


# Service Manual

Cassette Deck

## RS-M6

Front-Loading Vertical Hold Stereo Cassette Deck  
with Full Auto-Stop Mechanism and Dolby NR

(Silver Type)  
(Black Type)


**DOLBY SYSTEM**


This is the Service Manual for the following areas.

- Ⓔ ..... For All European areas except United Kingdom.
- Ⓝ ..... For Asia, Latin America, Middle East and Africa areas.
- Ⓐ ..... For Australia.

### RS-631 MECHANISM SERIES

#### Specifications

|                        |   |                                  |  |
|------------------------|---|----------------------------------|--|
| Power requirement:     | AC; 110/220V, 50-60Hz<br>for All European areas except United Kingdom<br>AC; 110/125/220/240V, 50-60Hz<br>for Asia, Latin America, Middle East and Africa areas<br>AC; 240V, 50-60Hz<br>for Australia | Fast forward and<br>rewind time: | Approx. 86 seconds with C-60 cassette tape   |
| Power consumption:     | 9W  | Inputs:                          | MIC; sensitivity 0.25 mV, input impedance 33 k $\Omega$<br>over applicable microphone impedance 600 $\Omega$ – 10 k $\Omega$<br>LINE; sensitivity 60 mV, input impedance 47 k $\Omega$ |
| Motor:                 | Electronic control DC motor   | Outputs:                         | LINE; output level 420 mV, output impedance 1.5 k $\Omega$ or less, load impedance 22 k $\Omega$ over HEADPHONE; output level 60 mV, load impedance 8 $\Omega$                         |
| Track system:          | 4-track 2-channel stereo recording and playback   | Rec/pb connection:               | 5P DIN type;<br>input sensitivity 0.25 mV, impedance 8.2 k $\Omega$<br>output level 420 mV, impedance 5.0 k $\Omega$   |
| Tape speed:            | 4.8 cm/s  | Bias frequency:                  | 83 kHz   |
| Wow and flutter:       | 0.08% (WRMS), $\pm$ 0.20% (DIN)   | Heads:                           | 2-head system;<br>1-supper permalloy head for record/playback<br>1-double-gap ferrite head for erasure   |
| Frequency response:    | CrO <sub>2</sub> /Fe-Cr tape; 30–15,000Hz<br>30–14,000Hz (DIN)<br>Normal tape; 30–14,000Hz<br>30–13,000Hz (DIN)   | Dimensions:                      | 41.0cm (W) $\times$ 14.2cm (H) $\times$ 20.5cm (D)   |
| Signal-to-noise ratio: | Dolby* NR in; 66 dB (above 5 kHz)<br>Dolby NR out; 56 dB (signal level = max. recording level, Fe-Cr/CrO <sub>2</sub> type tape)  | Weight:                          | 3.8 kg   |

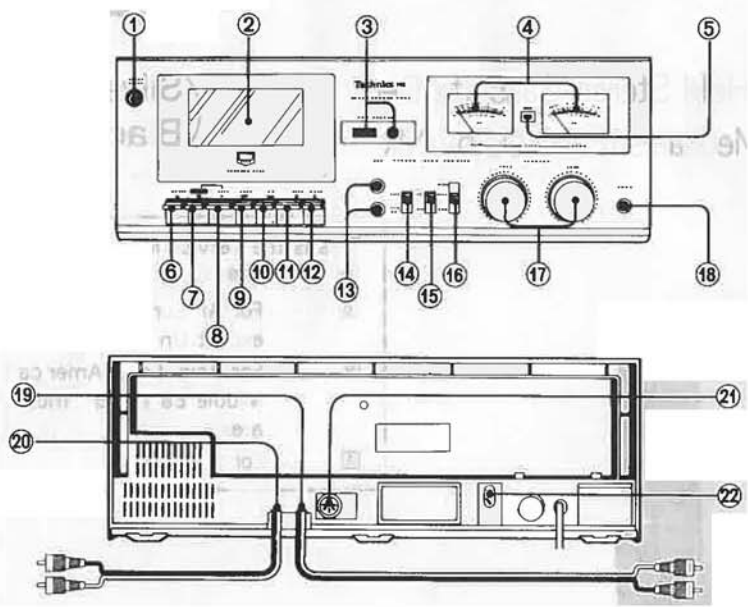
Specifications are subject to change without notice.

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

# Technics

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

# LOCATION OF CONTROLS AND COMPONENTS



- ① Power switch (power)
- ② Cassette holder
- ③ Tape counter and Reset button (tape counter)
- ④ VU meters (left-level-right)
- ⑤ Recording indication lamp (rec)
- ⑥ Pause button (pause) (II)
- ⑦ Record button (record) (O)
- ⑧ Play button (play) (▶)
- ⑨ Rewind button (rew) (◀◀)
- ⑩ Fast forward button (ff) (▶▶)
- ⑪ Stop button (stop) (■)
- ⑫ Eject button (eject) (▲)
- ⑬ Microphone jacks (mic) (left/right)
- ⑭ Input selector (input select)
- ⑮ Dolby noise-reduction switch (Dolby NR)
- ⑯ Tape selector (tape select)
- ⑰ Input level controls (left/input level/right)
- ⑱ Headphones jack (phones)
- ⑲ Line input cord (LINE IN)
- ⑳ Line output cord (LINE OUT)
- ㉑ Record/playback connection socket (REC/PLAY)
- ㉒ Voltage selector (VOLTAGE SELECTOR)

