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ROTEL®

Technical Manual

STEREO CASSETTE DECK RD-2200M

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**Serial No. Beginning
NC10812**

**THE ROTEL CO., LTD.
ROTEL ELECTRONICS CO., LTD.
ROTEL OF AMERICA, INC.
ROTEL HI FI LIMITED**

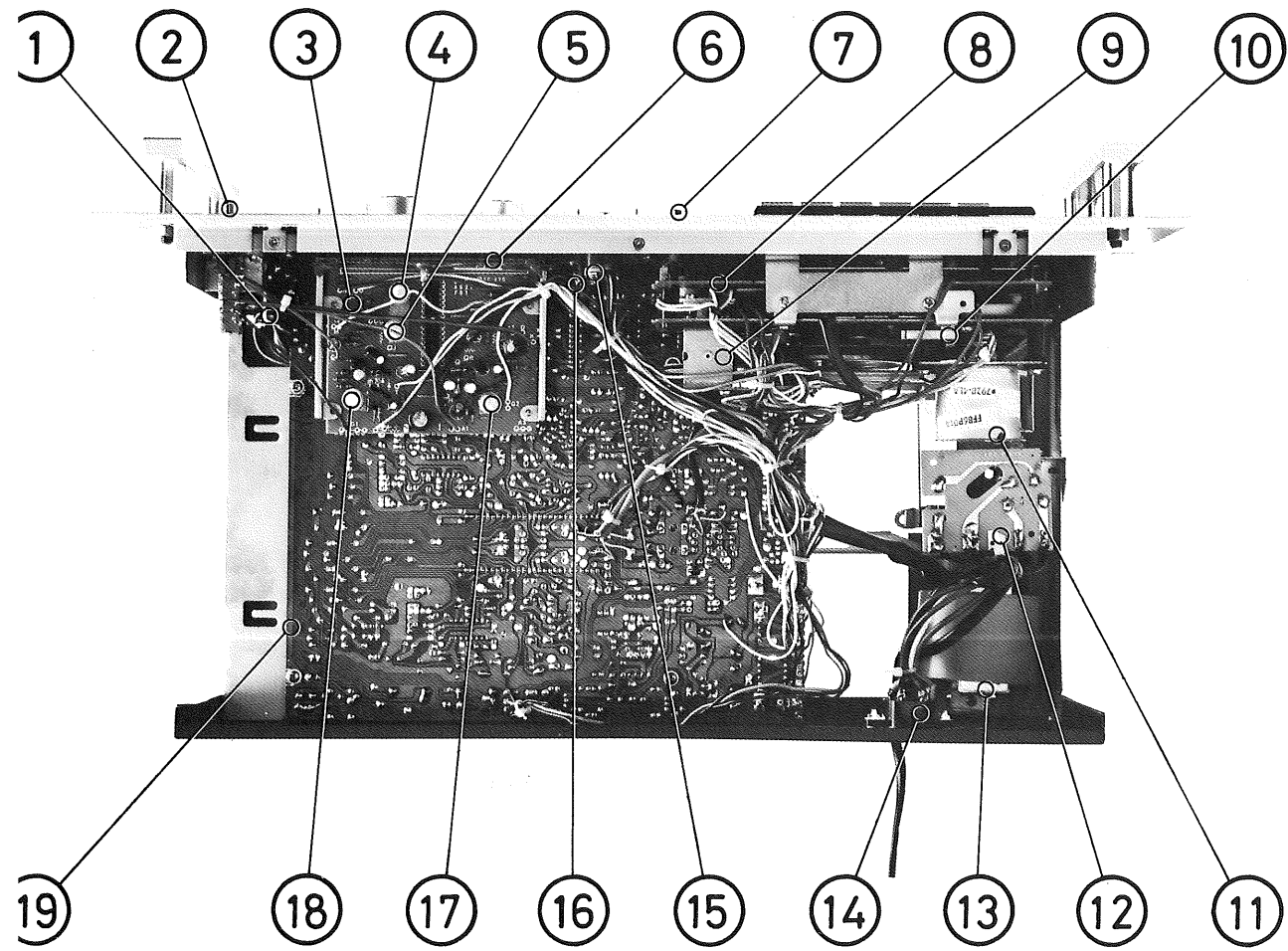
1-36-8 OHOKAYAMA, MEGURO-KU, TOKYO 152, JAPAN
2ND FLOOR, EVERGLORY BLDG., NO. 305, SECTION 3,
NANKING E. ROAD, TAIPEI, TAIWAN, REPUBLIC OF CHINA

1055 SAW MILL RIVER ROAD, ARDSLEY, N.Y. 10502, U.S.A.
2-4 ERICA ROAD, STACEY BUSHES, MILTON KEYNES,
BUCKINGHAMSHIRE, ENGLAND

Chassis Layout (Top View)

Chassis-Anordnung (Oberansicht)

Installation du châssis (vue de dessus)

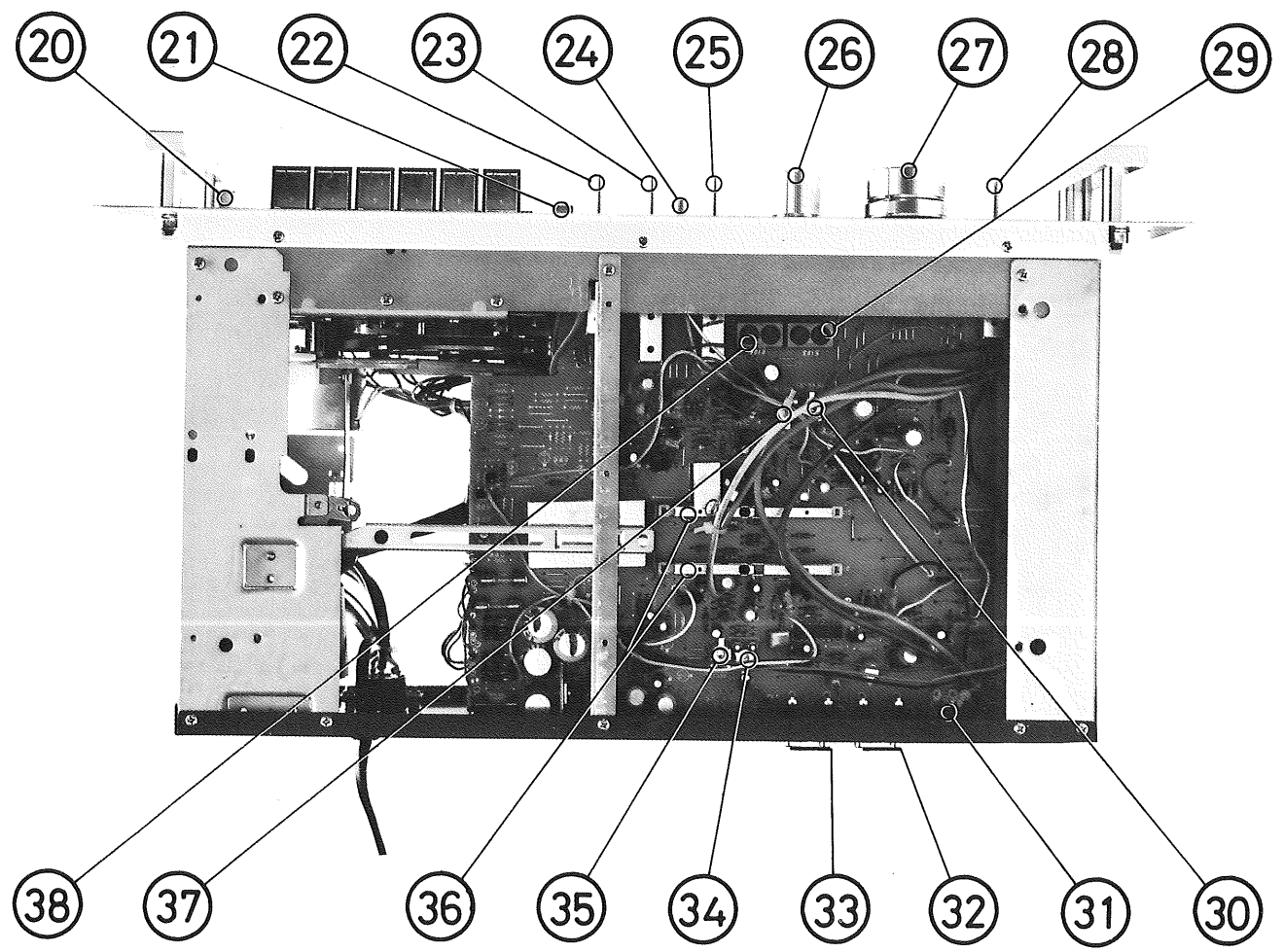


- 1. PHONE AND MIC JACK PCB
- 2. S106, INDICATOR SWITCH
- 3. LEVEL INDICATOR DRIVER PCB
- 4. VR108, 0dB ADJ, R-CH
- 5. VR107, 0dB ADJ, L-CH
- 6. LEVEL INDICATOR (FL METER)
- 7. RESET BUTTON
- 8. CASSETTE MECH ASS'Y
- 9. SHUT-OFF PLUNGER SOLENOID
- 10. S2, PLAY SWITCH
- 11. MOTOR
- 12. POWER SWITCH PCB
- 13. POWER TRANSFORMER
- 14. VOLTAGE SELECTOR (used for European Type only)
- 15. LED INDICATOR PCB
- 16. BIAS CONTROL PCB
- 17. VR106, OFF-SET LEVEL ADJ, R-CH
- 18. VR105, OFF-SET LEVEL ADJ, L-CH
- 19. MASTER PCB

Chassis Layout (Bottom View)

Chassis-Anordnung (Unteransicht)

Installation du châssis (vue de dessous)



- 20. S1, POWER SWITCH
- 21. TIMER STAND-BY KNOB
- 22. S102, BIAS SELECTOR
- 23. S103, EQ SELECTOR
- 24. BIAS CONTROL
- 25. S104, DOLBY NR/MPX FILTER SWITCH*
- 26. OUTPUT LEVEL CONTROL
- 27. REC LEVEL CONTROL
- 28. S105, INPUT SELECTOR
- 29. MPX FILTER, L-CH
- 30. VR102, PLAYBACK LEVEL ADJ, R-CH
- 31. DIN SOCKET
- 32. LINE IN JACKS
- 33. LINE OUT JACKS
- 34. VR101, PLAYBACK LEVEL ADJ, L-CH
- 35. VR103, REC LEVEL ADJ, L-CH
- 36. S101, REC/PB SWITCH
- 37. VR104, REC LEVEL ADJ, R-CH
- 38. MPX FILTER, R-CH

* Dolby and Dolbized are trademarks of Dolby Laboratories. Noise Reduction under licence from Dolby Laboratories.

Alignment

Instruments: AC Voltmeter, Oscilloscope
Blank Tape (NORMAL).

Note: Set Output Level Control to max.

Abgleich

Instrumente: Wechselstrom-Röhrenvoltmeter
Prüfttonband (MTT-114, MTT-150)

Anmerkung: Den Ausgangspegelregler auf max. einstellen.

Alignement

Instrumente: Voltmètre électronique
fréquences, bande d'essai (MTT-114, MTT-150)

Note: Régler le contrôle du niveau de sortie sur max.

