

Service Manual

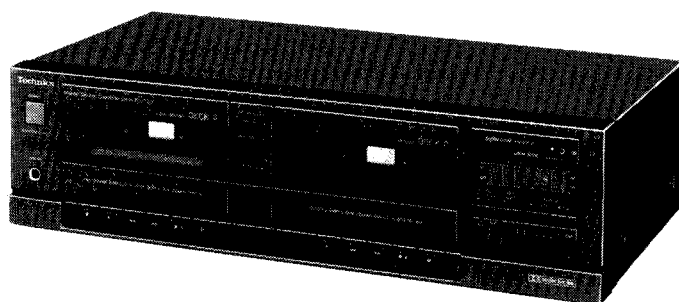
Dolby B•C NR-Equipped
Double Cassette Deck

Cassette Deck
RS-T22



Color

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



Color	Areas
(K) (S)	[E].....Continental Europe.
(K) (S)	[EK].....United Kingdom.
(K) (S)	[EH].....Holland.
(K) (S)	[EG].....F.R. Germany.
(K) (S)	[XA].....Asia, Latin America, Middle Near East, Africa and Oceania.
(K) (S)	[XL].....Australia.
(K)	[PA].....Far East PX.
(K)	[PE].....European Military.
(K)	[XB].....Saudi Arabia.

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
(DECK A) REC/PLAY	Solid Permalloy head
Erasing	Double-gap ferrite head
(DECK B) PLAY	Solid Permalloy head
Motors	
(DECK A) Capstan/reel table drive	
2 speed electronically controlled DC motor	
(DECK B) Capstan/reel table drive	
2 speed 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)
Frequency response (w/o Dolby N.R.)	
METAL	20 Hz~16 kHz (±15 dB)
	30 Hz~15 kHz (DIN)
CrO ₂	20 Hz~15 kHz (±15 dB)
	30 Hz~15 kHz (DIN)
NORMAL	20 Hz~15 kHz (±15 dB)
	30 Hz~15 kHz (DIN)
S/N (signal level = max recording level, CrO ₂ type tape)	
Dolby C NR on	74 dB (CCIR)
Dolby B NR on	66 dB (CCIR)
NR off	56 dB (A weighted)

Wow and flutter 0.08% (WRMS)

Fast Forward and Rewind Time

Approx. 105 seconds with C-60 cassette tape

Input sensitivity and impedance

LINE 60 mV/47 kΩ

Output voltage and impedance

LINE 400 mV/3.2 kΩ

HEADPHONES 30 mV/8 Ω

■ GENERAL

Power consumption 18W

Power supply

For Australia AC 50 Hz/60 Hz, 240V

For continental Europe AC 50 Hz/60 Hz, 220V

For others AC 50 Hz/60 Hz, 110V/127V/200V/240V

Dimensions (W×H×D) 430 × 120 × 228 mm

Weight (16-15/16" × 4-23/32" × 8-31/32") 3.8 kg (8.4 lb.)

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

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■ CONTENTS

	Page
• Location of Controls	2
• Operation	3, 4
• Disassembly Instructions	5
• Measurement and Adjustment Methodes.....	6~8
• Microcomputer Terminal Function and Waveform.....	9~11
• Terminal Guide of IC's Transistors and Diodes.....	11

	Page
• Wiring Connection Diagram	12
• Resistors and Capacitors	13, 14
• Electrical Parts List	14, 15
• Printed Circuit Board	16~20
• Schematic Diagram.....	21~24
• Block Diagram.....	25, 26
• Mechanical Parts Location	27~29
• Cabinet Parts Location.....	30~32

■ LOCATION OF CONTROLS

Headphones jack (phones)

Power "standby , on" switch (power "standby , on")

This switch turns on and off the secondary circuit power only. The unit is in the "stand-by" condition when this switch is set to the "standby " position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

Tape-select indicators (Auto Tape Select)

The tape selector setting changes automatically, and the indicator indicates the type of tape being used in "DECK A".

"DECK A" counter/reset button (DECK A counter/reset)

This indicates the amount of tape travel of "DECK A". When this button is pressed, the readout will be reset to "000".

Level meters (peak level)

During recording, these meters and digital display indicate the recording level. The level is adjusted by using the recording level control. During playback, they indicate the level of the recorded sound. Note that the digital display holds the maximum level for about 2 seconds.

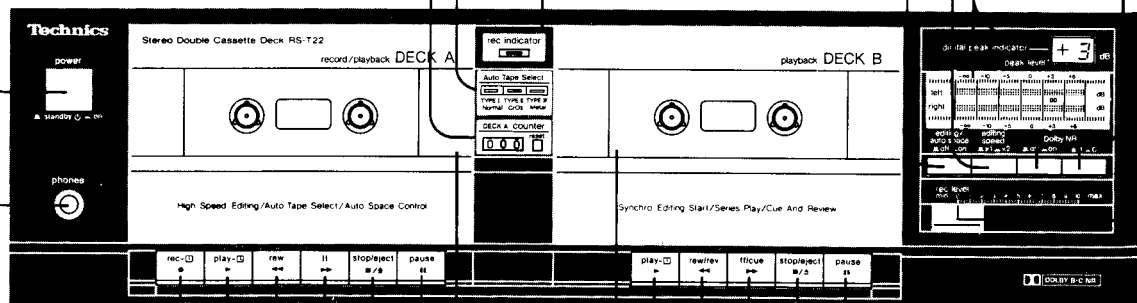
Editing tape-speed selector (editing speed)

Recording level control (rec level)

Editing/auto space switch (editing/auto space)

Dolby noise- reduction switches (Dolby NR)

Recording indicator (rec indicator)



When using "DECK A"

Record button (rec- / ●)

Playback button (play- /▶)

Rewind button (rew/◀◀)

Fast-forward button (ff/▶▶)

Stop/eject button (stop/eject/■/▲)

Pause button (pause/||)

Cassette holder

When using "DECK B"

• Pause button (pause/||)

• Stop/eject button (stop/eject/■/▲)
Press this button to stop the tape during recording or playback, and to open the cassette holder.

• Fast-forward/cue button (ff/cue/▶▶)

• Rewind/review button (rew/rev/◀◀)

• Playback button (play- /▶)

Cassette holder

■ OPERATION

Playback

Notes:

- "DECK A" and "DECK B" cannot both be used for playback at the same time.
- Do not press the stop/eject button while the tape is moving, doing so might cause a malfunction or damage the tape.

1 "on" (→)

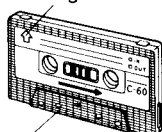
2 Select the noise-reduction system. (See below.)

When using "DECK A"

3 Press, then insert the tape cassette.

4 Press. (Playback will begin.)

The side to be played back facing outward.

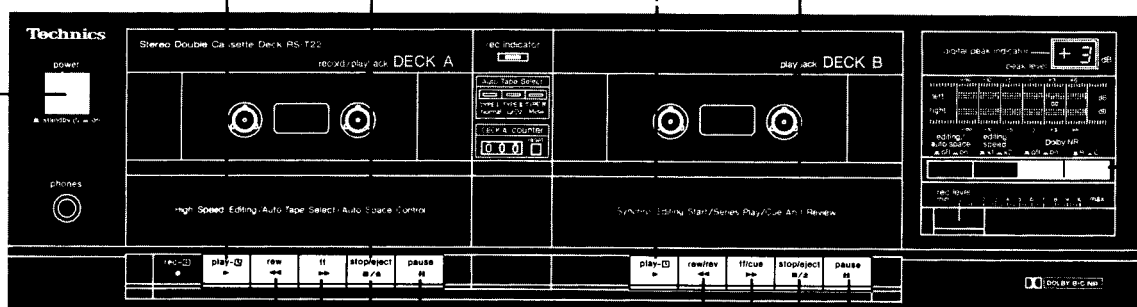


Part where tape is exposed facing downward.

When using "DECK B"

3 Press, then insert the tape cassette.

4 Press. (Playback will begin.)



Press to rewind the tape.

Press to advance the tape.

Press to stop the tape.

Press to stop the tape temporarily.

Press to stop the tape temporarily.

Press to stop the tape.

When in the stop mode, press this button to advance the tape rapidly. When in the play mode, press this button to fast forward the tape while monitoring the sound.

When in the stop mode, press this button to rewind the tape rapidly. When in the play mode, press this button to rewind the tape while monitoring the sound.

Dolby noise-reduction system

The Dolby-noise reduction system boosts low level high frequency signals during recording. During playback, these high frequency signals are reduced by a corresponding amount and, therefore, noise is reduced.

This unit uses the Dolby B-type and C-type of noise-reduction systems.

■ Examples of uses of the noise-reduction systems

Dolby B system

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 C system

Hiss noise is reduced to about one-tenth.

Use this system when recording 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.

Dolby noise-reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Series playback

Continuous playback from one side of a tape in "DECK A" to one side of a tape in "DECK B" (or from "DECK B" to "DECK A") is possible.

• When starting from "DECK A"

First press the playback button on "DECK A", and then press the playback button on "DECK B".

• When starting from "DECK B"

First press the playback button on "DECK B", and then press the playback button on "DECK A".

Automatic tape selector system

This cassette deck automatically detects the type of tape being used, and adjusts for the proper bias and equalization.

The tape-select indicator indicates the type of tape being used in "DECK A".

"Metal" lights when no tape has been loaded in the cassette holder of "DECK A".

Recording

Your attention is drawn to the fact that recording pre-recorded tapes or other published or broadcast material may infringe copyright laws.

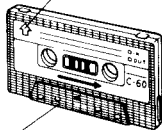
Note:

Only "DECK A" can be used for recording. "DECK B" has no record capability.

1 "on" ( → )

2 Press, then insert the tape to be used for recording.

The side to be recorded facing outward.

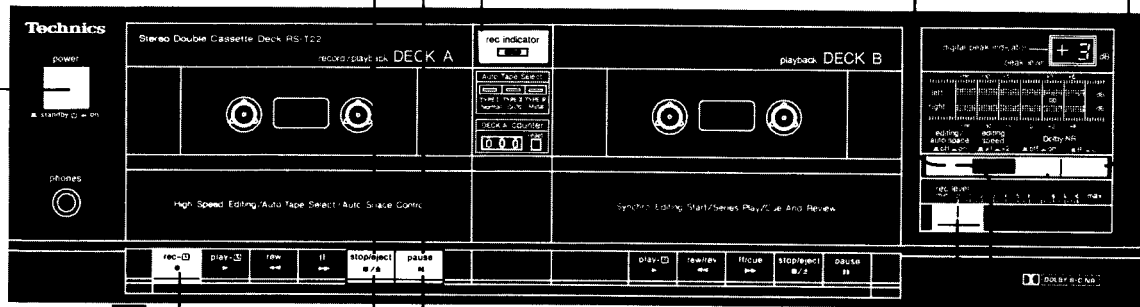


Part where tape is exposed facing downward.

3 Press.

4 Select the noise-reduction system.

5 "off" ( → )



6 Press.
The recording indicator will be illuminated. (Recording stand-by mode)

8 Adjust the recording level.
(See below.)

7 Begin the program source to be recorded.

Press to stop the recording.

9 Press.
(Recording will begin.)

Press to temporarily stop the recording.

Press to make non-recorded spaces between tunes.
(See below.)

To make non-recorded spaces between tunes

With this unit, by following the steps below, it is possible to make non-recorded spaces (four seconds long) between tunes.

- During recording, press the editing/auto space switch. After about 4 seconds, "DECK A" will automatically change to the recording stand-by mode.
- To start the recording again, set the switch to the "off" position. (Recording will begin.)

Note:

Sounds from the deck cannot be heard while the editing/auto space switch is pressed in, so set the tape-monitor switch (on the receiver, etc.) to the "source" position to be able to monitor the sound.

To erase recorded sounds

1. Insert the recorded tape cassette into the cassette holder of "DECK A".
2. Set the Dolby noise-reduction switch to the "off" position.
3. Set the recording level control to the minimum ("0") position.
4. Press the record button, and then let the tape run.

Note that any sounds on the tape will be automatically erased if a new recording is made on that part of the tape.

Adjustment of the recording level

The numbers which you should use as a guide for the adjustment of the tape level will differ depending upon the type of tape used.

Tape type	Normal (TYPE I) CrO ₂ (TYPE II)	Metal (TYPE IV)
Level (Dolby NR off)	0dB	+3dB
Level (Dolby NR on)	+3dB	+6dB

Dolby B-C NR-Equipped Stereo Cassette Deck

DEUTSCH

Verwenden Sie bitte diese Broschüre **zusammen** mit der **Service-Anleitung** für das Modell Nr. RS-T22.

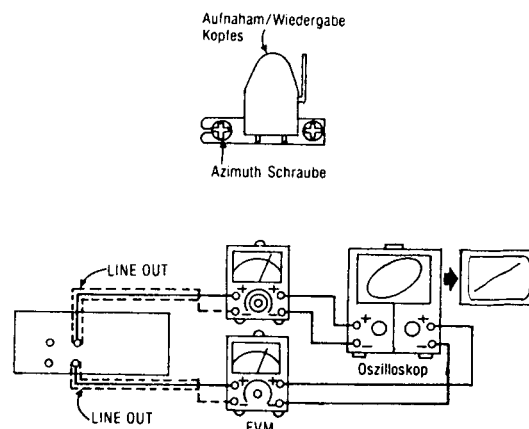
■ MESSUNGEN UND EINSTELL METHODEN

Meßinstrumente

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

Kpofazimut-Justierung

1. Den Azimut-Justierungsteil (8kHz, -20dB) des Testbandes (QZZCFM) wiedergeben und die Winkeljustierungs-Einstellschraube so verstellen, daß der Ausgang vom linken und rechten Kanal maximal wird. (Wenn die Justierpositionen für den linken und rechten Kanal verschieden sind, ist eine Position zu finden, wo der Ausgang des linken und rechten Kanals ausgeglichen ist, und dann ist die Justierung durchzuführen.)
2. Gleichzeitig eine Lissajous-Wellenform ziehen und Phasenablenkung eliminieren.
3. Nach erfolgter Justierung sind die Bandführungs-Höhen-und-Winkeljustierschrauben zu sichern.



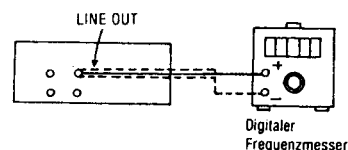
Bandgeschwindigkeits-Justierung

-- Schneller Bandlauf --

1. Stellen Sie den Bandgeschwindigkeitswählschalter auf "X2" und schließen Sie Deck A an TP1 und TPN1 und Deck B an TP2 und TPN2 kurz.
2. Spielen Sie den Mittelteil des Testbandes (QZZCWAT) ab.
3. Justieren Sie VR803 von Deck A so, daß die Abgabewerte innerhalb der Standardwerte liegen.

-- Normaler Bandlauf --

4. Stellen Sie den Bandgeschwindigkeitswählschalter auf "X1" und unterbrechen Sie Deck A in TP1 und TPN1 und Deck B in TP2 und TPN2.
5. Spielen Sie den Mittelteil des Testbandes (QZZCWAT) ab.
6. Justieren Sie VR802 von Deck B und VR801 von Deck A so, daß die Abgabewerte innerhalb der Standardwerte liegen.



**Standardwert: 3000±15Hz(Normal),
6000±630Hz(Schnell)**

Wiedergabe-Frequenzgang

1. Den Wiedergabe-Frequenzgangteil (315Hz, 12,5kHz~63Hz, -20dB) des Testbandes (QZZCFM) wiedergeben.
2. Überprüfen, ob der Frequenzgang innerhalb des in Abb. 1 für den linken und rechten Kanal gezeigten Bereichs liegt.

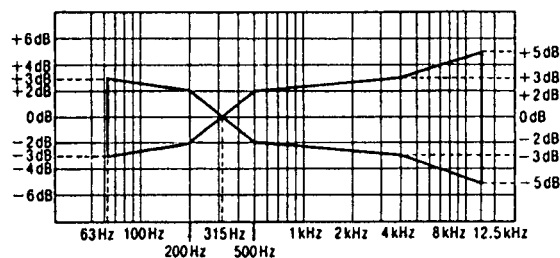
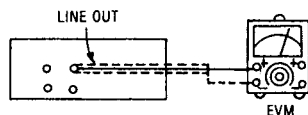
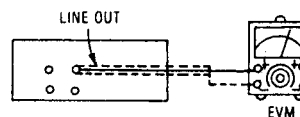


Abb. 1

Justierung des Wiedergabe-Verstärkungsgrades

1. Den für den Wiedergabe-Verstärkungsgrad justierten Teil (315Hz, 0dB) des Testbandes (QZZCFM) wiedergeben.
2. Den VR1 (linker Kanal) ((VR2 (rechter Kanal))) für Deck B und den VR3 (linker Kanal) ((VR4 (rechter Kanal))) für Deck A so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.



Standard-Wert: $0,4 \pm 0,02V$

Gesamtfrequenzgang

1. Legen Sie eine normale Leerkassette (QZZCRA) ein und nehmen ein Signal (50Hz ~ 12,5kHz) von 20dB auf, das durch das Referenzeingabepegelsignal (1kHz, -24dB) gedämpft wird.
2. Das in Schritt 1 aufgezeichnete Signal wiedergeben und prüfen, ob der Pegel jeder Ausgangsfrequenz im Bereich liegt, der in Abb. 2 in Vergleich zur Referenzfrequenz (1kHz) gezeigt wird.
3. Falls er nicht im Standard-Bereich liegt, ist der Vormagnetisierungsstrom mit VR301 (linker Kanal) ((VR302 (rechter Kanal))) für Deck A so zu justieren, daß der Frequenzpegel innerhalb des standards zuliegen kommt.
4. Anschließend das auf der CrO₂-Leerbassette (QZZCRX) und der Reineisenband-Leercassette (QZZCRZ) aufgezeichnete Signal auf 15kHz erhöhen und auf gleiche Weise justieren. Wie vorgehend beschrieben. Dann überprüfen, ob der Frequenzpegel innerhalb des in Abb. 3 gezeigten Bereichs liegt.

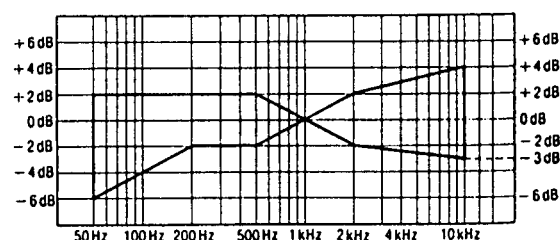
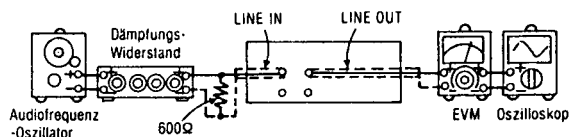


Abb. 2

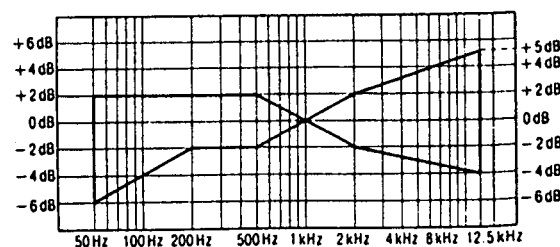
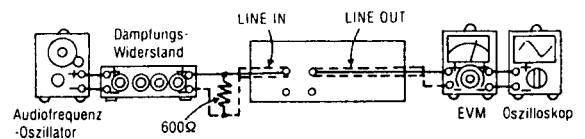


Abb. 3

Justierung des Gesamtverstärkungsgrades

1. Ein Normalband-Leercassette (QZZCRA) einsetzen und im Aufnahmepause- Zustand des Gerätes das Referenzsignal (1kHz, -24dB) eingeben.
2. Die Ausgangsleistung mit dem Dämpfungswiderstand auf 0.4V justieren und dann aufnehmen.
3. Das in Schritt 2 aufgezeichnete Signal wiedergeben und überprüfen, ob die Ausgangsleistung dem Standard-Wert entspricht.
4. Falls sie nicht dem Standard-Wert entspricht, ist der VR5 (linker Kanal) ((VR6 (rechter Kanal))) für Deck A zu justieren, und dann sind die Schritte(1), (2) und (3) zu Wiederholen, bis die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 0,4V $\pm$ 0,5dB (0,02V)



Dolby-Rauschunterdrückungs-Schaltkreis

1. Eine Normalband-Cassette einsetzen und im Aufnahmepause-Zustand des Gerätes ein 1kHz-Signal eingeben.
2. Mit dem Dämpfungswiderstand so justieren, daß die Ausgangsleistung zwischen Anschluß 7 des IC401 (linker Kanal) ((IC402 (rechter Kanal))) und Masse 12,3mV beträgt.

