

# Service Manual

Soft-Touch Cassette  
Deck with Dolby B-C NR

Cassette Deck  
**RS-M226**  
(Black Face)  
(Silver Face)



This is the Service Manual for the following areas.

- Ⓐ ..... For all European areas  
except United Kingdom.  
Ⓑ ..... For United Kingdom.

Please use this service manual for the RS-M226. (Discard the service manual prepared for the order No. ARD82050142C8-11.)

## RS-M24 MECHANISM SERIES

### Specifications

|                                                    |                                                                                   |                     |                                                                                                                                               |
|----------------------------------------------------|-----------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Track system:                                      | 4-track 2-channel stereo recording and playback                                   | Inputs:             | MIC; sensitivity 0.25 mV, applicable microphone impedance 400Ω—10 kΩ<br>LINE; sensitivity 60 mV, input impedance more than 47 kΩ              |
| Tape speed:                                        | 4.8 cm/s                                                                          | Outputs:            | LINE; output level 400 mV, output impedance less than 2.3 kΩ<br>HEADPHONES; output level 80 mV (8Ω)<br>applicable headphone impedance 8Ω—600Ω |
| Wow and flutter:                                   | 0.048% (WRMS), ±0.14% (DIN)                                                       | Bias frequency:     | 80 kHz                                                                                                                                        |
| Frequency response: Metal tape;                    | 20—18,000 Hz<br>30—17,000 Hz (DIN)                                                | Motor:              | Electrical DC governor motor                                                                                                                  |
| CrO <sub>2</sub> tape;                             | 20—18,000 Hz<br>30—16,000 Hz (DIN)                                                | Heads:              | 2-head system<br>1 MX head for rec/playback<br>1 double-gap ferrite head for erasure                                                          |
| Normal tape;                                       | 20—17,000 Hz<br>30—15,000 Hz (DIN)                                                | Power requirements: | Ⓐ ... AC 220 V, 50-60 Hz<br>(for all European areas except United Kingdom.)<br>Ⓑ ... AC 240 V, 50 Hz<br>(only for United Kingdom.)            |
| Signal-to-noise ratio: Dolby <sup>®</sup> C NR in; | 75 dB (CCIR)                                                                      | Power consumption:  | 12 W                                                                                                                                          |
| Dolby B NR in;                                     | 67 dB (CCIR)                                                                      | Dimensions:         | 43.0 cm(W) × 10.9 cm(H) × 23.3 cm(D)                                                                                                          |
| NR out;                                            | 57 dB<br>(signal level = max. input level A weighted, CrO <sub>2</sub> type tape) | Weight:             | 4.0 kg                                                                                                                                        |
| Fast forward and<br>rewind time:                   | Approx. 90 seconds with C-60 cassette tape                                        |                     |                                                                                                                                               |

Specifications are subject to change without notice.

\* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

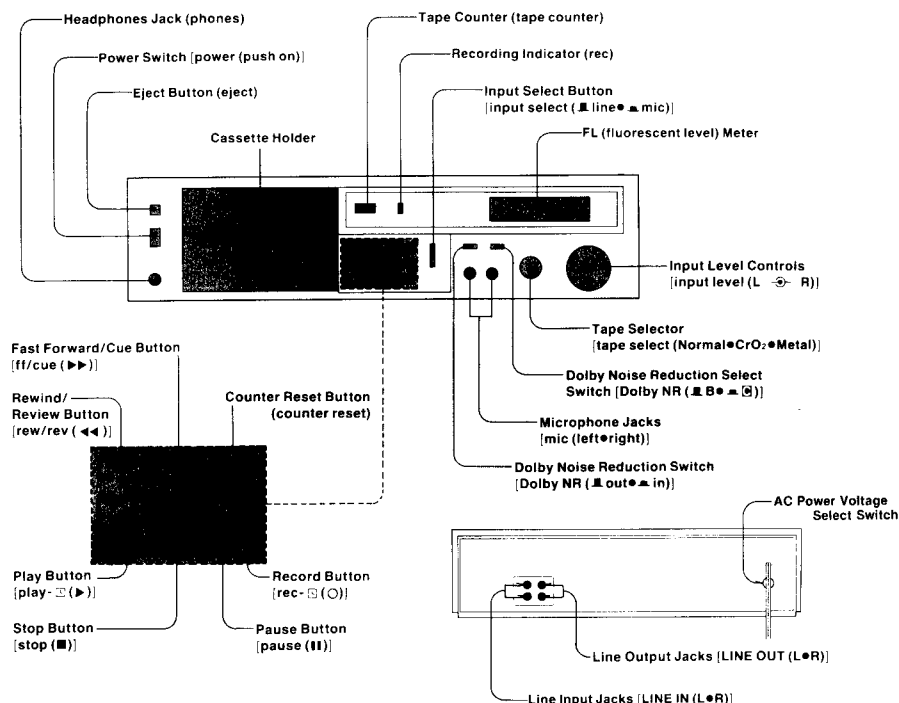
# Technics

**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan

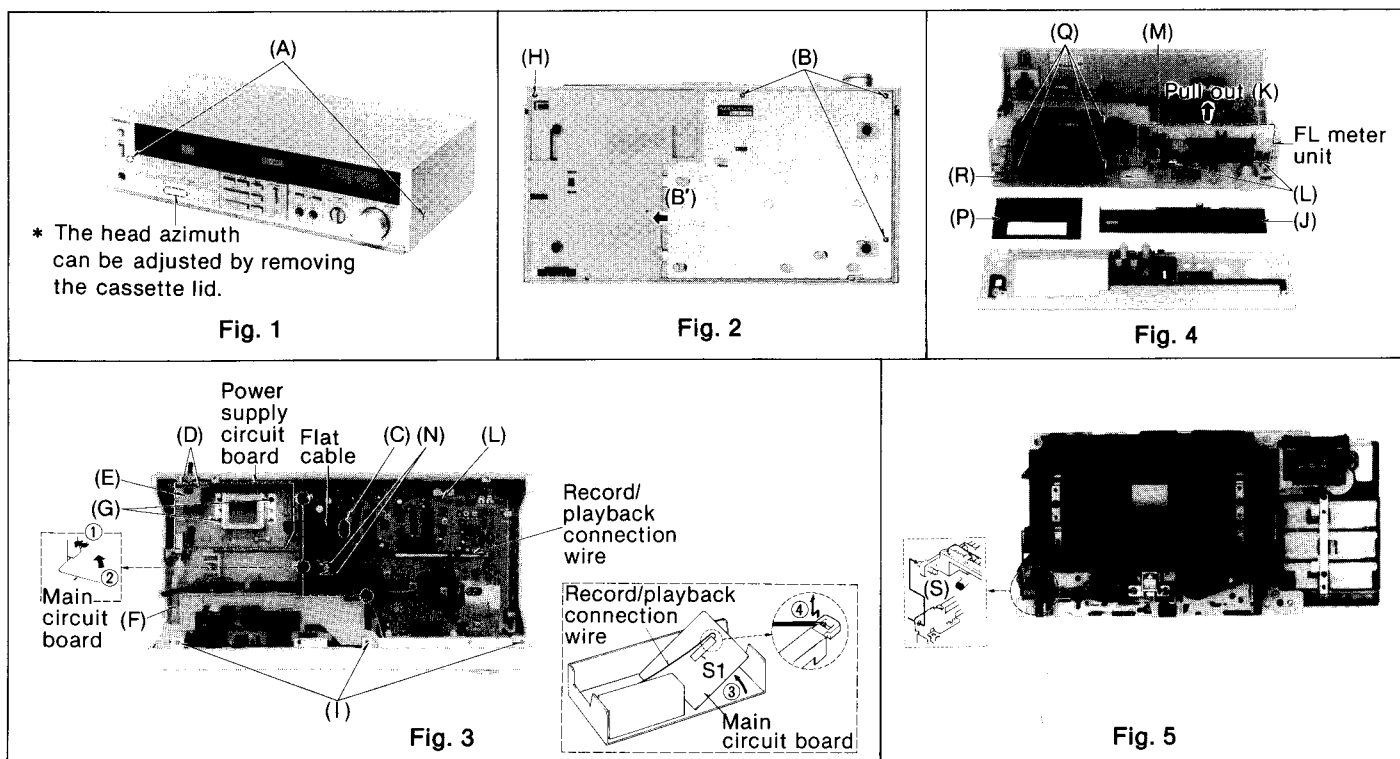
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## LOCATION OF CONTROLS AND COMPONENTS



## DISASSEMBLY INSTRUCTIONS



| Ref. No. | Procedure             | To remove ———              | Remove ———                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Shown in fig. ———             |
|----------|-----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1        | 1                     | Case cover                 | • 2 screws .....(A)                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1                             |
| 2        | 2                     | Bottom cover               | • 3 screws .....(B)<br>(Slide in direction of arrow).....(B')                                                                                                                                                                                                                                                                                                                                                                                                   | 2                             |
| 3        | 1 → 3                 | Power supply circuit board | • Pull out the flat cable from connector [4] .....(C)<br>• 2 screws .....(D)<br>• Cord clasper .....(E)<br>• Pull out the switch rod-C .....(F)<br>• 2 red screws.....(G)                                                                                                                                                                                                                                                                                       | 3<br>3<br>3<br>3<br>3         |
| 4        | 1 → 2 → 4             | Front panel                | • 1 screw.....(H)<br>• 3 screws .....(I)                                                                                                                                                                                                                                                                                                                                                                                                                        | 2<br>3                        |
| 5        | 1 → 2 → 4 → 5         | FL meter unit              | • Meter cover and meter filter .....(J)<br>• Pull out the FL meter unit .....(K)                                                                                                                                                                                                                                                                                                                                                                                | 4<br>4                        |
| 6        | 1 → 2 → 4 → 5 → 6     | Main circuit board         | • 3 red screws.....(L)<br>• Pull out the switch rod-E .....(M)<br>• Pull out the flat cable from connector [4] .....(C)<br>• Pull out the socket .....(N)<br>• As shown in fig. 3, push the claw in the direction of arrow ①, lift the main circuit board in the direction of arrow ②.<br>• Remove the record/playback connection wire in the direction of arrow ④ while lifting the main circuit board in the direction of arrow ③ as shown in fig. 3. ....(O) | 3, 4<br>4<br>3<br>3<br>3<br>3 |
| 7        | 1 → 2 → 4 → 5 → 7     | Mechanism unit             | • Cassette lid .....(P)<br>• 4 red screws.....(Q)<br>• Pull out the counter reset lever.....(R)                                                                                                                                                                                                                                                                                                                                                                 | 4<br>4<br>4                   |
| 8        | 1 → 2 → 4 → 5 → 7 → 8 | Cassette holder            | • Slide in direction of arrow.....(S)                                                                                                                                                                                                                                                                                                                                                                                                                           | 5                             |

## MEASUREMENT AND ADJUSTMENT METHODS

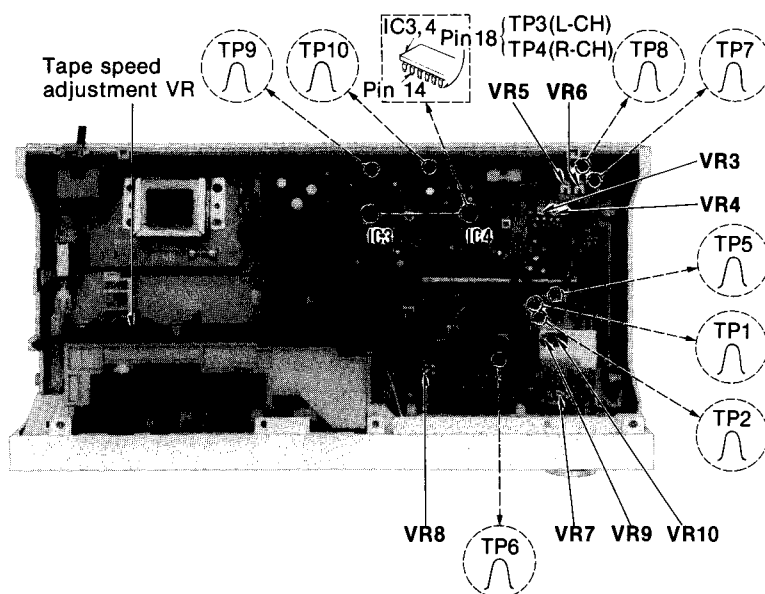
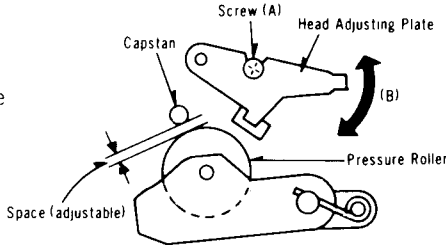
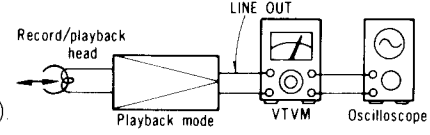
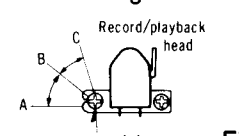
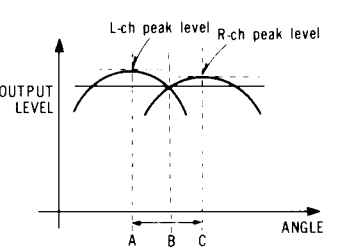
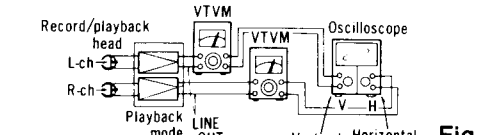
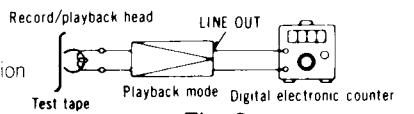


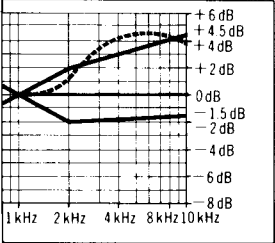
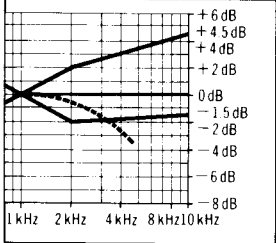
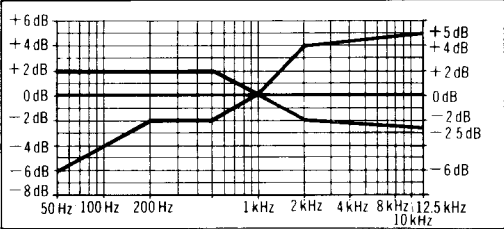
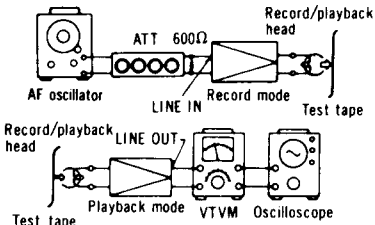
Fig. 1

**NOTES:** Keep good condition, set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature:  $20 \pm 5^{\circ}\text{C}$  ( $68 \pm 9^{\circ}\text{F}$ )
- Dolby NR switch: OUT
- Tape selector: Normal position
- Input selector: Line in
- Input level controls: Maximum

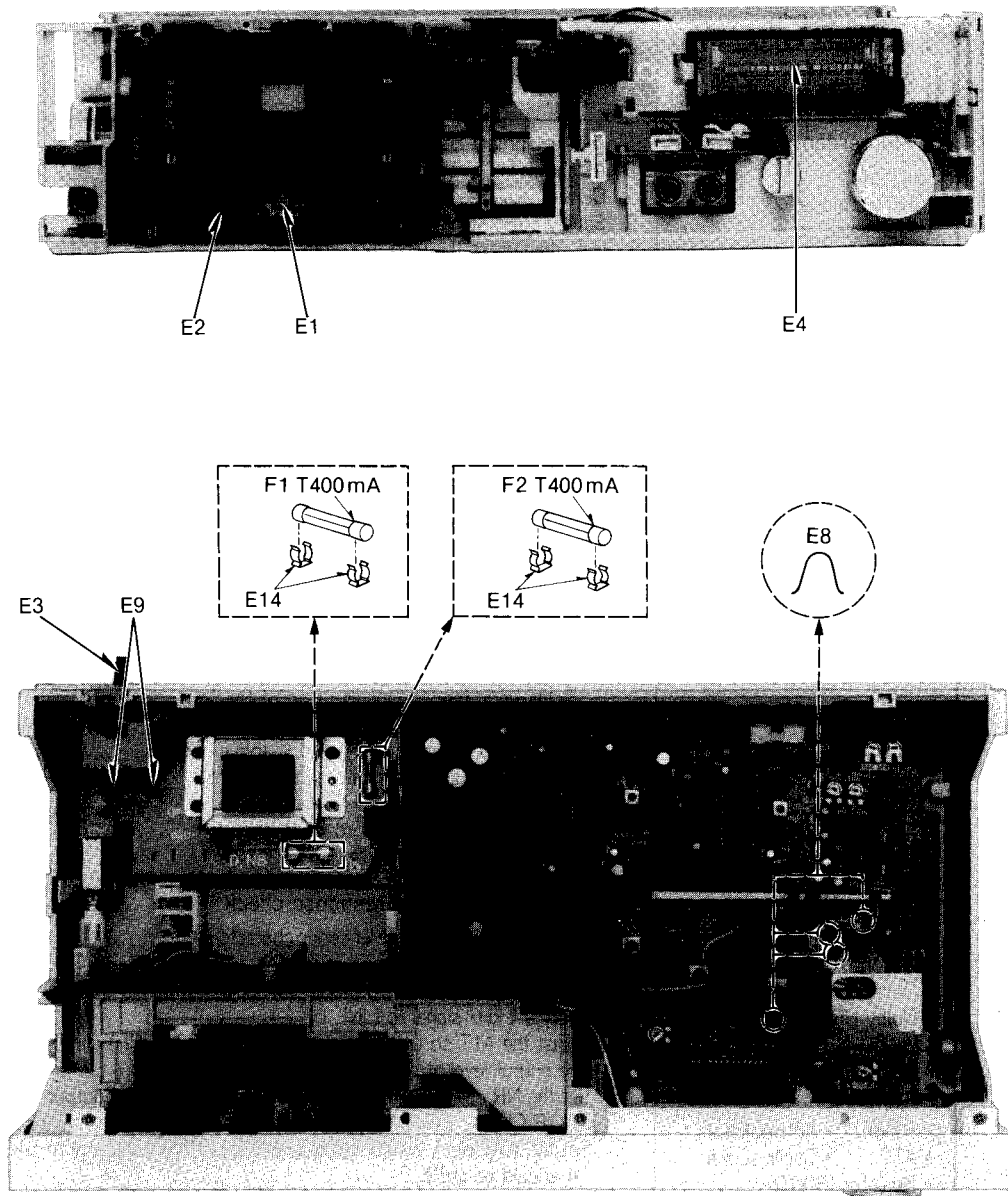
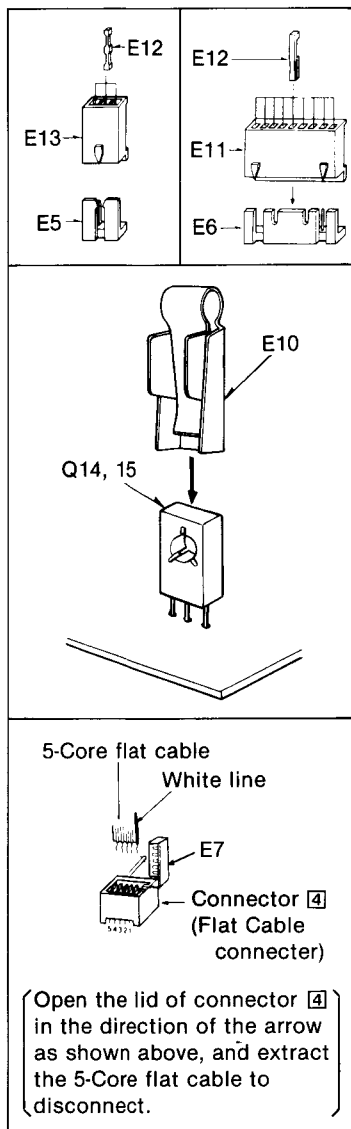
| ITEM                                                                                                                                                                                                                                                                  | MEASUREMENT & ADJUSTMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <p><b>A Head position adjustment</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Playback and pause mode</li> </ul>                                                                                                                                | <p>(The head adjusting plate is provided to adjust the tape touch of the head in cue or review mode)</p> <ol style="list-style-type: none"> <li>1 Press the playback button and pause button</li> <li>2 Measure the space between the pressure roller and the capstan.</li> </ol> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Standard value: <math>0.5 \pm 0.3\text{mm}</math></b> </div> <ol style="list-style-type: none"> <li>3 If the measured value is not within the standard value, untighten screw (A), and slide the head adjusting plate in the direction of arrow (B) for adjustment.</li> </ol>  <p style="text-align: center;"><b>Fig. 2</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>B Head azimuth adjustment</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Playback mode</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM • Oscilloscope</li> <li>• Test tape (azimuth) ... QZZCFM</li> </ul>       | <p><b>L-ch/R-ch output balance adjustment</b></p> <ol style="list-style-type: none"> <li>1 Make connections as shown in fig. 3.</li> <li>2 Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 4 for maximum output L-ch and R-ch levels.</li> <li>3 Turn the screw shown in fig. 4 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate the angle B between angles A and C, i.e., a point where L-ch and R-ch output levels come together at maximum. (Refer to figs. 4 and 5.)</li> </ol> <p><b>L-ch/R-ch phase adjustment</b></p> <ol style="list-style-type: none"> <li>4 Make connections as shown in fig. 6.</li> <li>5 Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 4 so that pointers of the two VTVMs swing to maximum and a waveform as illustrated in fig. 7 is obtained on the oscilloscope.</li> </ol>  <p style="text-align: center;"><b>Fig. 3</b></p>  <p style="text-align: center;"><b>Fig. 4</b></p>  <p style="text-align: center;"><b>Fig. 5</b></p>  <p style="text-align: center;"><b>Fig. 6</b></p>  <p style="text-align: center;"><b>Fig. 7</b></p> |
| <p><b>C Tape speed</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Playback mode</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• Digital electronic counter or frequency counter</li> <li>• Test tape ... QZZCWAT</li> </ul> | <p><b>Tape speed accuracy</b></p> <ol style="list-style-type: none"> <li>1 Test equipment connection is shown in fig. 8.</li> <li>2 Playback test tape (QZZCWAT 3,000Hz) at middle section and supply playback signal to frequency counter.</li> <li>3 Measure this frequency</li> <li>4 On the basis of 3,000Hz, determine value by following formula:</li> </ol> $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%) \quad \text{where, } f = \text{measured value}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Standard value: <math>\pm 1.5\%</math></b> </div> <p><b>Adjustment method</b></p> <ol style="list-style-type: none"> <li>1 Playback the test tape (middle)</li> <li>2 Adjust so that frequency becomes 3,000Hz</li> <li>3 Tape speed adjustment VR shown in fig. 1.</li> </ol> <p><b>Tape speed fluctuation</b></p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%) \quad f_1 = \text{maximum value, } f_2 = \text{minimum value}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Standard value: Less than 1%</b> </div> <p><b>Note:</b></p> <p>Please use non metal type screwdriver when you adjust tape speed accuracy on this unit.</p>  <p style="text-align: center;"><b>Fig. 8</b></p>           |

| ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MEASUREMENT & ADJUSTMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>㊦ Playback frequency response</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Playback mode</li> <li>• Tape selector<br/>... Normal position</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilloscope</li> <li>• Test tape ... QZZCFM</li> </ul>                                                                                                                                                                                                                                                                            | <ol style="list-style-type: none"> <li>1. Test equipment connection is shown in fig. 3.</li> <li>2. Place UNIT into playback mode</li> <li>3. Playback the frequency response test tape (QZZCFM).</li> <li>4. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.</li> <li>5. Make measurement for both channels.</li> <li>6. Make sure that the measured value is within the range specified in the frequency response chart (shown in fig. 9).</li> </ol> <div data-bbox="917 230 1441 510"> <p><b>Playback frequency response chart</b></p> </div> <p><b>Fig. 9</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>㊦ Playback gain</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Playback mode</li> <li>• Tape selector<br/>... Normal position</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilloscope</li> <li>• Test tape ... QZZCFM</li> </ul>                                                                                                                                                                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Test equipment connection is shown in fig. 3.</li> <li>2. Playback standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT.</li> <li>3. Make measurement for both channels</li> </ol> <div data-bbox="528 712 1412 779" style="border: 1px solid black; padding: 5px;"> <p><b>Standard value: 455mV ± 1dB [around 280mV: at test points TP3 (L-CH) and TP4 (R-CH)]</b></p> </div> <p><b>Adjustment</b></p> <ol style="list-style-type: none"> <li>1. If measured value is not within standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 1 on page 3).</li> <li>2. After adjustment, check "Playback frequency response" again</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>㊦ Erase current</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> <li>• Tape selector<br/>... Metal position</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilloscope</li> </ul>                                                                                                                                                                                                                                                                                                                             | <ol style="list-style-type: none"> <li>1. Test equipment connection is shown in fig. 10.</li> <li>2. Press the record and pause buttons</li> <li>3. Set the tape selector to metal position.</li> <li>4. Read voltage on VTVM and calculate erase current by following formula:</li> </ol> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R124}}{1 (\Omega)}$ <div data-bbox="528 1086 1054 1142" style="border: 1px solid black; padding: 5px;"> <p><b>Standard value: 155 ± 15 mA (Metal position)</b></p> </div> <div data-bbox="1086 920 1430 1070"> </div> <p><b>Fig. 10</b></p> <p>5. If measured value is not within standard, adjust as follows</p> <p><b>Adjustment</b></p> <ol style="list-style-type: none"> <li>1. Open the point (A) and short the point (B) on the main circuit board in the wiring connection diagram (See page 15).</li> <li>2. Make measurement for erase current</li> <li>3. Make sure that the measured value is within the erase current of 140mA to 170mA.</li> <li>4. If it is beyond the value, carry out the following adjustments: <ul style="list-style-type: none"> <li>• If the erase current is less than 140mA, short the point (A)</li> <li>• If the erase current is more than 170mA, open the points (A) and (B)</li> </ul> </li> </ol> |
| <p><b>㊦ Overall frequency response</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record/playback mode</li> <li>• Tape selector<br/>... Normal position<br/>... CrO<sub>2</sub> position<br/>... Metal position</li> <li>• Input level controls ... MAX</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• AF oscillator</li> <li>• ATT</li> <li>• Oscilloscope</li> <li>• Resistor (600Ω)</li> <li>• Test tape (reference blank tape)<br/>... QZZCRA for Normal<br/>... QZZCRX for CrO<sub>2</sub><br/>... QZZCRZ for Metal</li> </ul> | <p><b>Note :</b></p> <p>Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).</p> <div data-bbox="935 1417 1441 1686"> <p><b>Overall frequency response chart (Normal)</b></p> </div> <p><b>Fig. 11</b></p> <p><b>Overall frequency response adjustment by recording bias current</b></p> <p><b>Note 1:</b></p> <p>On RS-M226, overall frequency response is adjusted with tape selector set at Normal.</p> <p><b>Note 2:</b></p> <p>Recording equalizer is fixed.</p> <ol style="list-style-type: none"> <li>1. Make connections as shown in fig. 12.</li> <li>2. Input a 1kHz, -24dB signal through LINE IN. Place the set in record mode</li> <li>3. Fine adjust the attenuator to obtain 0.4V LINE OUT output. <ul style="list-style-type: none"> <li>• Make sure that the input signal level is -24 ± 4dB with 0.45V output voltage.</li> </ul> </li> </ol> <div data-bbox="911 1749 1430 2051"> </div> <p><b>Fig. 12</b></p>                                                                                                                                                                                                                                                                   |

| ITEM                                                                                                                                                                                                                                                                                                                                 | MEASUREMENT & ADJUSTMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|                                                                                                                                                                                                                                                                                                                                      | <p>4. Set the tape selector to Normal, and load the test tape (QZZCRA).</p> <p>5. Adjust the attenuator to reduce the input signal level by 20 dB.</p> <p>6. Adjust the AF oscillator to generate 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz and 10 kHz signals, and record these signals on the test tape.</p> <p>7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 11).<br/>(If the curve is within the charted specifications, proceed to steps 8, 9 and 10.)<br/>If the curve is not within the charted specifications, adjust as follows:</p> <p><b>Adjustment (A):</b><br/>When the curve exceeds the overall frequency response chart specifications (fig. 11) as shown in fig. 13.</p>  <p><b>Fig. 13</b></p> <ol style="list-style-type: none"> <li>1) Increase bias current by turning VR9 (L-CH) and VR10 (R-CH).<br/>(See fig. 1 on page 3.)</li> <li>2) Repeat steps 6 and 7 to confirm.<br/>(Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.)</li> <li>3) If the curve still exceeds the specifications (fig. 11), increase bias current further and repeat steps 6 and 7.</li> </ol> <p>8. Switch the tape selector to CrO<sub>2</sub>, change test tape to QZZCRX, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO<sub>2</sub> tapes (fig. 15).</p> <p>9. Switch the tape selector to Metal, change test tape to QZZCRZ, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 15).</p> <p>10. Confirm that bias currents are approximately as follows when the tape selector is set at different positions.</p> <ul style="list-style-type: none"> <li>• Read voltage on VTVM and calculate bias current by following formula:<br/> <math display="block">\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}</math> </li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>around 350 <math>\mu</math>A (Normal position)<br/> around 450 <math>\mu</math>A (CrO<sub>2</sub> position)<br/> around 700 <math>\mu</math>A (Metal position) } : measured at TP1 (L-CH) and TP2 (R-CH)</p> </div> <p><b>Adjustment (B):</b><br/>When the curve falls below the overall frequency response chart specifications (fig. 11) as shown in fig. 14.</p>  <p><b>Fig. 14</b></p> <ol style="list-style-type: none"> <li>1) Reduce bias current by turning VR9 (L-CH) and VR10 (R-CH).</li> <li>2) Repeat steps 6 and 7 to confirm.<br/>(Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.)</li> <li>3) If the curve still falls below the charted specifications (fig. 11), reduce bias current further and repeat steps 6 and 7.</li> </ol> <p><b>Overall frequency response chart (CrO<sub>2</sub>, Metal)</b></p>  <p><b>Fig. 15</b></p> |
| <p><b>H Overall gain</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record/playback mode</li> <li>• Tape selector<br/>..... Normal position</li> <li>• Input level controls... MAX</li> <li>• Standard input level:<br/>MIC ..... -72 <math>\pm</math> 4 dB<br/>LINE IN ... -24 <math>\pm</math> 4 dB</li> </ul> | <ol style="list-style-type: none"> <li>1. Test equipment connection is shown in fig. 16.</li> <li>2. Place UNIT into record mode, and tape selector to normal position.</li> <li>3. Supply 1 kHz signal (-24 dB) from AF oscillator, through ATT to LINE IN.</li> <li>4. Adjust ATT until monitor level at LINE OUT becomes 0.45 V.</li> <li>5. Using test tape, make recording.</li> <li>6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.45 V.</li> </ol>  <p><b>Fig. 16</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| ITEM                                                                                                                                                                                                                                                                                                                                                                                                               | MEASUREMENT & ADJUSTMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• AF oscillator</li> <li>• ATT</li> <li>• Oscilloscope</li> <li>• Resistor (600Ω)</li> <li>• Test tape (reference blank tape)</li> <li>... QZZCRA for Normal</li> </ul>                                                                                                                                                                   | <ol style="list-style-type: none"> <li>If measured value is not 0.45 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 1 on).</li> <li>Repeat from step (2).</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>① Fluorescent meter</p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> <li>• Tape selector</li> <li>..... Normal position</li> <li>• Input level controls ... MAX</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• AF oscillator</li> <li>• ATT</li> </ul>                                                                                    | <ol style="list-style-type: none"> <li>Test equipment connection is shown in fig. 16.</li> <li>As shown in fig. 17, connect the collector of Q8 and peak reset terminal.</li> <li>Supply 1kHz signal (−24 dB) to the LINE IN jack, then press the record button.</li> <li>Adjust the ATT so that the output level at LINE OUT jack becomes 0.45 V (The input level at this condition is termed the standard input level).</li> <li>Adjustment at “−20 dB”: <ol style="list-style-type: none"> <li>Adjust the ATT so that input level is −20 dB below standard recording level.</li> <li>Adjust VR7 so that the −20 dB segment lights up in the <math>-20 \pm 1</math> dB range (L-CH ONLY) (See fig. 18).</li> </ol> </li> <li>Adjustment at “0 dB”: <ol style="list-style-type: none"> <li>Adjust the ATT so that the output level at LINE OUT jack becomes 0.45 V. (The input level at this condition is termed the standard input level.)</li> <li>Adjust VR8 so that the +1 dB segment lights up in the <math>0 \pm 0.2</math> dB range of the standard input level (See fig. 19).</li> </ol> </li> <li>Repeat twice between steps 5 and 6 above.</li> <li>Adjust ATT and check that all segments light up when an input signal level is increased to 10 dB higher than the standard input level (See fig. 20).</li> </ol> <div data-bbox="1021 436 1316 705"> <p>Fig. 17</p> </div> <div data-bbox="973 739 1396 873"> <p>Fig. 18</p> </div> <div data-bbox="973 884 1396 1019"> <p>Fig. 19</p> </div> <div data-bbox="973 1030 1428 1153"> <p>Fig. 20</p> </div>                                                                                                                |
| <p>② Dolby NR circuit</p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> <li>• Dolby NR switch ... IN/OUT</li> <li>• Dolby NR select switch</li> <li>... B/C</li> <li>• Input level controls ... MAX</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• AF oscillator</li> <li>• ATT</li> <li>• Oscilloscope</li> <li>• Resistor (600Ω)</li> </ul> | <p><b>Dolby circuit frequency response check</b></p> <ul style="list-style-type: none"> <li>• Check of the Dolby-B type encoder characteristics <ol style="list-style-type: none"> <li>Make connections as shown in fig. 21.</li> <li>Set the unit to the record mode. (NR select switch is OUT.)</li> <li>Apply a 1 kHz signal to LINE IN.</li> <li>Adjust the ATT so that the output level at TP3 (L-CH) and TP4 (R-CH) is 12.3 mV.</li> <li>The output level at pin 14 should be 0 dB.</li> <li>Set the NR select switch to B, and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is <math>+6 \text{ dB} \pm 2.5 \text{ dB}</math>.</li> <li>Set the NR select switch to OUT, and adjust the frequency to 5 kHz. The output signal level at pin 14 should be 0 dB.</li> <li>Set the NR select switch to B and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is <math>8 \text{ dB} \pm 2.5 \text{ dB}</math>.</li> </ol> </li> <li>• Check of Dolby-C type encoder characteristics <ol style="list-style-type: none"> <li>Repeat steps 1-5 above.</li> <li>Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is <math>11.5 \text{ dB} \pm 2.5 \text{ dB}</math>.</li> <li>Set the NR select switch to OUT and adjust the frequency to 5 kHz. The output signal at pin 14 should be 0 dB.</li> <li>Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is <math>8.5 \text{ dB} \pm 2.5 \text{ dB}</math>.</li> </ol> </li> </ul> <div data-bbox="933 1523 1444 1724"> <p>Fig. 21</p> </div> |

# ELECTRICAL PARTS LOCATION



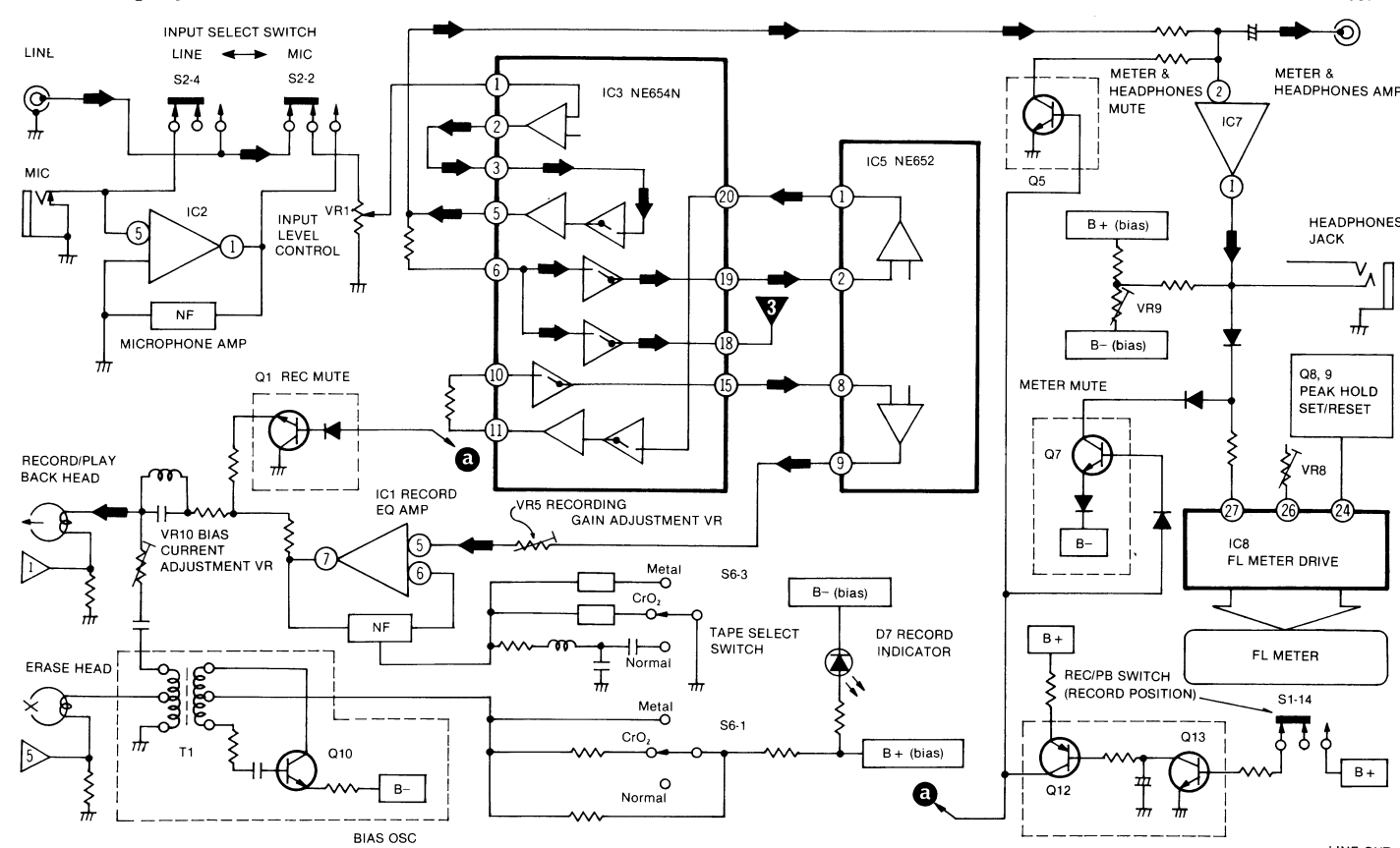
## REPLACEMENT PARTS LIST

Important safety notice  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.