## DISASSEMBLY INSTRUCTIONS

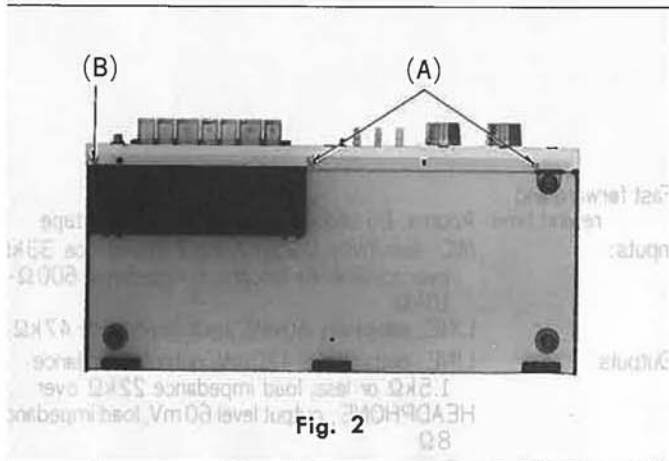


Fig. 2

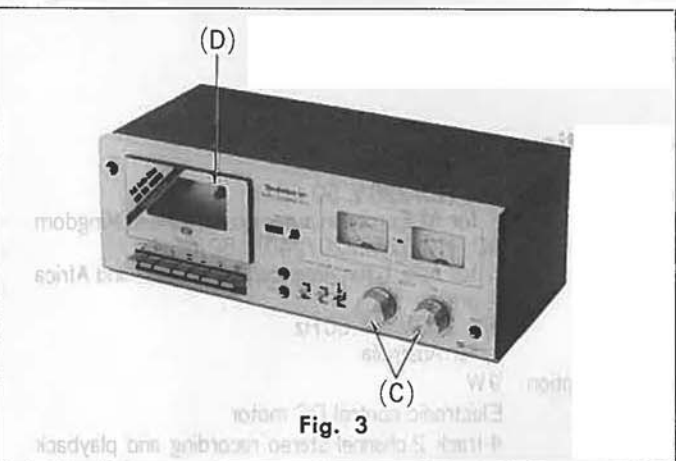


Fig. 3

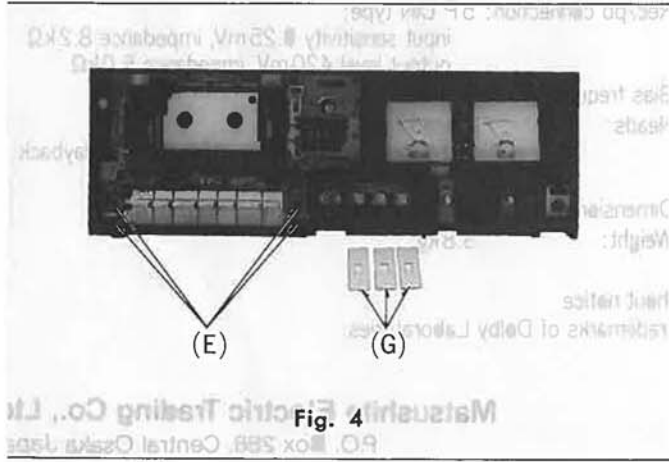


Fig. 4

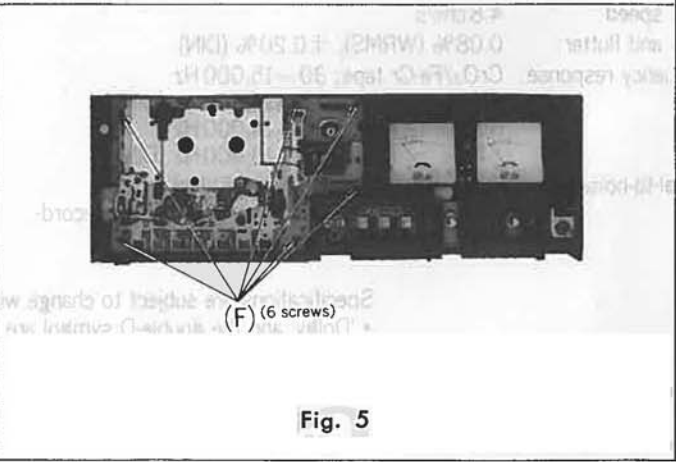


Fig. 5

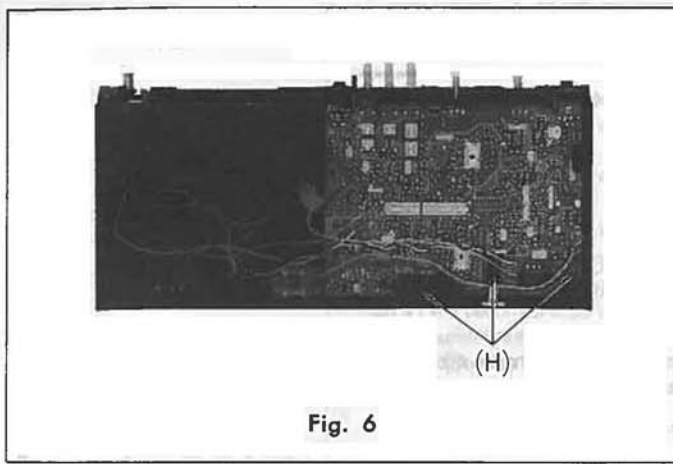
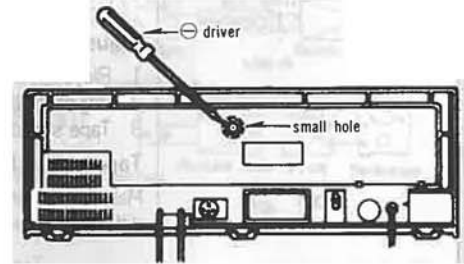


Fig. 6

**Caution:**

Motor speed can be adjusted through the small hole on the back-side of main case by the ⊖ driver as shown in the diagram below.



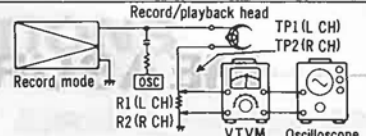
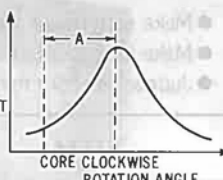
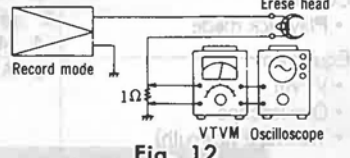
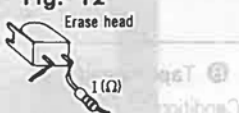
| Procedure | To remove                                   | Remove  | Shown in fig. |
|-----------|---|---|---------------|
| 1         | Bottom cover                                | • 2 screws ..... (A)  | 2             |
| 2         | Front panel                                 | • 1 screw ..... (B)<br>• 2 control knob ..... (C)<br>• Cassette lid ..... (D) | 2<br>3<br>3   |
| 3         | Control button assembly and cassette holder | • 4 red screws ..... (E)  | 4             |
| 4         | Mechanism                                   | • 6 red screws ..... (F)  | 5             |
| 4         | Circuit board                               | • 3 switch shelters ..... (G)<br>• 3 red screws ..... (H)                     | 4<br>6        |

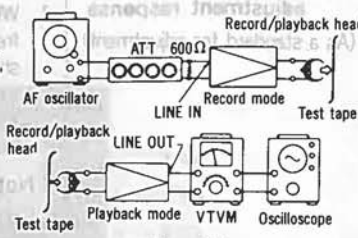
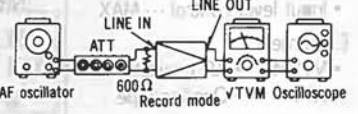
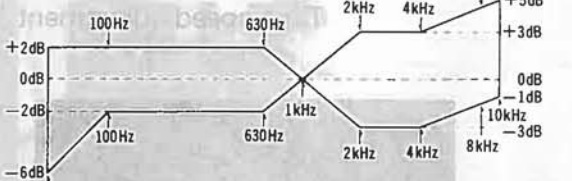
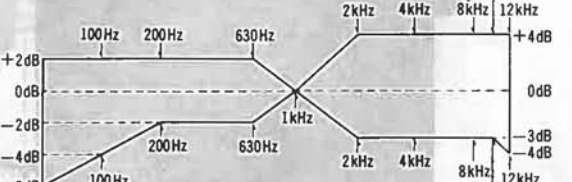
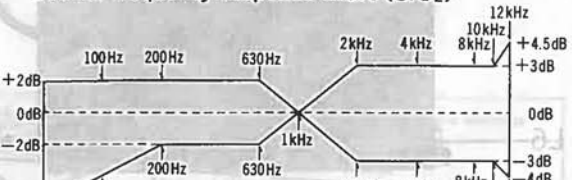
## MEASUREMENT AND ADJUSTMENT METHODS

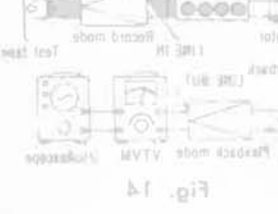
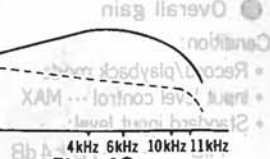
**NOTE:** Set lever switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20 ± 5°C (68 ± 9°F)
- Dolby NR switch: OUT.
- Tape selector: Normal position.

| ITEM   | MEASUREMENT & ADJUSTMENT   |
|--|--|
| <p><b>A 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</li> <li>• Oscilloscope</li> <li>• Test tape (azimuth) ... QZZCFM</li> </ul> | <ol style="list-style-type: none"> <li>1. Test equipment connection is shown in fig. 7.</li> <li>2. Playback azimuth tape (QZZCFM 8 kHz)</li> <li>3. Adjust record/playback head angle adjustment screw (B) in fig. 8 so that output level at LINE OUT becomes maximum</li> <li>4. Measure both channels, and adjust levels for equal output.</li> <li>5. After adjustment lock head adjustment screw with lacquer</li> </ol> <div style="text-align: right;"> <p>Fig. 7</p> <p>Fig. 8</p> </div>                    |
| <p><b>B 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. 9.</li> <li>2. Playback test tape (QZZCWAT 3,000Hz), 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> $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ <p>where, f = measured value</p> <div style="text-align: right;"> <p>Fig. 9</p> </div> |

| ITEM  | MEASUREMENT & ADJUSTMENT  |
|---|---|
|   | <p>5. Take measurement at middle section of tape.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Standard value: ± 1.5%</b></p> </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 CAUTION on page 2.</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> $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ <p><math>f_1</math> = maximum value, <math>f_2</math> = minimum value</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Standard value: 1%</b></p> </div>   |
| <p><b>Ⓒ Playback gain</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</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. 7.</li> <li>2. Playback standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT jack.</li> <li>3. Make measurement for both channels.</li> </ol> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Standard value: 0.39V</b></p> </div> <p><b>Adjustment</b></p> <ol style="list-style-type: none"> <li>1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 20 on page 5).</li> <li>2. After adjustment, check "Playback frequency response" again.</li> </ol>   |
| <p><b>Ⓓ Bias current</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> <li>• When bias current is adjusted on one-channel only, note that bias current on the other channel may vary.</li> <li>• When L5 or L6 is the replaced, preset core position to bottom side of coil and then readjust optimum bias current.</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. Place UNIT into record mode, and tape selector to normal position.</li> <li>3. Read voltage on VTVM and calculate bias current by following formula:</li> </ol> $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Standard value: around 315μA (Normal, Fe-Cr position)</b><br/> <b>around 380μA (CrO<sub>2</sub> position)</b></p> </div> <ol style="list-style-type: none"> <li>4. Adjust L5 (L-CH) and L6 (R-CH) (See fig. 20 on page 5).</li> </ol> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Adjusting L5 and L6 causes bias current to vary as shown in fig. 11.</li> <li>2. Bias current is adjusted by portion A (fig. 11).</li> </ol> <div style="text-align: right;">  <p><b>Fig. 10</b></p>  <p><b>Fig. 11</b></p> </div> |
| <p><b>Ⓔ Erase current</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilloscope</li> <li>• Resistor (1Ω)</li> </ul>   | <ol style="list-style-type: none"> <li>1. Connect 1Ω resistor between the ground side terminal of erase head and ground lead wire removed (See fig. 13).</li> <li>2. Connect VTVM to both ends of 1Ω resistor. (See fig. 12).</li> <li>3. Place UNIT into record mode, and measure voltage across the 1Ω resistor.</li> <li>4. Determine erase current with the following formula:</li> </ol> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of } 1\Omega \text{ resistor}}{1 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Standard value: More than 40mA (Normal position), More than 40 mA (Fe-Cr position), More than 55 mA (CrO<sub>2</sub> position)</b></p> </div> <div style="text-align: right;">  <p><b>Fig. 12</b></p>  <p><b>Fig. 13</b></p> </div>  |

