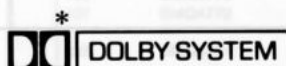


Service Manual

Dolby NR-Equipped
Double Cassette Deck

Cassette Deck
RS-T10



Color

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



Color	Areas
(K) (S)	[E].....All European areas except United Kingdom.
(K) (S)	[EK].....United Kingdom.
(K) (S)	[EH].....Holland.
(K) (S)	[EGA].....F.R. Germany.

RS-D550W MECHANISM SERIES

SPECIFICATIONS

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads (TAPE 1) PLAY	MX head
(TAPE 2) REC/PLAY	MX head
Erasing	Double-gap ferrite head
Motor	1 motor
Recording system	AC bias
Bias frequency	80 kHz
Erasing system	AC bias
Tape speed	4.8 cm/sec.
Frequency response	
Metal	20 Hz~16,000 Hz
	30 Hz~15,000 Hz (DIN)
	40 Hz~15,000 Hz (±3 dB)
CrO ₂	20 Hz~15,000 Hz
	30 Hz~15,000 Hz (DIN)
	40 Hz~14,000 Hz ±3 dB
Normal	20 Hz~15,000 Hz
	30 Hz~15,000 Hz (DIN)
	40 Hz~14,000 Hz ±3 dB

S/N (Signal level=max. recording level, CrO ₂ type tape)	
Dolby B NR in	66 dB (CCIR)
NR out	56 dB (A weighted)
Wow and flutter	0.08% (WRMS) ±0.2% (DIN)
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	80 mV/8 Ω
Power consumption	18 W
Power supply	[E] [EH] [EGA] 220 V
	[EK] 240 V
Dimensions (W×H×D)	430×115×227 mm
Weight	3.8 kg

* 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.

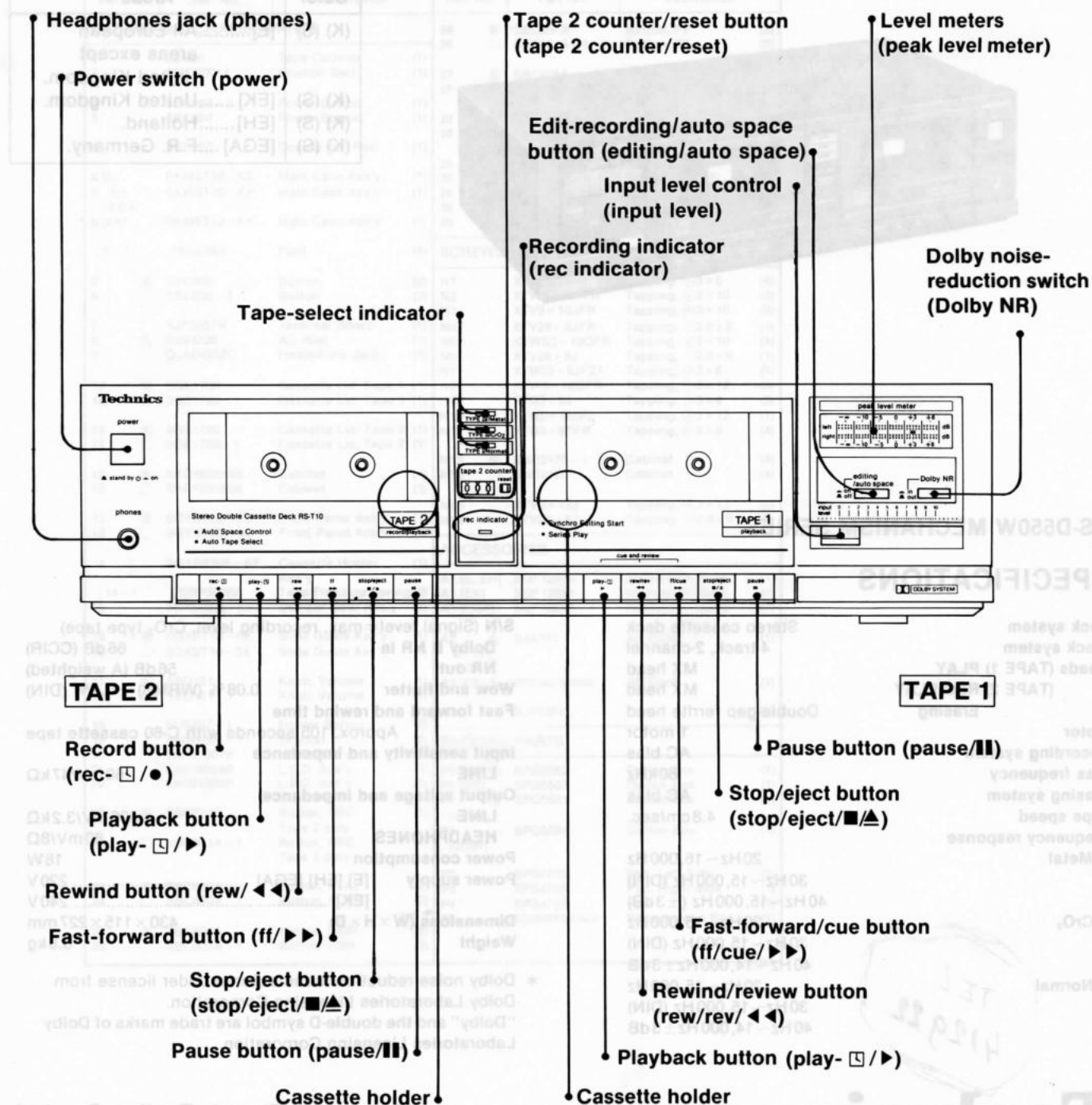
Technics

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

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• Location of Controls.....	2	• Printed Circuit Boards Wiring	
• Operation	3	Connection Diagram.....	11, 12
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LOCATION OF CONTROLS



OPERATION

To erase recorded sounds

1. Set the Dolby noise-reduction switch to the "out" position.
2. Set the input level control to the minimum (0) position.
3. Prepare in the same way as for recording, and then let the tape run.

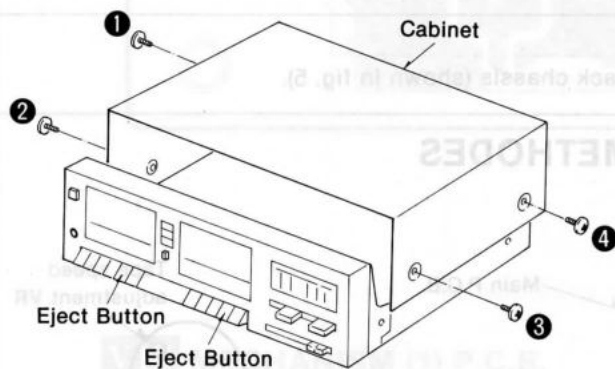
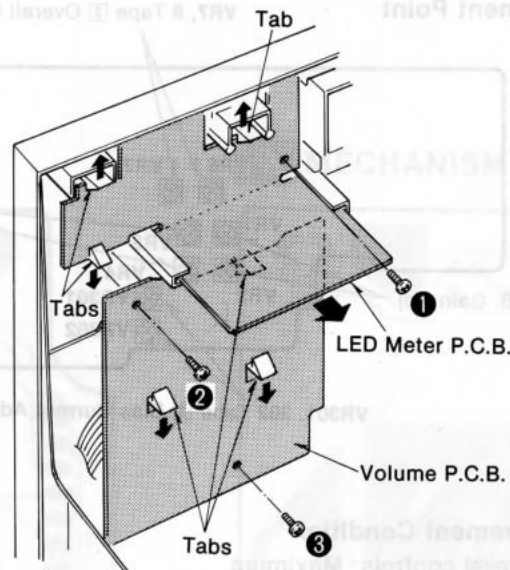
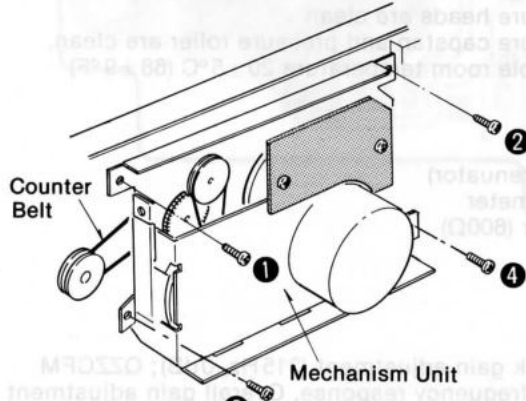
Note that any sounds on the tape will be automatically erased if a new recording is made on that part of the tape.

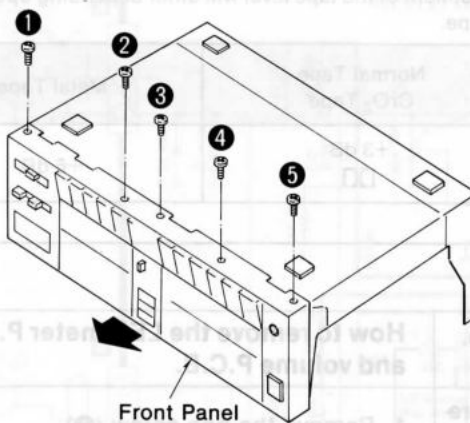
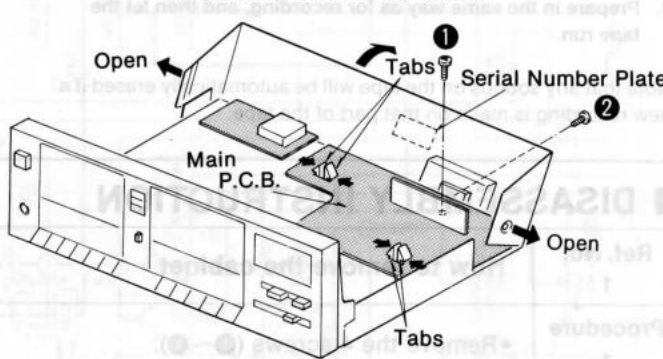
Adjustment of the recording level

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

Normal Tape CrO ₂ Tape	Metal Tape
+3 dB □□	+6 dB

DISASSEMBLY INSTRUCTION

Ref. No. 1	How to remove the cabinet	Ref. No. 3	How to remove the LED meter P.C.B. and volume P.C.B.
Procedure 1	• Remove the 4 screws (①~④).  Fig. 1	Procedure 1 → 3	1. Remove the one screw (①). 2. Remove the 3 tabs aside, and then remove the LED P.C.B. 3. Remove the 2 screws (②, ③). 4. Remove the 3 tabs aside, and then remove the volume P.C.B.  Fig. 3
Ref. No. 2	How to remove the mechanism unit		
Procedure 1 → 2	1. Push the eject button (see fig. 1). 2. Remove the 4 screws (①~④). 3. Remove the counter belt (for mechanism unit of tape ②).  Fig. 2		

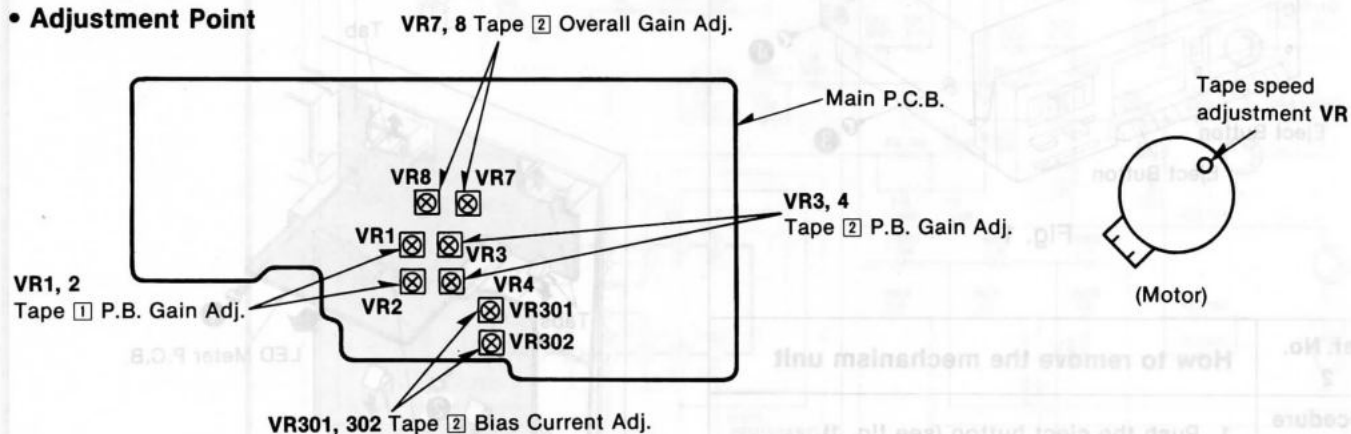
Ref. No. 4	How to remove the front panel	Ref. No. 5	How to remove the main P.C.B.
Procedure 1 → 2 → 3 → 4	Remove the 5 screws (①~⑤).  Front Panel Fig. 4	Procedure 1 → 5	- Remove the 2 screws (①, ②). - Open the side of back chassis, and then pull down the back chassis. - Remove the 4 tabs aside.  Open Tabs Serial Number Plate Main P.C.B. Open Tabs Fig. 5

* Serial No. Indication

- The serial number plate of the product is attached to the back chassis (shown in fig. 5).

■ MEASUREMENT AND ADJUSTMENT METHODS

• Adjustment Point



Measurement Condition

- Input level controls; Maximum
- Dolby NR switch; Out
- Dubbing 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, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

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

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

- 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

Dolby NR-Equipped Double Cassette Deck

RS-T10

DEUTSCH

- This booklet contains the specifications and adjusting procedures for RS-T10, written in German, French and Spanish.
- File this manual together with the RS-T10 service manual (Order No. HAD8602337C2).
- Das vorliegende Büchlein enthält die technische Daten und Justierverfahren für den RS-T10 in deutscher, französischer und spanischer Sprache.
- Bewahren Sie das Büchlein zusammen mit der Bedienungsanleitung für des RS-T10 auf (Bestell-Nr. HAD8602337C2).
- Cette brochure contient les spécifications et les procédures de mises au point pour le RS-T10, écrites en allemand, en français et en espagnol.
- Classer ce manuel en meme temps qu'avec le manuel de service du RS-T10 (N° d'ordre: HAD8602337C2).
- Este librito contiene la especificaciones y procedimientos de ajuste para RS-T10, escritos en alemán, francés y español.
- Guardar este manual juntamente con el manual de servicio de RS-T10 (Pedido N° HAD8602337C2).