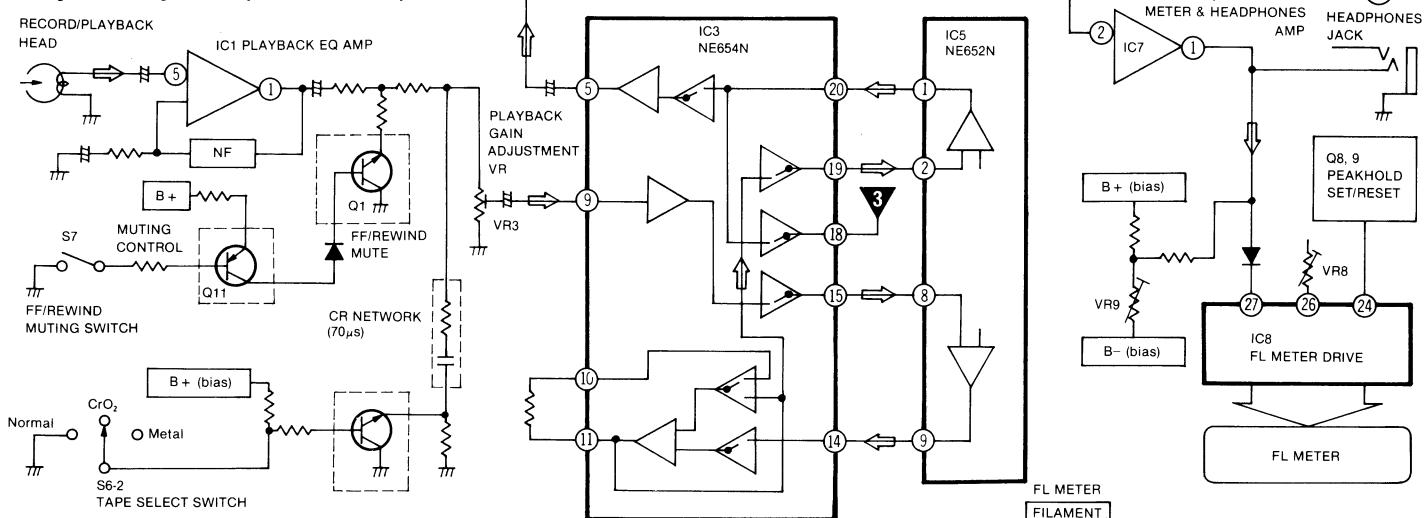
| Ref No.                 | Part No.                                        | Part Name & Description | Ref No. | Part No.         | Part Name & Description        |
|-------------------------|-------------------------------------------------|-------------------------|---------|------------------|--------------------------------|
| <b>ELECTRICAL PARTS</b> |                                                 |                         | E 7     | QJS1961S         | Flat Cable Connector           |
| E 1                     | QWY4122Z                                        | Record/Playback Head    | E 8     | QJT1090          | Pin Terminal-A (Test Point)    |
| E 2                     | QWY2138Z                                        | Erase Head              | E 9     | SJT777           | Pin Terminal-B (AC Power Cord) |
| E 3                     | [D] $\Delta$ RJA23ZC                            | AC Power Cord           | E 10    | NO39             | Heat Sink                      |
|                         | [For all European areas except United Kingdom.] |                         | E 11    | QJS1923TN        | 9 Pin Socket                   |
|                         | [B] $\Delta$ QFC1205M                           | AC Power Cord           | E 12    | QJT1054          | Contact                        |
|                         | [For United Kingdom.]                           |                         | E 13    | QJS1921TN        | 3 Pin Socket                   |
| E 4                     | QSiFL006F                                       | FL Meter                | E 14    | $\Delta$ QTF1054 | Fuse Holder                    |
| E 5                     | QJP1921TN                                       | 3 Pin Post              |         |                  |                                |
| E 6                     | QJP1923TN                                       | 9 Pin Post              |         |                  |                                |

# BLOCK DIAGRAM

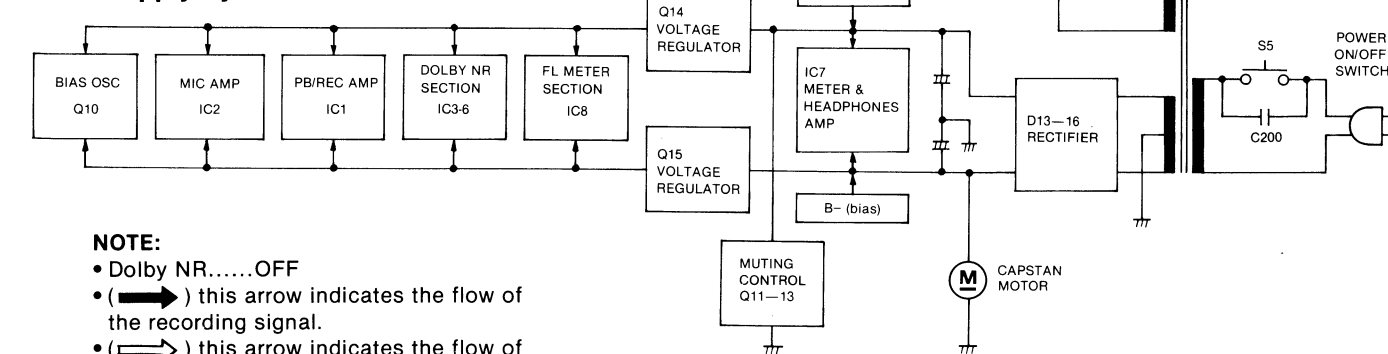
## Recording System (L-CH ONLY)



## Playback System (L-CH ONLY)



## Power Supply System

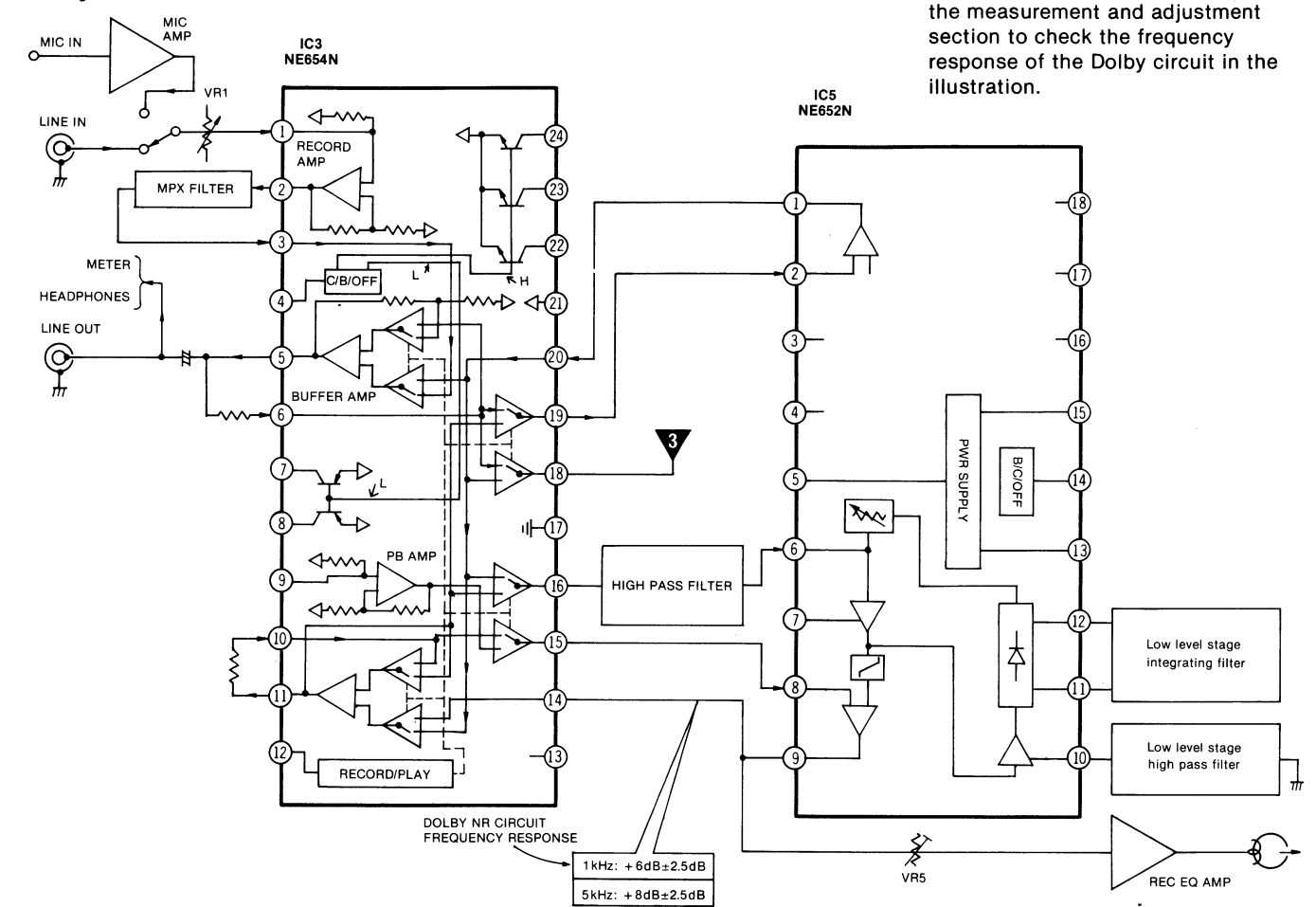


**NOTE:**

- Dolby NR.....OFF
- (→) this arrow indicates the flow of the recording signal.
- (⇄) this arrow indicates the flow of the playback signal.

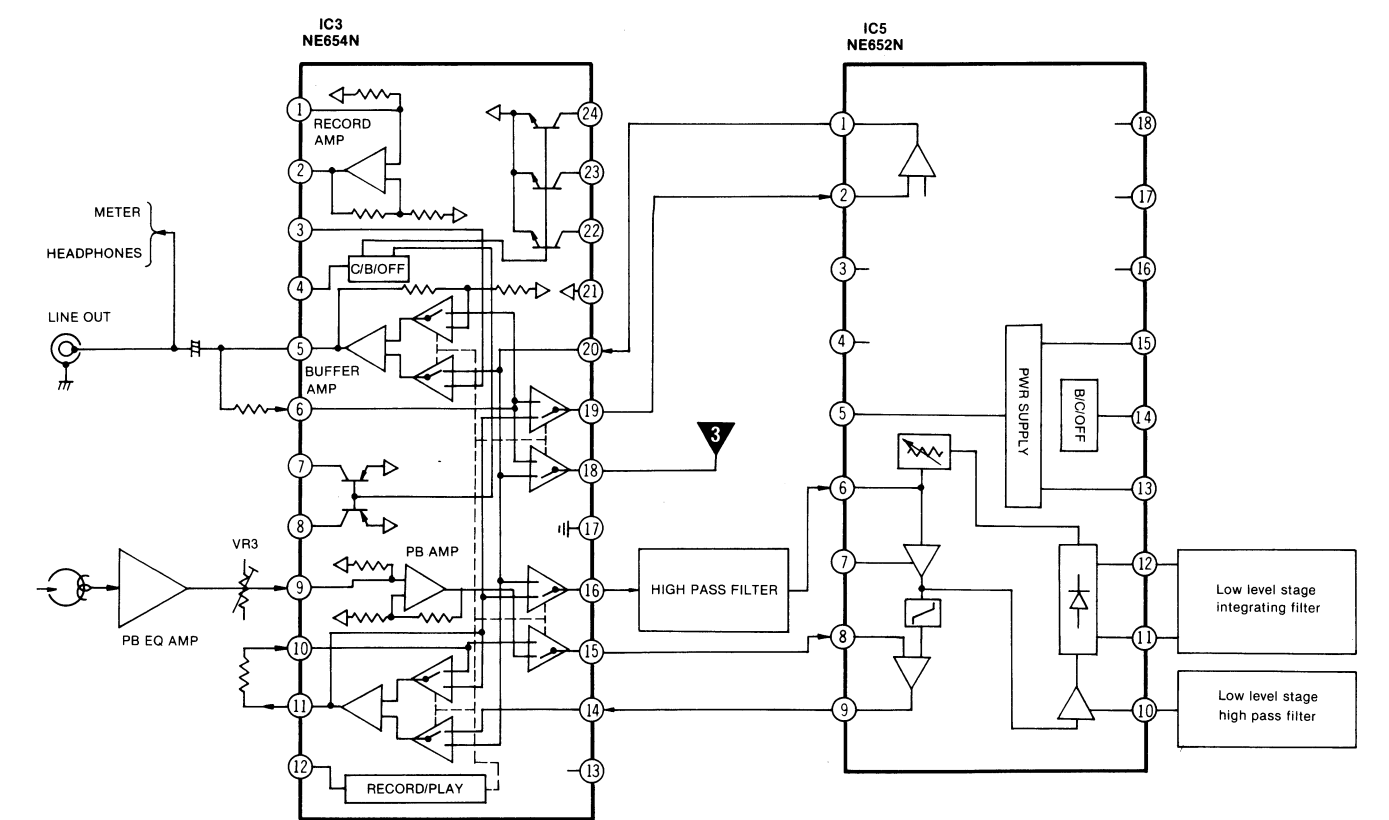
## DOLBY SYSTEM (L-CH ONLY)

### Dolby-B Encode

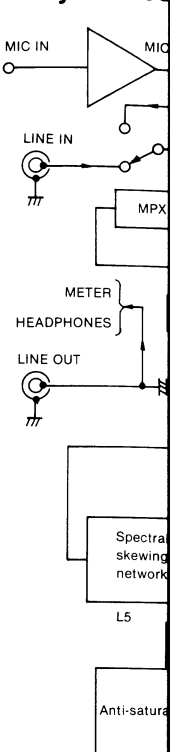


Refer to Item ③ "Dolby NR circuit" of the measurement and adjustment section to check the frequency response of the Dolby circuit in the illustration.