| ITEM   | MEASUREMENT & ADJUSTMENT  |
|--|---|
| <p><b>Ⓕ Overall gain</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>Record/playback mode</li> <li>Input level control ... MAX</li> <li>Standard input level:                     <ul style="list-style-type: none"> <li>MIC ..... <math>-72 \pm 4</math> dB</li> <li>LINE IN ... <math>-24 \pm 3</math> dB</li> <li>DIN ..... <math>-49 \pm 4</math> dB</li> </ul> </li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>AF oscillator</li> <li>VTVM</li> <li>Oscilloscope</li> <li>ATT</li> <li>Test tape (reference blank tape)</li> <li>... QZZCRA for Normal</li> </ul> | <ol style="list-style-type: none"> <li>Test equipment connection is shown in fig. 14.</li> <li>Place UNIT into record mode, and tape selector to normal position.</li> <li>Supply 1 kHz signal (<math>-24</math> dB) from AF oscillator, through ATT, to LINE IN.</li> <li>Adjust ATT until monitor level at LINE OUT becomes 0.39 V.</li> <li>Using test tape, make recording.</li> <li>Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39 V (<math>-7</math> dB).</li> <li>If measured value is not 0.39 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 20 on page 5).</li> <li>Repeat from step (2).</li> </ol>  <p style="text-align: center;"><b>Fig. 14</b></p>  |
| <p><b>Ⓖ Level meter</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>Record mode</li> <li>Input level control ... MAX</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>VTVM</li> <li>Oscilloscope</li> <li>AF oscillator</li> <li>ATT</li> </ul>  | <ol style="list-style-type: none"> <li>Test equipment connection is shown in fig. 15.</li> <li>Supply 1 kHz signal from the AF oscillator, through the ATT, to the LINE IN jack.</li> <li>Adjust ATT so that the monitor level at LINE OUT becomes 0.39 V.</li> <li>Check to see that the level meter stays within the range of <math>-1</math> dB to <math>+1</math> dB.</li> <li>If it is beyond the range, carry out the following adjustments:             <ol style="list-style-type: none"> <li>Open soldered portions a (L-CH) and c (R-CH) indicated as "DOWN" where level more than <math>+1</math> dB.</li> <li>Open soldered portions b (L-CH) and d (R-CH) indicated as "UP" where level less than <math>-1</math> dB.</li> </ol>             (See wiring connection diagram on page 8.)           </li> </ol>  <p style="text-align: center;"><b>Fig. 15</b></p>  |
| <p><b>Ⓗ Overall frequency response</b></p> <p>Condition:</p> <ul style="list-style-type: none"> <li>Record/playback mode</li> <li>Input level control ... MAX</li> </ul> <p>Equipment:</p> <ul style="list-style-type: none"> <li>VTVM</li> <li>AF oscillator</li> <li>ATT</li> <li>Test tape (reference blank tape)</li> <li>... QZZCRA for Normal</li> <li>... QZZCRX for CrO<sub>2</sub></li> <li>... QZZCRY for Fe-Cr</li> </ul>   | <ol style="list-style-type: none"> <li>Test equipment connection is shown in fig. 14.</li> <li>Load reference blank test tape and place UNIT into record mode.</li> <li>Supply 1 kHz signal from AF oscillator through ATT to LINE IN.</li> <li>Adjust ATT so that input level is <math>-20</math> dB below standard recording level (standard recording level ..... <math>-24</math> dB).</li> <li>Record each frequency 50 Hz, 100 Hz, 200 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz and 10 kHz (12 kHz for CrO<sub>2</sub> and Fe-Cr tape) at the same level.</li> <li>Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz.</li> <li>Make sure that the measured value is within the range specified in the overall frequency response chart.</li> <li>Set the tape selector to CrO<sub>2</sub>, Fe-Cr position.</li> <li>Measure as same as manner above.</li> <li>Make sure that the measured value is within the range specified in the overall frequency response chart for CrO<sub>2</sub> and Fe-Cr tape shown in fig. 17 and 18.</li> </ol> <p style="text-align: center;"><b>Overall frequency response chart (Normal)</b></p>  <p style="text-align: center;"><b>Fig. 16</b></p> <p style="text-align: center;"><b>Overall frequency response chart (Fe-Cr)</b></p>  <p style="text-align: center;"><b>Fig. 17</b></p> <p style="text-align: center;"><b>Overall frequency response chart (CrO<sub>2</sub>)</b></p>  <p style="text-align: center;"><b>Fig. 18</b></p> |

| ITEM  | MEASUREMENT & ADJUSTMENT   | ITEM   |
|---|--|--|
| <p>① Overall frequency adjustment response<br/>(As a standard for adjustment)</p>    | <p><b>Adjustment —Using bias current</b></p> <ol style="list-style-type: none"> <li>1. When the frequency response between the middle and high-frequency range becomes higher than the standard value, as shown by the solid line in fig. 19, increase the bias current by turning L5 (L-CH), L6 (R-CH).</li> <li>2. When it becomes lower, as shown by dotted line, reduce the bias current by turning L5 (L-CH), L6 (R-CH).</li> </ol> <p><b>Note:</b><br/>For the method of bias current measurement, refer to "Bias current adjustment" on page 3.</p> |  <p>Fig. 19</p> |
| <p>② Dolby NR circuit</p> <p>Condition:</p> <ul style="list-style-type: none"> <li>• Record mode</li> <li>• Input level control ... 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> </ul> | <ol style="list-style-type: none"> <li>1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5dB at TP4 (L-CH), TP5 (R-CH) (frequency 5kHz).</li> <li>2. Confirm that the value at IN position is 8 (<math>\pm 2.5</math>)dB greater than the value at OUT position of Dolby NR switch.</li> </ol>   |  |

## ADJUSTMENT PARTS LOCATION

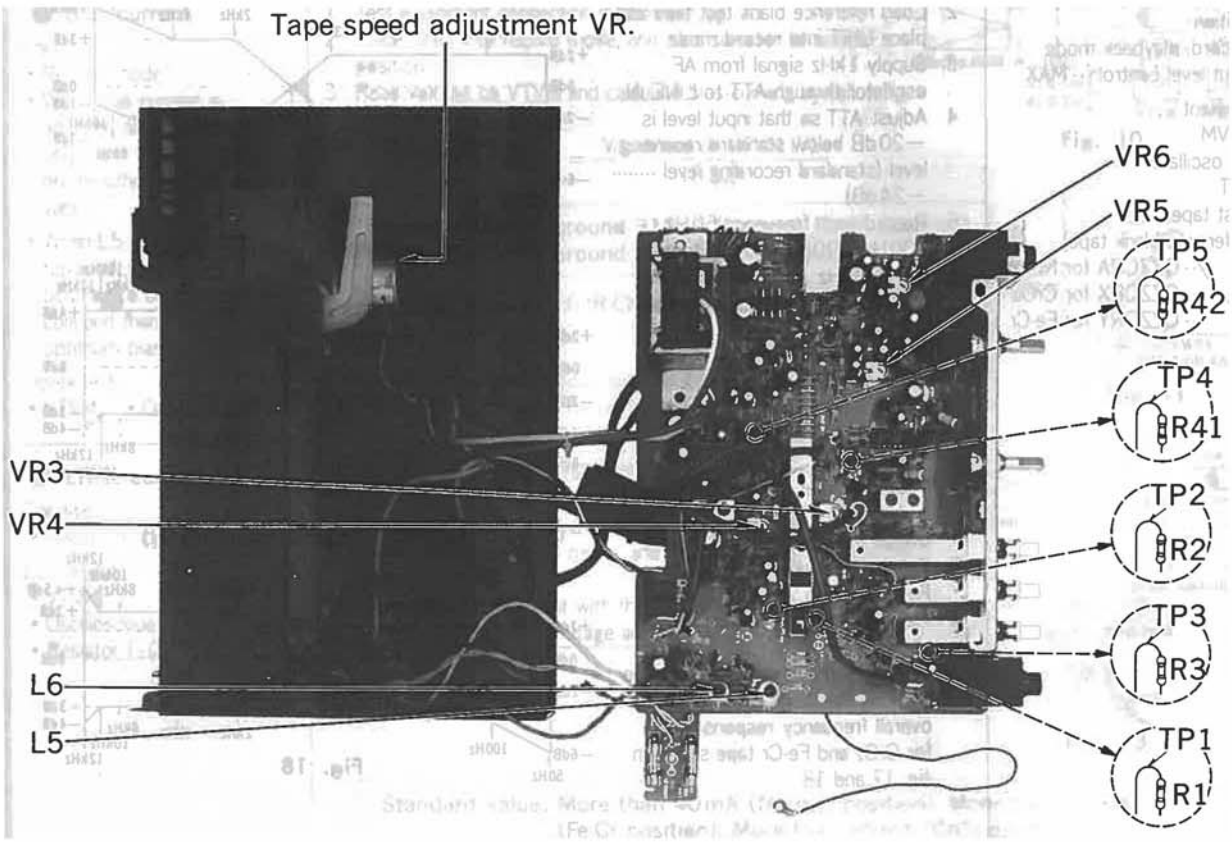
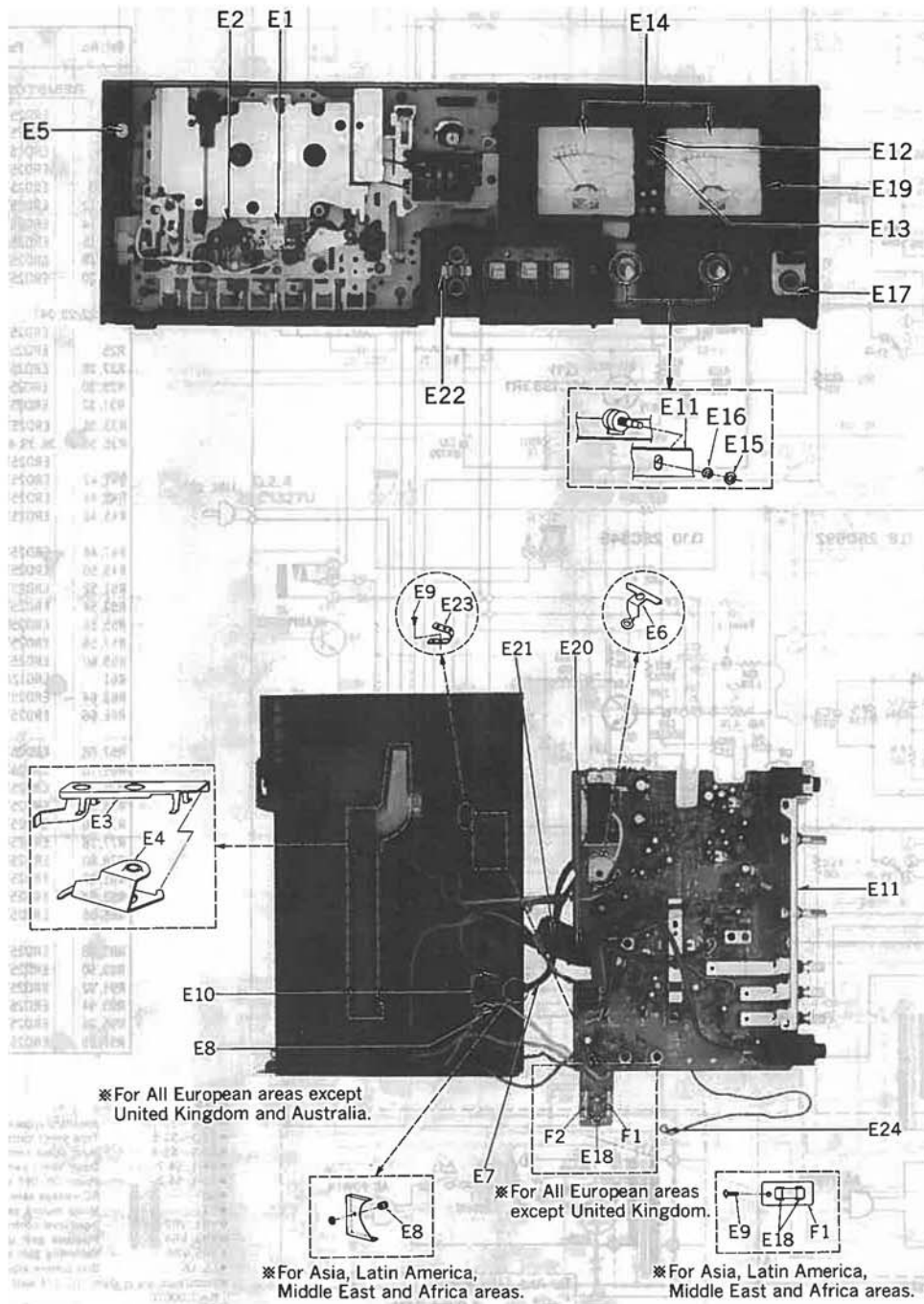


