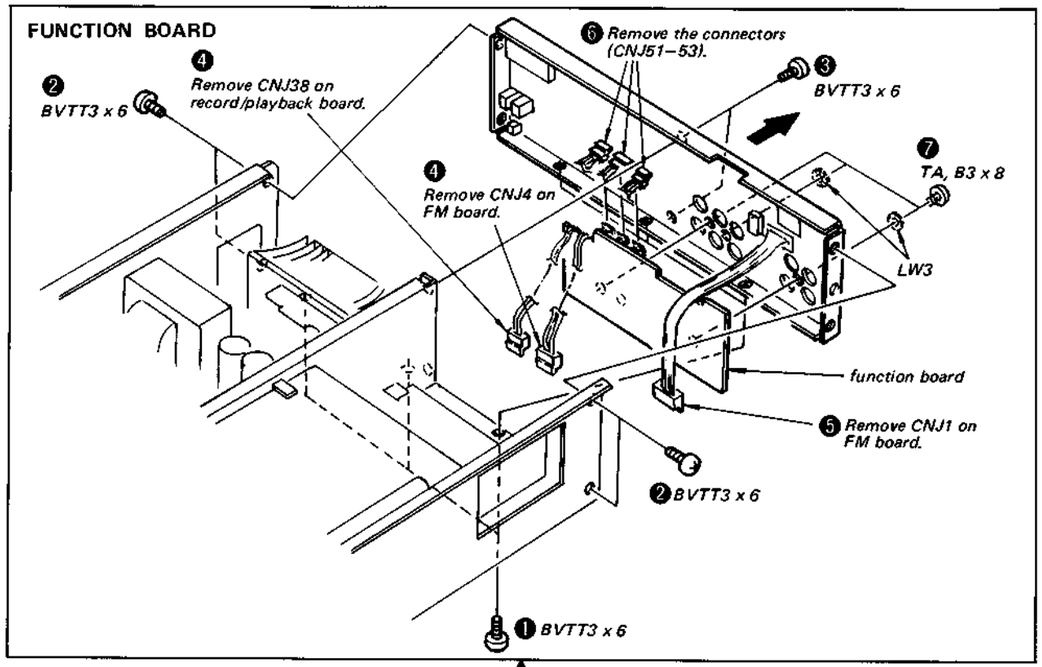
CASE



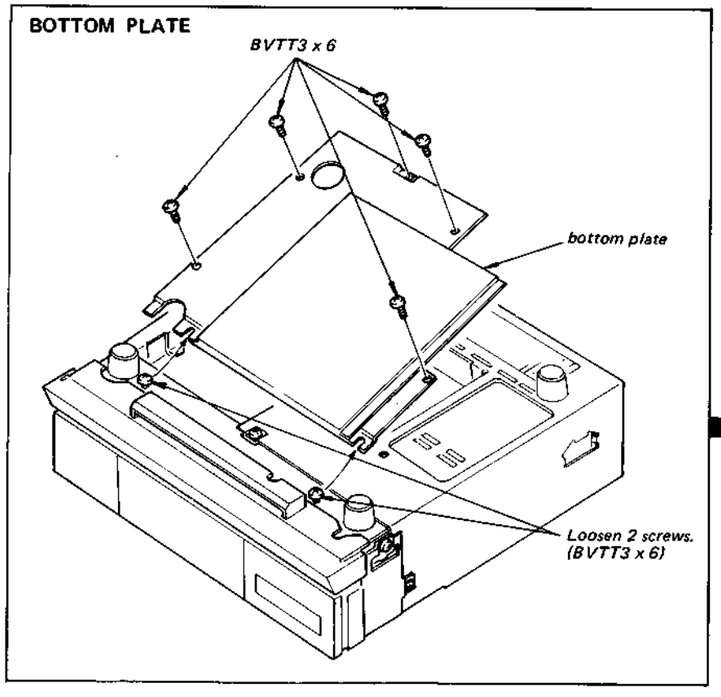
CASSETTE LID



FUNCTION BOARD



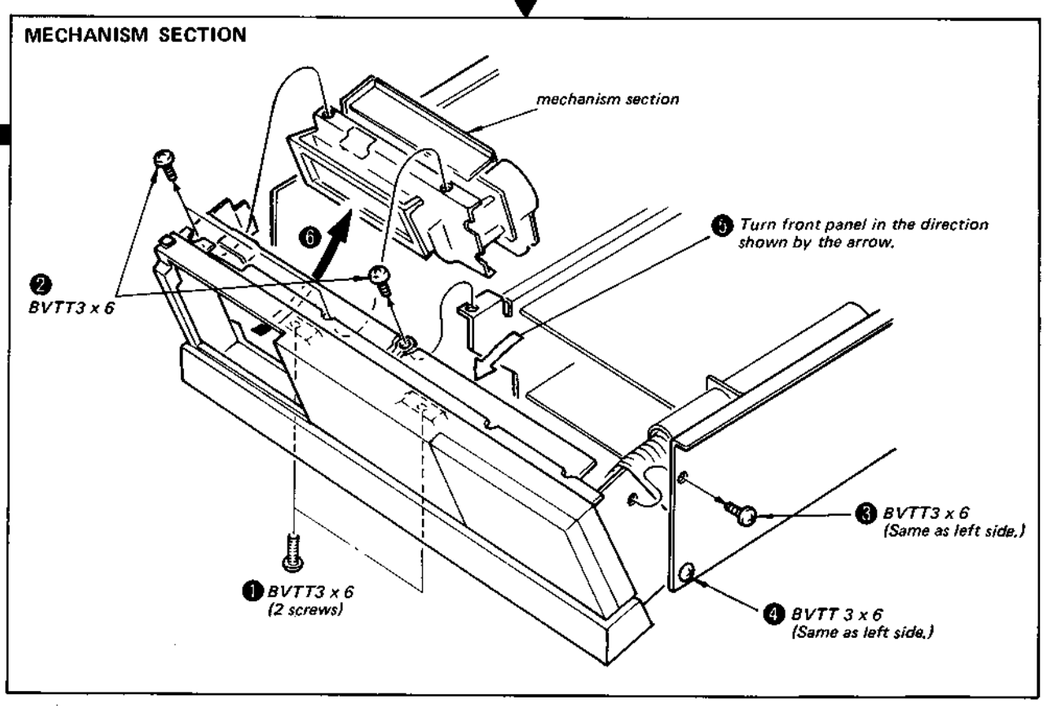
BOTTOM PLATE



CASSETTE-ORNAMENT PLATE, PINCH ROLLER and REEL TABLE REMOVAL
(See page 47.)

The conductor side of microcomputer board, FM board and power supply board can be checked in this condition.

MECHANISM SECTION



al order given.

AMENT
ROLLER
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side of
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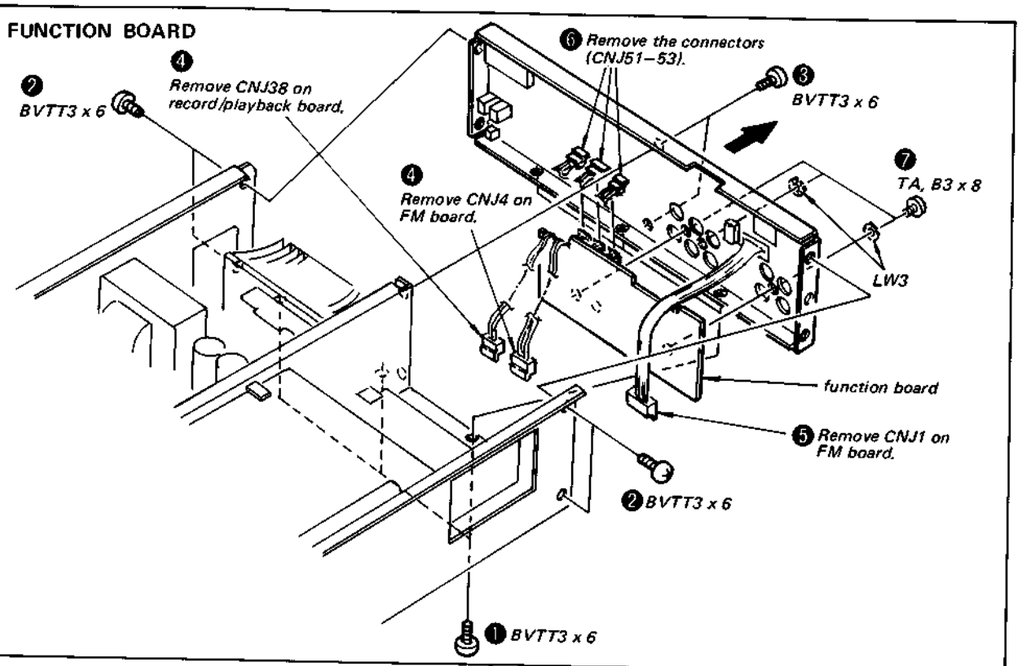
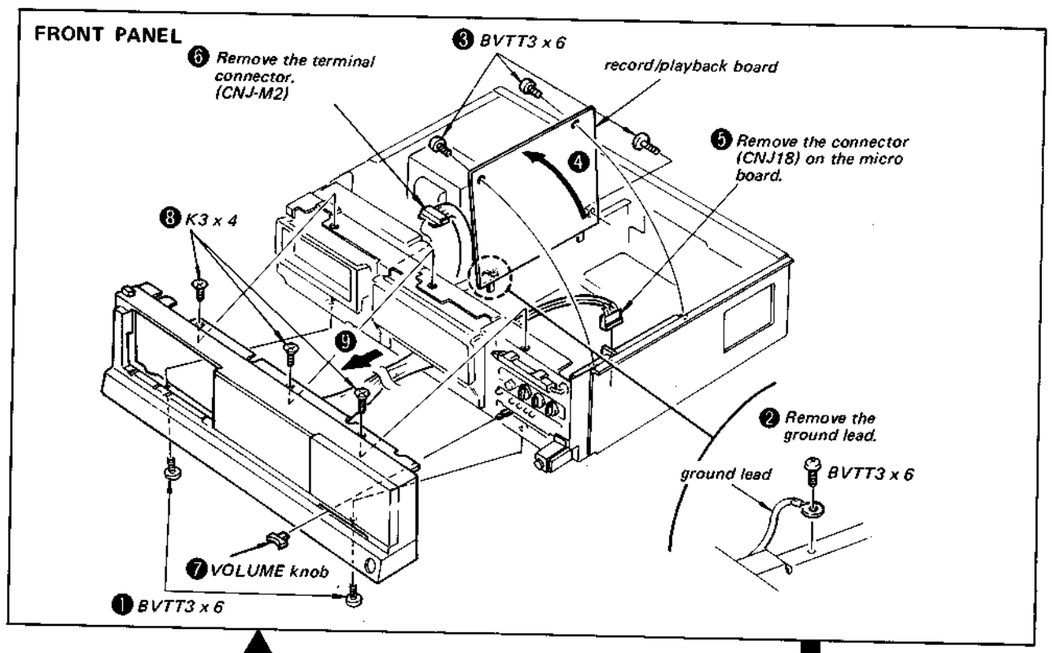
cked in

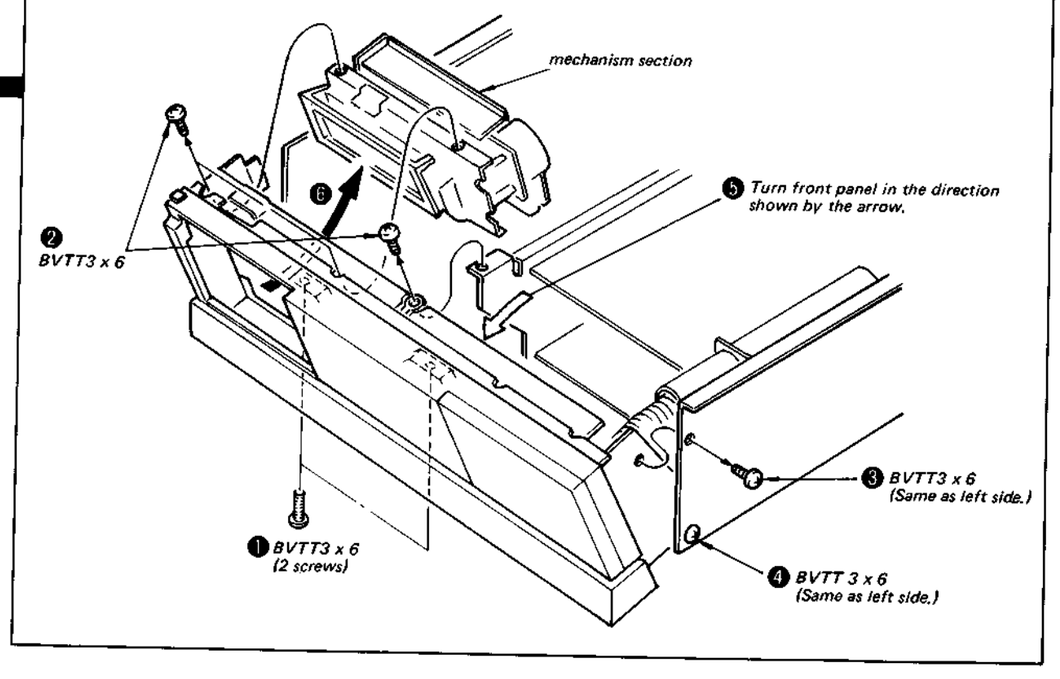
FUNCTION BOARD



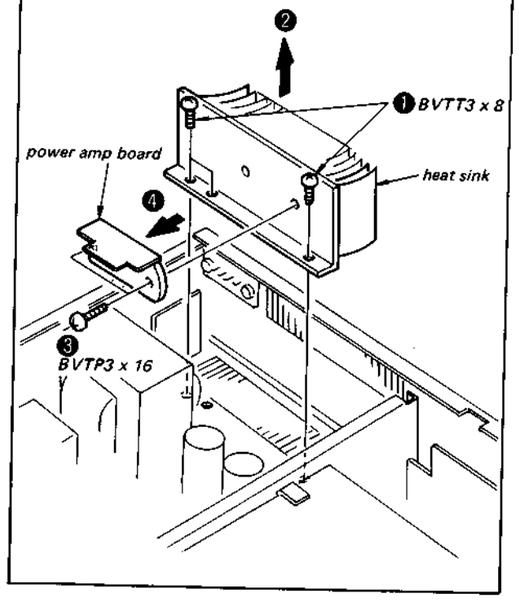
FRONT PANEL



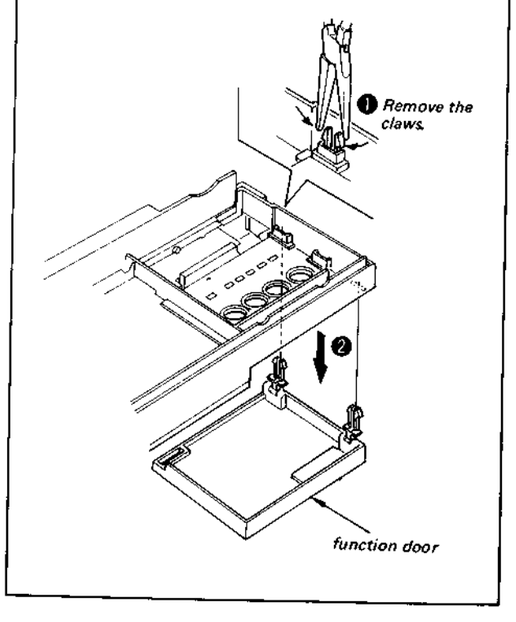
MECHANISM SECTION

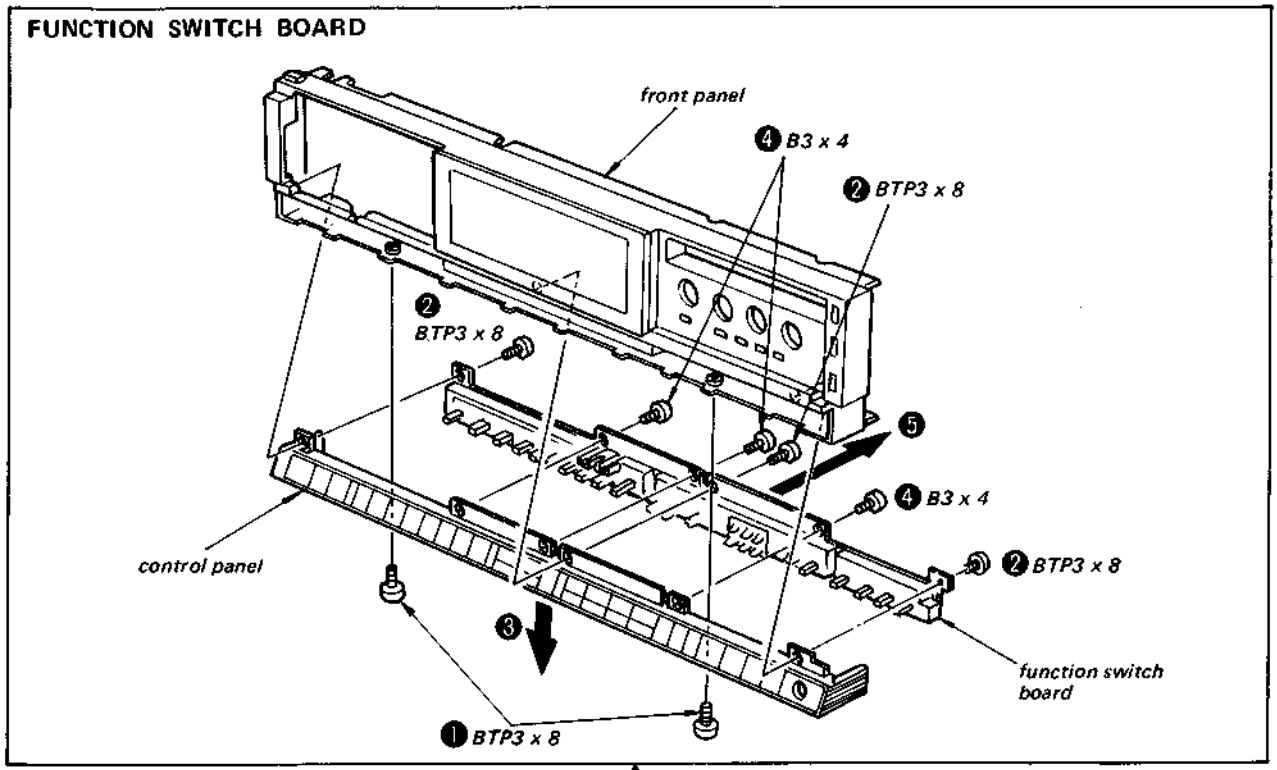


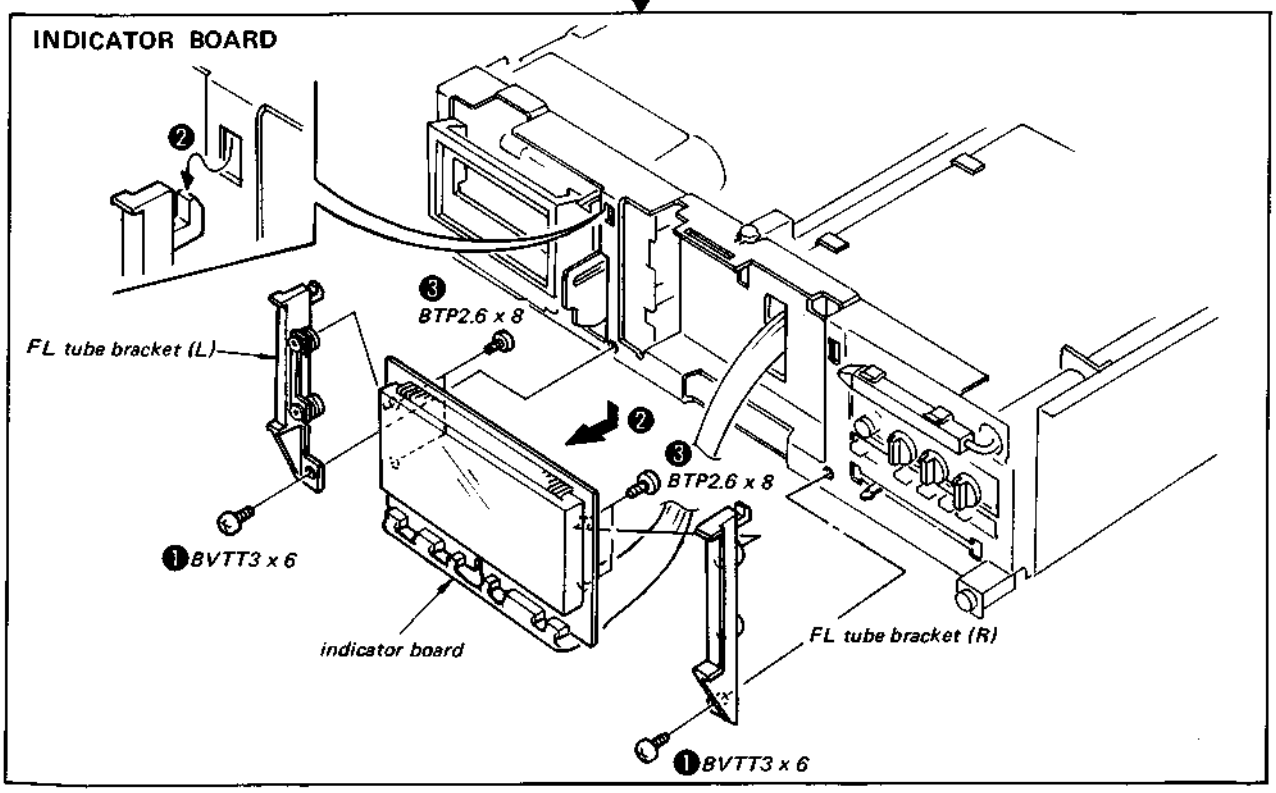
POWER AMP BOARD



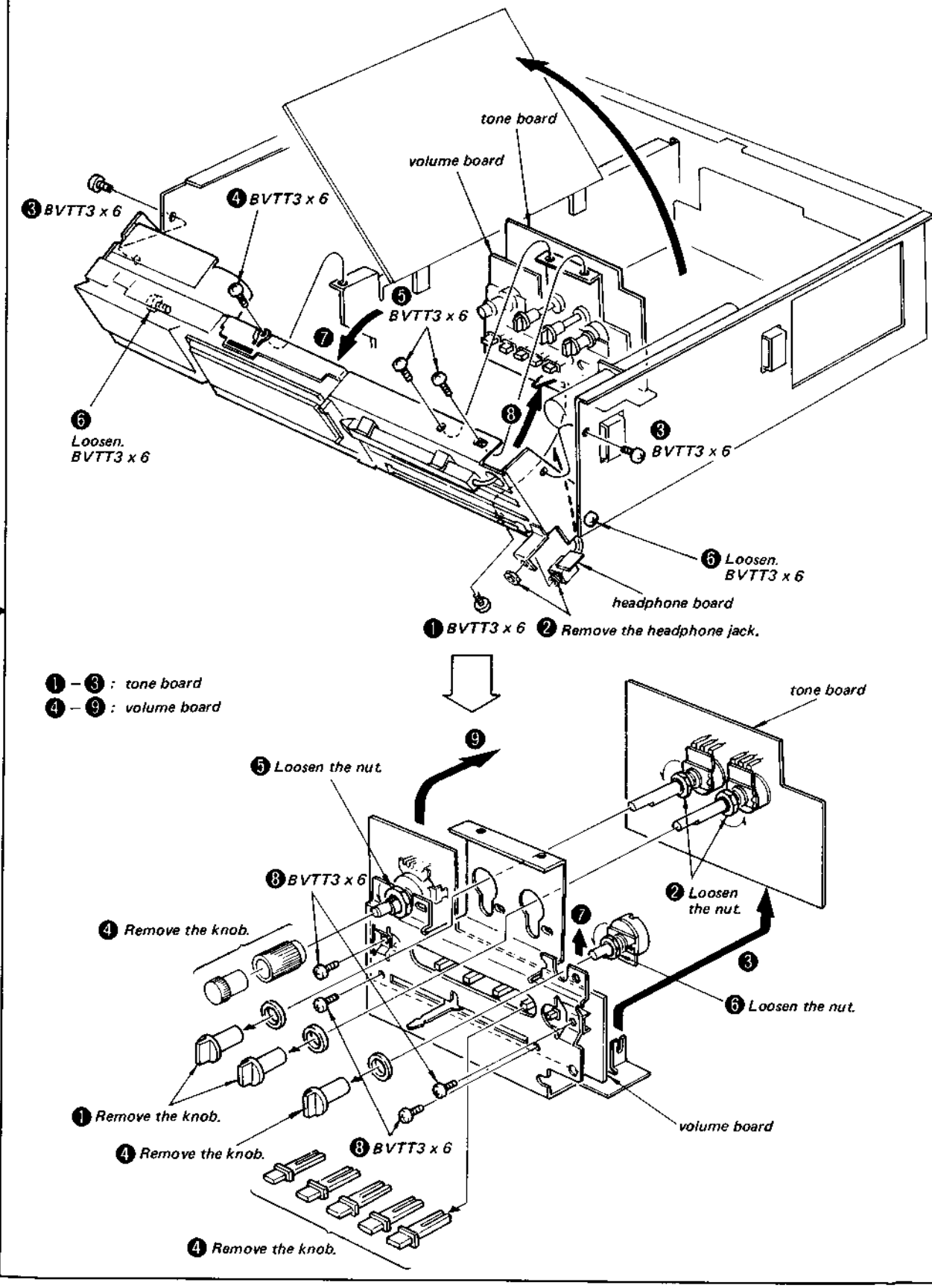
FUNCTION DOOR




FUNCTION SWITCH BOARD
front panel
4 B3 x 4
2 BTP3 x 8
2 BTP3 x 8
5
4 B3 x 4
control panel
2 BTP3 x 8
3
function switch board
1 BTP3 x 8


INDICATOR BOARD
2
3 BTP2.6 x 8
FL tube bracket (L)
2
3 BTP2.6 x 8
1 BVTT3 x 6
indicator board
FL tube bracket (R)
1 BVTT3 x 6

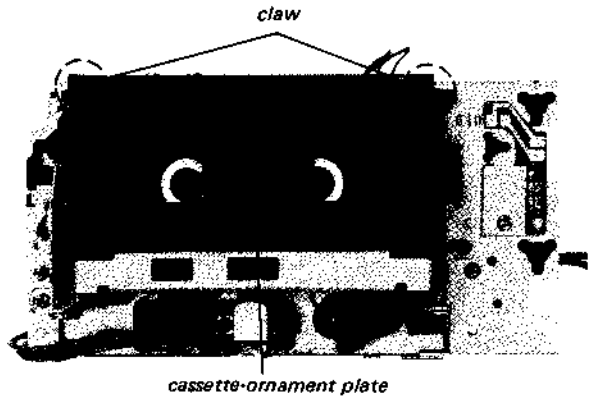
TONE BOARD, VOLUME BOARD



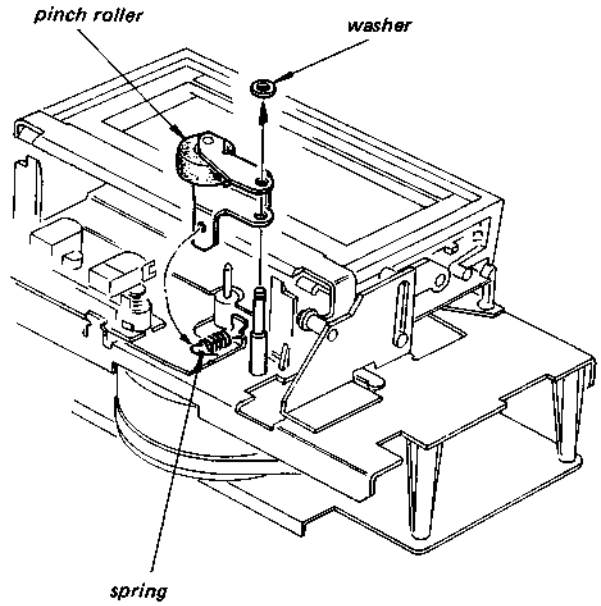
CASSETTE-ORNAMENT PLATE

Note: This plate does not need screws to be installed.

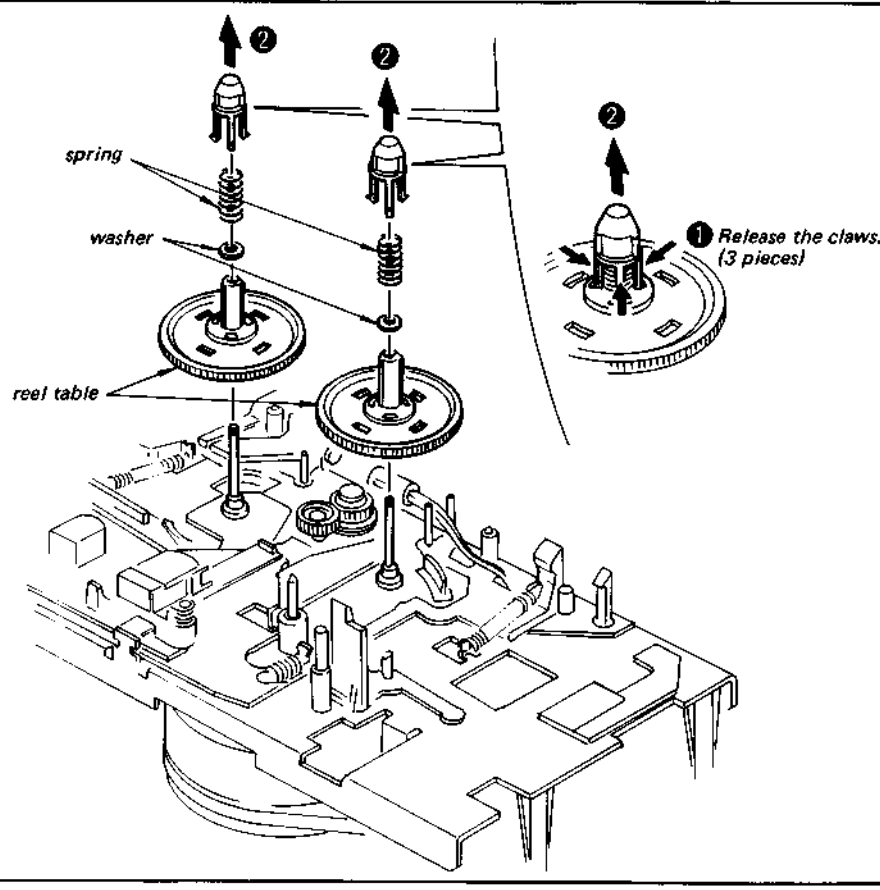
1. Press the ejection button and open the cassette lid.
2. Release the two claws from the cassette-ornament plate at both the top corners.
3. Depress the REC detecting lever and the half detecting levers at the inside of the set and remove the cassette-ornament plate.
4. When reinstalling the cassette-ornament plate, perform the steps in a reverse manner.