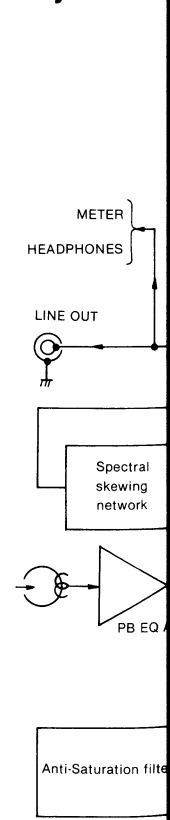
### Dolby-B Decode

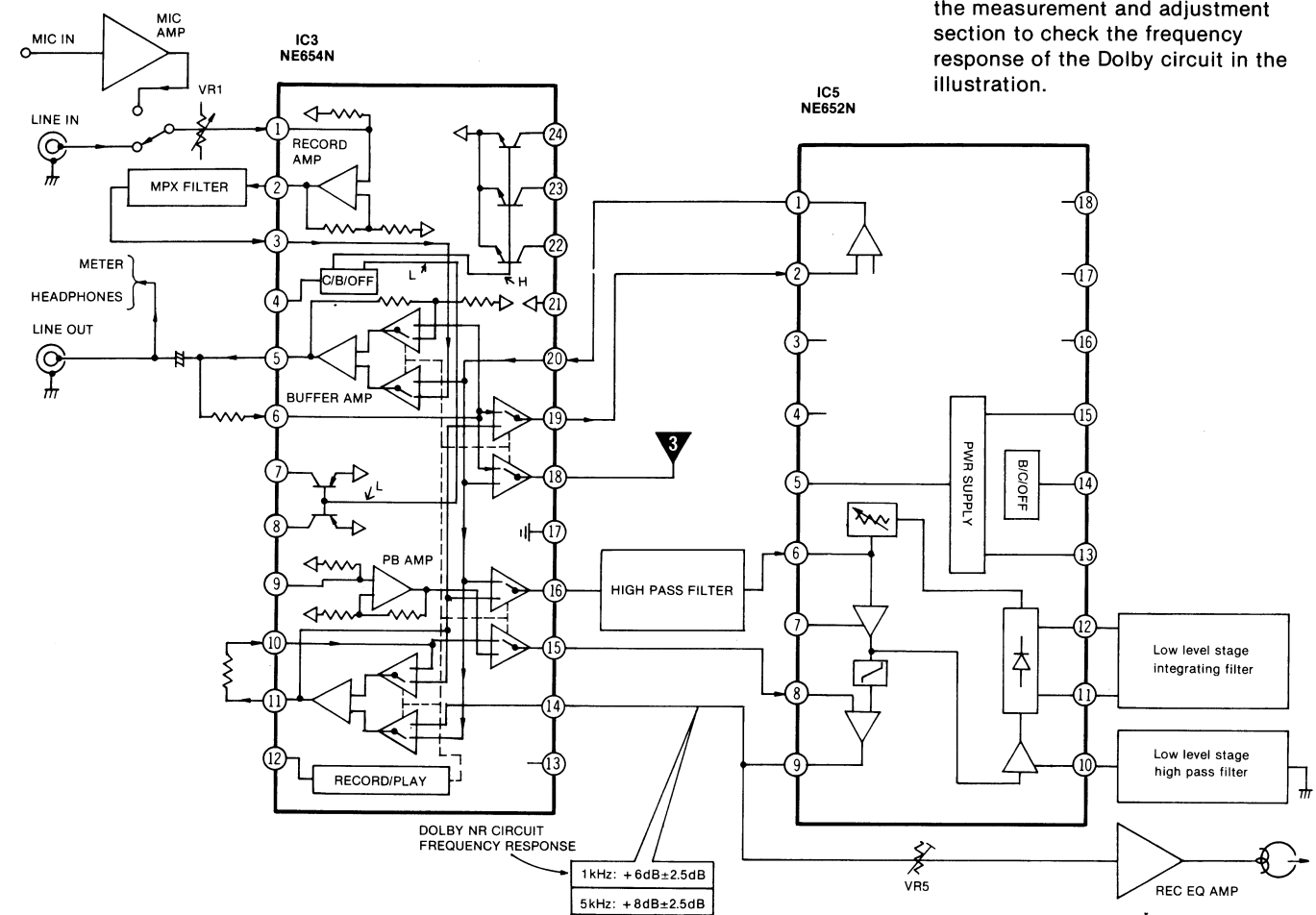
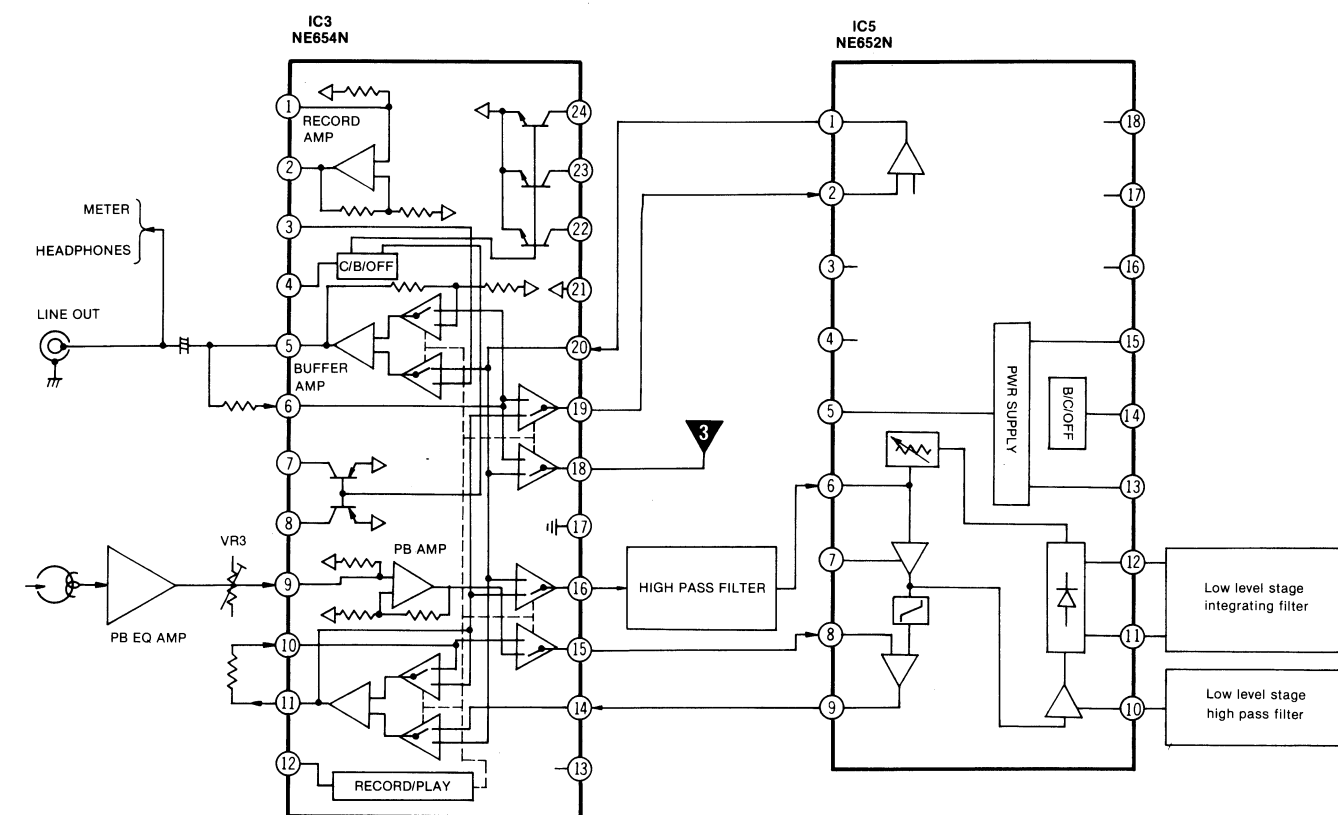
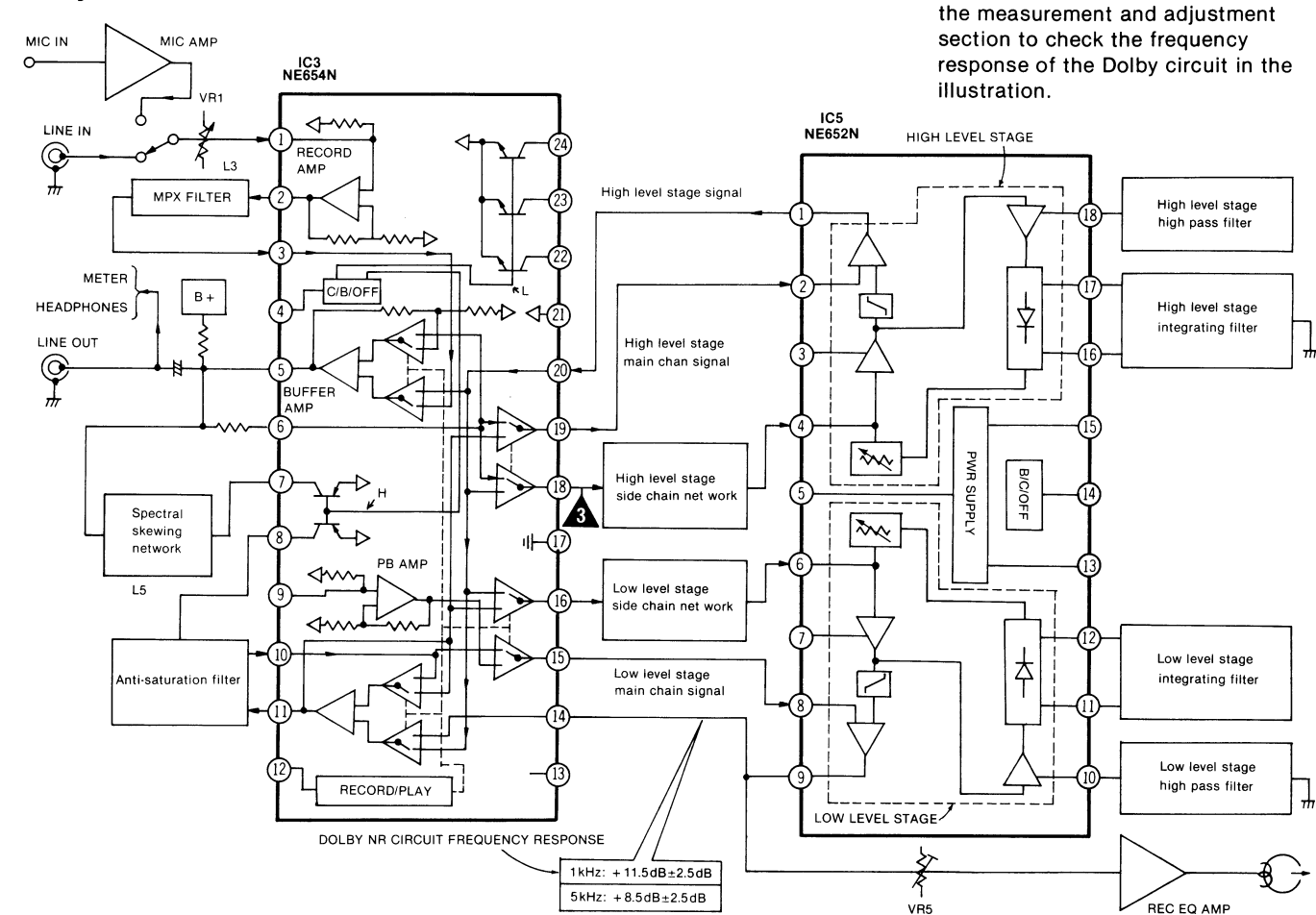
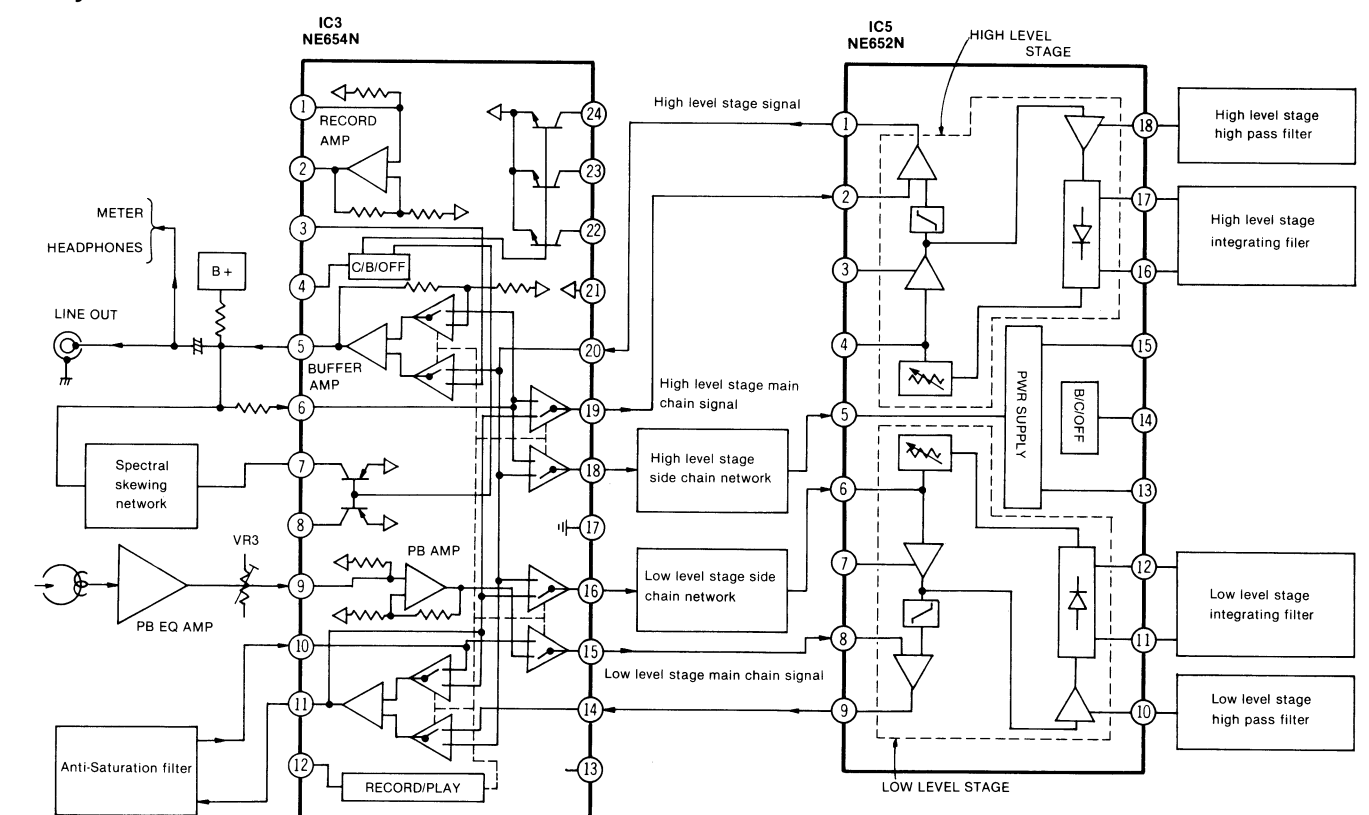


### Dolby-C Encode



### Dolby-C Decode



**DOLBY SYSTEM (L-CH ONLY)****Dolby-B Encode****Dolby-B Decode****Dolby-C Encode****Dolby-C Decode**

## NOTES: RESISTORS

ERD .....Carbon  
 ERG .....Metal-oxide  
 ERS .....Metal-oxide  
 ERO .....Metal-film  
 ERX .....Metal-film  
 ERQ .....Fuse type metallic  
 ERC .....Solid  
 ERF .....Cement

## CAPACITORS

ECBA .....Ceramic  
 ECG .....Ceramic  
 ECK .....Ceramic  
 ECC .....Ceramic  
 ECF .....Ceramic  
 ECQM .....Polyester film  
 ECQE .....Polyester film  
 ECQP .....Polypropylene

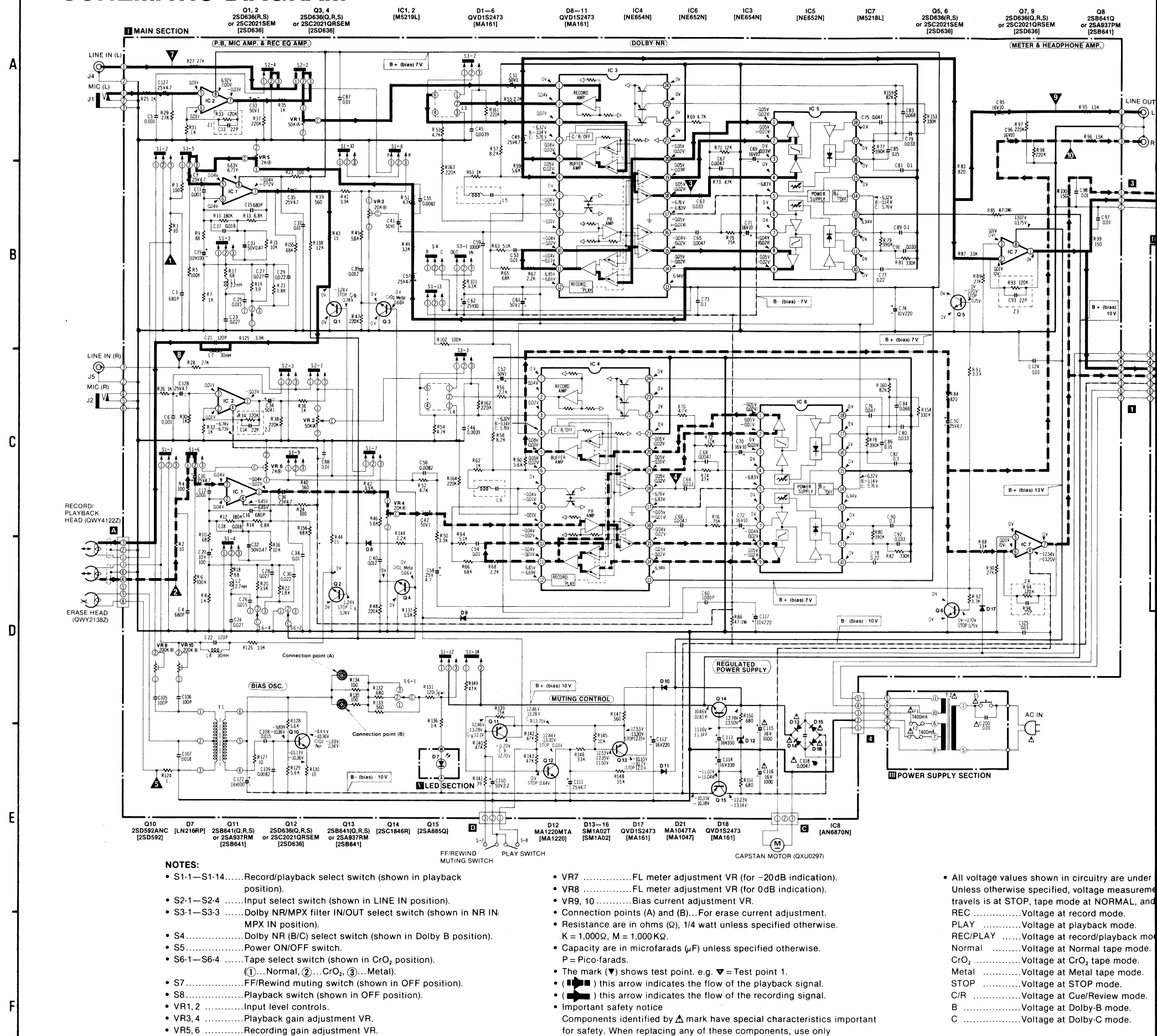
ECE .....Electrolytic  
 ECEP .....Non polar electrolytic  
 EQS .....Polystyrene  
 ECS .....Tantalum  
 QCS .....Tantalum

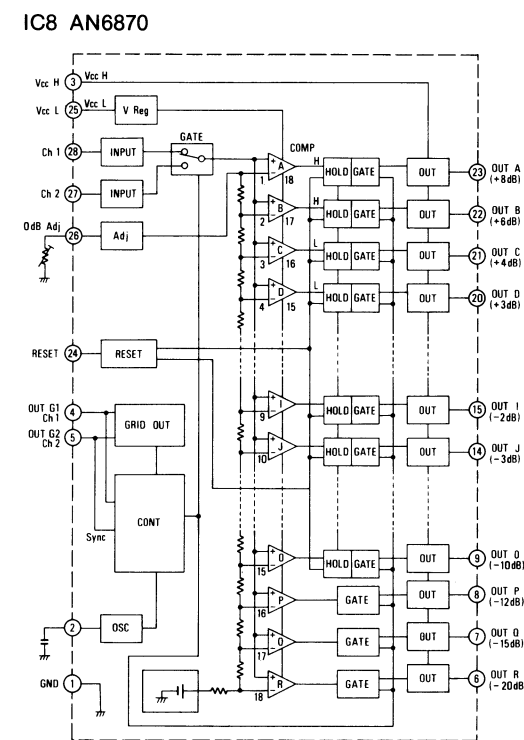
## REPLACEMENT PARTS LIST

Important safety notice  
 Components identified by  $\Delta$  mark have special characteristics important for safety.  
 When replacing any of these components, use only manufacturer's specified parts.