Fig. 20

# ELECTRICAL PARTS LOCATION

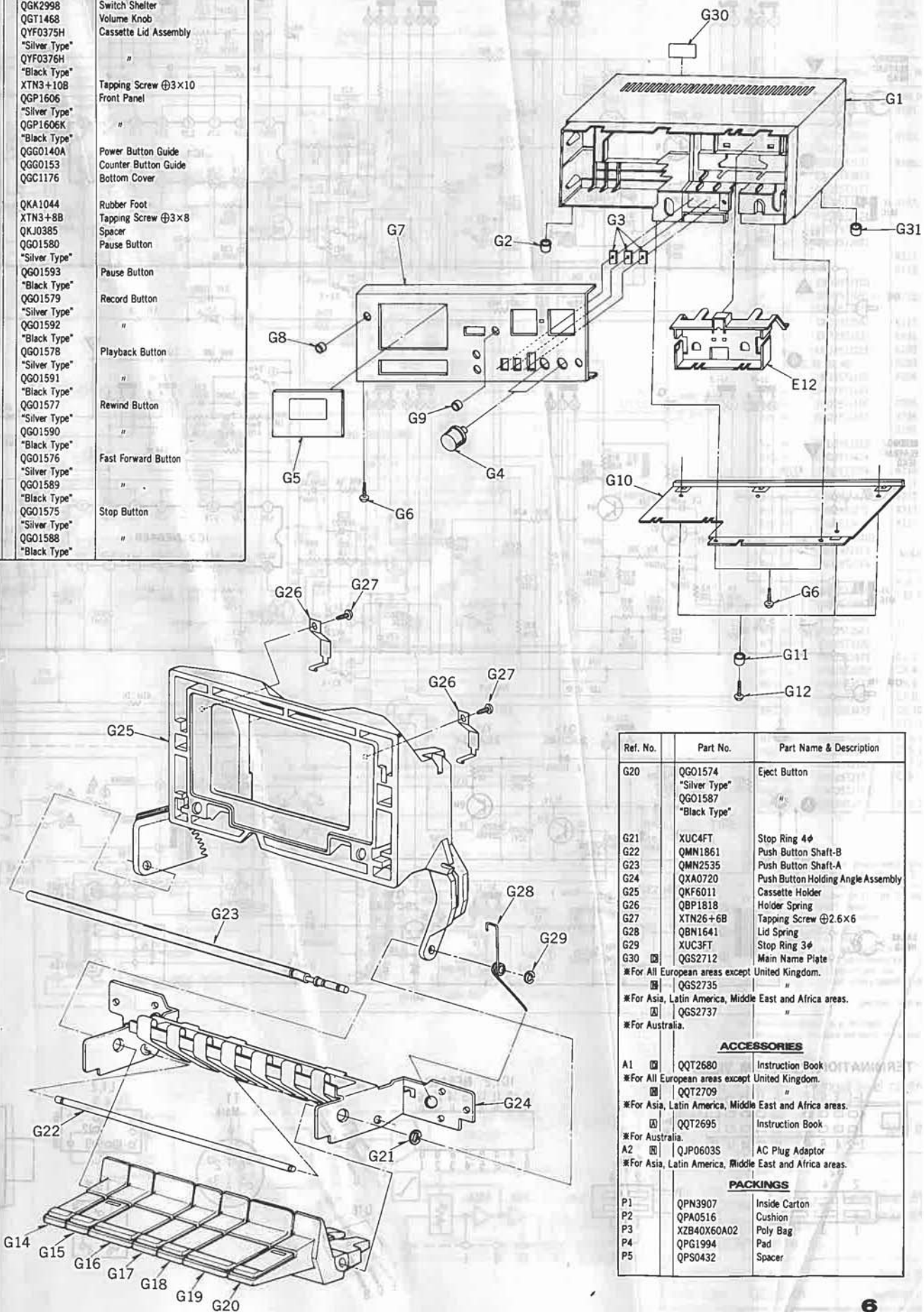


**NOTE:**  $\Delta$  indicates that only parts specified by the manufacturer be used for safety.

| Ref. No.                                       | Part No.          | Part Name & Description | Ref. No.   | Part No.          | Part Name & Description            | Ref. No.  | Part No.    | Part Name & Description |
|--|-------------------|-------------------------|--|-------------------|------------------------------------|---|-------------|-------------------------|
| <b>ELECTRICAL PARTS</b>                        |                   |                         | *For Asia, Latin America, Middle East and Africa areas.      |                   |                                    | E14   | QSL1109RNM  | Level Meter             |
| E1   | QWY4113ZA         | Record/Playback Head    | E9   | $\Delta$ QFC1208M | "                                  | E15   | QNQ1004     | Nut 8 $\phi$            |
| E2   | QWY2122ZB         | Erase Head              | E8   | $\Delta$ QTD1164  | Cord Bushing                       | E16   | QWQ2002     | Washer                  |
| E3   | QML3568           | Recording Lever-A       | *For All European areas except United Kingdom and Australia. |                   |                                    | E17   | QNQ1070     | Nut 12 $\phi$           |
| E4   | QML3569           | Recording Lever-B       | E9   | $\Delta$ QTD1129  | "                                  | E18   | QTF1054     | Fuse Holder             |
| E5   | QXR0539           | Power Button Assembly   | *For Asia, Latin America, Middle East and Africa areas.      |                   |                                    | *For All European areas except United Kingdom.          |             |                         |
|  | "Silver Type"     | "                       | E10  | XTV3+10BFN        | Tapping Screw $\phi$ 3 $\times$ 10 | E19   | XAMQ21P100N | Pilot Lamp              |
|  | QXR0539K          | "                       | *For All European areas except United Kingdom.               |                   |                                    | E20   | QFC2135     | Pin Cord                |
|  | "Black Type"      | "                       | E11  | QMA3893           | Volume Angle                       | *For Asia, Latin America, Middle East and Africa areas. |             |                         |
| E6   | QMA3840           | Earth Plate             | E12  | QKJ0381           | Level Meter Holder                 | E21   | QKJ0382     | Cord Clamper            |
| E7   | $\Delta$ QFC1204M | AC Power Cord           | E13  | QBG1366A          | Rubber Bush                        | E22   | QMA3841     | Microphone Holder       |
| *For All European areas except United Kingdom. |                   |                         | *For Asia, Latin America, Middle East and Africa areas.      |                   |                                    | E23   | RME144ZA    | Cord Clamper            |
|  | $\Delta$ QFC1203M | "                       |  |                   |                                    |   |             |                         |