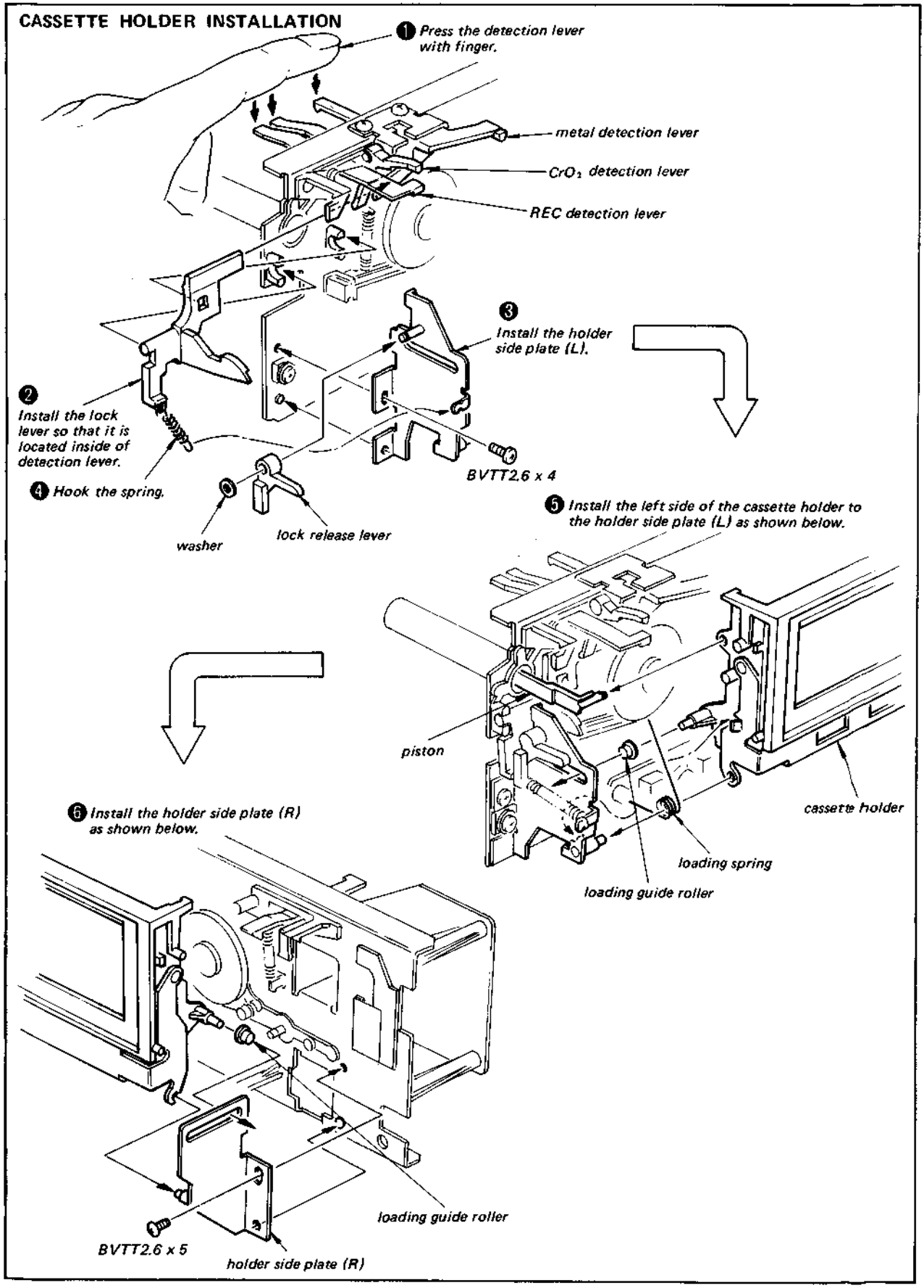
PINCH ROLLER



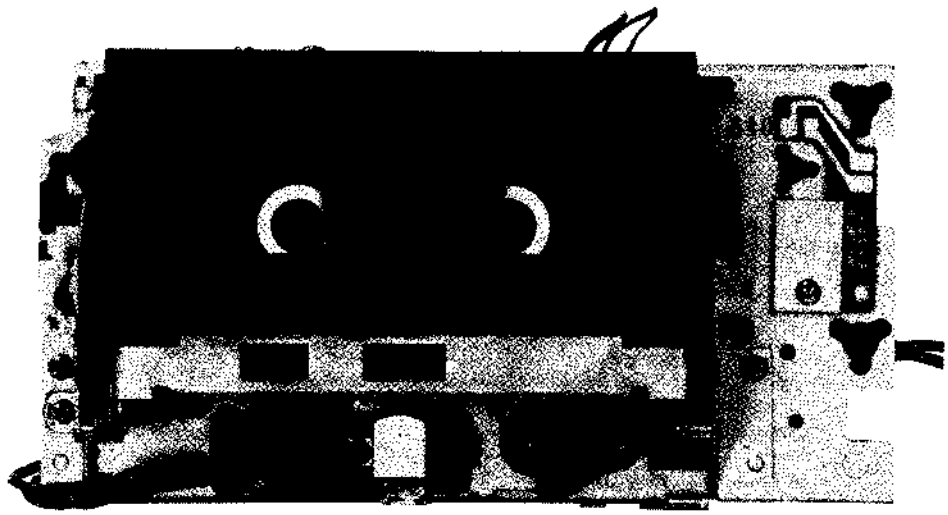
REEL TABLE



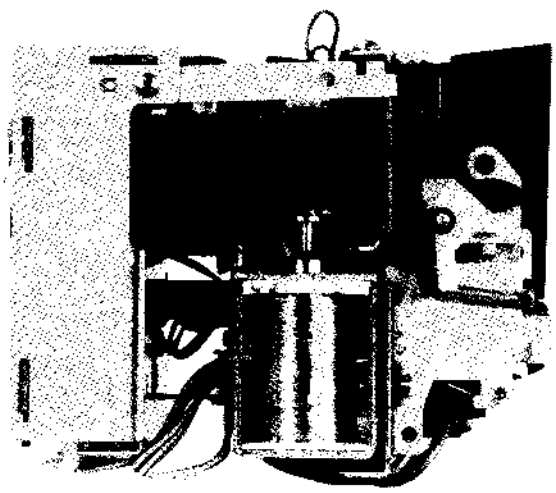
CASSETTE HOLDER INSTALLATION



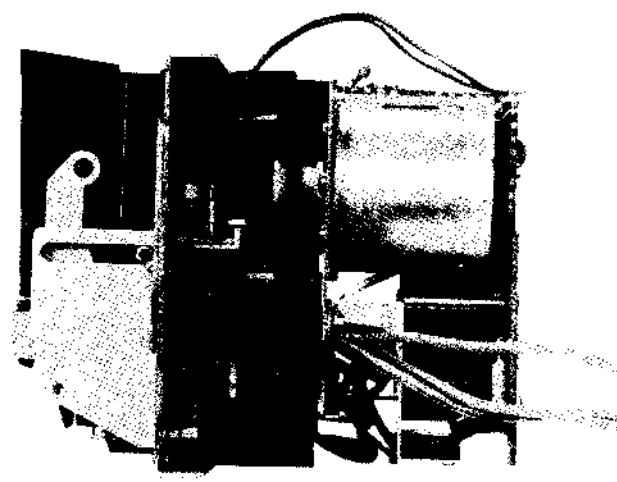
- **Front View**



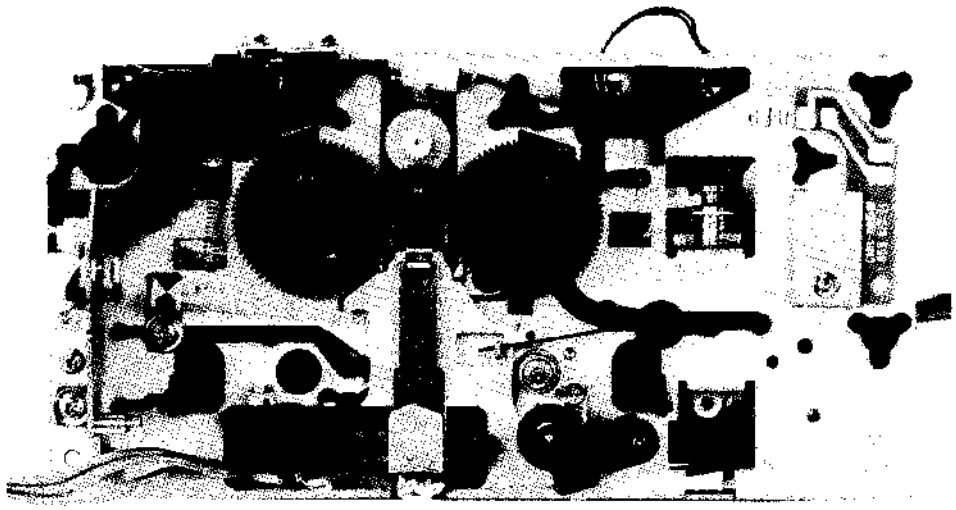
- **Left Side View**



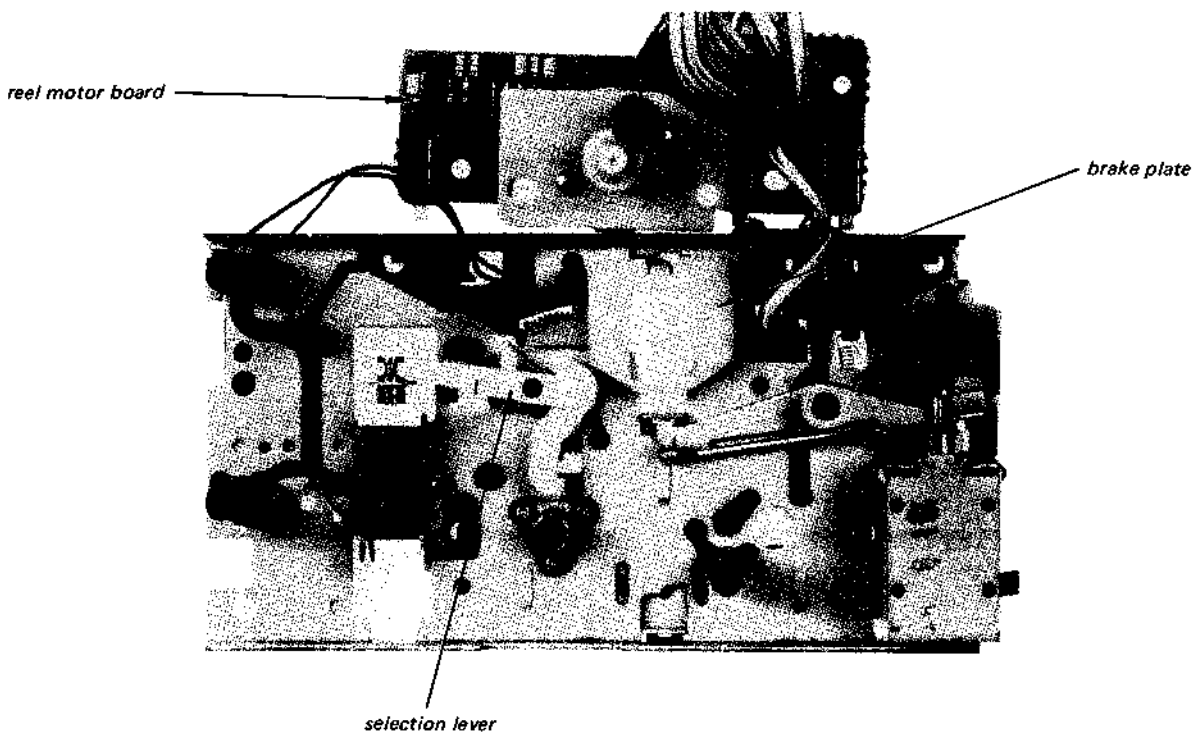
- **Right Side View**



- **Front View with Cassette Holder and Cassette-Ornament Plate Removed:**

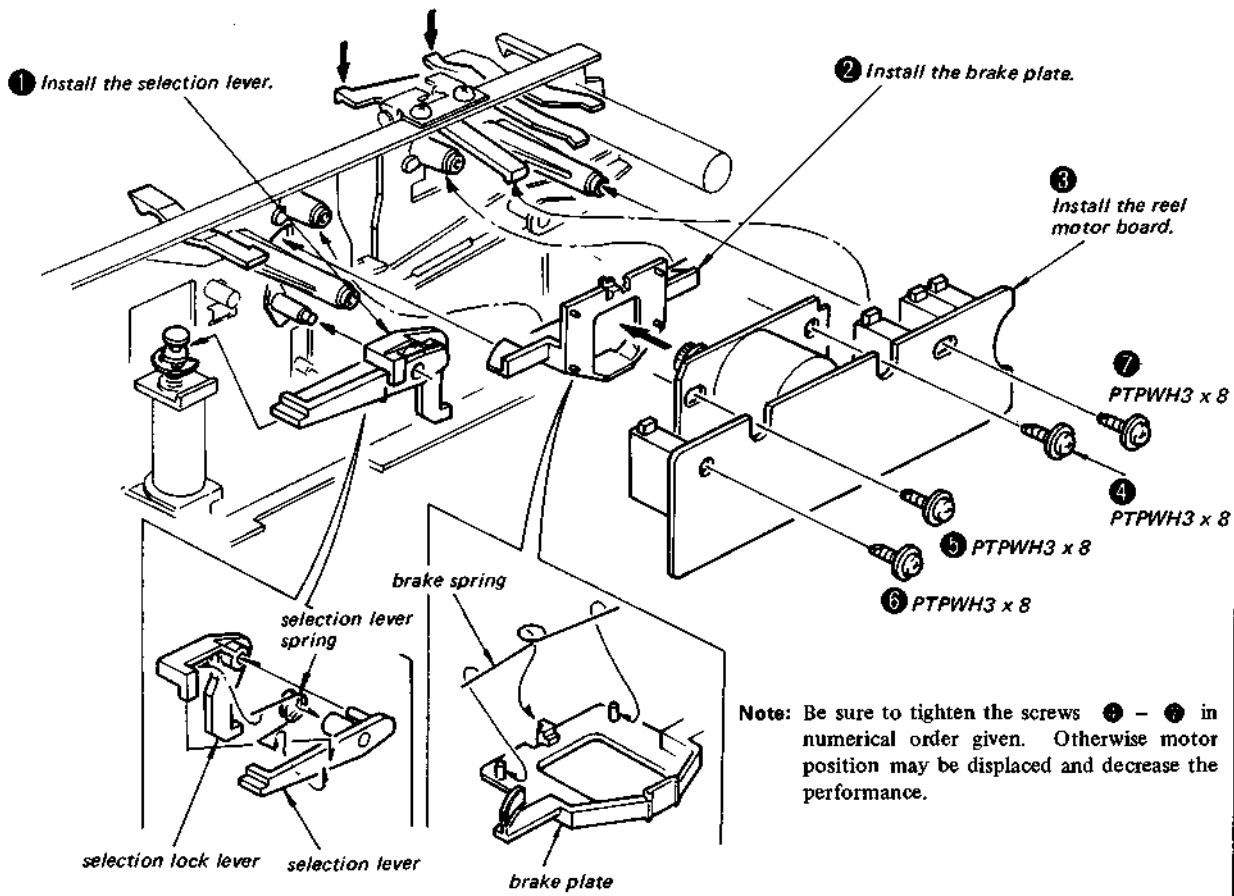


- **Bottom View with Reel Motor Board and Flywheel (T) Removed:**



REEL MOTOR BOARD INSTALLATION

- See the photo on page 50 (Bottom View).



Note: Be sure to tighten the screws ❶ – ❼ in numerical order given. Otherwise motor position may be displaced and decrease the performance.

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

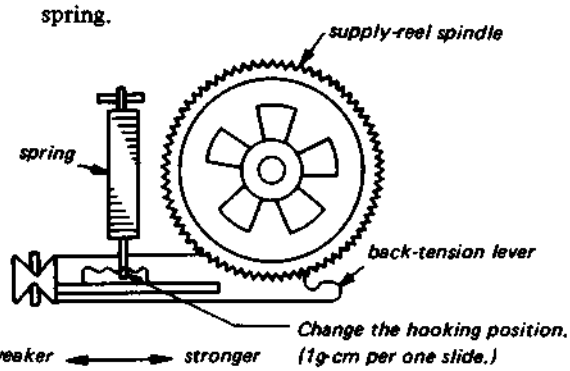
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement and Back Tension Torque Adjustment

1.

Torque	Torque meter	Meter reading
Forward	CQ-102C	30–60 g · cm (0.41–0.83 oz · inch)
Back tension	CQ-102C	2.5–4.5 g · cm (0.04–0.06 oz · inch)

2. If the specified back-tension torque is not obtained, change the hooking position of the spring.

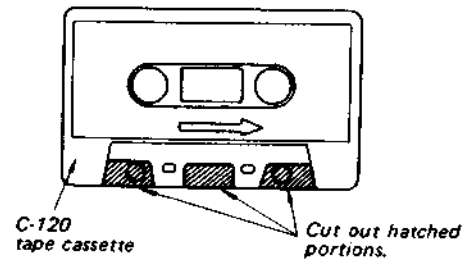


Confirmation:

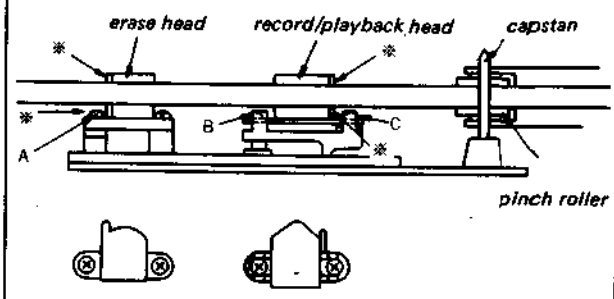
Torque	Torque meter	Meter reading
FF REW	CQ201B	100–160 g · cm (1.38–2.22 oz · inch)

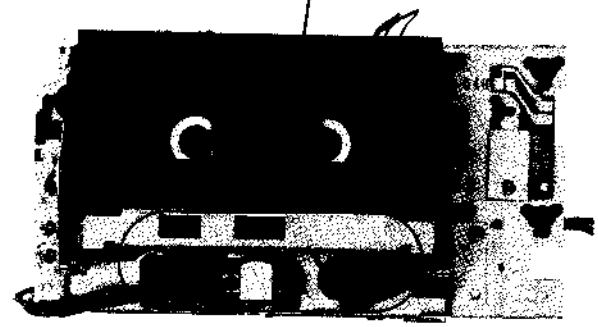
Head Height Adjustment

1. Prepare an adjustment cassette as shown below.

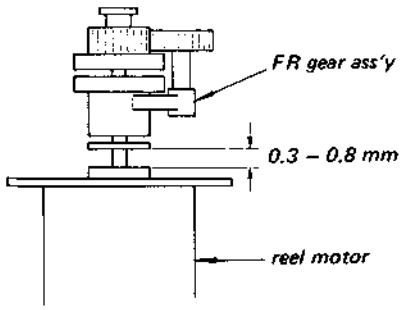


2. In playback mode and viewing from the front, adjust the head heights by using the adjustment screw A, B, C, to eliminate tape curl and tape twist at portions shown by arrow (*).
3. a) Remove the tape curl at the erase head guides by turning the screw A.
   b) Remove the tape curl at the record/playback head guides by turning the screws B and C by the same amount of angle in the same direction.
   c) After the adjustment, apply suitable locking compound to the screws.

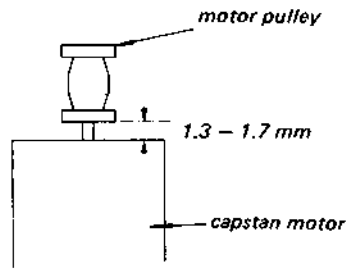


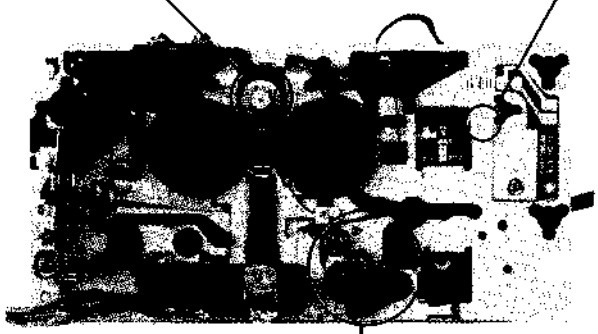


FR Gear Height Adjustment

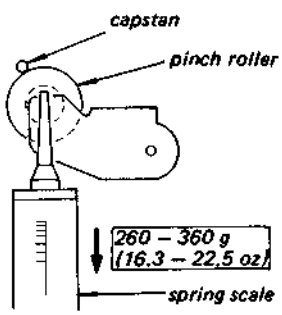


Motor Pulley Height Adjustment





Pinch Roller Pressure Adjustment



Procedure:

1. Clean the pinch roller and the capstan.
2. Set the unit to the forward mode. Measure the pinch roller pressure by using the spring scale. Read the spring scale just when the pinch roller stops rotating without contacting the capstan.

3-2. ELECTRICAL ADJUSTMENTS

Tape Recorder Section

Note: The adjustment should be performed in the order given in this service manual.
The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE SELECT switches according to the tape as follows.

Tape	TAPE SELECT switch
CS-15	AUTO (TYPE I: NORM)
CS-25	AUTO (TYPE II: CrO_2)
CS-30	TYPE III (Fe-Cr)
CS-40	TYPE IV (METAL)

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch . . . . . OFF
TAPE SELECT switch . . . . . AUTO
MEMORY switch . . . . . OFF
REC MUTE switch . . . . . OFF
Function selector keys . . . . . CD/AUX

- **Standard Record:**

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	CD/AUX INPUT
source impedance	47 kΩ
input level	0.14 V (−15 dB)

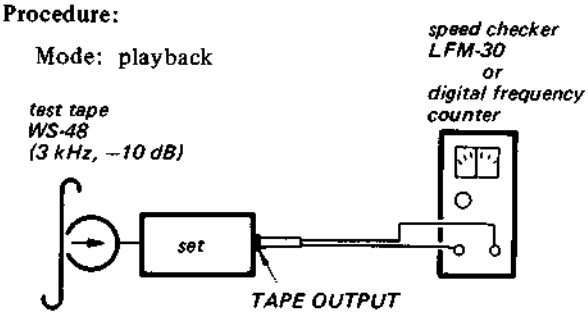
Standard Output Level

	TAPE OUTPUT
load impedance	4.7 kΩ
output level	0.44 V (−5 dB)

Capstan Motor Speed Adjustment

Procedure:

Mode: playback

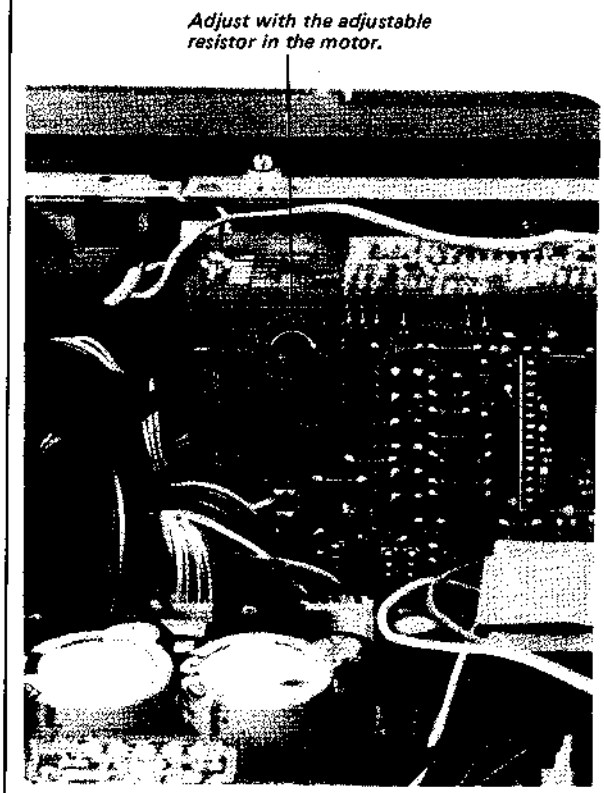


Specification:

Speed checker	Digital frequency counter
−0.6 % to +0.6 %	2,980 to 3,020 Hz

Frequency difference between the beginning and the end of the tape should be within 0.34 % (10 Hz).

Adjustment Location:

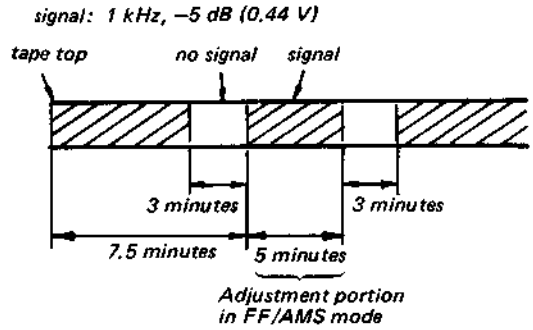


AMP Speed Adjustment

Preparation:

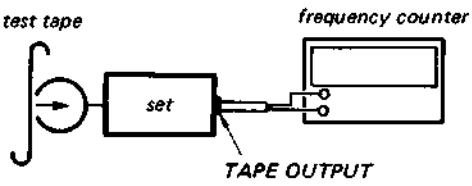
1. AMS speed adjustment tape

- Tape



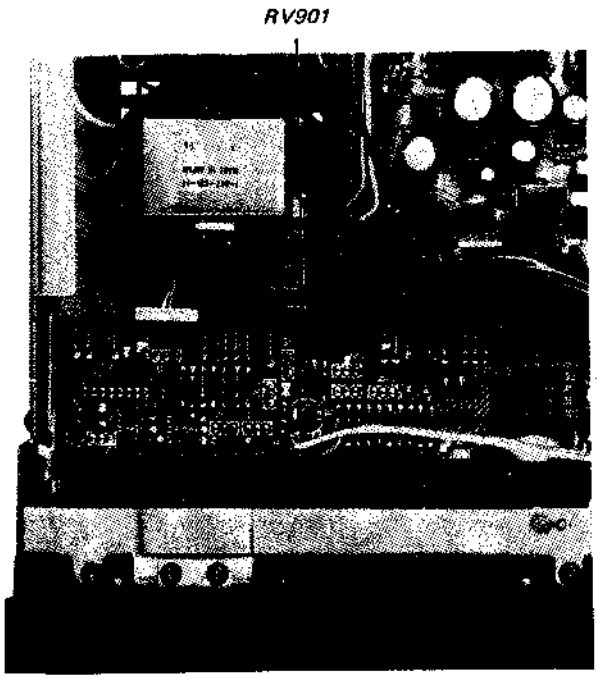
Procedure:

1. FF/AMS mode



2. Adjust RV901 so that the reading on the frequency counter becomes 23 kHz ±1 kHz at the 5 minutes portion of the adjustment tape.

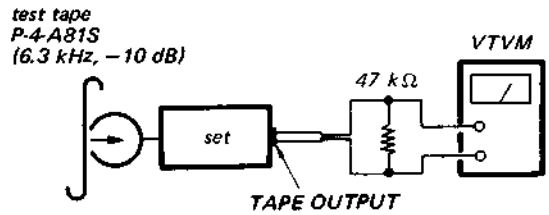
Adjustment Location: system control (A) board



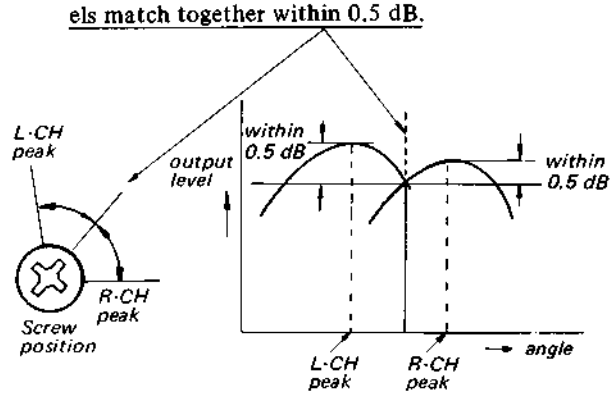
Record/playback Head Azimuth Adjustment

Procedure:

1. Mode: playback

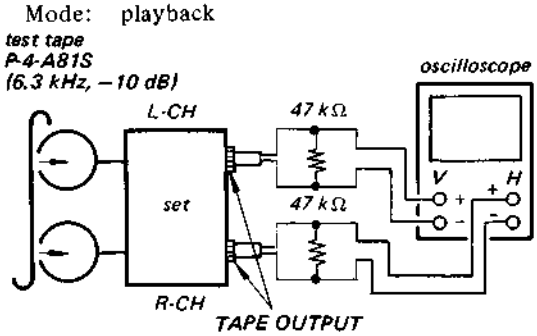


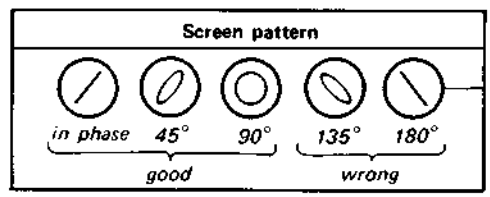
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.



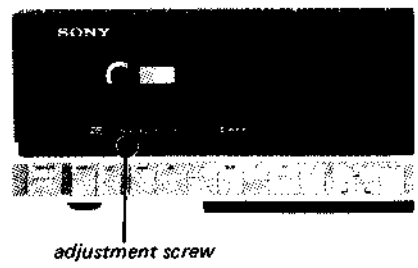
3. Phase Check

Mode: playback





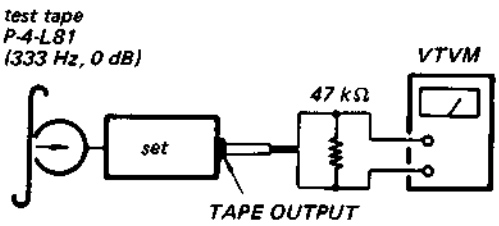
Adjustment Location:



Playback Level Adjustment

Procedure:

Mode: playback



Specification:

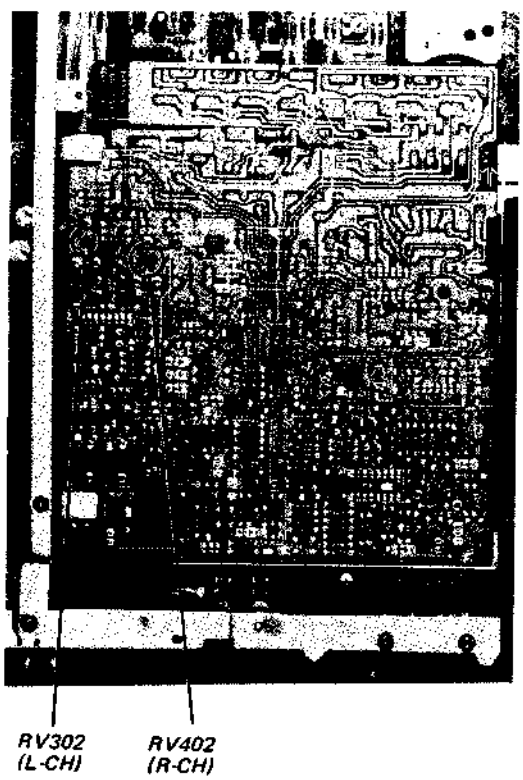
TAPE OUTPUT level: 0.52 to 0.58 V
(−3.5 to −2.5 dB)

Level difference between channels:
less than 0.5 dB

Check that the TAPE OUTPUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

– record/playback board –



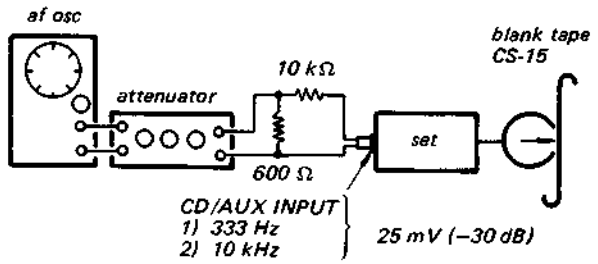
Record Bias Adjustment

Setting:

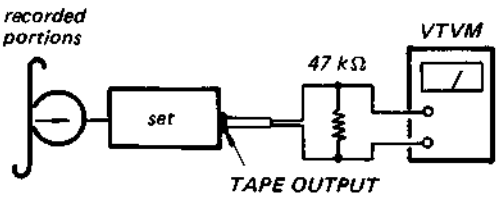
REC LEVEL control: standard record
(See page 54.)

Procedure:

1. Mode: record



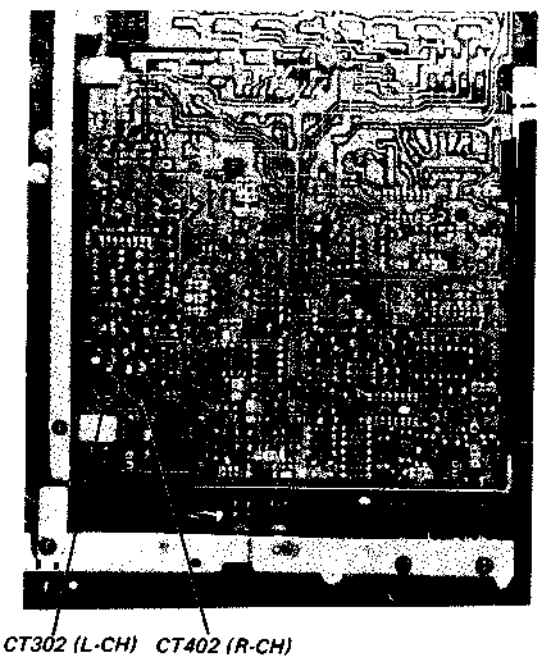
2. Mode: playback



Adjust CT302 (L-CH), CT402 (R-CH) so that the TAPE OUTPUT level of 10 kHz signal is 0 dB relative to that of 333 Hz.

Adjustment Location:

– record/playback board –



Record Level Adjustment

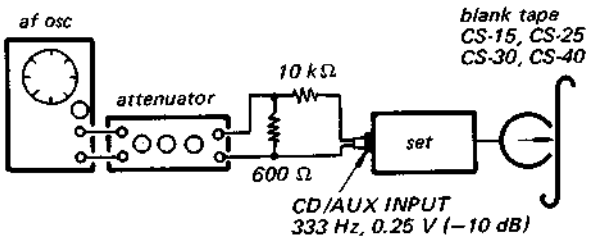
Setting:

REC LEVEL control: standard record
(See page 54.)

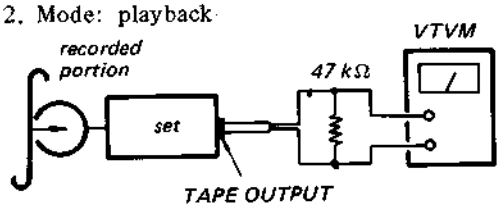
TAPE SELECT switch: See page 54.

Procedure:

1. Mode: record



2. Mode: playback



Specification:

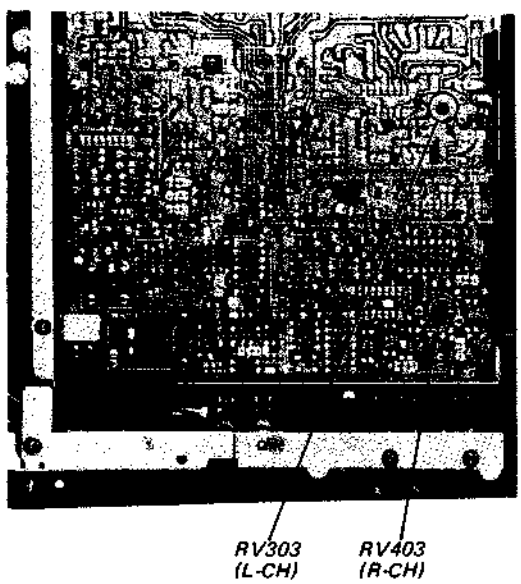
TAPE OUTPUT level:

CS-15 . . . . . 0.41 to 0.46 V
(−5.5 to −4.5 dB)

CS-25, 30, 40 . . . . . 0.37 to 0.51 V
(−6.5 to −3.5 dB)

Adjustment Location:

– record/playback board –



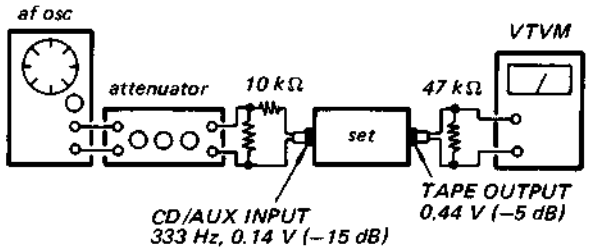
Level Meter Calibration

Setting:

REC LEVEL control: standard record
(See page 54.)

Procedure:

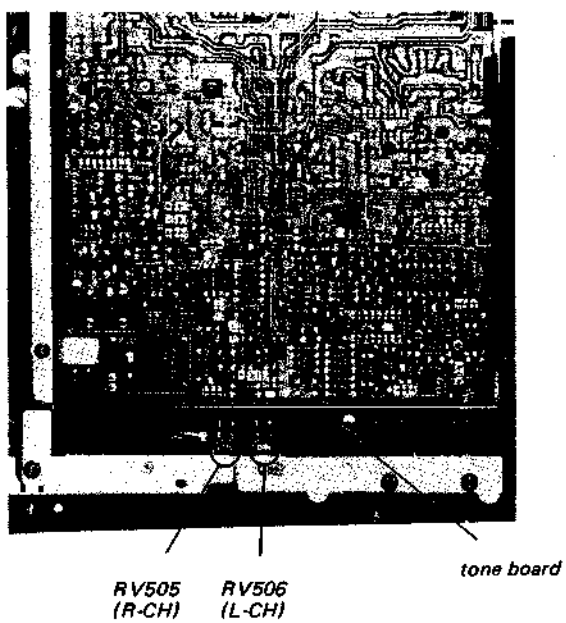
1. Mode: record



2. Adjust RV506 (L-CH), RV606 (R-CH) so that LED meter indicates −4 dB (0 VU) sliding the REC LEVEL control rightward slowly.
(Be careful to peakhold indication.)

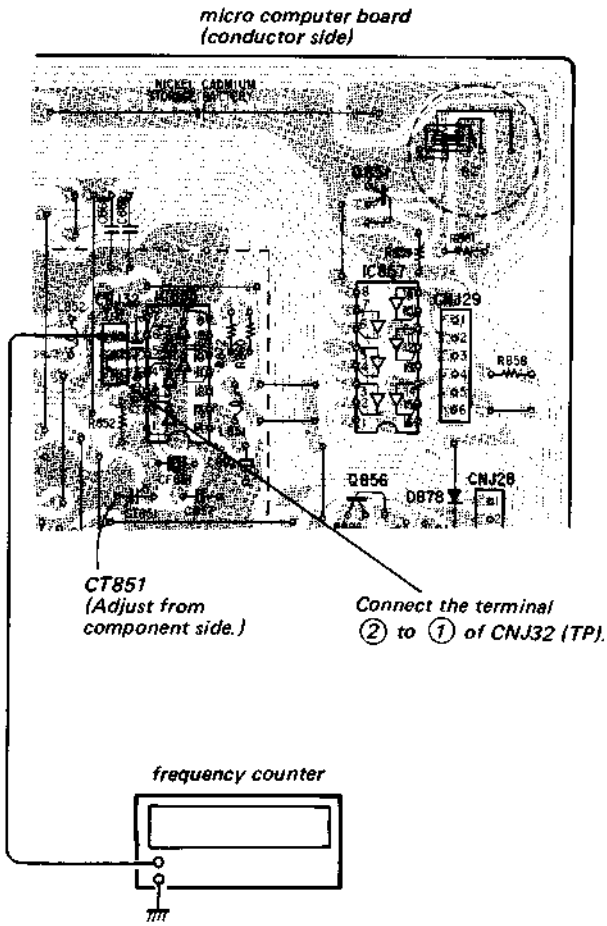
Adjustment Location:

–tone board –



Timer Section

TIME f_0 Adjustment



1. Adjust CT851 so that the frequency counter reading becomes 4.194300 MHz ±20 Hz.
2. After adjustment, disconnect the terminal ② from ① of CNJ32 (TP).

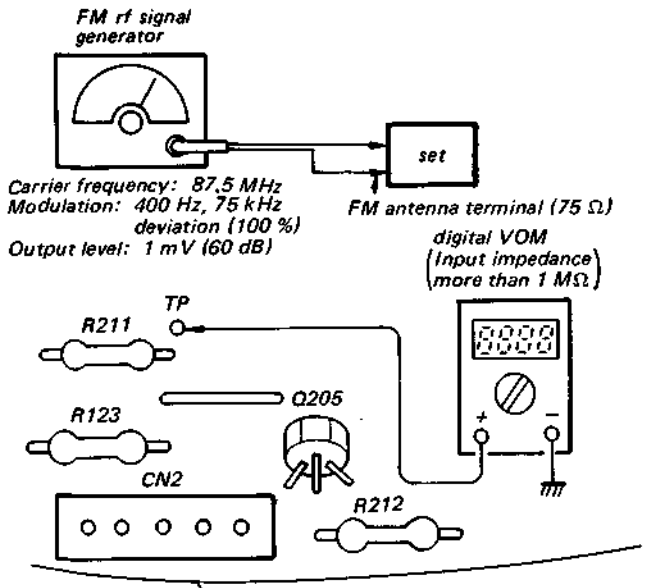
Tuner Section • **FM Section**

PLL Integrated Circuit Voltage Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . OFF

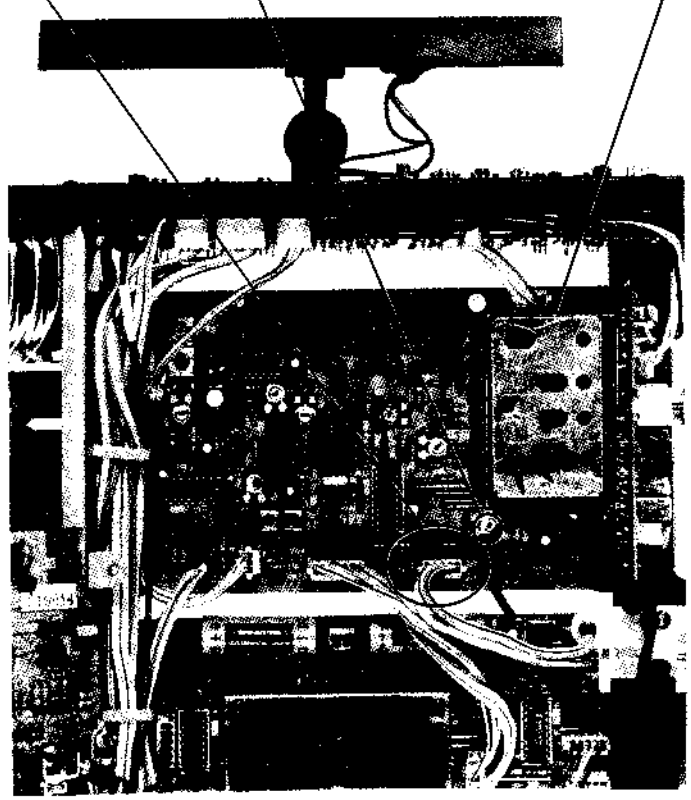
Procedure:



1. Terminate 75 Ω input of FM antenna terminal with 75 Ω dummy resistor.
2. Tune the set to 87.5 MHz on FM frequency indication by pressing TUNING key (±).
3. Adjust RV202 for 1.8 V on digital VOM reading.
4. Disconnect 75 Ω dummy resistor connected on step 1 and receive the signal from FM rf signal generator.
5. Press TUNING key (±) to slide the frequency ±0.3 – 0.5 MHz. Confirm that the signal can be received.
   (One pressing the key changes 0.05 MHz.)

Servicing Precaution

The front-end section has been carefully adjusted at the factory. When it is worn out, be sure to exchange it all with new section, because it is difficult to repair.

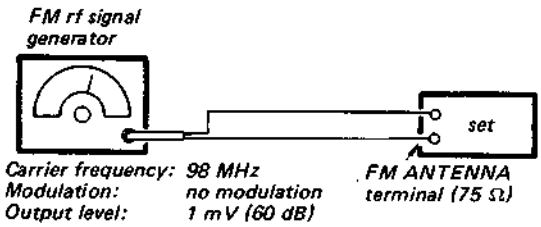


19 kHz VCO Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . ON (STEREO)

A) Regular Method

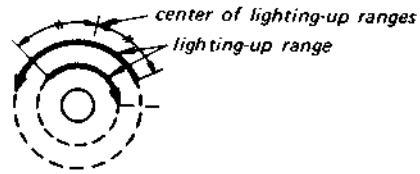


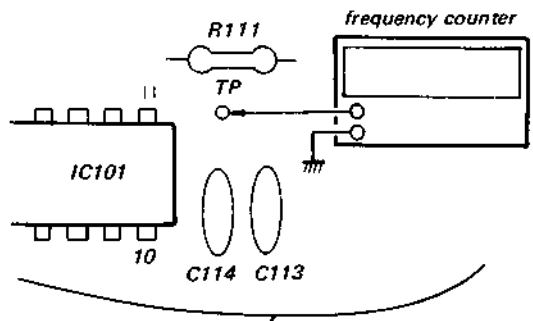
1. Tune the set to 98 MHz by pressing the TUNING key (±).
2. Adjust RV101 so that the reading on the frequency counter becomes 19 kHz ±50 Hz.
   Use the frequency counter with more than 220 kΩ input impedance.

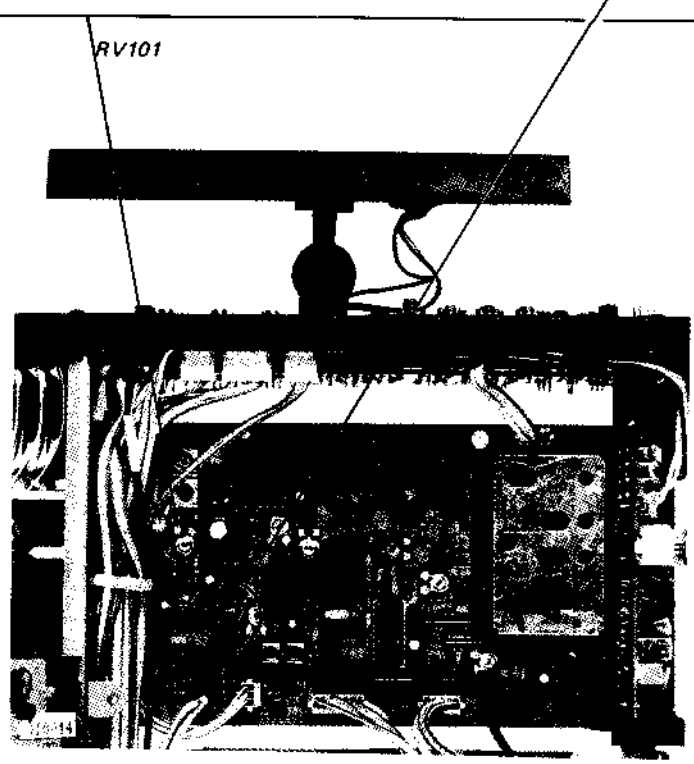
B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV101 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RV101 at the center of the lighting-up renge of both turns as shown below.





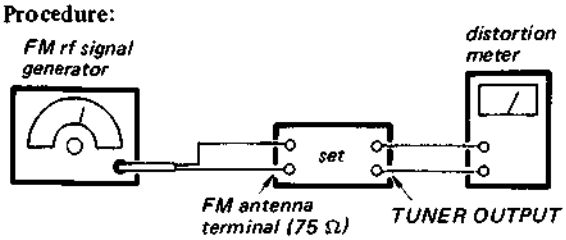


FM Discriminator Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . OFF

Procedure:

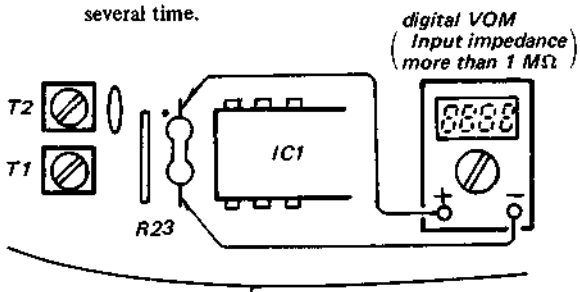


Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Modulation: 400 Hz, 75 kHz deviation (100 %)

1. Tune the set to 98 MHz by pressing the TUNING key (±).
2. Adjust T1 (black core) for 0 V reading on the digital VOM. . . . . NULL Adjustment

   Note: When the ceramic filter is replaced, these adjustments should be made.
3. Adjust T2 (white core) for a minimum reading on the distortion meter. . . . . Distortion Adjustment

   Note: Repeat the NULL and Distortion Adjustments several time.