Dolby-B(Dolby-C) (Kodierungseigenschaft)

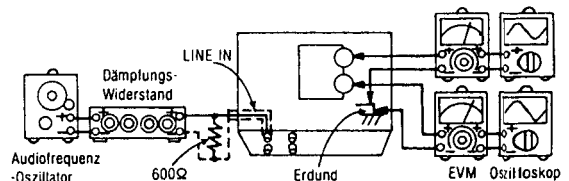
3. Den Rauschunterdrückungs-Schaltkreis (NR) auf "Dolby B(Dolby-C)" einstellen und das Eingangssignal auf 1kHz, 5kHz verändern.
4. Überprüfen, ob die Ausgangsleistung zwischen Anschluß 21 des IC401(linker Kanal) ((IC402(rechter Kanal))) und Masse wie vorgeschrieben gegenüber dem Pegel im rauschunterdrückungsfreiem Zustand verändert wird.

Dolby-B :

Standard-Wert: 6 $\pm$ 2,5dB(1kHz), 8 $\pm$ 2,5dB(5kHz)

Dolby-C :

Standard-Wert: 11,5 $\pm$ 2,5dB(1kHz), 8,5 $\pm$ 2,5dB(5kHz)



FRANÇAIS

Ceci est à utiliser conjointement avec manuel d'entretien du modèle No. RS-T22.

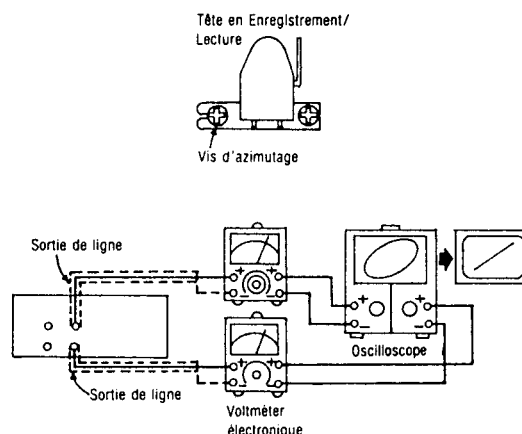
■ METHODES DES MESURES ET REGLAGES

Appareils de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T.(Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Réglage de l'angle des têtes de lecture

1. Faire jouer la partie réglée azimutale (8kHz, -20dB) de la bande d'essai (QZZCFM) et régler la vis de mise au point azimutale de telle sorte que les puissances de sortie du canal de gauche et du canal de droite soient au maximum.
(Si les positions de réglage du canal de gauche et du canal de droite sont différentes, trouver une position où les puissances de sortie des canaux de gauche et de droite soient équilibrées, puis effectuer la mise au point.)
2. En même temps, établir une forme d'onde de Lissajous et éliminer la déviation de phase.
3. Après le réglage, bloquer les vis du réglage angulaire et de la hauteur des guides de bande.



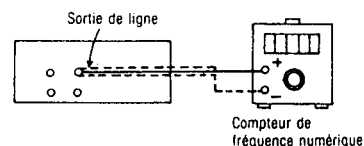
Réglage de la vitesse de défilement de la bande

-A grande vitesse-

1. Régler le commutateur de vitesse de défilement de la bande de montage sur "X2" et court-circuiter la platine A sur TP1 et TPN1, et la platine B sur TP2 et TPN2.
2. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
3. Ajuster la platine A sur VR803 de telle sorte que la puissance de sortie soit en deçà de la normale.

-Vitesse normale-

4. Régler le commutateur de vitesse de défilement de la bande de montage sur "X1" et mettre hors circuit la platine A sur TP1 et TPN1 et la platine B sur TP2 et TPN2.
5. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
6. Ajuster la platine B sur VR802 et la platine A sur VR801 de telle sorte que la puissance de sortie soit en deçà de la normale.



Valeur standard: 3000±15Hz(normale);
6000±630Hz(élevée)

Réponse en fréquence de la lecture

1. Faire jouer la partie de la réponse en fréquence de la lecture (315Hz, 12,5kHz~63Hz, -20dB) de la bande d'essai (QZZCFM).
2. Vérifier que la fréquence soit en deçà de la plage montrée à la Fig.1, à la fois pour le canal de gauche et le canal de droite.

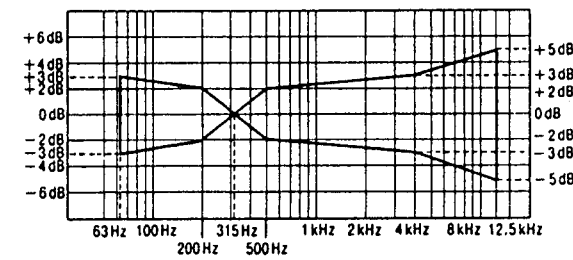
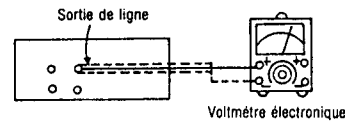
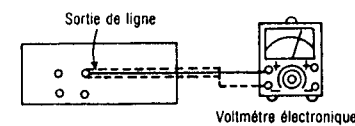


Fig. 1

Réglage d'amplification de la lecture

1. Faire jouer la partie réglée d'amplification de la lecture (315Hz, 0dB) de la bande d'essai (QZZCFM).
2. Régler la platine: VR1 (canal de gauche) ((VR2 (canal de droite))) et la platine A: VR3 (canal de gauche) ((VR4 (canal de droite))) de telle sorte que la puissance de sortie soit en deçà de la normale.



Valeur normalisée: $0,4 \pm 0,02V$

Réponse en fréquence globale

1. Installer une bande Vierge normale (QZZCRA) et enregistrer en appliquant un signal (50Hz~12,5kHz), 20dB atténués à partir du signal du niveau d'entrée de référence (1kHz, -24dB).
2. Faire jouer le signal enregistré à l'étape 1 et vérifier que le niveau de chaque fréquence de sortie soit en deçà de la plage montrée à la Fig.2 en comparaison avec la fréquence de référence (1kHz).
3. S'il n'est pas en deçà de la plage standard, régler le courant de polarisation avec platine A: VR301 (canal de gauche) ((VR302 (canal de gauche))) de telle sorte que le niveau de fréquence soit en deçà de la normale.
 - Niveau vers la haut dans la plage de fréquence élevéeAugmenter le courant de polarisation.
 - Niveau vers le bas dans la plage de fréquence élevéeDiminuer le courant de polarisation.
4. Après cela, amplifier le signal enregistré sur la bande vierger CrO₂ (QZZCRX) et la bande vierge métallisée (QZZCRZ) jusqu'à 15kHz et régler de la même manière que celle mentionnée ci-dessus. Puis, vérifier que le niveau de fréquence soit en deçà de la plage montrée à la Fig.3.

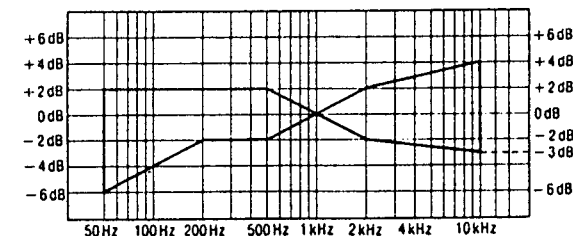
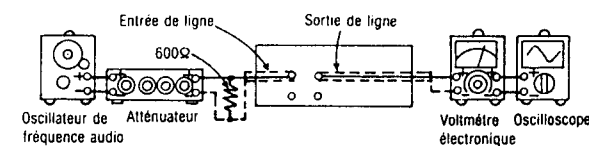


Fig. 2

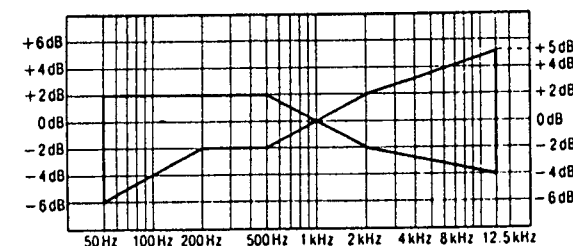
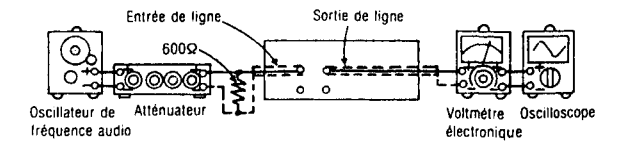


Fig. 3

Réglage d'amplification globale

1. Installer une bande vierge normale (QZZCRA) et appliquer le signal de niveau d'entrée de référence (1kHz, -24dB) sur le mode d'intermission d'enregistrement.
2. Régler la puissance de sortie 0,4V avec l'atténuateur, puis enregistrer.
3. Faire jouer le signal enregistré à l'étape 2 et vérifier que la puissance de sortie soit en deçà de la normale.
4. Si elle n'est pas en deçà de la normale, régler platine A: VR5 (canal de gauche) ((VR6 (canal de droite))) et répéter les étapes (1), (2) et (3) jusqu'à ce que la puissance de sortie soit en deçà de la normale.



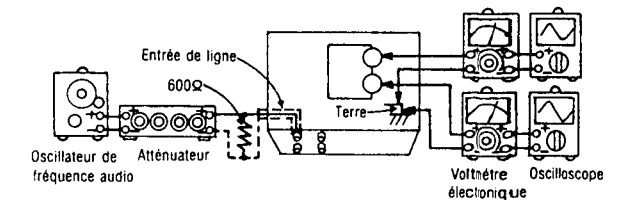
Valeur normalisée: $0,4V \pm 0,5dB(0,02V)$

Circuit de réduction des bruits Dolby

1. Installer une bande normale et appliquer un signal de 5kHz sur le mode d'intermission d'enregistrement.
2. Régler avec l'atténuateur de telle sorte que la puissance de sortie entre la borne 7 de IC401 (canal de gauche) ((IC402 (canal de droite))) et la masse soit de 12,3mV.

-Dolby B(Caractéristiques de codage)-

3. Régler le commutateur de réduction des bruits sur "Dolby B" et changer le signal d'entrée sur 1kHz, 5kHz.
4. Vérifier que la puissance de sortie entre la borne 21 de IC401 (canal de gauche) ((IC402 (canal de droite))) et la masse change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.



Valeur normalisée: $6 \pm 2,5dB(1kHz), 8 \pm 2,5dB(5kHz)$

-Dolby C(Caractéristiques de codage)-

5. Régler le commutateur de réduction des bruits sur "Dolby C" et changer le signal d'entrée sur 1kHz, 5kHz.
6. Vérifier que la puissance de sortie entre la borne 21 de IC401 (canal de gauche) ((IC402 (canal de droite))) et la masse change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.

Valeur normalisée: $11,5 \pm 2,5dB(1kHz), 8,5 \pm 2,5dB(5kHz)$

ESPAÑOL

Sírvase utilizarse junto con manual de servicio para el model No. RS-T22.

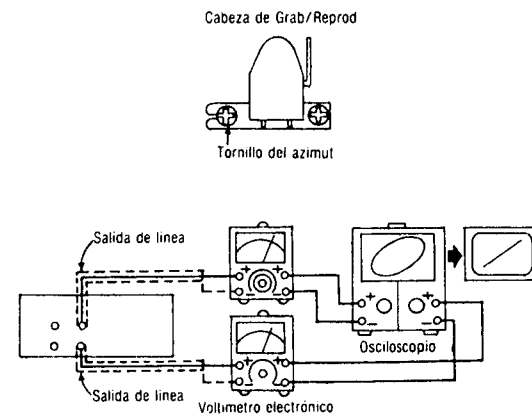
MÉTODOS DE AJUSTE Y MEDIDA

Instrumento de medición

- EVM(Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF
- ATT(Atenuador)
- Voltímetro CC
- Resistor(600Ω)

Ajuste acimutal de cabeza

- 1.Reproducir la parte ajustada de acimut(8kHz, -20dB) de la cinta de prueba(QZZCFM) y regular el tornillo de ajuste de ángulo de manera que las salidas de CH-I y CH-D sean maximizadas. (Cuando las posiciones de ajuste sean diferentes de CH-I y CH-D, encontrar una posición donde las salidas de CH-I y CH-D estén equilibradas y, luego, hacer el ajuste.)
- 2.Al mismo tiempo, trazar una forma de onda de Lissajous y eliminar la deflexión de fase.
- 3.Después del ajuste, fije los tornillos de ajuste de altura y ángulo de guía de cinta.



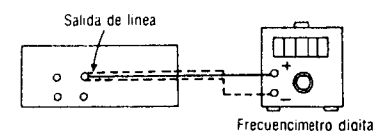
Ajuste de velocidad de cinta

-Alta velocidad-

- 1.Poner el conmutador de velocidad de cinta de compaginación "X2" conectar la Platina A: TP1 y TPN1, Platina B: TP2 y TPN2.
- 2.Reproducir la parte de en medio de la cinta de prueba (QZZCWAT).
- 3.Ajustar la Platina A: VR803 de manera que la salida esté dentro de la estándar.

-Velocidad normal-

- 4.Poner el conmutador de velocidad de cinta de compaginación en "X1" y abra la Platina A: TP1 y TPN1, Platina B: TP2 y TPN2.
- 5.Reproducir la parte de en medio de la cinta de prueba(QZZWAT).
- 6.Ajustar la Platina B: VR802 y Platina A: VR801 de manera que la salida esté dentro de la estándar.



Valor estándar: 3000±15Hz(normal)6000±630Hz(alta)

Respuesta de frecuencia de reproducción

- 1.Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz,-20dB) de la cinta de prueba(QZZCFM).
- 2.Comprobar que la frecuencia esté dentro de la gama mostrada en la Fig.1 tanto para CH-I como para CH-D.

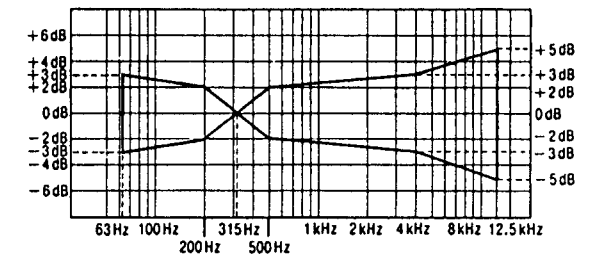
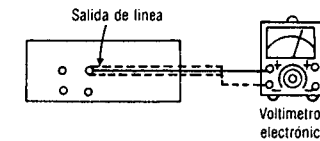
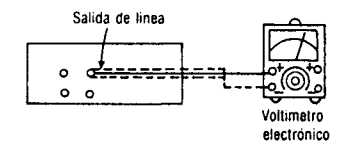


Fig. 1

Ajuste de ganancia de reproducción

- 1.Reproducir la parte ajustada de la ganancia de reproducción (315Hz, 0dB) de la cinta de prueba (QZZCFM).
- 2.Ajustar la Platina B: RV1(CH-I) ((RV2(CH-D))) y la Platina A: RV3(CH-I) ((RV4(CH-D))) de manera que la salida esté dentro de la estándar.



Valor estándar: 0,4±0,02V

Respuesta de frecuencia total

- 1.Poner una cinta virgen normal(QZZCRA) y grabar aplicando señal (50Hz~12,5kHz), 20dB atenuados de la señal de nivel de entrada de referencia(1kHz, -24dB).
- 2.Reproducir la señal grabada en el paso 1 y comprobar que el nivel de cada frecuencia de salida esté dentro de la gama mostrada en la Fig.2 en comparación con la frecuencia de referencia(1kHz).
- 3.Si no está dentro de la gama estándar, ajustar la corriente de polarización mediante la Platina A: RV301(CH-I) ((RV302(CH-D))) de manera que el nivel de frecuencia esté dentro del estándar.
 - Subir el nivel en la gama de alta frecuencia Incrementar la corriente de polarización.
 - Bajar el nivel en la gama de alta frecuencia Disminuir la corriente de polarización.
- 4.Después de eso, incrementar la señal grabada en la cinta virgen CrO₂ (QZZCRX) y la cinta virgen metálica (QZZCRZ) hasta 15kHz y ajustar de la misma manera como mencionado arriba y comprobar que el nivel de frecuencia esté dentro de la gama mostrada en la Fig.3.

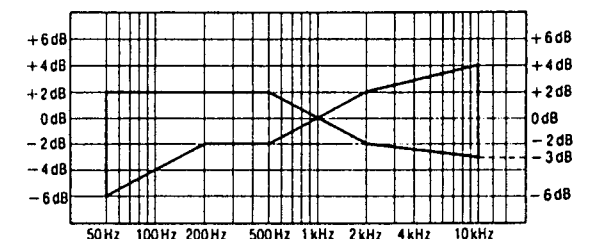
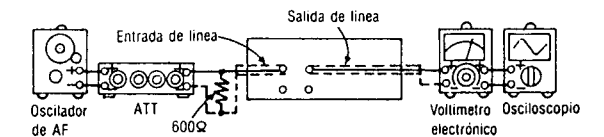


Fig. 2

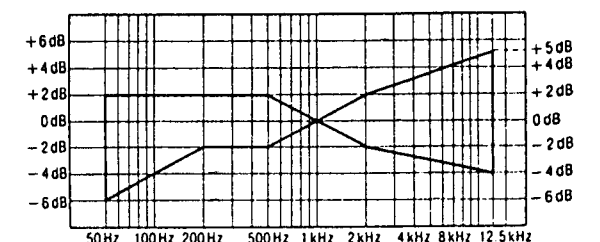
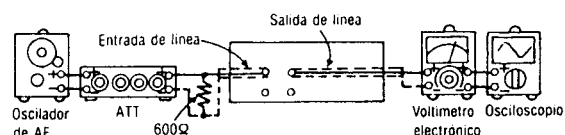


Fig. 3

Ajuste de ganancia total

1. Colocar una cinta virgen normal (QZZCRA) y aplicar la señal de nivel de entrada de referencia (1kHz, -24dB) en la modalidad de pausa de grabación.
2. Ajustar la salida 0,4V mediante atenuador y luego, grabar.
3. Reproducir la señal grabada en el paso 2 y comprobar que la salida esté dentro de la estándar.
4. Si no está dentro de la estándar, ajustar la Platina A: RV5 (CH-I) ((RV6 (CH-D))) y repetir el paso (1), (2) y (3) hasta que la salida esté dentro de la estándar.

Valor estándar: $0,4V \pm 0,5dB(0,02V)$



Circuito RR Dolby

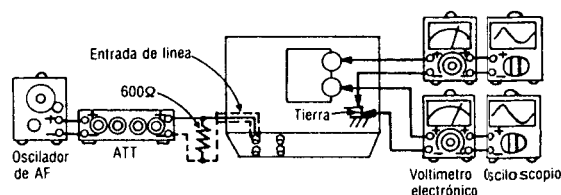
1. Colocar una cinta normal y aplicar señal 5kHz en la modalidad de pausa de grabación.
 2. Ajustar mediante atenuador de manera que la salida entre terminal 7 de IC401 (CH-I) ((IC402 (CH-D))) y tierra sea 12,3mV.
- Dolby B (Codificar característica)-**
3. Poner el interruptor RR en "Dolby B" y cambiar la señal de entrada a 1kHz, 5kHz.
 4. Comprobar que la salida entre terminal 21 de IC401 (CH-I) ((IC402 (CH-D))) y tierra cambie como especificado por el nivel en la modalidad de salida RR.

