ORDER NO. TSD-8905-346

Service Manual

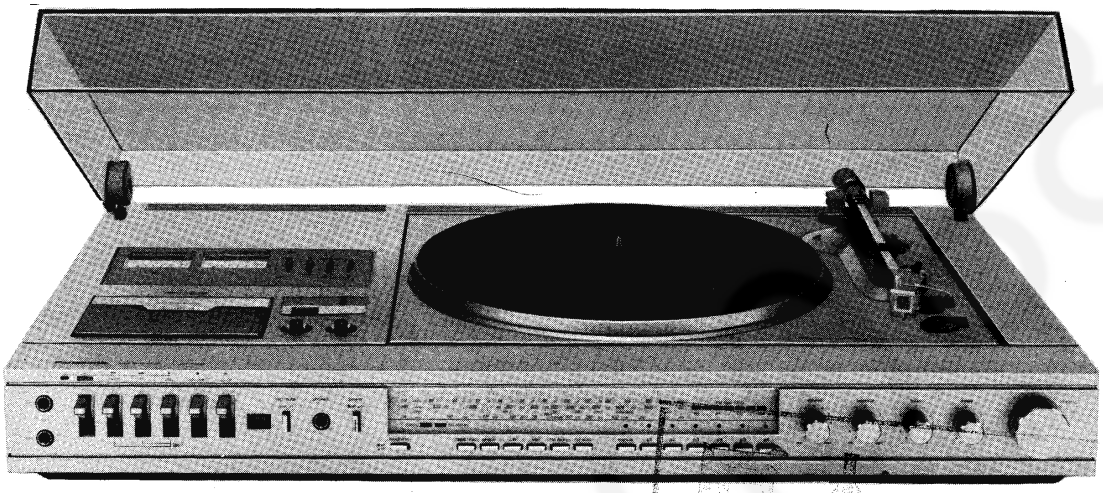
FM/AM/FM STEREO WITH CASSETTE TAPE DECK AND RECORD PLAYER

Stereo Music Centre

SG-4000/(UK)

SG-4000/(UK)

DOLBY SYSTEM



for United Kingdom

DOLBY SYSTEM

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

National Panasonic®

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

SG-4000/(UK)

Specifications For United Kingdom

AMPLIFIER SECTION

Power Output	MPO 33W × 2 (THD 1%, 4Ω) RMS 22W × 2 (THD 1%, 4Ω) One Channel Driven RMS 17W × 2 (THD 1%, 4Ω) Both Channel Driven
Frequency Response	10 Hz ~ 40 kHz, ±1.5 dB (DIN)
Power Band Width	10 Hz ~ 25 kHz, −3 dB (DIN)
Input Sensitivity and Impedance:	
Mic	1 mV, 3 kΩ
Tone Controls:	
Bass	±15 dB at 50 Hz
Treble	±15 dB at 15 kHz
Loudness Control	+10 dB at 50 Hz (Volume at −30 dB position)

FM TUNER SECTION

Tuning System	Varactor Diode (6 pre-selectors and 1 manual tuning)
Frequency Range	87.5 ~ 108 MHz
Intermediate Frequency (IF)	10.7 MHz
Sensitivity:	2.0 μV (S/N 26 dB Mod. 40 kHz) (DIN) 2.0 μV (IHF)
Image Ratio	45 dB (98 MHz)
Signal/Noise Ratio	63 dB (at 1 kHz, 60 dB, 40 kHz)
Distortion:	
Mono	0.15% (at 1 kHz, 60 dB, 40 kHz)
Stereo	0.2% (at 1 kHz, 60 dB, 40 kHz)
Stereo Separation	40 dB (at 1 kHz, 60 dB, 30%) 35 dB (at 250 Hz~6.3 kHz, 60 dB, 40 kHz) (DIN) 33 dB (at 6.3 ~ 10 kHz, 60 dB, 40 kHz) (DIN)
Selectivity	60 dB (at 1 kHz, 60 dB, 40 kHz)

AM TUNER SECTION

Frequency Range	MW: 525~1605 kHz (572~187m) LW: 145~350 kHz (2070~857m)
Intermediate Frequency (IF)	470 kHz
Sensitivity	MW: 100 μV/m (1 MHz) LW: 150 μV/m (240 kHz)
Image Ratio	MW: 50 dB (1 MHz) LW: 50 dB (240 kHz)

RECORD PLAYER SECTION

Player System	Belt-Drive, Automatic Return
Turntable	30 cm (12")
Turntable Speeds	33-1/3 and 45 rpm, 2-speed
Wow and Flutter	0.1% (WRMS), ±0.15% (DIN WTD)
Phonomotor	Electronic Governor DC Motor
Cartridge	Moving Magnet Type (EPC-290C)
Stylus	Diamond (EPS-290SD)
Stylus Pressure	2.0 ~ 3.0g
Frequency Response	20 Hz ~ 20 kHz (DIN)
Separation	23 dB (DIN)
Signal/Noise Ratio	56 dB (DIN-B)

TAPE DECK SECTION

Deck System	Auto-Stop Cassette System
Track System	4-Track, 2 Channel
Recording System	AC Bias (50 kHz) with Dolby NR System
Erasing System	AC Erase (50 kHz)
Tape Speed	4.75 cm/sec. (1-7/8 i.p.s.)
Frequency Reponse	20 Hz ~ 15 kHz (Normal) 20 Hz ~ 16 kHz (Fe-Cr) 20 Hz ~ 16 kHz (CrO_2)
Signal/Noise Ratio:	
Dolby NR−Out	DIN: 53 dB (Normal) 55 dB (Fe-Cr) 55 dB (CrO_2)
Dolby NR−In	10 dB or more improved at more than 5 kHz (DIN): 60 dB (Normal) 63 dB (Fe-Cr) 63 dB (CrO_2)
Erase Ratio	70 dB (DIN)
Channel Separation	40 dB (DIN)
Crosstalk	60 dB (DIN)
Wow and Flutter	0.15% (WRMS), ±0.35% (DIN)

POWER CONSUMPTION 140W

POWER SUPPLY ..... AC 110V, 120V, 220V, 240V, 50/60 Hz

DIMENSIONS (W × H × D) .. 700 mm × 443 mm × 144 mm

WEIGHT ..... 12.5 kg

* Specifications are subject to change without notice for further improvements.

Specifications

AMPLIFIER SECTION

Power Output	MPO 33W × 2 (THD 1%, 4Ω) RMS 22W × 2 (THD 1%, 4Ω) One Channel Driven RMS 17W × 2 (THD 1%, 4Ω) Both Channel Driven
Frequency Response	10 Hz ~ 40 kHz, ±1.5 dB (DIN)
Power Band Width	10 Hz ~ 25 kHz, −3 dB (DIN)
Input Sensitivity and Impedance:	
Mic	1 mV, 3 kΩ
Tone Controls:	
Bass	±15 dB at 50 Hz
Treble	±15 dB at 15 kHz
Loudness Control	+10 dB at 50 Hz (Volume at −30 dB position)

FM TUNER SECTION

Tuning System	Varactor Diode (6 pre-selectors and 1 manual tuning)
Frequency Range	87.5 ~ 108 MHz
Intermediate Frequency (IF)	10.7 MHz
Sensitivity:	2.0 μV (S/N 26 dB Mod. 40 kHz) (DIN) 2.0 μV (IHF)
Image Ratio	45 dB (98 MHz)
Signal/Noise Ratio	63 dB (at 1 kHz, 60 dB, 40 kHz)
Distortion:	
Mono	0.15% (at 1 kHz, 60 dB, 40 kHz)
Stereo	0.2% (at 1 kHz, 60 dB, 40 kHz)
Stereo Separation	40 dB (at 1 kHz, 60 dB, 30%) 35 dB (at 250 Hz~6.3 kHz, 60 dB, 40 kHz) (DIN) 33 dB (at 6.3 ~ 10 kHz, 60 dB, 40 kHz) (DIN)
Selectivity	60 dB (at 1 kHz, 60 dB, 40 kHz)

AM TUNER SECTION

Frequency Range	MW: 525~1605 kHz (572~187m) LW: 145~350 kHz (2070~857m)
Intermediate Frequency (IF)	455 kHz
Sensitivity	MW: 100 μV/m (1 MHz) LW: 150 μV/m (240 kHz)
Image Ratio	MW: 50 dB (1 MHz) LW: 50 dB (240 kHz)

RECORD PLAYER SECTION

Player System	Belt-Drive, Automatic Return
Turntable	30 cm (12")
Turntable Speeds	33-1/3 and 45 rpm, 2-speed
Wow and Flutter	0.1% (WRMS), ±0.15% (DIN WTD)
Phonomotor	Electronic Governor DC Motor
Cartridge	Moving Magnet Type (EPC-290C)
Stylus	Diamond (EPS-290SD)
Stylus Pressure	2.0 ~ 3.0g
Frequency Response	20 Hz ~ 20 kHz (DIN)
Separation	23 dB (DIN)
Signal/Noise Ratio	56 dB (DIN-B)

TAPE DECK SECTION

Deck System	Auto-Stop Cassette System
Track System	4-Track, 2 Channel
Recording System	AC Bias (50 kHz) with Dolby NR System
Erasing System	AC Erase (50 kHz)
Tape Speed	4.75 cm/sec. (1-7/8 i.p.s.)
Frequency Reponse	20 Hz ~ 15 kHz (Normal) 20 Hz ~ 16 kHz (Fe-Cr) 20 Hz ~ 16 kHz (CrO_2)
Signal/Noise Ratio:	
Dolby NR−Out	DIN: 53 dB (Normal) 55 dB (Fe-Cr) 55 dB (CrO_2)
Dolby NR−In	10 dB or more improved at more than 5 kHz (DIN): 60 dB (Normal) 63 dB (Fe-Cr) 63 dB (CrO_2)
Erase Ratio	70 dB (DIN)
Channel Separation	40 dB (DIN)
Crosstalk	60 dB (DIN)
Wow and Flutter	0.15% (WRMS), ±0.35% (DIN)

POWER CONSUMPTION 140W

POWER SUPPLY ..... AC 110V, 120V, 220V, 240V, 50/60 Hz

DIMENSIONS (W × H × D) .. 700 mm × 443 mm × 144 mm

WEIGHT ..... 12.5 kg

* Specifications are subject to change without notice for further improvements.

DEUTSCH

Technische Daten

VERSTÄRKER

Ausgangsleistung:
- Musik ..... 33W × 2 an 4Ω (1% Klirr)
- Sinus ..... 22W × 2 an 4Ω (bei Aussteuerung eines Kanals, 1% Klirr)
  17W × 2 an 4Ω (bei Aussteuerung beider Kanäle, 1% Klirr)

Frequenzgang ..... 10 Hz bis 40 kHz, 1,5 dB (DIN)
Leistungsbandbreite ..... 10 Hz bis 25 kHz, −3 dB (DIN)
Eingangsempfindlichkeit und Impedanz:
- Mikrofon ..... 1 mV, 3 kΩ

Klangregler:
- Basse ..... ±15 dB bei 50 Hz
- Hohen ..... ±15 dB bei 15 kHz

Gehorrichtige
- Frequenzgangkorrektur ..... +10 dB bei 50 Hz (Lautstarkepegel −30 dB)

UKW-EMPFANGSTEIL

Abstimmsystem ..... Kapazitatsdiode (6 Festsendertasten plus eine Taste fur manuelle Abstimmung)
Empfangsbereich ..... 87,5 ~ 108 MHz
Zwischenfrequenz (ZF) ..... 10,7 MHz
Eingangsempfindlichkeit ..... 2,0 μV (Fremdspannungsabstand 26 dB, Hub 40 kHz) (DIN)
2,0 μV (IHF)
Spiegelfrequenzdampfung ..... 45 dB (98 MHz)
Fremdspannungsabstand ..... 63 dB (bei 1 kHz, 60 dB, 40 kHz)
Klirrfaktor:
- Mono ..... 0,15% (bei 1 kHz, 60 dB, 40 kHz)
- Stereo ..... 0,2% (bei 1 kHz, 60 dB, 40 kHz)

Übersprechdampfung ..... 40 dB (bei 1 kHz, 60 dB, 30%)
35 dB (250 Hz~6,3 kHz, 60 dB, 40 kHz) (DIN)
33 dB (6,3~10 kHz, 60 dB, 40 kHz) (DIN)
Trennscharfe ..... 60 dB (bei 1 kHz, 60 dB, 40 kHz)

AM-EMPFANSTEIL

Empfangsbereiche ..... MW: 525~1.605 kHz (572~187m)
LW: 145~350 kHz (2.070~857m)
Zwischenfrequenz (ZF) ..... 455 kHz
Empfindlichkeit ..... MW: 100 μV/m (1 MHz)
LW: 150 μV/m (240 kHz)
Spiegelfrequenzdampfung ..... MW: 50 dB (1 MHz)
LW: 50 dB (240 kHz)

PLATTENSPIELER

Prinzip ..... Riemengetrieb Plattenteller mit Tonarm-Ruckführautomatik
Plattenteller ..... 300 mm
Drehzahlen ..... 33-1/3 und 45 upm
Gleichlaufschwankungen ..... 0,1% (Mittelwert, bewertet)
±0,15% (DIN. bewertet)
Plattentellerantrieb ..... Electronisch geregelter Gleichstrommotor
Tonabnehmer ..... Magnet-Tonabnehmer (EPC-290C)
Abtastnadel ..... Diamant (EPS-290SD)
Auflagekraft ..... 2.0 ~ 3,0g
Frequenzgang ..... 20 ~ 20 kHz (DIN)
Übersprechdampfung ..... 23 dB (DIN)
Fremdspannungsabstand ..... 56 dB (DIN B)

CASSETEN-TONBANDGERÄT

Prinzip ..... Automatisches Bandabschaltsystem
Spursystem ..... Viertelspur, Stereo
Aufnahmesystem ..... HF-Vormagnetisierung (50 kHz)
mit Dolby-Rauschunterdrückung
Loschsystem ..... HF-Loschung (50 kHz)
Bandgeschwindigkeit ..... 4,75 cm/s
Frequenzgang ..... 20~15 kHz (Normal)
20~16 kHz (Fe-Cr)
20~16 kHz (CrO_2)

Fremdspannungsabstand:
- Ohne Dolby ..... DIN:
  53 dB (Normal)
  55 dB (Fe-Cr)
  55 dB (CrO_2)
- Mit-Dolby ..... (über 5 kHz eine Verbesserung von mehr als 10 dB) (DIN):
  60 dB (Normal)
  63 dB (Fe-Cr)
  63 dB (CrO_2)

Löschdampfung ..... 70 dB (DIN)
Übersprechdampfung ..... 40 dB (DIN)
Stereo-Kanaltrennung ..... 60 dB (DIN)
Gleichlaufschwankungen ..... 0,15% (Mittelwert, bewertet)
±0,35% (DIN)

LEISTUNGSAUFNAHME 140W

NETZSPANNUNG UND FREQUENZ ..... 110V, 120V, 220V, 240V,50/60 Hz

ABMESSUNGEN (B × H × T) ..... 700 mm × 443 mm × 144 mm

GEWICHT ..... 12,5 kg

* Anderungen der technischen Daten und des Designs im Sinne standiger Verbesserung vorbehalten.

FRANÇAIS

Spécifications

SECTION AMPLIFICATEUR

Puissance de sortie ..... 33W × 2 (DHT 1%, 4Ω) PSM
22W × 2 (DHT 1%, 4Ω) EFF
Un canal en fonction
17W × 2 (DHT 1%, 4Ω) EFF
Deux canaux en fonction
Réponse de fréquence ..... 10 Hz ~ 40 kHz, ±1.5 dB (DIN)
Largeur de bande passante .. 10 Hz ~ 25 kHz, −3 dB (DIN)
Impédance et sensibilité d'entrée:
- Micro ..... 1 mV, 3 kΩ

Réglages de tonalité:
- Grave ..... ±15 dB à 50 Hz
- Aigu ..... ±15 dB à 15 kHz

Réglage de contour sonore ... +10 dB à 50 Hz (Volume à la position −30 dB)

SECTION TUNER FM

Système d'accord ..... Diode varactor (6 pré-sélecteurs et 1 accord manuel)
Echelle de fréquence ..... 87 108 MHz
Fréquence intermédiate (FI) .. 10,7 MHz
Sensibilité ..... 2,0 μV (S/B 26 dB Mod. 40 kHz) (DIN)
2,0 μV (IHF)
Rapport d'image ..... 45 dB (98 MHz)
Rapport de signal bruit ..... 63 dB (à 1 kHz, 60 dB, 40 kHz)
Distorsion:
- Mono ..... 0,15% (à 1 kHz, 60 dB, 40 kHz)
- Stéréo ..... 0,2% (à 1 kHz, 60 dB, 40 kHz)

Séparation stéréo ..... 40 dB (à 1 kHz, 60 dB, 30%)
35 dB (à 250 Hz~6,3 kHz, 60 dB, 40 kHz) (DIN)
33 dB (à 6,3~10 kHz, 60 dB, 40 kHz) (DIN)
Sélectivité ..... 60 dB (à 1 kHz, 60 dB, 40 kHz)

SECTION TUNER AM

Echelle de fréquence ..... PO: 525~1.605 kHz (572~187m)
GO: 145~350 kHz (2.070~857m)
Fréquence intermédiate (FI) .. 455 kHz
Sensibilité ..... PO: 100 μV/m (1 MHz)
GO: 150 μV/m (240 kHz)
Rapportimage ..... PO: 50 dB (1 MHz)
GO: 50 dB (240 kHz)

SECTION TOURNE-DISQUE

Système de tourne-disque ..... Entrainement par courroie et retour automatique
Plateau tourne-disque ..... 30 cm
Vitesses du tourne-disque ..... 33-1/3 et 45 t/min. 2 vitesses
Pleurage et scintillement ..... 0,1% (valeur eff. pondérée), ±0,15% (DIN WTD)
Phonomoteur ..... Moteur Cour. Cont. à régulateur électronique
Cartouche ..... Type à aimant mobile (EPC-290C)
Pointe de lecture ..... Diamant (EPS-290SD)
Pression de pointe ..... 2,0 ~ 3,0g
Réponse de fréquence ..... 20 Hz ~ 20 kHz (DIN)
Séparation ..... 23 dB (DIN)
Rapport de signal/bruit ..... 56 dB (DIN-B)

SECTION MAGNETOPHONE

Système de magnétophone ... Système cassette automatique
Système de piste ..... 4 pistes, 2 canaux
Système d'enregistrement ..... Polarisation Cour. Alt. (50 kHz) avec système Dolby NR
Système d'effacement ..... Effacement Cour. Alt. (50 kHz)
Vitesse de bande ..... 4,75 cm/s
Réponse de fréquence ..... 20 Hz ~ 15 kHz (Normale)
20 Hz ~ 16 kHz (Fe-Cr)
20 Hz ~ 16 kHz (CrO_2)

Rapport de signal/bruit:
- Sortie Dolby Nr ..... DIN:
  53 dB (Normale)
  55 dB (Fe-Cr)
  55 dB (CrO_2)
- Entrée Dolby Nr ..... B ou plus amélioré à plus de 5 kHz (DIN):
  dB (Normale)
  63 dB (Fe-Cr)
  63 dB (CrO_2)

Rapport d'effacement ..... 70 dB (DIN)
Séparation de canal ..... 40 dB (DIN)
Diaphonie ..... 60 dB (DIN)
Pleurage et scintillement ..... 0,15% (valeur eff. pondérée), ±0,35% (DIN)

