


# Service Manual

\*\*  
 dbx/Dolby NR Equipped  
 Stereo Cassette Deck

Cassette Deck  
**RS-B605**

\*  
 **DOLBY B-C NR HX PRO**

Color

(K)...Black Type  
 (S)...Silver Type



Color	Areas
(K)	[M].....U.S.A.
(K)	[MC].....Canada.
(K) (S)	[E].....All European areas except United Kingdom.
(K) (S)	[EK].....United Kingdom.
(K) (S)	[EG].....F.R. Germany.
(K) (S)	[EH].....Holland.
(K) (S)	[XA].....Asia, Latin America, Middle Near East, Africa and Oceania.
(K) (S)	[XL].....Australia.
(K) (S)	[XB].....Saudi Arabia.

## SPECIFICATIONS

### ■ CASSETTE DECK SECTION

Deck system Stereo cassette deck  
 Track system 4-track, 2-channel  
 Heads  
 REC/PLAY Solid Permaloy head  
 Erasing Double-gap ferrite head  
 Motors Electronically controlled DC motor  
 Recording system AC bias  
 Bias frequency 80 kHz  
 Erasing system AC erase  
 Tape speed 4.8 cm/sec. (1-7/8 ips)  
 S/N (signal level = max recording level, CrO<sub>2</sub> type tape)  
 dbx on 92 dB (A weighted)  
 Dolby C NR on 74 dB (CCIR)  
 Dolby B NR on 66 dB (CCIR)  
 NR off 56 dB (A weighted)  
 Wow and flutter 0.06% (WRMS)

Frequency response ±0.18% (DIN)  
**METAL** 20 Hz~19 kHz  
 30 Hz~18 kHz (DIN)  
 CrO<sub>2</sub> 20 Hz~18 kHz  
 30 Hz~17 kHz (DIN)  
**NORMAL** 20 Hz~17 kHz  
 30 Hz~16 kHz (DIN)  
 Dynamic Range (with dbx on) 110 dB (1 kHz)  
 Max. Input level improvement (with dbx on) 10 dB  
 Fast Forward and Rewind Time  
 Approx. 100 seconds with C-60 cassette tape  
 Input sensitivity and impedance  
 MIC 0.25 mV/400 Ω~10 kΩ  
 LINE 60 mV/47 kΩ  
 Output voltage and impedance

LINE 400 mV/3 kΩ  
 HEADPHONES 80 mV/8 Ω  
 ■ GENERAL  
 Power consumption 20W  
 Power supply  
 For U.S.A. and Canada AC 60 Hz, 120V  
 For continental Europe AC 50 Hz/60 Hz, 220V  
 For United Kingdom and others  
 AC 50 Hz/60 Hz, 110V/127V/220V/240V  
 Dimensions (W×H×D) 430 × 114.5 × 287 mm  
 (16-15/16" × 4-1/2" × 11-5/16")  
 Weight 4.3 kg (9.5 lb.)  
 Note:  
 Specifications are subject to change without notice.  
 Weight and dimensions are approximate.

\* HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.  
 "DOLBY", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.  
 \*\* The term dbx is a registered trademark of dbx Inc.

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# Technics

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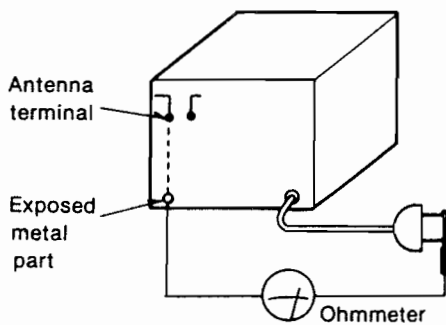
## SAFETY PRECAUTION (This "safety precaution" applies only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### INSULATION RESISTANCE TEST

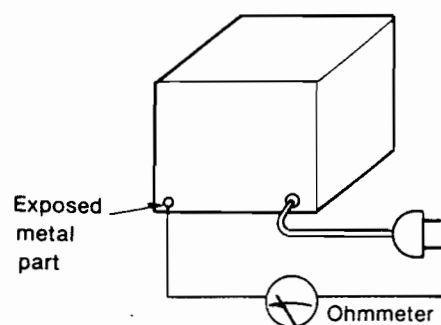
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance =  $3M\Omega$ — $5.2M\Omega$



(Fig. B)

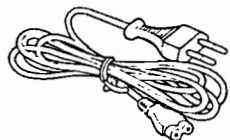
Resistance = Approx  $\infty$

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

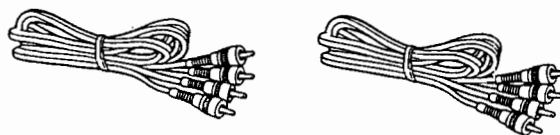
## ACCESSORIES

- AC power supply cord ..... 1

SJA171	[E, EH, EG]
SFDAC05G02	[EK]
SJA173	[XL]
SJA168-1	[XA]
SJA183	[XB]
SJA170T	[M]
SJA170	[MC]

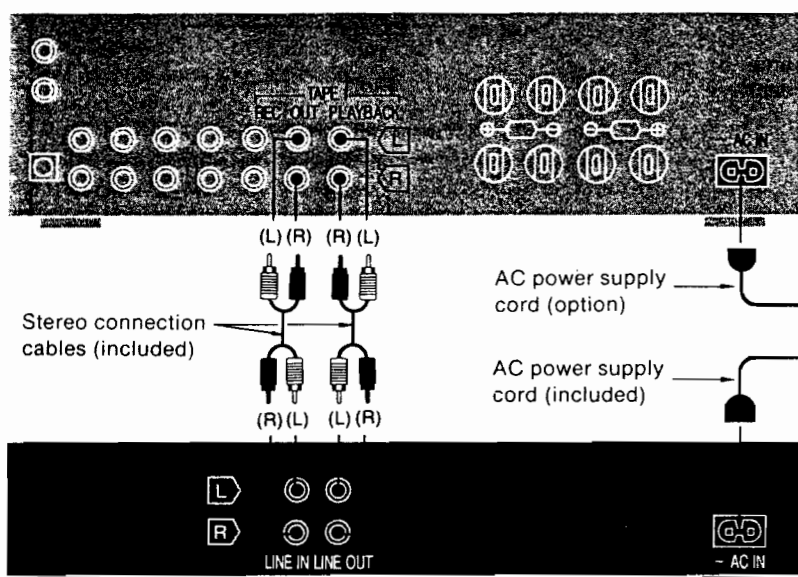


- Stereo connection cables ..... 2 (SJP2264)



Note: Configuration of AC power supply cord differs according to area.

## HOW TO CONNECTION



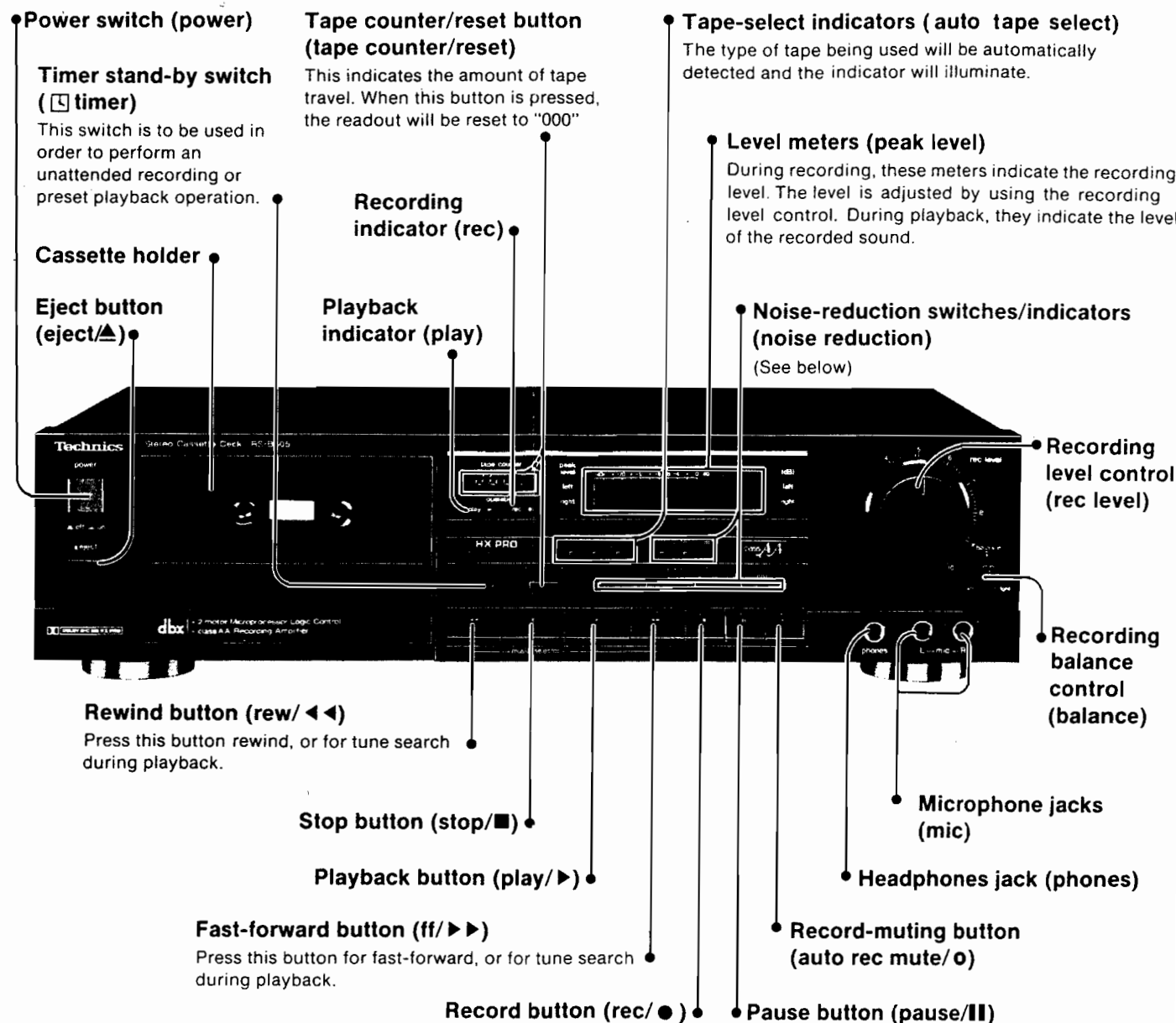
Stereo amplifier (option)

### Placement Hints

If this unit is placed near a stereo amplifier or tuner, a "hum" noise may be heard during tape playback, recording, or AM reception of the tuner. If this occurs, leave as much space as possible between the units, or place them where there is the least amount of "hum".

Note: The configuration of the AC outlet and AC power supply cord differs according to area. (For United Kingdom) Fit a suitable plug to the AC power supply cord.

## LOCATION OF CONTROLS



## Noise reduction systems

### Dolby NR B type

Noise is reduced to about one-third. Use this system when playing back tapes recorded by the Dolby noise-reduction system, such as prerecorded music tapes, etc.

### Dolby NR C type

Hiss noise is reduced to about one-tenth. Use this system for the recording and playback of sound sources that have a wide dynamic range and good tone quality, such as FM broadcasts of live performances, etc., and for playing back such tapes.

### dbx noise-reduction system

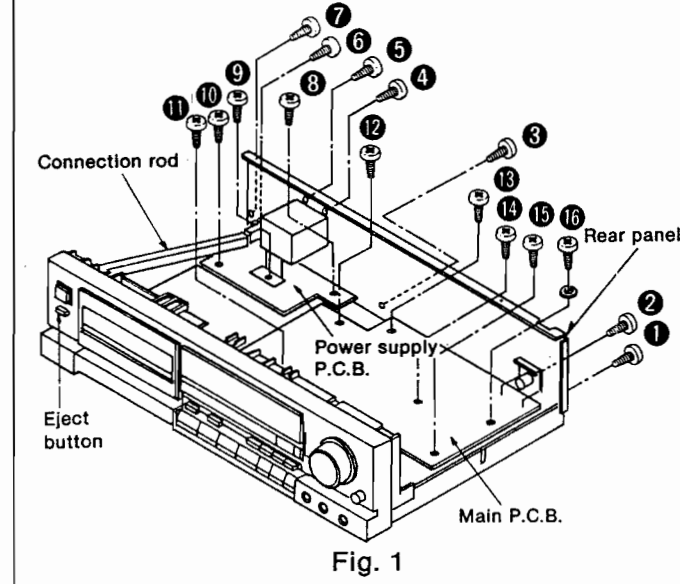
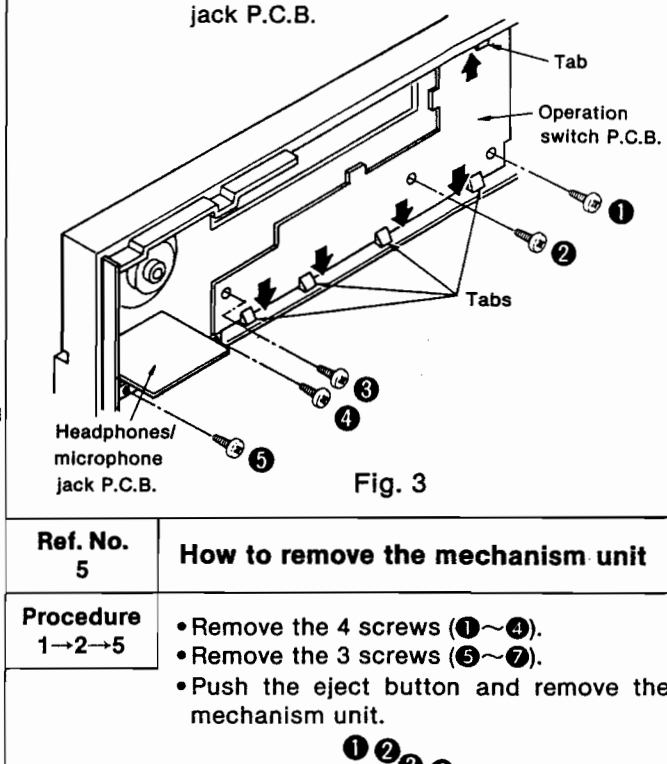
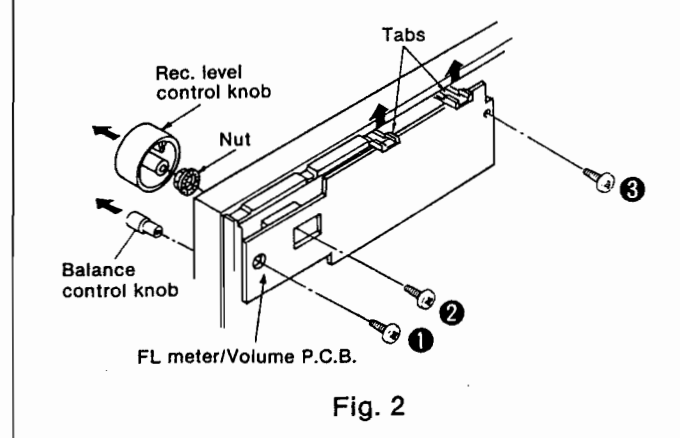
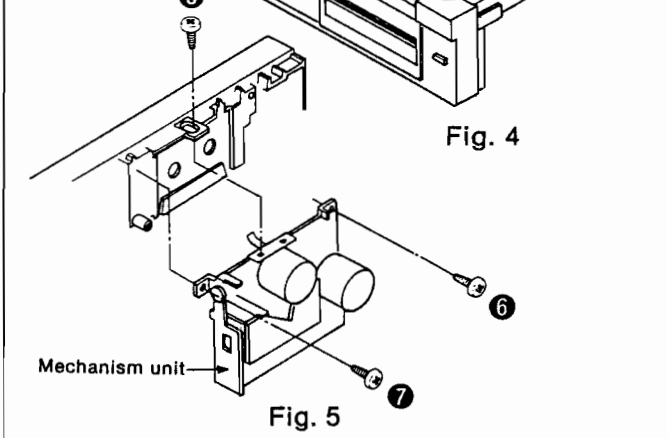
With this noise-reduction system, "hiss" noise is reduced to about 1/30. This system is particularly suitable for the recording and playback of live FM broadcasts and other sound sources with high tone quality and a wide dynamic range.

### About the Dolby HX Pro headroom extension system

By functioning to improve the maximum output level of the tape's high-frequency range, this system permits recordings without a drop of the level of the sound source's high-frequency range. In addition, by using the system in parallel with this unit's noise-reduction system, recording and playback with a greatly extended dynamic range is possible.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation. The term dbx is a registered trademark of dbx Inc.

## DISASSEMBLY INSTRUCTIONS

<p><b>Ref. No. 1</b></p> <p><b>How to remove the cabinet</b></p>	<p><b>Ref. No. 4</b></p> <p><b>How to remove the operation switch P.C.B. and the headphones/microphone jack P.C.B.</b></p>
<p><b>Procedure 1</b></p> <ul style="list-style-type: none"> <li>Remove the 7 screws.</li> </ul>	<p><b>Procedure 1→2→3→4</b></p> <ul style="list-style-type: none"> <li>Remove the 3 screws (1~3).</li> <li>Release the 5 tabs, and then remove the operation switch P.C.B.</li> <li>Remove the 2 screws (4, 5), and then remove the headphones/microphone jack P.C.B.</li> </ul>
<p><b>Ref. No. 2</b></p> <p><b>How to remove the power supply P.C.B. and the main P.C.B.</b></p>	
<p><b>Procedure 1→2</b></p> <ul style="list-style-type: none"> <li>Remove the 7 screws (1~7), and then remove the rear panel.</li> <li>Remove the connection rod.</li> <li>Remove the 3 screws (8~10).</li> <li>Remove the power supply P.C.B.</li> <li>Remove the 6 screws (11~16).</li> <li>Remove the main P.C.B.</li> </ul>  <p>Fig. 1</p>	 <p>Fig. 3</p>
<p><b>Ref. No. 3</b></p> <p><b>How to remove the FL meter/Volume P.C.B.</b></p>	<p><b>Ref. No. 5</b></p> <p><b>How to remove the mechanism unit</b></p>
<p><b>Procedure 1→2→3</b></p> <ul style="list-style-type: none"> <li>Pull out the rec. level control knob and the nut.</li> <li>Pull out the balance control knob.</li> <li>Remove the 3 screws (1~3).</li> <li>Release the 2 tabs, and then remove the FL meter/Volume P.C.B.</li> </ul>	<p><b>Procedure 1→2→5</b></p> <ul style="list-style-type: none"> <li>Remove the 4 screws (1~4).</li> <li>Remove the 3 screws (5~7).</li> <li>Push the eject button and remove the mechanism unit.</li> </ul>
 <p>Fig. 2</p>	 <p>Fig. 4</p> <p>Fig. 5</p>

### “ATTENTION SERVICER”

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

## MEASUREMENT AND ADJUSTMENT METHODS

### Measurement Condition

- Rec. level control; Maximum
- Timer start switch; Off
- Noise reduction select switch; Off

- Balance control; Center
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

### Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

- ATT (Attenuator)
- DC voltmeter
- Resistor ( $600\Omega$ )

### Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment Normal reference blank tape; QZZCRA
- CrO<sub>2</sub> reference blank tape; QZZCRX
- Metal reference blank tape; QZZCRZ

### HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjustment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

**Note:** If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.

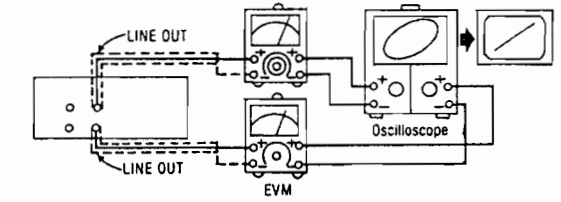


Fig. 1

Record/Playback Head

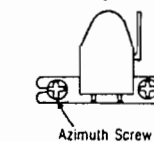


Fig. 2

### TAPE SPEED ADJUSTMENT

1. Playback the middle portion of the test tape (QZZCWAT).

2. Adjust the VR in the motor so that the output is within the standard value.

Standard value:  $3000 \pm 15\text{Hz}$

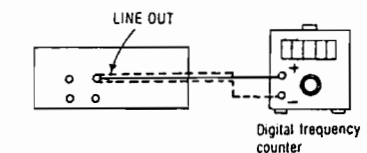


Fig. 3

### PLAYBACK GAIN ADJUSTMENT

1. Playback the gain adjusted portion (315 Hz, 0 dB) of the test tape (QZZCFM).

2. Adjust VR5 (L-CH) and VR6 (R-CH) so that the output is within the standard value.

Standard value:  $0.4\text{V} \pm 0.5\text{dB}$

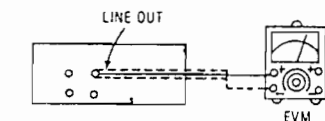


Fig. 4

### PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315 Hz, 12.5 kHz ~ 63 Hz, -20 dB) of the test tape (QZZCFM).

2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

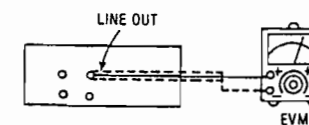


Fig. 5

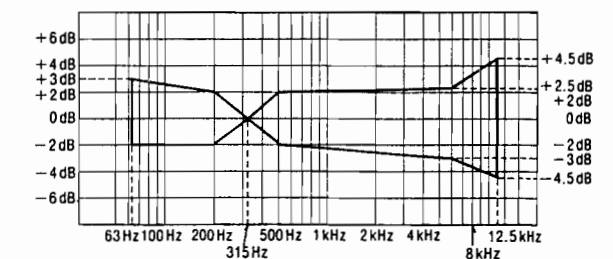


Fig. 6

**OVERALL FREQUENCY RESPONSE**  
(Bias current adj.)

1. Insert the a Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1 kHz, -24 dB) through an attenuator.
3. Attenuate the signal by 20 dB and adjust the frequency from 50 Hz ~ 12.5 kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig.8 in comparison to the reference frequency (1 kHz).
6. If it is not within the standard range, adjust VR301 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
  - Level up in high frequency range.....Increase the bias current.
  - Level down in high frequency range...Decrease the bias current.
7. Repeat steps 2 ~ 6 above using the CrO<sub>2</sub> tape(QZZCRX) and the Metal tape(QZZCRZ) increasing the frequency range to 14 kHz (50 Hz ~ 14 kHz).
8. Assure that the level is within the range shown in Fig.9.