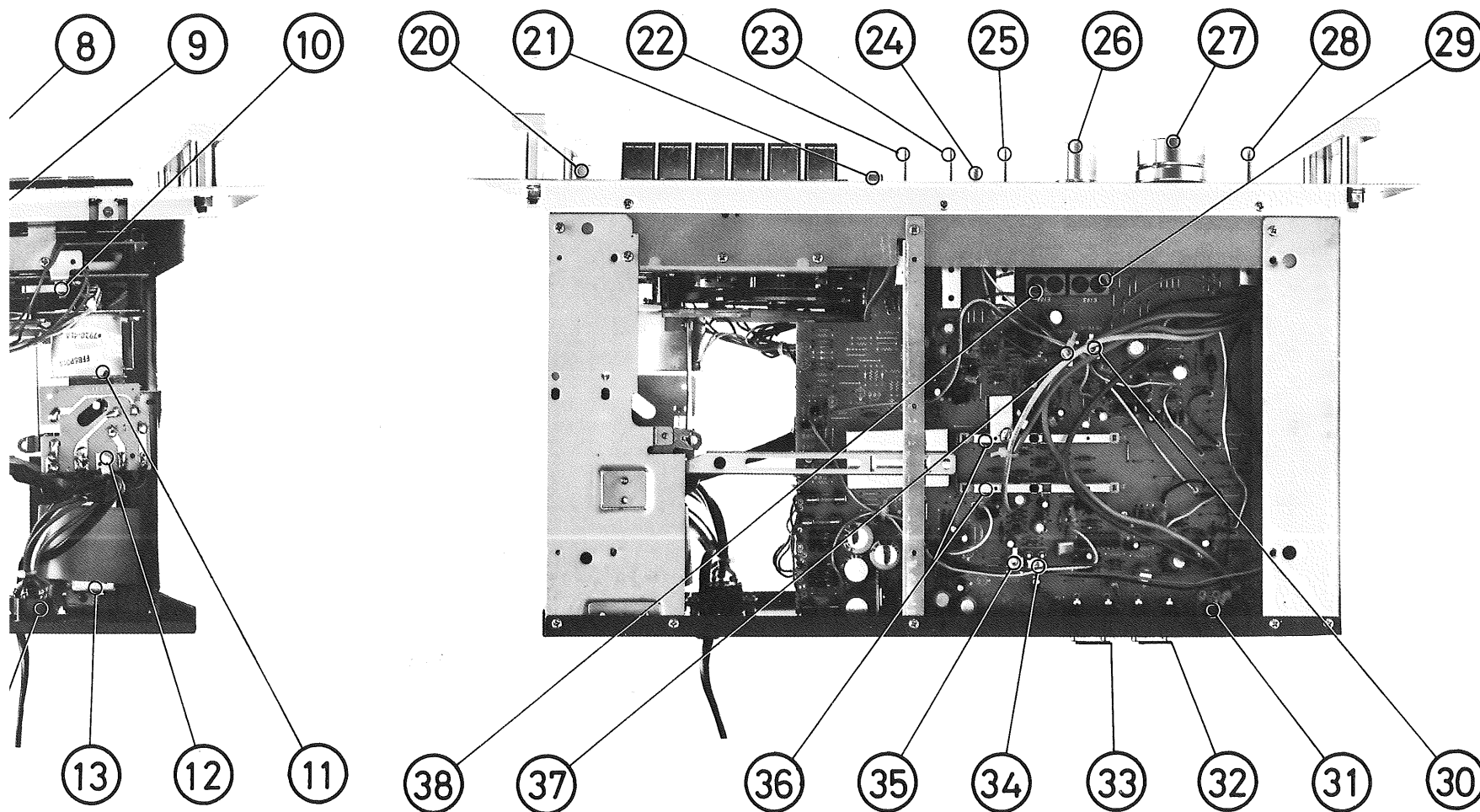
Step	Description	Meas. (Swi)	
1	Head Azimuth Adjustment	PLAYBACK EQ: 1 NR: 1	
2	Playback Level Adjustment	PLAYBACK EQ: 1 NR: 1	
3	A	Input Adjustment	RECORDING EQ: 1 NR: 1
		Level Indicator Calibration (-20 dB)	RECORDING EQ: 1 NR: 1
	B	Input Adjustment	RECORDING EQ: 1 NR: 1
		Level Indicator Calibration	RECORDING EQ: 1 NR: 1
4	Recording Level Adjustment	RECORDING EQ: 1 NR: 1	
5	Recording Bias Adjustment	RECORDING EQ: 1 NR: 1	

PLAYBACK TEST TAPE: TEST

1. Tape speed, wow and flutter (3 kHz)
2. Reference level (333 Hz, 0 dB = 20 dB)
3. 0 VU level, Dolby level (400 Hz, -10 dB)
4. Azimuth adjust (10 kHz, -10 dB)
5. Frequency response (31.5 Hz to 14 kHz)

(31.5 Hz to 14 kHz)

Chassis Layout (Bottom View)
 Chassis-Anordnung (Unteransicht)
 Installation du châssis (vue de dessous)



8. SWITCH PCB
 9. TRANSFORMER
 10. EQ SELECTOR (used for
 Type only)
 11. INDICATOR PCB
 12. CONTROL PCB
 13. OFFSET LEVEL ADJ, R-CH
 14. OFFSET LEVEL ADJ, L-CH
 15. PCB

20. S1, POWER SWITCH
 21. TIMER STAND-BY KNOB
 22. S102, BIAS SELECTOR
 23. S103, EQ SELECTOR
 24. BIAS CONTROL
 25. S104, DOLBY NR/MPX FILTER SWITCH*
 26. OUTPUT LEVEL CONTROL
 27. REC LEVEL CONTROL
 28. S105, INPUT SELECTOR
 29. MPX FILTER, L-CH

30. VR102, PLAYBACK LEVEL ADJ, R-CH
 31. DIN SOCKET
 32. LINE IN JACKS
 33. LINE OUT JACKS
 34. VR101, PLAYBACK LEVEL ADJ, L-CH
 35. VR103, REC LEVEL ADJ, L-CH
 36. S101, REC/PB SWITCH
 37. VR104, REC LEVEL ADJ, R-CH
 38. MPX FILTER, R-CH

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 Noise Reduction under licence from Dolby Laboratories.

Alignment

Instruments: AC Voltmeter, Oscilloscope, Audio Generator, Test Tape (MTT-114, MTT-150), Blank Tape (NORMAL).

Note: Set Output Level Control to maximum position.

Abgleich

Instrumente: Wechselstrom-Röhrenvoltmeter, Oszillograph, Tonfrequenzgenerator, Prüftontband (MTT-114, MTT-150), Leertonband (NORMAL).

Anmerkung: Den Ausgangspegelregler auf Maximum stellen.

Alignement

Instrumente: Voltmètre électronique CA, oscilloscope, générateur audio de fréquences, bande d'essai (MTT-114, MTT-150), bande vierge (NORMAL).

Note: Régler le contrôle du niveau de sortie au maximum.

Step	Description	Mode (Switch)	Adjust Points	Test Points	Connection Instruction	Remarks
1	Head Azimuth Adjustment	PLAY EQ: Nor NR: OFF	Head Azimuth Screw (Figure 2)	Line Out	Figure 1	Test Tape: MTT-114 Adjust for Max.
2	Playback Level Adjustment	PLAY EQ: Nor NR: OFF	VR101 VR102 (Figure 6)	Line Out	Figure 1	Test Tape: MTT-150 T.P. Output: 1000mV
3	A Input Adjustment	RECORD EQ: Nor NR: OFF	VR1-1 VR1-2 (Figure 6)	Line Out	Figure 3	Line Input: 333Hz, 30mV T.P. Output: 100mV
	A Level Indicator Calibration (-20 dB)	RECORD EQ: Nor NR: OFF	VR105 VR106 (Figure 7)	Level Meter Reading	Figure 3	Line Input: 333Hz, 30mV Adjust for "-20" dB
3	B Input Adjustment	RECORD EQ: Nor NR: OFF	VR1-1 VR1-2	Line Out	Figure 3	Line Input: 333Hz, 300mV T.P. Output: 1000mV
	B Level Indicator Calibration	RECORD EQ: Nor NR: OFF	VR107 VR108 (Figure 7)	Level Meter Reading	Figure 3	Line Input: 333Hz, 300mV Adjust for "0" dB
4	Recording Level Adjustment	RECORD EQ: Nor NR: OFF	VR103 VR104 (Figure 6)	T.P. 1 T.P. 2	Figure 4	Input: 333Hz, 300mV Line Output: 1000mV T.P. Output: 4.5mV
5	Recording Bias Adjustment	RECORD EQ: Nor NR: OFF	CT101 CT102 (Figure 6)	T.P. 1 T.P. 2	Figure 5	Input: None T.P. Output: 40mV

PLAYBACK TEST TAPE: TEAC MTT SERIES OR JVC VTT SERIES

- | | |
|---|---------------------|
| 1. Tape speed, wow and flutter (3 kHz, -10 dB): | Type MTT-111 |
| 2. Reference level (333 Hz, 0 dB = 25mM/mm): | Type MTT-112 |
| 3. 0 VU level, Dolby level (400 Hz, -1 dB = 22mM/mm): | Type MTT-150 |
| 4. Azimuth adjust (10 kHz, -10 dB): | Type MTT-114 |
| 5. Frequency response (31.5 Hz to 14 kHz, -24 dB): | Type MTT-116U |
| | (3,180 μS + 120 μS) |
| | Type MTT-116K |
| | (3,180 μS + 70 μS) |

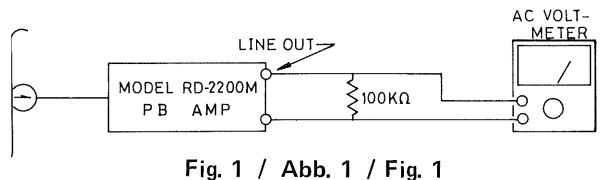


Fig. 1 / Abb. 1 / Fig. 1

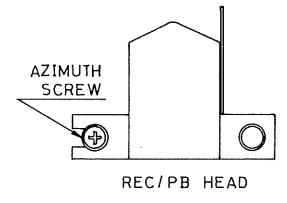


Fig. 2 / Abb. 2 / Fig. 2

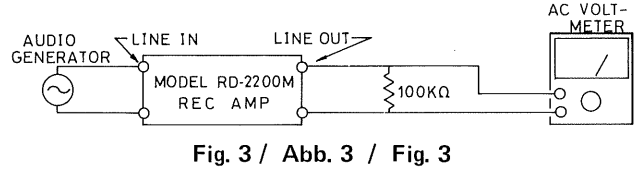


Fig. 3 / Abb. 3 / Fig. 3

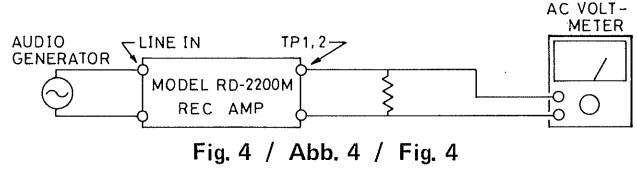


Fig. 4 / Abb. 4 / Fig. 4

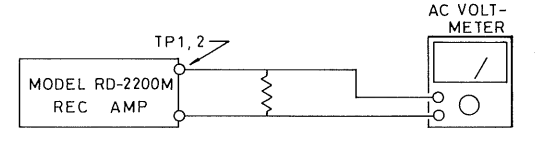


Fig. 5 / Abb. 5 / Fig. 5

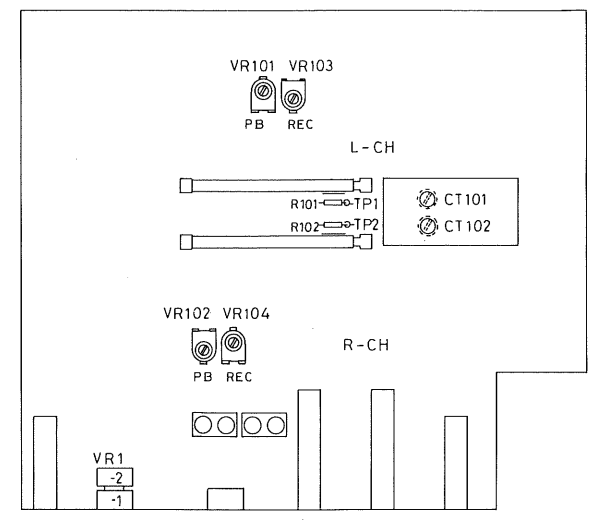


Fig. 6. Master PC Board Layout (component side view)
Abb. 6. Bestückungsplan der Hauptleiterplatte
Fig. 6. Disposition de la plaquette principale du circuit
(Vue latérale de composant)

