

# Service Information



**Nakamichi**

Model Nakamichi BX-125/BX-125E  
(2 Head Cassette Deck)  
Serial No. from -  
Subject Electrical Adjustment Instructions  
and Schematic Diagram

No. OOD-SI-3067 (1/5)  
Date 22 February 1985

This Service Information consists of the followings:

- o Parts Location for Electrical Adjustment
- o Electrical Adjustment Instructions
- o Schematic Diagram

## 1. Parts Location for Electrical Adjustment

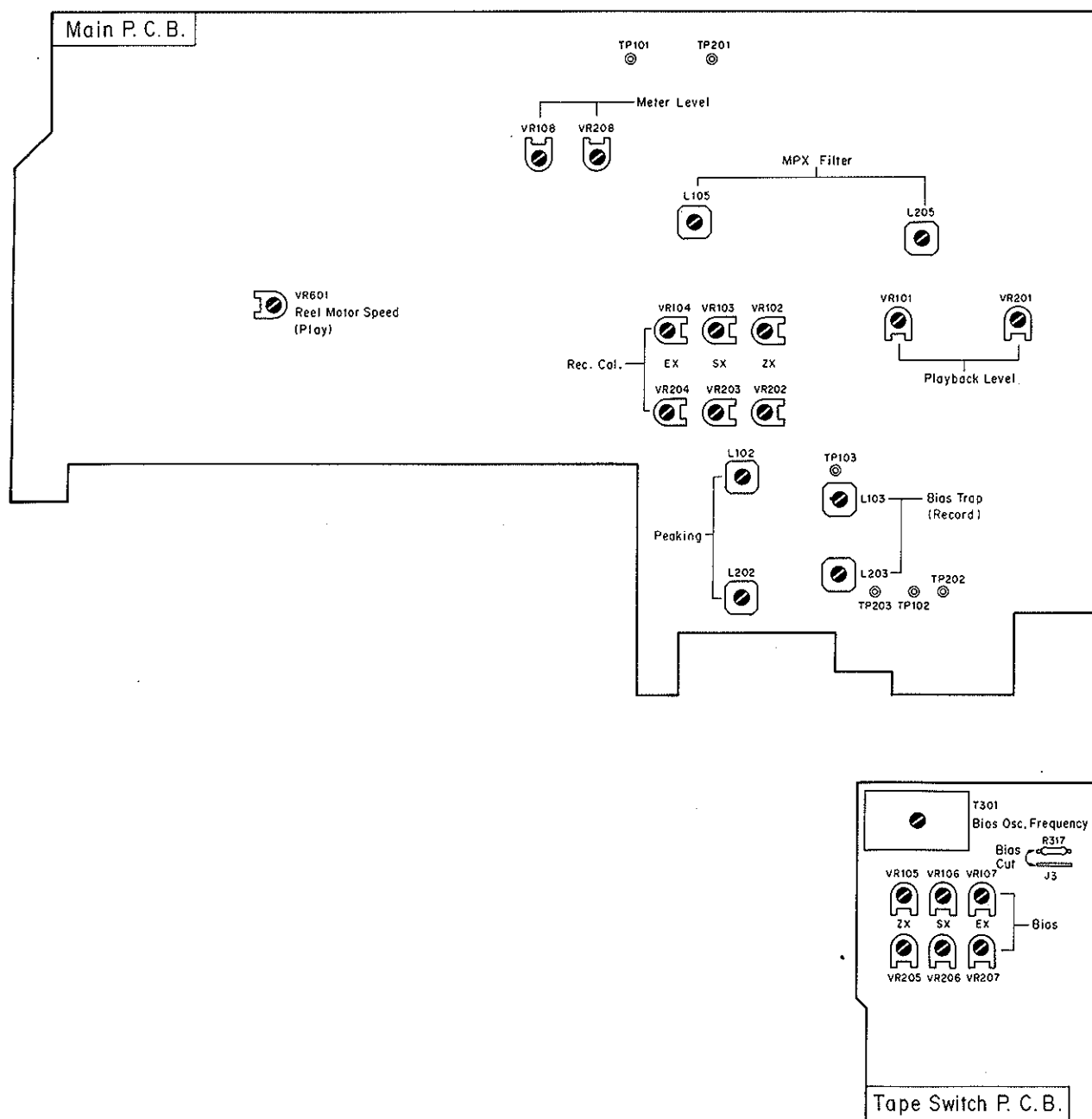


Fig. 1

## 2. Electrical Adjustment Instructions

| STEP | ITEM                                   | SIGNAL SOURCE                                                                                                                    | OUTPUT CONNECTION                   | MODE                                                     | ADJUST-MENT                                  | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Tape Speed Adjustment                  | 3 kHz Speed and Wow/Flutter Tape                                                                                                 | Frequency Counter to Output Jacks   | Playback Eq. - 70 $\mu$ s                                | Tape Speed Adjustment Volume                 | Adjust the volume incorporated in the capstan motor to obtain 3 kHz $\pm 0.5\%$ on the frequency counter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2    | Meter Level Calibration                | 400 Hz to Input Jacks                                                                                                            | VTVM to TP101, TP201 on Main P.C.B. | Record, Pause                                            | Main P.C.B. VR108 VR208                      | <ol style="list-style-type: none"> <li>1. Feed in 400 Hz and adjust the Input Level controls to obtain 350 mV <math>-0.8</math> dB on the VTVM.</li> <li>2. Adjust VR108 (VR208) so that the 0 dB segment of the level meter starts illuminating.</li> <li>3. Adjust the Input Level controls to obtain 350 mV on the VTVM, then decrease the generator output level by 20 dB.</li> <li>4. Check to insure that the segment for <math>-20</math> dB illuminates.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                           |
