

Service Manual

Cassette Deck

RS-M275X

(Silver Face)
(Black Face)

dbx -Equipped Direct Drive
Stereo Cassette Deck



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.

RS-M250 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Inputs:	MIC; sensitivity 0.25mV, applicable microphone impedance 400Ω—10kΩ
Tape speed:	4.8cm/s		LINE; sensitivity 60mV, input impedance more than 47kΩ
Wow and flutter:	0.03% (WRMS), ±0.07% (DIN)	Outputs:	LINE; output level 700mV, output impedance 1.5kΩ or less
Frequency response:	Metal tape; 20—20,000Hz 25—19,000Hz (DIN) 30—18,000Hz ±3dB		HEADPHONES; output level 130mV (8Ω) applicable headphone impedance 8Ω—600Ω
	CrO ₂ tape; 20—19,000Hz 25—18,000Hz (DIN) 30—17,000Hz ±3dB	Bias frequency:	85kHz
	Normal tape; 20—18,000Hz 25—17,000Hz (DIN) 30—16,000Hz ±3dB	Motor:	3-motor system 1-FG servo controlled direct-drive motor 2-DC motors for reel-tape drive
Dynamic range:	110dB (at 1kHz), dbx in	Heads:	2-head system 1-AX (AMORPHOUS) head for record/playback 1-double-gap ferrite head for erasure
Max. input level		Power requirement:	110/125/220/240V, 50-60Hz Pre-set power voltage 220V Pre-set power voltage 240V for United Kingdom
improvement:	10dB or more improved with dbx in (at 1kHz)	Power consumption:	37W
Signal-to-noise ratio:	dbx in; 92dB Dolby C NR in; 76dB (CCIR) Dolby B NR in; 68dB (CCIR) NR off; 58dB (signal level = max. input level A weighted, CrO ₂ type tape)	Dimensions:	43.0cm(W) × 9.8cm(H) × 32.6cm(D)
Fast forward and		Weight:	6.5kg
rewind time:	Approx. 90 seconds with C-60 cassette tape		

Specifications are subject to change without notice.

* The term dbx is a registered trademark of dbx Inc.

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

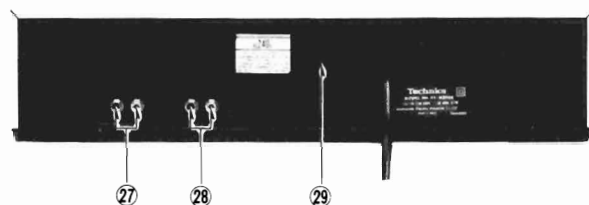
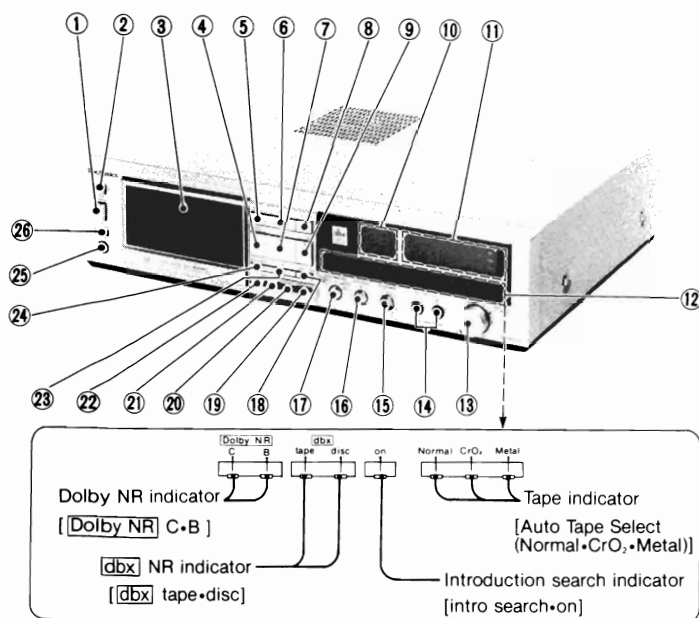
Technics

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

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LOCATION OF CONTROLS AND COMPONENTS



- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ① Power switch [power (push on)] ② Eject button [eject] ③ Cassette holder ④ Rewind button [rew (M · S) (◀◀)] ⑤ Record button and indicator [rec (○)] ⑥ Pause button and indicator [pause ()] ⑦ Play button and indicator [play (▶)] ⑧ Record muting button [rec mute (●)] ⑨ Fast forward button [ff (M · S) (▶▶)] ⑩ Digital multi counter [multi counter] ⑪ FL (fluorescent level) meter ⑫ Indicator ⑬ Input level controls [input level (L ↔ R)] ⑭ Microphone jacks [mic (L · R)] ⑮ Output level control [output level] | <ul style="list-style-type: none"> ⑯ Bias fine adjustment control [bias adjust] ⑰ Noise reduction select switch [Noise reduction (Dolby NR C · B · out · dbx tape · disc)] ⑱ Counter reset button [counter reset] ⑲ Music select button [music select] ⑳ Set button [set] ㉑ Tape/time select button [tape/time] ㉒ Memory repeat button [memory repeat (off · on)] ㉓ Stop button [stop (■)] ㉔ Introduction search button [intro search] ㉕ Headphones jack [phones] ㉖ Timer start switch [timer (rec · off · play)] ㉗ Line output jacks [LINE OUT (L · R)] ㉘ Line input jacks [LINE IN (L · R)] ㉙ Voltage selector [VOLTAGE SELECTOR] |
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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

Fig. 7

Fig. 8

Fig. 9



Ref. No.	Procedure	To remove —	Remove —	Shown in fig. —
1	1	Case cover	• 4 screws(A)	1
2	2	Bottom cover	• 6 screws(B)	2
3	1→2→3	Front panel	• Cassette lid(C) (As shown in fig. 1, pull out in the direction of arrow ①.) • Volume knob-A(D) • Volume knob-B(E) (As shown in fig. 1, set a string on volume knob-B and pull it out in the direction of arrow ②.) • 4 screws(F)	1 1 1 2, 3
4	1→3→4	Push switch circuit board and key board circuit board	• Meter cover(G) • 3 screws(H) • 2 screws(I)	4 5 5
5	1→3→5	FL meter	• 2 red screws.....(J)	3
6	1→3→5→6	LED circuit board	• As shown in fig. 5, pull the claw in the direction of arrow ③, then pull LED circuit board in the direction of arrow ④. Then, it can be removed.	5
7	1→3→7	dbx circuit board and Dolby circuit board	• 1 screw(K) • Wire(K') • 2 screws(L) (As shown in fig. 3, pull Dolby circuit board in the direction of arrow ⑤.) • As shown in fig. 3, pull the claw in the direction of arrow ⑥, then pull dbx circuit board in the direction of arrow ⑦. Then, it can be removed.	3 3 3 3
8	1→2→3→5→7→8	Main circuit board	• 9 red screws.....(M)	5, 6
9	1→3→9	Mechanism unit	• 6 screws(N) (As shown in fig. 5, pull out operation P.B. holder.)	2, 3
10	1→3→9→10	Main control circuit board	• 3 screws(O)	7
11	1→3→9→10→11	D.D capstan motor circuit board	• Insulating sheet(P) • 3 screws(Q)	8 8
12	1→12	Power transformer circuit board	• 5 screws(R)	3
13	1→13	Voltage regulator circuit board	• 4 screws(S)	6
14	1→3→9→14	Cassette holder assembly	• 3 screws(T) • Lock lever spring(U)	9 9

MEASUREMENT AND ADJUSTMENT METHODS (WITHOUT dbx SYSTEM)


Tape selector (Tape mode switching)

For measurement adjustment with test tapes without tape detection holes (A and B), switch tape modes as follows.
(For normal tape mode, just insert a normal tape into the cassette holder.)

* Metal tape mode setting:

Metal tape mode is obtained by disconnecting the 3 pin socket  from the 3 pin post  on the P.C.B. (Printed Circuit Board).

* CrO₂ tape mode setting:

First, disconnect the 3 pin socket  in the same way as above. Then, as illustrated in the figure right, connect the terminal-3 of the 3 pin post to the ground with a connection wire.

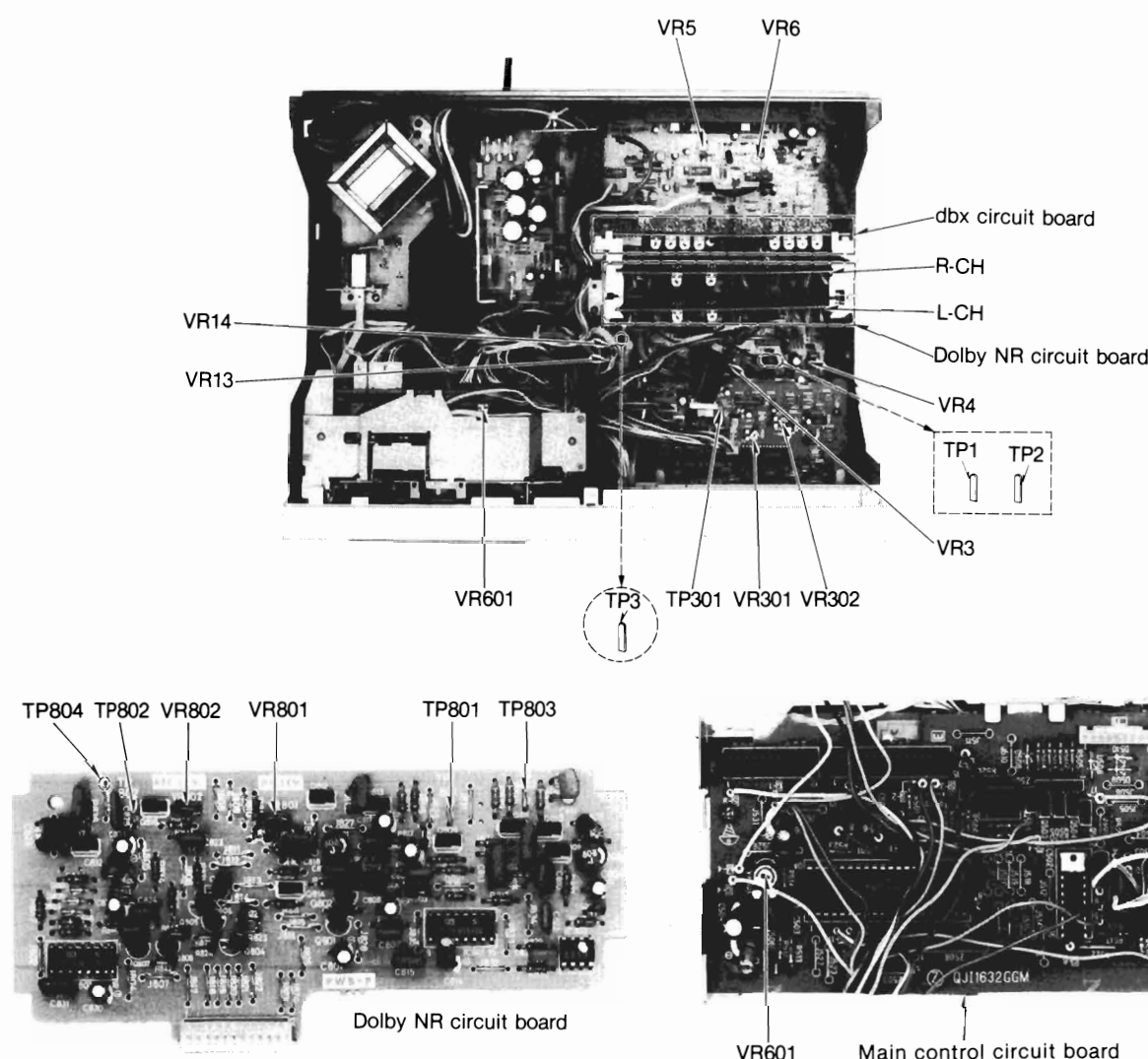
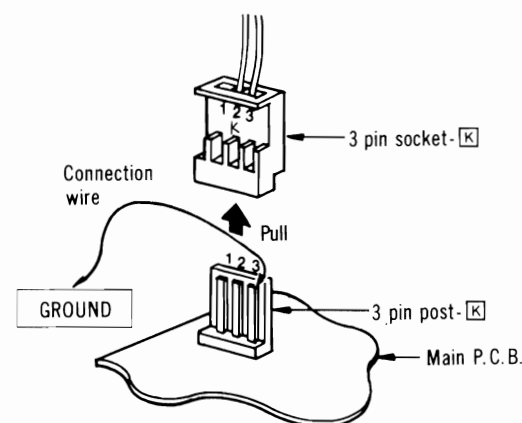
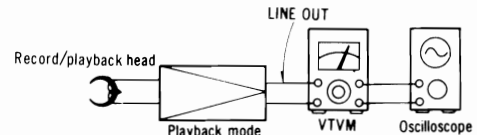
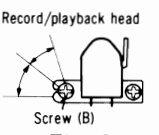
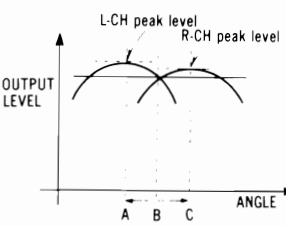
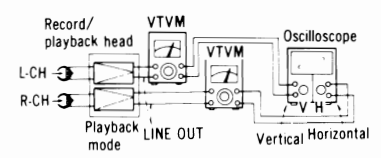
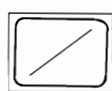


Fig. 1

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

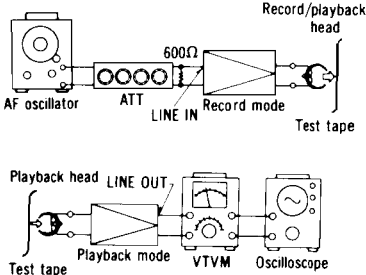
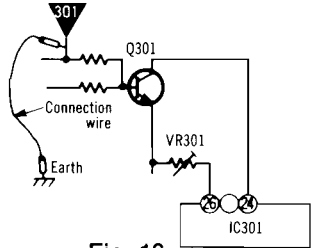

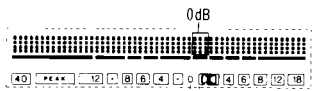
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
- NR switch: OUT
- Timer start switch: OFF

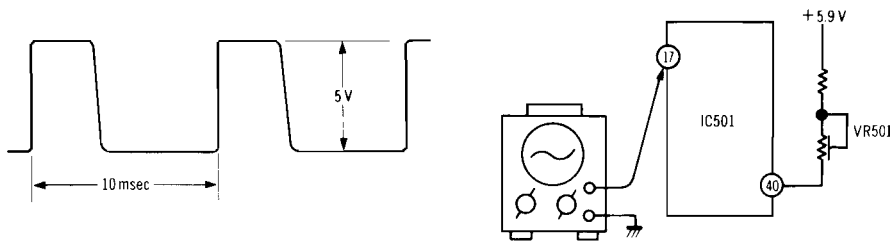
- Intro search: OFF
- Input level controls: Maximum
- Output level control: Maximum
- Bias fine adjustment control: Center

ITEM	MEASUREMENT & ADJUSTMENT
A Head azimuth adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ... QZZCFM	L-CH/R-CH output balance adjustment 1. Make connections as shown in fig. 2.  <p>Fig. 2</p> 2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 3 for maximum output L-CH and R-CH levels. When the output levels of L-CH and R-CH are not at maximum at the same time, readjust as follows. 3. Turn the screw shown in fig. 3 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. 3 and 4.)  <p>Fig. 3</p>  <p>Fig. 4</p> L-CH/R-CH phase adjustment 4. Make connections as shown in fig. 5. 5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 3 so that pointers of the two VTVMs swing to maximum and a waveform as illustrated in fig. 6 is obtained on the oscilloscope.  <p>Fig. 5</p>  <p>Fig. 6</p>
B Tape speed Condition: • Playback mode • Normal tape mode Equipment: • Digital electronic counter • Test tape ... QZZCWAT	Tape speed accuracy 1. Test equipment connection is shown in fig. 7. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of tape. 4. Measure this frequency. 5. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ where, f = measured value <div style="border: 1px solid black; padding: 2px; display: inline-block;">Standard value: $\pm 0.4\%$</div> Adjustment method 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000Hz. 3. Tape speed adjustment VR (VR601) shown in fig. 1. Tape speed fluctuation 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: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ f ₁ = maximum value, f ₂ = minimum value <div style="border: 1px solid black; padding: 2px; display: inline-block;">Standard value: Less than 0.3%</div>

ITEM	MEASUREMENT & ADJUSTMENT
<p>Ⓒ Playback frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode • Normal tape mode <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 2. 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart (Shown in fig. 8.) <div data-bbox="901 331 1444 604"> </div> <p style="text-align: center;">Fig. 8</p>
<p>Ⓓ Playback gain</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode • Normal tape mode <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 2 2. Playback standard recording level portion on test tape (QZZCFM 315Hz, 0dB), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. <div data-bbox="523 828 1407 900" style="border: 1px solid black; padding: 5px;"> <p>Standard value: 0.7V ± 0.1 dB (around 0.42V: at test points TP802 (L-CH) and TP802 (R-CH))</p> </div> <p>Adjustment</p> <ol style="list-style-type: none"> 1. If measured value is not within standard, adjust VR3 (L-CH), VR4 (R-CH) (shown in fig. 1) 2. After adjustment, check "Playback frequency response" again
<p>Ⓔ Erase current</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode • Metal tape mode <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 9. 2. Place UNIT into metal tape mode. 3. Press the record and pause buttons. 4. Read voltage on VTVM and calculate erase current by following formula: <div data-bbox="566 1191 1077 1249" style="text-align: center;"> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R127}}{1 (\Omega)}$ </div> <div data-bbox="523 1272 1050 1326" style="border: 1px solid black; padding: 5px;"> <p>Standard value: 150 \pm 15 mA (Metal position)</p> </div> <div data-bbox="1098 1102 1436 1249"> </div> <p style="text-align: center;">Fig. 9</p> <ol style="list-style-type: none"> 5. If measured value is not within standard, adjust as follows. <p>Adjustment</p> <ol style="list-style-type: none"> 1. Open the point (B) and short the point (A) on the main circuit board in the circuit board diagram (See page 27). 2. Make measurement for erase current. 3. Make sure that the measured value is within the erase current of 140mA to 170mA 4. If it is beyond the value, carry out the following adjustments: <ul style="list-style-type: none"> • If the erase current is less than 140mA, open the point (A). • If the erase current is more than 165mA, short the points (A) and (B).
<p>Ⓕ Overall frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record/playback mode • Normal tape mode • CrO₂ tape mode • Metal tape mode • Input level controls ... MAX • Output level control ... MAX 	<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 adjustment by recording bias current</p> <p>(Recording equalizer is fixed)</p> <ol style="list-style-type: none"> 1. Make connections as shown in fig. 11. 2. Place UNIT into normal tape mode and load the test tape (QZZCRA). <div data-bbox="901 1680 1444 1908"> </div> <p style="text-align: center;">Fig. 10</p>

ITEM	MEASUREMENT & ADJUSTMENT
<p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • ATT • Resistor (600Ω) • Test tape (reference blank tape) <ul style="list-style-type: none"> ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRZ for Metal • AF oscillator • Oscilloscope 	<ol style="list-style-type: none"> Input a 1kHz, -24dB signal through LINE IN. Place the set in record mode. Fine adjust the attenuator to obtain 0.7V LINE OUT output. <ul style="list-style-type: none"> • Make sure that the input signal level is -24 ± 4 dB with 0.7V output voltage. Adjust the attenuator to reduce the input signal level by 20dB. Adjust the AF oscillator to generate 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 12.5kHz 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. 10). <p>(If the curve is within the charted specifications, proceed to steps 8, 9, 10 and 11.) (If the curve is not within the charted specifications, adjust as follows;</p> <div data-bbox="555 902 715 929"> <p>Adjustment (A):</p> </div> <p>When the curve exceeds the overall frequency response chart specifications (fig. 10) as shown in fig. 12.</p> <div data-bbox="598 1052 920 1281"> </div> <div data-bbox="730 1294 810 1321"> <p>Fig. 12</p> </div> <ol style="list-style-type: none"> Increase bias current by turning VR13 (L-CH) and VR14 (R-CH). (See fig. 1 on page 5). Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 10.) If the curve still exceeds the specifications (fig. 10), increase bias current further and repeat steps 6 and 7. <div data-bbox="1034 902 1193 929"> <p>Adjustment (B):</p> </div> <p>When the curve falls below the overall frequency response chart specifications (fig. 10) as shown in fig. 13.</p> <div data-bbox="1090 1052 1412 1281"> </div> <div data-bbox="1217 1294 1297 1321"> <p>Fig. 13</p> </div> <ol style="list-style-type: none"> Reduce bias current by turning VR13 (L-CH) and VR14 (R-CH). Repeat steps 6 and 7 to confirm. (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 10.) If the curve still falls below the charted specifications (fig. 10), reduce bias current further and repeat steps 6 and 7. <ol style="list-style-type: none"> Place UNIT into CrO₂ tape mode. Change test tape to QZZCRX, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 12.5kHz 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. 14). <div data-bbox="925 358 1468 683"> </div> <div data-bbox="1177 698 1257 725"> <p>Fig. 11</p> </div> <div data-bbox="925 1657 1468 1886"> </div> <div data-bbox="1169 1904 1249 1930"> <p>Fig. 14</p> </div>

ITEM	MEASUREMENT & ADJUSTMENT
	<p>10. 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 and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 14).</p> <p>11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.</p> <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>Standard value:</p> <p>around 180 μA (Normal position)</p> <p>around 250 μA (CrO₂ position)</p> <p>around 380 μA (Metal position)</p> </div> <p style="text-align: right;">}: measured at TP1 (L-CH) and TP2 (R-CH)</p>
<p>G Overall gain</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record/playback mode • Normal tape mode • Input level controls ... MAX • Output level control ... MAX • Standard input level; <ul style="list-style-type: none"> MIC -72 \pm 3 dB LINE IN ... -24 \pm 3 dB <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600 Ω) • Test tape (reference blank tape) ... QZZCRA for Normal 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 15. 2. Place UNIT into normal tape mode, and load the test tape (QZZCRA). 3. Place UNIT into record mode. 4. Supply 1 kHz signal (-24 dB) from AF oscillator, through ATT to LINE IN. 5. Adjust ATT until monitor level at LINE OUT becomes 0.7 V. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.7 V. 7. If measured value is not 0.7 V, adjust VR7 (L-CH), VR8 (R-CH). 8. Repeat from step (2). <div style="text-align: right;">  <p>Fig. 15</p> </div>
<p>H Fluorescent meter</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode • Input level controls ... MAX • Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT 	<ol style="list-style-type: none"> 1. Make connections as shown (See fig. 15). 2. Connect a wire between TP301 and ground terminal (See fig. 16). 3. In the recording pause mode, apply 1 kHz (-24 dB) to LINE IN. 4. Adjust ATT so that output level at LINE OUT is 0.7 V. <p>-40dB adjustment</p> <ol style="list-style-type: none"> 5. Adjust ATT so that the level adjusted at step 4 is reduced by 40 dB. 6. At this time, check that -40 dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 17). 7. If the indicator is not lighted halfway as described in step 6, adjust VR302. <p>0dB adjustment</p> <ol style="list-style-type: none"> 8. Restore the condition of step 4 (set LINE OUT output level to 0.7 V). 9. At this time, check that 0dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 18). 10. If improper, adjust VR301. 11. Repeat adjustments and checks at steps 4, 5, 6, 7, 8, 9 and 10 two or three times. 12. Disconnect the wire between TP301 and ground terminal, which had been connected at step 2 <div style="text-align: right;">  <p>Fig. 16</p> </div> <div style="text-align: right;">  <p>Fig. 17</p> </div> <div style="text-align: right;">  <p>Fig. 18</p> </div>

ITEM	MEASUREMENT & ADJUSTMENT
<p>① Dolby NR circuit</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record/playback mode * NR switch ... OUT/B/C * Input level controls ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape ... QZZCFM 	<p>Note:</p> <p>Two Dolby PC boards are available for the L and R channels. Refer to fig. 1 for VR location and test points.</p> <p>Dolby level adjustment</p> <p>◦ Encoding level adjustment</p> <ol style="list-style-type: none"> 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at TP801 is 0.42 V. 4. Adjust VR802 so that the output signal level at TP802 is 0.42 V. <p>◦ Decoding level adjustment</p> <ol style="list-style-type: none"> 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and play the QZZCFM test tape (315 Hz, 0 dB). 3. Adjust VR3 (L-CH) and VR4 (R-CH) so that the output signal level at TP802 is 0.42 V. 4. Adjust VR801 so that the output signal level at TP801 is 0.42 V. <p>Checking Dolby circuit frequency response</p> <p>◦ Dolby-B (Encoding characteristics check)</p> <ol style="list-style-type: none"> 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at TP801 is 17.5 mV. 4. Change the input signal frequency to 1 kHz, and set the output signal level at TP804 to 0 dB. Measure the level when the NR switch is set to B, and check that the level difference is 6 ± 1.5 dB. 5. Check the level difference in the same way as step 4 above using a 5 kHz signal. The output signal level difference between Dolby-B IN and OUT should be 8 ± 1.5 dB. <p>◦ Dolby-C (Check of Encoding characteristics)</p> <p>Check characteristics in the same way as for Dolby-B (Encoding characteristics check). In this case, however, OUT/Dolby-C selection positions are available for the NR switch, and the output signal level difference should be 11.5 ± 1.5 dB at 1 kHz and 9.0 ± 1.5 dB at 5 kHz.</p>
<p>② Input scanning time adjustment</p> <p>Condition:</p> <ul style="list-style-type: none"> * Stop mode <p>Equipment:</p> <ul style="list-style-type: none"> * Oscilloscope 	<ol style="list-style-type: none"> 1. Connect oscilloscope to (17) terminal of IC501. 2. Measure the time of input scanning signal with oscilloscope as shown in fig. 20. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Standard value: About 10 msec</p> </div> <ol style="list-style-type: none"> 3. If the measured value is markedly different from the signal shown below, make the necessary adjustment with VR501 

MEASUREMENT AND ADJUSTMENT METHODS (FOR dbx SYSTEM)

• TROUBLESHOOTING CHART FOR dbx SYSTEM

The troubleshooting chart for the dbx system is shown in Fig. 1. Please follow the sequence of this chart for checking and repairing the dbx system. The figures shown in each block indicate the page on which the checking method, adjustment or measurement is explained.