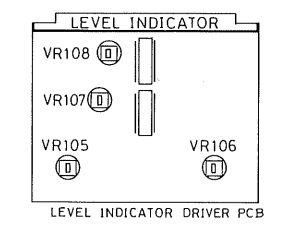
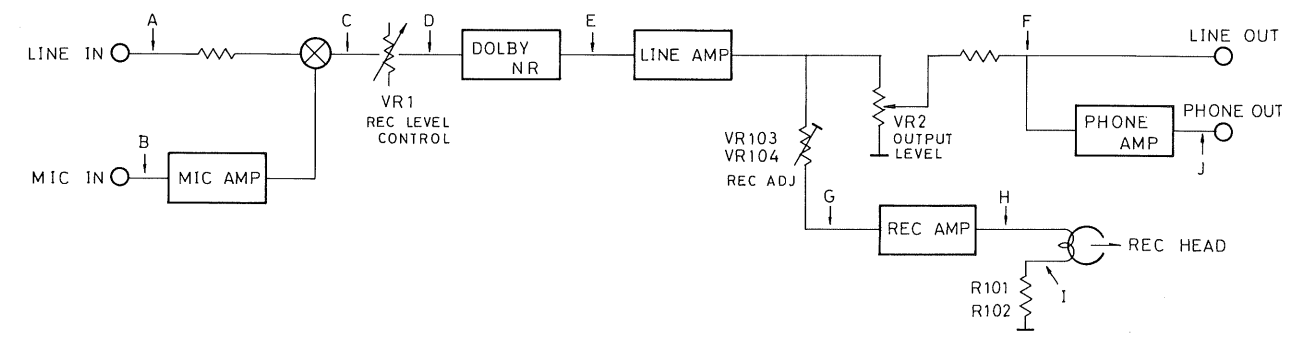
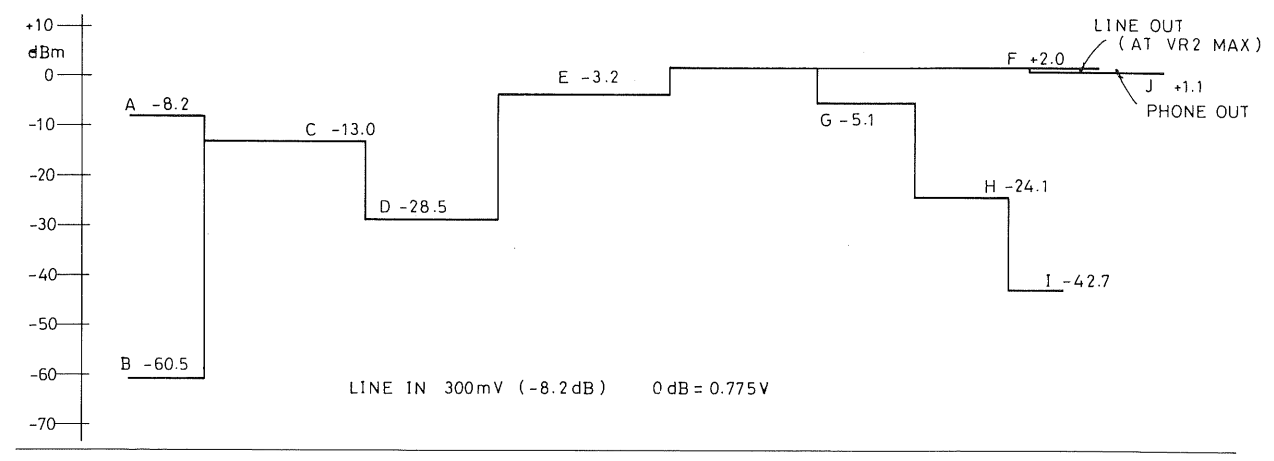


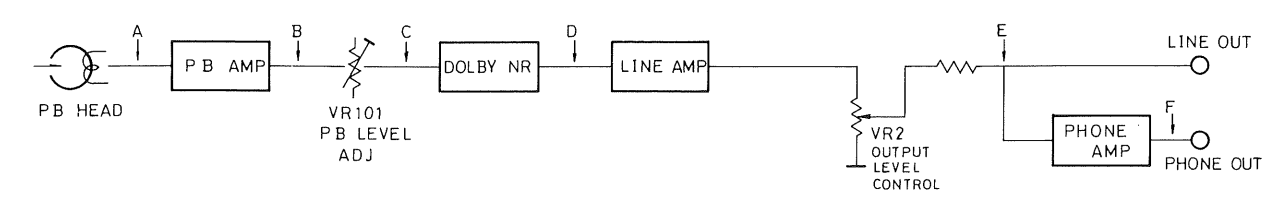
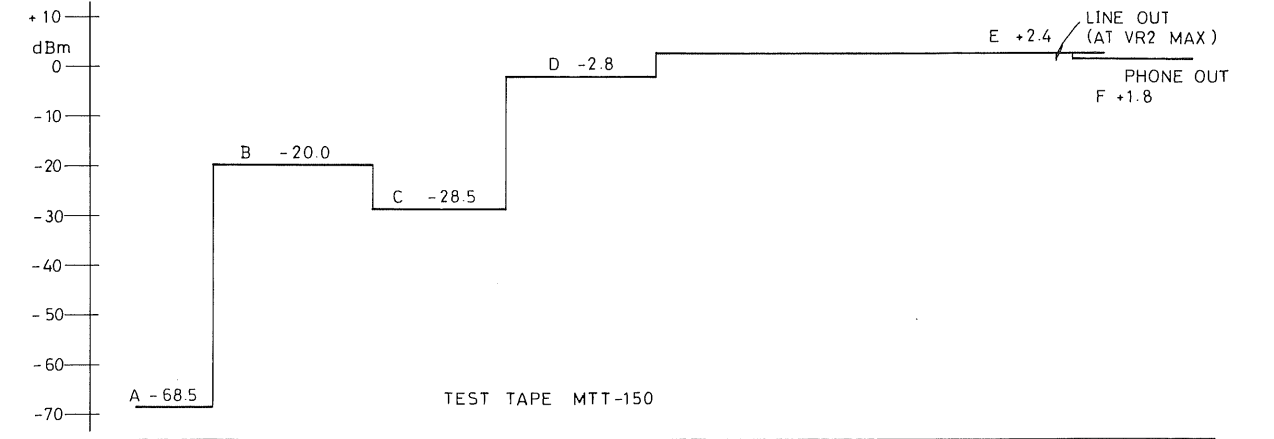
Fig. 7. Level Indicator Calibration
Abb. 7. Eichung der Pegelanzeige
Fig. 7. Etalonnage de l'indicateur de niveau

Record/Playback Level Diagram
Aufnahme/Wiedergabe-Pegeldiagramm
Diagramme du niveau d'enregistrement/lecture

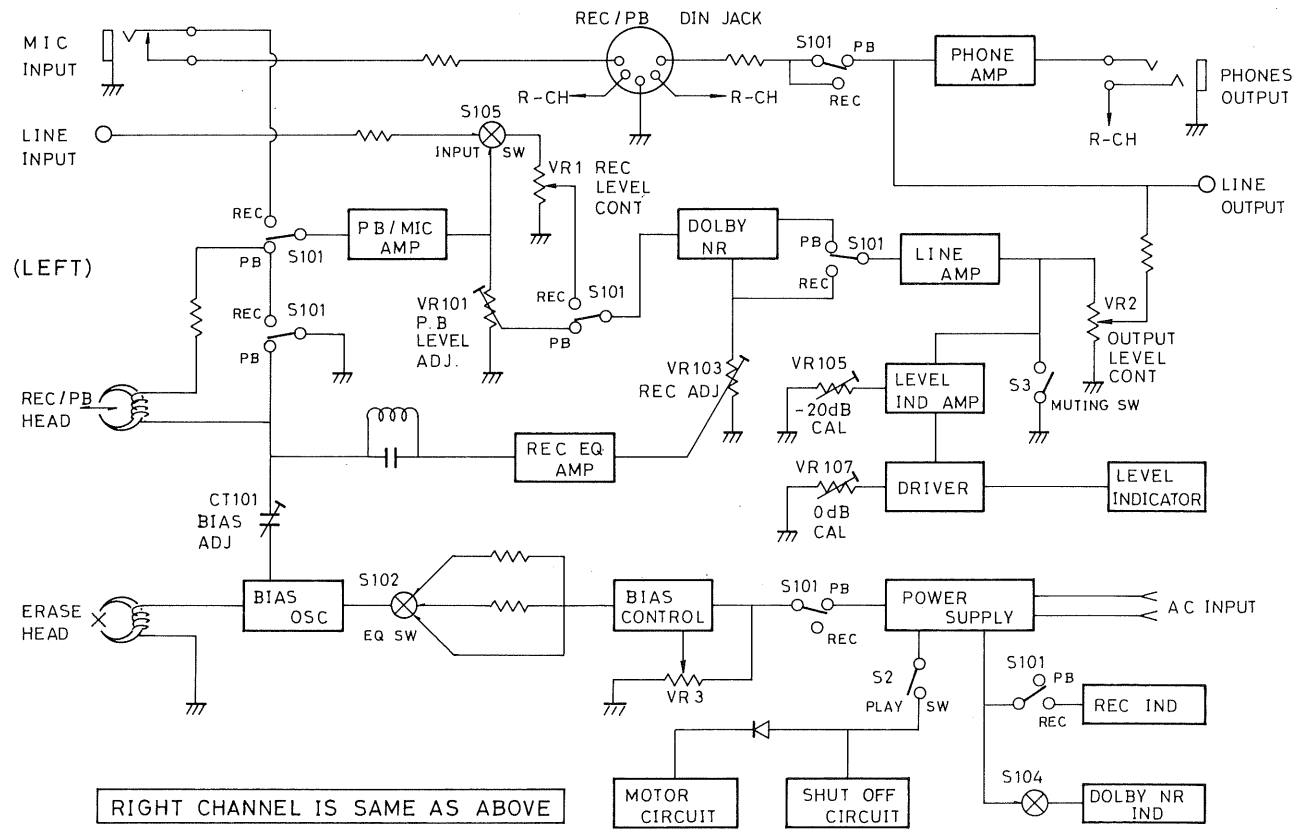
Recording Mode
Aufnahmebetrieb
Mode d'enregistrement



Playback Mode
Wiedergabebetrieb
Mode de lecture



Block Diagram Blockschaltbild Schéma synoptique



- **No Power**
 1. Defective power switch.
 2. Defective DC supply block
 3. Defective power connectio
- **Motor does not Run.**
 1. Defective motor.
 2. Defective servo.
 3. Defective start switch.
- **Distorted Sound**
 1. Rec/PB head dirty.
 2. Rec/PB head magnetized.
 3. Rec/PB head defective.
 4. Defective cassette tape.
- **High Frequency Deteriorated**
 1. PB azimuth adjustment in
 2. Rec/PB head dirty.
 3. Rec/PB head magnetized.
 4. Excessive wow and flutter.
 5. Incorrect tape travel.
 6. Rec/PB head defective.
 7. Cassette tape defective.
- **Excessive Wow and Flutter**
 1. Flywheel assembly defecti
 2. Motor defective.
 3. Defective servo.
 4. Defective drive belt.
 5. Pinch roller assembly defec
 6. Slippage between tape and
 7. Idler pulley defective.
 8. No clearance provided betw
 - flywheel and thrust screw*
 9. Tape counter defective.
 10. Excessive back-tension.
 11. Improper take-up torque.
 12. Defective tape cassette.

