


Service Manual

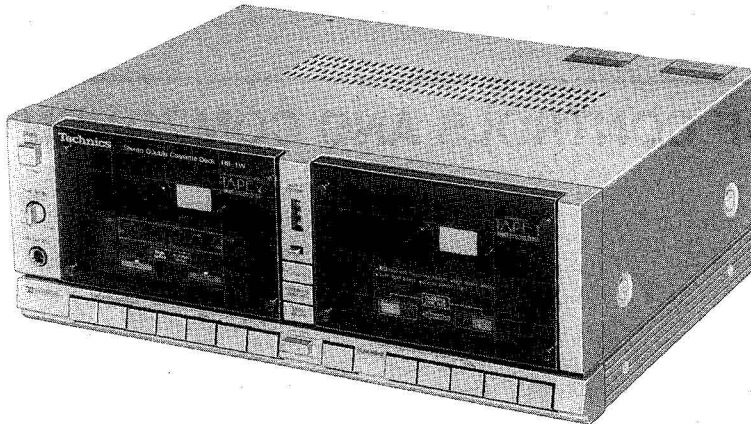
315 Series Mini-Size Double Cassette Deck
with Phono Synchro-Recording

Cassette Deck

RS-1W

(Silver Face)
(Black Face)

 DOLBY SYSTEM



RS-1W in black is also available in some countries.

This is the Service Manual for the following areas.

- For all European areas except United Kingdom.
- For United Kingdom.
- For Asia, Latin America, Middle East and Africa areas.
- For Australia.

RS-M24 MECHANISM SERIES

Specifications

Track System:	Tape Deck 1; 4-track 2-channel stereo playback Tape Deck 2; 4-track 2-channel stereo recording and playback	Inputs:	MIC; sensitivity 1mV, applicable microphone impedance 400Ω~10kΩ LINE; sensitivity 200mV, input impedance 47kΩ or more
Tape Speed:	4.8cm/s	Outputs:	LINE; output level 400mV, output impedance 2.7kΩ or less
Wow and Flutter:	0.048% (WRMS), ±0.14% (DIN)	Bias Frequency:	105kHz
Frequency Response:	Metal tape; 20~19,000Hz 30~18,000Hz (DIN) 40~17,000Hz ±3dB CrO ₂ tape; 20~18,000Hz 30~17,000Hz (DIN) 40~16,000Hz ±3dB Normal tape; 20~17,000Hz 30~16,000Hz (DIN) 40~15,000Hz ±3dB	Heads:	Tape Deck 1; 1 AX head for playback Tape Deck 2; 1-AX (AMORPHOUS) head for record/playback 1-double-gap ferrite head for erasure
Signal-to-noise Ratio:	Dolby* B NR in; 67dB (CCIR) NR out; 57dB (Signal level = max. input level A weighted, CrO ₂ type tape)	Motor:	Electrical governor motor
Fast Forward and Rewind Time:	Approx. 90 seconds with C-60 cassette tape	Power Requirements:	<input type="checkbox"/>AC; 220V, 50-60Hz <input type="checkbox"/>AC; 110/125/220/240V, 50-60Hz Pre-set power voltage 240V <input type="checkbox"/>AC 240V, 50-60Hz
		Power Consumption:	<input type="checkbox"/>13W <input type="checkbox"/>12W
		Dimensions (W×H×D):	31.5cm×11.6cm×23.4cm
		Weight:	4.6kg

Design and specifications are subject to change without notice.

*'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

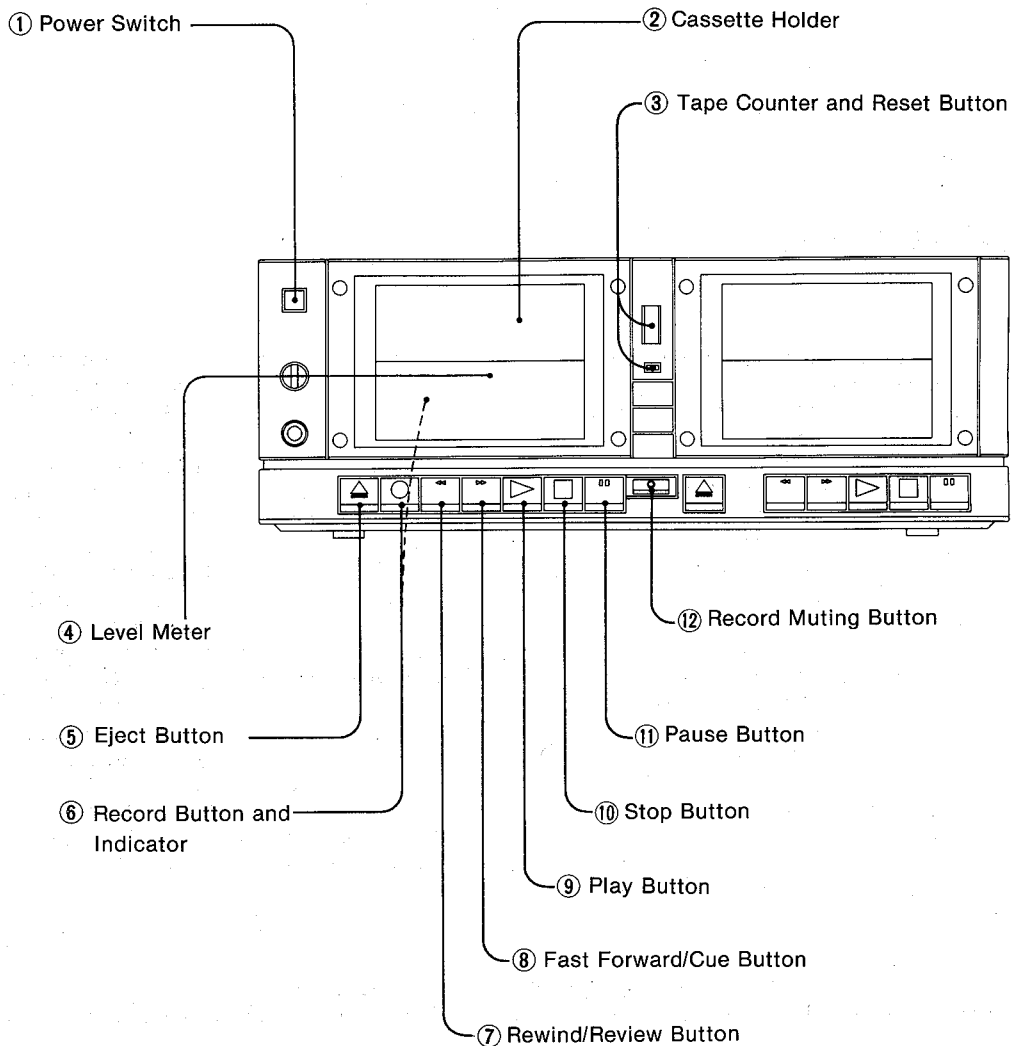
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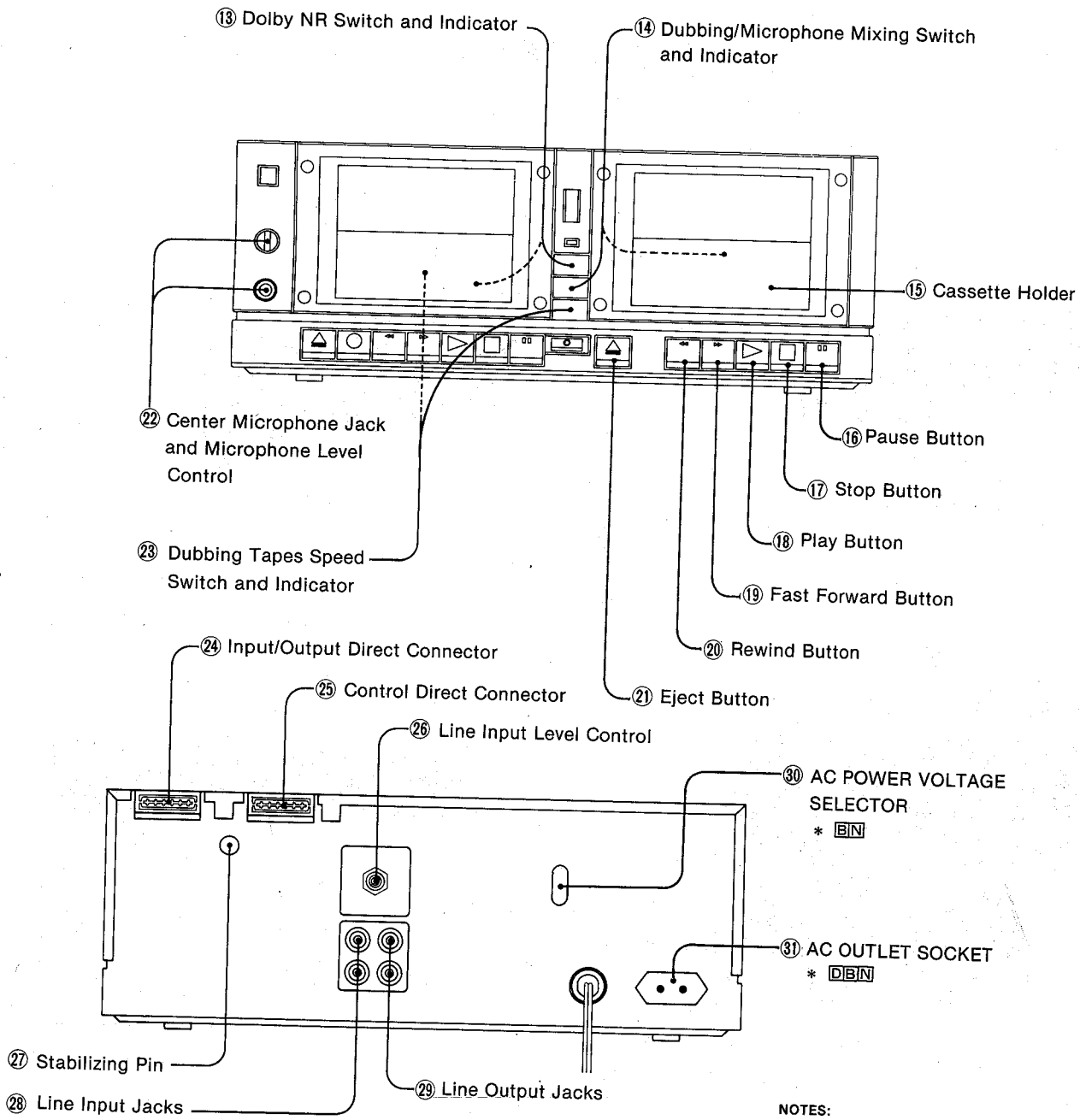
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LOCATION OF CONTROLS AND COMPONENTS

TAPE 2

(For Recording and Playback)





NOTES:

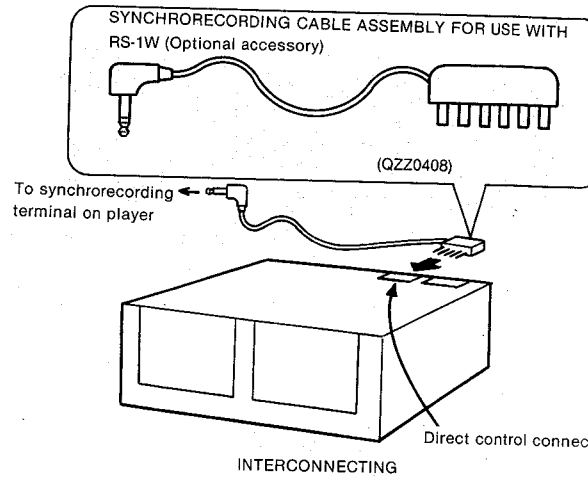
- ...For all European areas except United King
- ...For United Kingdom.
- ...For Asia, Latin America Middle East and Afr.

ABOUT SYNCHRO-RECORDING

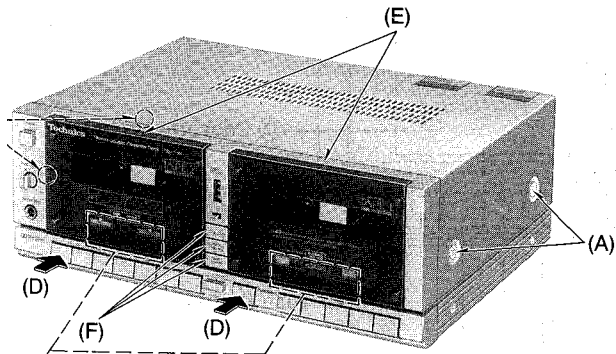
Why use synchro-recording?

When the tape deck's Record Button is pushed, and the deck placed in the record-pause condition, when the stylus of the tonearm is lowered onto the record surface, the Pause mode will be automatically released and recording will begin. When the stylus leaves the surface of the record, approximately four seconds of non-recorded interval will be allowed to pass before the recording stops automatically. This function is called synchro-recording.

NOTE: For synchrorecording with a system provided with no direct control connector, an optional synchrorecording cable assembly, QZZ0408, is required.



DISASSEMBLY INSTRUCTIONS



The head azimuth can be adjusted by removing the cassette lid.