| Ref. No.             | Part No.      | Part Name & Description                 |
|----------------------|---------------|---|
| <b>CABINET PARTS</b> |               |   |
| G1                   | QKM1385K      | Main Case                               |
| G2                   | QKA1081       | Case Foot                               |
| G3                   | QKG2998       | Switch Shelter                          |
| G4                   | QGT1468       | Volume Knob                             |
| G5                   | QYF0375H      | Cassette Lid Assembly                   |
|                      | "Silver Type" | " "                                     |
|                      | QYF0376H      | " "                                     |
|                      | "Black Type"  | " "                                     |
| G6                   | XTN3+10B      | Tapping Screw $\varnothing 3 \times 10$ |
| G7                   | QGP1606       | Front Panel                             |
|                      | "Silver Type" | " "                                     |
|                      | QGP1606K      | " "                                     |
|                      | "Black Type"  | " "                                     |
| G8                   | QGG0140A      | Power Button Guide                      |
| G9                   | QGG0153       | Counter Button Guide                    |
| G10                  | QGC1176       | Bottom Cover                            |
| G11                  | QKA1044       | Rubber Foot                             |
| G12                  | XTN3+8B       | Tapping Screw $\varnothing 3 \times 8$  |
| G13                  | QKJ0385       | Spacer                                  |
| G14                  | QGO1580       | Pause Button                            |
|                      | "Silver Type" | " "                                     |
|                      | QGO1593       | Pause Button                            |
|                      | "Black Type"  | " "                                     |
| G15                  | QGO1579       | Record Button                           |
|                      | "Silver Type" | " "                                     |
|                      | QGO1592       | " "                                     |
|                      | "Black Type"  | " "                                     |
| G16                  | QGO1578       | Playback Button                         |
|                      | "Silver Type" | " "                                     |
|                      | QGO1591       | " "                                     |
|                      | "Black Type"  | " "                                     |
| G17                  | QGO1577       | Rewind Button                           |
|                      | "Silver Type" | " "                                     |
|                      | QGO1590       | " "                                     |
|                      | "Black Type"  | " "                                     |
| G18                  | QGO1576       | Fast Forward Button                     |
|                      | "Silver Type" | " "                                     |
|                      | QGO1589       | " "                                     |
|                      | "Black Type"  | " "                                     |
| G19                  | QGO1575       | Stop Button                             |
|                      | "Silver Type" | " "                                     |
|                      | QGO1588       | " "                                     |
|                      | "Black Type"  | " "                                     |

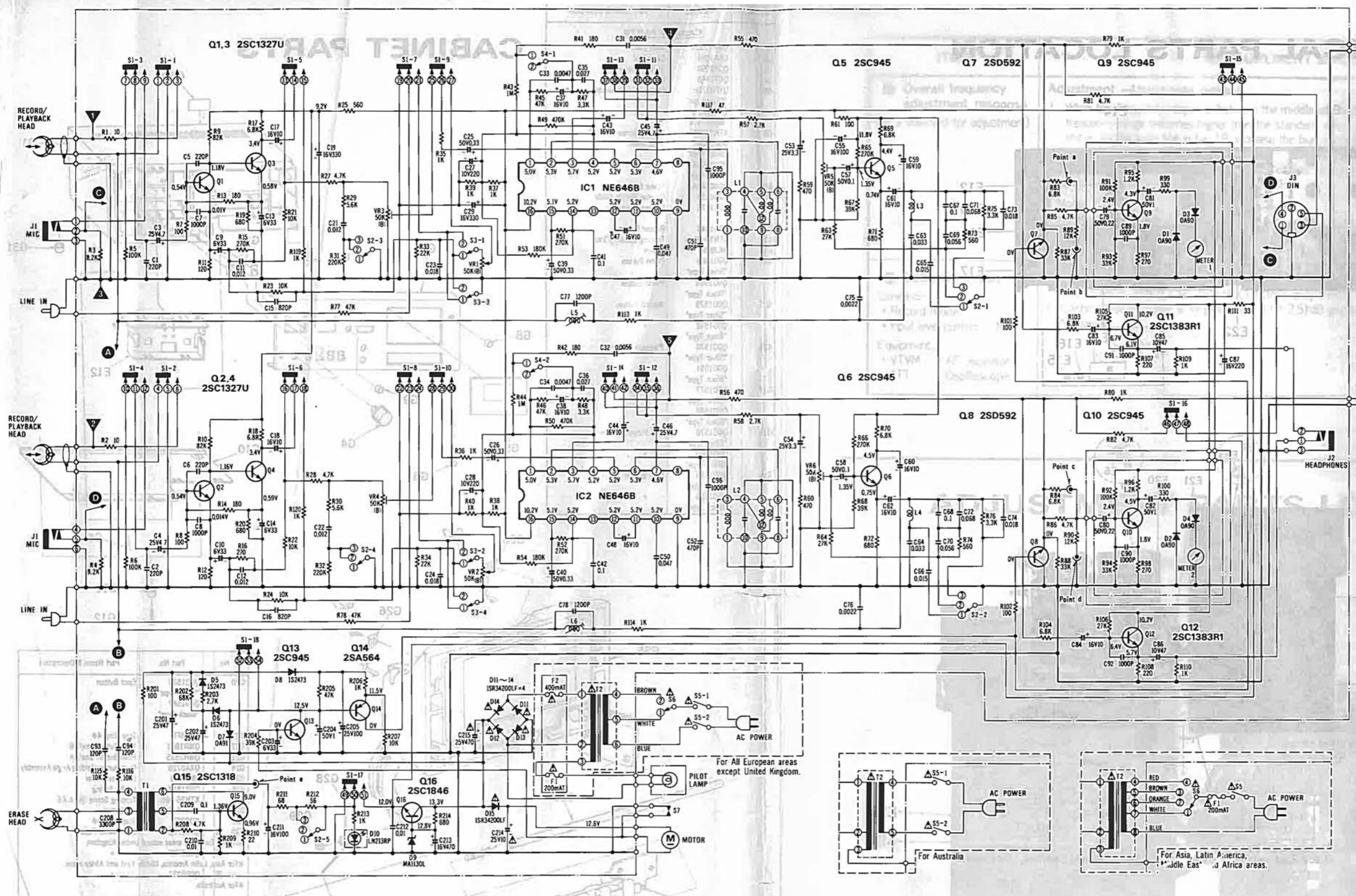
# CABINET PARTS



| Ref. No.  | Part No.      | Part Name & Description                  |
|---|---------------|--|
| G20   | QGO1574       | Eject Button                             |
|   | "Silver Type" | " "                                      |
|   | QGO1587       | " "                                      |
|   | "Black Type"  | " "                                      |
| G21   | XUC4FT        | Stop Ring 4 $\phi$                       |
| G22   | QMN1861       | Push Button Shaft-B                      |
| G23   | QMN2535       | Push Button Shaft-A                      |
| G24   | QXA0720       | Push Button Holding Angle Assembly       |
| G25   | QKF6011       | Cassette Holder                          |
| G26   | QBP1818       | Holder Spring                            |
| G27   | XTN26+6B      | Tapping Screw $\varnothing 2.6 \times 6$ |
| G28   | QBN1641       | Lid Spring                               |
| G29   | XUC3FT        | Stop Ring 3 $\phi$                       |
| G30   | QGS2712       | Main Name Plate                          |
| *For All European areas except United Kingdom.          |               |  |
|   | QGS2735       | " "                                      |
| *For Asia, Latin America, Middle East and Africa areas. |               |  |
|   | QGS2737       | " "                                      |
| *For Australia.   |               |  |
| <b>ACCESSORIES</b>                                      |               |  |
| A1  | QQT2680       | Instruction Book                         |
| *For All European areas except United Kingdom.          |               |  |
|   | QQT2709       | " "                                      |
| *For Asia, Latin America, Middle East and Africa areas. |               |  |
|   | QQT2695       | Instruction Book                         |
| *For Australia.   |               |  |
| A2  | QJP0603S      | AC Plug Adaptor                          |
| *For Asia, Latin America, Middle East and Africa areas. |               |  |
| <b>PACKINGS</b>   |               |  |
| P1  | QPN3907       | Inside Carton                            |
| P2  | QPA0516       | Cushion                                  |
| P3  | XZB40X60A02   | Poly Bag                                 |
| P4  | QPG1994       | Pad                                      |
| P5  | QPS0432       | Spacer                                   |