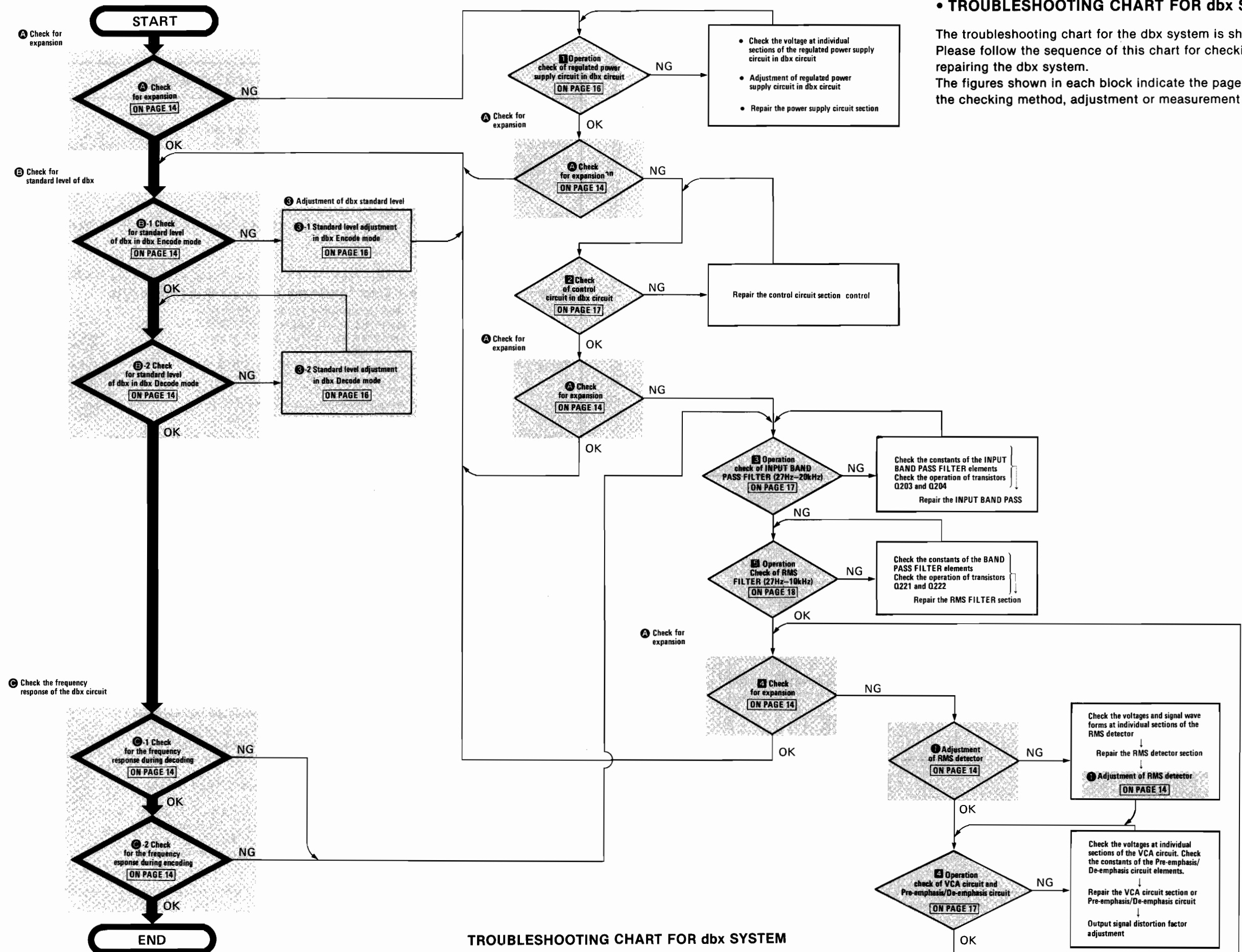


Fig. 1 TROUBLESHOOTING CHART FOR dbx SYSTEM

• ADJUSTMENT PARTS LOCATION OF dbx SYSTEM

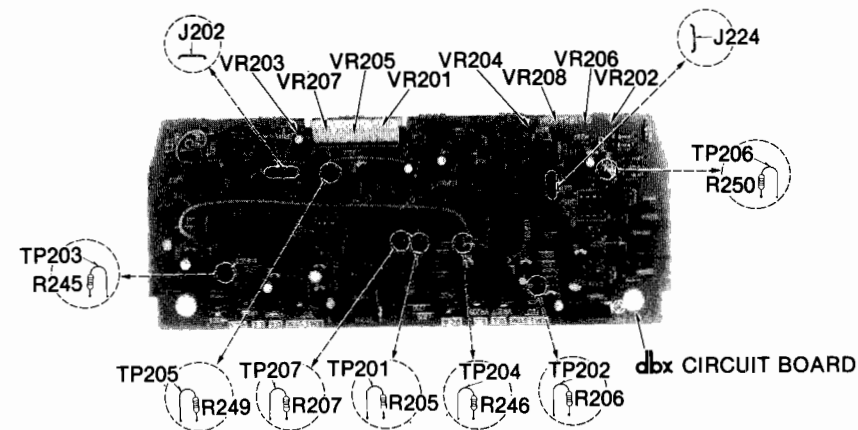


Fig. 2

BLOCK DIAGRAM OF dbx SECTION (L-CH ONLY)

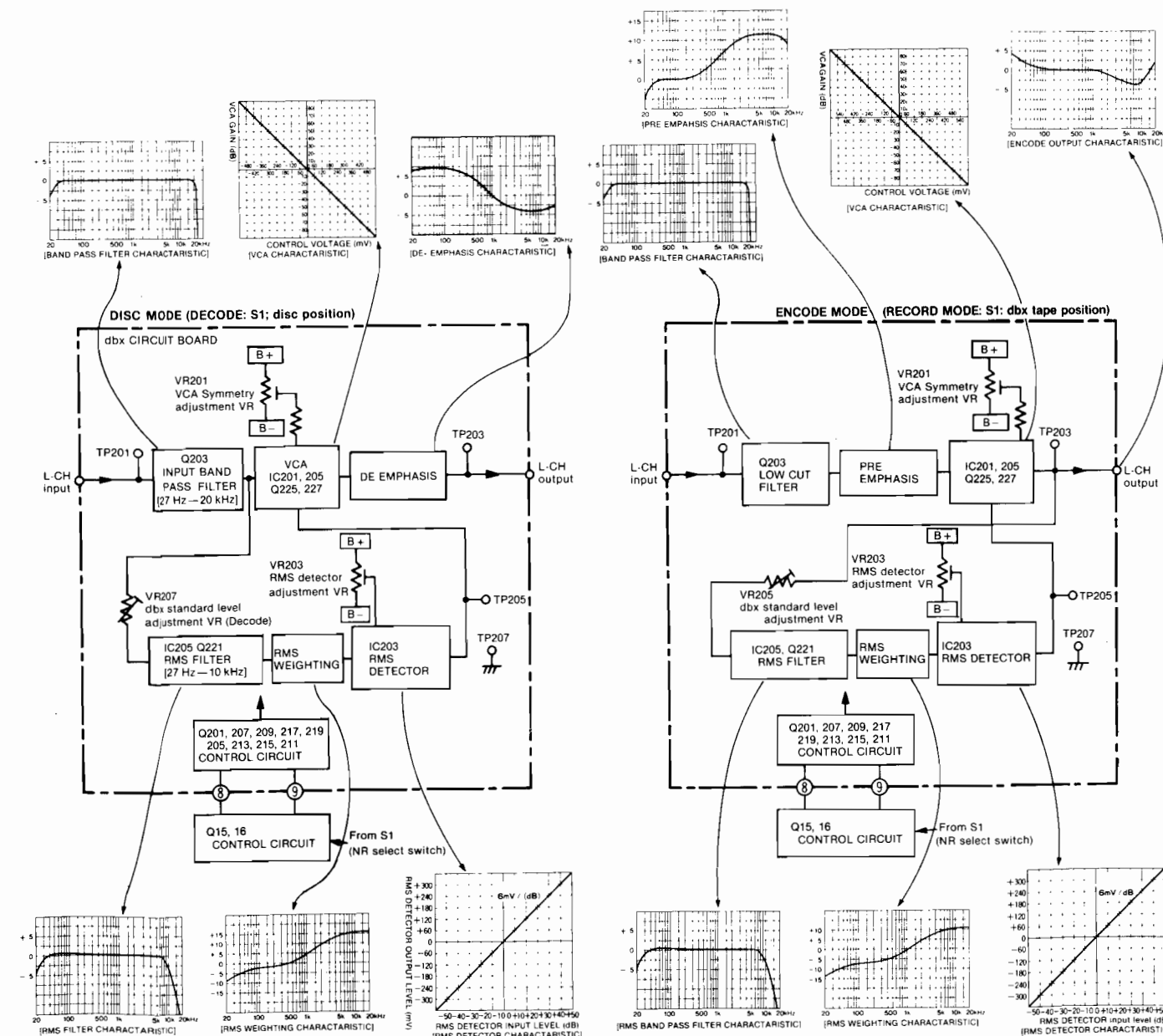


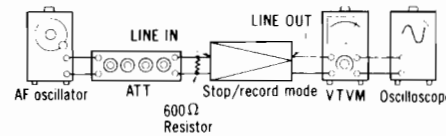
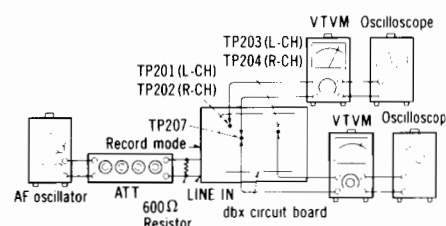
Fig. 3

Note: Encode/decode selection of the dbx circuit in RS-M275X is done with a control circuit, composed of transistors. (This control circuit is interlocked with S1 (NR selection switch).)

dbx SYSTEM CHECKING METHOD

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

- Input level controls: Maximum
- Output level control: Maximum

ITEM	CHECKING METHOD																						
A Check for expansion Condition: • Stop mode • Input level controls ... MAX • Output level control ... MAX • Noise reduction selector ... disc dbx tape Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω)	A Check for expansion 1. Make the connections as shown in fig. 4 and apply 1 kHz - 27 dB signal from LINE IN, and set the noise reduction selector to disc position. 2. Adjust ATT, increase input signal level by 10 dB, and make sure that the reading for VTVM increases by 20 dB ± 1 dB. 3. Adjust ATT, decrease the input signal level, and make sure that the reading for VTVM decreases by 20 dB ± 1 dB.  <p>Fig. 4</p>																						
B Check for standard level of dbx Condition: • Stop/record mode • Input level controls ... MAX • Noise reduction selector ... disc dbx tape Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω)	B-1 Check for standard level of dbx in dbx Encode mode 1. Make the connections as shown in fig. 5 and apply 1 kHz - 27 dB signal from LINE IN, and set the noise reduction selector to dbx tape position. 2. Set the unit to record mode, adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 3. Make sure that the signal level at TP203 (L-CH) and TP204 (R-CH) is 300 mV ± 0.5 dB. B-2 Check for standard level of dbx in dbx Decode mode 1. Make the connections as shown in fig. 5 and apply 1 kHz - 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to disc position and adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300 mV. 3. Make sure that the signal level at TP203 (L-CH) and TP204 (R-CH) is 300 mV ± 0.5 dB.  <p>Fig. 5</p>																						
C Check the frequency response of the dbx circuit Condition: • Stop/record mode • Input level controls ... MAX • Noise reduction selector ... disc dbx tape Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω)	C-1 Check the frequency response during decoding 1. Make the connections as shown in fig. 5 and apply 1 kHz - 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to disc position, and adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300 mV. 3. With the signal level at TP203 (L-CH) and TP204 (R-CH) as 0 dB, change the signal frequency to 100 Hz, 20 Hz and 7 kHz respectively. Read signal levels at TP203 (L-CH) and TP204 (R-CH) and check that they are within the specifications-1. C-2 Check the frequency response during encoding 1. Make the connections as shown in fig. 5 and apply 1 kHz - 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to dbx tape position, and the unit to record mode. 3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 4. With the signal level at TP203 (L-CH) and TP204 (R-CH) as 0 dB, change the signal frequency to 100 Hz and 7 kHz respectively. Read signal levels at TP203 (L-CH) and TP204 (R-CH) and check that they are within the specifications-2. <table border="1" data-bbox="2463 1239 2789 1491"> <thead> <tr> <th colspan="2">Specifications-1</th> </tr> <tr> <th>Frequency</th> <th>Signal levels at TP203 and TP204</th> </tr> </thead> <tbody> <tr> <td>1 kHz</td> <td>0 dB (300 mV)</td> </tr> <tr> <td>100 Hz</td> <td>-0.5 dB ± 1 dB</td> </tr> <tr> <td>20 Hz</td> <td>-30 dB ± 5 dB</td> </tr> <tr> <td>7 kHz</td> <td>+7 dB ± 1 dB</td> </tr> </tbody> </table> <table border="1" data-bbox="2463 1533 2789 1743"> <thead> <tr> <th colspan="2">Specifications-2</th> </tr> <tr> <th>Frequency</th> <th>Signal levels at TP203 and TP204</th> </tr> </thead> <tbody> <tr> <td>1 kHz</td> <td>0 dB (300 mV)</td> </tr> <tr> <td>100 Hz</td> <td>+0.5 dB ± 1 dB</td> </tr> <tr> <td>7 kHz</td> <td>3.5 dB ± 1 dB</td> </tr> </tbody> </table>	Specifications-1		Frequency	Signal levels at TP203 and TP204	1 kHz	0 dB (300 mV)	100 Hz	-0.5 dB ± 1 dB	20 Hz	-30 dB ± 5 dB	7 kHz	+7 dB ± 1 dB	Specifications-2		Frequency	Signal levels at TP203 and TP204	1 kHz	0 dB (300 mV)	100 Hz	+0.5 dB ± 1 dB	7 kHz	3.5 dB ± 1 dB
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Frequency	Signal levels at TP203 and TP204																						
1 kHz	0 dB (300 mV)																						
100 Hz	+0.5 dB ± 1 dB																						
7 kHz	3.5 dB ± 1 dB																						

NOTES:

- If the results of the above checks A, B and C do not satisfy the specifications, perform the following adjustments.
- If the specifications are not satisfied even after the adjustments, follow the checking procedure for problems.
- If the output signal is not produced or is extremely distorted, follow the checking procedure for problems.

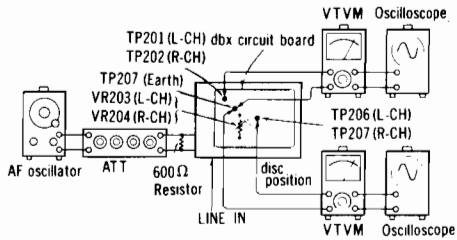
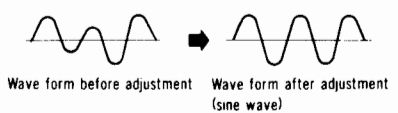
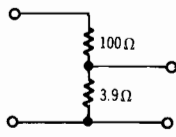
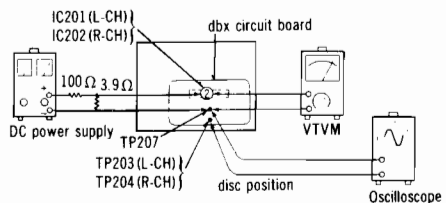
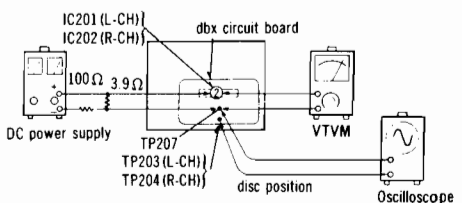
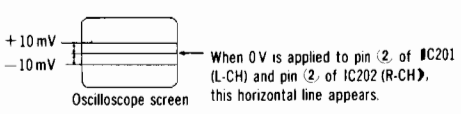
ADJUSTMENT OF dbx SYSTEM

NOTES: When adjusting the circuit of the dbx system, be sure to perform the adjustments in the following order:

- ① Adjustment of RMS detector, ② Adjustment of VCA, ③ Adjustment of dbx standard level.

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

- Input level controls: Maximum

ITEM	ADJUSTMENT
<p>① Adjustment of RMS detector</p> <p>Condition:</p> <ul style="list-style-type: none"> • Stop mode • Input level controls ... MAX • Noise reduction selector ... disc <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600Ω) 	<ol style="list-style-type: none"> Make the connections as shown in fig. 6, and set the noise reduction selector to disc position Apply 100Hz -27dB signal from LINE IN Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300mV. Make sure that the output signal at TP205 (L-CH) and TP206 (R-CH) is at 200Hz sine wave <p>If the output signal is not sinusoidal as shown in fig. 7, adjust VR203 (L-CH) and VR204 (R-CH) to make it sinusoidal.</p> <p>NOTE: The voltage of the output signal after adjustment is about 0.5mV rms.</p>  <p>Fig. 6</p>  <p>Fig. 7</p>
<p>② Adjustment of VCA</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record stop mode • Input level controls ... MAX • Noise reduction selector ... disc/dbx tape <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Resistor (100Ω, 3.9Ω) 	<p>Preparation before adjustment</p> <ol style="list-style-type: none"> Before adjusting VCA, from the device shown below using resistors of 100Ω and 3.9Ω (See fig. 8). Set NR switch to dbx disc. Remove jumpers [J202 (L-CH) and J224 (R-CH)]. Arrange connections referring to wire connection diagram (fig. 9 and 10), since 0V, +180mV and -180mV (DC) are applied in this order to pin 2 of IC201 (L-CH) and pin 2 of IC202 (R-CH).  <p>Fig. 8</p>  <p>Fig. 9</p> <p>Connections when applying +180mV and 0V</p> <p>Adjust DC power supply and arrange connections so that +180mV or 0V can be applied to TP203 (L-CH) and TP204 (R-CH).</p>  <p>Fig. 10</p> <p>Connections when applying -180mV</p> <p>Adjust DC power supply and arrange connections so that -180mV can be applied to TP203 (L-CH) and TP204 (R-CH).</p> <p>Adjustment procedure</p> <ol style="list-style-type: none"> Apply 0V to pin (2) of IC201 (L-CH) and pin (2) of IC202 (R-CH), and a horizontal line will appear on the screen of the oscilloscope. Use this line as the reference line. Apply +180mV to pin (2) of IC201 (L-CH) and pin (2) of IC202 (R-CH) (See fig. 9), and check that the level is not more than 10mV from the reference line. If improper, adjust VR201 (L-CH) and VR202 (R-CH). In the same way, apply -180mV to pin (2) of IC201 (L-CH) and pin (2) of IC203 (R-CH) (See fig. 10), and check that the level is not more than 10mV from the reference line. If improper, adjust VR201 (L-CH) and VR202 (R-CH). Repeat steps 2 and 3, and adjust VRs so that the levels are within ± 10mV when +180mV and -180mV are applied (fig. 11). After adjustment, connect jumpers J202 (L-CH) and J224 (R-CH) (See fig. 2).  <p>Fig. 11</p>
<p>③ Adjustment of dbx standard level</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record stop mode • Input level controls ... MAX 	<p>NOTE: Be sure to perform the standard level adjustment in dbx Encode, followed by the standard level adjustment in dbx Decode.</p>

ITEM	ADJUSTMENT
<p>• Noise reduction selector ... disc dbx tape</p> <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • ATT • Resistor (600Ω) • AF oscillator • Oscilloscope 	<p>③-1 Standard level adjustment in dbx Encode mode</p> <ol style="list-style-type: none"> 1. Make the connection as shown in fig. 12 and apply 1 kHz - 27 dB signal from LINE IN. and set the noise reduction selector to dbx tape position. 2. Set unit to record mode, adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 3. Adjust VR205 (L-CH) and VR206 (R-CH) so that the output signal level at TP203 (L-CH) and TP204 (R-CH) becomes 300 mV \pm 0.5 dB. <p>③-2 Standard level adjustment in dbx Decode mode</p> <ol style="list-style-type: none"> 1. Make the connection as shown in fig. 12 and apply 1 kHz - 27 dB signal from LINE IN. and perform the following adjustments. 2. Set the noise reduction selector to disc position, and adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300 mV. 3. Adjust VR207 (L-CH) and VR208 (R-CH) so that the output signal level at TP203 (L-CH) and TP204 (R-CH) becomes 300 mV \pm 0.5 dB <p>Fig. 12</p>
<p>NOTES:</p> <ul style="list-style-type: none"> • After adjustments ①, ② and ③, re-check according to "dbx SYSTEM CHECKING METHOD". • If the specifications are not satisfied, perform the adjustments again. 	

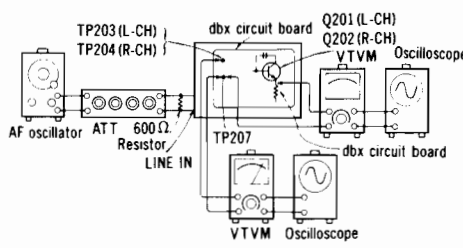
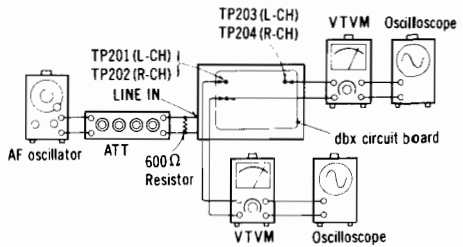
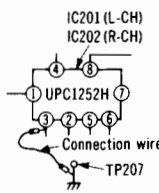
CHECKING PROCEDURE FOR PROBLEMS

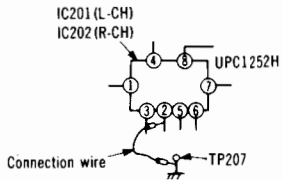
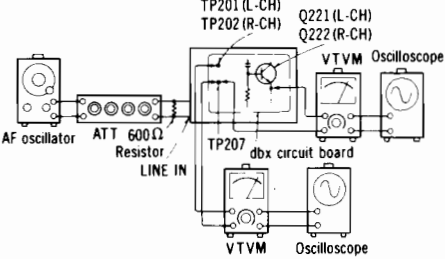
NOTES: Find defective parts according to the circuit operation checking method given below, and use the results for your reference during repair. Remember to adjust after repair.

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

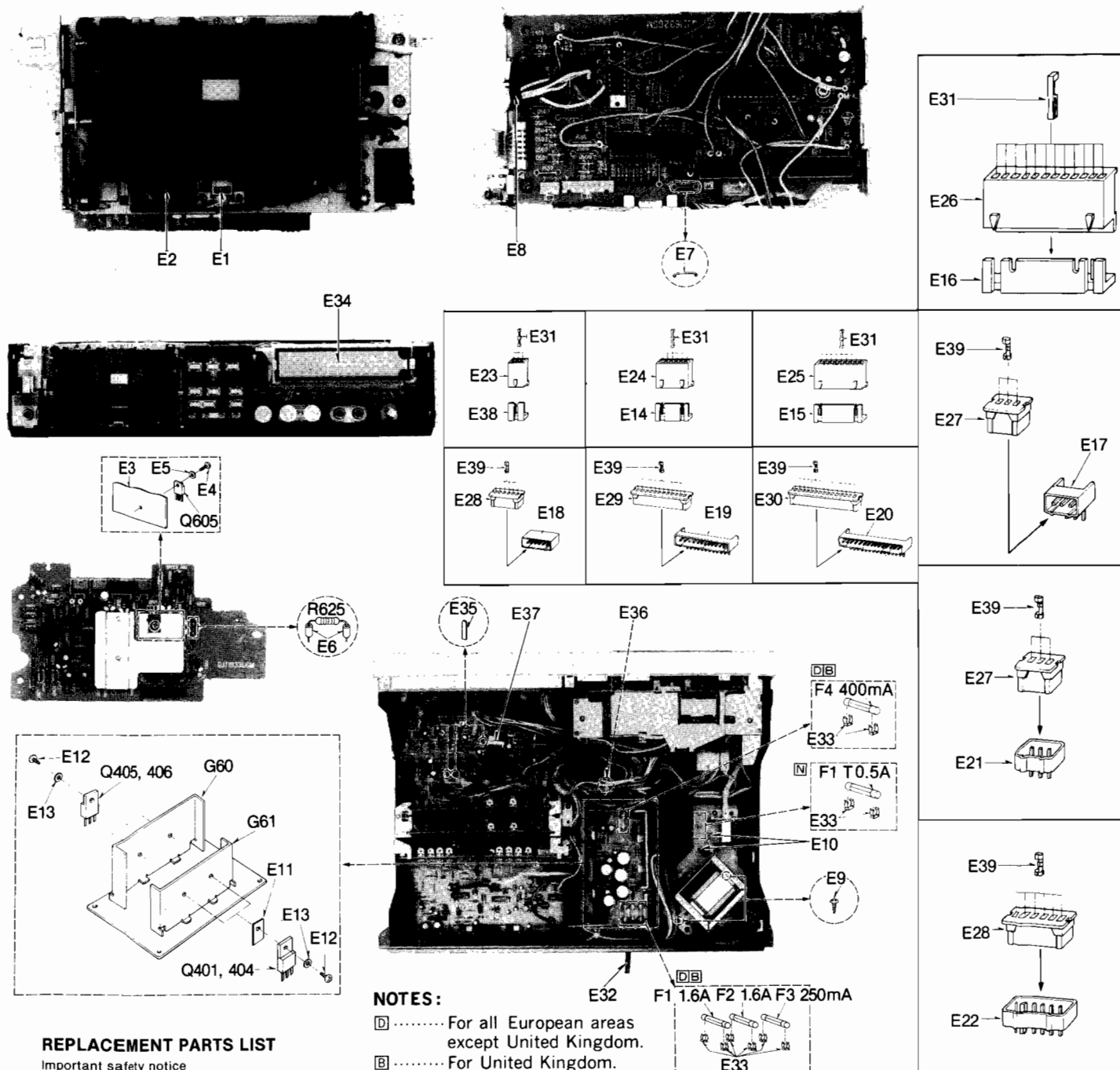
- Input level controls: Maximum

ITEM	CHECKING METHOD
<p>① Operation check of regulated power supply circuit in dbx circuit</p> <p>Equipment:</p> <ul style="list-style-type: none"> • DC volt meter • Oscilloscope 	<p>①-1 Check of +10.5V voltage</p> <p>Make the connection as shown in fig. 13 and make sure that the emitter voltage of Q401 is around +10.5V.</p> <p>①-2 Check of -10.5V voltage</p> <p>Make the connection as shown in fig. 13 and make sure that the emitter voltage of Q404 is around -10.5V.</p> <p>⑥ VOLTAGE REGULATOR CIRCUIT BOARD</p> <p>Fig. 13</p>

ITEM	CHECKING METHOD																																																																																																																																																																																													
<div>2</div> <div>Check of control circuit in dbx circuit</div> <div>Equipment:<ul style="list-style-type: none">• DC volt meter</div>	<div>E.C.B (G.S.D) voltage check of each switching transistor for Encode/Decode</div> <div>The terminal voltage of each switching transistor in Encode/Decode mode are shown in the table below.</div> <table><tr><th rowspan="2">Transistor Ref. No.</th><th colspan="3">Encode (dbx tape)</th><th colspan="3">Decode (dbx tape)</th><th colspan="3">disc</th></tr><tr><th>E (G)</th><th>C (S)</th><th>B (D)</th><th>E (G)</th><th>C (S)</th><th>B (D)</th><th>E (G)</th><th>C (S)</th><th>B (D)</th></tr><tr><td>Q15</td><td>-10.8V</td><td>6.0V</td><td>-10.8V</td><td>-10.8V</td><td>-10.8V</td><td>-10.1V</td><td>-10.8V</td><td>-10.8V</td><td>-10.1V</td></tr><tr><td>Q16</td><td>10.7V</td><td>-10.4V</td><td>10.6V</td><td>10.6V</td><td>10.7V</td><td>9.9V</td><td>-10.7V</td><td>-10.2V</td><td>-10.6V</td></tr><tr><td>Q17, 18</td><td>-8.8V</td><td>0V</td><td>0V</td><td>0.6V</td><td>0V</td><td>0V</td><td>0.6V</td><td>0V</td><td>0V</td></tr><tr><td>Q19, 20</td><td>0.6V</td><td>0V</td><td>0V</td><td>-8.8V</td><td>0V</td><td>0V</td><td>-8.8V</td><td>0V</td><td>0V</td></tr><tr><td>Q21</td><td>-10.8V</td><td>-10.8V</td><td>-10.1V</td><td>-10.8V</td><td>10.0V</td><td>-10.8V</td><td>-10.8V</td><td>-10.8V</td><td>-10.1V</td></tr><tr><td>Q30</td><td>0V</td><td>0V</td><td>0.6V</td><td>0V</td><td>10.7V</td><td>0V</td><td>0V</td><td>0V</td><td>0.6V</td></tr><tr><td>Q32</td><td>10.7V</td><td>10.7V</td><td>10.1V</td><td>10.7V</td><td>-10.7V</td><td>10.7V</td><td>10.7V</td><td>10.7V</td><td>10.1V</td></tr><tr><td>Q201, 202</td><td>-10.8V</td><td>0V</td><td>0V</td><td>+0.43V</td><td>0V</td><td>0V</td><td>-10.8V</td><td>0V</td><td>0V</td></tr><tr><td>Q205, 206</td><td>0V</td><td>-1.45V</td><td>-10.62V</td><td>-1.42V</td><td>-1.42V</td><td>-0.77V</td><td>-1.42V</td><td>-1.42V</td><td>-0.77V</td></tr><tr><td>Q207, 208</td><td>-1.45V</td><td>-1.45V</td><td>-0.83V</td><td>0V</td><td>-1.42V</td><td>-10.7V</td><td>0V</td><td>-1.42V</td><td>-10.71V</td></tr><tr><td>Q209, 210</td><td>0V</td><td>0V</td><td>0.61V</td><td>-0.15V</td><td>0V</td><td>-10.7V</td><td>0V</td><td>0V</td><td>-10.7V</td></tr><tr><td>Q211, 212</td><td>-0.11V</td><td>0V</td><td>-10.61V</td><td>0V</td><td>0V</td><td>0.63V</td><td>0V</td><td>0V</td><td>0.64V</td></tr><tr><td>Q213, 214</td><td>0V</td><td>-0.1V</td><td>-10.56V</td><td>0V</td><td>-0.1V</td><td>-10.56V</td><td>-0.29V</td><td>-0.29V</td><td>0.33V</td></tr><tr><td>Q215, 216</td><td>-0.1V</td><td>-0.1V</td><td>0.47V</td><td>0V</td><td>-0.1V</td><td>-10.65V</td><td>0V</td><td>-0.29V</td><td>-10.65V</td></tr><tr><td>Q217, 218</td><td>0V</td><td>0.01V</td><td>-10.62V</td><td>0V</td><td>0V</td><td>0.64V</td><td>0V</td><td>0V</td><td>0.64V</td></tr><tr><td>Q219, 220</td><td>0.01V</td><td>0V</td><td>0.62V</td><td>-1.42V</td><td>0V</td><td>-10.7V</td><td>-1.42V</td><td>0V</td><td>-10.71V</td></tr><tr><td>Q223, 224</td><td>-10.75V</td><td>-10.54V</td><td>-10.61V</td><td>-10.72V</td><td>10.64V</td><td>-10.62V</td><td>-10.77V</td><td>-10.76V</td><td>-10.12V</td></tr></table>	Transistor Ref. No.	Encode (dbx tape)			Decode (dbx tape)			disc			E (G)	C (S)	B (D)	E (G)	C (S)	B (D)	E (G)	C (S)	B (D)	Q15	-10.8V	6.0V	-10.8V	-10.8V	-10.8V	-10.1V	-10.8V	-10.8V	-10.1V	Q16	10.7V	-10.4V	10.6V	10.6V	10.7V	9.9V	-10.7V	-10.2V	-10.6V	Q17, 18	-8.8V	0V	0V	0.6V	0V	0V	0.6V	0V	0V	Q19, 20	0.6V	0V	0V	-8.8V	0V	0V	-8.8V	0V	0V	Q21	-10.8V	-10.8V	-10.1V	-10.8V	10.0V	-10.8V	-10.8V	-10.8V	-10.1V	Q30	0V	0V	0.6V	0V	10.7V	0V	0V	0V	0.6V	Q32	10.7V	10.7V	10.1V	10.7V	-10.7V	10.7V	10.7V	10.7V	10.1V	Q201, 202	-10.8V	0V	0V	+0.43V	0V	0V	-10.8V	0V	0V	Q205, 206	0V	-1.45V	-10.62V	-1.42V	-1.42V	-0.77V	-1.42V	-1.42V	-0.77V	Q207, 208	-1.45V	-1.45V	-0.83V	0V	-1.42V	-10.7V	0V	-1.42V	-10.71V	Q209, 210	0V	0V	0.61V	-0.15V	0V	-10.7V	0V	0V	-10.7V	Q211, 212	-0.11V	0V	-10.61V	0V	0V	0.63V	0V	0V	0.64V	Q213, 214	0V	-0.1V	-10.56V	0V	-0.1V	-10.56V	-0.29V	-0.29V	0.33V	Q215, 216	-0.1V	-0.1V	0.47V	0V	-0.1V	-10.65V	0V	-0.29V	-10.65V	Q217, 218	0V	0.01V	-10.62V	0V	0V	0.64V	0V	0V	0.64V	Q219, 220	0.01V	0V	0.62V	-1.42V	0V	-10.7V	-1.42V	0V	-10.71V	Q223, 224	-10.75V	-10.54V	-10.61V	-10.72V	10.64V	-10.62V	-10.77V	-10.76V	-10.12V
Transistor Ref. No.	Encode (dbx tape)			Decode (dbx tape)			disc																																																																																																																																																																																							
	E (G)	C (S)	B (D)	E (G)	C (S)	B (D)	E (G)	C (S)	B (D)																																																																																																																																																																																					
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Q211, 212	-0.11V	0V	-10.61V	0V	0V	0.63V	0V	0V	0.64V																																																																																																																																																																																					
Q213, 214	0V	-0.1V	-10.56V	0V	-0.1V	-10.56V	-0.29V	-0.29V	0.33V																																																																																																																																																																																					
Q215, 216	-0.1V	-0.1V	0.47V	0V	-0.1V	-10.65V	0V	-0.29V	-10.65V																																																																																																																																																																																					
Q217, 218	0V	0.01V	-10.62V	0V	0V	0.64V	0V	0V	0.64V																																																																																																																																																																																					
Q219, 220	0.01V	0V	0.62V	-1.42V	0V	-10.7V	-1.42V	0V	-10.71V																																																																																																																																																																																					
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<div>NOTE:</div> <div>• If no abnormality is found in steps 1 and 2, check the operation for each part as follows:</div>																																																																																																																																																																																														
<div>3</div> <div>Operation check of INPUT BAND PASS FILTER circuit (27Hz—20kHz)</div> <div>Condition:<ul style="list-style-type: none">• Record mode• Input level controls ... MAX• Noise reduction selector ... dbx tape</div> <div>Equipment:<ul style="list-style-type: none">• VTVM• AF oscillator• ATT• Oscilloscope• Resistor (600Ω)</div>	<div><div><div><div>1. Make the connections as shown in fig. 14, and apply 100Hz — 27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.</div><div>2. Set the unit to record mode.</div><div>3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300mV.</div><div>4. Make sure that the emitter signal level of Q203 (L-CH) and Q204 (R-CH) is 300mV.</div><div>5. Set the input signal frequency to 5kHz and make sure that the emitter signal of Q203 (L-CH) and Q204 (R-CH) remains at the same level (300mV).</div></div><div></div><div>Fig. 14</div></div></div>																																																																																																																																																																																													
<div>4</div> <div>Operation check of VCA circuit and Pre-emphasis/De-emphasis circuit</div> <div>Condition:<ul style="list-style-type: none">• Stop/record mode• Input level controls ... MAX• Noise reduction selector ... disc/dbx tape</div> <div>Equipment:<ul style="list-style-type: none">• VTVM• AF oscillator• ATT• Oscilloscope• Resistor (600Ω)</div>	<div><div><div><div>4-1 Operation check of VCA circuit and Pre-emphasis circuit</div><div><div><div>1. Make the connections as shown in fig. 15, and apply 100Hz — 27dB signal from LINE IN.</div><div>2. Short pin ③ of IC201 (L-CH) and IC202 (R-CH) to TP207 (ground) as shown in fig. 16.</div><div>3. Set the unit to record mode, and set the noise reduction selector to dbx tape position.</div><div>4. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300mV.</div><div>5. Make sure that the output signals at TP203 (L-CH) and TP204 (R-CH) are sinusoidal. (The operation of VCA can then be checked.)</div><div>6. Shift the frequency of input signal to 5kHz, and make sure that the output signal levels at TP203 (L-CH) and TP204 (R-CH) are increased by about 12dB. (The operation of the Pre-emphasis circuit can then be checked.)</div></div><div></div><div>Fig. 15</div><div></div><div>Fig. 16</div></div></div></div></div>																																																																																																																																																																																													