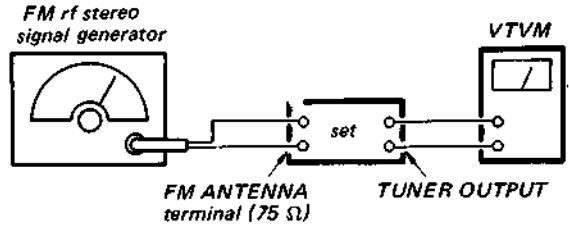


FM Stereo Separation Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . ON (STEREO)

Procedure:

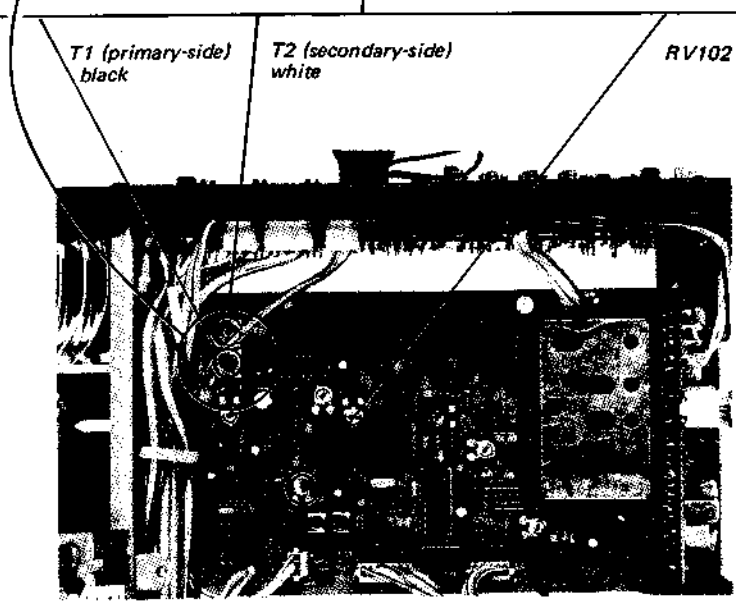


Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Mode: Stereo
Modulation:
Audio (1 kHz): 33.75 kHz deviation (45 %)
Pilot (19 kHz): 7.5 kHz deviation (10 %)
Subchannel (38 kHz): 33.75 kHz deviation (45 %)

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV102 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV102 for minimum reading.

L-CH Stereo separation: Ⓐ − Ⓑ
R-CH Stereo separation: Ⓒ − Ⓓ

The separations of both channels should be equal.

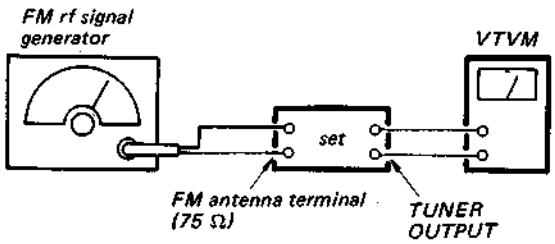


FM Muting Level Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . ON

Procedure:

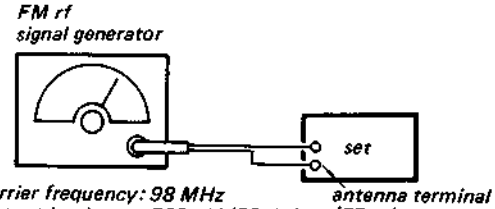


Carrier frequency: 98 MHz
Modulation: 400 Hz, 75 kHz deviation (100 %)
Output level: 18 μV (25 dB)

1. Tune the set to 98 MHz by pressing TUNING key (+, –).
2. Turn RV1 and stop it just when the VTVM indication suddenly decreases.

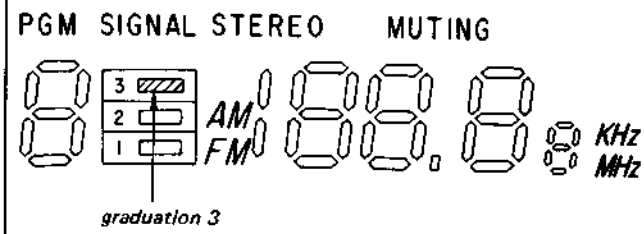
FM Signal Indicator Adjustment

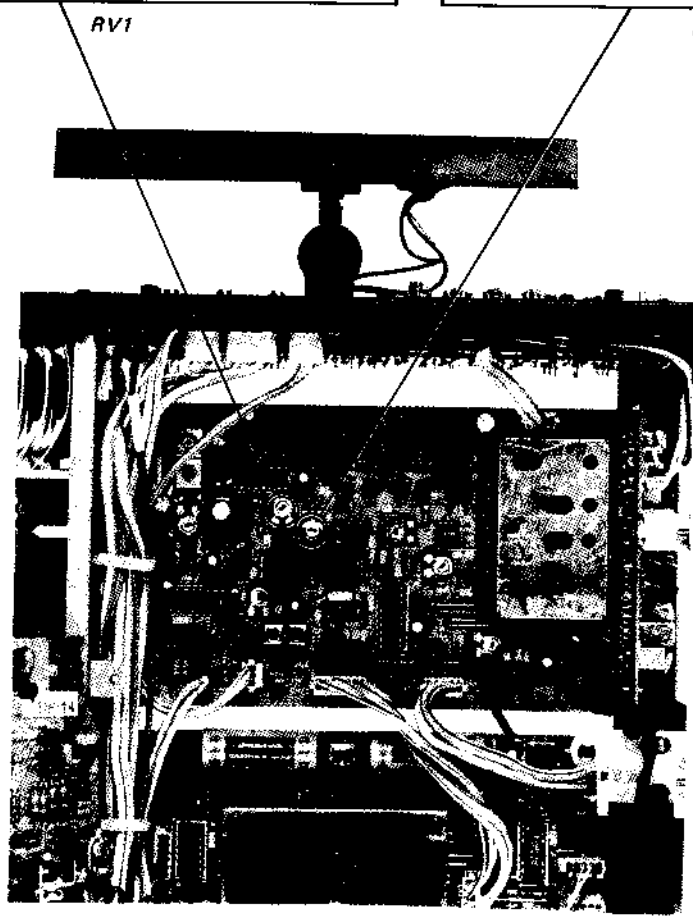
Procedure:



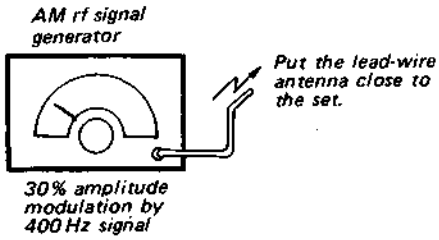
Carrier frequency: 98 MHz
Output level: 562 μV (55 dB)
Modulation: 400 Hz, 100 % modulation

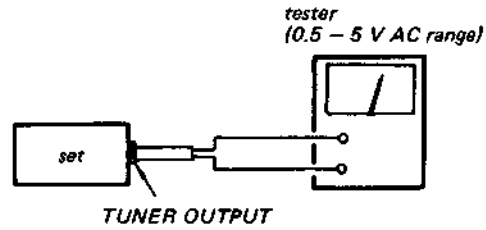
Turn RV2 and stop it when the graduation 3 changes from turning off to on.





- **AM Section**

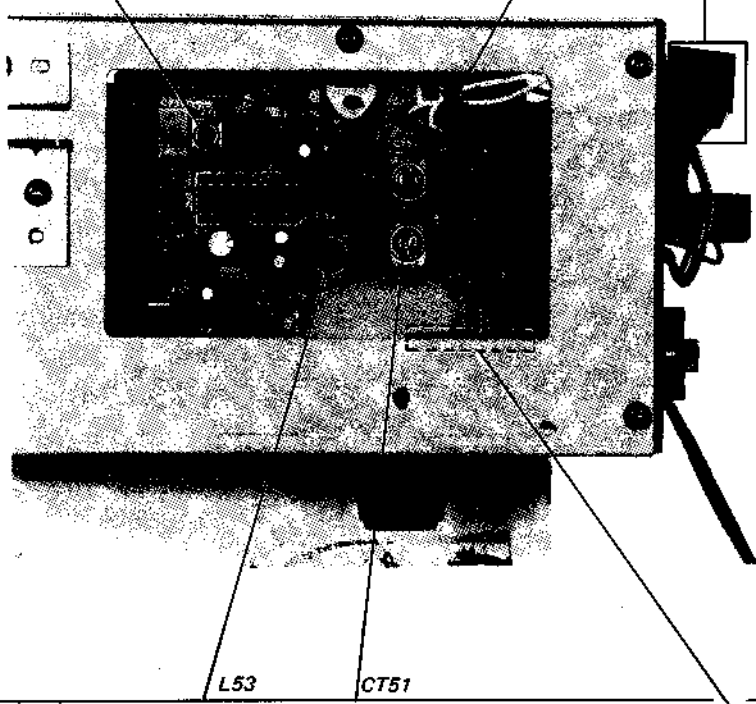




- Repeat the procedures in each adjustment several times, and the MW VCO and tracking adjustments should be finally done by the trimmer capacitors.

AM ALIGNMENT	
Adjust for a maximum reading on VOM (1).	
IFT51	450 kHz

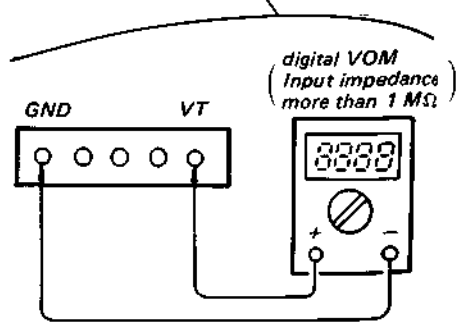
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM (1).	
1,404 kHz	603 kHz
CT52	L52



MW VCO Adjustment

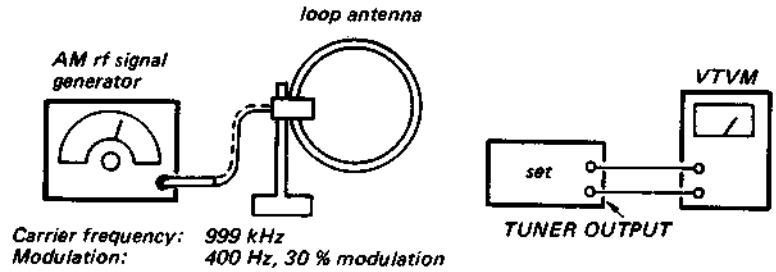
1. STEREO/MUTE switch (S601-5): OFF
2. Adjust L53 (CT51) so that the reading on the digital VOM is as follows when the set is tuned to 522 (1,602) kHz by pressing TUNING key (±).

MW VCO		
frequency indication	522 kHz	1,602 kHz
reading on digital VOM	1.6 V	24 V
adjustment location	L53	CT51



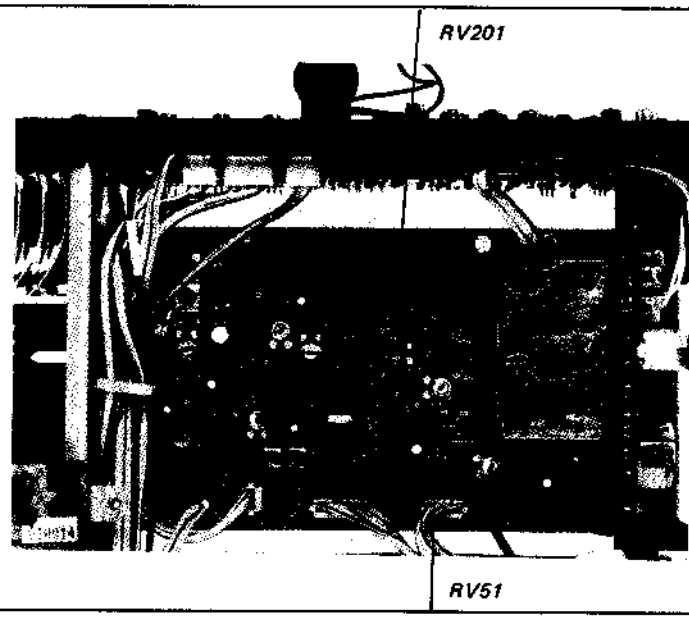
AM Muting Level Adjustment

Connection:



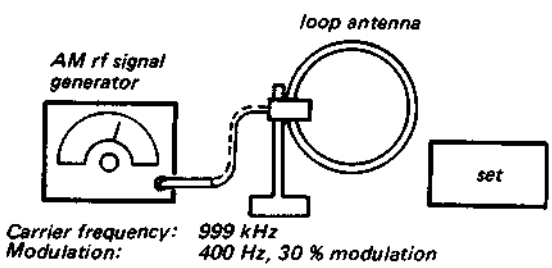
Procedure:

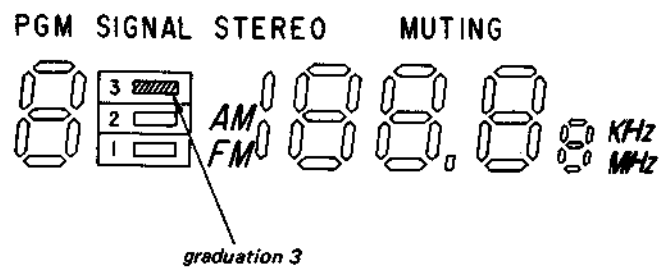
1. Set AM rf signal generator so that the AM antenna input level becomes 63 dB/m.
2. STEREO/MUTING switch (S601-4): ON
3. Turn RV201 and stop it just when the reading on VTVM suddenly becomes 0 V.



AM Signal Indicator Adjustment

Connection:



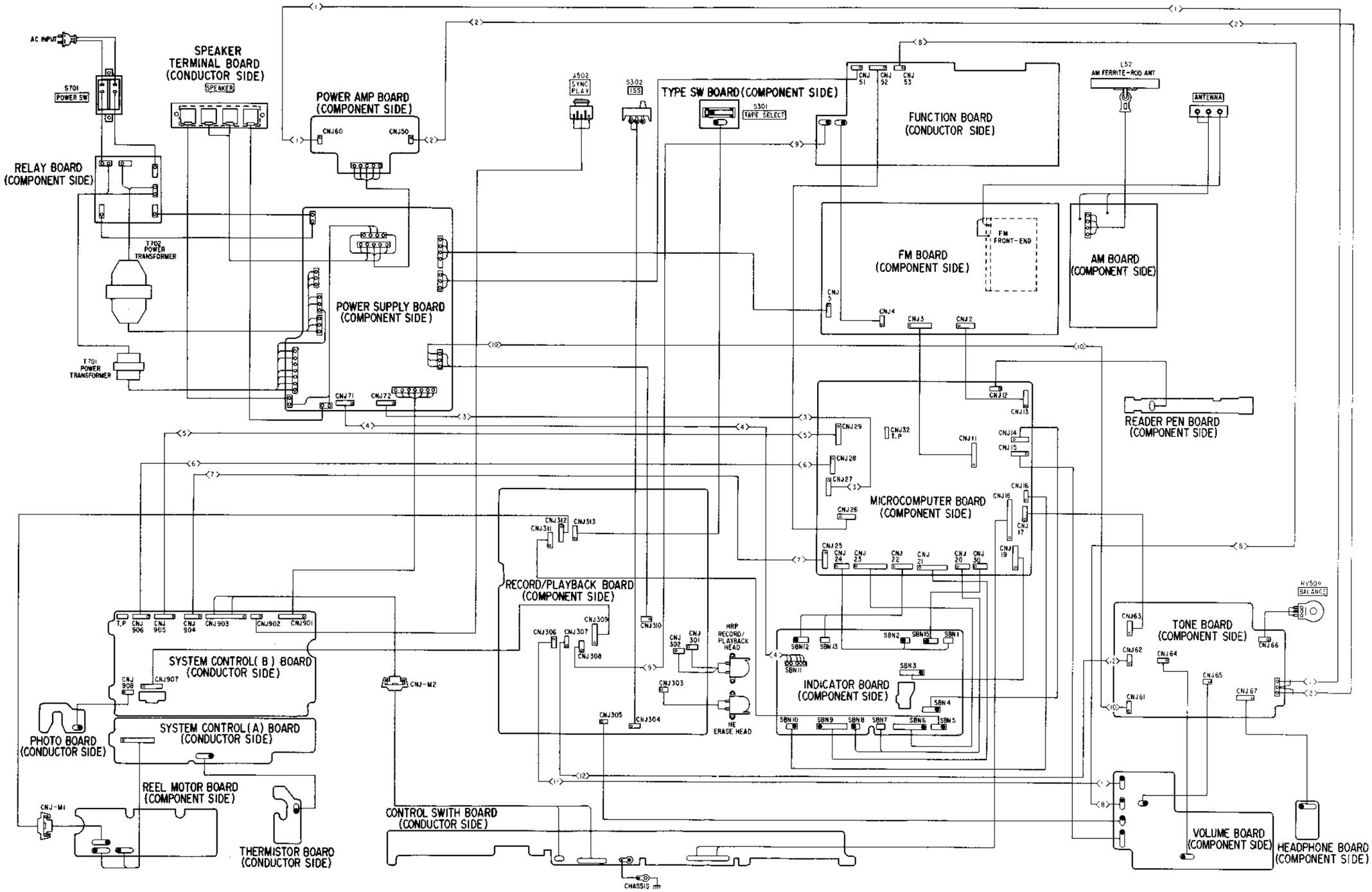


Procedure:

1. Set AM rf signal generator so that the AM antenna input level becomes 70 dB/m.
2. Turn RV51 and stop it when the graduation 3 changes from turning off to on.

SECTION 4
DIAGRAMS

4-1. TOTAL WIRING DIAGRAMS



Connector

Connec
between bo
plugging in

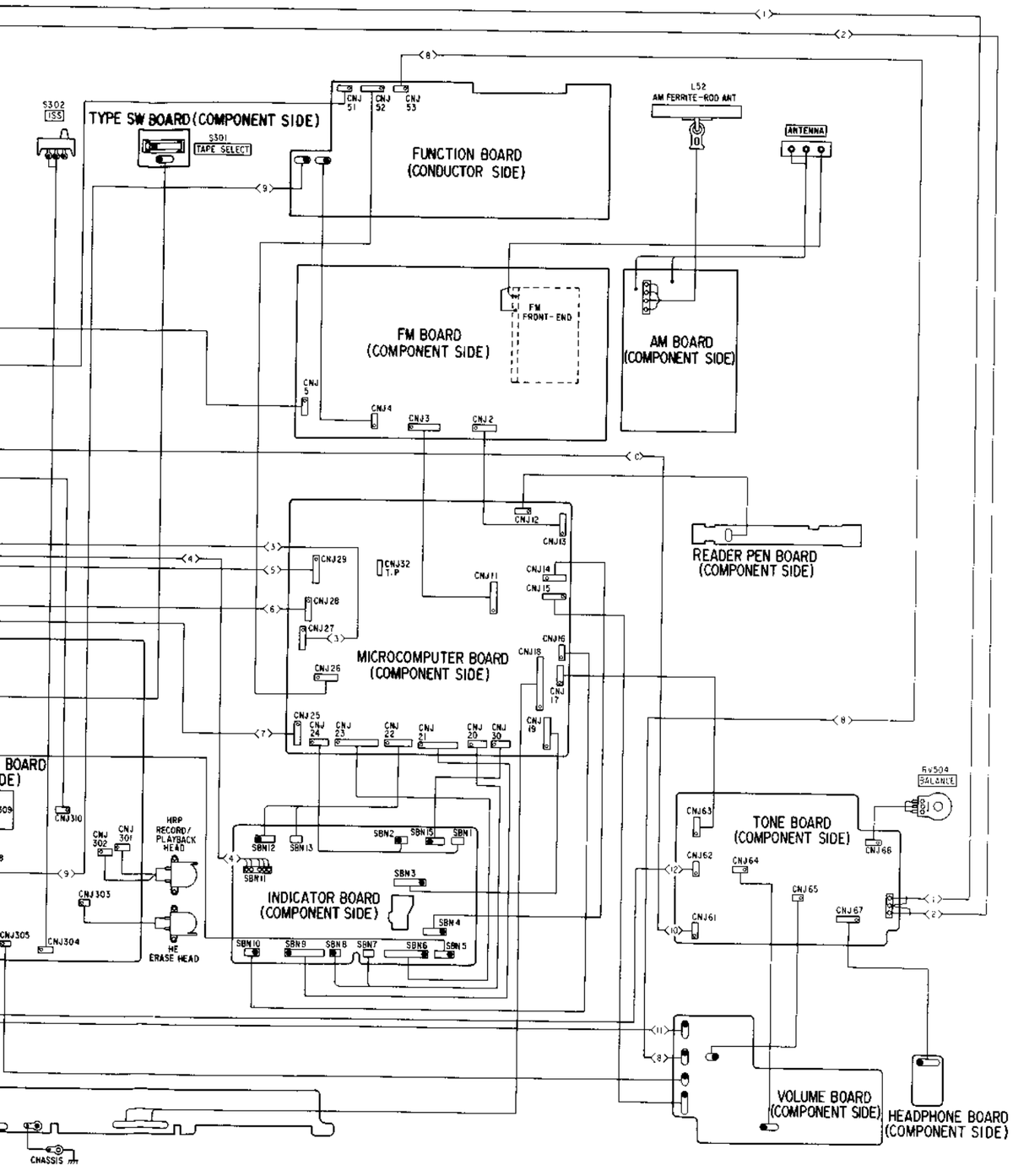
connector number

• The con
diagram

The co
board a
different
tion) and

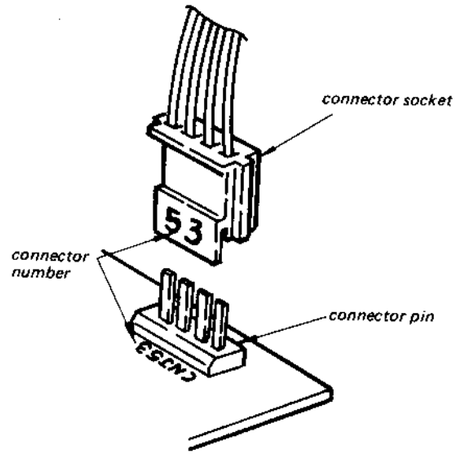
(Pin side)

CNJ301
|
CNJ309
CNJ901
|
CNJ909

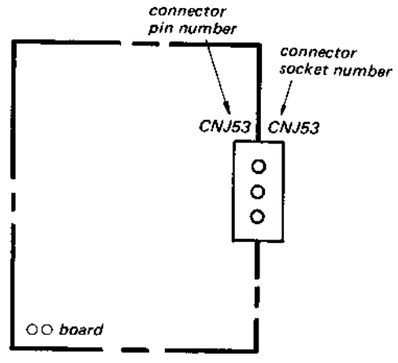


Connector Number

Connectors are used on this model for connection between boards. Check the connector number before plugging in.



- The connector number indications on the circuit diagram are as shown below.



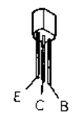
The connector numbers on the REC/PLAY board and system control board (A), (B) are different on the pin side (3 digit number indication) and socket side (2 digit number indication).

(Pin side)		(Socket side)
CNJ301	→	31
CNJ309	→	39
CNJ901	→	91
CNJ909	→	99

4-2. MOUNTING DIAGRAM – *TUNER SECTION* –

2SC710-14

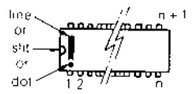
2SC1364
2SC2362



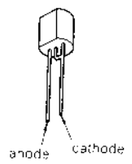
2SD414

2SK246

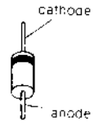
CX778A
LA1235
LA1245
LA3390



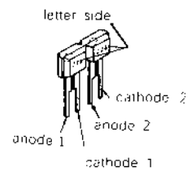
μPC574J-G



1S1555
RD15JN2

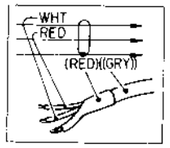


KV1226



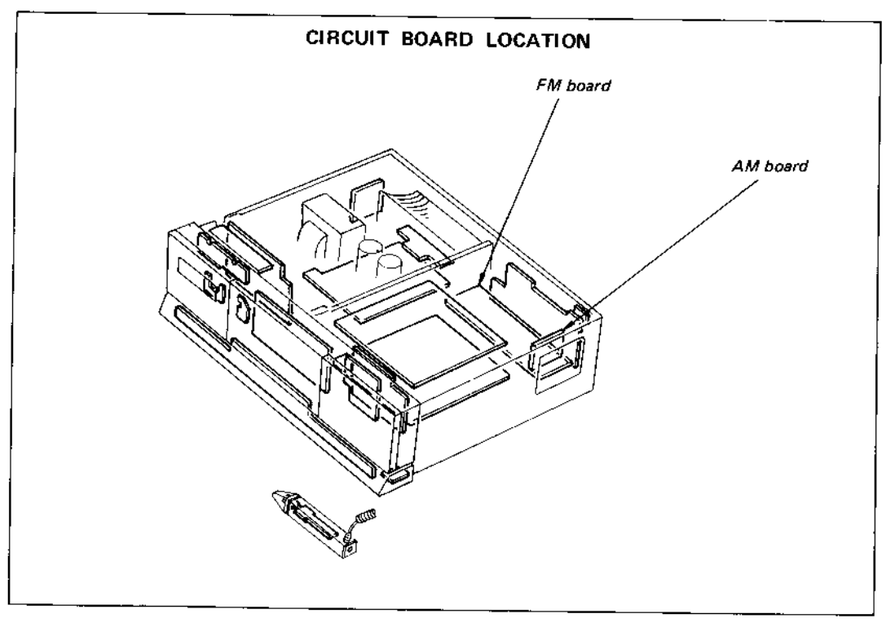
Note:

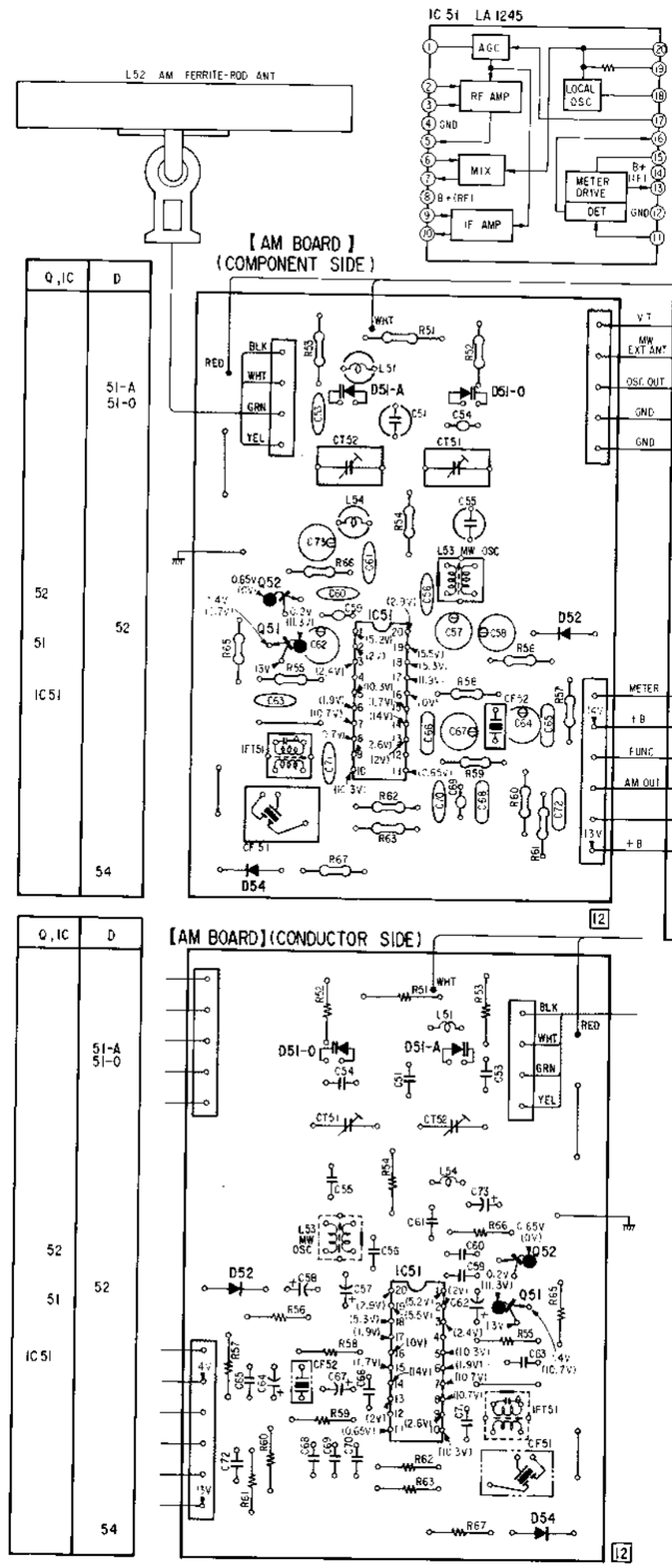
- Color code of sleeving over the end of the jacket.

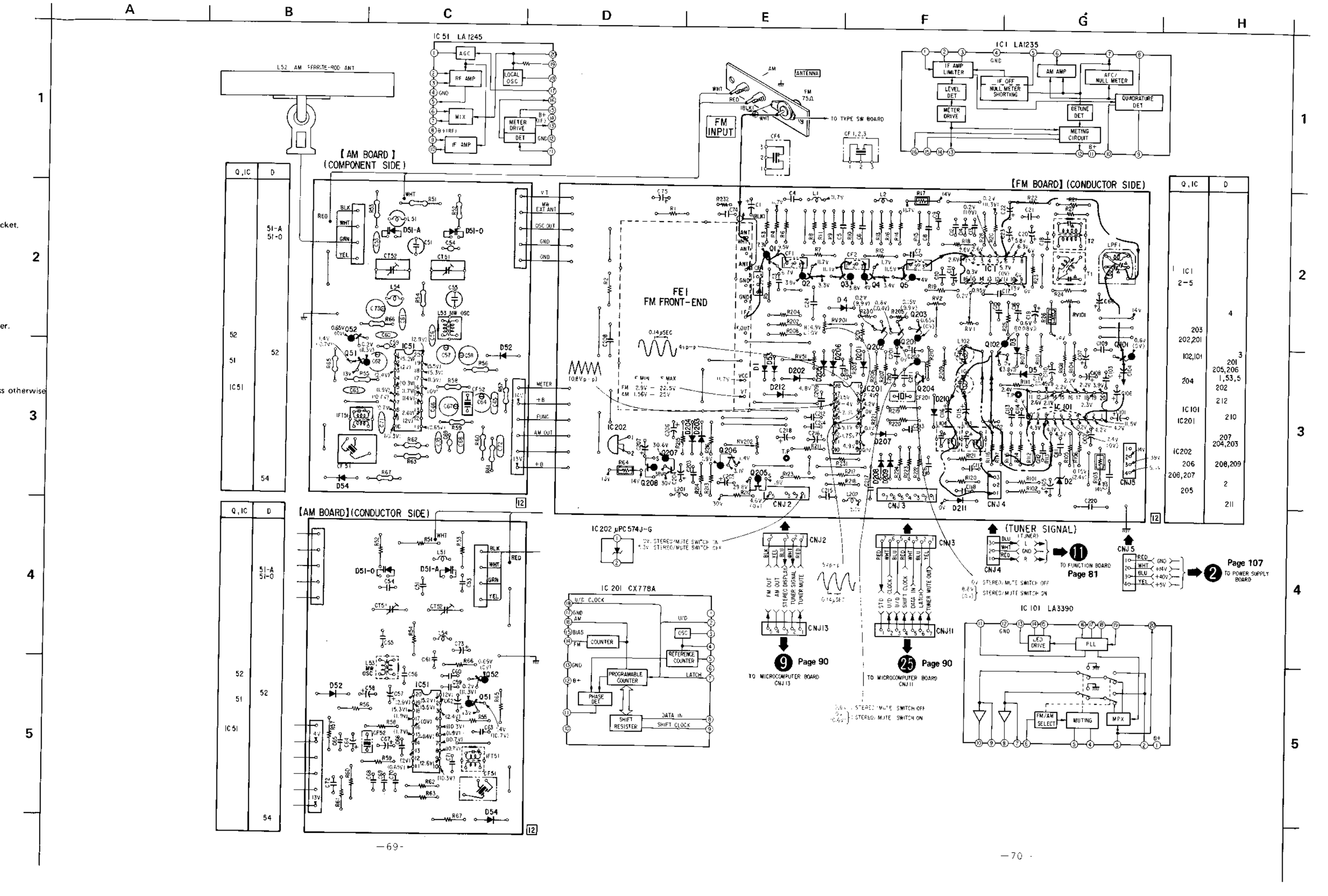


- ■ : part mounted on the conductor side.
- ⊏⊢ : indicates side identified with part number.
- : B+ pattern
- ▬▶▬ : signal path
- ▬▶▬ : L-CH signal path
- ▬▶▬ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
  (STEREO/MUTE switch: ON)
  no mark: FM detuned
  < > : FM tuned
  ≪ ≫ : STEREO indication
  ( ) : AM detuned

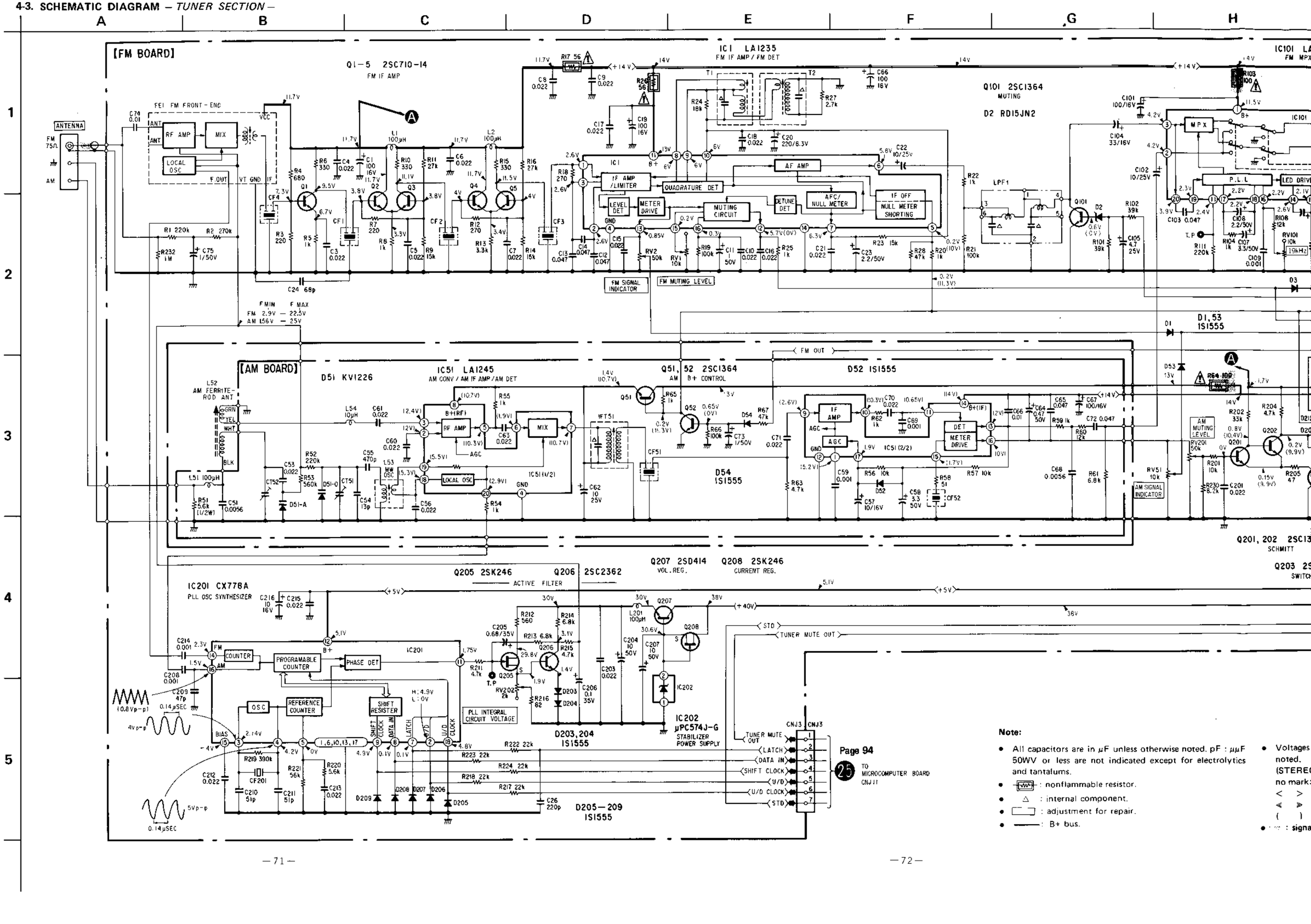
CIRCUIT BOARD LOCATION

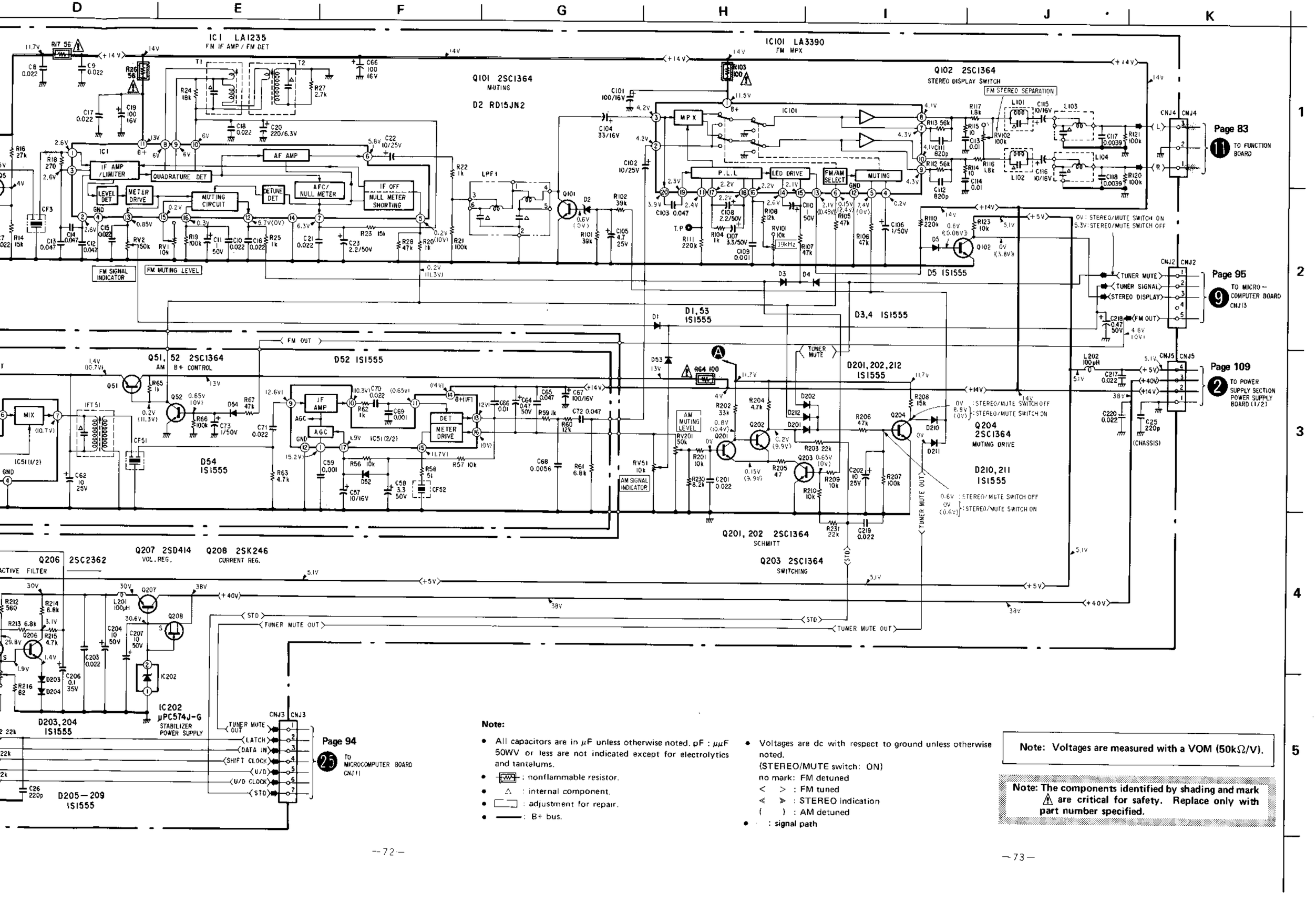





A
B
C
D
E
F
G
H
1
2
3
4
5
L52 AM FERRITE-ROD ANT
IC 51 LA 1245
AGC
RF AMP
LOCAL OSC
GND
MIX
B+(RF)
METER DRIVE
DET
B+(IF)
IF AMP
GND
IC1 LA1235
IF AMP LIMITER
GND
AM AMP
AFC/ NULL METER
LEVEL DET
IF OFF NULL METER SHORTING
QUADRATURE DET
METER DRIVE
DETUNE DET
METING CIRCUIT
ANTENNA
AM
FM 75Ω
WHT
RED
BLK
WHT
FM INPUT
TO TYPE SW BOARD
CF4
CF1,2,3
【AM BOARD】
(COMPONENT SIDE)
【FM BOARD】(CONDUCTOR SIDE)
FE1
FM FRONT-END
0.14μSEC
4Vp-p
(0.8Vp-p)
IC202
IC 201 CX778A
U/D CLOCK
GND AM
BIAS
FM
GND
B+
COUNTER
PROGRAMABLE COUNTER
PHASE DEC
OSC
REFERENCE COUNTER
LATCH
SHIFT RESISTER
DATA IN
SHIFT CLOCK
IC 202 μPC574J-G
5V: STEREO/MUTE SWITCH ON
0V: STEREO/MUTE SWITCH OFF
5Vp-p
0.14μSEC
FM OUT
AM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE
CNJ13
9 Page 90
TO MICROCOMPUTER BOARD CNJ13
STD
U/D CLOCK
U/D
SHIFT CLOCK
DATA IN
LATCH
TUNER MUTE OUT
CNJ11
25 Page 90
TO MICROCOMPUTER BOARD CNJ11
0V: STEREO/MUTE SWITCH OFF
8.6V (5V): STEREO/MUTE SWITCH ON
(TUNER SIGNAL)
(TUNER)
BLU
WHT
RED
L
GND
R
CNJ4
11 TO FUNCTION BOARD Page 81
CNJ5
RED
WHT
BLU
YEL
GND
+8V
+40V
+5V
2 Page 107 TO POWER SUPPLY BOARD
IC 101 LA3390
GND
LED DRIVE
PLL
FM/AM SELECT
MUTING
MPX
B+
Q,IC
D
IC1
2-5
4
203
202,201
102,101
3
201
205,206
1,53,5
204
202
212
IC101
IC201
210
207
204,203
IC202
206
208,209
208,207
2
205
211
51-A
51-D
52
51
IC51
54

4-3. SCHEMATIC DIAGRAM – *TUNER SECTION* –



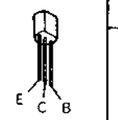


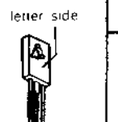
Note:

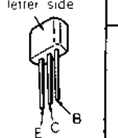
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- : nonflammable resistor.
- △ : internal component.
- : adjustment for repair.
- : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
  (STEREO/MUTE switch: ON)
  no mark: FM detuned
  < > : FM tuned
  ≪ ≫ : STEREO indication
  ( ) : AM detuned
- : signal path

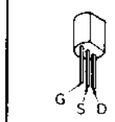
Note: Voltages are measured with a VOM (50kΩ/V).