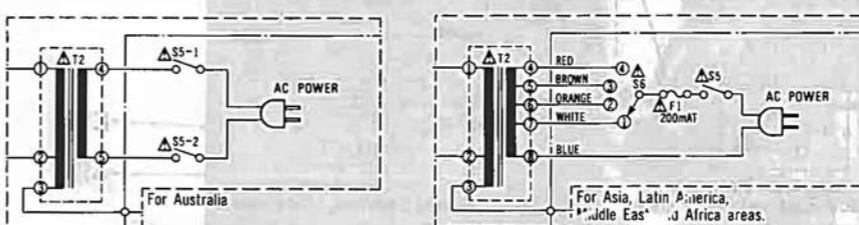
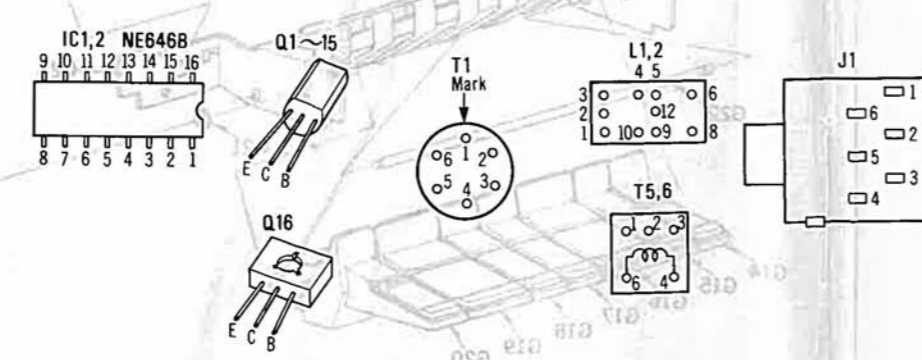
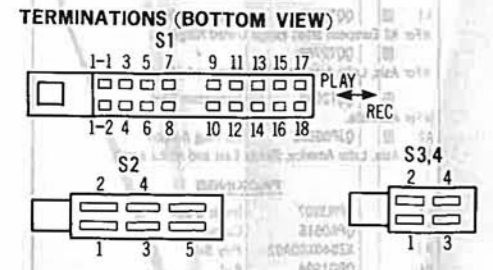
# SCHEMATIC DIAGRAM



**NOTE: RESISTORS**  
 ERD ... Carbon  
 ERG ... Metal-oxide  
 ERO ... Metal-film  
 ERX ... Metal-film  
 ERQ ... Fuse type metallic  
 ERC ... Solid  
 ERF ... Cement

**CAPACITORS**  
 ECG ... Ceramic  
 ECK ... Ceramic  
 ECF ... Ceramic  
 ECF ... Ceramic  
 ECQ ... Polyester film  
 ECQ ... Polyester film  
 ECQF ... Polypropylene  
 ECE ... Electrolytic  
 ECE ... Non polar electrolytic  
 ECQ ... Polystyrene  
 ECT ... Tantalum

| Ref. No.                | Part No.    | Ref. No.                  | Part No.     |
|-------------------------|-------------|---------------------------|--------------|
| <b>RESISTORS</b>        |             |                           |              |
| R1, 2                   | ERD25TJ100  | R99, 100                  | ERD25TJ331   |
| R3, 4                   | ERD25TJ822  | R101, 102                 | ERD25TJ101   |
| R5, 6                   | ERD25TJ104  | R103, 104                 | ERD25TJ682   |
| R7, 8                   | ERD25TJ101  | R105, 106                 | ERD25TJ273   |
| R9, 10                  | ERD25TJ823  |                           |              |
| R11, 12                 | ERD25TJ121  | R107, 108                 | ERD25TJ221   |
| R13, 14                 | ERD25TJ184  | R109, 110                 | ERD25TJ102   |
| R15, 16                 | ERD25TJ274  | R111                      | ERG12ANJ330  |
| R17, 18                 | ERD25TJ682  | R113, 114                 | ERD25TJ102   |
| R19, 20                 | ERD25TJ681  |                           |              |
| R21, 22, 23, 24         | ERD25TJ103  | R115, 116                 | ERD25TJ103   |
| R25                     | ERD25TJ561  |                           |              |
| R27, 28                 | ERD25TJ472  | R117                      | ERG12ANJ470  |
| R29, 30                 | ERD25TJ562  | R201                      | ERG12ANJ101  |
| R31, 32                 | ERD25TJ224  | R202                      | ERG12ANJ683  |
| R33, 34                 | ERD25TJ223  | R203                      | ERD25TJ272   |
| R35, 36, 37, 38, 39, 40 | ERD25TJ102  | R204                      | ERD25TJ393   |
| R41, 42                 | ERD25TJ181  | R205                      | ERD25TJ473   |
| R43, 44                 | ERD25TJ105  | R206                      | ERD25TJ102   |
| R45, 46                 | ERD25TJ473  | R207                      | ERD25TJ103   |
| R47, 48                 | ERD25TJ332  | R208                      | ERD25TJ472   |
| R49, 50                 | ERD25TJ474  | R209                      | ERD25TJ122   |
| R51, 52                 | ERD25TJ274  | R210                      | ERD25TJ274   |
| R53, 54                 | ERD25TJ184  | R211                      | ERG12ANJ680  |
| R55, 56                 | ERD25TJ471  | R212                      | ERG12ANJ560  |
| R57, 58                 | ERD25TJ272  | R213                      | ERD25TJ102   |
| R59, 60                 | ERD25TJ471  | R214                      | ERD25TJ681   |
| R61                     | ERG12ANJ101 | <b>VARIABLE RESISTORS</b> |              |
| R63, 64                 | ERD25TJ273  | VR1, 2                    | EVH3AA067A54 |
| R65, 66                 | ERD25TJ274  | VR3, 4, 5, 6              | EVNK4AA00B54 |
| R67, 68                 | ERD25TJ393  | <b>CAPACITORS</b>         |              |
| R69, 70                 | ERD25TJ682  | C1, 2                     | ECCD1H221K   |
| R71, 72                 | ERD25TJ681  | C3, 4                     | ECEA25M4R7   |
| R73, 74                 | ERD25TJ561  | C5, 6                     | ECCD1H221K   |
| R75, 76                 | ERD25TJ332  | C7, 8                     | ECKD1H102ZF  |
| R77, 78                 | ERD25TJ473  | C9, 10                    | ECEA0J5330   |
| R79, 80                 | ERD25TJ102  | C11, 12                   | ECFWD123KVY  |
| R81, 82                 | ERD25TJ472  | C13, 14                   | ECEA0J5330   |
| R83, 84                 | ERD25TJ682  | C15, 16                   | ECKD1H821KB  |
| R85, 86                 | ERD25TJ472  | C17, 18                   | ECEA1HS100   |
| R87, 88                 | ERD25TJ333  | C19                       | ECEA1CS331   |
| R89, 90                 | ERD25TJ123  | C21, 22                   | ECFWD123KVY  |
| R91, 92                 | ERD25TJ104  |                           |              |
| R93, 94                 | ERD25TJ333  |                           |              |
| R95, 96                 | ERD25TJ122  |                           |              |
| R97, 98                 | ERD25TJ271  |                           |              |



**NOTE:**

- S1-1 ~ S1-18: Record/playback select switch (shown in playback position).
- S2-1 ~ S2-5: Tape select switch (1 - Normal, 2 - Fe-Cr, 3 - CrO2).
- S3-1 ~ S3-4: Input select switch (1 - MIC, 2 - LINE IN).
- S4-1, S4-2: Dolby select switch (1 - IN, 2 - OUT).
- S5-1, S5-2: Power ON/OFF switch.
- S6: AC voltage select switch.
- S7: Motor muting switch.
- VR1, VR2: Input level control.
- VR3, VR4: Playback gain adjustment VR.
- VR5, VR6: Recording gain adjustment VR.
- L5, L6: Bias current adjustment coil.

Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.  
 K = 1,000Ω.  
 Capacity are in microfarads (μF) unless specified otherwise.  
 P = Pico-farads.  
 The mark (V) shows test point. e.g. V = Test point 1.  
 All voltage values shown in circuitry are under no signal condition with volume control at minimum position.  
 For measurement, use VTVM.