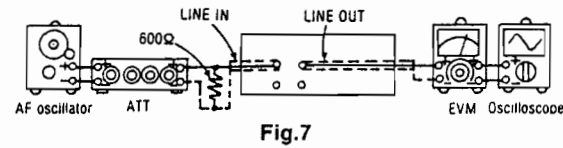


Fig.7

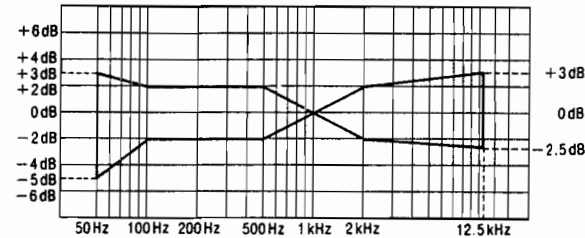


Fig.8

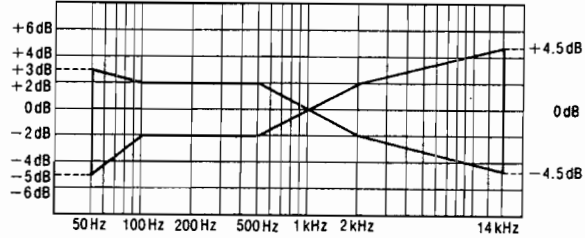


Fig.9

**OVERALL GAIN ADJUSTMENT**

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1 kHz, -24 dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust VR7 (L-CH) and VR8 (R-CH).
6. Repeat the step 2 ~ 5 above until the output is within the standard value.

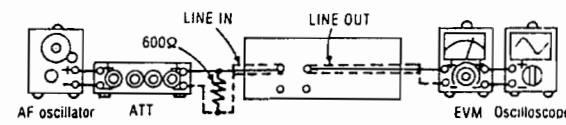


Fig.10

Standard value: 0.4V ± 0.5dB

**FLUORESCENT METER ADJUSTMENT**

1. Insert the Normal blank test tape(QZZCRA) and apply a reference input signal (1 kHz, -24 dB) in the Record Pause mode.
2. Using an attenuator, adjust until the voltage of the tape decks "LINE OUT" terminals is 0.4V.
3. Adjust VR701 so that the "0 dB" segment is slightly illuminated.

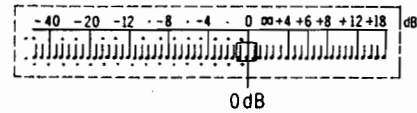


Fig. 11

**dbx TIMING ADJUSTMENT**

1. Shift the noise reduction switch to the dbx position.
2. Playback the gain adjustment portion (315 Hz, 0 dB) of the test tape (QZZCFM).
3. Connect a DC voltmeter across TP501 and TP502.
4. Adjust VR501 so that the output is within the standard value.

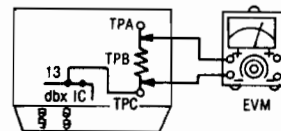
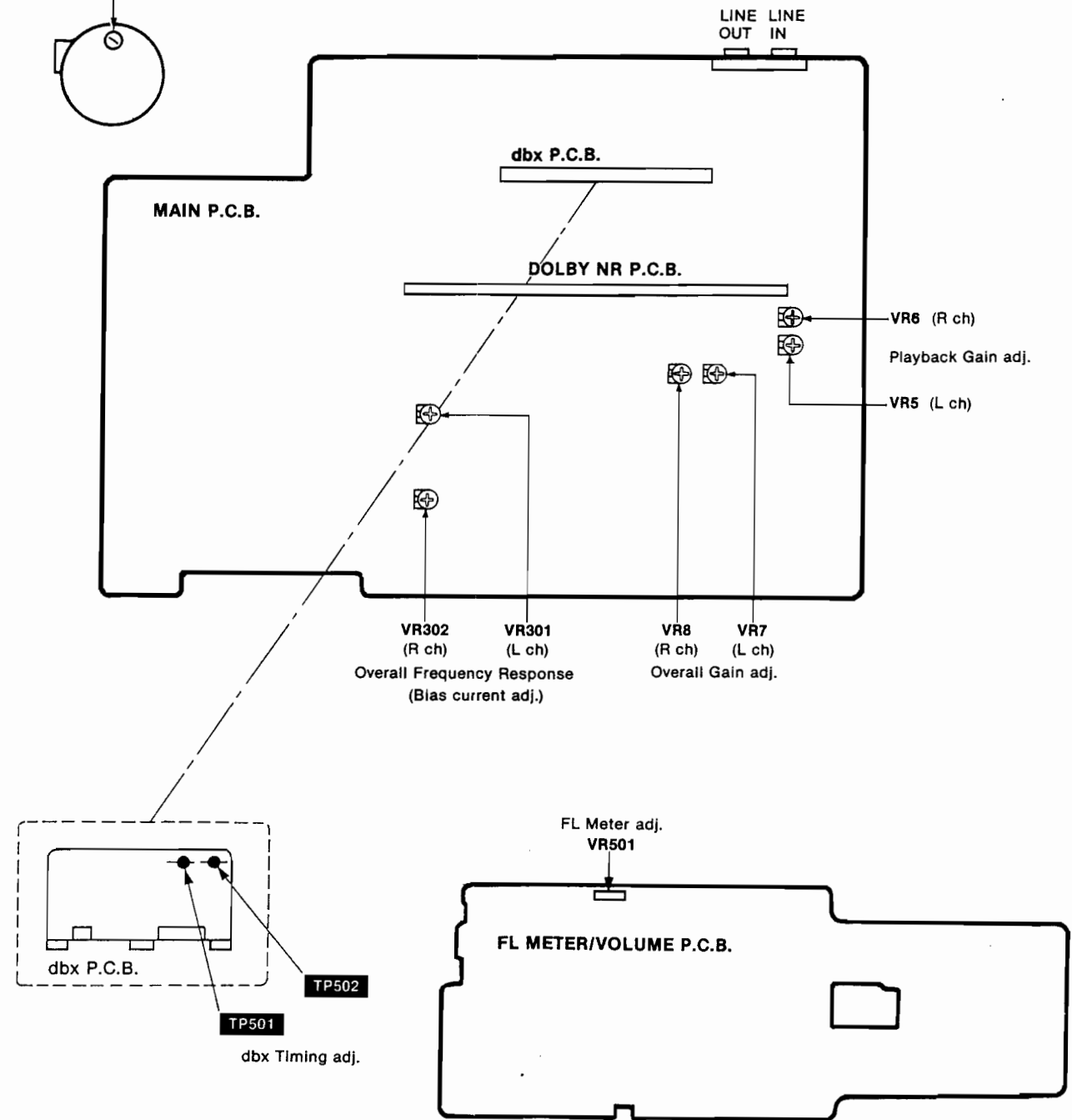
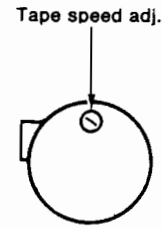


Fig. 12

TPA: TP501, TPB: R521, TPC: TP502

Standard value: DC18.4mV ± 0.5mV

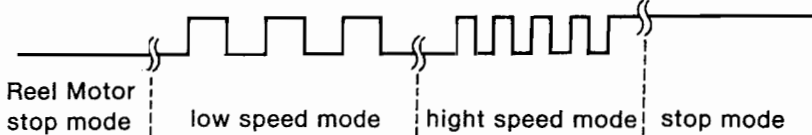
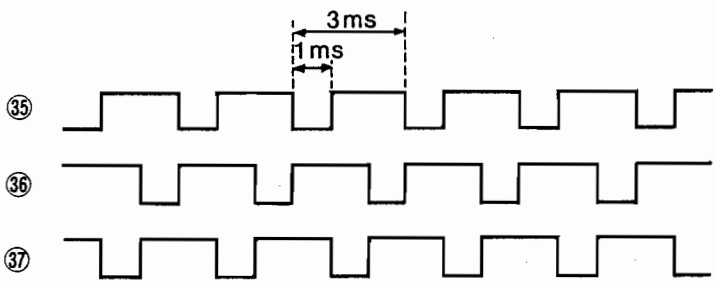
• Adjustment point



**■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC801: M50720-411SP)** \*This microcomputer is used for mechanical operation.

Terminal No.	In/Out	Symbol	Function/operation
1	In/Out	NRB	Reading of Dolby B switch (S10) & Dolby B LED control. <ul style="list-style-type: none"> <li>• "L" input when switch (S10) is on mode.</li> <li>• "H" input when switch (S10) is off mode.</li> <li>• Dolby B LED turned on when output level is "L".</li> <li>• Dolby B LED turned off when output level is "H".</li> </ul>
2	In/Out	NRC	Reading of Dolby C switch (S11) & Dolby C LED control. <ul style="list-style-type: none"> <li>• Input level is "L" when switch (S11) is on mode.</li> <li>• Input level is "H" when switch (S11) is off mode.</li> <li>• Dolby C LED turned on when output level is "L".</li> <li>• Dolby C LED turned off when output level is "H".</li> </ul>
3	In/Out	NRX	Reading of dbx switch (S12) & dbx LED control <ul style="list-style-type: none"> <li>• Input level is "L" when switch (S12) is on mode.</li> <li>• Input level is "H" when switch (S12) is off mode.</li> <li>• dbx LED turned on when output level is "L".</li> <li>• dbx LED turned off when output level is "H".</li> </ul>
4	Output	X <sub>OUT</sub>	• Clock OSC terminal.
5	Input	X <sub>IN</sub>	
6	Input	CE	Reset input terminal. <ul style="list-style-type: none"> <li>• Connected to V<sub>DD</sub> (+5V).</li> </ul>
7	Input	$\overline{\text{RESET}}$	Reset terminal (The microcomputer is reset when "L" level is applied for longer than one machine cycle.)
8	Input	V <sub>DD</sub>	Power supply terminal.
9	—	CNTR	Timer terminal. <ul style="list-style-type: none"> <li>• Not used in this unit (Connected to GND).</li> </ul>
10	—	INT	External interruption input terminal. <ul style="list-style-type: none"> <li>• Not used in this unit (Connected to GND).</li> </ul>
11	—	C	Terminal with external capacitor. <ul style="list-style-type: none"> <li>• Not used in this unit.</li> </ul>
12	Output	$\overline{\text{R/P}}$	Record/playback selector & Rec LED control. <ul style="list-style-type: none"> <li>• Record mode and Rec LED turned on when output level is "L".</li> <li>• Playback mode and Rec LED turned off when output level is "H".</li> </ul>
13	Output	$\overline{\text{BIAS}}$	Bias OSC control. <ul style="list-style-type: none"> <li>• When output level is "L", Bias oscillation is state.</li> <li>• When output level is "H", Bias oscillation is stop.</li> </ul>

Terminal No.	In/Out	Symbol	Function/operation																				
14	Output	$\overline{120/70}$	Playback equalizer (120 $\mu$ s/70 $\mu$ s) selector. <ul style="list-style-type: none"> <li>• Equalizer is 120<math>\mu</math>s mode when output level is "L".</li> <li>• Equalizer is 70<math>\mu</math>s mode when output level is "H".</li> </ul>																				
15	Output	MS	In MS action, the muting of recording amplifier is turned on or off.																				
16	Output	MMT	Meter mute control. <ul style="list-style-type: none"> <li>• Meter muting is on mode when output level is "L".</li> <li>• Meter muting is off mode when output level is "H".</li> </ul>																				
17	Output	NR IN/OUT	Noise reduction selector.  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>NR OUT</th> <th>Dolby B</th> <th>Dolby C</th> <th>dbx</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>H</td> <td>L</td> <td>L</td> <td>L</td> </tr> <tr> <td>18</td> <td>H</td> <td>H</td> <td>L</td> <td>H</td> </tr> <tr> <td>19</td> <td>H</td> <td>H</td> <td>H</td> <td>L</td> </tr> </tbody> </table>		NR OUT	Dolby B	Dolby C	dbx	17	H	L	L	L	18	H	H	L	H	19	H	H	H	L
	NR OUT	Dolby B		Dolby C	dbx																		
17	H	L		L	L																		
18	H	H	L	H																			
19	H	H	H	L																			
18	Output	Dolby B/C																					
19	Output	dbx																					
20	—	CNV <sub>SS</sub>	• Connected to V <sub>SS</sub> .																				
21	—	V <sub>SS</sub>	• Connected to GND.																				
22	Output	RMF	Reel motor rotation control.  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Forward direction</th> <th>Reverse direction</th> <th>Stop</th> </tr> </thead> <tbody> <tr> <td>22</td> <td>H</td> <td>L</td> <td>L</td> </tr> <tr> <td>23</td> <td>L</td> <td>H</td> <td>L</td> </tr> </tbody> </table>		Forward direction	Reverse direction	Stop	22	H	L	L	23	L	H	L								
	Forward direction	Reverse direction		Stop																			
22	H	L	L																				
23	L	H	L																				
23	Output	RMR																					
24	Output	RPC	Reel motor torque control. <ul style="list-style-type: none"> <li>• Torque is Low (playback mode) when output level is "L".</li> <li>• Torque is High (FF/Rew mode) when output level is "H".</li> </ul>																				
25	Output	CPM	Capstan motor control. <ul style="list-style-type: none"> <li>• Capstan motor activated when output level is "L".</li> <li>• Capstan motor inactivated when output level is "H".</li> </ul>																				
26	Output	SOL	Plunger drive control.																				
27	Output	SOLP																					

Terminal No.	In/Out	Symbol	Function/operation
28	Output	DMT	Direct muting (DMT) signal. • Direct mute is on mode when output level is "L". • Direct mute is off mode when output level is "H".
29	Output	PLAY LED	Playback LED control. • Playback LED turned on when output level is "L". • Playback LED turned off when output level is "H".
30	Output	UP/DOWN	Counter up/down command. • Counter is down when output level is "L". • Counter is up when output level is "H".
31	Input	TPS	Input to detect presence or absence of tape playback signal. • Input level is "L" when playback signal is present. • Input level is "H" when playback signal is absent.
32	Input	PLS	Rotation pulse signal of reel table.  
33	Input	POF	Detection of power supply. • Input level is "L" when power supply is off mode. • Input level is "H" when power supply is on mode.
34	Input	REC INH	Rec. inhibit input. • Input level is "L" when rec inhibit switch is on mode. • Input level is "H" when rec. inhibit switch is off mode.
35	Output	SCAN 3	Key scan output.  
36	Output	SCAN 2	
37	Output	SCAN 1	


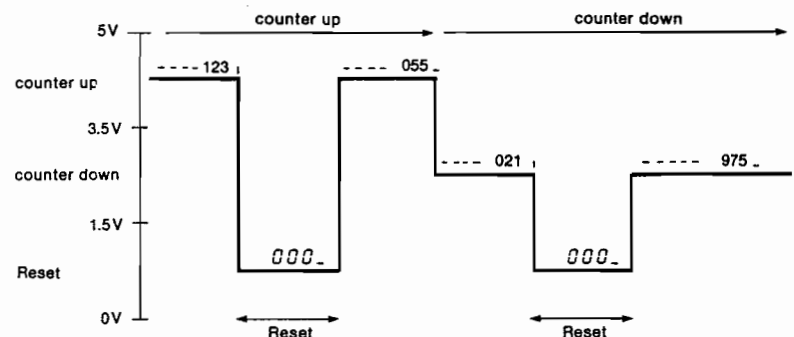
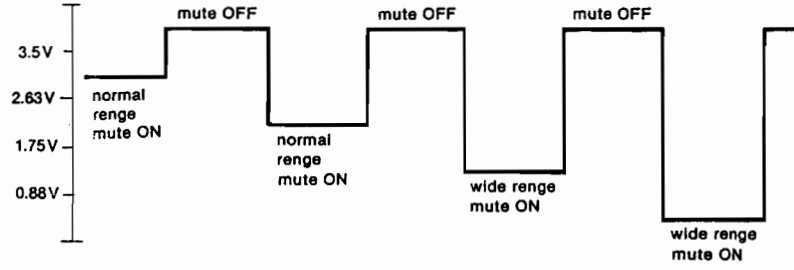
Terminal No.	In/Out	Symbol	Function/operation																				
38 39 40 41	Input Input Input Input	KEY IN	Key scan input. • Input level is "L" when switch is on mode.  <table border="1" data-bbox="2122 294 2715 924"> <thead> <tr> <th></th> <th>37 "L" level</th> <th>36 "L" level</th> <th>35 "L" level</th> </tr> </thead> <tbody> <tr> <td>38</td> <td>STOP</td> <td>NR OFF</td> <td>MS</td> </tr> <tr> <td>39</td> <td>PLAY</td> <td>AUTO REC. MUTE</td> <td>TIMER PLAY</td> </tr> <tr> <td>40</td> <td>REC.</td> <td>REW</td> <td>TIMER REC</td> </tr> <tr> <td>41</td> <td>PAUSE</td> <td>FF</td> <td>Usually "H" level</td> </tr> </tbody> </table>		37 "L" level	36 "L" level	35 "L" level	38	STOP	NR OFF	MS	39	PLAY	AUTO REC. MUTE	TIMER PLAY	40	REC.	REW	TIMER REC	41	PAUSE	FF	Usually "H" level
	37 "L" level		36 "L" level	35 "L" level																			
38	STOP		NR OFF	MS																			
39	PLAY		AUTO REC. MUTE	TIMER PLAY																			
40	REC.		REW	TIMER REC																			
41	PAUSE	FF	Usually "H" level																				
42	Input	ATS	Auto tape selector (ATS). • Input level is "L" when ATS is on mode (Normal tape). • Input level is "H" when ATS is off mode (CrO <sub>2</sub> , Metal tape).																				

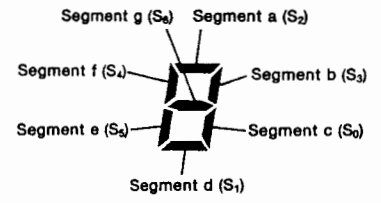
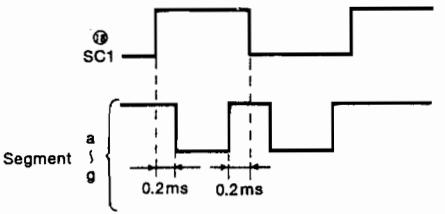
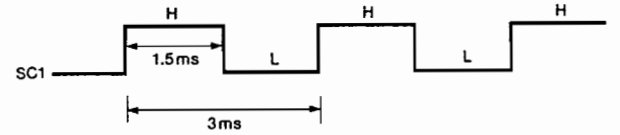
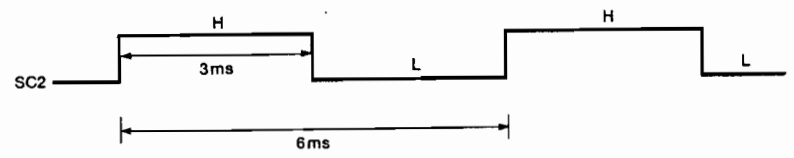


# MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM

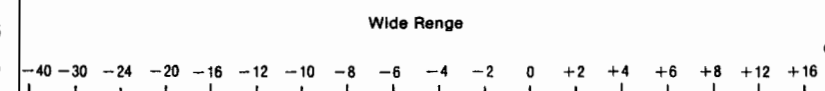
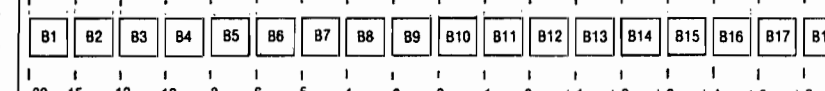
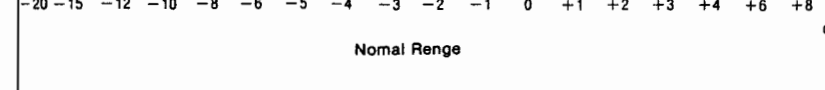
(IC701: M50726-427SP)

\* This microcomputer is used for tape counter operation and FL meter.