Fig. 1

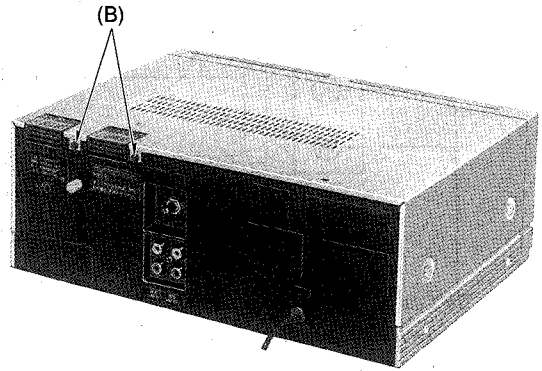


Fig. 2

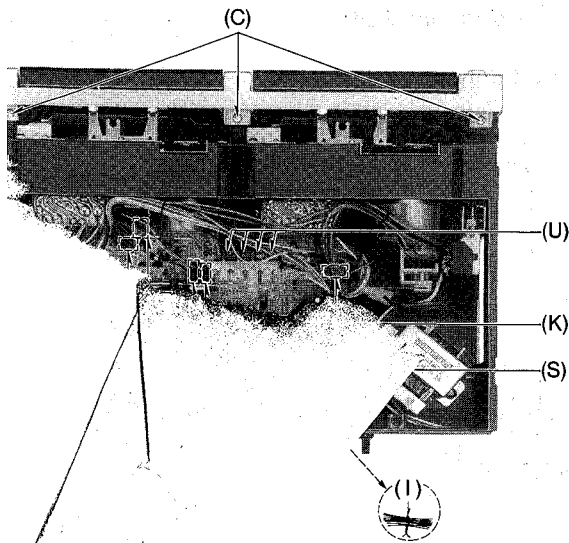


Fig. 3

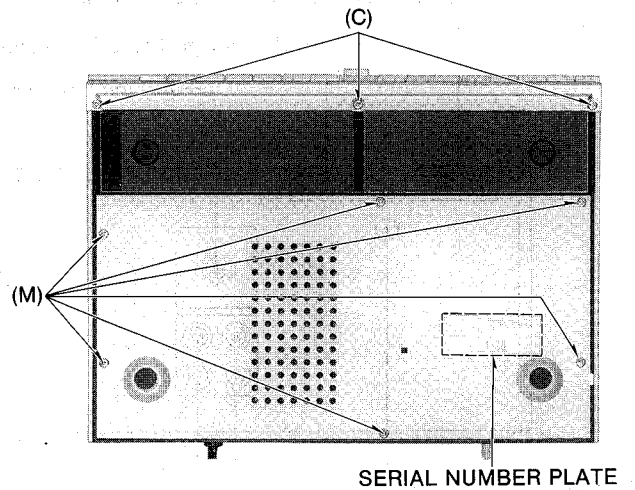


Fig. 4

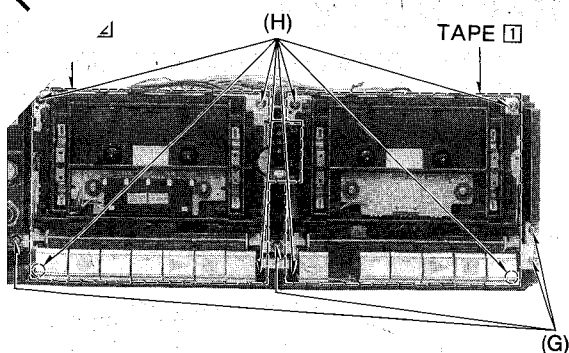


Fig. 5

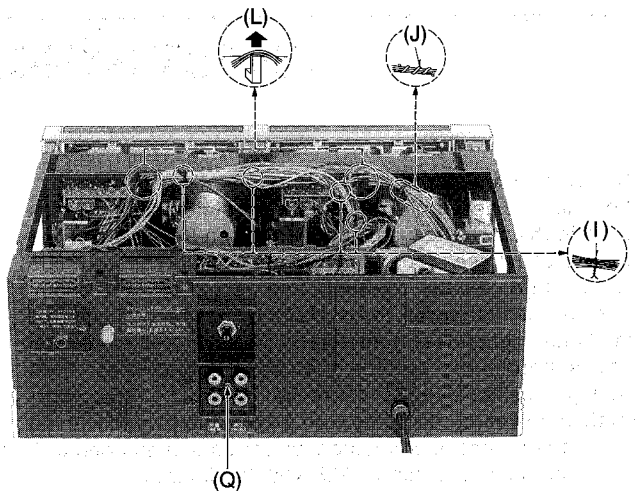
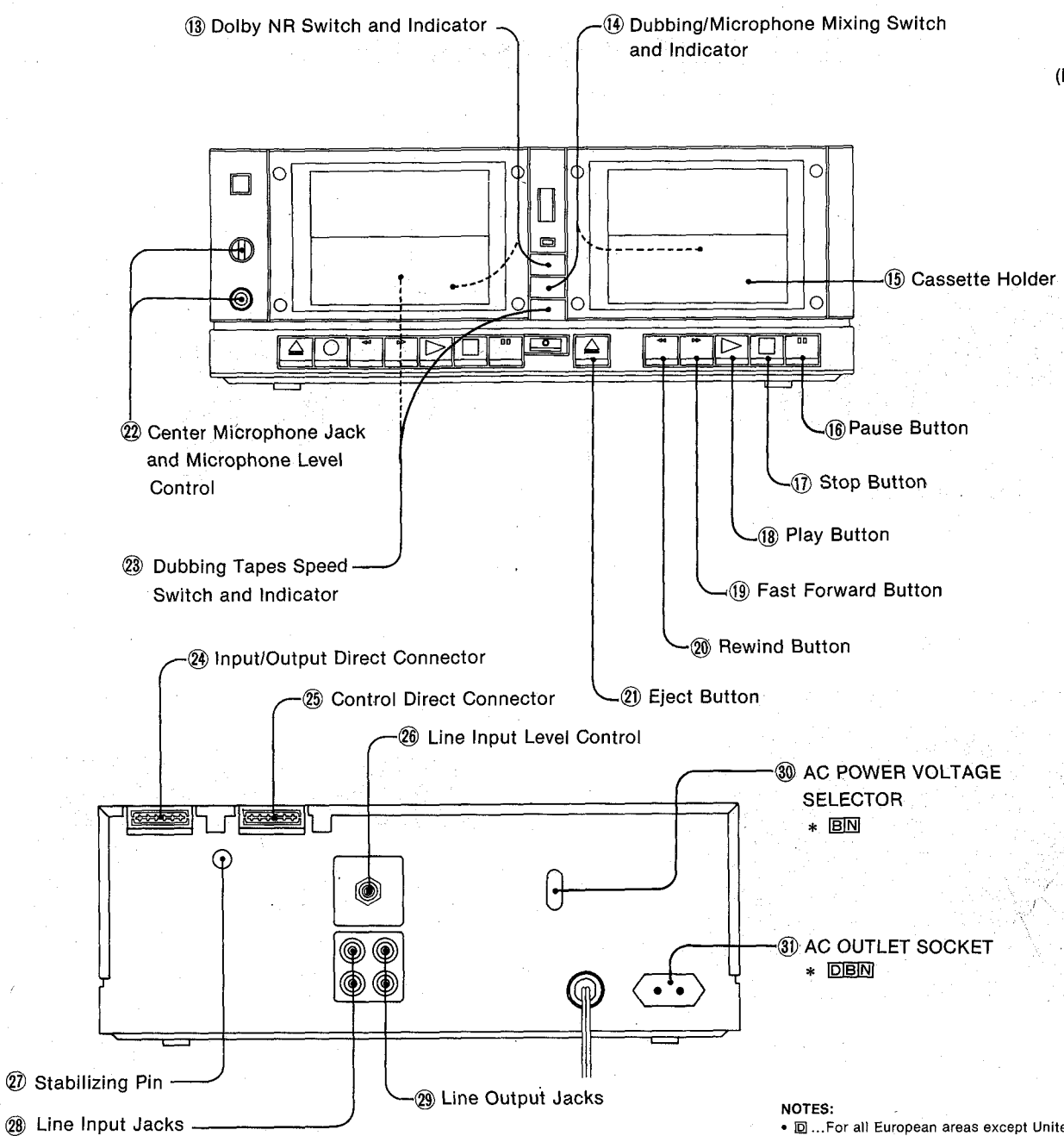


Fig. 6

TAPE 1
(For Playback)



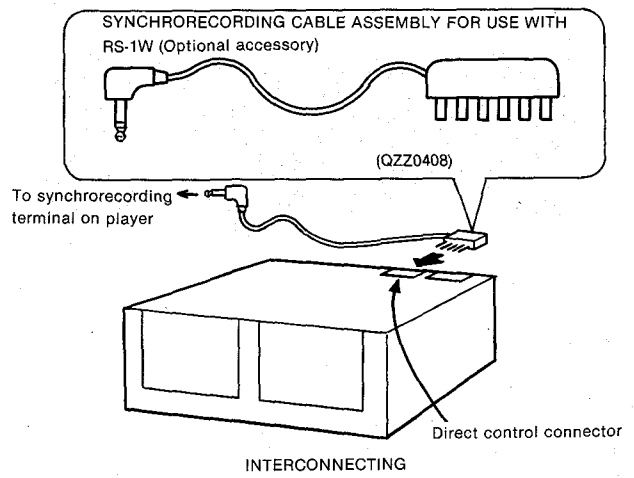
- NOTES:**
- [Symbol] ...For all European areas except United Kingdom.
 - [Symbol] ...For United Kingdom.
 - [Symbol] ...For Asia, Latin America Middle East and Africa areas.

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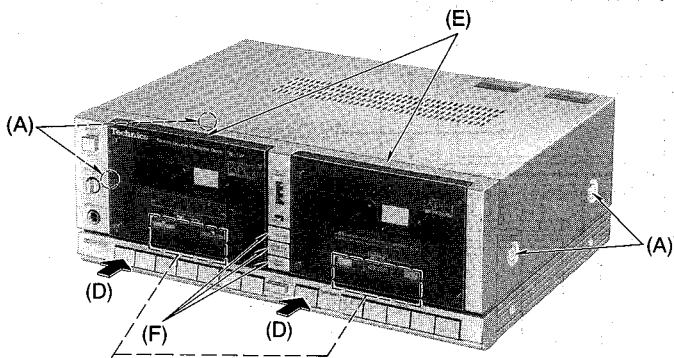
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Fig. 1

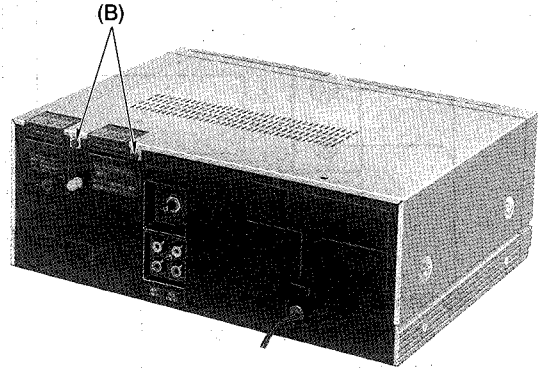


Fig. 2

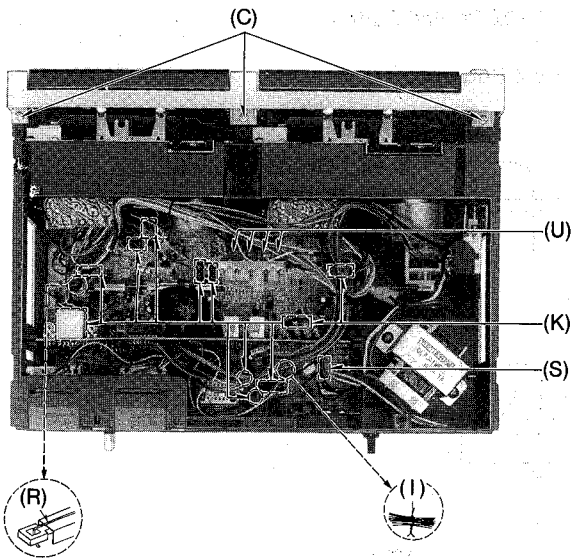


Fig. 3

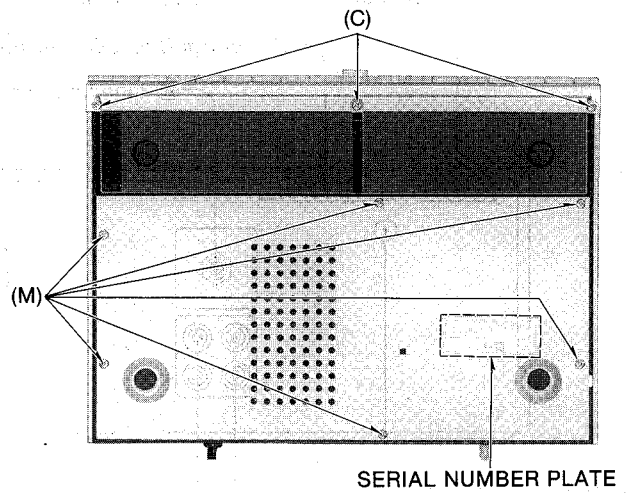


Fig. 4

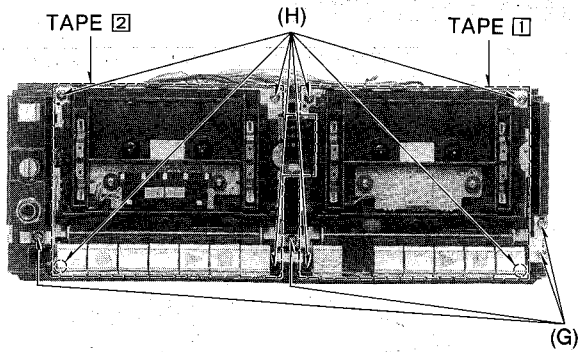


Fig. 5

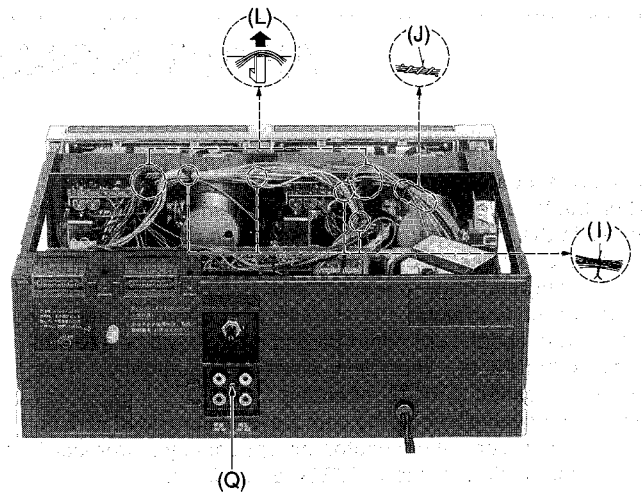
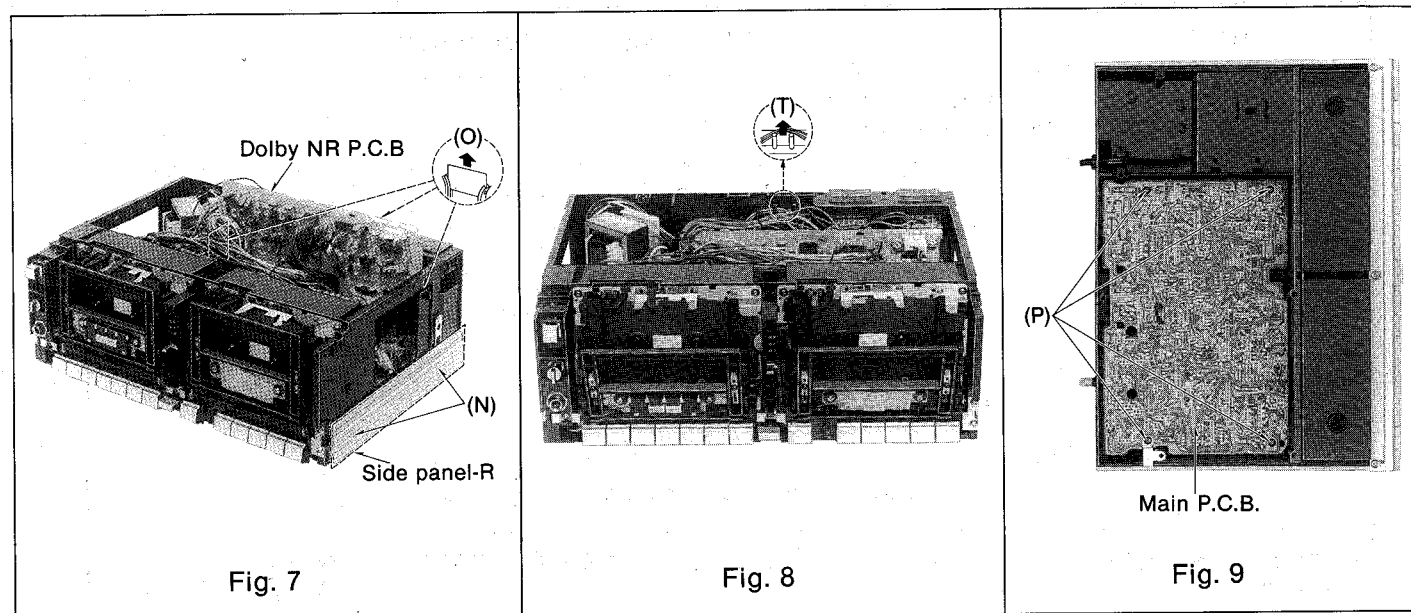


Fig. 6



Ref No.	Procedure	To remove —	Remove —	Shown in fig. —
1	1	Main case	<ul style="list-style-type: none"> • 4 ornament screws.....(A) • 2 screws.....(B) 	1 2
2	1 → 2	Front panel ass'y	<ul style="list-style-type: none"> • 6 screws.....(C) • Push the eject buttons.....(D) • Pull out the cassette lids.....(E) • Pull out the Dolby, dubbing and tape speed buttons.....(F) 	3, 4 1 1 1
3	1 → 2 → 3	Mechanism unit	<ul style="list-style-type: none"> • 4 screws.....(G) • 8 screws.....(H) • Nylon binder.....(I) • Metal clasper.....(J) • Pull out the connectors.....(K) • Remove the wiers from the wire clamp.....(L) <p>Note: Remove the tape [2] mechanism unit before removing the tape [1] mechanism unit.</p>	5 5 3, 6 6 3 6
4	4	Bottom cover	• 6 screws.....(M)	4
5	1 → 5	Side panel-R	• 2 screws.....(N)	7
6	1 → 6	Dolby NR P.C.B	• The P.C board is locked by the hook. Unhook the P.C board and pull it in the direction of arrow as shown in Fig. (O).	7
7	1 → 4 → 5 → 6 → 7	Main P.C.B	<ul style="list-style-type: none"> • 4 screws.....(P) • 1 screw.....(Q) • Recording wire.....(R) • Pull out the connectors.....(K) & (S) • Remove the wiers from the wire clamp.....(T) • Pull out the Dolby, dubbing and tape speed switch rods.....(U) 	9 6 3 3 8 3

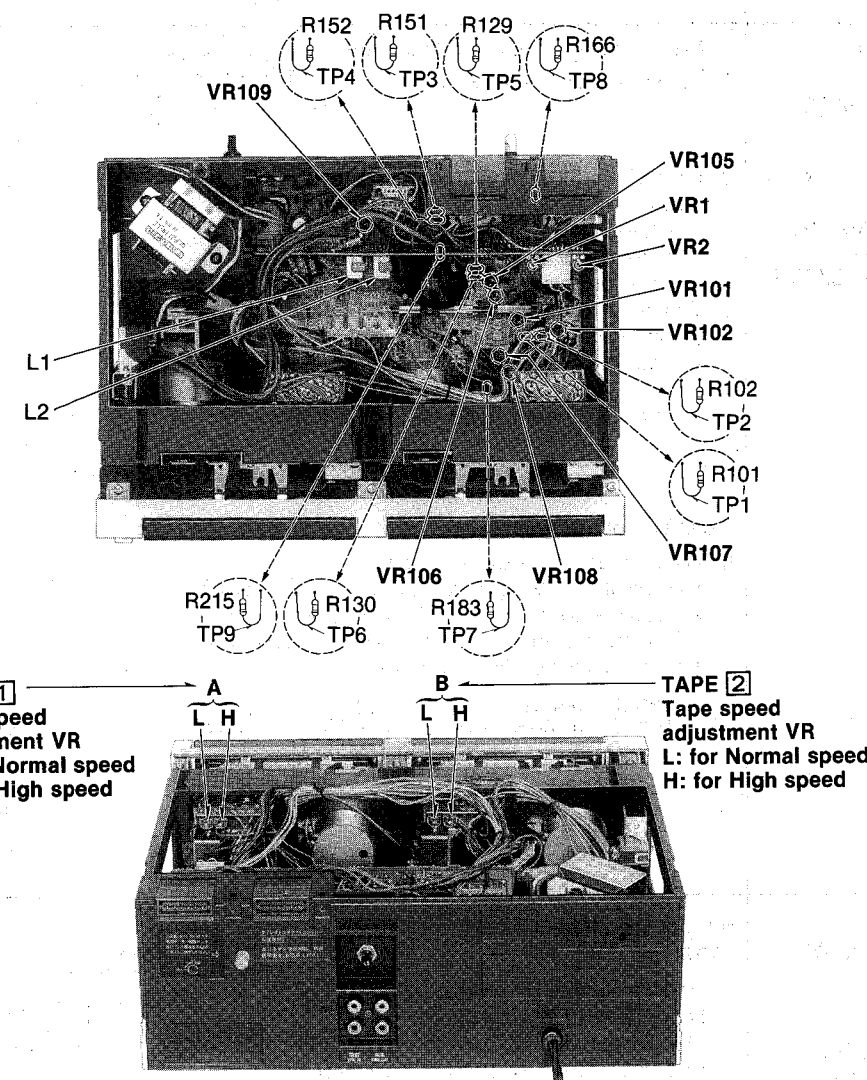
*** Serial No. Indication**

• The serial number plate of this product is attached to the bottom cover. (Shown in fig. 4.)