CONSOMMATION DE PUISSANCE 140W

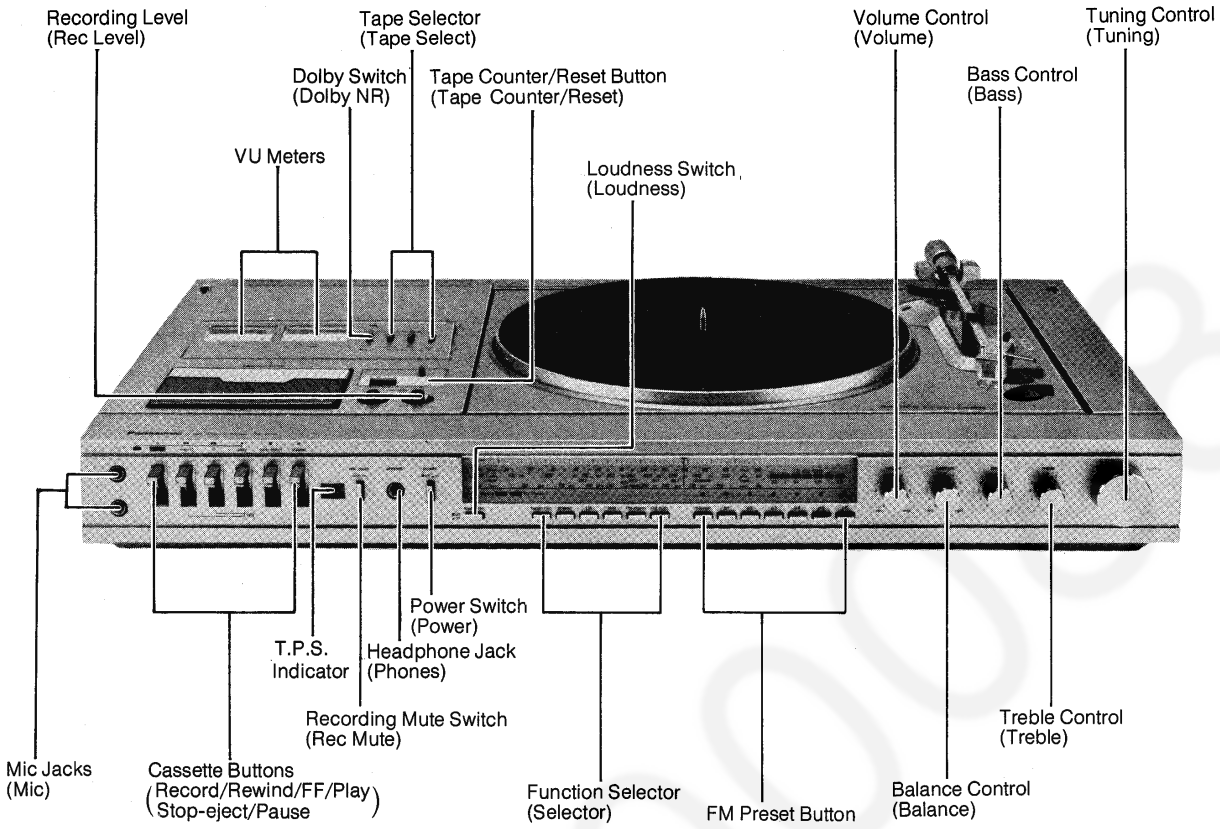
ALIMENTATION ..... Cour. Alt. 110V, 120V, 220V, 240V, 50/60 Hz

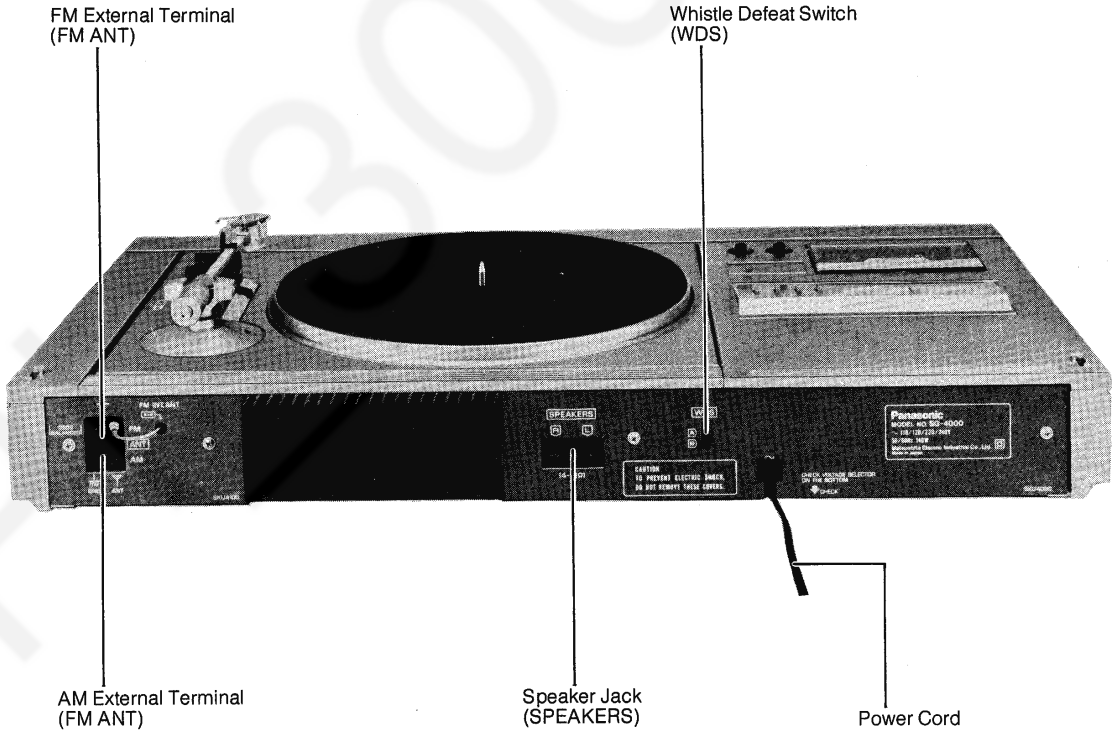
DIMENSIONS (L × H × P) .... 700 mm × 443 mm × 144 mm

POIDS ..... 12,5 kg

* Les spécifications et le présentation sont susceptibles d'être modifiées sans préavis par suite d'amélioration éventuelle de nos appareils.

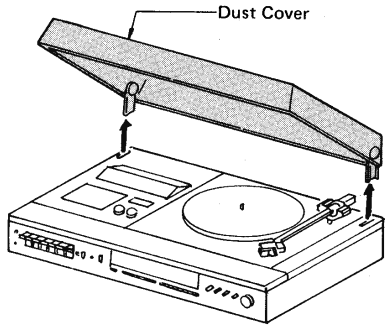
LOCATION OF CONTROLS



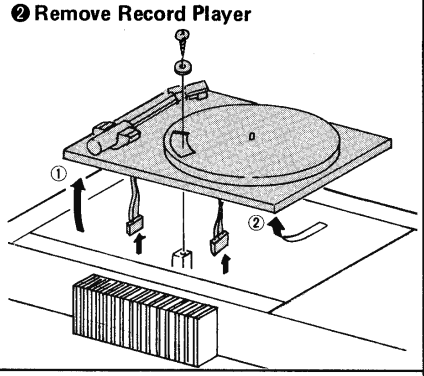


DISASSEMBLY INSTRUCTIONS

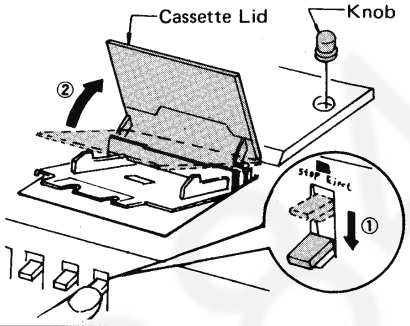
❶ Remove Dust Cover



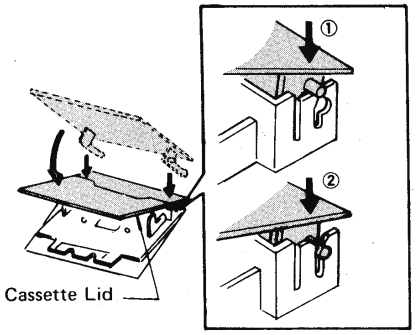
❷ Remove Record Player



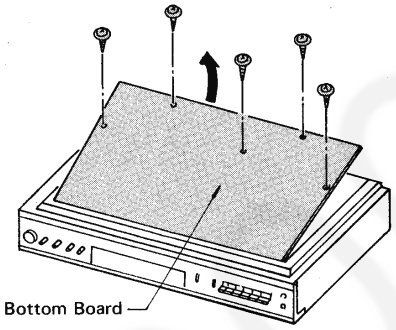
❸ Remove Cassette Lid



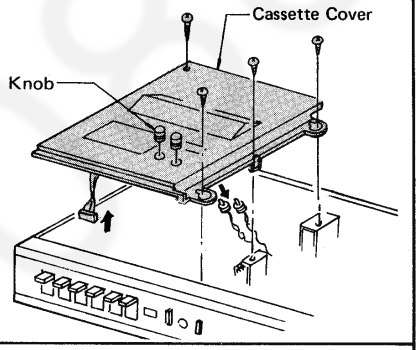
❹ Install Cassette Lid



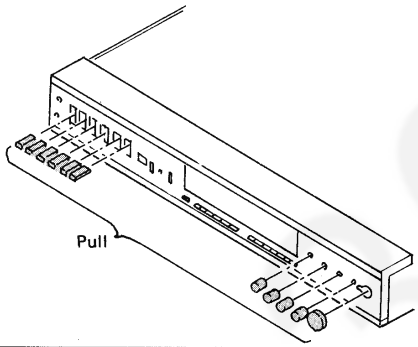
❺ Remove Bottom Board



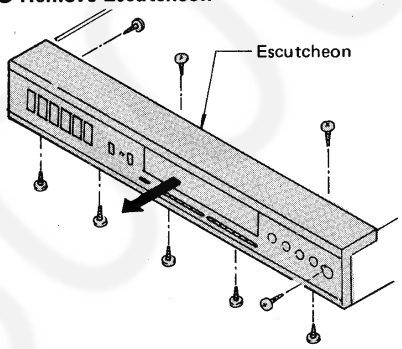
❻ Remove Cassette Cover



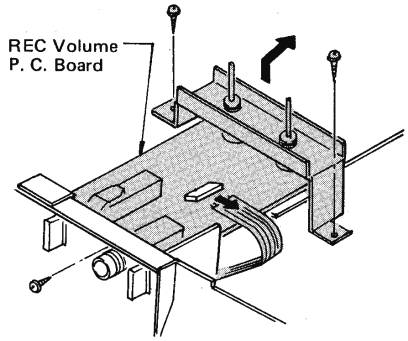
❼ Remove Knobs



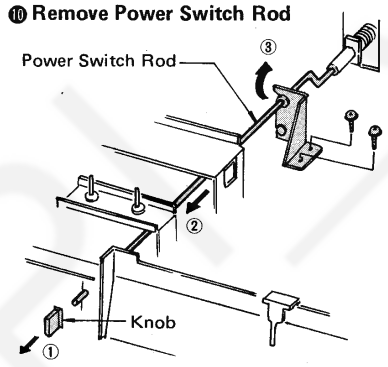
❽ Remove Escutcheon



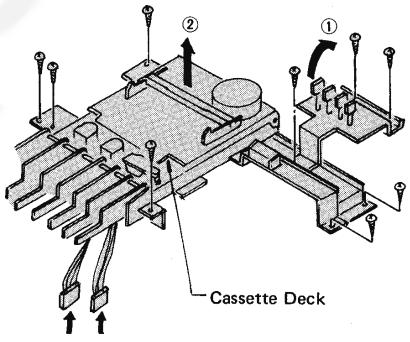
❾ Remove REC Volume P. C. Board



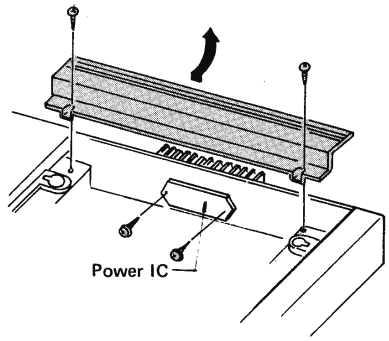
❿ Remove Power Switch Rod



⓫ Remove Cassette Deck



⓬ Remove Power IC



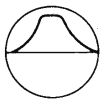
- **To Replace Cassette Lid** ..... Refer to ❸, ❹.
- **To Replace Parts on P.C. Board**..... Refer to ❶～❸, ❺～⓬.
- **To Replace Power IC** ..... Refer to ❶, ❷, ❺, ⓬.
- **To Remove Escutcheon**..... Refer to ❶～❸, ❻～❽.
- **To Remove Tape Deck** ..... Refer to ❶～❸, ❻～⓫.

ALIGNMENT INSTRUCTIONS (RADIO)–1

■ AM Alignment

Control Positions:

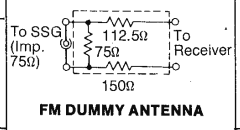
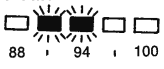
1. Volume Control ..... Maximum (AM-IF and RF, FM-RF); Minimum (FM-IF)
2. Function Selector ..... LW, MW, FM MONO and FM AUTO
3. FM Preset..... MANUAL, P1, P2, P3, P4, P5 and P6
4. Loudness..... OFF
5. FM Preset Volume (VR102～VR107)..... Turn them fully counterclockwise.
6. Preset Volume (VR108～VR110 and 901)..... Turn set to the center position.
7. Output of signal generator should be no higher than necessary to obtain output reading.
8. Make certain that speaker system is connected to the receiver when aligning. (or use 4Ω dummy load resistors.)

STEP	SIGNAL GENERATOR OR SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
AM-IF AND RF ALIGNMENT						
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	470 kHz (for UK) 455 kHz 30% Mod. with 400 Hz	Point of non-interference	Output meter across speaker jack (L). (Imp. 4Ω)	T201 (AM 1st IFT) T202 (AM CFT) T203 (AM DET)	• Adjust for maximum output.
2 (LW)		145 kHz 30% Mod. with 400 Hz	145 kHz (9.3 mm)		L202 (LW ANT Coil) L204 (LW OSC Coil)	• Adjust for maximum output by sliding coil L202 along ferrite core. • Refer to **NOTE**.
3 (LW)		350 kHz 30% Mod. with 400 Hz	350 kHz (141.2 mm)		CT202 (LW ANT Trimmer) CT204 (LW OSC Trimmer)	• Adjust for maximum output. • Repeat steps (2) and (3).
4 (MW)		550 kHz 30% Mod. with 400 Hz	550 kHz (16.5 mm)		L201 (MW ANT Coil) L203 (MW OSC Coil)	• Adjust for maximum output by sliding coil L201 along ferrite core. • Refer to **NOTE**.
5 (MW)		1500 kHz 30% Mod. with 400 Hz	1500 kHz (135.5 mm)		CT201 (MW ANT Trimmer) CT203 (MW OSC Trimmer)	• Adjust for maximum output. • Repeat steps (4) and (5).
Note: Coment antenna coil with wax after completing alignment.						
FM-IF ALIGNMENT						
1	High side through 0.01 μF between point TP Ⓐ and TP101 (Earth)	10.7 MHz (400 kHz SWP.)	Point of non-interference	Connect vert. amp input of scope between point TP202 and TP203 (Earth)	L5	• Adjust T101 for maximum amplitude and symmetrical curve. 
2	No connection	No signal	Free	Connect DC VTVM between TP204 and TP205.	T204－A (Brown Core)	• Adjust T204-A for 0 mV on VTVM reading.

ENGLISH

ALIGNMENT INSTRUCTIONS (RADIO)–2

■ FM·RF ALIGNMENT

STEP	SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	FM PRESET BUTTON	ADJUST	REMARKS
1	Connect to EXT. FM Antenna terminal through dummy antenna.  FM DUMMY ANTENNA	106 MHz 30% Mod. with 400 Hz	106 MHz (132.02 mm)	Output meter across speaker jack (L)	MANUAL	VR901	
2		87.4 MHz 30% Mod. with 400 Hz	87.4 MHz (0 mm)			VR108	• Adjust for maximum output. • Repeat steps (1)~(3).
3					P1	VR109	
4		92.5 MHz 30% Mod. with 400 Hz	92.5 MHz	FM dial indicator		VR110	• Adjust VR110 to get same lightness at 2nd and 3rd (94 MHz) LED from left end of FM dial indicator. 
Note: To correct the drift of FM band coverage (87.5~108 MHz), adjust VR108, 109, 110 and VR901.							
FM MONO DISTORTION ALIGNMENT							
1	Connect to EXT. FM antenna terminal through dummy antenna.	98 MHz 100% Mod. with 400 Hz	98 MHz	Distortion meter to speaker jack (L).	.....	T204-B (Green core) (Disc IFT)	• Adjust for minimum distortion meter indication.

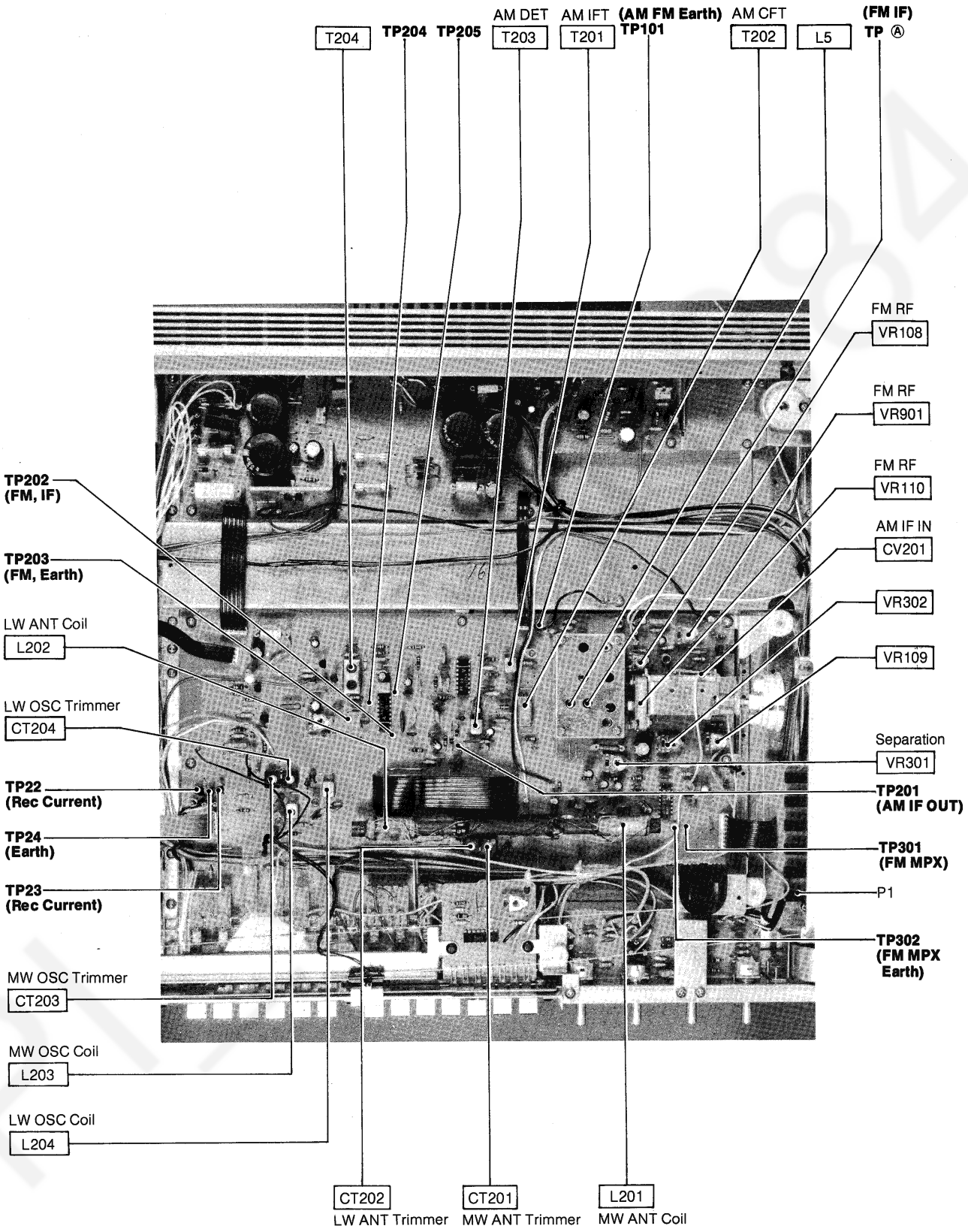
■ FM Stereo Alignment

EQUIPMENT CONNECTION	ADJUST	REMARKS
Connect frequency counter to TP301 and TP302 (Earth) at 98 MHz, 30% modulation with 60 dB input.	VR302	Adjust VR302 for 19 kHz ± 50 Hz on frequency counter reading.
SEPARATION ALIGNMENT		

Notes:
1. Stereo Modulator: Connect Stereo Modulator to EXT. Mod. terminal of signal generator.
2. Signal Generator: Modulation Rate of 19 kHz Pilot Signal 10%
   Modulation Rate of Right and Left Signal 27%
   Output Level..... 60 dB
3. Tuner (Balance Control): Adjust balance control so that output level from both channels becomes equal.