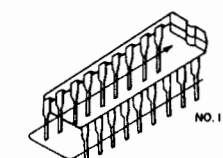
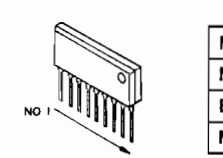
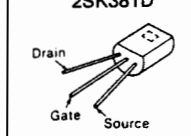
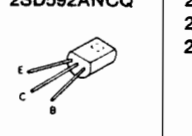
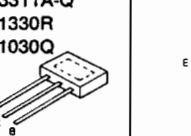
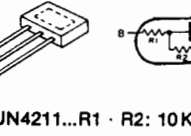

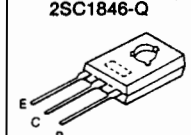
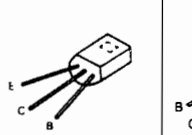
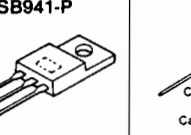

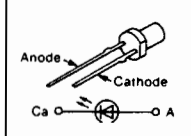
Terminal No.	In/Out	Symbol	Function/operation
1	Input	$\overline{\text{RESET}}$	Reset terminal
2	Input	INT	Reel table Pulse • The rotation of reel table is detected by photo sensor, and the pulses are used to carry up or down for the counter. 
3	—	$\text{AV}_{\text{SS}}$	Power supply for A-D converter, $\text{AV}_{\text{SS}} = 3.5\text{V}$
4	Input	$\text{V}_{\text{REF}}$	Reference Power supply
5	Input	$\text{K}_0$	Lch A-D Converter (Analogue input)
6	Input	$\text{K}_1$	Rch A-D Converter (Analogue input)
7	Input	$\text{K}_2$	Reset input • Activate "Low" (counter display is reset to 000_.) Counter up/down select command 
8	Input	$\text{K}_3$	Meter mute control (activate "Low") Meter range (wide/normal) mode selector 

Terminal No.	In/Out	Symbol	Function/operation
9	Input	$\text{AV}_{\text{DD}}$	Power supply for A-D converter • Connected to $\text{V}_{\text{DD}}$ .
10	In/Out	$\text{S}_0$	Counter segment (active "LOW")  
11		$\text{S}_1$	
12		$\text{S}_2$	
13		$\text{S}_3$	
14		$\text{S}_4$	
15		$\text{S}_5$	
16		$\text{S}_6$	
18	Output	$\text{D}_0$	Scan signal for counter drive (SC1) 
19	Output	$\text{D}_1$	Scan signal for level meter drive (SC2) 
20	—	$\text{CNV}_{\text{SS}}$	• Connected to $\text{V}_{\text{SS}}$ .
21	—	$\text{V}_{\text{SS}}$	• Connected to GND.



Terminal No.	In/Out	Symbol	Function/operation
17	In/Out	S <sub>7</sub>	<b>B18</b> Level meter segment <b>B17</b> <b>B16</b> Wide Range  <b>B15</b>  <b>B14</b> <b>B13</b> Normal Range  <b>B12</b> <b>B11</b> <b>B10</b> <b>B9</b> <b>B8</b> <b>B7</b> <b>B6</b> <b>B5</b> <b>B4</b> <b>B3</b> <b>B2</b> <b>B1</b>
22		D <sub>2</sub>	
23		D <sub>3</sub>	
24		D <sub>4</sub>	
25		D <sub>5</sub>	
26		D <sub>6</sub>	
27		D <sub>7</sub>	
28		D <sub>8</sub>	
29		D <sub>9</sub>	
30		D <sub>10</sub>	
31		F <sub>0</sub>	
32		F <sub>1</sub>	
33		F <sub>2</sub>	
34		F <sub>3</sub>	
35	G <sub>0</sub>		
36	G <sub>1</sub>		
37	G <sub>2</sub>		
38	G <sub>3</sub>		
39	Output	X <sub>OUT</sub>	•Clock OSC terminal
40	Input	X <sub>IN</sub>	
41	—	CNTR	•Not used in this unit.
42	Input	V <sub>DD</sub>	Power supply terminal

## TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

			
AN7016NK	30 Pin	M50726-427SP	42 Pin
AN7373K	28 Pin	M50720-411SP	42 Pin
AN6294NK	28 Pin	μPC1297CA	18 Pin
MN6634	9 Pin	M5218L	8 Pin
		BA6218	9 Pin
		M5238L	8 Pin
2SJ40CD 2SK381D	2SB621A-R 2SD592ANCQ	2SA1309AQS 2SC3311A-Q 2SD1330R 2SB1030Q	UN4211 UN4113, UN4114
 Drain Gate Source	 E C B	 E C B	 E C B UN4211...R1 · R2: 10K  E C B UN4113...R1 · R2: 47K UN4114...R1: 10K, R2: 47K
2SA885Q 2SC1846-Q	2SA1253-S	2SD1265-O 2SB941-P	MA165 SVD1SR35200A
 E C B	 E C B	 B C E	 Anode Cathode Ca — A
 Anode Cathode Ca — A LN38GCPP(GREEN) LN48YCPPU (YEL) LN88RCPP (RED)			MA4091-M MA4062-M MA4082M MA4056-M MA4047M

## REPLACEMENT PARTS LIST

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

\* Bracketed indications in Ref. No. columns specify the area.  
 Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			D5, D6	MA165	DIODE
IC1	AN7016NK	I.C.REC/RLAY AMP	D7, D8	MA165	DIODE
IC2, IC3	M5218L	I.C.BUFFER AMP	D9, D10	MA165	DIODE
IC4, IC5	MN6634	I.C.NR SELECTOR	D11, D301	MA165	DIODE
IC301	UPC1297CA	I.C.DOLBY HX PRO	D505	MA165	DIODE
IC401, IC402	AN7373K	I.C.DOLBY B/C NR	D601, D602 $\Delta$	SVD1SR35200A	RECTIFIER
IC501	AN6294NK	I.C.DBX AMP	D603, D604 $\Delta$	SVD1SR35200A	RECTIFIER
IC701	M50726-427SP	I.C.MICRO COMPUTER	D605, D606	MA165	DIODE
IC702	M5238L	I.C.BUFFER AMP	D607, D608	MA4091-M	DIODE
IC801	M50720-411SP	I.C.MICRO COMPUTER	D609	MA4062-M	DIODE
IC802	BA6218	I.C.MOTOR DRIVE	D701, D702	MA165	DIODE
IC803	M5218L	I.C.BUFFER AMP	D703	MA4047M	DIODE
TRANSISTORS			D704, D705	MA165	DIODE
Q1, Q2	2SJ40CD	TRANSISTOR	D706, D707	MA165	DIODE
Q3, Q4	2SD381D	TRANSISTOR	D708, D709	MA165	DIODE
Q5, Q6	2SJ40CD	TRANSISTOR	D710, D801	MA165	DIODE
Q7, Q8	2SD381D	TRANSISTOR	D802, D803	MA165	DIODE
Q9	UN4113	TRANSISTOR	D804	MA165	DIODE
Q13, Q14	2SA1309AQS	TRANSISTOR	D805 $\Delta$	SVD1SR35200A	RECTIFIER
Q15, Q16	2SA1309AQS	TRANSISTOR	D806, D807	MA165	DIODE
Q17, Q18	2SC3311A-Q	TRANSISTOR	D808, D809	MA165	DIODE
Q19, Q20	2SC3311A-Q	TRANSISTOR	D810, D901	MA165	DIODE
Q21, Q22	2SD1330R	TRANSISTOR	D902	MA4082M	DIODE
Q23, Q24	2SD1330R	TRANSISTOR	D903	MA4056-M	DIODE
Q301, Q302	2SC3311A-Q	TRANSISTOR	D904, D905	MA165	DIODE
Q303	2SB1030Q	TRANSISTOR	D906, D907	MA165	DIODE
Q304	2SB621A-R	TRANSISTOR	D908	LN88RCPP	LED
Q401, Q402	2SC3311A-Q	TRANSISTOR	D909	LN38GCPP	LED
Q403, Q404	2SC3311A-Q	TRANSISTOR	D910	LN48YCPP	LED
Q409	2SA1253-S	TRANSISTOR	D911, D912	LN38GCPP	LED
Q601	2SD1265-O	TRANSISTOR	D913	LN88RCPP	LED
Q602	2SB941-P	TRANSISTOR	D914	LN38GCPP	LED
Q603	2SC1846-Q	TRANSISTOR	D915	LN88RCPP	LED
Q701	UN4113	TRANSISTOR	D916, D917	MA165	DIODE
Q702, Q703	2SB1030Q	TRANSISTOR	D918, D919	MA165	DIODE
Q704	UN4211	TRANSISTOR	D920, D921	MA165	DIODE
Q705, Q706	2SC3311A-Q	TRANSISTOR	D922, D923	MA165	DIODE
Q707, Q708	2SC3311A-Q	TRANSISTOR	D924, D925	MA165	DIODE
Q709, Q710	UN4113	TRANSISTOR	D926, D927	MA165	DIODE
Q711, Q712	UN4113	TRANSISTOR	(EK, XL)		
Q713, Q714	UN4113	TRANSISTOR	I.C.PROTECTORS		
Q715, Q716	UN4113	TRANSISTOR	ICP601, ICP602	SRUN10	IC PROTECTOR
Q717, Q718	UN4113	TRANSISTOR	(EK, XL)		
Q719, Q720	UN4113	TRANSISTOR	VARIABLE RESISTORS		
Q721, Q722	UN4113	TRANSISTOR	VR1, 2	EWK94A033A54	V.R., 50K $\Omega$ (A)
Q723, Q724	UN4113	TRANSISTOR	VR3	EWHFDAF20G15	V.R., 100K $\Omega$ (G)
Q725, Q726	UN4113	TRANSISTOR	VR5, VR6	EVND4AA00B24	V.R., 20K $\Omega$ (B)
Q727	2SB621A-R	TRANSISTOR	VR7, VR8	EVND4AA00B14	V.R., 10K $\Omega$ (B)
Q728	UN4211	TRANSISTOR	VR301, VR302	EVND4AA00B14	V.R., 10K $\Omega$ (B)
Q801	2SC3311A-Q	TRANSISTOR	VR501	EVND4AA00B53	V.R., 5K $\Omega$ (B)
Q802, Q803	UN4113	TRANSISTOR	VR701	EVND1AA00B14	V.R., 10K $\Omega$ (B)
Q804, Q805	UN4113	TRANSISTOR	COILS AND TRANSFORMERS		
Q806	UN4113	TRANSISTOR	L1, L2	SLQX303-1K	CHOKE COIL
Q807	2SC3311A-Q	TRANSISTOR	L3, L4	SLQX272-1YT	CHOKE COIL
Q808	2SA1309AQS	TRANSISTOR	L401, L402	QLB40048	M.P.X. COIL
Q809, Q810	UN4211	TRANSISTOR	L403, L404	SLM1B8-K	M.P.X. COIL
Q901, Q902	2SD592ANCQ	TRANSISTOR	T301	SL09C19-K	OSCILLATOR COIL
Q903	2SD592ANCQ	TRANSISTOR	T303, T304	SL09B1-K	OSCILLATOR COIL
Q904	2SA885Q	TRANSISTOR	T601 $\Delta$	SLT5V26-W	POWER TRANSFORMER
Q905	2SC3311A-Q	TRANSISTOR	[E, EH, EG]		
Q908, Q909	UN4114	TRANSISTOR	T601 $\Delta$	SLT5V27-W	POWER TRANSFORMER
Q910, Q911	UN4211	TRANSISTOR	[XA, XB]		
DIODES			T601 $\Delta$	SLT5V28-W	POWER TRANSFORMER
D1, D2	MA165	DIODE	[M, MC]		
D3, D4	MA165	DIODE	T601 $\Delta$	SLT5V31-W	POWER TRANSFORMER
			[EK, XL]		
COMPONENT COMBINATIONS					
Z701	EXBF8E471J			COMPONENT COMBINATION	
Z901	EXBF5E562J			COMPONENT COMBINATION	

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
<b>OSCILLATORS</b>					
X701	SVFCST250MG	CERAMIC FILTER	S7	SSG13	SW. REC MUTE
X801	EF0FC2004A4	CERAMIC FILTER	S8	SSS147	SW. TIMER
<b>DISPLAYS</b>					
FL1	SADBG506GK	DISPLAY TUBE	S9, S10	SSG13	SW. NR OFF/B
<b>SWITCHES</b>					
S1, S2	SSG13	SW. REC/PLAY	S11, S12	SSG13	SW. C/DBX
S3, S4	SSG13	SW. STOP/FF	S13	SSG13	SW. RESET
S5, S6	SSG13	SW. REW/PAUSE	S601	ESB8249V	POWER SWITCH
			S602	SSR187-1	SW. VOLTAGE SELECT
			(E.K. XA, XB)		
			(XL)		
			S1001, S1002	SMQA1252	SWITCH
			S1003	SMQA1252	SWITCH

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
R605	ERD2FCG270	R839	ERDS2TJ393	C322	ECKD1H473ZF
(E.K. XL)		R840	ERDS2TJ103	C323	ECEA1CK5100
R606	ERDS2TJ270	R841	ERDS2TJ104	C324	ECEA1AU101
(M, MC, E)		R842	ERDS2TJ102	C325	ECEA1CK5100
(EH, EG, XA)		R901, R902	ERDS2TJ103	C401, C402	ECCD1H151K
(XB)		R903	ERF5AJ390	C403, C404	ECEA1CK5100
R606	ERD2FCG270	(E.K. XL)		C405, C406	ECKD1H471KB
(E.K. XL)		R903	ERG1ANJ390	C407, C408	ECQB1H472JZ
R607, R608	ERDS2TJ560	(M, MC, E)		C409, C410	ECQB1H472JZ
(E.K. XL)		(EH, EG, XA)		C411, C412	ECQB1H333JZ
R609, R610	ERQ14LKR22	(XB)		C413, C414	ECAG25ER68L
(E.K. XL)		R904	ERDS2TJ391	C415, C416	ECQM1H154JZ
R701	ERDS2TJ105	R905	ERDS2TJ152	C417, C418	ECEA1CK5100
R702, R703	ERDS2TJ104	R906	ERG1ANJ560	C419, C420	ECQB1H273JZ
R704	ERDS2TJ104	R907	ERDS2TJ152	C421, C422	ECQB1H333JZ
R705, R706	ERDS2TJ101	R908	ERDS2TJ104	C423, C424	ECQB1H392JZ
R707, R708	ERDS2TJ103	R909, R910	ERDS2TJ273	C425, C426	ECQB1H472JZ
R709, R710	ERDS2TJ103	R911	ERDS2TJ102	C427, C428	ECEA1HSOR1
R711	ERDS2TJ473	R912	ERDS2TJ471	C429, C430	ECEA1HUR22
R712	ERDS2TJ223	R913	ERDS2TJ223	C431, C432	ECKD1H152KB
R713	ERDS2TJ473	R914	ERDS2TJ473	C433, C434	ECKD1H122KB
R714, R715	ERDS2TJ102	R915	ERDS2TJ103	C435, C436	ECEA1AU471
R716	ERDS2TJ473	R916, R917	ERDS2TJ821	C437, C438	ECEA1HK010
R717, R718	ERDS2TJ102	R918, R919	ERDS2TJ471	C501, C502	ECEA1AK220
R719	ERDS2TJ473	R920, R921	ERDS2TJ681	C503, C504	ECQB1H153JZ
R720, R721	ERDS2TJ102	R922	ERDS2TJ821	C505, C506	ECKD1H331KB
R722	ERDS2TJ473	R925	ERDS2TJ562	C507, C508	ECEA1HK1R5
R723, R724	ERDS2TJ102	R926, R927	ERDS2TJ103	C509, C510	ECEA1AN20S
R725	ERDS2TJ473	<b>CAPACITORS</b>			
R726, R727	ERDS2TJ103	C1, C2	ECEA1EK4R7	C511, C512	ECEA1EK3R3B
R728	ERDS2TJ103	C3, C4	ECKD1H681K	C513, C514	ECQV1H104JZ
R729, R730	ERDS2TJ124	C5, C6	ECKD1H103PF	C515, C516	ECQV1H104JZ
(E.K. XL)		C7, C8	ECEA0JS221	C517, C518	ECQB1H332JZ
R731, R732	ERDS2TJ104	C9, C10	ECQB1H562JZ	C519, C520	ECQB1H332JZ
R733	ERDS2TJ221	C11, C12	ECEA1CK5100	C521, C522	ECKD1H331KB
R734	ERDS2TJ471	C13, C14	ECKD1H102KB	C523, C524	ECQV1H184JZ
R735, R736	ERDS2TJ181	C15, C16	ECEA1HK010	C525, C526	ECQB1H183JZ
R801	ERDS2TJ272	C17, C18	ECKD2H121KB	C527, C528	ECEA1AK220
R802	ERDS2TJ101	C19, C20	ECKD1H561KB	C529, C530	ECKD1H182KB
R803	ERDS2TJ563	C21, C22	ECEA1EK4R7	C531, C532	ECKD1H182KB
R804	ERDS2TJ393	C23, C24	ECKD1H122KB	C601	ECKDKC103PF2
R805	ERDS2TJ183	C25, C26	ECBA1H681KB5	C602	ECEA1CU472
R806	ERDS2TJ392	C27, C28	ECQB1H223JZ	C603	ECEA1CU222
R807	ERDS2TJ393	C29, C30	ECQB1H822JZ	C604, C605	ECKD1H103PF
R808, R809	ERDS2TJ273	C31, C32	ECQB1H472JZ	C606, C607	ECEA1CU331
R810	ERDS2TJ272	C33, C34	ECEA1CK5100	C608	ECKD1H103PF
R811	ERDS2TJ332	C35, C36	ECEA1HK010	C609, C610	ECEA10V1000
R812, R813	ERDS2TJ103	C37, C38	ECEA1CK5100	C611	ECKD2H682PEL
R814	ERDS2TJ103	C39, C40	ECQM1H333JZ	C612	ECKD1H473ZF
R815	ERDS2TJ563	C41, C42	ECEA1CK5100	C701	ECKD1H103PF
R816	ERDS2TJ472	C43	ECKD1H103PF	C702	ECEA1CK5100
R817	ERDS2TJ182	C44	ECEA1HCR33	C705	ECKD1H103PF
R818	ERDS2TJ103	C45, C46	ECQB1H152JZ	C707, C708	ECEA1CK220
R819	ERDS2TJ123	C47, C48	ECQB1H472JZ	C709, C710	ECBT1H102KB
R820	ERDS2TJ563	C49	ECKD1H103PF	C711, C712	ECBT1H102KB
R821, R822	ERDS2TJ103	C301, C302	ECQB1H103JZ	C713	ECEA1HK010
R823	ERDS2TJ103	C303, C304	ECKD1H122KB	C714, C715	ECKD1H103PF
R824	ERDS2TJ272	C305, C306	ECQB1H223JZ	C801	ECFR1H822KDY
R825, R826	ERDS2TJ103	C307, C308	ECQV1H104JZ	C802	ECEA1CK5100
R827	ERDS2TJ105	C309, C310	RCBS1H121KBY	C803	ECCD1H470K
R828	ERDS2TJ471	C311, C312	ECBT1H681KB	C804	ECEA1HK010
R829	ERDS2TJ182	C313, C314	ECQB1H223JZ	C806	ECEA1AU471
R830	ERDS2TJ472	C315	RCBS1H100JCY	C807	ECEA1EK4R7
R831, R832	ERDS2TJ103	C316	ECQP1H83JZ	C810	ECEA1HK010
R833	ERDS2TJ102	C317	ECEA1EK4R7	C811	ECEA1EU220
R834	ERDS2TJ103	C318	ECKD1H562KB	C812	ECEA0JU222
R835	ERDS2TJ122	C319, C320	ECKD1H472K	C813, C814	ECKD1H103PF
R836	ERDS2TJ103	C321	ECKD1H472K	C816	ECKD1H473ZF
R837, R838	ERDS2TJ104			C901	ECEA1CN100S
				C902	ECBT1H102KB

## RESISTORS & CAPACITORS

\* Bracketed indications in Ref. No. columns specify the areas.  
Parts without these indications can be used for all areas.