*Clearance between them sho be 0.05mm – 0.4mm.
- **Signal to Noise Ratio Deterior**
 1. Rec/PB head magnetized.
 2. Rec/PB head dirty.
 3. Rec/PB head defective.
 4. Defective output amp.
 5. Defective cassette tape
- **Loss of Channel Separation**
 1. Incorrect tape travel.
 2. Rec/PB head defective.
- **Level Variations**
 1. Dirty Rec/PB head.
 2. Defective Rec/PB head.
 3. Rec/PB head misaligned.
 4. Defective cassette tape.
- **Incorrect Tape Travel**
 1. Weak pinch roller pressure.
 2. Capstan defective.
 3. Defective pinch roller.
 4. Rec/PB head misaligned.

● No Power

1. Defective power switch.
2. Defective DC supply block.
3. Defective power connection.

● Motor does not Run.

1. Defective motor.
2. Defective servo.
3. Defective start switch.

● Distorted Sound

1. Rec/PB head dirty.
2. Rec/PB head magnetized.
3. Rec/PB head defective.
4. Defective cassette tape.

● High Frequency Deteriorated

1. PB azimuth adjustment inadequate.
2. Rec/PB head dirty.
3. Rec/PB head magnetized.
4. Excessive wow and flutter.
5. Incorrect tape travel.
6. Rec/PB head defective.
7. Cassette tape defective.

● Excessive Wow and Flutter

1. Flywheel assembly defective.
2. Motor defective.
3. Defective servo.
4. Defective drive belt.
5. Pinch roller assembly defective.
6. Slippage between tape and pinch roller.
7. Idler pulley defective.
8. No clearance provided between flywheel and thrust screw*.
9. Tape counter defective.
10. Excessive back-tension.
11. Improper take-up torque.
12. Defective tape cassette.

*Clearance between them should be 0.05mm – 0.4mm.

● Signal to Noise Ratio Deteriorated

1. Rec/PB head magnetized.
2. Rec/PB head dirty.
3. Rec/PB head defective.
4. Defective output amp.
5. Defective cassette tape

● Loss of Channel Separation

1. Incorrect tape travel.
2. Rec/PB head defective.

● Level Variations

1. Dirty Rec/PB head.
2. Defective Rec/PB head.
3. Rec/PB head misaligned.
4. Defective cassette tape.

● Incorrect Tape Travel

1. Weak pinch roller pressure.
2. Capstan defective.
3. Defective pinch roller.
4. Rec/PB head misaligned.

● Tape Speed Too Fast or Slow

1. Defective cassette tape.
2. Defective motor.
3. Defective servo.

● Tape Does Not Move.

1. Defective cassette tape.
2. Defective motor.
3. Defective servo.
4. Drive belt off.
5. Pinch roller not contacting capstan.
6. Reel hub defective.
7. Defective power connection.
8. Drive belt out of place.

● Recording Cannot Be Made.

1. Rec/PB head defective.
2. Rec/PB head dirty.
3. Record amp defective.
4. Rec interlock switch defective.
5. Safety tab of cassette removed.
6. Head wire broken.
7. Bias OSC defective.
8. Input jack defective.
9. Muting switch defective.

● Playback Cannot Be Made.

1. Rec/PB head dirty.
2. Rec/PB head defective.
3. PB amp defective.
4. Output amp defective.
5. Output jack defective.
6. Muting switch defective.
7. Head wire defective.
8. Dolby NR circuit defective.

● Erasing Cannot Be Made.

1. Erase head defective.
2. Erase head dirty.
3. Bias OSC defective.
4. Wire on head broken.

● Auto-Shut-Off Does Not Work at End of Tape.

1. Stop sensor defective.
2. Auto-shut-off driver defective.
3. Solenoid driver defective.
4. Deck button defective.

● Auto-Shut-Off Works before End of Tape.

1. Stop sensor defective.
2. Auto-shut-off driver defective.
3. Solenoid driver defective.
4. Defective counter.
5. Defective cassette tape.

● Keine Spannung.

1. Defekter Netzschalter.
2. Defektes Netzteil.
3. Netzstecker nicht richtig eingesteckt.

● Keine Spannung am Motor.

1. Defekter Motor.
2. Defekter Servokreis.
3. Defekter Startschalter.

● Verzerrter Ton.

1. Aufnahme-/Wiedergabekopf ist verschmutzt.
2. Aufnahme-/Wiedergabekopf ist magnetisiert.
3. Aufnahme-/Wiedergabekopf ist defekt.
4. Defekte Kassette.

● Schlechte Wiedergabe hoher Frequenzen.

1. Wiedergabe-Azimuth-Einstellung mangelhaft.
2. Aufnahme-/Wiedergabekopf ist verschmutzt.
3. Aufnahme-/Wiedergabekopf ist magnetisiert.
4. Übermäßige Gleichlaufschwankungen.
5. Unrichtiger Bandlauf.
6. Defekter Aufnahme-/Wiedergabekopf.
7. Defekte Kassette.

● Übermäßige Gleichlaufschwankungen.

1. Schwungrad und damit zusammenhängende Teile sind defekt.
2. Defekter Motor.
3. Defekte Servoschaltung.
4. Defekter Antriebsriemen.
5. Andruckrolle und damit zusammenhängende Teile sind defekt.
6. Schlupf zwischen Band und Andruckrolle.
7. Defekte Spannrolle.
8. Kein Spiel zwischen Schwungrad und Preßschraube*.
9. Defektes Bandzählwerk.
10. Übermäßiger Bremszug.
11. Falsches Aufwickeldrehmoment.
12. Defekte Kassette.

* Der Abstand dazwischen sollte zwischen 0,05mm und 0,4mm betragen.

● Verschlechterter Signal-Rauschabstand.

1. Aufnahme-/Wiedergabekopf ist magnetisiert.
2. Aufnahme-/Wiedergabekopf ist verschmutzt.
3. Aufnahme-/Wiedergabekopf ist defekt.
4. Defekter Ausgangsverstärker.
5. Defekte Kassette.

● Verschlechterte Kanaltrennung.

1. Unrichtiger Bandlauf.
2. Aufnahme-/Wiedergabekopf ist defekt.

● Pegelschwankungen

1. Verschmutzter Aufnahme-/Wiedergabekopf.
2. Defekter Aufnahme-/Wiedergabekopf.
3. Nichtfluchtender Aufnahme-/Wiedergabekopf.
4. Defekte Kassette.

● Mangelhafter Bandlauf.

1. Schwacher Druck der Andruckrolle.
2. Defekte Antriebswelle.
3. Defekte Andruckrolle.
4. Nichtfluchtender Aufnahme-/Wiedergabekopf.

● Bandgeschwindigkeit ist zu hoch oder zu niedrig.

1. Defekte Kassette.
2. Defekter Motor.
3. Defekter Servokreis.

● Das Band läuft nicht.

1. Defekte Kassette.
2. Defekter Motor.
3. Defekter Servokreis.
4. Antriebsriemen ist abgesprungen.
5. Andruckrolle berührt die Antriebswelle nicht.
6. Defekte Bandspulennarbe.
7. Defekter Netzanschluß.
8. Antriebsriemen sitzt nicht richtig.

● Aufnahme ist nicht möglich.

1. Aufnahme-/Wiedergabekopf ist defekt.
2. Aufnahme-/Wiedergabekopf ist verschmutzt.
3. Aufnahmeverstärker ist defekt.
4. Aufnahme-Freigabeschutzschalter ist defekt.
5. Löschschiene der Kassette ist entfernt.
6. Anschlußdraht am Tonkopf ist unterbrochen.
7. Vormagnetisierungszosillator ist defekt.
8. Defekte Eingangsbuchse.
9. Defekter Muting-Schalter.

● Wiedergabe ist nicht möglich.

1. Aufnahme-/Wiedergabekopf ist verschmutzt.
2. Aufnahme-/Wiedergabekopf ist defekt.
3. Wiedergabeverstärker ist defekt.
4. Ausgangsverstärker ist defekt.
5. Defekte Ausgangsbuchse.
6. Defekter Muting-Schalter.
7. Anschlußdraht am Tonkopf ist unterbrochen.
8. Dolby NR-Kreis ist defekt.

● Löschen ist nicht möglich.

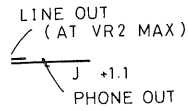
1. Defekter Löschkopf.
2. Verschmutzter Löschkopf.
3. Vormagnetisierungszosillator ist defekt.
4. Anschlußdraht am Kopf ist unterbrochen.

● Die Abschaltautomatik arbeitet am Bandende nicht.

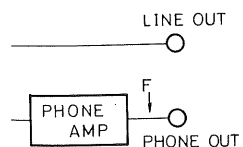
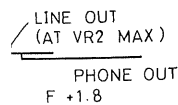
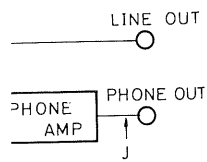
1. Defekter Stoppsensor.
2. Abschaltautomatik-Treiber ist defekt.
3. Solenoid-Treiber ist defekt.
4. Defekte Funktionstaste.

● Die Abschaltautomatik arbeitet vor dem Bandende.

1. Defekter Stoppsensor.
2. Abschaltautomatik-Treiber ist defekt.
3. Solenoid-Treiber ist defekt.
4. Defektes Bandzählwerk.
5. Defekte Kassette.



2.7



Guide de dépannage

- **Pas d'arrivée de courant**
 1. Interrupteur général défectueux.
 2. Bloc d'alimentation DC défectueux.
 3. Raccordement de puissance défectueux.
- **Moteur ne fonctionnant pas.**
 1. Moteur défectueux.
 2. Servo-moteur défectueux.
 3. Commande d'entraînement défectueux.
- **Son déformé**
 1. Tête d'enregistrement/lecture sale.
 2. Tête d'enregistrement/lecture magnétisée.
 3. Tête d'enregistrement/lecture défectueuse.
 4. Bande magnétique défectueuse.
- **Haute fréquence détériorée.**
 1. Réglage de l'azimut d'enregistrement/reproduction incorrect.
 2. Tête d'enregistrement/lecture sale.
 3. Tête d'enregistrement/lecture magnétisée.
 4. Pleurage et scintillement excessifs.
 5. Trajectoire de bande magnétique incorrecte.
 6. Tête d'enregistrement/lecture défectueuse.
 7. Bande magnétique défectueuse.
- **Pleurage et scintillement excessifs.**
 1. Assemblage défectueux du volant.
 2. Moteur défectueux.
 3. Servo-moteur défectueux.
 4. Courroie de commande défectueuse.
 5. Assemblage du galet presseur défectueux.
 6. Glissement entre la bande et le galet presseur.
 7. Poulie dewatte défectueuse.
 8. Dégagement non équipé entre le volant et la vis enfoncée.*
 9. Compteur de bande magnétique défectueux.
 10. Tension-arrière défectueuse
 11. Torque réceptrice sale.
 12. Bande magnétique défectueuse.