EQUIPMENT CONNECTION			ADJUST	REMARKS
SIGNAL GENERATOR	VTVM	OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna.	Connect across speaker jack. (Imp. 4Ω).	Connect vertical amp. input of scope to terminals of VTVM.	VR301 (Separation (Control)	Adjust VR301 for minimum indication of VTVM from the left side output when the right side of stereo modulation is modulated. Adjust VR301 in the same way for the right side. Adjust for best balance between "L to R" and "R to L" separation.
Note: When aligning separation, disconnect frequency counter.				

ALIGNMENT POINTS (RADIO)
ANWEISUNGEN ZUM ABGLEICH (TONBANDGERÄT)



ALIGNMENT INSTRUCTIONS (CASSETTE TAPE DECK)

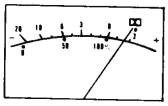
BIAS ALIGNMENT

Control Positions: 1. Tape Deck Condition..... Recording Condition
2. Dolby Switch..... OUT

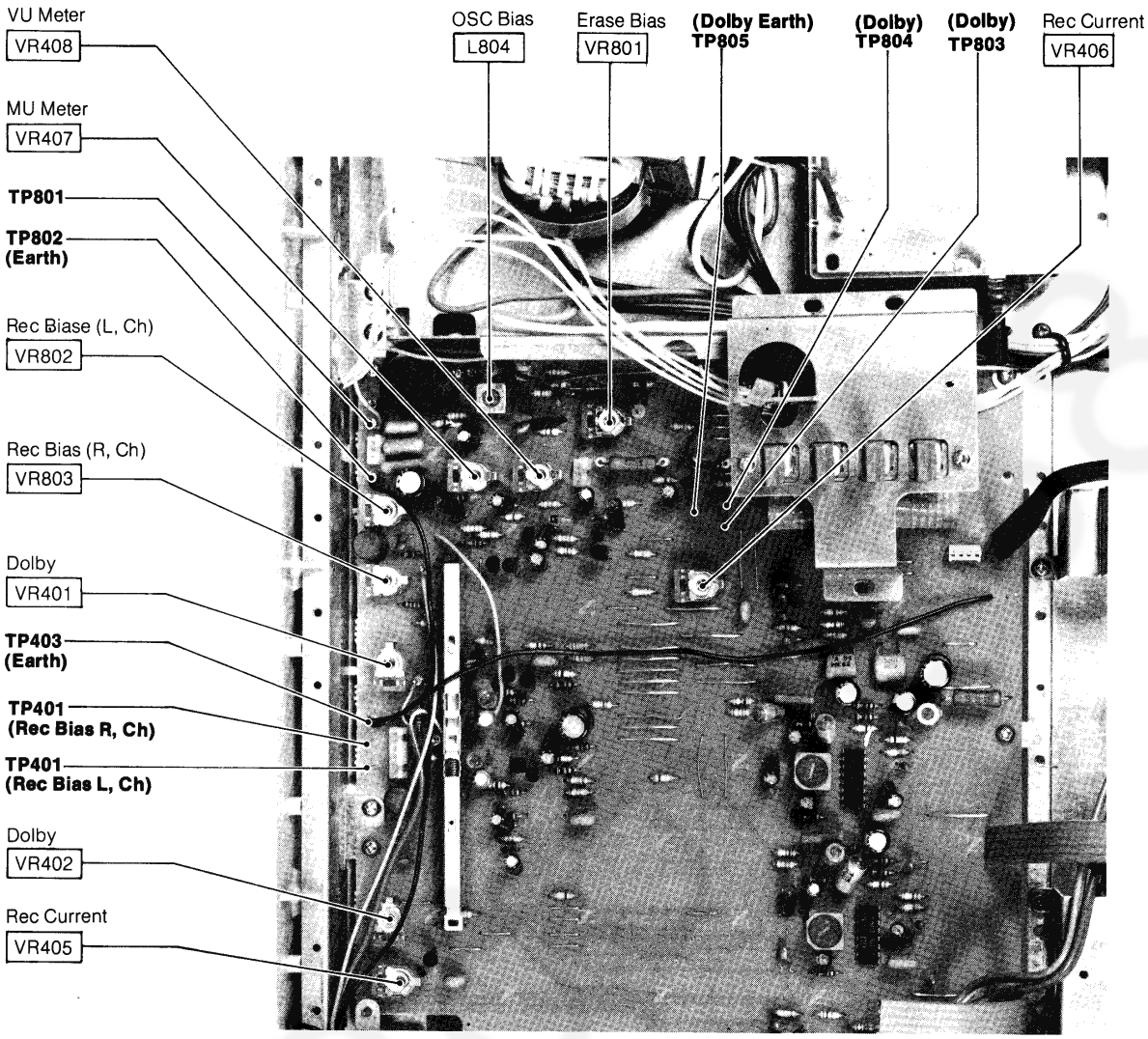
STEP	ALIGNMENT ITEM	VTVM CONNECTION		TAPE SELECTOR	WHISTLE DEFEAT SWITCH	ADJUST	REMARKS
		Positive	Negative				
1	OSC Coil	TP801	TP802	NORMAL	A	L804	• Adjust L804 for max. indication on VTVM and should be within 0.5V when the whistel defeat switch is B.
2	Erase Current			CrO_2	A and B	VR801	• Adjust VR801 for 250 ± 10 mV indication on VTVM.
3	Recording Bias	TP401 (L, Ch)	TP403	NORMAL	A	VR802	• Adjust VR802 and VR803 for 3.4 ± 0.1 mV indication on VTVM.
		TP402 (R, Ch)				VR803	

AZIMUTH, DOLBY, REC CURRENT ALIGNMENT

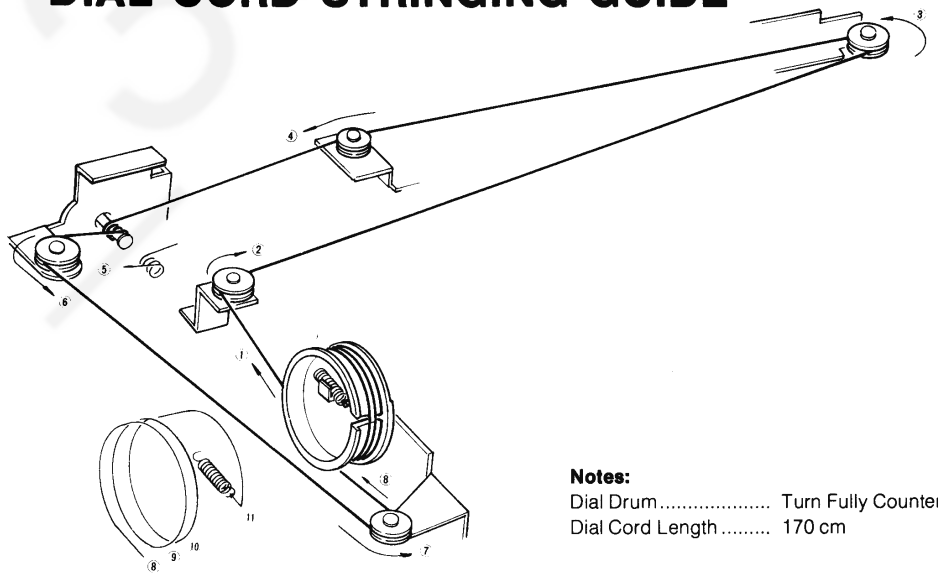
Control Positions: 1. Tape Deck Condition..... PLAY Condition
2. Tape Selector..... NORMAL

STEP	ALIGNMENT ITEM	VTVM CONNECTION		TEST TAPE	DOLBY SWITCH	ADJUST	REMARKS
		Positive	Negative				
1	R/P Head Azimuth	Speaker Terminal	Speaker Terminal	VTT653	OUT	Head Screw	• Adjust screw for max. indication on VTVM.
2	Dolby Level	TP803	TP805	TM6130	IN	VR401	• Adjust VR401 and VR402 for 580 ± 20 mV indication on VTVM.
		TP804				VR402	
3	VU Meter	.....	.....			VR407	• Adjust VR407 and VR408 so that needle just defects at +**3 dB** (◫ mark). 
						VR408	
4	Rec Current	TP401	TP403	.....		VR405	• Connect TP801 to TP802. • Apply 150 mV audio signal to TP22, TP23, TP24 (Refer to Ratio Alignment points) and set body REC Volume at +**3 dB** (◫ mark) on VU meter. Adjust VR405 and 406 for 0.5 ± 0.02 mV reading on VTVM.
		TP402				VR406	

ALIGNMENT POINTS (CASSETTE TAPE DECK)
ABGLEICHPUNKTE (KASSETTEN-TONBAND)



DIAL CORD STRINGING GUIDE



Notes:

Dial Drum ..... Turn Fully Counterclockwise

Dial Cord Length ..... 170 cm

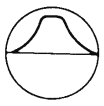
ANWEISUNGEN ZUM ABGLEICH (RADIO)—1

■ AM-Abgleich

Hinweis: Siehe Seite 8 von Abgleichpunkte.

Hinweise:

1. Lautstärkeregler ..... Maximum (AM-ZF und HF, FM-HF)
2. Empfangsbereichschalter..... LW, MW, FM MONO und FM AUTO
3. FM-Vorprogrammierung ..... MANUAL, P1, P2, P3, P4, P5 und P6
4. Lautheit ..... AUS
5. Lautstärke der FM-Vorprogrammierung (VR102～VR107)..... Ganz im Uhrzeigersinn drehen.
6. Lautstärke der Vorprogrammierung (VR108～VR110 und 901)..... Bis zur Mitte drehen.
7. Der Ausgang des Messenders sollte nicht höher als nötig sein, um den Ausgangswert zu erhalten.
8. Sich vergewissern, ob die Lautsprecheranlage während des Abgleichs an den Tuner angeschlossen ist (order künstliche Antennenwiderstände von 4Ω verwenden).

SCHRITTE	MESSOLZILLATOR oder WOBBELGENERATOR		EINSTELLUNG DER ABSTIMM-SKALA	AMZEIGE (RVM oder SKOP)	EINSTELLEN	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
AM-ZF-ABGLEICH UND HF-ABGLEICH						
1	Aus mehreren Drahtwindungen eine Schleife bilden und das Signal in die Schleife des Receivers abstrahlen.	455 kHz 30% Mod. mit 400 Hz	Punkt der Nicht-interferenz	Ausgangsmessinstrument über Ausgangsbuchse (L). (Imp. 40Ω).	T201 (AM Erst IFT) T202 (AM CFT) T203 (AN DET)	• Aufmaximalen Ausgang einstellen.
2 (LW)		145 kHz 30% Mod. mit 400 Hz	145 kHz (9,3 mm)		L202 (LW-Antennenspule) L204 (LW-Schwingspule)	• Durch Verschieben der Spule L202 entlang dem Ferritkern auf maximalen Ausgang einstellen. • Siehe **Hinweis**.
3 (LW)		350 kHz 30% Mod. mit 400 Hz	350 kHz (141,2 mm)		CT202 (LW-Antennentrimmer) CT204 (LW-Schwingtrimmer)	• Auf maximalen Ausgang einstellen. • Schritte (2) und (3) wiederholen.
4 (MW)		550 kHz 30% Mod. mit 400 Hz	550 kHz (16,5 mm)		L201 (MW-Antennenspule) L203 (MW-Schwingspule)	• Durch Verschieben der Spule L201 entlang dem Ferritkern auf maximalen Ausgang einstellen. • Siehe **Hinweisung**.
5 (MW)		1500 kHz 30% Mod. mit 400 Hz	1500 kHz (135,5 mm)		CT201 (MW-Antennentrimmer) CT203 (MW-Schwingtrimmer)	• Auf maximalen Ausgang einstellen. • Schritte (4) und (5) widerholen.
Hinweis: Die Antennenspule nach dem Abgleich mit Wachs beschichten.						
FM-ZF-ABGLEICH						
1	Hohe Seite durch 0,01 μF zwischen Punkt TP Ⓐ und TP101 (Erde).	10,7 MHz (400 kHz SWP.)	Punkt der Nicht-Interferenz	Vertikalen Verstärkereingang des Skop zwischen Punkt TP202 und TP203 (Erde) anschliessen.	L5	• T101 auf maximale Amplitude und symmetrische Kurve einstellen. 
2	Kein Auschluss	Kain Signal	Frei	DC RVM zwischen TP204 und TP205 anschliessen.	T204-A (Braun Kern)	• T204-A auf 0 mV auf der RVM-Anzeige

ANWEISUNGEN ZUM ABGLEICH (RADIO)—2

■ FM-ZF-Abgleich

SCHRITT	MESSOSZILLATOR ANSCHLUSS	MESSOSZILLATOR FREQUENZ	EINSTELLUNG DER ABSTIMM-SKALA	ANZEIGE (RVM oder SKOP)	UKW-VORPROGRAM-MIERUNGS-TASTE	EINSTELLEN	BEMERKUNGEN
1	Über Hilfsantenne mit EXT. FM-Antennenklemme verbinden. Zu SSG (Imp 75Ω) — Zum Receiver 112.5Ω, 75Ω, 150Ω **FM-HILFSANTENNE**	106 MHz 30% Mod. mit 400 Hz	106 MHz (132,02 mm)	Ausgangsmess-instrument über Lautsprecher-buchse (L)	MANUAL	VR901	• Auf maximalen Ausgang einstellen. • Schritte (1) bis (3) wiederholen.
2		87,4 MHz 30% Mod. mit 400 Hz	87,4 MHz (0 mm)			VR108	
3					P1	VR109	
4		92,5 MHz 30% Mod. mit 400 Hz	92,5 MHz	UKW-Anzeige		VR110	• VR110 für gleiche Leichte am 2. und 3. (94 MHz) LED vom linken Ende des UKW-Anzeigers einstellen. 88 I 94 I 100
Hinweis: Zur Korrektur der Verschiebung des UKW-Bandbereichs (87,5～108 MHz) VR108, 109, 110 und VR902 einstellen.							
UKW-MONO-VERZERRUNGSABGLEICH							
1	Über Hilfsantenne mit EXT-FM-Antennenklemme verbinden.	98 MHz 100% Mod. mit 400 Hz	98 MHz	Verzerrungsmesser zur Lautsprecherbuchse (L).	.....	T204-B (Grüner Kern) (Scheibe/Zwischenfrequenz-übertrager)	·Auf minimale Anzeige des Verzerrungsmessers einstellen.

■ UKW-STEREO-ABGLEICH

GERÄTE-ANSCHLUSS	EINSTELLEN	BEMERKUNGEN
Frequenz-Zähler an TP301 und TP302 (Erde) bei 98 MHz, 30% Modulation mit 60 dB Eingang anschliessen.	VR302	VR302 auf 19 kHz ± 50 Hz am Frequenz-Zähler einstellen.

TRENNUNGSABGLEICH

Hinweise:

1. Stereo-Modulator: Stereo-Modulator an EXT. Mod. Anschluss des Messoszillator anschliessen.
2. Messoszillator: Modulation des 19 kHz-Pilottons 10%
   Modulation des rechten und linken Tons 17%
   Ausgangspegel ..... 60 dB
3. Tuner (Balance): Balanceregler so einstellen, dress der Ausgang beider Kanä identisch ist.

GERÄTE-ANSCHLUSS			EINSTELLEN	BEMERKUNGEN
MESSOSZILLATOR	RVM	EINSTELLEN		
Über Hilfsantenne an EXT. FM-Antennen-klemme anschliessen.	Über Laut-sprecher-buchse anschliessen (Imp. 4Ω)	Vertikalen Verstärkereingang des SKOP mit den Anschlüsse des RVM verbinden.	VR301 (Trennungs-regler)	VR301 auf minimale Anzeige des RVM vom linken Ausgang einstellen, wenn die rechte Seite des Stereo-Modulators moduliert wird. VR301 in gleicher Weise für die rechte Seite einstellen. Optimale Balance zwischen „L nach R" und „R nach L" einstellen.

Hinweis: Beim Trennungsabgleich den Frequenzzähler ausschalten.

ANWEISUNGEN ZUM ABGLEICH (KASSETTEN-TONBAND)

Hinweis: Siehe Seite 10 von Abgleichpunkte.

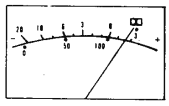
VERZERRUNGSABGLEICH

Hinweise:
1. Tonbandgerät auf RECORDING (Aufnahme) einstellen.
2. DOLBY-Schalter auf OUT (Aus) stellen.

SCHRITT	ABGLEICH-OBJEKT	RVM-ANSCHLUSS		BANDWAHL	PFEIF-UNTERDRÜCK-SCHALTER	EIN-STELLEN	BEMERKUNGEN
		Positiv	Negativ				
1	OSC-Spule	TP801	TP802	NORMAL	A	L804	• L804 auf maximale Anzeige am RVM einstellen, d.h. 0,5V wenn der Pfeif-Unterdrückschalter auf B gestellt ist.
2	Lösch-Strom			CrO_2	A und B	VR801	• VR801 auf 250 ± 10 mV Anzeige auf RVM einstellen.
3	Aufnahmenverzerrung	TP401 (L, Ch)	TP403	NORMAL	A	VR802	• VR802 und VR803 auf 3,4 ± 0,1 mV Anzeige auf RVM einstellen.
		TP402 (R, Ch)				VR803	

ABGLEICH DES AZIMUTH, DOLBY, UND AUFNAHMESTROMS

Hinweise:
1. Tonbandgerät auf PLAY einstellen.
2. Bandwahl: NORMAL

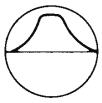
SCHRITTE	ABGLEICH-OBJEKT	RVM-ANSCHLUSS		TESTBAND	DOLBY-SCHALTER	EIN-STELLEN	BEMERKUNGEN
		Positiv	Negativ				
1	R/P-Kopf Azimuth	Lautsprecher Anschluss	Lautsprecher Anschluss	VTT653	OUT	Kopf-schraube	• Schraube auf maximale Anzeige am RVM einstellen. RVM einstellen.
2	Dolby Pegel	TP803	TP805	TM6130	IN	VR401	• VR401 und VR402 auf 580 mV Anzeige am einstellen.
		TP804				VR402	
3	VU-Meter		.....			VR407	• VR407 und VR408 so einstellen, dass die Nadel bis +**3 dB** (DIN-Markierung) ausschlägt. 
						VR408	
4	Aufnahme-Strom	TP401	TP403			VR405	• TP801 and TP802 anschliessen. • Ein 150 mV Audio-Signal auf TP22, TP23, TP24 anpeilen und REC-Lautstärke auf +**3 dB** (DIN-Markierung) am VU-Meter einstellen. VR405 und VR406 auf 0,5 ±0,02 mV Anzeige am RVM einstellen.
		TP402				VR406	

INSTRUCTIONS D'ALIGNEMENT – 1

■ Alignement de AM

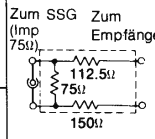
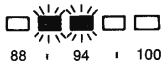
Remarques:

1. Contrôle de volume ..... Au maximum (AM-IF et RF, FM-RF; au minimum (FM-IF)
2. Sélecteur de gamme ..... LW, MW, FM MONO et FM AUTO
3. Présélection FM ..... MANUAL, P1, P2, P3, P4, P5 et P6
4. Envelope sonore ..... OFF
5. Volume de présélection FM (VR102 ~ 107) ..... Tourner tout à fait dans le sens contraire des aiguilles d'une montre.
6. Volume (VR108, 109, 110 et VR901)..... Tourner la commande jusqu'au point central.
7. La sortie du générateur de signaux ne doit pas être supérieure à celle nécessaire pour obtenir la lecture de sortie.
8. S'assurer que les enceintes sont raccordées au récepteur quand on effectue la alignement.