Valor estándar: $6 \pm 2,5dB(1kHz)$, $8 \pm 2,5dB(5kHz)$

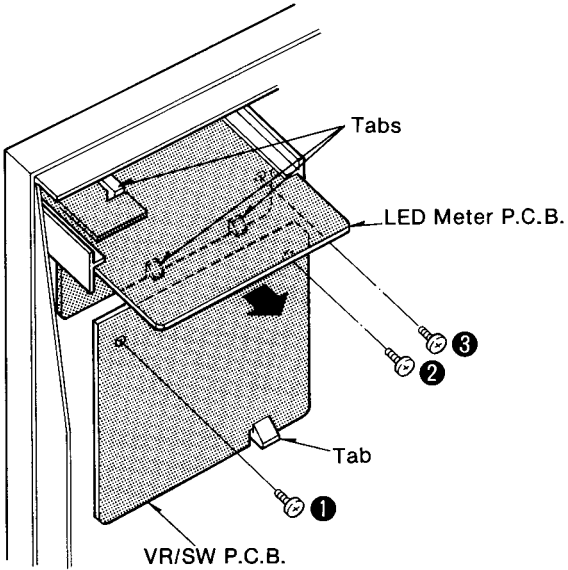
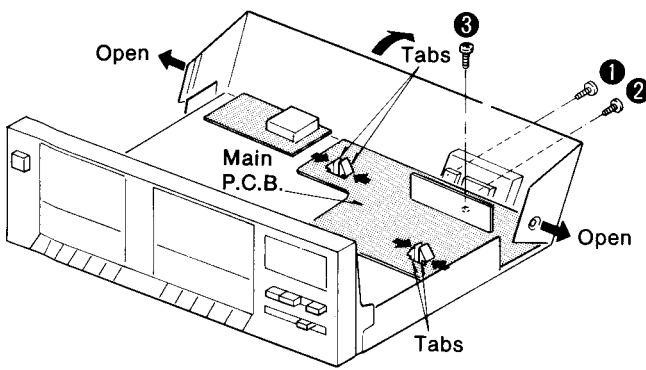
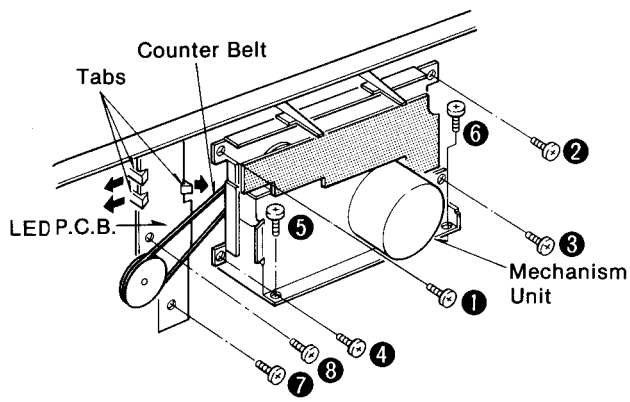
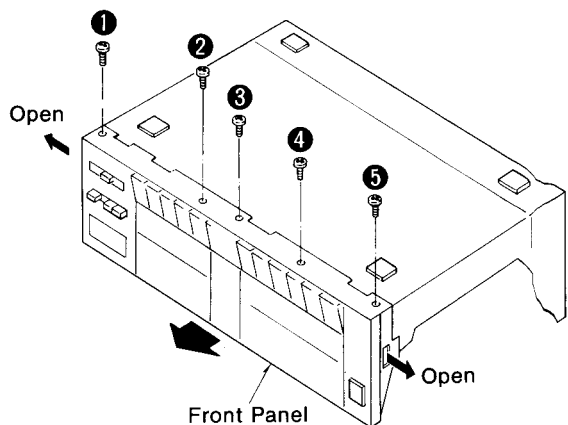
-Dolby C (Codificar característica)-

5. Poner el interruptor RR en "Dolby C" y cambiar la señal de entrada 1kHz, 5kHz.
6. Comprobar que la salida entre terminal 21 de IC401 (CH-I) ((IC402 (CH-D))) y tierra cambie como especificado por el nivel en la modalidad de salida RR.

Valor estándar: $11,5 \pm 2,5dB(1kHz)$, $8,5 \pm 2,5dB(5kHz)$



DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet	Ref. No. 4	How to remove the LED meter P.C.B. and VR/SW P.C.B.
Procedure 1	Remove the 4 screws.	Procedure 1 → 4	- Remove the 2 screws (①, ②). - Push the one tab aside, and then remove the VR/SW P.C.B. - Remove the one screw (③). - Push the 3 tabs aside, and then remove the LED meter P.C.B.
Ref. No. 2	How to remove the main P.C.B.		
Procedure 1 → 2	- Remove the 2 screws (①, ②). - Open the side of back chassis, and then pull down it. - Remove the one screw (③). - Remove the 4 tabs aside.		
		Ref. No. 5	How to remove the LED P.C.B.
Procedure 1 → 3	- Remove the 6 screws (①~⑥). - Push the eject button. - Remove the counter belt (for mechanism unit of DECK A).	Procedure 1 → 5	- Remove the 2 screws (⑦, ⑧). (fig. 2) - Remove the 3 tabs aside. (fig. 2)
		Ref. No. 6	How to remove the front panel
		Procedure 1 → 3 → 4 → 5 → 6	- Remove the 5 screws (①~⑤). - Open the sides of front panel, and then pull it to yourself.
Fig. 2			

■ MEASUREMENT AND ADJUSTMENT METHODES

Measurement Condition

- Input level controls; Maximum
- Editing switch; Off
- NR switch; Off

Measuring instrument

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

Test tape

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

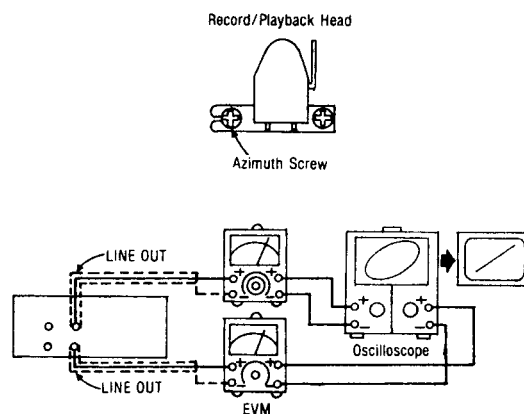
- Editing tape speed switch; X1
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20\pm5^{\circ}\text{C}(68\pm9^{\circ}\text{F})$

- ATT(Attenuator)
- DC voltmeter
- Resistor (600 Ω)

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
Normal reference blank tape; QZZCRA
CrO₂ reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjusted part(8kHz, -20dB) of the test tape(QZZCFM) and regulate the angle adjusting screw so that the outputs of L-CH and R-CH are maximized.
(When the adjusting positions are different with L-CH and R-CH, find a position where the outputs of L-CH and R-CH are balanced, and then make the adjustment.)
2. At the same time, obtain a lissajous waveform and eliminate phase deflection.
3. After adjustment, lock the tape guide height and angle adjustment screws.



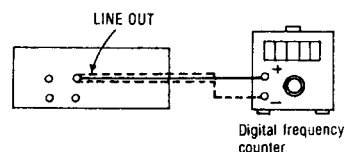
TAPE SPEED ADJUSTMENT

High speed

1. Set the editing tape speed switch to "X2" and connect the Deck A = TP1 and TPN1, Deck B = TP2 and TPN2.
2. Playback the middle part of the test tape (QZZCWAT).
3. Adjust Deck A = VR803 so that the output is within the standard.

Normal speed

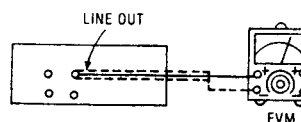
4. Set the editing tape speed switch to "X1" and open the Deck A = TP1 and TPN1, Deck B = TP2 and TPN2.
5. Playback the middle part of the test tape (QZZCWAT).
6. Adjust Deck A = VR801 and Deck B = VR802 so that the output is within the standard.



Standard value: 3000 $\pm$ 15Hz(Normal), 6000 $\pm$ 630Hz(High)

PLAYBACK FREQUENCY RESPONSE

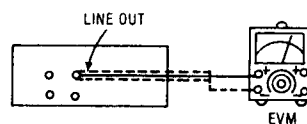
1. Playback the playback frequency response part (315Hz, 12.5kHz ~ 63Hz, -20dB) of the test tape (QZZCFM).
2. Check that the frequency is within the range shown in Fig. 1 for both L-CH and R-CH.
(See page 8.)



PLAYBACK GAIN ADJUSTMENT

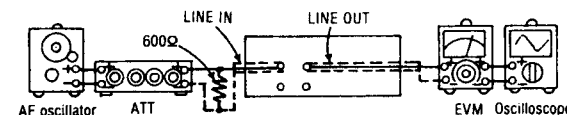
1. Playback the playback gain adjusted part (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck B=VR1(L-CH) (VR2(R-CH)) and Deck A=VR3(L-CH) (VR4(R-CH)) so that the output is within the standard.

Standard value: $0.4 \pm 0.02V$



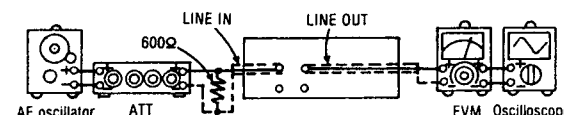
OVERALL FREQUENCY RESPONSE

1. Set a normal blank tape (QZZCRA) and record by applying signal (50Hz ~ 12.5kHz), 20dB attenuated from the reference input level signal (1kHz, -24dB).
2. Playback the signal recorded in step 1, and check that the level of each output frequency is within the range shown in Fig.2 in comparison with the reference frequency (1kHz).
3. If it is not within the standard range, adjust the bias current by Deck A= VR301(L-CH) (Deck A= VR302(R-CH)) so that the frequency level is within the standard.
 - Level up in high frequency range.....Increase the bias current.
 - Level down in high frequency range...Decrease the bias current.
4. After that, increase the signal recorded on CrO₂ blank tape(QZZCRX) and metal blank tape(QZZCRZ) up to 14kHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig.3



OVERALL GAIN ADJUSTMENT

1. Set a normal blank tape (QZZCRA) and apply the reference input level signal (1kHz, -24dB) in record pause mode.
2. Adjust the output 0.4V by attenuator and then record.
3. Playback the signal recorded in step 2, and check that the output is within the standard.
4. If it is not within the standard, adjust Deck A= VR5(L-CH) (Deck A= VR6(R-CH)) and repeat the step (1), (2) and (3) until the output is within the standard.



Standard value: $0.4V \pm 0.5dB(0.02V)$

DOLBY NR CIRCUIT

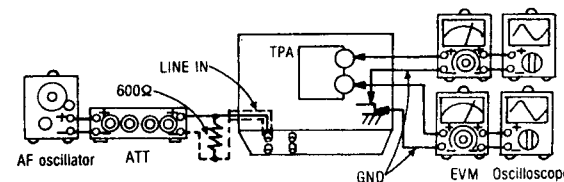
1. Set a normal tape and apply 1kHz signal in record pause mode.
2. Adjust by attenuator so that the output between terminal 7 of IC401 (L-CH) (IC402(R-CH)) and ground is 12.3mV.
3. Set NR switch to "Dolby B" and change the input signal to 1kHz, 5kHz.
4. Check that the output between terminal 21 of IC401(L-CH) (IC402 (R-CH)) and ground change as specified from the level in NR out mode.

Standard value: $6 \pm 2.5dB(1kHz)$, $8 \pm 2.5dB(5kHz)$

-Dolby B (Encode characteristic)-

5. Set NR switch to "Dolby C" and change the input signal to 1kHz, 5kHz.
6. Check that the output between terminal 21 of IC401(L-CH) (IC402 (R-CH)) and ground change as specified from the level in NR out mode.

Standard value: $11.5 \pm 2.5dB(1kHz)$, $8.5 \pm 2.5dB(5kHz)$



Playback frequency response chart

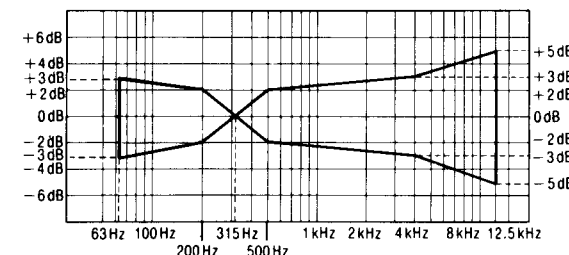


Fig. 1

Overall frequency response chart (Normal)

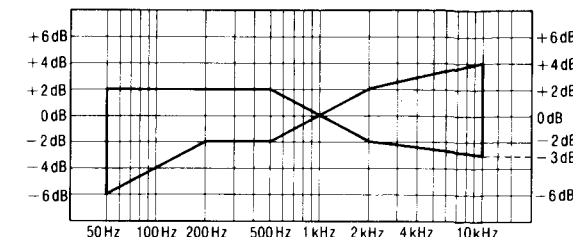


Fig. 2

Overall frequency response chart (CrO₂, Metal)

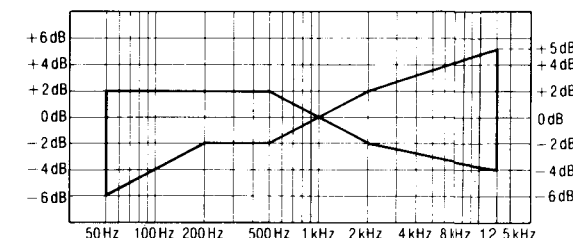
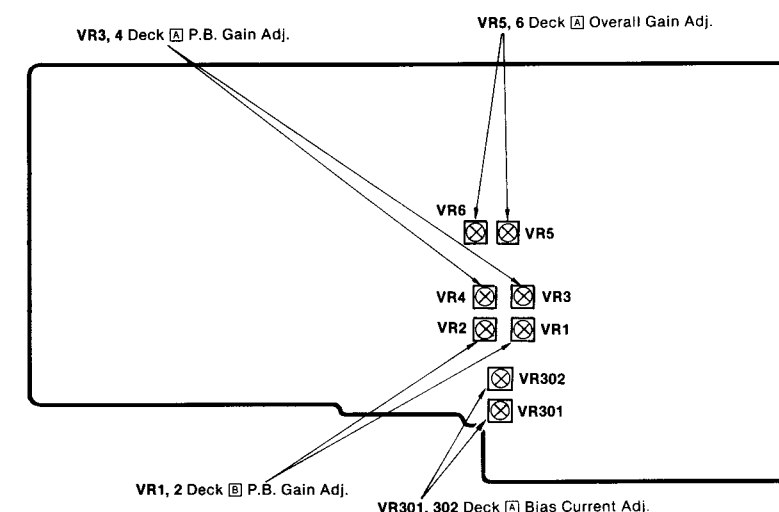


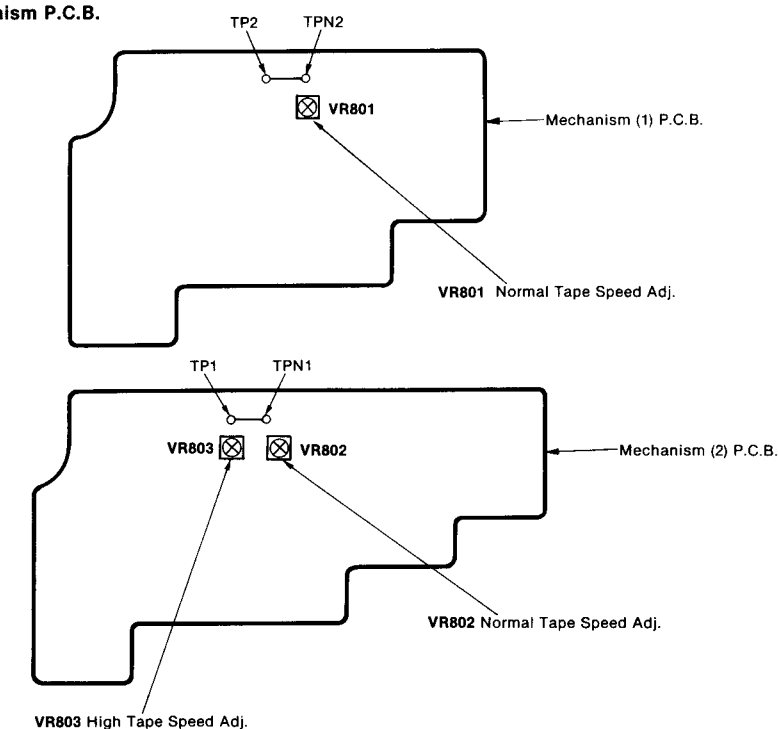
Fig. 3

• Adjustment Point

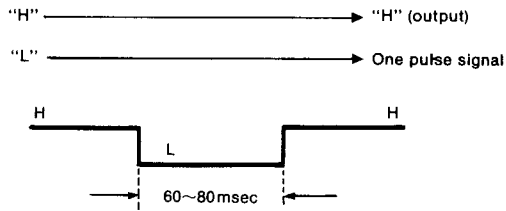
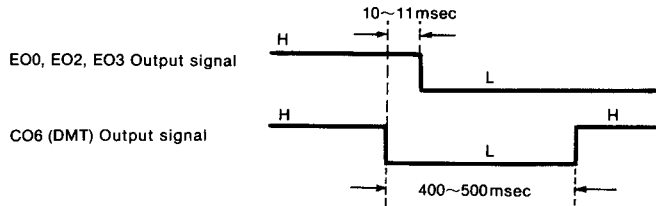
• Main P.C.B.



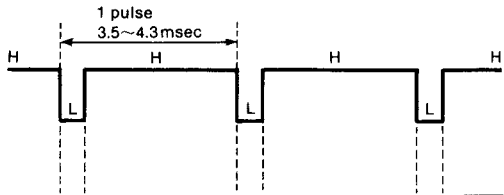
• Mechanism P.C.B.



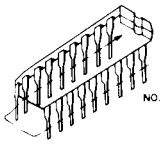
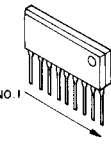
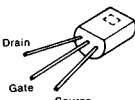
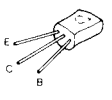
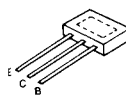
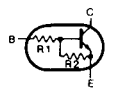
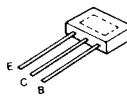
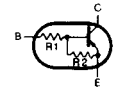
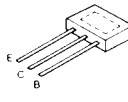
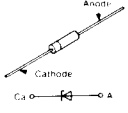
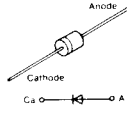
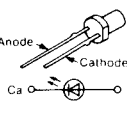
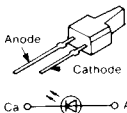
■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC801: MN1402STO)

Terminal No.	Symbol	Name	Function/operation
1	Vss	—	•Connection to GND.
2	CO9	—	•Non connection.
3	CO8	—	•Non connection.
4	CO7	—	•Non connection. Remote control signal (SNS0 Terminal output signal input signal) CO7 Terminal output signal 
5	CO6	Direct muting (DMT) signal output	•“L” in mute on (STOP, FF/REW, CUE/REV and each selector), “H” in mute off (REC, PLAY). •DMT Output timing of each selector. 
6	CO5	Muting off signal output of playback AMP	•Deck [B] “L” in CUE/REV, “H” in other.
7	AI3	Reading of input switch state deck [B] auto tape selector (S904)	•“L” when auto tape selector is on mode. •“H” when auto tape selector is off mode.
8	AI2	Reading of input switch state deck [B] FF/REW (S902)	•“L” when FF/REW switch is on mode. •“H” when FF/REW switch is off mode.