ITEM	CHECKING METHOD
	<p>4-2 Operation check of VCA circuit and De-emphasis circuit</p> <ol style="list-style-type: none"> 1. The procedure is the same as 1 for the above 4-1 VCA circuit and Pre-emphasis circuit. 2. Short pin ② of IC201 (L-CH) and IC202 (R-CH) to TP207 (ground) as shown in fig. 17. 3. Set the noise reduction selector to disc position. 4. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 5. Make sure that the output signals at TP203 (L-CH) and TP204 (R-CH) are sinusoidal. (The operation of VCA can then be checked.) 6. Change the frequency of input signal to 5 kHz and make sure that the output signal level at TP203 (L-CH) and TP204 (R-CH) is decreased by about 12 dB. (The operation of the De-emphasis circuit can then be checked.)  <p style="text-align: center;">Fig. 17</p>
<p>5 Operation check of RMS FILTER circuit (27 Hz—10 kHz)</p> <p>Condition:</p> <ul style="list-style-type: none"> • Stop mode • Input level controls ... MAX • Noise reduction selector ... disc <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT • Oscilloscope • Resistor (600 Ω) 	<ol style="list-style-type: none"> 1. Make the connections as shown in fig. 18, and apply 100 Hz — 27 dB signal from LINE IN. 2. Set the noise reduction selector to disc position. 3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 4. Make sure that the emitter signal level of Q221 (L-CH) and Q222 (R-CH) is around 300 mV. 5. Change the frequency of input signal to 5 kHz and make sure that the emitter signal of Q221 (L-CH) and Q222 (R-CH) remains at the same level (300 mV).  <p style="text-align: center;">Fig. 18</p>

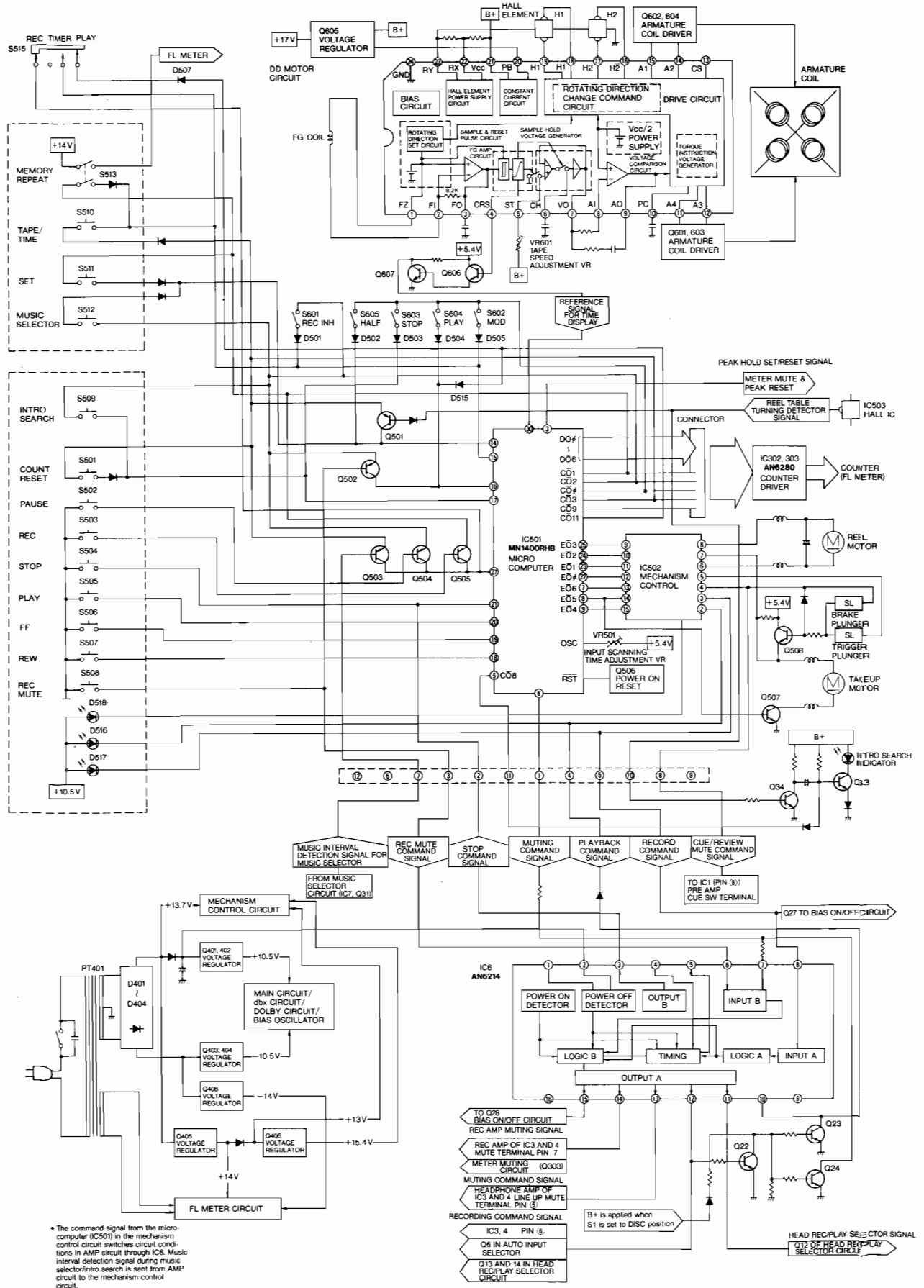
ELECTRICAL PARTS LOCATION



Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
ELECTRICAL PARTS			E 17	QJP03L001T	3Pin Post (L-Type)	[B] Δ QFC1205M		AC Power Cord
E 1	QWY4137Z	Record/Playback Head	E 18	QJP06L001T	6 Pin Post (L-Type)	[For United Kingdom]		
E 2	QWY2138Z	Erase Head	E 19	QJP12L001T	12 Pin Post (L-Type)	[N] Δ RJA522B		AC Power Cord
E 3	QTH1161	Heat Sink	E 20	QJP15L001T	15 Pin Post (L-Type)	[For Asia, Latin America, Middle East and Africa areas.]		
E 4	XSN3+10S	Screw $\Phi 3 \times 10$	E 21	QJP03S001T	3 Pin Post	E 33		
E 5	XWVC3B	Snap Washer	E 22	QJP06S001T	6 Pin Post	[DB] Δ QTF1054		Fuse Holder
E 6	QZE0003	Porcelain Tube	E 23	QJS1921TN	3 Pin Socket	[For all European areas.]		
E 7	QJT1090	Pin Terminal	E 24	QJS1922TN	6 Pin Socket	[N] Δ QTF1060		Fuse Holder
E 8	RME144Z	Cord Clamper	E 25	QJS1923TN	9 Pin Socket	[For Asia, Latin America, Middle East and Africa areas.]		
E 9	XTN3+8B	Tapping Screw $\Phi 3 \times 8$	E 26	QJS1924TNL	12 Pin P.B Socket (L-type)	E 34	QSiFM004F	FL Meter
E 10	SJT777	Pin Terminal	E 27	QJS03001T	3 Pin Socket	E 35	QJT1067	Check Pin
E 11	NO18E	Insulator Plate	E 28	QJS06001T	6 Pin Socket	E 36	QTD1181	Wire Clamper
E 12	XSN3+8S	Screw $\Phi 3 \times 8$	E 29	QJS1924TN	12 Pin P.B Socket	E 37	QJS1961S	Jumper Socket
E 13	XWE3	Washer 3ϕ	E 30	QJS15001T	15 Pin Socket	E 38	QJP1921TN	3 Pin Post
E 14	QJP1922TN	6 Pin Post	E 31	QJT1054	Contact	E 39	QJT1089	Contact
E 15	QJP1923TN	9 Pin Post	E 32					
E 16	QJP1924TN	12 Pin Post						
			[D] Δ SJA88		AC Power Cord			
			[For all European areas except United Kingdom.]					

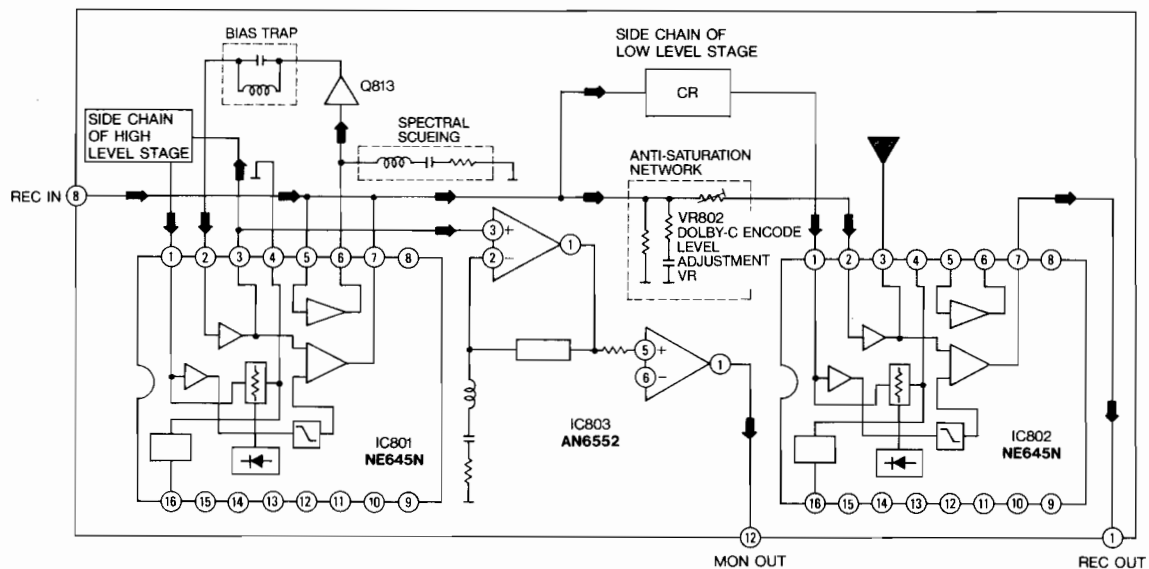
BLOCK DIAGRAM

MECHANISM CONTROL SECTION

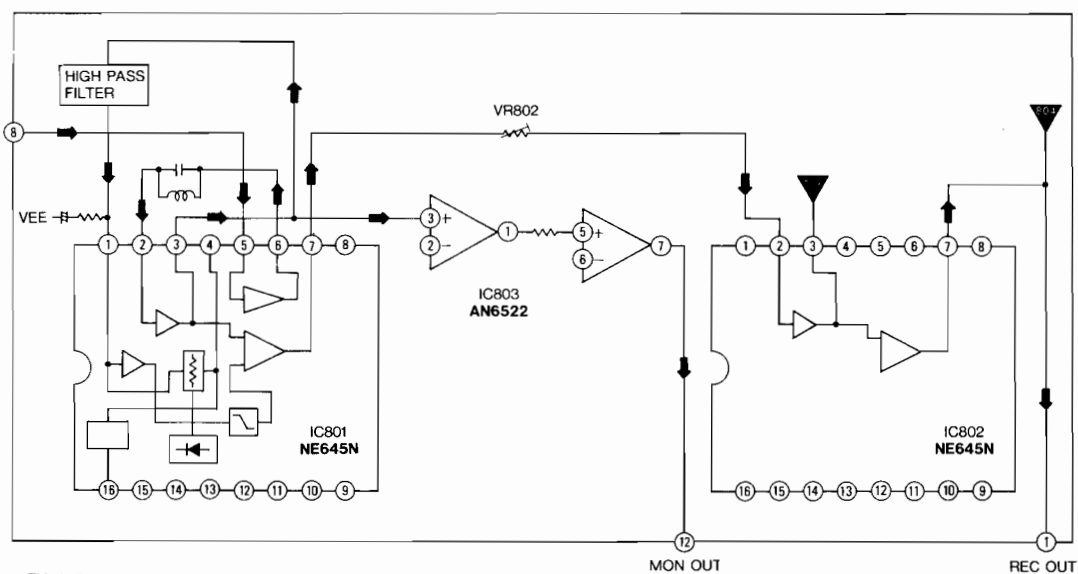


• DOLBY CIRCUIT

DOLBY-C ENCODE MODE (RECORD MODE)

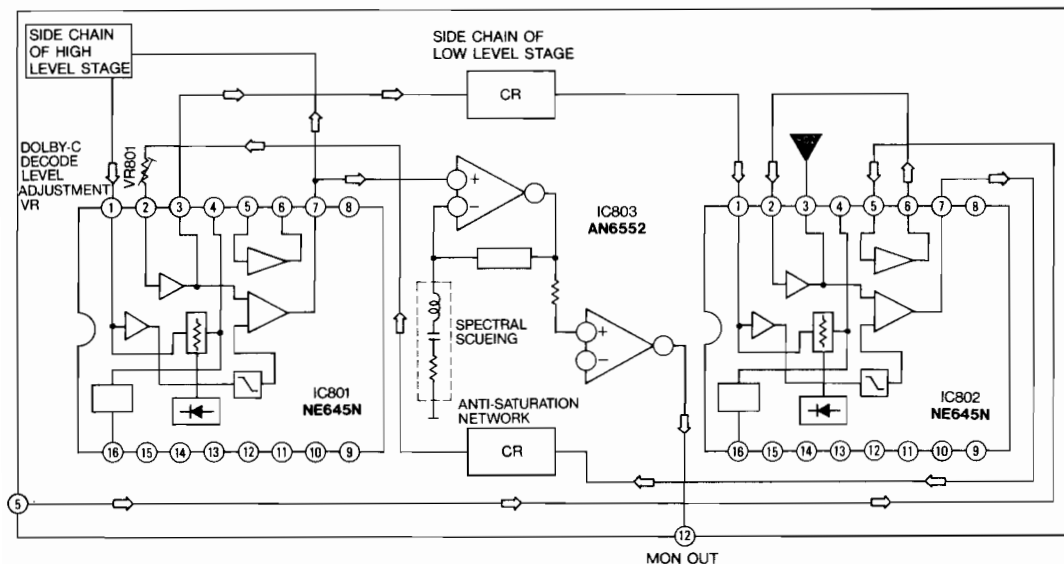


DOLBY-B ENCODE MODE (RECORD MODE)

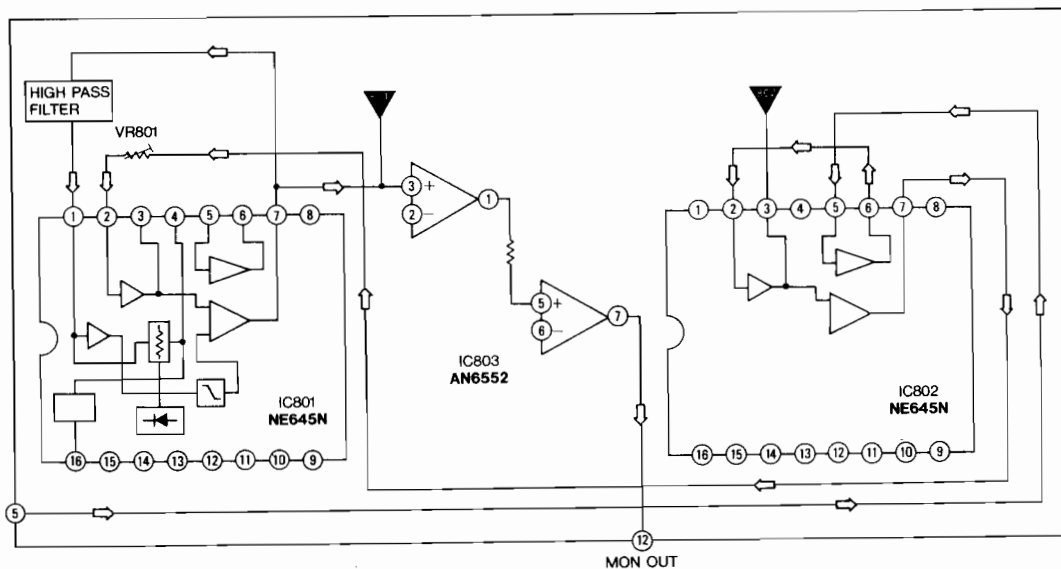


- This indicates the signal flow in the Dolby circuit during record/playback mode at Dolby C and Dolby B settings.
- Change in circuit construction is made by the switching transistors Q801-816 in the Dolby circuit according to the command signal from encode/decode control circuit.

DOLBY-C DECODE MODE (PLAYBACK MODE)

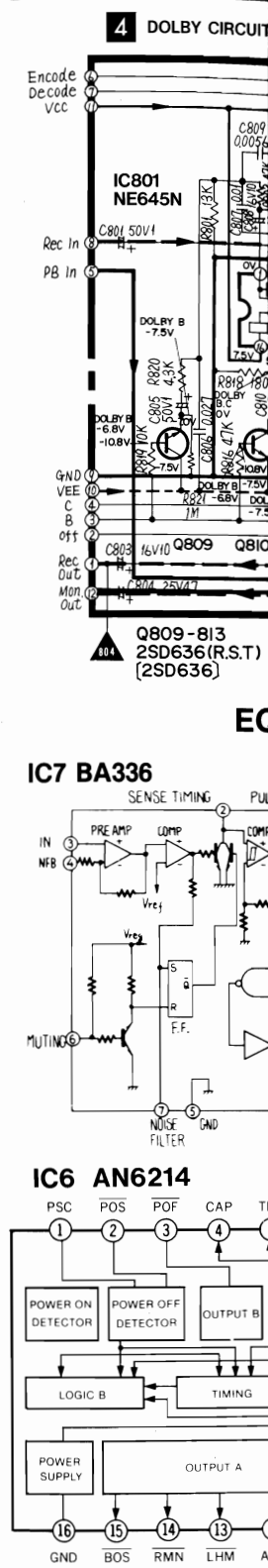
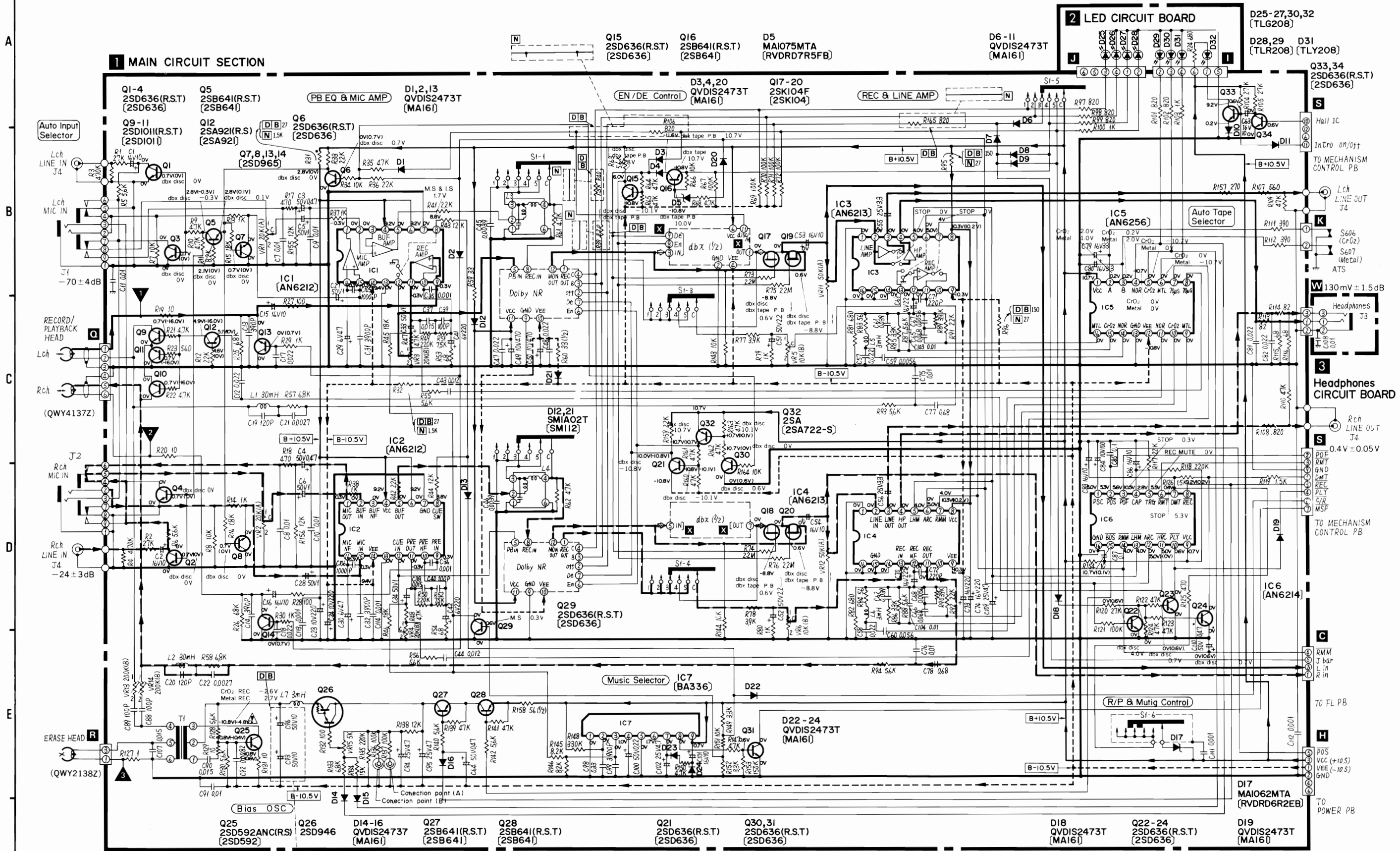


DOLBY-B ENCODE MODE (PLAYBACK MODE)



- Mark \longrightarrow indicates the signal flow during recording.
- Mark \dashrightarrow indicates the signal flow during playback.

SCHEMATIC DIAGRAM



Q26 [2SD946]

	B	C	E
PLAY	-10.8V	-10.8V	-10.8V
Normal	(-3.3V)	(9.3V)	(-4.6V)
CrO ₂	(-1.0V)	(8.8V)	(-2.3V)
Metal	(4.5V)	(7.6V)	(3.1V)

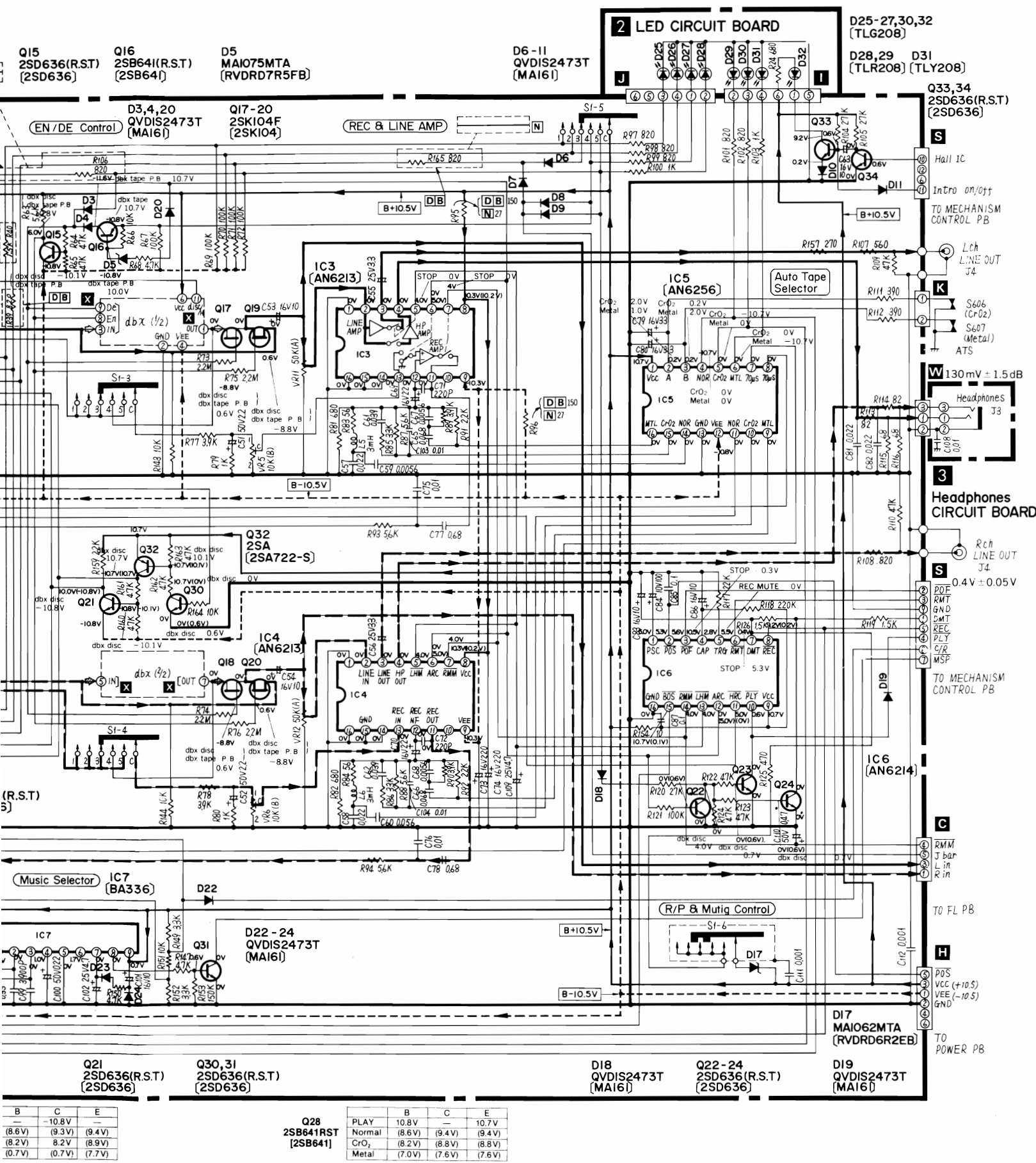
Q27 2SB641RST [2SB641]

	B	C	E
PLAY	-	-10.8V	-
Normal	(8.6V)	(9.3V)	(9.4V)
CrO ₂	(8.2V)	8.2V	(8.9V)
Metal	(0.7V)	(0.7V)	(7.7V)

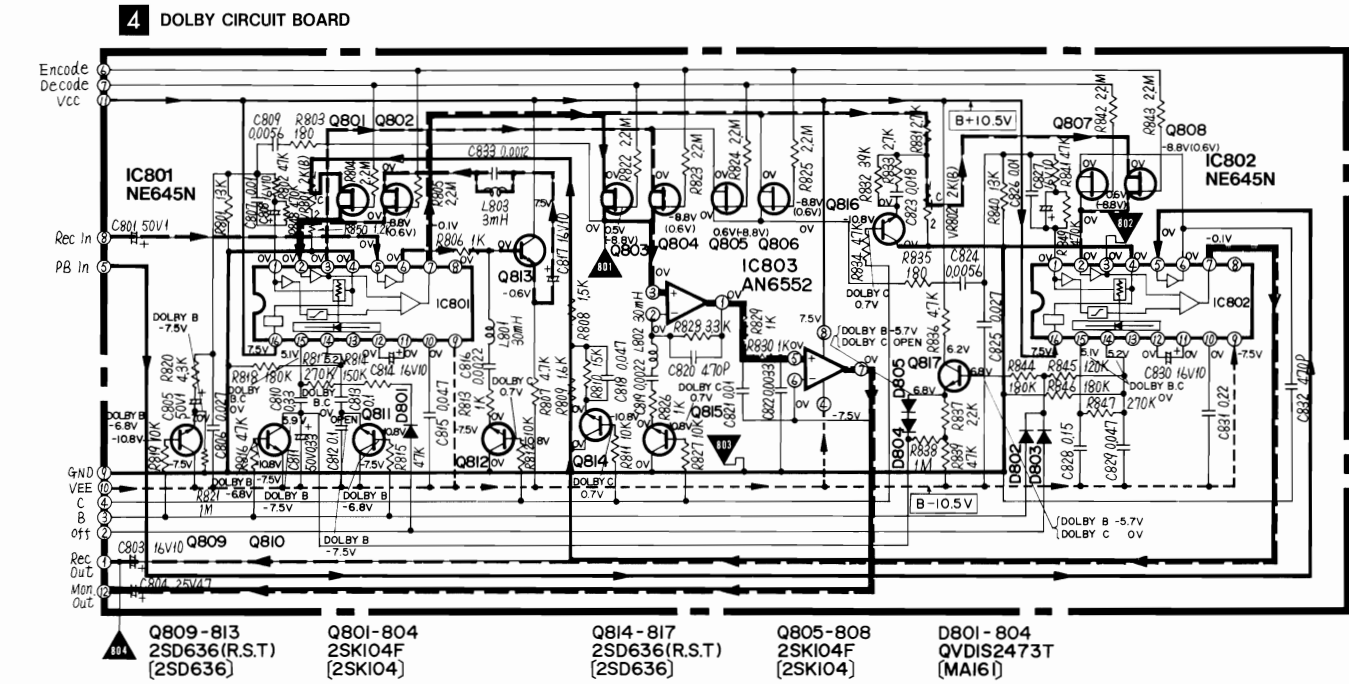
Q28 2SB641RST [2SB641]