OPERATING PRECAUTIONS

* If the Record Button or the Play Button is pressed immediately after the power has gone off, the head section will remain raised. This means that the tape will not be ejected even when the Eject Button is pressed. In cases like this, switch on the power again.

MEASUREMENT AND ADJUSTMENT METHODS



- TP8: Test point for line A.G.C off Grounding this test point disables line A.G.C. [Applied in erase ratio measurements]
- TP9: Test point for tape speed change Grounding this test point places the recorder in the doubled tape-speed mode. [Applicable in tape speed adjustments]

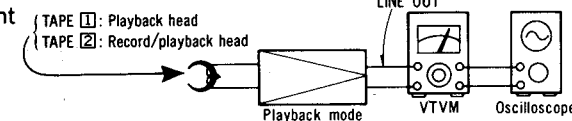
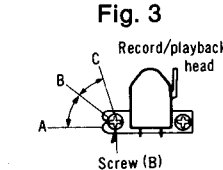
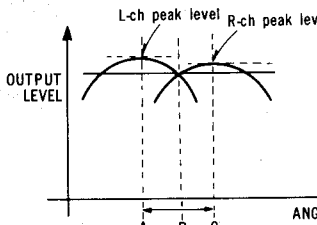
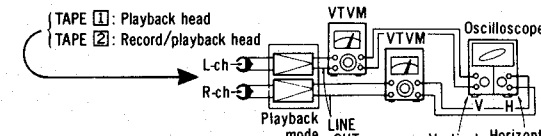

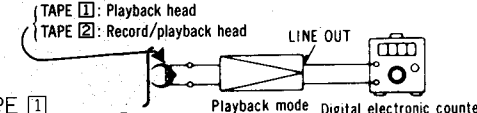
Fig. 1

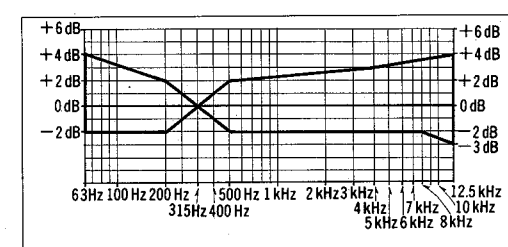
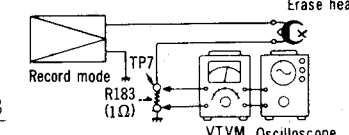
NOTES: Keep good condition, set switches and controls in the following positions, unless otherwise specified.

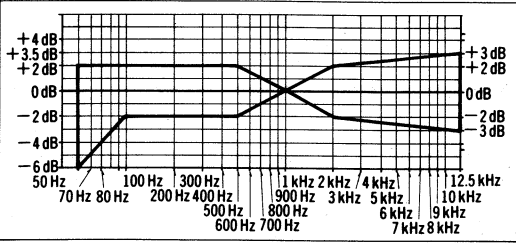
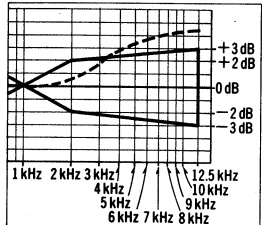
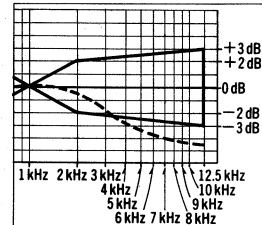
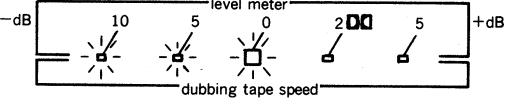
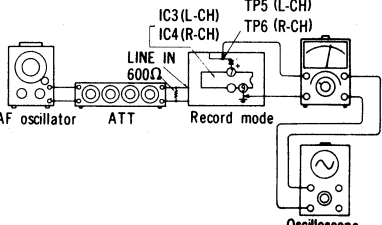
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20 ± 5°C (68 ± 9°F)
- Dolby NR switch: OUT
- LINE input level control: Center
- Microphone level control: Minimum
- Dubbing/Mixing switch: OFF
- Tape speed switch: Normal

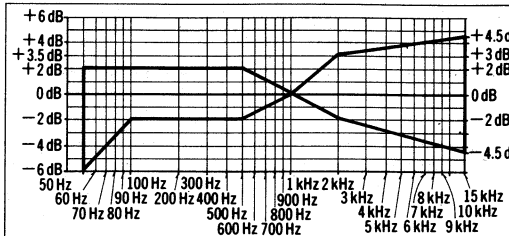
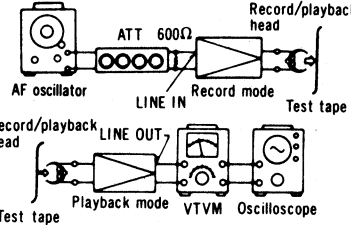
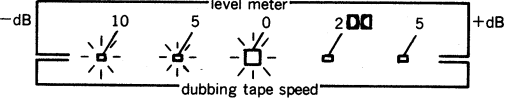
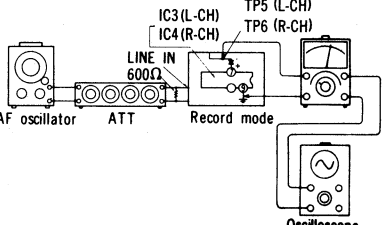
ITEM	MEASUREMENT & ADJUSTMENT
<p>A Head position adjustment [TAPE [1], TAPE [2]] Condition: • Playback and pause mode</p>	<p>(The head adjusting plate is provided to adjust the tape touch of the head in cue or review mode.)</p> <ol style="list-style-type: none"> 1. Press the playback button and pause button. 2. Measure the space between the pressure roller and the capstan. <p style="text-align: center;">Standard value: 0.5 ± 0.3 mm</p> <ol style="list-style-type: none"> 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.

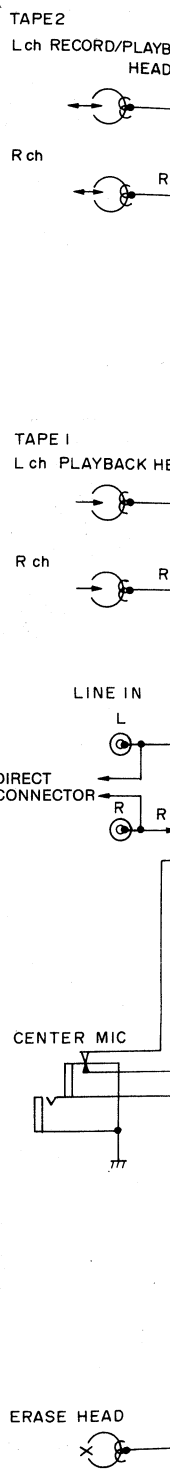
Fig. 2

ITEM	MEASUREMENT & ADJUSTMENT
<p>Ⓒ Head azimuth adjustment [TAPE 1, TAPE 2]</p> <p>Condition: • Playback mode</p> <p>Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ... QZZCFM</p>	<p>L-ch/R-ch output balance adjustment</p> <p>1. Make connections as shown in fig. 3.</p>  <p>Fig. 3</p> <p>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.</p> <p>When the output levels of L-ch and R-ch are not at maximum at the same time, readjust as follows.</p> <p>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.)</p>  <p>Fig. 4</p>  <p>Fig. 5</p> <p>L-ch/R-ch phase adjustment</p> <p>4. Make connections as shown in fig. 6.</p> <p>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.</p>  <p>Fig. 6</p>  <p>Fig. 7</p>
<p>Ⓓ Tape speed [TAPE 1, TAPE 2]</p> <p>Condition: • Playback mode • Dubbing speed switch ... Normal/high</p> <p>Equipment: • Digital electronic counter or frequency counter • Test tape ... QZZCWAT</p>	<p>Normal speed adjustment TAPE 1</p> <p>1. Make connections as shown in fig. 8.</p> <p>2. Set the dubbing speed switch to Normal.</p> <p>3. Play the test tape (QZZCWAT) with the TAPE 1 head, and measure the playback signal frequency. If the playback signal frequency does not conform to the standard value, adjust the normal speed adjustment VR for the TAPE 1 head (See fig. 1).</p>  <p>Fig. 8</p> <p>Standard value: TAPE 1 (Playback deck: Normal speed) 3010 ± 45 Hz</p> <p>TAPE 2</p> <p>4. Play the test tape (QZZCWAT) with the TAPE 2 head, and measure the playback signal frequency, and then adjust the normal speed adjustment VR for the TAPE 2 head so that the playback signal frequency is 15 Hz lower than the output signal frequency after adjustment of TAPE 1.</p> <p>High speed adjustment</p> <p>Note: Perform high speed adjustment about 10 seconds after the start of motor rotation.</p> <p>1. Make connections as shown in fig. 8.</p> <p>2. Set the dubbing/mixing switch to off, and set the dubbing speed switch to high. Short between TP9 and ground.</p> <p>3. Play the test tape (QZZCWAT) with the TAPE 1 and measure the playback signal frequency. If the playback signal frequency does not conform to the standard value, adjust the high speed adjustment VR for the TAPE 1 head (See fig. 1).</p> <p>Standard value: TAPE 1 (Playback deck: Normal speed) 6020 ± 90 Hz</p> <p>4. Play the test tape (QZZCWAT) with the TAPE 2 head, and measure the playback signal frequency, and then adjust the high speed adjustment VR for the TAPE 2 head so that the playback signal frequency is 30 Hz lower than the output signal frequency after adjustment of TAPE 1.</p> <p>5. After high speed adjustment, remove the short between TP9 and ground.</p>

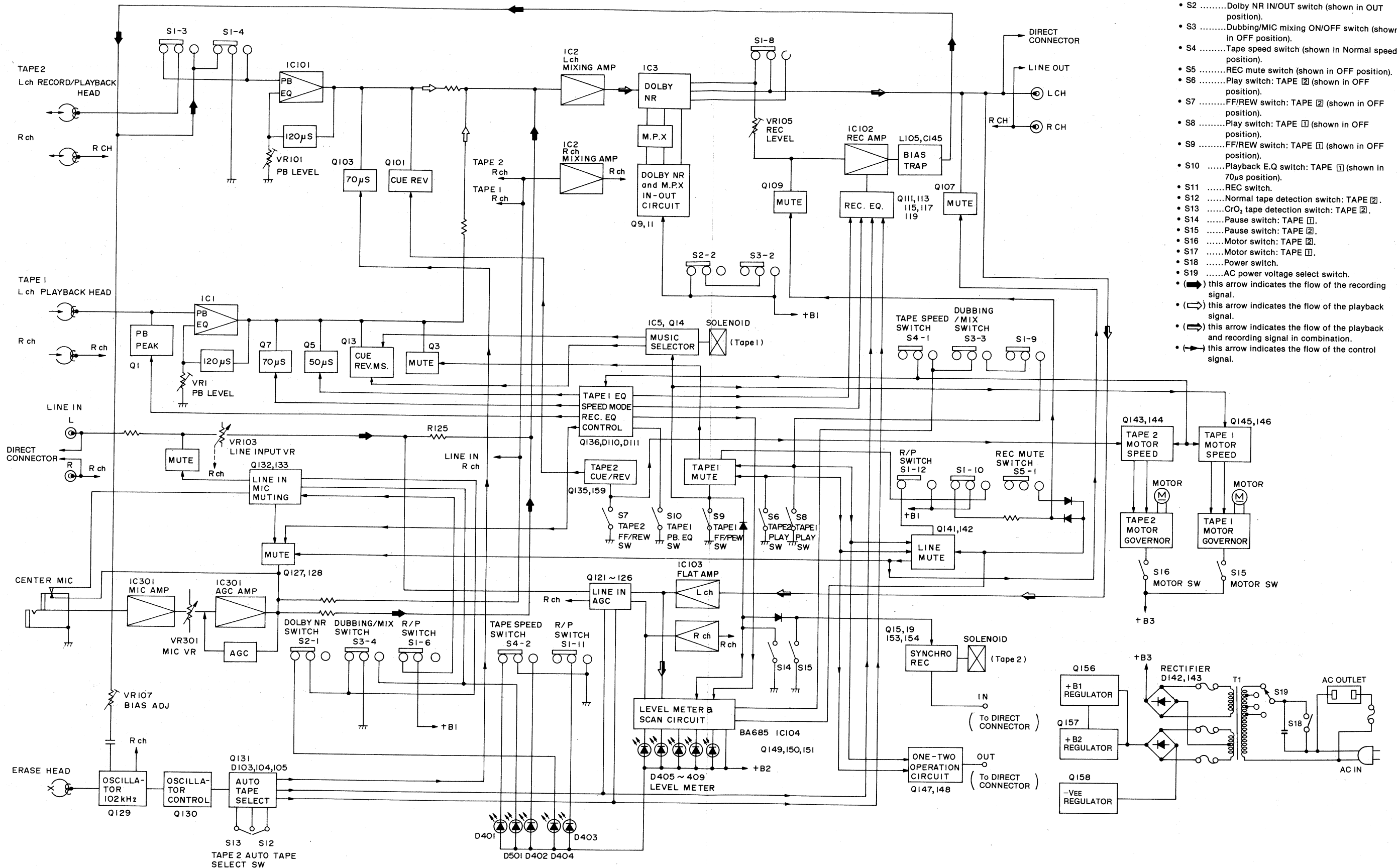
ITEM	MEASUREMENT & ADJUSTMENT															
<p>Ⓔ Tape speed fluctuation TAPE 1, TAPE 2</p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation (Normal speed)} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ <p>$f_1 = \text{maximum value, } f_2 = \text{minimum value}$</p> $\text{Tape speed fluctuation (High speed)} = \frac{f_1 - f_2}{6,000} \times 100 (\%)$ <p>$f_1 = \text{maximum value, } f_2 = \text{minimum value}$</p> <p>Standard value: Less than 1%</p> <p>Note: Please use non metal type screwdriver when you adjust tape speed on this unit.</p>																
<p>Ⓕ Playback frequency response [TAPE 1, TAPE 2]</p> <p>Condition: • Playback mode • Normal tape mode</p> <p>Equipment: • VTVM • Oscilloscope • Test tape ... QZZCFM</p>	<p>1. Test equipment connection is shown in fig. 3.</p> <p>2. Place UNIT into Normal tape mode.</p> <p>3. Playback the frequency response test tape (QZZCFM).</p> <p>4. Measure output level at 315 Hz, 12.5 kHz, 8 kHz, 4 kHz, 1 kHz, 250 Hz, 125 Hz and 63 Hz, and compare each output level with the standard frequency 315 Hz, at LINE OUT.</p> <p>5. Make measurement for both channels.</p> <p>6. Make sure that the measured value is within the range specified in the frequency response chart (shown in fig. 9).</p> <p>Playback frequency response chart [TAPE 1, TAPE 2]</p>  <p>Fig. 9</p>															
<p>Ⓖ Playback gain [TAPE 1, TAPE 2]</p> <p>Condition: • Playback mode • Normal tape mode</p> <p>Equipment: • VTVM • Oscilloscope • Test tape ... QZZCFM</p>	<p>1. Test equipment connection is shown in fig. 3.</p> <p>2. Playback standard recording level portion on test tape (QZZCFM 315 Hz, 0 dB), and using VTVM measure the output level at LINE OUT.</p> <p>3. Make measurement for both channels.</p> <p>Standard value: TAPE 1, 2; 0.4 V ± 1 dB [0.42 V; at test point TP3 (L-CH) and TP4 (R-CH)]</p> <p>Adjustment</p> <p>1. If measured value is not within standard, adjust VR1 (TAPE 1: L-CH), VR2 (TAPE 1: R-CH), VR101 (TAPE 2: L-CH), VR102 (TAPE 2: R-CH).</p> <p>2. After adjustment check "Playback frequency response" again.</p>															
<p>Ⓗ Erase current [TAPE 2]</p> <p>Condition: • Record mode • Metal tape mode</p> <p>Equipment: • VTVM • Oscilloscope</p>	<p>1. Test equipment connection is shown in fig. 10.</p> <p>2. Place UNIT into Metal tape mode.</p> <p>3. Press the record and pause buttons.</p> <p>4. Read voltage on VTVM and calculate erase current by following formula:</p> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R183}}{1 (\Omega)}$  <p>Fig. 10</p> <p>Standard value: 160⁺¹⁰₋₂₀ mA (Metal position)</p> <p>Adjustment</p> <p>5. If the measured value is not within the standard, make an open or short circuit on the connection points (A) and (B) as required for a reading within the standard. [Refer to Table 1.] The correction values referred to are deviations from the level that is obtained when both (A) and (B) are short-circuited.</p> <table border="1" data-bbox="2374 1638 2789 1869"> <thead> <tr> <th>Connection Point (A)</th> <th>Connection Point (B)</th> <th>Correction Value</th> </tr> </thead> <tbody> <tr> <td>Short</td> <td>Short</td> <td>0 dB</td> </tr> <tr> <td>Short</td> <td>Open</td> <td>1 dB Up</td> </tr> <tr> <td>Open</td> <td>Short</td> <td>2 dB Up</td> </tr> <tr> <td>Open</td> <td>Open</td> <td>3 dB Up</td> </tr> </tbody> </table> <p>Table 1</p>	Connection Point (A)	Connection Point (B)	Correction Value	Short	Short	0 dB	Short	Open	1 dB Up	Open	Short	2 dB Up	Open	Open	3 dB Up
Connection Point (A)	Connection Point (B)	Correction Value														
Short	Short	0 dB														
Short	Open	1 dB Up														
Open	Short	2 dB Up														
Open	Open	3 dB Up														