ETAPE	GENERATEUR DE SIGNAUX ou DE BALAYAGE		POSITION DU CURSEUR SUR LE CADRAN	VOLTMETRE ou OSCILLOSCOPE	AJUSTAGE	REMARQUES
	CONNEXION	FREQUENCE				
ALIGNEMENT DE F.I. ET H.F. EN AM						
1	Façonner une boucle de quelques tours de fil et rayonner le signal dans la boucle du récepteur.	455 kHz module à 30% sur 400 Hz	Point sans interférence	Voltmètre sur la prise du haut-parleur gauche (L) (Imp. 4Ω).	T201 (1èr3 TFI sur AM) T202 (2ème TFI sur AM) T203 (3ème TFI sur AM)	• Régler pour une sortie maximale.
2 (LW)		145 kHz module à 30% sur 400 Hz	145 kHz (9,3 mm)		L202 (Bobine d'antenne GO) L204 (Bobine de l'oscillateur GO)	• Régler pour une sortie Maximale en déplaçant la bobine L202 sur le noyau de ferrite. • Se référer à **remarque**.
3 (LW)		350 kHz module à 30% sur 400 Hz	350 kHz (141,2 mm)		CT202 (Compensateur d'antenne GO) CT204 (Compensateur de l'oscillateur GO)	• Régler pour une sortie maximale. • Répéter les étapes (2) et (3).
4 (MW)		550 kHz module à 30% sur 400 Hz	550 kHz (16,5 mm)		L201 (Bobine d'antenne OM) L203 (Bobine de l'oscillateur OM)	• Régler pour une sortie maximale en déplaçant la bobine L201 sur le noyau de ferrite. • Se référer à remarque.
5 (MW)		1500 kHz module à 30% sur 400 Hz	1500 kHz (135,5 mm)		CT201 (Compensateur d'antenne QM) CT203 (Compensateur de l'oscillateur QM)	• Régler pour une sortie maximale. • Répéter les étapes (4) et (5).
Remarque: Cimenter la bobine d'antenne à la cire après avoir terminé l'alignement.						
FM-IF ALIGNMENT						
1	Côté haut connecté par 0,01 μF entre les points TP Ⓐ et TP 101 (masse).	10.7 MHz (400 kHz SWP.)	Point de non-interférence	Connecter l'entrée d'amp. vert. d'oscilloscope entre les points TP202 et TP 203 (masse).	L5	• Ajuster T101 pour avoir une amplitude maximale et une courbe symmétrique. 
2	Pas de connextion	Pas de signal	Libre	Connecter le voltmètre électron. à cour. cont. entre TP204 et TP205.	T204-A (Noyau Brun)	• Régler T204-A pour obtenir la lecture de 0 mV au voltmètre électron.

INSTRUCTIONS D'ALIGNEMENT – 2

■ Alignement de FM·RF

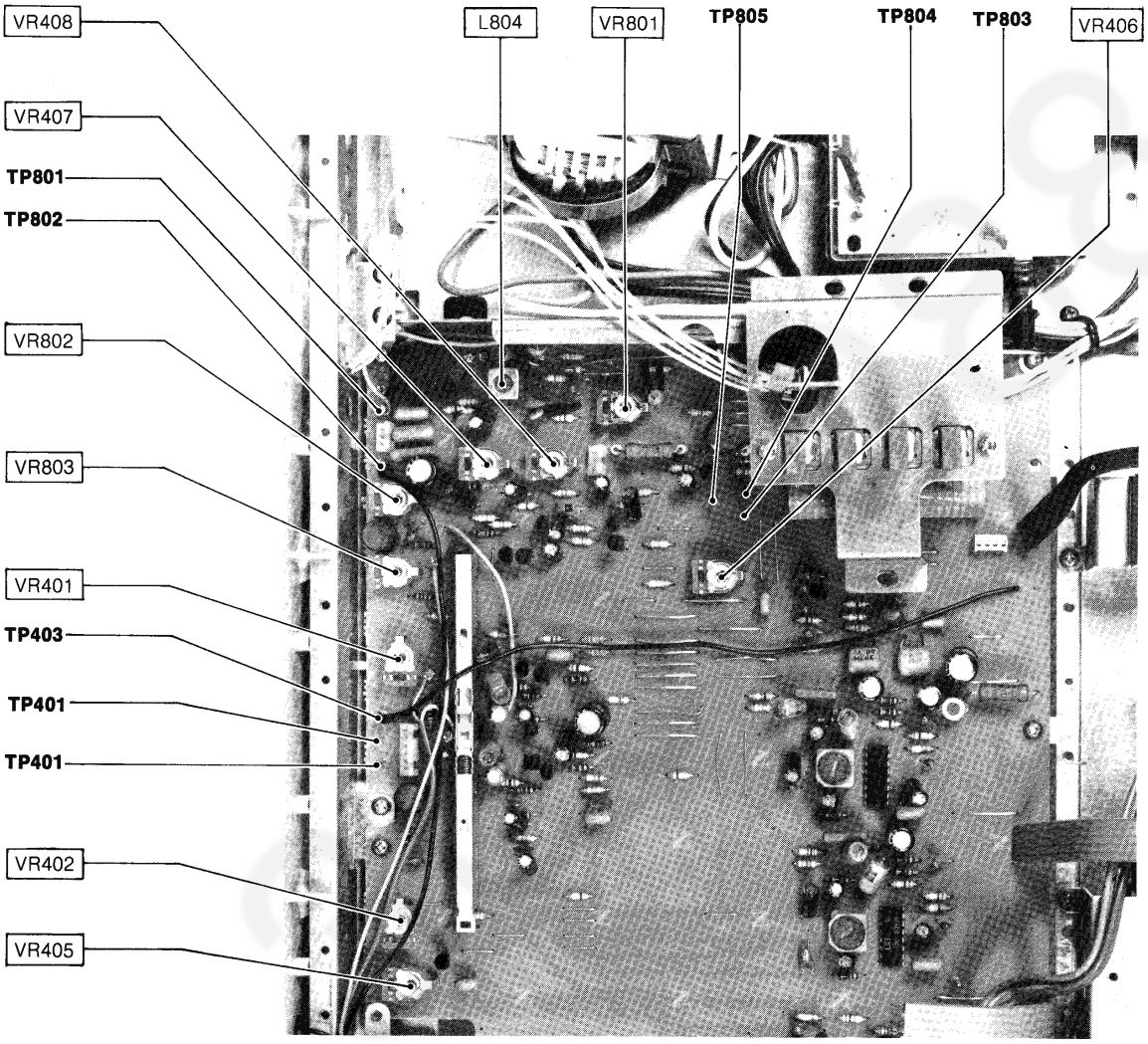
ETAPE	GENERATEUR DE SIGNAUX		POSITION DU CURSEUR SUR LE CADRAN	VOLTMETRE ou OSCILLOSCOPE	BOUTON DE PRESELECTION	REGLAGE	REMARQUES
	CONNEXION	FREQUENCE					
1	Connecter la borne d'antenne FM EXT. par l'intermédiaire de l'antenne fictive.  FM-HILFSANTENNE	106 MHz module à 30% sur 400 Hz	106 MHz (132,02 mm)	Voltmètre sur la prise du haut-parleur gauche (L).	MANUAL	VR901	
2		87,4 MHz module à 30% sur 400 Hz	87,4 MHz (0 mm)			VR108	• Régler pour obtenir la sortie maximale. • Répéter les opérations (1)~(3).
3					P1	VR109	
4		92,5 MHz module à 30% sur 400 Hz	92,5 MHz	Indicateur de FM		VR110	• Régler VR110 pour obtenir la même luminosité aux 2ème et 3ème (94 MHz) diodes lumineuses à partir de la gauche de l'indicateur d'accord FM. 
Remarque: Pour corriger la dérive de la gamme de fréquence FM (87,5~108 MHz), régler VR108, 109, 110 et VR901.							
ALIGNEMENT DE LA DISTORSION SUR FM MONO							
1	Connecter à la borne d'antenne EXT. FM via le circuit de couplage.	98 MHz Module à 100% sur 400 Hz	98 MHz	Distorsionmètre à la prise du haut-parleur gauche (L).	.....	T204-B (Noyau vert) (Disque FTI)	• Régler pour une lecture minimale du distorsionmètre.

■ Alignement stéréo FM

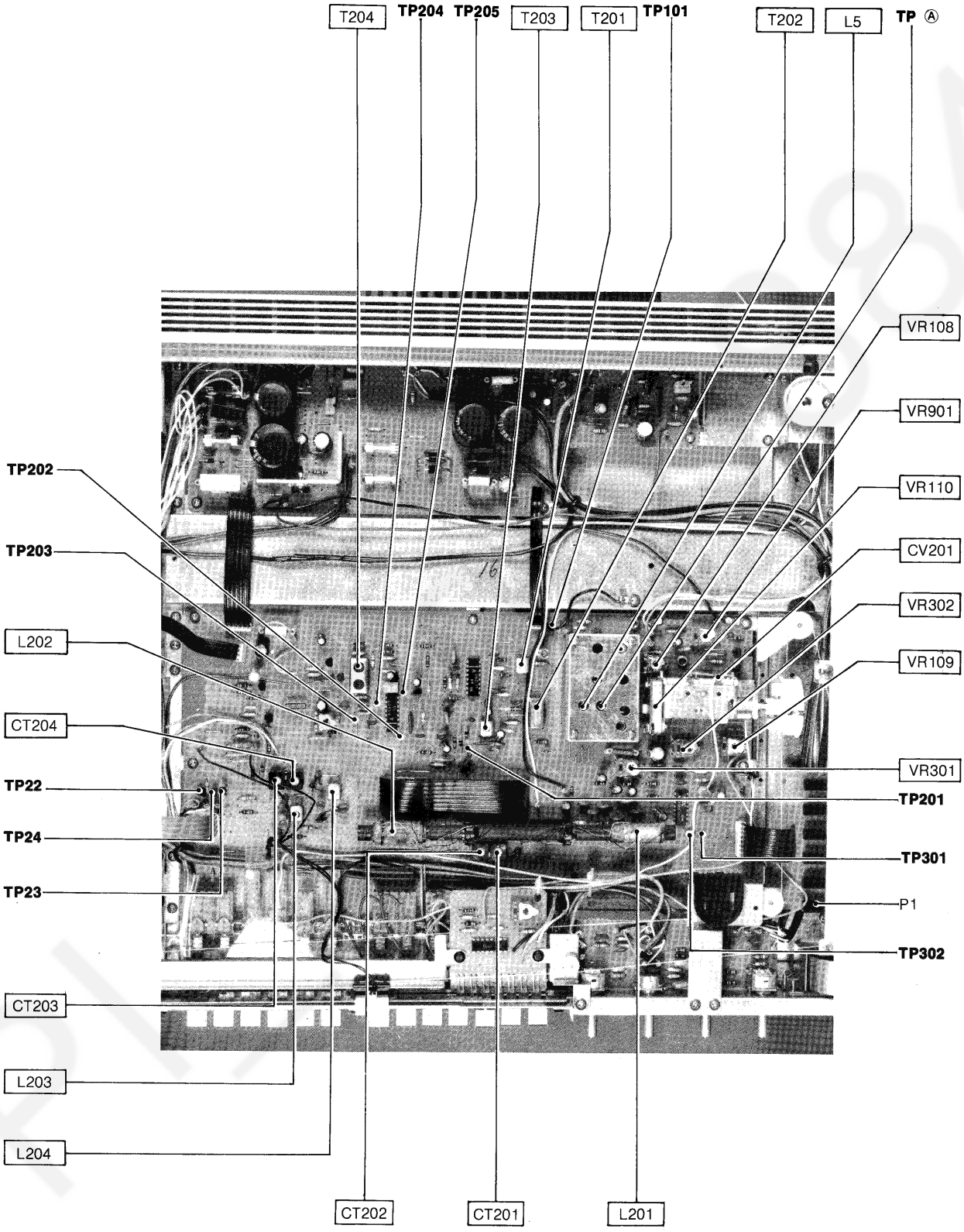
CONNEXION DES INSTRUMENTS	REGLAGE	REMARQUES
Brancher un fréquencemètre à TP301 et TP302 (Masse) à 98 MHz modulé à 30% sur entrée de 60 dB.	VR302	Ajuster VR301 pour une lecture de 19 kHz ± 50 Hz sur le fréquencemètre.
ALIGNEMENT DE LA DIAPHONIE		
Remarques: 1. Modulateur stéréo: Connecter le modulateur stéréo à la borne Mod. Ext. du générateur de signaux. 2. Générateur de signaux: Taux de modulation du signal pilot de 19 kHz ..... 10% Taux de modulation des signaux gauche et droit ..... 27% Niveau de sortie..... 60 dB 3. Tuner (contrôle d'équilibrage): Régler le contrôle d'équilibrage de sorte que la sortie des deux canaux soit égale.		

CONNEXION DES INSTRUMENTS			REGLAGE	REMARQUES
GENERATEUR DE SIGNAUX	VOLTMETRE	OSCILLOSCOPE		
Connecter à la borne d'antenne EXT. FM via le circuit de couplage.	Connecter à la prise de hautparleur. (Inp. 4Ω)	Connecter la sonde verticale à la sonde du voltmètre.	VR301 (Commande de séparation)	Régler VR301 pour une lecture minimale sur le canal lorsque le signal module est sur le canal droit. Régler VR301 de la même manière pour le canal droit. Régler pour un équilibrage parfait entre gauche et droit et pour une meilleure séparation, il faut débrancher le fréquencemètre.
Remarque: Pour l'alignement de la séparation, il faut débrancher le fréquencemètre.				

INSTRUCTIONS D'ALIGNEMENT (MAGNETOPHONE)



POINTS D'ALIGNEMENT



INSTRUCTIONS D'ALIGNEMENT (MAGNETOPHONE)

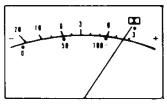
TENSION DE ALIGNEMENT

Position des commendes: 1. Condition du magnétophone ..... Condition d'enregistrement
2. Commutateur Dolby ..... SORTI

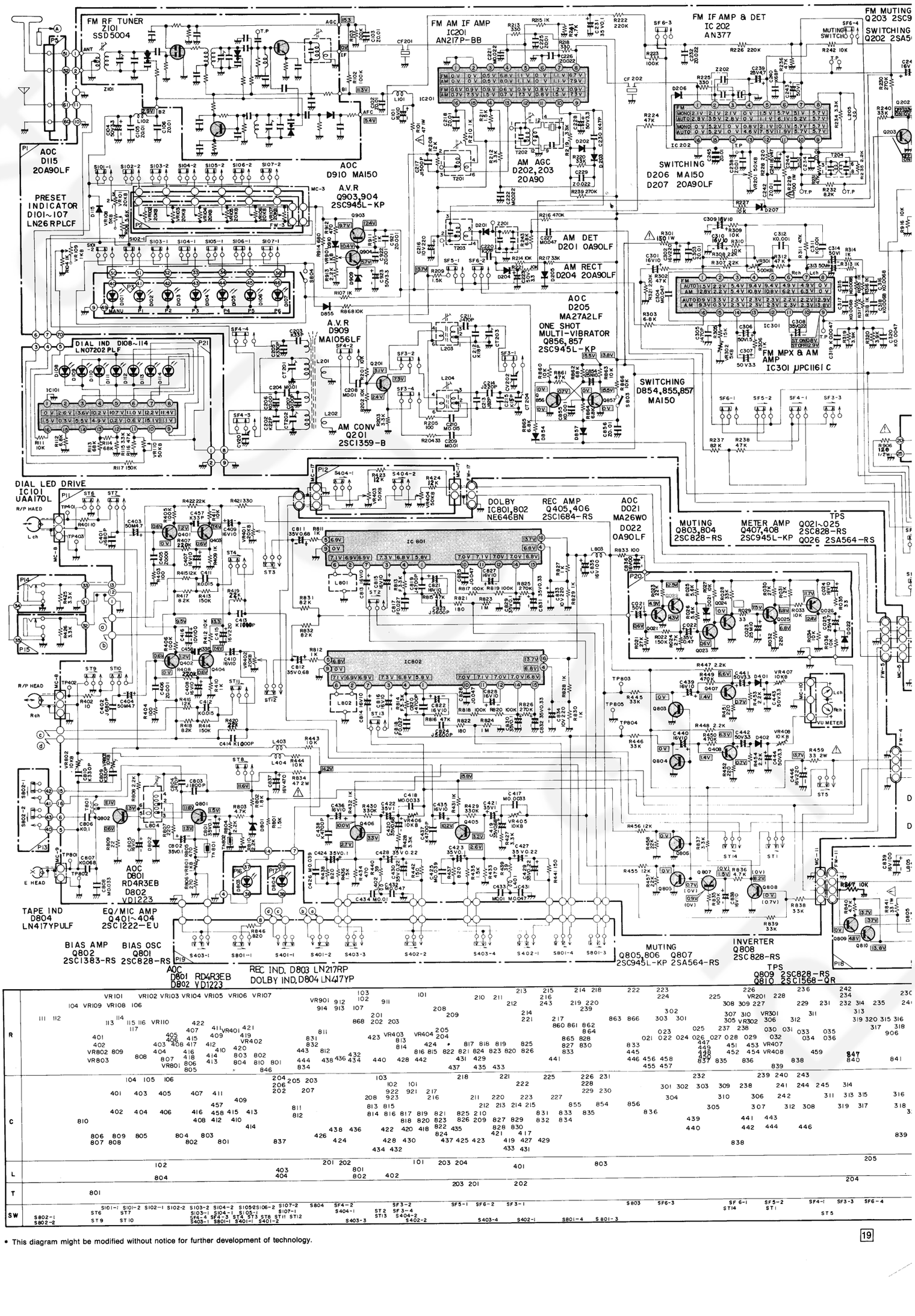
ETAPE	ARTICLE DE ALIGNMENT	CONNEXION DU VOLTMETRE		SELECTEUR DE BANDE	COMMUTATEUR DE SUPPRESSION DE SIFFLEMENT	REGLAGE	REMARQUES
		Positif	Négatif				
1	Bobine OSC	TP801	TP802	NORMAL	A	L804	• Régler L804 pour obtenir l'indication maximale au voltmètre électron. et doit être dans la limite de 0,5V quand le commutateur de suppression de sifflement est B.
2	Courant d'effacement			CrO_2	A et B	VR801	• Régler VR801 pour obtenir l'indication 250 ± 10 mV au voltmètre électron.
3	Polarisation d'enregistre-ment	TP401 (L, Ch)	TP403	NORMAL	A	VR802	• Régler VR802 et VR803 pour obtenir l'indication 3,4 ±0,1 mV au voltmètre électron.
		TP402 (R, Ch)				VR803	

ALIGNEMENT AZIMUT, DOLBY, COURANT REC

Position des commendes: 1. Condition du magnétophone ..... Condition de reproduction PLAY
2. Sélecteur de bande ..... NORMAL