* Le dégagement entre eux doit être entre 0,05 – 0,4mm.
- **Rapport signal/bruit détérioré.**
 1. Tête d'enregistrement/lecture sale.
 2. Tête d'enregistrement/lecture magnétisée.
 3. Tête d'enregistrement/lecture défectueuse.
 4. Amplificateur de sortie défectueux.
 5. Bande magnétique défectueuse.
- **Perte de séparation des canaux.**
 1. Trajectoire de bande magnétique incorrecte.
 2. Tête d'enregistrement/lecture défectueuse.
- **Variations de niveaux.**
 1. Tête d'enregistrement/lecture sale.
 2. Tête d'enregistrement/lecture défectueuse.
 3. Tête d'enregistrement/lecture mal alignée.
 4. Bande magnétique défectueuse.
- **Trajectoire de bande incorrecte.**
 1. Pression du galet presseur faible.
 2. Cabestan défectueux.
 3. Galet presseur défectueux.
 4. Tête d'enregistrement/lecture mal alignée.
- **Vitesse trop rapide ou trop lente.**
 1. Bande magnétique défectueuse.
 2. Moteur défectueux.
 3. Servo-moteur défectueux.
- **Bande magnétique bloquée.**
 1. Bande magnétique défectueuse.
 2. Moteur défectueux.
 3. Servo-moteur défectueux.
 4. Courroie de commande OFF.
 5. Galet presseur non raccordé avec le cabestan.
 6. Pivot de bobine défectueux.
 7. Raccordement de puissance défectueux.
 8. Courroie de commande sortie de la gorge de poulie.
- **Enregistrement impossible.**
 1. Tête d'enregistrement/lecture sale.
 2. Tête d'enregistrement/lecture défectueuse.
 3. Amplificateur d'enregistrement défectueux.
 4. Interrupteur d'enclenchement d'enregistrement défectueux.
 5. Plaquette de sécurité déplacée.
 6. Fibre métallique de la tête cassée.
 7. Polarisation défectueuse OSC.
 8. Prise d'entrée défectueuse.
 9. Interrupteur de muting défectueux.
- **Lecture impossible.**
 1. Tête d'enregistrement/lecture sale.
 2. Tête d'enregistrement/lecture défectueuse.
 3. Amplificateur d'enregistrement/reproduction défectueux.
 4. Amplificateur de sortie défectueux.
 5. Prise de sortie défectueuse.
 6. Interrupteur de muting défectueux.
 7. Fibre métallique de la tête défectueuse.
 8. Circuit de réduction du bruit Dolby défectueux.
- **Effacement impossible.**
 1. Tête d'effacement défectueuse.
 2. Tête d'effacement sale.
 3. Polarisation défectueuse OSC.
 4. Fibre métallique de la tête cassée.
- **Arrêt automatique en fin de bande magnétique ne fonctionnant pas.**
 1. Détecteur d'arrêt défectueux.
 2. Commande d'arrêt automatique défectueuse.
 3. Commande électronique à solénoïde défectueuse.
 4. Bouton de cassette défectueux.
- **Arrêt automatique fonctionnant avant la fin de bande magnétique.**
 1. Détecteur d'arrêt défectueux.
 2. Commande d'arrêt automatique défectueuse.
 3. Commande électronique à solénoïde défectueuse.
 4. Compteur défectueux.
 5. Bande magnétique défectueuse.

Specifications Technische Daten

Rec/PB Head . . . . .	.SC (sendust core)
Erase Head. . . . .	.Double gap ferrite core
Motor. . . . .	.Electrically governors controlled, DC type
Track . . . . .	.4-track/2-channel
Tape Speed . . . . .	.4.76cm/sec ±1.5%
Tape Speed Variation. . . . .	.±1.5%
Take-up Torque. . . . .	.30 to 60 g-cm
FF/Rew Torque. . . . .	.70 to 120 g-cm
Wow and Flutter . . . . .	.0.1% (DIN) 0.045% (WRMS)
Fast Wind Time . . . . .	.Approx. 90 seconds (C-60)
Input Sensitivity/Impedance (at 1,000 Hz)	
MIC. . . . .	.0.4mV/20,000 ohms
LINE . . . . .	.140mV/50,000 ohms
DIN. . . . .	.0.1mV/1,000 ohms
Frequency Response* (MPX Filter at OFF)	
Normal, LH Tape . . . . .	.30 to 17,000Hz ±3dB
Chromium (CrO ₂) Tape . . . . .	.30 to 19,000Hz ±3dB
Metal Tape. . . . .	.30 to 19,000Hz ±3dB
Signal to Noise Ratio* (Chromium)	
Dolby NR OFF . . . . .	.More than 56dB

Caractéristiques

Dolby NR ON . . . . .	.More than 64dB
Output Level* : LINE . . . . .	.980mV (output control at max position)
Level Meter Setting . . . . .	.Dolby Level 0±1 VU (MTT-150)
Dolby Noise Reduction Effect . . . . .	.8.5dB min (CCIR WTD)
Bias Adjust Level . . . . .	.±5% (Normal, Chromium, Metal Tape)
Erase Capability (1,000Hz, Recording at 10dB or over). . . . .	.65dB min
Power Requirements . . . . .	.100, 120, 220 or 240V, 50/60Hz
Power Consumption . . . . .	.10 watts max
Notes:	
1. Data with asterisk were obtained by using the following tapes.	
a. Normal Tape: AHF, Sony	
b. Chromium (CrO ₂) Tape: JHF, Sony	
c. Metal Tape: AC701 (MA), TDK	
2. Specifications and design subject to possible modification without notice.	

Repair Parts List

Reparaturteilliste

Liste des pièces de rechange

Schematic Location	Description	Part No.
TRANSISTORS, DIODES AND IC'S		
Q101, 102	2SC1222 (E)	301201156
Q103, 104, 105	2SC732BL	092023208
106, 107, 108		
111, 112, 113		
114, 119, 120		
Q109, 110, 115	2SC509 (Y)	092023209
116, 117		
Q118	2SD235 (R)	092023212
Q1, 2	2SC373	092023204
D101, 102, 103	1N60 (Ge)	300111003
104		
D105, 106, 113	10E2 or	090153322
114	1N4003	300919026
D107, 108, 109	10E1 or	092023205
110, 3, 4	1N4003	300919026
D111, 112	Varistor, MV-11	092023231
D115	1S1555	092023216
D1	GL-9PG2, Dolby NR Ind	300414035
D2	GL-9PR2, Rec Ind	300414036
TD1	Thyristor, 2P1M or SF1R3B41	092023202
ZD101	HZ-24, Zener, 24V, 0.5W	092023213
ZD102, 103	HZ-6A1L, Zener, 6V, 0.5W	300313049
IC101, 102	LM1011N, Dolby NR or NE645B	303452224 303452225
IC103, 104	BA658, FL Meter Driver	303452226

Schematic Location	Description	Part No.
VARIABLE RESISTOR		
VR101, 102	50KB, Playback, Record Level Adj	510502154
103, 104		
VR105, 106	10KB, Level Ind, Cal	510502138
107, 108		
COILS AND TRANSFORMER		
L101, 102	Inductor, 2.7mH	092022123
L103, 104	Inductor, 3.3mH	092022122
L105, 106	Inductor, 4.7mH	092022109
L107, 108	Inductor, 27mH	092022107
T101	Bias Osc Trans	092022121
OTHERS		
S101	Switch, Slide, REC/PB	092026546
CT101, 102	Capacitor, Trimmer, 150pF max	092024001
E103, 104	MPX Filter	092022124
	FL Meter, Level Ind	360201111
F101	Fuse, 315mAT, Midget (Europe only)	345952031
F102	Fuse, 630mAT, Midget (Europe only)	345952063
F103	Fuse, 160mAT, Midget (Europe only)	345952016
	Fuse Holder	092026553

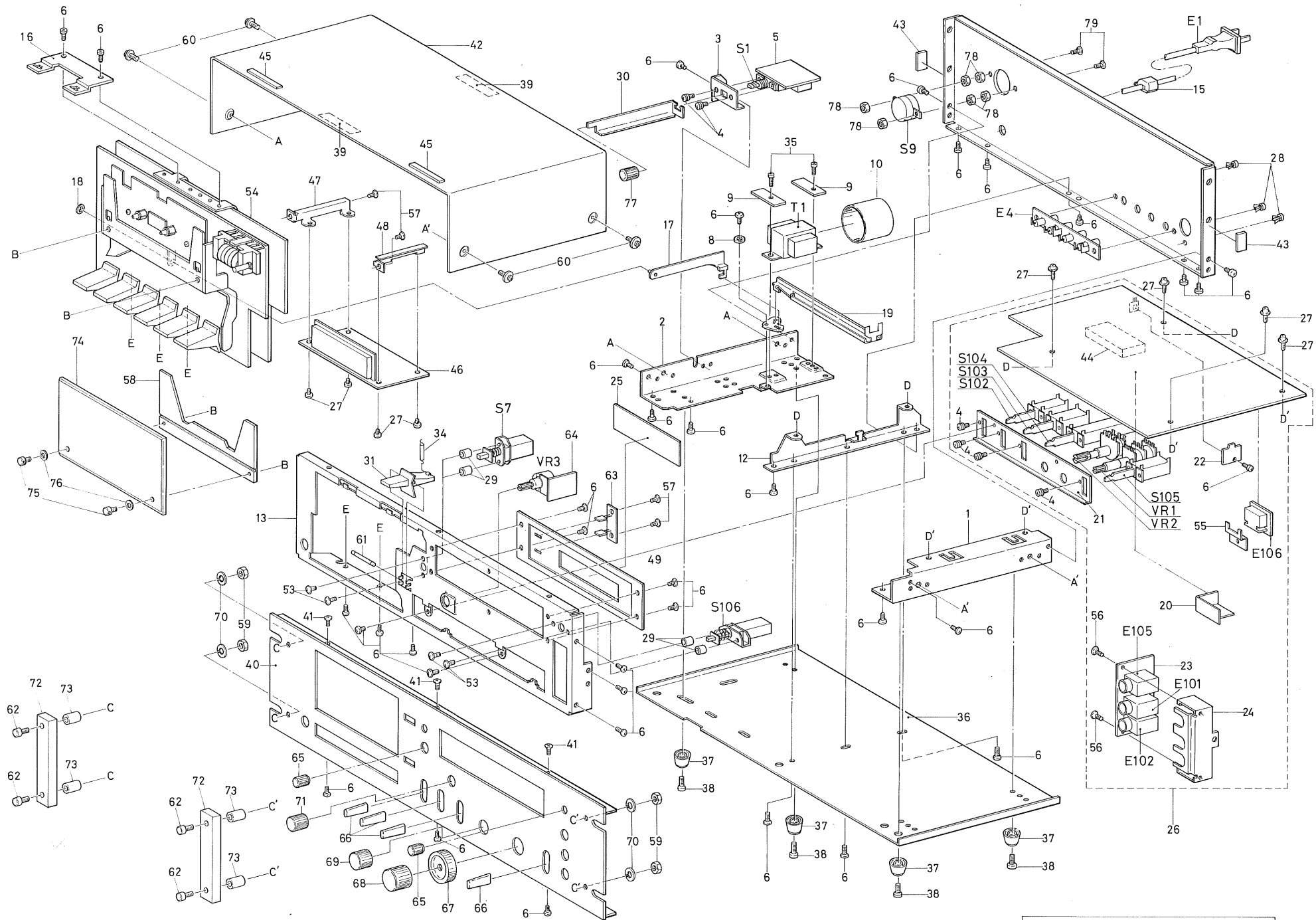
- | | |
|-----|-------------------|
| No. | |
| 1. | Bracket, Side R |
| 2. | Bracket, Side L |
| 3. | Bracket, Power |
| 4. | Screw, M3 x 6mm |
| 5. | PC Board Ass'y, " |
| 6. | Screw, 3 x 6mm |
| 7. | Support, Record |
| 8. | Spacer |
| 9. | Support, Transf |
| 10. | Shield, Magnetic |
| 11. | Not Used |
| 12. | Bracket, Center |
| 13. | Chassis, Front |
| 14. | Cover, Rear |
| 15. | Stopper, Cord |
| 16. | Support, Mech |
| 17. | Lever, Record A |
| 18. | Washer C, φ2.3 |
| 19. | Ass'y, Record L |
| 20. | Shield, PB Amp |
| 21. | Bracket, Switch |
| 22. | Bracket, Heat S |
| 23. | PC Board, Mic |
| 24. | Bracket, Mic Jar |
| 25. | Filter, Acryl (fo |
| 26. | Ass'y, Master PC |
| 27. | Screw, 3 x 6mm |
| 28. | Rivet, Push |
| 29. | Spacer, Memory |
| 30. | Lever, Power Sv |
| 31. | Knob, Timer |
| 32. | Not Used |
| 33. | Not Used |
| 34. | Spring, Timer K |
| 35. | Screw, 3 x 8mm |
| 36. | Cover, Bottom |
| 37. | Pad, Trannleg |
| 38. | Screw, 4 x 12m |
| 39. | Pad, Cushion |
| 40. | Ass'y, Front Par |
| 41. | Screw, 3 x 6mm |
| 42. | Cover, Top |
| 43. | Cushion, Rubbe |
| 44. | Shield, OSC |
| 45. | Pad, Cushion |
| 46. | PC Board Ass'y, |
| 47. | Bracket A, FL M |
| 48. | Bracket B, FL M |
| 49. | Frame, FL Metr |
| 50. | Not Used |
| 51. | Not Used |
| 52. | Not Used |
| 53. | Screw, M3 x 10 |
| 54. | Cassette Mech A |
| 55. | Support, DIN S |
| 56. | Screw, 3 x 5mm |
| 57. | Screw, 3 x 6mm |
| 58. | Panel, Door |
| 59. | Nut, M6, Hex, I |
| 60. | Screw, 4 x 8mm |
| 61. | Shaft, Timer K1 |
| 62. | Screw, M6 x 40 |
| 63. | PC Board Ass'y |
| 64. | PC Board Ass'y |
| 65. | Button, Memor |
| 66. | Knob, Lever Sv |