ITEM	MEASUREMENT & ADJUSTMENT
<p>Overall frequency response [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record/playback mode Normal tape mode CrO₂ tape mode Metal tape mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRZ for Metal 	<p>Note</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> <p>Overall frequency response chart (Normal) [TAPE 2]</p>  <p>Fig. 11</p> <p>Overall frequency response adjustment by recording bias current</p> <p>(Recording equalizer is fixed.)</p> <ol style="list-style-type: none"> Make connections as shown in fig. 12. Place UNIT into normal tape mode and load the test tape (QZZCRA). Input a 1 kHz, -14 dB signal through LINE IN. Place the set in record mode. Fine adjust the attenuator to obtain 0.4 V LINE OUT output. <ul style="list-style-type: none"> Make sure that the input signal level is -14 ± 4 dB with 0.4 V output voltage. Adjust the attenuator to reduce the input signal level by 20 dB. Adjust the AF oscillator to generate 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals, and record these signals on the test tape. 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). (If the curve is within the charted specifications, proceed to steps 8, 9 and 10.) If the curve is not within the charted specifications, adjust as follows: <p>Adjustment (A):</p> <p>When the curve exceeds the overall frequency response chart specifications (fig. 11) as shown in fig. 13.</p>  <p>Fig. 13</p> <ol style="list-style-type: none"> Increase bias current by turning VR107 (L-CH) and VR108 (R-CH). (See fig. 1 on page 6.) Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.) If the curve still exceeds the specifications (fig. 11), increase bias current further and repeat steps 6 and 7. <p>Adjustment (B):</p> <p>When the curve falls below the overall frequency response chart specifications (fig. 11) as shown in fig. 14.</p>  <p>Fig. 14</p> <ol style="list-style-type: none"> Reduce bias current by turning VR107 (L-CH) and VR108 (R-CH). Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 11.) If the curve still falls below the charted specifications (fig. 11), reduce bias current further and repeat steps 6 and 7.
<p>Overall gain [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record/playback mode Normal tape mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) Test tape (reference blank tape) ... QZZCRA for Normal 	<p>1. Test equipment connection is shown in fig. 16.</p> <p>2. Place UNIT into Normal tape mode, and load the test tape (QZZCRA).</p> <p>3. Place UNIT into record mode.</p> <p>4. Supply 1 kHz signal (-14 dB) from AF oscillator, through ATT to LINE IN.</p> <p>5. Adjust ATT until monitor level at LINE OUT becomes 0.4 V.</p> <p>6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.4 V.</p> <p>7. If measured value is not 0.4 V, adjust VR105 (L-CH), VR106 (R-CH).</p> <p>8. Repeat from step (2).</p>
<p>Level meter [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Resistor (600Ω) 	<p>1. Test equipment connection is shown in fig. 16.</p> <p>2. Place UNIT into record mode.</p> <p>3. Supply 1 kHz signal (-14 dB) from AF oscillator, through ATT to LINE IN.</p> <p>4. Adjust ATT until monitor level at LINE OUT becomes 0.4 V.</p> <p>5. Then adjust VR109 until then 0 dB indication segment comes on.</p>  <p>Fig. 17</p>
<p>Dolby NR circuit [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record mode Dolby NR switch ... IN/OUT LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) 	<p>1. Test equipment connection is shown in fig. 21.</p> <p>2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain 17.5 mV at TP5 (L-CH), TP6 (R-CH) (frequency 5 kHz).</p> <p>3. Confirm that the value at IN position is 8 (± 2.5) dB greater than the value at OUT position of Dolby NR switch.</p>  <p>Fig. 18</p>

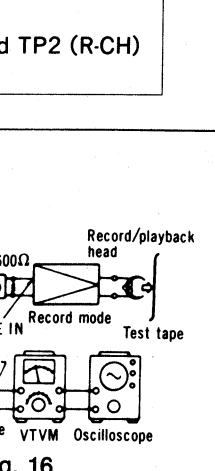
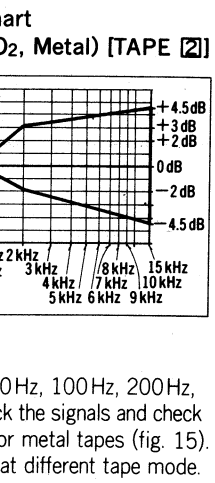
ITEM	MEASUREMENT & ADJUSTMENT
<p>Overall frequency response [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record/playback mode Normal tape mode CrO₂ tape mode Metal tape mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRZ for Metal 	<p>Overall frequency response chart (CrO₂, Metal) [TAPE 2]</p>  <p>Fig. 15</p> <ol style="list-style-type: none"> Place UNIT into CrO₂ tape mode. Change test tape to QZZCRX, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 15 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 15). Place UNIT into Metal tape mode change test tape to QZZCRZ and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz, 12.5 kHz and 15 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). Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode. <ul style="list-style-type: none"> Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>around 190μA (Normal position) around 250μA (CrO₂ position) around 380μA (Metal position) } : measured at TP1 (L-CH) and TP2 (R-CH)</p> </div>
<p>Overall gain [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record/playback mode Normal tape mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) Test tape (reference blank tape) ... QZZCRA for Normal 	<p>1. Test equipment connection is shown in fig. 16.</p> <p>2. Place UNIT into Normal tape mode, and load the test tape (QZZCRA).</p> <p>3. Place UNIT into record mode.</p> <p>4. Supply 1 kHz signal (-14 dB) from AF oscillator, through ATT to LINE IN.</p> <p>5. Adjust ATT until monitor level at LINE OUT becomes 0.4 V.</p> <p>6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.4 V.</p> <p>7. If measured value is not 0.4 V, adjust VR105 (L-CH), VR106 (R-CH).</p> <p>8. Repeat from step (2).</p>  <p>Fig. 16</p>
<p>Level meter [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record mode LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Resistor (600Ω) 	<p>1. Test equipment connection is shown in fig. 16.</p> <p>2. Place UNIT into record mode.</p> <p>3. Supply 1 kHz signal (-14 dB) from AF oscillator, through ATT to LINE IN.</p> <p>4. Adjust ATT until monitor level at LINE OUT becomes 0.4 V.</p> <p>5. Then adjust VR109 until then 0 dB indication segment comes on.</p>  <p>Fig. 17</p>
<p>Dolby NR circuit [TAPE 2]</p> <p>Condition:</p> <ul style="list-style-type: none"> Record mode Dolby NR switch ... IN/OUT LINE input level control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> VTVM AF oscillator ATT Oscilloscope Resistor (600Ω) 	<p>1. Test equipment connection is shown in fig. 21.</p> <p>2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain 17.5 mV at TP5 (L-CH), TP6 (R-CH) (frequency 5 kHz).</p> <p>3. Confirm that the value at IN position is 8 (± 2.5) dB greater than the value at OUT position of Dolby NR switch.</p>  <p>Fig. 18</p>



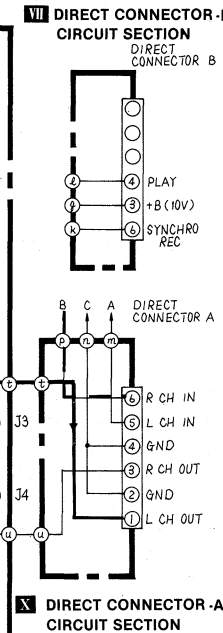
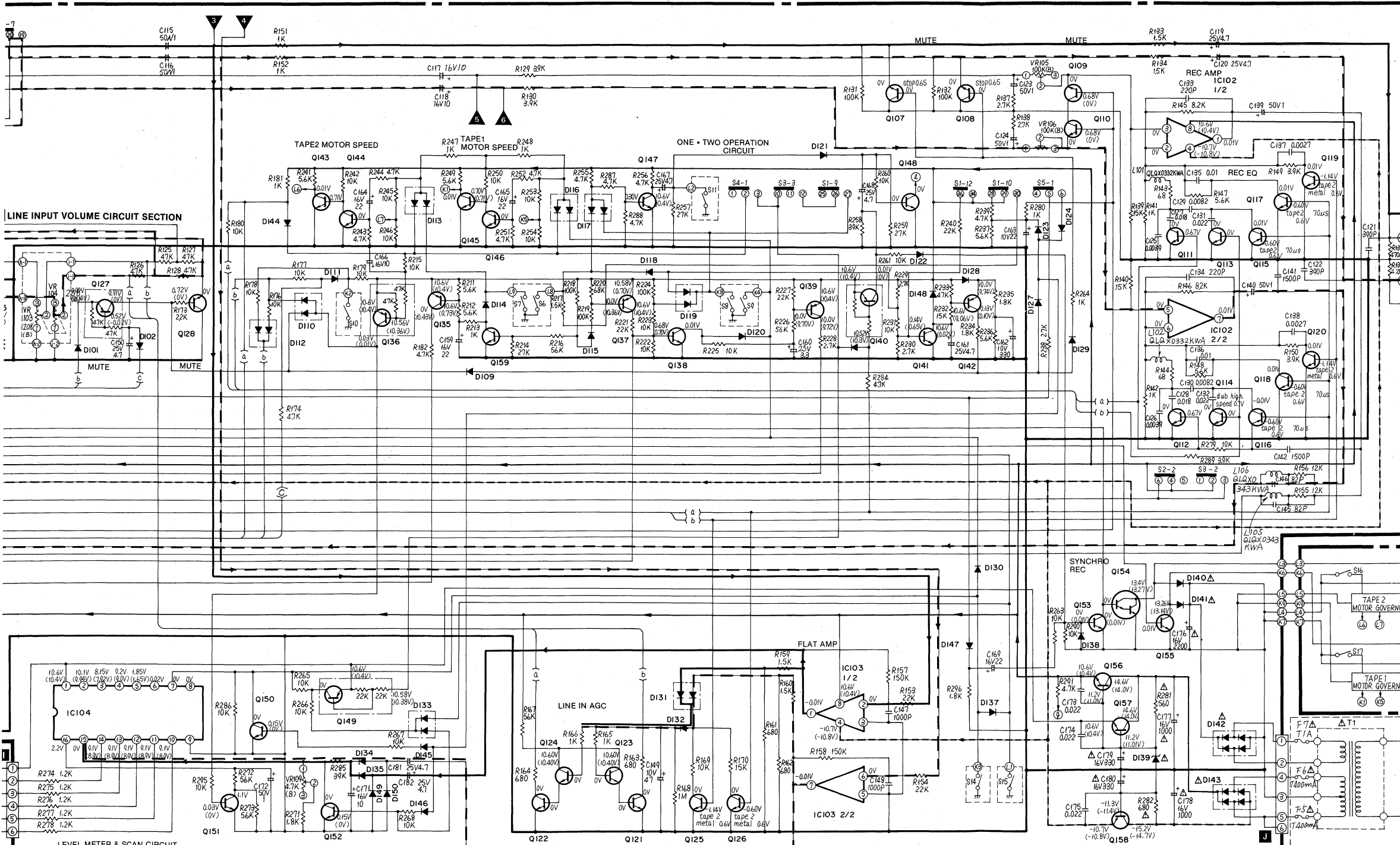
BLOCK DIAGRAM (L-ch only)



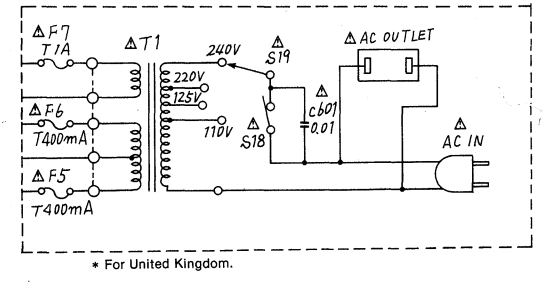
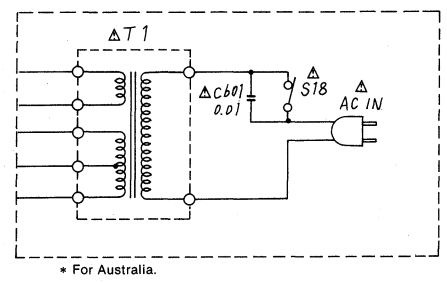
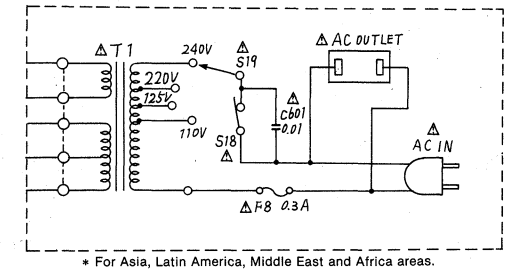
- NOTES:**
- S1Record/playback select switch (shown in playback position).
 - S2Dolby NR IN/OUT switch (shown in OUT position).
 - S3Dubbing/MIC mixing ON/OFF switch (shown in OFF position).
 - S4Tape speed switch (shown in Normal speed position).
 - S5REC mute switch (shown in OFF position).
 - S6Play switch: TAPE 2 (shown in OFF position).
 - S7FF/REW switch: TAPE 2 (shown in OFF position).
 - S8Play switch: TAPE 1 (shown in OFF position).
 - S9FF/REW switch: TAPE 1 (shown in OFF position).
 - S10Playback E.Q switch: TAPE 1 (shown in 70µs position).
 - S11REC switch.
 - S12Normal tape detection switch: TAPE 2.
 - S13CrO₂ tape detection switch: TAPE 2.
 - S14Pause switch: TAPE 1.
 - S15Pause switch: TAPE 2.
 - S16Motor switch: TAPE 2.
 - S17Motor switch: TAPE 1.
 - S18Power switch.
 - S19AC power voltage select switch.
 - (→) this arrow indicates the flow of the recording signal.
 - (⇌) this arrow indicates the flow of the playback signal.
 - (⇌) this arrow indicates the flow of the playback and recording signal in combination.
 - (→) this arrow indicates the flow of the control signal.