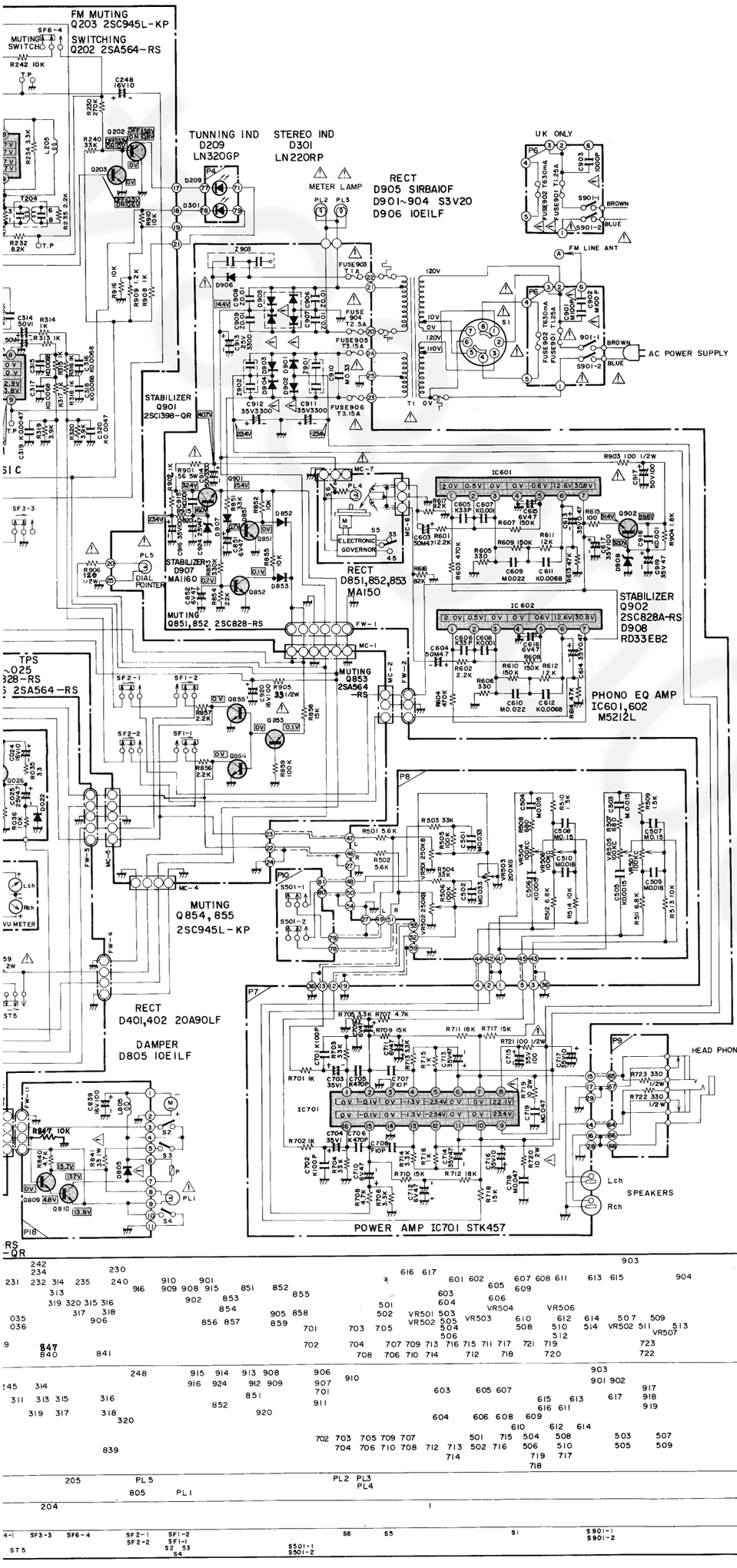
ETAPE	ARTICLE DE ALIGNMENT	CONNEXION DU VOLTMETRE		BANDE D'ESSAI	COMMUTATEUR DE DOLBY	REGLAGE	REMARQUES
		Positif	Négatif				
1	Azimut tête Enr./Rep.	Borne de haut-parleur (Borne)	Borne de haut-parleur (Borne)	VTT653	OUT	Vis de tête	• Régler la vis pour obtenir l'indication au voltmètre électron.
2	Niveau Dolby	TP803	TP805	TM6130	IN	VR401	• Régler VR401 et VR402 pour obtenir l'indication 580 ± 20 mV au voltmètre électron.
		TP804				VR402	
3	VU-Mètre	.....	.....			VR407	• Rétler VR407 et 408 de façon que l'aiguille dévie juste à + **3 dB** (marque ◧◨). 
						VR408	
4	Courant Rec.	TP401	TP403	.....		VR405	• Connecter TP801 à TP802. • Appliquer un signal audio de 150 mV à TP22, TP23, TP24 et régler le volume REC à +**3 dB** (marque ◧◨) au VU-mètre. Régler VR405 et 406 pour obtenir la lecture de 0,5 + 0,02 mV au voltmètre électron.
		TP402				VR406	

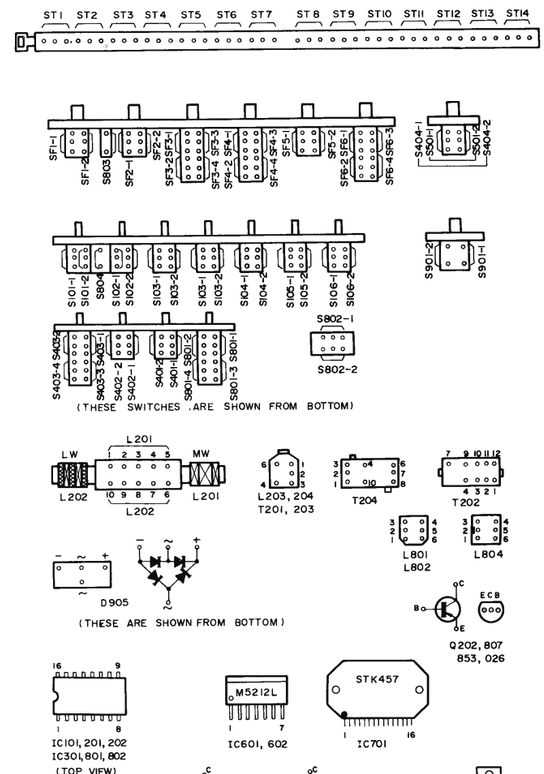
SCHEMATIC DIA



• This diagram might be modified without notice for further development of technology.

MATIC DIAGRAM





NOTES

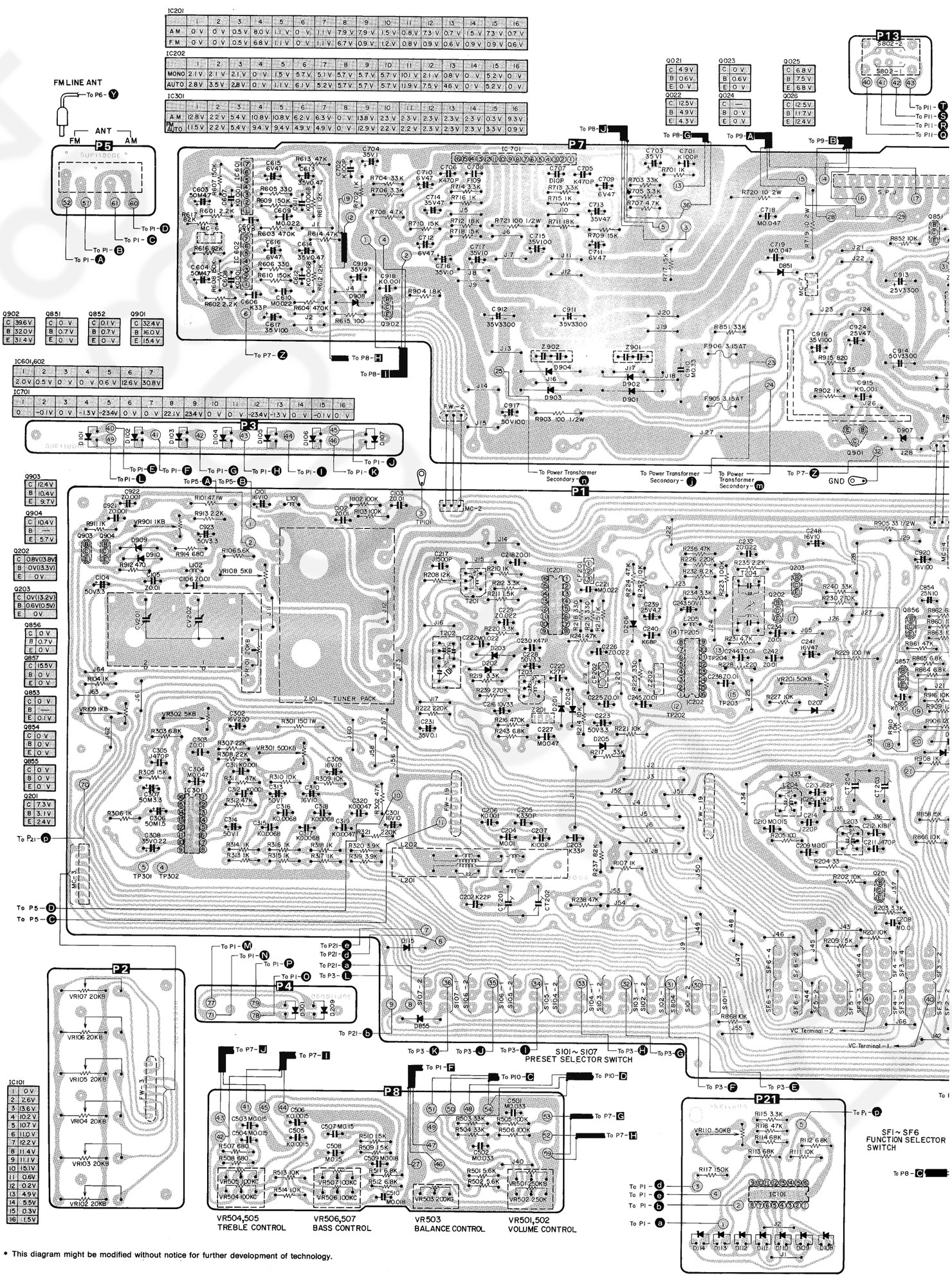
1) S1 : POWER VOLTAGE SELECTOR SWITCH IN "220V" POSITION
   S2 : TAPE MOTOR SWITCH IN "OFF" POSITION
   S3 : TAPE PLAYBACK SWITCH IN "OFF" POSITION
   S4 : TAPE FF/REW SWITCH IN "OFF" POSITION
   S5 : SPEED SELECTOR SWITCH IN "33rpm" POSITION
   S6 : PHONO MOTOR SWITCH IN "OFF" POSITION
   S101~107 : PRE SET SELECTOR SWITCH IN "MANUAL" POSITION
   SF1~SF6 : FUNCTION SELECTOR SWITCH IN "TAPE" POSITION
   (SF6 : FM AUTO SF5 : FM MONO SF4 : MW SF3 : LW
   SF2 : PHONO SF1 : TAPE)
   ST1~ST14 : REC/PLAY SELECTOR SWITCH IN "PLAY" POSITION
   S401~S403 : TAPE SELECTOR SWITCH IN "NORMAL" POSITION
   (S401 : NORMAL S402 : Fe-Cr S403 : CrO2
   S404 : RECORDING MUTE SWITCH IN "OFF" POSITION
   S501 : LOUDNES SWITCH IN "OFF" POSITION
   S801 : DOLBY NR SWITCH IN "OUT" POSITION
   S802 : WHISTLE DEFEAT SWITCH IN "A" POSITION
   S803 : FUNCTION MUTING SWITCH IN "OFF" POSITION
   S804 : PRE SET MUTING SWITCH IN "OFF" POSITION
   S901 : POWER SWITCH IN "OFF" POSITION
2) Letters Z.M.K.J & F indicate folerance of Capacitors as follows
   Z: +80% −20% M: ±20% K: ±10% J: ±5% F: ±1%
3) DC Voltages are to be measured with VTVM under no signal condition in "AM" "FM" position
4) The ⚠ marks is safety parts.

IMPORTANT SAFETY NOTICE

THE ⚠ MARK ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY.
WHEN SERVICING IT IS ESSEMTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS MARKED ⚠ IN THE SCHEMATIC.

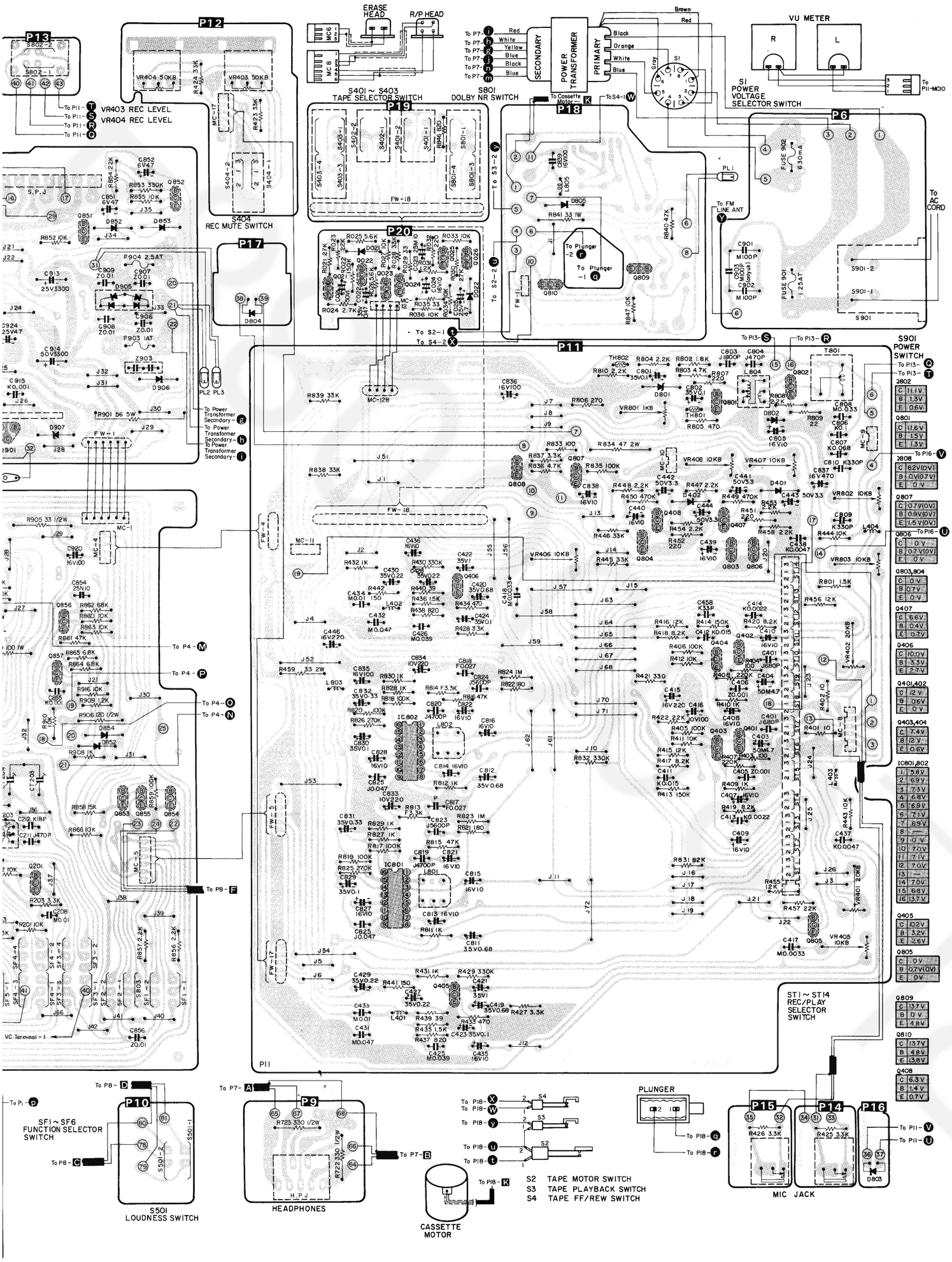
SCHEMATIC DIAGRAM MODEL SG-4000

CIRCUIT BOARD AND WIR

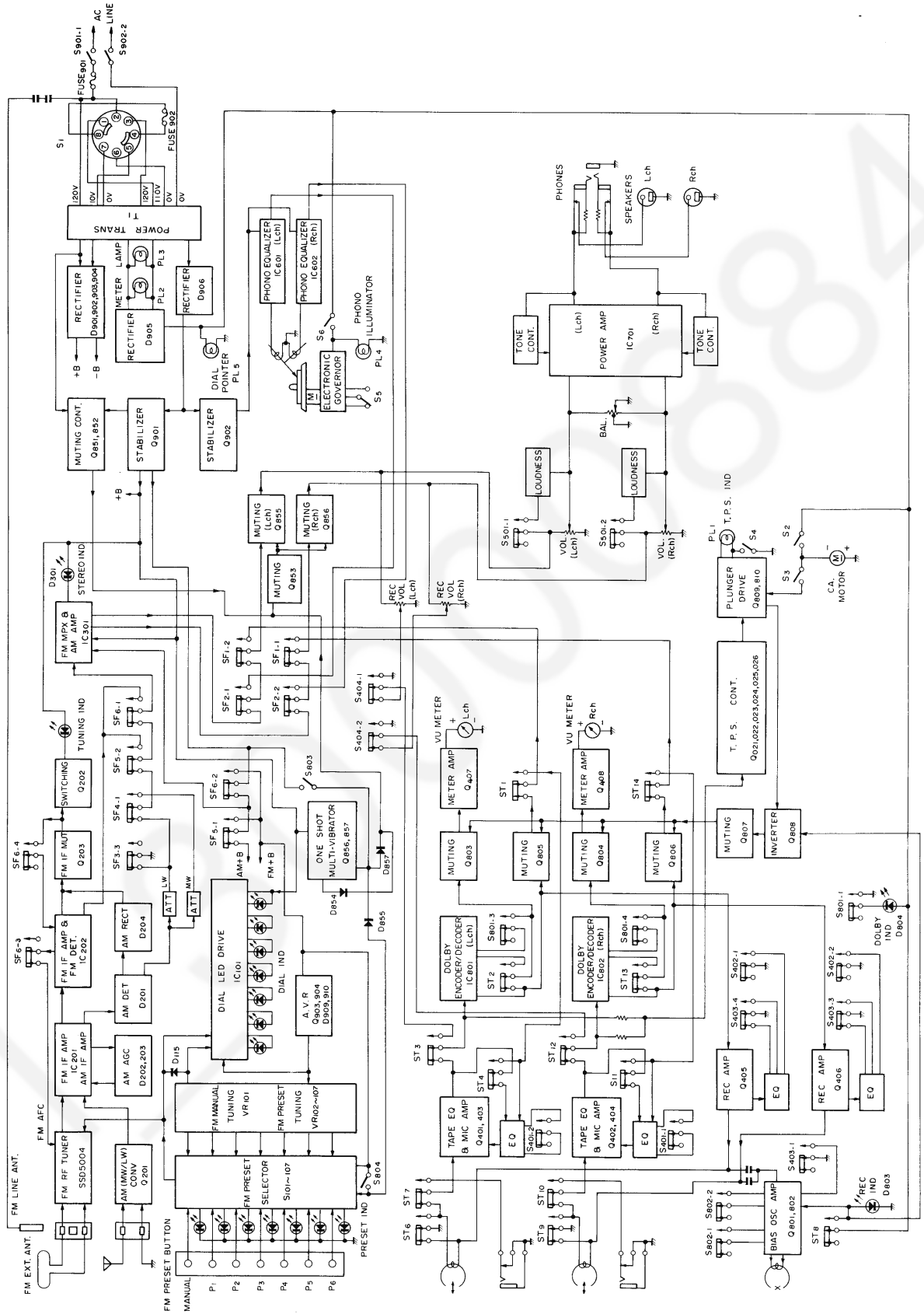


* This diagram might be modified without notice for further development of technology.