Disassembly Diagram

Illustration des Auseinanderbaus

Schéma de démontage

No.	Description	Part No.
1.	Bracket, Side R	092021046
2.	Bracket, Side L	092021101
3.	Bracket, Power Switch	092021102
4.	Screw, M3 x 6mm, w/SPW	713203006
5.	PC Board Ass'y, Power Switch	092021103
	" " " (Europe)	092021104
6.	Screw, 3 x 6mm, Tap-tight	765203006
7.	Support, Record Lever	092021051
8.	Spacer	092027651
9.	Support, Transformer	092027652
10.	Shield, Magnetic Inside	092021105
11.	Not Used	-
12.	Bracket, Center	092021047
13.	Chassis, Front	092021106
14.	Cover, Rear	092021107
	" " " (Europe)	092021108
15.	Stopper, Cord	675201111
	" " " (Europe)	675201114
16.	Support, Mech Ass'y	092021109
17.	Lever, Record A	092021059
18.	Washer C, φ2.3	770500057
19.	Ass'y, Record Lever B	092021062
20.	Shield, PB Amp	092021110
21.	Bracket, Switch	092021063
22.	Bracket, Heat Sink	092021064
23.	PC Board, Mic Jack	092021111
24.	Bracket, Mic Jack	092021066
25.	Filter, Acryl (for FL Meter)	092021112
26.	Ass'y, Master PC Board	092021113
	" " " (Europe)	092021114
27.	Screw, 3 x 6mm, Tapping	723203006
28.	Rivet, Push	770911147
29.	Spacer, Memory Switch Mtg, etc.	092027627
30.	Lever, Power Switch	092021115
31.	Knob, Timer	092021116
32.	Not Used	-
33.	Not Used	-
34.	Spring, Timer Knob	092026561
35.	Screw, 3 x 8mm, Tap-tight	765203008
36.	Cover, Bottom	092021078
37.	Pad, Trannleg	092026541
38.	Screw, 4 x 12mm, Tap-tight	765204012
39.	Pad, Cushion	092029802
40.	Ass'y, Front Panel	092021117
	" " " (BLACK)	092021138
41.	Screw, 3 x 6mm, Tap-tight, Countersunk	761203006
42.	Cover, Top	092021118
43.	Cushion, Rubber	092029804
44.	Shield, OSC	092021119
45.	Pad, Cushion	092029803
46.	PC Board Ass'y, FL Meter	092021120
47.	Bracket A, FL Meter PC Board Mtg	092021121
48.	Bracket B, FL Meter PC Board Mtg	092021122
49.	Frame, FL Meter	092021123
50.	Not Used	-
51.	Not Used	-
52.	Not Used	-
53.	Screw, M3 x 10mm	703203010
54.	Cassette Mech Ass'y	900111030
	" " " (for Black Type)	900111031
55.	Support, DIN Socket	092021085
56.	Screw, 3 x 5mm, Tapping	723203005
57.	Screw, 3 x 6mm, Tapping	723203006
58.	Panel, Door	092021124
	" " " (BLACK)	092021125
59.	Nut, M6, Hex, Handle Mtg	770402204
60.	Screw, 4 x 8mm, Tap-tight, (BLK) w/FW	092027653
61.	Shaft, Timer Knob	092026562
62.	Screw, M6 x 40mm, Handle Mtg.	770911209
63.	PC Board Ass'y, LED Ind	092021126
64.	PC Board Ass'y, Bias Control	092021127
65.	Button, Memory, Indicator Switch	092021070
	" " " (BLACK)	092021131
66.	Knob, Lever Switch, Bias, EQ, etc.	092021068
	" " " (BLACK)	092021132

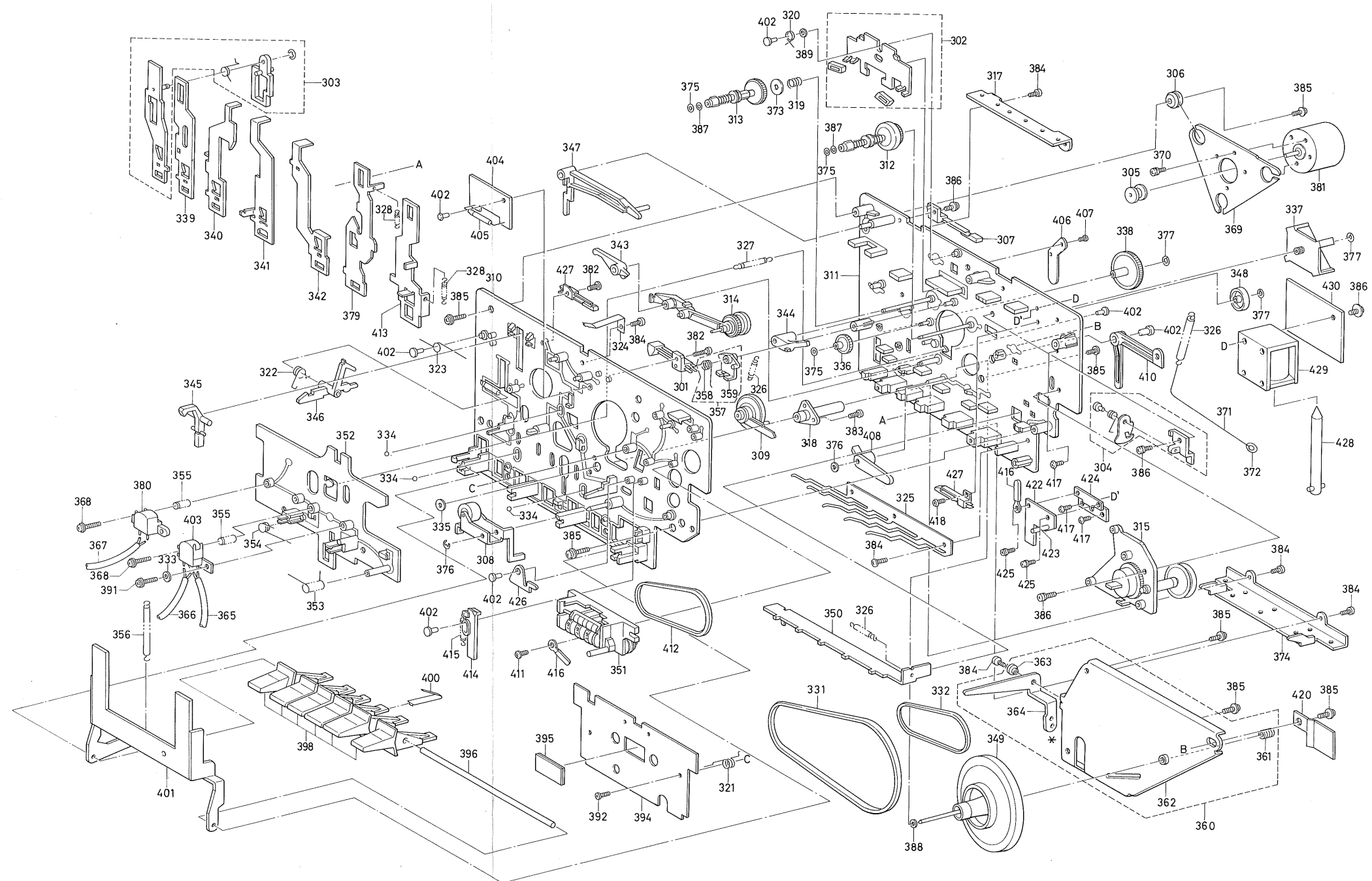


DISASSEMBLY DIAGRAM RD-2200M

67.	Knob, Rec Level Control (R-CH)	092021074
	" " " (BLACK)	092021133
68.	Knob, Rec Level Control (L-CH)	092021073
	" " " (BLACK)	092021134
69.	Knob, Bias Control	092021071
	" " " (BLACK)	092021135
70.	Spring Washer, φ6, Handle Mtg	770500012
71.	Knob, Output Level Control	092021072
	" " " (BLACK)	092021136
72.	Bracket, Handle	670101118
	" " " (BLACK)	670101121
73.	Support, Handle Mtg	770911216
	" " " (BLACK)	770911247
74.	Frame, Door	092021128
75.	Screw, 4 x 12mm, Special, Door Frame Mtg.	092027628
76.	Rubber Washer, φ4, Door Frame Mtg	092027629
77.	Button, Push Switch, Power	092021129
	" " " (BLACK)	092021137
78.	Nut, M3, Hex (European Type Only)	770402201
79.	Screw, M3 x 12mm, (BLACK) (European Type Only)	703223012

S1	Switch, Power	092026563
	" " " (Europe)	092026564
S102	Switch, Lever, Bias	092026542
S103	Switch, Lever, EQ	092026566
S104	Switch, Lever, Dolby NR/MPX	092026544
S105	Switch, Lever, Input	092026565
S106	Switch, Push, Indicator	092026567
S7	Switch, Push, Memory	092026549
S9	Voltage Selector (European Type Only)	092026548
T1	Transformer, Power	092022125
	" " " (Europe)	092022126
VR1	Rec Level Control	092025412
VR2	Output Level Control	092025401
VR3	Bias Control	092025411
E1	AC Cord	796301115
	" " " (Europe)	796301148
E4	Pin Jack Board, 4P, LINE IN/OUT	092026553
E101,102	Jack, Mic	092026552
E105	Jack, Headphone	092026551
E106	Jack, 5P, DIN	092026550