Q105, 106, 129, 157 [2SD471K] Q20, 127, 132, 136, 140 [DTA144F] D101, I02, I04~I06, I09, I11, I14, I15, I18, I20, I22~I30, I32, I37, I38, I44~I48, 301 [ISS133] Q135, 137, 139, 142 2SA1115E [2SA1115] Q107, 108 2SD1468(R,S,E) [2SD1468R] IC102 [M5218L] Q11, 12, 115, 116 2SA1115E [2SA1115]



NOTES:
 • All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
 No mark Voltage values at OUT (NR select switch) mode.
 () Voltage values at record mode.
 STOP Voltage values at stop mode.
 DUB. HIGH SPEED Voltage values at dubbing high tape speed mode.
 For measurement use VTVM.
 • () indicates B+ (bias).
 • () indicates B- (bias).
 • () indicates the flow of the playback signal. (NR out).
 • () indicates the flow of the recording signal. (NR out).
 • Important safety notice
 Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.



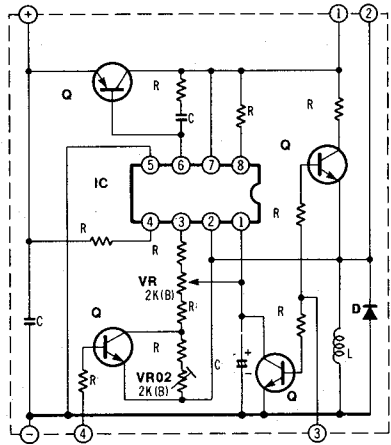
D403, 405~409 LLN0120IC) D404 [LN0130IC] IC104 [BA6851] D134, 135 OA90MLF [2OA90] Q149 [DTA124F] D149, I50 OA90M [OA90] D112, I19, I31 [MC921] Q121~I26, I33, I38, I41, I43~I48, I50~I53, I59, 301, 302 [2SC2603] IC103 [M5218L] Q154 2SD985K [2SD985] Q155 2SD9650 [2SD165] Q156 2SD12650 [2SD1265] Q158 2SB941P [2SB941] D139 [MT222C] D140, 141 [SM112] D142, I43 [SIVB20]

NOTES:
 • () For all European areas except United Kingdom.
 • () For United Kingdom.
 • () For Asia, Latin America, Middle East and Africa areas.
 • () For Australia.

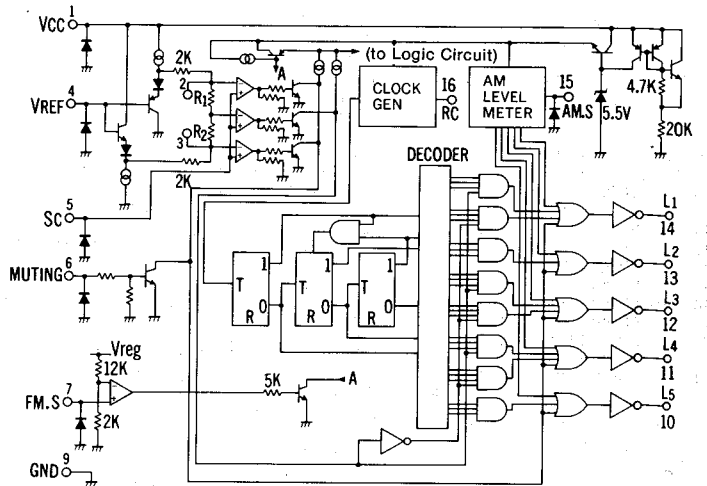
SPECIFICATIONS *Line input level controls...Center

Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio * Test tape...QZZCRX	Greater than 45dB (without NAB filter)

IX MOTOR GOVERNER CIRCUIT (TAPE 1 & TAPE 2)



EQUIVALENT CIRCUITS IC104 BA685



NOTES:

- S1 Record/playback select switch (shown in playback position).
- S2 Dolby NR IN/OUT switch (shown in OUT position).
- S3 Dubbing/MIC mixing ON/OFF switch (shown in OFF position).
- S4 Tape speed switch (shown in Normal speed position).
- S5 REC mute switch (shown in OFF position).
- S6 Play switch: TAPE 2 (shown in OFF position).
- S7 FF/REW switch: TAPE 2 (shown in OFF position).
- S8 Play switch: TAPE 1 (shown in OFF position).
- S9 FF/REW switch: TAPE 1 (shown in OFF position).
- S10 Playback E.Q switch: TAPE 1 (shown in 70µs position).
- S11 REC switch.
- S12 Normal tape detection switch: TAPE 2.
- S13 CrO₂ tape detection switch: TAPE 2.
- S14 Pause switch: TAPE 1.
- S15 Pause switch: TAPE 2.
- S16 Motor switch: TAPE 2.
- S17 Motor switch: TAPE 1.
- S18 Power switch.
- S19 AC power voltage select switch.
- VR1, 2 Playback gain adjustment VR (TAPE 1).
- VR101, 102 Playback gain adjustment VR (TAPE 2).
- VR103, 104 LINE input level control.
- VR105, 106 Overall gain adjustment VR.

- VR107, 108 Bias current adjustment VR.
- VR109 Level meter gain adjustment VR.
- VR301 Center microphone volume control.
- Points (A), (B)... Erase current adjustment points.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
1K = 1,000(Ω), 1M = 1,000k(Ω).
- Capacity are in micro-farads (µF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.
e.g. Q1
2SC1844(E,F) ← Production parts number
[2SC1844E] ← Supply parts number
D212
1S2473T77 ← Production parts number
[MA161] ← Supply parts numbers
- The supply parts number is described alone in the replacement parts list.

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

ELECTRICAL PARTS LIST

NOTES: RESISTORS

- ERDCarbon
- ERGMetal-oxide
- ERS.....Metal-oxide
- EROMetal-film
- ERX.....Metal-film
- ERQFuse type metallic
- ERCSolid
- ERF.....Cement

CAPACITORS

- ECBACeramic
- ECG□.....Ceramic
- ECK□.....Ceramic
- ECC□.....Ceramic
- ECF□.....Ceramic
- ECQM.....Polyester film
- ECQEPolyester film
- ECQFPolypropylene

- ECE□.....Electrolytic
- ECE□DNNon polar electrolytic
- ECQSPolystyrene
- ECSDTantalum
- QCSTantalum

REPLACEMENT PARTS LIST

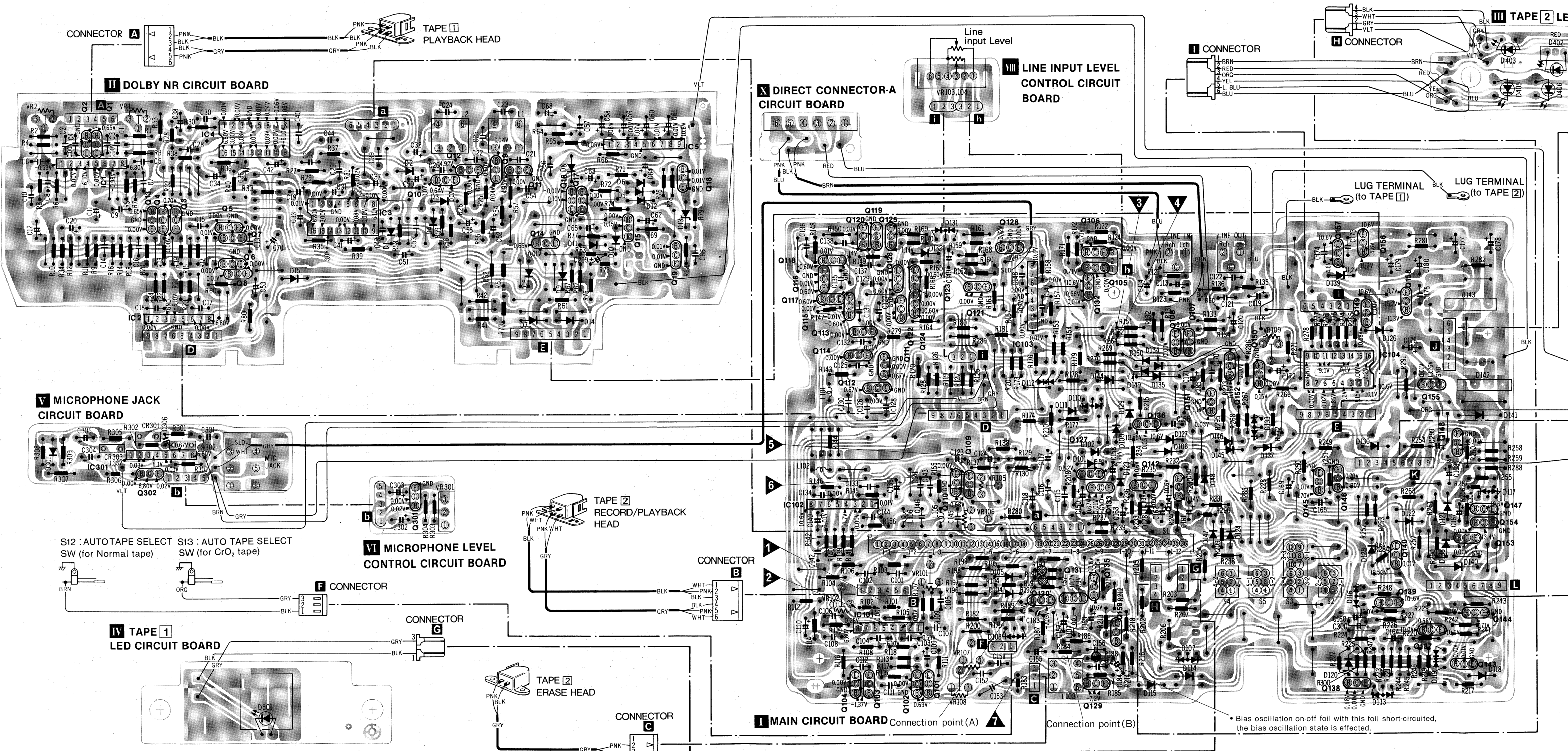
Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Ref. No.	Ref. No.	Part No.
RESISTORS											
R 1, 2	ERDS2TJ563	R 37, 38	ERDS2TJ181	R 68	ERDS2TJ223	R 111, 112	ERDS2TJ563	R 148	ERDS2TJ562	R 176, 177, 178, 179, 180	
R 3, 4	ERDS2TJ101	R 39, 40	ERDS2TJ184	R 69	ERDS2TJ472	R 113, 114	ERDS2TJ472	R 149, 150	ERDS2TJ392		ERDS2TJ103
R 5, 6	ERDS2TJ684	R 41, 42	ERDS2TJ472			R 115, 116	ERDS2TJ682	R 151, 152	ERD25FJ102	R 181	ERDS2TJ102
R 7, 8	ERDS2TJ243	R 51	ERG12SJ820	R 70	ERDS2TJ223	R 117, 118	ERDS2TJ560	R 153, 154	ERDS2TJ223	R 182	ERDS2TJ472
R 9, 10	ERDS2TJ563	R 52	ERG12SJ101	R 71	ERDS2TJ183	R 119, 120	ERDS2TJ473	R 155, 156	ERDS2TJ123	R 183	ERD25FJ1R0
R 11, 12	ERDS2TJ183	R 53	ERDS2TJ103	R 72	ERDS2TJ101	R 121, 122	ERDS2TJ474			R 184	ERDS2TJ682
R 13, 14	ERDS2TJ472	R 54	ERDS2TJ105	R 73	ERDS2TJ102	R 123, 124	ERDS2TJ563	R 157, 158	ERDS2TJ154	R 185	ERDS2TJ100
R 15, 16	ERDS2TJ562	R 55	ERDS2TJ104	R 74	ERDS2TJ472	R 125, 126, 127, 128		R 159, 160	ERDS2TJ152		
R 17, 18	ERDS2TJ272	R 56	ERDS2TJ103	R 75	ERDS2TJ103		ERDS2TJ473	R 161, 162, 163, 164			
R 19, 20	ERDS2TJ822	R 57	ERDS2TJ223	R 76	ERDS2TJ273	R 129, 130	ERD25FJ392		ERDS2TJ681	R 187 [DB]	ERG12SJ100
		R 58	ERDS2TJ562	R 77	ERDS2TJ333	R 131, 132	ERDS2TJ104	R 165	ERDS2TJ102	[For all European areas.]	
		R 59	ERDS2TJ103	R 78	ERDS2TJ152	R 133, 134	ERDS2TJ152	R 166	ERD25FJ102	[AN] ERDS2TJ220	
				R 79	ERDS2TJ221	R 135, 136	ERDS2TJ474	R 167	ERDS2TJ563	[For Australia, Asia, Latin America, Middle East and Africa areas.]	
R 21, 22	ERDS2TJ393	R 60	ERDS2TJ472			R 137, 138	ERDS2TJ272	R 168	ERDS2TJ105		
R 23, 24	ERDS2TJ473	R 61	ERDS2TJ332	R 80	ERDS2TJ103			R 169	ERDS2TJ103	R 188	ERDS2TJ4R7
R 25, 26	ERDS2TJ105	R 62	ERDS2TJ103	R 81, 83	ERDS2TJ333	R 139, 140	ERDS2TJ153	R 170	ERDS2TJ153	R 189	ERDS2TJ222
R 27, 28	ERDS2TJ684	R 63	ERDS2TJ332	R 101, 102	ERD25FJ100	R 141, 142	ERDS2TJ102			R 190	ERDS2TJ103
R 29, 30	ERDS2TJ473	R 64	ERDS2TJ154	R 103, 104	ERDS2TJ563	R 143, 144	ERDS2TJ222	R 171	ERDS2TJ272	R 191, 192	ERDS2TJ223
R 31, 32	ERDS2TJ332	R 65	ERDS2TJ104	R 105, 106	ERDS2TJ101	R 145, 146	ERDS2TJ822	R 173	ERDS2TJ222	R 193	ERDS2TJ222
R 33, 34	ERDS2TJ102	R 66	ERDS2TJ333	R 107, 108	ERDS2TJ124	R 147	ERD25FJ562	R 174	ERDS2TJ472	R 194	ERDS2TJ123
R 35, 36	ERDS2TJ274	R 67	ERDS2TJ391	R 109, 110	ERDS2TJ432			R 175	ERDS2TJ561	R 195	ERDS2TJ563