DEUTSCH

■ TECHNISCHE DATEN

System	Stereo-Cassettendeck
Spuren	4 Spuren, 2 Kanäle
Tonköpfe (TAPE 1) Wiedergabe	MX-Kopf
(TAPE 2) Aufnahme/Wiedergabe	MX-Kopf
Löschen	Ferrit-Kopf mit Doppelspalt
Motor	1-Motor
Aufnahmesystem	Wechselstrom-Vormagnetisierung
Vormagnetisierungsfrequenz	80kHz
Löschsystem	Wechselstrom-Vormagnetisierung
Bandgeschwindigkeit	4,8cm/s
Frequenzgang	
Reineisenbänder	20Hz~16.000Hz 30Hz~15.000Hz (DIN) 40Hz~15.000Hz±3dB
CrO₂-Bänder	20Hz~15.000Hz 30Hz~15.000Hz (DIN) 40Hz~14.000Hz±3dB
Normalbänder	20Hz~15.000Hz 30Hz~15.000Hz (DIN) 40Hz~14.000Hz±3dB

Geräuschspannungsabstand:

(Signalpegel=max. Aussteuerungspegel, CrO ₂ -Band)	
mit Dolby-B-Rauschunterdrückung	66dB (CCIR)
ohne Rauschunterdrückung	56dB (nach A bewertet)
Gleichlauschwankungen	0,08% (WRMS) ±0,2% (DIN)

Umspulzeit ca. 105 s für C-60-Cassette**Eingangsempfindlichkeit und Impedanz**
LINE 60mV/47kΩ**Ausgangsspannung und Impedanz**
LINE 400mV/3,2kΩ**HEADPHONES** 80mV/8Ω**Stromaufnahme** 18W**Stromversorgung**
Netz 50Hz/60Hz, 220V für Europa außer England
240V für England**Abmessungen (B×H×T)** 430×115×227mm**Gewicht** 3,8kg

■ MESSUNGEN UND JUSTIERUNGEN

Meßbedingungen

- Eingangspegelregler; Maximum
- Dolby-Rauschunterdrückungs-Schalter; out
- Überspielungs-Schalter; off
- Überprüfen, ob die Köpfe sauber sind.

Meßinstrumente

- Elektronisches Voltmeter (EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator

- Überprüfen, ob die Bandantriebsachse und die Andruckrolle sauber sind.
- Umgebungstemperatur für die Messung; 20±5 °C (68±9 °F)

- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Testband

- Kopfazimut-Justierung (8kHz, -20dB); QZZCFM
- Justierung der Bandgeschwindigkeit (3kHz, -10dB); QZZCWAT
- Wiedergabe-Frequenzgang (315Hz, 12,5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125kHz, 63Hz, -20dB); QZZCFM
- Justierung des Wiedergabe-Verstärkungsgrades (315Hz, 0dB); QZZCFM
- Gesamtfrequenzgang, Gesamtverstärkungsgrad-Justierung
 - Normales Referenz-Leerband; QZZCRA
 - CrO₂-Referenz-Leerband; QZZCRX
 - Reineisen-Referenz-Leerband; QZZCRZ

Kopfazimut-Justierung

1. Die Anschlußverbindungen für die Testgeräte sind in Abb. 1 gezeigt.
2. 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.)
3. Gleichzeitig eine Lissajous-Wellenform ziehen und Phasenablenkung eliminieren.
4. Nach erfolgter Justierung sind die Bandführungs-Höhen-und-Winkeljustierschrauben zu sichern.

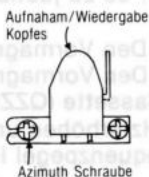


Abb. 2

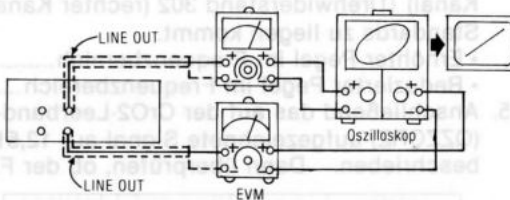


Abb. 1

Bandgeschwindigkeits-Justierung

1. Der Testaufbau ist in Abb. 3 gezeigt.
2. Den mittleren Teil des Testbandes (QZZCWAT) wiedergeben.
3. Den Drehwiderstand im Motor so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 3000 ± 20 Hz

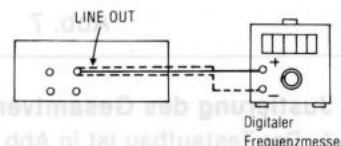


Abb. 3

Wiedergabe-Frequenzgang

1. Der Testaufbau ist in Abb. 4 gezeigt.
2. Den Wiedergabe-Frequenzgangteil (315Hz, 12,5kHz~63Hz, -20dB) des Testbandes (QZZCFM) wiedergeben.
3. Überprüfen, ob der Frequenzgang innerhalb des in Abb. 5 für den linken und rechten Kanal gezeigten Bereichs liegt.

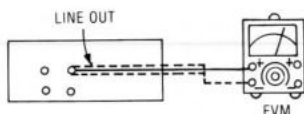


Abb. 4

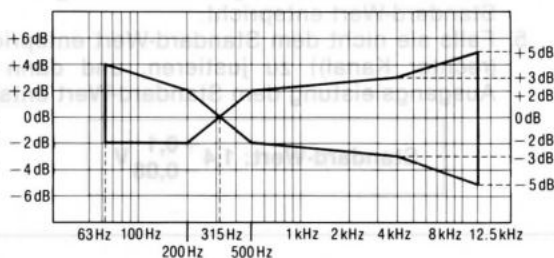


Abb. 5

Justierung des Wiedergabe-Verstärkungsgrades

1. Der Testaufbau ist in Abb. 4 gezeigt.
2. Den für den Wiedergabe-Verstärkungsgrad justierten Teil (315Hz, 0dB) des Testbandes (QZZCFM) wiedergeben.
3. Den Drehwiderstand 1, (linker Kanal) {Drehwiderstand 2 (rechter Kanal)} für TAPE 1 und den Drehwiderstand 3, (linker Kanal) {Drehwiderstand 4 (rechter Kanal)} für TAPE 2 so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.

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

Gesamtfrequenzgang

1. Der Testaufbau ist in Abb. 6 gezeigt.
2. Eine Normalband-Leercassette (QZZCRA) einsetzen und aufnehmen, während ein Signal von nacheinander 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, und 10 kHz bei 20 dB, abgeschwächt vom Referenz-Eingangspegelsignal (1 kHz, -24 dB) eingegeben wird.
3. Das in Schritt 2 aufgezeichnete Signal wiedergeben und prüfen, ob der Pegel jeder Ausgangsfrequenz im Bereich liegt, der in Abb. 7 im Vergleich zur Referenzfrequenz (1 kHz) gezeigt wird.
4. Falls er nicht im Standard-Bereich liegt, ist der Vormagnetisierungsstrom mit Drehwiderstand 301 (linker Kanal) (Drehwiderstand 302 (rechter Kanal)) so zu justieren, daß der Frequenzpegel innerhalb des Standards zu liegen kommt.
 - Erhöhter Pegel im Frequenzbereich..... Den Vormagnetisierungsstrom erhöhen.
 - Reduzierter Pegel im Frequenzbereich..... Den Vormagnetisierungsstrom senken.
5. Anschließend das auf der CrO₂-Leercassette (QZZCRX) und der Reineisenband-Leercassette (QZZCRZ) aufgezeichnete Signal auf 12,5 kHz erhöhen und auf gleiche Weise justieren, wie vorgehend beschrieben. Dann überprüfen, ob der Frequenzpegel innerhalb des in Abb. 8 gezeigten Bereichs liegt.

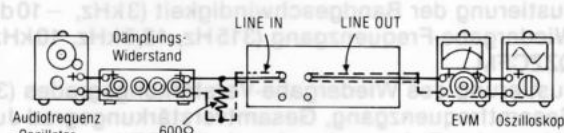


Abb. 6

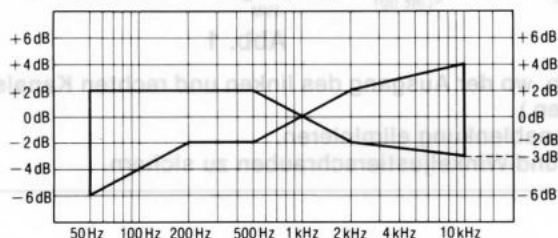


Abb. 7

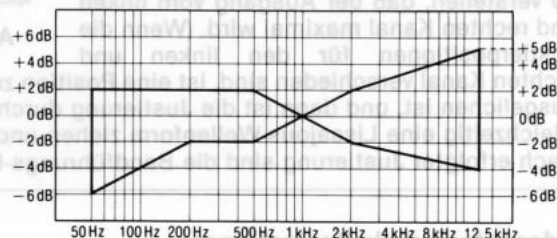


Abb. 8

Justierung des Gesamtverstärkungsgrades

1. Der Testaufbau ist in Abb. 6 gezeigt.
2. Eine Normalband-Leercassette (QZZCRA) einsetzen und im Aufnahmepause-Zustand des Gerätes das Referenzsignal (1 kHz, -24 dB) eingeben.
3. Die Ausgangsleistung mit dem Dämpfungswiderstand auf 0,4 V justieren und dann aufnehmen.
4. Das in Schritt 3 aufgezeichnete Signal wiedergeben und überprüfen, ob die Ausgangsleistung dem Standard-Wert entspricht.
5. Falls sie nicht dem Standard-Wert entspricht, ist der Drehwiderstand 7 (linker Kanal) (Drehwiderstand 8 (rechter Kanal)) zu justieren, und dann sind die Schritte (2), (3) und (4) zu Wiederholen, bis die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: $1,4^{+0,1}_{-0,08}$ V

Dolby-Rauschunterdrückungs-Schaltkreis

1. Der Testaufbau ist in Abb. 9 gezeigt.
2. Eine Normalband-Cassette einsetzen und im Aufnahmepause-Zustand des Gerätes ein 5 kHz-Signal eingeben.
3. Mit dem Dämpfungswiderstand so justieren, daß die Ausgangsleistung zwischen Anschluß ⑥ (linker Kanal) (Anschluß ⑩ (rechter Kanal)) des IC401 und Masse 12,3 mV beträgt.
4. Den Rauschunterdrückungs-Schalter (NR) einschalten und prüfen, ob der Pegel wie vorgeschrieben gegenüber dem Pegel im rauschunterdrückungsfreien Zustand verändert wird.

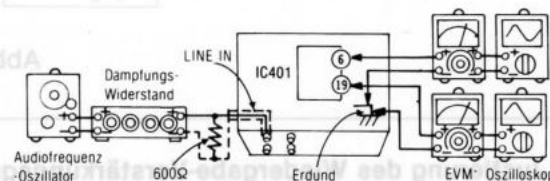


Abb. 9

Standard-Wert: $8 \pm 1,5$ dB

FRANÇAIS

CARACTERISTIQUES

Platine	Platine magnéto-cassette stéréo
Pistes	4 pistes, 2 canaux
Têtes	
(TAPE 1) LECTURE	Tête en MX
(TAPE 2) ENREGISTREMENT/LECTURE	Tête en MX
Effacement	Tête en ferrite à double entrefer
Moteur	1-moteur
Système d'enregistrement	Polarisation CA
Fréquence de polarisation	80kHz
Système d'effacement	Polarisation CA
Vitesse de défilement de la bande	4,8cm/sec.
Réponse en fréquence	
Métal	20Hz~16.000Hz
	30Hz~15.000Hz (DIN)
	40Hz~15.000Hz ±3dB
CrO ₂	20Hz~15.000Hz
	30Hz~15.000Hz (DIN)
	40Hz~14.000Hz ±3dB
Normal	20Hz~15.000Hz
	30Hz~15.000Hz (DIN)
	40Hz~14.000Hz ±3dB

Rapport signal/bruit:

(niveau de signal=niveau d'enregistrement maximum, bande magnétique de type CrO₂)

Système de réduction de bruits Dolby B 66dB (CCIR)

Pas de système de réduction de bruits 56dB (A pondéré)

Pleurage et scintillement 0,08% (WRMS)
±0,2% (DIN)

Temps d'avance rapide et de rebobinage

Environ 105 secondes pour une cassette C-60

Sensibilité et impédance d'entrée

LIGNE 60mV/47kΩ

Tension et impédance de sortie

LIGNE 400mV/3,2kΩ

HEADPHONES 80mV/8Ω

Consommation 18W

Alimentation AC 50Hz/60Hz 220V pour l'Europe
sauf la Grande Bretagne, 240V pour la Grande Bretagne

Dimensions (L×H×P) 430×115×227 mm

Poids 3,8kg

MESURAGES ET REGLAGES

Conditions pour le mesurage

- Commandes du niveau d'entrée; Maximum
- Commutateur de réduction des bruits Dolby; Hors circuit
- Commutateur de mixage; Arrêt

- S'assurer que les têtes soient propres.
- S'assurer que le cabestan et les galets-presseurs soient propres.
- Température de la pièce jugée: 20±5 °C (68±9 °F)

Appareils de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio

- A.T.T. (Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Bande d'essai

- Réglage de l'angle des têtes de lecture (8kHz, -20dB); QZZCFM
- Réglage de la vitesse de défilement de la bande (3kHz, -10dB); QZZCWAT
- Réponse en fréquence de la lecture (315Hz, 12,5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Réglage d'amplification de la lecture (315Hz, 0dB); QZZCFM
- Réponse en fréquence globale, réglage d'amplification globale
 - Bande vierge de référence normale; QZZCRA
 - Bande vierge de référence CrO₂; QZZCRX
 - Bande vierge de référence métallisée; QZZCRZ

Réglage de l'angle des têtes de lecture

1. Le raccordement de l'équipement d'essai est montré à la Fig. 1.

2. 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.)