AND WIRING CONNECTION

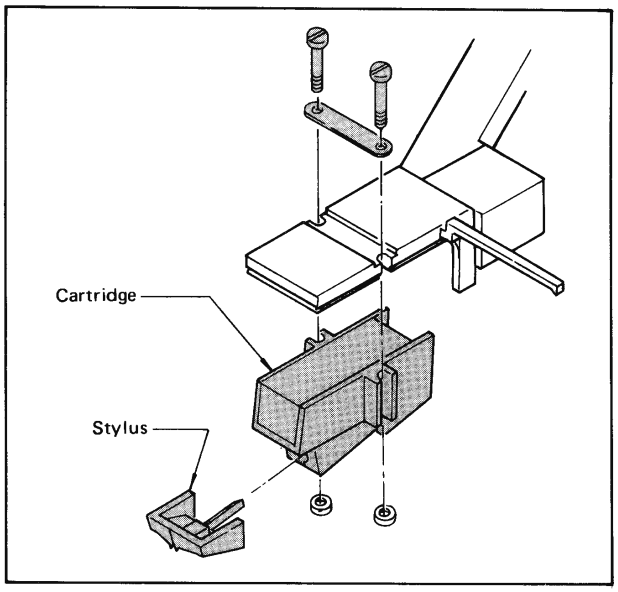


BLOCK DIAGRAM

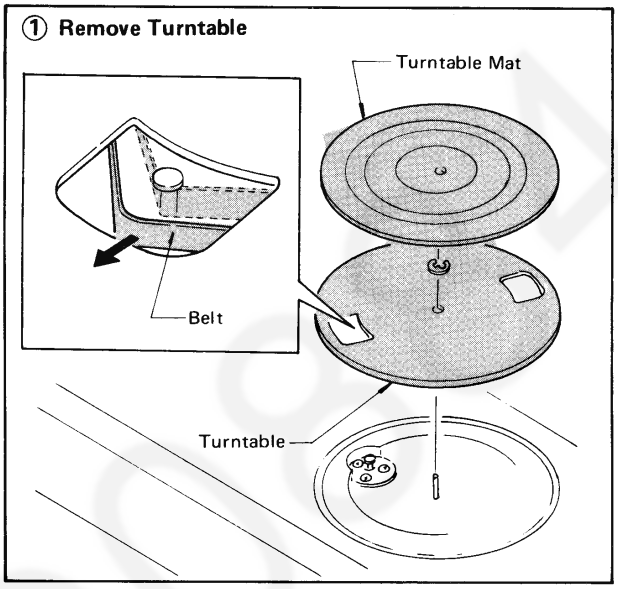


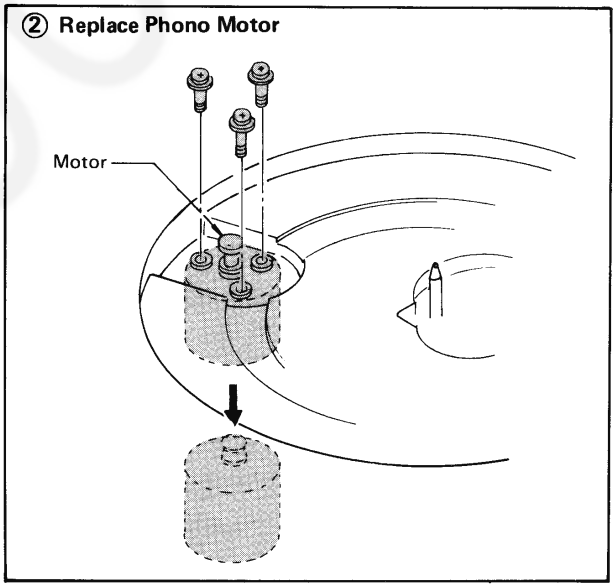
SERVICING THE RECORD PLAYER

■ CARTRIDGE AND STYLUS REPLACEMENT



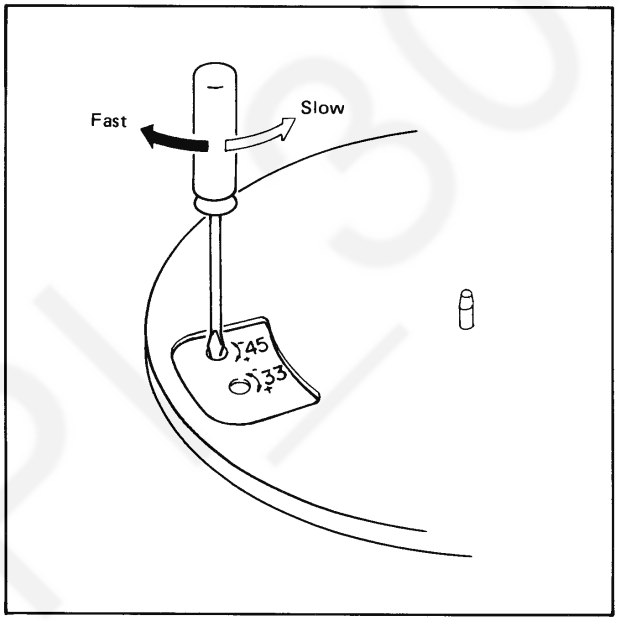
■ PHONO MOTOR REPLACEMENT





■ MOTOR SPEED ADJUSTMENT

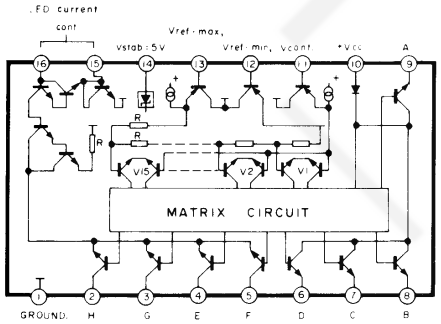
Adjust the screw when the turntable rotation going out of normal speed.



IC BLOCK DIAGRAMS

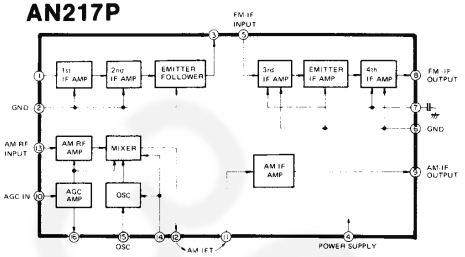
IC101

UAA170L



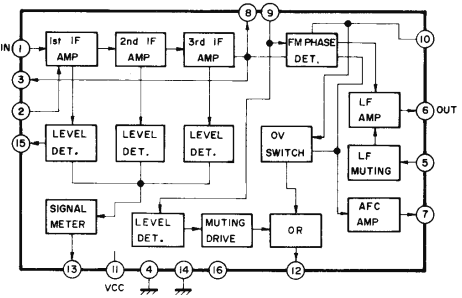
IC201

AN217P



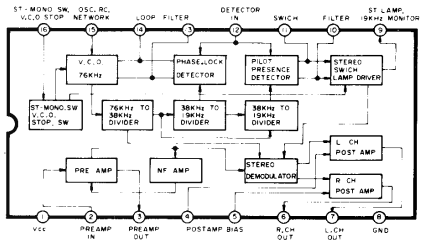
IC202

AN377



IC301

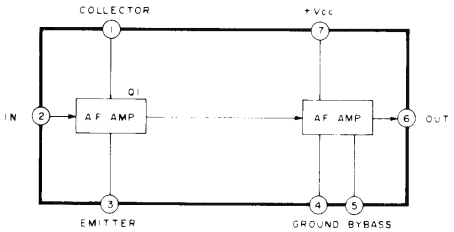
μPC1161C



23

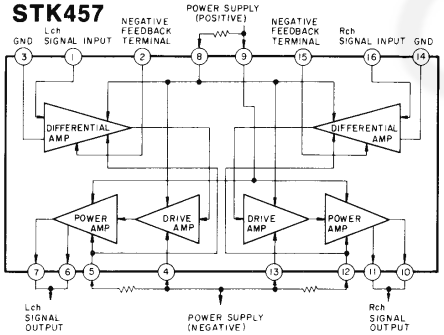
IC601,602

M5212L



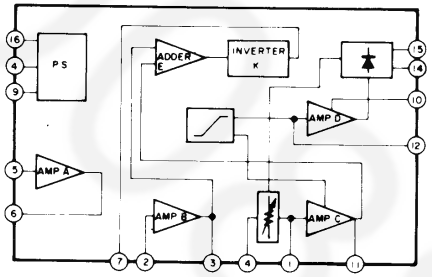
IC701

STK457



IC801,802

NE646BN



SG-4000

REPLACEMENT PARTS LIST

NOTE:

1. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
2. Parts No. listed in this Parts List are of Service Parts.
3. GFO ..... Franse, MESE, Austria, Netherlands, Belgium, Malta, Germany.

Ref. No.	Part No.	Description	Per Set (pcs.)
TRANSISTORS			
Q021,022	2SC828	Transistor	2
Q023,024	2SC828	Transistor	2
Q025	2SC828	Transistor	1
Q026	2SA564	Transistor	1
Q201	2SC1359	Transistor	1
Q202	2SA564	Transistor	1
Q203	2SC945L	Transistor	1
Q401,402	2SC1222	Transistor	2
Q403,404	2SC1222	Transistor	2
Q405,506	2SC1684	Transistor	2
Q407,408	2SC945L	Transistor	2
Q801	2SC828	Transistor	1
Q802	2SC1383	Transistor	1
Q803,804	2SC828	Transistor	2
Q805,806	2SC945L	Transistor	2
Q807	2SA564	Transistor	1
Q808,809	2SC828	Transistor	2
Q810	2SC1568	Transistor	1
Q851,852	2SC828	Transistor	2
Q853	2SA564	Transistor	1
Q854,855	2SC945L	Transistor	2
Q856,857	2SC945L	Transistor	2
Q901	2SC1398	Transistor	1
Q902	2SC828A	Transistor	1
Q903,904	2SC945L	Transistor	2
INTEGRATED CIRCUITS			
IC101	UAA170L	IC	1
IC201	AN217P	IC	1
IC202	AN377	IC	1
IC301	μPC1161C	IC	1
IC601,602	M5212L	IC	2
IC701	STK457	IC	1
IC801,802	NE646BN	IC	2

Ref. No.	Part No.	Description	Per Set (pcs.)
DIODES			
D021	MA26WO	Diode	1
D022	2OA90	Diode	1
D101,102	LN26RPLCF	LED	2
D103,104	LN26RPLCF	LED	2
D105,106	LN26RPLCF	LED	2
D107	LN26RPLCF	LED	1
D108,109	LN0720ZPLF	LED	2
D110,111	LN0720ZPLF	LED	2
D112,113	LN0720ZPLF	LED	2
D114	LN0720ZPLF	LED	1
D115	2OA90	Diode	1
D201,202	2OA90	Diode	2
D203,204	2OA90	Diode	2
D205	MA27A2	Diode	1
D206	MA150	Diode	1
D207	2OA90	Diode	1
D209	LN320GP	LED	1
D301	LN220RP	LED	1
D401,402	20A90	Diode	2
D801	RD4R3EB	Diode	1
D802	VD1223	Diode	1
D803	LN217RPLF	LED	1
D804	LN417YPULF	LED	1
D805	SM112	Diode	1
D851,852	MA150	Diode	2
D853,854	MA150	Diode	2
D855	MA150	Diode	1
D857	MA150	Diode	1
D901,902	S3V20	Diode	2
D903,904	S3V20	Diode	2
D905	S1RBA10	Diode	1
D906	SM112	Diode	1
D907	MA1160	Diode	1
D908	RD33EB2	Diode	1
D909	MA1056	Diode	1
D910	MA150	Diode	1
THERMISTERS			
TH801,802	ERTD2FHK202S	Thermister	2
LAMPS AND FUSES			
PL1,2 ⚠	XAMR53X300	Lamp 14V 50mA	2
PL3 ⚠	XAMR53X500	Lamp 14V 50mA	1
PL4 ⚠	XAMR51X400	Lamp12.6V 50mA	1
PL5 ⚠	XAMR50X300	Lamp 12.6V 30mA	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
F901 ⚠	XBA2C12TR0	Fuse	1
F902 ⚠	XBA2C06TR0	Fuse	1
F903 ⚠	XBA2C10TR0	Fuse	1
F904 ⚠	XBA2C25TR0	Fuse	1
F905,906 ⚠	XBA2C31TR0	Fuse	2
METER			
M1	SSM162	VU Meter	2
COILS AND TRANSFORMERS			
L101,102	RLQY30S1-O	Coil RFC	2
L201	SLF6G42-O	Ferrite Ant. MW	1
L202	SLF6G42-O	Ferrite Ant. LW	1
L203	SLO2M6-M	OSC Coil, MW	1
L204	SLO1M8-M	OSC Coil, LW	1
L205	SLQX180-4M	Choke Coil	1
L401,402	SLQU222-2Y	Coil	2
L403,404	SLQV393-4M	Coil Trap	2
L801,802	SLM9Z6-M	Coil Trap	2
L803	SLQU270-2K	Coil RFC	1
L804	SLO9Z10-K	OSC Coil, Bias	1
L805	SLQU270-2K	Coil RFC	1
T1 ⚠	SLT5M98-W	Power Trans.	1
T201	SLI2M102-M	1st IFT, AM	1
T202	RLI7V102-M	CFT, AM (Except UK)	1
T202	SLI9W106P-M	CFT, AM (for UK)	1
T203	RLI2M402-M	IFT, AM 2nd	1
T204	SLI4D513-Z	Disc Coil, FM	1
T801	SLT6E4	Output	1
CF201,202	SVF107MA53	CFT, FM	2
COMPONENT COMBINATIONS			
Z201	EXAF203Z471	C-R	1
Z202	EXF3SL04	C-C	1
Z901,902	EXRFS203ZS	C-C	2
Z903	EXRFS203ZS	C-C	1

Ref. No.	Part No.	Description	Per Set (pcs.)
VARIABLE RESISTORS			
VR102,103	EWEU7A015B24	Preset 20kΩ B	2
VR104,105	EWEU7A015B24	Preset 20kΩ B	2
VR106,107	EWEU7A015B24	Preset 20kΩ B	2
VR108	EVLS3AA00B53	Preset 5kΩ B	1
VR109	EVLS3AA00B13	Preset 1kΩ B	1
VR110	EVLS3AA00B54	Preset 50kΩ B	1
VR201	EVLS3AA00B54	Preset 50kΩ B	1
VR301	EVLS3AA00B55	Preset 500kΩ B	1
VR302	EVTS3MA00B55	Preset 5kΩ B	1
VR401,402	EVLS3AA00B24	Preset 20kΩ B	2
VR403,404	EVH7XAF30B54	Rec. Volume 50kΩ B	2
VR405,406	EVLS3AA00B14	Preset 10kΩ B	2
VR407,408	EVLS3AA00B14	Preset 10kΩ B	2
VR501,502	EWKK7A091BF5	Volume 250kΩ B	1
VR503	EVHFDA505G25	Balance 200kΩ G	1
VR504,505	EWKEUA091C15	Tone 100kΩ C	1
VR506,507	EWKEUA091C15	Tone 100kΩ C	1
VR801	EVLS3AA00B13	Preset 1kΩB	1
VR802,803	EVLS3AA00B14	Preset 10kΩB	2
VR901	EVLS3AA00B13	Preset 1kΩB	1
VARIABLE CAPACITORS			
CT201,202	SCVCTY211D31	Trimmer	1
CT203,204	SCVCTY211D31	Trimmer	1
CV201,202 (VR101)	SCVCE21W114	Tuning with Variable Resistor	1
SWITCHES			
S1 ⚠	ESE37205	Voltage Selector	1
S101～107	SSH710	Preset	1
S401～403,801	SSH412	Tape Selector	1
S404	SSH66	Rec Muting	1
S501	SSH90	Loudness	1
S802	SSS94	Whistle Defeat	1
S901 ⚠	SSH88	Power	1
ST1～14	ESD81548	Rec/Play SW	1
SF1～6	SSH628	Function	1
TUNER			
Z101	SSD5004	FM RF Tuner	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
PACKINGS			
1	SPN3688	Carton Box	1
2	SPN3716	Pad	1
3	SPN3720	Pad, Dust Cover	1
4	XZB92X63C05	Poly Cover	1
OTHERS			
1	SQX50146	Instruction Book (Except UK, Norway, Denmark, Sweden, Finland)	1
1	SQX50084	Instruction Book (for UK)	1
1	SQX50072	Instruction Book (for Norway, Denmark, Sweden, Finland)	1
2	SPT1HCZNRAZ1	Demonstration Tape	1
		(only Austria, France)	1
3	OL340	Silicone Oil (for Transistor and Power IC)	2
4	AD1600	Adhesives	1
5	SZOGM0380	Grease (for Player)	1
6	KF96HIMCS	Silicone Oil (for Sliding Board Ass'y)	1
7	SJP9206	Plug. FM Antenna	1

Numbering System of Resistor

Type	Wattage	Tolerance	Value
Three Letters	One or Two Letters	Two or Three Letters	Three or Four Letters

Example:

E R D 2 5 T J 1 0 1

Resistor Type	Tolerance
ERD: Carbon Film	F: ±1%
ERC: Solid	J: ±5%
ERX: Metal Film	K: ±10%
ERG: Metal Oxide Film	
ERO: High Stability Metal Film	
ERF: Flameproof Wire-Wound Bath-Tube	
ERQ: Fuse Type Metal Film	

Ref. No.	Part No.	Description	Per Set (pcs.)
RESISTORS			
R021	ERD25TJ273	27kΩ 1/4W	1
R022	ERD25TJ154	150kΩ 1/4W	1
R023	ERD25TJ223	22kΩ 1/4W	1
R024	ERD25TJ272	2.7kΩ 1/4W	1
R025,026	ERD25TJ562	5.6kΩ 1/4W	2
R027	ERD25TJ103	10kΩ 1/4W	1
R028	ERD25TJ333	33kΩ 1/4W	1
R029	ERD25TJ330	33Ω 1/4W	1
R030	ERD25TJ273	27kΩ 1/4W	1
R031	ERD25TJ122	1.2kΩ 1/4W	1
R032	ERD25TJ221	220Ω 1/4W	1
R033,034	ERD25TJ103	10kΩ 1/4W	2
R035	ERD25TJ330	33Ω 1/4W	1
R036	ERD25TJ103	10kΩ 1/4W	1
R101 ⚠	ERG1ANJ470	47Ω 1W	1
R102,103	ERD25TJ104	100kΩ 1/4W	2
R104	ERD25TJ102	1kΩ 1/4W	1
R106	ERD25TJ562	5.6kΩ 1/4W	1
R107	ERD25TJ102	1kΩ 1/4W	1
R111	ERD25TJ103	10kΩ 1/4W	1
R112	ERD25TJ682	6.8kΩ 1/4W	1
R113,114	ERD25TJ683	68kΩ 1/4W	2
R115	ERD25TJ332	3.3kΩ 1/4W	1
R116	ERD25TJ473	47kΩ 1/4W	1
R117	ERD25TJ154	150kΩ 1/4W	1
R201,202	ERD25TJ103	10kΩ 1/4W	2
R203	ERD25TJ332	3.3kΩ 1/4W	1
R204	ERD25TJ330	33Ω 1/4W	1
R205	ERD25TJ101	100Ω 1/4W	1
R208	ERD25TJ123	12kΩ 1/4W	1
R209	ERD25TJ152	1.5kΩ 1/4W	1
R210	ERD25TJ102	1kΩ 1/4W	1
R211	ERD25TJ152	1.5kΩ 1/4W	1
R212	ERD25TJ332	3.3kΩ 1/4W	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description		Per Set (pcs.)
R213	ERD25TJ331	330Ω	1/4W	1
R214	ERD25TJ103	10kΩ	1/4W	1
R215	ERD25TJ102	1kΩ	1/4W	1
R216	ERD25TJ474	470kΩ	1/4W	1
R217	ERD25TJ333	33kΩ	1/4W	1
R218	ERD25TJ331	330Ω	1/4W	1
R219,220	ERD25TJ333	33kΩ	1/4W	2
R221	ERD25TJ103	10kΩ	1/4W	1
R222	ERD25TJ224	220kΩ	1/4W	1
R223	ERD25TJ104	100kΩ	1/4W	1
R224	ERD25TJ473	47kΩ	1/4W	1
R225	ERD25TJ331	330Ω	1/4W	1
R226	ERD25TJ224	220kΩ	1/4W	1
R227	ERD25TJ103	10kΩ	1/4W	1
R228	ERD25TJ221	220Ω	1/4W	1
R229 ⚠	ERG1ANJ101	100Ω	1W	1
R230	ERD25TJ274	270kΩ	1/4W	1
R231	ERD25TJ472	4.7kΩ	1/4W	1
R232	ERD25TJ822	8.2kΩ	1/4W	1
R234	ERD25TJ332	3.3kΩ	1/4W	1
R235	ERD25TJ222	2.2kΩ	1/4W	1
R236	ERD25TJ473	47kΩ	1/4W	1
R237	ERD25TJ823	82kΩ	1/4W	1
R238	ERD25TJ473	47kΩ	1/4W	1
R239	ERD25TJ274	270kΩ	1/4W	1
R240	ERD25TJ333	33kΩ	1/4W	1
R241	ERD25TJ472	4.7kΩ	1/4W	1
R242	ERD25TJ103	10kΩ	1/4W	1
R243	ERD25TJ682	6.8kΩ	1/4W	1
R301 ⚠	ERG1ANJ151	150Ω	1W	1
R302	ERD25TJ473	47kΩ	1/4W	1
R303	ERD25TJ682	6.8kΩ	1/4W	1
R305	ERD25TJ153	15kΩ	1/4W	1
R306	ERD25TJ102	1kΩ	1/4W	1
R307,308	ERD25TJ223	22kΩ	1/4W	2
R309,310	ERD25TJ103	10kΩ	1/4W	2
R311,312	ERD25TJ473	47kΩ	1/4W	2
R313,314	ERD25TJ102	1kΩ	1/4W	2
R315,316	ERD25TJ102	1kΩ	1/4W	2
R317,318	ERD25TJ102	1kΩ	1/4W	2
R319,320	ERD25TJ392	3.9kΩ	1/4W	2
R321	ERD25TJ224	220kΩ	1/4W	1
R401,402	ERD25TJ100	10Ω	1/4W	2
R403,404	ERD25TJ101	100Ω	1/4W	2
R405,406	ERD25TJ104	100kΩ	1/4W	2
R407,408	ERD25TJ224	220kΩ	1/4W	2
R409,410	ERD25TJ102	1kΩ	1/4W	2
R411,412	ERD25TJ103	10kΩ	1/4W	2
R413,414	ERD25TJ154	150kΩ	1/4W	2
R415,416	ERD25TJ123	12kΩ	1/4W	2
R417,418	ERD25TJ822	8.2kΩ	1/4W	2
R419,420	ERD25TJ223	22kΩ	1/4W	2
R421	ERD25TJ331	330Ω	1/4W	1
R422	ERD25TJ223	22kΩ	1/4W	1