| 3    | MPX Filter Adjustment                  | 19 kHz $\pm 100$ Hz to Input Jacks                                                                                               | VTVM to Output Jacks                | Record, Pause MPX - OFF/ON                               | Main P.C.B. L105 L205                        | <ol style="list-style-type: none"> <li>1. Set the Output Level control to max. Adjust the Input Level controls to obtain 500 mV (0 dB) on the VTVM.</li> <li>2. Set the MPX Filter switch to ON and adjust L105 (L205) to obtain minimum reading on the VTVM (minimum reading will be less than <math>-30</math> dB).</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4    | Record/Playback Head Azimuth Alignment | 15 kHz Azimuth Tape                                                                                                              | VTVM to Output Jacks                | Playback Eq. - 70 $\mu$ s<br>Dolby NR - OFF<br>MPX - OFF | Record/Playback Head Azimuth Alignment Screw | Adjust the Record/Playback Head Azimuth Alignment Screw to obtain maximum readings for both channels on the VTVM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 5    | Playback Level Calibration             | 400 Hz Level Tape                                                                                                                | VTVM to TP101, TP201 on Main P.C.B. | Same as above                                            | Main P.C.B. VR101 VR201                      | Adjust VR101 (VR201) to obtain 350 mV on the VTVM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6    | Playback Frequency Response Adjustment | 400 Hz Level Tape<br>10 kHz PB Frequency Response Tape<br>15 kHz PB Frequency Response Tape<br>20 kHz PB Frequency Response Tape | VTVM to Output Jacks                | Same as above                                            | Main P.C.B. R110 R210<br><br>R195 R295       | <ol style="list-style-type: none"> <li>1. Load a 400 Hz level tape and play it back. Adjust the Output Level control to a certain level.</li> <li>2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and play them back. Adjust the record/playback head azimuth to obtain maximum readings for both channels on the VTVM with each tape. Short R110 (R210) or R195 (R295) on the Main P.C.B. Ass'y to obtain the following levels against the level for the 400 Hz level tape. <ul style="list-style-type: none"> <li>10 kHz: <math>-20</math> dB <math>-2</math> to <math>+2</math> dB</li> <li>15 kHz: <math>-20</math> dB <math>-2</math> to <math>+3</math> dB</li> <li>20 kHz: <math>-20</math> dB <math>-2</math> to <math>+4</math> dB</li> </ul> </li> <li>3. Conduct step 4 "Record/Playback Head Azimuth Alignment".</li> </ol> |