	B	C	E
PLAY	10.8V	-	10.7V
Normal	(8.6V)	(9.4V)	(9.4V)
CrO ₂	(8.2V)	(8.8V)	(8.8V)
Metal	(7.0V)	(7.6V)	(7.6V)

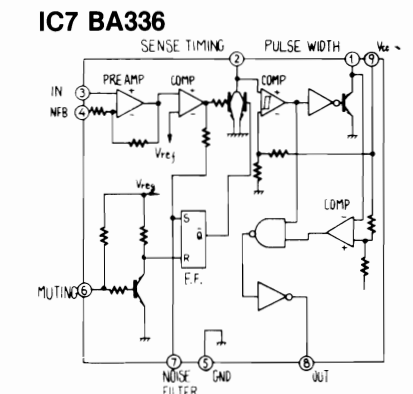
- SPECIFICATIONS**
- * Input
 - * Output
 - Playback S/N ratio
 - * Test tape ... QZZCFM
 - Overall distortion
 - * Test tape
 - ... QZZCRA for Normal
 - ... QZZCRX for CrO₂
 - ... QZZCRZ for Metal
 - Overall S/N ratio
 - * Test tape ... QZZCRA



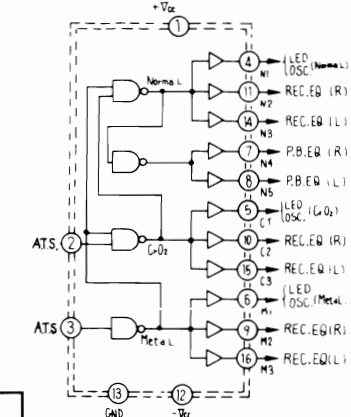
Q28 2SB641RST [2SB641]			Q22-24 2SD636(R.S.T) [2SD636]			D18 QVDIS2473T [MAI61]			D19 QVDIS2473T [MAI61]		
B	C	E	PLAY	B	C	E	PLAY	B	C	E	
(8.6V)	(9.3V)	(9.4V)	Normal	10.8V	(8.6V)	(9.4V)	Normal	10.8V	(8.6V)	(9.4V)	
(8.2V)	8.2V	(8.9V)	CrO ₂	(8.2V)	(8.8V)	(8.8V)	CrO ₂	(7.0V)	(7.6V)	(7.6V)	
(0.7V)	(0.7V)	(7.7V)	Metal	(7.0V)	(7.6V)	(7.6V)	Metal	(7.0V)	(7.6V)	(7.6V)	



EQUIVALENT CIRCUIT



IC5 AN6256 (AUTO TAPE SELECTOR)



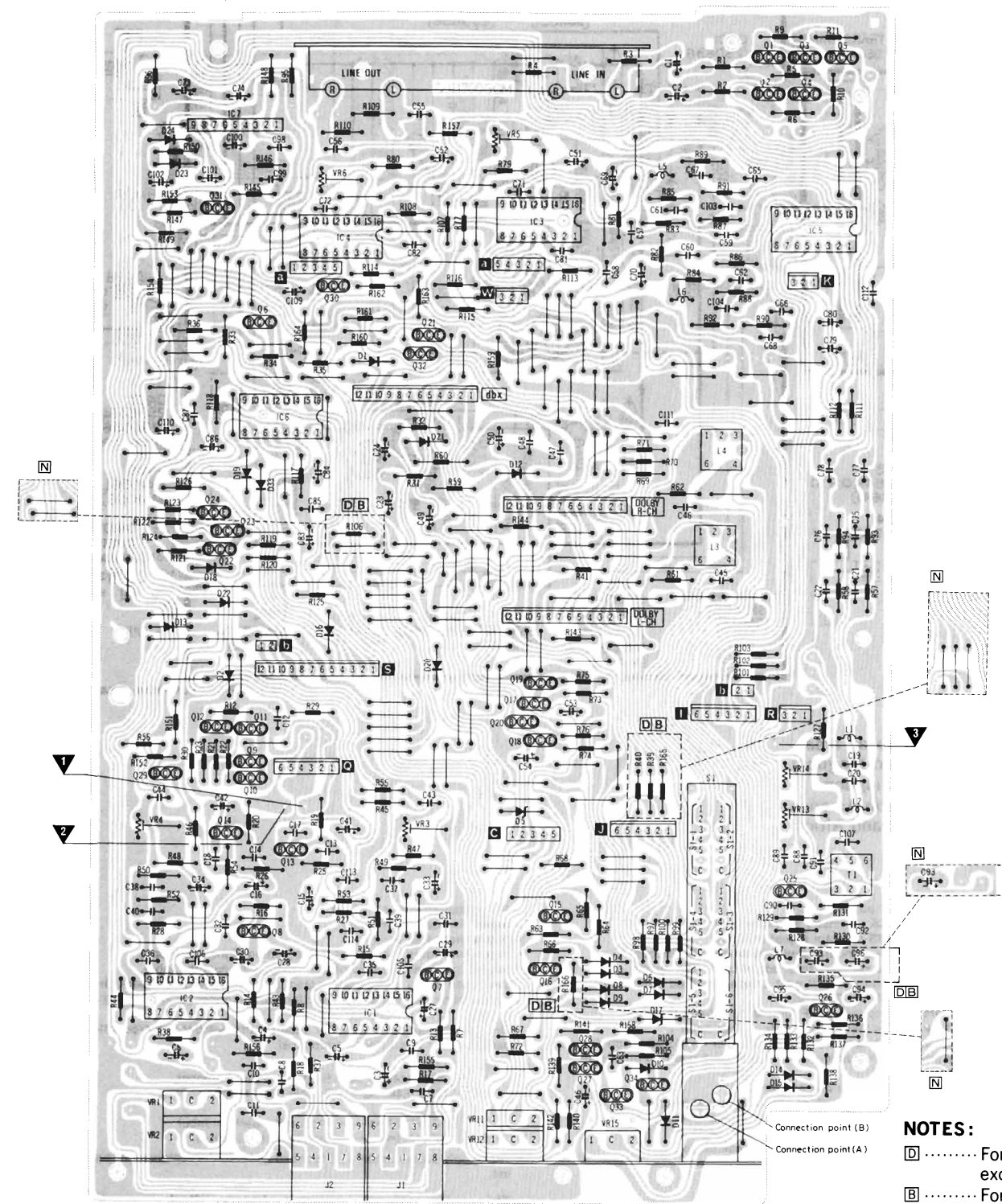
- NOTES:
- S1-1-S1-6 NR select switch (shown in out position) (1 Dolby-C, 2 Dolby-B, 3 NR OUT, 4 dbx Tape, 5 dbx disc)
 - S606 Auto tape select switch (For CrO₂/Normal tape)
 - S607 Auto tape select switch (For Metal tape)
 - VR1, 2 Input level control
 - VR3, 4 Playback gain adjustment VR
 - VR5, 6 Recording gain adjustment VR
 - VR11, 12 Output level control
 - VR13, 14 Bias current adjustment VR
 - VR15 Bias adjust volume
 - VR801 Playback level adjustment VR (Dolby)
 - VR802 Recording gain adjustment VR (Dolby)
 - Connection point (A), (A') Bias current adjustment point.
 - Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000 (Ω), 1M = 1,000 k(Ω).
 - Capacity are in micro-farads (μF) unless specified otherwise.
 - The mark (▼) shows test point, e.g. ▼ = Test point 1.
 - 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
 - dbx disc Voltage values at dbx disc mode
 - dbx tape Voltage values at dbx tape mode
 - dbx tape PB Voltage values at dbx tape and playback mode
 - dbx tape REC Voltage values at dbx tape and record mode
 - CrO₂ Voltage values at CrO₂ tape mode
 - Metal Voltage values at Metal tape mode
 - CrO₂ REC Voltage values at CrO₂ tape and record mode
 - Metal REC Voltage values at Metal tape and record mode
 - STOP Voltage values at STOP mode
 - REC MUTE Voltage values at REC MUTE mode
 - DOLBY B Voltage values at Dolby-B mode
 - DOLBY C Voltage values at Dolby-C mode
 - DOLBY B-C Voltage values at Dolby-B or Dolby-C mode
 - For measurement use VTVM.
 - (▼) indicates B + (bias).
 - (▲) indicates B - (bias).
 - (▶) indicates the flow of the playback signal.
 - (◀) indicates the flow of the recording signal.
 - Described in the schematic diagram are two types of numbers; the supply parts number 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 [MAI61] Supply parts numbers
 - The supply parts number is described alone in the replacement parts list.

SPECIFICATIONS

Playback S/N ratio	Greater than 45dB
* Test tape ... QZZCFM	
Overall distortion	Less than 3%
* Test tape	
... QZZCRA for Normal	
... QZZCRX for CrO ₂	
... QZZCRZ for Metal	
Overall S/N ratio	Greater than 43dB
* Test tape ... QZZCRA	(without NAB filter)

CIRCUIT BOARDS DIAGRAM

1 MAIN CIRCUIT BOARD



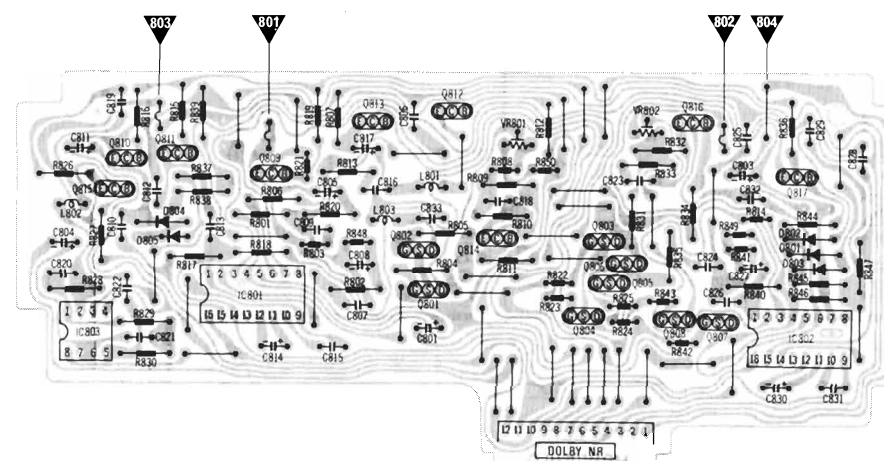
NOTES:

- The circuit shown in on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in 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
- dbx disc Voltage values at dbx disc mode
- dbx tape Voltage values at dbx tape mode
- dbx tape PB Voltage values at dbx tape and playback mode
- dbx tape REC Voltage values at dbx tape and record mode
- CrO₂ Voltage values at CrO₂ tape mode
- Metal Voltage values at Metal tape mode

CrO₂, REC Voltage values at CrO₂ tape and record mode
 Metal REC Voltage values at Metal tape and record mode
 STOP Voltage values at STOP mode
 REC MUTE Voltage values at REC MUTE mode
 DOLBY B Voltage values at Dolby-B mode
 DOLBY C Voltage values at Dolby-C mode
 DOLBY B-C Voltage values at Dolby-B or Dolby-C mode
 MS.IS Voltage values at Intro Search mode
 For measurement use VTVM.

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

4 DOLBY CIRCUIT BOARD



IC1, 2 [AN6212]	IC3 [AN6213]	IC4 [AN6213]
1 0.0V	1 0.0V	1 0.0V
2 0.0V	2 0.0V	2 0.0V
3 0.0V	3 0.0V	3 0.0V
4 9.2V	4 0.0V	4 0.0V
5 0.0V	5 4V STOP	5 4.0V
6 9.2V	6 0.0V (5.0V)	6 0.0V (5.0V)
7 0.0V	7 0.0V (5.0V)	7 4.0V
8 8.8V	8 4V STOP	8 10.3V (10.2V)
9 0.3V	9 10.3V (10.2V)	9 10.3V
10 0.3V	10 0.0V	10 0.0V
11 0.0V	11 0.0V	11 0.0V
12 0.0V	12 0.0V	12 0.0V
13 0.0V	13 0.0V	13 0.0V
14 9.4V	14 0.0V	14 0.0V
15 0.3V	15 0.0V	15 0.0V
16 0.3V	16 0.0V	16 0.0V

IC5 [AN6256]	IC6 [AN6214]
1 10.7V	1 5.0V
2 0.2V CrO ₂	2 5.6V
3 0.2V CrO ₂	3 5.6V
4 0.2V CrO ₂	4 10.5V STOP 0.3V
5 0.2V CrO ₂	5 2.8V
6 10.7V CrO ₂	6 5.5V REC MUTE ON
7 0.0V CrO ₂	7 0.4V STOP 5.3V
8 0.0V CrO ₂	8 9.2V (0.2V)
9 0.0V CrO ₂	9 10.7V
10 0.0V CrO ₂	10 0.6V STOP 1.8V
11 0.0V CrO ₂	11 5.0V (0.0V)
12 0.0V CrO ₂	12 0.0V (5.0V)
13 0.0V CrO ₂	13 4.0V STOP 0.0V
14 0.0V CrO ₂	14 4.0V REC MUTE ON
15 0.0V CrO ₂	15 10.7V (0.1V)
16 0.0V CrO ₂	16 0.0V

IC7 [BA336]	Q22 2SD636RST [2SD636]	Q12 2SA921RS [2SA921]
1 0.0V	B 0.0V (0.6V)	B 4.6V (0.0V)
2 0.0V	C 0.0V (0.6V)	C 4.9V (-16.0V)
3 0.0V	E 0.0V	E 5.1V (0.0V)
4 1.0V		
5 0.0V		
6 1.7V		
7 0.0V		
8 0.0V		
9 10.7V		

Q1, 2, 3, 4 2SD636RST [2SD636]	Q5 2SB641RST [2SB641]	Q16 2SB641RST [2SB641]
B 0.7V (0.0V) dbx disc	B 2.1V (0.0V) dbx disc	B 10.8V dbx tape P.B.
C 0.0V	C 2.8V (-0.3V) dbx disc	C -11.6V dbx tape P.B.
E 0.0V	E 2.8V (0.1V) dbx disc	E -10.8V dbx tape P.B.

Q6 2SD636RST [2SD636]	Q17, 18 2SK104F [2SK104]
B 0.0V (0.7V) dbx disc	B -10.8V dbx disc
C 0.0V	C 2.8V (-0.3V) dbx disc
E 0.0V	E 2.8V (0.1V) dbx disc

Q7, 8 [2SD965]	Q19, 20 2SK104F [2SK104]
B 0.7V (0.0V) dbx disc	B 0.6V dbx disc
C 0.0V	C 10.0V (-10.8V) dbx disc
E 0.0V	E -10.8V (-10.8V) dbx disc

Q9, 10, 11 2SD1011RST [2SD1011]	Q21 2SD636RST [2SD636]
B 0.7V (-16.0V)	B -10.8V (-10.1V) dbx disc
C 0.0V	C 10.0V (-10.8V) dbx disc
E 0.0V	E -10.8V (-10.8V) dbx disc

Q15 2SD636RST [2SD636]	Q23 2SD636RST [2SD636]
B -10.8V dbx disc	B 0.0V (0.6V) dbx disc
C 6.0V dbx disc	C 0.0V
E -10.8V	E 0.0V

Q24 2SD636RST [2SD636]	Q33 2SD636RST [2SD636]
B 0.0V (0.6V) dbx disc	B 0.0V
C 0.0V	C 9.2V
E 0.0V	E 0.2V

Q31 2SD636RST [2SD636]	Q32 2SB641RST [2SB641]
B 0.0V	B 10.7V (10.1V) dbx disc
C 0.0V	C -10.7V (10.7V) dbx disc
E 0.6V	E 10.7V

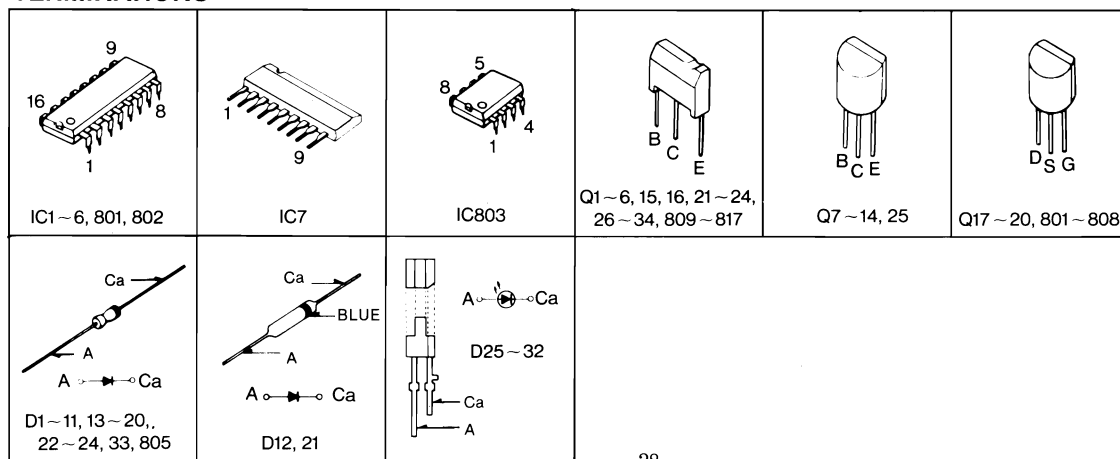
Q34 2SD636RST [2SD636]	Q81 2SD636RST [2SD636]
B 0.0V	B -10.8V DOLBY B
C 0.0V	C -7.5V
E 0.0V	E -7.5V

Q82 2SK104F [2SK104]	Q83 2SK104F [2SK104]
B -8.8V dbx disc	B -8.8V dbx disc
C 0.0V	C 0.0V
E 0.0V	E 0.0V

Q84 2SK104F [2SK104]	Q85, 807 2SK104F [2SK104]
B -8.8V dbx disc	B -8.8V dbx disc
C 0.0V	C 0.0V
E 0.0V	E 0.0V

Q86, 808 2SK104F [2SK104]	Q89 2SD636RST [2SD636]
B -8.8V dbx disc	B -10.8V DOLBY B
C 0.0V	C -7.5V
E 0.0V	E -7.5V

TERMINATIONS



NOTES: RESISTORS

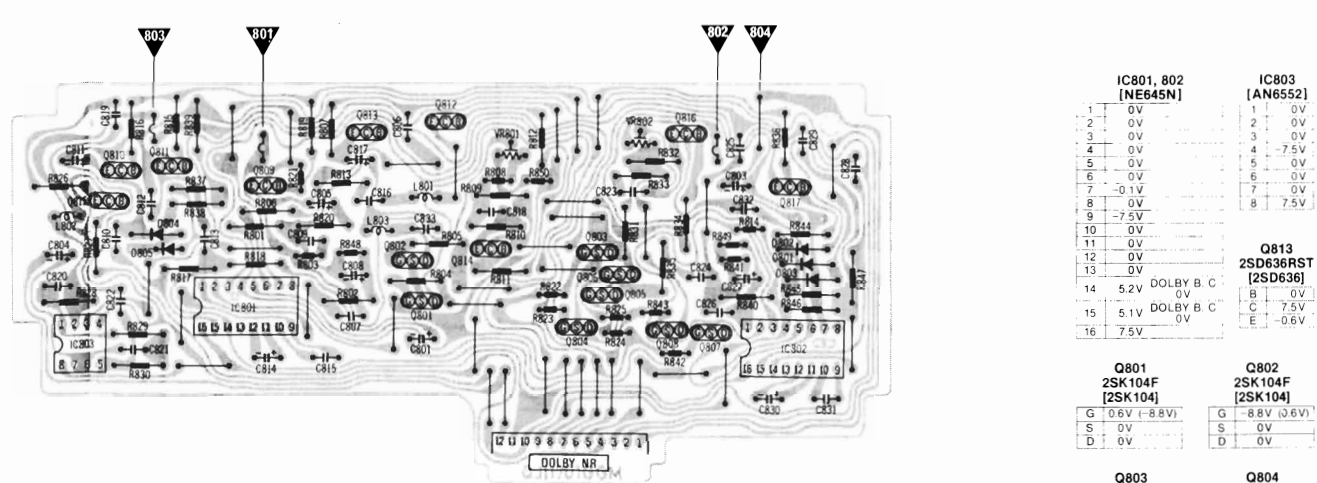
ERD Carbon
 ERG Metal-oxide
 ERS Metal-oxide
 ERO Metal-film
 ERX Metal-film
 ERQ Fuse type metal
 ERC Solid
 ERF Cement

REPLACEMENT PARTS LIST

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

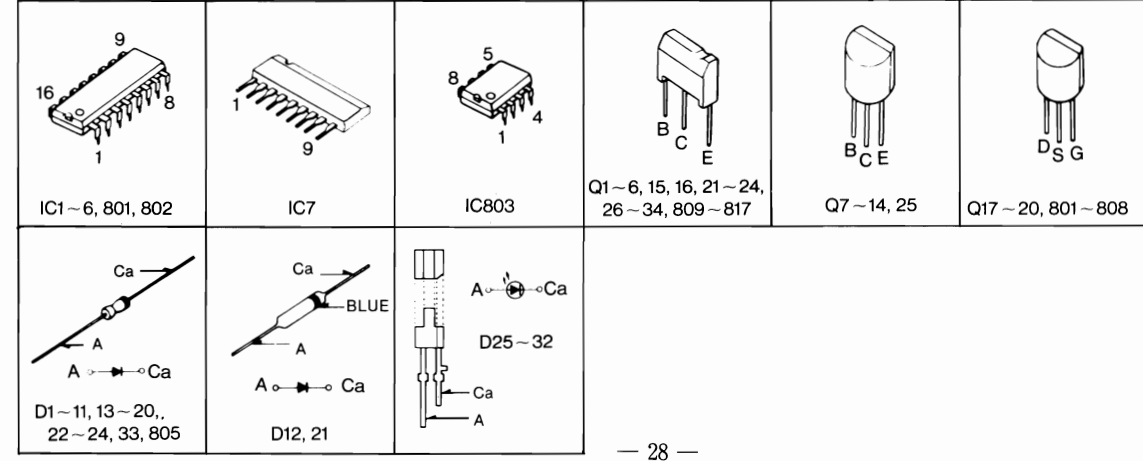
Ref No.	Part No.	Ref No.
RESISTORS		
R 1, 2	ERD25TJ273	R 96 [D]
R 3, 4	ERD25TJ474	[For
R 5, 6	ERD25FJ562	Midd
R 7, 8	ERD25FJ103	area
R 9, 10	ERD25FJ472	R 97, 98
R 11	ERD25FJ822	
R 12	ERD25TJ223	R 100
R 13, 14	ERD25FJ102	R 101
R 15, 16	ERD25FJ182	R 103
R 17, 18	ERD25FJ471	
R 19, 20	ERD25FJ100	R 104
R 21, 22	ERD25FJ472	R 106 [D]
R 23	ERD25FJ561	[For
R 24	ERD25FJ681	R 107
R 25, 26	ERD25TJ683	R 108
R 27, 28	ERD25FJ101	R 109
R 29, 30	ERD25FJ102	R 111
R 31 [DB]	ERQ14AJ270	R 113
[For all European areas.]		
[N] ERD25FJ152		
[For Asia, Latin America, Middle East and Africa areas.]		
R 32 [DB]	ERQ14AJ270	R 120
[For all European areas.]		
[N] ERD25FJ152		
[For Asia, Latin America, Middle East and Africa areas.]		
R 33	ERD25FJ222	R 125
R 34	ERD25FJ103	R 126
R 35	ERD25TJ473	R 127
R 36	ERD25TJ223	R 128
R 37	ERD25FJ102	R 129
R 38	ERD25FJ102	R 130
R 39 [DB]	ERD25FJ821	R 131
R 40 [DB]	ERD25FJ152	R 132
[For all European areas.]		
R 41, 42	ERD25FJ222	R 133
R 43, 44	ERD25TJ123	R 134
R 45, 46	ERD25TJ183	R 135
R 47, 48	ERD25FJ472	R 136
R 49, 50	ERD25TJ224	R 137
R 51, 52	ERD25FJ562	R 138
R 53, 54	ERD25FJ680	R 139
R 55, 56	ERD25FJ562	R 140
R 57, 58	ERD25FJ682	R 141
R 59 [DB]	ERQ14AJ330	R 142
[For all European areas.]		
[N] ERD25FJ330		
[For Asia, Latin America, Middle East and Africa areas.]		
R 60	ERQ14AJ330	R 143
R 61, 62	ERD25FJ472	R 144
R 63	ERD25FJ562	R 145
R 64, 65	ERD25FJ473	R 146
R 66	ERD25FJ103	R 147
R 67	ERD25TJ104	R 148
R 68	ERD25FJ472	R 149
R 69, 70, 71, 72	ERD25TJ104	R 150
R 73, 74, 75, 76	ERD25TJ225	R 151
R 77, 78	ERD25FJ392	R 152
R 79, 80	ERD25FJ102	R 153
R 81, 82	ERD25FJ681	R 154
R 83, 84	ERD25FJ560	R 155
R 85, 86	ERD25FJ332	R 157
R 87, 88	ERD25FJ562	R 158
R 89, 90	ERD25FJ392	R 159
R 91, 92	ERD25FJ222	R 160
R 93, 94	ERD25FJ562	
R 95 [DB]	ERQ14AJ151	
[For all European areas.]		
[N] ERD25FJ270		
[For Asia, Latin America, Middle East and Africa areas.]		