3. En même temps, établir une forme d'onde de Lissajous et éliminer la déviation de phase.

4. Après le réglage, bloquer les vis du réglage angulaire et de la hauteur des guides de bande.

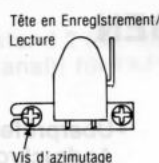


Fig. 2

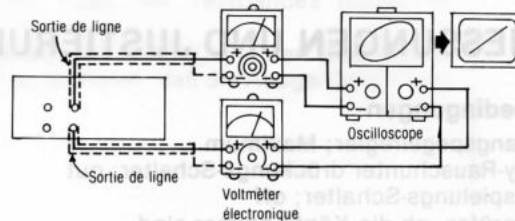


Fig. 1

Réglage de la vitesse de défilement de la bande

1. Le raccordement de l'équipement d'essai est montré à la Fig. 3.
2. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
3. Régler VR dans le moteur de telle sorte que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: 3000 ± 20 Hz

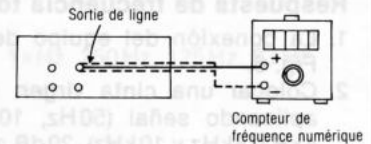


Fig. 3

Réponse en fréquence de la lecture

1. Le raccordement de l'équipement d'essai est montré à la Fig. 4.
2. Faire jouer la partie de la réponse en fréquence de la lecture (315 Hz, 12,5 kHz ~ 63 Hz, -20 dB) de la bande d'essai (QZZCFM).
3. Vérifier que la fréquence soit en deçà de la plage montrée à la Fig. 5, à la fois pour le canal de gauche et le canal de droite.

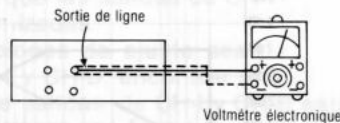


Fig. 4

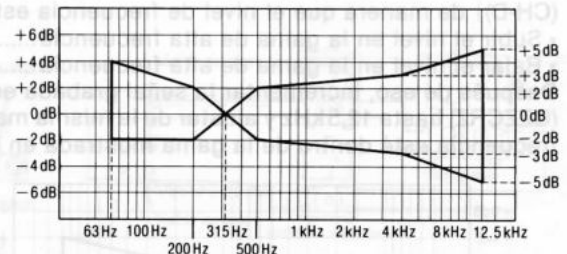


Fig. 5

Réglage d'amplification de la lecture

1. Le raccordement de l'équipement d'essai est montré à la Fig. 4.
2. Faire jouer la partie réglée d'amplification de la lecture (315 Hz, 0 dB) de la bande d'essai (QZZCFM).
3. Régler la BANDE 1: VR1 (canal de gauche) [VR2 (canal de droite)] et la BANDE 2: VR3, (canal de gauche) [VR4 (canal de droite)] de telle sorte que la puissance de sortie soit en deçà de la normale.

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

Réponse en fréquence globale

1. Le raccordement de l'équipement d'essai est montré à la Fig. 6.
2. Installer une bande vierge normale (QZZCRA) et enregistrer en appliquant un signal (50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz et 10 kHz) de 20 dB atténués provenant du signal du niveau d'entrée de référence (1 kHz, -24 dB).
3. Faire jouer le signal enregistré à l'étape 2 et vérifier que le niveau de chaque fréquence de sortie soit en deçà de la plage montrée à la Fig. 7 en comparaison avec la fréquence de référence (1 kHz).
4. S'il n'est pas en deçà de la plage standard, régler le courant de polarisation avec VR 301 (canal de gauche) [VR302 (canal de droite)], de telle sorte que le niveau de fréquence soit en deçà de la normale.
 - Niveau vers le haut dans la plage de fréquence élevée.....Augmenter le courant de polarisation.
 - Niveau vers le bas dans la plage de fréquence élevée.....Diminuer le courant de polarisation.
5. Après cela, amplifier le signal enregistré sur la bande vierge CrO2 (QZZCRX) et la bande vierge métallisée (QZZCRZ) jusqu'à 12,5 kHz et régler de la même manière que celle mentionné ci-dessus. Puis, vérifier que le niveau de fréquence soit en deçà de la plage montrée à la Fig. 8.

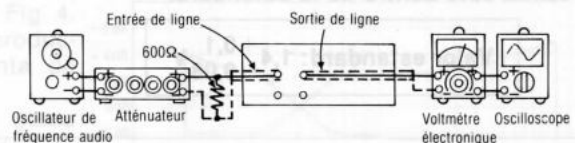


Fig. 6

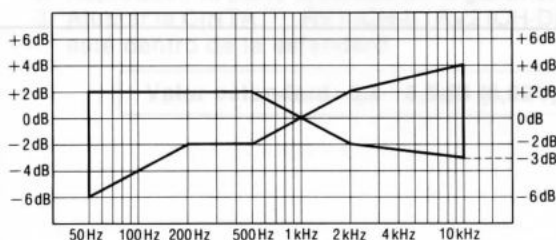


Fig. 7

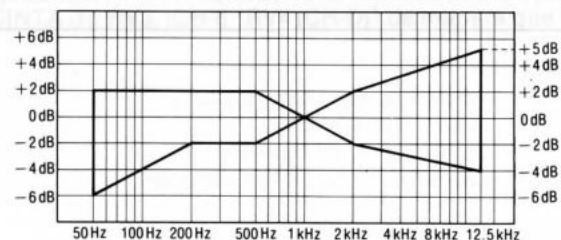


Fig. 8

Réglage d'amplification globale

1. Le raccordement de l'équipement d'essai est montré à la Fig. 6.
2. Installer une bande vierge normale (QZZCRA) et appliquer le signal de niveau d'entrée de référence (1 kHz, -24dB) sur le mode d'intermission d'enregistrement.
3. Régler la puissance de sortie 0.4V avec L'atténuateur, puis enregistrer.
4. Faire jouer le signal enregistré à l'étape 3 et vérifier que la puissance de sortie soit en deçà de la normale.
5. Si elle n'est pas en deçà de la normale, régler VR7 (canal de gauche) [VR8 (canal de droite)] et répéter les étapes (2), (3) et (4) jusqu'à ce que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: $0.4 \pm 0,1$ V
 $-0,08$

Circuit de réduction des bruits Dolby

1. Le raccordement de l'équipement d'essai est montré à la Fig. 9.
2. Installer une bande normale et appliquer un signal de 5kHz sur le mode d'intermission d'enregistrement.
3. Régler avec l'atténuateur de telle sorte que la puissance de sortie entre la borne ⑥ (canal de gauche) [borne ⑩ (canal de droite)] de IC401 et la masse soit de 12,3mV.
4. Mettre en marche le commutateur de réduction des bruits et vérifier que le niveau change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.

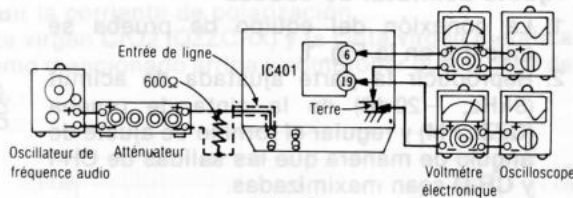


Fig. 9

Valeur normalisée: $8 \pm 1,5$ dB

ESPAÑOL

■ ESPECIFICACIONES

Sistema de platina	Platina de cassette estéreo
Sistema de pistas	4 pistas, 2 canales
Cabezas (TAPE 1) de REPROD	Cabeza de MX
(TAPE 2) de GRAB/REPROD	Cabeza de MX
de borrado	
	Cabeza de ferrita de 3 entrehierros
Motor	1 motor
Sistema de grabación	Polarización de CA
Frecuencia de polarización	80kHz
Sistema de borrado	Polarización de CA
Velocidad de cinta	4,8cm/seg.
Respuesta de frecuencia	
Metal	20Hz~16,000Hz
	30Hz~15,000Hz (DIN)
	40Hz~15,000Hz ± 3 dB
CrO ₂	20Hz~15,000Hz
	30Hz~15,000Hz (DIN)
	40Hz~14,000Hz ± 3 dB
Normal	20Hz~15,000Hz
	30Hz~15,000Hz (DIN)
	40Hz~14,000Hz ± 3 dB

Señal a ruido:

(niveau de signal=niveau de grabación máx. tipo de cinta CrO ₂)	
con reducción de ruidos Dolby B	66dB (CCIR)
sin reducción de ruidos	56dB (promedio A)
Variación de velocidad	0,08% (WRMS) $\pm 0,2$ % (DIN)
Tiempo de avance rápido y rebobinado	Approx. 105 segundos con cintas C-60
Sensibilidad de entrada e impedancia	
LINE	60mV/47kΩ
Voltaje de salida e impedancia	
LINE	400mV/3,2kΩ
HEADPHONES	80mV/8Ω
Consumo de corriente	18W
Alimentación de energía	CA 50Hz/60Hz
	220V para Europe realizar Royaume-Uni.
	240V para Royaume-Uni
Dimensions (An. x Al x Prof.)	430 x 115 x 227 mm
Peso	3,8kg

■ MEDICIONES Y AJUSTE

Condición de medición

- Controles de nivel de entrada; Máximo
- Interruptor RR Dolby; Fuera (out)
- Interruptor de copia; Desconectado (off)
- Asegurarse de que las cabezas están limpias

- Asegurarse de que el cabrestante y rodillo de presión están limpios
- Temperatura ambiente previsible 20 ± 5 °C (68 ± 9 °F)

Instrumento de medición

- EVM (Voltmetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF

- ATT (Atenuador)
- Voltmetro CC
- Resistor (600Ω)

Cinta de prueba

- Ajuste acimutal de cabeza (8kHz, -20dB); QZZCFM
- Ajuste de velocidad de cinta (3kHz, -10dB); QZZCWAT
- Respuesta de frecuencia de reproducción (315Hz, 12,5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Ajuste de ganancia de reproducción (315Hz, 0dB); QZZCFM
- Respuesta de frecuencia total, Ajuste de ganancia total
 - Cinta virgen de referencia normal; QZZCRA
 - Cinta virgen de referencia CrO₂; QZZCRX
 - Cinta virgen de referencia metálica; QZZCRZ

Ajuste acimutal de cabeza

1. La conexión del equipo de prueba se muestra en la Fig. 1.
2. 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.)
3. Al mismo tiempo, trazar una forma de onda de Lissajous y eliminar la deflexión de fase.
4. Después del ajuste, fije los tornillos de ajuste de altura y ángulo de guía de cinta.

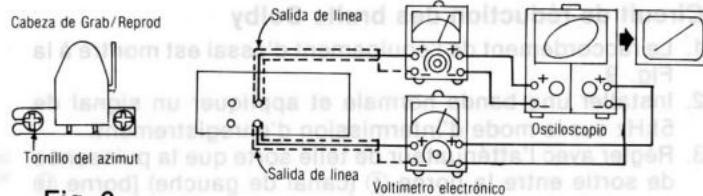


Fig. 2

Fig. 1

Ajuste de velocidad de cinta

1. La conexión del equipo de prueba se muestra en la Fig. 3.
2. Reproducir la parte media de la cinta de prueba (QZZCWAT).
3. Ajustar el RV del motor de manera que la salida esté dentro de la estándar.

Valor estándar: 3000 ± 20 Hz

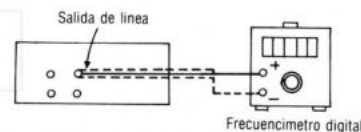


Fig. 3

Respuesta de frecuencia de reproducción

1. La conexión del equipo de prueba se muestra en la Fig. 4.
2. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12,5kHz — 63Hz, -20dB) de la cinta de prueba (QZZCFM).
3. Comprobar que la frecuencia esté dentro de la gama mostrada en la Fig. 5 tanto para CH-I como para CH-D.

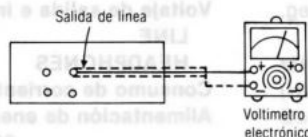


Fig. 4

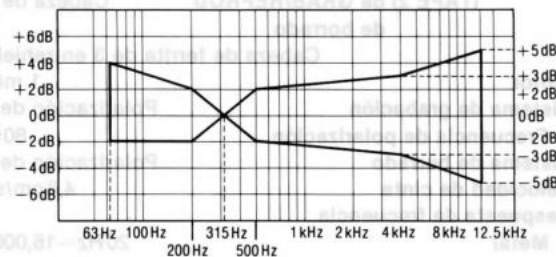


Fig. 5

Ajuste de ganancia de reproducción

1. La conexión del equipo de prueba se muestra en la Fig. 4.
2. Reproducir la parte ajustada de la ganancia de reproducción (315Hz, 0dB) de la cinta de prueba (QZZCFM).
3. Ajustar la CINTA 1: RV1 (CH-I) (RV2 (CH-D)) y la CINTA 2: RV3, (CH-I) (RV4 (CH-D)) de manera que la salida esté dentro de la estándar.

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

Respuesta de frecuencia total

1. La conexión del equipo de prueba se muestra en la Fig. 6.
2. Colocar una cinta virgen normal (QZZCRA) y grabar aplicando señal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz y 10kHz), 20dB atenuada de la señal de nivel de entrada de referencia (1kHz, -24dB).
3. Reproducir la señal grabada en el paso 2 y comprobar que el nivel de cada frecuencia de salida esté dentro de la gama mostrada en la Fig. 7 en comparación con la frecuencia de referencia (1kHz).
4. Si no está dentro de la gama estandar, ajustar la corriente de polarización mediante RV301 (CH-I) {RV302 (CH-D)} de manera que el nivel de frecuencia esté dentro del estandar.
 - 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.
5. Después de eso, incrementar la señal grabada en la cinta virgen CrO2 (QZZCRX) y la cinta virgen metálica (QZZCRZ) hasta 12,5kHz 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. 8.

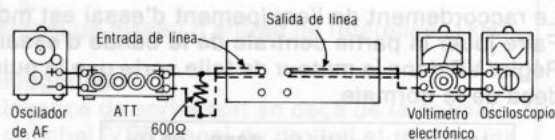


Fig. 6

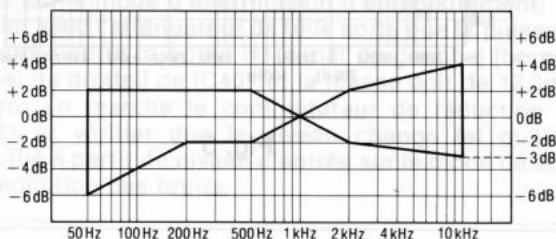


Fig. 7

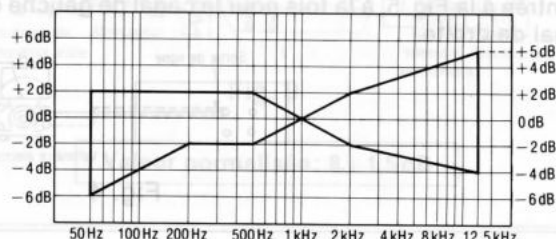


Fig. 8

Ajuste de ganancia total

1. La conexión del equipo de prueba se muestra en la Fig. 6.
2. 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.
3. Ajustar la salida 0.4V mediante atenuador y, luego, grabar.
4. Reproducir la señal grabada en el paso 3 y comprobar que la salida esté dentro de la estandar.
5. Si no está dentro de la estandar, ajustar RV7 (CH-I) {RV8 (CH-D)} y repetir el paso (2), (3) y (4) hasta que la salida esté dentro de la estandar.