| Ref No.               | Part No.     | Ref No.              | Part No.     | Ref No.               | Part No.                                        | Ref No.                                                       | Part No.     |
|-----------------------|--------------|----------------------|--------------|-----------------------|-------------------------------------------------|---------------------------------------------------------------|--------------|
| RESISTORS             |              |                      |              | TRANSISTORS           |                                                 |                                                               |              |
| R 1, 2                | ERD25FJ100   | R 132                | ERD25FJ681   | C 85, 86              | ECQV05154JZ                                     | Z 3 (R 93 and C 93)                                           | EXRP220K124T |
| R 3, 4                | ERD25FJ101   | R 133                | ERD25FJ561   | C 87, 88              | ECKD1H103ZF                                     | Z 4 (R 94 and C 94)                                           | EXRP220K124T |
| R 5, 6                | ERD25TJ104   | R 134, 135           | ERD25FJ101   | C 89, 90              | ECQM1H104JZ                                     |                                                               |              |
| R 7, 8                | ERD25FJ102   | R 136                | ERD25FJ102   | C 91, 92              | ECQM1H333JZ                                     |                                                               |              |
| R 9, 10               | ERD25FJ680   | R 137                | ERD25FJ152   | C 93 (22PF)           | refer to Z 3                                    |                                                               |              |
| R 11, 12              | ERD25TJ184   | R 138                | ERD25TJ123   | C 94 (22PF)           | refer to Z 4                                    |                                                               |              |
| R 13, 14              | ERD25FJ682   | R 139                | ERD25TJ153   | C 95, 96              | ECEA1HS100                                      |                                                               |              |
| R 15, 16              | ERD25FJ103   | R 140                | ERD25TJ473   | C 97, 98              | ECKD1H103ZF                                     |                                                               |              |
| R 17, 18              | ERD25FJ680   | R 141                | ERD25FJ390   | C 99, 100, 101, 102   |                                                 |                                                               |              |
| R 19, 20              | ERD25FJ392   |                      |              |                       | ECEA50Z1                                        |                                                               |              |
|                       |              | R 142, 143           | ERD25TJ473   | C 103                 | ECEA1HS100                                      |                                                               |              |
| R 21, 22              | ERD25FJ182   | R 144                | ERD25FJ222   | C 104                 | ECFDD473MXY                                     |                                                               |              |
| R 23, 24              | ERD25FJ101   | R 145                | ERD25FJ103   | C 105, 106            | ECKD1H101K                                      |                                                               |              |
| R 25, 26              | ERD25FJ102   | R 146                | ERD25TJ333   | C 107                 | ECQP1183JZ                                      |                                                               |              |
| R 27, 28, 29, 30      |              | R 147                | ERD25FJ561   | C 108                 | ECQM1H153JZ                                     |                                                               |              |
|                       | ERD25TJ273   | R 148                | ERD25TJ153   | C 109                 | ECQM1H822JZ                                     |                                                               |              |
| R 31, 32              | ERD25FJ102   | R 149                | ERD25TJ473   | C 110                 | ECEA50Z2R2                                      |                                                               |              |
| R 33 (120K $\Omega$ ) | refer to Z 1 | R 150, 151           | ERD25FJ681   | C 111                 | ECEA25Z4R7                                      |                                                               |              |
| R 34 (120K $\Omega$ ) | refer to Z 2 | R 152                | ERD25FJ103   | C 112                 | ECEA1CS221                                      |                                                               |              |
| R 35, 36              | ERD25FJ102   | R 153, 154           | ERD25TJ334   | C 113, 114            | ECEA1CS331                                      |                                                               |              |
| R 37, 38              | ERD25TJ224   |                      |              | C 115, 116            | $\Delta$ ECEA1CS102                             |                                                               |              |
| R 39, 40              | ERD25FJ561   | R 155, 156           | ERD25TJ683   | C 117                 | ECEA1AS221                                      |                                                               |              |
|                       |              | R 159, 160           | ERD25TJ823   |                       |                                                 |                                                               |              |
|                       |              | R 161, 162, 163, 164 |              |                       |                                                 |                                                               |              |
|                       |              | ERD25TJ224           |              |                       |                                                 |                                                               |              |
| R 41, 42              | ERD25FJ392   | R 166                | ERD25TJ683   |                       |                                                 |                                                               |              |
| R 43, 44              | ERD25FJ150   |                      |              |                       |                                                 |                                                               |              |
| R 45, 46              | ERD25FJ562   | VARIABLE RESISTORS   |              |                       |                                                 |                                                               |              |
| R 47, 48              | ERD25TJ224   | VR 1, 2              | EWJS3AF22A54 |                       |                                                 |                                                               |              |
| R 49, 50              | ERD25FJ332   | VR 3, 4              | EVNM4AA00B24 |                       |                                                 |                                                               |              |
| R 51, 52, 53, 54      |              | VR 5, 6              | EVNM4AA00B23 |                       |                                                 |                                                               |              |
|                       | ERD25FJ472   | VR 7                 | EVNM4AA00B24 |                       |                                                 |                                                               |              |
| R 55, 56              | ERD25FJ272   | VR 8                 | EVNM4AA00B14 |                       |                                                 |                                                               |              |
| R 57, 58              | ERD25FJ822   | VR 9, 10             | EVNM4AA00B25 |                       |                                                 |                                                               |              |
| R 59, 60              | ERD25FJ562   |                      |              |                       |                                                 |                                                               |              |
| R 61, 62              | ERD25FJ102   |                      |              |                       |                                                 |                                                               |              |
|                       |              | CAPACITORS           |              |                       |                                                 |                                                               |              |
| R 63, 64              | ERD25FJ512   | C 3, 4               | ECKD1H681KB  |                       |                                                 |                                                               |              |
| R 65, 66              | ERD25TJ683   | C 5                  | ECKD1H102KB  |                       |                                                 |                                                               |              |
| R 67, 68              | ERD25FJ222   | C 6                  | ECBS1H102KBY |                       |                                                 |                                                               |              |
| R 69, 70              | ERD25FJ472   | C 9, 10              | ECEA25Z4R7   |                       |                                                 |                                                               |              |
| R 71, 72              | ERD25TJ123   | C 11, 12             | ECKD1H102KB  |                       |                                                 |                                                               |              |
| R 73, 74              | ERD25TJ473   | C 13 (22PF)          | refer to Z 1 |                       |                                                 |                                                               |              |
| R 75, 76              | ERD25TJ753   | C 14 (22PF)          | refer to Z 2 |                       |                                                 |                                                               |              |
| R 77, 78, 79, 80      |              | C 15, 16             | ECKD1H681KB  |                       |                                                 |                                                               |              |
|                       | ERD25TJ394   | C 17, 18             | ECQM1H183JZ  |                       |                                                 |                                                               |              |
| R 81, 82              | ERD25TJ334   | C 19, 20             | ECEA1AS101   |                       |                                                 |                                                               |              |
| R 83, 84              | ERD25FJ821   |                      |              |                       |                                                 |                                                               |              |
|                       |              | C 21, 22             | ECKD2H121KB  |                       |                                                 |                                                               |              |
| R 85, 86              | ERG1ANJ470   | C 23, 24             | ECQM1H273JZ  |                       |                                                 |                                                               |              |
| R 87, 88              | ERD25TJ333   | C 25, 26             | ECQM1H153JZ  |                       |                                                 |                                                               |              |
| R 89, 90              | ERD25TJ273   | C 27, 28             | ECFDD273KXY  |                       |                                                 |                                                               |              |
| R 91, 92              | ERD25FJ332   | C 29, 30             | ECFDD223KXY  |                       |                                                 |                                                               |              |
| R 93 (120K $\Omega$ ) | refer to Z 3 | C 31, 32             | ECEA50ZP47   |                       |                                                 |                                                               |              |
| R 94 (120K $\Omega$ ) | refer to Z 4 | C 33, 34             | ECEA50Z1     |                       |                                                 |                                                               |              |
| R 95, 96              | ERD25FJ152   | C 35, 36             | ECEA25Z4R7   |                       |                                                 |                                                               |              |
| R 97, 98              | ERD25TJ224   | C 37, 38             | ECKD1H103ZF  |                       |                                                 |                                                               |              |
| R 99, 100             | ERD25FJ151   | C 39, 40             | ECQM1H123JZ  |                       |                                                 |                                                               |              |
| R 101                 | ERD25FJ332   |                      |              |                       |                                                 |                                                               |              |
|                       |              | C 41, 42             | ECEA50Z1     |                       |                                                 |                                                               |              |
| R 102                 | ERD25TJ104   | C 45, 46             | ECFDD392KVY  |                       |                                                 |                                                               |              |
| R 103, 104            | ERD25TJ683   | C 49, 50             | ECEA25Z4R7   |                       |                                                 |                                                               |              |
| R 105, 106            | ERD25TJ473   | C 51, 52             | ECEA50Z1     |                       |                                                 |                                                               |              |
| R 107, 108            | ERD25TJ105   | C 53, 54             | ECQM1H103JZ  |                       |                                                 |                                                               |              |
| R 109, 110            | ERD25FJ102   | C 55, 56             | ECQM1H822JZ  |                       |                                                 |                                                               |              |
| R 111                 | ERD25TJ153   | C 57, 58             | ECEA25Z4R7   |                       |                                                 |                                                               |              |
| R 112                 | ERD25FJ103   | C 59, 60             | ECKD1H102KB  |                       |                                                 |                                                               |              |
| R 113                 | ERD25TJ683   | C 61                 | ECEA50Z1     |                       |                                                 |                                                               |              |
| R 114                 | ERD25FJ222   | C 62                 | ECEA1HS100   |                       |                                                 |                                                               |              |
| R 115                 | ERD25TJ684   |                      |              |                       |                                                 |                                                               |              |
|                       |              | C 63, 64             | ECQM1H333JZ  |                       |                                                 |                                                               |              |
| R 116                 | ERD25FJ471   | C 65, 66, 67, 68     |              |                       |                                                 |                                                               |              |
| R 117                 | ERD25FJ472   |                      | ECQM1H472JZ  |                       |                                                 |                                                               |              |
| R 119                 | ERD25FJ182   |                      |              |                       |                                                 |                                                               |              |
| R 121                 | ERD25FJ103   | C 69, 70, 71, 72     |              |                       |                                                 |                                                               |              |
| R 122, 123            | ERD25FJ181   |                      | ECEA1HS100   |                       |                                                 |                                                               |              |
| R 124                 | ERD25FJ180   | C 73                 | ECQM1H104JZ  |                       |                                                 |                                                               |              |
| R 125, 126            | ERD25FJ392   | C 74                 | ECEA1AS221   |                       |                                                 |                                                               |              |
| R 127                 | ERD25FJ100   | C 75, 76             | ECQM1H473JZ  |                       |                                                 |                                                               |              |
| R 128, 129            | ERD25FJ562   | C 77, 78             | ECQV05224JZ  |                       |                                                 |                                                               |              |
| R 130                 | ERD25FJ100   | C 79, 80             | ECQM1H333JZ  |                       |                                                 |                                                               |              |
|                       |              | C 81, 82             | ECQM1H104JZ  |                       |                                                 |                                                               |              |
|                       |              | C 83, 84             | ECQM1H683JZ  |                       |                                                 |                                                               |              |
| R 131                 | ERD50FJ121   |                      |              |                       |                                                 |                                                               |              |
|                       |              |                      |              | COMBINATION PARTS     |                                                 |                                                               |              |
|                       |              |                      |              | Z 1 (R 33 and C 13)   | EXRP220K124T                                    |                                                               |              |
|                       |              |                      |              | Z 2 (R 34 and C 14)   | EXRP220K124T                                    |                                                               |              |
|                       |              |                      |              | TRANSISTORS           |                                                 |                                                               |              |
|                       |              |                      |              | C 85, 86              | ECQV05154JZ                                     | Z 3 (R 93 and C 93)                                           | EXRP220K124T |
|                       |              |                      |              | C 87, 88              | ECKD1H103ZF                                     | Z 4 (R 94 and C 94)                                           | EXRP220K124T |
|                       |              |                      |              | C 89, 90              | ECQM1H104JZ                                     |                                                               |              |
|                       |              |                      |              | C 91, 92              | ECQM1H333JZ                                     |                                                               |              |
|                       |              |                      |              | C 93 (22PF)           | refer to Z 3                                    |                                                               |              |
|                       |              |                      |              | C 94 (22PF)           | refer to Z 4                                    |                                                               |              |
|                       |              |                      |              | C 95, 96              | ECEA1HS100                                      |                                                               |              |
|                       |              |                      |              | C 97, 98              | ECKD1H103ZF                                     |                                                               |              |
|                       |              |                      |              | C 99, 100, 101, 102   |                                                 |                                                               |              |
|                       |              |                      |              |                       | ECEA50Z1                                        |                                                               |              |
|                       |              |                      |              | C 103                 | ECEA1HS100                                      |                                                               |              |
|                       |              |                      |              | C 104                 | ECFDD473MXY                                     |                                                               |              |
|                       |              |                      |              | C 105, 106            | ECKD1H101K                                      |                                                               |              |
|                       |              |                      |              | C 107                 | ECQP1183JZ                                      |                                                               |              |
|                       |              |                      |              | C 108                 | ECQM1H153JZ                                     |                                                               |              |
|                       |              |                      |              | C 109                 | ECQM1H822JZ                                     |                                                               |              |
|                       |              |                      |              | C 110                 | ECEA50Z2R2                                      |                                                               |              |
|                       |              |                      |              | C 111                 | ECEA25Z4R7                                      |                                                               |              |
|                       |              |                      |              | C 112                 | ECEA1CS221                                      |                                                               |              |
|                       |              |                      |              | C 113, 114            | ECEA1CS331                                      |                                                               |              |
|                       |              |                      |              | C 115, 116            | $\Delta$ ECEA1CS102                             |                                                               |              |
|                       |              |                      |              | C 117                 | ECEA1AS221                                      |                                                               |              |
|                       |              |                      |              | C 118                 | $\Delta$ ECKD2H472PE                            |                                                               |              |
|                       |              |                      |              | C 122                 | ECEA1ES101                                      |                                                               |              |
|                       |              |                      |              | C 124, 125            | ECKD1H103ZF                                     |                                                               |              |
|                       |              |                      |              | C 127, 128            | ECEA25Z4R7                                      |                                                               |              |
|                       |              |                      |              | C 200                 | $\Delta$ ECQU2A103MF                            |                                                               |              |
|                       |              |                      |              | COMBINATION PARTS     |                                                 |                                                               |              |
|                       |              |                      |              | Z 1 (R 33 and C 13)   | EXRP220K124T                                    |                                                               |              |
|                       |              |                      |              | Z 2 (R 34 and C 14)   | EXRP220K124T                                    |                                                               |              |
|                       |              |                      |              | TRANSISTORS           |                                                 |                                                               |              |
|                       |              |                      |              | Q 1, 2, 3, 4, 5, 6, 7 | 2SD636                                          |                                                               |              |
|                       |              |                      |              | Q 8                   | 2SB641                                          |                                                               |              |
|                       |              |                      |              | Q 9                   | 2SD636                                          |                                                               |              |
|                       |              |                      |              | Q 10                  | 2SD592                                          |                                                               |              |
|                       |              |                      |              | Q 11                  | 2SB641                                          |                                                               |              |
|                       |              |                      |              | Q 12                  | 2SD636                                          |                                                               |              |
|                       |              |                      |              | Q 13                  | 2SB641                                          |                                                               |              |
|                       |              |                      |              | Q 14                  | 2SC1846R                                        |                                                               |              |
|                       |              |                      |              | Q 15                  | 2SA885Q                                         |                                                               |              |
|                       |              |                      |              | DIODES & RECTIFIERS   |                                                 |                                                               |              |
|                       |              |                      |              | D 1, 2, 3, 4, 5, 6    | MA161                                           |                                                               |              |
|                       |              |                      |              | D 7                   | LN216RP                                         |                                                               |              |
|                       |              |                      |              | D 8, 9, 10, 11        | MA161                                           |                                                               |              |
|                       |              |                      |              | D 12                  | MA1220M                                         |                                                               |              |
|                       |              |                      |              | D 13, 14, 15, 16      | $\Delta$ SM112                                  |                                                               |              |
|                       |              |                      |              | D 17, 18              | MA161                                           |                                                               |              |
|                       |              |                      |              | D 21                  | MA1047                                          |                                                               |              |
|                       |              |                      |              | INTEGRATED CIRCUITS   |                                                 |                                                               |              |
|                       |              |                      |              | IC 1, 2               | M5219L                                          |                                                               |              |
|                       |              |                      |              | IC 3, 4               | NE654N                                          |                                                               |              |
|                       |              |                      |              | IC 5, 6               | NE652N                                          |                                                               |              |
|                       |              |                      |              | IC 7                  | M5218L                                          |                                                               |              |
|                       |              |                      |              | IC 8                  | AN6870N                                         |                                                               |              |
|                       |              |                      |              | COILS                 |                                                 |                                                               |              |
|                       |              |                      |              | L 1, 2                | QLQX2721D                                       | Peaking Coil                                                  |              |
|                       |              |                      |              | L 3, 4                | QLM929K                                         | MPX Coil                                                      |              |
|                       |              |                      |              | L 5, 6                | ELM7Q306A                                       | Combination Coil                                              |              |
|                       |              |                      |              | L 7, 8                | QLQX0343KWA                                     | Bias Trap Coil                                                |              |
|                       |              |                      |              | TRANSFORMERS          |                                                 |                                                               |              |
|                       |              |                      |              | T 1                   | QLB0198                                         | Bias Oscillation Coil                                         |              |
|                       |              |                      |              | T 2                   | [D] $\Delta$ QLPD68EKC                          | AC Power Transformer                                          |              |
|                       |              |                      |              |                       | [For all European areas except United Kingdom.] |                                                               |              |
|                       |              |                      |              |                       | [B] $\Delta$ QLP6A5EKC                          | AC Power Transformer                                          |              |
|                       |              |                      |              |                       | [For United Kingdom.]                           |                                                               |              |
|                       |              |                      |              | FUSES                 |                                                 |                                                               |              |
|                       |              |                      |              | F 1, 2 $\Delta$       | XBAQ0007                                        | Fuse (T 400mA)                                                |              |
|                       |              |                      |              | SWITCHES              |                                                 |                                                               |              |
|                       |              |                      |              | S 1                   | QSSE203                                         | Record/Playback Select Switch                                 |              |
|                       |              |                      |              | S 2, 3 and 4          | QSWX312                                         | Combination Switch (Input Select/Dolby SW/Dolby B-C Selector) |              |
|                       |              |                      |              | S 5 $\Delta$          | ESB822S                                         | Push Switch (Power ON/OFF)                                    |              |
|                       |              |                      |              | S 6                   | QSR4306                                         | Rotary Switch (Tape Select Switch)                            |              |
|                       |              |                      |              | S 7                   | QSB0251                                         | FF/Rewind Muting Switch                                       |              |
|                       |              |                      |              | S 8                   | QSB0251                                         | Playback Switch                                               |              |
|                       |              |                      |              | JACKS                 |                                                 |                                                               |              |
|                       |              |                      |              | J 1, 2                | QJA0451                                         | Microphone Jack                                               |              |
|                       |              |                      |              | J 3                   | QJA0259                                         | Headphones Jack                                               |              |
|                       |              |                      |              | J 4, 5, 6, 7          | QEJ5028S                                        | Jack Board (Line IN/OUT)                                      |              |

## SCHEMATIC DIAGRAM

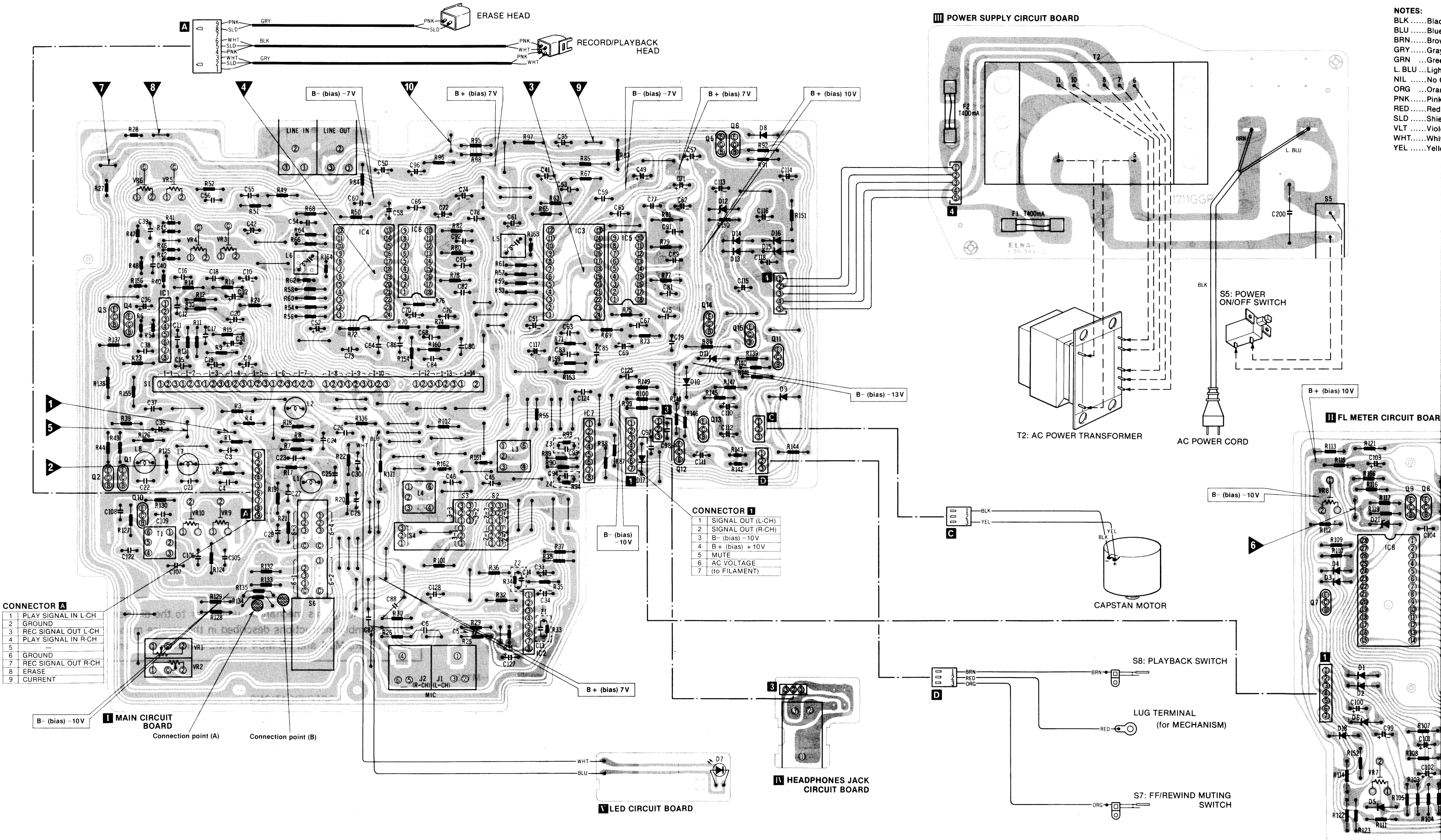




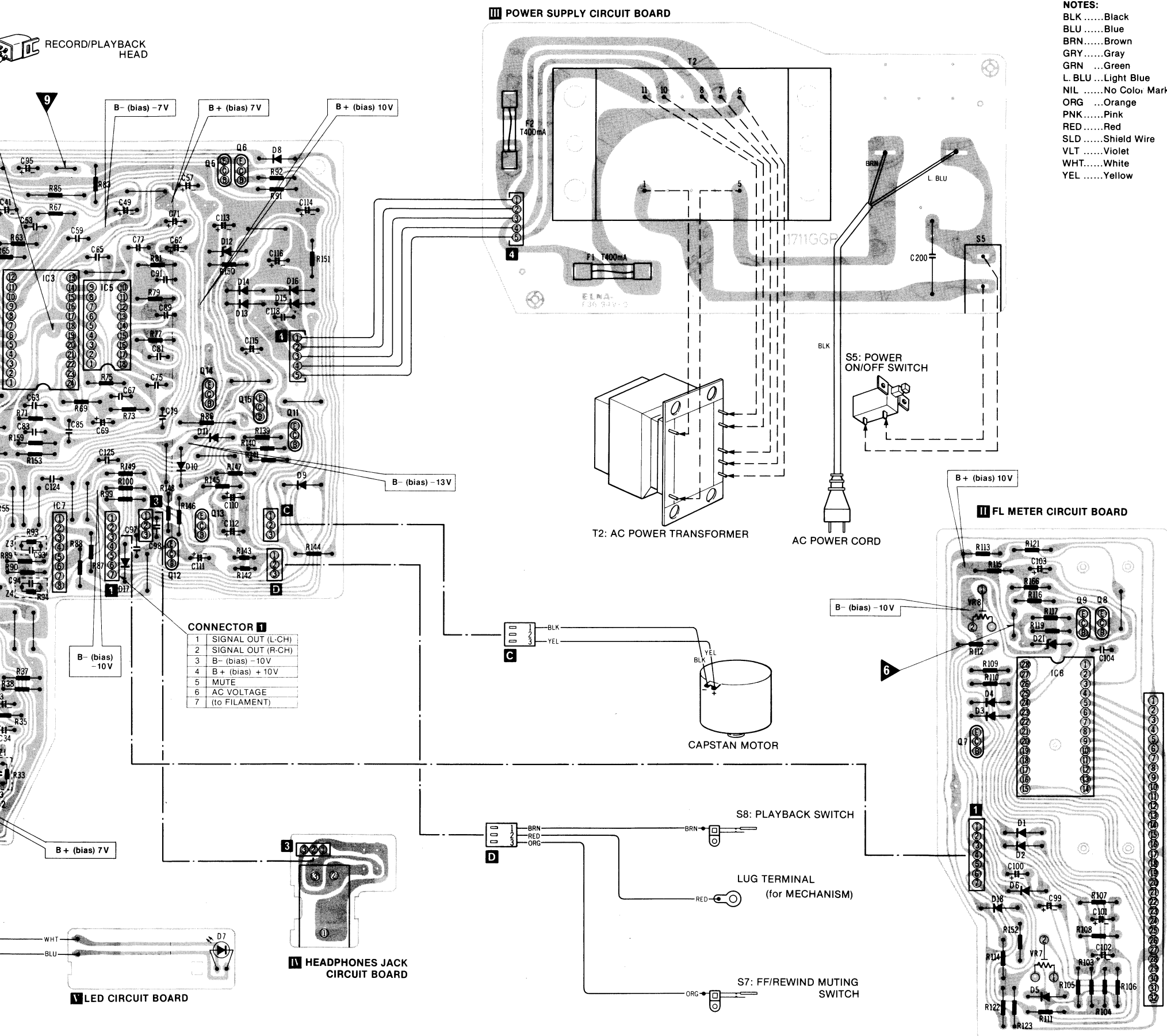
|                                                                                                                     |                                            |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Playback S/N ratio<br>Test tape ... QZZCFM                                                                          | Greater than 45 dB<br>(without NAB filter) |
| Overall distortion<br>Test tape<br>... QZZCRA for Normal<br>... QZZCRX for CrO <sub>2</sub><br>... QZZCRZ for Metal | Less than 4%                               |
| Overall S/N ratio<br>Test tape ... QZZCRA                                                                           | Greater than 43 dB                         |

- This schematic diagram may be modified at any time with the development of new technology.