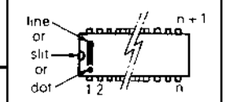
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

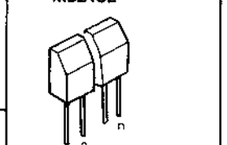


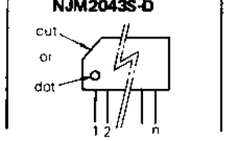


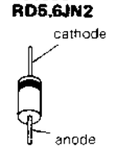


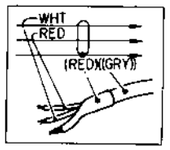


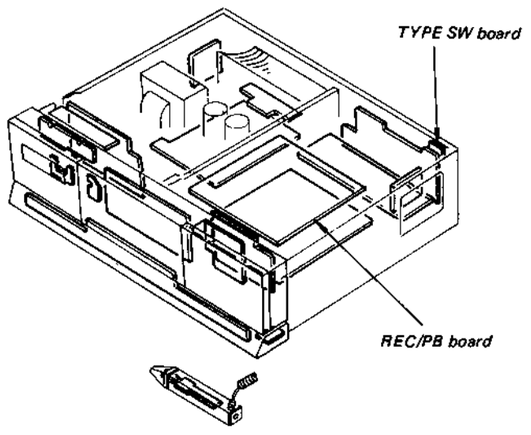












4-4. MOUNTING DIAGRAM – *RECORD/PLAYBACK AMP SECTION* –

2SA844
2SA1015
2SB864
2SC1364
2SC2001
2SC2878-B
2SD1152

2SK120

1S1555
RD5.6JN2

CX174A

2SB548
2SD414

M5218L

2SC2603

NJM2043S-D

Note:

- Color code of sleeving over the end of the jacket.

- ○— : parts extracted from the component side.
- ■ : part mounted on the conductor side.
- : B + pattern
- ━━▶━ : signal path
- ━━ ━ ━▶ : L-CH signal path
- ━━·━·▶ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions.
  no mark: STOP mode
  - ● : REC mode
  - ▶ : FWD mode
  - ●/▶ : REC/FWD mode
  - ○ : REC MUTE mode
- AC voltage readings in the bias oscillator with a VTVM.

CIRCUIT BOARD LOCATION

	C	D	
Q · IC	301 IC301/401 314 313 305 401 318 321 324 323	315 322 304 319 325 320 308,312 310 316 317 303 302	402
D	301	311 310 312 308 302 402	

【RECORD/PLAYBACK BOARD】(CONDUCTOR SIDE)

the jacket.

nent side.
side.

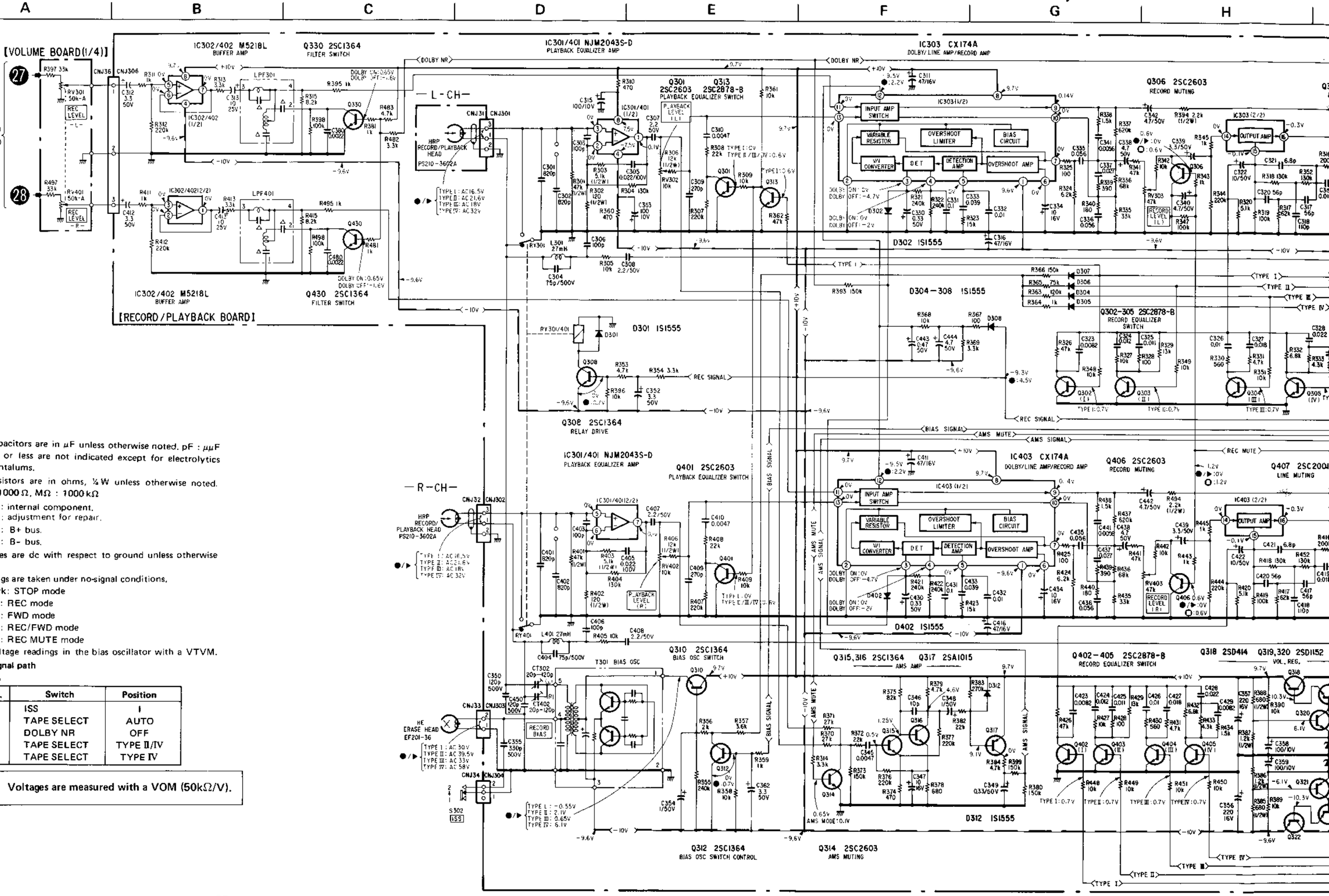
nd unless otherwise

ditions.

tor with a VTVM.

Q - IC	301 IC301/401	314 313 305 401 318 321 324 323	315 322 304 319 325 320 308,312 316 317 310 303 302	402 403 IC303 IC403 406 306 404 IC302/402	405 307 330 407 430
D		301	311 310 312 308 302 402	307,306	304,305 309

【RECORD/PLAYBACK BOARD】(CONDUCTOR SIDE)

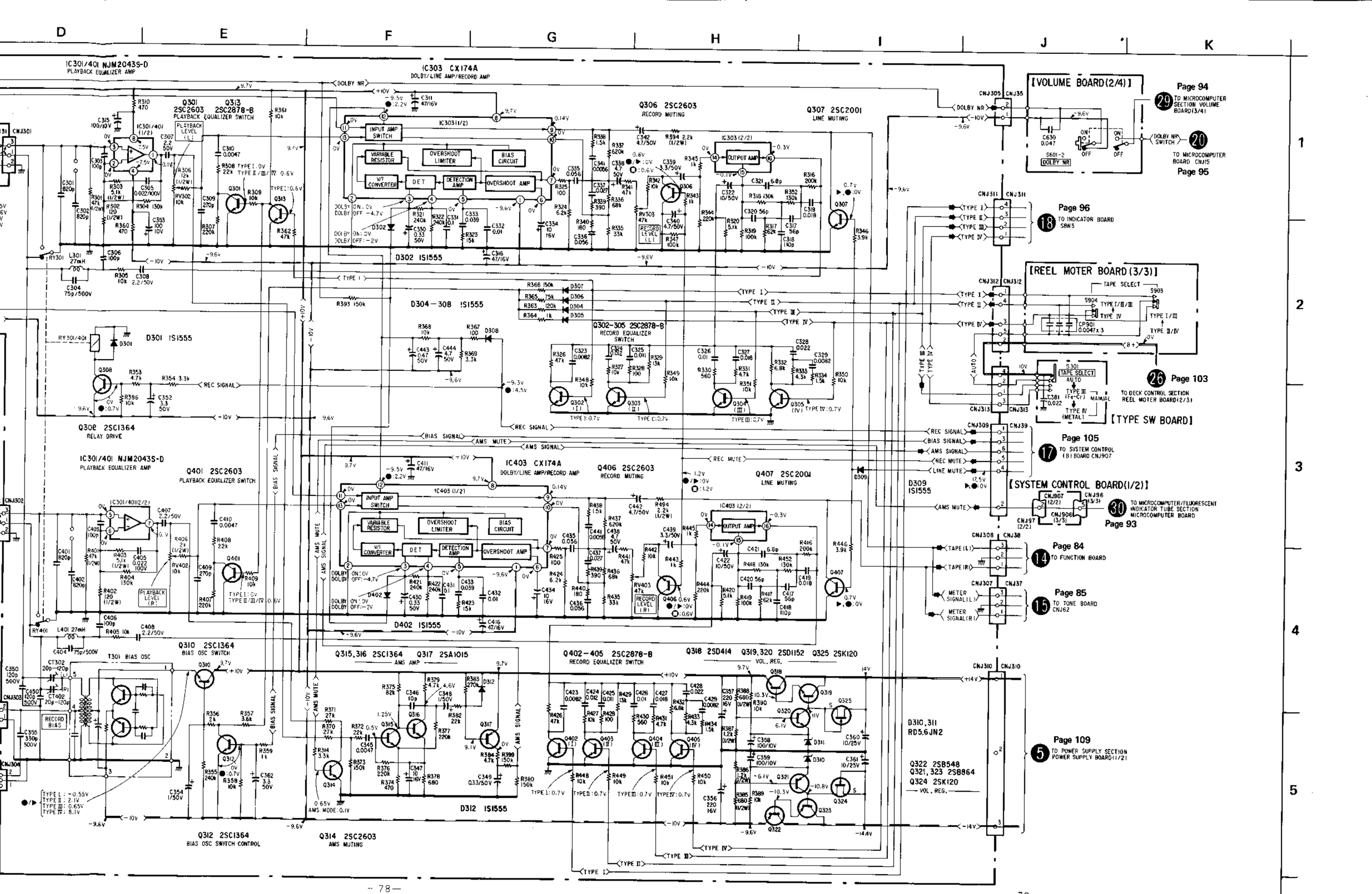


Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : adjustment for repair.
- ——: B+ bus.
- – – –: B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions.
  no mark: STOP mode
  ● : REC mode
  ▶ : FWD mode
  ●/▶ : REC/FWD mode
  ○ : REC MUTE mode
- AC voltage readings in the bias oscillator with a VTVM.
- : signal path
- Switch

Ref. No.	Switch	Position
S302	ISS	I
S301	TAPE SELECT	AUTO
S601-2	DOLBY NR	OFF
S903	TAPE SELECT	TYPE II/IV
S904	TAPE SELECT	TYPE IV

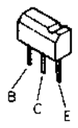
Note: Voltages are measured with a VOM (50kΩ/V).


D E F G H I J K
1 2 3 4 5
IC301/401 NJM2043S-D
PLAYBACK EQUALIZER AMP
Q301 2SC2603 Q313 2SC2878-B
PLAYBACK EQUALIZER SWITCH
IC303 CX174A
DOLBY/LINE AMP/RECORD AMP
Q306 2SC2603
RECORD MUTING
Q307 2SC2001
LINE MUTING
INPUT AMP SWITCH
VARIABLE RESISTOR
OVERSHOOT LIMITER
BIAS CIRCUIT
W/ CONVERTER
DET
DETECTION AMP
OVERSHOOT AMP
OUTPUT AMP
D302 1S1555
D304-308 1S1555
Q302-305 2SC2878-B
RECORD EQUALIZER SWITCH
D301 1S1555
Q308 2SC1364
RELAY DRIVE
IC403 CX174A
DOLBY/LINE AMP/RECORD AMP
Q406 2SC2603
RECORD MUTING
Q407 2SC2001
LINE MUTING
D309 1S1555
D402 1S1555
Q401 2SC2603
PLAYBACK EQUALIZER SWITCH
Q310 2SC1364
BIAS OSC SWITCH
Q312 2SC1364
BIAS OSC SWITCH CONTROL
Q315,316 2SC1364
AMS AMP
Q317 2SA1015
Q314 2SC2603
AMS MUTING
D312 1S1555
Q402-405 2SC2878-B
RECORD EQUALIZER SWITCH
Q318 2SD414 Q319,320 2SD1152 Q325 2SK120
VOL. REG.
D310,311 RD5.6JN2
Q322 2SB548
Q321,323 2SB864
Q324 2SK120
VOL. REG.
【VOLUME BOARD(2/4)】
Page 94
29 TO MICROCOMPUTER SECTION VOLUME BOARD(3/4)
DOLBY NR SWITCH
20 TO MICROCOMPUTER BOARD CNJ15
Page 95
Page 96
18 TO INDICATOR BOARD SBN5
【REEL MOTER BOARD(3/3)】
TAPE SELECT
Page 103
26 TO DECK CONTROL SECTION REEL MOTER BOARD(2/3)
【TYPE SW BOARD】
Page 105
17 TO SYSTEM CONTROL (B) BOARD CNJ907
【SYSTEM CONTROL BOARD(1/2)】
30 TO MICROCOMPUTER/FLUORESCENT INDICATOR TUBE SECTION MICROCOMPUTER BOARD
Page 93
Page 84
14 TO FUNCTION BOARD
Page 85
15 TO TONE BOARD CNJ62
Page 109
5 TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2)
DOLBY NR
REC SIGNAL
BIAS SIGNAL
AMS SIGNAL
AMS MUTE
REC MUTE
LINE MUTE
TAPE(L)
TAPE(R)
METER SIGNAL(L)
METER SIGNAL(R)
TYPE I
TYPE II
TYPE III
TYPE IV

4-6. MOUNTING DIAGRAM

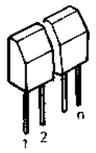
– FUNCTION SWITCH/POWER AMP SECTION –

2SA937
2SC2021



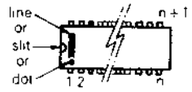
2SK246

M5218L



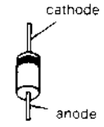
2SA1015
2SC1364

CX770A
LC4066B
TC4066BP

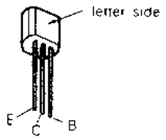


(Top view)

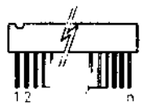
1S1556
RD5.6JN2
RD15JN2



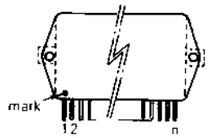
2SC2603



BA6138



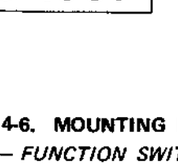
STK465A



(Marking side view)

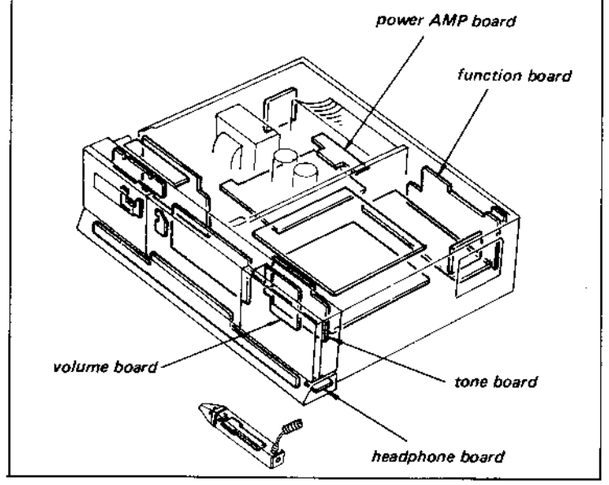
Note:

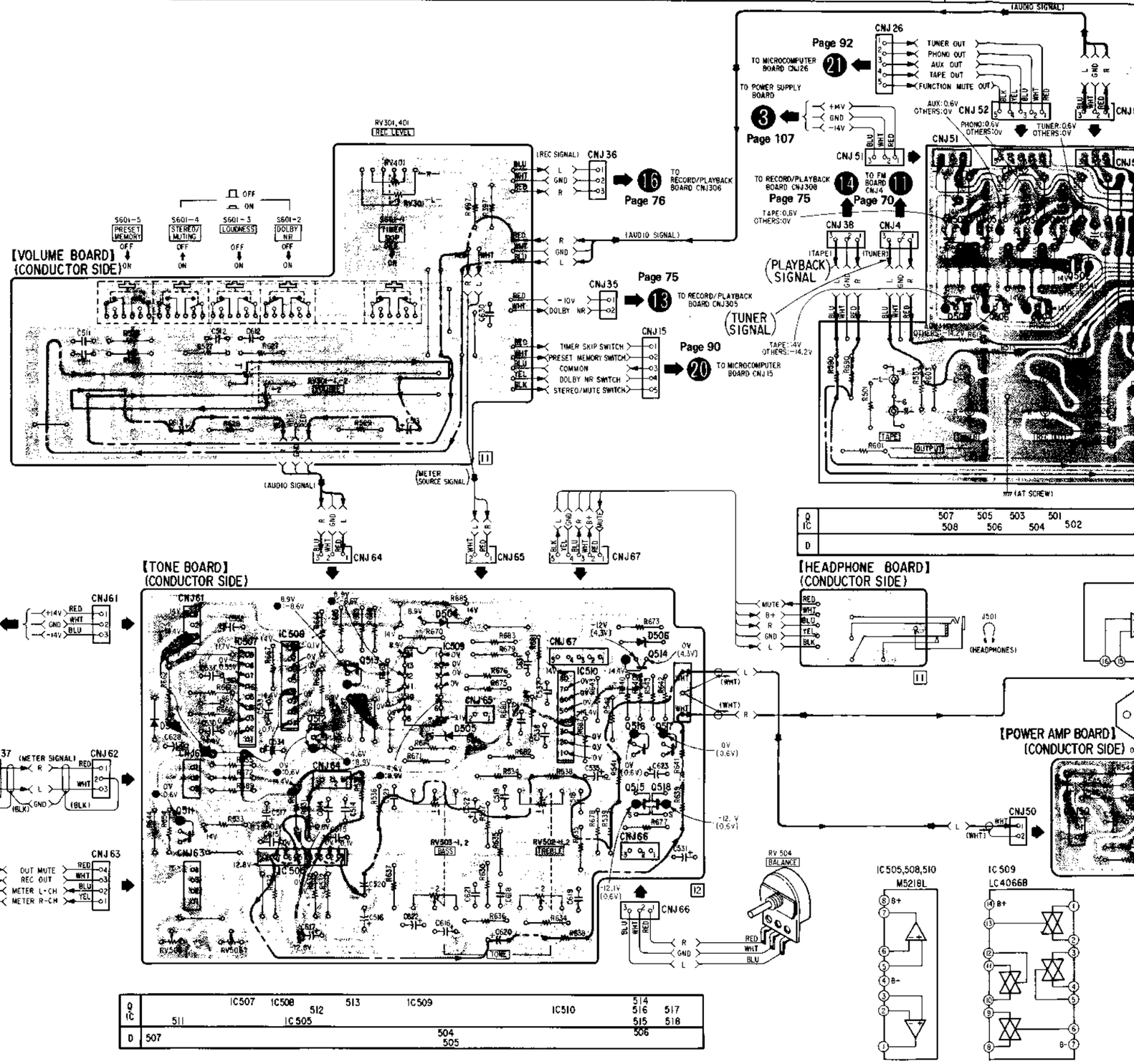
- Color code of sleeving over the end of the jacket.

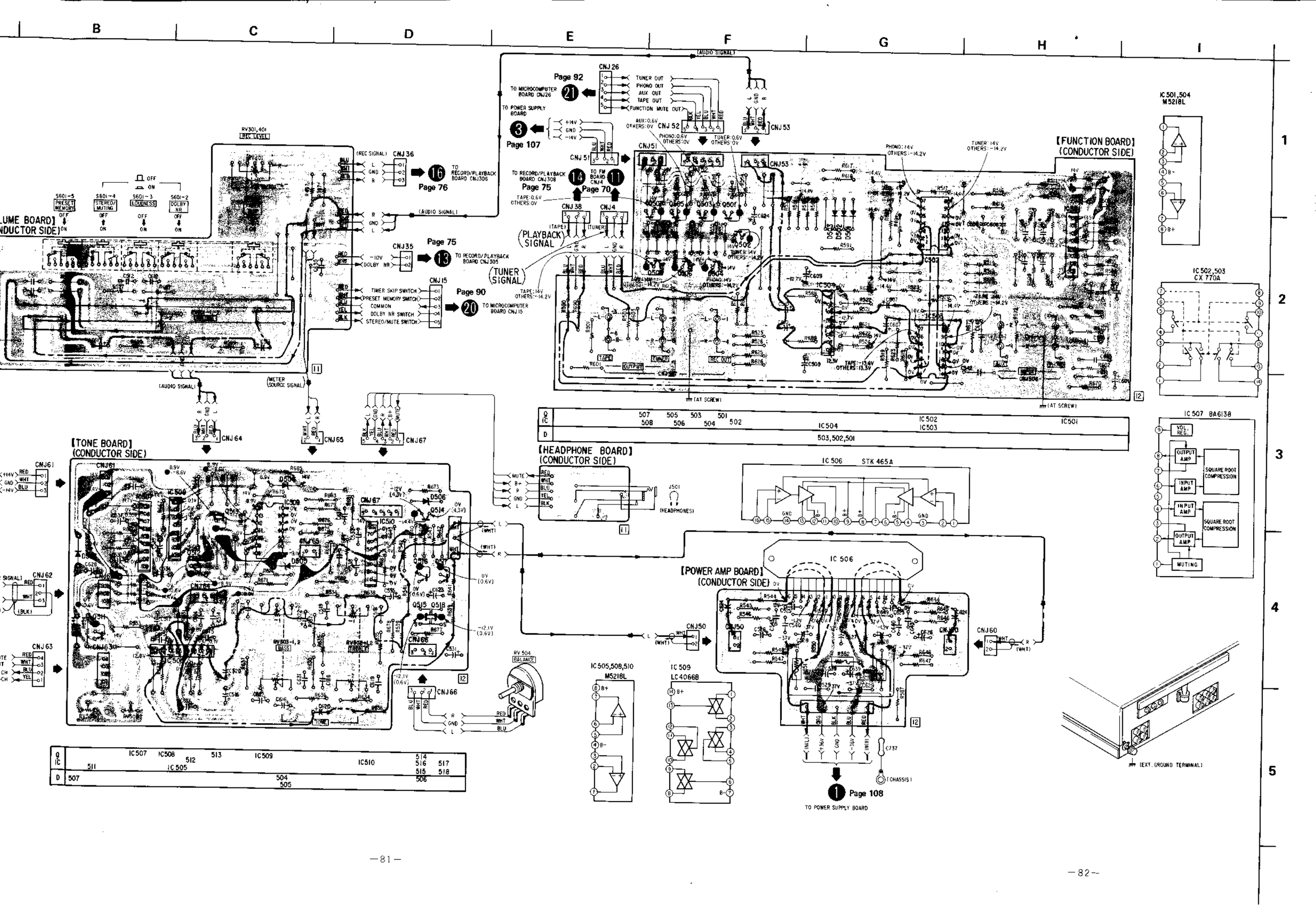


- ○—: parts extracted from the component side.
- ■ : part mounted on the conductor side.
- ● : B+ pattern
- ▸ [redacted]
- ●—▶— : signal path
- ●——▶ : L-CH signal path
- ●—·—▶ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  [ ] : When the headphones are inserted to the headphone jack.
  ● : REC mode

CIRCUIT BOARD LOCATION






B
C
D
E
F
G
H
I
1
2
3
4
5
[AUDIO SIGNAL]
CNJ26
Page 92
TO MICROCOMPUTER BOARD CNJ26
21
TUNER OUT
PHONO OUT
AUX OUT
TAPE OUT
FUNCTION MUTE OUT
TO POWER SUPPLY BOARD
3
Page 107
+14V
GND
-14V
CNJ52
CNJ53
CNJ51
AUX:0.6V OTHERS:0V
PHONO:0.6V OTHERS:0V
TUNER:0.6V OTHERS:0V
TO RECORD/PLAYBACK BOARD CNJ308
14
TO FM BOARD CNJ4
11
Page 70
Page 75
TAPE:0.6V OTHERS:0V
CNJ38
CNJ4
(TAPE)
(TUNER)
(PLAYBACK) SIGNAL
(TUNER) SIGNAL
TAPE:14V OTHERS:-14.2V
PHONO:14V OTHERS:-14.2V
TUNER:14V OTHERS:-14.2V
【FUNCTION BOARD】
(CONDUCTOR SIDE)
(REC SIGNAL)
CNJ36
L
GND
R
16
TO RECORD/PLAYBACK BOARD CNJ306
Page 76
(AUDIO SIGNAL)
CNJ35
-10V
DOLBY NR
Page 75
13
TO RECORD/PLAYBACK BOARD CNJ305
CNJ15
Page 90
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
STEREO/MUTE SWITCH
20
TO MICROCOMPUTER BOARD CNJ15
RV301,401
REV LEVEL
S601-5 PRESET MEMORY
S601-4 STEREO/MUTING
S601-3 LOUDNESS
S601-2 DOLBY NR
OFF
ON
【VOLUME BOARD】
【CONDUCTOR SIDE】
(AUDIO SIGNAL)
(METER SOURCE SIGNAL)
CNJ64
CNJ65
CNJ67
【TONE BOARD】
(CONDUCTOR SIDE)
CNJ61
CNJ62
CNJ63
CNJ66
RV503-1,2 BASS
RV502-1,2 TREBLE
RV 504 BALANCE
IC 501,504 M5218L
IC 502,503 CX 770A
IC 507 BA6138
VOL REG.
OUTPUT AMP
INPUT AMP
SQUARE ROOT COMPRESSION
MUTING
IC 506 STK 465A
【HEADPHONE BOARD】
(CONDUCTOR SIDE)
MUTE
B+
R
GND
L
J501
(HEADPHONES)
【POWER AMP BOARD】
(CONDUCTOR SIDE)
CNJ50
CNJ60
IC505,508,510 M5218L
IC 509 LC40668
(INU)
+36V
GND
-36V
(INR)
C737
(CHASSIS)
1
Page 108
TO POWER SUPPLY BOARD
(EXT. GROUND TERMINAL)
IC
D
507 505 503 501
508 506 504 502
IC504
IC502
IC503
IC501
503,502,501
IC507 IC508 512 513 IC509 IC510 514
511 IC505 516 517
515 518
507 504 505 506

4-7. SCHEMATIC DIAGRAM – *FUNCTION SWITCH/POWER AMP SECTION* –

A B C D E F G H

1 2 3 4 5

TO TUNER SECTION FM BOARD CNJ4 — 11 Page 73

TO MICROCOMPUTER BOARD CNJ26 — 21 Page 94

TO RECORD/PLAYBACK BOARD CNJ308 — 14 Page 79

CNJ52

【FUNCTION BOARD】

TUNER (R) · GND · TUNER (L) · TUNER OUT · PHONO OUT · AUX OUT · TAPE OUT · FUNCTION MUTE OUT · TAPE (R) · GND · TAPE (L)

Q501 2SC2021 LEVEL SHIFT
Q502 2SA937 FUNCTION SWITCH DRIVE (TUNER)
Q503 2SC2021 LEVEL SHIFT
Q504 2SA937 FUNCTION SWITCH DRIVE (PHONO)
Q505 2SC2021 LEVEL SHIFT
Q506 2SA937 FUNCTION SWITCH DRIVE (AUX)
Q507 2SC2021 LEVEL SHIFT
Q508 2SA937 FUNCTION SWITCH DRIVE (TAPE)

TUNER: 0.6V OTHERS: 0V · PHONO 0.6V OTHERS: 0V · AUX: 0.6V OTHERS: 0V · TAPE: 0.6V OTHERS: 0V

TUNER: 4V OTHERS: −4.2V · PHONO: 14V OTHERS: −14.2V · AUX: 0.6V OTHERS: 14.2V · TAPE: 4V OTHERS: 4.2V

+14V · −14V · GND · 14V · −14.4V

Page 109 — 3 TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)

CNJ 51 · CNJ 52

0501 ~ 503 IS1555

CNJ507-1 REC OUT −L− · CNJ507-2 OUTPUT TUNER −L− · CNJ507-3 OUTPUT TAPE −L− · CNJ507-4 REC OUT −R− · CNJ507-5 OUTPUT TUNER −R− · CNJ507-6 OUTPUT TAPE −R−

CNJ53 · CNJ54

28 TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (1/4) — Page 77

【VOLUME BOARD(4/4)】

S601-3 LOUDNESS ON/OFF · RV501-1,2 250K-A VOLUME

—L-CH— · CNJ506-1 PHONO −L− · CNJ506-2 AUX −L− · INPUT

—R-CH— · CNJ506-3 PHONO −R− · CNJ506-4 AUX −R− · INPUT

IC501 M5218L RIAA EQUALIZER

IC502 CX770A FUNCTION SWITCH

IC503 CX770A FUNCTION SWITCH

IC504 M5218L BUFFER AMP

TUNER · PHONO · AUX · TAPE

ACK BOARD CNJ308
Page 79

TO RECORD/PLAYBACK BOARD CNJ307
15 Page 79

TO MICROCOMPUTER BOARD CNJ17
19 Page

[TONE BOARD]

[POWER AMP BOARD]

Q507 2SC2021 LEVEL SHIFT

Q508 2SA937 FUNCTION SWITCH DRIVE (TAPE)

Q511 2SC1364 SWITCHING

Q512 2SA1015 SWITCHING

Q513 2SA1015 SWITCHING

D504 RD5.6JN2

D505 RD5.6JN2

D506 RD15JN2

D507 IS1555

IC503 CX770A FUNCTION SWITCH

IC504 M5218L BUFFER AMP

IC505 M5218L TONE AMP

IC506 STK465A POWER AMP

IC507 BA6138 LOG AMP

IC508 M5218L BUFFER AMP

IC509 LC4066B SWITCH

Q514 2SA1015 SWITCHING

Q515 2SK246 MUTING

Q516 2SC2603 MUTING

Q517 2SC2603 MUTING

Q518 2SK246 MUTING

Page 109
3 TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)

28 TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (1/4)
27 Page 77

[VOLUME BOARD(4/4)]

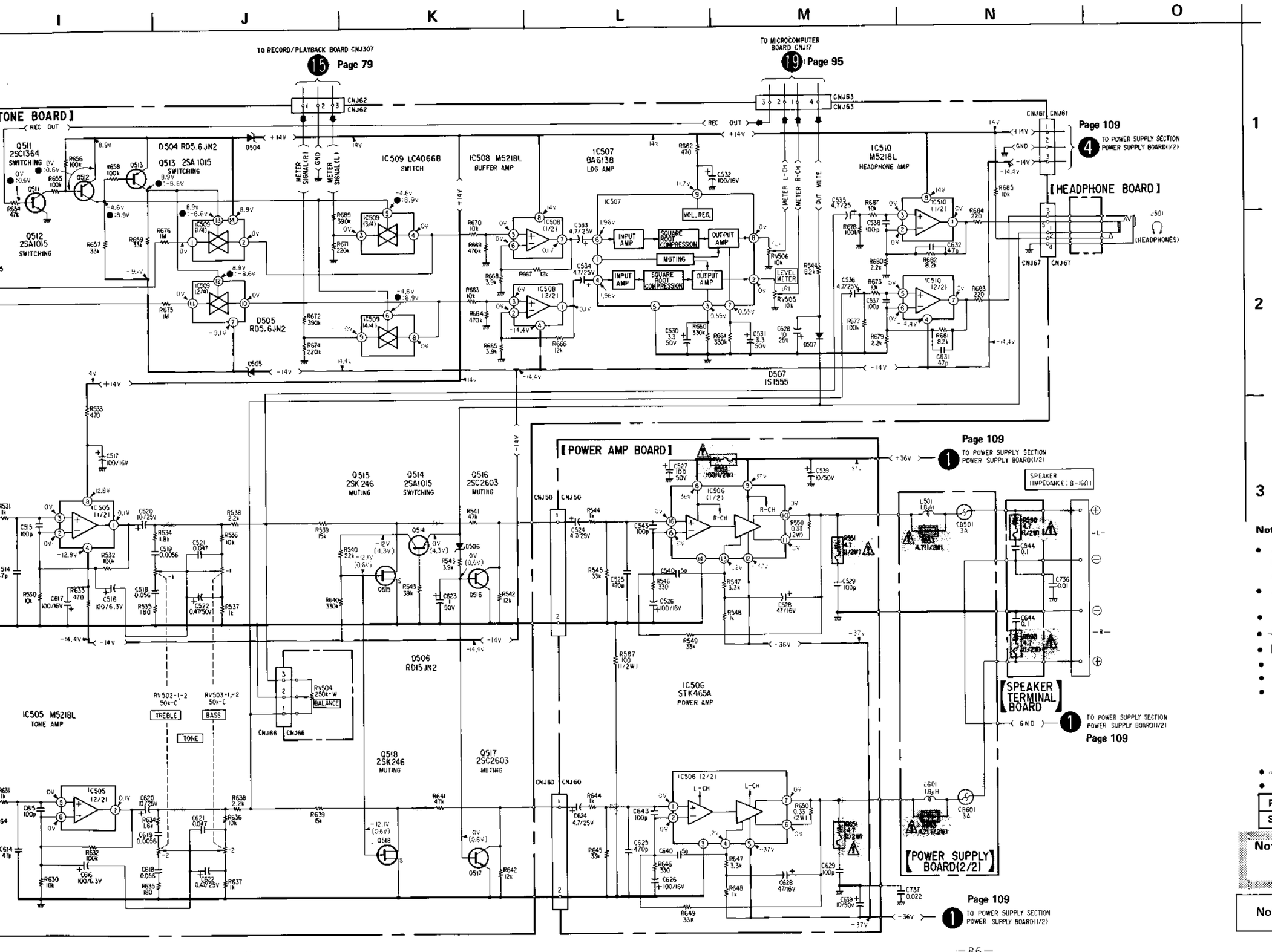
RV501-1,2 250k-A VOLUME

RV502-1,2 50k-C TREBLE

RV503-1,2 50k-C BASS

RV504 250k-W BALANCE

XO-1001



Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : B+ bus.
- : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  ( ) : When the headphones are inserted to the headphone jack.
  ● : REC mode
- : signal path
- Switch

Ref. No.	Switch	Position
S601-3	LOUDNESS	OFF

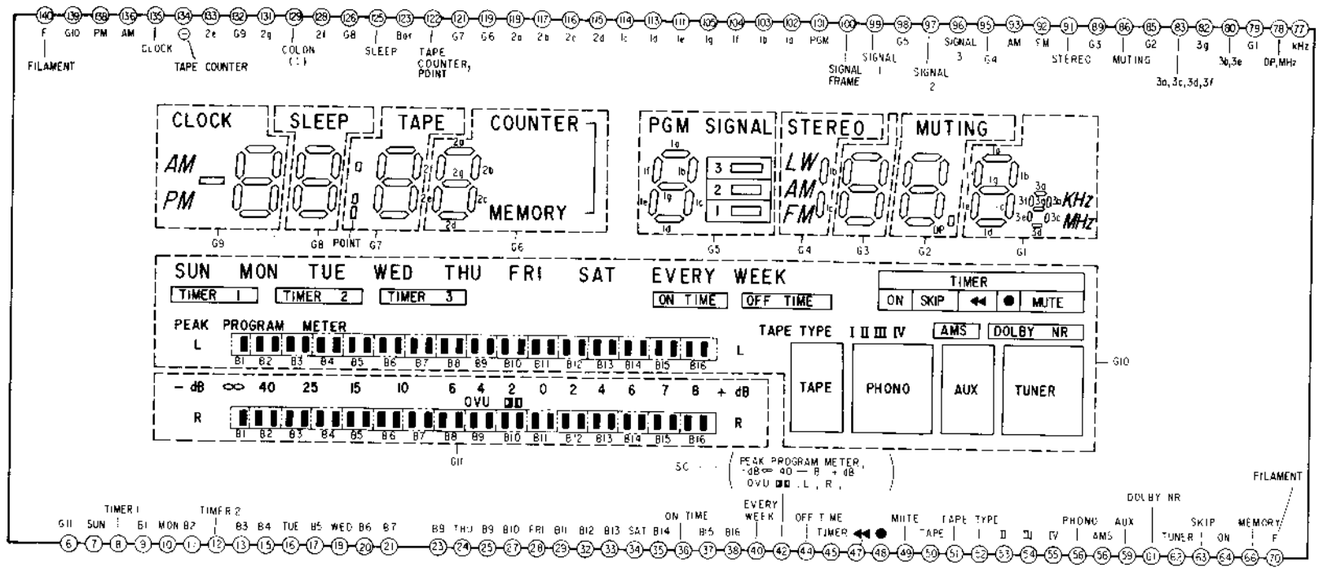
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

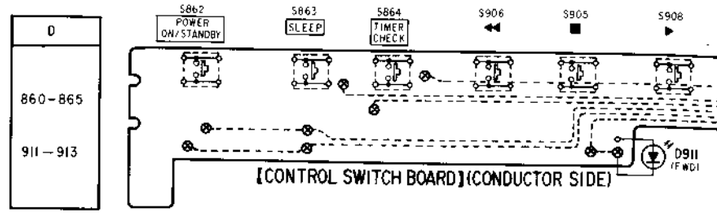
Note: Voltages are measured with a VOM (50kΩ/V).