Valor estandar: $1,4^{+0,1}_{-0,08}$ V

Circuito RR Dolby

1. La conexión del equipo de prueba se muestra en la Fig. 9.
2. Colocar una cinta normal y aplicar señal 5kHz en la modalidad de pausa de grabación.
3. Ajustar mediante atenuador de manera que la salida entre terminal ⑥ (CH-I) {terminal ⑩ (CH-D)} de IC401 y tierra sea 12,3mV.
4. Prender el interruptor RR y comprobar que el nivel cambia como especificado por el nivel en la modalidad de salida RR.

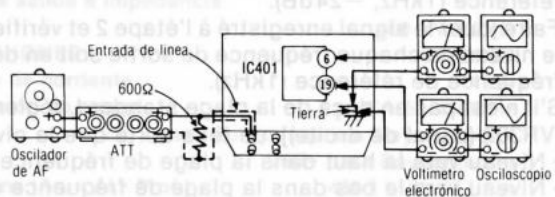


Fig. 9

Valor estandar: $8 \pm 1,5$ dB

Head azimuth adjustment

1. Test equipment connection is shown in Fig. 1.
2. 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.)
3. At the same time, draw a lissajous waveform and eliminate phase deflection.
4. After adjustment, lock the tape guide height and angle adjustment screws.

Record/Playback Head

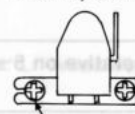


Fig. 2

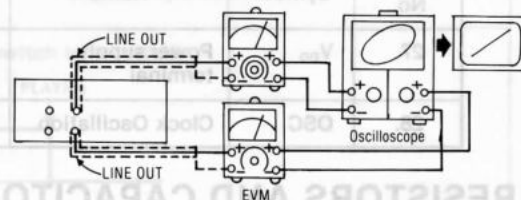


Fig. 1

Tape speed adjustment

1. Test equipment connection is shown in Fig. 3.
2. Playback the middle part of the test tape (QZZCWAT).
3. Adjust the VR in the motor so that the output is within the standard.

Standard value: 3000 ± 20 Hz

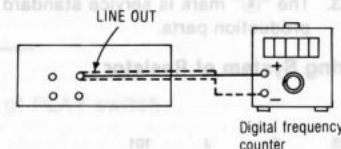


Fig. 3

Playback frequency response

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback frequency response part (315Hz, 12.5kHz~63kHz, -20dB) of the test tape (QZZCFM).
3. Check that the frequency is within the range shown in Fig. 5 for both L-CH and R-CH.

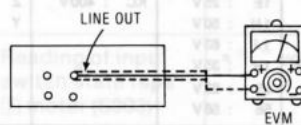


Fig. 4

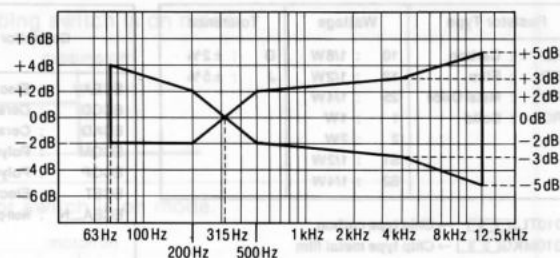


Fig. 5

Playback gain adjustment

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback gain adjusted part (315Hz, 0dB) of the test tape (QZZCFM).
3. Adjust TAPE ①: VR1 (L-CH) {VR2 (R-CH)} and TAPE ②: VR3 (L-CH) {VR4 (R-CH)} so that the output is within the standard.

Standard value: 0.4 ± 0.5 dB (0.02V)

Overall frequency response

1. Test equipment connection is shown in Fig. 6.
2. Set a normal blank tape (QZZCRA) and record by applying signal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz and 10kHz), 20dB attenuated from the reference input level signal (1kHz, -24dB).
3. Playback the signal recorded in step 2, and check that the level of each output frequency is within the range shown in Fig. 7 in comparison with the reference frequency (1kHz).
4. If it is not within the standard range, adjust the bias current by VR301 (L-CH) {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.
5. After that increase the signal recorded on CrO₂ blank tape (QZZCRX) and metal blank tape (QZZCRZ) up to 12.5kHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.

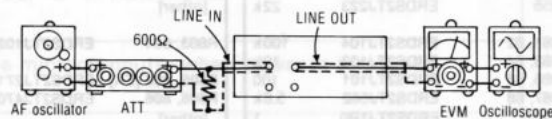


Fig. 6

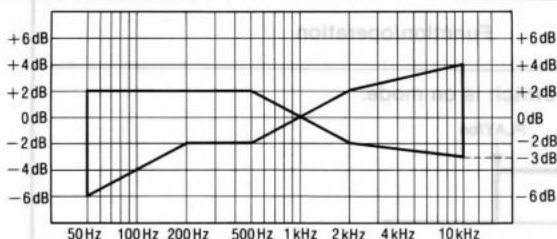


Fig. 7

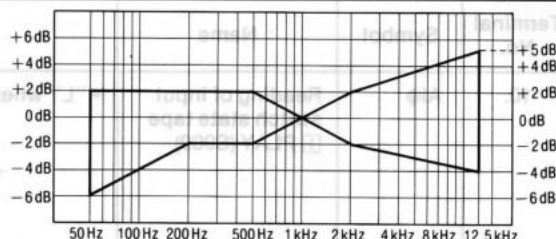


Fig. 8

Overall gain adjustment

1. Test equipment connection is shown in Fig. 6.
2. Set a normal blank tape (QZZCRA) and apply the reference input level signal (1 kHz, -24 dB) in record pause mode.
3. Adjust the output 0.4V by attenuator and then record.
4. Playback the signal recorded in step 3, and check that the output is within the standard.
5. If it is not within the standard, adjust VR7 (L-CH) {VR8 (R-CH)} and repeat the step (2), (3) and (4) until the output is within the standard.

Standard value: $0.4V \pm \begin{matrix} 0.1V \\ 0.08V \end{matrix}$

Dolby NR circuit

1. Test equipment connection is shown in Fig. 9.
2. Set a normal tape and apply 5kHz signal in record pause mode.
3. Adjust by attenuator so that the output between terminal ⑥ (L-CH) {terminal ⑯ (R-CH)} of IC401 and ground is 12.3mV.
4. Turn NR switch ON, and check that the level changes as specified from the level in NR out mode.

Standard value: $8 \pm 1.5 \text{ dB}$

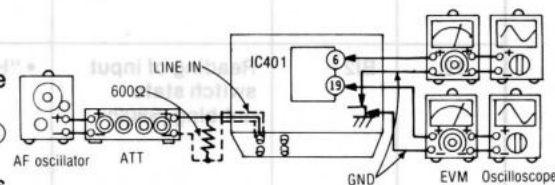
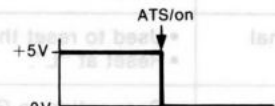
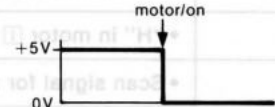
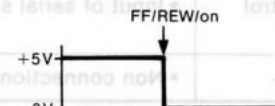
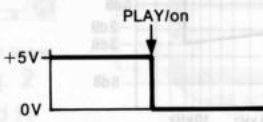
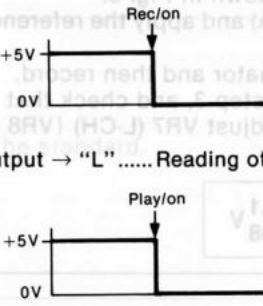
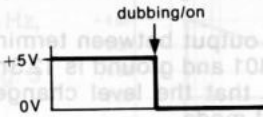
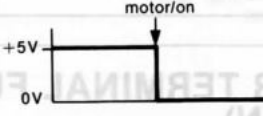
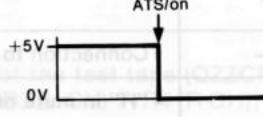


Fig. 9

■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC801: MN1402STN)

Terminal No.	Symbol	Name	Function/operation
1.	Vss	—	• Connection to GND.
2.	CO9	P.B. mute	• "H" in mute on, "L" in mute off.
3.	CO8	Auto tape selector	• "H" in 70μS mode, "L" in 120μS mode.
4.	CO7	Bias	• "H" in bias off, "L" in bias on.
5.	CO6	Direct muting	• "H" in mute off, "L" in mute on.
6.	CO5	—	• Non connection.
7.	AI3	Reading of input switch state tape ① auto tape selector (S909)	• "L" when auto tape selector is on mode. 
8.	AI2	Reading of input switch state tape ① motor (S904)	• "L" when motor switch is on mode. 
9.	AI1	Reading of input switch state tape ① FF/REW (S906)	• "L" when FF/REW switch is on mode. 

Terminal No.	Symbol	Name	Function/operation
10.	AI ϕ	Reading of input switch state tape ① PLAY (S902)	• "L" when PLAY switch is on mode. 
11.	BI3	Reading of scan signal output	• Input of Tape ② REC switch, Tape ② PLAY switch. • The above-mentioned inputs are read in accordance with DOϕ, DO1 scanning. - DOϕ output → "L" Reading of REC switch. - DO1 output → "L" Reading of PLAY switch. 
12.	BI2	Reading of input switch state dubbing (S802)	• "H" when dubbing switch is on mode. 
13.	BI1	Reading of input switch state tape ② motor (S903)	• "L" when motor switch is on mode. 
14.	BI ϕ	Reading of input switch state tape ② auto tape selector (S907)	• "L" when auto tape selector is on mode. 
15.	EO ϕ	Head selector	• "H" in tape ① Head, "L" in tape ② Head.
16.	EO1	Tape speed selector	• "H" in high speed, "L" in normal speed.
17.	EO2	Dolby NR IN/OUT	• "H" in REC mode, "L" in PLAY mode.
18.	EO3	Dolby B/C NR selector	• "H" in PLAY mode, "L" in REC mode.
19.	RST	Reset terminal	• Used to reset the microcomputer when power is thrown in. • Reset at "L".
20.	TEST	—	• Connection to GND.
21.	DO3	Motor ②	• "H" in motor ② off, "L" in motor ② on.
22.	DO2	Motor ①	• "H" in motor ① off, "L" in motor ① on.
23.	DO1	SCAN 2	• Scan signal for reading of tape ② PLAY switch input.
24.	DO ϕ	SCAN 1	• Scan signal for reading of REC switch input.
25.	SNS ϕ	Remote control signal input	• Input of serial signal from remote control jack.
26.	SNS1	—	• Non connection.

Terminal No.	Symbol	Name	Function/operation
27.	V _{DD}	Power supply terminal	• Operative on 5±0.5 volts.
28.	OSC	Clock Oscillation	• Clock oscillation of about 600kHz.

RESISTORS AND CAPACITORS

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 - 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.
 - The "©" mark is service standard parts and may differ from production parts.

- The unit of resistance is Ω (ohm).
K=1000 Ω , M=1000k Ω
- The unit of capacitance is μ F (microfarad).
P=10⁻⁶ μ F.
- Bracketed indications in Ref. columns specify the area. Parts without these indications can be used for all area.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	G : ±2%
ERO : Film	12 : 1/2W	J : ±5%
ERG : Metal Oxide	25 : 1/4W	
ERC : Solid	1 : 1W	
	2 : 2W	
	S1 : 1/2W	
	S2 : 1/4W	

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA : Electrolytic	0J : 6.3V	1H : 50V	CJ : ±0.25pF
ECCD : Ceramic	1A : 10V	2H : 500V	J : ±5%
ECKD : Ceramic	1C : 16V	1 : 100V	K : +10%
ECQM : Polyester	1E : 25V	KC : 400V	Z : +80%, -20%
ECQP : Polyester	1H : 50V		Y : ±22%
ECET : Electrolytic	1J : 63V		
ECEA...N : Non-polar Electrolytic	1V : 35V		
	25 : 25V		
	56 : 56V		