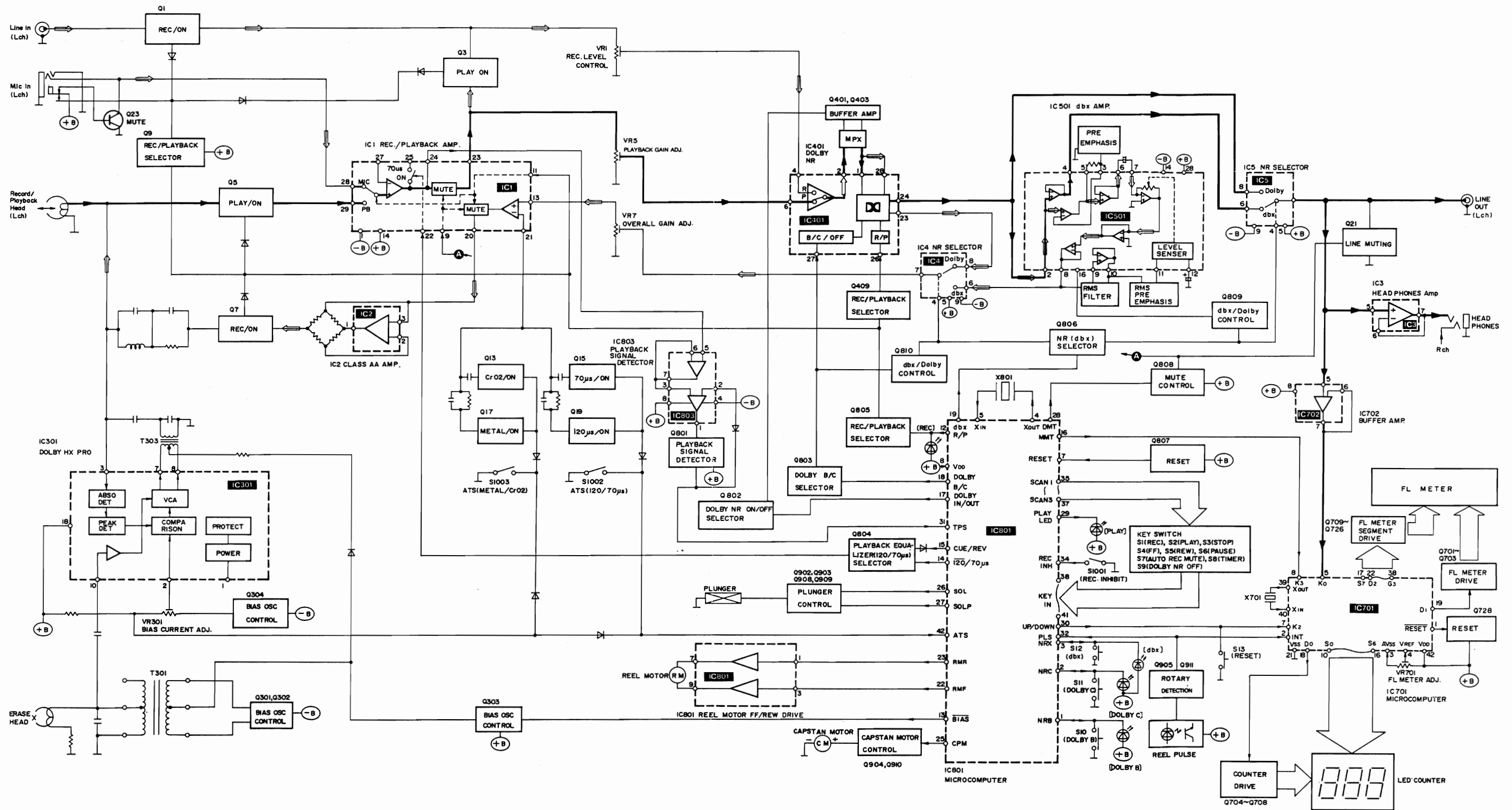
Resistor Type	Wattage	Tolerance
ERD: Carbon Resistor	10 : 1/8W	F : ±1%
ERC: Solid Resistor	25 : 1/4W	G : ±2%
ERF: Incombustible Box-Shaped Wire-Wound Resistor	50 : 1/2W	J : ±5%
	18 : 1/4W	K : ±10%
	14 : 1/4W	M : ±20%
ERG: Metal Oxide-Film Resistor	1 : 1W	
	2 : 2W	
ERM: Wire-Wound Resistor	3 : 3W	
	S1 : 1/2W	
ERO: Superstable Metal Film Resistor	S2 : 1/4W	
	6G : 1/10W	
ERX: Metal-Film Resistor	8G : 1/8W	
RRJ: Chip Resistor		
ERJ: Chip Resistor		

Capacitor Type	Voltage	Tolerance
ECCD: Ceramic Capacitor (Chitacon)	(ECCD, ECKD Type) 1H : 50V DC 2H : 500V DC	K : ±10%
ECKD: Ceramic Capacitor (Chitabar)	(ECFD Type) C : 12V DC D : 25V DC	M : ±20%
ECFD: Semiconductor Ceramic Capacitor (ECQ Type)	E : 50V DC	Z : +80%
ECE: Electrolytic Capacitor	05 : 50WV DC 1 : 100WV DC	J : ±5%
ECS: Tantalum Fixed Electrolytic Capacitor	(ECE, ECS Type) 0G : 4V 0J : 6.3V	G : ±2%
ECQ: Polystyrene Film Capacitor	1A : 10V 1C : 16V 1E : 25V 1V : 35V	F : ±1%
ECQS: Polystyrene Film Capacitor	1H : 50V 1J : 63V 2A : 100V	C : ±0.25pF
ECQV: Polypropylene Film Capacitor		D : ±0.5pF
ECU: T.F. Capacitor		
ECV: Chip Capacitor		
ECB: Cylindrical Ceramic Capacitor		

\* Capacity are in microfarads (µF) unless specified otherwise, P=Pico-farads.  
\* Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000Ω, 1M=1,000KΩ

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
<b>RESISTORS</b>					
R1, R2	ERDS2TJ183	R62	ERD2FCG330	R435, R436	ERDS2TJ562
R3, R4	ERDS2TJ473	(E.K. XL)		R448	ERDS2TJ392
R5, R6	ERDS2TJ102	R63, R64	ERDS2TJ102	R501, R502	ERDS2TJ432
R7, R8	ERDS2TJ472	R65, R66	ERDS2TJ223	R503, R504	ERDS2TJ622
R9	ERDS2TJ104	R67, R68	ERDS2TJ103	R505, R506	ERDS2TJ243
R10	ERDS2TJ473	R69, R70	ERDS2TJ223	R507, R508	ERDS2TJ913
R11, R12	ERDS2TJ820	R73, R74	ERDS2TJ223	R509, R510	ERDS2TJ472
R13, R14	ERDS2TJ153	R301, R302	ERDS2TJ153	R511, R512	ERDS2TJ333
R15, R16	ERDS2TJ564	R303	ERDS2TJ153	R513, R514	ERDS2TJ333
R17, R18	ERDS2TJ682	R306, R306	ERDS2TJ154	R515, R516	ERDS2TJ682
R19, R20	ERDS2TJ155	R307, R308	ERDS2TJ223	R517, R518	ERDS2TJ182
R21, R22	ERDS2TJ683	R309, R310	ERDS2TJ180	R519, R520	ERDS2TJ183
R23, R24	ERDS2TJ101	R311	ERDS2TJ473	R521	ERDS2TJ102
R25, R26	ERDS2TJ103	R312	ERDS2TJ102	R523, R524	ERDS2TJ123
R27, R28	ERDS2TJ100	R313, R314	ERDS2TJ221	R525, R526	ERDS2TJ123
R29, R30	ERDS2TJ330	R315	ERDS2TJ820	R527, R528	ERDS2TJ112
R31, R32	ERDS2TJ102	(M, MC, E)		R529, R530	ERDS2TJ112
R33, R34	ERDS2TJ332	(EH, EG, XA)		R531, R532	ERDS2TJ223
R35, R36	ERDS2TJ473	(XB)		R533	ERDS2TJ103
R37, R38	ERDS2TJ472	R315	ERD2FCG820	R601	ERDS1FJ391
R39, R40	ERDS2TJ103	(E.K. XL)		R601	ERDS2TJ391
R41, R42	ERDS2TJ272	R316	ERDS2TJ180	(M, MC, E)	
R43, R44	ERDS2TJ560	R317	ERDS2TJ102	(EH, EG, XA)	
R45, R46	ERDS2TJ222	R318	ERDS2TJ103	(XB)	
R47, R48	ERDS2TJ272	R319	ERDS2TJ222	R602	ERDS1FJ391
R49, R50	ERDS2TJ331	R321, R322	ERDS2TJ392	(E.K. XL)	
R51, R52	ERDS2TJ332	R401, R402	ERDS2TJ242	R602	ERDS2TJ391
R53, R54	ERDS2TJ122	R403, R404	ERDS2TJ562	(M, MC, E)	
R55, R56	ERDS2TJ103	R405, R406	ERDS2TJ332	(EH, EG, XA)	
R57, R58	ERDS2TJ182	R407, R408	ERDS2TJ102	(XB)	
R59, R60	ERDS2TJ393	R409, R410	ERDS2TJ331	R603	ERD2FCJ8R2
R61	ERDS2TJ330	R411, R412	ERDS2TJ104	(E.K. XL)	
(M, MC, E)		R413, R414	ERDS2TJ564	R603	ERX1ANJ8R2
(EH, EG, XA)		R415, R416	ERDS2TJ223	(M, MC, E)	
(XB)		R417, R418	ERDS2TJ682	(EH, EG, XA)	
R61	ERD2FCG330	R419, R420	ERDS2TJ471	(XB)	
(E.K. XL)		R421, R422	ERDS2TJ912	R604	ERDS2TJ102
R62	ERDS2TJ330	R423, R424	ERDS2TJ473	R605	ERDS2TJ270
(M, MC, E)		R425, R426	ERDS2TJ512	(M, MC, E)	
(EH, EG, XA)		R427, R428	ERDS2TJ564	(EH, EG, XA)	
(XB)		R429, R430	ERDS2TJ274	(XB)	
		R431, R432	ERDS2TJ684		
		R433, R434	ERDS2TJ684		

# BLOCK DIAGRAM

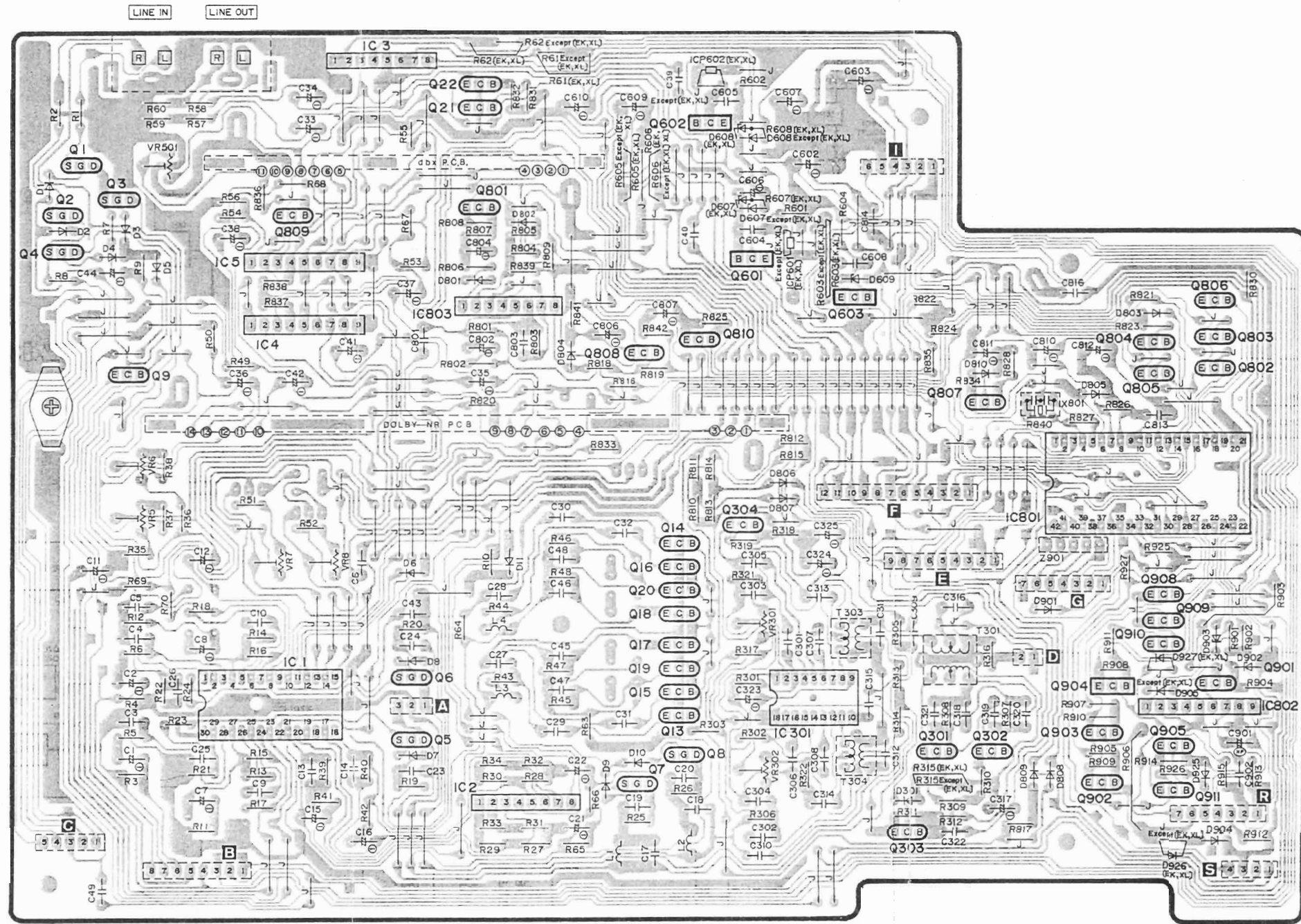


**NOTES:**  
 (→): Playback signal  
 (⇨): Recording signal

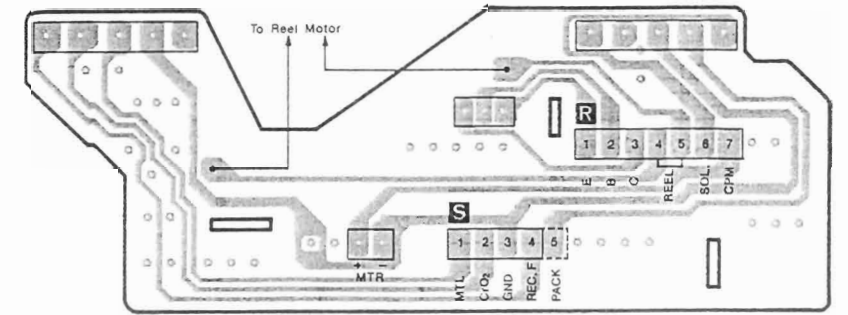
**PRINTED CIRCUIT BOARDS**

A  
B  
C  
D  
E  
F

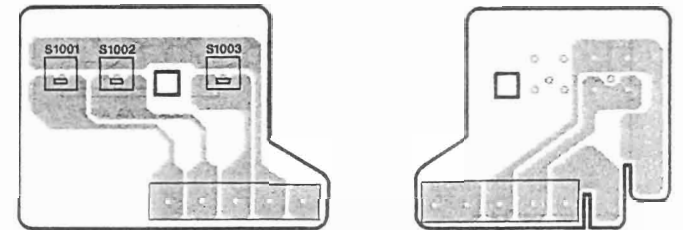
**I MAIN P.C.B.**



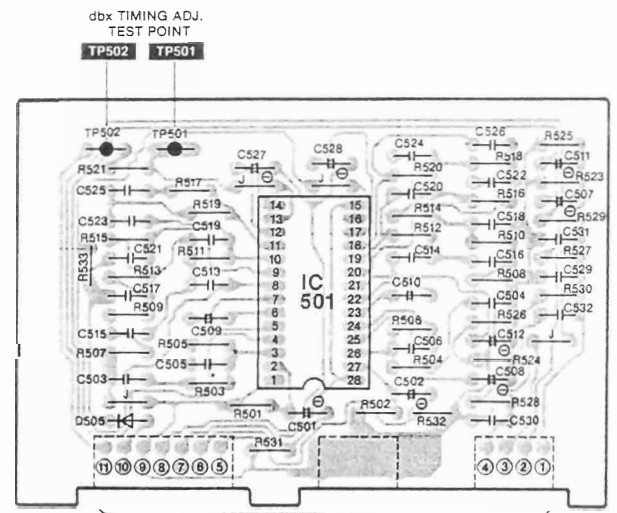
**V MECHANISM P.C.B.**



**VII MECHANISM SWITCH P.C.B.**

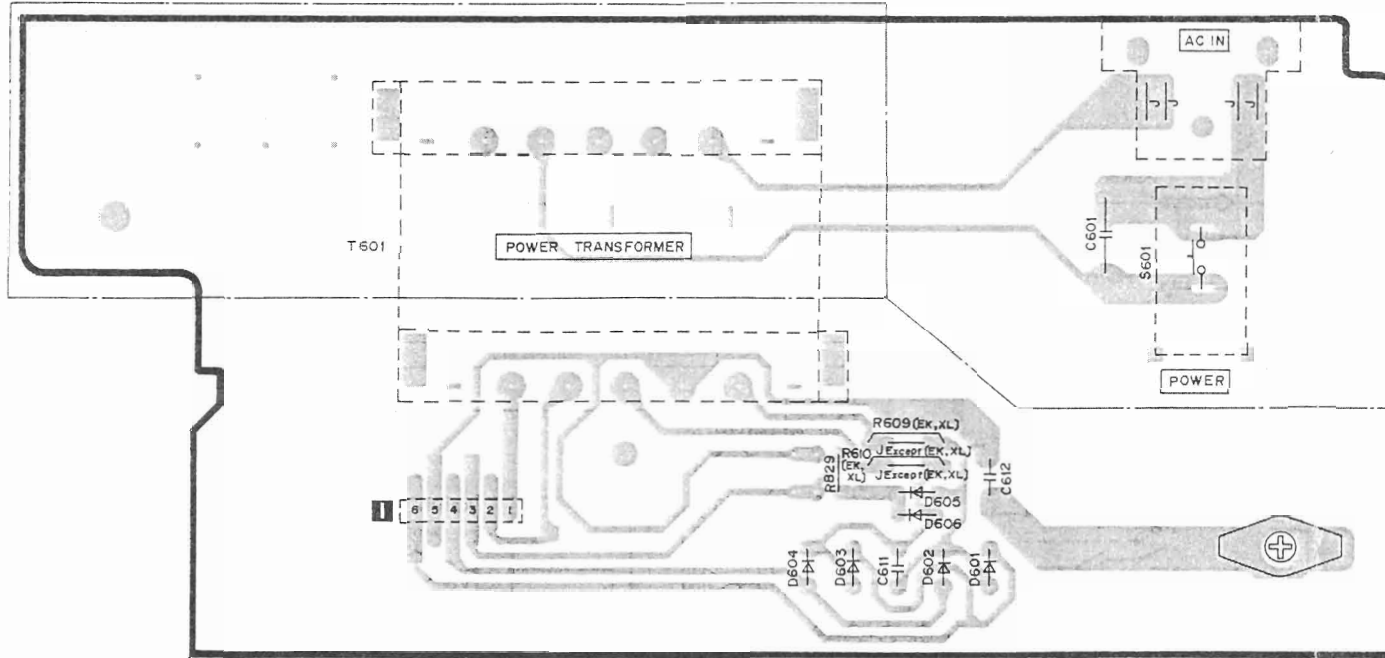


**IX dbx P.C.B.**

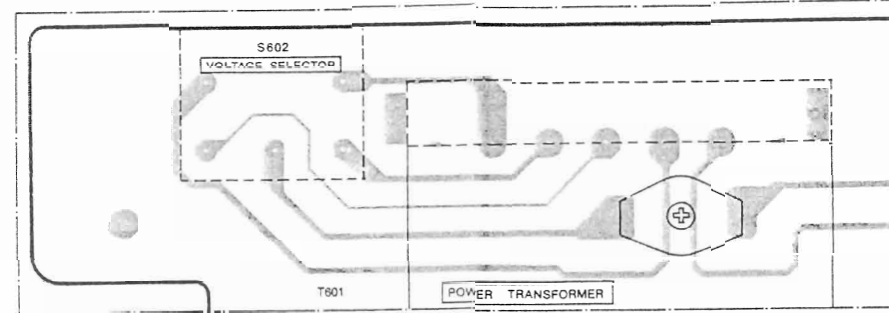




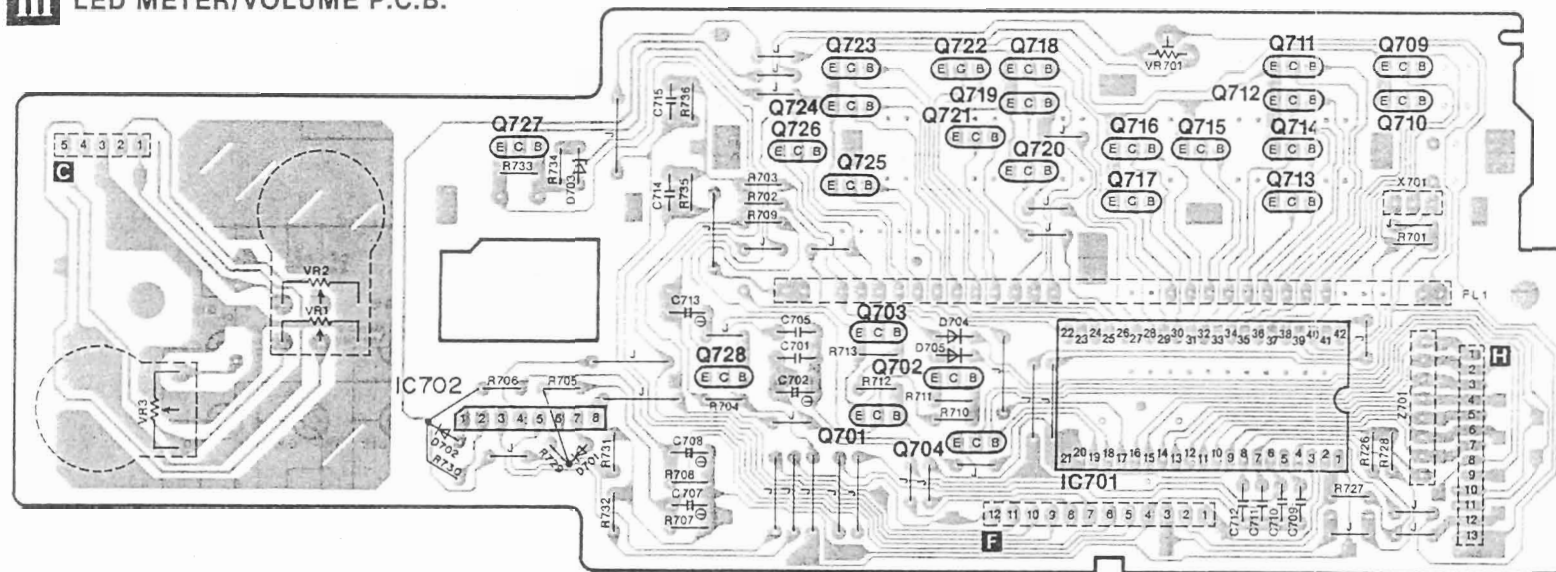
**II** POWER SUPPLY P.C.B. ([M, MC, E, EG, EH] areas)