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part Name & Description
R 196, 197	ERDS2TJ332	VR 107, 108	QVNB3A00B224	C 173, 174, 175		Q 154	2SD985K			FUSES	
R 198, 199	ERDS2TJ103	VR 109	QVNB3A00B472		ECFDD223KXY	Q 155	2SD965Q			F 4 [D] Δ	XBAQ0010 Fuse (T 1.6 A)
		VR 301	QVJKA00B15B24	C 176, 178	ECEA1CS222	Q 156	2SD12650			[For all European areas except United Kingdom.]	
R 200, 201	ERDS2TJ472	CAPACITORS		C 177, 178	Δ ECEA1CS102	Q 157	2SD471K			F 5, 6	[DB] Δ XBAQ0007 Fuse (T 400mA)
R 202	ERDS2TJ103	C 1, 2	ECKD1H331KB	C 179, 180	Δ ECEA1CS331	Q 158	2SB941P			[For all European areas.]	
R 203	ERDS2TJ821	C 3, 4	ECKD1H391KB		ECEA1EK4R7	Q 159	2SC2603			F 7	[DB] Δ XBAQ0004 Fuse (T 1 A)
R 204	ERDS2TJ122	C 7, 8	ECCD1H151J	C 181, 182	ECEA1EK4R7					[For all European areas.]	
R 206	ERDS2TJ222	C 9, 10	ECQM1H472JZ	C 183	ECQV05223JZ	DIODES & RECTIFIERS					
R 207	ERDS2TJ821	C 11, 12	ECEA25Z4R7	C 184	ECQV05334JZ	D1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 16					
R 208	ERDS2TJ223	C 13, 14	ECQV05103JZ	C 301	ECEA50Z1						
R 209, 210	ERDS2TJ103	C 15, 16	ECQM1H682JZ	C 302	ECEA50ZR33						
R 211, 212	ERDS2TJ562	C 17, 18	ECCD1H100J	C 303, 304, 305	ECEA25Z4R7						
R 213	ERDS2TJ102	C 19, 20	ECEA50MR33		ECEA25Z4R7						
R 214	ERDS2TJ273	C 21, 22	ECKD1H102KB	C 306	ECKD1H102KB						
R 215	ERD25FJ103			C 601 Δ	ECQU2A103MF						
R 216	ERDS2TJ563			COMBINATION PARTS							
R 217	ERDS2TJ152	C 23, 24	ECQM1H392JZ	CR 301	EXRP102K103W						
R 218, 219	ERDS2TJ104	C 25, 26	ECCD1H390J	CR 302, 303	EXRP102K472W						
R 220	ERDS2TJ683	C 27, 28	ECQV05273JZ	TRANSISTORS							
R 221	ERDS2TJ223	C 29, 30	ECQM1H472JZ	Q 1, 2	2SC2603						
R 222, 223	ERDS2TJ103	C 31, 32	ECEA1HS100	Q 3, 4	2SD1468R						
R 224	ERDS2TJ104	C 33, 34	ECEA50ZR33	Q 5, 6, 7, 8							
R 225	ERDS2TJ103	C 35, 36	ECQV05104JZ	Q 9, 10	2SC2603						
R 226	ERDS2TJ563	C 37, 38	ECEA1HS100	Q 11, 12	2SA1115E						
R 227	ERDS2TJ223	C 39, 40	ECQM1H562JZ	Q 13, 14, 15, 16, 17, 18, 19							
R 228, 229, 230	ERDS2TJ272	C 41, 42	ECEA1HS100	Q 20	DTA144F						
R 231	ERDS2TJ103			Q 21	2SC2603						
R 232	ERDS2TJ153	C 43, 44	ECQV05473JZ	Q 101, 102, 103, 104	2SC2603						
R 233	ERDS2TJ473	C 50	ECEA1AS470	Q 105, 106	2SD471K						
R 234, 235	ERDS2TJ182	C 51	ECEA1AS471	Q 107, 108	2SD1468R						
R 236, 237	ERDS2TJ562	C 52	ECEA1AS331	Q 109, 110, 111, 112, 113, 114							
R 238	ERDS2TJ272	C 53	ECEA1HS100	Q 115, 116	2SA1115E						
R 239	ERDS2TJ472	C 54	ECQV05104JZ	Q 117, 118, 119, 120, 121, 122, 123, 124, 125, 126							
		C 55	ECEA1HS100	Q 127	DTA144F						
R 240	ERDS2TJ223	C 56	ECQM1H392JZ	Q 128	2SD1468R						
R 241	ERDS2TJ562	C 57	ECEA50ZR68	Q 129	2SD471K						
R 242	ERDS2TJ103	C 58	ECEA50Z1	Q 130	2SD638R						
R 243, 244	ERDS2TJ472			Q 131	2SA952L						
R 245, 246	ERDS2TJ103	C 59	ECEA50ZR22	Q 132	DTA144F						
R 246, 247, 248	ERDS2TJ102	C 60, 61	ECEA25Z4R7	Q 133	2SC2603						
R 249	ERDS2TJ562	C 62	ECEA1ES220	Q 135	2SA1115E						
R 250	ERDS2TJ103	C 63	ECEA50Z1	Q 136	DTA144F						
R 251, 252	ERDS2TJ472	C 64	ECEA1CS330	Q 137	2SA1115E						
R 253, 254	ERDS2TJ103	C 65	ECEA1ES220	Q 138	2SC2603						
		C 66	ECEA1AS331	Q 139	2SA1115E						
R 255, 256	ERDS2TJ472	C 67	ECEA1AS102	Q 140	DTA144F						
R 257	ERDS2TJ273	C 68	ECEA1ES220	Q 141	2SC2603						
R 258	ERDS2TJ393	C 69	ECEA1AS102	Q 142	2SA1115E						
R 259	ERDS2TJ273	C 70	ECEA1AS102	Q 143, 144, 145, 146, 147, 148							
R 260, 261, 263, 265, 266, 267, 268	ERDS2TJ103	C 71	ECEA1ES220	Q 149	DTA124F						
R 271	ERDS2TJ182	C 101, 102	ECKD1H681KB	Q 150, 151, 152, 153	2SC2603						
R 272, 273	ERDS2TJ563										
R 274, 275, 276, 277, 278	ERDS2TJ122	C 103, 104	ECKD1H151KB								
R 277	ERDS2TJ103	C 105, 106	ECKD1H102KB								
R 278, 279	ERDS2TJ103	C 107, 108	ECQV05273JZ								
R 280	ERDS2TJ102	C 109, 110	ECEA25Z4R7								
		C 111, 112	ECQV05103JZ								
R 281 Δ	ERDS2TJ561	C 113, 114	ECEA50Z1								
R 282 Δ	ERDS2TJ681	C 115, 116	ECEA1HN010								
R 283 [DB]	ERG12SJ150	C 117, 118	ECEA1HS100								
	[For all European areas.]	C 119, 120	ECEA25Z4R7								
R 284	ERDS2TJ472	C 121, 122	ECKD1H391KB								
R 285	ERDS2TJ393										
R 286	ERDS2TJ103										
R 287, 288	ERDS2TJ472										
R 289	ERDS2TJ392										
R 290	ERDS2TJ103										
R 291	ERDS2TJ472										
R 295	ERDS2TJ103										
R 296	ERD25FJ182										
R 301	ERDS2TJ561										
R 302	ERDS2TJ820										
R 303	ERDS2TJ103										
R 304	ERDS2TJ562										
R 305	ERDS2TJ181										
R 306	ERDS2TJ103										
R 307	ERDS2TJ105										
R 308	ERDS2TJ332										
R 309	ERDS2TJ122										
R 310	ERDS2TJ563										
R 311	ERD25TJ104										
VARIABLE RESISTORS											
VR 1, 2	EVNMOA00B23										
VR 101, 102	QVNB3A00B331										
VR 103, 104	EWCRSAS15B24										
VR 105, 106	QVNB3A00B104										

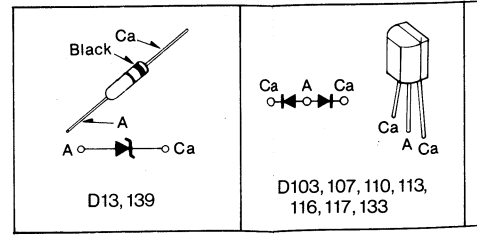
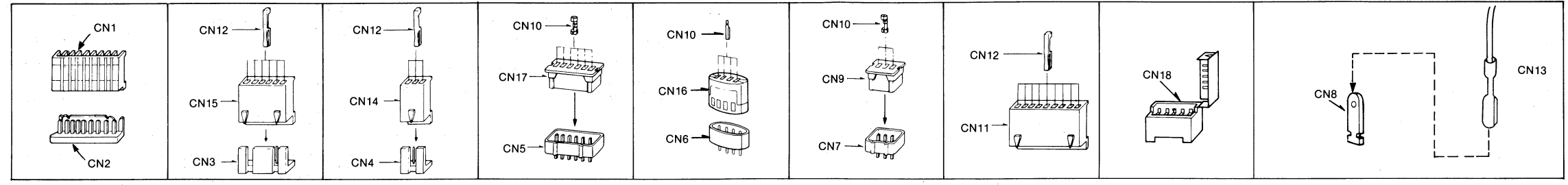
17 16 15 14 13 12 11 10 9

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

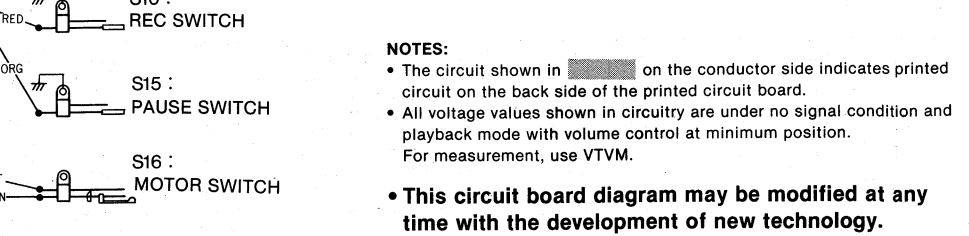
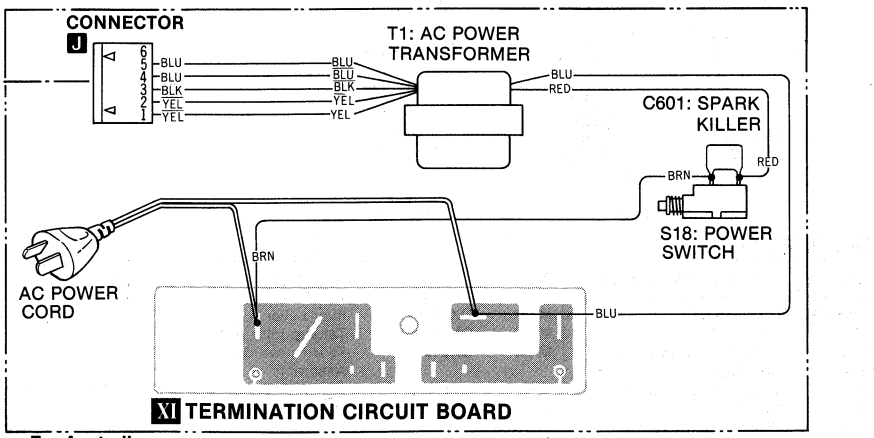
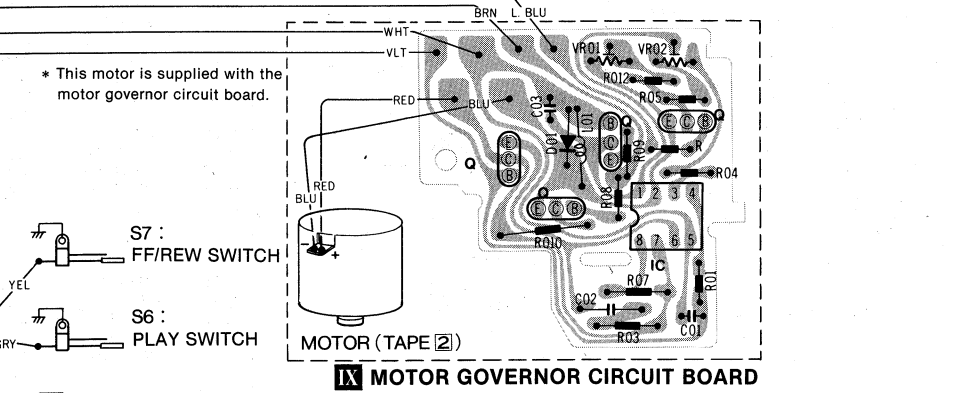
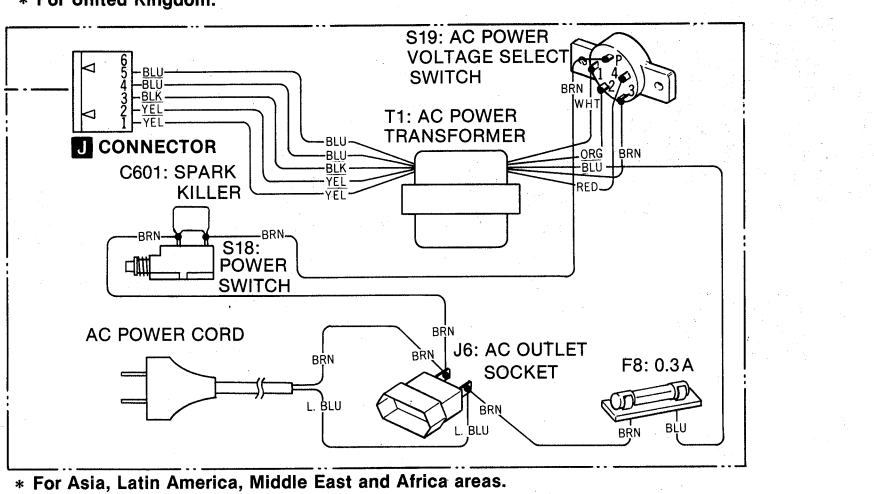
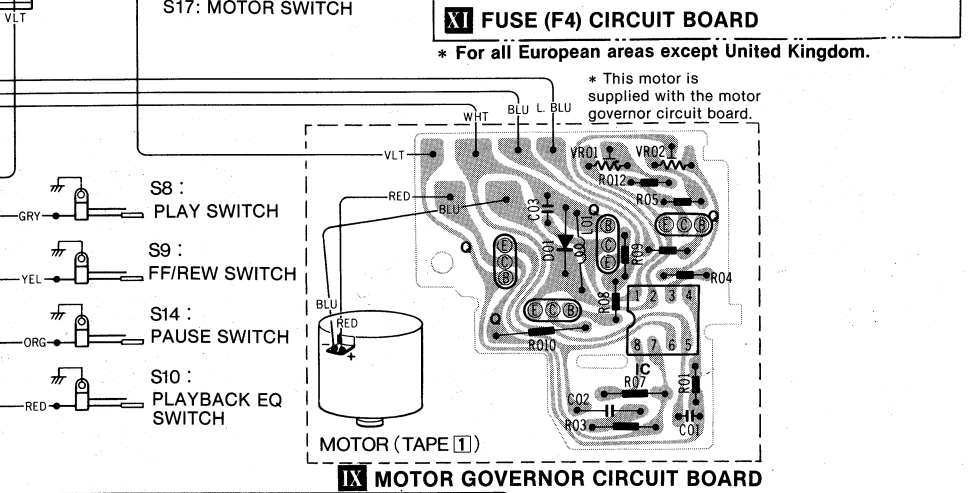
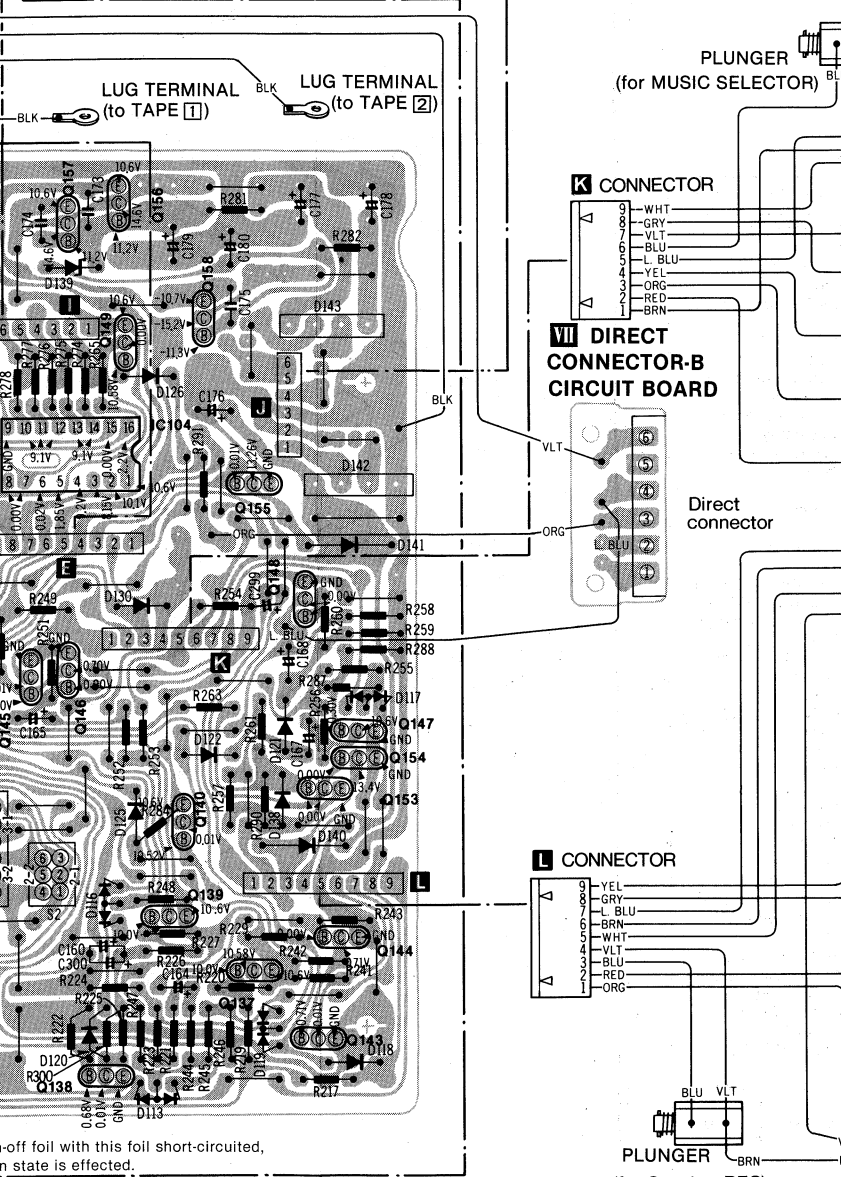
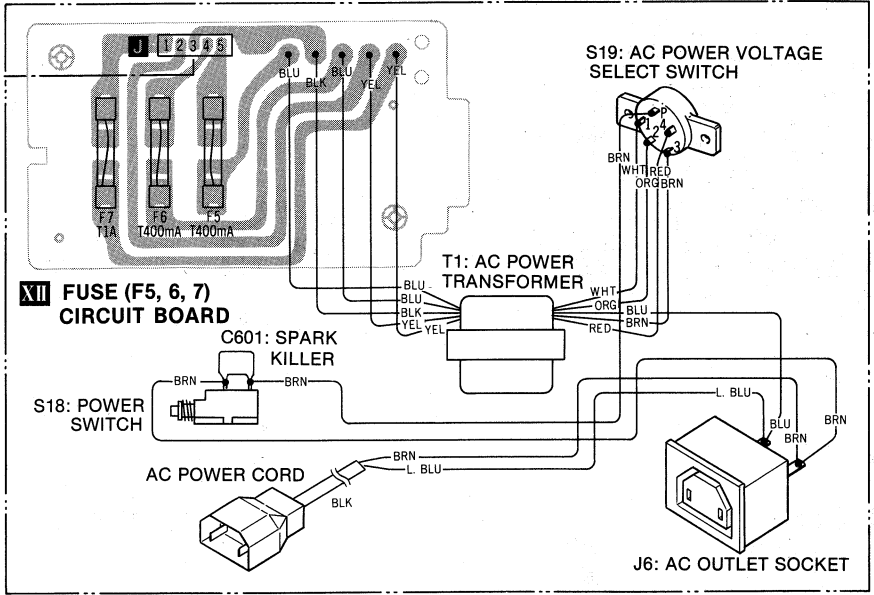
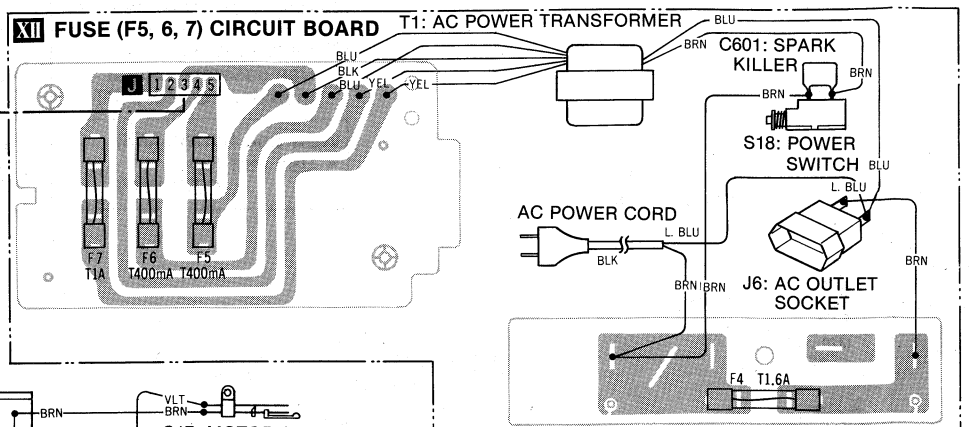
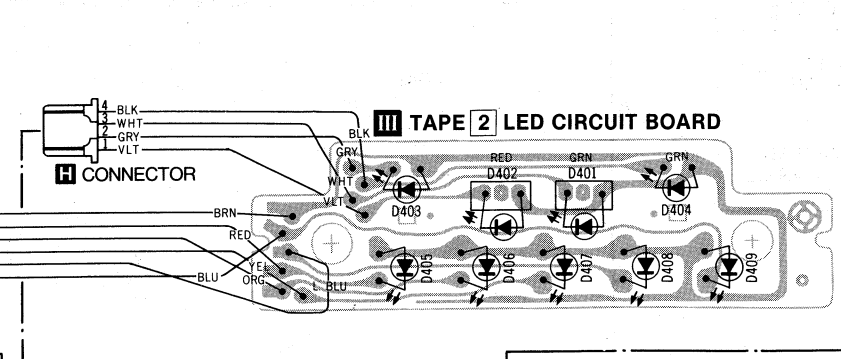