4 DOLBY CIRCUIT BOARD



IC1, 2 [AN6212] 1 0V 2 0V 3 0V 4 9.2V 5 0V 6 9.2V 7 0V 8 8.8V 9 -0.3V 10 -0.3V 11 0V 12 0V 13 0V 14 -9.4V 15 -0.3V 16 -0.3V	IC3 [AN6213] 1 0V 2 0V 3 0V 4 0V 5 4V 6 0V 7 4V 8 10.3V 9 10.3V 10 0V 11 0V 12 0V 13 0V 14 0V 15 0V 16 0V	IC4 [AN6213] 1 0V 2 0V 3 0V 4 0V 5 4V 6 0V 7 4V 8 10.3V 9 10.3V 10 0V 11 0V 12 0V 13 0V 14 0V 15 0V 16 0V	Q1, 2, 3, 4 2SD636RST [2SD636] B 0.7V (0V) dbx disc C 0V D 0V	Q16 2SB641RST [2SB641] B -10.8V dbx tape PB C -11.6V dbx tape PB D -10.8V dbx tape PB	Q25 2SD592ANCRS [2SD592] B -10.8V (-10.4V) C -10.8V (-4.8V) E -10.8V (-10.6V)	Q26 [2SD946] PLAY -10.8V -10.8V -10.8V Normal (-3.3V) (9.3V) (-4.6V) CrO ₂ (-1.0V) (8.8V) (-2.3V) Metal (-4.5V) (7.6V) (-3.1V)	Q27 2SB641RST [2SB641] B -10.8V DOLBY B C -7.5V DOLBY B E -7.0V DOLBY B	Q28 2SB641RST [2SB641] B -10.8V DOLBY B C -7.5V DOLBY B E -7.5V DOLBY B	Q29 2SD636RST [2SD636] B 0.6V C 0V E 0.6V	Q30 [2SA722-S] B 0V (0.6V) dbx disc C 10.7V (0V) dbx disc E 0V	Q31 2SD636RST [2SD636] B 0V C 0V E 0.6V	Q32 2SB641RST [2SB641] B 10.7V (10.1V) dbx disc C 10.7V (10.7V) dbx disc E 10.7V	Q33 2SD636RST [2SD636] B 0.6V C 0V E 0.6V	Q34 2SD636RST [2SD636] B 0.6V C 0V E 0.6V	Q35, 807 2SK104F [2SK104] G 0.6V (-8.8V) S 0V D 0V	Q806, 808 2SK104F [2SK104] G -8.8V (-8.8V) S 0V D 0V	Q809 2SD636RST [2SD636] B -10.8V DOLBY B C -7.5V DOLBY B E -7.0V DOLBY B	Q810 2SD636RST [2SD636] B -10.8V DOLBY B C -7.5V DOLBY B E -7.5V DOLBY B	Q811 2SD636RST [2SD636] B -10.8V DOLBY B C -7.5V DOLBY B E -7.5V DOLBY B	Q812, 814, 815, 816 2SD636RST [2SD636] B -10.8V DOLBY B C -7.5V DOLBY B E -7.5V DOLBY B	Q817 2SD636RST [2SD636] B 6.8V DOLBY B -5.7V C 6.2V DOLBY B -5.7V E 6.8V DOLBY B -5.7V
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TERMINATIONS



NOTES: RESISTORS	CAPACITORS
ERD.....Carbon	ECBA.....Ceramic
ERG.....Metal-oxide	ECG.....Ceramic
ERS.....Metal-oxide	ECK.....Ceramic
ERO.....Metal-film	ECC.....Ceramic
ERX.....Metal-film	ECF.....Ceramic
ERQ.....Fuse type metallic	ECQM.....Polyester film
ERC.....Solid	ECQE.....Polyester film
ERF.....Cement	ECQF.....Polypropylene

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.	Part No.
RESISTORS					CAPACITORS				
R 1, 2	ERD25TJ273	R 96 [DB]	ERQ14AJ151 [For all European areas.]	R 229, 230	ERD25FJ332	[N] Δ	ERX12ANJ2R7 [For Asia, Latin America, Middle East and Africa areas.]	R 603	ERD25TJ153
R 3, 4	ERD25TJ474	[N]	ERD25FJ270 [For Asia, Latin America, Middle East and Africa areas.]	R 231, 232	ERD25TJ473	R 404	ERD25FJ102	R 604	ERD25TJ273
R 5, 6	ERD25FJ562	R 97, 98, 99	ERD25FJ821	R 233, 234, 235, 236	ERD25TJ104	R 405	ERD25FJ222	R 605, 606	ERD25FJ472
R 7, 8	ERD25FJ103	R 100	ERD25FJ102	R 237, 238	ERD25TJ103	R 406 [DB]	ERD25FJ561	R 607	ERD25TJ333
R 9, 10	ERD25FJ472	R 101, 102	ERD25FJ821	R 239, 240	ERD25TJ333	[For all European areas.]	ERD25FJ102	R 608, 609	ERD25FJ682
R 11	ERD25FJ822	R 103	ERD25FJ102	R 241, 242	ERD25FJ102	[N]	ERD25FJ122	R 611	ERD25CKG9312
R 12	ERD25TJ223	R 104, 105	ERD25TJ273	R 243, 244	ERD25TJ473	[For Asia, Latin America, Middle East and Africa areas.]	ERD25FJ103	R 612, 613, 614, 615	ERD25FJ471
R 13, 14	ERD25FJ102	R 106 [DB]	ERD25FJ821	R 245, 246	ERD25FJ101	R 407	ERD25FJ472	R 616, 617, 618, 619	ERD25FJ103
R 15, 16	ERD25FJ182	[For all European areas.]	ERD25FJ102	R 247, 248	ERD25TJ473	R 408	ERD25FJ562	R 620	ERD50FJ1R0
R 17, 18	ERD25FJ471	R 107	ERD25FJ561	R 249, 250	ERD25FJ103	R 409	ERD25FJ103	R 621	ERD25FJ150
R 19, 20	ERD25FJ100	R 108	ERD25FJ821	R 251, 252	ERD25FJ102	R 410 [DB]	ERD25FJ103	R 622, 623	ERD25FJ270
R 21, 22	ERD25FJ472	R 109, 110	ERD25TJ473	R 253, 254	ERD25FJ392	[For all European areas.]	ERD25FJ103	R 624	ERD25FJ391
R 23	ERD25FJ561	R 111, 112	ERD25FJ391	R 255, 256	ERD25TJ333	R 411	ERD25FJ102	R 625	ERQ14AJ680
R 24	ERD25FJ681	R 113, 114	ERD25FJ820	R 257, 258	ERD25TJ104	R 412	ERD25FJ222	R 626	ERQ14AJ391
R 25, 26	ERD25FJ683	R 115, 116	ERD25FJ680	R 259, 260	ERD25FJ472	R 413	ERD25FJ102	R 628	ERD25TJ473
R 27, 28	ERD25FJ101	R 117	ERD25TJ223	R 261, 262	ERD25TJ333	[DB] Δ	ERQ12AJ4R7 [For all European areas.]	R 629	ERD25FJ272
R 29, 30	ERD25FJ102	R 118	ERD25TJ224	R 263, 264	ERD25FJ682	[N] Δ	ERX12ANJ4R7 [For Asia, Latin America, Middle East and Africa areas.]	R 801	ERD25TJ133
R 31 [DB]	ERQ14AJ270	R 119	ERD25FJ152	R 265, 266	ERD25FJ472	R 802	ERD25TJ473	R 803	ERD25TJ181
[For all European areas.]	ERD25FJ152	R 120	ERD25TJ273	R 267, 268	ERD25FJ472	R 804, 805	ERD25TJ225	R 806	ERD25FJ102
[N]	ERD25FJ152	R 121	ERD25TJ104	[DB] Δ	ERQ12HJ220 [For all European areas.]	R 807	ERD25FJ102	R 808	ERD25FJ472
[For Asia, Latin America, Middle East and Africa areas.]	ERD25FJ152	R 122, 123, 124	ERD25TJ104	[N]	ERD25FJ220 [For Asia, Latin America, Middle East and Africa areas.]	R 809	ERD25FJ162	R 810	ERD25FJ162
R 32 [DB]	ERQ14AJ270	R 125	ERD25TJ473	R 269, 270	ERD25TJ393	R 811, 812	ERD25FJ103	R 813	ERD25FJ102
[For all European areas.]	ERD25FJ152	R 126	ERD25FJ471	R 271, 272	ERD25TJ223	[For all European areas.]	ERD25FJ102	R 814	ERD25TJ154
R 33	ERD25FJ222	R 127	ERD25FJ1R0	R 273, 274	ERD25FJ332	[N]	ERD25FJ8R2 [For Asia, Latin America, Middle East and Africa areas.]	R 815, 816	ERD25TJ473
R 34	ERD25FJ103	R 128	ERD25FJ562	R 275, 276	ERD25TJ333	R 414	ERD25TJ823	R 817	ERD25TJ274
R 35	ERD25TJ473	R 129	ERD25FJ100	R 277, 278	ERD25TJ394	R 415	ERD25FJ103	R 818	ERD25TJ184
R 36	ERD25TJ223	R 130	ERD25FJ562	R 279, 280	ERD25FJ102	R 416	ERD25FJ391	R 819	ERD25FJ103
R 37	ERD25FJ102	R 131	ERD25FJ100	R 281, 282	ERD25FJ8R2	R 417 [DB]	ERQ12AJ8R2 [For all European areas.]	R 820	ERD25FJ432
R 38	ERD25FJ102	R 132	ERD25FJ101	R 283, 284	ERD25TJ333	[N]	ERD25FJ8R2 [For Asia, Latin America, Middle East and Africa areas.]	R 821	ERD25TJ105
R 39 [DB]	ERD25FJ821	R 133	ERD25FJ682	R 285	ERD25FJ103	R 418	ERD25TJ274	R 822, 823, 824, 825	ERD25TJ225
[For all European areas.]	ERD25FJ152	R 134	ERD25TJ153	R 287	ERD25FJ392	[DB] Δ	ERQ12AJ2R2 [For all European areas.]	R 826	ERD25FJ102
[N]	ERD25FJ152	R 135	ERD25TJ224	R 289, 290	ERD25FJ103	[N] Δ	ERX12ANJ2R2 [For Asia, Latin America, Middle East and Africa areas.]	R 827	ERD25FJ103
[For all European areas.]	ERD25FJ152	R 136, 137	ERD25TJ104	R 291, 292	ERD25FJ155	[For all European areas.]	ERD25FJ102	R 828	ERD25FJ332
R 41, 42	ERD25FJ222	R 138	ERD25TJ123	R 301, 302, 303, 304	ERD25FJ471	R 419 Δ	ERD50FJ221	R 829, 830	ERD25FJ102
R 43, 44	ERD25TJ123	R 139	ERD25TJ473	R 305 [DB]	ERQ1ANJ221 [For all European areas.]	R 420	ERD25FJ221	R 831	ERD25FJ272
R 45, 46	ERD25FJ183	R 140	ERD25FJ562	[N]	ERD50FJ221 [For Asia, Latin America, Middle East and Africa areas.]	R 421	ERD25FJ100	R 832	ERD25TJ393
R 47, 48	ERD25FJ472	R 141	ERD25TJ473	[For all European areas.]	ERD50FJ221	R 422	ERD25FJ122	R 833	ERD25FJ272
R 49, 50	ERD25TJ224	R 142	ERD25FJ562	R 145, 146	ERD25FJ822	R 423	ERD25FJ102	R 834	ERD25TJ473
R 51, 52	ERD25FJ752	R 143, 144	ERD25FJ103	R 147	ERD25TJ473	R 424 [DB]	ERD25FJ103	R 835	ERD25FJ181
R 53, 54	ERD25FJ680	R 145, 146	ERD25FJ822	R 148	ERD25TJ334	[For all European areas.]	ERD25FJ102	R 836	ERD25FJ472
R 55, 56	ERD25FJ562	R 147	ERD25TJ473	R 149	ERD25FJ332	[N]	ERD25FJ151 [For Asia, Latin America, Middle East and Africa areas.]	R 837	ERD25FJ222
R 57, 58	ERD25FJ682	R 150	ERD25FJ472	R 151	ERD25FJ103	R 425 [DB]	ERD25TJ333	R 838	ERD25TJ105
R 59 [DB]	ERQ14AJ330	R 152	ERD25FJ332	R 153	ERD25TJ154	[For all European areas.]	ERD25FJ103	R 839	ERD25TJ473
[For all European areas.]	ERD25FJ152	R 154	ERQ14AJ100	R 155, 156	ERD25TJ123	R 426, 427	ERX12ANJ271 [For all European areas.]	R 840	ERD25TJ133
[N]	ERD25FJ152	R 157	ERD25FJ271	R 157	ERD25FJ271	[DB] Δ	ERQ12AJ2R7 [For all European areas.]	R 841	ERD25TJ473
[For Asia, Latin America, Middle East and Africa areas.]	ERD25FJ152	R 158	ERD50FJ560	R 158	ERD50FJ560	[N]	ERD25FJ100 [For Asia, Latin America, Middle East and Africa areas.]	R 842, 843	ERD25TJ225
R 60	ERQ14AJ330	R 159	ERD25TJ223	R 160, 161, 162, 163	ERD25TJ473	R 502, 503, 504, 505	ERD25TJ184	R 844	ERD25TJ184
R 61, 62	ERD25FJ472	R 164	ERD25FJ103	R 164	ERD25FJ103	R 506	ERD25TJ273	R 845	ERD25TJ124
R 63	ERD25FJ562	R 165, 166	ERD25FJ821	R 165, 166	ERD25FJ821	R 507	ERD25FJ271	R 846	ERD25TJ184
R 64, 65	ERD25TJ473	[DB]	ERD25FJ821	[DB]	ERD25FJ821	R 508	ERD25FJ331	R 847	ERD25TJ274
R 66	ERD25FJ103	[For all European areas.]	ERD25FJ104	[For all European areas.]	ERD25FJ104	R 509	ERD25FJ271	R 848, 849	ERD25TJ474
R 67	ERD25TJ104	R 201, 203	ERD25FJ104	[For Asia, Latin America, Middle East and Africa areas.]	ERD25FJ104	R 510	ERD25FJ331	R 850	ERD25FJ122
R 68	ERD25FJ472	R 205, 206	ERD25FJ101	R 207, 208	ERD25FJ474	R 511	ERD25FJ271		
R 69, 70, 71, 72	ERD25TJ104	R 209, 210	ERD25TJ105	R 211, 212	ERD25TJ124	R 512	ERD25TJ104		
R 73, 74, 75, 76	ERD25TJ225	R 213, 214	ERD25TJ473	R 215, 216	ERD25FJ472	R 513	ERD25TJ223		
R 77, 78	ERD25FJ392	R 217, 218	ERD25TJ473	R 219, 220	ERD25TJ333	R 514	ERD25FJ562		
R 79, 80	ERD25FJ102	R 221, 222	ERD25FJ103	R 223, 224	ERD25TJ473	R 515	ERD25FJR47		
R 81, 82	ERD25FJ681	R 225, 226	ERD25FJ470	R 227, 228	ERD25TJ124	R 516	ERD25FJ1R5		
R 83, 84	ERD25FJ560					R 517	ERD25FJ222		
R 85, 86	ERD25FJ332					R 520	ERD25FJ103		
R 87, 88	ERD25FJ562					R 523	ERD25FJ222		
R 89, 90	ERD25FJ392					R 524, 525	ERD25FJ272		
R 91, 92	ERD25FJ222					R 526	ERD25FJ562		
R 93, 94	ERD25FJ562					R 527	ERD25FJ471		
R 95 [DB]	ERQ14AJ151					R 528	ERD25TJ184		
[For all European areas.]	ERD25FJ151					R 601	ERD25FJ221		
[N]	ERD25FJ270					R 602	ERD25TJ273		
[For Asia, Latin America, Middle East and Africa areas.]	ERD25FJ270								

VARIABLE RESISTORS

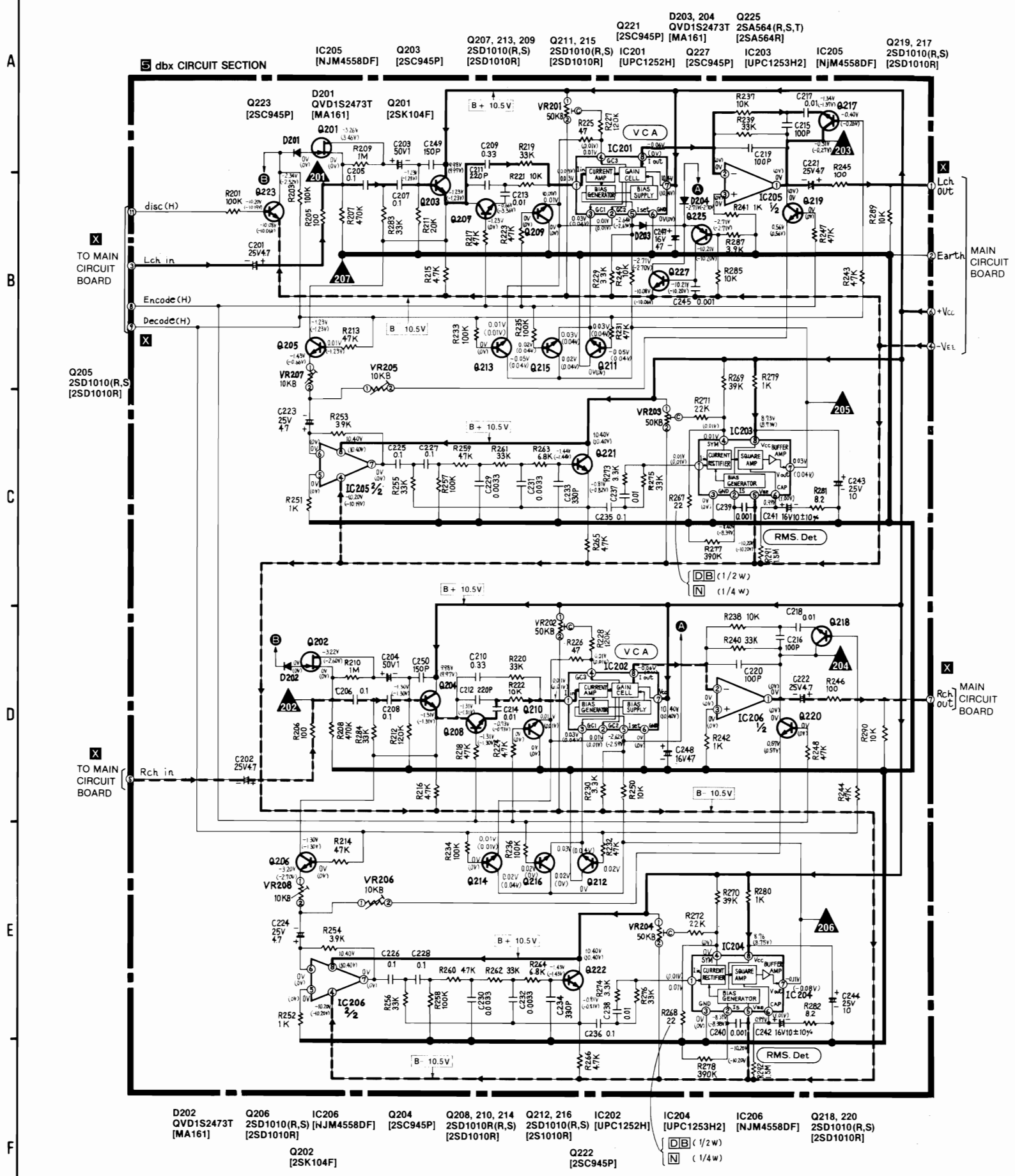
VR 1, 2	EWJSEAF22A24	VR 201, 202, 203, 204	EVNM0AA00B54
VR 3, 4	EVNM0AA00B24	VR 205, 206, 207, 208	EVNM0AA00B14
VR 5, 6	EVNM0AA00B14	VR 301	EVNM0AA00B24
VR 11, 12	QWKGTA02A454	VR 302	EVNM0AA00B43
VR 13, 14	EVNM0AA00B25	VR 501	EVNM0AA00B14
VR 15	EVH4KA084B53		
VR 201, 202, 203, 204	EVNM0AA00B54		
VR 205, 206, 207, 208	EVNM0AA00B14		
VR 301	EVNM0AA00B24		
VR 302	EVNM0AA00B43		
VR 501	EVNM0AA00B14		

REPLACEMENT PARTS LIST

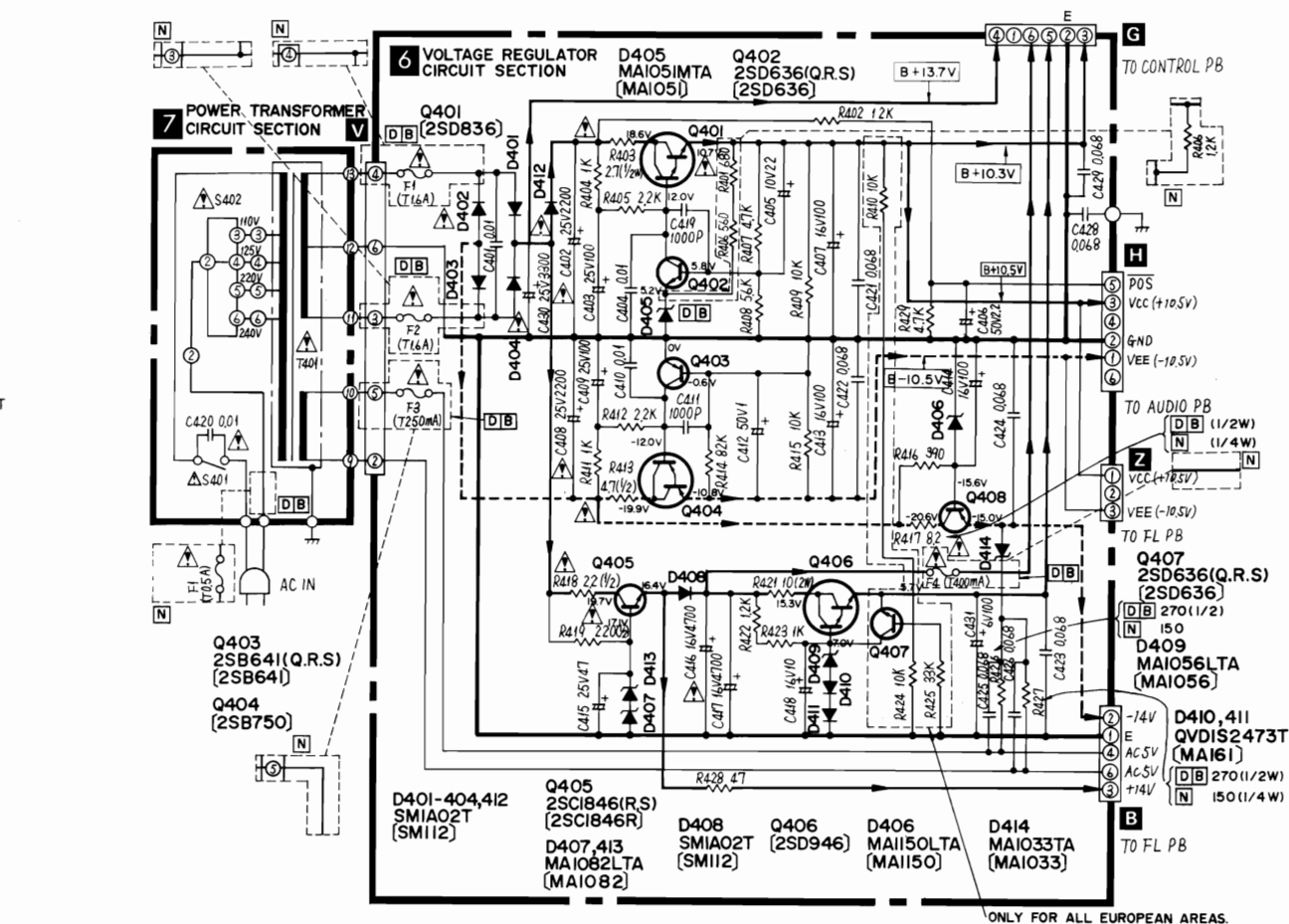
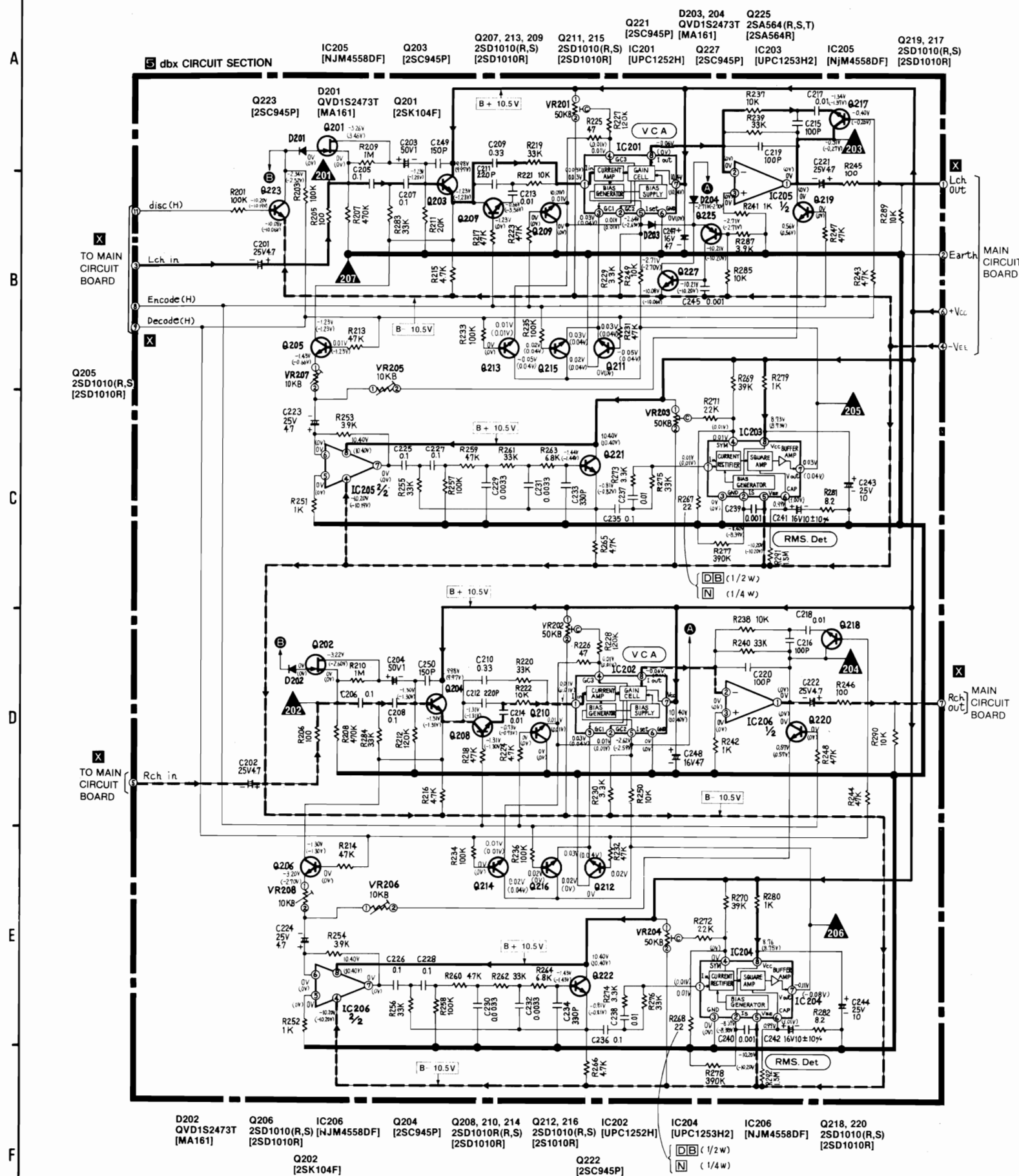
Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref No.	Part No.	Ref No.	Part No.	Ref No.	Part No.	Ref No.	Part No.	Part Name & Description
C 209, 210	ECQV05334JZ	C 810	ECQV05334JZ	Q 605	2SA886-Q	COILS		
C 211, 212	ECCD1H221K	C 811	ECEA50ZR33	Q 606, 607	2SD636	L 1, 2	QLQX0343KWA	Bias Trap Coil
C 213, 214	ECQM1H103JZ	C 812, 813	ECQM1H104JZ			L 3, 4	QLM929K	MPX Filter
C 215, 216	ECCD1H101K	C 814	ECEA1HS100	Q 801, 802, 803, 804, 805, 806,		L 5, 6, 7	QLQX0332KWA	Peaking Coil
C 217, 218	ECQM1H103JZ	C 815	ECQM1H473JZ	Q 809, 810, 811, 812, 813, 814,		L 501	ELEH101KA	Choke Coil
C 219, 220	ECCD1H101K	C 816	ECQM1H222JZ	815, 816, 817		L 502, 503	QLQZ1014D	Choke Coil
C 221, 222, 223, 224	ECEA25Z4R7	C 817	ECEA1HS100			L 504, 505	ELEH101KA	Choke Coil
C 225, 226, 227, 228	ECQV05104JZ	C 818	ECQM1H473JZ	DIODES & RECTIFIERS				
C 229, 230, 231, 232	ECQM1H332JZ	C 819	ECQM1H222JZ	D 1, 2, 3, 4	MA161	L 801	QLQX0343KWA	Peaking Coil
C 233, 234	ECCD1H331K	C 820	ECCD1H471KB	D 5	RVDRD7R5FB	L 802	QLQX0343KWA	Peaking Coil
		C 821	ECQM1H103JZ	D 6, 7, 8, 9, 10, 11	MA161	L 803	QLQX0332KWA	Bias Trap Coil
C 235, 236	ECQV05104JZ	C 822	ECQM1H332JZ	D 12	SM112	TRANSFORMERS		
C 237, 238	ECQM1H103JZ	C 823	ECQM1H183JZ	D 13, 14, 15, 16	MA161	T 1	QLB0198	Bias Oscillation Transformer
C 239, 240	ECQM1H102JZ	C 824	ECQM1H562JZ	D 17	RVDRD6R2EB	T 401	QLPD71EMX	AC Power Transformer
C 241, 242	ECEA16M10R	C 825	ECQM1H273JZ	D 18, 19, 20	MA161	[For all European areas.]		
C 243, 244	ECEA1HS100	C 826	ECQM1H103JZ	D 21	SM112	[N] Δ	QLPA66EMX	AC Power Transformer
C 245	ECQM1H102JZ	C 827	ECEA1HS100	D 22, 23, 24	MA161	[For Asia, Latin America, Middle East and Africa areas.]		
C 247, 248	ECEA1ES470	C 828	ECQV05154JZ	D 25, 26, 27	TLG208			
C 249, 250	ECCD1H151K	C 829	ECQM1H473JZ					
C 301	ECQM1H104JZ	C 830	ECEA1HS100					
C 302	ECFDD223KXY	C 831	ECQV05224JZ					
C 303, 304	ECEA50Z1	C 832	ECCD1H471KB					
C 305, 306	ECEA50ZR47	C 833	ECQM1H122JZ					
C 307, 308	ECEA1HS100							
C 309	ECEA1ES101	COMBINATION PARTS						
C 310	ECFDD473KXY	Z 301	EXRP682M473T	D 28, 29	TLR208	F 1	XBAQ0010	Fuse (T 1.6A)
C 401	ECQP1103JZ	Z 501	EXBEQ5273K	D 30	TLG208	[For all European areas.]		
C 402	ECEA1ES222	Z 502	EXBD86181K	D 31	TLY208	[N] Δ	XBA2E05NS5	Fuse (T 0.5A)
C 403	ECEA1ES101	Z 503	EXBEQ4272K	D 32	TLG208	[For Asia, Latin America, Middle East and Africa areas.]		
C 404	ECCD1H103ZF	Z 504	QCRFWA1	D 33	MA161	F 2	XBAQ0010	Fuse (T 1.6A)
C 405	ECEA1ES220	Z 505	EXFP4472Z	D 34	MA161	[For all European areas.]		
		Z 506	EXBD88254K	D 401, 402, 403, 404	MA161	F 3	XBAQ025031	Fuse (T 250mA)
C 406	ECEA50Z2R2	Z 507	EXRP152K473T	D 405	MA1051	[For all European areas.]		
C 407	ECEA1ES101			D 406	MA1150	F 4	XBAQ0007	Fuse (T 400mA)
C 408	ECEA1ES222	TRANSISTORS						
C 409	ECEA1ES101	Q 1, 2, 3, 4	2SD636	D 407	MA1082			
C 410	ECCD1H103ZF	Q 5	2SB641	D 408	SM112			
C 411	ECCD1H102KB	Q 6	2SC945-Q	D 409	MA1056			
C 412	ECEA50Z1	Q 7, 8	2SD965	D 410, 411	MA161			
C 413, 414	ECEA1ES101	Q 9, 10, 11	2SD1011	D 412	SM112			
C 415	ECEA1ES470	Q 12	2SA921	D 413	MA1082			
C 416, 417	ECEA1CS472	Q 13, 14	2SD965	D 414	MA1047			
		Q 15	2SD636	D 501, 502, 503, 504, 505, 506,				
C 418	ECEA1HS100	Q 16	2SB641	507, 508, 509, 510, 511, 512,				
C 419	ECCD1H102KB	Q 17, 18, 19, 20	2SK104	513, 514, 515				
C 420	ECQU2A103MF	Q 21	2SC945-Q	D 516	LN31GPHL	S 1	QSR6501	Rotary Switch (NR Selector)
C 421, 422, 423, 424, 425, 426,	ECFDD683KXY	Q 22, 23, 24	2SD636	D 517	LN21RPHL	S 401 Δ	QSW117AS	Push Switch (Power ON/OFF)
428, 429	ECFDD683KXY	Q 25	2SD592			S 402 Δ	QSR1407	Rotary Switch (AC Power Voltage Selector)
C 430	ECEA1ES332	Q 26	2SD946	D 518	LN41YPHL	S 501	QSW1118	Push Switch (Counter Reset ON/OFF)
C 431	ECEA1AS101	Q 27, 28	2SB641	D 519	MA161	S 502	QSW1118	Push Switch (Pause ON/OFF)
C 432	ECCD1H102MD	Q 29	2SD636	D 801, 802, 803, 804	MA161	S 503	QSW1118	Push Switch (REC)
C 433	ECQM1H331K	Q 30, 31	2SC945-Q	D 805	OA90M	S 504	QSW1118	Push Switch (STOP)
C 434	ECEA1AS221	Q 32	2SA722-S			S 505	QSW1118	Push Switch (PLAY)
C 435	ECCD1H333ZF	Q 33, 34	2SD636			S 506	QSW1118	Push Switch (FF)
		Q 201, 202	2SK104			S 507	QSW1118	Push Switch (REW)
C 506	ECEA50Z2R2	Q 203, 204	2SC945			S 508	QSW1118	Push Switch (REC Mute)
C 507	ECCD1H222MD	Q 205, 206, 207, 208, 209, 210,				S 509	QSW1118	Push Switch (Introduction Search)
C 508	ECEA1CN100	211, 212, 213, 214, 215, 216,						
C 511	ECEA50ZR1	217, 218, 219, 220				S 511, 512, 513, 514	QSWY408	4 Key Push Switch
C 601	ECEA50MR68R	221, 222, 223, 224				S 515	QSS1303	Timer Switch
C 602	ECQM1H822JZ	2SD1010				S 601	QSB0260	Leaf Switch (Accidental Erase Prevention)
C 603	ECQM1H183JZ	Q 221, 222, 223, 224						
C 604	ECQM1H332JZ	2SC945-Q				S 602	QSB0260	Leaf Switch (Mode)
C 605	ECQP1822JZ	Q 225	2SA722-S			S 603	QSB0261	Leaf Switch (Playback)
C 606	ECQM1H562JZ	Q 301, 302	2SD636			S 604	QSB0260	Leaf Switch (Stop)
		Q 303	2SB641			S 605	QSB0261	Leaf Switch (Cassette Detection)
C 607	ECQM1H473JZ	Q 401	2SD836					
C 608	ECQV05334JZ	Q 402	2SD636			S 606, 607	QSB0266	Leaf Switch (Auto Tape Selector)
C 609	ECQM1H223JZ	Q 403	2SB641					
C 610	ECEA50Z1	Q 404	2SB750					
C 611	ECQM1H562JZ	Q 405	2SC1846R					
C 612	ECQV05154JZ	Q 406	2SD946					
C 613	ECSF10E3R3	Q 407 [DB]	2SD636					
C 614, 615	ECEA1EN4R7							
C 616	ECEA1HF100							
C 617	ECSF35E2R2							
C 618	ECQM1H562JZ							
C 801	ECEA50Z1							
C 803	ECEA1HS100							
C 804	ECEA25Z4R7							
C 805	ECEA50Z1							
C 806	ECQM1H273JZ							
C 807	ECQM1H103JZ							
C 808	ECEA1HS100							
C 809	ECQM1H562JZ							

SCHEMATIC DIAGRAMS



SCHEMATIC DIAGRAMS



NOTES:

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

NOTES:

- S401 AC power switch
- VR201, 202 VCA symmetry adjustment VR
- VR203, 204 dbx detector adjustment VR
- VR205, 206 dbx standard level adjustment VR (Encode)
- VR207, 208 dbx standard level adjustment VR (Decode)
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000 (Ω), 1M = 1,000 k(Ω).
- Capacity are in micro-farads (μ F) unless specified otherwise.
- The mark (▼) shows test point, e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- Voltage values shown in dbx section. No mark Voltage values at dbx Tape and playback mode. () Voltage values at dbx Tape and record mode.
- Voltage values shown in voltage regulator section. No mark Voltage values at playback mode. () Voltage values at record mode.