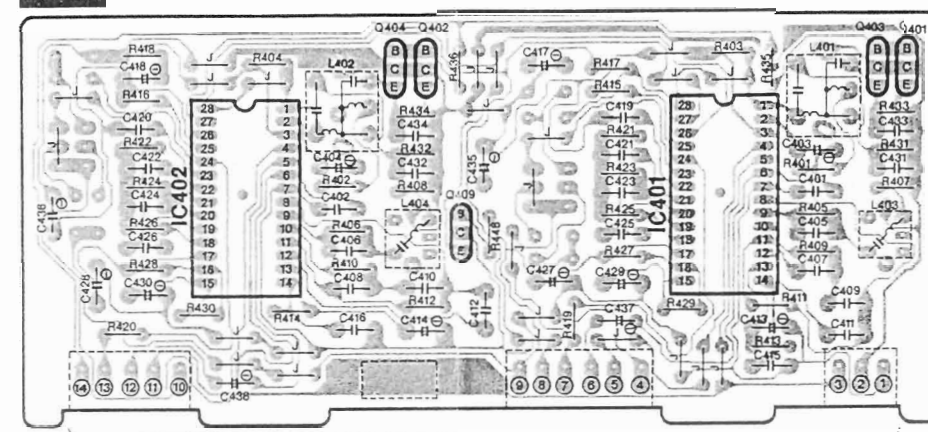
**II** POWER SUPPLY P.C.B. ([EK, XL, XA, XB] areas)



**III** LED METER/VOLUME P.C.B.

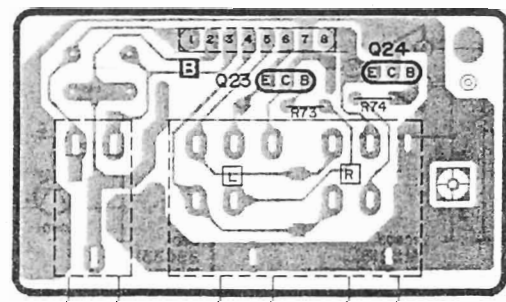


**VIII** DOLBY NR P.C.B.



TO MAIN P.C.B.

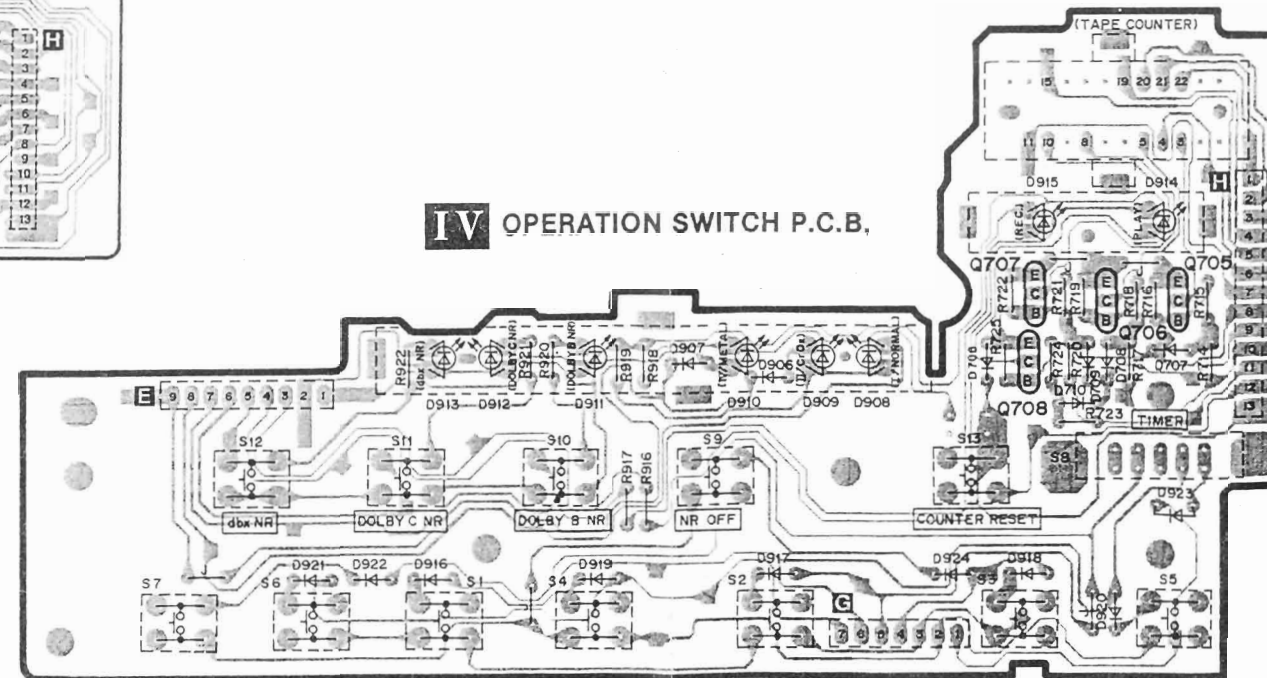
**VI** HEADPHONES/MICROPHONE JACK P.C.B.



PHONES

MIC.

**IV** OPERATION SWITCH P.C.B.



AUTO REC MUTE

PAUSE

REC.

F.F.

PLAY

STOP

REW.

# SCHEMATIC DIAGRAM

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

## Note:

- S1 : Record switch in "off" position.
- S2 : Play switch in "off" position.
- S3 : Stop switch in "off" position.
- S4 : F.F. switch in "off" position.
- S5 : Rew. switch in "off" position.
- S6 : Pause switch in "off" position.
- S7 : Auto rec. mute switch in "off" position.
- S8 : Timer stand-by switch in "off" position.
- S9 : NR off switch in "off" position.
- S10 : Dolby B NR switch in "off" position.
- S11 : Dolby C NR switch in "off" position.
- S12 : dbx switch in "off" position.
- S13 : Counter reset switch in "off" position.
- S601 : Power switch in "on" position.
- S602 : Voltage selector "240V" position. ([EK, XL, XA, XB] areas)
- S1001 : Rec. inhibit switch in "off" position.
- S1002 : ATS (Metal/CrO<sub>2</sub>) in "off (Metal)" position.
- S1003 : ATS (120/70μs) in "off (70μs)" position.

• Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.

1K=1,000 (Ω), 1M=1,000k (Ω)

• Capacity are in micro-farads (μF) unless specified otherwise.

• 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.

(- ) indicates B (bias).

(- - - - -) indicates the flow of the playback signal.

(- - - - -) indicates the flow of the record signal.

• Important safety notice

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

## \* Caution!

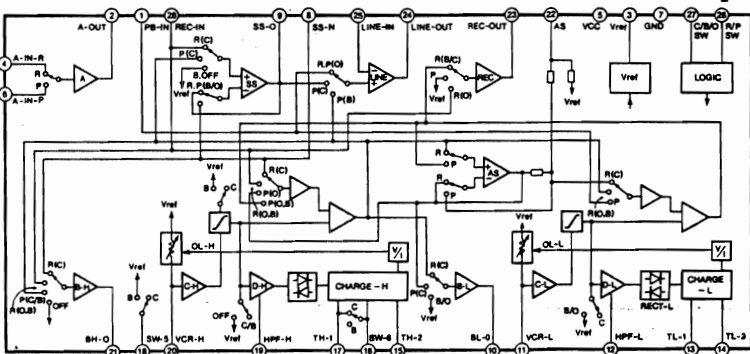
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- \* Cover the parts boxes made of plastics with aluminum foil.
- \* Ground the soldering iron.
- \* Put a conductive mat on the work table.
- \* Do not touch the legs of IC or LSI with the fingers directly.

## SPECIFICATIONS \* Input level control...MAX

Overall distortion	Normal:
* Test tape	Less than 3.5%
...QZZCRA for Normal	CrO <sub>2</sub> , Metal:
...QZZCRX for CrO <sub>2</sub>	Less than 4.0%
...QZZCRZ for Metal	
Overall S/N ratio	Greater than 43dB
* Test tape ...QZZCRA	

## EQUIVALENT CIRCUIT

IC401, IC402: AN7373K



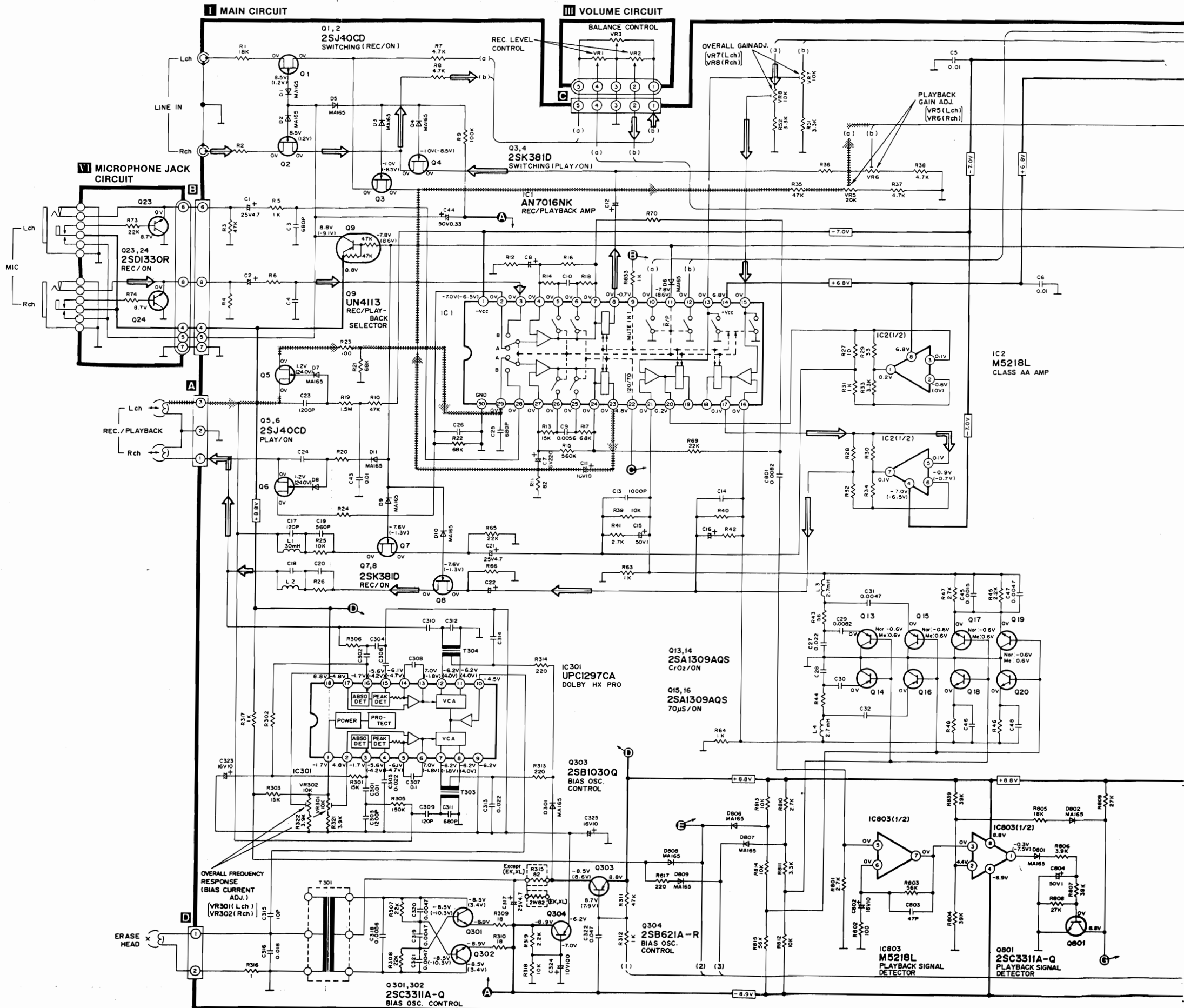
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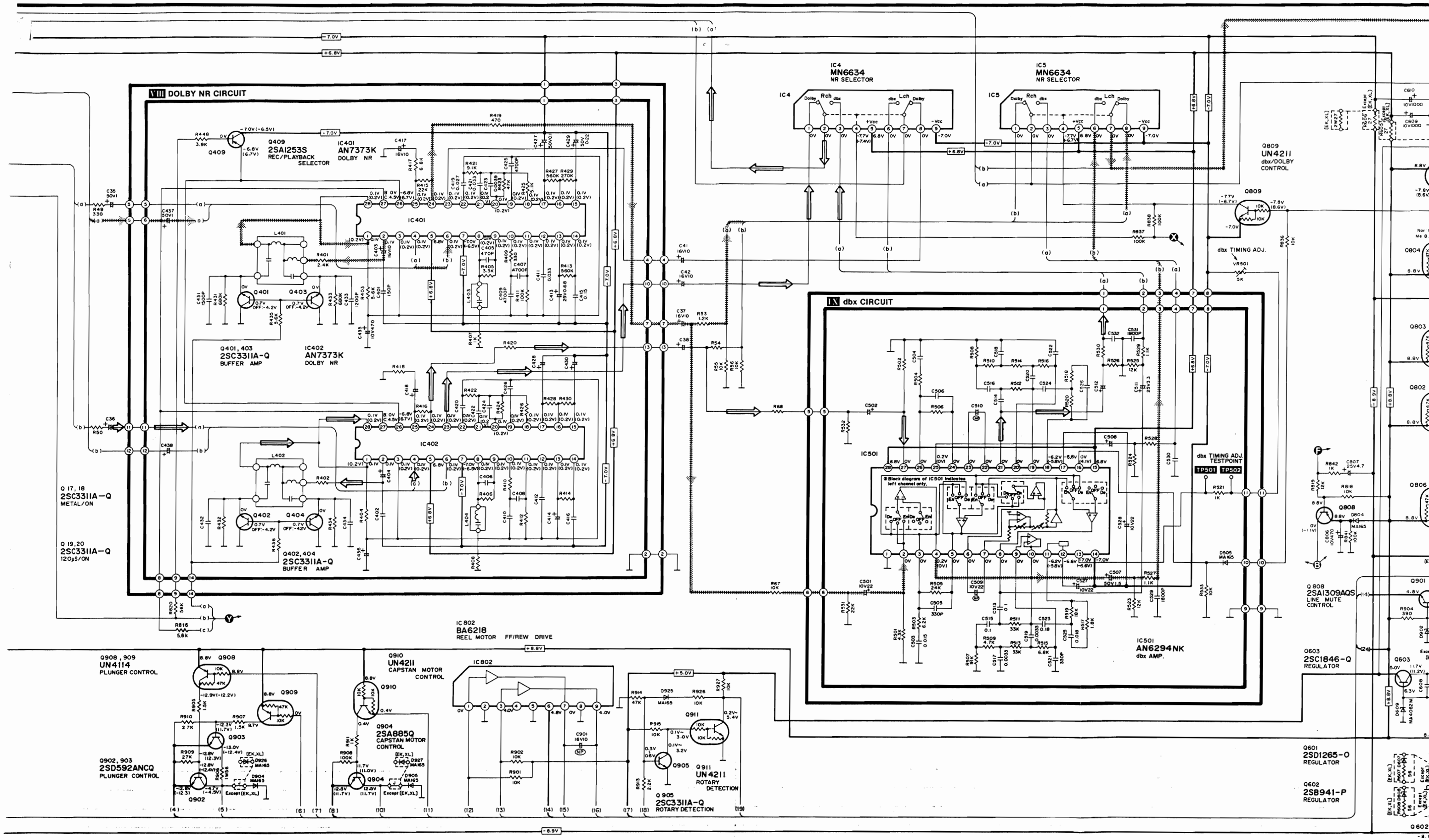
B