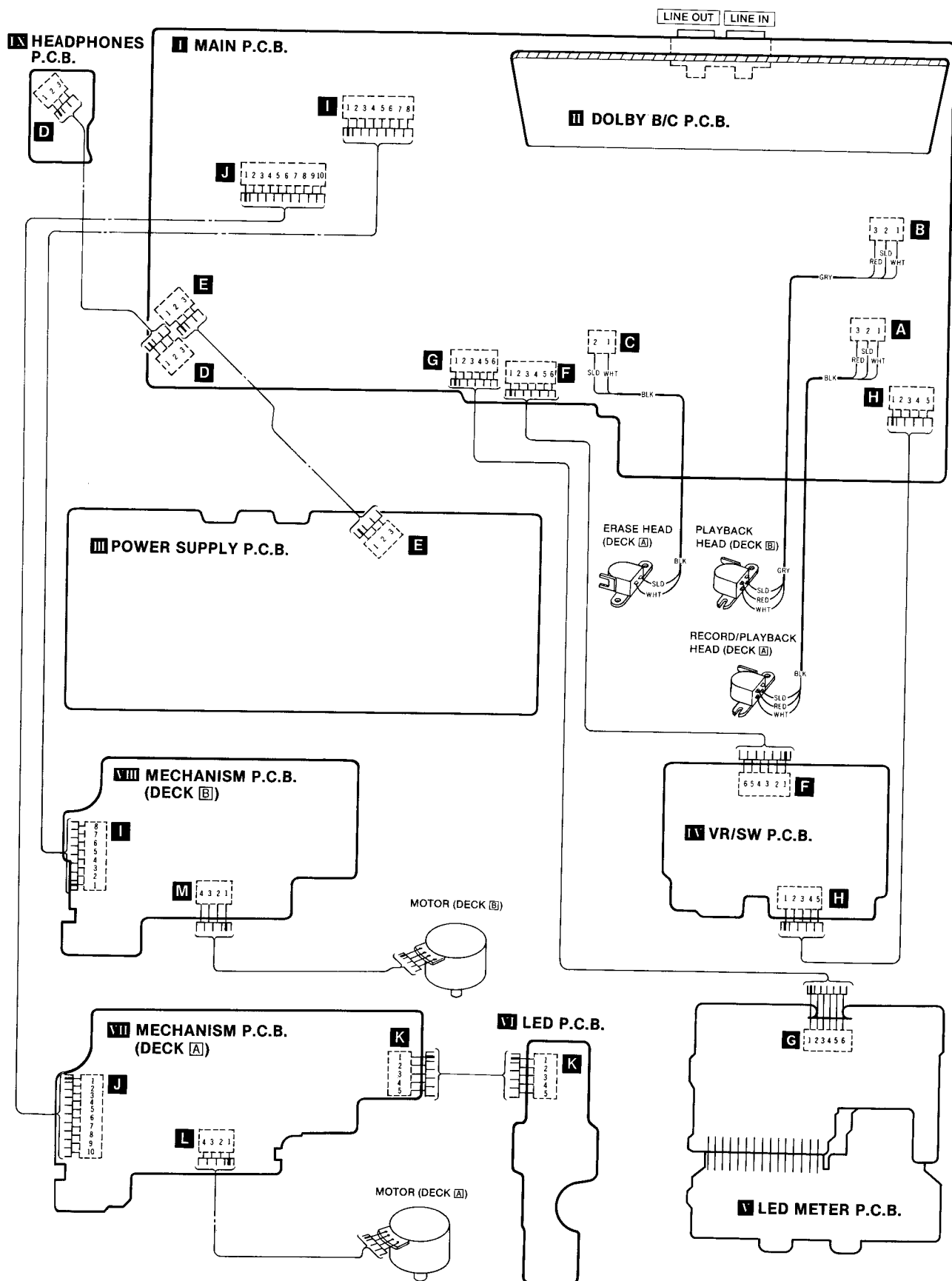
Terminal No.	Symbol	Name	Function/operation
9	AI1	Reading of input switch state deck [A], deck [B] motors (S906, S903)	•DO0 output (Scan [A]) signal → “L” Deck [A]... “L” in motor switch on, “H” in motor switch off. •DO1 output (Scan [B]) signal → “L” Deck [B]... “L” in motor switch on, “H” in motor switch off.
10	AI0	Reading of input switch state deck [A], deck [B] PLAY (S905, S901)	•DO0 output (Scan [A]) signal → “L” Deck [A]... “L” in PLAY switch on, “H” in PLAY switch off. •DO1 output (Scan [B]) signal → “L” Deck [B]... “L” in PLAY switch on, “H” in PLAY switch off.
11	BI3	Reading of input switch state editing (S1)	•“L” when editing switch is on mode. •“H” when editing switch is off mode.
12	BI2	Reading of input switch state Tape speed selector (S2)	•“L” when tape speed selector is on mode. •“H” when tape speed selector is off mode.
13	BI1	Reading of input switch state deck [A] auto tape selector (S908)	•“L” when auto tape selector is on mode. •“H” when auto tape selector is off mode.
14	BI0	Reading of input switch state deck [A] REC (S907)	•“H” when REC switch is on mode. •“L” when REC switch is off mode.
15	EO0	Mode selector deck [A]	•“L” in PLAY mode, “H” in other mode.
16	EO1	Playback equalizer (120μs/70μs) selector	•“L” in 120μs mode, “H” in 70μs mode.
17	EO2	Tapespeed (X1/X2) selector	•“L” in normal speed (X1), “H” in high speed (X2).
18	EO3	Dolby IC mode selector (REC/PLAY)	•“L” in REC mode, “H” in PLAY mode.
19	RST	Reset terminal	•Used to reset the microcomputer when power is thrown in. •Reset at “L”.
20	TST	—	•Connection to GND.
21	DO3	Motor selector deck [B]	•“H” in motor deck [B] off, “L” in motor deck [B] on.
22	DO2	Motor selector deck [A]	•“H” in motor deck [A] off, “L” in motor deck [A] on.

Terminal No.	Symbol	Name	Function/operation
23	DO1	Scan B	• Scan signal for reading of PLAY switch input. 
24	DO0	Scan A	 • Scan signal for reading of REC switch input.
25	SNS0	—	• Non connection.
26	SNS1	—	• Non connection.
27	V _{DD}	Power supply terminal	• Operative on 5±0.5 volts.
28	OSC	Clock Oscillation	• Clock oscillation of about 300kHz.

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

 NO.1	<table><tr><td>M50725-426SP</td><td>30 Pin</td></tr><tr><td>AN6888</td><td>18 Pin</td></tr><tr><td>TEA0665</td><td>28 Pin</td></tr><tr><td>MN1402STO</td><td>28 Pin</td></tr><tr><td>AN7016K</td><td>30 Pin</td></tr></table>	M50725-426SP	30 Pin	AN6888	18 Pin	TEA0665	28 Pin	MN1402STO	28 Pin	AN7016K	30 Pin	 NO.1	<table><tr><td>MN6634</td><td>9 Pin</td></tr><tr><td>M5218L</td><td>8 Pin</td></tr></table>	MN6634	9 Pin	M5218L	8 Pin	<table><tr><td>2SJ40CD</td><td>2SK381</td></tr></table>  Drain Gate Source	2SJ40CD	2SK381	<table><tr><td>2SB621A-R</td><td>2SD592AN-CQ</td></tr></table>  E C B	2SB621A-R	2SD592AN-CQ
M50725-426SP	30 Pin																						
AN6888	18 Pin																						
TEA0665	28 Pin																						
MN1402STO	28 Pin																						
AN7016K	30 Pin																						
MN6634	9 Pin																						
M5218L	8 Pin																						
2SJ40CD	2SK381																						
2SB621A-R	2SD592AN-CQ																						
UN4211  	UN4113, UN4114  	 2SA1309AQS 2SC3311-Q 2SD1330R 2SA1253R 2SD1450R	 Anode Cathode Ca MA40B2M MA40E2-M MA4075M MA4100M																				
 Anode Cathode Ca MA165 SVD1SR35200	 Anode Cathode Ca LN463YCPPU (YEL) LN863RCPP (RED)	 Anode Cathode Ca LN846RP (RED) LN346GP (GRN) LN446YP (YEL)																					

WIRING CONNECTION DIAGRAM



RESISTORS & CAPACITORS

Notes: * 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.

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

Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value
				47x10 ¹ (ohm)

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M		330
Type	Voltage	Peculiarity		Value
				(33x10 ⁰ microfarad)

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : ±5%
ERG : Metal Oxide	12 : 1/2W	F : ±1%
ERX : Metal Film	25 : 1/4W	G : ±2%
ERQ : Fuse Type Metal	1A : 1W	K : ±10%
ERD L : Carbon (chip)	18 : 1/8W	
ERD K : Metal Film (chip)	S2 : 1/4W	
ERC : Solid	S1 : 1/2W	
	2F : 1/4W	
	50 : 1/2W	
	2A : 2W	

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V	C : ±0.25pF
ECCD : Ceramic	1A : 10V	J : ±5%
ECKD : Ceramic	1C : 16V	K : ±10%
ECQM : Polyester	1E : 25V	Z : ±80%
	1H : 50V	-20%
ECQP : Polypropylene	1V : 35V	P : +100%
	50 : 50V	-0%
ECG : Ceramic	05 : 50V	M : ±20%
ECEA □ □ □ □ : Non Polar Electrolytic	2H : 500V	
QCU □ : Ceramic (Chip Type)	2A : 100V	D : ±0.5pF
ECUX : Ceramic (Chip Type)	1 : 100V	G : ±2%
ECF : Semiconductor	KC : 400V AC	
	KC : 125VAC (UL)	
	1J : 63V	
EECW : Liquid electrolyte double layer capcitor		

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
RESISTORS			R59, R60	ERDS2TJ470	001 152 2442 5	R603	ERDS2TJ101	001 152 2421 0
R1, R2	ERDS2TJ101	001 152 2421 0	EK, XL			R604	ERDS2TJ102	001 152 2346 4
R3, R4	ERDS2TJ101	001 152 2421 0	R301	ERDS2TJ1R0	001 152 2419 4	R605	ERDS1FJ100	001 152 2612 5
R5, R6	ERDS2TJ101	001 152 2421 0	R302, R303	ERDS2TJ563	001 152 2446 1	E, EG, EH, XA, PA, PE, XB		
R7, R8	ERDS2TJ225	001 152 3149 3	R304	ERDS1FJ100	001 152 2612 5	R605	ERDS2TJ101	001 152 2421 0
R9, R10	ERDS2TJ820	001 152 2453 2	EK, XL			EK, XL		
R11, R12	ERDS2TJ392	001 152 2439 0	R304	ERDS2TJ100	001 152 2420 1	E, EG, EH, XA, PA, PE, XB		
R13, R14	ERDS2TJ272	001 152 2354 4	R305	ERDS1FJ100	001 152 2612 5	R606	ERDS1FJ220	001 152 2622 3
R15, R16	ERDS2TJ122	001 152 2423 8	EK, XL			E, EG, EH, XA, PA, PE, XB		
R17, R18	ERDS2TJ332	001 152 2357 1	R305	ERDS2TJ100	001 152 2420 1	R606	ERDS2TJ220	001 152 2430 9
R19, R20	ERDS2TJ154	001 152 2427 4	R308	ERDS2TJ561	001 152 2364 2	EK, XL		
R21, R22	ERDS2TJ273	001 152 2436 3	R309	ERDS1FJ220	001 152 2622 3	R607, R608	ERDS2TJ102	001 152 2346 4
R23, R24	ERDS2TJ472	001 152 2362 4	EK, XL			R609	ERDS2TJ102	001 152 2346 4
R25, R26	ERDS2TJ102	001 152 2346 4	R309	ERDS2TJ220	001 152 2430 9	R610	ERDS2TJ101	001 152 2421 0
R27, R28	ERDS2TJ330	001 152 2355 3	E, EG, EH, XA, PA, PE, XB			R613	ERDS2TJ563	001 152 2446 1
R29, R30	ERDS2TJ472	001 152 2362 4	R310	ERDS2TJ331	001 152 2356 2	ERQ14LKR22		001 190 0625 4
R31, R32	ERDS2TJ182	001 152 2352 6	R401, R402	ERDS2TJ242	001 152 3150 0	EK, XL		
R33, R34	ERDS2TJ272	001 152 2354 4	R403, R404	ERDS2TJ562	001 152 2445 2	R623, R624	ERG1ANJ560	001 151 0077 9
R37, R38	ERDS2TJ332	001 152 2357 1	R405, R406	ERDS2TJ332	001 152 2357 1	EK, XL		
R39, R40	ERDS2TJ103	001 152 2347 3	R407, R408	ERDS2TJ102	001 152 2346 4	R625	ERG1ANJ120	001 151 0023 3
R41, R42	ERDS2TJ152	001 152 2350 8	R409, R410	ERDS2TJ333	001 152 2358 0	EK, XL		
R43, R44	ERDS2TJ182	001 152 2352 6	R411, R412	ERDS2TJ823	001 152 2456 9	R626	ERD2FCJ6P8	001 152 2481 8
R45	ERDS2TJ271	001 152 2435 4	R413, R414	ERDS2TJ471	001 152 2361 5	EK, XL		
EK, XL			R415, R416	ERDS2TJ512	001 152 2596 8	R627, R628	ERX1ANJ8R2	001 151 0447 3
R45	ERDS2TJ330	001 152 2355 3	R417, R418	ERDS2TJ683	001 152 2450 5	EK, XL		
E, EG, EH, XA, PA, PE, XB			R419, R420	ERDS2TJ222	001 152 2353 5	R701, R702	ERDS2TJ101	001 152 2421 0
R46	ERDS2TJ271	001 152 2435 4	R421, R422	ERDS2TJ823	001 152 2456 9	R703	ERDS2TJ101	001 152 2421 0
EK, XL			R423, R424	ERDS2TJ331	001 152 2356 2	R704, R705	ERDS2TJ271	001 152 2435 4
R46	ERDS2TJ330	001 152 2355 3	R425, R426	ERDS2TJ101	001 152 2421 0	R706	ERDS2TJ271	001 152 2435 4
E, EG, EH, XA, PA, PE, XB			R427, R428	ERDS2TJ684	001 152 2451 4	R707, R708	ERDS2TJ102	001 152 2346 4
R47, R48	ERDS2TJ682	001 152 2365 1	R429, R430	ERDS2TJ684	001 152 2451 4	R709, R710	ERDS2TJ102	001 152 2346 4
R49, R50	ERDS2TJ154	001 152 2427 4	R431, R432	ERDS2TJ562	001 152 2445 2	R711, R712	ERDS2TJ102	001 152 2346 4
E, EH, EK, XL, XA, XB, PA, PE			R601	ERDS2TJ271	001 152 2435 4	R713	ERDS2TJ102	001 152 2346 4
R51, R52	ERDS2TJ223	001 152 2432 7	EK, XL			R714, R715	ERDS2TJ103	001 152 2347 3
R53, R54	ERDS2TJ103	001 152 2347 3	R601	ERDS2TJ470	001 152 2442 5	R716	ERDS2TJ122	001 152 2423 8
R55, R56	ERDS2TJ563	001 152 2446 1	E, EG, EH, XA, PA, PE, XB			R717	ERDS2TJ102	001 152 2346 4
EK, XL			R602	ERDS2TJ271	001 152 2435 4	R718, R719	ERDS2TJ154	001 152 2427 4
R57, R58	ERDS1FJ151	001 152 2512 8	EK, XL			R720	ERDS2TJ154	001 152 2427 4
EK, XL			R602	ERDS2TJ470	001 152 2442 5	R721, R722	ERDS2TJ152	001 152 2350 8
			E, EG, EH, XA, PA, PE, XB			R723, R724	ERDS2TJ331	001 152 2356 2
						R725	ERDS2TJ183	001 152 2429 2
						R727, R728	ERDS2TJ561	001 152 2364 2

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
R801	ERDS2TJ103	001 152 2347 3	C3, C4	RCBS1H271KBY	001 103 5611 9	C403, C404	ECQB1H472JZ	001 106 3380 8
R802	ERDS2TJ102	001 152 2346 4	C5, C6	ECQB1H123JZ	001 106 3239 2	C405, C406	ECEA1CKS100	001 120 2600 7
R803	ERDS2TJ103	001 152 2347 3	C7, C8	ECEA0JU101	001 120 2829 8	C407, C408	ECQM1H473JZ	001 106 0810 9
R804	ERDS2TJ223	001 152 2432 7	C9, C10	ECEA1EK4R7	001 120 0294 5	C409, C410	ECQM1H224JZ	001 106 0746 0
R805	ERDS2TJ272	001 152 2354 4	C11, C12	ECBT1H681KB	001 103 3535 2	C411, C412	ECAG25ER68L	001 120 1109 7
R806	ERDS2TJ332	001 152 2357 1	C15, C16	ECKD1H122KB	001 103 1459 5	C413, C414	ECQB1H103JZ	001 106 3225 8
R807, R808	ERDS2TJ103	001 152 2347 3	C17, C18	ECCD1H181K	001 103 0466 0	C415, C416	ECQB1H472JZ	001 106 3380 8
R809	ERDS2TJ103	001 152 2347 3	C19, C20	ECEA1HKR47	001 120 0338 0	C417, C418	ECEA1CKS100	001 120 2600 7
R810	ERDS2TJ563	001 152 2446 1	C21, C22	ECEA1HK010	001 120 0341 5	C419, C420	ECQM1H473JZ	001 106 0810 9
R811	ERDS2TJ332	001 152 2357 1	C23, C24	ECKD2H101KB	001 103 1610 6	C421, C422	ECQM1H224JZ	001 106 0746 0
R812	ERDS2TJ392	001 152 2439 0	C25, C26	ECKD1H561KB	001 103 1576 1	C423, C424	ECAG25ER68L	001 120 1109 7
R813	ERDS2TJ272	001 152 2354 4	C27, C28	ECQB1H332JZ	001 106 3316 6	C425, C426	ECKD1H152KB	001 103 1467 5
R814	ERDS2TJ103	001 152 2347 3	C29, C30	ECQB1H223JZ	001 106 3239 2	C427, C428	ECKD1H122KB	001 103 1459 5
R815	ERDS2TJ563	001 152 2446 1	C31, C32	ECQB1H123JZ	001 106 3239 2	C601, C602	ECEA0JS102	001 120 0152 8
R816	ERDS2TJ184	001 152 2588 8	C33, C34	ECQB1H123JZ	001 106 3239 2	C603	ECEA0JU222	001 120 3161 5
R817	ERDS2TJ271	001 152 2435 4	C35, C36	ECFR1E153KAY	001 108 1055 6	C604, C605, Δ	ECKD1H223PF	001 103 1510 9
R818, R819	ERDS2TJ391	001 152 2360 6	C37, C38, Δ	ECKD1H223PF	001 103 1510 9	C606, Δ	ECKD1H223PF	001 103 1510 9
R820	ERDS2TJ103	001 152 2347 3	C39, C40	ECEA1HK010	001 120 0341 5	C607, C608	ECEA1AU221	001 120 3131 1
R821	ERDS2TJ273	001 152 2436 3	C41, C42	ECEA1HK2R2B	001 120 0346 0	C609, C610	ECEA1CU471	001 120 3202 3
R822	ERDS2TJ223	001 152 2432 7	C43, C44	ECEA1EK4R7	001 120 0294 5	C611	ECEA16V1000	001 120 2545 7
R823	ERDS2TJ152	001 152 2350 8	C45, C46	ECEA1EK4R7	001 120 0294 5	C612	ECKD2H682PE	
R824	ERDS2TJ223	001 152 2432 7	C47, Δ	ECKD1H223PF	001 103 1510 9	C613, Δ	ECKD1H223PF	001 103 1510 9
R825	ERDS2TJ152	001 152 2350 8	C301	ECKD1H392KB	001 103 1547 6	C701	ECEA1HK2R2B	001 120 0346 0
R826	ERDS2TJ102	001 152 2346 4	C302	ECFR1E682KAY	001 108 0942 8	C702	ECEA1HK010	001 120 0341 5
R827	ERDS2TJ820	001 152 2453 2	C303, C304	ECFR1E222KAY	001 108 0942 8	C703, C704	ECEA1HK2R2B	001 120 0346 0
EK, XL			C305, Δ	ECKD1H223PF	001 103 1510 9	C705, C706	ECFD1V473KD	001 108 0256 3
R828, R829	ERDS2TJ103	001 152 2347 3	C306	ECFD1V473KD	001 108 0256 3	C707	ECEA1CU470	001 120 2835 0
R830	ERDS2TJ123	001 152 2424 7	C307	ECQP1183JZ	001 106 1083 2	C801	ECEA1CKS100	001 120 2600 7
R831	ERDS2TJ682	001 152 2365 1	C308	ECEA1CKS100	001 120 2600 7	C802	ECEA1HKR47	001 120 0338 0
R832, R833	ERDS2TJ223	001 152 2432 7	E, EG, EH, XA, PA, PE, XB			C803	ECCD1H101K	001 103 0341 2
R834	ERDS2TJ103	001 152 2347 3	C308	ECEA1CU220	001 120 2906 2	C804, Δ	ECKD1H223PF	001 103 1510 9
R835	ERDS2TJ123	001 152 2424 7	EK, XL			C805	ECEA1HK2R2B	001 120 0346 0
R836	ERDS2TJ154	001 152 2427 4	C309, C310	RCBS1H271KBY	001 103 5611 9	C806	ECEA1EK4R7	001 120 0294 5
R837	ERDS2TJ563	001 152 2446 1	C311	ECEA1CKS100	001 120 2600 7	C807	ECEA1AU221	001 120 3131 1
R838	ERDS2TJ154	001 152 2427 4	C321	ECEA1CU220	001 120 2906 2	C808, C809	ECFR1E682KAY	
CAPACITORS			EK, XL			C810		
C1, C2	RCBS1H391KBY	001 103 8540 5	C401, C402	ECCD1H820K	001 103 0703 6			
							ECQV1H224JZ	001 106 3625 6