Ref. No.	Part No.	Description		Per Set (pcs.)
R423,424	ERD25TJ333	33kΩ	1/4W	2
R425,426	ERD25TJ332	3.3kΩ	1/4W	2
R427,428	ERD25TJ332	3.3kΩ	1/4W	2
R429,430	ERD25TJ334	330kΩ	1/4W	2
R431,432	ERD25TJ102	1kΩ	1/4W	2
R433,434	ERD25TJ471	470Ω	1/4W	2
R435,436	ERD25TJ152	1.5kΩ	1/4W	2
R437,438	ERD25TJ821	820Ω	1/4W	2
R439,440	ERD25TJ390	39Ω	1/4W	2
R441,442	ERD25TJ151	150Ω	1/4W	2
R443,444	ERD25TJ103	10kΩ	1/4W	2
R445,446	ERD25TJ333	33kΩ	1/4W	2
R447,448	ERD25TJ222	2.2kΩ	1/4W	2
R449,450	ERD25TJ474	470kΩ	1/4W	2
R451,452	ERD25TJ221	220Ω	1/4W	2
R453,454	ERD25TJ222	2.2kΩ	1/4W	2
R455,456	ERD25TJ123	12kΩ	1/4W	2
R457,458	ERD25TJ223	22kΩ	1/4W	2
R459 ⚠	ERG2ANJ330	33Ω	2W	1
R501,502	ERD25TJ562	5.6kΩ	1/4W	2
R503,504	ERD25TJ333	33kΩ	1/4W	2
R505,506	ERD25TJ104	100kΩ	1/4W	2
R507,508	ERD25TJ681	680Ω	1/4W	2
R509,510	ERD25TJ152	1.5kΩ	1/4W	2
R511,512	ERD25TJ682	6.8kΩ	1/4W	2
R513,514	ERD25TJ103	10kΩ	1/4W	2
R601,602	ERD25TJ222	2.2kΩ	1/4W	2
R603,604	ERD25TJ474	470kΩ	1/4W	2
R605,606	ERD25TJ331	330Ω	1/4W	2
R607,608	ERD25TJ154	150kΩ	1/4W	2
R609,610	ERD25TJ154	150kΩ	1/4W	2
R611,612	ERD25TJ123	12kΩ	1/4W	2
R613,614	ERD25TJ473	47kΩ	1/4W	2
R615	ERD25TJ101	100Ω	1/4W	1
R616,617	ERD25TJ823	82kΩ	1/4W	2
R701,702	ERD25TJ102	1kΩ	1/4W	2
R703,704	ERD25TJ333	33kΩ	1/4W	2
R705,706	ERD25TJ332	3.3kΩ	1/4W	2
R707,708	ERD25TJ472	4.7kΩ	1/4W	2
R709,710	ERD25TJ153	15kΩ	1/4W	2
R711,712	ERD25TJ123	12kΩ	1/4W	2
R713,714	ERD25TJ332	3.3kΩ	1/4W	2
R715,716	ERD25TJ102	1kΩ	1/4W	2
R717,718	ERD25TJ153	15kΩ	1/4W	2
R719,720 ⚠	ERG2ANJ100	10Ω	2W	2
R721 ⚠	ERQ12HJ101	100Ω	2W	1
R722,723	ERD50TJ331	330Ω	1/2W	2
R801	ERD25TJ152	1.5kΩ	1/4W	1
R802	ERD25TJ182	1.8kΩ	1/4W	1
R803	ERD25TJ472	4.7kΩ	1/4W	1
R804	ERD25TJ222	2.2kΩ	1/4W	1
R805	ERD25TJ471	470Ω	1/4W	1
R806	ERD25TJ271	270Ω	1/4W	1
R807	ERD25TJ221	220Ω	1/4W	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description		Per Set (pcs.)
R808	ERD25TJ222	2.2kΩ	1/4W	1
R809	ERD25TJ220	22Ω	1/4W	1
R810	ERD25TJ222	2.2kΩ	1/4W	1
R811,812	ERD25TJ102	1kΩ	1/4W	2
R813,814 ⚠	ERO25CKF3301	33kΩ	1/4W	2
R815,816	ERD25TJ473	47kΩ	1/4W	2
R817,818	ERD25TJ104	100kΩ	1/4W	2
R819,820	ERD25TJ104	100kΩ	1/4W	2
R821,822	ERD25TJ181	180Ω	1/4W	2
R823,824	ERD25TJ105	1MΩ	1/4W	2
R825,826	ERD25TJ274	270kΩ	1/4W	2
R827,828	ERD25TJ102	1kΩ	1/4W	2
R829,830	ERD25TJ102	1kΩ	1/4W	2
R831,832	ERD25TJ823	82kΩ	1/4W	2
R833	ERD25TJ101	100Ω	1/4W	1
R834 ⚠	ERG2ANJ470	47Ω	2W	1
R835	ERD25TJ104	100kΩ	1/4W	1
R836	ERD25TJ472	4.7kΩ	1/4W	1
R837	ERD25TJ332	3.3kΩ	1/4W	1
R838,839	ERD25TJ333	33kΩ	1/4W	2
R840	ERD25TJ472	4.7kΩ	1/4W	1
R841 ⚠	ERG1ANJ330	33Ω	1W	1
R846	ERD25TJ821	820Ω	1/4W	1
R851	ERD25TJ333	33kΩ	1/4W	1
R852	ERD25TJ103	10kΩ	1/4W	1
R853	ERD25TJ334	330kΩ	1/4W	1
R854	ERD25TJ223	22kΩ	1/4W	1
R855	ERD25TJ103	10kΩ	1/4W	1
R856,857	ERD25TJ222	2.2kΩ	1/4W	2
R858	ERD25TJ153	15kΩ	1/4W	1
R859	ERD25TJ104	100kΩ	1/4W	1
R860	ERD25TJ103	10kΩ	1/4W	1
R861	ERD25TJ473	47kΩ	1/4W	1
R862	ERD25TJ683	68kΩ	1/4W	1
R863	ERD25TJ103	10kΩ	1/4W	1
R864,865	ERD25TJ682	6.8kΩ	1/4W	2
R866	ERD25TJ103	10kΩ	1/4W	1
R868	ERD25TJ103	10kΩ	1/4W	1
R847	ERD25TJ103	10kΩ	1/4W	1
R901 ⚠	ERF5SJ560	56kΩ	5W	1
R902	ERD25TJ102	1kΩ	1/4W	1
R903 ⚠	ERQ12HJ101	100Ω	1/2W	1
R904	ERD25TJ182	1.8kΩ	1/4W	1
R905 ⚠	ERQ12HJ330	33Ω	1/2W	1
R906	ERD50TJ121	120Ω	1W	1
R908	ERD25TJ102	1kΩ	1/4W	1
R909	ERD25TJ122	1.2kΩ	1/4W	1
R910	ERD25TJ103	10kΩ	1/4W	1
R911	ERD25TJ102	1kΩ	1/4W	1
R912	ERD25TJ471	470Ω	1/4W	1
R913	ERD25TJ222	2.2kΩ	1/4W	1
R914	ERD25TJ681	680Ω	1/4W	1
R915	ERD25TJ821	820Ω	1/4W	1
R916	ERD25TJ103	10kΩ	1/4W	1

Numbering System of Capacitor

Type	Voltage	Value	Tolerance
Four Letters	One or Two Letters	Two to Five Letters	One or Two Letters

Example:

E C K D 1 H 3 3 3 M D

Capacitor Type	Tolerance
ECCD: Temperature Compensating Ceramic	C: ±0.25pF
ECKD: High Dielectric Constant Ceramic	D: ±0.5pF
ECQM: Polyester	F: ±1pF
ECQS: Polystyrene Film	J: ±5%
ECQP: Polypropylene Film	K: ±10%
ECFD: Semiconductor Ceramic	M: ±20%
ECEA: Electrolytic	P: +100, −0%
ECEB: Electrolytic	Z: +80, −20%
ECET: Electrolytic	
ECSF: Tantalum	

Ref. No.	Part No.	Description		Per Set (pcs.)
CAPACITORS				
C021	ECEA50Z1	1μF	50V	1
C022	ECSF35ER47T	0.47μF	35V	1
C023	ECEA25M10R	10μF	25V	1
C024	ECEA1HS100	10μF	50V	1
C025	ECEA25Z4R7	4.7μF	25V	1
C101	ECEA1HS100	10μF	50V	1
C102,103	ECKD1H103ZF	0.01μF	50V	2
C104	ECEA50Z3R3	3.3μF	50V	1
C105,106	ECKD1H103ZF	0.01μF	50V	2
C202	ECCD1H220K	22pF	50V	1
C203	ECCD1H330K	33pF	50V	1
C204	ECFD1E103MD	0.01μF	25V	1
C205	ECKD1H331KB	330pF	50V	1
C206	ECKD1H102KB	0.001μF	50V	1
C207	ECKD1H101KB	100pF	50V	1
C208,209	ECFD1E103MD	0.01μF	25V	2
C210	ECFD1E153MD	0.015μF	25V	1
C211	ECQS147IJZ	470pF	125V	1
C212	ECCD1H180K	18pF	50V	1
C213	ECCD1H820J	82pF	50V	1
C214	ECQS122IJZ	220pF	125V	1
C215	ECCD1H120K	12pF	50V	1
C216	ECEA1AS221	220μF	10V	1
C217	ECQS1152JZ	1500pF	125V	1
C218	ECKD1H103ZF	0.01μF	50V	1
C220	ECCD1H270K	27pF	50V	1
C221,222	ECFD1E223MD	0.022μF	25V	2
C223	ECEA50Z3R3	3.3μF	50V	1
C225	ECKD1H103ZF	0.01μF	50V	1
C226	ECKD1H223ZF	0.022μF	50V	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
C227	ECFD1E473MD	0.047μF 25V	1
C228	ECEA50Z3R3	3.3μF 50V	1
C229	ECKD1H223ZF	0.022μF 50V	1
C230	ECCD1H470K	47pF 50V	1
C231	ECSF35ERIT	0.1μF 35V	1
C232	ECKD1H223ZF	0.022μF 50V	1
C234	ECKD1H103ZF	0.01μF 50V	1
C238	ECKD1H103ZF	0.01μF 50V	1
C239	ECEA25Z4R7	4.7μF 25V	1
C240	ECCD1H680K	68pF 50V	1
C241	ECEA1ES470	47μF 25V	1
C242	ECKD1H103ZF	0.01μF 50V	1
C243	ECEA50Z1	1μF 50V	1
C244,245	ECKD1H103ZF	0.01μF 50V	2
C248	ECEA1HS100	10μF 50V	1
C301	ECEA1HS100	10μF 50V	1
C302	ECEA1CS221	220μF 16V	1
C303	ECKD1H103ZF	0.01μF 50V	1
C304	ECFD1E473MD	0.047μF 25V	1
C305	ECQS147IJZ	470pF 125V	1
C306	ECEA50M1R5R	1.5μF 50V	1
C307	ECEA50M3R3R	3.3μF 50V	1
C308	ECSF35ER22T	0.22μF 35V	1
C309,310	ECEAIHS100	10μF 50V	2
C311,312	ECKD1H102KB	0.001μF 50V	2
C313,314	ECEA50Z1	1μF 50V	2
C315,316	ECKD1H682KB	0.0068μF 50V	2
C317,318	ECKD1H682KB	0.0068μF 50V	2
C319,320	ECKD1H472KB	0.0047μF 50V	2
C401,402	ECQS1681JZ	680pF 125V	2
C403,404	ECEA50M4R7R	4.7μF 50V	2
C405,406	ECKD1H102ZF	0.001μF 50V	2
C407,408	ECEA1HS100	10μF 50V	2
C409,410	ECEA1HS100	10μF 50V	2
C411,412	ECQM1H153KZ	0.015μF 50V	2
C413,414	ECKD1H102KB	0.001μF 50V	2
C415	ECEA1CS221	220μF 16V	1
C416	ECEA1AS101	100μF 10V	1
C417,418	ECQM1H332MZ	0.0033μF 50V	2
C419,420	ECSF35ER68T	0.68μF 35V	2
C421,422	ECSF35E1T	1μF 35V	2
C423,424	ECSF35ER1T	0.1μF 35V	2
C425,426	ECQM1H393MZ	0.039μF 50V	2
C427,428	ECSF35ER22T	0.22μF 35V	2
C429,430	ECSF35ER22T	0.22μF 35V	2
C431,432	ECQM1H473MZ	0.047μF 50V	2
C433,434	ECQM1H103MZ	0.01μF 50V	2
C435	ECEA1HS100	10μF 50V	1
C436	ECEA1HS100	10μF 50V	1
C437,438	ECKD1H472KB	0.0047μF 50V	2
C439,440	ECEA1HS100	10μF 50V	2
C441,442	ECEA50Z3R3	3.3μF 50V	2
C443,444	ECEA50Z3R3	3.3μF 50V	2
C446	ECEA1CS221	220μF 16V	1

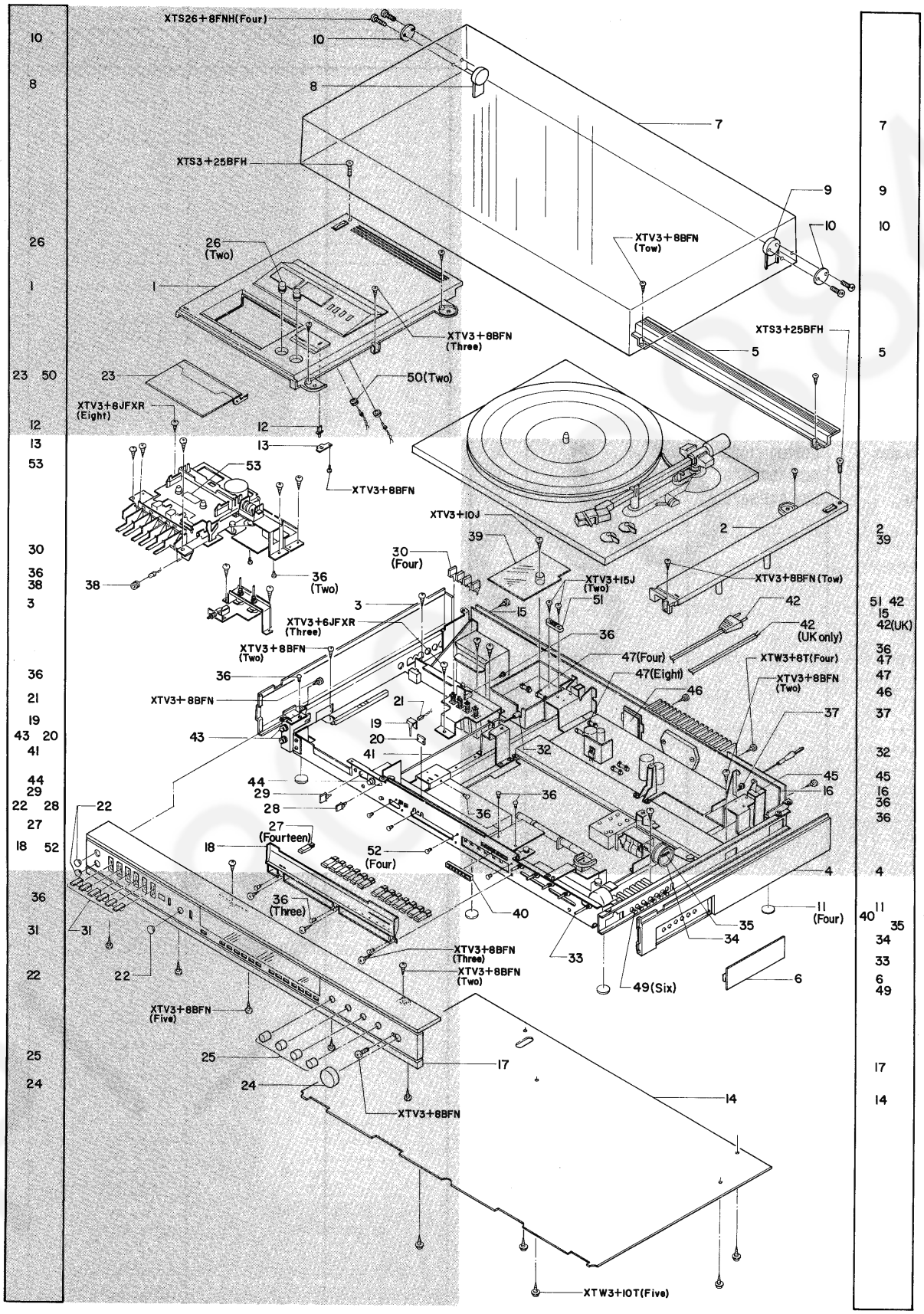
Ref. No.	Part No.	Description	Per Set (pcs.)
C457,458	ECCD1H330K	33pF 50V	2
C501,502	ECFD1E333MD	0.033μF 25V	2
C503,504	ECFD1E153MD	0.015μF 25V	2
C505,506	ECKD1H152KB	0.0015μF 5V	2
C507,508	ECQM1H154MZ	0.15μF 50V	2
C509,510	ECQM1H183MZ	0.018μF 50V	2
C603,604	ECEA50M4R7R	4.7μF 50V	2
C605,606	ECCD1H330K	33pF 50V	2
C607,608	ECKD1H102KB	0.001μF 50V	2
C609,610	ECFD1E223MD	0.022μF 25V	2
C611,612	ECKD1H682KB	0.0068μF 50V	2
C613,614	ECSF35ER47T	0.47μF 35V	2
C615,616	ECEA1AS470	47μF 10V	2
C617	ECEA1VS101	100μF 35V	1
C701,702	ECKD1H101KB	100pF 50V	2
C703,704	ECSF35E1T	1μF 35V	2
C705,706	ECKD1H471KB	470pF 50V	2
C707,708	ECCD1H100F	10pF 50V	2
C109,710	ECEA1AS470	47μF 10V	2
C711,712	ECEA1AS470	47μF 10V	2
C713,714	ECEA1HS470	47μF 50V	2
C715	ECEA1VS101	100μF 35V	1
C716,717	ECEA1HS100	10μF 50V	2
C718,719	ECQM1H473MZ	0.047μF 50V	2
C801,802	ECSF35ER1T	0.1μF 35V	2
C803	ECQS1182JZ	1800pF 125V	1
C804	ECQS1471JZ	470pF 125V	1
C805	ECEA1HS100	10μF 50V	1
C806	ECQM1H104MZ	0.1μF 50V	1
C807	ECQM1H683MZ	0.068μF 50V	1
C808	ECQM1H333MZ	0.033μF 50V	1
C809,810	ECKD1H331KB	330pF 50V	2
C811,812	ECSF35ER68T	0.68μF 35V	2
C813,814	ECEA1HS100	10μF 50V	2
C815,816	ECEA1HS100	10μF 50V	2
C817,818	ECQP1273FZ	0.027μF 50V	2
C819,820	ECQS1472JZ	4700pF 125V	2
C821,822	ECEA1HS100	10μF 50V	2
C823,824	ECQS1562JZ	5600pF 125V	2
C825,826	ECQM1H473JZ	0.047μF 50V	2
C827,828	ECEA1HS100	10μF 50V	2
C829,830	ECSF35ER1T	0.1μF 35V	2
C831,832	ECSF35ER33T	0.33μF 35V	2
C833,834	ECEA1AS221	220μF 10V	2
C835,836	ECEA1ES101	100μF 25V	2
C837	ECEA1CS471	470μF 16V	2
C838	ECEA1HS100	10μF 50V	1
C839	ECEA1ES101	100μF 25V	1
C843,844	ECKD1H102KB	0.001μF 50V	1
C851,852	ECEA1AS470	47μF 10V	2
C854	ECEA25N10	10μF 25V	2
C855	ECKD1H102KB	0.001μF 50V	1
C856	ECKD1H103ZF	0.01μF 50V	1

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)
C901,902 ⚠	ECKDHS101MB	100pF 400V (Except UK)	2
C903 ⚠	ECKDGS101MB4	100pF 400V (for UK)	1
C906,907	ECKD1H103ZF	0.01μF 50V	2
C908,909	ECKD1H103ZF	0.01μF 50V	2
C910	ECQM1H334MZ	0.33μF 50V	1
C911,912	ECET35R332	3300μF 35V	2
C913	ECET25R332	3300μF 25V	1
C914	ECET50R332	3300μF 50V	1
C915	ECKD1H102KB	0.001μF 50V	1
C916	ECEA1VS101	100μF 35V	1
C917	ECEA1HS101	100μF 50V	1
C918	ECKD1H102KB	0.001μF 50V	1
C919	ECEA1HS470	47μF 50V	1
C920	ECEA1ES101	100μF 25V	1
C921,922	ECKD1H102ZF	0.001μF 50V	2
C923	ECEA50Z3R3	3.3μF 50V	1
C924	ECEA1ES470	47μF 25V	1

Ref. No.	PartNo.	Description	Per Set (pcs.)