## Note: Test Tapes

3 kHz Speed and Wow/Flutter Tape (DA09006C)  
15 kHz Azimuth Tape (DA09004B)  
400 Hz Level Tape (DA09005B)  
10 kHz PB Frequency Response Tape (DA09003B)  
15 kHz PB Frequency Response Tape (DA09002B)

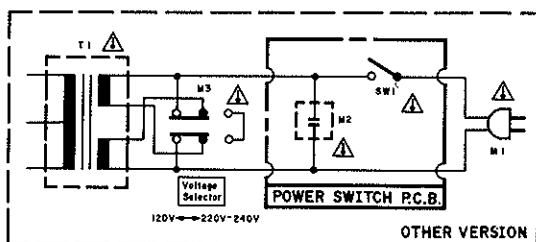
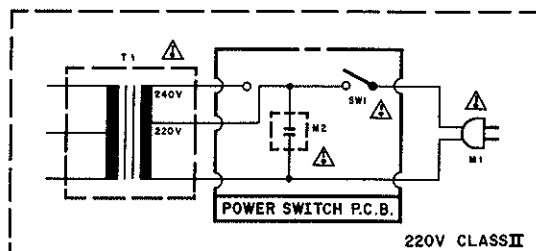
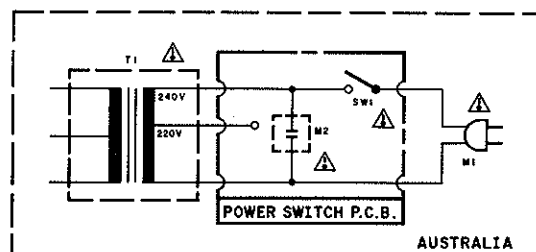
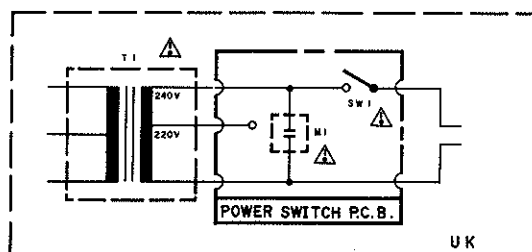
20 kHz PB Frequency Response Tape (DA09001B)  
Reference EXII Tape (DA09066B)  
Reference SX Tape (DA09025B)  
Reference SX-E Tape (DA09086A)  
Reference ZX Tape (DA09037B)