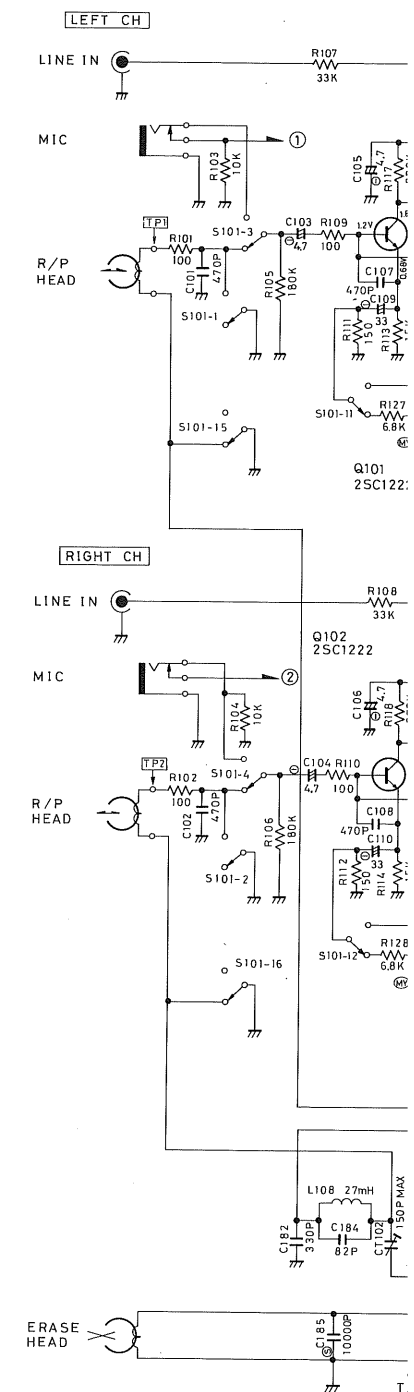
No.	Description	Part No.
301.	Switch, Double Leaf	092026519
302.	Ass'y, Brake w/Brake Pad	092021141
303.	Ass'y, Eject Lever	092021142
304.	Ass'y, Pause Cam	092021143
305.	Pulley, Motor	092026581
306.	Cushion, Motor	092026582
307.	Switch, Leaf	092026583
308.	Ass'y, Pinch Roller	092021144
309.	Ass'y, Play Idler	092021145
310.	Ass'y, Chassis A	092021146
311.	Ass'y, Chassis B	092021147
312.	Ass'y, Reel, Take-up	092026584
313.	Ass'y, Reel, Supply	092026585
314.	Ass'y, Center Idler	092021148
315.	Ass'y, Timer Kick	092021149
316.	Not Used	-
317.	Bracket, Deck-B	092021150
318.	Housing, Capstan	092021151
319.	Spring, Back Tension	092026586
320.	Spring, Brake	092026587
321.	Spring, Play Idler	092026588
322.	Spring, Door Stopper	092026589
323.	Spring, Rec Sensor	092026590
324.	Spring, Cassette H	092026591
325.	Spring, Lever	092026592
326.	Spring, Pull	092026593
327.	Spring, Pull	092026594
328.	Spring, Pull	092026595
329.	Not Used	-
330.	Not Used.	-
331.	Belt, Main	092026596
332.	Belt, Sub	092026597
333.	Washer, $\phi 3.3 \times \phi 6 \times t0.5$	090157342
334.	Ball, Steel, $\phi 2$	651010113
335.	Washer, Oil Seal	092027614
336.	Gear, Rew	092026598
337.	Gear, Drive	092026599
338.	Gear, Drive	092026600
339.	Lever, Rec	092021152
340.	Lever, Rew	092021153
341.	Lever, Play	092021154
342.	Lever, F.F.	092021155
343.	Arm, Review	092021156
344.	Arm, Rec Stopper	092021157
345.	Arm, Rec Sensor	092021158
346.	Arm, Door Stopper	092021159
347.	Arm, Switch	092021160
348.	Pulley, Idler	092026601
349.	Flywheel, Capstan	092026602
350.	Plate, Lock	092021161
351.	Tape Counter	092026603
352.	Base, Head	092021162
353.	Spring, Pinch Roller	092026604
354.	Spring, Head Base	092026605
355.	Spring, Azimuth	092026606
356.	Spring, Pull	092026607
357.	Ass'y, Arm F.F.	092021163
358.	Spring, F.F. Arm	092026608
359.	Arm, F.F.	092021164
360.	Ass'y, Bracket, Flywheel	092021165
361.	Screw, Bearing	092027661
362.	Bracket, Flywheel	092021166
363.	Spacer, Arm	092027662
364.	Arm, Rec	092021167
365.	CW Shield (GRY), 270mm	092027601
366.	CW Shield (BRN), 250mm	092027602
367.	CW Shield (BLK), 250mm	092027603
368.	Screw, M2 x 10mm	713202010
369.	Bracket, Motor	092021168
370.	Screw, M2.6 x 4mm, w/SPW	713202604
371.	Dial Cord	092027665
372.	Washer $\phi 4.1 \times \phi 6.5 \times t0.5$	092027666
373.	Washer, Slide	092027667
374.	Bracket, Support-A	092021169
375.	Washer, Lock	092027604



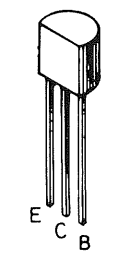
376.	Washer, Lock	092027668
377.	Washer, Lock	092027669
378.	Pulley, Counter	092026609
379.	Ass'y, Rev Lever, Pause	092021170
380.	Erase Head	092022128
381.	Motor	092022129
382.	Screw, M2.6 x 10mm	713202610
383.	Screw, 3 x 5mm, Tap-tight	763203005
384.	Screw, 3 x 6mm, Tap-tight	763203006
385.	Screw, 3 x 14mm, Tapping, (WH)	092027671
386.	Screw, M3 x 6mm, F-lock	713203006
387.	Washer, STW	092027672
388.	Washer, $\phi 2.6 \times \phi 4.7 \times t0.5$, PS	090157329
389.	Washer	092027673
390.	Not Used	-
391.	Screw, M2 x 10mm	713202010
392.	Screw, M2.6 x 4mm, (Ni), Dust Cover Mtg	703212604
	" " (BLZ), "	703222604
393.	Not Used	-
394.	Cover, Dust	092021171
	" " (BLACK)	092021174
395.	Lens, Dust Cover	092021172
396.	Shaft, Function Knob	092026610

397.	Not Used	-
398.	Knob, Function	092021173
399.	Not Used	-
400.	Spring Knob	092026616
401.	Ass'y, Door Frame	092021175
402.	Rivet	092027676
403.	REC/PB Head	092022127
404.	Ass'y, Lamp PC Board	092021176
405.	Lamp, Blue	092023201
406.	Spring, Shaft Hold	092026611
407.	Screw, 2.6 x 8mm, Tapping	723202608
408.	Arm, Cue	092021178
409.	Spring, Counter	092026617
410.	Arm, Plunger	092021179
411.	Screw, Tapping	092027678
412.	Belt, Counter	092026523
413.	Lever, Timer	092021180
414.	Arm, Timer	092021181
415.	Spring, Pull	092026612
416.	Lug, Wrap-around	092027679
417.	Screw, M2.6 x 8mm	713202608
418.	Screw, M2 x 4mm	713202004
419.	Not Used	-

420.	Bracket, Cover Pin	092021182
421.	Ass'y, Magnet	092021183
422.	PC Board, Reed SW	092021184
423.	Reed Switch	092026613
424.	Bracket, Reed SW PC Board Mtg	092021185
425.	Screw, M3 x 5mm	092027682
426.	Arm, Lock	092021186
427.	Switch, Leaf	092026614
428.	Ass'y, Plunger	092026615
429.	Solenoid, DC	092022130
430.	Ass'y, Shut-off PC Board	092021187

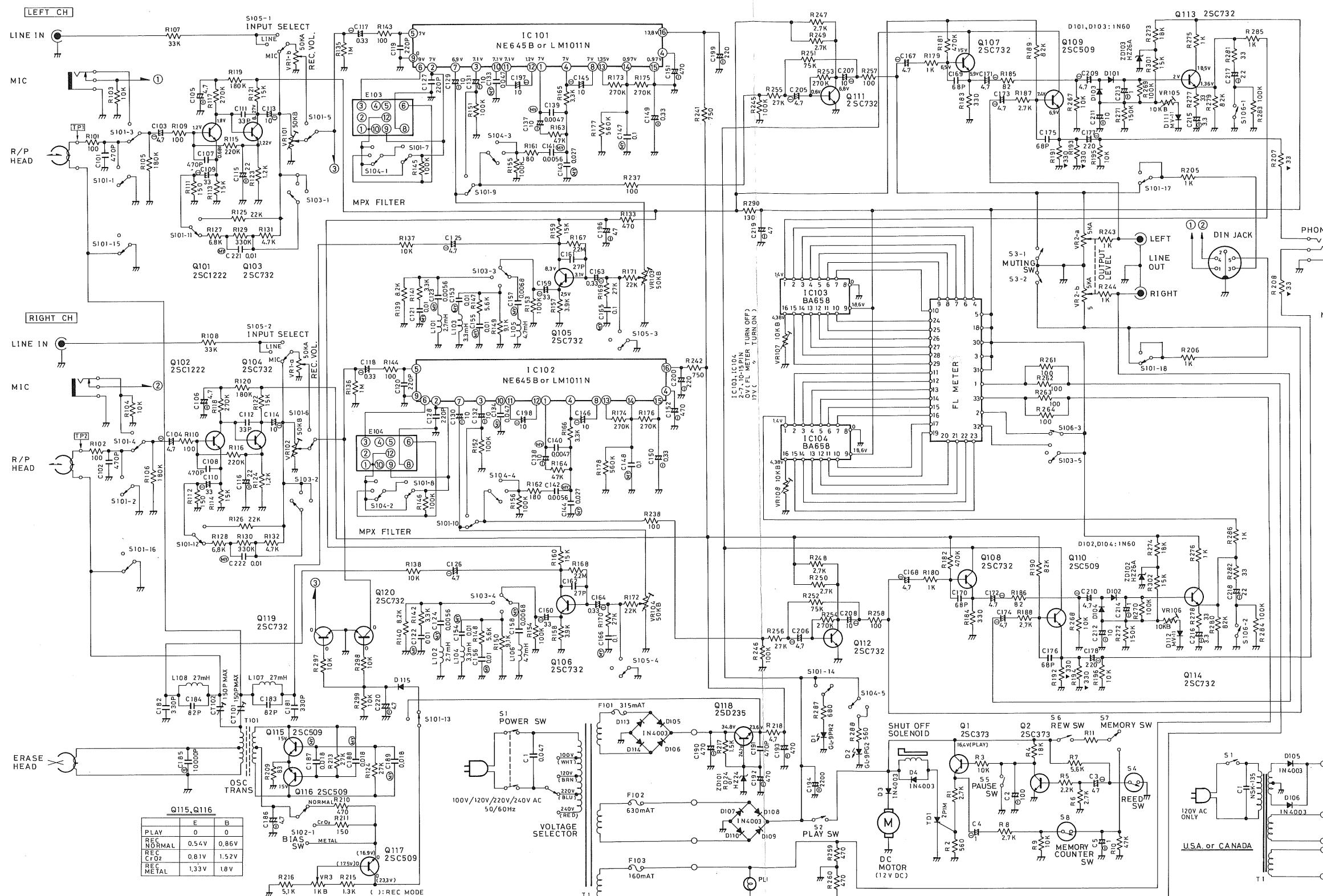
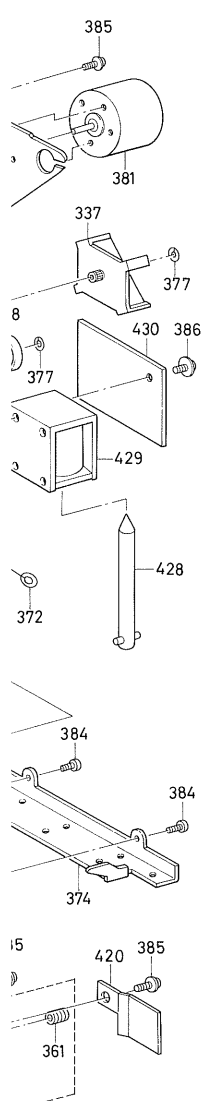


Q115, Q116		
	E	B
PLAY	0	0
REC NORMAL	0.54V	0.8V
REC CrO2	0.81V	1.5V
REC METAL	1.33V	1.8V

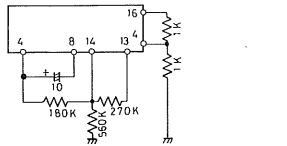


2SC1222

Schematic Diagram Schaltungsschema Diagramme schématique



- NOTES**
- 1) S101-1~S101-14 RECORD PLAY MODE SW. (PLAY POSITION)
 - 2) S102-1 BIAS SW. (NORMAL POSITION)
 - 3) S103-1~S103-6 EQ (NORMAL/CROZ/METAL) SW. NORMAL POSITION
 - 4) S104-1~S104-4 INPUT SELECT & LINE MUTE SW. (MIC/LINE/LINE MUTE) MIC POSITION (NR & MPX OFF/NR & MPX ON/NR ON & MPX OFF) NR & MPX OFF POSITION
 - 5) S105-1~S105-4 INPUT SELECT & LINE MUTE SW. (MIC/LINE/LINE MUTE) MIC POSITION
 - 6) S106-1~S106-3 PEAK VU SW. (VU POSITION)
 - 7) THE FOLLOWING PARTS WILL BE CHANGED WHEN DOLBY IC101-102 ARE REPLACED FROM LM1011N TO NE645B



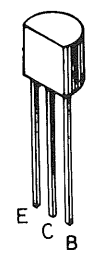
	NE 645 B	LM1011N
R229, 230	180K - 1/4W	NOT USED
R231~234	1K - 1/2W	NOT USED
C145, 146	NOT USED	10
R173, 174	NOT USED	270K
R177, 178	NOT USED	560K

8) THIS SCHEMATIC PARTS WILL BE CHANGED WHEN DOLBY LAB'S RECOMMENDATION MAKES IT NECESSARY.