ERD10TLJ□□□ → Chip type carbon
ERO10MKG□□□ → Chip type metal film

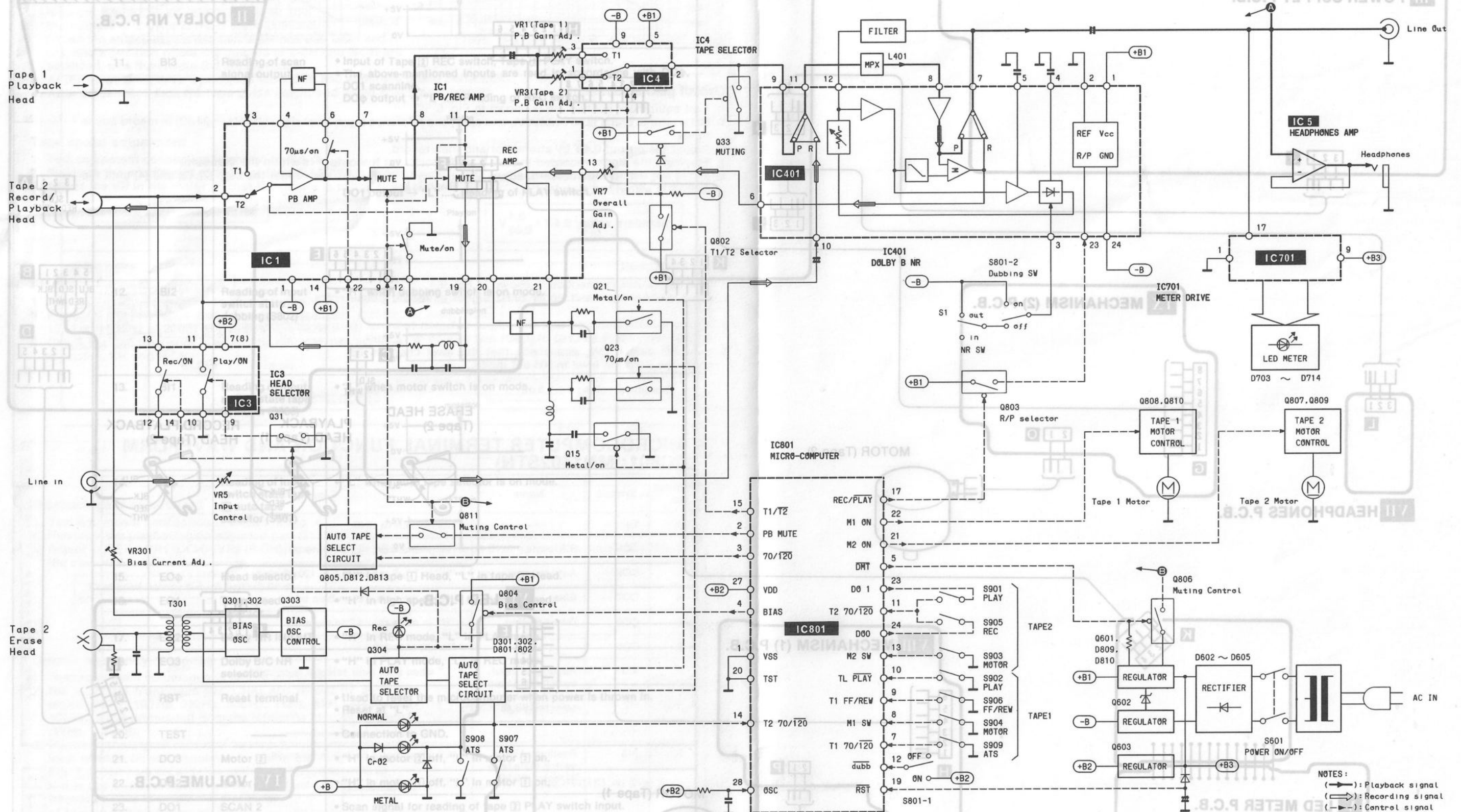
RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R1, 2	ERDS2TJ104	100k	R304, 305	ERDS2TJ100	10	R607	ERDS2TJ102	1k	R801	ERDS2TJ103	10k
R3, 4	ERDS2TJ101	100	R306	ERDS2TJ561	560	R608 [EK]	ERDS2TJ101	100	R802	ERDS2TJ332	3.3k
R5, 6	ERDS2TJ820	82	R307	ERDS2TJ392	3.9k	R608 [other]	ERDS2TJ560	56	R803	ERDS2TJ272	2.7k
R7, 8	ERDS2TJ562	5.6k	R308	ERDS2TJ561	560	R609 [EK] only	ERDS2TJ560	56	R804	ERDS2TJ563	56k
R13, 14	ERDS2TJ392	3.9k	R310	ERDS2TJ331	330	R610, 611	ERQ14LKR22	0.22	R805, 806	ERDS2TJ103	10k
R15, 16	ERDS2TJ274	270k	R401, 402	ERDS2TJ242	2.4k	[EK] only			R809	ERDS2TJ392	3.9k
R17, 18	ERDS2TJ103	10k	R403, 404	ERDS2TJ471	470	R612, R613	ERG1ANJ560	56	R812	ERDS2TJ473	47k
R19, 20	ERDS2TJ153	15k	R405, 406	ERDS2TJ473	47k				R815	ERDS2TJ183	18k
R21, 22	ERDS2TJ472	4.7k	R407, 408	ERDS2TJ432	4.3k				R816	ERDS2TJ103	10k
R23, 24	ERDS2TJ102	1k	R409, 410	ERDS2TJ332	3.3k				R817	ERDS2TJ123	12k
R25, 26	ERDS2TJ330	33	R411, 412	ERDS2TJ102	1k	R701, 702	ERDS2TJ363	36k	R818, 819	ERDS2TJ102	1k
R27, 28	ERDS2TJ182	1.8k	R413, 414	ERDS2TJ274	270k	[EK] only			R820	ERDS2TJ473	47k
R29, 30	ERDS2TJ272	2.7k	R415, 416	ERDS2TJ184	180k	R702, 703	ERDS2TJ472	4.7k	R821	ERDS2TJ102	1k
R31, 32	ERDS2TJ103	10k	R417, 418	ERDS2TJ470	47	R705, 706	ERDS2TJ154	150k	R822	ERDS2TJ473	47k
R33, 34	ERDS2TJ273	27k	R419	ERDS2TJ512	5.1k	R707	ERDS2TJ562	5.6k	R823	ERDS2TJ102	1k
R35, 36	ERDS2TJ152	1.5k	R420	ERDS2TJ103	10k	R708, 709	ERDS2TJ221	220	R824	ERDS2TJ223	22k
R37, 38	ERDS2TJ274	270k	R421	ERDS2TJ102	1k	R710 [EK]	ERDS2TJ6R8	6.8	R825	ERDS2TJ102	1k
R41, 42	ERDS2TJ103	10k	R601, 602 [EK]	ERD2FCG100	10	R710 [other]	ERDS2TJ330	33	R826, 827	ERDS2TJ391	390
R43, 44	ERDS2TJ102	1k	R601, 602 [other]	ERDS2TJ100	10	R711 [EK]	ERDS2TJ471	470	R828, 829	ERDS2TJ103	10k
R45, 46	ERDS2TJ330	33	R603, 604	ERDS2TJ102	1k	R711 [other]	ERDS2TJ330	33	R830	ERDS2TJ102	1k
R55	ERDS2TJ223	22k	R605, 606 [EK]	ERDS2TJ271	270	R712, 713	ERDS2TJ150	15	R832	ERDS2TJ472	4.7k
R61, 62	ERDS2TJ104	100k	R605, 606 [other]	ERDS2TJ470	47	[EK] only			R833	ERDS2TJ103	10k
R63, 64	ERDS2TJ103	10k				R714, 715	ERDS2TJ150	15	R834, 835	ERDS2TJ472	4.7k
R65, 66	ERDS2TJ101	100				[EK] only					
R67, 68	ERDS2TJ562	5.6k				R716 [EK] only	ERDS2TJ150	15			
R301	ERDS2TJ1R0	1									
R302, 303	ERDS2TJ683	68k									

CAPACITORS

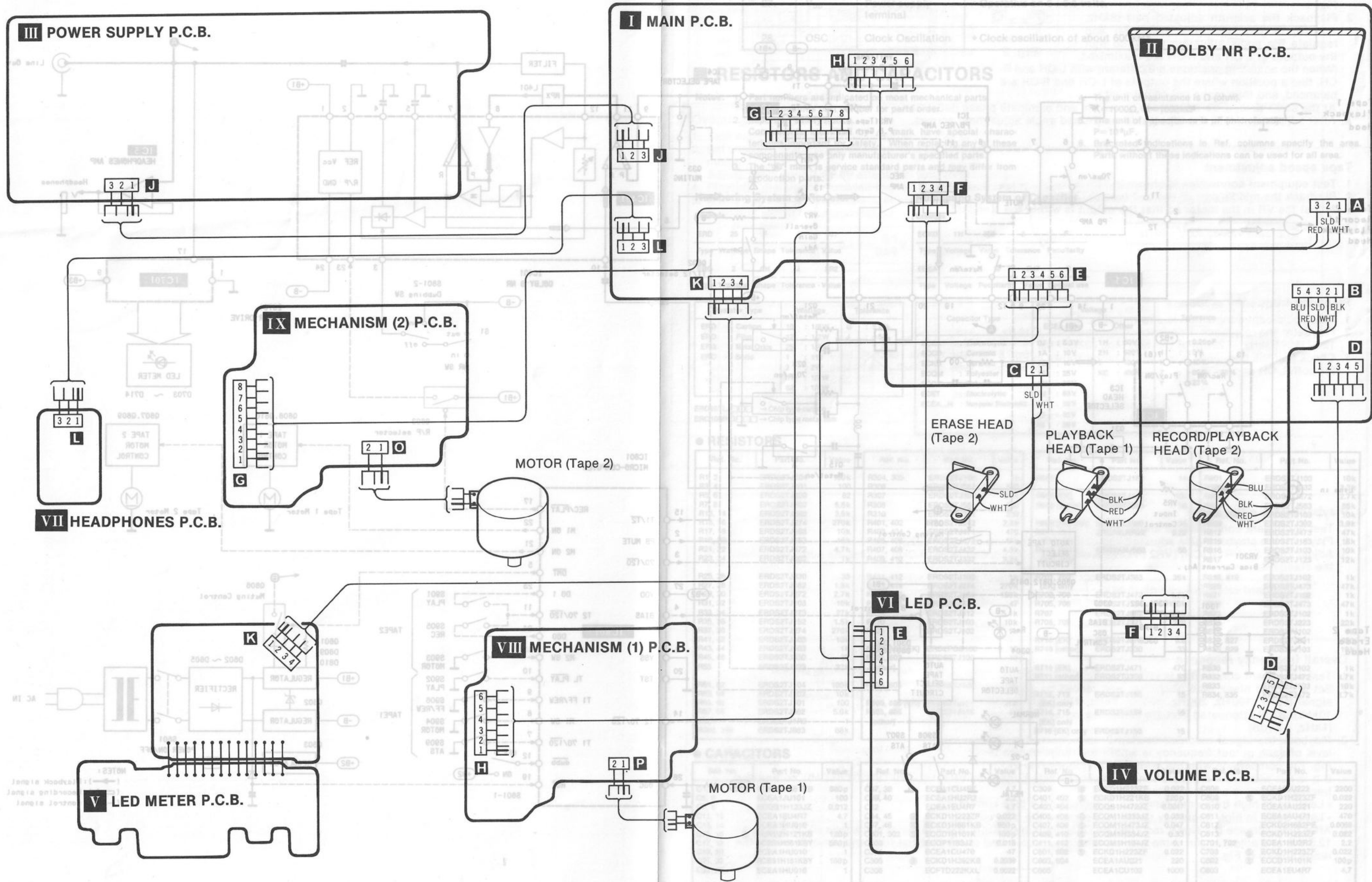
Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1, 2	© ECKD1H681KB	680p	C37, 38	ECEA1CU4R7	4.7	C309	© ECKD1H223ZF	0.022	C608	ECEA0JU222	2200
C5, 6	ECEA1JU101	100	C39, 40	ECEA1HU2R2	2.2	C401, 402	© ECKD1H221KB	220p	C609	© ECKD1H223ZF	0.022
C7, 8	ECQB1H123JZ	0.012	C42	ECEA1EU4R7	4.7	C403, 404	© ECQB1H472JZ	0.0047	C610	ECEA1AU221	220
C11, 12	ECEA1EU4R7	4.7	C44, 45	© ECKD1H223ZF	0.022	C405, 406	© ECQM1H333JZ	0.033	C611	ECEA1AU471	470
C13, 14	ECEA1HU010	1	C47, 48	© ECKD1H681KB	680p	C407, 408	© ECQM1H473JZ	0.047	C612	ECKD2H682PE	0.0068
C15, 16	© ECKD2H121KB	120p	C301, 302	© ECCD1H101K	100p	C409, 410	© ECQM1H334JZ	0.33	C613	© ECKD1H223ZF	0.022
C17, 18	RCBS1H561KBY	560p	C303	ECQP1183JZ	0.018	C411, 412	© ECQM1H104JZ	0.1	C701, 702	ECEA1HU2R2	2.2
C19, 20	ECEA1HU010	1	C304	ECEA1CU470	47	C601, 602	© ECKD1H223ZF	0.022	C703	© ECKD1H223ZF	0.022
C21, 22	RCBS1H181KBY	180p	C305	© ECKD1H392KB	0.0039	C603, 604	ECEA1AU221	220	C802	© ECCD1H101K	100p
C23, 24	ECEA1HU010	1	C306	ECFTD222KXL	0.0022	C605	ECEA1CU102	1000	C803	ECEA1EU4R7	4.7
C29, 30	ECQB1H123JZ	0.012	C307	ECFTD682KXL	0.0068	C606	ECEA1CU471	470	C804	ECEA1AU221	220
C35, 36	ECFTD153KXL	0.015	C308	ECFTD222KXL	0.0022	C607	ECEA1CU102	1000	C805	ECEA1HUR47	0.47

■ BLOCK DIAGRAM



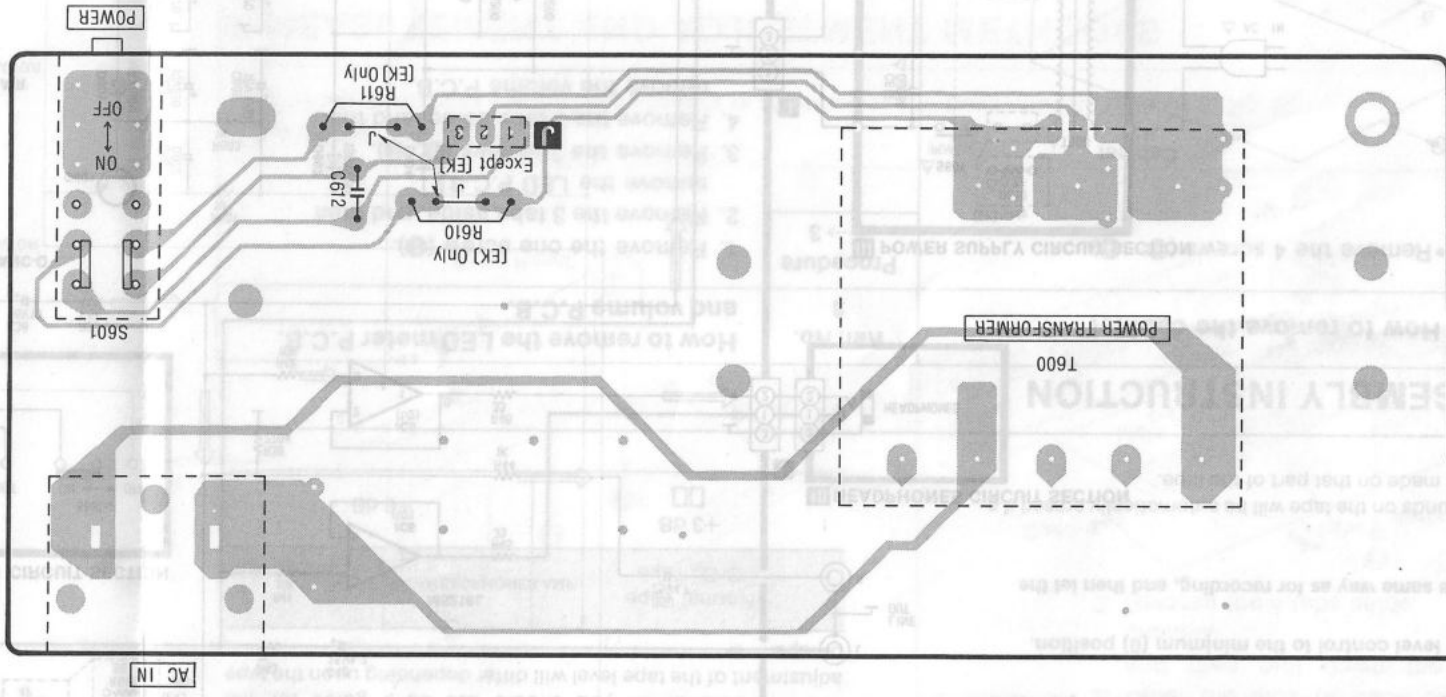
NOTES:
(→): Playback signal
(⇨): Recording signal
(---): Control signal