| STEP | ITEM                                                           | SIGNAL SOURCE                                    | OUTPUT CONNECTION                                                                                | MODE                                                                                                                           | ADJUSTMENT                                                                                                                                                                                                 | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|----------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7    | Bias Oscillation Frequency and Erase Current Adjustment        | None                                             | Frequency Counter to CN2-2 on Tape Switch P.C.B. and VTVM across the additional 0.1 ohm resistor | Record, Pause Tape - ZX<br>Eq. - 70 $\mu$ s<br>Dolby NR - OFF<br>MPX - OFF                                                     | Tape Switch P.C.B.<br>T301<br>R318<br>R350                                                                                                                                                                 | <ol style="list-style-type: none"> <li>1. Connect an additional 0.1 ohm resistor in series to the Erase Head and connect a VTVM across it.</li> <li>2. Adjust T301 to obtain 105 kHz on the frequency counter.</li> <li>3. Check the erase current by the VTVM. Erase current will be in a range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting either R318 or R350.</li> <li>4. After completion of the erase current adjustment, re-check the bias oscillation frequency.</li> <li>5. Remove the additional 0.1 ohm resistor.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8    | Record Amplifier Equalizer Adjustment                          | 21 kHz (-20 dB) to Input Jacks                   | VTVM to TP102, TP202 on Main P.C.B.                                                              | Same as above                                                                                                                  | Main P.C.B.<br>L102<br>L202                                                                                                                                                                                | <ol style="list-style-type: none"> <li>1. Short the bias cut points indicated in Fig. 1 with a clip to stop bias oscillation.</li> <li>2. Adjust L102 (L202) to obtain peak reading at 21 kHz on the VTVM.</li> <li>3. Remove the clip.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 9    | Bias Trap Adjustment (Record Amp.)                             | None (remove input signals)                      | VTVM to TP103, TP203 on Main P.C.B.                                                              | Same as above                                                                                                                  | Main P.C.B.<br>L103<br>L203                                                                                                                                                                                | Adjust L103 (L203) to obtain maximum reading on the VTVM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 10   | Record Level Calibration and Recording Bias Current Adjustment | 400 Hz (0 dB) and 15 kHz (-20 dB) to Input Jacks | VTVM and Distortion Meter to Output Jacks                                                        | Record and Playback Tape - ZX/SX/ (Level)<br>EX<br>Eq. - 70 $\mu$ s (ZX/SX)<br>120 $\mu$ s (EX)<br>Dolby NR - OFF<br>MPX - OFF | Main P.C.B. (Level)<br>ZX:<br>VR102<br>VR202<br>SX:<br>VR103<br>VR203<br>EX:<br>VR104<br>VR204<br><br>Tape Switch P.C.B. (Bias)<br>ZX:<br>VR105<br>VR205<br>SX:<br>VR106<br>VR206<br>EX:<br>VR107<br>VR207 | Adjustment should be made in the order of ZX, SX and EX. <ol style="list-style-type: none"> <li>1. Set the Output Level control to max.</li> <li>2. Set the cassette deck in Record/Pause mode.</li> <li>3. Feed in 400 Hz and adjust the Input Level controls to obtain 500 mV (0 dB) on the VTVM.</li> <li>4. Load a reference ZX tape, reference SX/SX-E tape and reference EXII tape.</li> <li>5. Feed in 400 Hz (0 dB) and record, rewind and play it back. Adjust VR102 (VR202) for ZX tape, VR103 (VR203) for SX/SX-E Tape and VR104 (VR204) for EXII tape so that the played back output levels are 500 mV (0 dB) on the VTVM.</li> <li>6. Feed in 15 kHz (-20 dB) and record, rewind and play it back. Adjust VR105 (VR205) for ZX tape, VR106 (VR206) for SX/SX-E tape and VR107 (VR207) for EXII tape so that the played back output levels are 50 mV (-20 dB) on the VTVM.</li> <li>7. Repeat above 5 and 6 two or three times.</li> <li>8. Feed in 400 Hz (0 dB) and record, rewind and play it back. Check to insure whether the total harmonic distortion is less than 1.0% for ZX and EXII tapes and 1.2% for SX/SX-E tape. If the total harmonic distortion exceeds the specified value, repeat above steps till satisfactory results are obtained.</li> </ol> |