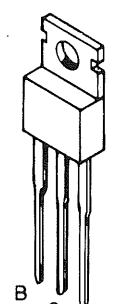
- 092021182
- 092021183
- 092021184
- 092026613
- 092021185
- 092027682
- 092021186
- 092026614
- 092026615
- 092022130
- 092021187

Q115, Q116

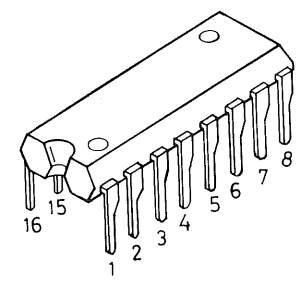
	E	B
PLAY	0	0
REC NORMAL	0.54V	0.86V
REC C102	0.81V	1.52V
REC METAL	1.33V	1.8V



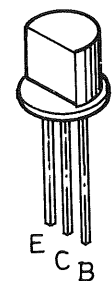
2SC1222



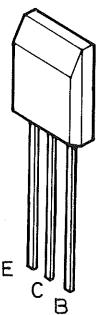
2SD235



NE645B
LM1011N
BA658



2SC373
2SC732



2SC509

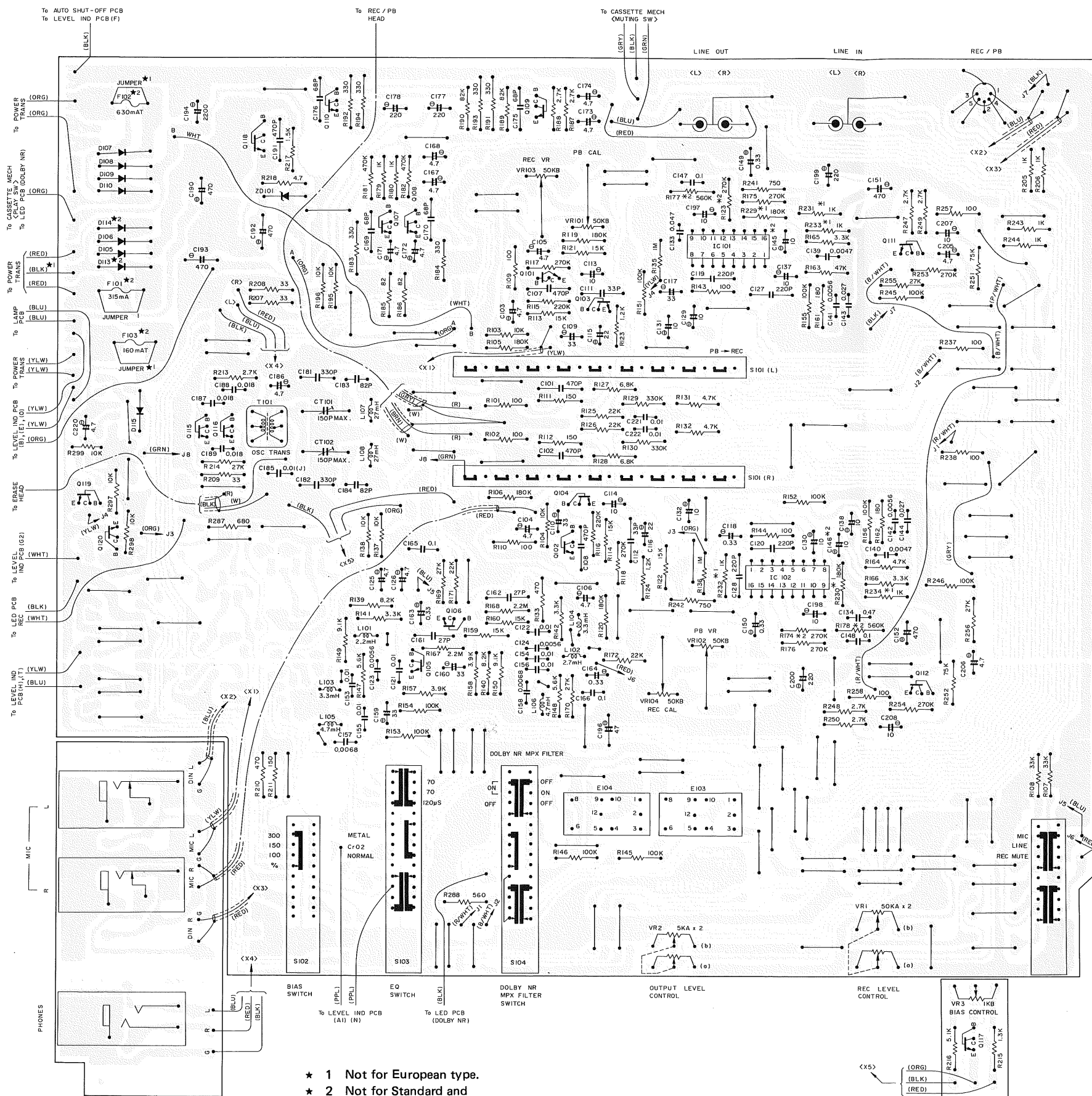
Circuit Board Diagrams / Bestückungspläne / Diagrammes des plaquettes de circuits imprimés

MASTER CIRCUIT BOARD HAUPTLEITERPLATTE CIRCUIT PRINCIPAL

BIAS CONTROL CIRCUIT VORMAGNETISIERUNGSKREIS CIRCUIT DU CONTRÔLE DE PORALISATION

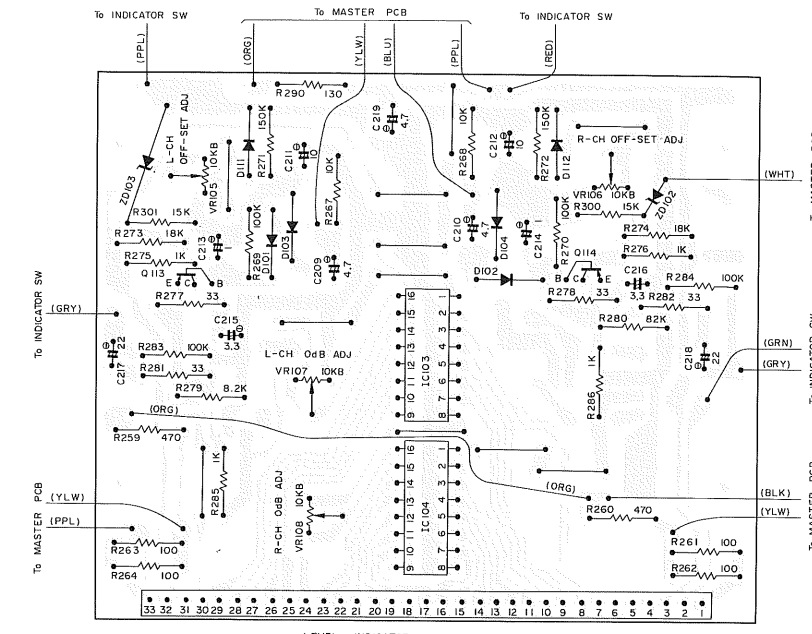
JACK CIRCUIT BOARD BUCHSEN-LEITERPLATTE CIRCUIT DE LA PRISE

LEVEL INDICATOR DRIVER CIRCUIT TREIBER DER PEGELANZEIGE CIRCUIT DE COMMANDE DE L'INDICATEUR DE NIVEAU

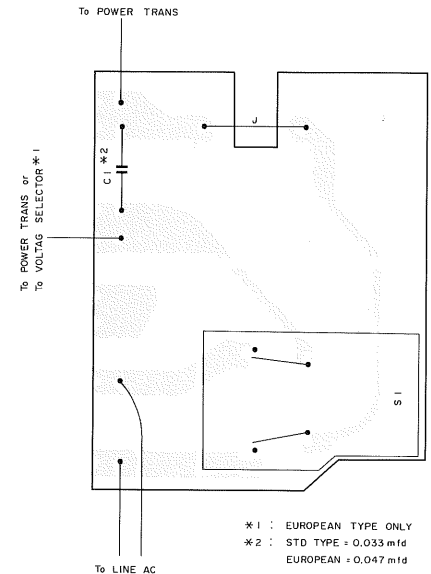


- * 1 Not for European type.
- * 2 Not for Standard and Canadian types.

Note: Resistor and capacitor marked *1 or *2 differ depending on kinds of IC101 and IC102.
When LM1011N is used: components marked *1 are not used.
When NE645 is used: components marked *2 are not used.

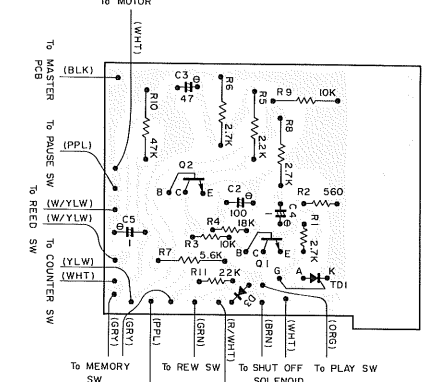


POWER SWITCH CIRCUIT NETZSCHALTERKREIS CIRCUIT DE L'INTERRUPTEUR DE PUISSANCE

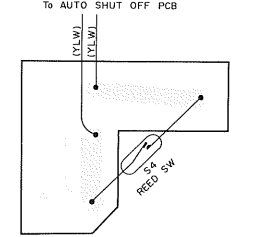


- * 1 : EUROPEAN TYPE ONLY
- * 2 : STD TYPE + 0.033 mfd
EUROPEAN + 0.047 mfd

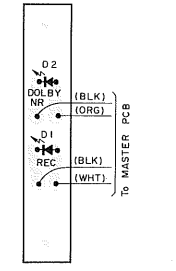
AUTO SHUT-OFF CIRCUIT KREIS DER ABSCHALTAUTOMATI CIRCUIT D'ARRET AUTOMATIQUE



REED SWITCH CIRCUIT KREIS DES REED-SCHALTERS CIRCUIT DE L'INTERRUPTEUR RE



LED CIRCUIT LED-KREIS CIRCUIT LED



PILOT LAMP CIRCUIT KREIS DER KONTROLLAMPE CIRCUIT DE LA LAMPE-TEMOIN