PRINTED CIRCUIT BOARDS WIRING CONNECTION DIAGRAM

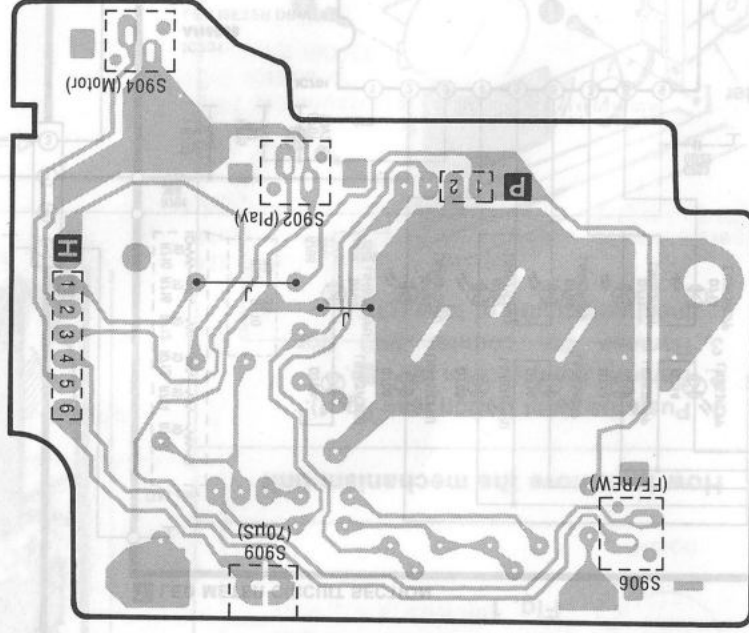


■ PRINTED CIRCUIT BOARDS

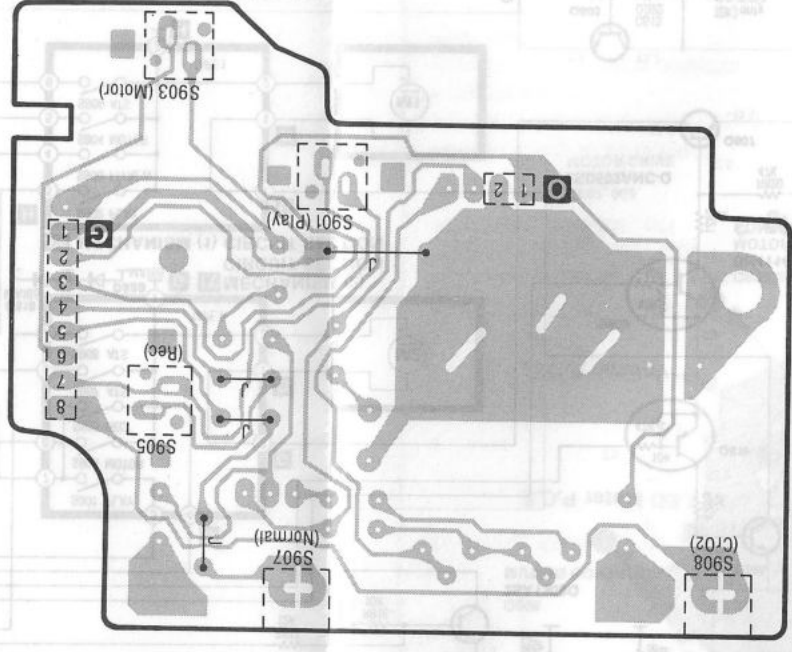
III POWER SUPPLY P.C.B.



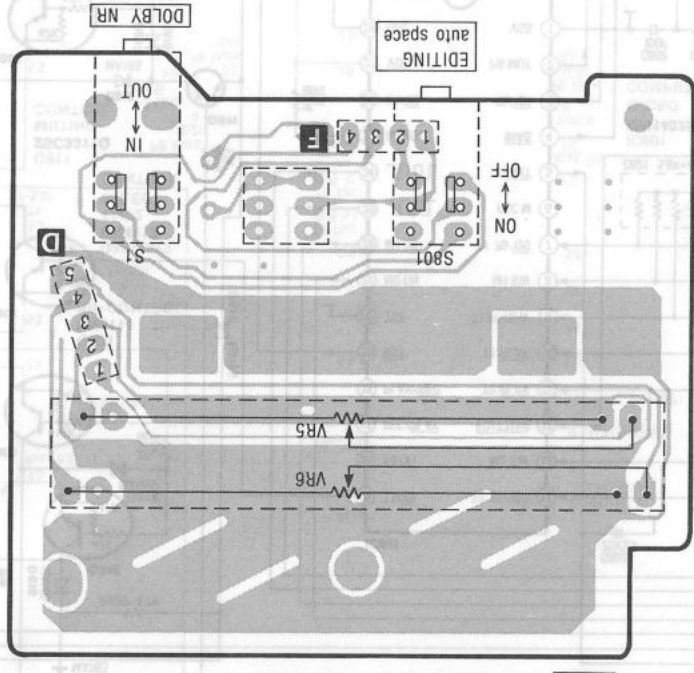
VIII MECHANISM (1) P.C.B.



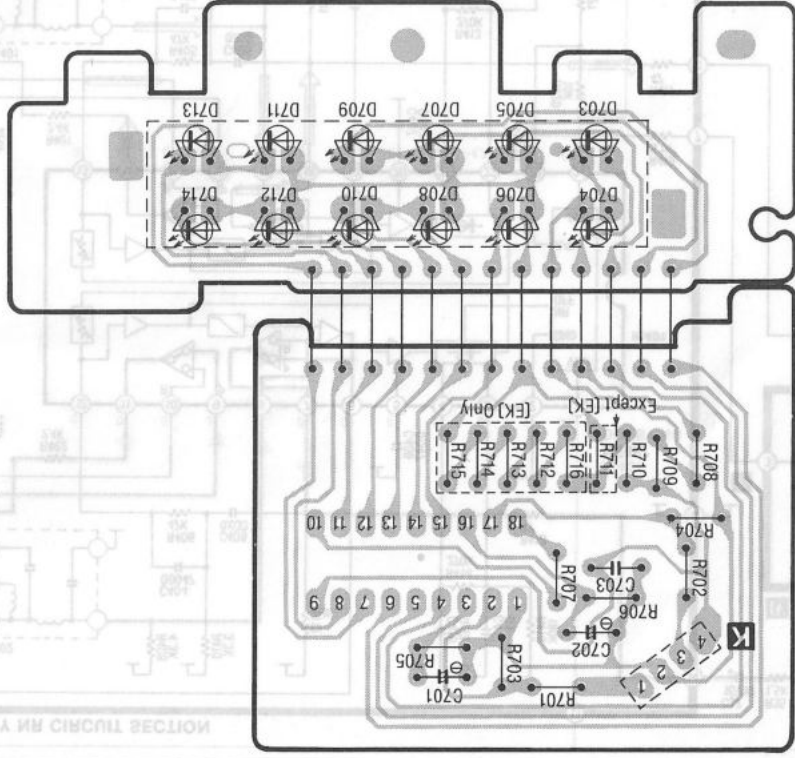
IX MECHANISM (2) P.C.B.



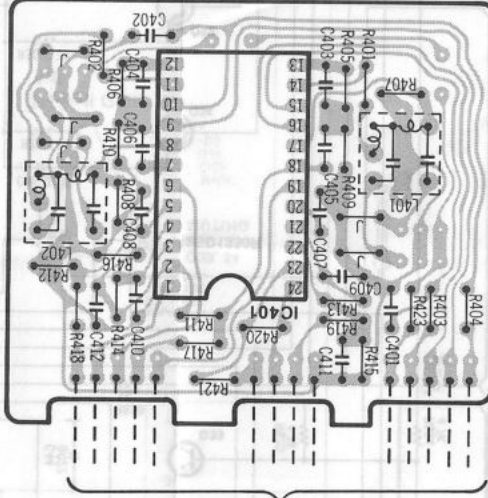
IV VOLUME P.C.B.



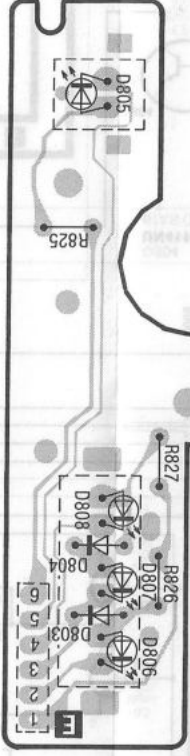
V LED METER P.C.B.



II DOLBY NR P.C.B.



VI LED P.C.B.



ELECTRICAL PARTS LIST

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 - 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.

Area

- * [E] All European areas except United Kingdom.
- * [EK] United Kingdom.
- * [EH] Holland.
- * [EGA] F.R. Germany.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN7014K	Integrated Circuit
IC3	UPC1290C	Integrated Circuit
IC4	MN6634	Integrated Circuit
IC5	M5218L	Integrated Circuit
IC401	NE657	Integrated Circuit
IC701	AN6888	Integrated Circuit
IC801	MN1402STN	Integrated Circuit
TRANSISTORS		
Q15, 16, 806	2SA1309Q	Transistor
Q21, 22, 23, 24, 301, 302, 811	2SC3311-Q	Transistor
Q31	UN4213	Transistor
Q33, 34	2SD1330R	Transistor
Q303 [EK] only	2SB621A-R	Transistor
Q303 [other]	2SB1030Q	Transistor
Q304, 601, 807, 808	2SD592ANC-Q	Transistor
Q602	2SB621A-R	Transistor
Q603	2SD14230	Transistor
Q802, 805, 812	UN4113	Transistor
Q803, 809, 810	UN4114	Transistor
Q804	UN4116	Transistor
DIODES		
D7, 10, 301, 302, 609, 801, 802, 803, 804, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818	MA165	Diode
D601	MA4160M	Diode
D602, 603, 604, Δ 605, 606, 607	1SR35200	Diode
D608	MA4062-M	Diode
D703, 704, 705, 706, 707, 708	LN463YCPPU	L.E.D.
D709, 710, 711, 712, 713, 714	LN863RCPP	L.E.D.
D805	LN846RP	L.E.D.
D806	LN846RP	L.E.D.
D807	LN346GP	L.E.D.
D808	LN446YP	L.E.D.
COILS		
L1, 2	SLQX303-1K	Choke
L3, 4	QLQX2722D	Choke
L401, 402	QLM9Z10K	MPX Coil
TRANSFORMERS		
T301	SL09C19-K	Bias OSC
T600 [EK] only Δ	SLT5K234SA	Power Transformer
T600 [other] Δ	SLT5K232SA	Power Transformer
VARIABLE RESISTORS		
VR1, 2, 3, 4	EVND4AA00B24	Tape 1/Tape 2 P.B. Gain Adj.
VR5, 6	EWAPB1X05A54	Input Volume
VR7, 8	EVND4AA00B14	Overall Gain Adj.
VR301, 302	EVND4AA00B15	Bias Current Adj.

SCHEMATIC DIAGRAM

Notes:

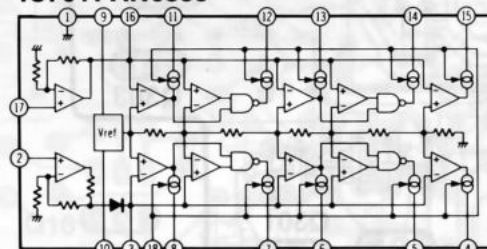
- S1 : Dolby NR switch in "out" position.
- S601 : Power switch in "off" position.
- S801 : Dubbing switch in "off" position.
- S901 : Tape 2 play switch in "off" position.
- S902 : Tape 1 play switch in "off" position.
- S903 : Tape 2 motor switch in "off" position.
- S904 : Tape 1 motor switch in "off" position.
- S905 : Tape 2 rec switch in "off" position.
- S906 : Tape 1 FF/REW switch in "off" position.
- S907 : Tape 2 Normal switch in "off" position.
- S908 : Tape 2 CrO₂ switch in "off" position.
- S909 : Tape 1 70 μ S 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 (μ F) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition an playback mode with volume control at minimum position otherwise specified.
- ()Voltage values at record mode.
- CrO₂Voltage values at CrO₂ tape mode.
- MetalVoltage values at Metal tape mode.
- NRVoltage values at Dolby NR mode.
- dobVoltage values at dubbing mode.
- For measurement use 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



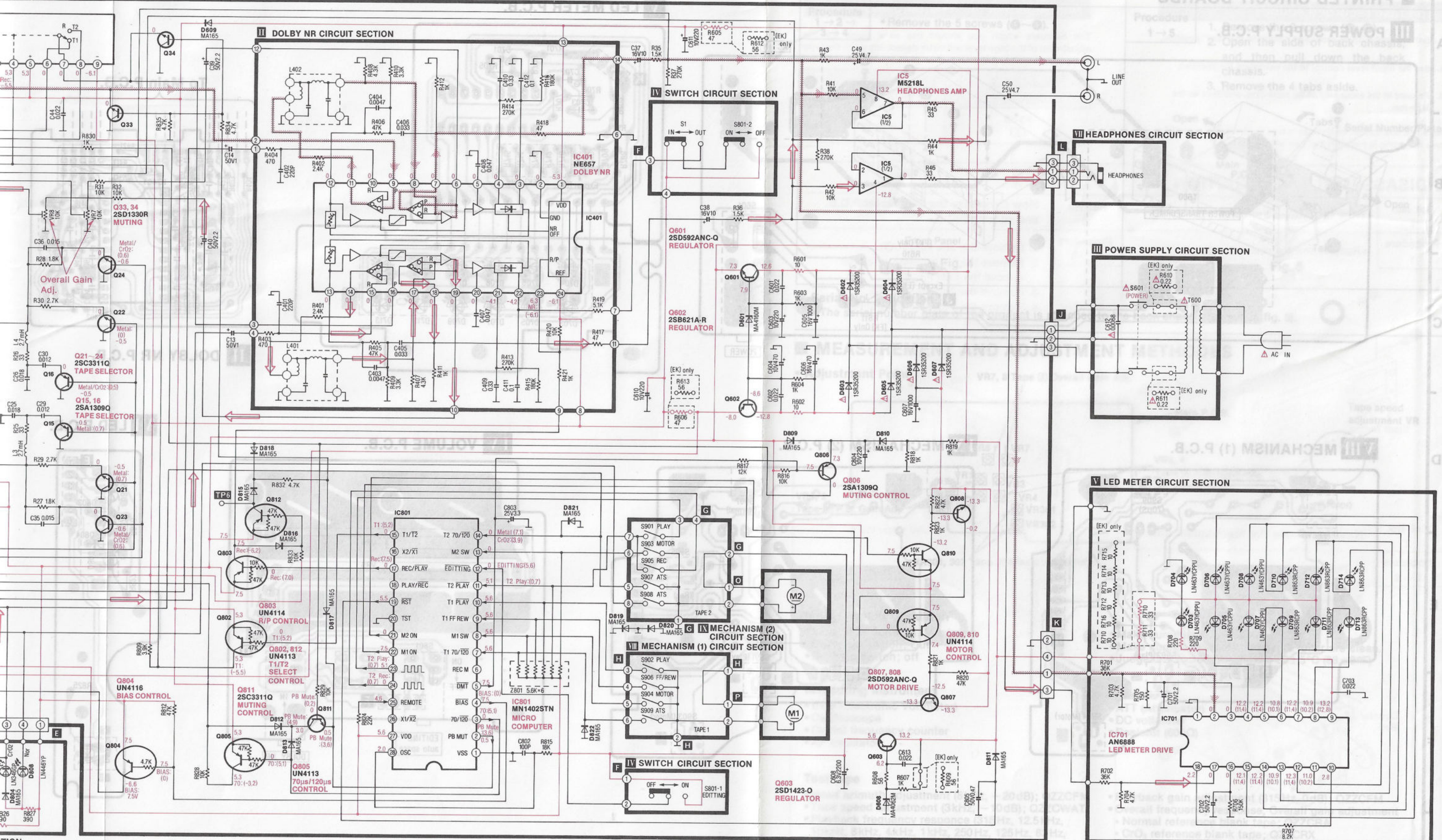
SPECIFICATIONS

* 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)