For measurement use VTVM.

- (B+) indicates B + (bias).
- (B-) indicates B - (bias).
- (S) indicates the flow of the recording signal (dbx tape).
- (P) indicates the flow of the playback signal (dbx tape).
- Described in the schematic diagram are two types of numbers; the supply parts number 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.

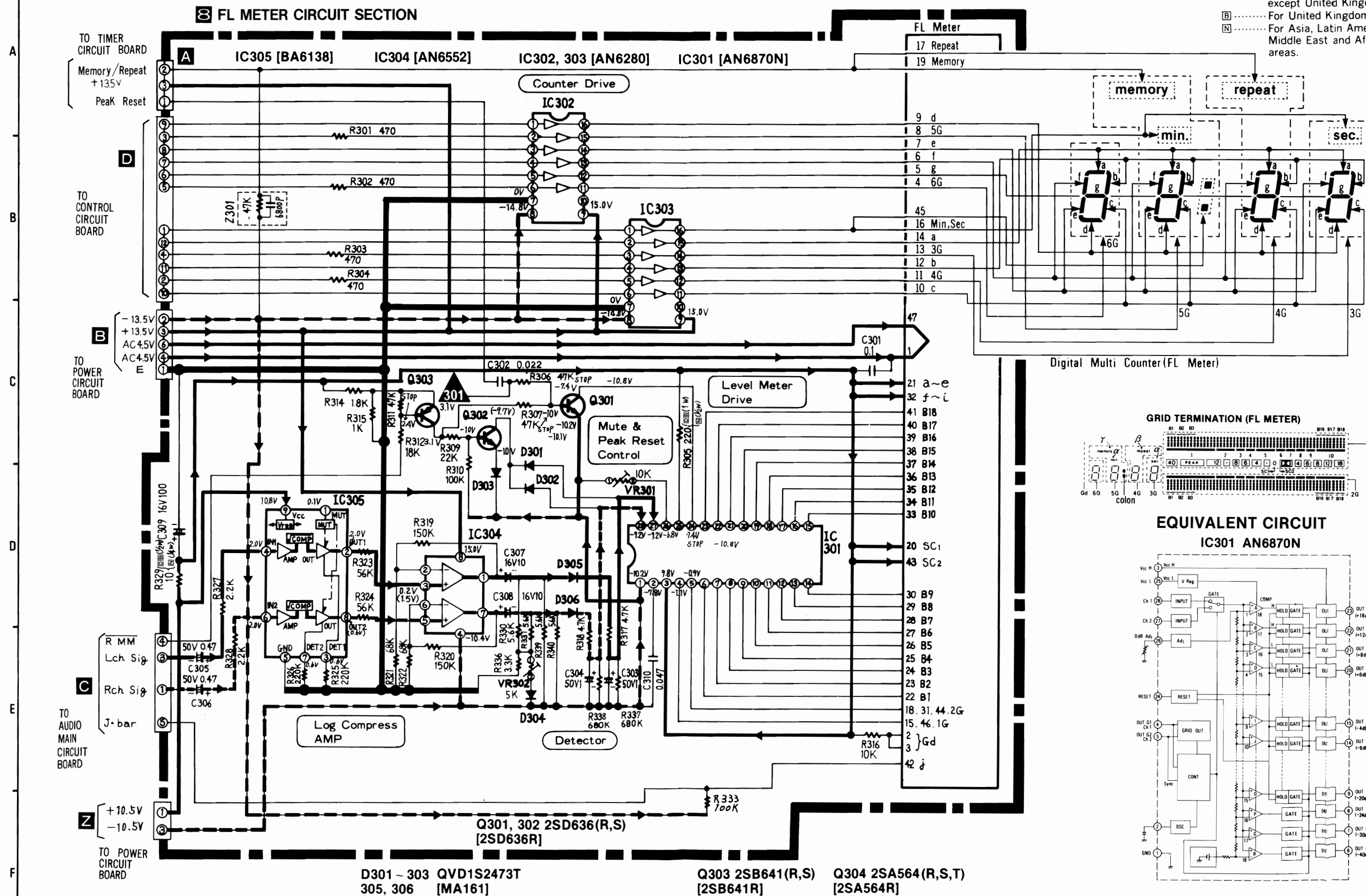
This schematic diagram may be modified at any time with the development of new technology.

SCHEMATIC DIAGRAM

8 FL METER CIRCUIT SECTION

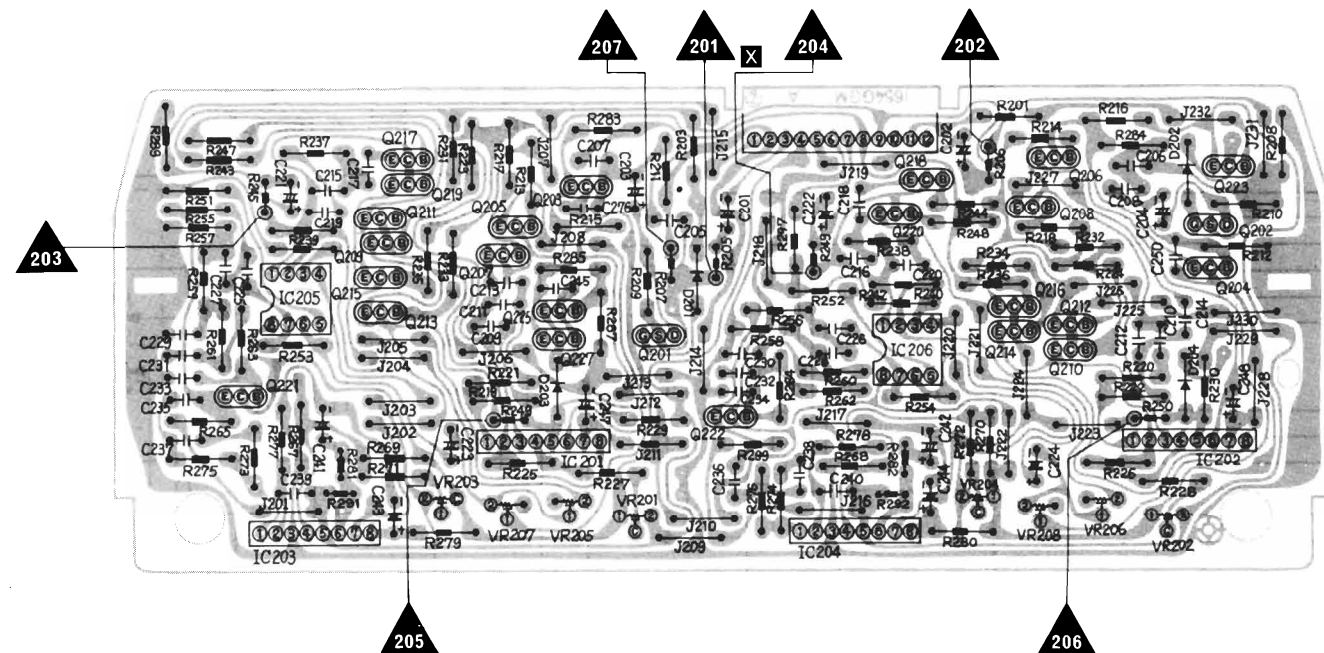
NOTES:

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



CIRCUIT BOARDS

5 dbx CIRCUIT BOARD

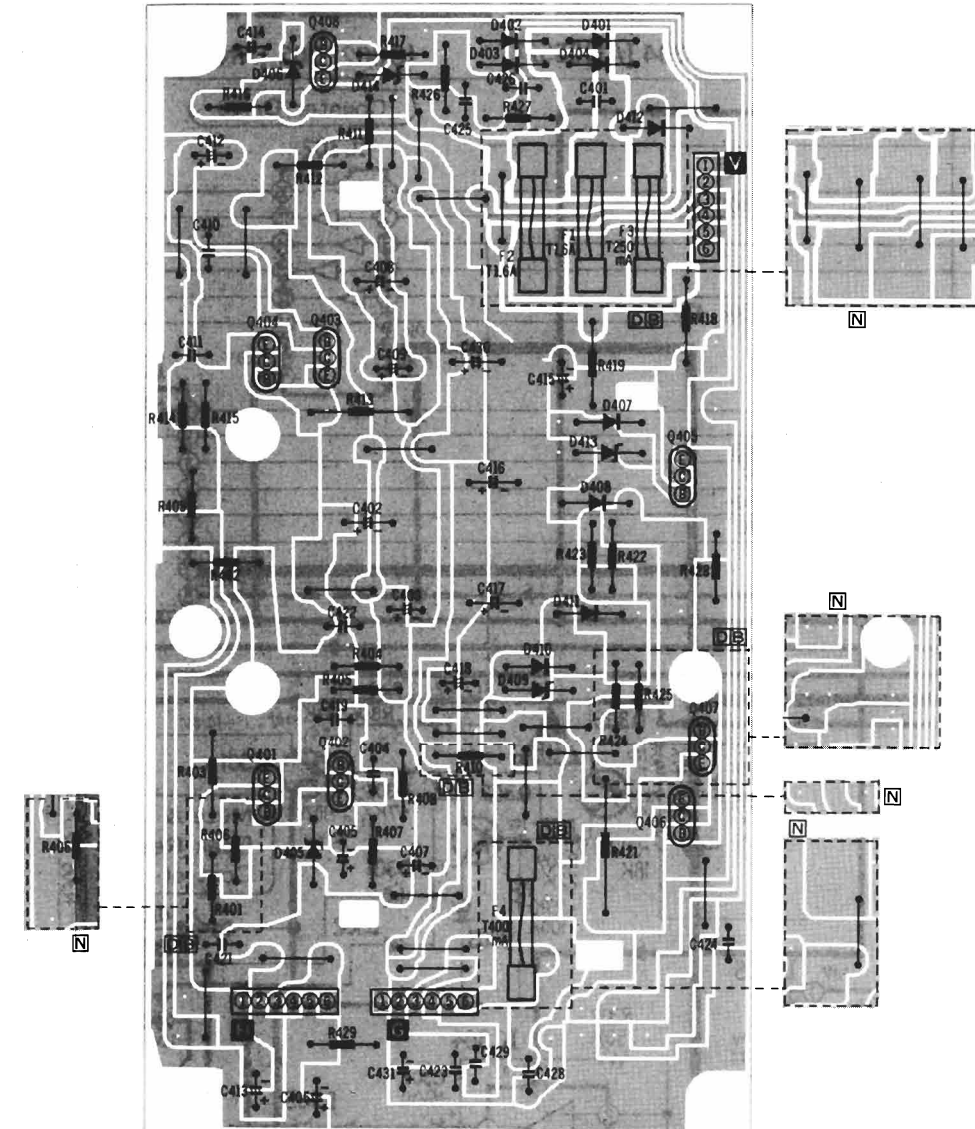


<div>Q201 2SK104F [2SK104]</div> <table><tr><td>G</td><td>0V</td></tr><tr><td>S</td><td>0V</td></tr><tr><td>D</td><td>-3.26V (3.46V)</td></tr></table>	G	0V	S	0V	D	-3.26V (3.46V)	<div>Q202 2SK104F [2SK104]</div> <table><tr><td>G</td><td>0V</td></tr><tr><td>S</td><td>0V</td></tr><tr><td>D</td><td>-3.22V (-2.60V)</td></tr></table>	G	0V	S	0V	D	-3.22V (-2.60V)	<div>Q203 2SC945P</div> <table><tr><td>B</td><td>-1.23V</td></tr><tr><td>C</td><td>9.98V (9.97V)</td></tr><tr><td>E</td><td>-1.23V</td></tr></table>	B	-1.23V	C	9.98V (9.97V)	E	-1.23V	<div>Q204 2SC945P</div> <table><tr><td>B</td><td>-1.30V</td></tr><tr><td>C</td><td>9.98V (9.97V)</td></tr><tr><td>E</td><td>-0.68V (-0.67V)</td></tr></table>	B	-1.30V	C	9.98V (9.97V)	E	-0.68V (-0.67V)	<div>Q205 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0.01V (-1.23V)</td></tr><tr><td>C</td><td>-1.23V (-1.23V)</td></tr><tr><td>E</td><td>-1.43V (-0.66V)</td></tr></table>	B	0.01V (-1.23V)	C	-1.23V (-1.23V)	E	-1.43V (-0.66V)	<div>Q206 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>-1.30V</td></tr><tr><td>E</td><td>-3.20V (-2.70V)</td></tr></table>	B	0V	C	-1.30V	E	-3.20V (-2.70V)
G	0V																																								
S	0V																																								
D	-3.26V (3.46V)																																								
G	0V																																								
S	0V																																								
D	-3.22V (-2.60V)																																								
B	-1.23V																																								
C	9.98V (9.97V)																																								
E	-1.23V																																								
B	-1.30V																																								
C	9.98V (9.97V)																																								
E	-0.68V (-0.67V)																																								
B	0.01V (-1.23V)																																								
C	-1.23V (-1.23V)																																								
E	-1.43V (-0.66V)																																								
B	0V																																								
C	-1.30V																																								
E	-3.20V (-2.70V)																																								
<div>Q207 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>-1.23V (0V)</td></tr><tr><td>C</td><td>-1.23V</td></tr><tr><td>E</td><td>-0.66V (-3.36V)</td></tr></table>	B	-1.23V (0V)	C	-1.23V	E	-0.66V (-3.36V)	<div>Q208 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>-1.31V (-1.30V)</td></tr><tr><td>C</td><td>-1.31V (-1.30V)</td></tr><tr><td>E</td><td>-0.73V</td></tr></table>	B	-1.31V (-1.30V)	C	-1.31V (-1.30V)	E	-0.73V	<div>Q209 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>0.57V</td></tr></table>	B	0V	C	0V	E	0.57V	<div>Q210 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>0.59V</td></tr></table>	B	0V	C	0V	E	0.59V	<div>Q211 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>-0.05V (0.04V)</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>-1.42V (3.82V)</td></tr></table>	B	-0.05V (0.04V)	C	0V	E	-1.42V (3.82V)							
B	-1.23V (0V)																																								
C	-1.23V																																								
E	-0.66V (-3.36V)																																								
B	-1.31V (-1.30V)																																								
C	-1.31V (-1.30V)																																								
E	-0.73V																																								
B	0V																																								
C	0V																																								
E	0.57V																																								
B	0V																																								
C	0V																																								
E	0.59V																																								
B	-0.05V (0.04V)																																								
C	0V																																								
E	-1.42V (3.82V)																																								
<div>Q212 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0.02V</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>-2.53V (-2.57V)</td></tr></table>	B	0.02V	C	0V	E	-2.53V (-2.57V)	<div>Q213 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>-0.05V (0.04V)</td></tr><tr><td>E</td><td>-2.39V (-2.69V)</td></tr></table>	B	0V	C	-0.05V (0.04V)	E	-2.39V (-2.69V)	<div>Q214 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>0.02V (0.04V)</td></tr><tr><td>E</td><td>-2.48V (-2.60V)</td></tr></table>	B	0V	C	0.02V (0.04V)	E	-2.48V (-2.60V)	<div>Q215 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0.02V (0.04V)</td></tr><tr><td>C</td><td>0.02V (0.04V)</td></tr><tr><td>E</td><td>0.58V (0.61V)</td></tr></table>	B	0.02V (0.04V)	C	0.02V (0.04V)	E	0.58V (0.61V)	<div>Q216 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0.02V (0V)</td></tr><tr><td>C</td><td>0.02V (0V)</td></tr><tr><td>E</td><td>0.56V (0.57V)</td></tr></table>	B	0.02V (0V)	C	0.02V (0V)	E	0.56V (0.57V)							
B	0.02V																																								
C	0V																																								
E	-2.53V (-2.57V)																																								
B	0V																																								
C	-0.05V (0.04V)																																								
E	-2.39V (-2.69V)																																								
B	0V																																								
C	0.02V (0.04V)																																								
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B	0.02V (0V)																																								
C	0.02V (0V)																																								
E	0.56V (0.57V)																																								
<div>Q217 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>-0.40V (-0.26V)</td></tr><tr><td>C</td><td>-0.31V (-0.27V)</td></tr><tr><td>E</td><td>-1.34V (-1.35V)</td></tr></table>	B	-0.40V (-0.26V)	C	-0.31V (-0.27V)	E	-1.34V (-1.35V)	<div>Q218 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>-0.06V (-0.02V)</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>-2.30V (-1.29V)</td></tr></table>	B	-0.06V (-0.02V)	C	0V	E	-2.30V (-1.29V)	<div>Q219 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>0.56V</td></tr></table>	B	0V	C	0V	E	0.56V	<div>Q220 2SD1010RST [2SD1010]</div> <table><tr><td>B</td><td>0V</td></tr><tr><td>C</td><td>0V</td></tr><tr><td>E</td><td>0.57V</td></tr></table>	B	0V	C	0V	E	0.57V	<div>Q221 2SC945P [2SC945-Q]</div> <table><tr><td>B</td><td>-1.44V</td></tr><tr><td>C</td><td>10.40V</td></tr><tr><td>E</td><td>-0.81V (-0.82V)</td></tr></table>	B	-1.44V	C	10.40V	E	-0.81V (-0.82V)	<div>Q222 2SC945P [2SC945-Q]</div> <table><tr><td>B</td><td>-1.43V</td></tr><tr><td>C</td><td>10.40V</td></tr><tr><td>E</td><td>-0.81V</td></tr></table>	B	-1.43V	C	10.40V	E	-0.81V
B	-0.40V (-0.26V)																																								
C	-0.31V (-0.27V)																																								
E	-1.34V (-1.35V)																																								
B	-0.06V (-0.02V)																																								
C	0V																																								
E	-2.30V (-1.29V)																																								
B	0V																																								
C	0V																																								
E	0.56V																																								
B	0V																																								
C	0V																																								
E	0.57V																																								
B	-1.44V																																								
C	10.40V																																								
E	-0.81V (-0.82V)																																								
B	-1.43V																																								
C	10.40V																																								
E	-0.81V																																								
<div>Q223 2SC945P [2SC945-Q]</div> <table><tr><td>B</td><td>-10.20V (-10.19V)</td></tr><tr><td>C</td><td>-2.34V (-2.52V)</td></tr><tr><td>E</td><td>-10.08V (-10.06V)</td></tr></table>	B	-10.20V (-10.19V)	C	-2.34V (-2.52V)	E	-10.08V (-10.06V)	<div>Q225 2SA722 [2SA772-S]</div> <table><tr><td>B</td><td>-2.71V</td></tr><tr><td>C</td><td>-9.71V (-9.62V)</td></tr><tr><td>E</td><td>-2.85V</td></tr></table>	B	-2.71V	C	-9.71V (-9.62V)	E	-2.85V	<div>Q227 2SC945P [2SC945-Q]</div> <table><tr><td>B</td><td>-10.21V (-10.20V)</td></tr><tr><td>C</td><td>-2.71V (-2.70V)</td></tr><tr><td>E</td><td>-9.66V (-9.69V)</td></tr></table>	B	-10.21V (-10.20V)	C	-2.71V (-2.70V)	E	-9.66V (-9.69V)	<div>Q401 [2SD836]</div> <table><tr><td>B</td><td>12.0V</td></tr><tr><td>C</td><td>18.6V</td></tr><tr><td>E</td><td>10.7V</td></tr></table>	B	12.0V	C	18.6V	E	10.7V	<div>Q402 2SD636QRS [2SD636]</div> <table><tr><td>B</td><td>5.8V</td></tr><tr><td>C</td><td>12.0V</td></tr><tr><td>E</td><td>5.2V</td></tr></table>	B	5.8V	C	12.0V	E	5.2V							
B	-10.20V (-10.19V)																																								
C	-2.34V (-2.52V)																																								
E	-10.08V (-10.06V)																																								
B	-2.71V																																								
C	-9.71V (-9.62V)																																								
E	-2.85V																																								
B	-10.21V (-10.20V)																																								
C	-2.71V (-2.70V)																																								
E	-9.66V (-9.69V)																																								
B	12.0V																																								
C	18.6V																																								
E	10.7V																																								
B	5.8V																																								
C	12.0V																																								
E	5.2V																																								
<div>Q403 2SB641QRS [2SB641]</div> <table><tr><td>B</td><td>-0.6V</td></tr><tr><td>C</td><td>-12.0V</td></tr><tr><td>E</td><td>0V</td></tr></table>	B	-0.6V	C	-12.0V	E	0V	<div>Q404 [2SB750]</div> <table><tr><td>B</td><td>-12.0V</td></tr><tr><td>C</td><td>-19.9V</td></tr><tr><td>E</td><td>-10.8V</td></tr></table>	B	-12.0V	C	-19.9V	E	-10.8V	<div>Q405 2SC1846RS [2SC1846R]</div> <table><tr><td>B</td><td>17.1V</td></tr><tr><td>C</td><td>19.7V</td></tr><tr><td>E</td><td>16.4V</td></tr></table>	B	17.1V	C	19.7V	E	16.4V	<div>Q406 [2SD946]</div> <table><tr><td>B</td><td>7.0V</td></tr><tr><td>C</td><td>15.3V</td></tr><tr><td>E</td><td>5.7V</td></tr></table>	B	7.0V	C	15.3V	E	5.7V	<div>Q407 2SD636QRS [2SD636]</div> <table><tr><td>B</td><td>4.6V</td></tr><tr><td>C</td><td>4.2V</td></tr><tr><td>E</td><td>5.6V</td></tr></table>	B	4.6V	C	4.2V	E	5.6V	<div>Q408 2SB643QRS [2SB643]</div> <table><tr><td>B</td><td>-15.6V</td></tr><tr><td>C</td><td>-20.6V</td></tr><tr><td>E</td><td>-15.0V</td></tr></table>	B	-15.6V	C	-20.6V	E	-15.0V
B	-0.6V																																								
C	-12.0V																																								
E	0V																																								
B	-12.0V																																								
C	-19.9V																																								
E	-10.8V																																								
B	17.1V																																								
C	19.7V																																								
E	16.4V																																								
B	7.0V																																								
C	15.3V																																								
E	5.7V																																								
B	4.6V																																								
C	4.2V																																								
E	5.6V																																								
B	-15.6V																																								
C	-20.6V																																								
E	-15.0V																																								

*For all European areas

*For all European areas.

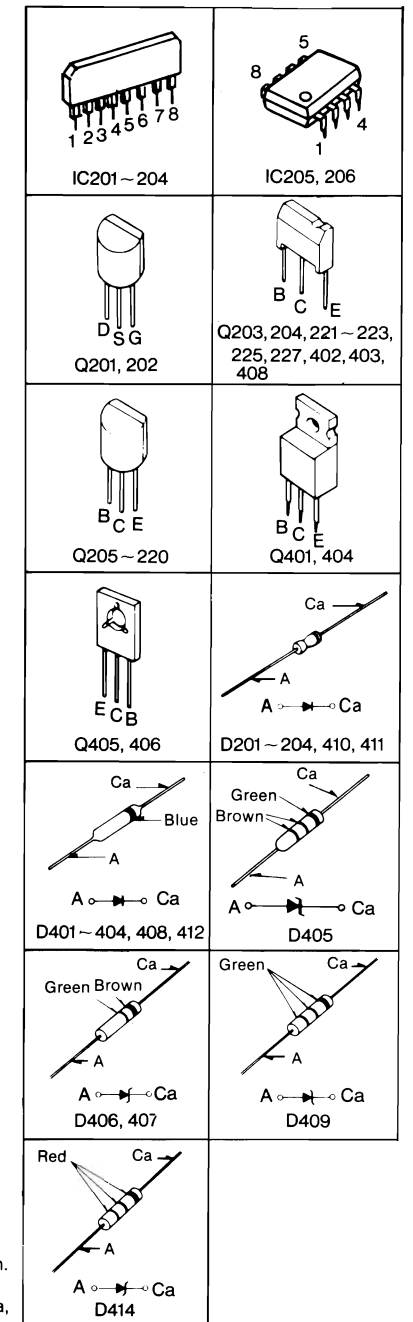
6 VOLTAGE REGULATOR CIRCUIT BOARD



IC201 [UPC1252H]		IC202 [UPC1252H]		IC203 UPC1253H2 [UPC1253H]	
1	0.03V	1	0.01V	1	0.01 V
2	0.01V	2	0.01V	2	-8.40V (-8.39V)
3	0.03V (0.04V)	3	0.03V (0.04V)	3	0V
4	0.01V	4	0V	4	0.01V
5	-2.64V (-2.63V)	5	-2.62V (-2.59V)	5	-10.20V
6	0V	6	0V	6	0.99V (1.00V)
7	10.40V	7	10.40V	7	0.03V (0.04V)
8	-0.06V (0V)	8	-0.06V (0V)	8	8.73V

IC204 UPC1253H2 [UPC1253H]		IC205 [NJM4558DF]		IC206 [NJM4558DF]	
1	0.01V	1	0V	1	0V
2	-8.39V (8.38V)	2	0V	2	0V
3	0V	3	0V	3	0V
4	0V	4	-10.20V (-10.19V)	4	-10.20V
5	-10.20V	5	0V	5	0V
6	0.99V (1.01V)	6	0V	6	0V
7	-0.11V (-0.08V)	7	0V	7	0V
8	8.76V (8.75V)	8	10.40V	8	10.40V

TERMINATIONS



NOTES:

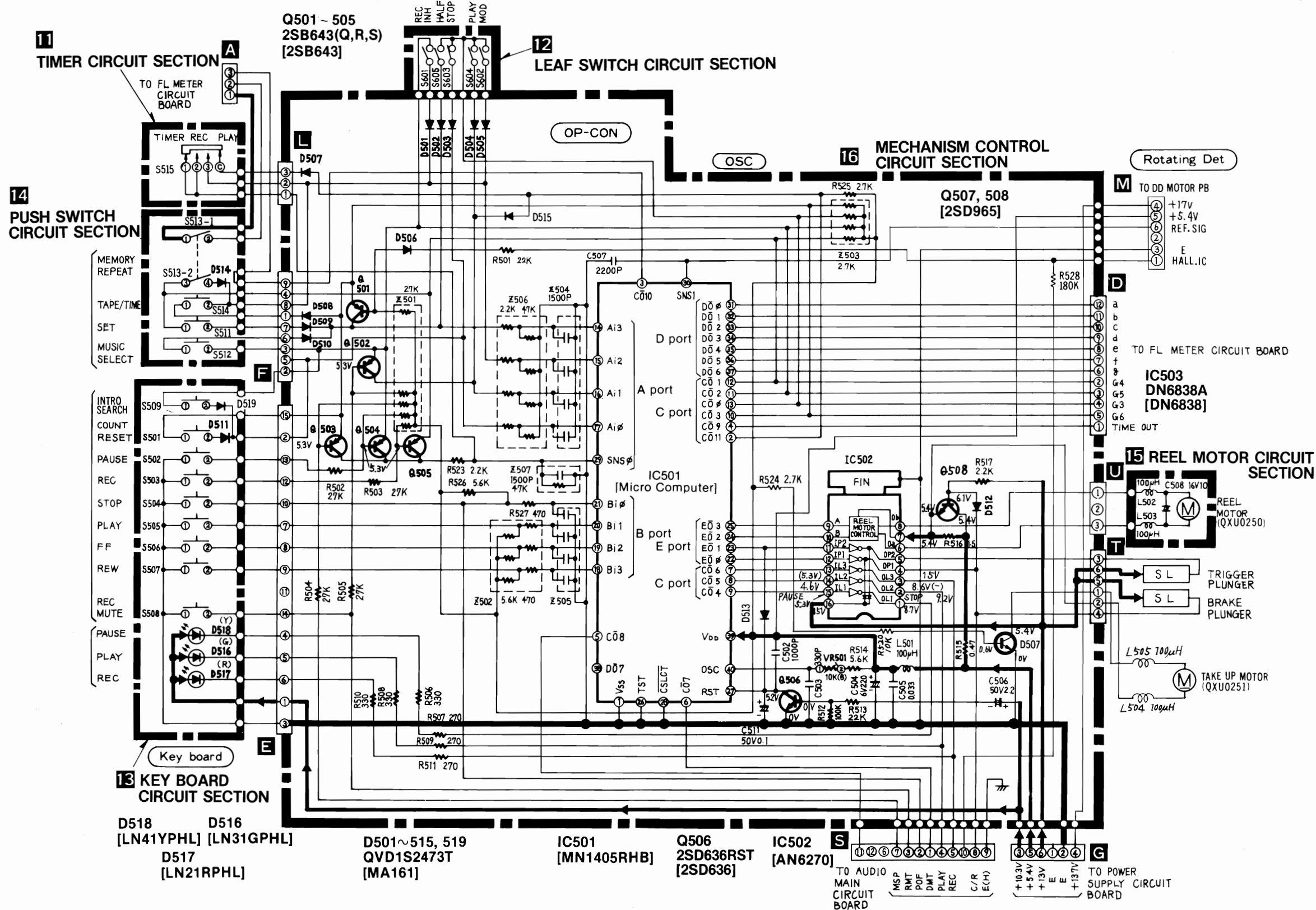
- For all European areas except United Kingdom.
- For United Kingdom.
- For Asia, Latin America, Middle East and Africa areas.