C

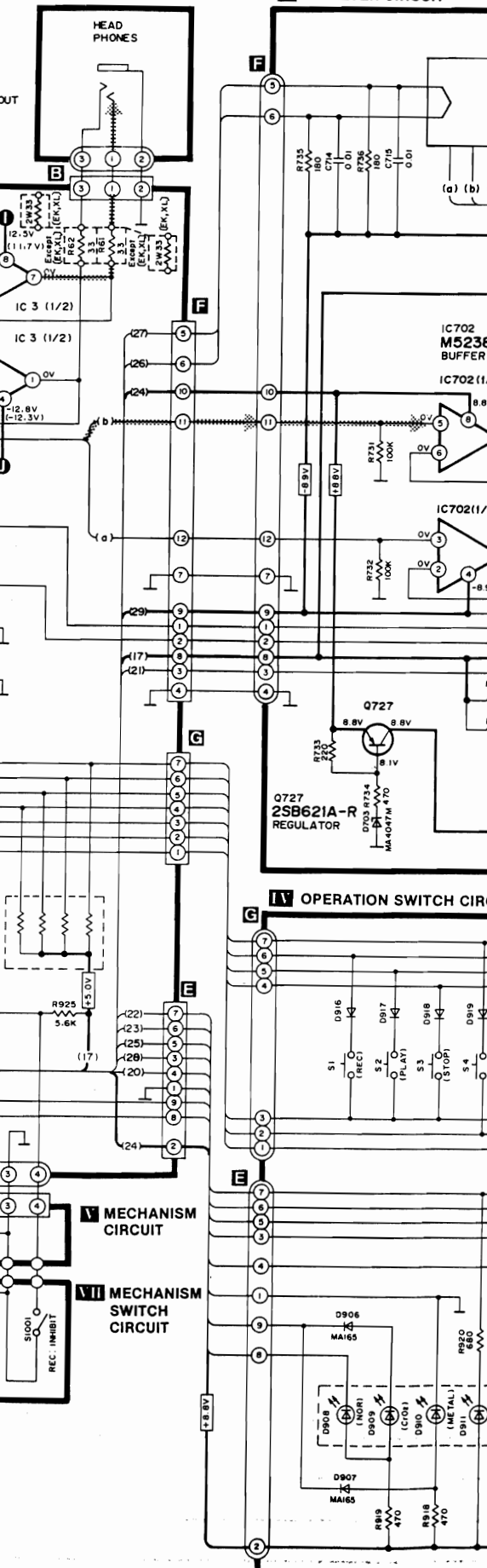
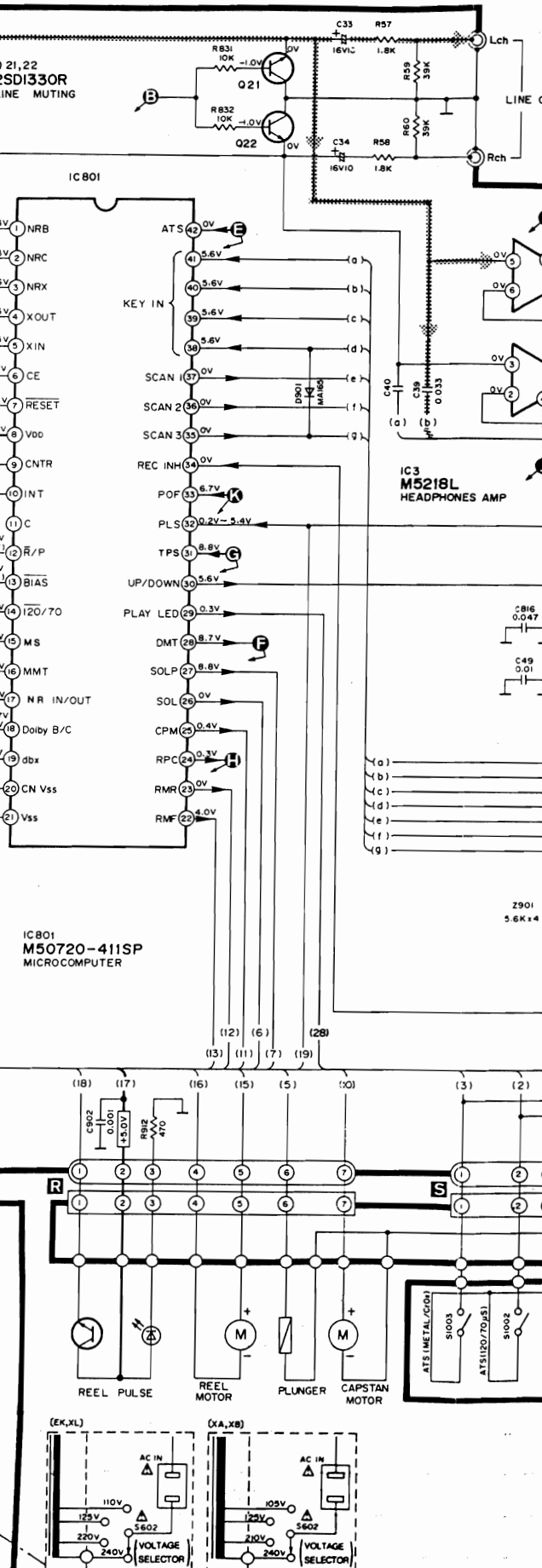
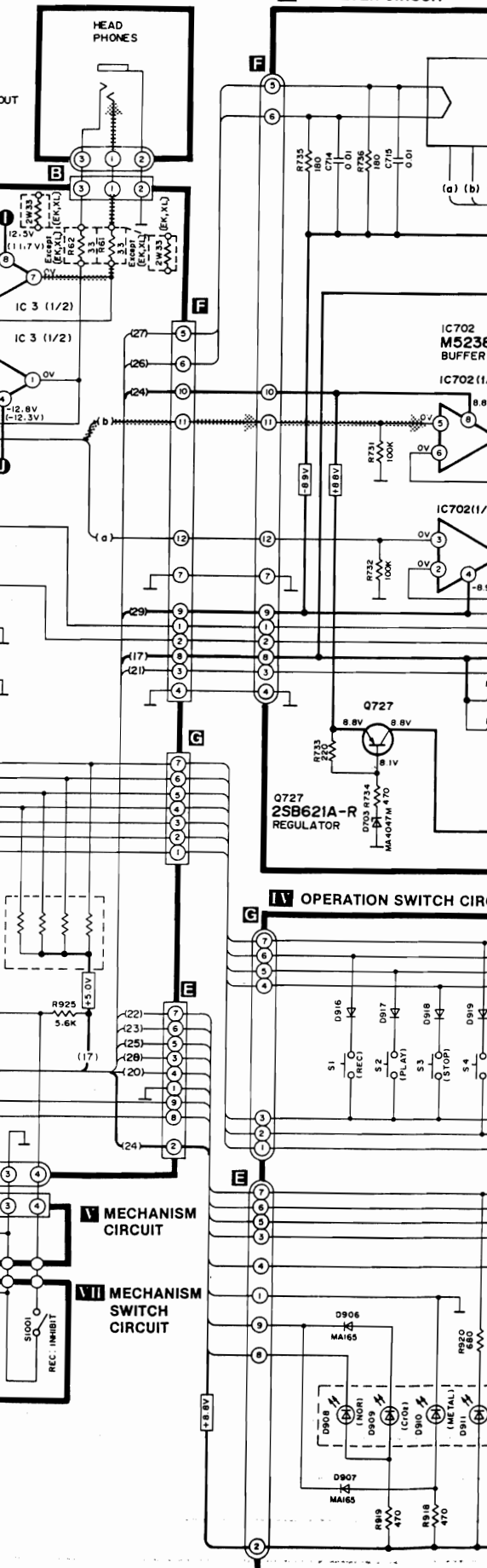
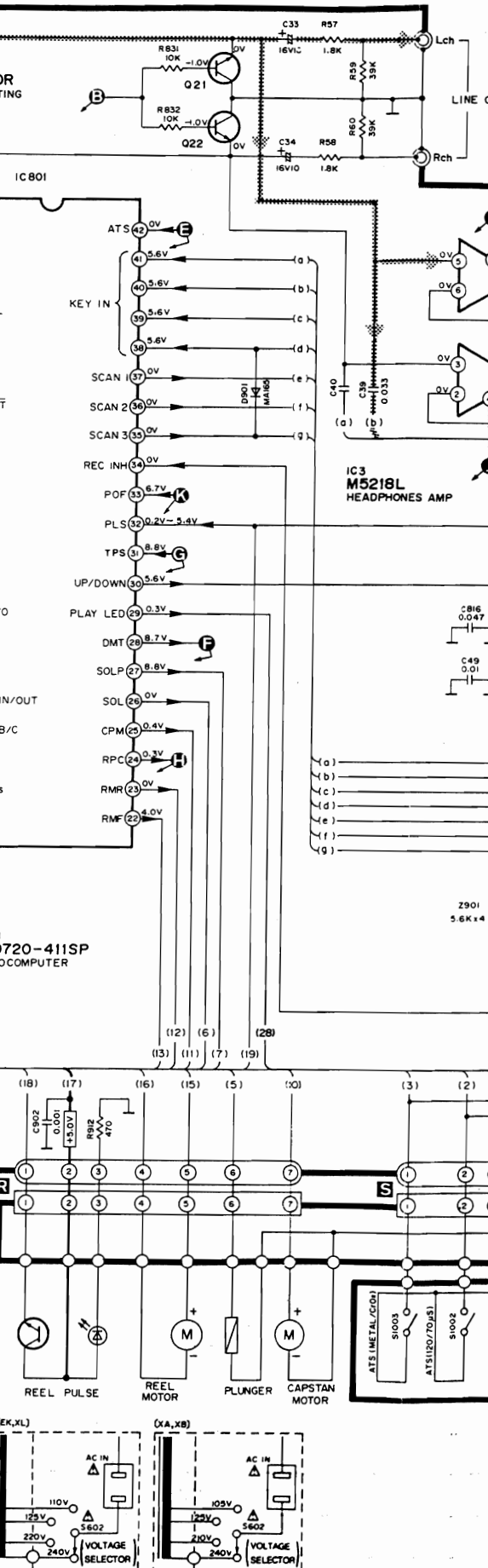
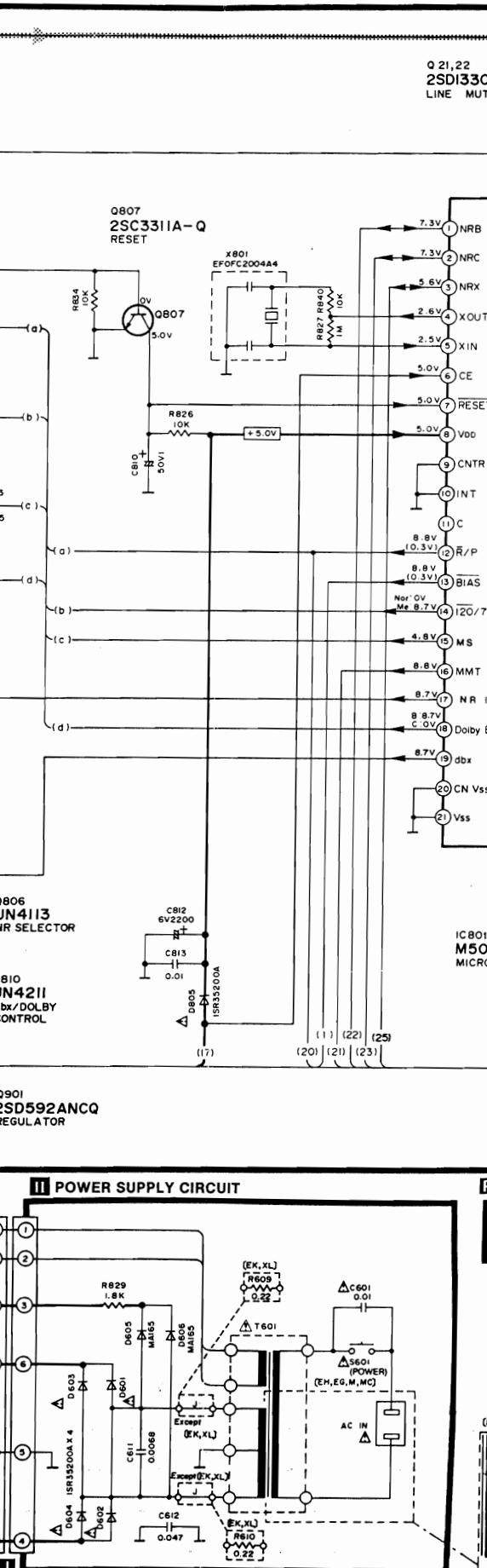
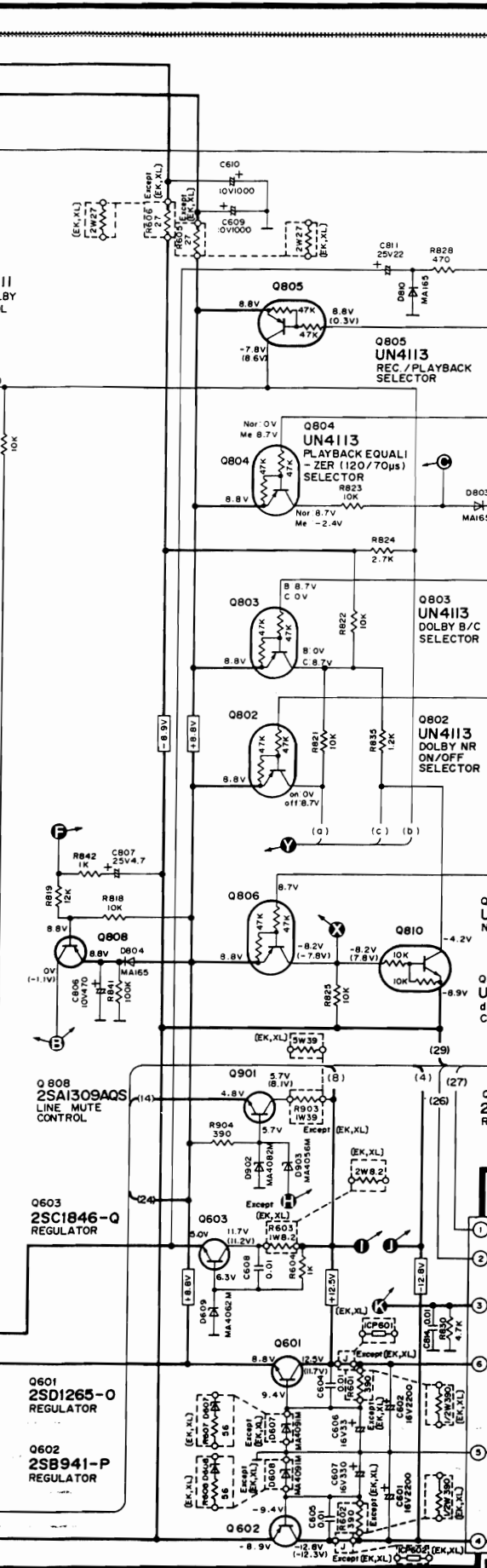
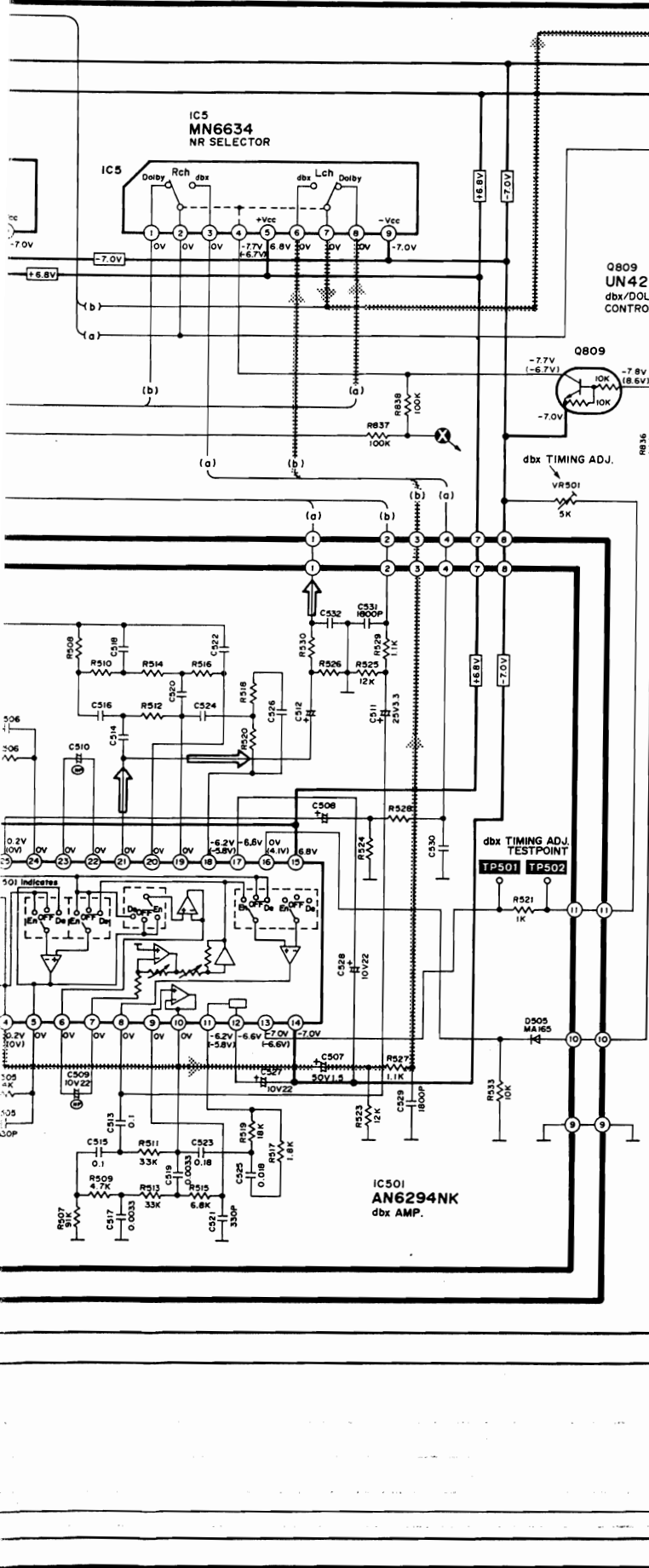
D

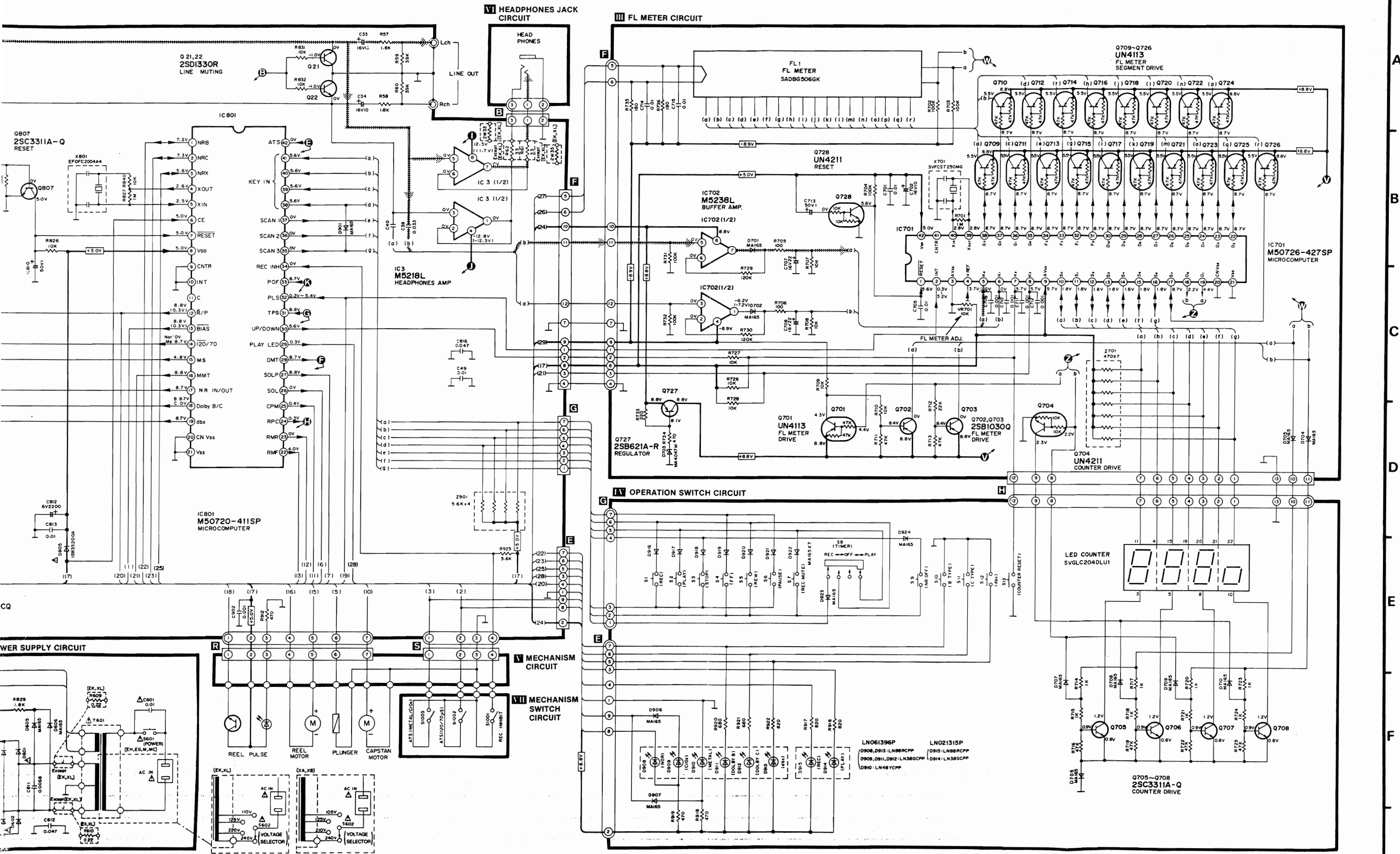
E











# REPLACEMENT PARTS LIST

Bracketed indications in Ref. No. columns specify the area.  
Parts without these indications can be used for all areas.