- NOTES:**
- BLKBlack
 - BLUBlue
 - BRNBrown
 - GRYGray
 - GRNGreen
 - L. BLULight Blue
 - NILNo Color Mark
 - ORGOrange
 - PNKPink
 - REDRed
 - SLDShield Wire
 - VLTViolet
 - WHTWhite
 - YELYellow

CONNECTORS



9 8 7 6 5 4 3 2 1

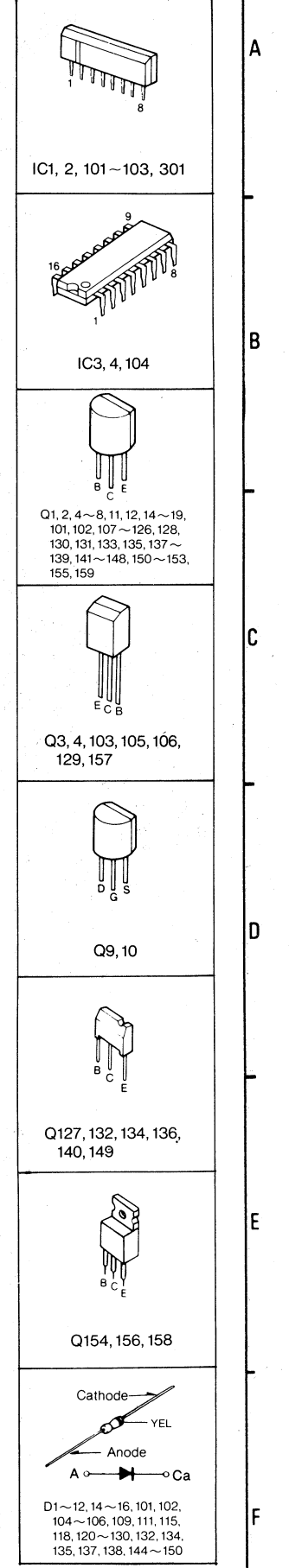


NOTES:

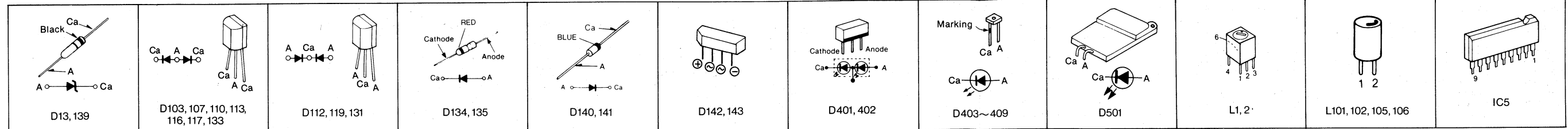
- The circuit shown in [shaded area] on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. For measurement, use VTVM.

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

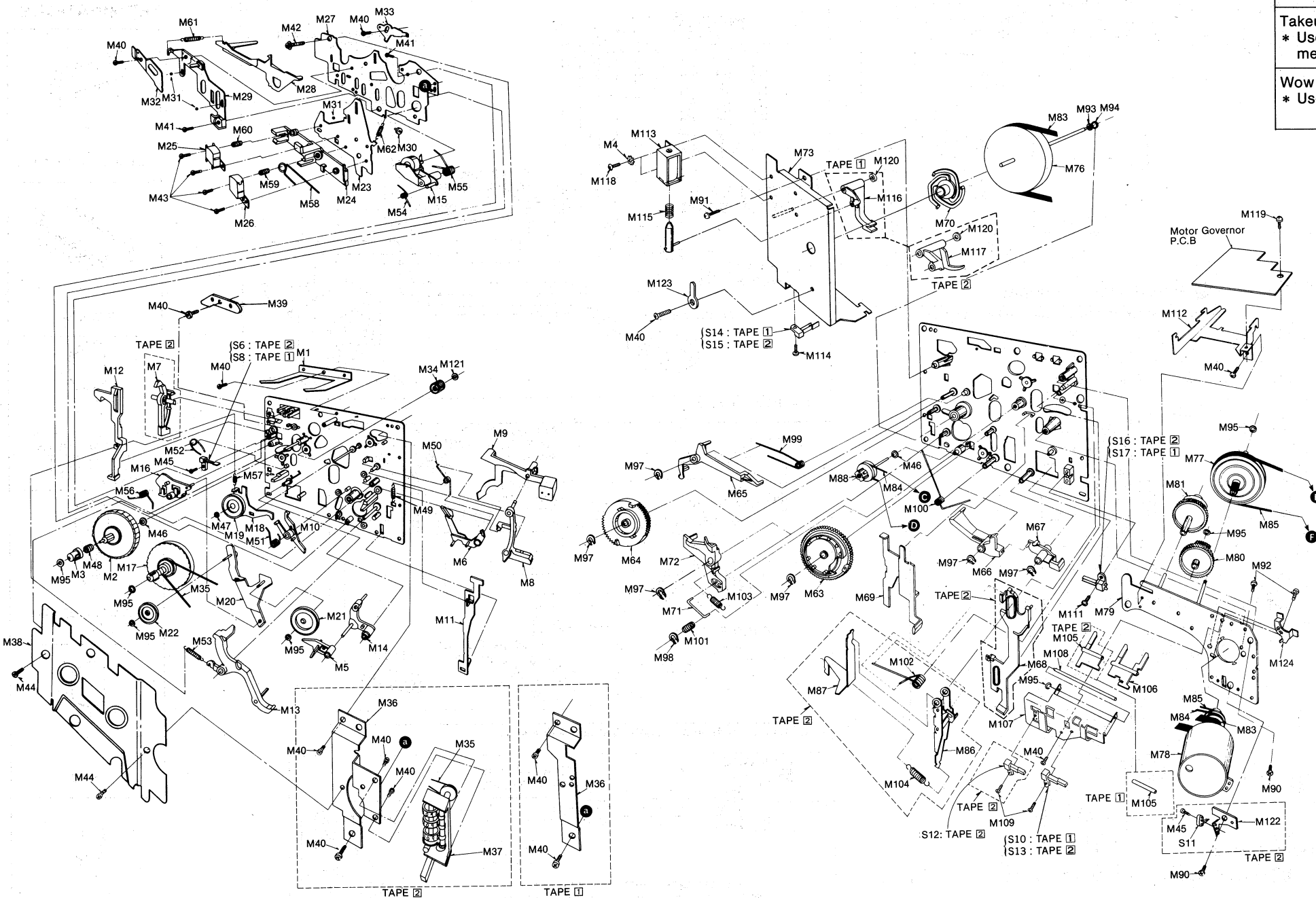
TERMINATIONS



off foil with this foil short-circuited, n state is effected.



MECHANICAL PARTS LOCATION

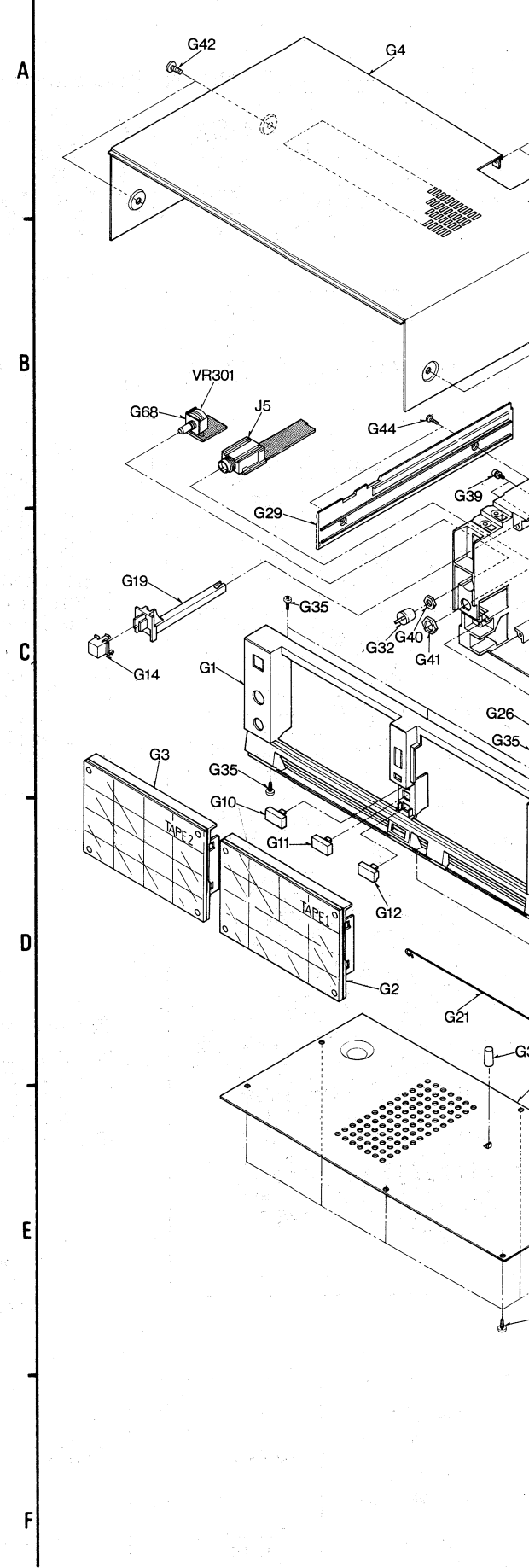


SPECIFICATIONS	
Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	45 + 15 - 15 g-cm
Wow and flutter; (JIS) * Use test tapeQZZCWAT	Less than 0.08% (WRMS)