NOTES:

- The circuit shown in on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- Voltage values shown in dbx section.
 - No mark Voltage values at dbx Tape and playback mode.
 - (.....) Voltage values at dbx Tape and record mode.
- Voltage values shown in voltage regulator section.
 - No mark Voltage values at playback mode.
 - (.....) Voltage values at record mode.
- For measurement use VTVM.

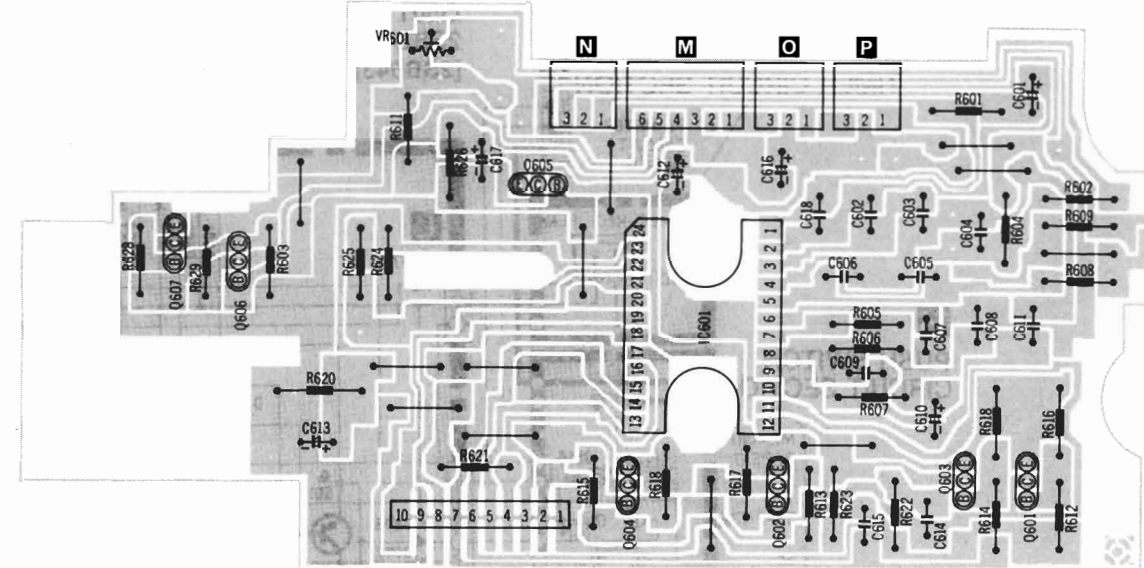
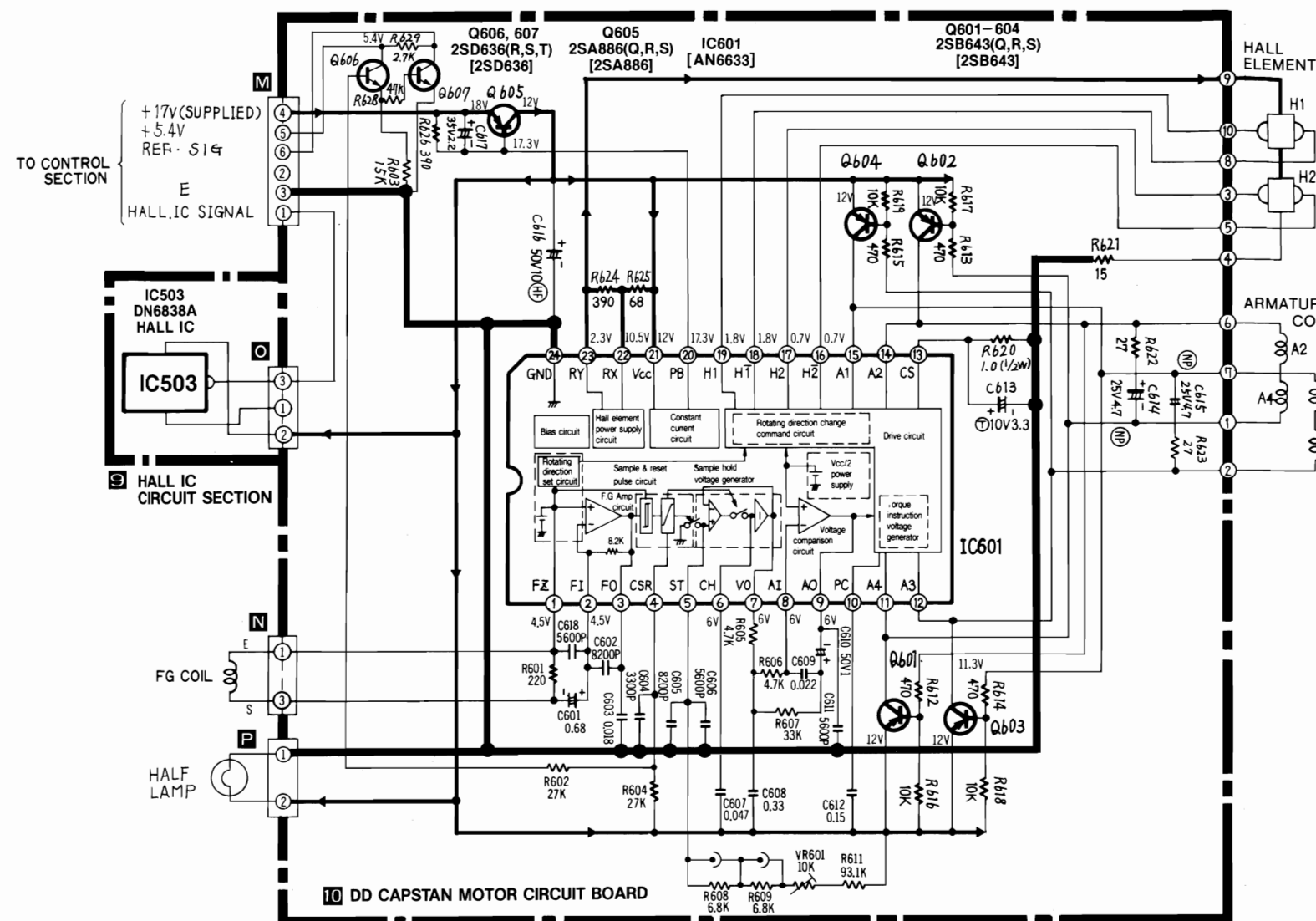
- This circuit board diagram may be modified at any time with the development of new technology.

SCHEMATIC DIAGRAM **16 MECHANISM CONTROL CIRCUIT SECTION**

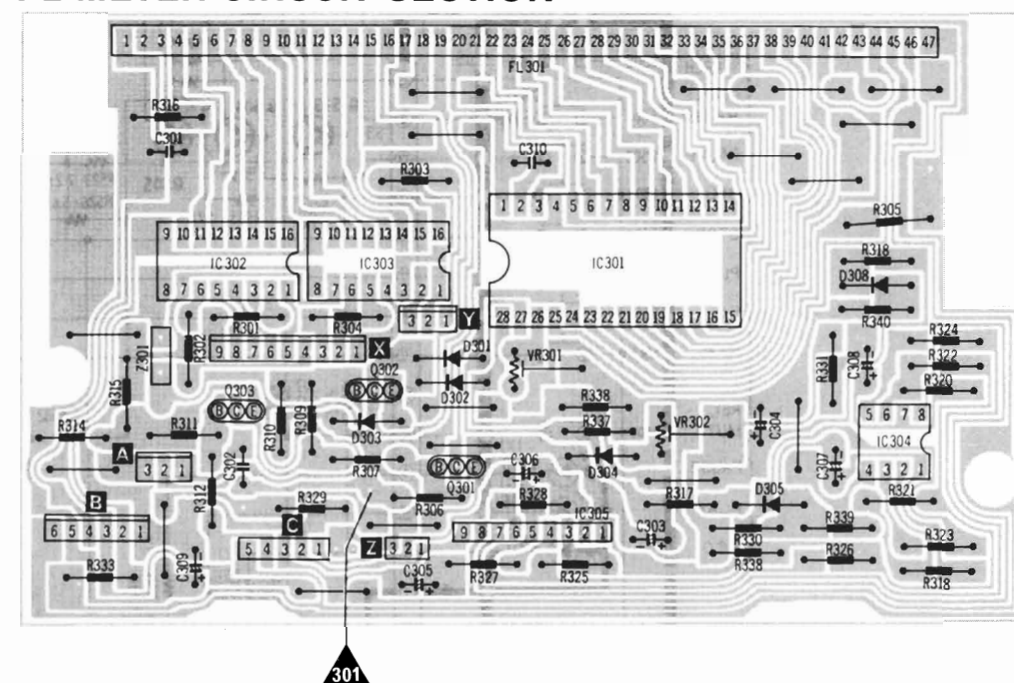


- This schematic diagram may be modified at any time with the development of new technology.

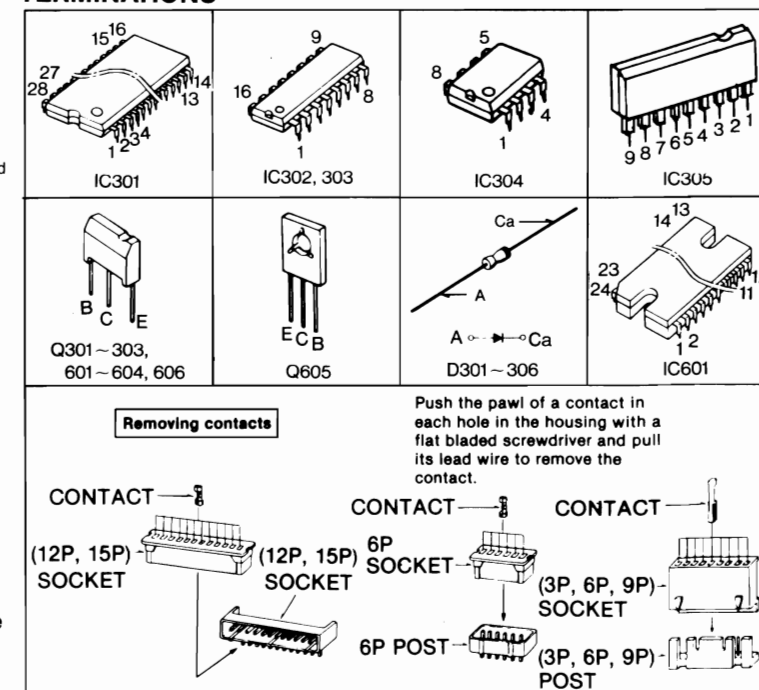
10 D.D CAPSTAN MOTOR CIRCUIT BOARD



8 FL METER CIRCUIT SECTION



TERMINATIONS



IC302, 303 [AN6280]	
7	0V
8	-14.8V
9	15.0V
10	0V

1	0V
2	0V
3	0V
4	-10.8V
5	0V
6	0V
7	0V
8	15.0V

IC305 [BA6138]	
1	0.1V
2	0V
3	0.6V
4	2.0V
5	0V
6	2.0V
7	0.6V
8	0V (0.6V)
9	10.8V

1	12 V
2	0 V
3	—

IC301 [AN6870N]	
1	-10.8V
2	-8.3V
3	10.3V
4	-1.0V
5	-0.9V
24	-7.4V STOP -10.8V
25	5.3V
26	-6.8V
27	-9.7V
28	-9.7V

Q301 2SD636RST [2SD636]		
B	-10.8V	STOP -10.1V
C	-7.4V	STOP -10.8V
E	-10.8V	

Q302 2SD636RST [2SD636]		
B	-10.8V	STOP -10.1V
C	-9.7V	STOP -10.3V
E	-10.8V	STOP -10.3V

Q303	
2SB641RS	
[2SB641]	
B	— STOP 2.4 V
C	3.1 V
E	3.1 V

Q601, 602, 603, 604
2SB643QRS
[2SB643]



B	—
C	—
E	12V

Q605		Q606	
2SA886QRS		2SD636RS	
[2SA886Q]		[2SD636]	
B	17.3V	B	—
C	12V	C	5.4V
E	18V	E	—

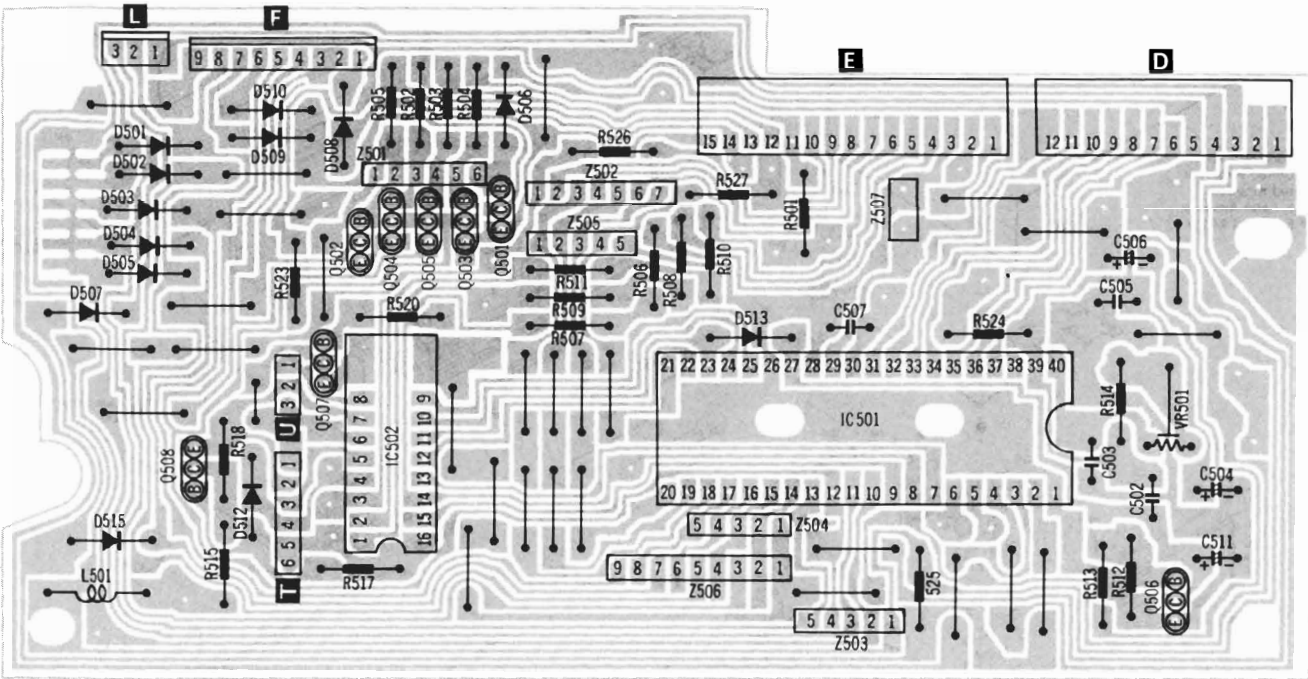
1	4.5V	13	—
2	4.5V	14	—
3	—	15	—
4	—	16	0.7V
5	—	17	0.7V
6	6V	18	1.8V
7	6V	19	1.8V
8	6V	20	17.3V
9	6V	21	12V
10	—	22	10.5V
11	—	23	2.3V
12	—	24	0V

B	—
C	—
E	OV

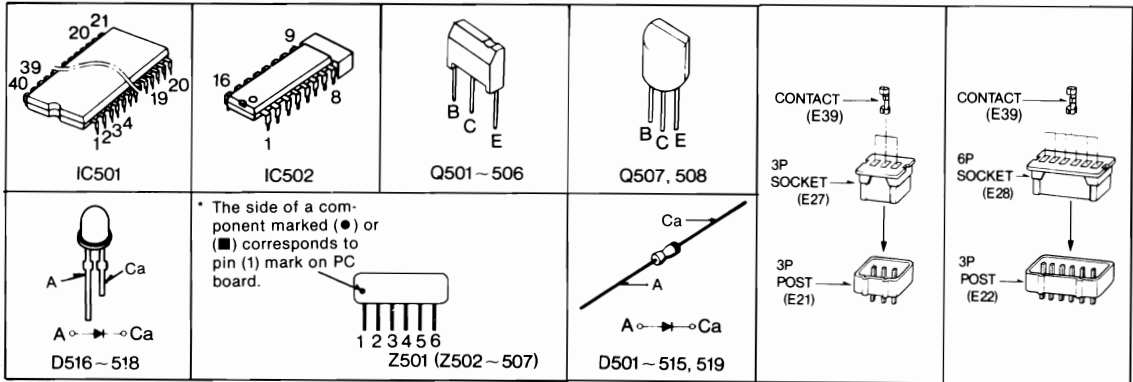
- NOTES:
- VR301..... FL meter adjustment VR (0dB indication)
 - VR302..... FL meter adjustment VR (-40dB indication)
 - VR601..... Tape speed adjustment VR
 - Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
1K = 1,000 Ω , 1M = 1,000 k(Ω).
 - Capacity are in micro-farads (μ F) unless specified otherwise.
 - The mark (▼) shows test point, e.g. ▼ = Test point 1.
 - All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
 - (.....) Voltage values at record mode.
 - STOP..... Voltage values at stop mode.
- For measurement use VTVM.
- (■) indicates B + (bias).
 - (■) indicates B - (bias).
 - (■ ■ ■) indicates the flow of the recording signal (dbx tape).
 - (■) indicates the flow of the playback signal (dbx tape).
 - Described in the schematic diagram are two types of numbers; the supply parts number 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.**

- NOTES:
- The circuit shown in  on the conductor side indicates printed circuit on the back side of the printed circuit board.
 - Values indicated in  are under no signal condition and playback mode with volume control at minimum position otherwise specified.
 - All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
 - () Voltage values at record mode.
 - STOP Voltage values at stop mode.
 - For measurement use VTVM.
- This circuit board diagram may be modified at any time with the development of new technology.**

CIRCUIT BOARD DIAGRAM
16 MECHANISM CONTROL CIRCUIT BOARD



TERMINATIONS



NOTES:

- The circuit shown in 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. However, the voltage in record mode is indicated in () when it differs from that in record mode. For measurement, use VTVM.

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

Q501
2SB643QRS
[2SB643]

B	—
C	—
E	—

Q502, 503, 504, 505
2SB643QRS
[2SB643]

B	5.4V
C	—
E	—

Q507
[2SD965]

B	0.6V
C	5.4V
E	0V

Q506
2SD636RST
[2SD636]

B	0V
C	5.2V
E	0V

Q508
[2SD965]

B	6.0V
C	5.4V
E	5.4V

IC501
[MN1405RHB]

1	0V	21	5.4V
2	0V	22	0V
3	—	23	0V
4	0V	24	0V
5	0V	25	0V
6	0V	26	0V
7	0V (5.3V)	27	5.2V
8	4.6V	28	0V
9	0V	29	—
10	—	30	—
11	—	31	—
12	—	32	—
13	—	33	—
14	—	34	—
15	—	35	—
16	—	36	—
17	—	37	—
18	5.4V	38	—
19	5.4V	39	5.4V
20	5.4V	40	—

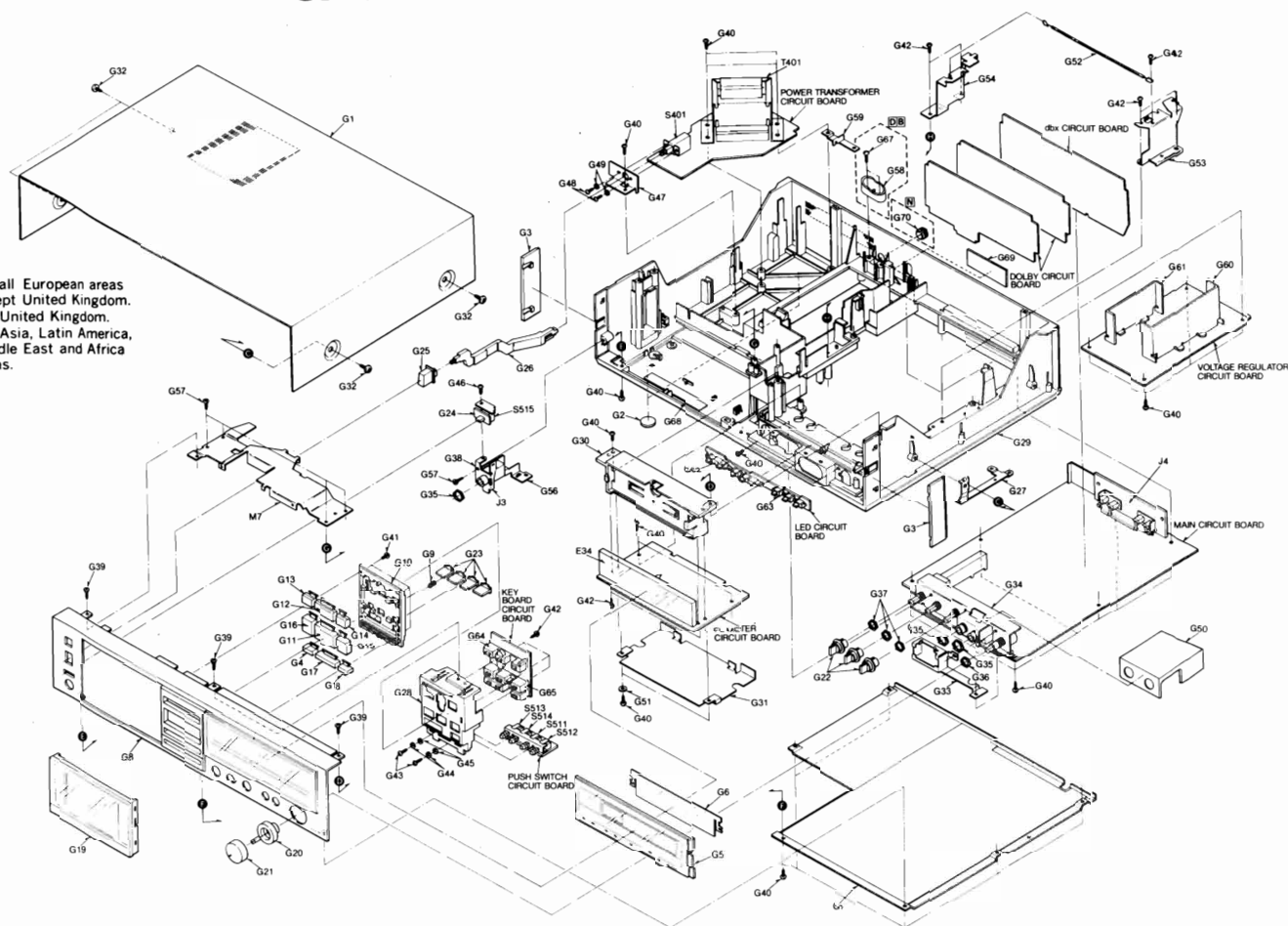
IC502
[AN6270]

1	9.7V	PAUSE	0V
2	0V	STOP	9.2V
3	9.2V (0V)		
4	15V	FF/REW	0V
5	0V		
6	0V		
7	5.4V		
8	0V		
9	0V		
10	0V		
11	0V		
12	0V		
13	0V (5.3V)		
14	4.6V		
15	0V	PAUSE	5.3V
16	15V		

CABINET PARTS LOCATION

NOTES:

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



REPLACEMENT PARTS LIST

Important safety notice

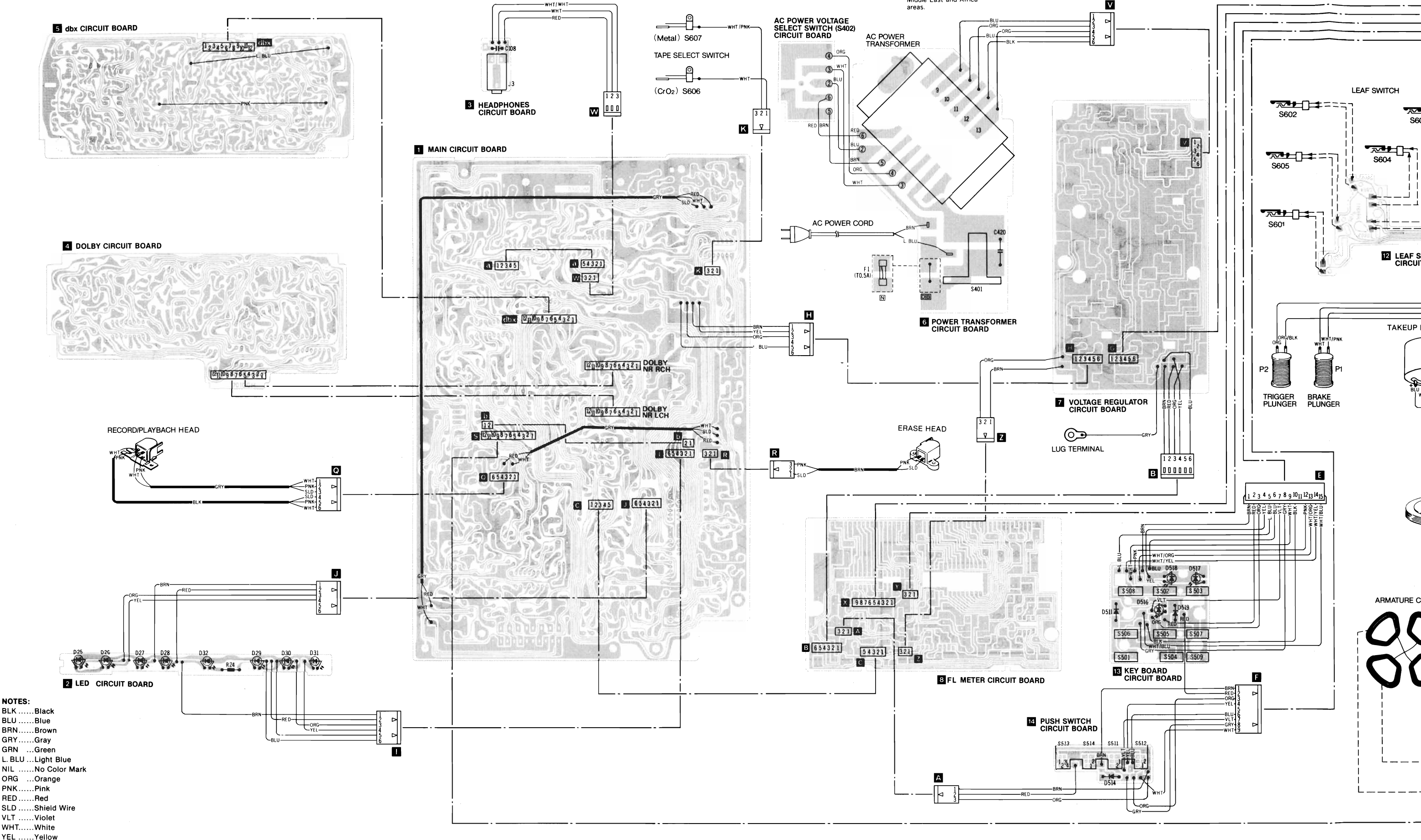
Components identified by ▲ mark have special characteristics important for safety.

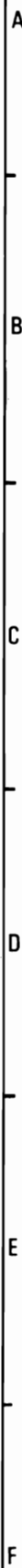
When replacing any of these components, use only manufacturer's specified parts.

Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
CABINET PARTS			G 18	QGO1983	Push Button (Conunter Reset)
G 1	QGC1225	Case Cover	G 19	QYF0562	Cassette Lid Assembly
	"Silver Type"			"Silver Type"	
	QGC1225K	Case Cover		QYF0562K	Cassette Lid Assembly
	"Black Type"			"Black Type"	
G 2	QKA1086	Case Foot	G 20	QGT1571	Volume Knob-B
G 3	QGK3217	Side Board	G 21	QYT0640	Volume Knob-A
	"Silver Type"		G 22	QGT1569	Select Knob
	QGK3217K	Side Board	G 23	QGO1985S	Function Button
	"Black Type"		G 24	QGO1987	Timer Button
G 4	QGO2050	Intro Search Button	G 25	QGO1986	Power Button
G 5	QGK3281	Meter Cover	G 26	QMR1985	Power Rod
	"Silver Type"		G 27	QJC0047	Earth Plate-A
	QGK3281K	Meter Cover	G 28	QKJ0514	Operation P.B Holder
	"Black Type"		G 29	QKM1547	Chassis
G 6	QGL1174	Filter	G 30	QKJ0513	Meter Holder
G 7	QYB0416	Bottom Cover Assembly	G 31	QTS1572	Meter Shield Plate
G 8	QYP1107	Front Panel Assembly	G 32	XTB4 + 10BFN	Screw $\pm 4 \times 10$
	"Silver Type"			"Silver Type"	
	QYP1107K	Front Panel Assembly		XTB4 + 10BFZ	Screw $\pm 4 \times 10$
	"Black Type"			"Black Type"	
G 9	QBC1159	Button Spring	G 33	QJC0048	Earth Plate-B
G 10	QGG0194	Button Holder	G 34	QMA4360	Volume Angle
G 11	QXB0763	Play Button Assembly	G 35	QNQ1070	Nut
G 12	QXB0762	Pause Button Assembly	G 36	QNQ1033	Nut 9ø
G 13	QXB0761	Rec Button Assembly	G 37	QNQ1004	Nut 8ø
G 14	QGO1984	Operation Button	G 38	QMA4361	Headphone Angle
	"Silver Type"	(Rec Mute)	G 39	XTS3 + 12B	Tapping Screw $\pm 3 \times 12$
	QGO1984Y	Operation Button	G 40	XTN3 + 10B	Tapping Screw $\pm 3 \times 10$
	"Black Type"	(Rec Mute)	G 41	XTN26 + 8B	Tapping Screw $\pm 2.6 \times 8$
G 15	QGO1981	Operation Button	G 42	XTN3 + 8B	Tapping Screw $\pm 3 \times 8$
	"Silver Type"	(Fast Forward)	G 43	XTS26 + 8B	Tapping Screw $\pm 2.6 \times 8$
	QGO1981Y	Operation Button	G 44	QWA26B	Washer
	"Black Type"	(Fast Forward)	G 45	XWA26B	Washer 26ø
G 16	QGO1980	Operation Button (Rewind)	G 46	XTN3 + 6B	Tapping Screw $\pm 3 \times 6$
	"Silver Type"		G 47	QMA4362	Switch Angle
	QGO1980Y	Operation Button	G 48	XSN3 + 8S	Screw $\pm 3 \times 8$
	"Black Type"	(Rewind)	G 49	XWE3	Washer 3ø
G 17	QGO1982	Operation Button (Stop)	G 50	QTS1579	Insulator Plate
	"Silver Type"		G 51	XWG3	Washer 3ø
	QGO1982Y	Operation Button (Stop)	G 52	QBS1140	Connection Wire
	"Black Type"		G 53	QMA4434	NR P.B Holding Angle-L
			G 54	QMA4435	NR P.B Holding Angle-R

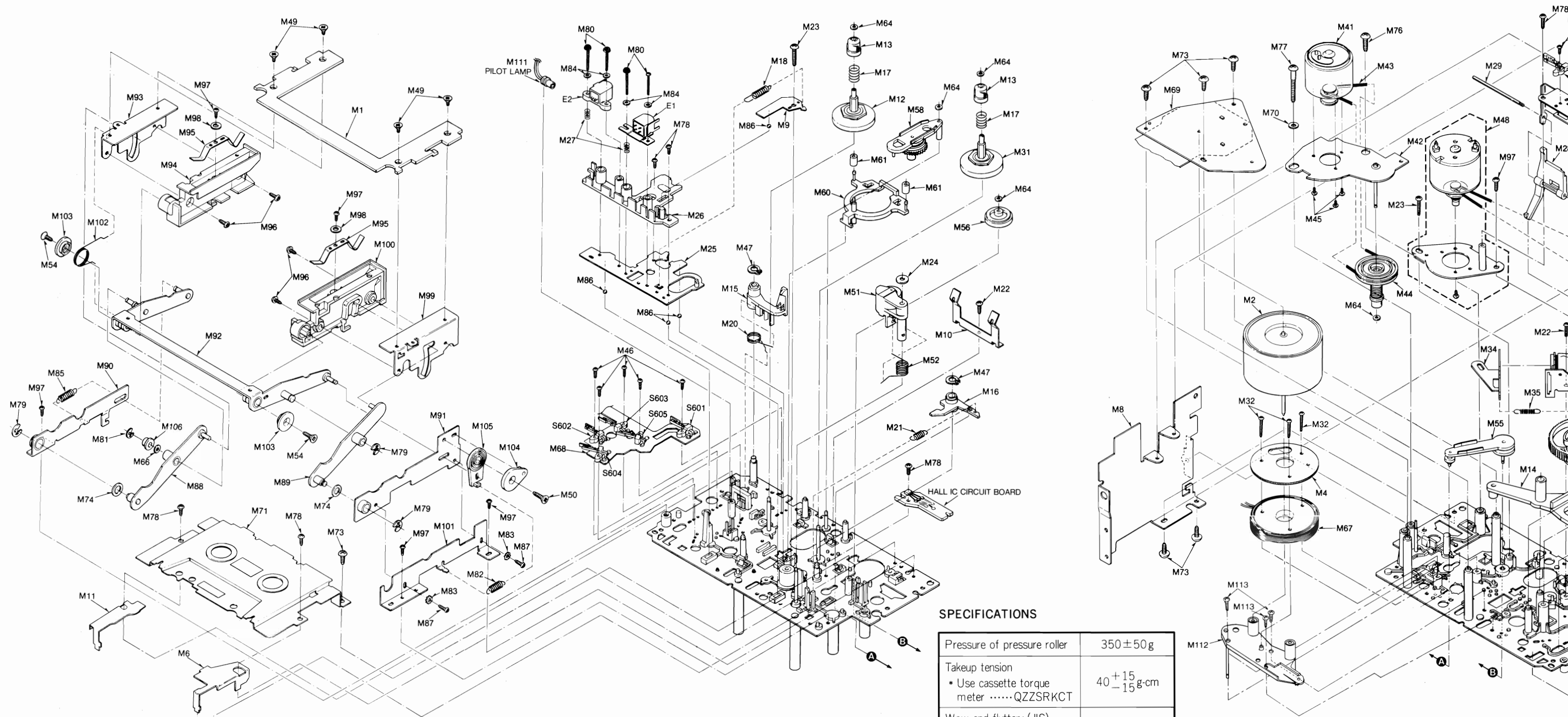
Ref No.	Part No.	Part Name & Description
G 56	QJC0052	Earth Plate-C
G 57	XTS3 + 10B	Tapping Screw $\oplus 3 \times 10$
G 58	[DB] QTD1164	Cord Bushing
	[For all European areas.]	
G 59	QJC0053	Earth Plate-D
G 60	QTH1162	Heat Sink-A
G 61	QTH1163	Heat Sink-B
G 62	QKJ0515	LED Holder-A
G 63	QKJ0516	LED Holder-B
G 64	QKJ0541	Switch Rod-A
G 65	QKJ0542	Switch Rod-B
G 67	[DB] XTN3 + 12B	Tapping Screw $\oplus 3 \times 12$
	[For all European areas.]	
G 68	QTW1277	Shield Plate
G 69 [D]	QGS3018	Main Name Plate
	[For all European areas except United Kingdom.]	
	[B] QGS3019	Main Name Plate
	[For United Kingdom.]	
	[N] QGS3021	Main Name Plate
	[For Asia, Latin America, Middle East and Africa areas.]	
G 70 [N]	QTD1129	Cord Bushing
	[For Asia, Latin America, Middle East and Africa areas.]	
<u>ACCESSORIES</u>		
A 1	QEB0125	Stereo Pin Card
A 2 [D]	QQT3313	Instruction Book
	[For all European areas except United Kingdom.]	
	[B] QQT3314	Instruction Book
	[For United Kingdom.]	
	[N] QQT3335	Instruction Book
	[For Asia, Latin America, Middle East and Africa areas.]	
A 3	[N] Δ QJP0603S	AC Plug Adapter or
	[For Asia, Latin America, Middle East and Africa areas.]	
<u>PACKINGS</u>		
P 1	QPN4333	Inside Carton
P 2	QPA0673	Cushion-A
P 3	QPA0674	Cushion-B
P 4	XZB50X65A02	Poly Bag
P 5	QPC0072	Sheet
P 6	QPA0662	Spacer

WIRING CONNECTION DIAGRAM





MECHANICAL PARTS LOCATION



SPECIFICATIONS

Pressure of pressure roller	350±50 g
Takeup tension	40 ⁺¹⁵ ₋₁₅ g·cm
* Use cassette torque meterQZZSRKCT	
Wow and flutter; (JIS)	Less than
* Use test tapeQZZCWAT	0.05% (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	Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
MECHANICAL PARTS			M 13	QMB1336	Reel Table Hub	M 26	QMZ1263	Head Spacer	M 36	QXA1076	Trigger Plunger Assembly	M 49	XSS26 + 4BV	Screw @2.6×4	M 60	QML3659	Brake Lever	M 71	QXH0410	
M 1	QMF2234	Cassette Holder Plate	M 14	QML3655	Cam Follower	M 27	QBC1103	Head Spring	M 37	QML3800	Trigger Plunger Lever	M 50	XSS26 + 8	Screw @2.6×8	M 61	QBG1132	Brake Lever	M 72	QML3772	
M 2	QXF0176	Flywheel Assembly	M 15	QML3661	Erase Safety Lever	M 28	QML3717	Tape Detection Lever (for Metal Tape)	M 38	QML3653	Control Lever	M 51	QXL1406	Pressure Roller Assembly	M 62	QXL1411	Lock Lever Assembly	M 73	XTN3 + 6B	
M 3	QTW1251	Insulating Sheet	M 16	QML3660	Idler Select Lever	M 29	QMN2642	Detection Lever Shaft	M 39	QBT1938	Lock Spring	M 52	QBN1771	Pressure Roller Spring	M 63	QMA4072	Auto Tape Selector Angle	M 74	QBW2020	
M 4	QDG1128	F.G. Plate	M 17	QBC1373	Reel Table Spring	M 30	QXA1216	Side Angle	M 40	QBT1278	Record Lock Lever Spring	M 53	QXG1059	Main Gear Assembly	M 64	QBW2008	Snap Washer	M 75	QBT1725	
M 5	QDB0287	Changing Belt	M 18	QBT1927	Head Base Plate Return Spring	M 30-1	QBT1920	Intermediate Lever Spring	M 41	QXU0251	Takeup Reel Motor Assembly	M 54	XTS26 + 8B	Screw @2.6×8	M 65	XTN2 + 6B	Tapping Screw @2×6	M 76	XTN3 + 12	
M 6	QMA4447	Reinforcement Angle-B	M 19	QBT1933	Lock Lever Spring	M 31	QXD0120	Takeup Reel Table Assembly	M 42	QXA1077	Motor Retainer Assembly	M 55	QXL1423	Idler Lever Assembly	M 66	QBW2014	Washer	M 77	XTN3 + 24	
M 7	QMA4085	Center Angle	M 20	QBN1772	Erase Safety Lever Spring	M 32	XTN2 + 10B	Tapping Screw @2×10	M 43	QDB0286	Takeup Belt	M 56	QXI0116	Takeup Idler Assembly	M 67	QXQ0123	F.G. Coil Assembly	M 78	XTN26 + 3	
M 8	QMA4087	Side Angle-R	M 21	QBT1920	Idler Spring	M 33	QXA1232	Brake Plunger Assembly	M 44	QXP0621	Takeup Pulley	M 57	QXL1408	Swing Gear Lever Assembly	M 68	QJI1466RR	Leaf Switch F.P.C (for S601, 602, 603, 604, 605)	M 79	XUC3FT	
M 9	QBP1894	Head Spring	M 22	XTN26 + 8B	Tapping Screw @2.6×8	M 34	QML3865	Plunger Lever	M 45	XSN26 + 3	Screw @2.6×3	M 58	QXL1409	Fast Wind Arm Assembly	M 69	QXK2560	Amature Coil Assembly (with H1, H2 and F.P.C)	M 80	XSN2 + 10	
M 10	QBP1895	Cassette Pressure Spring	M 23	XTN26 + 12B	Tapping Screw @2.6×12	M 35	QBT1955	Brake Spring	M 46	XTN2 + 5B	Tapping Screw @2×5	M 59	QML3716	Tape Detection Lever (for Normal/CrO ₂ Tape)	M 81	XUC2FT		M 82	QBT1931	
M 11	QMA4448	Reinforcement Angle-A	M 24	QBW2046	Snap Washer				M 47	XUB4FT	Stop Ring 4φ				M 83	XWA3B		M 84	XWG2	
M 12	QDR1146	Supply Reel Table	M 25	QMK1867	Head Base Plate				M 48	QXU0250	Reel Motor Assembly									

Service Manual

Cassette Deck

dbx* -Equipped Direct Drive
Stereo Cassette Deck

RS-M275X

(Silver Face)
(Black Face)

Supplement-1



RS-M250 MECHANISM SERIES

- For **D** **B** **N** mark areas, use this manual together with the service manual for model No. RS-M275X (Original) order No. ARD82050141C8-24.
- For **A** mark areas, use this manual together with the service manual for model No. RS-M275X (Original) order No. ARD82070178A3-01.

PARTS COMPARISON TABLE:

Please revise the original parts list in the Service Manual (RS-M275X) to conform to the changes shown herein.

If new part numbers are shown, be sure to use them when ordering parts.

Ref. No.	Part Name & Description	Part Numbers	
		Former Type	New Type
G2	Case Foot	QKA1086	QKA1094
M58	Fast Wind Arm Assembly	QXL1409	QXL1604

This is the Service Manual for the following areas.

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

B ...For United Kingdom.

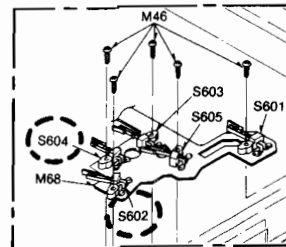
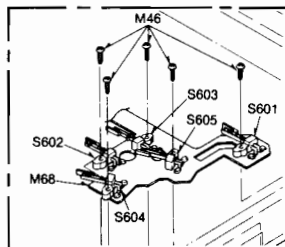
N ...For Asia, Latin America, Middle East and Africa areas.

A ...For Australia.

MEASUREMENT AND ADJUSTMENT METHODS (Correction)

ITEM	MEASUREMENT & ADJUSTMENT
① Dolby NR circuit Condition: * Record/playback mode * NR switch...OUT/B/C * Input level controls ...MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape...QZZCFM	Checking Dolby circuit frequency response • Dolby-B (Encoding characteristics check) 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at (LINE OUT) is 17.5mV. 4. Change the input signal frequency to 1kHz, and set the output signal level at TP804 to 0dB. Measure the level when the NR switch is set to B, and check that the level difference is 6 ± 1.5 dB. 5. Check the level difference in the same way as step 4 above using a 5kHz signal. The output signal level difference between Dolby-B IN and OUT should be 8 ± 1.5 dB.

MECHANICAL PARTS LOCATION (Correction)



* The term dbx is a registered trademark of dbx Inc.

** '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

(ARD, H.M.) Printed in Japan

Service Manual

Supplement-1

Microprocessor Controlled Cassette Deck
with 3-Head, Closed Loop System



Cassette Deck

RS-M273

(Silver Face)
(Black Face)

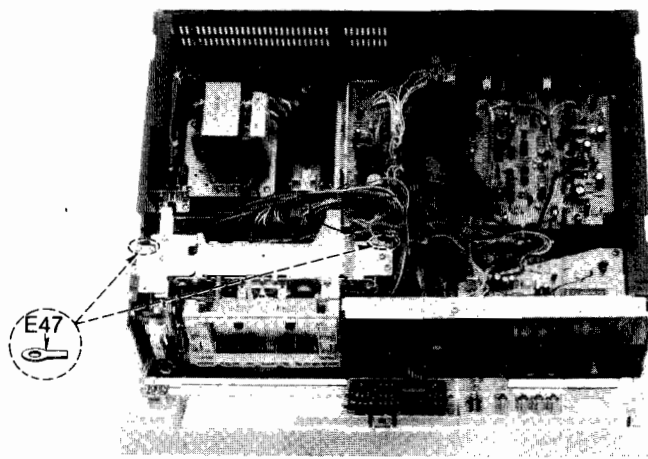
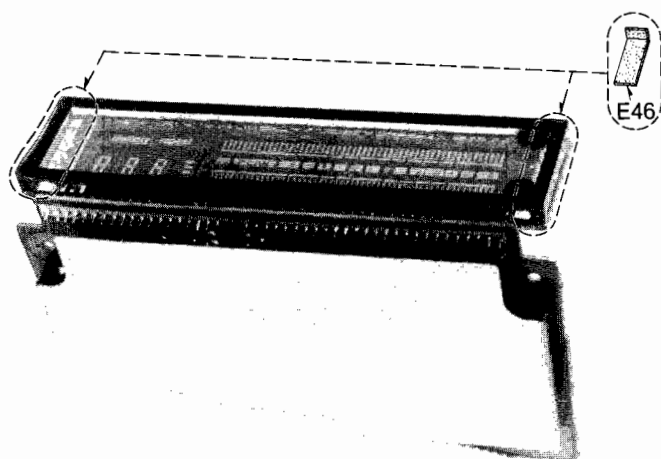


This is the Service Manual for the following areas.

- For all European areas except United Kingdom.
- ⊠ For United Kingdom.

Please use this manual together with the service manual for model No. RS-M273 (original) order No. ARD81090091C2-23.

ELECTRICAL PARTS LOCATION (ADDITION)



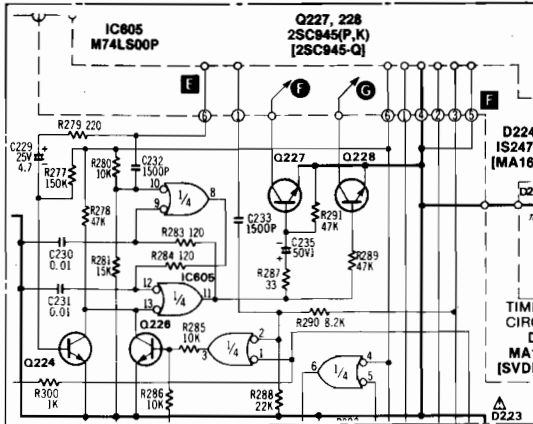
* 'Dolby' and the double-D symbols are trademarks of Dolby Laboratories.

Technics

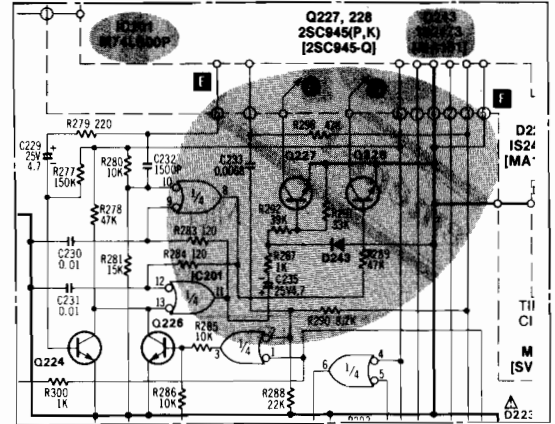
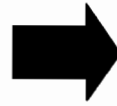
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SCHEMATIC DIAGRAM

Main Section (DIFFERENCE)



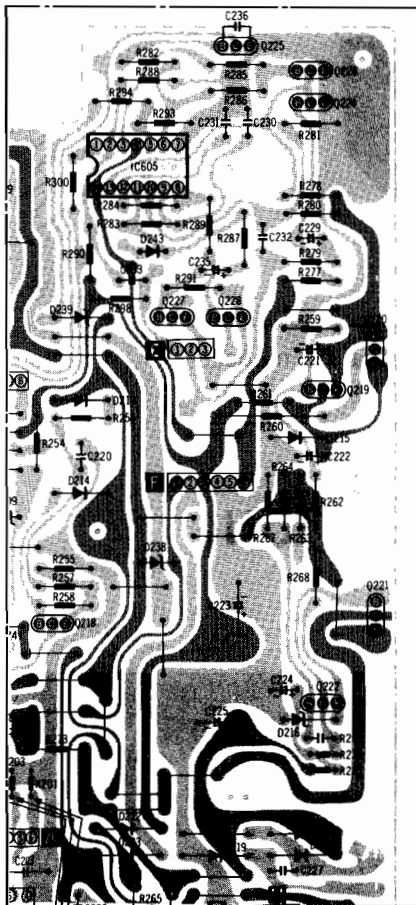
Former Type



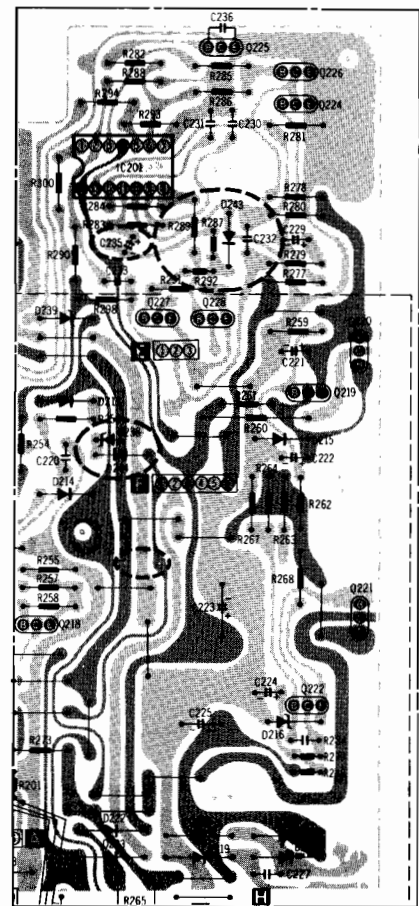
New Type

CIRCUIT BOARDS

Main Circuit Board (DIFFERENCE)

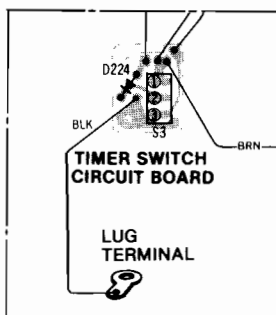


Former Type

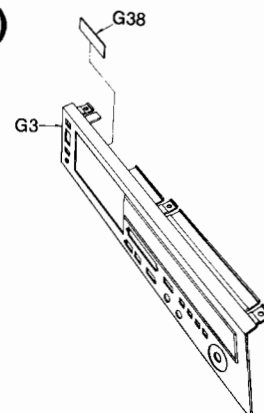


New Type

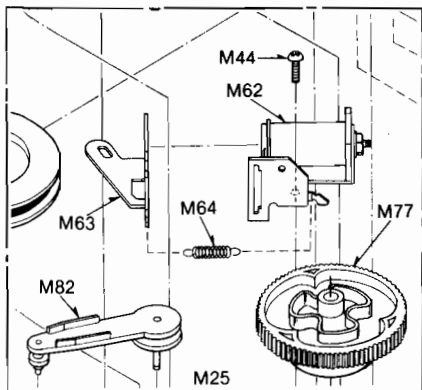
WIRING CONNECTION DIAGRAM (ADDITION)



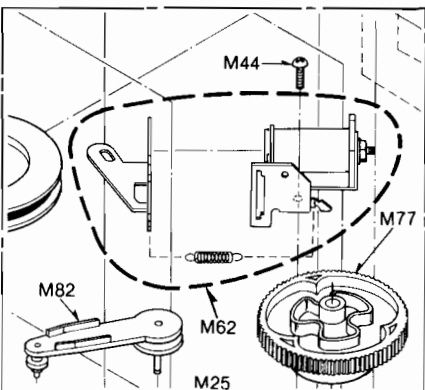
CABINET PARTS LOCATION (ADDITION)



MECHANICAL PARTS LOCATION
(DIFFERENCE)

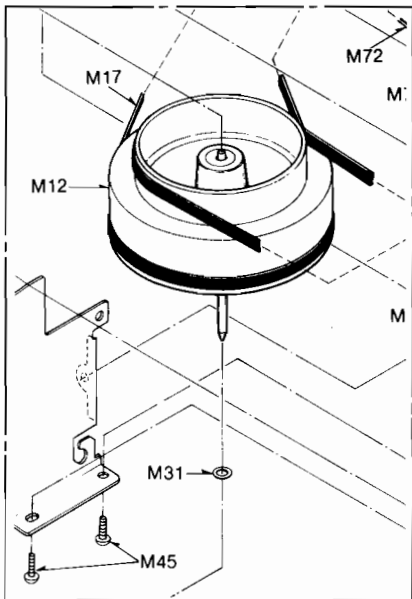


Former Type

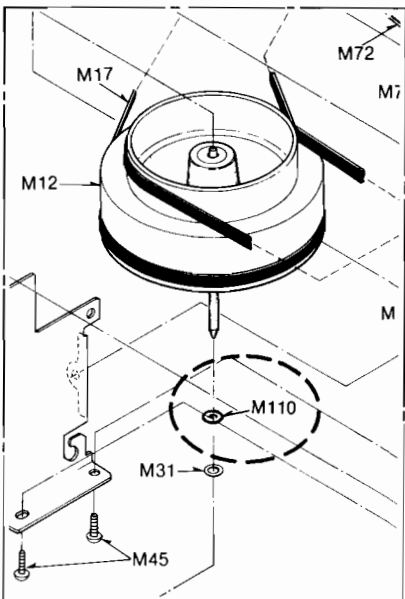


New Type

(ADDITION)

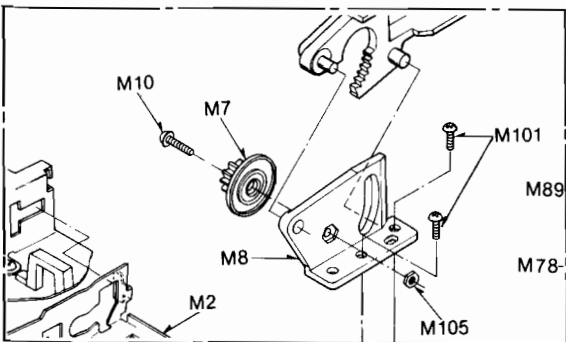


Former Type

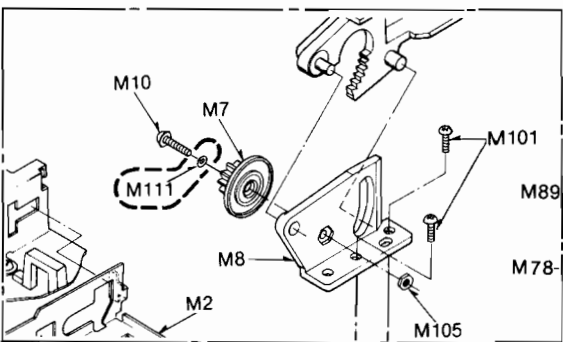


New Type

(ADDITION)



Former Type



New Type

PARTS COMPARISON TABLE:

Please revise the original parts list in the Service Manual to conform to the changes shown herein.

If new parts number are shown, be sure to use them when ordering parts.

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.	Parts Name & Description	Parts Number		Remarks
		Former Type	New Type	
M10	Screw $\oplus 2.6 \times 8$	XTN26+8	XSN26+8	
M26	Lever (Detector)	QML3611	QML3661	
M62	Angle Assembly (with Plunger)	QXA1075	QXA1072	
M63	Lever (for Plunger)	QML3650		Deleted
M64	Spring	QBT1924		Deleted
M70	Capstan Motor	QXU0268	QXU0269	
M80	Pressure Roller Lever-R	QXL1406	QXL1532	
M80-1	Pressure Roller Spring	QBN1771	QBN1884	
M110	Washer		QBJ3221	Added
M111	Washer 2.6 ϕ		XWG26	Added
R137, 138	Resistor	ERO25TKG2003 (200k Ω)	ERO25CKG2003 (200k Ω)	
R157	Resistor	ERD25FJ221 (220 Ω)	ERQ14AJ181P (180 Ω)	
R167, 168	Resistor	ERD25FJ330 (33 Ω)	ERD25FJ101 (100 Ω)	
R235	Resistor	ERD25TJ183 (18k Ω)	ERD25TJ393 (39k Ω)	
R236	Resistor	ERD25FJ562 (5.6k Ω)	ERD25FJ472 (4.7k Ω)	
R237	Resistor	ERD25FJ682 (6.8k Ω)	ERD25FJ472 (4.7k Ω)	
R253	Resistor	ERD25TJ273 (2.7k Ω)	ERD25TJ104 (100k Ω)	
R256	Resistor	ERD25FJ122 (1.2k Ω)	ERD25FJ272 (2.7k Ω)	
R264	Resistor	ERO25KF1502 (15k Ω)	ERO25CKF1502 (15k Ω)	
R269	Resistor	ERG1ANJ3R9 (3.9 Ω)		Deleted
R273	Resistor	ERQ12AJ181P (180 Ω , 1/2W)	ERD25FJ271 (270 Ω , 1/4W)	
R287	Resistor	ERD25FJ330 (33 Ω)	ERD25FJ102 (1k Ω)	
R289	Resistor	ERD25FJ473 (47k Ω)	ERD25FJ102 (1k Ω)	
R291	Resistor	ERD25TJ473 (47k Ω)	ERD25TJ393 (39k Ω)	
R292	Resistor	ERD25FJ103 (10k Ω)	ERD25TJ393 (39k Ω)	
R298	Resistor		ERD25TJ473 (47k Ω)	Added
R313, 314	Resistor	ERO25KG2702S (27k Ω)	ERO25CKF2702S (27k Ω)	
C5, 6	Capacitor	ECKD1H561KB (560pF)	ECKD1H471KB (470pF)	
C21	Capacitor	ECEA1ES101 (16V 100 μ F)	ECEA1CS221 (16V 220 μ F)	
C34	Capacitor		ECQM1H273JZ (0.027 μ F)	Added
C58	Capacitor	ECEA50Z3R3 (50V 3.3 μ F)	ECEA50Z1 (50V 1 μ F)	
C155, 156	Capacitor	ECQV05153JZ (0.015 μ F)	ECQV05103JZ (0.01 μ F)	
C206	Capacitor	ECQF6682KZH (0.0068 μ F)	ECQM1H682JZ (0.0068 μ F)	
C215	Capacitor	ECEA1CN100S (16V 10 μ F)	ECEA1CN220S (16V 22 μ F)	
C233	Capacitor	ECKD1H152KB (0.0015 μ F)	ECQM1H682JZ (0.0068 μ F)	
C235	Capacitor		ECEA25Z4R7 (25V 4.7 μ F)	Added
C301, 302	Capacitor	ECEA50Z3R3 (50V 3.3 μ F)	ECEA50ZR22 (50V 0.22 μ F)	
D238	Diode	RD5R6EB	RD3R9EB	
D243	Diode		MA161	Added
IC201	Integrated Circuit		M74LS00P	Added
IC606	Integrated Circuit	M74LS00P		Deleted
F1 Δ	Fuse (T 1.6A)	XBA0010	XBAQ0010	
E1	Head (Record/Playback)	QWY4125ZA	QWY4125W	
E46	Meter Cushion		QBMM0019	Added
E47	Lug Terminal		QTD1001	Added
G17	Meter Cover "Silver Type"	QGLM0026	QGLM0033	
	Meter Cover "Black Type"	QGLM0026Y	QGLM0033Y	
G38	Spacer		QGKM0167	Added
P7	Spacer		QPAM0051	Added
P8	Pad		QPS0434	Added