No.	Part No.	Description
	CASSETTE DECK	
	XSQ2+8	SCREW
	SMQA1001	SPRING
	SJH99	MAGNETIC HEAD, R/P
	SJH100	MAGNETIC HEAD, ERASE
107	SMQA1002	SPACER
108	SMQA1256	HEAD BASE
109	SMQA1004	SPRING
110	SMQA1230	SCREW
111	SMQA1231	PINCH ROLLER
113	SMQA1007	WASHER
115	SMQA1014	WASHER
	SMQA1056	LEVER
117	SMQA1024	SPRING
118	SMQA1010	WASHER
119	SMQA1013	HELL
120	SMQA1026	REEL
121	SMQA1212	PLUNGER CAP
122	SMQA1233	PLUNGER COIL
123	SMQA1257	CHASSIS ASSY
124	SMQA1235	SCREW
125	SMQA1011	ARM
126	SMQA1012	SPRING
127	SMQA1061	IDLER PULLEY
128	SMQA1258	CAM GEAR
131	SMQA1259	LEVER
132	SMQA1237	METAL LEVER
133	SMQA1062	SPRING
134	SMQA1260	SPRING
136	SMQA1031	WASHER
137	SMQA1032	WHEEL
139	SMQA1097	SPACER
140	SMQA1240	BRACKET
141	SMQA1241	ARM
142	SMQA1242	MOTOR (REEL)
143	SMQA1261	MOTOR(MAIN)
148	SMQA1038	FLAT BELT
149	SMQA1247	SCREW
150	SMQA1262	SCREW
151	XYN26+C6	SCREW
152	SMQA1263	SCREW
153	XTN26+8C	TAPPING SCREW
154	SMQA1254	WASHER
157	SMQA1255	WASHER
158	SMQA1267	EJECT ARM
159	SMQA1019	SPRING
160	SMQA1222	SCREW
161	SMQA1039	COVER
(EG)		
162	SMQA1071	WASHER
163	SMQA1252	SWITCH
164	SMQA1041	PHOTO INTERRUPTER
165	SJT30440LX-V	CONNECTOR(4-P)
166	SJT30740LX-V	CONNECTOR(7-P)

# MECHANICAL PARTS LOCATION

## SPECIFICATIONS

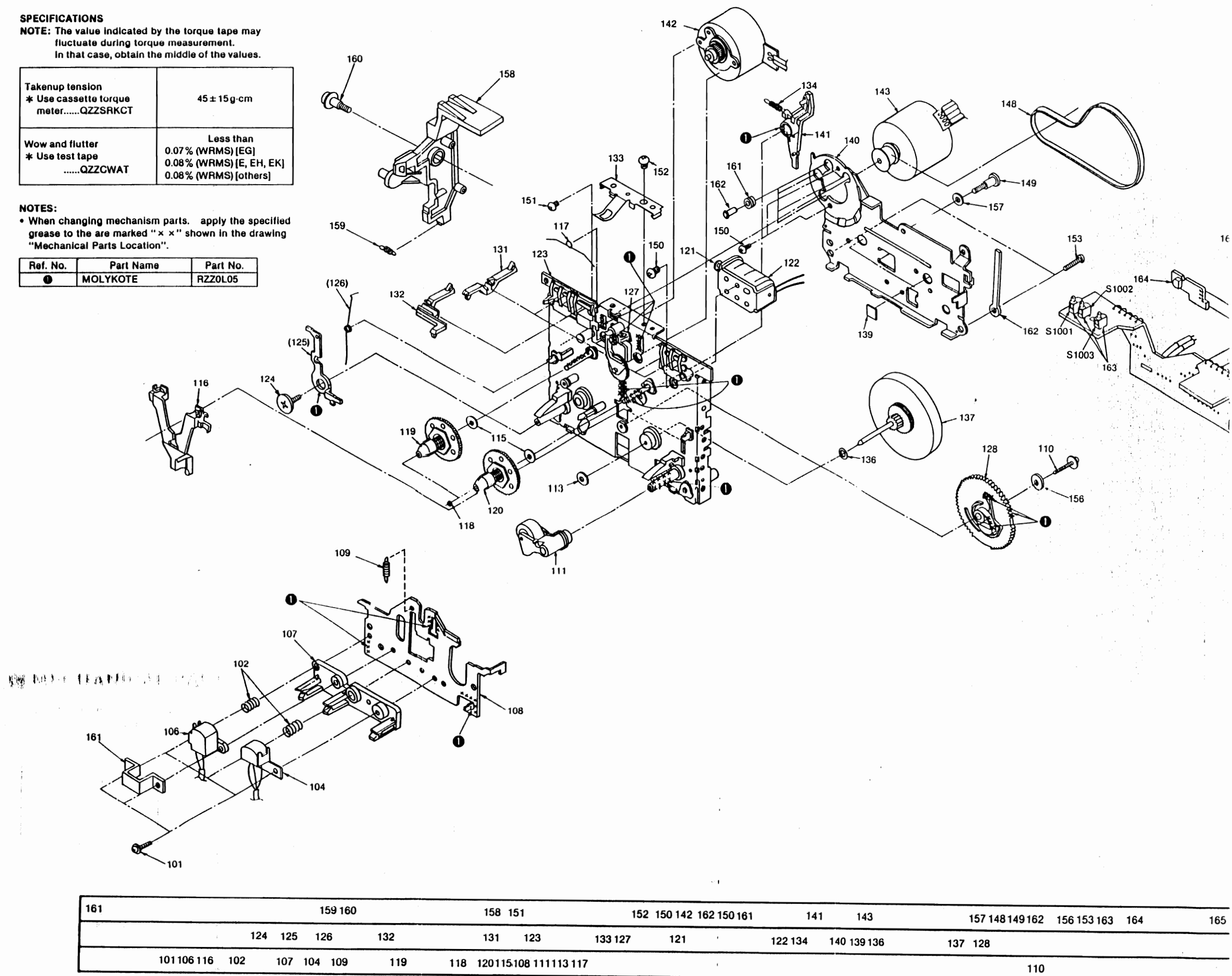
NOTE: The value indicated by the torque tape may fluctuate during torque measurement. In that case, obtain the middle of the values.

<b>Takeup tension</b> * Use cassette torque meter.....QZZSRKCT	45 ± 15 g-cm
<b>Wow and flutter</b> * Use test tape .....QZZCWAT	Less than 0.07% (WRMS) [EG] 0.08% (WRMS) [E, EH, EK] 0.08% (WRMS) [others]

## NOTES:

• When changing mechanism parts, apply the specified grease to the are marked "x" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
①	MOLYKOTE	RZZ0L05



# REPLACEMENT PARTS LIST

\* Bracketed indications in Ref. No. columns specify the area.  
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
<b>CASSETTE DECK</b>		
101	XSN2*8	SCREW
102	SMQA1001	SPRING
104	SJH99	MAGNETIC HEAD, R/P
106	SJH100	MAGNETIC HEAD, ERASE
107	SMQA1002	SPACER
108	SMQA1256	HEAD BASE
109	SMQA1004	SPRING
110	SMQA1230	SCREW
111	SMQA1231	PINCH ROLLER
113	SMQA1007	WASHER
115	SMQA1014	WASHER
116	SMQA1056	LEVER
117	SMQA1024	SPRING
118	SMQA1010	WASHER
119	SMQA1013	REEL
120	SMQA1026	REEL
121	SMQA1212	PLUNGER CAP
122	SMQA1233	PLUNGER COIL
123	SMQA1257	CHASSIS ASS'Y
124	SMQA1235	SCREW
125	SMQA1011	ARM
126	SMQA1012	SPRING
127	SMQA1061	IDLER PULLEY
128	SMQA1258	CAM GEAR
131	SMQA1259	LEVER
132	SMQA1237	METAL LEVER
133	SMQA1062	SPRING
134	SMQA1260	SPRING
136	SMQA1031	WASHER
137	SMQA1032	WHEEL
139	SMQA1097	SPACER
140	SMQA1240	BRACKET
141	SMQA1241	ARM
142	SMQA1242	MOTOR (REEL)
143	SMQA1261	MOTOR (MAIN)
148	SMQA1038	FLAT BELT
149	SMQA1247	SCREW
150	SMQA1262	SCREW
151	XYN26+C6	SCREW
152	SMQA1263	SCREW
153	XTN26+8C	TAPPING SCREW
156	SMQA1254	WASHER
157	SMQA1255	WASHER
158	SMQA1267	EJECT ARM
159	SMQA1019	SPRING
160	SMQA1222	SCREW
161	SMQA1039	COVER
(EG)		
162	SMQA1071	WASHER
163	SMQA1252	SWITCH
164	SMQA1041	PHOTO INTERRUPTER
165	SJT30440LX-V	CONNECTOR(4-P)
165	SJT30740LX-V	CONNECTOR(7-P)

# MECHANICAL PARTS LOCATION

## SPECIFICATIONS

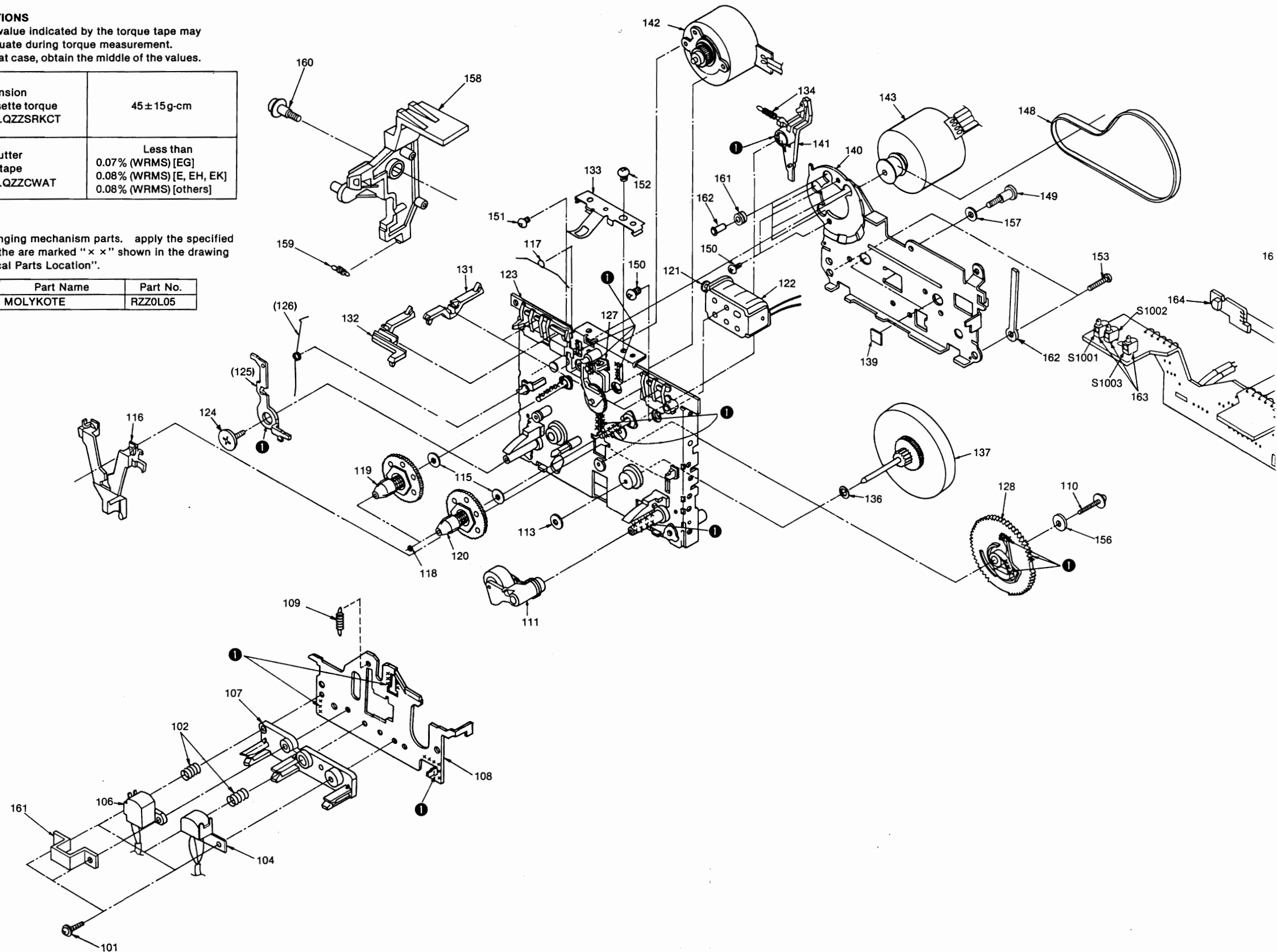
**NOTE:** The value indicated by the torque tape may fluctuate during torque measurement.  
In that case, obtain the middle of the values.

<b>Takeup tension</b> * Use cassette torque meter.....QZZSRKCT	45 ± 15g-cm
<b>Wow and flutter</b> * Use test tape .....QZZCWAT	Less than 0.07% (WRMS) [EG] 0.08% (WRMS) [E, EH, EK] 0.08% (WRMS) [others]

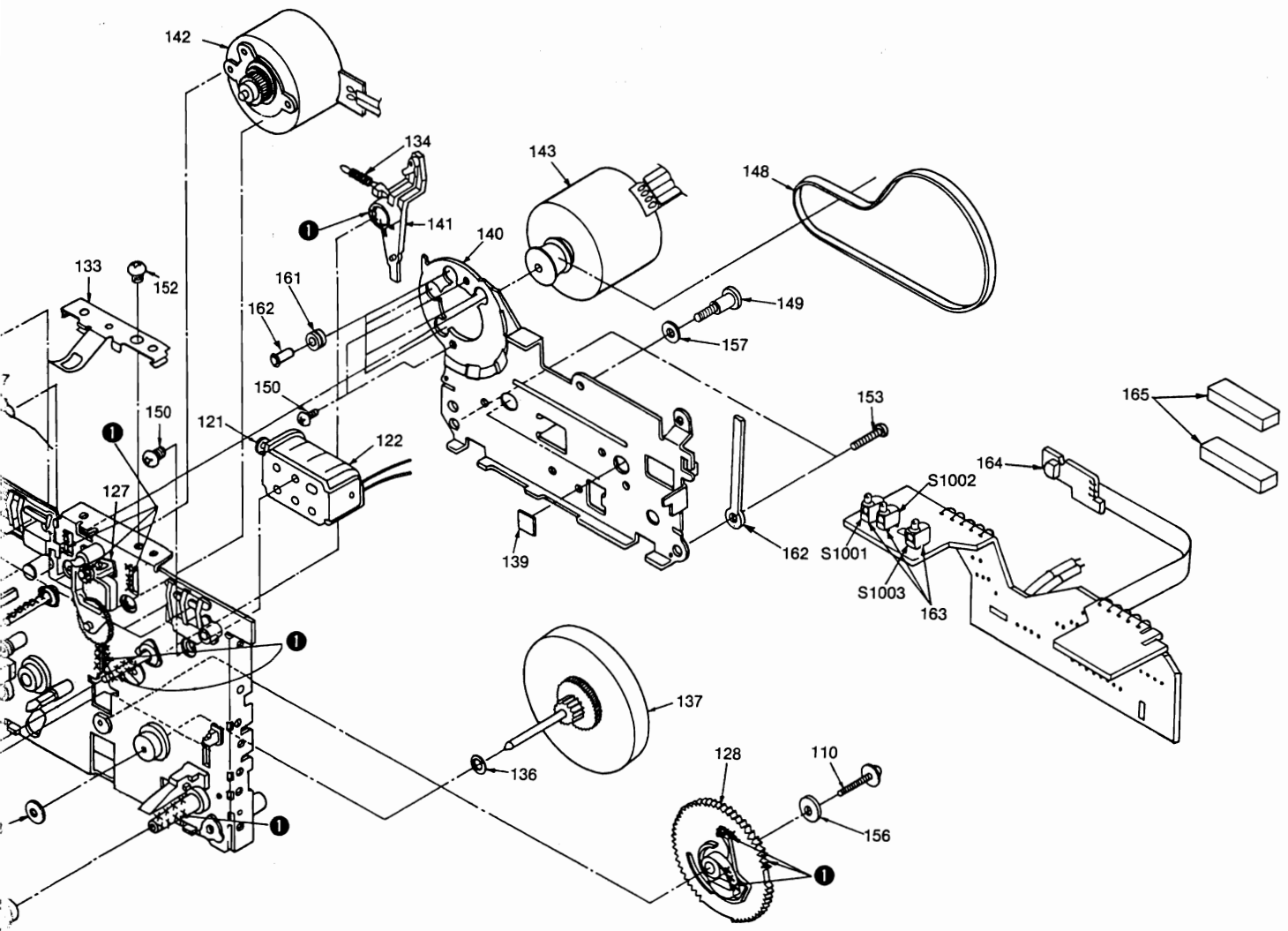
## NOTES:

• When changing mechanism parts, apply the specified grease to the are marked "x" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
①	MOLYKOTE	RZZ0L05

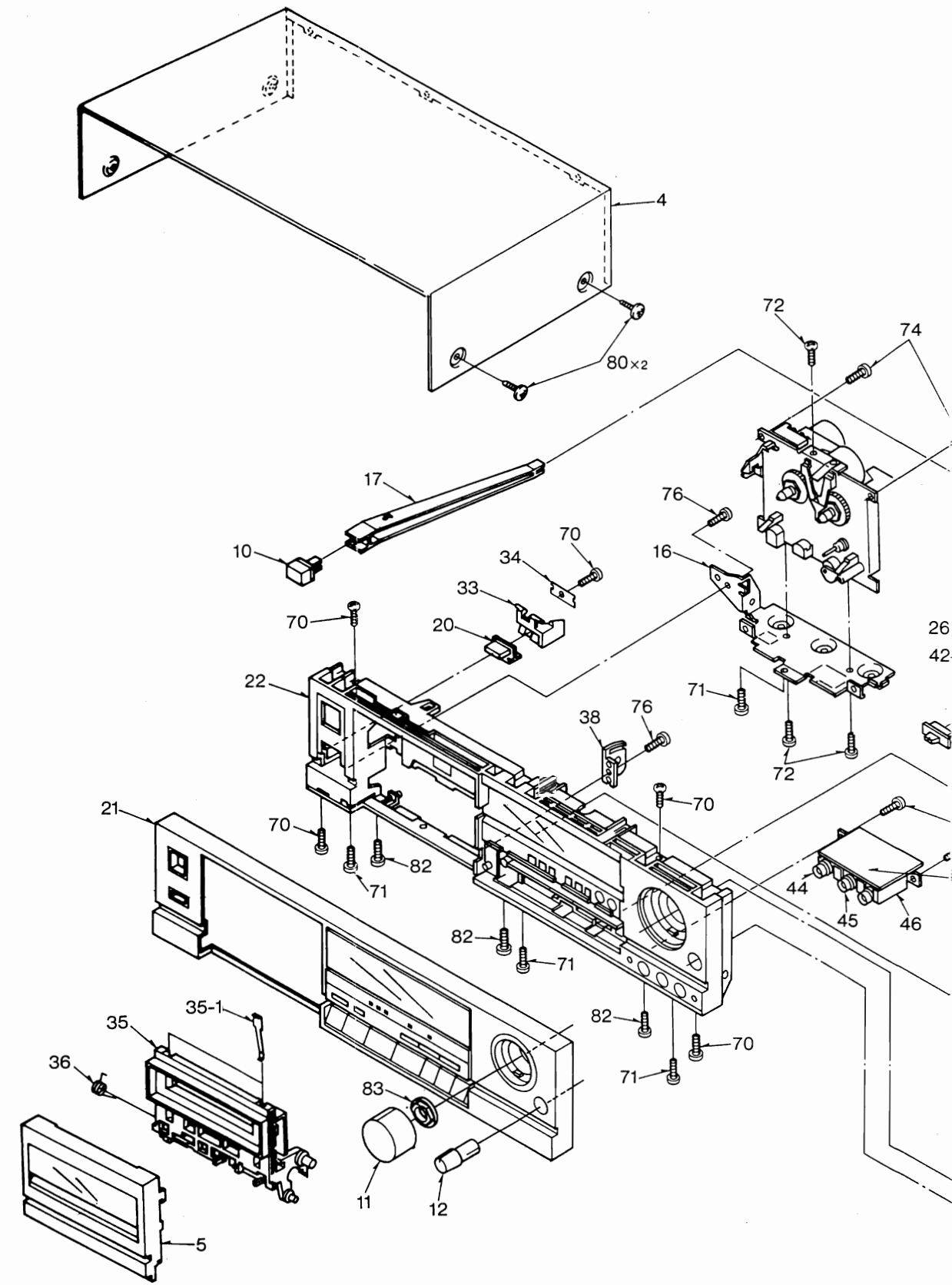


161	159 160	158 151	152 150 142 162 150 161	141	143	157 148 149 162	156 153 163	164	165
	124 125 126	132	133 127	121	122 134	140 139 136	137 128		
101 106 116	102	107 104 109	119	118 120 115 108 111 113 117			110		



152	150	142	162	150	161	141	143	157	148	149	162	156	153	163	164	165
133	127	121	122	134	140	139	136	137	128	110	156					
3 117																
110																