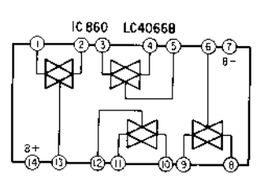
A | B | C | D | E | F | G | H

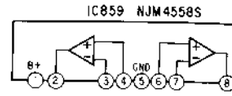
1 | 2 | 3 | 4 | 5

4-8. MOUNTING DIAGRAM – *MICROCOMPUTER/INDICATOR SECTION* –

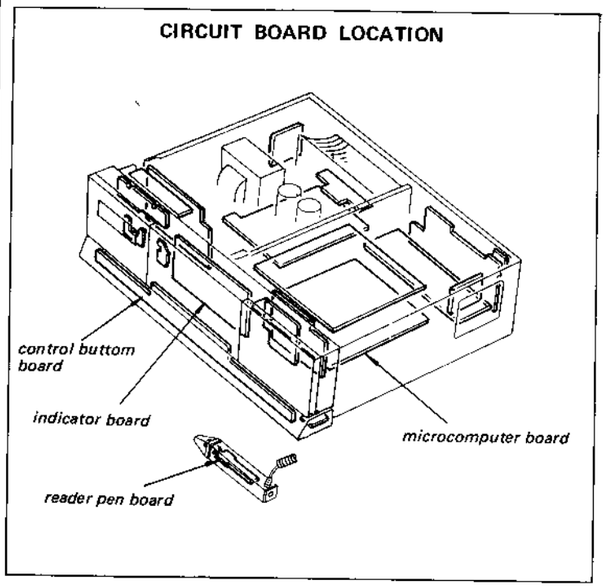


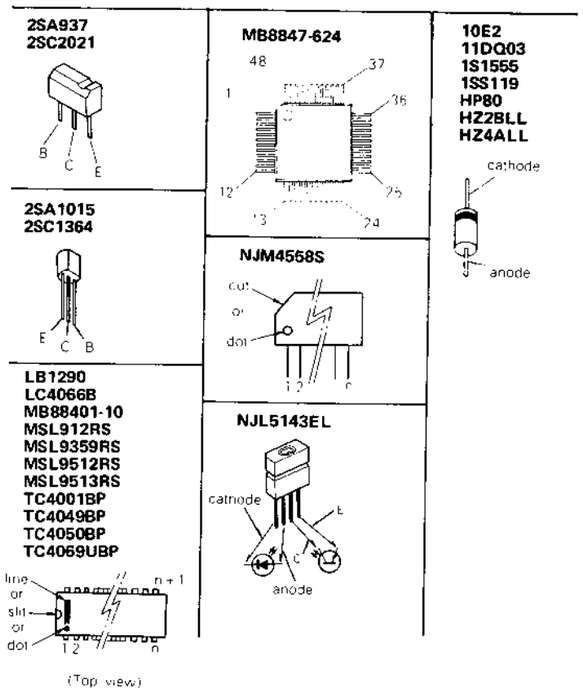




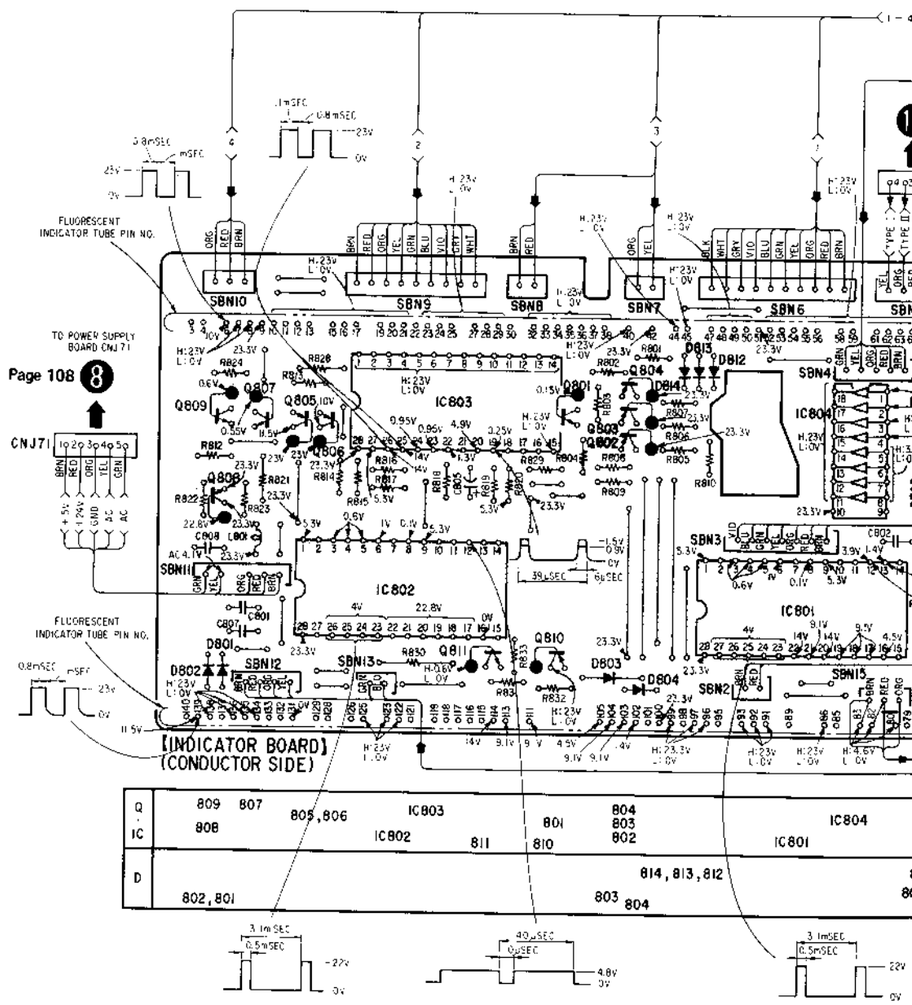


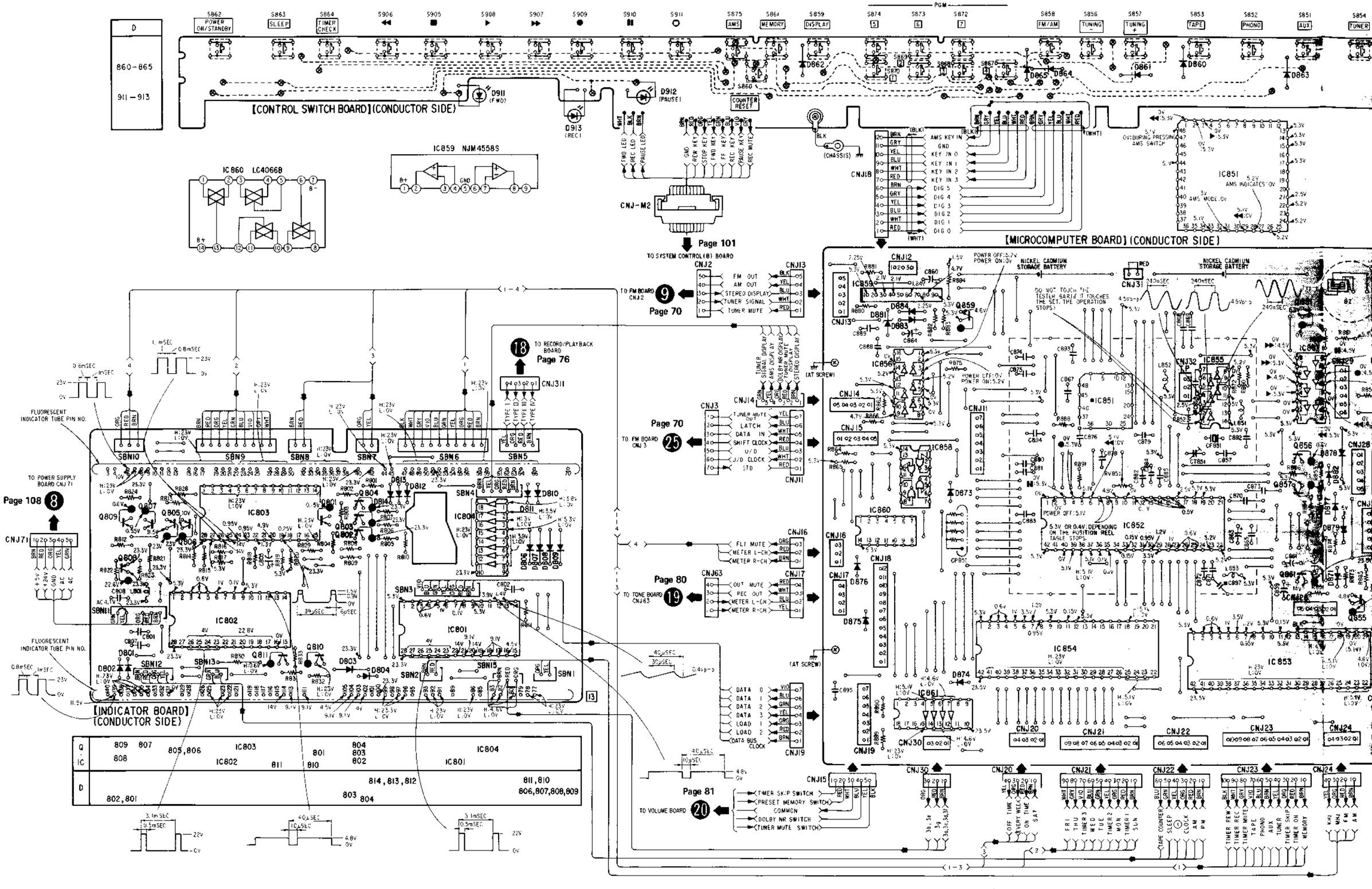
CIRCUIT BOARD LOCATION

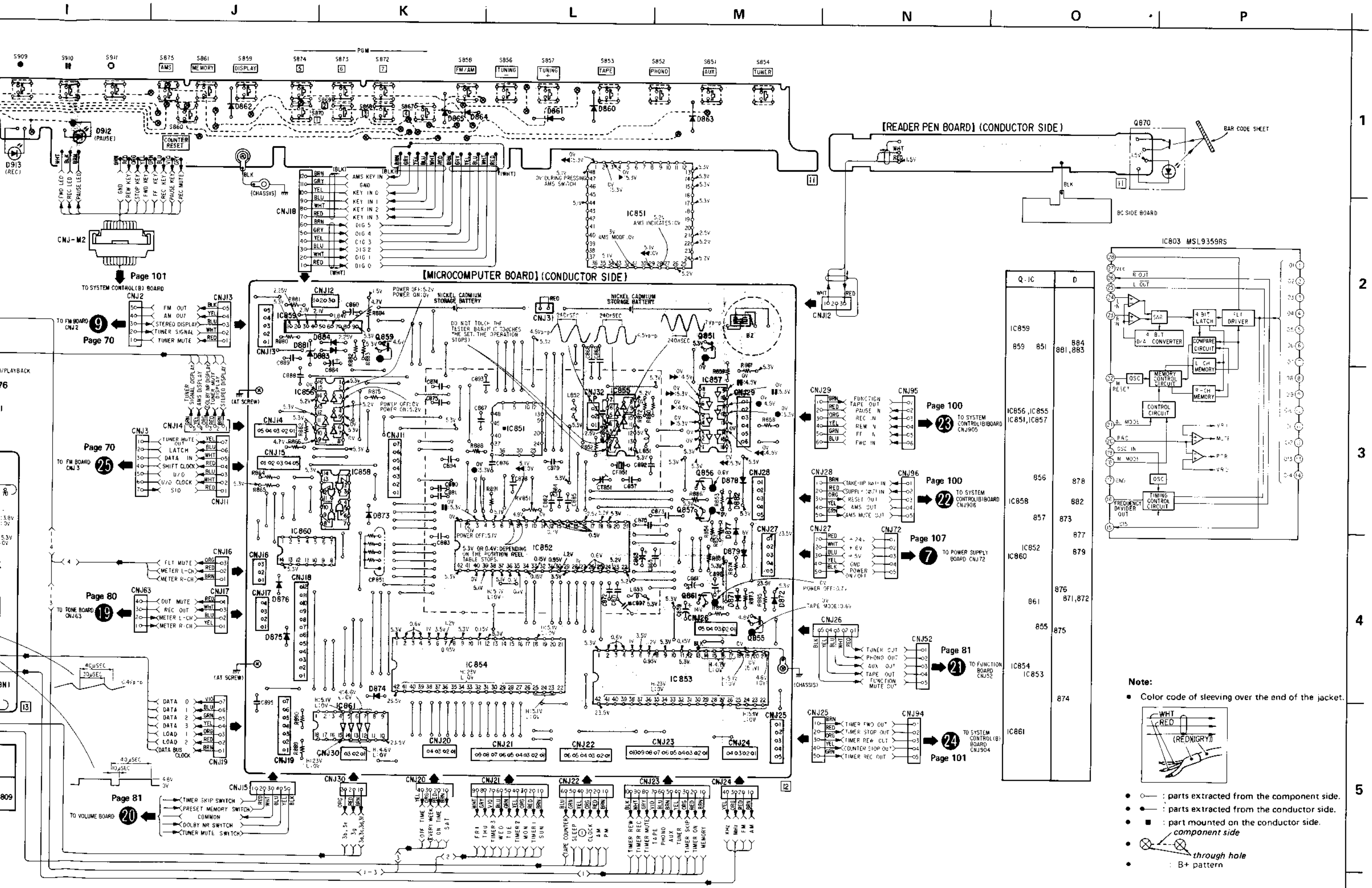




(Top view)




D
860-865
911-913
S862 POWER ON/STANDBY
S863 SLEEP
S864 TIMER CHECK
S906
S905
S908
S907
S909
S910
S911
S875 AMS
S861 MEMORY
S859 DISPLAY
PGM
S874 5
S873 6
S872 7
S858 FM/AM
S856 TUNING -
S857 TUNING +
S853 TAPE
S852 PHONO
S851 AUX
S854 TUNER
[CONTROL SWITCH BOARD] (CONDUCTOR SIDE)
D911 (FWD)
D913 (REC)
D912 (PAUSE)
COUNTER RESET
D862
D865
D864
D861
D860
D863
S860
S867
S870
S869
S868
S871
S875
IC859 NJM4558S
IC860 LC4066B
CNJ-M2
Page 101
TO SYSTEM CONTROL(8) BOARD
CNJ18
[MICROCOMPUTER BOARD] (CONDUCTOR SIDE)
IC851
IC852
IC853
IC854
IC855
IC856
IC858
IC860
IC861
CNJ2
CNJ3
CNJ11
CNJ12
CNJ13
CNJ14
CNJ15
CNJ16
CNJ17
CNJ18
CNJ19
CNJ20
CNJ21
CNJ22
CNJ23
CNJ24
CNJ30
CNJ31
CNJ32
CNJ63
FM OUT
AM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE
TO FM BOARD CNJ2
Page 70
TO FM BOARD CNJ 3
Page 70
TO TONE BOARD CNJ63
Page 80
TO VOLUME BOARD
Page 81
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
TUNER MUTE SWITCH
TO RECORD/PLAYBACK BOARD
Page 76
TO POWER SUPPLY BOARD CNJ71
Page 108
FLUORESCENT INDICATOR TUBE PIN NO.
[INDICATOR BOARD] (CONDUCTOR SIDE)
SBN1
SBN2
SBN3
SBN4
SBN5
SBN6
SBN7
SBN8
SBN9
SBN10
SBN11
SBN12
SBN13
SBN15
IC801
IC802
IC803
IC804
Q801
Q802
Q803
Q804
Q805
Q806
Q807
Q809
Q810
Q811
D801
D802
D803
D804
D805
D806
D807
D808
D809
D810
D811
D812
D813
D814
NICKEL CADMIUM STORAGE BATTERY
DO NOT TOUCH THE TESTER SARIN IT TOUCHES THE SET, THE OPERATION STOPS!
POWER OFF:5.2V POWER ON:0V
POWER OFF:5.1V
5.3V OR 0.4V DEPENDING ON THE POSITION REEL TABLE STOPS.
AMS KEY IN
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
AMS MODE :0V
AMS INDICATES :0V
AMS SWITCH
DATA 0
DATA 1
DATA 2
DATA 3
LOAD 1
LOAD 2
DATA BUS CLOCK
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
STD
FLT MUTE
METER L-CH
METER R-CH
OUT MUTE
REC OUT
METER L-CH
METER R-CH
TIMER REW
TIMER REC
TIMER MUTE
TAPE
PHONO
AUX
TUNER
TIMER SKIP
TIMER ON
MEMORY
TAPE COUNTER
SLEEP
CLOCK
AM
PM
OFF TIME
EVERY WEEK
ON TIME
SAT
FRI
THU
TIMER3
WED
TUE
TIMER2
MON
TIMER1
SUN
KHz
MHz
FM
AM
IC
D
809 807 805,806 IC803 801 804 803 802 IC804
808 IC802 811 810 IC801
814,813,812 811,810
802,801 803 804 806,807,808,809



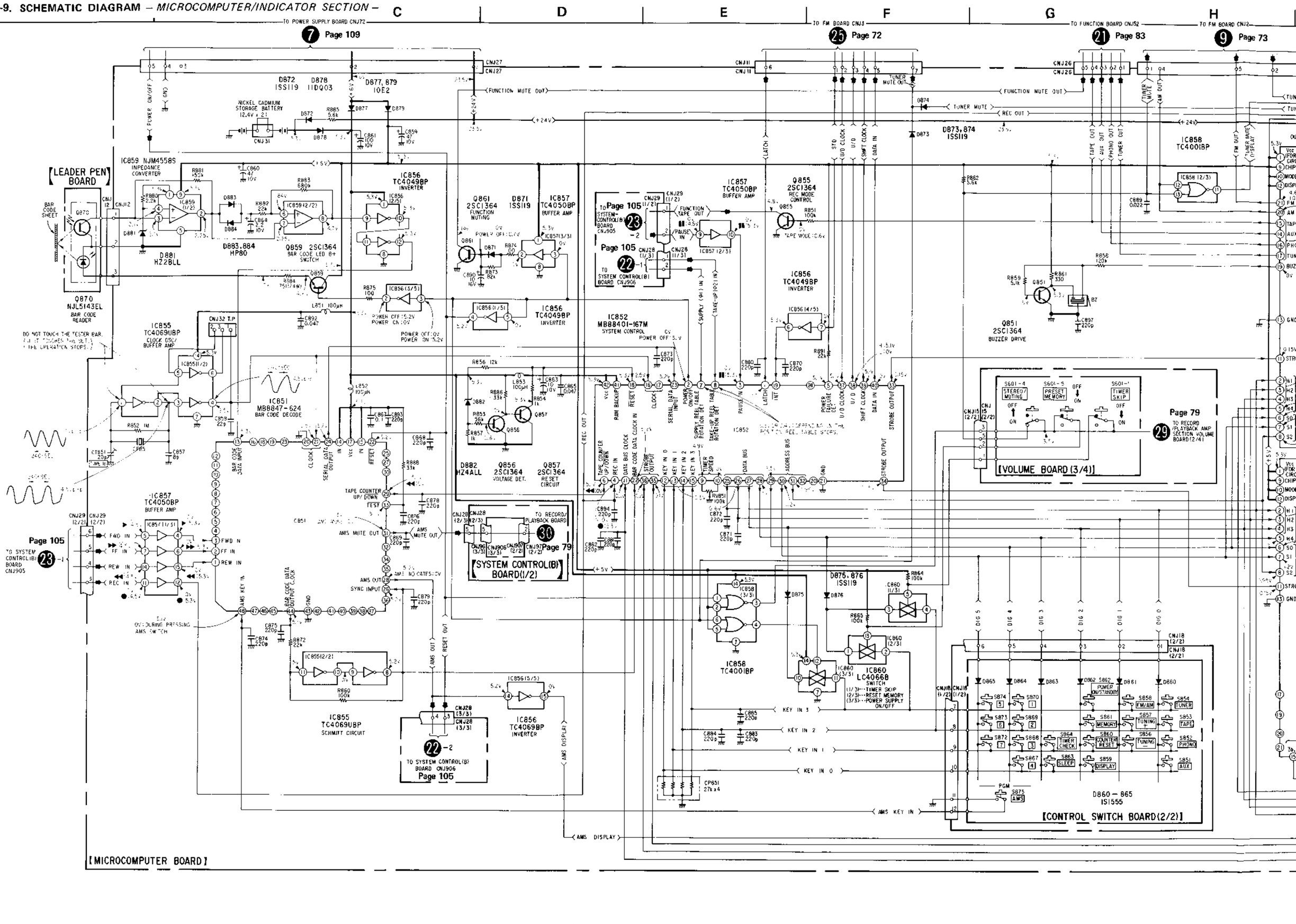
[MICROCOMPUTER BOARD] (CONDUCTOR SIDE)
[READER PEN BOARD] (CONDUCTOR SIDE)
BAR CODE SHEET
BC SIDE BOARD
IC803 MSL9359RS
IC851
IC852
IC853
IC854
IC855
IC856
IC857
IC858
IC859
IC860
IC861
NICKEL CADMIUM STORAGE BATTERY
DO NOT TOUCH THE TESTER BAR IF IT TOUCHES THE SET, THE OPERATION STOPS)
5.3V OR 0.4V: DEPENDING ON THE POSITION REEL TABLE STOPS.
POWER OFF: 5.2V
POWER ON: 0V
Page 101
TO SYSTEM CONTROL(B) BOARD
Page 70
TO FM BOARD CNJ 2
TO FM BOARD CNJ 3
Page 80
TO TONE BOARD CNJ63
Page 81
TO VOLUME BOARD
Page 100
TO SYSTEM CONTROL(B) BOARD CNJ905
TO SYSTEM CONTROL(B) BOARD CNJ906
Page 107
TO POWER SUPPLY BOARD CNJ72
TO FUNCTION BOARD CNJ52
TO SYSTEM CONTROL(B) BOARD CNJ904

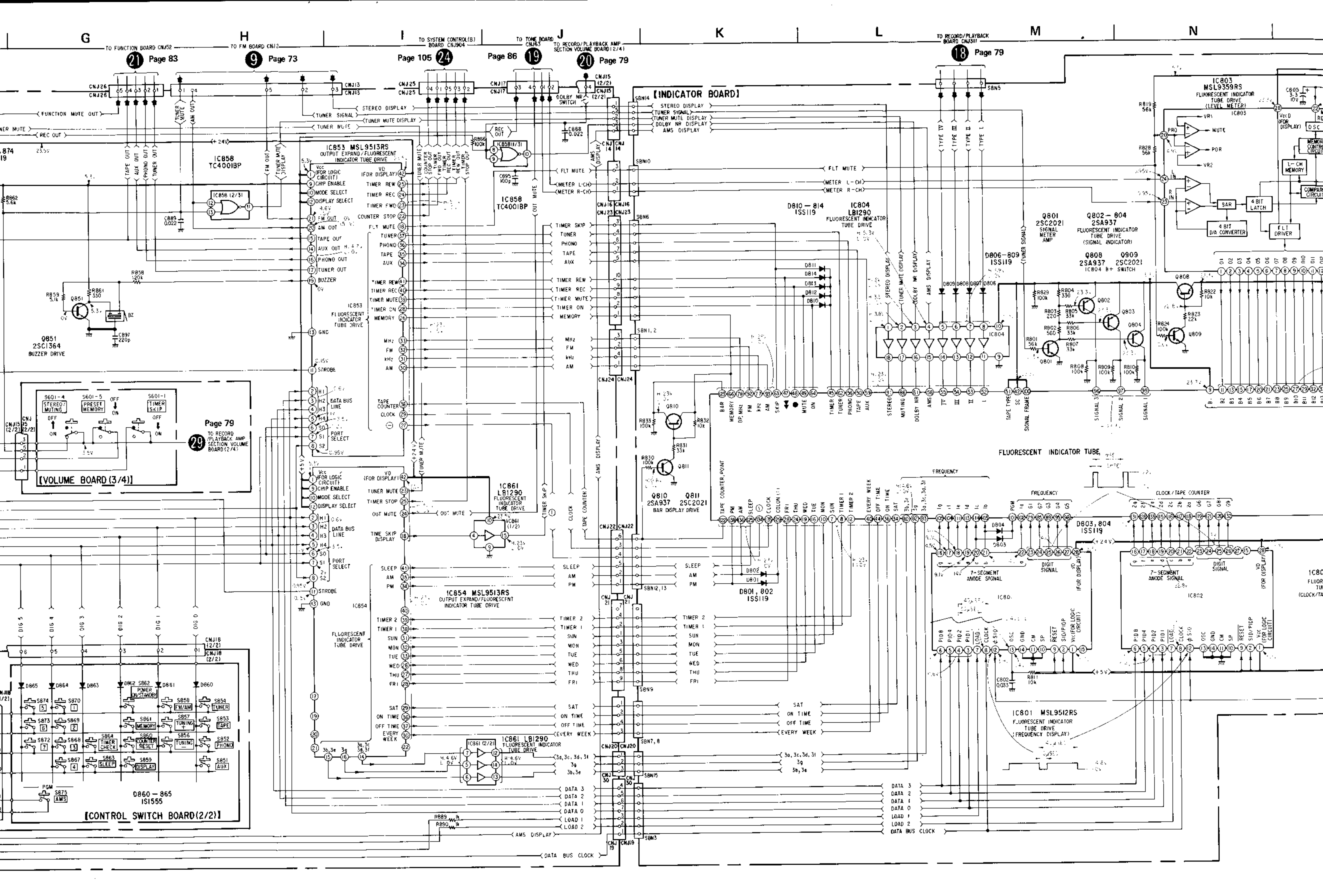
Q·IC	D
IC859	
859 851	884 881,883
IC856, IC855 IC851, IC857	
856	878
IC858	882
857	873
	877
IC852 IC860	879
	876 871,872
861	
855	875
IC854 IC853	
	874
IC861	

Note:

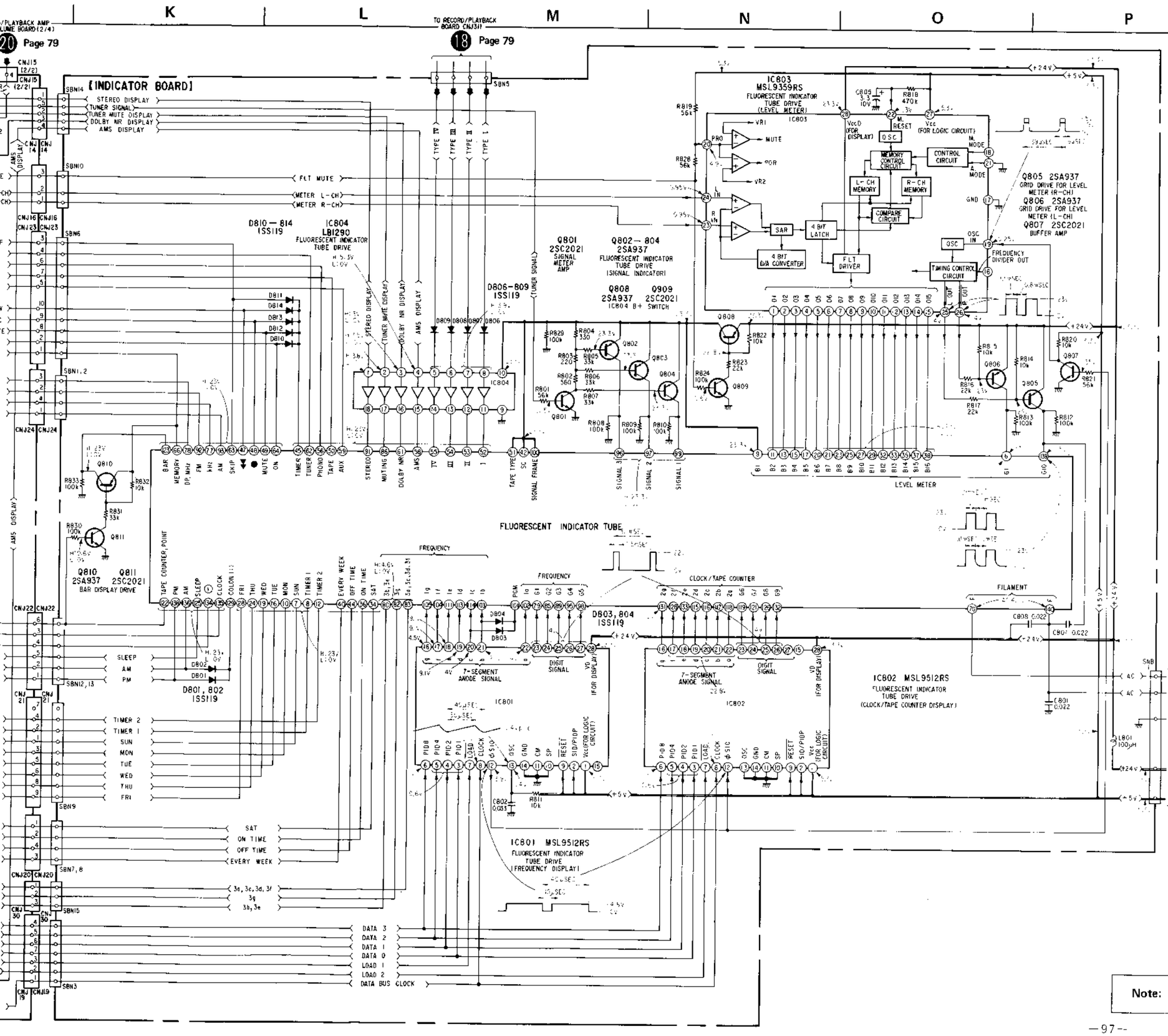
- Color code of sleeving over the end of the jacket.
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.
- component side / through hole
- : B+ pattern

4-9. SCHEMATIC DIAGRAM – *MICROCOMPUTER/INDICATOR SECTION* –





[INDICATOR BOARD]
[VOLUME BOARD (3/4)]
[CONTROL SWITCH BOARD (2/2)]
IC853 MSL9513RS
IC854 MSL9513RS
IC858 TC4001BP
IC861 LB1290
IC804 LB1290
IC803 MSL9359RS
IC801 MSL9512RS
FLUORESCENT INDICATOR TUBE
Page 83
Page 73
Page 105
Page 86
Page 79



Note:

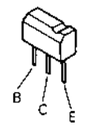
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- [ ] : adjustment for repair.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
  - ● : REC mode
  - ▶ : FWD mode
  - ▶▶ : FF mode
  - ◀◀ : REW mode
  - ❚❚ : PAUSE mode
- Switch

Ref. No.	Switch	Position
S601-1	TIMER SKIP	OFF
S601-4	PRESET MEMORY	OFF
S601-5	STEREO/MUTING	OFF
S851	AUX	OFF
S852	PHONO	OFF
S853	TAPE	OFF
S854	TUNER	OFF
S855	TUNING (–)	OFF
S857	TUNING (+)	OFF
S858	FM/AM	OFF
S859	DISPLAY	OFF
S860	COUNTER RESET	OFF
S861	MEMORY	OFF
S862	POWER ON/STANDBY	OFF
S863	SLEEP	OFF
S864	TIMER CHECK	OFF
S867	4	OFF
S868	3	OFF
S869	2	OFF
S870	1	OFF
S872	7	OFF
S873	6	OFF
S874	5	OFF
S875	AMS	OFF
S905	■ (STOP)	OFF
S906	◀◀ (REW)	OFF
S907	▶▶ (FF)	OFF
S908	▶ (FWD)	OFF
S909	● (REC)	OFF
S910	❚❚ (PAUSE)	OFF
S911	⊖ (REC MUTE)	OFF

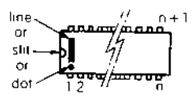
Note: Voltages are measured with a VOM (50kΩ/V).

4-10. MOUNTING DIAGRAM – *SYSTEM CONTROL SECTION* –

2SA881
2SA937
2SC1545
2SC2021
2SC2673

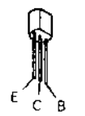


MSM58361RS
TC4081BP

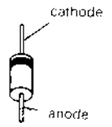


(Top view)

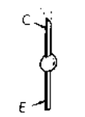
2SD1055



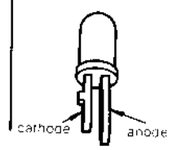
10E2
1S1555
LT8003N



PH102



SLR34DC5
SLR34PC5
SLR34URC5



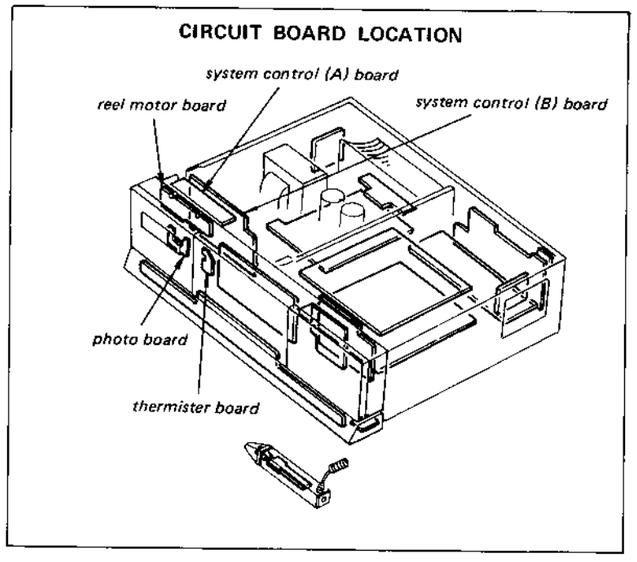
Note:

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- 

- : B + pattern

- Voltages are dc with respect to ground unless otherwise noted.
  no mark: STOP mode
  《 》: FWD, REC/FWD, REW mode
  ● : REC mode
  ▶ : FWD mode
  ●/▶ : REC/FWD mode
  ▶▶ : FF mode
  ◀◀ : REW mode
  ○ : REC MUTE mode
  ▮▮ : PAUSE mode

CIRCUIT BOARD LOCATION



Note: Voltages are measured with an oscilloscope (10 MΩ probe). So readings are different from the mounting diagram and schematic diagram measured with a VOM.