Ref. No.	Part No.	Description
COMBINATION PART		
Z801	EXBF7E562J	5.6k Ω $\times$ 6
SWITCHES		
S1, 801	SSH2110	NR Dubbing Switch
S601 Δ	SSH1069	Power Switch
S901, 902, 903, 904, 905, 906	SSP83	Leaf Switch
S907, 908, 909	LSA-1150AU	Leaf Switch





MECHANICAL PARTS LOCATION

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

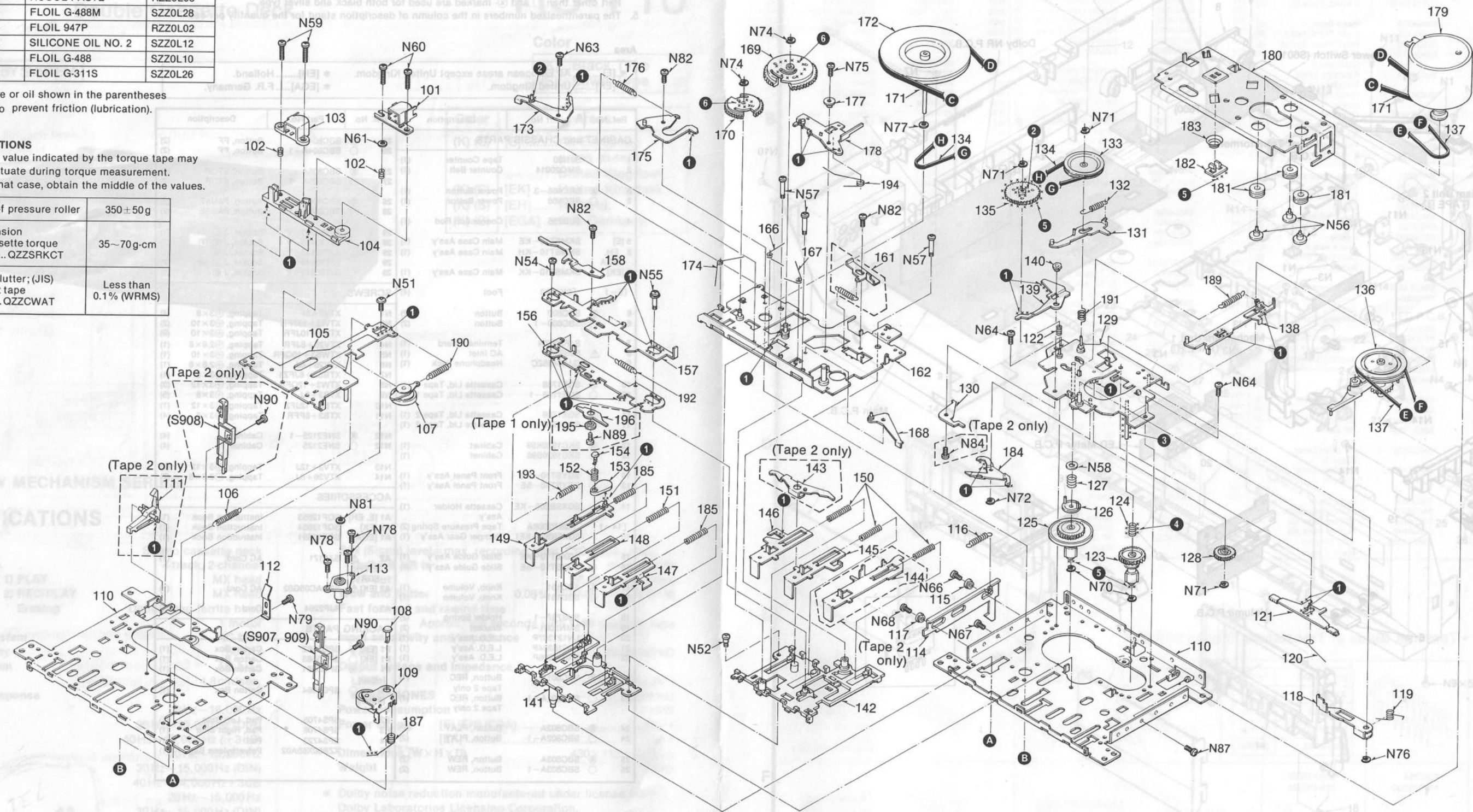
Ref. No.	Part Name	Part No.
1	ROCOL PASTE	RZZ0L06
2	FLOIL G-488M	SZZ0L28
3	FLOIL 947P	RZZ0L02
4	SILICONE OIL NO. 2	SZZ0L12
5	FLOIL G-488	SZZ0L10
6	FLOIL G-311S	SZZ0L26

• The grease or oil shown in the parentheses function to prevent friction (lubrication).

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

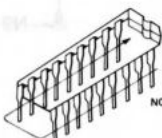
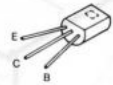
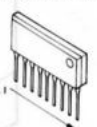
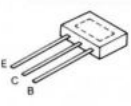
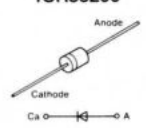
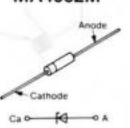
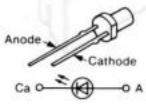
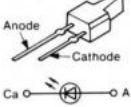


CABINET PARTS LOCATION

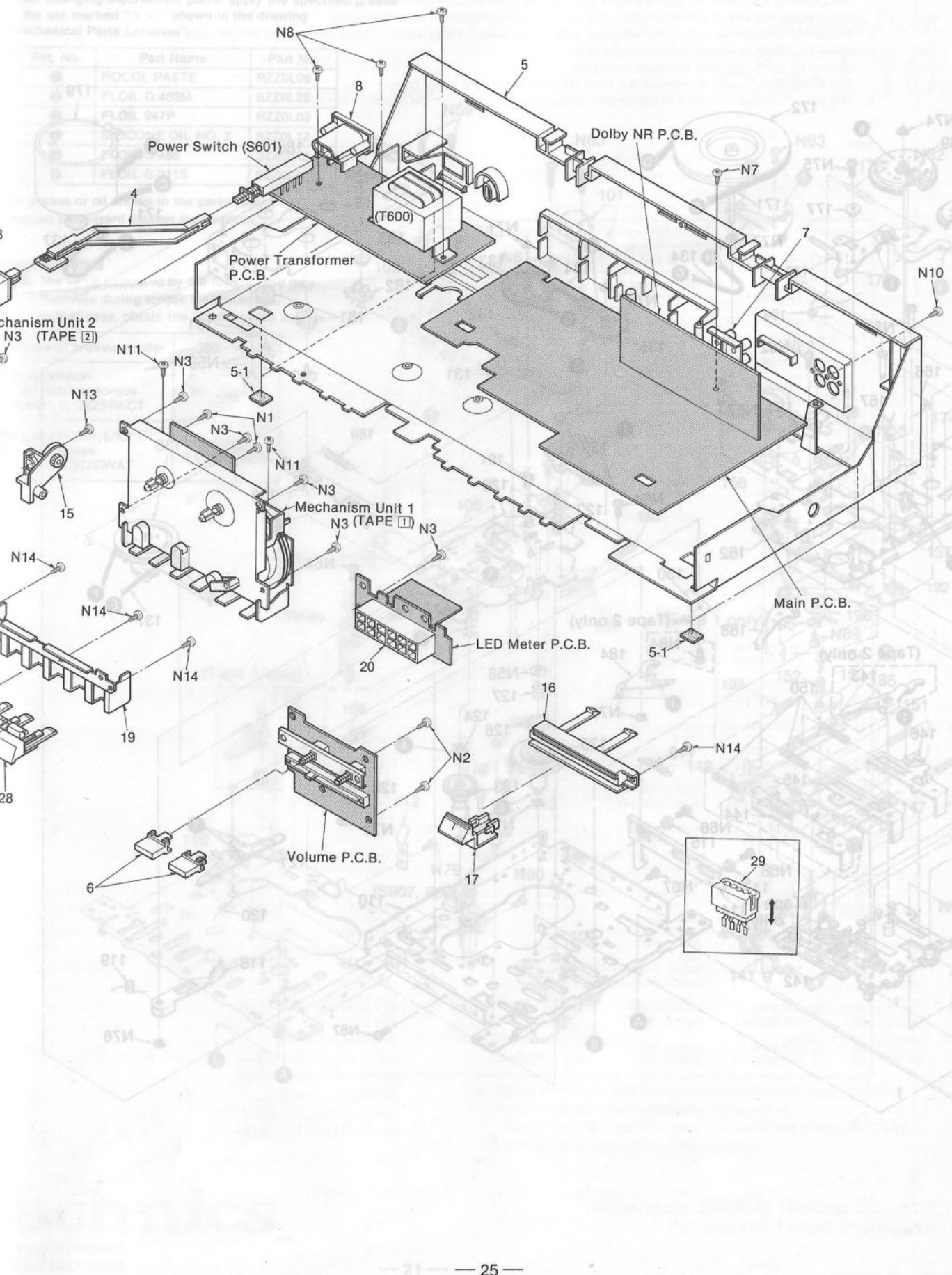
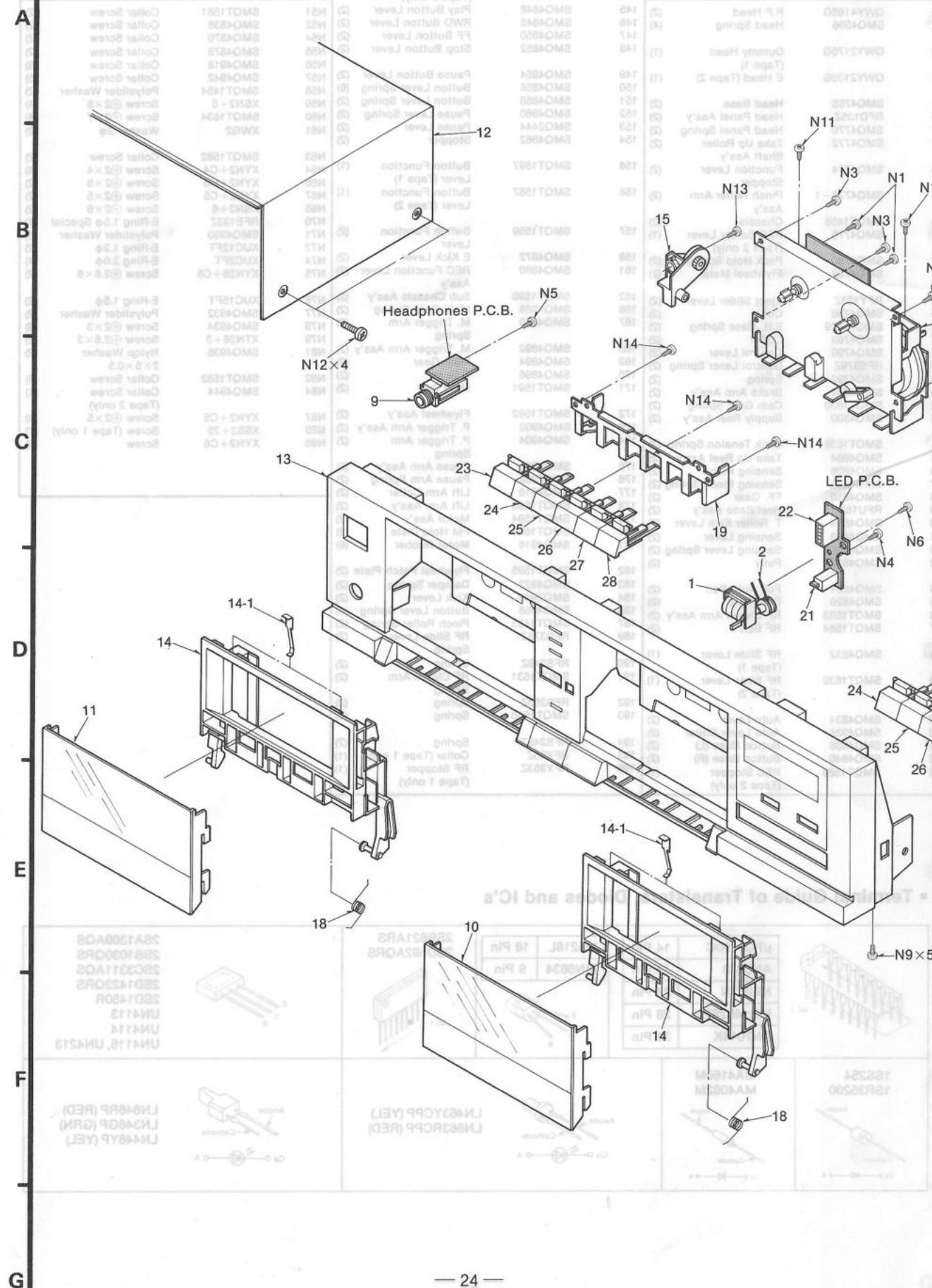
REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANISM PARTS			144	SMQT1586	REC Button Lever (Tape 2 only)	SCREWS and NUTS		
101	QWY4165G	R.P Head (2)	145	SMQ4846	Play Button Lever (2)	N51	SMQT1581	Collar Screw (2)
102	SMQ4596	Head Spring (4)	146	SMQ4848	RWD Button Lever (2)	N52	SMQ4838	Collar Screw (2)
103	QWY2175G	Dummy Head (Tape 1) (1)	147	SMQ4850	FF Button Lever (2)	N54	SMQ4870	Collar Screw (2)
103	QWY2138G	E Head (Tape 2) (1)	148	SMQ4852	Stop Button Lever (2)	N55	SMQ4878	Collar Screw (2)
104	SMQ4768	Head Base (2)	149	SMQ4854	Pause Button Lever (2)	N56	SMQ4918	Collar Screw (6)
105	RFD135Z	Head Panel Ass'y (2)	150	SMQ4856	Button Lever Spring (6)	N57	SMQ4942	Collar Screw (6)
106	SMQ4770	Head Panel Spring (2)	151	SMQ4858	Button Lever Spring (2)	N58	SMQT1454	Polyslider Washer (2)
107	SMQ4772	Take Up Roller (2)	152	SMQ4860	Pause Lever Spring (2)	N59	XSN2+8	Screw $\varnothing 2 \times 8$ (4)
108	SMQ4774	Shaft Ass'y Function Lever Stopper (2)	153	SMQ2444	Pause Lever (2)	N60	SMQT1634	Screw $\varnothing 2 \times 7$ (4)
109	SMQ4776-1	Pinch Roller Arm Ass'y (2)	154	SMQ4862	Stopper (2)	N61	XWG2	Washer 2 ϕ (2)
110	SMQT1458	Chassis (2)	156	SMQT1597	Button Function Lever (Tape 1) (1)	N63	SMQT1582	Collar Screw (2)
111	SMQ4778	REC Safety Lever (Tape 2 only) (1)	156	SMQT1587	Button Function Lever (Tape 2) (1)	N64	XYN2+C4	Screw $\varnothing 2 \times 4$ (4)
112	SMQ4780	Pack Hold Spring (2)	157	SMQT1589	Switch Function Lever (2)	N66	XYN2+C5	Screw $\varnothing 2 \times 5$ (2)
113	SMQ4782	Flywheel Metal (2)	158	SMQ4872	E Kick Lever (2)	N67	XYN2+C5	Screw $\varnothing 2 \times 5$ (2)
114	RFY183Z	Eject Slider Lever (2)	161	SMQ4880	REC Function Lever Ass'y (2)	N68	XSN2+6	Screw $\varnothing 2 \times 6$ (2)
115	SMQ4786	Collar (2)	162	SMQT1590	Sub Chassis Ass'y (2)	N70	RFE133Z	E-Ring 1.5 ϕ Special (4)
116	SMQT1629	E.H. Base Spring (2)	166	SMQ4888	Main Gear Spring (2)	N71	SMQ4930	Polyslider Washer (6)
117	SMQ4788	Collar (2)	167	SMQ4890	M. Trigger Arm Spring (2)	N72	XUC12FT	E-Ring 1.2 ϕ (2)
118	SMQ4790	Control Lever (2)	168	SMQ4892	M. Trigger Arm Ass'y (2)	N74	XUC2FT	E-Ring 2.0 ϕ (4)
119	RFS379Z	Control Lever Spring (2)	169	SMQ4894	Main Gear (2)	N75	XYN26+C6	Screw $\varnothing 2.6 \times 6$ (2)
120	SMQ4792	Spring (2)	170	SMQ4896	P Gear (2)	N76	XUC15FT	E-Ring 1.5 ϕ (2)
121	SMQ4794	Brake Arm Ass'y (2)	171	SMQT1591	Main Belt (2)	N77	SMQ4932	Polyslider Washer (2)
122	SMQT1630	Cam Gear Spring (2)	172	SMQT1592	Flywheel Ass'y (2)	N78	SMQ4934	Screw $\varnothing 2 \times 3$ (6)
123	SMQ4800	Supply Reel Ass'y (2)	173	SMQ4902	P. Trigger Arm Ass'y (2)	N79	XTN26+3	Screw $\varnothing 2.6 \times 3$ (2)
124	SMQT1636	Back Tension Spring (2)	174	SMQ4904	P. Trigger Arm Spring (2)	N81	SMQ4936	Nylon Washer 2 $\times 5 \times 0.5$ (2)
125	SMQ4804	Take Up Reel Ass'y (2)	175	SMQ4906	Pause Arm Ass'y (2)	N82	SMQT1582	Collar Screw (6)
126	SMQ4806	Sensing Piece (2)	176	SMQ4909	Pause Arm Spring (2)	N84	SMQ4944	Collar Screw (1)
127	SMQ4808	Sensing Piece Spring (2)	177	SMQ4910	Lift Arm Collar (2)	N87	XYN2+C5	Screw $\varnothing 2 \times 5$ (4)
128	SMQ4810	FF. Gear (2)	178	SMQT1593	Lift Arm Ass'y (2)	N89	XSS2+25	Screw (Tape 1 only) (1)
129	RFU16Z	Reel Base Ass'y (2)	179	SMQT1594	Motor Ass'y (2)	N90	XYN2+C6	Screw (6)
130	SMQ4814	T. Roller Kick Lever (2)	180	SMQT1633	FM Hold Plate (2)			
131	SMQ4818	Sensing Lever (2)	181	SMQ4916	Motor Rubber (6)			
132	SMQ4820	Sensing Lever Spring (2)	182	SMQT1595	Flywheel Patch Plate (2)			
133	SMQ4822	Pully (2)	183	SMQ4922	Damper Spring (2)			
134	SMQ4824	Full Auto Belt (2)	184	SMQ4940	Kick Lever (2)			
135	SMQ4826	Cam Gear (2)	185	SMQ4858	Button Lever Spring (4)			
136	SMQT1583	RF Clutch Arm Ass'y (2)	187	SMQT1453	Pinch Roller Spring (2)			
137	SMQT1584	RF Belt (2)	189	RFS378Z	RF Slide Lever Spring (2)			
138	SMQ4832	RF Slide Lever (Tape 1) (1)	190	RFS249Z	Spring (2)			
138	SMQT1632	RF Slide Lever (Tape 2) (1)	191	SMQT1631	RF Clutch Arm Spring (2)			
139	SMQ4834	Auto Lever (2)	192	RFS253Z	Spring (2)			
140	SMQ4938	Auto Lever Collar (2)	193	SMQT1588	Spring (2)			
141	SMQ4836	Button Base (L) (2)	194	RFS248Z	Spring (2)			
142	SMQ4840	Button Base (R) (2)	195	RFX85Z	Collar (Tape 1 only) (1)			
143	SMQT1585	REC Stopper (Tape 2 only) (1)	196	RFY353Z	RF Stopper (Tape 1 only) (1)			