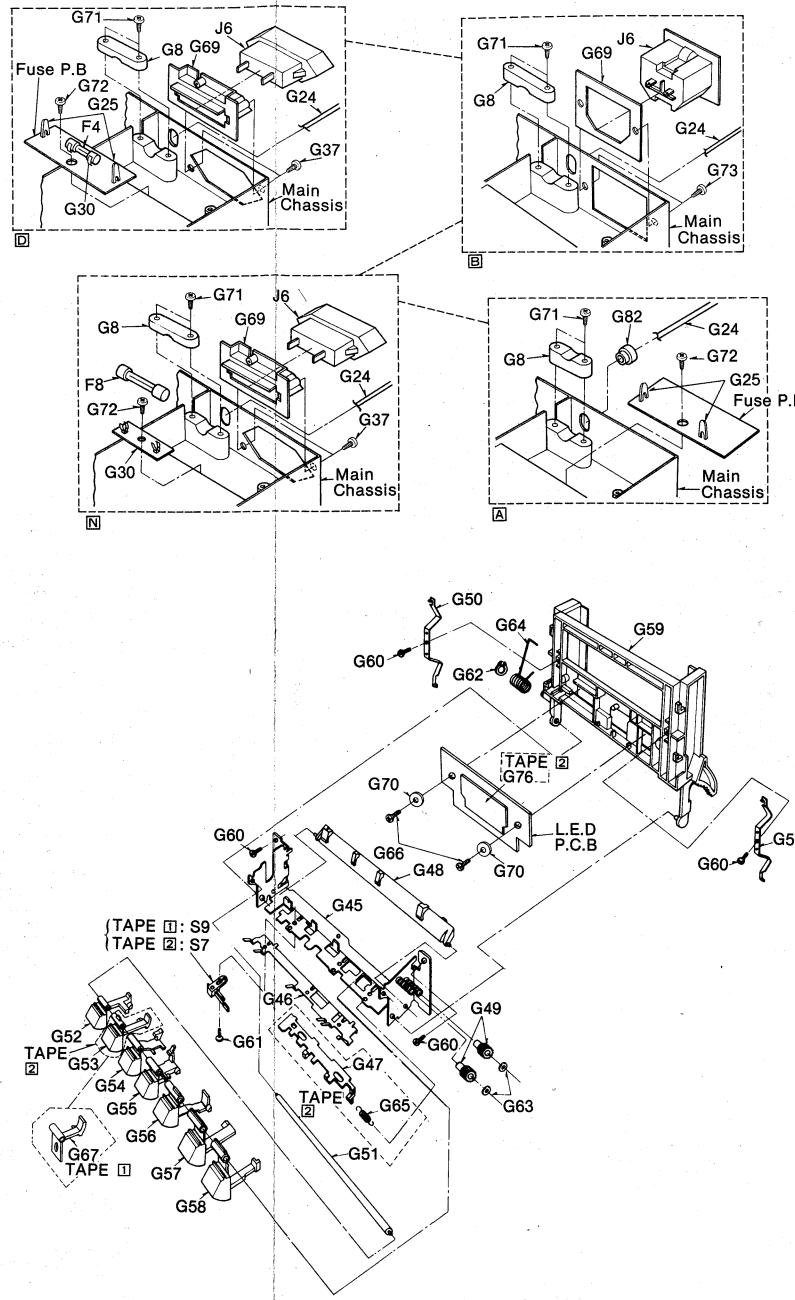
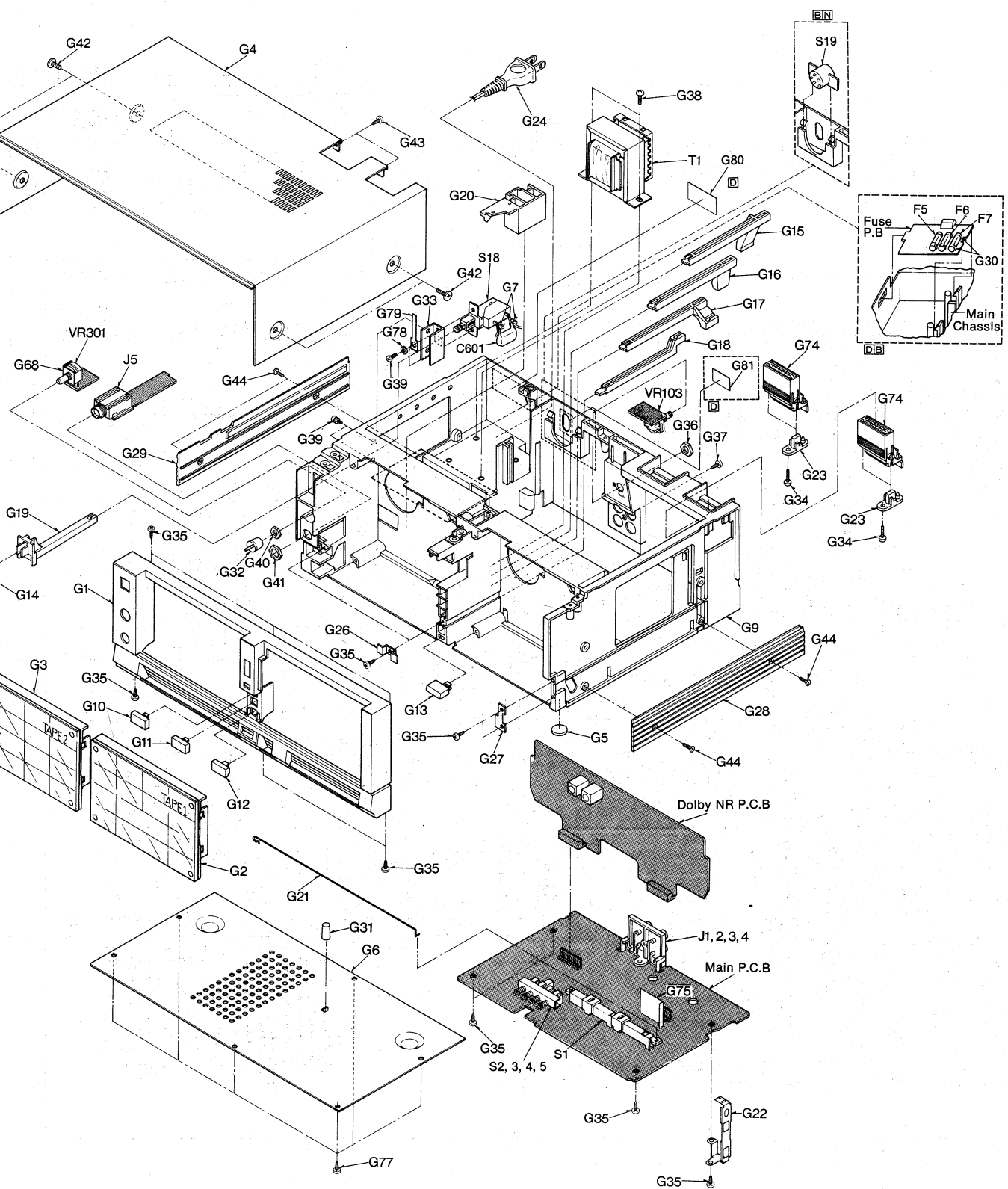
REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS											
M 1	QBP1874	Cassette Retainer Spring	M 18	QXL1382	Idler Lever Assembly	M 36	QMA4437	Holding Angle [for TAPE (1)]	M 47	QBW2008	Poly Washer 2φ
M 2	QDR1139	Reel Table	M 19	QXI0111	Takeup Idler Assembly	M 37	QMA0162	Counter Angle [for TAPE (2)]	M 48	QBC1372	Reel Table Spring
M 3	QMB1336	Supply Reel Table Hub	M 20	QXL1383	Fast Forward Arm Assembly	M 38	QXH0438	Chassis Cover-[1] [for TAPE (1)]	M 49	QBT1682	Auto Stop Connection Rod Spring
M 4	XWC3B	Washer	M 21	QXI0112	Rewind Idler Assembly	M 39	QMF2118	Lock Plate	M 50	QBN1746	Auto Stop Lever Spring
M 5	QML3586	Music Select Lever	M 22	QXI0113	Fast Forward Idler Assembly	M 40	XTN26 + 6B	Tapping Screw φ2.6 x 6	M 51	QBN1741	Change Lever Spring
M 6	QML3594	Auto Stop Release Arm	M 23	QMK1840	Head Base Plate	M 41	XTN26 + 10B	Tapping Screw φ2.6 x 10	M 52	QBN1747	Connection Spring
M 7	QML3603	Erase Safety Lever (TAPE [2])	M 24	QMZ1241	Head Spacer	M 42	XTN26 + 12B	Tapping Screw φ2.6 x 12	M 53	QBT1894	Main Lever Spring
M 8	QML3604	Auto Stop Driving Lever	M 25	QWY2168Z	Erase Head [for TAPE (1)]	M 43	XSN2DW9	Screw φ2 x 9	M 54	QBN1742	Pressure Roller Release Spring
M 9	QML3605	Auto Stop Detection Lever	M 26	QWY2138Z	Erase Head [for TAPE (2)]	M 44	XTN26 + 6BFZ	Tapping Screw φ2.6 x 6	M 55	QBN1743	Pressure Roller Spring
M 10	QML3592	Change Lever	M 27	QXV0185	Record/Playback Head Assembly	M 45	XTN2 + 6B	Tapping Screw φ2 x 6	M 56	QBN1748	Fast Forward Spring
M 11	QMR1821	Auto Stop Connection Rod	M 28	QMK1838	Upper Base Plate	M 46	QBW2012	Poly Washer	M 57	QBT1893	Idler Spring
M 12	QMR1822	Eject Rod	M 29	QML3591	Brake Arm				M 58	QBN1740	Spring
M 13	QXL1355	Main Lever Assembly	M 30	QML3591	Sub Head Base Plate				M 59	QBC1278	Head Spring
M 14	QXL1354	Sub Lever Assembly	M 31	QMN2550	Roller				M 60	QBCA0008	Head Spring
M 15	QXL1381	Pressure Roller Lever	M 32	QDK1017	Steel Ball	M 41	XTN26 + 10B	Tapping Screw φ2.6 x 10	M 61	QBT1597	Brake Arm Spring
M 16	QML3588	Fast Forward Lever	M 33	QBP1873	Head Base Plate Pressure Spring	M 42	XTN26 + 12B	Tapping Screw φ2.6 x 12	M 62	QBT1892	Head Release Spring
M 17	QXD1143	Takeup Reel Table Assembly	M 34	QMA3858	Head Adjustment Plate	M 43	XSN2DW9	Screw φ2 x 9	M 63	QDG1201	Main Gear
			M 35	QDP1828	Fast Forward Pulley	M 44	XTN26 + 6BFZ	Tapping Screw φ2.6 x 6	M 64	QDG1202	Sub Gear
				QDB0167	Counter Belt [for TAPE (2)]	M 45	XTN2 + 6B	Tapping Screw φ2 x 6	M 65	QML3581	Sub Control Lever
						M 46	QBW2012	Poly Washer			
									M 66	QML3583	Main Control Lever
									M 67	QML3584	Reverse Lever
									M 68	QMR1820	Record Rod (TAPE [2])
									M 69	QMR1824	Control Rod
									M 70	QMZ1239	Flywheel Thrust Retainer
									M 71	QBS1128	Lock Pin
									M 72	QML3582	Pause Lock Lever
									M 73	QXA1042	Plunger Angle Assembly
									M 76	QXK0241	Takeup Gear Assembly
									M 77	QXU0290	Motor Assembly
									M 78	QXK2286	Sub Chassis Assembly
									M 79	QXK2286	Sub Chassis Assembly
									M 80	QDG1199	Arm Stop Gear
									M 81	QDG1200	Cam Gear
									M 83	QDB0316	Capstan Belt
									M 84	QDB0290	Fast Forward Belt
									M 85	QDB0274	Takeup Belt
									M 86	QXL1360	Record/Playback Change Arm Assembly (TAPE [2])
									M 87	QML3580	Record/Playback Change Lever (TAPE [2])
									M 88	QXP0607	Fast Forward Connection Pulley Assembly
									M 90	XTN3 + 10B	Tapping Screw φ3 x 10
									M 91	XTN3 + 24B	Tapping Screw φ3 x 24
									M 92	XSN26 + 3	Screw φ2.6 x 3
									M 93	QBW2026	Poly Washer
									M 94	QBW2049	Poly Washer
									M 95	QBW2008	Poly Washer 2φ
									M 97	XUB3FT	Stop Ring 3φ
									M 98	XUB4FT	Stop Ring 4φ
									M 99	QBN1744	Sub Gear Spring
									M 100	QBN1802	Main Gear Spring
									M 101	QBC1357	Lock Pin Pressure Spring
									M 102	QBN1739	Change Lever Spring (TAPE [2])
									M 103	QBT1896	Lever Release Spring
									M 104	QBT1895	Record/Playback Change Arm Spring (TAPE [1])
									M 105	QMC0136	Spacer (for TAPE [1])
									M 106	QML3644	Tape Detection Lever-A (for Metal) (TAPE [2])
									M 106	QML3645	Tape Detection Lever-B (for CrO ₂)
									M 107	QMA4228	Detection Lever Angle-B
									M 108	QMS2546	Detection Lever Shaft
									M 109	XSN2 + 5	Screw φ2 x 5
									M 111	XTN2 + 10B	Tapping Screw φ2 x 10
									M 112	QMA4640	Circuit Board Angle
									M 113	QME0157	Plunger
									M 114	XTN2 + 6B	Tapping Screw φ2 x 6
									M 115	QBC1358	Plunger Release Spring
									M 116	QML3616	Lock Release Lever
									M 117	QML3607	Pause Connection Lever (TAPE [2])
									M 118	XSN3 + 6S	Screw φ3 x 6
									M 119	XSN26 + 8	Screw φ2.6 x 8
									M 120	QBW2083	Washer
									M 121	QBW2085	Poly Washer
									M 122	QMA4643	Switch Angle (TAPE [2])
									M 123	QJT0055	Lug Terminal
									M 124	QMA4678	Protection Angle (for Belt)

CABINET PARTS LOCATION



CABINET PARTS LOCATION



- NOTES:**
- [D] For all European areas except United Kingdom.
 - [B] For United Kingdom.
 - [N] For Asia, Latin America, Middle East and Africa areas.
 - [A] For Australia.

REPLACEMENT PARTS LIST

Important safety notice
Components identified by Δ 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
CABINET PARTS		
G 1	QYPM0074 "Silver Type" QYPM0074K "Black Type"	Front Panel Assembly
G 2	QYFM0068 "Silver Type" QYFM0068Y "Black Type"	Cassette Lid-[1] (TAPE [1])
G 3	QYFM0069 "Silver Type" QYFM0069Y "Black Type"	Cassette Lid-[2] (TAPE [2])
G 4	QGCM0071 "Silver Type" QGCM0071K "Black Type"	Case Cover
G 5	SKL245-4	Rubber Foot
G 6	QYBM0049	Bottom Cover Assembly
G 7[DBA]	QTD1315	Cord Clamper
G 8	QTD1164	Cord Bushing
G 9	QKMM0055K	Main Chassis
G 10	QGOM0128 "Silver Type" QGM128K "Black Type"	Push Button (Dolby NR)
G 11	QGOM0129 "Silver Type" QGOM129K "Black Type"	Push Button (Dubbing/Mix)
G 12	QGOM0130 "Silver Type" QGOM130K "Black Type"	Push Button (Tape Speed)
G 13	QGOM0131	Push Button (for REC Mute)
G 14	QGOM0132	Push Button (for Power ON/OFF)
G 15	QKJM0122	Dolby NR Switch Rod
G 16	QKJM0123	Dubbing/Mix Switch Rod
G 17	QKJM0124	Tape Speed Switch Rod
G 18	QKJM0125	REC Mute Switch Rod
G 19	QKJM0121	Power Switch Rod
G 20	QML3907	Recording Lever
G 21	QBSM0011	Recording Wire
G 22	QTSM0085	Earth Plate
G 23	QKJM0077	Direct Connector Holding Plate
G 24	[DN] Δ SJA151 [For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.] [A] XT3 + 12BFN [For Australia.]	AC Power Cord
G 25	[B] Δ SJA149-1 [For all European areas, Asia, Latin America, Middle East and Africa areas.] [A] Δ QFC1208M [For Australia.]	AC Power Cord
G 26	QAMAM0160	Stopper-(1)
G 27	QAMAM0161	Stopper-(2)
G 28	QGKM0206 "Silver Type" QGKM0206K "Black Type"	Side Panel-R
G 29	QGKM0207 "Silver Type" QGKM0207K "Black Type"	Side Panel-L
G 30	[DB] Δ QTF1054 [For all European areas.] [N] Δ QTF1056 [For Asia, Latin America, Middle East and Africa areas.]	Fuse Holder
G 31	QKJM0119	Spacer
G 32	SBN1085-6	Microphone Knob
G 33	QAMAM0163	Power Switch Angle
G 34	XTN3 + 12B	Tapping Screw $\Phi 3 \times 12$
G 35	XTN3 + 10B	Tapping Screw $\Phi 3 \times 10$
G 36	XNS8	Nut (8 ϕ)
G 37	XTN3 + 10BFZ	Tapping Screw $\Phi 3 \times 10$
G 38	XTN4 + 12B	Tapping Screw $\Phi 4 \times 12$
G 39	XSN3 + 6S	Screw $\Phi 3 \times 6$
G 40	XNS7	Nut (7 ϕ)
G 41	QNK1070	Nut (10 ϕ)
G 42	QHQ1324 "Silver Type" QHQ1324K "Black Type"	Ornament Screw
G 43	XTB3 + 10BFZ	Tapping Screw $\Phi 3 \times 10$
G 44	XTS3 + 8BFN "Silver Type" XTS3 + 8BFZ "Black Type"	Screw $\Phi 3 \times 8$

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
G 45	QXA1044	Operation Button Angle Assembly	G 46	QBP1875	Operation Button Spring
G 47	QMR1823	Obstruction Rod (TAPE [2])	G 48	QML3649	Lock Arm (TAPE [1])
G 49	QML3593	Lock Arm (TAPE [2])	G 50	QDG1102	Dumper Gear
G 51	QMN2554	Operation Button Shaft	G 52	QXL1657	Eject Button Assembly
G 53	QXL1658	Record Button Assembly (TAPE [2])	G 54	QXL1659	Rewind/Review Button Assembly
G 55	QXL1660	F.F/Cue Button Assembly	G 56	QXL1661	Playback Button Assembly
G 57	QXL1662	Stop Button Assembly	G 58	QXL1663	Pause Button Assembly
G 59	QKFM6011K	Cassette Holder	G 60	XTN26 + 6B	Tapping Screw $\Phi 2.6 \times 6$
G 61	XTN2 + 6B	Tapping Screw $\Phi 2 \times 6$	G 62	XUB5FT	Stop Ring
G 63	QBW2082	Poly Washer	G 64	QBN7008	Eject Spring
G 65	QBT1597	Obstruction Rod Spring (TAPE [2])	G 66	XTN26 + 6B	Tapping Screw $\Phi 2.6 \times 6$
G 67	QML3601	Record Dummy Lever (TAPE [1])	G 68	QTSM0086	Earth Plate (for VR301)
G 69	QKJM0086	AC Outlet Holding Plate	G 70	QBM1059	AC Outlet Holding Plate
G 71	[DBN] XTN3 + 16B [For all European areas, Asia, Latin America, Middle East and Africa areas.] [A] XT3 + 12BFN [For Australia.]	Tapping Screw $\Phi 3 \times 16$	G 72	[DN] XTN3 + 10B [For all European areas, Asia, Latin America, Middle East and Africa areas.] [B] Δ SJA149-1 [For United Kingdom.] [A] Δ QFC1208M [For Australia.]	Tapping Screw $\Phi 3 \times 10$
G 73	[B] XSN3 + 8BVS [For United Kingdom.]	Screw $\Phi 3 \times 8$	G 74	SJS9607	Direct Connector-A
G 75	QTSM0089	Shield Board	G 76	QKJM0120	L.E.D. Spacer [TAPE [2]]
G 77	XTN3 + 10B	Tapping Screw $\Phi 3 \times 10$	G 78	XWA3B	Washer 3 ϕ
G 79	QTD1319	Cord Clamper	G 80	[D] QGSM0202	Main Name Plate
G 81	[D] QGK1735 [For all European areas except United Kingdom.]	Hole Cap	G 82	[A] QBJ1425 [For Australia.]	Cord Bushing
ACCESSORIES					
A 1	QQT3516	Instruction Book	A 2	SHE135	Stabilizing Pin
PACKINGS					
P 1	[DBA] QPNM0209 [For all European areas and Australia.] [N] QPNM0210 [For Asia, Latin America, Middle East and Africa areas.]	Inner Carton	P 2	QPAM0061	Cushion-R
P 3	QPAM0062	Cushion-L	P 4	[DBA] QPSM0009	Pad
P 5	XZB40X50A02	Poly Bag (for UNIT)	P 6	QPQ1052	Poly Sheet (for AC Power Cord)