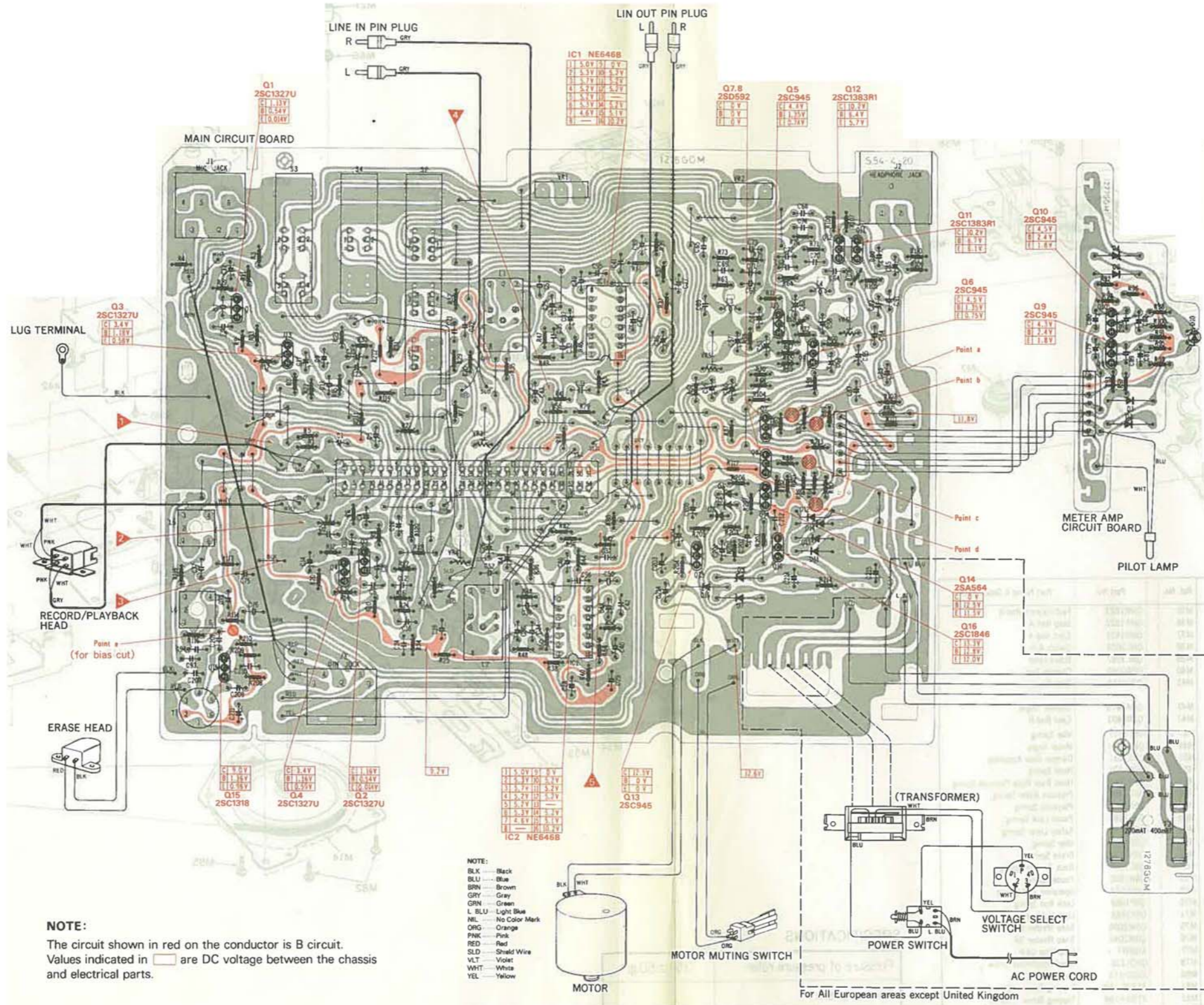
**SPECIFICATIONS** • Input level control ... MAX

|   |   |
|---|---|
| Playback S/N ratio<br>Test tape ... QZZCFM  | More than 45 dB                                     |
| Overall distortion<br>Test tape<br>... QZZCRA for Normal<br>... QZZCRX for CrO2<br>... QZZCRY for Fe-Cr | Less than 3% (Normal)<br>Less than 4% (Fe-Cr, CrO2) |
| Overall S/N ratio<br>Test tape ... QZZCRA   | More than 43 dB<br>(without NAB filter)             |

NOTE:  $\Delta$  indicates that only parts specified by the manufacturer be used for safety.

| Ref. No.        | Part No.     | Ref. No.            | Part No.            |
|-----------------|--------------|---------------------|---------------------|
| C23, 24         | ECFWD183KXY  | C201, 202           | ECEA1ES470          |
| C25, 26         | ECEA50MR33   |                     | ECEAJS330           |
| C27, 28         | ECEA1AS221   | C203                | ECEAHS010           |
| C29             | ECEA1CS331   | C204                | ECEAHS010           |
| C31, 32         | ECQM1H562JZW | C205                | ECEA1ES101          |
| C33, 34         | ECQM1H472JZW |                     |                     |
| C35, 36         | ECQM1H273JZW | C208                | ECQP1332JZW         |
| C37, 38         | ECEA1HS100   | C209                | ECFWD104MXY         |
| C39, 40         | ECEA50MR33   | C210                | ECFWD103KXY         |
|                 |              | C211                | ECEA1CS101          |
| C41, 42         | ECFWD104MXY  | C212                | ECKD1H103ZF         |
| C43, 44         | ECEA1HS100   | C213                | ECEA1CS471          |
| C45, 46         | ECEA1ES477   | C214                | $\Delta$ ECEA1ES100 |
| C47, 48         | ECEA1HS100   | C215                | $\Delta$ ECEA1ES473 |
| C49, 50         | ECFWD473KXY  |                     |                     |
| C51, 52         | ECKD1H471KB  |                     |                     |
| C53, 54         | ECEA1HS3R3   | Q1, 2, 3, 4         | 2SC1327U            |
| C55             | ECEA1CS101   | Q5, 6               | 2SC945P             |
| C57, 58         | ECEA1HSR1    | Q7, 8               | 2SD592NCS           |
| C59, 60, 61, 62 | ECEA1HS100   | Q9, 10              | 2SC945P             |
|                 |              | Q11, 12             | 2SC1383R1           |
|                 |              | Q13                 | 2SC945P             |
| C63, 64         | ECFWD333KXY  | Q14                 | 2SA564R             |
| C65, 66         | ECFWD153KXY  | Q15                 | 2SC1318R            |
| C67, 68         | ECFWD104KXY  | Q16                 | 2SC1846S            |
| C69, 70         | ECFWD563KXY  |                     |                     |
| C71, 72         | ECFWD683KXY  |                     |                     |
| C73, 74         | ECFWD183KXY  | D1, 2, 3, 4         | 0A90Z               |
| C75, 76         | ECFWD222KXY  | D5, 6               | 1S2473              |
| C77, 78         | ECQP1122JZW  | D7                  | 0A91LF              |
| C79, 80         | ECEA1HSR22   | D8                  | 1S2473              |
| C81, 82         | ECEA1HS010   | D9                  | MA1130              |
|                 |              | D10                 | LN213RP             |
| C83, 84         | ECEA1HS100   | D11, 12, 13, 14, 15 | $\Delta$ 1SR34200   |
| C85, 86         | ECEA1AS470   |                     |                     |
| C87             | ECEA1CS221   |                     |                     |
| C89, 90, 91, 92 | ECKD102ZF    |                     |                     |
| C93, 94         | ECKD1H121K   |                     |                     |
| C95, 96         | ECKD102ZF    | IC1, 2              | NE646B              |