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



## DIAGRAM

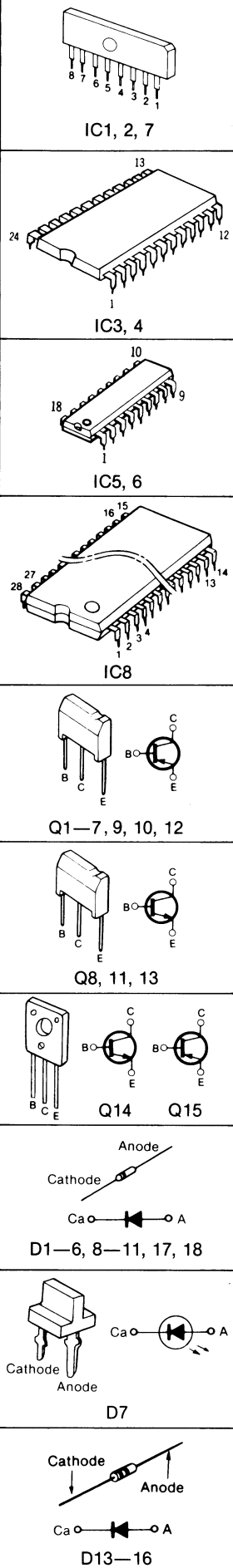
RECORD/PLAYBACK  
HEAD

| IC1<br>[M5219L]    |                   | IC2<br>[M5219L]    |                   | Q1, 2<br>[2SD636] |                                |
|--------------------|-------------------|--------------------|-------------------|-------------------|--------------------------------|
| 1                  | -0.04V (-0.02V)   | 1                  | -0.03V (-0.03V)   | B                 | -1.24V (-1.24V) STOP C/R       |
| 2                  | 0.04V (0.04V)     | 2                  | 0.01V (0.01V)     | C                 | 0V (0V) 0V                     |
| 3                  | 0.04V (0.04V)     | 3                  | 0.01V (0.01V)     | E                 | 0V (0V) 0V                     |
| 4                  | -6.45V (-6.46V)   | 4                  | -6.74V (-6.73V)   | Q3, 4<br>[2SD636] |                                |
| 5                  | 0.04V (0.04V)     | 5                  | 0.01V (0.01V)     | B                 | 0V (0V) CrO <sub>2</sub> Metal |
| 6                  | 0.04V (0.04V)     | 6                  | 0.01V (0.01V)     | C                 | 0V (0V) 0V                     |
| 7                  | -0.04V (-0.02V)   | 7                  | -0.03V (-0.03V)   | E                 | 0V (0V) 0V                     |
| 8                  | 6.63V (6.73V)     | 8                  | 6.92V (7.00V)     | Q5, 6<br>[2SD636] |                                |
| IC3, 4<br>[NE654N] |                   | IC5, 6<br>[NE652N] |                   | Q7<br>[2SD636]    |                                |
| 1                  | 0V (0V)           | 10                 | 0V (0V)           | B                 | -10.21V (-10.23V)              |
| 2                  | 0.04V (0.04V)     | 11                 | 0V (0V)           | C                 | -0.45V (-0.30V)                |
| 3                  | 0.02V (0.02V)     | 12                 | 0V (0V)           | E                 | -9.91V (-9.93V)                |
| 4                  | -6.32V (-6.32V)   | 13                 | 6.94V (6.94V)     | Q8<br>[2SB641]    |                                |
| 5                  | 0.08V (0.03V)     | 14                 | -6.32V (-6.32V)   | B                 | -5.57V (-5.63V)                |
| 6                  | 0.05V (0.02V)     | 15                 | 0V (0V)           | C                 | -10.17V (-10.27V)              |
| 7                  | 0V (0V)           | 16                 | -0.05V (-0.01V)   | E                 | -                              |
| 8                  | -0.04V (-0.01V)   | 17                 | -6.76V (-6.83V)   | Q9<br>[2SD636]    |                                |
| 9                  | -0.01V (-0.01V)   | 18                 | 0.05V (0.02V)     | B                 | -10.20V (-10.25V)              |
| 10                 | -0.04V (-0.02V)   | 19                 | 0.05V (-0.01V)    | C                 | -5.60V (-5.63V)                |
| 11                 | -0.04V (-0.01V)   | 20                 | -0.05V (0.02V)    | E                 | -10.28V (-10.34V)              |
| 12                 | 6.85V (-6.69V)    | 21                 | 0V (0V)           | Q10<br>[2SD592]   |                                |
| IC6, 7<br>[M5218L] |                   | IC8<br>[AN6870N]   |                   | B                 | -9.89V (-10.36V)               |
| 1                  | 0V (0V)           | 1                  | -10.27V (-10.35V) | C                 | -4.49V (-10.36V)               |
| 2                  | 0.01V (0V)        | 2                  | -7.72V (-7.80V)   | E                 | -10.13V (-10.36V)              |
| 3                  | 0.01V (0V)        | 3                  | 10.42V (10.64V)   | Q11<br>[2SB641]   |                                |
| 4                  | -12.54V (-13.20V) | 4                  | -0.46V (-0.38V)   | B                 | 12.46V (13.28V)                |
| 5                  | 0V (0V)           | 5                  | -0.47V (-0.40V)   | C                 | -0.20V (-0.20V)                |
| 6                  | 0.01V (0V)        | 6                  | -10.15V (-10.32V) | E                 | 12.46V (13.28V)                |
| 7                  | 0V (0V)           | 7                  | -10.16V (-10.24V) | Q12<br>[2SD636]   |                                |
| 8                  | 13.07V (13.75V)   | 8                  | -10.15V (-10.24V) | B                 | 0V (0V) STOP                   |
| IC8<br>[AN6870N]   |                   | IC10<br>[2SC1846R] |                   | C                 | 12.44V (13.30V)                |
| 1                  | -10.27V (-10.35V) | 1                  | 11.16V (11.34V)   | E                 | 0V (0V) 0V                     |
| 2                  | -7.72V (-7.80V)   | 2                  | 12.74V (13.50V)   | Q13<br>[2SB641]   |                                |
| 3                  | 10.42V (10.64V)   | 3                  | 10.46V (10.65V)   | B                 | 12.53V (12.35V)                |
| 4                  | -0.46V (-0.38V)   | 4                  | -10.15V (-10.24V) | C                 | -10.0V (-10.7V)                |
| 5                  | -0.47V (-0.40V)   | 5                  | -10.15V (-10.24V) | E                 | 12.53V (13.30V)                |
| 6                  | -10.15V (-10.32V) | 6                  | -10.15V (-10.25V) | Q14<br>[2SA885Q]  |                                |
| 7                  | -10.16V (-10.24V) | 7                  | -10.15V (-10.25V) | B                 | -11.01V (-11.04V)              |
| 8                  | -10.15V (-10.24V) | 8                  | -10.15V (-10.25V) | C                 | -12.23V (-13.14V)              |
| 9                  | -10.15V (-10.24V) | 9                  | -10.15V (-10.25V) | E                 | -10.31V (-10.38V)              |
| 10                 | -10.15V (-10.23V) | 10                 | -10.15V (-10.25V) | Q15<br>[2SA885Q]  |                                |
| 11                 | -10.16V (-10.24V) | 11                 | -10.15V (-10.25V) | B                 | -11.01V (-11.04V)              |
| 12                 | -10.16V (-10.25V) | 12                 | -10.15V (-10.25V) | C                 | -12.23V (-13.14V)              |
| 13                 | -10.15V (-10.24V) | 13                 | -10.15V (-10.25V) | E                 | -10.31V (-10.38V)              |
| 14                 | -10.15V (-10.24V) | 14                 | -10.15V (-10.25V) | Q16<br>[2SA885Q]  |                                |
| IC10<br>[2SC1846R] |                   | IC11<br>[2SA885Q]  |                   | B                 | -11.01V (-11.04V)              |
| 1                  | 11.16V (11.34V)   | 1                  | -11.01V (-11.04V) | C                 | -12.23V (-13.14V)              |
| 2                  | 12.74V (13.50V)   | 2                  | -12.23V (-13.14V) | E                 | -10.31V (-10.38V)              |
| 3                  | 10.46V (10.65V)   | 3                  | -10.31V (-10.38V) | Q17<br>[2SA885Q]  |                                |
| 4                  | -10.15V (-10.24V) | 4                  | -10.31V (-10.38V) | B                 | -11.01V (-11.04V)              |
| 5                  | -10.15V (-10.24V) | 5                  | -10.31V (-10.38V) | C                 | -12.23V (-13.14V)              |
| 6                  | -10.15V (-10.25V) | 6                  | -10.31V (-10.38V) | E                 | -10.31V (-10.38V)              |
| 7                  | -10.15V (-10.25V) | 7                  | -10.31V (-10.38V) | Q18<br>[2SA885Q]  |                                |
| 8                  | -10.15V (-10.25V) | 8                  | -10.31V (-10.38V) | B                 | -11.01V (-11.04V)              |
| 9                  | -10.15V (-10.25V) | 9                  | -10.31V (-10.38V) | C                 | -12.23V (-13.14V)              |
| 10                 | -10.15V (-10.25V) | 10                 | -10.31V (-10.38V) | E                 | -10.31V (-10.38V)              |
| 11                 | -10.15V (-10.25V) | 11                 | -10.31V (-10.38V) | Q19<br>[2SA885Q]  |                                |
| 12                 | -10.15V (-10.25V) | 12                 | -10.31V (-10.38V) | B                 | -11.01V (-11.04V)              |
| 13                 | -10.15V (-10.25V) | 13                 | -10.31V (-10.38V) | C                 | -12.23V (-13.14V)              |
| 14                 | -10.15V (-10.25V) | 14                 | -10.31V (-10.38V) | E                 | -10.31V (-10.38V)              |

- NOTES:**
- The circuit shown in [ ] on the onductor indicates printed circuit on the back side of the printed circuit board.
  - Values indicated in [ ] are under no signal condition.
- Unless otherwise specified, voltage measurement conditions are the tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.
- REC .....Voltage at record mode.
- PLAY .....Voltage at playback mode.
- REC/PLAY .....Voltage at record/playback mode.
- Normal .....Voltage at Normal tape mode.
- CrO<sub>2</sub> .....Voltage at CrO<sub>2</sub> tape mode.
- Metal .....Voltage at Metal tape mode.
- STOP .....Voltage at STOP mode.
- C/R .....Voltage at Cue/Review mode.
- B .....Voltage at Dolby-B mode.
- C .....Voltage at Dolby-C mode.
- For measurement, use VTVM.
- The supply parts number is described alone in the replacement parts list.

This circuit board diagram may be modified at any time with the development of new technology.