• Terminal Guide of Transistors, Diodes and IC's

 NO.1	<table><tr><td>μPC1290C</td><td>14 Pin</td></tr><tr><td>AN6888</td><td>18 Pin</td></tr><tr><td>NE657N</td><td>24 Pin</td></tr><tr><td>MN1402STN</td><td>28 Pin</td></tr><tr><td>AN7014K</td><td>30 Pin</td></tr></table>	μ PC1290C	14 Pin	AN6888	18 Pin	NE657N	24 Pin	MN1402STN	28 Pin	AN7014K	30 Pin	<table><tr><td>M5218L</td><td>18 Pin</td></tr><tr><td>MN6634</td><td>9 Pin</td></tr></table>  E C B	M5218L	18 Pin	MN6634	9 Pin	2SB621ARS 2SD592AQRS  NO.1	 E C B	2SA1309AQS 2SB1030QRS 2SC3311AQS 2SD1423QRS 2SD1450R UN4113 UN4114 UN4116, UN4213
μ PC1290C	14 Pin																		
AN6888	18 Pin																		
NE657N	24 Pin																		
MN1402STN	28 Pin																		
AN7014K	30 Pin																		
M5218L	18 Pin																		
MN6634	9 Pin																		
1SS254 1SR35200  Anode Cathode Ca  A	MA4160M MA4062M  Anode Cathode Ca  A	 Anode Cathode Ca  A	LN463YCPP (YEL) LN863RCPP (RED)	 Anode Cathode Ca  A	LN846RP (RED) LN346GP (GRN) LN446YP (YEL)														

■ CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 - 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.
 - $\otimes$ -marked Parts are used for silver type only.
 $\circ$ -marked Parts are used for black type only.
Part other than $\otimes$ and $\circ$ -marked are used for both black and silver type.
 - The parenthesized numbers in the column of description stand for the quantity per set.

Area

- * [E]..... All European areas except United Kingdom. * [EH]..... Holland.
* [EK]..... United Kingdom. * [EGA]..... F.R. Germany.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS					
1	SJN20	Tape Counter	(1)	26	$\otimes$ SBC804A Button, FF (2)
2	SMQ20014	Counter Belt	(1)	26	$\circ$ SBC804A-1 Button, FF (2)
3	$\otimes$ SBC666-3	Power Button	(1)	27	$\otimes$ SBC805A Button, STOP (2)
3	$\circ$ SBC666	Power Button	(1)	27	$\circ$ SBC805A-1 Button, STOP (2)
4	SUB255	Connection Rod	(1)	28	$\otimes$ SBC806A Button, PAUSE (2)
5 [E]	SKMST10-KE	Main Case Ass'y	(1)	28	$\circ$ SBC806A-1 Button, PAUSE (2)
5 EH, EGA	SKMST10-KH	Main Case Ass'y	(1)	29	SJT30343-V Socket, J $\square$ (1)
5 [EK]	SKMST10-KK	Main Case Ass'y	(1)	29	SJT30443-V Socket, J $\square$, $\square$ (2)
[5-1]	[SKL293]	Foot	(4)	29	SJT30543-V Socket, J $\square$ (1)
6	$\otimes$ SBC800	Button	(2)	29	SJT30643-V Socket, J $\square$, $\square$ (2)
6	$\circ$ SBC800-1	Button	(2)	29	SJT30843-V Socket, J $\square$ (1)
7	SJF3057N	Terminal Board	(1)	SCREWS	
8	SJS9236	AC Inlet	(1)	N1	XTV3+8F Tapping, $\oplus 3 \times 8$ (4)
9	QJA0455ZC	Headphone Jack	(1)	N2	XTW3+10TFR Tapping, $\oplus 3 \times 10$ (2)
10	$\otimes$ SGE1788	Cassette Lid, Tape 1	(1)	N3	XTV3+10JFR Tapping, $\oplus 3 \times 10$ (9)
10	$\circ$ SGE1788-1	Cassette Lid, Tape 1	(1)	N4	XTV26+8JFR Tapping, $\oplus 2.6 \times 8$ (1)
11	$\otimes$ SGE1789	Cassette Lid, Tape 2	(1)	N5	XTWS3+10QFR Tapping, $\oplus 3 \times 10$ (1)
11	$\circ$ SGE1789-1	Cassette Lid, Tape 2	(1)	N6	XTV26+6J Tapping, $\oplus 2.6 \times 6$ (1)
12	$\otimes$ SKC1920K99	Cabinet	(1)	N7	XTBS3+8JFZ1 Tapping, $\oplus 3 \times 8$ (1)
12	$\circ$ SKC1920S98	Cabinet	(1)	N8	XTW3+12QFR Tapping, $\oplus 3 \times 12$ (3)
13	$\otimes$ SGYST10-KE	Front Panel Ass'y	(1)	N9	XTB3+8J Tapping, $\oplus 3 \times 8$ (5)
13	$\circ$ SGYST10-SE	Front Panel Ass'y	(1)	N10	XTB3+12JFZ Tapping, $\oplus 3 \times 12$ (1)
14	SGXSB205-KE	Cassette Holder Ass'y	(1)	N11	XTB3+6FFR Tapping, $\oplus 3 \times 6$ (4)
[14-1]	[QBP2006A]	Tape Pressure Spring	(2)	N12	$\otimes$ SNE2125-1 Cabinet (4)
15	SGXSB205-KE1	Damper Gear Ass'y	(1)	N12	$\circ$ SNE2125 Cabinet (4)
16	$\otimes$ SGXST10-KE	Slide Guide Ass'y	(1)	N13	XTV3+12J Tapping, $\oplus 3 \times 12$ (2)
16	$\circ$ SGXST10-SE	Slide Guide Ass'y	(1)	N14	XTV26+8J Tapping, $\oplus 2.6 \times 8$ (7)
17	$\otimes$ SBD131	Knob, Volume	(1)	ACCESSORIES	
17	$\circ$ SBD131-1	Knob, Volume	(1)	A1 [E, EH]	SQF12653 Instruction Book (1)
18	SUS797-1	Holder Spring	(2)	A1 [EK]	SQF12654 Instruction Book (1)
19	SMN2001-1	Bracket	(2)	A1 [EGA]	SQF12691 Instruction Book (1)
20	LN121307P	L.E.D. Ass'y	(1)	A2 Δ SJA171	AC Cord (1)
21	LN018304P	L.E.D. Ass'y	(1)	E, EH, EGA	
22	LN031306P	L.E.D. Ass'y	(1)	A2 [EK] Δ SFDAC05G02	AC Cord (1)
23	$\otimes$ SBC801A	Button, REC	(1)	A3	SJP2264 Cord (1)
23	$\circ$ SBC801A-1	Tape 2 only Button, REC	(1)	PACKING PARTS	
24	$\otimes$ SBC802A	Button, PLAY	(2)	P1 [EK] $\otimes$ SPG5562	Carton Box (1)
24	$\circ$ SBC802A-1	Button, PLAY	(2)	P1 [EK] $\circ$ SPG5563	Carton Box (1)
25	$\otimes$ SBC803A	Button, REW	(2)	P1 $\otimes$ SPG5561	Carton Box (1)
25	$\circ$ SBC803A-1	Button, REW	(2)	[other] P1 $\circ$ SPG5564	Carton Box (1)
				[other] P1	
				P2	SPS4705 Pad, Left Side (1)
				P3	SPS4706 Pad, Right Side (1)
				P4	SPS4723 Pad (1)
				P5	XZB50X65A02 Polyethylene Bag (1)