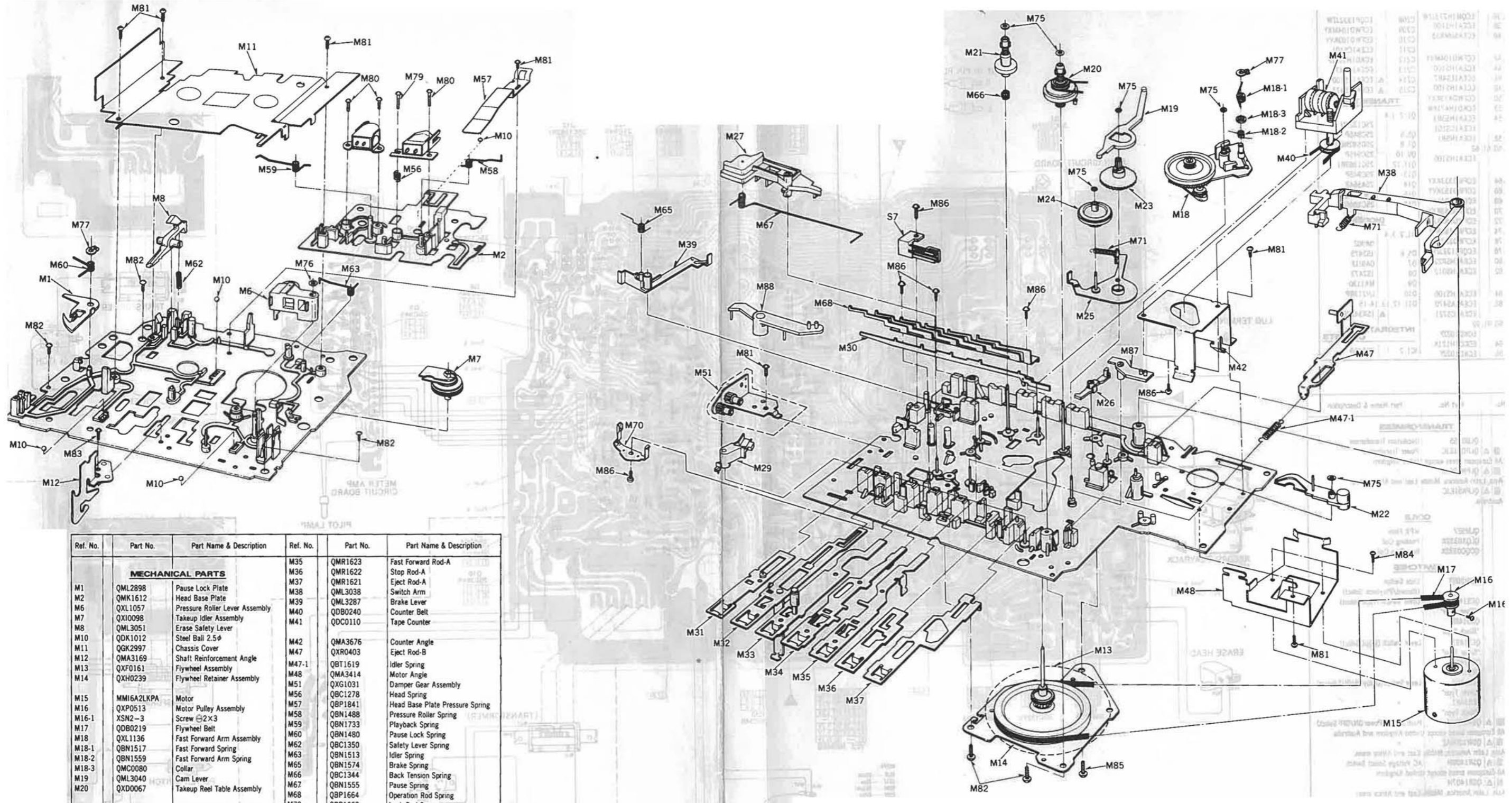
# WIRING CONNECTION DIAGRAM



NOTE:  
 The circuit shown in red on the conductor is B circuit.  
 Values indicated in  $\square$  are DC voltage between the chassis and electrical parts.

| Ref. No.   | Part No.  | Part Name & Description               |
|--|-----------|---------------------------------------|
| <b>TRANSFORMERS</b>  |           |                                       |
| T1   | QLB0155   | Oscillation Transformer               |
| T2   | QLPD41EJC | Power Transformer                     |
| *For All European areas except United Kingdom.               |           |                                       |
| *For Asia, Latin America, Middle East and Africa areas.      |           |                                       |
| *For Australia.  |           |                                       |
| <b>COILS</b>   |           |                                       |
| L1, 2  | QLM927    | MPX Filter                            |
| L3, 4  | QLQX0332K | Peaking Coil                          |
| L5, 6  | QCQC0332K | Bias Trap Coil                        |
| <b>SWITCHES</b>  |           |                                       |
| S1   | QSSI205T  | Slide Switch (Record/Playback Select) |
| S2   | QES1490   | Lever Switch (Tape Select)            |
|  | QES1485   | "Silver Type"                         |
|  | QES1485   | "Black Type"                          |
| S3   | QES1491   | Lever Switch (Input Select)           |
|  | QES1486   | "Silver Type"                         |
|  | QES1486   | "Black Type"                          |
| S4   | QES1492   | Lever Switch (Dolby IN/OUT Select)    |
|  | QES1487   | "Silver Type"                         |
|  | QES1487   | "Black Type"                          |
| S5   | QSW2214A  | Push Switch (Power ON/OFF Select)     |
| *For All European areas except United Kingdom and Australia. |           |                                       |
| *For Asia, Latin America, Middle East and Africa areas.      |           |                                       |
| S6   | QSR1409H  | AC Voltage Select Switch              |
| *For All European areas except United Kingdom.               |           |                                       |
| *For Asia, Latin America, Middle East and Africa areas.      |           |                                       |
| S7   | QSB0247   | Leaf Switch (Motor Switch)            |
| <b>FUSES</b>   |           |                                       |
| F1   | XBAQ0013  | Fuse (200mA)                          |
| *For All European areas except United Kingdom.               |           |                                       |
| *For Asia, Latin America, Middle East and Africa areas.      |           |                                       |
| F2   | XBAQ0007  | Fuse (400mA)                          |
| *For All European areas except United Kingdom.               |           |                                       |
| <b>JACKS</b>   |           |                                       |
| J1   | QJA0257A  | Microphone Jack                       |
| J2   | QJA0249C  | Headphone Jack                        |
| J3   | QJS1954H  | DIN Jack                              |

# EXPLODED VIEWS



| Ref. No.                | Part No.   | Part Name & Description        | Ref. No. | Part No. | Part Name & Description         |              |
|-------------------------|------------|--------------------------------|----------|----------|---------------------------------|--------------|
| <b>MECHANICAL PARTS</b> |            |                                |          |          |                                 |              |
| M1                      | QML2898    | Pause Lock Plate               | M35      | QMR1623  | Fast Forward Rod-A              |              |
| M2                      | QMK1612    | Head Base Plate                | M36      | QMR1622  | Stop Rod-A                      |              |
| M6                      | QXL1057    | Pressure Roller Lever Assembly | M37      | QMR1621  | Eject Rod-A                     |              |
| M7                      | QXI0098    | Takeup Idler Assembly          | M38      | QML3038  | Switch Arm                      |              |
| M8                      | QML3051    | Erase Safety Lever             | M39      | QML3287  | Brake Lever                     |              |
| M10                     | QDK1012    | Steel Ball 2.5φ                | M40      | QDB0240  | Counter Belt                    |              |
| M11                     | QGK2997    | Chassis Cover                  | M41      | QDC0110  | Tape Counter                    |              |
| M12                     | QMA3169    | Shaft Reinforcement Angle      | M42      | QMA3676  | Counter Angle                   |              |
| M13                     | QXF0161    | Flywheel Assembly              | M47      | QXR0403  | Eject Rod-B                     |              |
| M14                     | QXH0239    | Flywheel Retainer Assembly     | M47-1    | QBT1619  | Idler Spring                    |              |
| M15                     | MMI6A2LKPA | Motor                          | M48      | QMA3414  | Motor Angle                     |              |
| M16                     | QXP0513    | Motor Pulley Assembly          | M51      | QXG1031  | Damper Gear Assembly            |              |
| M16-1                   | XSN2-3     | Screw @2x3                     | M56      | QBC1278  | Head Spring                     |              |
| M17                     | QDB0219    | Flywheel Belt                  | M57      | QBP1841  | Head Base Plate Pressure Spring |              |
| M18                     | QXL1136    | Fast Forward Arm Assembly      | M58      | QBN1488  | Pressure Roller Spring          |              |
| M18-1                   | QBN1517    | Fast Forward Spring            | M59      | QBN1733  | Playback Spring                 |              |
| M18-2                   | QBN1559    | Fast Forward Arm Spring        | M62      | QBN1480  | Pause Lock Spring               |              |
| M18-3                   | QMC0080    | Collar                         | M63      | QBC1350  | Safety Lever Spring             |              |
| M19                     | QML3040    | Cam Lever                      | M65      | QBN1513  | Idler Spring                    |              |
| M20                     | QXD0067    | Takeup Reel Table Assembly     | M66      | QBN1574  | Brake Spring                    |              |
| M21                     | QXD0084    | Supply Reel Table Assembly     | M67      | QBC1344  | Back Tension Spring             |              |
| M22                     | QXL1055    | Auto-Stop Lever Assembly       | M68      | QBN1555  | Pause Spring                    |              |
| M23                     | QDG1096    | Cam Gear                       | M70      | QBP1664  | Operation Rod Spring            |              |
| M24                     | QXG1026    | Auto-Stop Gear Assembly        | M71      | QBP1662  | Lock Rod Spring                 |              |
| M25                     | QXL1037    | Gear Lever Assembly            | M75      | QBW2008  | Lock Holding Spring             |              |
| M26                     | QML3042    | Auto-Stop Obstruction Lever    | M76      | QBW2046  | Snap Washer 2φ                  |              |
| M27                     | QML3217    | Pause Lever                    | M77      | XUB4FT   | Snap Washer 3φ                  |              |
| M29                     | QML3124    | Lock Release Arm               | M79      | XHQ1226  | Stop Ring C4φ                   |              |
| M30                     | QMR1735    | Lock Rod Assembly              | M80      | XSN2+10  | Head Adjustment Screw           |              |
| M31                     | QXR0342    | Pause Rod Assembly             | M81      | XTN26+5B | Screw @2x10                     |              |
| M32                     | QXR0465    | Record Rod Assembly            | M82      | XTN3+10B | Tapping Screw @2.6x5            |              |
| M33                     | QXR0344    | Playback Rod Assembly          | M83      | XTN26+8B | Tapping Screw @3x10             |              |
| M34                     | QMR1624    | Rewind Rod-A                   | M84      | XTN26+8B | Tapping Screw @2.6x8            |              |
|                         |            |                                | M85      | XSN26+3  | Screw @2.6x3                    |              |
|                         |            |                                | M86      | XTN3+25B | Tapping Screw @3x25             |              |
|                         |            |                                | M87      | XTN26+6B | Tapping Screw @2.6x6            |              |
|                         |            |                                | M88      | QML3504  | Cue Lever                       |              |
|                         |            |                                |          | M88      | QML3207                         | Muting Lever |

## SPECIFICATIONS

|   |               |
|---|---------------|
| Pressure of pressure roller                 | 350 ± 50 gr   |
| Takeup tension                              | 50 ± 15 gr·cm |
| • Use cassette torque meter<br>... QZZSRKCT |               |
| Wow and flutter (JIS)                       | 0.12% (WRMS)  |
| • Use test tape ... QZZCWAT                 |               |