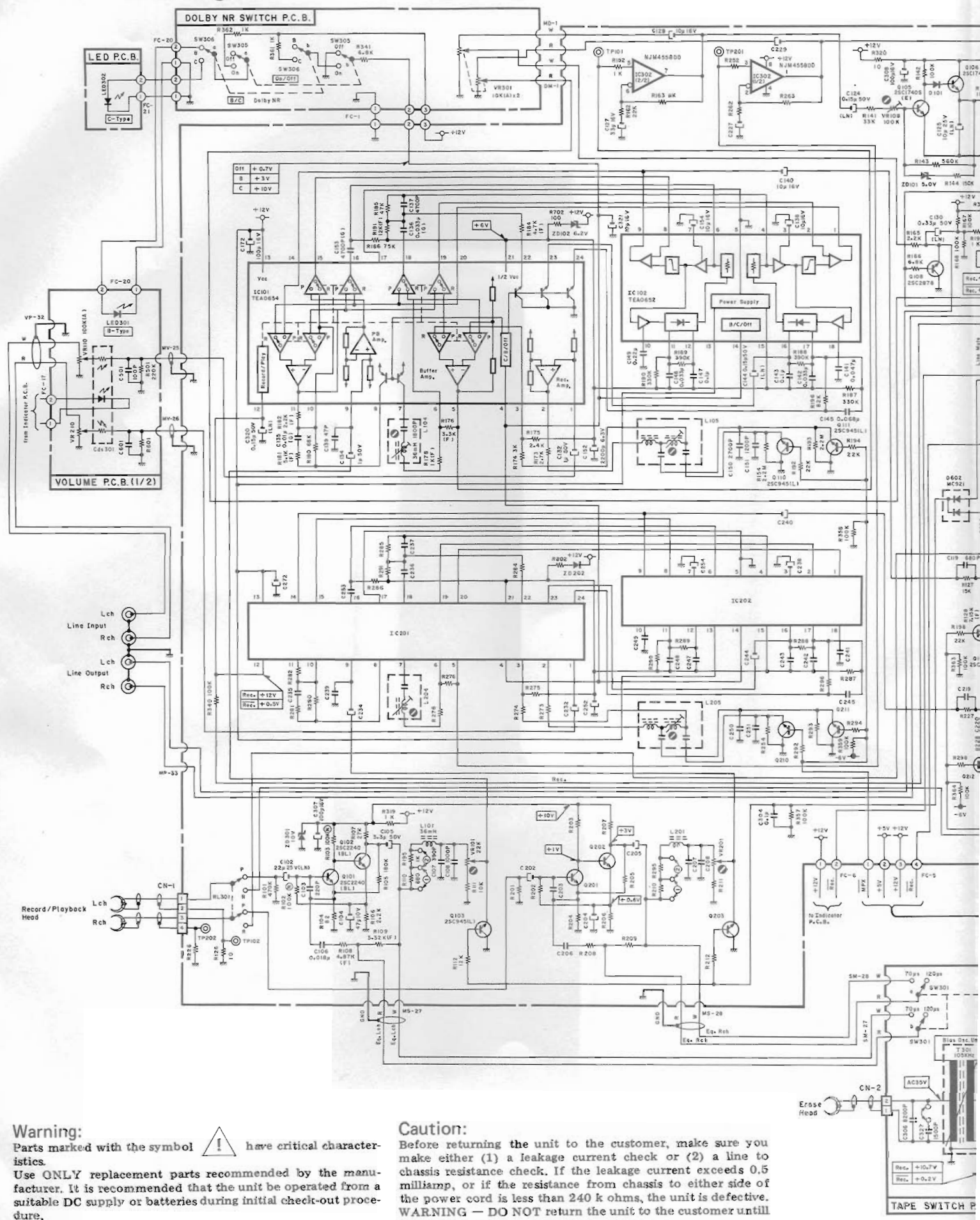
| STEP | ITEM                                  | SIGNAL SOURCE                                             | OUTPUT CONNECTION    | MODE                                                                                                                     | ADJUSTMENT                  | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|---------------------------------------|-----------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11   | Overall Frequency Response Adjustment | 400 Hz (0 dB) and 20 Hz to 17 kHz (-20 dB) to Input Jacks | VTVM to Output Jacks | Record and Playback<br>Tape - ZX/SX/EX<br>Eq. - 70 $\mu$ s (ZX/SX)<br>120 $\mu$ s (EX)<br>Dolby NR - OFF<br>MPX SW - OFF | Main P.C.B.<br>L102<br>L202 | <ol style="list-style-type: none"> <li>Set the cassette deck in Record/Pause mode.</li> <li>Feed in 400 Hz and set the Input Level controls to obtain 500 mV (0 dB) on the VTVM.</li> <li>Decrease the generator output control by 20 dB.</li> <li>Feed in 20 Hz to 17 kHz (-20 dB), and record, rewind and play them back, then check to insure whether the output levels are within -20 dB <math>\pm</math> 4 dB.</li> <li>If above is not sufficient, adjust L102 (L202) to obtain approx. -20 dB on the VTVM, then conduct step 10 "Record Level Calibration and Recording Bias Current Adjustment".</li> <li>If above is not sufficient, precise re-adjustment of step 6 "Playback Frequency Response", replacement of Record/Playback Head or tape travelling check will be required.</li> </ol> |

#### Notes:

- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories Licensing Corporation.



### 3. Schematic Diagram



#### Warning:

Parts marked with the symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedure.

#### Caution:

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective. **WARNING — DO NOT** return the unit to the customer until the problem is located and corrected.