REPLACEMENT PARTS LIST

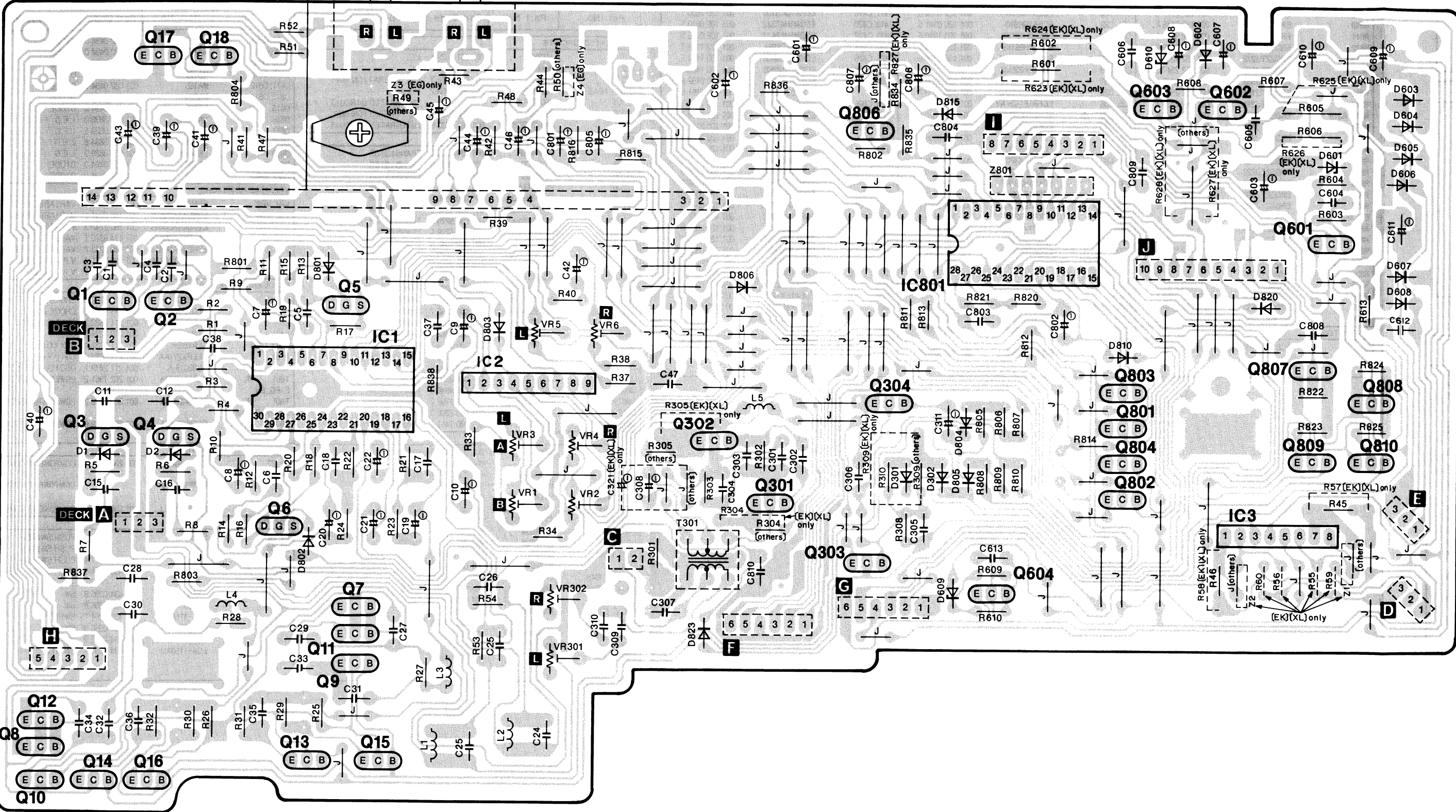
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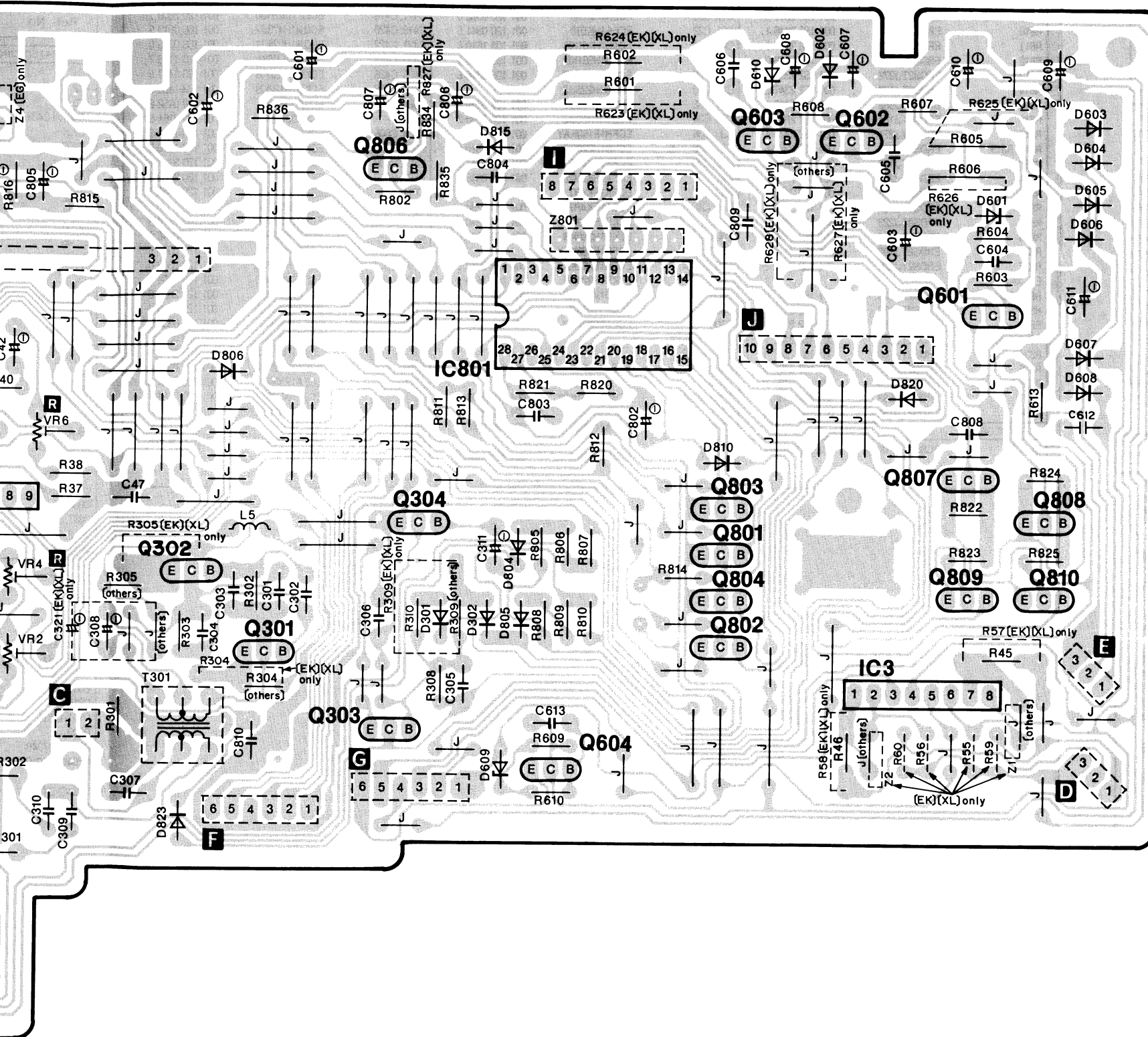
* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS							
IC1	AN7016K	001 061 4629 4	I.C.	D803, D804	MA165	001 032 0494 0	DIODE
IC2	MN6634	001 061 0884 7	I.C.	D805, D806	MA165	001 032 0494 0	DIODE
IC3	M5218L	001 060 3798 7	I.C., OPERATION AMP.	D807, D808	MA165	001 032 0494 0	DIODE
IC401, IC402	TEA0685	001 060 7933 2	I.C.	D809, D810	MA165	001 032 0494 0	DIODE
IC701	M50725-426SP		INTEGRATED CIRCUIT	D811, D812	MA165	001 032 0494 0	DIODE
IC702	M5218L	001 060 3798 7	I.C., OPERATION AMP.	D813, D814	MA165	001 032 0494 0	DIODE
IC801	MN1402ST0	001 061 4933 9	INTEGRATED CIRCUIT	D815	MA165	001 032 0494 0	DIODE
TRANSISTORS				D816	LN846RP	001 032 3839 3	L.E.D
Q1, Q2	2SD1450R	001 030 4366 1	TRANSISTOR	D817	LN346GP	001 032 3829 5	L.E.D
Q3, Q4	2SJ40CD	001 030 2807 5	TRANSISTOR	D818	LN446YP	001 032 3834 8	L.E.D
Q5, Q6	2SJ40CD	001 030 2807 5	TRANSISTOR	D819	LN846RP	001 032 3839 3	L.E.D
Q7, Q8	2SC3311A-Q	001 030 5279 5	TRANSISTOR	D820, D821	MA165	001 032 0494 0	DIODE
Q9, Q10	2SA1309AQS	001 030 4846 0	TRANSISTOR	D822, D823	MA165	001 032 0494 0	DIODE
Q11, Q12	2SA1309AQS	001 030 4846 0	TRANSISTOR	VARIABLE RESISTORS			
Q13, Q14	2SC3311A-Q	001 030 5279 5	TRANSISTOR	VR1, VR2	EVND4AA00B24	001 180 2244 1	VARIABLE RESISTOR
Q15, Q16	2SC3311A-Q	001 030 5279 5	TRANSISTOR	VR3, VR4	EVND4AA00B24	001 180 2244 1	VARIABLE RESISTOR
Q17, Q18	2SA1253-S	001 030 4843 3	TRANSISTOR	VR5, VR6	EVND4AA00B14	001 180 2242 3	V.R., 10K Ω (B)
Q301, Q302	2SC3311A-Q	001 030 5279 5	TRANSISTOR	VR7, VR8	EWABP1X05A54	001 174 6870 1	VARIABLE RESISTOR
Q303	2SD592ANCQ	001 030 1752 7	TRANSISTOR	VR301, VR302	EVND4AA00B15	001 180 2243 2	VARIABLE RESISTOR
Q304	UN4211	001 030 4033 9	TRANSISTOR	VR801, VR802	EVN49C00YB14	001 180 3171 7	V.R., 10K Ω (B)
Q401, Q402	2SC3311A-Q	001 030 5279 5	TRANSISTOR	VR803	EVN49C00YB14	001 180 3171 7	V.R., 10K Ω (B)
Q403, Q404	2SC3311A-Q	001 030 5279 5	TRANSISTOR	COILS AND TRANSFORMERS			
Q601, Q602	2SD592ANCQ	001 030 1752 7	TRANSISTOR	L1, L2	SLQX303-1K	001 211 1756 6	CHOKE COIL
Q603	2SB621A-R	001 030 0668 6	TRANSISTOR	L3, L4	SLQX272-1YT	001 211 0649 2	CHOCK COIL
Q604	2SD592ANCQ	001 030 1752 7	TRANSISTOR	L5	ELEPK271KA	001 211 0622 3	COIL FILTER
Q701, Q702	2SC3311A-Q	001 030 5279 5	TRANSISTOR	L401, L402	QLB40048	001 210 7275 9	COIL
Q703, Q704	2SB621A-R	001 030 0668 6	TRANSISTOR	L403, L404	SLM1B8-K	001 211 2731 1	MPX COIL
Q801, Q802	UN4113	001 030 2900 9	TRANSISTOR	L701	ELEPK271KA	001 211 0622 3	COIL FILTER
Q803, Q804	UN4113	001 030 2900 9	TRANSISTOR	T301	SL09C19-K	001 211 2472 1	OSCILLATOR COIL
Q806	2SA1309AQS	001 030 4846 0	TRANSISTOR	T601 Δ	SLT5K232SA	001 202 7951 2	POWER TRANSFORMER
Q807, Q808	2SD592ANCQ	001 030 1752 7	TRANSISTOR	E, EG, EH			
Q809, Q810	UN4113	001 030 2900 9	TRANSISTOR	T601 Δ	SLT5K233SA	001 202 8312 3	POWER TRANSFORMER
Q811, Q812	2SD381D	001 030 7411 1	TRANSISTOR	XA, PA, PE, XB			
DIODES				T601 Δ	SLT5K234SA	001 202 7979 0	POWER TRANSFORMER
D1, D2	MA165	001 032 0494 0	DIODE	EK, XL			
D301, D302	MA165	001 032 0494 0	DIODE	COMPONENT COMBINATIONS			
D601	MA4062-M	001 032 7211 7	DIODE	Z1, Z2	EXRP150K104T	001 230 0410 6	COMPONENT COMBINATION
D602	MA4062M	001 032 4955 6	DIODE	EK, XL			
D603, D604 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	Z3, Z4	EXRP152K104T		COMPONENT COMBINATION
D605, D606 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	EG			
D607, D608 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	Z801	EXBFT562J	001 230 1578 9	COMPONENT COMBINATION
D609	MA4100M	001 032 4722 1	DIODE	SWITCHES			
D610	MA4075M	001 032 7212 6	DIODE	S1, S2	SSH4110		PUSH SWITCH
D701, D702	MA165	001 032 0494 0	DIODE	S3, S4	SSH4110		PUSH SWITCH
D703	MA165	001 032 0494 0	DIODE	S601 Δ	SSH1226	003 435 6277 4	PUSH SWITCH
D704A, D704B	LN463YCPPU	001 032 7887 9	L.E.D	S602 Δ	SSR187-1	003 430 2201 5	SW. VOLTAGE SELECT
D704C, D704D	LN463YCPPU	001 032 7887 9	L.E.D	XA, PA, PE, XB			
D704E, D704F	LN463YCPPU	001 032 7887 9	L.E.D	S901, S902	SSP83	003 434 0996 9	SW
D704G, D704H	LN863RCPP	001 032 7263 5	L.E.D	S903	SSP83	003 434 0996 9	SW
D704I, D704J	LN863RCPP	001 032 7263 5	L.E.D	S904	LSA-1150AU	003 434 0994 1	SWITCH
D704K, D704L	LN863RCPP	001 032 7263 5	L.E.D	S905, S906	SSP83	003 434 0996 9	SW
D705	SVGLS-202		DIODE, GAASP	S907	SSP83	003 434 0996 9	SW
D801, D802	MA165	001 032 0494 0	DIODE	S908, S909	LSA-1150AU	003 434 0994 1	SWITCH

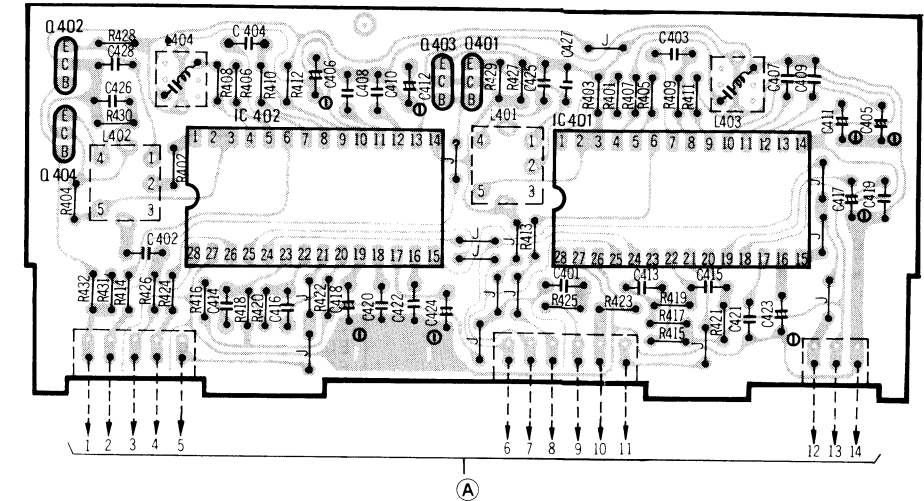
■ PRINTED CIRCUIT BOARDS

I MAIN P.C.B.