## TERMINATIONS

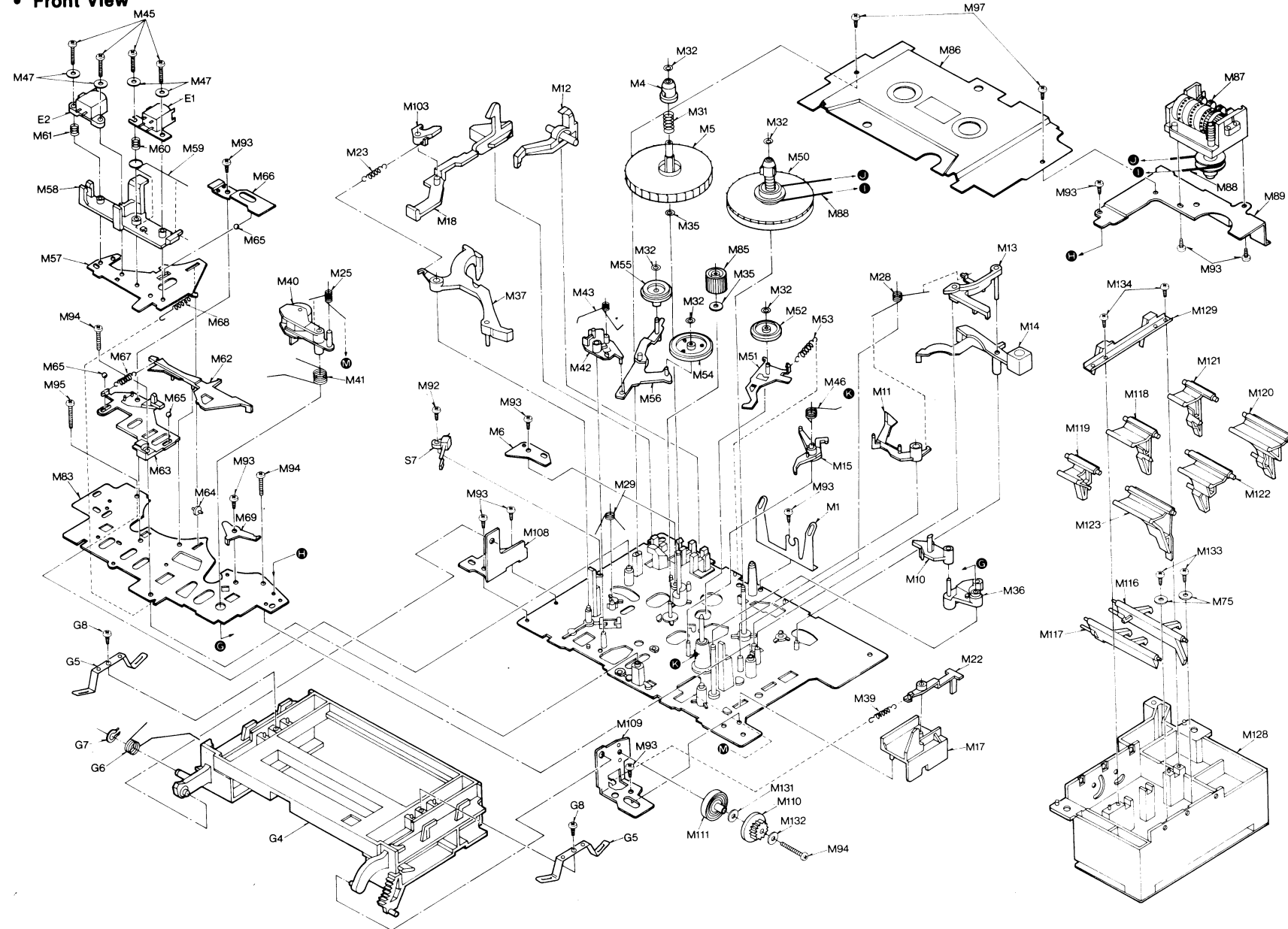


REPLACEMENT PARTS LIST

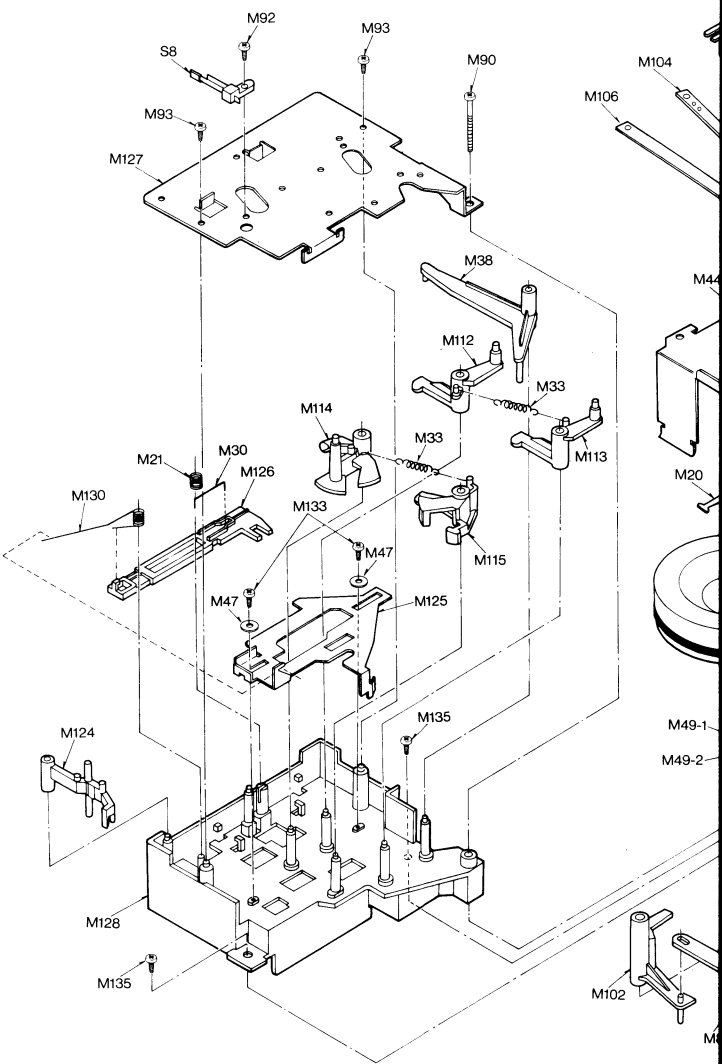
| Ref No.                 | Part No. | Part Name & Description                   |
|-------------------------|----------|-------------------------------------------|
| <b>MECHANICAL PARTS</b> |          |                                           |
| A                       | M 1      | QBP1874 Cassette Pressure Spring          |
|                         | M 2      | QDG1201 Main Gear                         |
|                         | M 3      | QDG1202 Sub Gear                          |
|                         | M 4      | QMB1336 Supply Reel Table Hub             |
|                         | M 5      | QDR1139 Supply Reel Table                 |
|                         | M 6      | QMF2118 Fast Forward Arm Bracket          |
|                         | M 7      | QML3899 Sub Control Lever                 |
|                         | M 8      | QML3898 Main Control Lever                |
|                         | M 9      | QML3900 Record Operation Lever            |
|                         | M 10     | QML3586 Head Base Plate Lift Lever        |
|                         | M 11     | QML3594 Auto-Stop Release Arm             |
|                         | M 12     | QML3603 Erase Safety Lever                |
|                         | M 13     | QML3604 Auto-Stop Driving Lever           |
|                         | M 14     | QML3605 Auto-Stop Detection Lever         |
|                         | M 15     | QML3592 Change Lever                      |
|                         | M 16     | QMR2013 Record Rod                        |
|                         | M 17     | QMR2011 Auto-Stop Connection Rod          |
|                         | M 18     | QMR2014 Eject Rod                         |
|                         | M 19     | QMR2012 Control Rod                       |
|                         | M 20     | QMZ1283 Flywheel Thrust Retainer          |
|                         | M 21     | QBC1357 Lock Pin Pressure Spring          |
|                         | M 22     | QML3896 Auto-Stop Selection Lever         |
|                         | M 23     | QBT1962 Main Lever Spring                 |
|                         | M 24     | QBN1739 Selection Lever Spring            |
|                         | M 25     | QBN1742 Pressure Roller Release Spring    |
|                         | M 26     | QBN1744 Sub Gear Spring                   |
|                         | M 27     | QBN1897 Main Gear Spring                  |
|                         | M 28     | QBN1746 Auto-Stop Lever Spring            |
|                         | M 29     | QBN1747 Connection Spring                 |
|                         | M 30     | QBS1137 Pause Lock Pin                    |
|                         | M 31     | QBC1372 Reel Table Spring                 |
|                         | M 32     | QBW2008 Poly Washer                       |
|                         | M 33     | QBT1961 Operating Change Lever Spring     |
|                         | M 34     | XUB3FT Stop Ring 3ø                       |
|                         | M 35     | QBW2012 Poly Washer                       |
|                         | M 36     | QXL1354 Sub Lever Assembly                |
|                         | M 37     | QXL1355 Main Lever Assembly               |
|                         | M 38     | QML3882 Pause Change Lever                |
|                         | M 39     | QBT1682 Lock Retainer Spring              |
|                         | M 40     | QXL1381 Pressure Roller Assembly          |
|                         | M 41     | QBN1743 Pressure Roller Spring            |
|                         | M 42     | QML3588 Fast Forward Lever                |
|                         | M 43     | QBN1748 Fast Forward Spring               |
|                         | M 44     | QMA4410 Flywheel Retainer                 |
|                         | M 45     | XSN2 + 10 Screw $\varnothing 2 \times 10$ |
|                         | M 46     | QBN1741 Change Lever Spring               |
|                         | M 47     | XWG2B Washer 2ø                           |
|                         | M 48     | QMZ1254 Cord Clamper                      |
|                         | M 49     | QXF0199 Flywheel Assembly                 |
|                         | M 49-1   | QBW2049 Poly Washer                       |
|                         | M 49-2   | QBW2026 Snap Ring                         |
|                         | M 50     | QXD1143 Takeup Reel Table Assembly        |
|                         | M 51     | QXL1382 Idler Lever Assembly              |
|                         | M 52     | QXI0111 Takeup Idler Assembly             |
|                         | M 53     | QBT1893 Takeup Idler Spring               |
|                         | M 54     | QXI0113 Fast Forward Idler Assembly       |
|                         | M 55     | QXI0112 Rewind Idler Assembly             |
|                         | M 56     | QXL1383 Fast Forward Arm Assembly         |
|                         | M 57     | QMK1840 Head Base Plate Assembly          |
|                         | M 58     | QMZ1241 Head Spacer                       |
|                         | M 59     | QBN1740 Head Pressure Spring              |
|                         | M 60     | QBC1278 Head Spring                       |
|                         | M 61     | QBCA0008 Head Spring                      |
|                         | M 62     | QML3591 Brake Arm                         |
|                         | M 63     | QMZ1240 Sub Head Base Plate               |
|                         | M 64     | QMN2550 Roller                            |
|                         | M 65     | QDK1017 Steel Ball 2ø                     |
|                         | M 66     | QBP1873 Head Base Plate Pressure Spring   |
|                         | M 67     | QBT1597 Brake Arm Spring                  |
|                         | M 68     | QBT1892 Head Release Spring               |
|                         | M 69     | QMA3858 Head Adjustment Plate             |
|                         | M 70     | QZK0241 Takeup Gear Assembly              |
|                         | M 71     | QXU0297 Motor Assembly                    |
|                         | M 72     | QXK2286 Sub Chassis Assembly              |
|                         | M 73     | QDG1199 Auto-Stop Gear                    |
|                         | M 74     | QDG1200 Cam Gear                          |
|                         | M 75     | XWG2 Washer 2ø                            |
|                         | M 76     | QDB0324 Capstan Belt                      |
|                         | M 77     | QDB0274 Takeup Belt                       |

MECHANICAL PARTS LOCATION

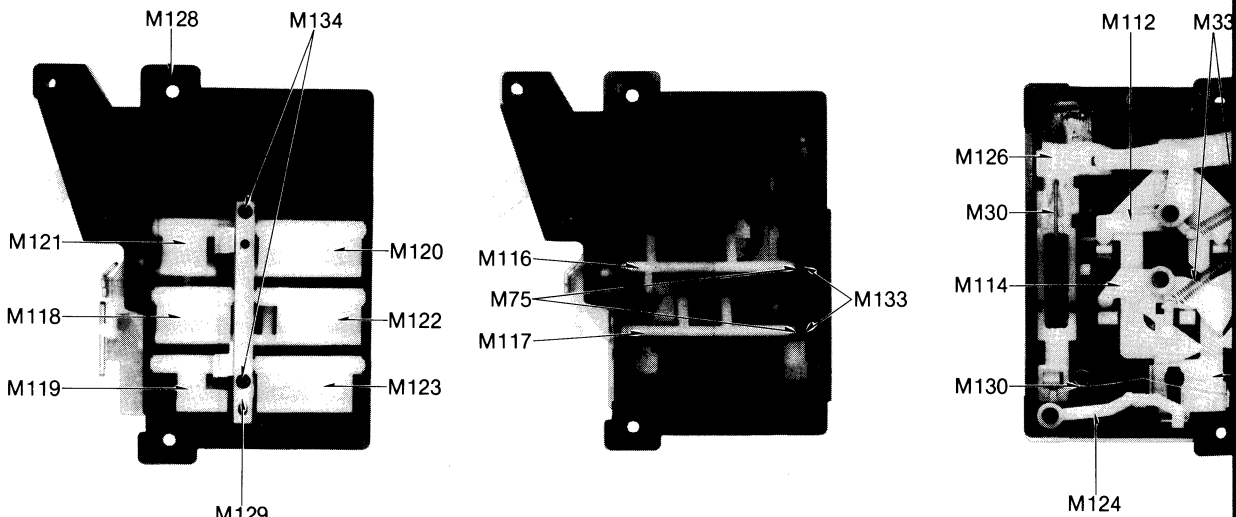
• Front View

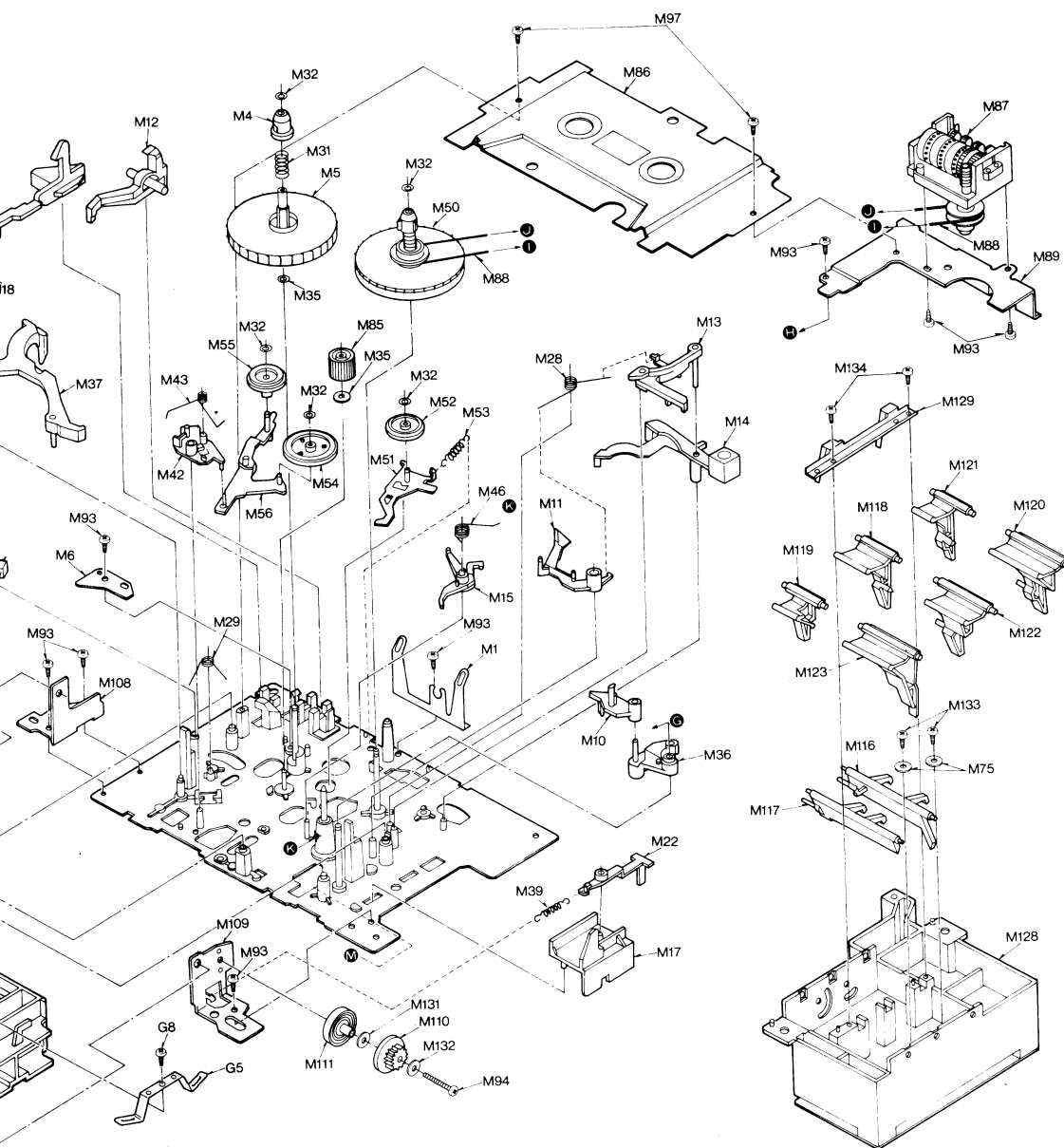


• Rear View

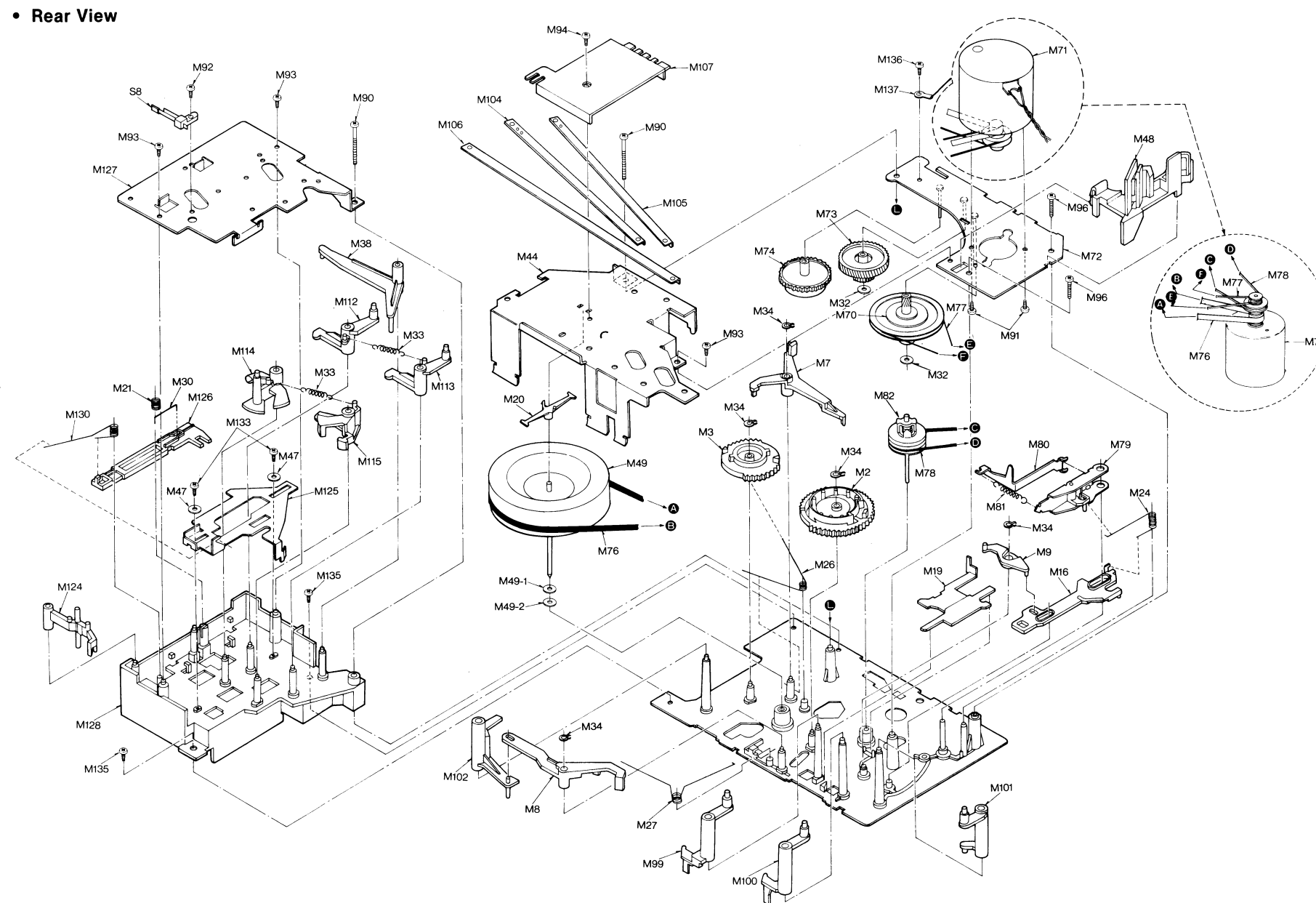


| Ref No. | Part No.    | Part Name & Description                   | Ref No. | Part No.     | Part Name & Description                  | Ref No. | Part No.    | Part Name & Description                 |
|---------|-------------|-------------------------------------------|---------|--------------|------------------------------------------|---------|-------------|-----------------------------------------|
| M 78    | QDB0273     | Fast Forward Belt                         | M 97    | XTN26 + 5BFZ | Tapping Screw $\varnothing 2.6 \times 5$ | M 117   | QML3884     | Lock Arm-B                              |
| M 79    | QXL1360     | Record/Playback Selection Arm Assembly    | M 99    | QML3885      | Fast Forward Driving Lever               | M 118   | QML3888     | Play Lever                              |
| M 80    | QML3580     | Record/Playback Selection Lever           | M 100   | QML3886      | Rewind Driving Lever                     | M 119   | QML3889     | Stop lever                              |
| M 81    | QBT1895     | Record/Playback Selection Lever Spring    | M 101   | QML3887      | Record Driving Lever                     | M 120   | QML3890     | Fast Forward Lever                      |
| M 82    | QXP0607     | Fast Forward Connection Pulley Assembly   | M 102   | QML3897      | Play Changing Lever                      | M 121   | QML3891     | Rewind Lever                            |
| M 83    | QMK1838     | Upper Base Plate                          | M 103   | QML3901      | Eject Obstruction Lever                  | M 122   | QML3892     | Record Lever                            |
| M 85    | QDP1828     | Fast Forward Pulley                       | M 104   | QMR2007      | Fast Forward Connection Plate            | M 123   | QML3893     | Pause Lever                             |
| M 86    | QXH0408     | Chassis Cover Assembly                    | M 105   | QMR2008      | Rewind Connection Plate                  | M 124   | QML3894     | Muting Lever                            |
| M 87    | QDC0126     | Tape Counter                              | M 106   | QMR2009      | Record Connection Plate                  | M 125   | QMR2006     | Fast Wind Rod                           |
| M 88    | QDB0169     | Counter Belt                              | M 107   | QMZ1288      | Connection Plate Retainer                | M 126   | QMR2010     | Pause Rod                               |
| M 89    | QMA4439     | Counter Angle                             | M 108   | QMA4411      | Holding Angle-L                          | M 127   | QMF2245     | Operating Button Plate                  |
| M 90    | XTN3 + 24B  | Tapping Screw $\varnothing 3 \times 24$   | M 109   | QMA4412      | Holding Angle-R                          | M 128   | QKJ0537     | Operating Button Frame                  |
| M 91    | XSN26 + 3   | Screw $\varnothing 2.6 \times 3$          | M 110   | QDG1254      | Damper Gear                              | M 129   | QBP1953     | Operating Lever Spring                  |
| M 92    | XTN2 + 6B   | Tapping Screw $\varnothing 2 \times 6$    | M 111   | QDP1920      | Damper Retainer                          | M 130   | QBN1898     | Fast Wind Rod Spring                    |
| M 93    | XTN26 + 6B  | Tapping Screw $\varnothing 2.6 \times 6$  | M 112   | QML3878      | Fast Forward Change Lever                | M 131   | QBW2020     | Washer                                  |
| M 94    | XTN26 + 10B | Tapping Screw $\varnothing 2.6 \times 10$ | M 113   | QML3879      | Rewind Change Lever                      | M 132   | XWG26       | Washer 2.6ø                             |
| M 95    | XTN26 + 12B | Tapping Screw $\varnothing 2.6 \times 12$ | M 114   | QML3880      | Record Change Lever                      | M 133   | XTN2 + 5B   | Tapping Screw $\varnothing 2 \times 5$  |
| M 96    | XTN3 + 10B  | Tapping Screw $\varnothing 3 \times 10$   | M 115   | QML3881      | Play Change Lever                        | M 134   | XTN2 + 4BFZ | Tapping Screw $\varnothing 2 \times 4$  |
|         |             |                                           | M 116   | QML3883      | Lock Arm-A                               | M 135   | XTN3 + 6B   | Tapping Screw $\varnothing 3 \times 6$  |
|         |             |                                           |         |              |                                          | M 136   | XTN3 + 12B  | Tapping Screw $\varnothing 3 \times 12$ |
|         |             |                                           |         |              |                                          | M 137   | QJT0015     | Lug Terminal                            |

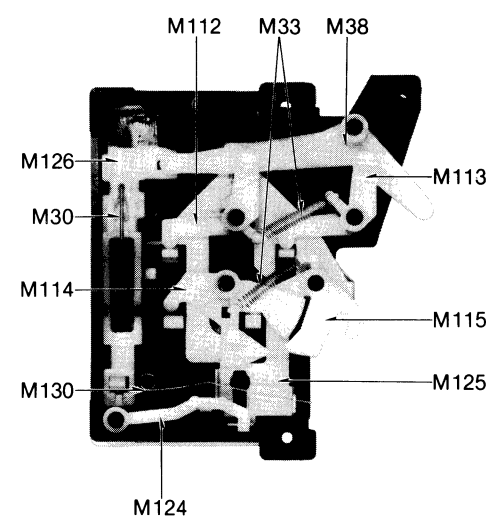
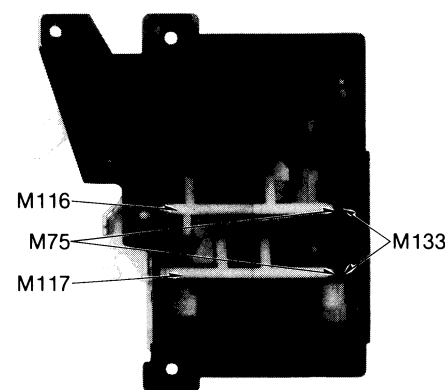
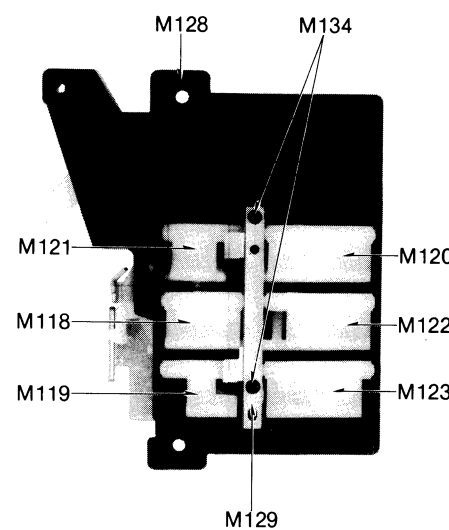




## • Rear View



| Part Name & Description                  | Ref. No. | Part No.    | Part Name & Description                 |
|------------------------------------------|----------|-------------|-----------------------------------------|
| Winding Screw $\varnothing 2.6 \times 5$ | M 117    | QML3884     | Lock Arm-B                              |
| Fast Forward Driving Lever               | M 118    | QML3888     | Play Lever                              |
| Winding Driving Lever                    | M 119    | QML3889     | Stop lever                              |
| Record Driving Lever                     | M 120    | QML3890     | Fast Forward Lever                      |
| Play Changing Lever                      | M 121    | QML3891     | Rewind Lever                            |
| Obstruction Lever                        | M 122    | QML3892     | Record Lever                            |
| Fast Forward Connection                  | M 123    | QML3893     | Pause Lever                             |
| Winding Connection Plate                 | M 124    | QML3894     | Muting Lever                            |
| Record Connection Plate                  | M 125    | QMR2006     | Fast Wind Rod                           |
| Connection Plate Retainer                | M 126    | QMR2010     | Pause Rod                               |
| Winding Angle-L                          | M 127    | QMF2245     | Operating Button Plate                  |
| Winding Angle-R                          | M 128    | QKJ0537     | Operating Button Frame                  |
| Winding Gear                             | M 129    | QBP1953     | Operating Lever Spring                  |
| Winding Retainer                         | M 130    | QBN1898     | Fast Wind Rod Spring                    |
| Fast Forward Change                      | M 131    | QBW2020     | Washer                                  |
| Winding Change Lever                     | M 132    | XWG26       | Washer 2.6 $\phi$                       |
| Record Change Lever                      | M 133    | XTN2 + 5B   | Tapping Screw $\varnothing 2 \times 5$  |
| Winding Change Lever                     | M 134    | XTN2 + 4BFZ | Tapping Screw $\varnothing 2 \times 4$  |
| Record Change Lever                      | M 135    | XTN3 + 6B   | Tapping Screw $\varnothing 3 \times 6$  |
| Winding Change Lever                     | M 136    | XTN3 + 12B  | Tapping Screw $\varnothing 3 \times 12$ |
| Winding Arm-A                            | M 137    | QJT0015     | Lug Terminal                            |



When servicing this mechanism unit, refer to the disassembly notes and assembly instructions described in the service manuals of RS-M51, RS-M13, RS-M14 and RS-M04 (RS-M24 mechanism series).