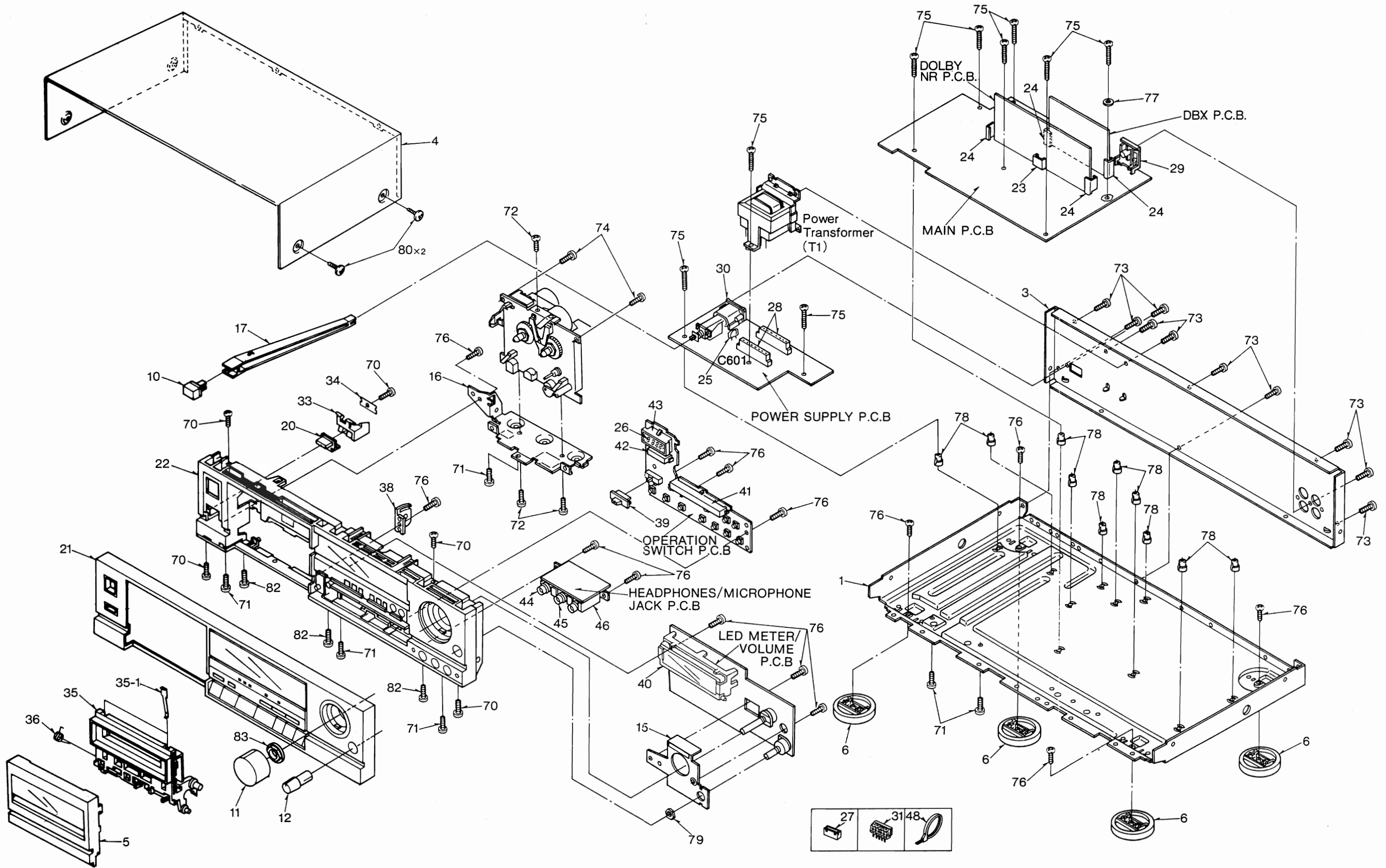
### ■ CABINET PARTS LOCATION



21	5	10	22	11	17	12	20	16	4		
36	35	35-1		33	34	38		44	45	46	26
70 70											
83 71 82 82											
71 70 82 71 80x2 70 76 71 70 70 72 74											

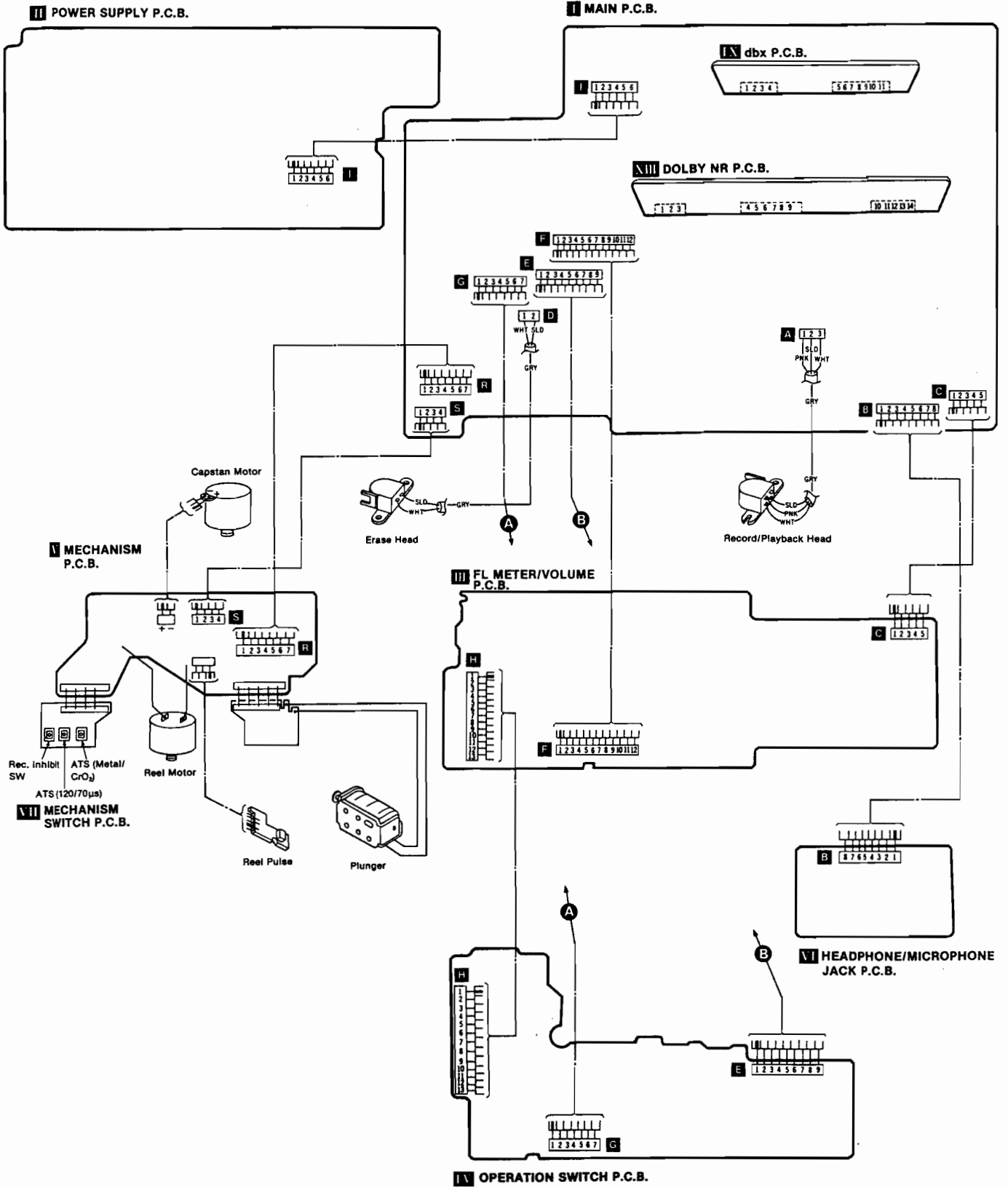


# ■ CABINET PARTS LOCATION



21	5	10	22	11	17	12	20	16	4	15	25	16	24	6	23	24	3	24	6	6		
36	35	35-1		33	34	38		44	45	46	26	42	40	43	39	30	41	28	27	31	48	29
			70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
			70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70

# WIRING CONNECTION DIAGRAM





# REPLACEMENT PARTS LIST

**Notes:** \* Important safety notice:

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

\* Bracketed indications in Ref. No. columns specify the area.

Parts without these indications can be used for all areas.

\*  $\text{\textcircled{A}}$ -marked parts are used for black only, while  $\text{\textcircled{S}}$ -marked parts are for silver type only.

\* Part other than  $\text{\textcircled{A}}$ -and  $\text{\textcircled{S}}$ -marked are use for both black and silver type.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
<b>CABINET AND CHASSIS</b>			29	SJF3057N	TERMINAL BOARD
1	SKUSB605-KE	BOTTOM BOARD	30	SJS9236	AC INLET
3	SGP7160-1A	REAR PANEL	31	SJT30540LX-V	CONNECTOR(5-P)
(EK)			31	SJT30640LX-V	CONNECTOR(6-P)
3	SGP7160-1B	REAR PANEL	31	SJT30740LX-V	CONNECTOR(7-P)
(XL)			31	SJT30840LX-V	CONNECTOR(8-P)
3	SGP7160-1C	REAR PANEL	31	SJT30940LX-V	CONNECTOR(9-P)
(XA, XB)			31	SJT31243-V	CONNECTOR(12-P)
3	SGP7160A	REAR PANEL	33	SUB236-2	EJECT LEVER
(E)			34	SUW3090	BRACKET
3	SGP7160B	REAR PANEL	35	SGXSB505-KE1	CASSETTE HOLDER
(EH, EG)			35-1	QBP2006A	SPRING
3	SGP7160C	REAR PANEL	36	SUS869	LEAF SPRING
(M, MC)			38	QTG40076	GUIDE
4	$\text{\textcircled{A}}$ SKC2110K99	CABINET BODY	39	$\text{\textcircled{A}}$ SBD145	KNOB
4	$\text{\textcircled{S}}$ SKC2110S98	CABINET BODY	39	$\text{\textcircled{S}}$ SBD145-1	KNOB
5	$\text{\textcircled{A}}$ SGE1901	CASSETTE LID	40	SHRM9021	HOLDER(FL)
5	$\text{\textcircled{S}}$ SGE1901-1	CASSETTE LID	41	LN061396P	LED ASS'Y
6	SKL313	FOOT	42	LN021315P1	LED ASS'Y
10	$\text{\textcircled{S}}$ SBC666	BUTTON, POWER	43	SHRM9022	HOLDER(LED)
10	$\text{\textcircled{A}}$ SBC666-5	BUTTON, POWER	44	SJJ126B	JACK
11	$\text{\textcircled{A}}$ SYTM10ZCOA	DIAL, REC LEVEL	45	SJJ127HH	JACK
11	$\text{\textcircled{S}}$ SYTM10ZSOA	DIAL, REC LEVEL	46	SUW3092	BRACKET
12	$\text{\textcircled{S}}$ SBDM10MA0A	KNOB	48	SHR301	CLAMPER
12	$\text{\textcircled{A}}$ SBDM10ZK0A	KNOB	49	SJT783	CONTACT
15	SUW3091	BRACKET	50	SJS5215	SOCKET(2-P)
16	SUW3093	BRACKET	50	SJS5331	SOCKET(3-P)
17	SUB268	ROD	<b>SCREWS, WASHERS AND NUTS</b>		
20	$\text{\textcircled{S}}$ SBC736	BUTTON	70	XTB3+8J	TAPPING SCREW
20	$\text{\textcircled{A}}$ SBC736-1	BUTTON	71	XTB3+6JFZ	TAPPING SCREW
21	SGWSB605-KE	FRONT PANEL	72	XTB3+6FFR	TAPPING SCREW
21	SGWSB605-SE	FRONT PANEL	73	XTB3+8JFZ	TAPPING SCREW
22	$\text{\textcircled{A}}$ SGXSB605-KE	SUB PANEL	74	XTB3+12JFR	TAPPING SCREW
22	$\text{\textcircled{S}}$ SGXSB605-SE	SUB PANEL	75	XTB3+20J	TAPPING SCREW
23	SMN2043	ANGLE	76	XTBS3+10JFZ	TAPPING SCREW
24	SME103-4	SHIELD PLATE	77	XWA3B	WASHER
25	SMX897	SPACER	78	SHE187-2	HOLDER
26	SVGLC204DLU1	LED(COUNTER)	79	XNS8FZ	NUT
27	EMCS1350ZL	SOCKET(13-P)	80	$\text{\textcircled{S}}$ SNE2129	SCREW
27	SJT3213	CONNECTOR(2-P)	80	$\text{\textcircled{A}}$ SNE2129-1	SCREW
27	SJT3319	CONNECTOR(3-P)	82	XTS3+8JFZ	TAPPING SCREW
28	SJS501	SOCKET	83	SNE4021	NUT

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Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
<b>PACKINGS</b>			A1	SQF13092	INSTRUCTION BOOK
P1	$\text{\textcircled{A}}$ SPG6138	CARTON BOX	(M)		
(E, EK, EH)			A1	SQF13093	INSTRUCTION BOOK
(XL, XA, XB)			(MC)		
(MC, EG)			A1	SQF13105	INSTRUCTION BOOK
P1	$\text{\textcircled{S}}$ SPG6139	CARTON BOX	(XB)		
(E, EK, EH)			A2	SJPK2202	CORD
(EG, XL, XA)			A3	$\Delta$ SFDAC05G02	POWER CORD
(XB)			(EK)		
P1	$\text{\textcircled{A}}$ SPG6140	CARTON BOX	A3	$\Delta$ SJA168	POWER CORD
(M)			(XA)		
P2	SPS5037	PAD	A3	$\Delta$ SJA170	POWER CORD
P3	SPS5038	PAD	(MC)		
P4	XZB50X65B02	POLY SHEET	A3	$\Delta$ SJA170-1	POWER CORD
<b>ACCESSORIES</b>			(M)		
A1	SQF13082	INSTRUCTION BOOK	A3	$\Delta$ SJA171	POWER CORD
(E, EH, XA)			(E, EH, EG)		
A1	SQF13083	INSTRUCTION BOOK	A3	$\Delta$ SJA173	POWER CORD
(EK)			(XL)		
A1	SQF13088	INSTRUCTION BOOK	A3	$\Delta$ SJA183	POWER CORD
(EG)			(XB)		
A1	SQF13091	INSTRUCTION BOOK	A4	$\Delta$ RJP120ZBS-H	AC PLUG ADAPTOR
(XL)			(XA, XB)		

# dbx/Dolby NR Equipped Stereo Cassette Deck

## DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen  
mit der Service-Anleitung für das Modell Nr.  
RS-B605

### ■ MESSUNGEN UND EINSTELL METHODEN

#### Meßinstrumente

- Elektronisches Voltmeter(EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

#### Tonkopf-Azimuteinstellung

1.Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8 kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajoscghe wellenfigur sich, wie abgebildet, 0 Grad nähert.

#### Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2.Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

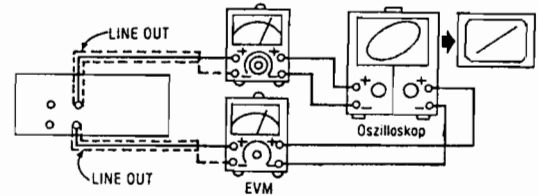


Abb. 1

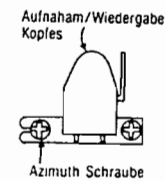


Abb. 2

#### Bandgeschwindigkeitseinstellung

1.Spielen Sie den Mittelteil des Testbands (QZZCWAT) ab.  
2.Stellen Sie den VR im Motor so ein, daß die Abgabe den Normwert erfüllt.

Normwert:  $3000 \pm 15\text{Hz}$

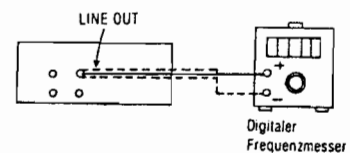


Abb. 3

#### Einstellung der Wiedergabeverstärkungsregelung

1.Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315 Hz, 0 dB) ab.  
2.Stellen Sie VR5 (L-K) und VR6 (R-K) so ein, daß die Abgabe den Normwert erfüllt.

Normwert:  $0.4\text{V} \pm 0.5\text{dB}$

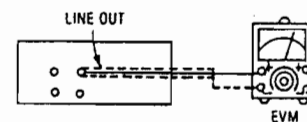


Abb. 4

### Wiedergabefrequenzgang

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, -20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in **Abb. 6** gezeigten Bereich liegt.

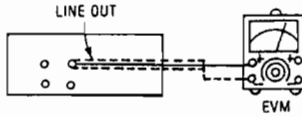


Abb. 5

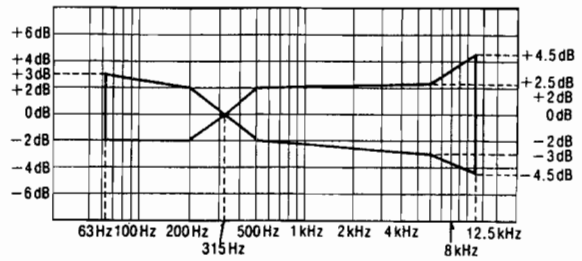


Abb. 6

### Gesamtfrequenzgang (Vormagnetisierungs-strom-Justierung)

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkereger ein Bezugseingabesignal (1 kHz, -24 dB) ein.
3. Stellen Sie das Signal auf 20 dB und justieren die Frequenz von 50 Hz ~ 12.5 kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bezugsfrequenz (1 kHz) in dem in **Abb. 8** aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie **VR301** (L-K) und **VR302** (R-K) so, daß der Frequenzpegel mit der Norm übereinstimmt.
  - Nach oben im Hochfrequenzbereich ausgleichen....Den vormagnetisierungsstrom anheben.
  - Nach unten im Hochfrequenzbereich ausgleichen...Den vormagnetisierungsstrom senken.
7. Wiederholen Sie die Schritte 2 ~ 6 und verwenden das CrO<sub>2</sub> Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 14 kHz (50 Hz ~ 14 kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in **Abb. 9** aufgezeigten Bereich befindet.

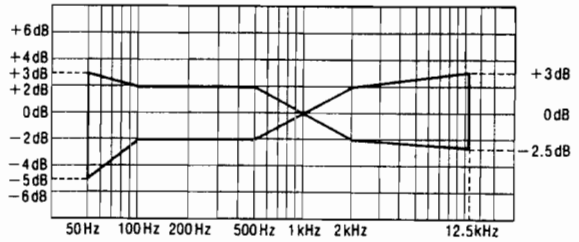


Abb. 8

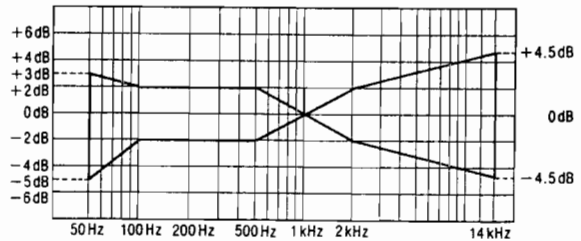


Abb. 9

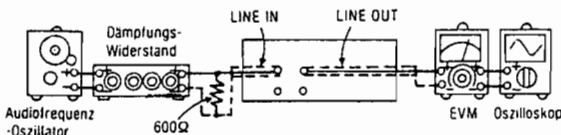


Abb. 7

### Einstellung der Gesamtverstärkungsregelung

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Betrieb.
2. Legen Sie ein Bezugseingabesignal (1 kHz, -24 dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4 V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie **VR7** (L-K) und **VR8** (R-K).
6. Wiederholen Sie die Schritte 2 ~ 5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

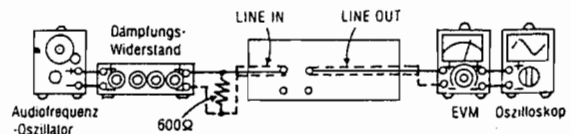


Abb. 10

Normwert: 0.4V ± 0.5dB

### Fluoreszenzanzeigeneinstellung

1. Legen Sie das normale Leertestband (QZZCRA) ein und geben bei Aufnahme-/Pause-Betrieb ein Bezugseingabesignal (1 kHz, -24 dB) ein.
2. Verwenden Sie einen Lautstärkereglер und stellen Sie diesen so ein, daß an den "LINE OUT"-Anschlüssen des Kassettendecks 0.4 V anliegen.
3. Justieren Sie **VR701** so, daß der "0 dB"-Abschnitt der Anzeige schwach aufleuchtet.

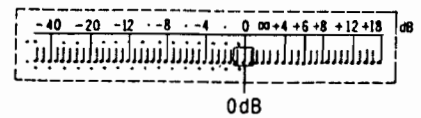


Abb. 11

### dbx Synchronisierung

1. Stellen Sie den Rauschunterdrückungswählschalter in die dbx Stellung.
2. Spielen Sie den auf dem Testband (QZZCFM) den teil für die Einstellung der Verstärkungsregelung (315 Hz, 0 dB) ab.
3. Schalten Sie ein Gleichspannungsvoltmeter parallel zu **TP501** und **TP502**.
4. Stellen Sie den **VR501** so ein, daß die Abgabe den Normwert erfüllt.

**Normwert: Gleichspannung 18.4mV ± 0.5mV**

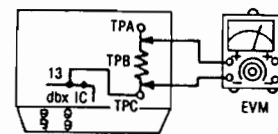


Abb. 12

TPA: TP501, TPB: R521, TPC: TP502