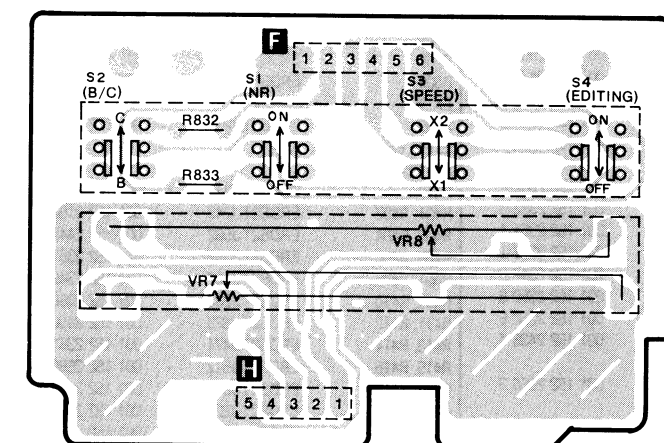




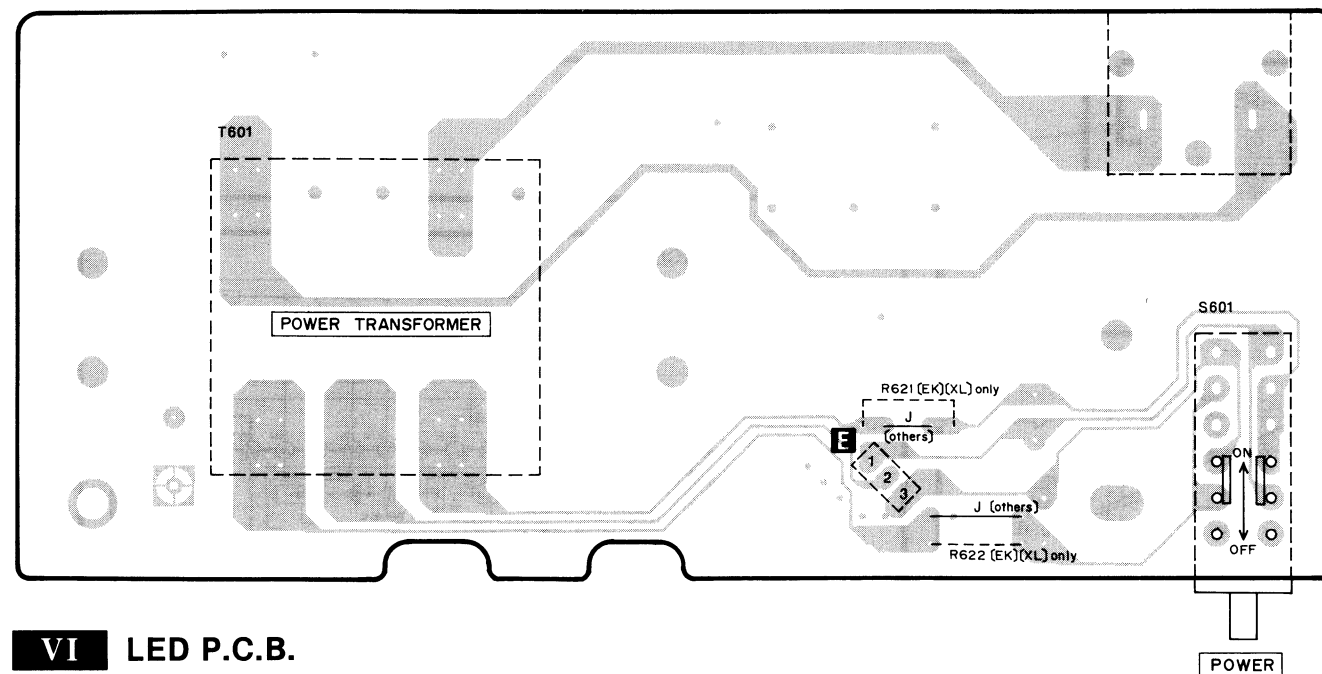
II DOLBY NR P.C.B. To Main P.C.B.



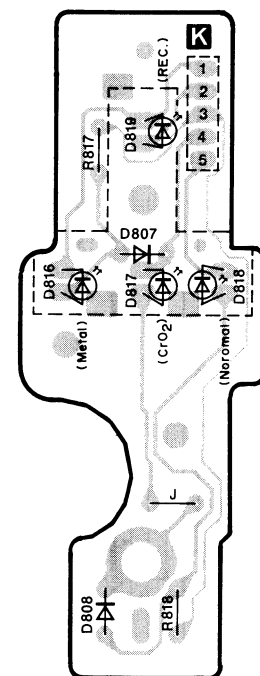
IV VR/SW P.C.B.



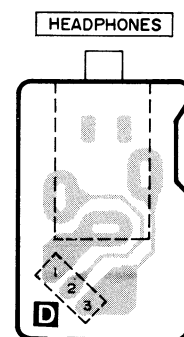
III POWER SUPPLY P.C.B. (For [E] [EK] [EG] [EH] [XL] areas.)



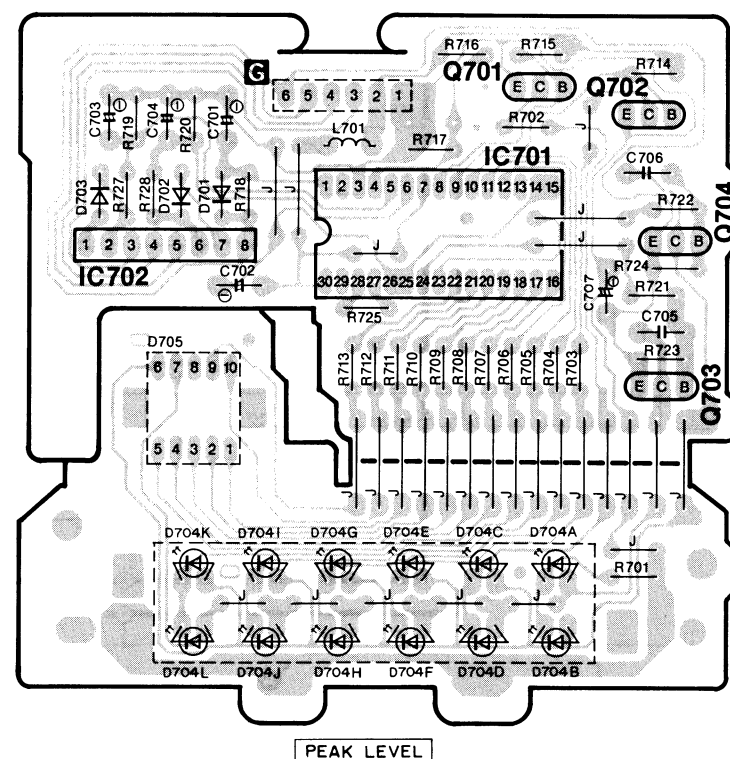
VI LED P.C.B.



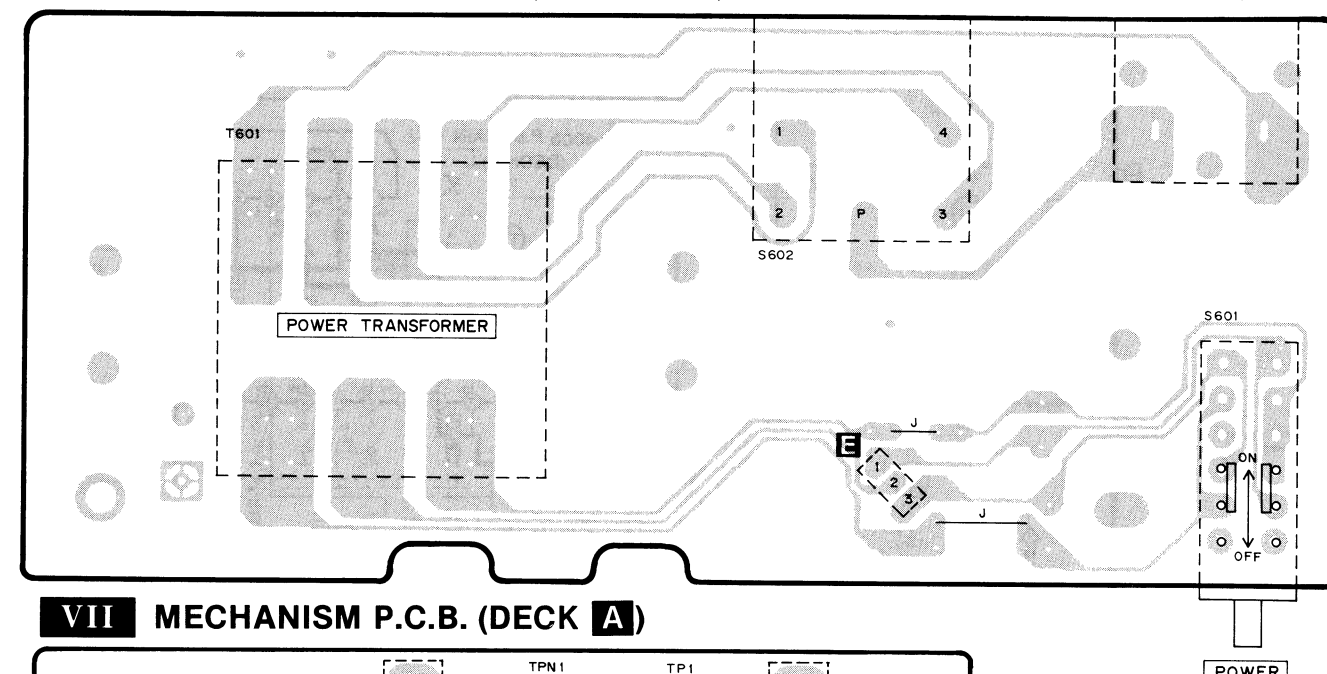
IX HEADPHONES P.C.B.



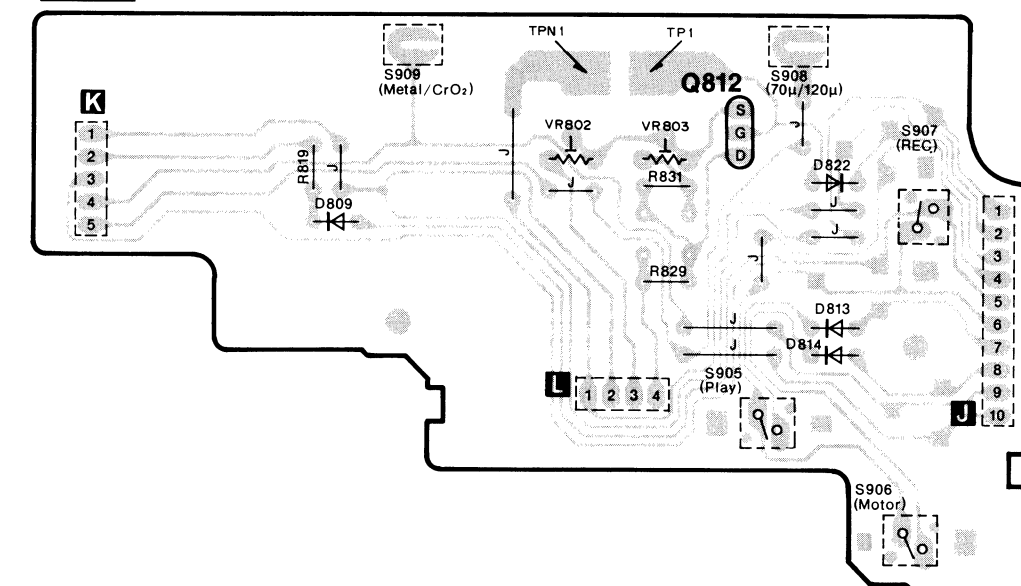
V LED METER P.C.B.



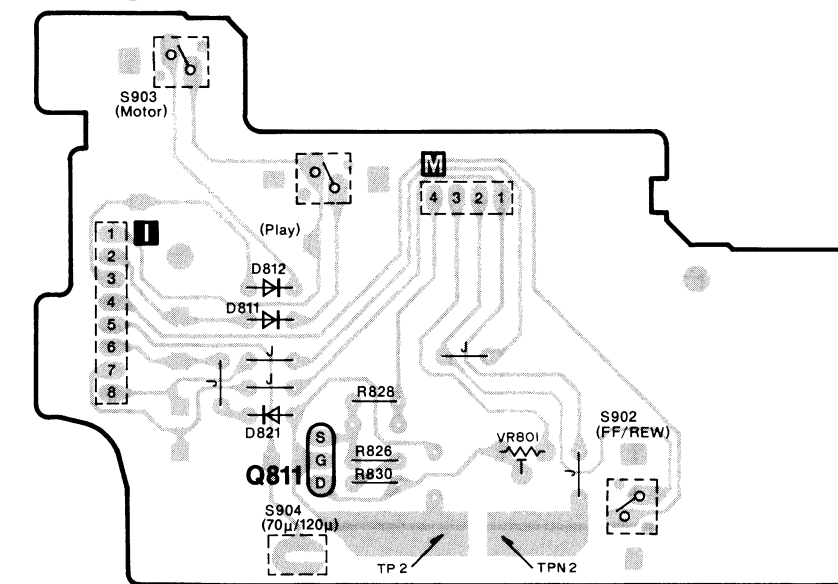
III POWER SUPPLY P.C.B. (For [XA] [XB] [PA] [PE] areas.)

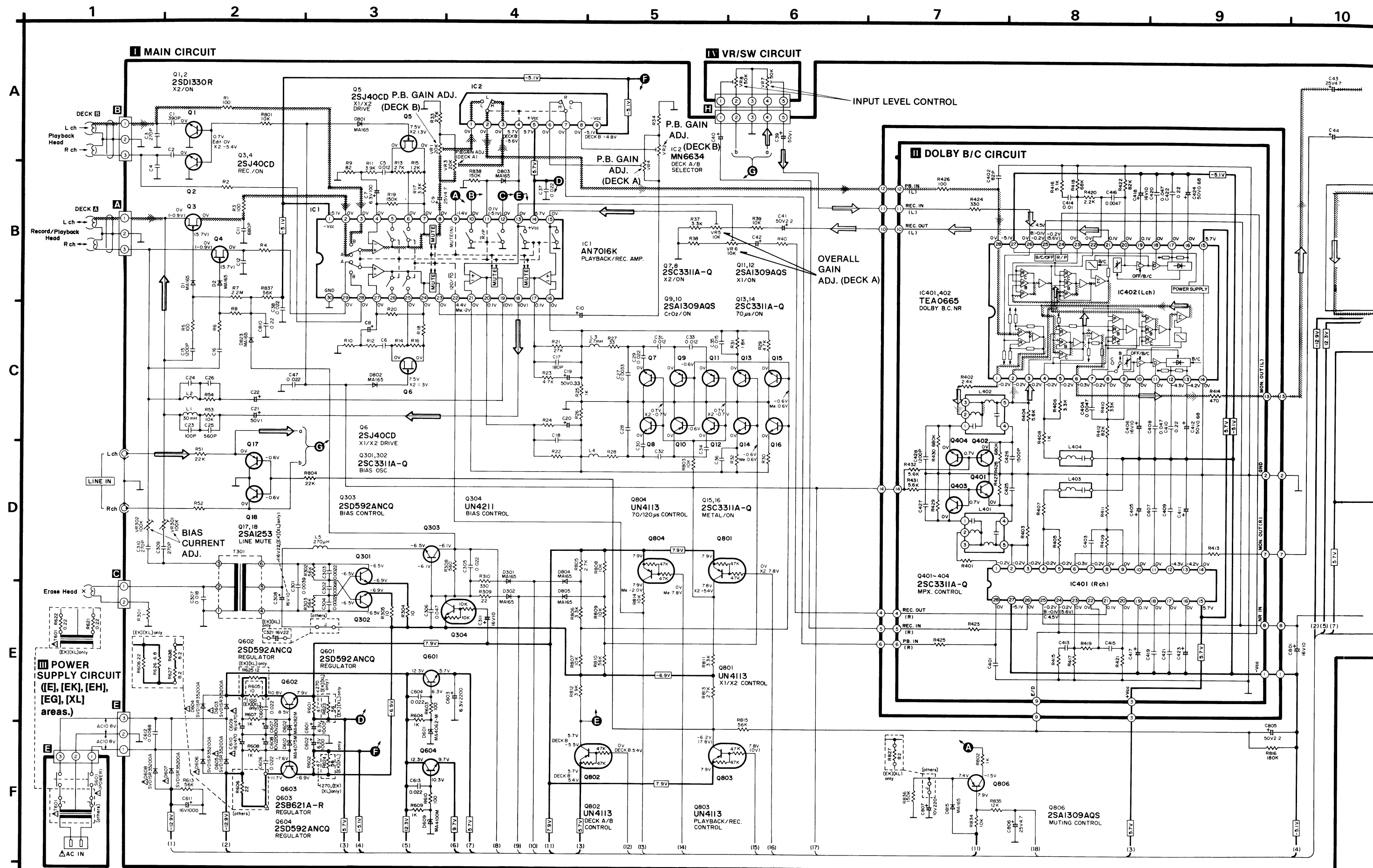


VII MECHANISM P.C.B. (DECK A)



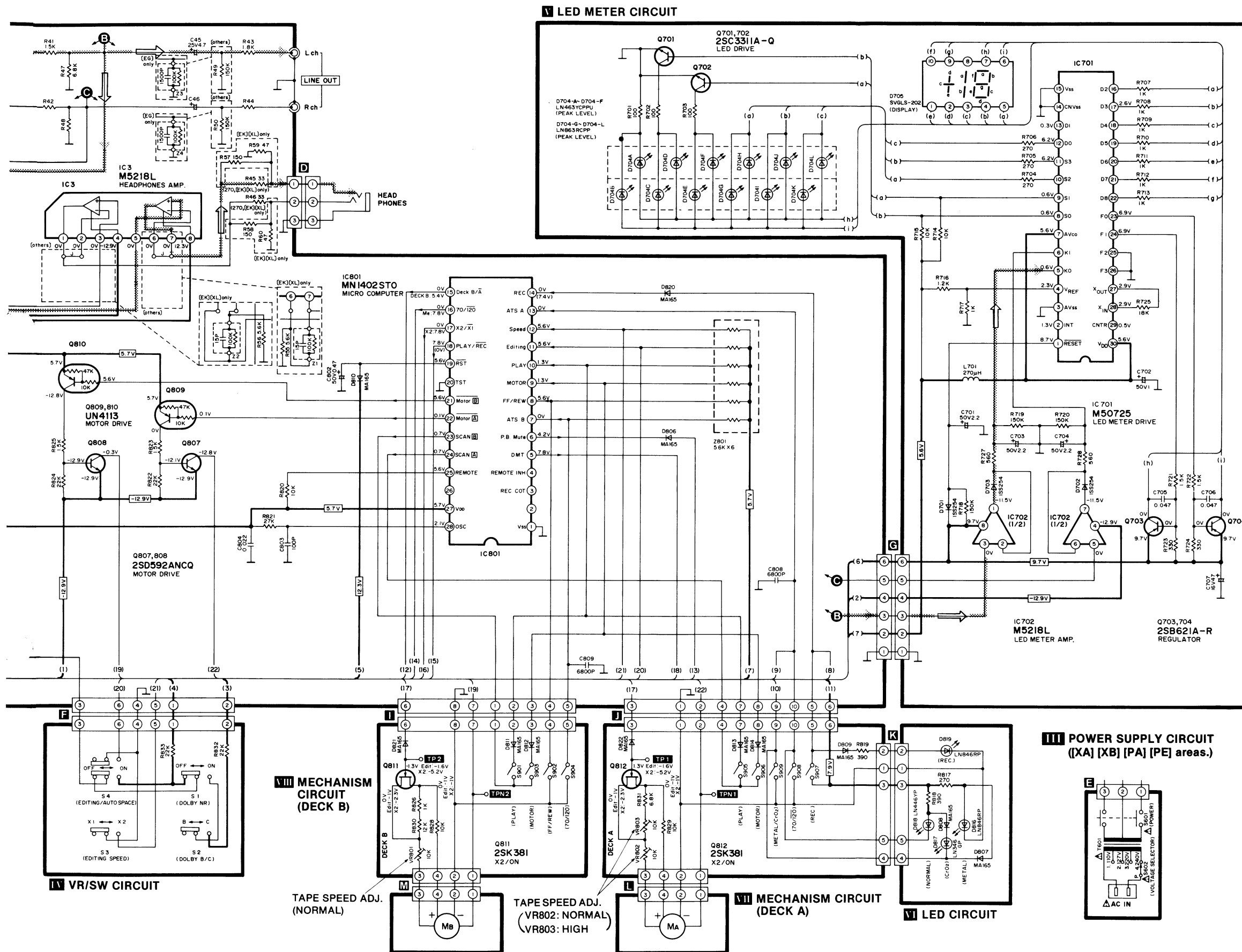
VIII MECHANISM P.C.B. (DECK B)





SCHEMATIC DIAGRAM

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



Notes:

- S1 : Editing switch in "off" position.
- S2 : Editing speed select switch in "X1" position.
- S3 : Dolby NR switch in "off" position.
- S4 : Dolby B/C NR selector in "B" position.
- S601 : Power switch in "off" position.
- S602 : Voltage selector switch in "240V" position. (110V ← 127V ← 220V ← 240V) (XA), [PA], [PE], [XB] areas)
- S901 : DECK [B] play switch in "off" position.
- S902 : DECK [B] FF/REW switch in "off" position.
- S903 : DECK [B] motor switch in "off" position.
- S904 : DECK [B] 70/120μs detection switch in "off" position.
- S905 : DECK [A] play switch in "off" position.
- S906 : DECK [A] motor switch in "off" position.
- S907 : DECK [A] rec switch in "off" position.
- S908 : DECK [A] 70/120μs detection switch in "off" position.
- S909 : DECK [A] Metal/CrO₂ detection switch in "off" 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.
- X2 Voltage values at Editing speed X2 mode.
- Me Voltage values at Metal tape mode.
- B Voltage values at Dolby B NR mode.
- C Voltage values at Dolby C NR mode.
- Edit Voltage values at Editing mode.
- DECK B Voltage values at DECK B Playback.
- For measurement us EVM.
- () indicates B (bias).
- () indicates the flow of the playback signal.
- () indicates the flow of the record signal.