## SPECIFICATIONS

|                                                               |                           |
|---------------------------------------------------------------|---------------------------|
| Pressure of pressure roller                                   | 350 $\pm$ 50 g            |
| Takeup tension<br>* Use cassette torque meter<br>... QZZSRKCT | 45 $\pm$ 15<br>- 15 g-cm  |
| Wow and flutter; (JIS)<br>* Use test tape<br>... QZZCWAT      | Less than<br>0.08% (WRMS) |

## Motor Unit Disassembly

1. Remove screw (A) and connection plate retainer (M107). Then remove fast forward connection plate (M104), rewind connection plate (M105) and record connection plate (M106) (see Fig. 1).
2. Remove three screws (B) and remove operation button unit (see Fig. 2).
3. Remove two screws (C) and hook at section (D) to dismount flywheel retainer (M44) (see Fig. 2).
4. Remove hook at section (E) and cord clamber (M48) (see Fig. 2), and then remove two screws (F) (see Fig. 3) to dismount motor unit.

## Precautions for Mechanism Unit Assembly

Before installing the operation button unit in the mechanism unit, pull the play changing lever (M102) of the mechanism unit in the direction of the arrow until it is locked, and set the pause, F.F. and rewind buttons of the operation button unit to OFF. At this time, check that all parts are installed at their proper positions at sections (G), (H) and (I) (see Fig. 2).

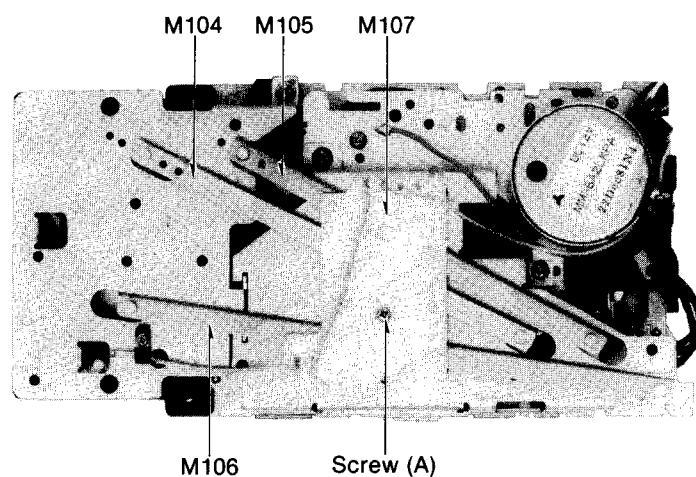


Fig. 1

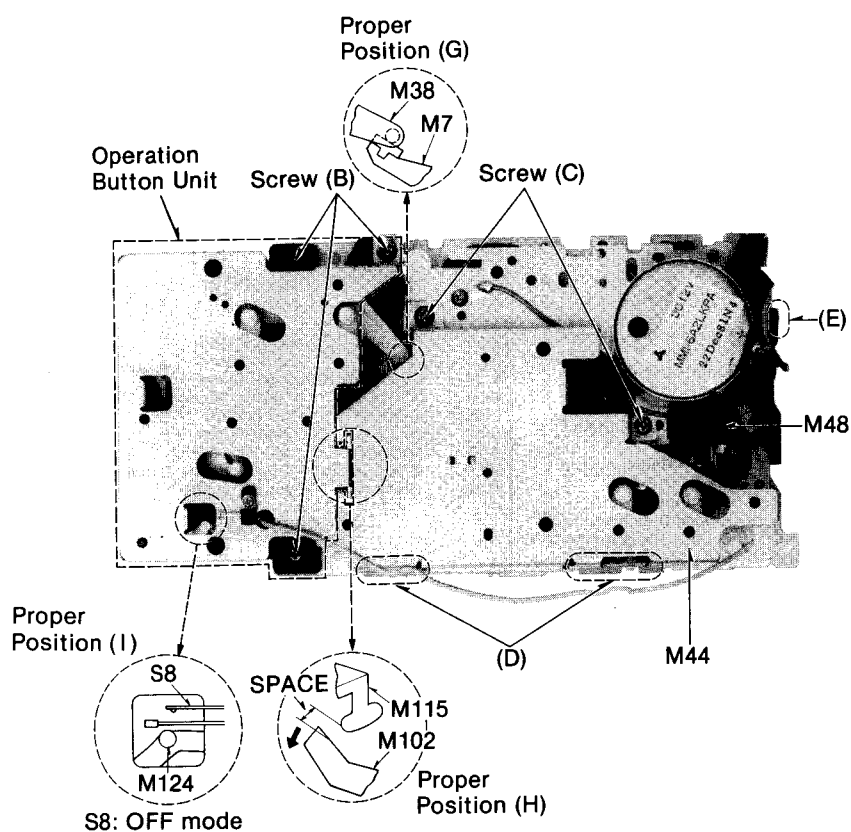


Fig. 2

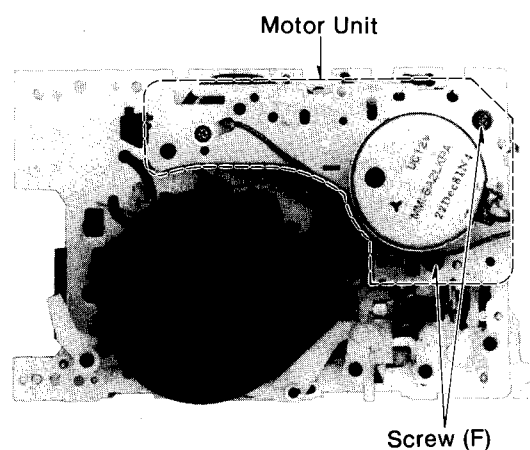
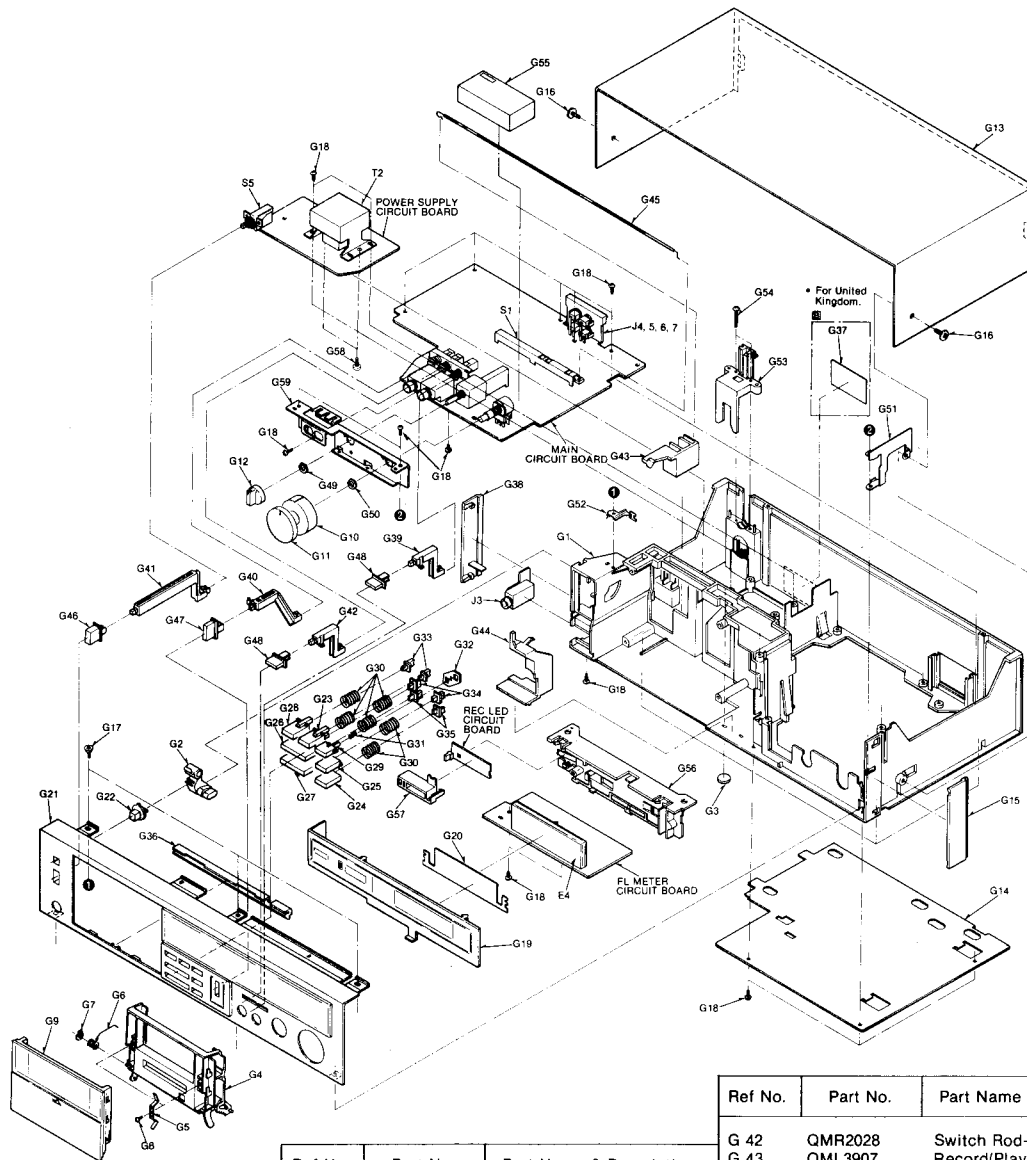


Fig. 3

## CABINET PARTS LOCATION



## REPLACEMENT PARTS LIST

| Ref No.              | Part No.      | Part Name & Description                  |
|----------------------|---------------|------------------------------------------|
| <b>CABINET PARTS</b> |               |                                          |
| G 1                  | QKM1535K      | Main Case                                |
| G 2                  | QML3908       | Eject Lever                              |
| G 3                  | QKA1081       | Rubber Foot                              |
| G 4                  | QKF2105       | Cassette Holder                          |
| G 5                  | QBP1923       | Holder Spring                            |
| G 6                  | QBN1893       | Eject Spring                             |
| G 7                  | XUB5FT        | Stop Ring 5φ                             |
| G 8                  | XTN26 + 5BFZ  | Tapping Screw $\varnothing 2.6 \times 5$ |
| G 9                  | QYF0560       | Cassette Lid Assembly                    |
|                      | "Silver Type" |                                          |
|                      | QYF0560K      | Cassette Lid Assembly                    |
|                      | "Black Type"  |                                          |
| G 10                 | QYT0647       | Volume Knob-R Assembly                   |
| G 11                 | QYT0648       | Volume Knob-L Assembly                   |
| G 12                 | QGT1591       | Tape Selector Knob                       |
| G 13                 | QGC1231       | Case Cover                               |
|                      | "Silver Type" |                                          |
|                      | QGC1231K      | Case Cover                               |
|                      | "Black Type"  |                                          |
| G 14                 | QGC1232       | Bottom Cover                             |
| G 15                 | QGK3260       | Side Panel-R                             |
|                      | "Silver Type" |                                          |
|                      | QGK3260K      | Side Panel-R                             |
|                      | "Black Type"  |                                          |
| G 16                 | QH01324       | Screw                                    |
|                      | "Silver Type" |                                          |
|                      | QH01324K      | Screw                                    |
|                      | "Black Type"  |                                          |
| G 17                 | XTS3 + 10B    | Tapping Screw $\varnothing 3 \times 10$  |

| Ref No.  | Part No.              | Part Name & Description                 |
|----------|-----------------------|-----------------------------------------|
| G 18     | XTN3 + 10B            | Tapping Screw $\varnothing 3 \times 10$ |
| G 19     | QGK3263               | Meter Cover                             |
|          | "Silver Type"         |                                         |
|          | QGK3263Y              | Meter Cover                             |
|          | "Black Type"          |                                         |
| G 20     | QGL1177               | Meter Filter                            |
| G 21     | QYP1110               | Front Panel Assembly                    |
|          | "Silver Type"         |                                         |
|          | QYP1110K              | Front Panel Assembly                    |
|          | "Black Type"          |                                         |
| G 22     | QGO2059               | Eject Button                            |
| G 23     | QGOM0089              | Fast Forward Button                     |
| G 24     | QGOM0095              | Pause Button                            |
| G 25     | QGOM0093              | Record Button                           |
| G 26     | QGOM0092              | Playback Button                         |
| G 27     | QGOM0094              | Stop Button                             |
| G 28     | QGOM0088              | Rewind Button                           |
| G 29     | QGOM0097              | Counter Reset Button                    |
| G 30     | QBC1414               | Button Spring                           |
| G 31     | QBC1187               | Idle Spring                             |
| G 32     | QKJ0547               | Spring Holder                           |
| G 33     | QKJ0544               | Button Rod-A                            |
| G 34     | QKJ0545               | Button Rod-B                            |
| G 35     | QKJ0546               | Button Rod-C                            |
| G 36     | QKG3529K              | Spacer                                  |
| G 37 [B] | QGS2994               | Main Name Plate                         |
|          | [For United Kingdom.] |                                         |
| G 38     | QKJ0547               | Side Panel-L                            |
|          | "Silver Type"         |                                         |
|          | QKJ0547K              | Side Panel-L                            |
|          | "Black Type"          |                                         |
| G 39     | QMR2026               | Switch Rod-D                            |
| G 40     | QMR2027               | Switch Rod-E                            |
| G 41     | QMR2019               | Switch Rod-C                            |

| Ref No.                                         | Part No.    | Part Name & Description                 |
|-------------------------------------------------|-------------|-----------------------------------------|
| G 42                                            | QMR2028     | Switch Rod-F                            |
| G 43                                            | QML3907     | Record/Playback Lever                   |
| G 44                                            | QML3909     | Counter Reset Lever                     |
| G 45                                            | QBS1139     | Record/Playback Connection Wire         |
| G 46                                            | QGO1900     | Power ON/OFF Button                     |
| G 47                                            | QGO2052     | Push Button-B                           |
| G 48                                            | QGO2071     | Push Button-C                           |
| G 49                                            | XNS8        | Nut 8φ                                  |
| G 50                                            | XNS9        | Nut 9φ                                  |
| G 51                                            | QJC0054     | Earth Plate-A                           |
| G 52                                            | QJC0057     | Earth Plate-C                           |
| G 53                                            | QKJ0550K    | Cord Clamper                            |
| G 54                                            | XTN3 + 20B  | Tapping Screw $\varnothing 3 \times 20$ |
| G 55                                            | QTS1586     | Shield Case                             |
| G 56                                            | QKJ0548     | Meter Holder                            |
| G 57                                            | QKJ0549     | LED Holder                              |
| G 58                                            | XTN3 + 8B   | Tapping Screw $\varnothing 3 \times 8$  |
| G 59                                            | QMA4440     | Volume Angle                            |
| <b>ACCESSORIES</b>                              |             |                                         |
| A 1                                             | QEB0125     | Connection Cord                         |
| A 2 [D]                                         | QQT3331     | Instruction Book                        |
| [For all European areas except United Kingdom.] |             |                                         |
| [B]                                             | QQT3310     | Instruction Book                        |
| [For United Kingdom.]                           |             |                                         |
| <b>PACKINGS</b>                                 |             |                                         |
| P 1                                             | QPN4332     | Inside Carton                           |
| P 2                                             | QPA0676     | Cushion-R                               |
| P 3                                             | QPA0675     | Cushion-L                               |
| P 5                                             | QPC0072     | Poly Sheet                              |
| (for AC Power Cord)                             |             |                                         |
| P 6                                             | XZB40X60A02 | Poly Bag (for UNIT)                     |

ARD

Y.F. **DDKBK**

Printed in Japan

# Service Manual

Cassette Deck

Soft-Touch Cassette Deck  
with Dolby B-C NR**RS-M226**(Black Face)  
(Silver Face)**Supplement-2**This is the Service Manual  
for the following areas.

**D** ...For all European  
areas except United  
Kingdom.

**B** ...For United Kingdom.

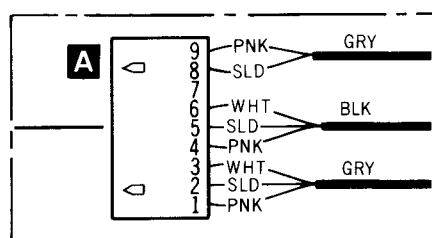
**RS-M24 MECHANISM SERIES**

Please use this manual together with the service manual for  
model No. RS-M226 (Original) order No. ARD82060161C8-11 and  
RS-M226 (Supplement-1) order No. ARD82100161S2-01.

**PARTS COMPARISON TABLE:**

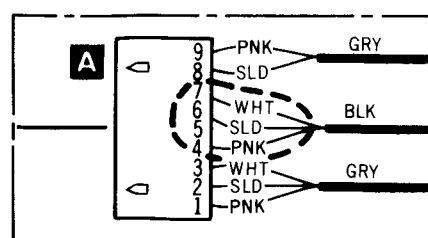
Please revise the original parts list in the Service Manual (RS-M226) to conform to the changes shown herein.  
If new part numbers are shown, be sure to use them when ordering parts.

| Ref. No. | Part Name & Description | Part Numbers |                | Remarks |
|----------|-------------------------|--------------|----------------|---------|
|          |                         | Former Type  | New Type       |         |
| G3       | Rubber Foot             | QKA1081      | <b>QKA1093</b> |         |
| G6       | Eject Spring            | QBN1893      | <b>QBN1937</b> |         |
| G37      | Main Name Plate         | —            | <b>QGS3094</b> | Added   |

**CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM**

Former Type

(Correction)



New Type

\* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

**Technics**

**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan

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