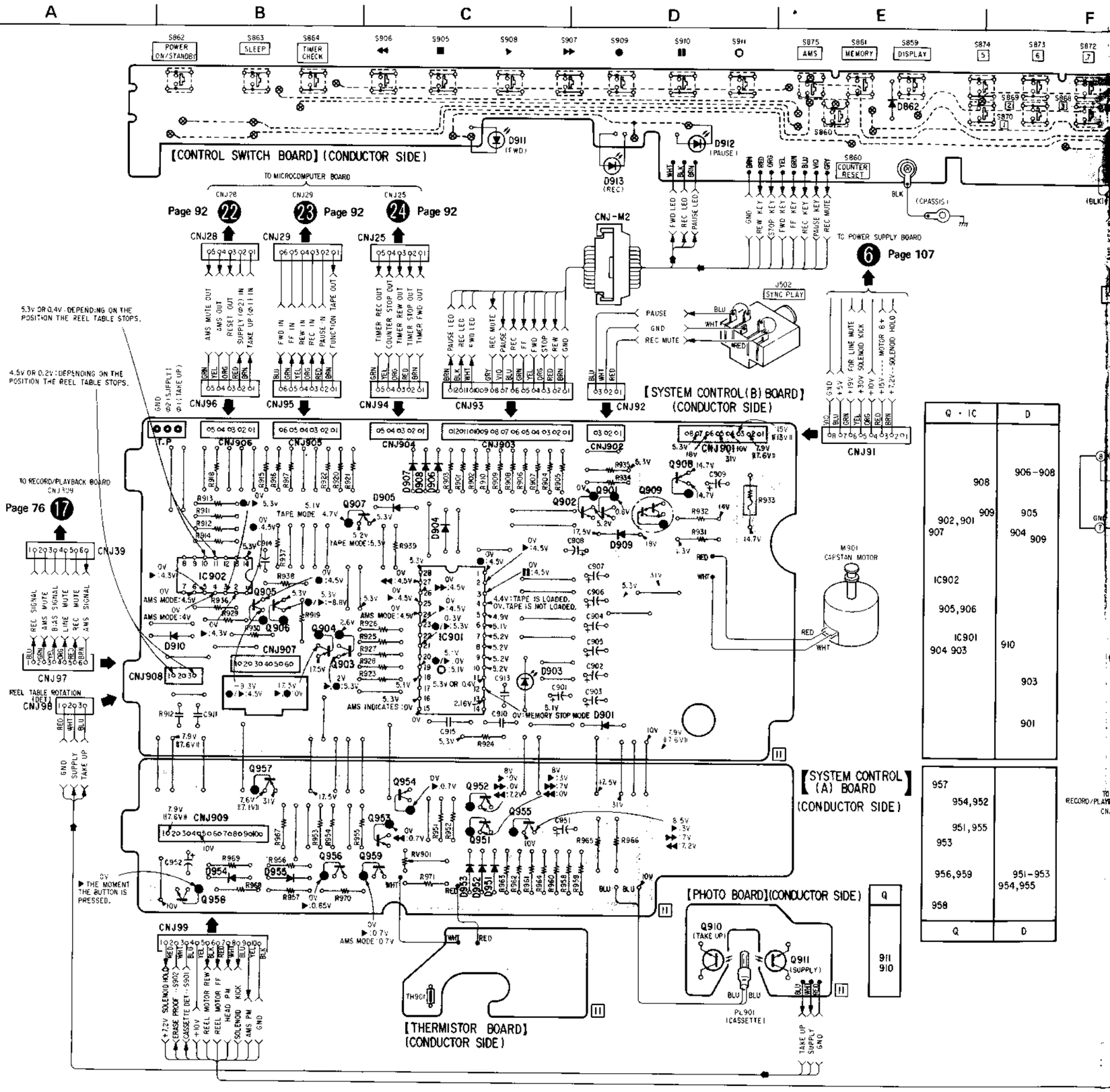
IC901's Terminal Name, Waveform and/or Voltages

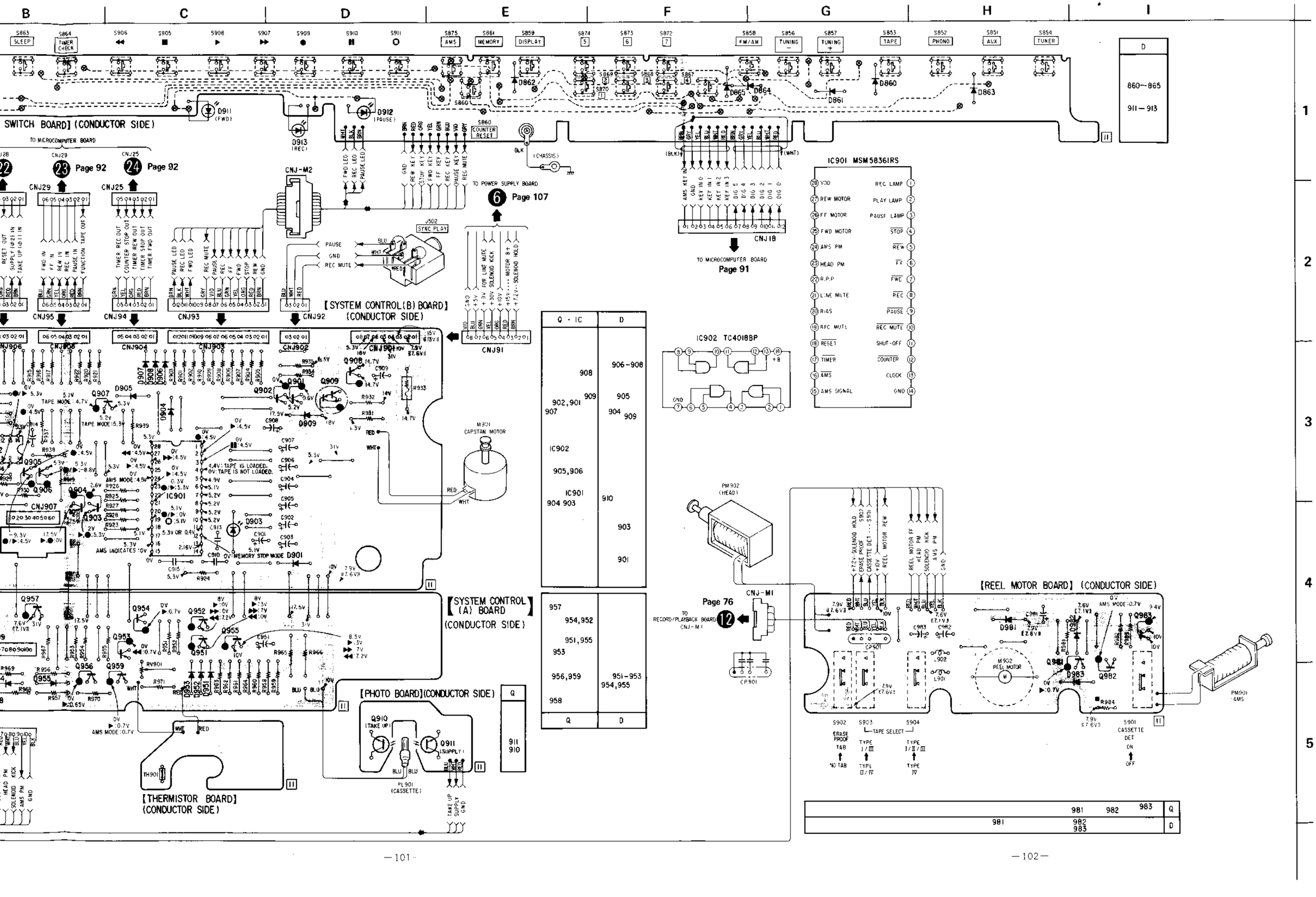
Pin No.	Waveform and/or Voltages
1	● *Lamp Drive* *REC mode: DC 4.5 V* *STOP mode: DC 0 V*
2	▶ *Lamp Drive* *REC/FWD mode and FWD mode: DC 4.5 V* *STOP mode: DC 0 V*
3	▮▮ *Lamp Drive* *PAUSE mode: DC 4.6 V* *STOP mode: DC 0 V*
4	■ *STOP Switch Input* DC 5.2 V / 0 V *stop button kept pressed* *STOP mode: DC 0 V*
5	◀◀ *REW Switch Input* DC 5.2 V / 0 V *REW button kept pressed* *STOP mode: DC 4 V*
6	▶▶ *FF Switch Input* DC 5.2 V / 0 V *FF button kept pressed* *STOP mode: DC 0 V*
7	▶ *FWD Switch Input* DC 5.2 V / DC 0.4 V *FWD button kept pressed*
8	● *REC Switch Input* DC 5.2 V / DC 0.4 V *REC button kept pressed* *STOP mode: DC 4.6 V*
9	▮▮ *PAUSE Switch Input* DC 5.2 V / DC 0.4 V *PAUSE button kept pressed* *STOP mode: DC 5.2 V*
10	○ *REC MUTE Switch Input* DC 5.2 V / DC 0.4 V *REC MUTE button kept pressed* *STOP mode: DC 5.2 V*
11	*Auto Shut-Off Signal* DC 5.2 V / 0 V, 2 sec *tape end 0.2 sec* — *auto shut off* *becomes in stop mode at tape end in forward mode. (may become in 0 V according to the position of take-up reel spindle.)*
12	*Tape Counter Input* DC 5.2 V / DC 0 V, 1.5 sec *memory stop mode* *(memory stop at tape counter value "0.00"*
13	*Clock Signal* *DC 1.6 V* 1.1 Vp-p, 8 msec
14	*GND*
15	*AMS Signal* *AMS mode: DC 4.7 V*
16	*AMS-MODE Signal (AMS)* DC 5.2 V / 0 V *AMS indication by pressing AMS button.*
17	*Timer Signal* *DC 5.2 V*
18	*Reset Signal (RESET)* *DC 5.2 V*
19	*Record-Muting Signal* DC 5.1 V / 0 V *PAUSW switch: OFF* *REC MUTE switch ON in record/foward mode*
20	*Bias Signal (not used in this set)* DC 5.2 V / 0 V *REC ON* — *PAUSW ON* — *PAUSE OFF*
21	*Line-Muting Signal* DC 5.2 V / DC 0.4 V *FWD ON* — *PAUSE ON* — *PAUSE OFF* DC 5.2 V / -0 V *REC/FWD ON or only REC switch ON*
22	*R.P.P. Signal (not used in this set) 0 V* DC 5 V / 0 V, 31.24 msec *PAUSE switch ON in REC/FWD mode*
23	*Head-Solenoid Drive Signal* -DC 4.7 V / 0 V *REC/FWD or FWD ON* — *PAUSE OFF* *PAUSE ON* *STOP mode: DC 0 V*
24	*AMS Solenoid Drive Signal* -DC 4.7 V / 0 V, 0.25 sec *REC/FWD or FWD ON* — *PAUSE ON* — *PAUSE OFF* *STOP mode: DC 0 V*
25	*Reel-Motor Drive Signal in Forward Mode* -DC 4.8 V / 0 V *REC/FWD or FWD ON* — *PAUSE OFF* *PAUSE ON* *STOP mode: DC 0 V* *FF mode: DC 0.3 V*
26	*Reel-Motor Drive Signal in Fast-Forward Mode* *FF mode: DC 4.8 V* *REC/FWD mode, FWD mode: DC 0.3 V* *STOP mode, PAUSE mode, REW mode: DC 0 V*
27	*Reel-Motor Drive Signal in Rewind Mode* *REW mode: DC 4.8 V* *STOP mode: DC 0 V*
28	*B+ Supply Voltage DC 5.2 V*

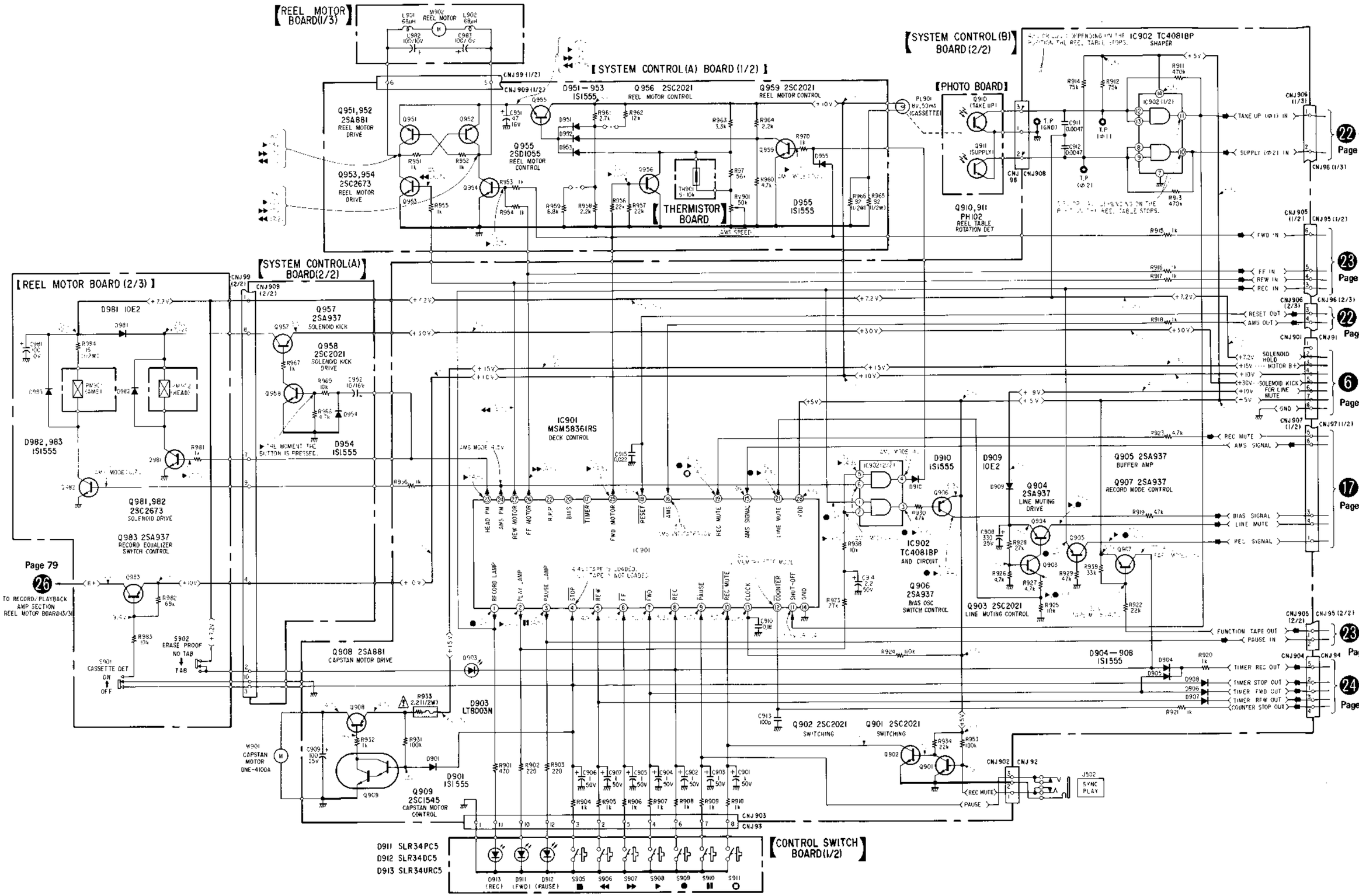
cilloscope (10 MΩ probe). So readings are different schematic diagram measured with a VOM.

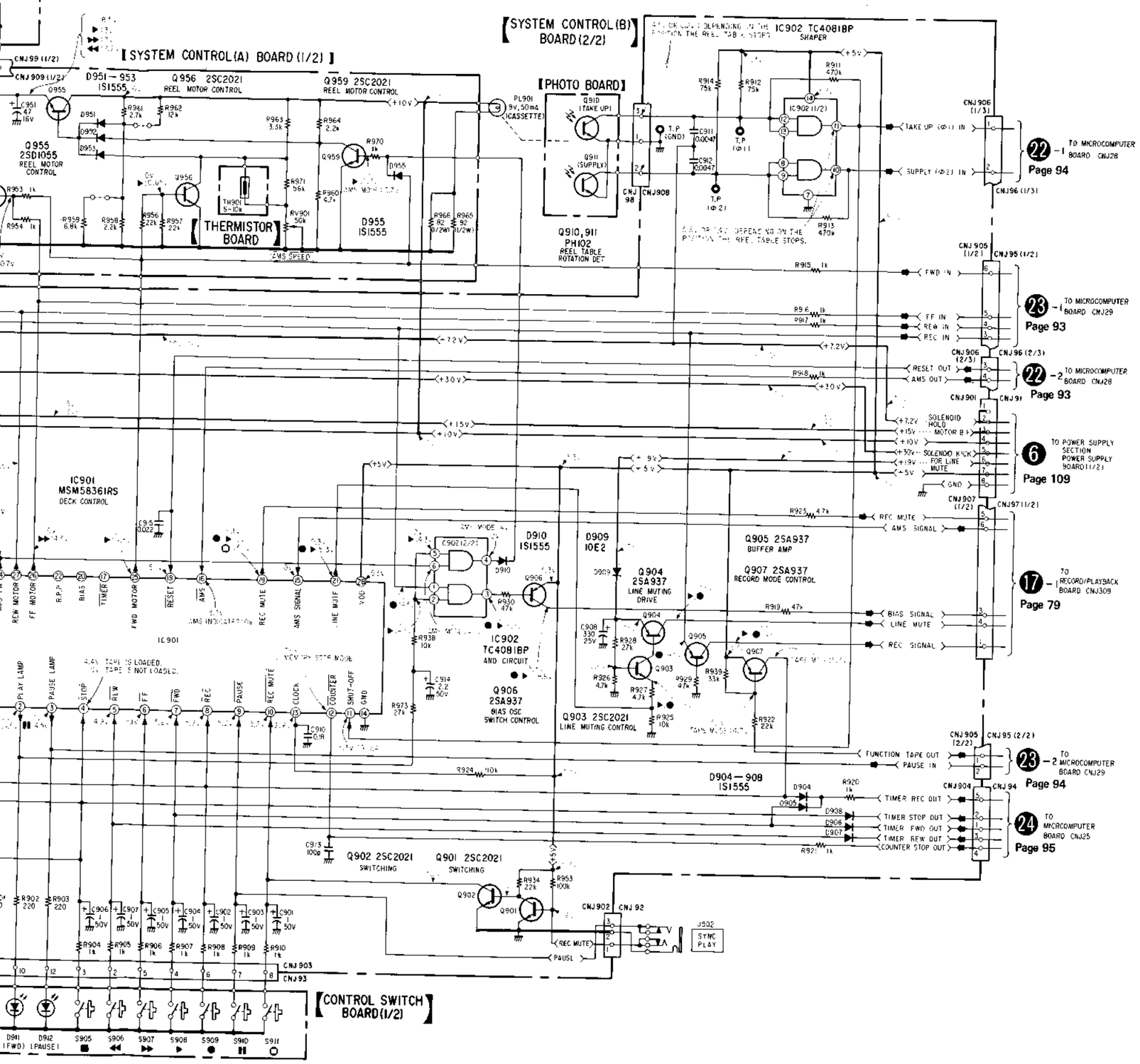
IC901's Terminal Name, Waveform and/or Voltages

Pin No.	Waveform and/or Voltages
(10)	◉REC MUTE Switch Input DC 5.2 V / DC 0.4 V REC MUTE button kept pressed STOP mode: DC 5.2 V
(11)	Auto Shut-Off Signal DC 5.2 V / 0 V 2 sec tape end 0.2 sec auto shut off becomes in stop mode at tape end in forward mode. (may become in 0 V according to the position of take-up reel spindle.)
(12)	Tape Counter Input DC 5.2 V / DC 0 V 1.5 sec memory stop mode (memory stop at tape counter value "0.00")
(13)	Clock Signal DC 1.6 V 1.1 Vp-p 8 msec
(14)	GND
(15)	AMS Signal AMS mode: DC 4.7 V
(16)	AMS-MODE Signal (AMS) DC 5.2 V / 0 V AMS indication by pressing AMS button.
(17)	Timer Signal DC 5.2 V
(18)	Reset Signal (RESET) DC 5.2 V
(19)	Record-Muting Signal DC 5.1 V / 0 V PAUSW switch: OFF REC MUTE switch ON in record/forward mode
(20)	Bias Signal (not used in this set) DC 5.2 V / 0 V REC ON PAUSW ON PAUSE OFF
(21)	Line-Muting Signal DC 5.2 V / DC 0.4 V FWD ON PAUSE ON PAUSE OFF DC 5.2 V / 0 V REC/FWD ON or only REC switch ON
(22)	R.P.P. Signal (not used in this set) 0 V DC 5 V / 0 V 31.24 msec PAUSE switch ON in REC/FWD mode
(23)	Head-Solenoid Drive Signal DC 4.7 V / 0 V REC/FWD or FWD ON PAUSE OFF PAUSE ON STOP mode: DC 0 V
(24)	AMS Solenoid Drive Signal DC 4.7 V / 0 V 0.25 sec PAUSE OFF REC/FWD or FWD ON PAUSE ON STOP mode: DC 0 V
(25)	Reel-Motor Drive Signal in Forward Mode DC 4.8 V / 0 V REC/FWD or FWD ON PAUSE OFF PAUSE ON STOP mode: DC 0 V FF mode: DC 0.3 V
(26)	Reel-Motor Drive Signal in Fast-Forward Mode FF mode: DC 4.8 V REC/FWD mode, FWD mode, STOP mode, PAUSE mode: DC 0.3 V REW mode: DC 0 V
(27)	Reel-Motor Drive Signal in Rewind Mode REW mode: DC 4.8 V STOP mode: DC 0 V
(28)	B+ Supply Voltage DC 5.2 V




B
C
D
E
F
G
H
I
S863 SLEEP
S864 TIMER CHECK
S906
S905
S908
S907
S909
S910
S911
S875 AMS
S861 MEMORY
S859 DISPLAY
S874 5
S873 6
S872 7
S858 FM/AM
S856 TUNING −
S857 TUNING +
S853 TAPE
S852 PHONO
S851 AUX
S854 TUNER
D
860–865
911–913
D911 (FWD)
D912 (PAUSE)
D913 (REC)
S860 COUNTER RESET
D862
D863
D864
D865
D860
D861
S869
S870
S867
S868
SWITCH BOARD] (CONDUCTOR SIDE)
TO MICROCOMPUTER BOARD
CNJ28
CNJ29
CNJ25
22
23 Page 92
24 Page 92
RESET OUT
SUPPLY (Q21) IN
TAKE UP (Q11) IN
FWD IN
FF IN
REW IN
REC IN
PAUSE IN
FUNCTION TAPE OUT
TIMER REC OUT
COUNTER STOP OUT
TIMER REW OUT
TIMER STOP OUT
TIMER FWD OUT
CNJ95
CNJ94
CNJ93
CNJ92
CNJ-M2
PAUSE LED
REC LED
FWD LED
REC MUTE
PAUSE
FF
REW
FWD
STOP
GND
J502 SYNC PLAY
TO POWER SUPPLY BOARD
6 Page 107
【SYSTEM CONTROL(B) BOARD】
(CONDUCTOR SIDE)
CNJ91
VIO
+5V
+3V
+30V
+10V
+15V
+7.2V
FOR LINE MUTE
SOLENOID KICK
MOTOR B+
SOLENOID HOLD
CNJ18
TO MICROCOMPUTER BOARD
Page 91
IC901 MSM5836IRS
VDD
REW MOTOR
FF MOTOR
FWD MOTOR
AMS PM
HEAD PM
R.P.P
LINE MUTE
BIAS
REC MUTE
RESET
TIMER
AMS
AMS SIGNAL
REC LAMP
PLAY LAMP
PAUSE LAMP
STOP
REW
FF
FWD
REC
PAUSE
REC MUTE
SHUT-OFF
COUNTER
CLOCK
GND
IC902 TC4018BP
+B
GND
Q - IC
D
908
906–908
902,901
909
907
905
904
909
IC902
905,906
IC901
904 903
910
903
901
957
954,952
951,955
953
956,959
951–953
954,955
958
Q
D
911
910
M901 CAPSTAN MOTOR
RED
WHT
PM902 (HEAD)
CNJ-M1
Page 76
TO RECORD/PLAYBACK BOARD
CNJ-M1
12
CP901
【REEL MOTOR BOARD】 (CONDUCTOR SIDE)
+7.2V SOLENOID HOLD
ERASE PROOF
CASSETTE DET
REEL MOTOR REW
REEL MOTOR FF
HEAD PM
SOLENOID KICK
AMS PM
GND
CP501
M902 REEL MOTOR
L902
L901
S902
S903
S904
S901
ERASE PROOF TAB
TAPE SELECT
TYPE I / III
TYPE II / III
TYPE II / IV
TYPE IV
NO TAB
CASSETTE DET ON
OFF
PM901 CAPS
【PHOTO BOARD】(CONDUCTOR SIDE)
Q910 (TAKE UP)
Q911 (SUPPLY)
PL901 (CASSETTE)
【THERMISTOR BOARD】
(CONDUCTOR SIDE)
TH901
981
982
983
Q
D


[REEL MOTOR BOARD(1/3)]
M902 REEL MOTOR
L901 68µH
L902 68µH
C982 100/10V
C983 100/10V
[SYSTEM CONTROL(A) BOARD (1/2)]
CNJ99 (1/2)
CNJ909 (1/2)
Q951,952 2SA881 REEL MOTOR DRIVE
Q953,954 2SC2673 REEL MOTOR DRIVE
Q955 2SD1055 REEL MOTOR CONTROL
D951 – 953 1S1555
Q956 2SC2021 REEL MOTOR CONTROL
Q959 2SC2021 REEL MOTOR CONTROL
THERMISTOR BOARD
TH901 5:10k
D955 1S1555
[SYSTEM CONTROL(B) BOARD (2/2)]
[PHOTO BOARD]
PL901 8V, 50mA (CASSETTE)
Q910 (TAKE UP)
Q911 (SUPPLY)
Q910,911 PH102 REEL TABLE ROTATION DET
IC902 TC4081BP SHAPER
CNJ906 (1/3)
TAKE UP (Φ1) IN
SUPPLY (Φ2) IN
Page 94
CNJ96 (1/3)
CNJ905 (1/2)
CNJ95 (1/2)
FWD IN
FF IN
REW IN
REC IN
Page 93
CNJ96 (2/3)
RESET OUT
AMS OUT
Page 92
CNJ91
SOLENOID HOLD
MOTOR B+
SOLENOID KICK FOR LINE MUTE
Page 105
CNJ907 (1/2)
CNJ97 (1/2)
REC MUTE
AMS SIGNAL
BIAS SIGNAL
LINE MUTE
REC SIGNAL
Page 79
[REEL MOTOR BOARD (2/3)]
D981 10E2
D982,983 1S1555
Q981,982 2SC2673 SOLENOID DRIVE
Q983 2SA937 RECORD EQUALIZER SWITCH CONTROL
Page 79
TO RECORD/PLAYBACK AMP SECTION REEL MOTOR BOARD(3/3)
S901 CASSETTE DET ON OFF
S902 ERASE PROOF NO TAB TAB
[SYSTEM CONTROL(A) BOARD(2/2)]
CNJ99 (2/2)
CNJ908 (2/2)
Q957 2SA937 SOLENOID KICK
Q958 2SC2021 SOLENOID KICK DRIVE
D954 1S1555
THE MOMENT THE BUTTON IS PRESSED.
Q908 2SA881 CAPSTAN MOTOR DRIVE
D903 LT8003N
M901 CAPSTAN MOTOR DNE-4100A
Q909 2SC1545 CAPSTAN MOTOR CONTROL
D901 1S1555
IC901 MSM5836IRS DECK CONTROL
HEAD PH
AMS PH
REW MOTOR
FF MOTOR
A.P.P.
BIAS
TIMER
FWD MOTOR
RESET
AMS
REC MUTE
AMS SIGNAL
LINE MUTE
VDD
RECORD LAMP
PLAY LAMP
PAUSE LAMP
STOP
REW
FF
FWD
REC
PAUSE
REC MUTE
CLOCK
COUNTER
SHUT-OFF
GND
IC902 TC4081BP AND CIRCUIT
Q906 2SA937 BIAS OSC SWITCH CONTROL
D910 1S1555
D909 10E2
Q904 2SA937 LINE MUTING DRIVE
Q905 2SA937 BUFFER AMP
Q907 2SA937 RECORD MODE CONTROL
Q903 2SC2021 LINE MUTING CONTROL
D904 – 908 1S1555
FUNCTION TAPE OUT
PAUSE IN
CNJ905 (2/2)
CNJ95 (2/2)
Page 95
CNJ904
CNJ94
TIMER REC OUT
TIMER STOP OUT
TIMER FWD OUT
TIMER REW OUT
COUNTER STOP OUT
Q902 2SC2021 SWITCHING
Q901 2SC2021 SWITCHING
CNJ902
CNJ92
J502 SYNC PLAY
REC MUTE
PAUSE
CNJ903
CNJ93
D911 SLR34PC5
D912 SLR34DC5
D913 SLR34URC5
[CONTROL SWITCH BOARD(1/2)]
D913 (REC)
D911 (FWD)
D912 (PAUSE)
S905
S906
S907
S908
S909
S910
S911



Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ⏦: fusible resistor.
- ⬚: adjustment for repair.
- ⏤⏤⏤: B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
  - no mark: STOP mode
  - ⟪ ⟫ : FWD, REC/FWD, REW mode
  - ● : REC mode
  - ▶ : FWD mode
  - ●/▶ : REC/FWD mode
  - ▶▶ : FF mode
  - ◀◀ : REW mode
  - ○ : REC MUTE mode
  - ❚❚ : PAUSE mode

- Switch

Ref. No.	Switch	Position
S901	CASSETTE HALF DETECTOR	OFF
S902	ERASE PROOF	NO TAB
S905	■ (STOP)	OFF
S906	◀◀ (REW)	OFF
S907	▶▶ (FF)	OFF
S908	▶ (FWD)	OFF
S909	● (REC)	OFF
S910	❚❚ (PAUSE)	OFF
S911	○ (REC MUTE)	OFF

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

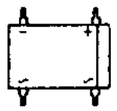
Note: Voltages are measured with a VOM (50kΩ/V).

4-12. MOUNTING DIAGRAM – *POWER SUPPLY SECTION* –

2SA771
2SA768
2SC1826

2SD1164

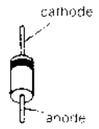
S1WB10
S1WB40



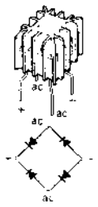
2SD414

letter side

10E2
RD5.6FB1
RD6.8JN1
RD8.2JN2
RD15JN2
RD24JN1



D4BB20

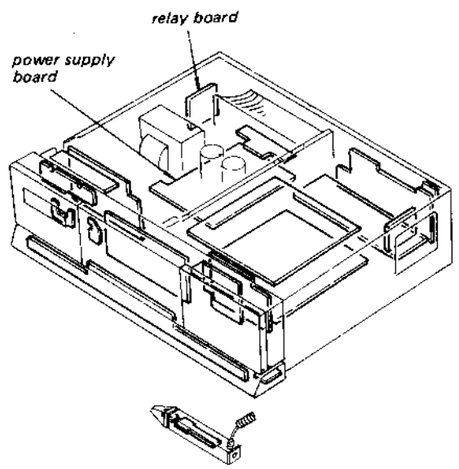


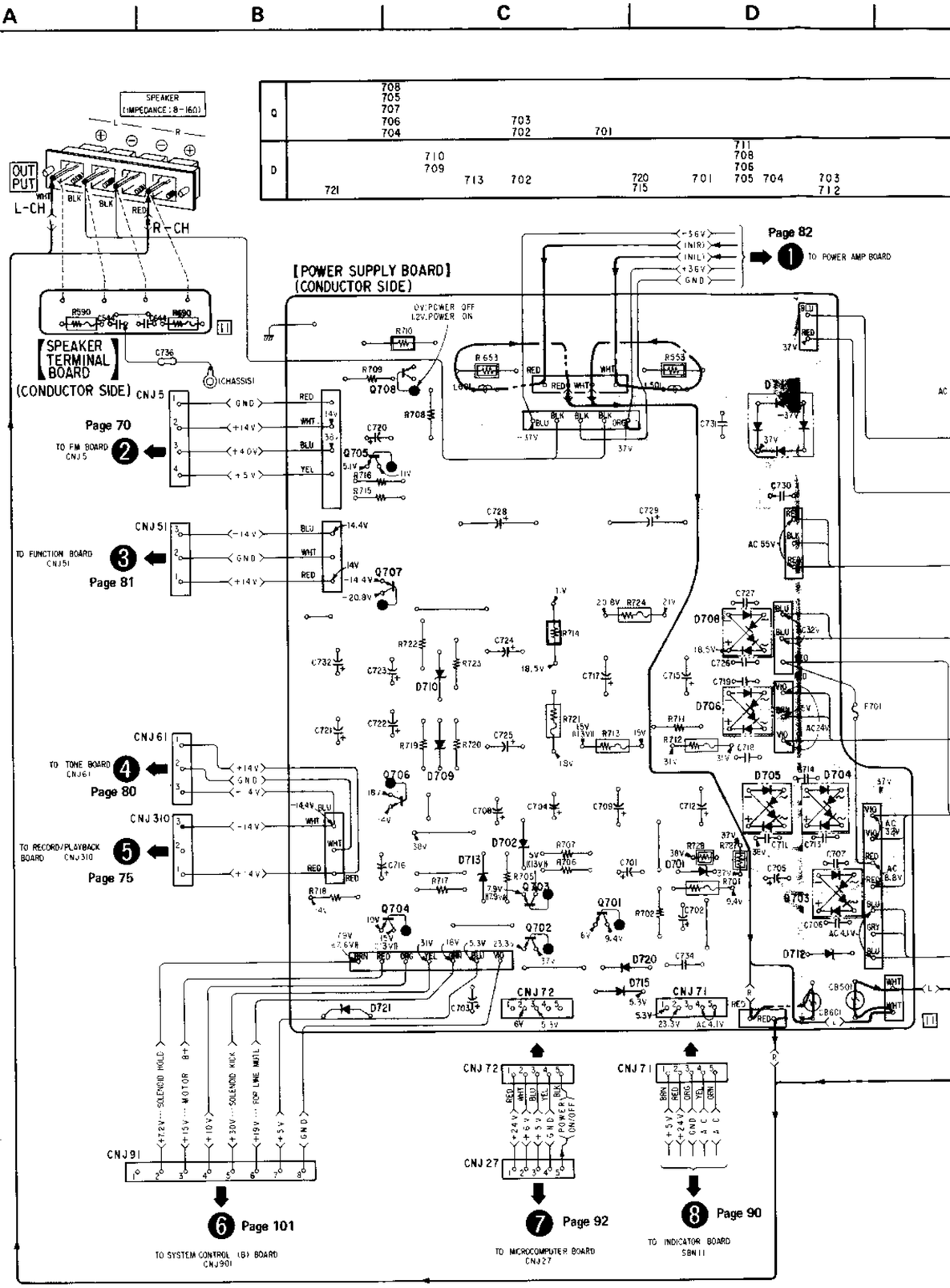
Note:

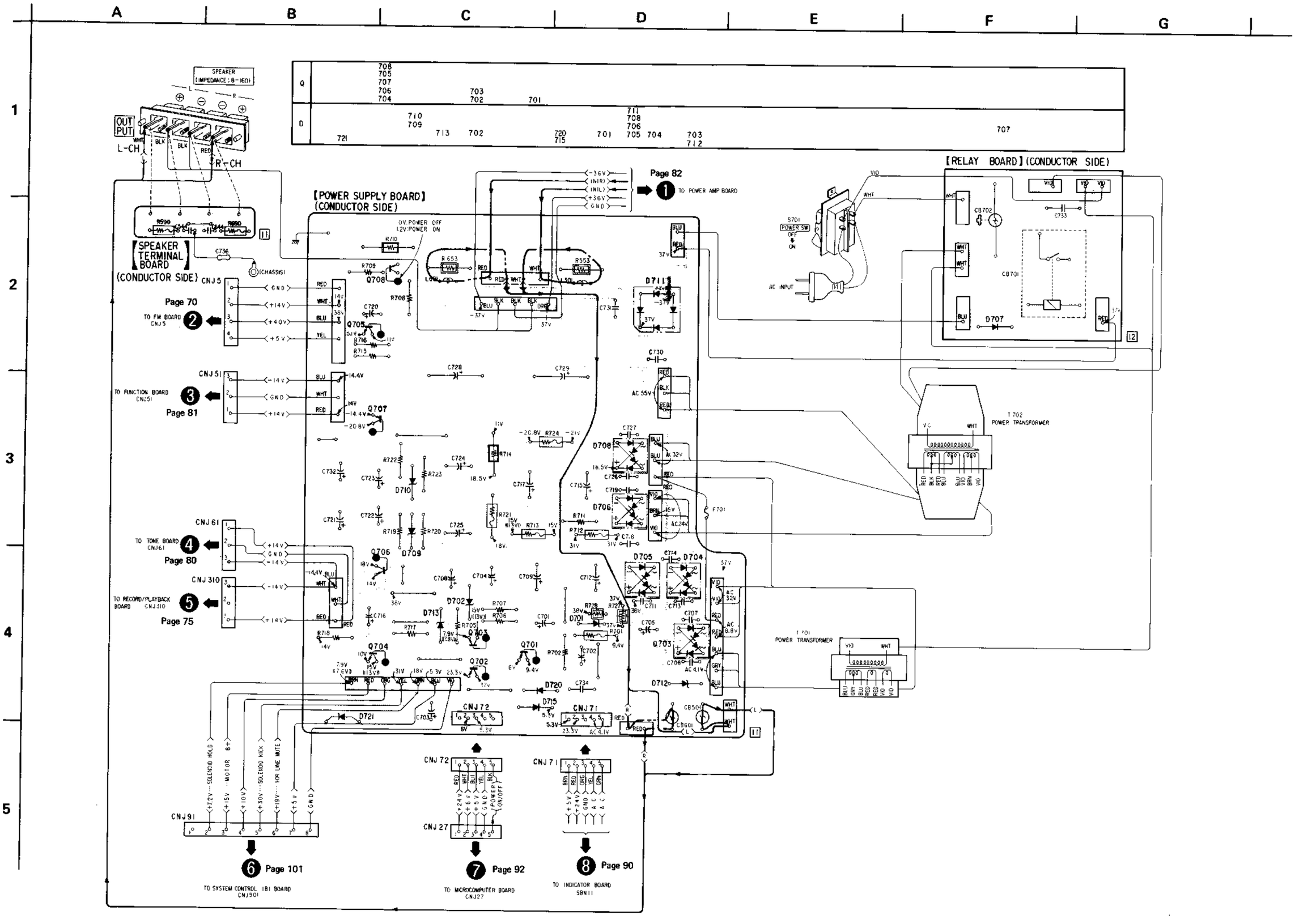
- ■ : part mounted on the conductor side.
- : B+ pattern

- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  《 》 : FWD, REC/FWD, REW mode

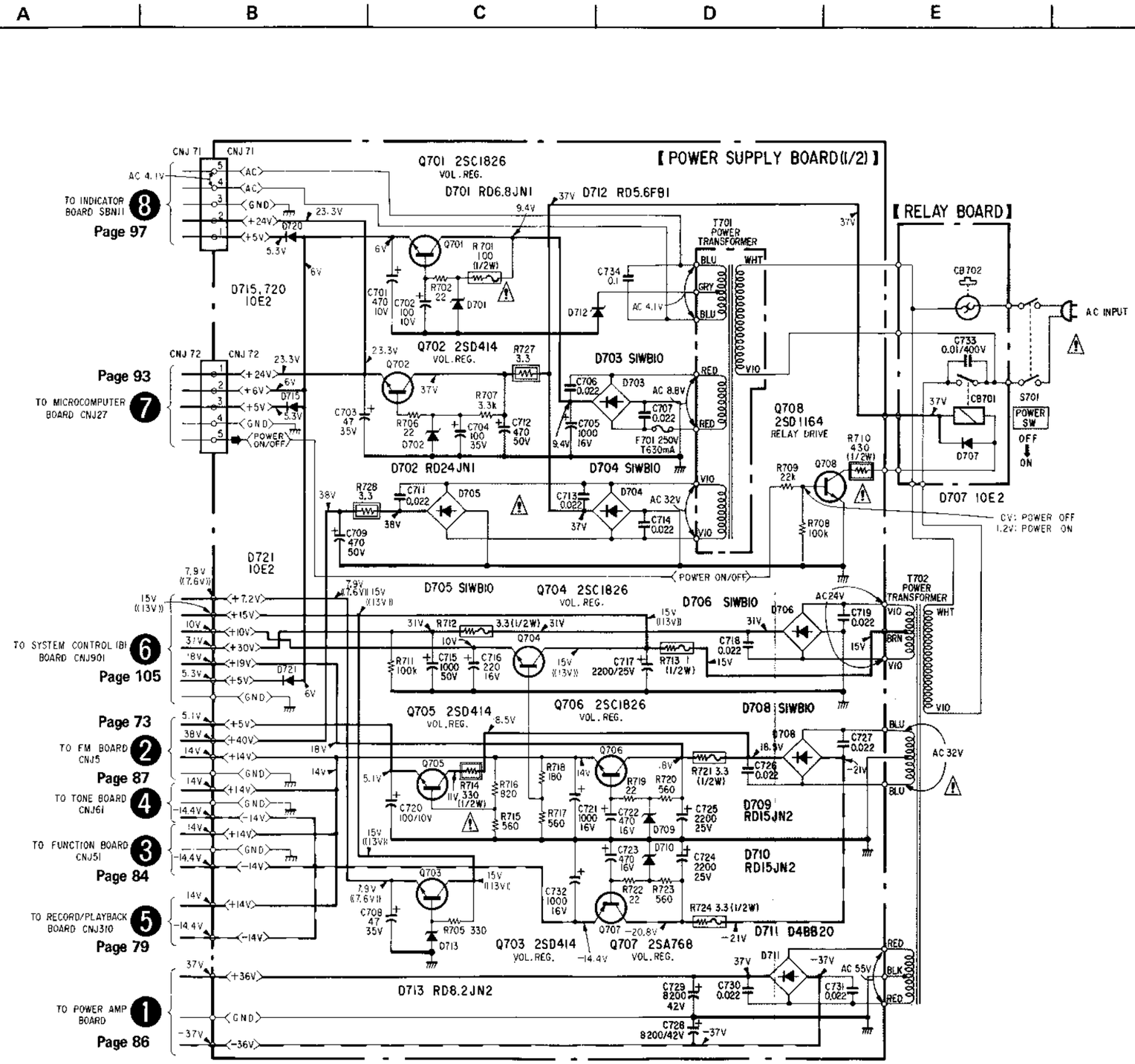
CIRCUIT BOARD LOCATION






SPEAKER (IMPEDANCE : 8~16Ω)
OUTPUT
L-CH
R-CH
WHT
BLK
BLK
RED
R590
R590
SPEAKER TERMINAL BOARD (CONDUCTOR SIDE)
C736
(CHASSIS)
CNJ5
Page 70
TO FM BOARD CNJ5
GND
+14V
+4.0V
+5V
RED
WHT
BLU
YEL
CNJ51
TO FUNCTION BOARD CNJ51
Page 81
-14V
GND
+14V
BLU
WHT
RED
【POWER SUPPLY BOARD】 (CONDUCTOR SIDE)
0V:POWER OFF
1.2V:POWER ON
R710
Q708
R709
R708
Q705
R716
R715
C720
R653
R553
L501
C728
C729
C730
C731
D711
Q707
-20.8V
R714
R724
C727
D708
C726
R722
C724
C723
C732
D710
C715
C719
D706
R721
R713
R712
C718
C722
R719
R720
C725
D709
Q706
C708
C704
C709
C712
D705
D704
C714
C711
C713
D702
R707
R706
D713
R717
R705
Q703
C716
R718
C701
R728
R724
D701
R701
C705
C707
C706
Q704
Q702
Q701
R702
C702
D720
C734
D712
D715
D721
C703
CNJ72
CNJ71
C850
C860
(L)
(R)
CNJ61
TO TONE BOARD CNJ61
Page 80
+14V
GND
-14V
CNJ310
TO RECORD/PLAYBACK BOARD CNJ310
Page 75
-14V
+14V
CNJ91
+7.2V ... SOLENOID HOLD
+15V ... MOTOR B+
+10V
+30V ... SOLENOID KICK
+19V ... FOR LANE MUTE
+5V
GND
Page 101
TO SYSTEM CONTROL (B) BOARD CNJ901
CNJ72
+24V
+6V
+5V
GND
POWER ON/OFF
CNJ27
Page 92
TO MICROCOMPUTER BOARD CNJ27
CNJ71
+5V
+24V
GND
AC
AC
Page 90
TO INDICATOR BOARD SBN11
-36V
(NR)
(NL)
+36V
GND
Page 82
TO POWER AMP BOARD
【RELAY BOARD】 (CONDUCTOR SIDE)
S701
POWER SW
OFF
ON
AC INPUT
CB702
C733
CB701
D707
T 702
POWER TRANSFORMER
F 701
POWER TRANSFORMER
VIO
WHT
BLU
GRY
BRN
RED