* 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.

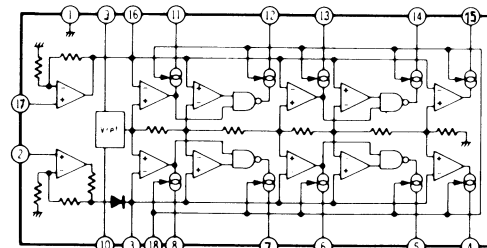
* Caution !

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.

EQUIVALENT CIRCUIT

IC701: AN6888

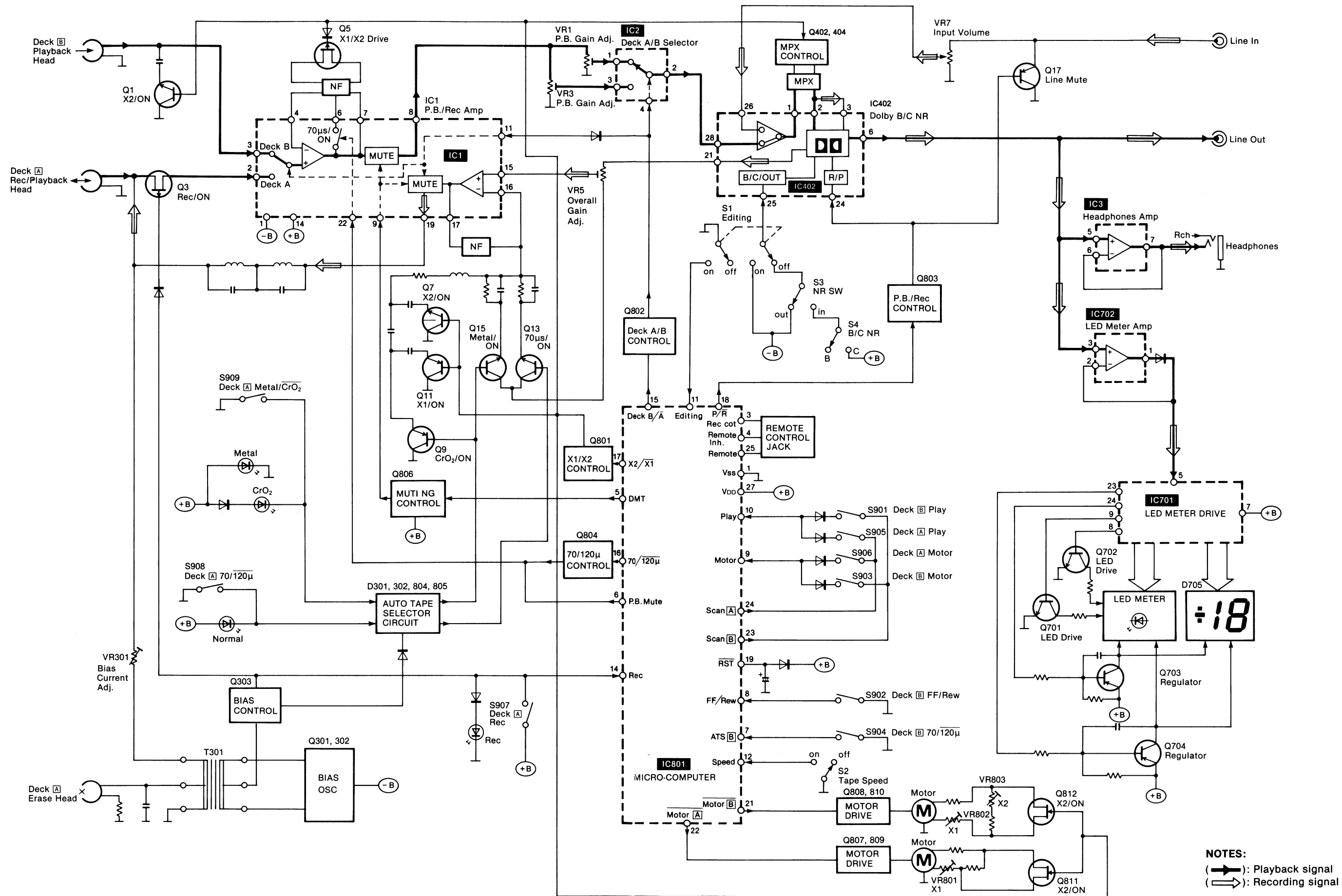


SPECIFICATIONS

* Input level control... MAX

Playback S/N ratio * Test tape... QZZCFM	Greater than 45dB
Overall distortion * Test tape ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRZ for Metal	Normal..... Less than 3.5% CrO ₂ , Metal... Less than 4%
Overall S/N ratio * Test tape... QZZCRA	Greater than 43dB (without NAB filter)

BLOCK DIAGRAM



Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CASSETTE DECK				164	SMQT1589	016 718 3304 3	LEVER
101	SJH103	001 270 1833 9	MAGNETIC HEAD (DECK B)	166	SMQ4872	016 718 0323 2	EJECT KICK LEVER
101	RJH4C35GZAM	001 270 1680 8	MAGNETIC HEAD (DECK A)	168	SMQ4880	016 718 0325 0	FUNCTION LEVER W/SP
102	SMQ4596	016 726 0239 1	SPRING	169	SMQT1590	016 630 1711 5	SUB CHASSIS
103	RJH7E5YAM	001 270 1681 7	MAGNETIC HEAD (DECK A)	170	SMQ4888	016 728 0089 7	M GEAR SPRING
103	SJH97	001 270 1682 6	MAGNETIC HEAD (DECK B)	171	SMQ4890	016 728 0090 4	TRIGGER ARM SPRING
104	SMQ4768	016 630 0142 0	HEAD BASE	172	SMQ4892	016 717 0150 0	TRIGGER ARM ASSEMBLY
105	RFD135ZA	015 845 0361 4	PANEL	173	SMQ4894	016 745 0071 0	MAIN GEAR
106	SMQT1581	005 500 5750 4	SCREW	174	SMQ4896	016 745 0130 6	PAUSE GEAR
107	SMQ4770	016 726 0242 6	HEAD PANEL SPRING	175	SMQT1591	016 752 0121 6	MAIN BELT
108	SMQ4772	016 740 0061 7	TAKE UP ROLLER ASSY	176	SMQT1592	016 756 0080 8	FLYWHEEL ASSY
109	RFS249ZA	015 726 2227 5	SPRING	177	SMQ4902	016 717 0151 9	TRIGGER ARM
110	SMQ4774	016 652 0304 8	FUNCTION LEVER STOPPER	178	SMQ4904	016 728 0091 3	TRIGGER ARM SPRING
111	SMQ4776	016 717 0146 6	PINCH ROLLER ASSY	179	SMQ4906	016 717 0152 8	PAUSE ARM ASSY
112	SMQT1458	016 630 0224 9	CHASSIS	180	SMQ4909	016 726 0780 5	SPRING
113	SMQ4778	016 718 0306 3	REC SAFETY LEVER (DECK A)	181	SMQ4910	016 643 0445 7	LIFT ARM COLLAR
114	SMQ4780	016 727 0051 6	PACK HOLDER SPRING	182	SMQT1593	016 717 0243 6	ARM
115	SMQ4782	016 757 0032 1	FLYWHEEL METAL	183	RFS248ZA	015 726 2226 6	SPRING
116	RFY183ZA	015 718 3291 9	LEVER	184	SMQT1731		MOTOR ASS'Y
117	SMQ4786	016 650 0655 1	COLLAR	185	SMQT1633	016 650 5188 4	FM- HOLD PLATE
118	SMQT1629	016 726 0778 9	SPRING	186	SMQ4916	016 653 0521 3	MOTOR RUBBER
119	SMQ4788	016 650 0656 0	COLLAR	187	SMQT1595	016 630 1710 6	FL PLATE
120	SMQ4790	016 718 0308 1	CONTROL LEVER	188	SMQ4922	016 726 0251 5	SPRING
121	RFS379Z	016 726 0430 4	SPRING	190	SMQ4940	016 718 0326 9	KICK LEVER
122	SMQ4792	016 728 0088 8	BRAKE SPRING	191	SMQ4858	016 726 0247 1	BUTTON LEVER SPRING
123	SMQ4794	016 717 0147 5	BRAKE ARM ASSEMBLY	192	SMQT1453	016 726 0423 3	SPRING
124	SMQT1630	016 726 0777 0	SPRING	193	SMQT1598	016 650 5194 6	BRACKET
125	SMQ4800	016 765 0025 4	SUPPLY REEL ASSEMBLY	194	SMQT1680	016 643 1042 8	FELT
126	SMQT1636	016 726 0779 8	SPRING	195	RFS378Z	016 726 0610 2	SPRING
127	SMQ4804	016 765 0026 3	TAKE UP REEL ASSEMBLY	205	RFS378Z	016 726 0610 2	SPRING
128	SMQ4806	016 652 0305 7	SENSING PIECE	SCREWS, WASHERS & NUTS			
129	SMQ4808	016 726 0244 4	SENSING PIECE SPRING	131	SMQ4168	016 650 0538 2	COLLAR
130	SMQ4810	016 745 0069 4	FF GEAR	134	SMQT1582	005 500 5751 3	SCREW
132	RFU16ZA	015 630 1587 9	PLATE	147	SMQ4838	005 500 4519 3	COLLAR SCREW
133	SMQ4814	016 718 0309 0	T. ROLLER KICK LEVER	165	SMQ4870	016 650 0562 2	COLLAR SCREW
135	SMQ4818	016 718 0310 7	SENSING LEVER	167	SMQ4878	016 643 0444 8	COLLAR SCREW
136	SMQ4820	016 726 0245 3	SENSING LEVER SPRING	189	SMQ4942	016 643 0448 4	COLLAR SCREW
137	SMQ4822	016 740 0062 6	PULLEY	196	SMQ4936	005 513 2293 9	NYLON WASHER
138	SMQ4824	016 752 0078 2	FULL AUTO BELT	197	XSN2+8	005 500 1301 1	SMALL SCREW
139	SMQ4826	016 745 0070 1	CAM GEAR	198	SMQT1634	005 500 5867 2	SCREW
140	SMQT1631	016 726 0781 4	SPRING	199	XWG2	005 513 1459 9	WASHER
141	SMQT1583	016 717 0242 7	ARM	200	SMQ4944	005 500 2957 3	SCREW
142	SMQT1635	016 752 0123 4	FLAT BELT	201	XYN2+C4	005 503 0549 9	SCREW
143	SMQ4832	016 718 0311 6	RF SLIDING LEVER ASSY	202	XYN2+C6	005 500 1297 0	SCREW
144	SMQ4834	016 718 0312 5	AUTO LEVER	203	XSN26+C	005 500 1361 9	SCREW
145	SMQ4938	016 643 0447 5	AUTO LEVER COLLAR	204	XYN2+C5	005 500 1291 6	SCREW
146	SMQ4836	016 630 0143 9	BUTTON BASE(L)	206	RFE133Z	005 512 0346 6	RETAINING RING
148	SMQ4840	016 630 0144 8	BUTTON BASE(R)	207	SMQ4930	005 513 2291 1	POLYSLIDE WASHER
149	SMQT1585	016 643 0920 1	SPACER (DECK A)	208	XUC12FT	005 512 0116 8	WASHER
150	SMQT1586	016 718 3306 1	LEVER (DECK A)	209	XUC2FT	005 512 0126 6	E-RING
151	SMQ4846	016 718 0315 2	PLAY BUTTON LEVER	210	XYN26+C6	005 503 0554 1	SMALL SCREW
152	SMQ4848	016 718 0316 1	RWD BUTTON LEVER	211	XUC15FT	005 512 0121 1	WASHER
153	SMQ4850	016 718 0317 0	FF BUTTON LEVER	212	SMQ4932	005 513 2292 0	NYLON WASHER
154	SMQ4852	016 718 0318 9	STOP BUTTON LEVER	213	SMQ4934	005 500 2966 4	SCREW
155	SMQ4854	016 718 0319 8	PAUSE BUTTON LEVER ASSY	214	XTN26+3	005 501 3346 5	TAPPING SCREW
156	SMQ4856	016 726 0246 2	BUTTON LEVER SPRING	215	SMQT1454	005 513 4008 0	WASHER
157	SMQ4858	016 726 0247 1	BUTTON LEVER SPRING	216	SQM4918	016 643 0446 6	COLLAR SCREW
158	SMQ4860	016 726 0248 0	PAUSE LEVER SPRING	217	RFN73Z	016 643 0778 9	SPACER
159	SMQ2444	016 718 0205 7	LEVER				
160	SMQ4862	016 652 0306 6	P STOPPER				
161	SMQT1588	016 726 0770 7	SPRING				
162	SMQT1587	016 718 3305 2	LEVER				
163	RFS253ZA	015 726 2232 8	SPRING				

NOTES:

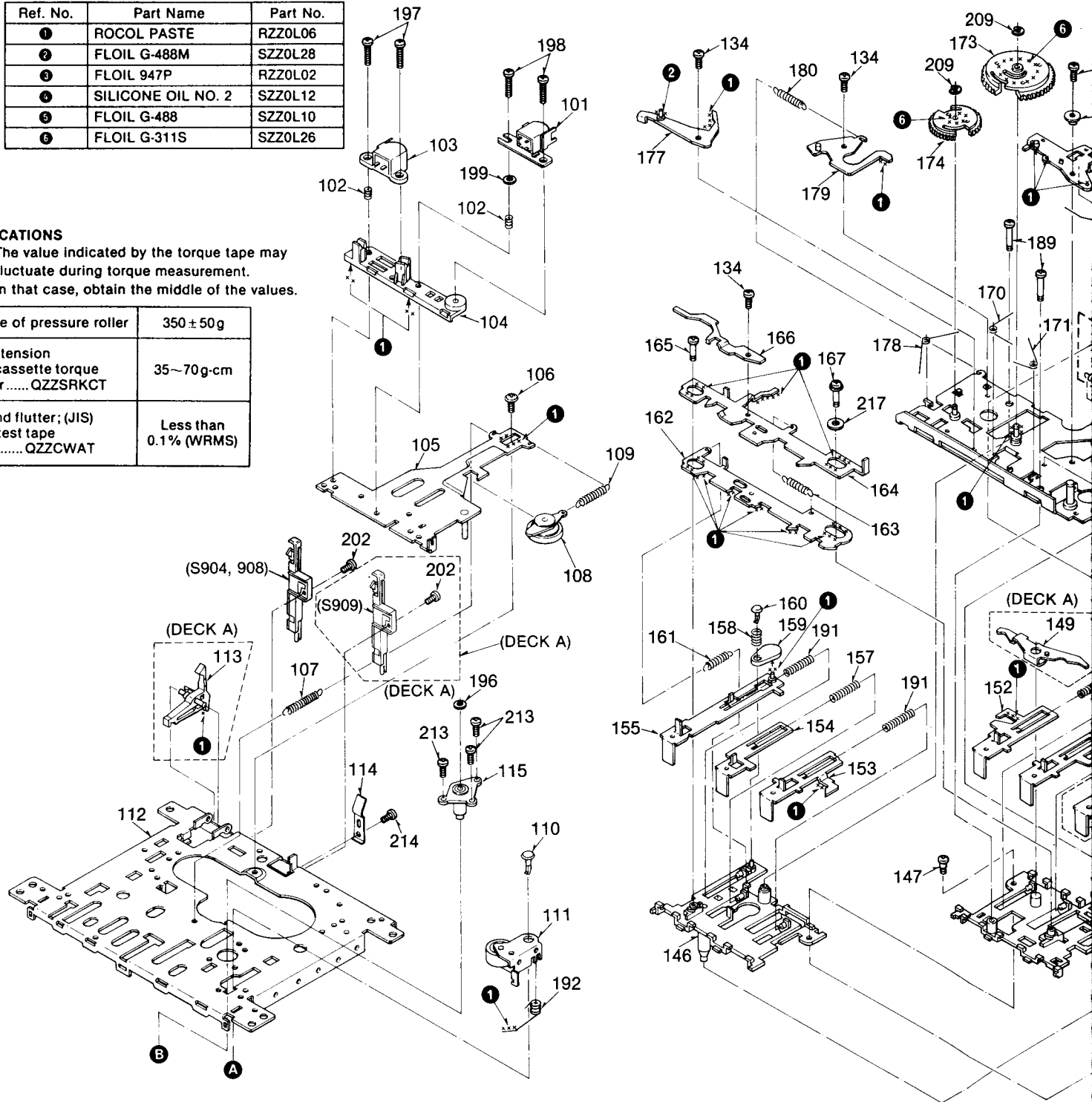
- When changing mechanism parts, apply the specified grease to the are marked "x x" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
①	ROCOL PASTE	RZZ0L06
②	FLOIL G-488M	SZZ0L28
③	FLOIL 947P	RZZ0L02
④	SILICONE OIL NO. 2	SZZ0L12
⑤	FLOIL G-488	SZZ0L10
⑥	FLOIL G-311S	SZZ0L26

SPECIFICATIONS

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

Pressure of pressure roller	350 ± 50 g
Takeup tension * Use cassette torque meter QZZSRKCT	35 ~ 70 g-cm
Wow and flutter; (JIS) * Use test tape QZZCWAT	Less than 0.1% (WRMS)

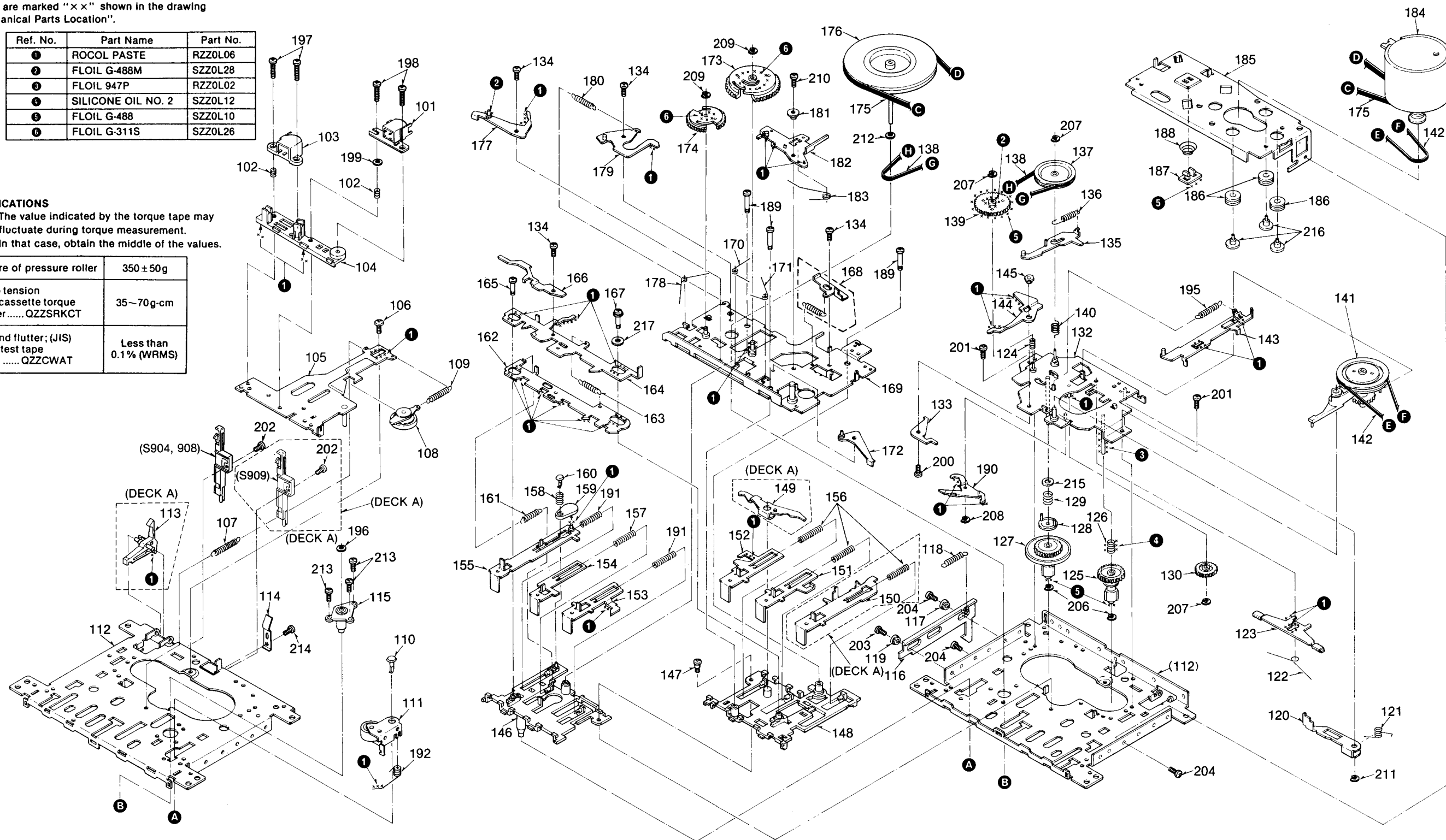
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- When changing mechanism parts, apply the specified grease to the are marked "x x" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
①	ROCOL PASTE	RZZ0L06
②	FLOIL G-488M	SZZ0L28
③	FLOIL 947P	RZZ0L02
④	SILICONE OIL NO. 2	SZZ0L12
⑤	FLOIL G-488	SZZ0L10
⑥	FLOIL G-311S	SZZ0L26

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

Pressure of pressure roller	350 ± 50 g
Takeup tension * Use cassette torque meter..... QZZSRKCT	35 ~ 70 g·cm
Wow and flutter; (JIS) * Use test tape QZZCWAT	Less than 0.1% (WRMS)

[illegible]

REPLACEMENT PARTS LIST

Notes: * 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.

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

Parts without these indications can be used for all areas.

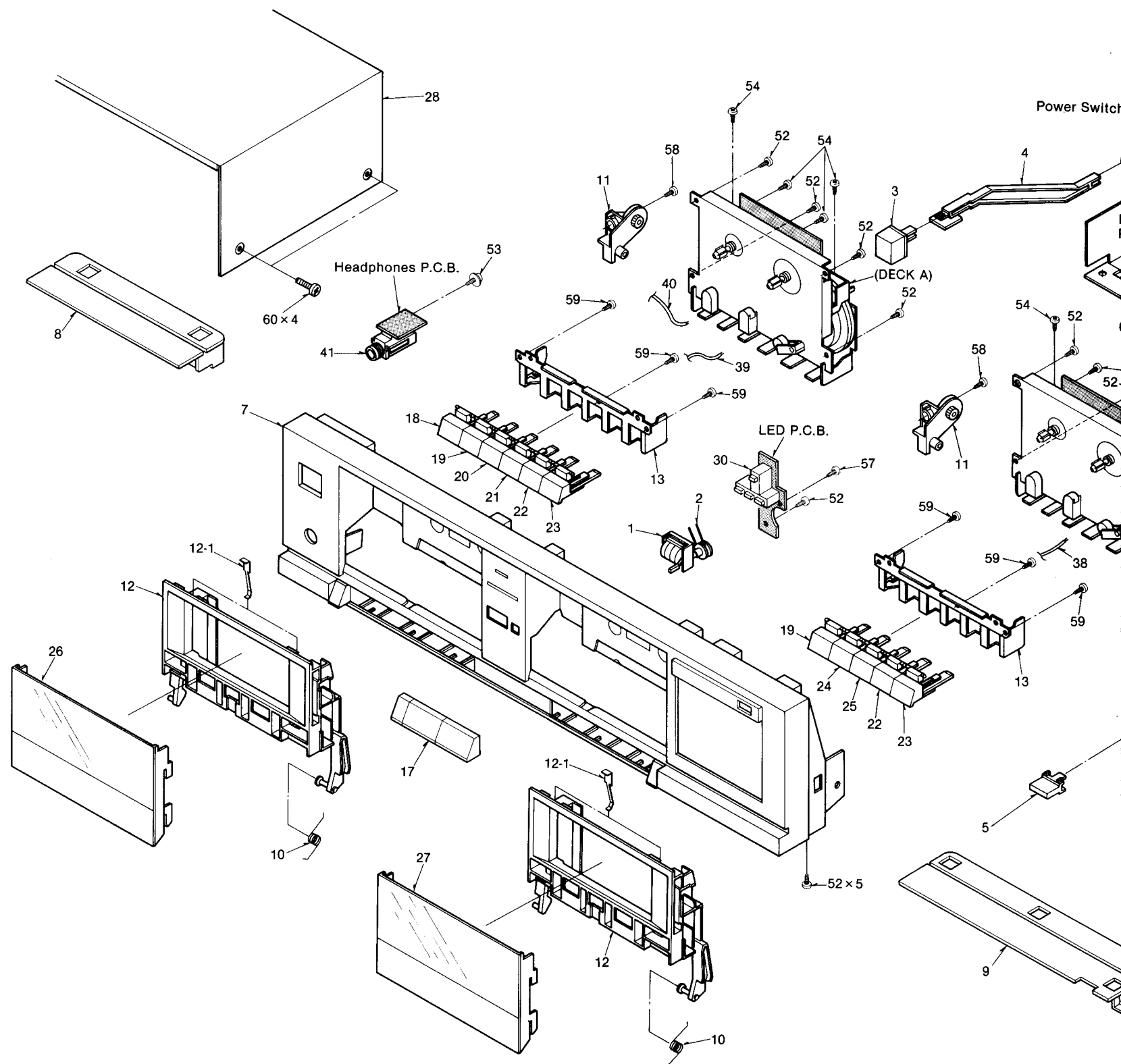
* $\textcircled{B}$ -marked parts are used for black only, while $\textcircled{S}$ -marked parts are for silver type only.

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

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET AND CHASSIS				21	$\textcircled{B}$	SBC868A	016 702 6654 8 BUTTON
1	SJN20	016 892 0121 5	TAPE COUNTER	22	$\textcircled{S}$	SBC805A-1	016 702 6419 7 BUTTON
2	SMQ20018	016 754 0054 0	ANGULAR BELT	22	$\textcircled{B}$	SBC870A	016 702 6655 7 BUTTON
3	$\textcircled{S}$ SBC666	016 702 5545 6	BUTTON, POWER	23	$\textcircled{S}$	SBC806A-1	016 702 6417 9 BUTTON
3	$\textcircled{B}$ SBC666-5	016 702 6679 9	BUTTON, POWER	23	$\textcircled{B}$	SBC871A	016 702 6656 6 BUTTON
4	SUB255	016 712 0316 1	ROD	24	$\textcircled{S}$	SBC803B-1	016 702 6476 8 BUTTON
5	$\textcircled{B}$ SBC944	016 702 7018 6	BUTTON	24	$\textcircled{B}$	SBC868B	016 702 6652 0 BUTTON
5	$\textcircled{S}$ SBC944-1	016 702 7117 4	BUTTON	25	$\textcircled{S}$	SBC804B-1	016 702 6474 0 BUTTON
6	SKMST22-KE	016 800 3138 8	CABINET BODY	25	$\textcircled{B}$	SBC869B	016 702 6653 9 BUTTON
E				26	$\textcircled{B}$	SGE1892	016 820 0619 6 CASSETTE LID
6	SKMST22-KG	016 800 3139 7	CABINET BODY	26	$\textcircled{S}$	SGE1892-2	016 820 0618 7 CASSETTE LID
EG, EH				27	$\textcircled{B}$	SGE1892-1	016 820 0604 3 CASSETTE LID
6	SKMST22-KK	016 800 3141 3	CABINET BODY	27	$\textcircled{S}$	SGE1892-3	016 820 0617 8 CASSETTE LID
EK				28	$\textcircled{B}$	SKC2090K39	016 800 3071 0 CABINET BODY
6	SKMST22-KL	016 800 3140 4	CABINET BODY	28	$\textcircled{S}$	SKC2090S38	016 800 3133 3 CABINET BODY
XL				29		LN121307P	001 032 8495 7 DIODE, GAASP
6	SKMST22-KX	016 800 3142 2	CABINET BODY	30		LN041395P1	001 033 0227 2 LED BLOCK
XA, PA, PE, XB				31		SJF3057NK	003 410 8123 0 TERMINAL BOARD
6-1	SKL293	016 828 0269 8	RUBBER	32	Δ	SJS9236	003 403 4660 7 AC SOCKET
7	$\textcircled{B}$ SGYST22-KE	016 840 7875 2	FRONT PANEL (K)	34		SJT30540LX-V	003 410 5996 1 CONNECTOR
7	$\textcircled{S}$ SGYST22-SE	016 840 7877 0	FRONT PANEL (S)	34		SJT30840LX-V	003 410 5998 9 LUG TERMINAL
8	SGX7894	016 846 3777 9	SPACER	34		SJT31040LX-V	003 410 6112 1 LUG TERMINAL
9	SGX7895	016 846 3776 0	SPACER	35		QJP1920TN-1	003 403 7219 8 CONNECTOR
10	SUS797	016 726 0677 3	SPRING	35		QJP1921TN-1	003 403 7220 5 CONNECTOR
11	SGXST25-KP	016 846 3480 3	ORNAMENT	36		SMC1227	016 601 0543 0 SHIELD COVER
12	SGXST17-KM	016 846 3795 7	CASSETTE HOLDER	37		SMN2043	016 632 1880 9 ANGLE
12-1	QBP2006A	015 727 0706 8	SPRING	38		SWKST11M1	016 934 0162 5 P.HEAD WIRE
13	SMN2001-1	016 632 1784 8	ANGLE	39		SWKST11M2	016 934 0161 6 R/P HEAD WIRE
14	$\textcircled{B}$ SGX7901	016 846 3827 6	METER ORNAMENT	40		SWKST11M3	016 934 0160 7 E.HEAD WIRE
14	$\textcircled{S}$ SGX7901-1	016 846 3860 5	ORNAMENT	41		QJA0455ZC	003 400 5218 2 JACK
15	$\textcircled{B}$ SBD144	016 700 1979 0	KNOB	SCREWS, WASHERS & NUTS			
15	$\textcircled{S}$ SBD144-1	016 700 2000 6	KNOB	51		XTBS3+8JFZ1	005 501 2523 0 SCREW
16	$\textcircled{B}$ SGX7898	016 846 3775 1	ORNAMENT	52		XTB3+10J	005 501 2076 2 SCREW
16	$\textcircled{S}$ SGX7898-1	016 846 3854 3	SLIDE GUIDE	53		XTWS3+10Q	005 501 2293 5 SCREW
17	$\textcircled{B}$ SGX7897	016 846 3796 6	ORNAMENT	54		XTB3+6F	005 501 2687 1 SCREW
17	$\textcircled{S}$ SGX7897-1	016 846 3853 4	ORNAMENT	55		XTB3+12JFZ	005 501 2078 0 TAPPING SCREW
18	$\textcircled{B}$ SBC801A-1	016 702 6427 7	BUTTON	56		XTV26+6J	005 501 1301 6 SCREW
18	$\textcircled{S}$ SBC866A	016 702 6649 5	BUTTON	57		XTW3+12Q	005 501 1350 7 TAPPING SCREW
19	$\textcircled{B}$ SBC802A-1	016 702 6425 9	BUTTON	58		XTB3+12J	005 501 1534 1 SCREW
19	$\textcircled{B}$ SBC867A	016 702 6650 2	BUTTON	59		XTV26+8J	005 501 1140 5 SCREW
20	$\textcircled{S}$ SBC803A-1	016 702 6423 1	BUTTON	60	$\textcircled{S}$	SNE2125	005 500 5753 1 SCREW
20	$\textcircled{B}$ SBC868A	016 702 6651 1	BUTTON	60	$\textcircled{B}$	SNE2125-1	005 500 5752 2 SCREW
21	$\textcircled{S}$ SBC804A-1	016 702 6421 3	BUTTON	61		XTB3+8JFZ	005 501 0138 3 SCREW

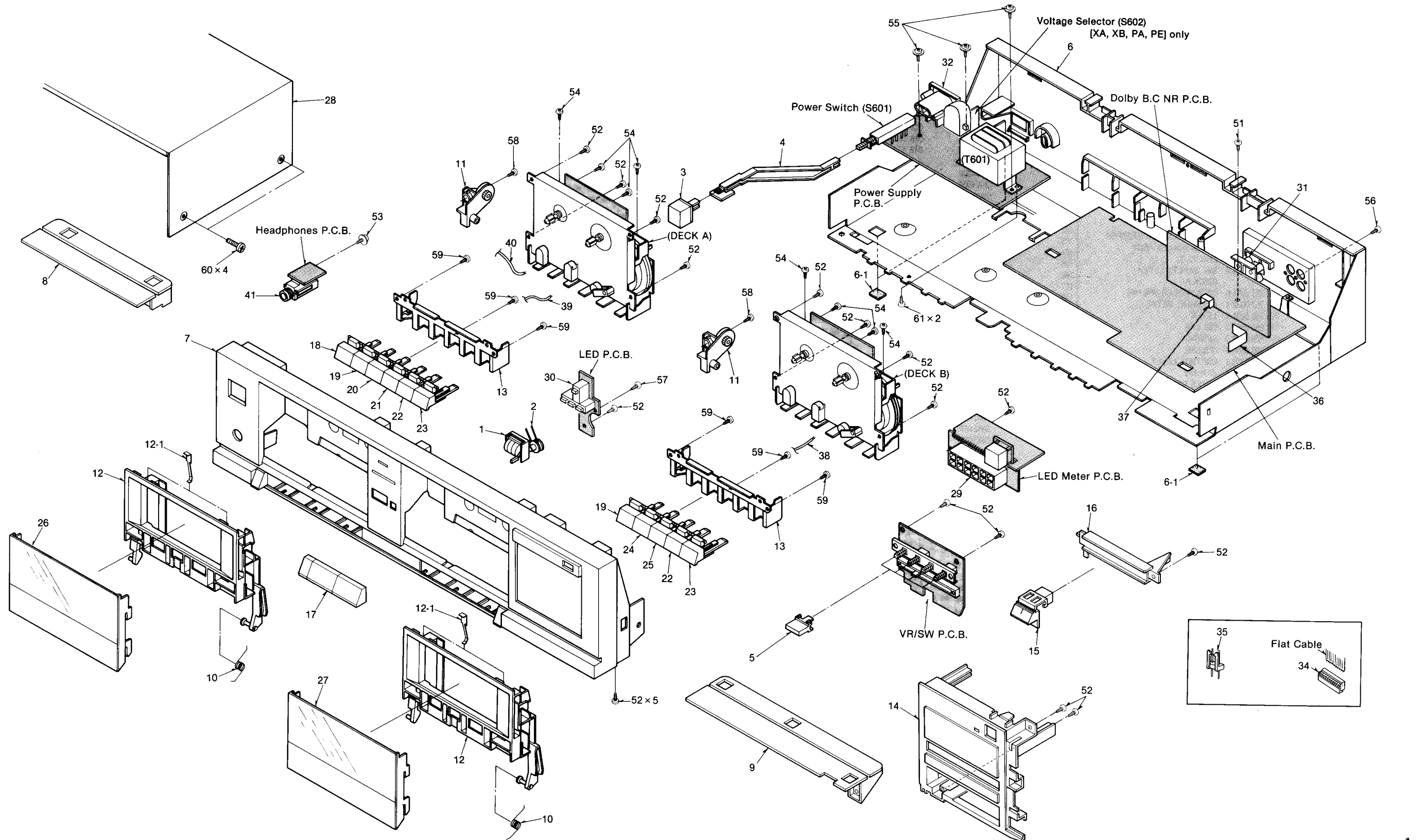
Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
PACKINGS				XB			
P1	$\textcircled{B}$ SPG5906	016 971 5084 3	CARTON BOX	A2	SJPK2202	003 492 6415 1	CORD
P1	$\textcircled{S}$ SPG5907	016 971 5085 2	CARTON BOX	A3	SQF12922	016 983 5252 9	INSTRUCTION BOOK
P2	SPS4963	016 977 3314 6	PAD	EG			
P3	SPS4964	016 977 3327 1	PAD	A3	SQF12923	016 983 5253 8	INSTRUCTION BOOK
P4	SPS4905	016 977 3274 7	PAD	E, EH			
P5	XZB50X65B02	016 978 0420 2	PROTECTION COVER	A3	SQF13048		INSTRUCTION BOOK
ACCESSORIES				EK			
A1	Δ SFDAC05E03	003 490 4809 5	POWER CORD	A3	SQF12969	016 983 5255 6	INSTRUCTION BOOK
E, EG, EH, XA, PA, PE				XA, XL			
A1	Δ SFDAC05G02	003 490 2613 3	POWER CORD	A3	SQF13028	016 983 5256 5	INSTRUCTION BOOK
EK				PA, PE			
A1	Δ SJA163	003 490 2503 8	POWER CORD	A3			
XL				XB			
A1	Δ SJA183	003 490 4873 7	POWER CORD	A4	Δ SJP9215	003 402 1437 9	AC PLUG ADAPTOR
				XA, PA, PE, XB			

CABINET PARTS LOCATION



60	41	53	59	59	58	59	54	52	52	57	52	59	58	59	54	59	52
26			27	28	21	22	23		40	30	39	24	25	22	23		38
8	12	12-1	7	10	17	18	19	20	12-1	12	11	1	13	2	10	19	3
																11	5
																9	13
																4	

CABINET PARTS LOCATION



60																														41			53			59			59			58			59			54			52			52			57			52			59			58			59			54			59			52			54			55			61			52			52			52			51			42			56		
26																														27			28			21			22			23			40			30			39			24			25			22			23			38			32			29			37			35			31			34			36																				
8			12			12-1			7			10			17			18			19			20			12-1			12			11			1			13			2			10			19			3			11			5			9			13			4			6-1			14			15			6			16			6-1																							