4-13. SCHEMATIC DIAGRAM – *POWER SUPPLY SECTION* –



Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- ——— : B+ bus.
- – – – : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  (( )) : FWD, REC/FWD, REW mode
- Switch

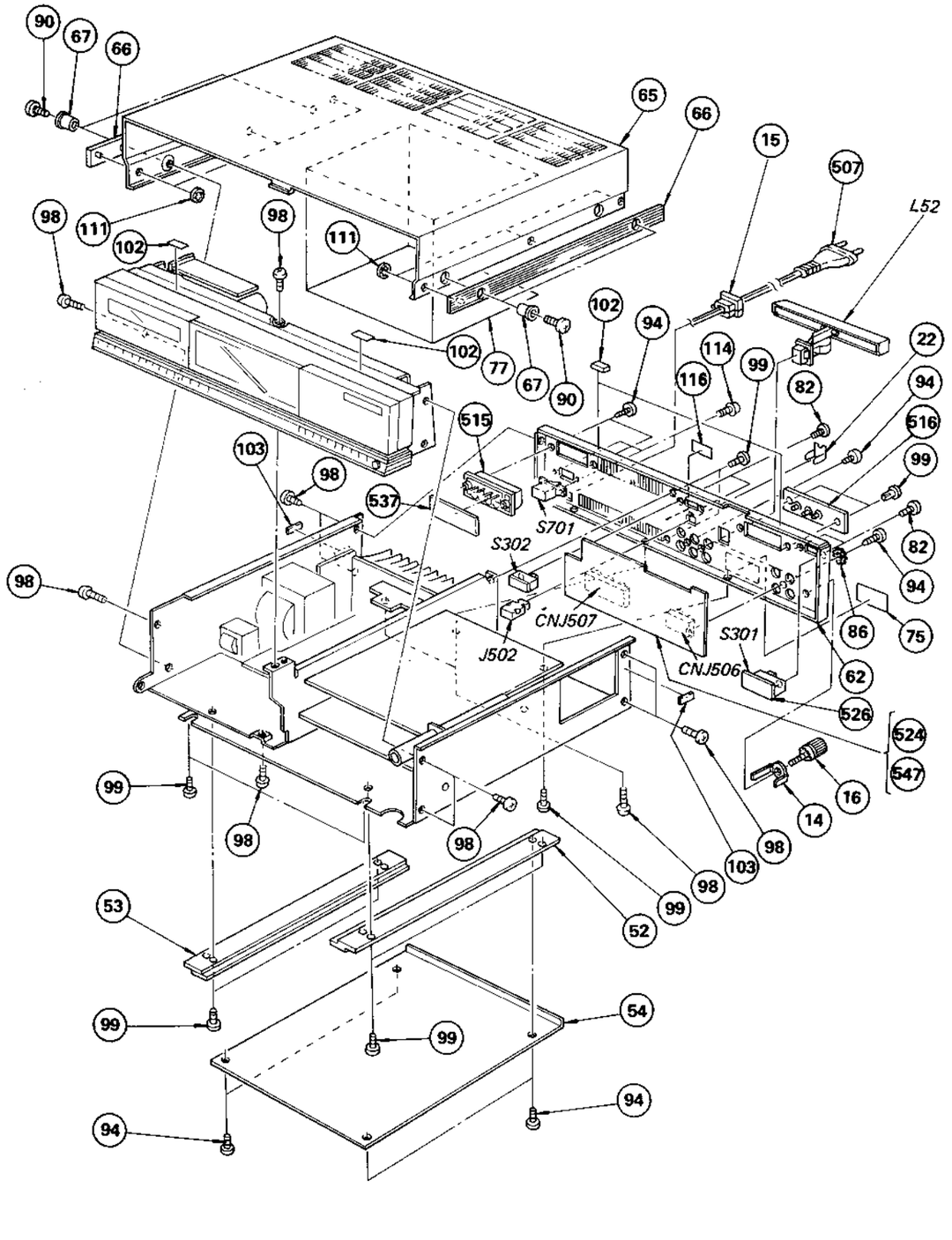
Ref. No.	Switch	Position
S701	POWER SW	OFF

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

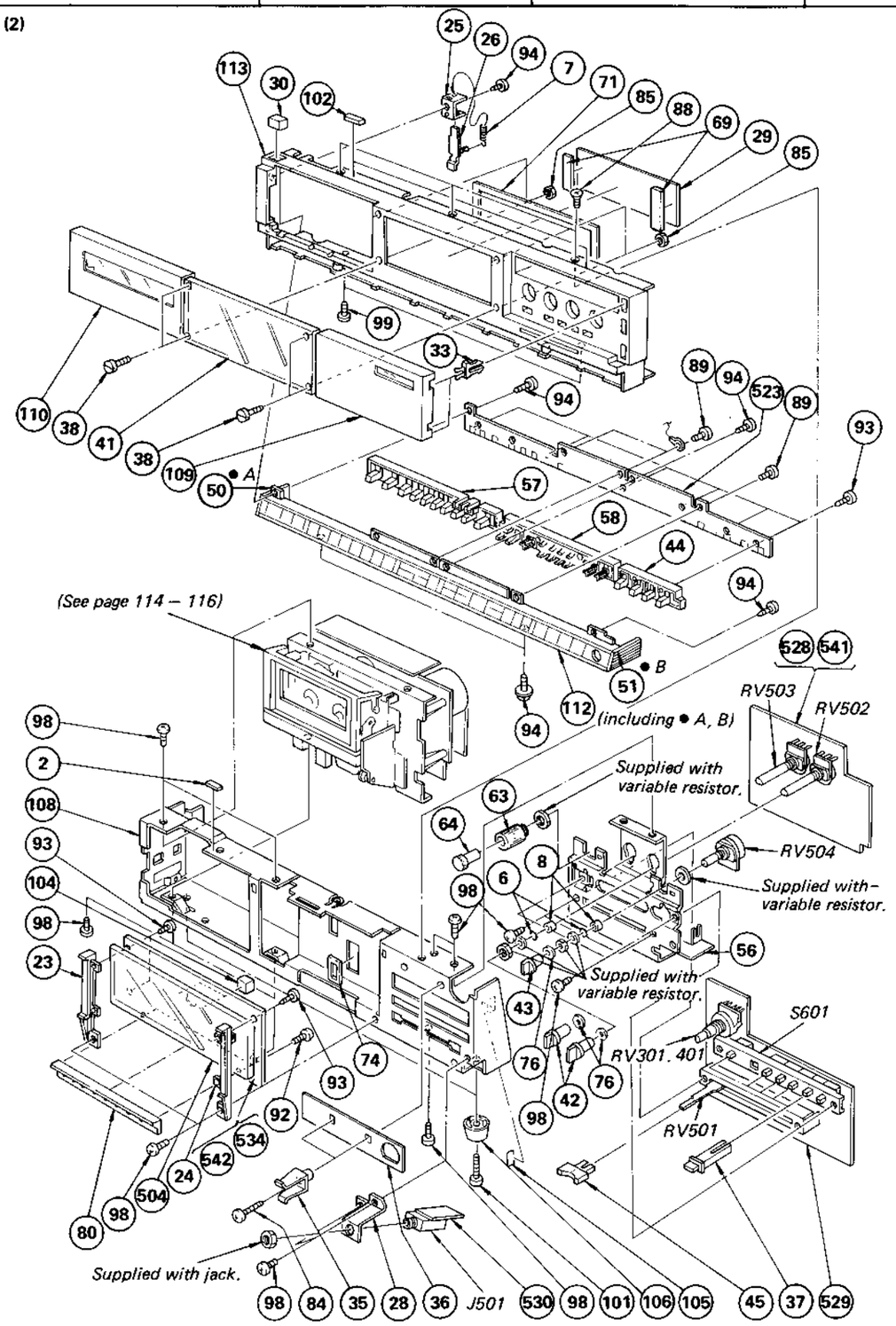
Note: Voltages are measured with a VOM (50kΩ/V).

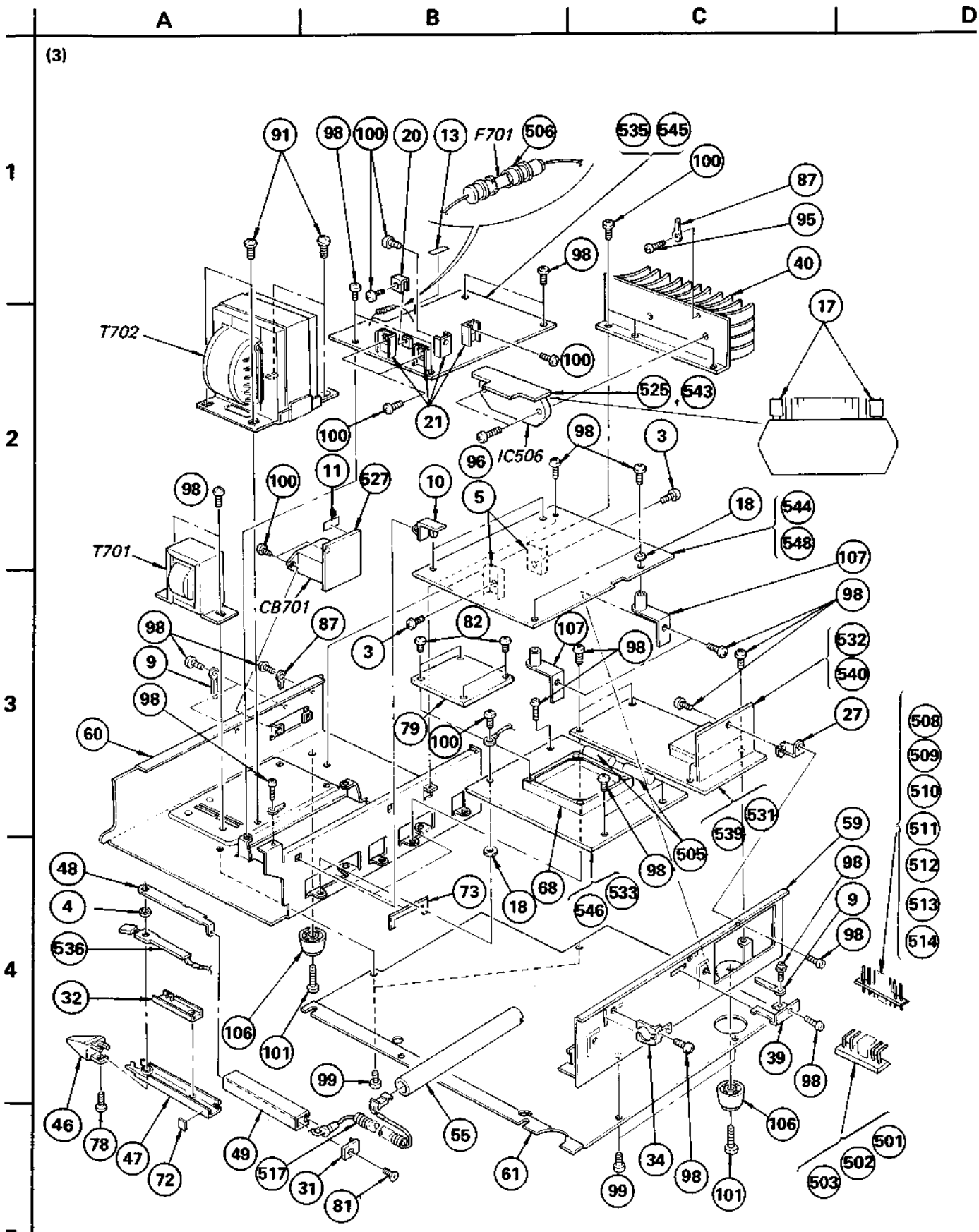
SECTION 5
EXPLODED VIEWS AND PARTS LIST

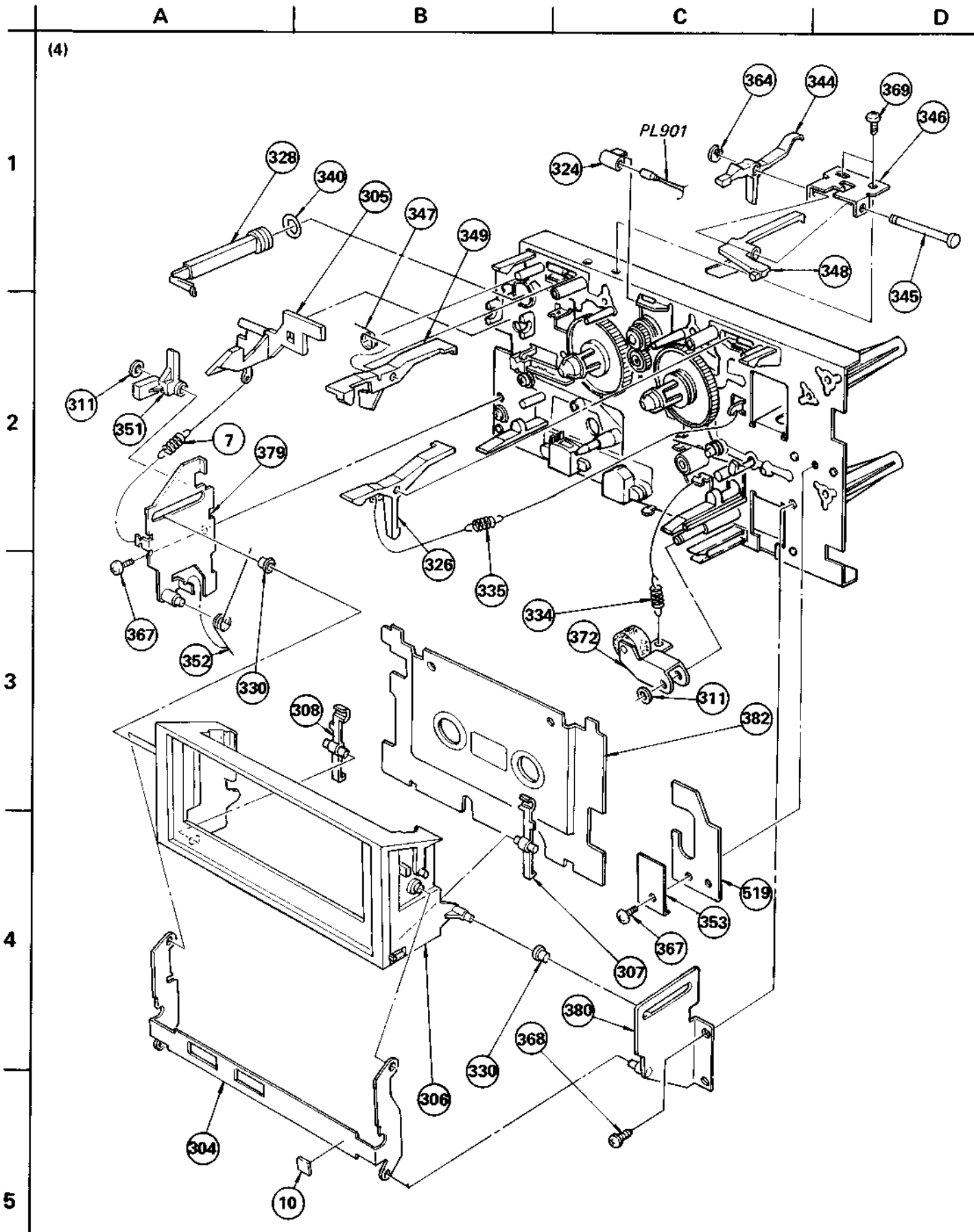
(1)

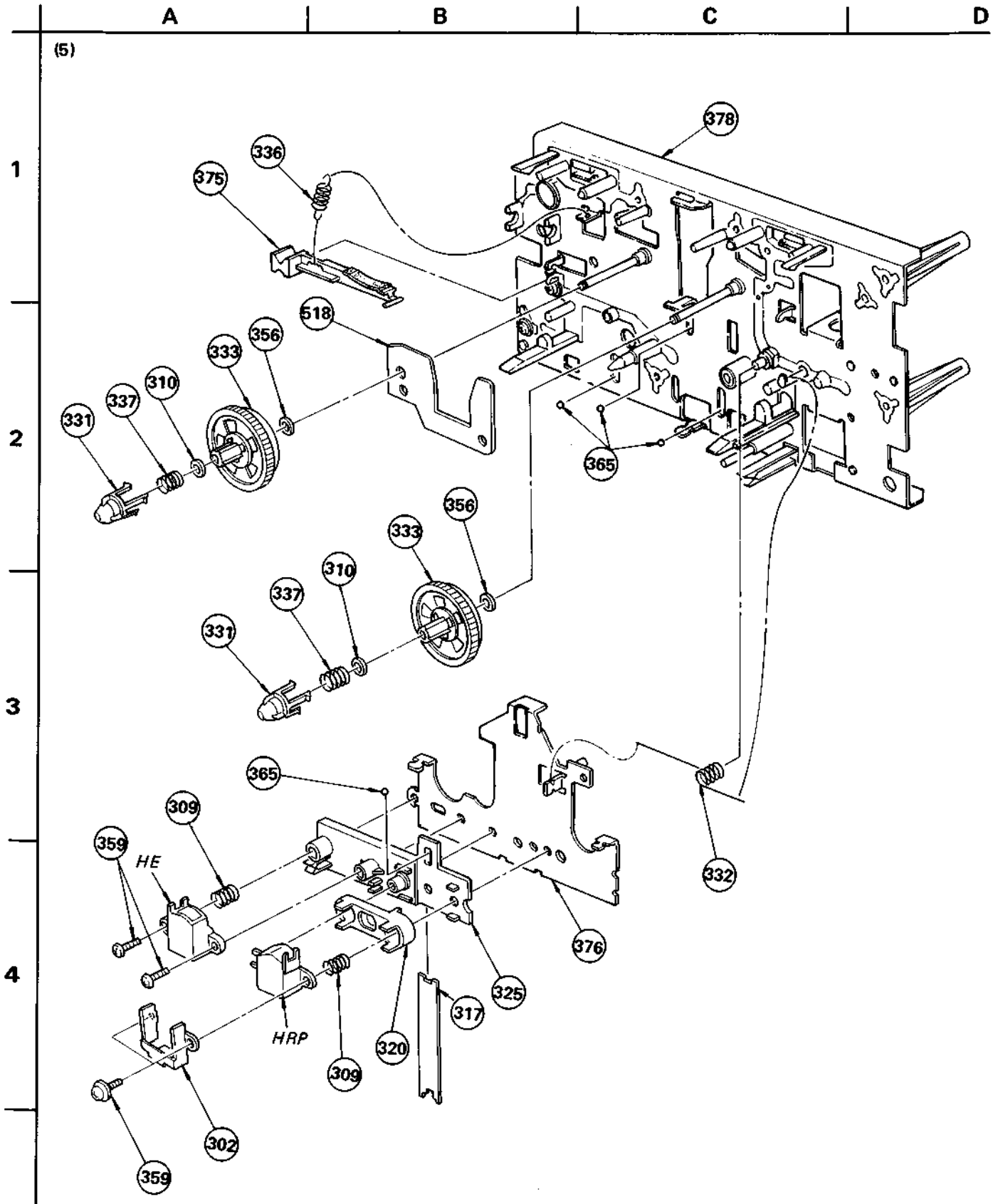


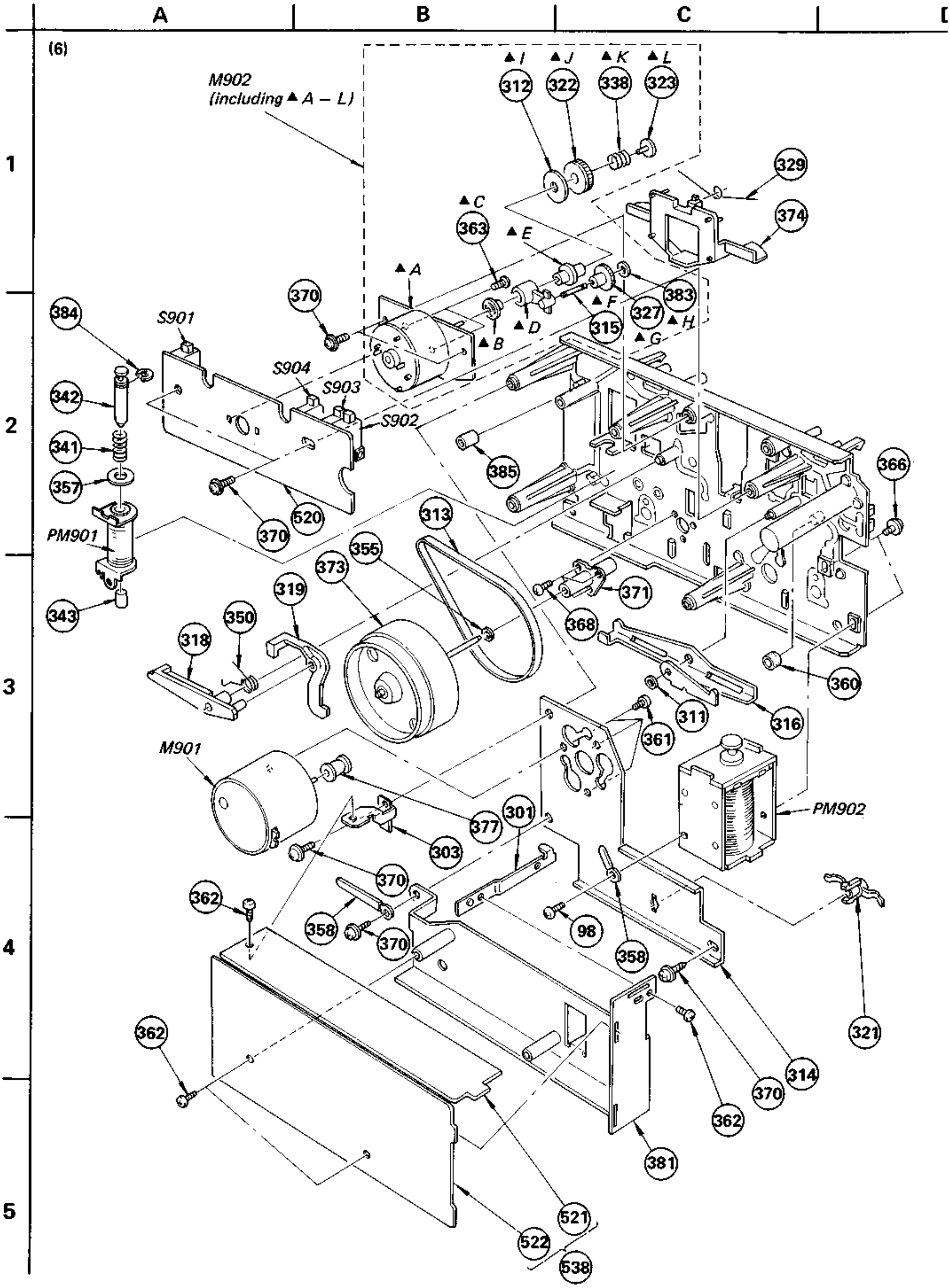
(2)




A
B
C
D
1
2
3
4
5
(3)
T702
T701
CB701
F701
IC506


A
B
C
D
1
2
3
4
5
(4)
PL901
364
344
369
346
328
340
305
347
349
324
348
345
311
351
7
379
326
335
334
372
367
352
330
308
382
519
353
307
380
368
306
304
10


A
B
C
D
1
2
3
4
5
(5)
378
336
375
518
356
333
310
337
331
365
HE
HRP
309
359
302
317
320
325
376
332


A
B
C
D
1
2
3
4
5
(6)
M902
(including ▲A – L)
▲I ▲J ▲K ▲L
312 322 338 323
329
374
▲C
363
▲E
▲A
370
383
327
315
▲F
▲H
▲G
▲D
▲B
384
S901
342
S904
S903
S902
341
357
385
366
PM901
520
370
313
355
373
319
350
343
318
371
368
360
311
316
361
M901
377
301
PM902
303
370
362
358
370
98
358
321
362
362
370
314
381
521
522
538

GENERAL SECTION

No.	Part No.	Description
1	.....	
2 ♣	2-095-203-00	SHEET, CUSHION
3	2-259-121-00	SCREW, TR
4	2-832-007-00	BUSHING (K), INSULATING
5 ♣	3-567-242-00	HEAT SINK
6	3-575-360-00	RING, O
7	3-575-364-00	SPRING, TENSION
8 ♣	3-577-675-00	SPACER, CONTROL, REC CAL
9 ♣	3-701-822-00	HOLDER, WIRE
10 ♣	3-701-832-00	HINGE, CIRCUIT BOARD
11 ♣	3-701-946-11	LABEL, FUSE
12	.....	
13 ♣	3-701-948-12	LABEL, FUSE
14	3-701-993-00	SPACER, TERMINAL
15	3-703-244-00	BUSHING, CORD
16	3-706-165-00	SCREW
17	3-886-569-00	TUBE, RUBBER
18	4-830-092-00	WASHER, FIBER
19	.....	
20 ♣	4-866-080-00	HEAT SINK
21 ♣	4-866-647-00	HEAT SINK
22 ♣	4-879-486-00	HOLDER, JACK
23 ♣	4-883-404-00	BRACKET (LEFT), FL TUBE
24 ♣	4-883-405-00	BRACKET (RIGHT), FL TUBE
25 ♣	4-883-408-00	HOLDER, EJECT
26 ♣	4-883-409-00	LEVER, EJECT
27 ♣	4-883-410-00	BRACKET, AMPLIFIER PLATE
28 ♣	4-883-411-00	BRACKET, HP JACK
29	4-883-412-00	FILTER, INDICATION TUBE
30	4-883-413-00	BUTTON, EJECT
31	4-883-416-00	PLATE, BOTTOM, BC
32 ♣	4-883-417-00	PLATE, SHIELD, BC
33	4-883-418-00	HINGE (A), DOOR
34 ♣	4-883-420-00	BRACKET (A), SLEEVE
35	4-883-421-00	HOLDER, BC PEN
36	4-883-422-00	PLATE, ORNAMENTAL, BC
37	4-883-424-00	KNOB (A), PUSH
38	4-883-427-00	SCREW, WINDOW, INDICATION TUBE
39 ♣	4-883-428-00	BRACKET (B), SLEEVE
40 ♣	4-883-430-00	HEAT SINK
41	4-883-431-00	WINDOW, INDICATION TUBE
42	4-883-432-00	KNOB, CONTROL (BASS, TREBLE)
43	4-883-432-11	KNOB, CONTROL (BALANCE)
44 ♣	4-883-435-00	HINGE (C), BUTTON
45	4-883-436-00	KNOB, CONTROL, MASTER

GENERAL SECTION

No.	Part No.	Description
46	4-883-437-00	HEAD, BC
47 ♣	4-883-438-00	PLATE (A), SIDE, BC
48 ♣	4-883-439-00	PLATE (B), SIDE, BC
49	4-883-440-00	COVER, BC
50	4-883-441-00	ORNAMENT (LEFT), CONTROL BUTTON
51	4-883-442-00	ORNAMENT(RIGHT), CONTROL BUTTON
52 ♣	4-883-443-01	RAIL, CARD
53 ♣	4-883-443-11	RAIL, CARD
54 ♣	4-883-444-00	COVER, CARD
55 ♣	4-883-446-00	SLEEVE
56 ♣	4-883-447-00	BRACKET, SWITCH
57 ♣	4-883-450-00	HINGE (A), BUTTON
58	4-883-451-00	HINGE (B), BUTTON
59 ♣	4-883-455-00	PLATE, SIDE, RIGHT
60 ♣	4-883-457-00	PLATE, SIDE, LEFT
61 ♣	4-883-459-00	PLATE, BOTTOM
62	4-883-462-11	PLATE, JACK
63	4-883-463-00	KNOB (LEFT), REC CONTROL
64	4-883-464-00	KNOB (RIGHT), REC CONTROL
65	4-883-465-00	CASE
66	4-883-466-00	PLATE, ORNAMENTAL, CASE
67 ♣	4-883-467-00	SPACER, CASE
68 ♣	4-883-468-00	PLATE(A), SHIELD, MICRO COMPUTER
69 ♣	4-883-470-00	SPACER, FILTER
70 ♣	4-883-473-00	SPACER, CASSETTE LID
71 ♣	4-883-474-00	SHEET, WINDOW, INDICATION TUBE
72 ♣	4-883-475-00	SPACER, BC
73 ♣	4-883-476-01	COVER, EDGE
74 ♣	4-883-476-11	COVER, EDGE
75	4-883-477-00	LABEL, MODEL NUMBER (AEP1)
76 ♣	4-883-478-00	GUIDE, CONTROL
77	4-883-479-00	SHEET, INSTRUCTION, PICK
78	4-883-480-00	SCREW, HEAD, BD
79	4-883-481-00	PLATE (A), SHIELD
80 ♣	4-883-482-00	GUIDE, TUBE, INDICATION
81	7-621-555-30	SCREW +K 2X5
82	7-621-775-10	SCREW +B 2.6X4
83	.....	
84	7-621-775-60	SCREW +B 2.6X12
85	7-622-305-01	N 2, TYPE 3
86	7-623-422-07	LW 3, TYPE B
87	7-623-508-01	LUG, 3
88	7-682-245-04	SCREW +K 3X4
89	7-682-545-09	SCREW +B 3X4
90	7-682-561-04	SCREW +B 4X8

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♣ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in uF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC·, UPD···: μPD···

GENERAL SECTION

No.	Part No.	Description
91	7-682-961-01	SCREW +PSW 4X8
92	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
93	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
94	7-685-546-19	SCREW +BTP 3X8 TYPE2 N-S
95	7-685-645-21	SCREW +BVTP 3X6 TYPE2 SLIT
96	7-685-650-11	SCREW +BVTP 3X16 TYPE2 N-S
97	.....	
98	7-685-871-01	SCREW +BVTT 3X6 (S)
99	7-685-871-09	SCREW +BVTT 3X6 (S)
100	7-685-872-01	SCREW +BVTT 3X8 (S)
101	7-685-876-01	SCREW +BVTT 3X16 (S)
102	9-911-837-XX	CUSHION, FILTER
103	9-911-840-XX	RUBBER (B)
104	9-911-846-XX	CUSHION
105	9-911-863-XX	INSULATOR, CONTROL
106	X-4838-902-X	FOOT ASSY, 18MF
107 ♦	X-4883-401-0	BRACKET ASSY, AUDIO PC BOARD
108 ♦	X-4883-402-0	BRACKET ASSY, AMPLIFIER CHASSIS
109	X-4883-403-1	DOOR ASSY, FUNCTION
110	X-4883-404-1	PLATE ASSY, WINDOW, CASSETTE
111	7-624-190-31	STOP RING 4, TYPE-CS
112	X-4883-406-1	PANEL ASSY, CONTROL
113	X-4883-408-1	PANEL ASSY, FRONT
114	7-682-546-09	SCREW +B 3X5
115	7-685-545-19	SCREW +BTP 3X6
116 ♦	3-703-456-01	LABEL, AMS LICENSE

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
151	3-701-630-00	BAG, POLYETHYLENE
152	3-773-005-11	MANUAL, INSTRUCTION
153	4-880-211-00	SHEET, PROTECTION
154	4-883-402-00	CUSHION (A)
155	4-883-403-00	CUSHION (B)
156	4-883-483-00	INDIVIDUAL CARTON
157	4-883-484-00	SHEET, PROTECTION
158	7-621-775-10	SCREW +B 2.6X4
159	A-4382-124-A	SHEET (B) ASSY, BAR CORD
160	A-4382-125-A	SHEET (C) ASSY, BAR CORD
161	X-3701-105-0	ROD ASSY, CLEANING, HEAD
162	4-883-485-00	SPACER
163	4-883-486-00	SHEET

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

MECHANISM SECTION

No.	Part No.	Description
301 ♣	3-306-201-00	BRACKET (B), SYSTEM CONTROL
302	3-306-203-00	PLATE (C), SHIELD, HEAD
303 ♣	3-306-204-00	BRACKET (C), SYSTEM CONTROL
304 ♣	3-306-205-00	ARM, HOLDER FULCRUM
305	3-306-206-00	LEVER, LOCK
306	3-306-207-00	HOLDER, CASSETTE
307	3-306-210-00	SPRING (RIGHT)
308	3-306-211-00	SPRING (LEFT)
309	3-481-272-00	SPRING, COMPRESSION
310	3-558-708-11	WASHER, STOPPER
311	3-558-708-21	WASHER, STOPPER
312	3-564-027-11	FELT, LIMITER
313	3-564-319-00	BELT, CAPSTAN
314 ♣	3-575-302-00	RETAINER, THRUST
315	3-575-304-00	SHAFT, GEAR, FR
316 ♣	3-575-307-00	LEVER, FWD
317 ♣	3-575-312-00	SPRING
318	3-575-317-02	LEVER, TUNING
319	3-575-318-00	LEVER, LOCK, TUNING
320	3-575-320-00	BASE, ADJUSTMENT, HEAD
321	3-575-321-00	RETAINER, THRUST, CAPSTAN
322	3-575-324-00	GEAR, LIMITER
323	3-575-327-00	STOPPER
324	3-575-328-00	HOLDER, LAMP
325	3-575-330-00	BRACKET, HEAD
326 ♣	3-575-331-00	LEVER, DETECTION, HALF
327	3-575-332-00	GEAR, FR
328	3-575-333-00	PISTON
329	3-575-345-00	SPRING
330	3-575-348-00	ROLLER, GUIDE, THREADING
331	3-575-350-00	CLAW, REEL TABLE
332	3-575-351-00	SPRING
333	3-575-353-00	TABLE, REEL
334	3-575-357-00	SPRING, TENSION
335	3-575-358-00	SPRING, TENSION
336	3-575-359-00	SPRING, TENSION
337	3-575-365-00	SPRING, COMPRESSION
338	3-575-368-00	SPRING, COMPRESSION
339	.....	
340	3-575-392-00	RING, PISTON
341	3-575-414-00	SPRING, COMPRESSION
342	3-575-415-11	ARBOR, MOVABLE
343	3-575-416-11	ARBOR, FIXED
344	3-575-438-00	LEVER, DETECTION
345 ♣	3-575-439-00	SHAFT, LEVER, DETECTION

MECHANISM SECTION

No.	Part No.	Description
346 ♣	3-575-440-00	BRACKET, LEVER, DETECTION
347	3-575-441-00	SPRING
348	3-575-446-00	LEVER, DETECTION, METAL
349	3-575-449-00	LEVER, DETECTION, REC
350	3-575-458-00	SPRING
351 ♣	3-575-495-00	LEVER, LOCK RELEASE
352	3-575-499-00	SPRING
353 ♣	3-575-728-00	SPRING, LEAF
354	.....	
355	3-701-438-21	WASHER
356	3-701-439-21	WASHER
357	3-701-444-11	WASHER, 6
358 ♣	3-701-822-00	HOLDER, WIRE
359	3-703-496-00	SCREW + PWH2X14
360	4-855-109-01	RUBBER, LIFTER CUSHION
361	7-621-259-15	SCREW +P 2.6X3
362	7-621-759-45	+PSW, 2.6X6
363	7-621-775-10	SCREW +B 2.6X4
364	7-624-104-04	STOP RING 2.0, TYPE -E
365	7-671-112-11	BALL, STEEL
366	7-682-949-01	SCREW +PSW 3X10
367	7-685-860-01	SCREW +BVTT 2.6X4 (S)
368	7-685-861-01	SCREW +BVTT 2.6X5 (S)
369	7-685-870-01	SCREW +BVTT 3X5 (S)
370	7-687-246-11	SCREW, TOTSU PTPWH 3X8, TYPE2
371	X-3575-303-0	METAL ASSY, CAPSTAN
372	X-3575-304-0	PINCH LEVER (T) ASSY
373	X-3575-305-0	FLYWHEEL (T) ASSY
374	X-3575-309-0	PLATE ASSY, BRAKE
375	X-3575-310-0	LEVER ASSY, TENSION, BACK
376	X-3575-324-0	CHASSIS ASSY, HEAD
377	X-3575-328-1	PULLEY, MOTOR
378 ♣	X-3575-334-0	CHASSIS ASSY, MECHANICAL
379 ♣	X-3575-350-0	PLATE (LEFT) ASSY, SIDE, HOLDER
380 ♣	X-3575-351-0	PLATE (RIGHT)ASSY, SIDE, HOLDER
381 ♣	X-3575-352-0	BRACKET ASSY, PC BOARD
382	X-3575-353-0	PLATE ASSY, ORNAMENTAL
383	3-558-708-01	WASHER, STOPPER
384	7-624-110-04	STOP, RING 5
385	3-538-051-00	RUBBER, BRAKE

NOTE:
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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC·, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	♦;1-508-831-12	H TYPE BASE POST (4P)
502	♦;1-508-832-12	H TYPE BASE POST (5P)
503	♦;1-508-833-12	H TYPE BASE POST (6P)
504	1-519-260-00	INDICATOR TUBE, FLUORESCENT
505	1-528-097-00	BATTERY, STORAGE, NICKEL CADMIUM
506	1-533-102-XX	HOLDER, FUSE
507	♦;1-534-817-XX	CORD, POWER
508	♦;1-535-114-00	TERMINAL (1P)
509	♦;1-535-115-00	TERMINAL (2P)
510	♦;1-535-116-00	TERMINAL (3P)
511	♦;1-535-117-00	TERMINAL (4P)
512	♦;1-535-118-00	TERMINAL (5P)
513	♦;1-535-119-00	TERMINAL (6P)
514	♦;1-535-120-00	TERMINAL (7P)
515	1-536-627-00	TERMINAL BOARD 4P (SPEAKER)
516	1-536-733-00	TERMINAL BOARD, ANTENNA
517	1-556-374-00	CORD, CURL
518	♦;1-603-823-00	PC BOARD, PHOTO
519	♦;1-605-510-00	PC BOARD, THERMISTOR
520	♦;1-607-459-00	PC BOARD, REEL MOTOR
521	♦;1-607-460-00	PC BOARD, SYSTEM CONTROL A
522	♦;1-607-461-00	PC BOARD, SYSTEM CONTROL B
523	♦;1-607-544-00	PC BOARD, CONTROL SWITCH
524	♦;1-607-603-00	PC BOARD, FUNCTION
525	♦;1-607-604-00	PC BOARD, POWER AMP
526	♦;1-607-606-00	PC BOARD, TYPE SW
527	♦;1-607-607-00	PC BOARD, RELAY
528	♦;1-607-608-00	PC BOARD, TONE
529	♦;1-607-609-00	PC BOARD, VOLUME
530	♦;1-607-610-00	PC BOARD, HEADPHONE
531	♦;1-607-611-00	PC BOARD, FM
532	♦;1-607-612-00	PC BOARD, AM
533	♦;1-607-613-00	PC BOARD, MICRO COMPUTER
534	♦;1-607-614-00	PC BOARD, INDICATOR
535	♦;1-607-616-00	PC BOARD, POWER SUPPLY
536	♦;1-607-902-00	PC BOARD, LEADER PEN
537	♦;1-608-265-00	PC BOARD, SPEAKER TERMINAL
538	♦;A-2019-142-A	MOUNTED PCB, SYSTEM CONTROL
539	♦;A-4348-009-A	MOUNTED PCB, FM
540	♦;A-4350-011-A	MOUNTED PCB, AM
541	♦;A-4375-165-A	MOUNTED PCB, TONE
542	♦;A-4380-043-A	MOUNTED PCB, INDICATOR
543	♦;A-4388-326-A	MOUNTED PCB, POWER AMP
544	♦;A-4393-021-A	MOUNTED PCB, RECORD/PLAYBACK
545	♦;A-4394-291-A	MOUNTED PCB, POWER SUPPLY
546	♦;A-4409-667-A	MOUNTED PCB, MICRO COMPUTER
547	♦;A-4474-207-A	MOUNTED PCB, FUNCTION
548	♦;1-607-543-00	PC BOARD, RECORD/PLAYBACK

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
BZ	1-529-016-00	BUZZER, PIEZOELECTRIC			
C25	1-161-315-00	CERAMIC	220PF	10%	50V
C51	1-104-095-00	POLYSTYRENE	0.0056MF	5%	50V
C55	1-104-069-00	POLYSTYRENE	470PF	5%	50V
C109	1-104-077-00	POLYSTYRENE	0.001MF	5%	50V
C304	1-107-167-00	MICA	75PF	5%	500V
C305	1-130-305-00	FILM	0.022MF	5%	100V
C307	1-123-230-00	ELECT	2.2MF	20%	50V
C308	1-123-230-00	ELECT	2.2MF	20%	50V
C319	1-130-623-00	FILM	0.018MF	5%	50V
C321	1-161-257-00	CERAMIC	6.8PF	10%	50V
C324	1-130-621-00	FILM	0.012MF	5%	50V
C326	1-130-620-00	FILM	0.01MF	5%	50V
C327	1-130-623-00	FILM	0.018MF	5%	50V
C328	1-130-624-00	FILM	0.022MF	5%	50V
C331	1-130-632-00	FILM	0.1MF	5%	50V
C332	1-130-620-00	FILM	0.01MF	5%	50V
C333	1-130-627-00	FILM	0.039MF	5%	50V
C335	1-130-629-00	FILM	0.056MF	5%	50V
C336	1-130-629-00	FILM	0.056MF	5%	50V
C337	1-130-625-00	FILM	0.027MF	5%	50V
C342	1-123-232-00	ELECT	4.7MF	20%	50V
C350	1-107-171-00	MICA	120PF	5%	500V
C355	1-107-181-00	MICA	330PF	5%	500V
C404	1-107-167-00	MICA	75PF	5%	500V
C405	1-130-305-00	FILM	0.022MF	5%	100V
C407	1-123-230-00	ELECT	2.2MF	20%	50V
C408	1-123-230-00	ELECT	2.2MF	20%	50V
C419	1-130-623-00	FILM	0.018MF	5%	50V
C421	1-161-257-00	CERAMIC	6.8PF	10%	50V
C424	1-130-621-00	FILM	0.012MF	5%	50V
C426	1-130-620-00	FILM	0.01MF	5%	50V
C427	1-130-623-00	FILM	0.018MF	5%	50V
C428	1-130-624-00	FILM	0.022MF	5%	50V
C431	1-130-632-00	FILM	0.1MF	5%	50V
C432	1-130-620-00	FILM	0.01MF	5%	50V
C433	1-130-627-00	FILM	0.039MF	5%	50V
C435	1-130-629-00	FILM	0.056MF	5%	50V
C436	1-130-629-00	FILM	0.056MF	5%	50V
C437	1-130-625-00	FILM	0.027MF	5%	50V
C442	1-123-232-00	ELECT	4.7MF	20%	50V
C450	1-107-171-00	MICA	120PF	5%	500V
C542	1-161-315-00	CERAMIC	220PF	10%	50V
C545	1-161-315-00	CERAMIC	220PF	10%	50V
C642	1-161-315-00	CERAMIC	220PF	10%	50V
C645	1-161-315-00	CERAMIC	220PF	10%	50V

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COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C705⚠	1-123-324-00	ELECT	1000MF	20%	16V
C706⚠	1-101-005-00	CERAMIC	0.022MF		50V
C707⚠	1-101-005-00	CERAMIC	0.022MF		50V
C709⚠	1-123-363-00	ELECT	470MF	20%	50V
C711⚠	1-101-005-00	CERAMIC	0.022MF		50V
C712⚠	1-123-363-00	ELECT	470MF	20%	50V
C713⚠	1-101-005-00	CERAMIC	0.022MF		50V
C714⚠	1-101-005-00	CERAMIC	0.022MF		50V
C715⚠	1-123-324-00	ELECT	1000MF	20%	16V
C717⚠	1-123-338-00	ELECT	2200MF	20%	25V
C718⚠	1-101-005-00	CERAMIC	0.022MF		50V
C719⚠	1-101-005-00	CERAMIC	0.022MF		50V
C724⚠	1-123-338-00	ELECT	2200MF	20%	25V
C725⚠	1-123-338-00	ELECT	2200MF	20%	25V
C726⚠	1-101-005-00	CERAMIC	0.022MF		50V
C727⚠	1-101-005-00	CERAMIC	0.022MF		50V
C728⚠	1-125-292-11	ELECT(BLOCK)	8200MF	20%	42V
C729⚠	1-125-292-11	ELECT(BLOCK)	8200MF	20%	42V
C730⚠	1-101-005-00	CERAMIC	0.022MF		50V
C731⚠	1-101-005-00	CERAMIC	0.022MF		50V
C733⚠	1-161-744-00	CERAMIC	0.01MF		400V
C801	1-130-624-00	FILM	0.022MF	5%	50V
C802	1-130-626-00	FILM	0.033MF	5%	50V
C807	1-130-624-00	FILM	0.022MF	5%	50V
C808	1-130-624-00	FILM	0.022MF	5%	50V
C857	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C865	1-130-624-00	FILM	0.022MF	5%	50V
C867	1-130-632-00	FILM	0.1MF	5%	50V
C868	1-161-315-00	CERAMIC	220PF	10%	50V
C869	1-161-315-00	CERAMIC	220PF	10%	50V
C870	1-161-315-00	CERAMIC	220PF	10%	50V
C873	1-161-315-00	CERAMIC	220PF	10%	50V
C892	1-130-628-00	FILM	0.047MF	5%	50V
C909	1-123-333-00	ELECT	100MF	20%	25V
C910	1-130-635-00	FILM	0.18MF	5%	50V
CB501	1-532-657-00	BREAKER, CIRCUIT			
CB601	1-532-657-00	BREAKER, CIRCUIT			
CB701⚠	1-515-421-00	RELAY			
CB702⚠	1-532-541-00	CIRCUIT BREAKER			
CF1	1-527-344-91	FILTER, CERAMIC			
CF2	1-527-344-91	FILTER, CERAMIC			
CF3	1-527-344-91	FILTER, CERAMIC			
CF4	1-527-344-91	FILTER, CERAMIC			
CF51	1-527-966-00	FILTER, CERAMIC			
CF52	1-527-817-00	FILTER, CERAMIC			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CF201	1-527-731-00	OSCILLATOR, CRYSTAL
CF851	1-527-647-00	OSCILLATOR, CRYSTAL
CNJ2 ♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ3 ♣	1-560-338-00	PIN, CONNECTOR 7P
CNJ4 ♣	1-560-061-00	PIN, CONNECTOR 3P
CNJ5 ♣	1-560-062-00	PIN, CONNECTOR 4P
CNJ11♣	1-560-338-00	PIN, CONNECTOR 7P
CNJ12♣	1-560-597-00	PIN, CONNECTOR 3P
CNJ13♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ14♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ15♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ16♣	1-560-061-00	PIN, CONNECTOR 3P
CNJ17♣	1-560-062-00	PIN, CONNECTOR 4P
CNJ18♣	1-560-230-00	PIN, CONNECTOR 12P
CNJ19♣	1-560-338-00	PIN, CONNECTOR 7P
CNJ20♣	1-560-062-00	PIN, CONNECTOR 4P
CNJ21♣	1-560-339-00	PIN, CONNECTOR 9P
CNJ22♣	1-560-064-00	PIN, CONNECTOR 6P
CNJ23♣	1-560-066-00	PIN, CONNECTOR 10P
CNJ24♣	1-560-062-00	PIN, CONNECTOR 4P
CNJ25♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ26♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ27♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ28♣	1-560-063-00	PIN, CONNECTOR 5P
CNJ29♣	1-560-064-00	PIN, CONNECTOR 6P
CNJ30♣	1-560-061-00	PIN, CONNECTOR 3P
CNJ31♣	1-560-060-00	PIN, CONNECTOR 2P
CNJ32♣	1-560-597-00	PIN, CONNECTOR 3P
CNJ50♣	1-560-060-00	PIN, CONNECTOR 2P
CNJ51♣	1-560-072-00	PIN, CONNECTOR (U TYPE)
CNJ52♣	1-560-074-00	PIN, CONNECTOR
CNJ53♣	1-560-072-00	PIN, CONNECTOR (U TYPE)
CNJ60♣	1-560-060-00	PIN, CONNECTOR 2P
CNJ61♣	1-508-878-00	BASE POST
CNJ62♣	1-508-878-00	BASE POST
CNJ63♣	1-508-879-00	BASE POST
CNJ64♣	1-560-061-00	PIN, CONNECTOR 3P
CNJ65♣	1-560-060-00	PIN, CONNECTOR 2P
CNJ66♣	1-560-061-00	PIN, CONNECTOR 3P
CNJ67♣	1-560-070-00	BASE POST
♣CNJ301	1-560-061-00	PIN, CONNECTOR 3P
♣CNJ302	1-560-061-00	PIN, CONNECTOR 3P
♣CNJ303	1-560-060-00	PIN, CONNECTOR 2P
♣CNJ304	1-560-061-00	PIN, CONNECTOR 3P

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COILS

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SEMICONDUCTORS

In each case, U : μ, for example:
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ELECTRICAL PARTS

Ref.No.	Part No.	Description
♦CNJ305	1-560-060-00	PIN, CONNECTOR 2P
♦CNJ306	1-560-061-00	PIN, CONNECTOR 3P
♦CNJ307	1-560-061-00	PIN, CONNECTOR 3P
♦CNJ308	1-560-061-00	PIN, CONNECTOR 3P
♦CNJ309	1-560-064-00	PIN, CONNECTOR 6P
♦CNJ310	1-560-061-00	PIN, CONNECTOR 3P
♦CNJ311	1-560-062-00	PIN, CONNECTOR 4P
♦CNJ312	1-560-063-00	PIN, CONNECTOR 5P
♦CNJ313	1-560-062-00	PIN, CONNECTOR 4P
CNJ506	1-507-734-00	JACK, PIN 4P
CNJ507	1-507-746-21	JACK, PIN 6P
♦CNJ701	1-560-063-00	PIN, CONNECTOR 5P
♦CNJ702	1-560-063-00	PIN, CONNECTOR 5P
♦CNJ901	1-560-076-00	PIN, CONNECTOR (U TYPE) 8P
♦CNJ902	1-560-072-00	PIN, CONNECTOR (U TYPE) 3P
♦CNJ903	1-560-846-00	PIN, CONNECTOR (U TYPE) 12P
♦CNJ904	1-560-074-00	PIN, CONNECTOR (U TYPE) 5P
♦CNJ905	1-560-075-00	PIN, CONNECTOR (U TYPE) 6P
♦CNJ906	1-560-074-00	PIN, CONNECTOR (U TYPE) 5P
♦CNJ907	1-560-075-00	PIN, CONNECTOR (U TYPE) 6P
♦CNJ908	1-560-061-00	PIN, CONNECTOR 3P
♦CNJ909	1-560-066-00	PIN, CONNECTOR 10P
CT51	1-141-181-11	CAP, TRIMMER
CT52	1-141-179-12	CAP, TRIMMER
CT302	1-141-225-00	CAP, TUNING, TRIMAR
CT402	1-141-225-00	CAP, TUNING, TRIMAR
CT851	1-141-227-00	TRIMAR, CERAMIC
D1	8-719-815-55	DIODE 1S1555
D2	8-719-103-61	DIODE RD15J-N2
D3	8-719-815-55	DIODE 1S1555
D4	8-719-815-55	DIODE 1S1555
D5	8-719-815-55	DIODE 1S1555
D51	8-719-912-27	DIODE KV1226
D52	8-719-815-55	DIODE 1S1555
D53	8-719-815-55	DIODE 1S1555
D54	8-719-815-55	DIODE 1S1555
D201	8-719-815-55	DIODE 1S1555
D202	8-719-815-55	DIODE 1S1555
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D205	8-719-815-55	DIODE 1S1555
D206	8-719-815-55	DIODE 1S1555
D207	8-719-815-55	DIODE 1S1555
D208	8-719-815-55	DIODE 1S1555

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D209	8-719-815-55	DIODE 1S1555
D210	8-719-815-55	DIODE 1S1555
D211	8-719-815-55	DIODE 1S1555
D212	8-719-815-55	DIODE 1S1555
D301	8-719-815-55	DIODE 1S1555
D302	8-719-815-55	DIODE 1S1555
D304	8-719-815-55	DIODE 1S1555
D305	8-719-815-55	DIODE 1S1555
D306	8-719-815-55	DIODE 1S1555
D307	8-719-815-55	DIODE 1S1555
D308	8-719-815-55	DIODE 1S1555
D309	8-719-815-55	DIODE 1S1555
D310	8-719-103-31	DIODE RD5.6J-N2
D311	8-719-103-31	DIODE RD5.6J-N2
D312	8-719-815-55	DIODE 1S1555
D402	8-719-815-55	DIODE 1S1555
D501	8-719-815-55	DIODE 1S1555
D502	8-719-815-55	DIODE 1S1555
D503	8-719-815-55	DIODE 1S1555
D504	8-719-103-31	DIODE RD5.6J-N2
D505	8-719-103-31	DIODE RD5.6J-N2
D506	8-719-103-61	DIODE RD15J-N2
D507	8-719-815-55	DIODE 1S1555
D701	8-719-103-36	DIODE RD6.8J-N1
D702	8-719-103-75	DIODE RD24J-N1
D703 ⚠	8-719-500-04	DIODE S1NB40
D704 ⚠	8-719-500-04	DIODE S1NB40
D705 ⚠	8-719-500-04	DIODE S1NB40
D706 ⚠	8-719-500-04	DIODE S1NB40
D707	8-719-200-02	DIODE 10E-2
D708 ⚠	8-719-500-04	DIODE S1NB40
D709	8-719-103-61	DIODE RD15J-N2
D710	8-719-103-61	DIODE RD15J-N2
D711	8-719-504-02	DIODE D4BB20
D712	8-719-160-25	DIODE RD5.6F-B1
D713	8-719-103-43	DIODE RD8.2J-N2
D715	8-719-200-02	DIODE 10E-2
D720	8-719-200-02	DIODE 10E-2
D721	8-719-200-02	DIODE 10E-2
D801	8-719-911-19	DIODE 1SS119
D802	8-719-911-19	DIODE 1SS119
D803	8-719-911-19	DIODE 1SS119
D804	8-719-911-19	DIODE 1SS119
D806	8-719-911-19	DIODE 1SS119
D807	8-719-911-19	DIODE 1SS119

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D808	8-719-911-19	DIODE 1SS119
D809	8-719-911-19	DIODE 1SS119
D810	8-719-911-19	DIODE 1SS119
D811	8-719-911-19	DIODE 1SS119
D812	8-719-911-19	DIODE 1SS119
D813	8-719-911-19	DIODE 1SS119
D814	8-719-911-19	DIODE 1SS119
D860	8-719-815-55	DIODE 1S1555
D861	8-719-815-55	DIODE 1S1555
D862	8-719-815-55	DIODE 1S1555
D863	8-719-815-55	DIODE 1S1555
D864	8-719-815-55	DIODE 1S1555
D865	8-719-815-55	DIODE 1S1555
D871	8-719-911-19	DIODE 1SS119
D872	8-719-911-19	DIODE 1SS119
D873	8-719-911-19	DIODE 1SS119
D874	8-719-911-19	DIODE 1SS119
D875	8-719-911-19	DIODE 1SS119
D876	8-719-911-19	DIODE 1SS119
D877	8-719-200-02	DIODE 10E-2
D878	8-719-200-08	DIODE 11DQ03
D879	8-719-200-02	DIODE 10E-2
D881	8-719-921-12	DIODE HZ2BLL
D882	8-719-914-11	DIODE HZ4ALL
D883	8-719-900-80	DIODE HP80
D884	8-719-900-80	DIODE HP80
D901	8-719-815-55	DIODE 1S1555
D903	8-719-902-93	DIODE LT8003N
D904	8-719-815-55	DIODE 1S1555
D905	8-719-815-55	DIODE 1S1555
D906	8-719-815-55	DIODE 1S1555
D907	8-719-815-55	DIODE 1S1555
D908	8-719-815-55	DIODE 1S1555
D909	8-719-200-02	DIODE 10E-2
D910	8-719-815-55	DIODE 1S1555
D911	8-719-902-77	DIODE SLR34PC5
D912	8-719-902-78	DIODE SLR34DC5
D913	8-719-934-05	DIODE SLR-34URC5
D951	8-719-815-55	DIODE 1S1555
D952	8-719-815-55	DIODE 1S1555
D953	8-719-815-55	DIODE 1S1555
D954	8-719-815-55	DIODE 1S1555
D955	8-719-815-55	DIODE 1S1555
D981	8-719-200-02	DIODE 10E-2
D982	8-719-815-55	DIODE 1S1555
D983	8-719-815-55	DIODE 1S1555

ELECTRICAL PARTS

Ref.No.	Part No.	Description
F701	1-532-284-00	FUSE, TIME-LAG, 250V 630MA
FE1	1-463-365-00	FRONT END
HE	8-825-724-00	HEAD, ERASE EF-201-36
HRP	8-825-732-00	HEAD, REC/PB PS210-3602A
IC1	8-759-812-35	IC LA1235
IC51	8-759-812-45	IC LA1245
IC101	8-759-833-90	IC LA3390
IC201	8-759-617-78	IC CX-778A
IC202	8-759-157-41	IC UPC574J-G
IC301	8-759-700-05	IC NJM2043S-D
IC302	8-759-600-02	IC M5218L
IC303	8-759-300-74	IC CX-174A
IC401	8-759-700-05	IC NJM2043S-D
IC402	8-759-600-02	IC M5218L
IC403	8-759-300-74	IC CX-174A
IC501	8-759-600-02	IC M5218L
IC502	8-759-307-70	IC CX-770A
IC503	8-759-307-70	IC CX-770A
IC504	8-759-600-02	IC M5218L
IC505	8-759-600-02	IC M5218L
IC506	8-749-946-50	IC STK-465A
IC507	8-759-961-38	IC BA6138
IC508	8-759-600-02	IC M5218L
IC509	8-759-800-03	IC LC4066B
IC510	8-759-600-02	IC M5218L
IC801	8-759-905-48	IC MSL9512RS
IC802	8-759-905-48	IC MSL9512RS
IC803	8-759-904-72	IC MSL9359RS
IC804	8-759-812-90	IC LB1290
IC851	8-759-905-72	IC MB8847-624
IC852	8-759-905-95	IC MB88401-167M
IC853	8-759-905-49	IC MSL9513RS
IC854	8-759-905-49	IC MSL9513RS
IC855	8-759-240-69	IC TC4069UBP
IC856	8-759-240-49	IC TC4049BP
IC857	8-759-240-50	IC TC4050BP
IC858	8-759-240-01	IC TC4001BP
IC859	8-759-700-08	IC NJM4558S
IC860	8-759-800-03	IC LC4066B
IC861	8-759-812-90	IC LB1290
IC901	8-759-900-71	IC MSM58361RS
IC902	8-759-240-81	IC TC4081BP
IFT51	1-404-326-00	TRANSFORMER, IF

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CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC·, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
J501	1-507-791-00	JACK, LARGE TYPE (HEADPHONES)
J502	1-507-688-21	JACK (STEREO PLUG) (SYNC PLAY)
L1	1-407-169-XX	MICRO INDUCTOR 100UH
L2	1-407-169-XX	MICRO INDUCTOR 100UH
L51	1-408-195-00	MICRO INDUCTOR 100UH
L52	1-402-007-	ANTENNA, FERRITE-ROD (MW)
L53	1-405-927-00	COIL, MW OSC
L54	1-408-183-00	MICRO INDUCTOR 10UH
L101	1-235-085-00	FILTER, LOW PASS
L102	1-235-085-00	FILTER, LOW PASS
L103	1-235-086-00	FILTER, LOW PASS
L104	1-235-086-00	FILTER, LOW PASS
L201	1-407-169-XX	MICRO INDUCTOR 100UH
L202	1-407-169-XX	MICRO INDUCTOR 100UH
L301	1-408-262-00	MICRO INDUCTOR 27MMH
L401	1-408-262-00	MICRO INDUCTOR 27MMH
L501 ♦	1-420-872-00	COIL, AIR CORE
L601 ♦	1-420-872-00	COIL, AIR CORE
L801	1-407-169-XX	MICRO INDUCTOR 100UH
L851	1-408-195-00	MICRO INDUCTOR 100UH
L852	1-408-195-00	MICRO INDUCTOR 100UH
L853	1-408-195-00	MICRO INDUCTOR 100UH
L901	1-407-167-XX	MICRO INDUCTOR 68UH
L902	1-407-167-XX	MICRO INDUCTOR 68UH
LPF1	1-231-657-00	FILTER, LOWPASS
LPF301	1-231-388-00	FILTER, LOWPASS
LPF401	1-231-388-00	FILTER, LOWPASS
M901	8-835-049-01	MOTOR, DC (DNE-4100A)
M902	X-3575-348-0	MOTOR ASSY, REEL
PL901	1-518-306-00	LAMP, PILOT
PM901	1-454-291-00	SOLENOID, PLUNGER (AMS)
PM902	1-454-301-00	SOLENOID, PLUNGER (HEAD)
Q1	8-729-671-14	TRANSISTOR 2SC710-14
Q2	8-729-671-14	TRANSISTOR 2SC710-14
Q3	8-729-671-14	TRANSISTOR 2SC710-14
Q4	8-729-671-14	TRANSISTOR 2SC710-14
Q5	8-729-671-14	TRANSISTOR 2SC710-14
Q51	8-729-663-47	TRANSISTOR 2SC1364
Q52	8-729-663-47	TRANSISTOR 2SC1364
Q101	8-729-663-47	TRANSISTOR 2SC1364
Q102	8-729-663-47	TRANSISTOR 2SC1364
Q201	8-729-663-47	TRANSISTOR 2SC1364
Q202	8-729-663-47	TRANSISTOR 2SC1364
Q203	8-729-663-47	TRANSISTOR 2SC1364

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q204	8-729-663-47	TRANSISTOR 2SC1364
Q205	8-729-224-61	TRANSISTOR 2SK246
Q206	8-729-823-64	TRANSISTOR 2SC2362
Q207	8-729-141-43	TRANSISTOR 2SD414
Q208	8-729-224-61	TRANSISTOR 2SK246
Q301	8-729-606-32	TRANSISTOR 2SC2603
Q302	8-729-201-05	TRANSISTOR 2SC2878-B
Q303	8-729-201-05	TRANSISTOR 2SC2878-B
Q304	8-729-201-05	TRANSISTOR 2SC2878-B
Q305	8-729-201-05	TRANSISTOR 2SC2878-B
Q306	8-729-606-32	TRANSISTOR 2SC2603
Q307	8-729-100-13	TRANSISTOR 2SC2001
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q310	8-729-663-47	TRANSISTOR 2SC1364
Q312	8-729-663-47	TRANSISTOR 2SC1364
Q313	8-729-201-05	TRANSISTOR 2SC2878-B
Q314	8-729-606-32	TRANSISTOR 2SC2603
Q315	8-729-663-47	TRANSISTOR 2SC1364
Q316	8-729-663-47	TRANSISTOR 2SC1364
Q317	8-729-201-52	TRANSISTOR 2SA1015
Q318	8-729-141-43	TRANSISTOR 2SD414
Q319	8-729-315-22	TRANSISTOR 2SD1152
Q320	8-729-315-22	TRANSISTOR 2SD1152
Q321	8-729-384-48	TRANSISTOR 2SA844
Q322	8-729-154-83	TRANSISTOR 2SB548
Q323	8-729-384-48	TRANSISTOR 2SA844
Q324	8-769-111-00	TRANSISTOR 2SK120
Q325	8-769-111-00	TRANSISTOR 2SK120
Q330	8-729-663-47	TRANSISTOR 2SC1364
Q401	8-729-606-32	TRANSISTOR 2SC2603
Q402	8-729-201-05	TRANSISTOR 2SC2878-B
Q403	8-729-201-05	TRANSISTOR 2SC2878-B
Q404	8-729-201-05	TRANSISTOR 2SC2878-B
Q405	8-729-201-05	TRANSISTOR 2SC2878-B
Q406	8-729-606-32	TRANSISTOR 2SC2603
Q407	8-729-100-13	TRANSISTOR 2SC2001
Q430	8-729-663-47	TRANSISTOR 2SC1364
Q501	8-729-902-11	TRANSISTOR 2SC2021
Q502	8-729-993-72	TRANSISTOR 2SA937
Q503	8-729-902-11	TRANSISTOR 2SC2021
Q504	8-729-993-72	TRANSISTOR 2SA937
Q505	8-729-902-11	TRANSISTOR 2SC2021
Q506	8-729-993-72	TRANSISTOR 2SA937
Q507	8-729-902-11	TRANSISTOR 2SC2021
Q508	8-729-993-72	TRANSISTOR 2SA937

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CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q511	8-729-663-47	TRANSISTOR 2SC1364
Q512	8-729-201-52	TRANSISTOR 2SA1015
Q513	8-729-201-52	TRANSISTOR 2SA1015
Q514	8-729-201-52	TRANSISTOR 2SA1015
Q515	8-729-224-61	TRANSISTOR 2SK246
Q516	8-729-606-32	TRANSISTOR 2SC2603
Q517	8-729-606-32	TRANSISTOR 2SC2603
Q518	8-729-224-61	TRANSISTOR 2SK246
Q701	8-729-382-63	TRANSISTOR 2SC1826
Q702	8-729-141-43	TRANSISTOR 2SD414
Q703	8-729-141-43	TRANSISTOR 2SD414
Q704	8-729-382-63	TRANSISTOR 2SC1826
Q705	8-729-141-43	TRANSISTOR 2SD414
Q706	8-729-382-63	TRANSISTOR 2SC1826
Q707	8-729-377-12	TRANSISTOR 2SA771
Q708	8-729-116-42	TRANSISTOR 2SD1164
Q801	8-729-902-11	TRANSISTOR 2SC2021
Q802	8-729-993-72	TRANSISTOR 2SA937
Q803	8-729-993-72	TRANSISTOR 2SA937
Q804	8-729-993-72	TRANSISTOR 2SA937
Q805	8-729-993-72	TRANSISTOR 2SA937
Q806	8-729-993-72	TRANSISTOR 2SA937
Q807	8-729-902-11	TRANSISTOR 2SC2021
Q808	8-729-993-72	TRANSISTOR 2SA937
Q809	8-729-902-11	TRANSISTOR 2SC2021
Q810	8-729-993-72	TRANSISTOR 2SA937
Q811	8-729-902-11	TRANSISTOR 2SC2021
Q851	8-729-663-47	TRANSISTOR 2SC1364
Q855	8-729-663-47	TRANSISTOR 2SC1364
Q856	8-729-663-47	TRANSISTOR 2SC1364
Q857	8-729-663-47	TRANSISTOR 2SC1364
Q859	8-729-663-47	TRANSISTOR 2SC1364
Q861	8-729-663-47	TRANSISTOR 2SC1364
Q870	8-719-700-04	DIODE NJL5143EL
Q901	8-729-902-11	TRANSISTOR 2SC2021
Q902	8-729-902-11	TRANSISTOR 2SC2021
Q903	8-729-902-11	TRANSISTOR 2SC2021
Q904	8-729-993-72	TRANSISTOR 2SA937
Q905	8-729-993-72	TRANSISTOR 2SA937
Q906	8-729-993-72	TRANSISTOR 2SA937
Q907	8-729-993-72	TRANSISTOR 2SA937
Q908	8-729-988-12	TRANSISTOR 2SA881
Q909	8-729-954-51	TRANSISTOR 2SC1545
Q910	8-729-110-21	TRANSISTOR PH102
Q911	8-729-110-21	TRANSISTOR PH102

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q951	8-729-988-12	TRANSISTOR 2SA881			
Q952	8-729-988-12	TRANSISTOR 2SA881			
Q953	8-729-967-32	TRANSISTOR 2SC2673			
Q954	8-729-967-32	TRANSISTOR 2SC2673			
Q955	8-729-905-52	TRANSISTOR 2SD1055			
Q956	8-729-902-11	TRANSISTOR 2SC2021			
Q957	8-729-993-72	TRANSISTOR 2SA937			
Q958	8-729-902-11	TRANSISTOR 2SC2021			
Q959	8-729-902-11	TRANSISTOR 2SC2021			
Q981	8-729-967-32	TRANSISTOR 2SC2673			
Q982	8-729-967-32	TRANSISTOR 2SC2673			
Q983	8-729-993-72	TRANSISTOR 2SA937			
R51	1-202-591-00	COMPOSITION	5.6K	5%	1/2W
R301	1-244-913-00	CARBON	47K	5%	1/2W
R302	1-244-851-00	CARBON	120	5%	1/2W
R303	1-244-890-00	CARBON	5.1k	5%	1/2W
R306	1-244-899-00	CARBON	12K	5%	1/2W
R385	1-244-869-00	CARBON	680	5%	1/2W
R386	1-244-875-00	CARBON	1.2K	5%	1/2W
R387	1-244-875-00	CARBON	1.2K	5%	1/2W
R388	1-244-869-00	CARBON	680	5%	1/2W
R394	1-244-881-00	CARBON	2.2K	5%	1/2W
R397	1-214-765-00	METAL	33K	1%	1/4W
R401	1-244-913-00	CARBON	47K	5%	1/2W
R402	1-244-851-00	CARBON	120	5%	1/2W
R403	1-244-890-00	CARBON	5.1K	5%	1/2W
R406	1-244-899-00	CARBON	12K	5%	1/2W
R494	1-244-881-00	CARBON	2.2K	5%	1/2W
R497	1-214-765-00	METAL	33K	1%	1/4W
R550	1-207-615-00	METAL PLATE	0.33	10%	2W
R650	1-207-615-00	METAL PLATE	0.33	10%	2W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R965	1-244-847-00	CARBON	82	5%	1/2W
R966	1-244-847-00	CARBON	82	5%	1/2W
R984	1-244-830-00	CARBON	16	5%	1/2W
RV1	1-226-236-00	RES, ADJ, CARBON 10K			
RV2	1-226-238-00	RES, ADJ, CARBON 50K			
RV51	1-226-236-00	RES, ADJ, CARBON 10K			
RV101	1-226-236-00	RES, ADJ, CARBON 10K			
RV102	1-226-239-00	RES, ADJ, CARBON 100K			
RV201	1-226-238-00	RES, ADJ, CARBON 50K			
RV202	1-226-234-00	RES, ADJ, CARBON 2K			
RV301	1-228-646-00	RES, VAR, CARBON 50K/50K, REC LEVEL			
RV302	1-224-645-XX	RES, ADJ, CARBON 10K			
RV303	1-224-647-XX	RES, ADJ, CARBON 47K			
RV401	1-228-646-00	RES, VAR, CARBON 50K/50K, REC LEVEL			
RV402	1-224-645-XX	RES, ADJ, CARBON 10K			
RV403	1-224-647-XX	RES, ADJ, CARBON 47K			
RV501	1-228-649-00	RES, VAR, SLIDE 250K, VOLUME			
RV502	1-228-648-00	RES, VAR, CARBON 50K/50K, TREBLE			
RV503	1-228-648-00	RES, VAR, CARBON 50K/50K, BASS			
RV504	1-228-647-00	RES, VAR, CARBON 250K, BALANCE			
RV505	1-226-431-00	RES, ADJ, CARBON 10K			
RV506	1-226-431-00	RES, ADJ, CARBON 10K			
RV851	1-226-239-00	RES, ADJ, CARBON 100K			
RV901	1-226-238-00	RES, ADJ, CARBON 50K			
RY301	1-515-323-00	RELAY			
RY401	1-515-323-00	RELAY			
S301	1-552-819-00	SWITCH, SLIDE (TAPE SELECT)			
S302	1-514-524-00	SLIDE SWITCH (ISS)			
S601	1-554-148-00	SWITCH, PUSH (5 KEY)			
S851	1-553-856-00	SWITCH, KEY BOARD (AUX)			
S852	1-553-856-00	SWITCH, KEY BOARD (PHONO)			
S853	1-553-856-00	SWITCH, KEY BOARD (TAPE)			
S854	1-553-856-00	SWITCH, KEY BOARD (TUNER)			
S856	1-553-856-00	SWITCH, KEY BOARD (TUNING/-)			
S857	1-553-856-00	SWITCH, KEY BOARD (TUNING/+)			
S858	1-553-856-00	SWITCH, KEY BOARD (FM/AM)			
S859	1-553-856-00	SWITCH, KEY BOARD (DISPLAY)			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S860	1-553-856-00	SWITCH, KEY BOARD (COUNTER RESET)
S861	1-553-856-00	SWITCH, KEY BOARD (MEMERY)
S862	1-553-856-00	SWITCH, KEY BOARD (POWER ON/STANDBY)
S863	1-553-856-00	SWITCH, KEY BOARD (SLEEP)
S864	1-553-856-00	SWITCH, KEY BOARD (TIMER CHECK)
S867	1-553-856-00	SWITCH, KEY BOARD (4)
S868	1-553-856-00	SWITCH, KEY BOARD (3)
S869	1-553-856-00	SWITCH, KEY BOARD (2)
S870	1-553-856-00	SWITCH, KEY BOARD (1)
S872	1-553-856-00	SWITCH, KEY BOARD (7)
S873	1-553-856-00	SWITCH, KEY BOARD (6)
S874	1-553-856-00	SWITCH, KEY BOARD (5)
S875	1-553-856-00	SWITCH, KEY BOARD
S901	1-552-532-00	SWITCH, PUSH (CASSETTE DET)
S902	1-552-532-00	SWITCH, PUSH (ERASE PROOF)
S903	1-552-532-00	SWITCH, PUSH (TAPE SELECT)
S904	1-552-532-00	SWITCH, PUSH (TAPE SELECT)
S905	1-553-856-00	SWITCH, KEY BOARD (STOP)
S906	1-553-856-00	SWITCH, KEY BOARD (REW)
S907	1-553-856-00	SWITCH, KEY BOARD (FF)
S908	1-553-856-00	SWITCH, KEY BOARD (FWD)
S909	1-553-856-00	SWITCH, KEY BOARD (REC)
S910	1-553-856-00	SWITCH, KEY BOARD (PAUSE)
S911	1-553-856-00	SWITCH, KEY BOARD (REC MUTE)
T1	1-404-327-00	TRANSFORMER, DISCRIMINATOR
T2	1-404-328-00	TRANSFORMER, DISCRIMINATOR
T301	1-464-110-00	OSCILLATOR UNIT, BIAS
TH901	1-800-202-XX	THERMISTOR S-10K

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

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TROUBLE CHECKS

The following checks will assist in the correction of most problems which you may encounter with your set. Should any problem persist after you have made these checks, consult your nearest Sony service facility.
Before going through the check list below, first pay attention to the following fundamental points.
- The power cord must be connected firmly.
- The speaker connection must also be firm.
- The POWER switch on the rear must be set to ON.
- The POWER ON/STAND BY key must be pressed to ON.

RADIO PROGRAM RECEPTION

The STEREO indicator flickers or the SIGNAL indicator do not illuminate.
- Tune in the station accurately.
- Adjust the antenna.

The desired station cannot be tuned in with the automatic tuning system.
- The signal strength is too weak for automatic tuning.

Adjust the antenna for optimum reception and tune in the station with the manual tuning system.

The desired station cannot be tuned in with the manual tuning system.
- The signal strength is too weak.

Adjust the antenna for optimum reception or press to release the STEREO/MUTING switch.

Tuning cannot be done correctly when the station preset button is pressed.
- Memorize the frequency correctly.

Severe hum or noise
- Tune in the station accurately.
- Use shielded antenna leads.
- Avoid long horizontal runs of antenna lead.
- Keep antenna leads away from transformers or motors, and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- Adjust the antenna.
- Connect the ground wire.
- When listening to FM stereo programs, releasing the STEREO/MUTING switch will provide less noise in the monaural mode.

BUILT-IN CASSETTE DECK OPERATION

The function keys do not activate right after the POWER ON/STAND BY key pressed to ON.
- Logic-controlled function keys operate approximately 4 seconds after the POWER ON/STAND BY key is pressed.

The function keys do not activate.
- The cassette holder is not fully closed.
- No cassette in the cassette holder.

The ● key does not activate.
- The tab is removed from the cassette. See page 15.
- The TAPE function selector key is engaged.

Tape does not move even when the ▶ key is pressed.
- The tape is wound completely.
- The ❚❚ key is pressed.

Recording or playback cannot be made or there is a decrease in sound level.
- Dirty heads.
- Magnetic contamination on the record/playback head.
- Improper setting of the function selector keys.

Excessive wow or flutter, or sound drop-out
- Contamination of the capstan or pinch roller.

Insufficient erasure
- Magnetic contamination of the erase head.

Increase of noise or erasure of high frequencies
- Magnetic build-up on the head.

Unbalanced tone in higher frequencies
- Improper setting of the DOLBY NR switch. If recorded with the switch set to ⏥ ON, play back with it at ⏥ ON. If recorded with it set to ⎍ OFF, play back with it at ⎍ OFF.
- A TYPE II or TYPE IV cassette which does not have METAL tape detector slots is being used with the TAPE SELECT switch set to AUTO.

OTHERS

The time display does not change to the tape counter when the cassette deck function key is pressed.
- The time display does not change for approximately 5 seconds after it is selected by the DISPLAY key. Press the DISPLAY key twice to change the display to the tape counter.

The time display shows "0000" and the previous timer setting and station memory are cancelled.
- There was a power interruption for more than 30 minutes or the set has been left with the power cord unplugged.

Set the clock and the timer and memorize the stations again.

No audio
- Slide the VOLUME control to the right.
- Check the function selector key setting.

No audio from one channel or unbalanced left and right volume
- Adjust the BALANCE control.
- Check the speaker connections of the inoperative channel.

Reversed left and right sound
- Check the speaker cord connection and speaker location.

Lack of bass sound or apparently imprecise physical location of musical instruments
- Check the speaker connection for proper phasing.

Severe hum or noise
- Use shielded connecting cords.
- Keep the connecting cords away from transformers or motors and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- Ground the receiver.
- Connect the ground wire of the turntable system to the terminal of the receiver.

Rustling noise
- Make secure connections.
- Wipe the plugs and jacks with a cloth lightly dampened with methanol.

ELECTROLYTIC CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	-	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	-
3300	1-121-661-00	1-123-075-00	1-123-071-00	-	-	-

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	-	-	-	-
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	-	1-123-028-00
3.3	1-121-995-00	-	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	-	-
47	1-123-251-00	1-121-919-00	-	
100	1-123-084-00	-	-	-

CERAMIC CAPACITORS

RATING

CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

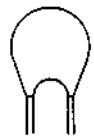
CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

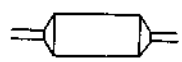
MYLAR CAPACITORS

CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
	→ : Use the high voltage rated one.						
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068						→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	→	1-131-405-00
0.47	–	–	–	–	1-131-412-00	1-131-409-00	1-131-406-00
0.68	–	–	–	1-131-415-00	→	→	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	1-131-410-00	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	→	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-411-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-355-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-356-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-357-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-358-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-359-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00	1-131-360-00	
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00				
68	1-131-394-00	1-131-388-00	–				
100	1-131-395-00	–					



TANTALUM CAPACITORS

CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	..
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	..	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	..		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

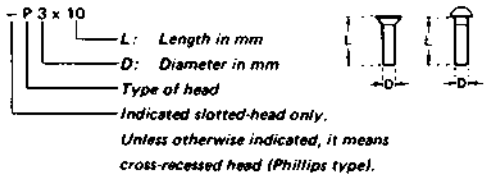
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

1/8 WATT CARBON RESISTOR

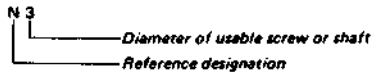
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2 6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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