PARTS LOCATION OF CABINET AND CHASSIS

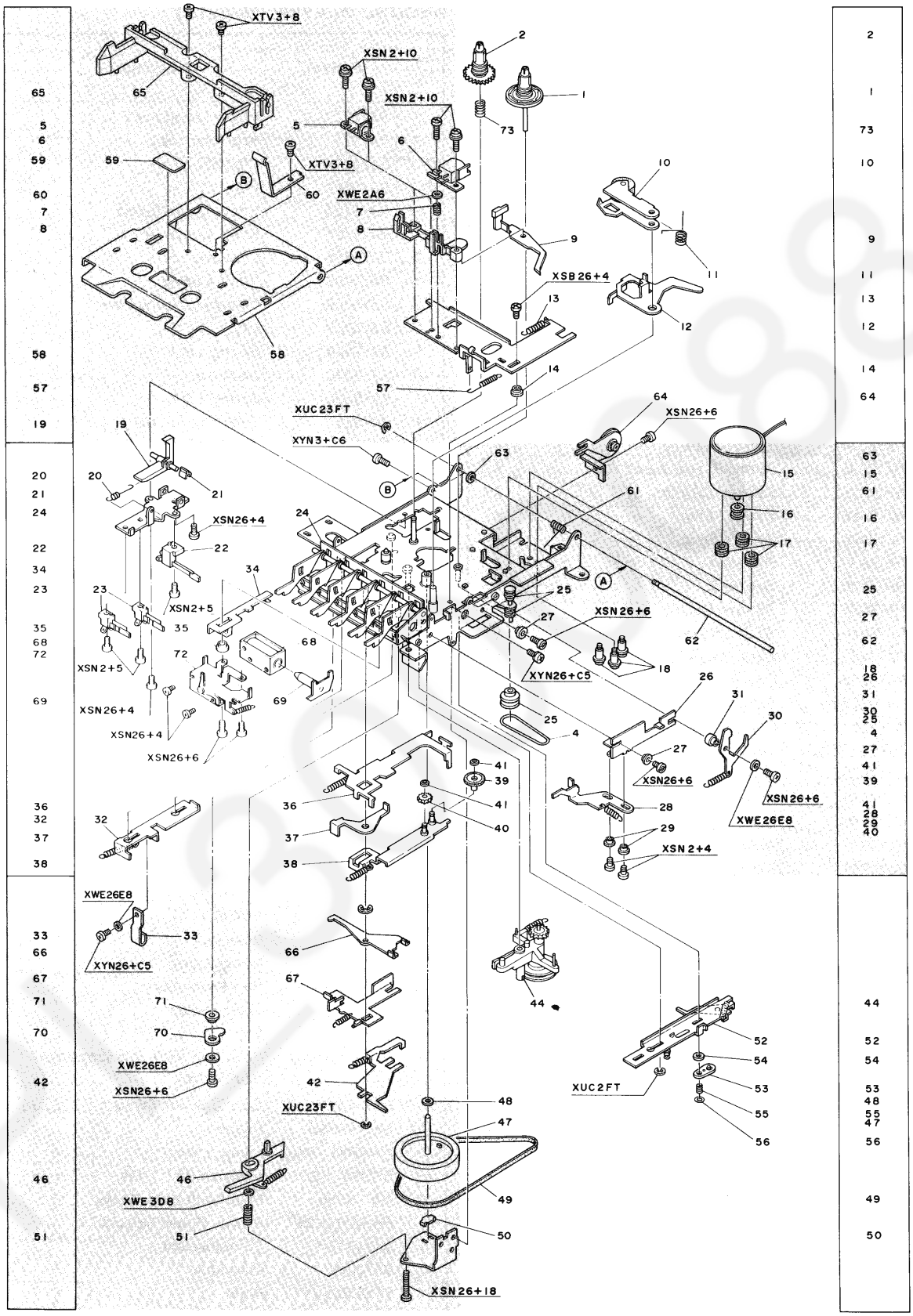


REPLACEMENT PARTS LIST OF CABINET AND CHASSIS

Ref. No.	Part No.	Description	Per Set (pcs.)
1	SKM6000	Cabinet A	1
2	SKM5980	Cabinet B	1
3	SKM6040	Cabinet Side, Left	1
4	SKM6020	Cabinet Side, Right	1
5	SKM6060	Cabinet C	1
6	SYE674	Volume Lid	1
7	SGE1024	Dust Cover	1
8	SBH9036-1	Hinge, Right	1
9	SBH9038-1	Hinge, Left	1
10	SBH9040-1	Cap	2
11	SHS3018	Foot, Felt	4
12	SBC190-4	Button, Reset	1
13	SUW932-1	Bracket, Button	1
14	SYU386	Bottom Board Ass'y	1
15	SKU4081	Rear Board A (except UK, GFO)	1
15	SKU4082	Rear Board A (for UK, GFO)	1
16	SKU4100	Rear Board B	1
17	SYP414	Escutcheon Ass'y	1
18	SKD4560	Dial Scale (except UK)	1
18	SKD4561	Dial Scale (for UK)	1
19	SDP5040	Dial Pointer	1
20	SDA62	Holder, Dial Pointer	1
21	SWE112	Lamp, Dial Pointer	1
22	SUV122-1	Cover, Headphone Jack	3
23	SYE644	Cassette Lid Ass'y	1
24	SBN918	Knob, Tuning	1
25	SBN920	Knob, Volume	4
26	SBN922	Knob, Rec	2
27	SBC370	Button, Function	14
28	SBC372	Button A, Power	1
29	SBC374	Button	1
30	SBC376	Button, Selector	4
31	SBC378	Button, Cassette	6
32	SBC226	Button B, Power	1
33	SDT9306	Tuning Shaft	1
34	RDD323ZA	Dial Drum	1
35	RDS3090A	Spring	1
36	RHR969ZA	Latch	10
37	RHG3-1	Rubber, Antenna	1
38	SHG9100	Rubber, Lamp	1
39 ⚠	SMX202	Insulator Cover	1
40	SMP142	Lamp Holder	1
41	SUH68-1	Remote Rod	1
42 ⚠	SJA88	Power Cord (except UK)	1
42 ⚠	SJA116	Power Cord (for UK)	1
43	XCJ6P21A	Jack Microphone	2
44	XCJ6P21F	Jack Headphone	1
45	SJS9408	Terminal Antenna	1
46	SJF9210	Terminal 2p	1
47 ⚠	SJF110	Fuse Holder	12

Ref. No.	Part No.	Description	Per Set (pcs.)
49	NBE502	Knob, Preset	6
50	RHG211	Rubber, Meter Lamp	2
51 ⚠	SHR134	Power Cord clamp	1
52	SHR9112	Latch	4
53	SHD94-2	Reflector Plate	1

EXPLODED VIEW
CASSETTE TAPE DECK (SJD572)

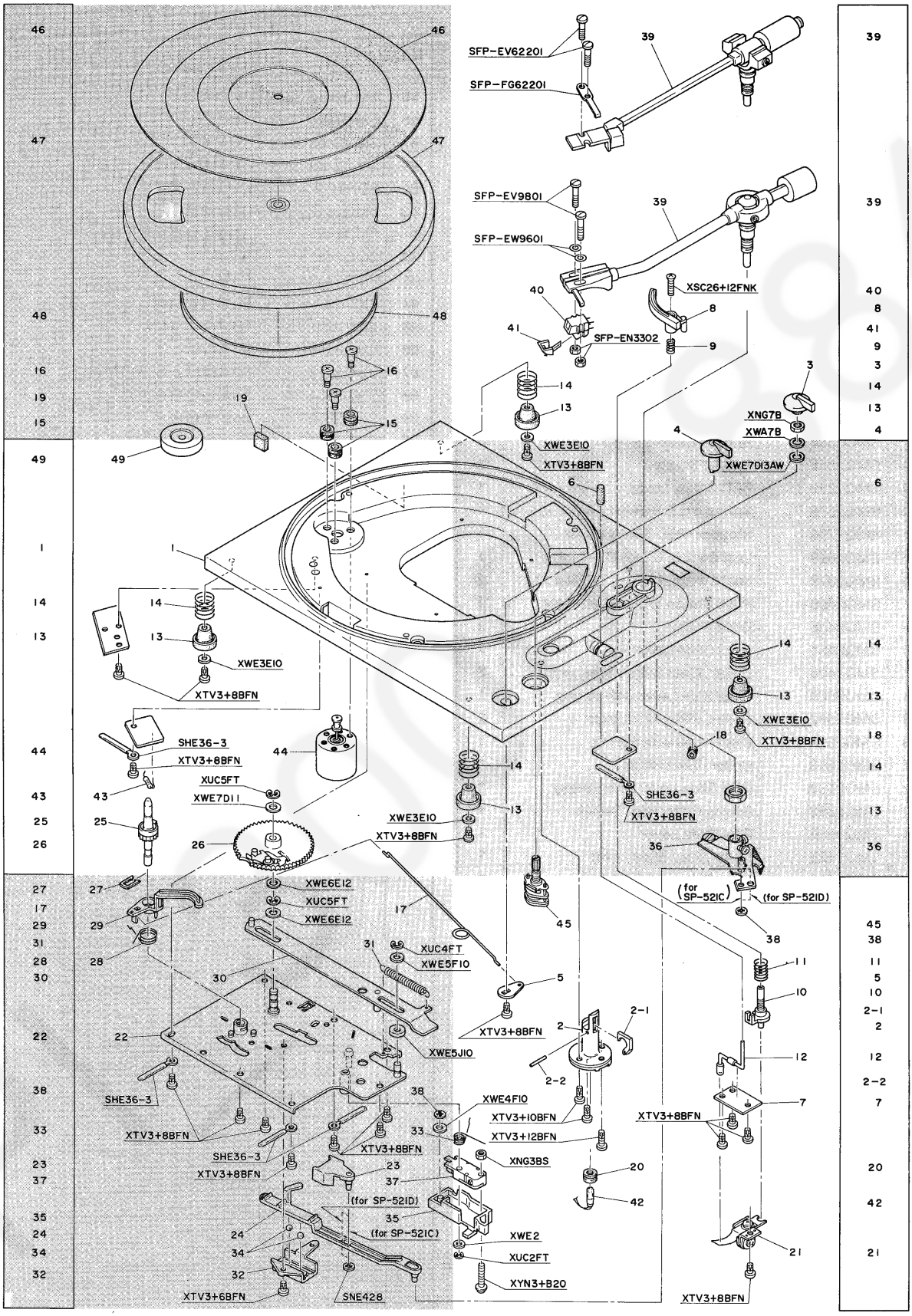


REPLACEMENT PARTS LIST OF CASSETTE TAPE DECK (SJD572)

Ref. No.	Part No.	Description	Per Set (pcs.)
1	SMQ2476	Take Up Reel Assembly	1
2	SMQ2474	Supply Reel Assembly	1
4	SMQ2608	Counter Belt	1
5	SJH14	Erase Head	1
6	SJH30	R/P Head	1
7	SMQ678	Spring, R/P Head	1
8	SMQ1986	Head Base	1
9	SMQ1900	Lever Assembly, Auto Stop	1
10	SMQ2482	Pinch Roller Assembly	1
11	SMQ2484	Spring, Pinch Roller	1
12	SMQ2494	Arm Lever	1
13	SMQ1898	Spring, Head Panel	1
14	SMQ1648	Collar, Head Panel	1
15	MHT5PT2TX	Motor	1
16	SMQ1802-1	Motor Pulley	1
17	SMQ2584	Rubber Cushion	3
18	SMQ2586	Spacer Screw	3
19	SMQ1232-1	REC Safety Lever	1
20	SMQ2578	Spring, REC Safety Lever	1
21	SMQ1706	Stopper, REC Safety Lever	1
22	SMQ2582	Leaf Switch, Motor ON-OFF	1
23	SMQ2572	Leaf Switch, Muting, FF Rew	2
24	SMQ2600	Push Button Frame Assembly	1
25	SMQ2436	Drive Pulley	3
26	SMQ2558	Eject Slide Lever	1
27	SMQ1426	Collar, Eject Slide Lever	2
28	SMQ2560	Slide Kick Lever with Spring	1
29	SMQ2562	Collar, Slide Kick Lever	2
30	SMQ2564	Eject Hook with Spring	1
31	SMQ2588	Collar, Eject Hook	1
32	SMQ2552	REC Slide Lever with Spring	1
33	SMQ2598	Spring Plate, REC Switch	1
34	SMQ1920	Play Slide Lever	1
35	SMQ1426	Collar, Play Slide Lever	1
36	SMQ1926	Main Plate with Spring	1
37	SMQ1928	Rewind Arm	1
38	SMQ1922	FF Idler Arm Assembly with Spring	1
39	SMQ1450	Take Up Idler	1
40	SMQ1924	FF Gear	1
41	SMQ1952	Washer	2
42	SMQ2574	Operation Plate, Muting with Spring	1
44	SMQ1930	RF Clutch Assembly with Spring	1
46	SMQ1918	Auto Stop Kick Lever with Spring	1
47	SMQ1942	Flywheel	1
48	SMQ1940	Washer	1
49	SMQ2556	Main Belt	1
50	SMQ2538	Flywheel Pad	1
51	SMQ1948	Thrust Spring, Flywheel	1
52	SMQ2568	Pause Slide Lever Assembly with Spring	1
53	SMQ2444	Pause Lever	1
54	SMQ2446	Collar, Pause Lever	1

Ref. No.	Part No.	Description	Per Set (pcs.)
55	SMQ2448	Spring, Pause Lever	1
56	SMQ2450	Washer	1
57	SMQ2488	RC Spring	1
58	SMQ2404	Cassette Cover	1
59	SDH94-2	Fluorescent Paper	1
60	SMQ2412	Cassette Hold Spring	1
61	SMQ2408	Spring, Cassette Cover	1
62	SMQ2406	Shaft	1
63	SMQ2410	Collar	1
64	SXE158	Eject Arm Ass'y	1
65	SGE1060	Cassette Holder	1
66	SMQ2500	RC Lever	1
67	SMQ2602	RF Slide Lever w/Spring	1
68	SMQ2604	Solenoid Assembly	1
69	SMQ2606	Shaft Ass'y	1
70	SMQ2504	Stopper	1
71	SMQ2616	Collar, Stopper	1
72	SMQ2610	Bracket, Solenoid	1
73	SMQ2512	Spring, Supply Reel	1

EXPLODED VIEW OF RECORD PLAYER (SP521C, SP521D)



REPLACEMENT PARTS LIST OF RECORD PLAYER (SP521C, SP521D)

RECORD PLAYER (SP521C)

Ref. No.	Part No.	Description	Per Set (pcs.)
1	SJY222	Player Board Ass'y	1
2	SJY230	Arm Rest Ass'y	2
2-1	SJY5132	Clamper	1
2-2	SJY9664	Pin	1
3	SJY5126	Knob, Speed Select	1
4	SJY5124	Knob, Cut Lever	
5	SJY9238	Cut Lever	1
6	SJY5050	Knob, Cueing	6
7	SJY9256	Clamper, Cueing Lever	
8	SJY5052-1	Lift	1
9	SJY9228	Spring, Lift A	1
10	SJY5042	Shaft, Lift	1
11	SJY9230	Spring, Lift B	1
12	SJY226	Cueing Lever Ass'y	1
13	SJY9244	Rubber, Cushion A	4
14	SJY9234	Spring, Player Board	4
15	SHG9092	Rubber, Cushion	3
16	SJY9168	Screw, Motor	3
17	SJY9660	Spring, Stop	1
18	RHG3-1	Rubber A	1
19	SHG916	Rubber B	1
20	RHG202	Rubber, Cushion B	1
21	SJY84-1	Sliding Board Ass'y	1
22	SJY196	Base Plate Ass'y	1
23	SJY9276-1	Spacer	1
24	SJY9270-1	Actuating Slide	1
25	SJY192	Spindle Ass'y with Gear	1
26	SJY32	Main Gear Ass'y	1
27	SJY9652	Clip	1
28	SJY9650	Spring	1
29	SJY9648	Reject Arm	1
30	SJY90	Sliding Arm Ass'y	1
31	SJY9264	Spring B	1
32	SJY9276	T.S Holder	1
33	SJY9262	Spring A	1
34	SJY9280	Steel Ball	2
35	SJY188	Switch Cover	1
36	SJY186	Rest Lever Ass'y	1
37	AH75503	Micro Switch	1
38	SNE428	Clip	2
39	EPU614SMFD	Tone Arm Ass'y with Cartridge and Stylus	1
40	EPC290C	Cartridge with Stylus	1
41	EPS290SD	Stylus	1
42	XAMR51 × 400	Lamp	1
43	ERD50TJ820	Resistor 82Ω 1/2W	1
44	MMC4000	Motor with Motor Pulley	1
45	ESRE112K20F	Switch, Speed Selector	1
46	SJY4032-1	Turntable Mat	1
47	SJY3020	Turntable	1
48	SFGB321-1	Bolts	1
49	SGE263	45 r.p.m Adapter	1

RECORD PLAYER (SP521D)

Ref. No.	Part No.	Description	Per Set (pcs.)
1	SJY222	Player Board Ass'y	1
2	SJY224	Arm Rest Ass'y	2
2-1	SJY5134	Clamper	1
2-2	SJY9664	Pin	1
3	SJY5126	Knob, Speed Select	1
4	SJY5124	Knob, Cut Lever	
5	SJY9238	Cut Lever	1
6	SJY5050	Knob, Cueing	6
7	SJY9256	Clamper, Cueing Lever	
8	SJY5052-1	Lift	1
9	SJY9228	Spring, Lift A	1
10	SJY5042	Shaft, Lift	1
11	SJY9230	Spring, Lift B	1
12	SJY226	Cueing Lever Ass'y	1
13	SJY9244	Rubber, Cushion A	4
14	SJY9234	Spring, Player Board	4
15	SHG9092	Rubber, Cushion	3
16	SJY9168	Screw, Motor	3
17	SJY9660	Spring, Stop	1
18	RHG3-1	Rubber A	1
19	SHG916	Rubber B	1
20	RHG202	Rubber, Cushion B	1
21	SJY84-1	Sliding Board Ass'y	1
22	SJY196	Base Plate Ass'y	1
23	SJY9272-1	Spacer	1
24	SJY9270-1	Actuating Slide	1
25	SJY192	Spindle Ass'y with Gear	1
26	SJY32	Main Gear Ass'y	1
27	SJY9652	Clip	1
28	SJY9650	Spring	1
29	SJY9648	Reject Arm	1
30	SJY90	Sliding Arm Ass'y	1
31	SJY9264	Spring B	1
32	SJY9276	T.S Holder	1
33	SJY9262	Spring A	1
34	SJY9280	Steel Ball	2
35	SJY188	Switch Cover	1
36	SJY186-1	Rest Lever Ass'y	1
37	AH75503	Micro Switch	1
38	SNE428	Clip	2
39	EPU622SMAD	Tone Arm Ass'y with Cartridge and Stylus	1
40	EPC-290C	Cartridge with Stylus	1
41	EPS-290SD	Stylus	1
42	XAMR51 × 400	Lamp	1
43	ERD50TJ820	Resistor 82Ω 1/2W	1
44	MMC4000	Motor with Motor Pulley	1
45	ESRE112K20F	Switch, Speed Selector	1
46	SJY4032-1	Turntable Mat	1
47	SJY3020	Turntable	1
48	SFGB321-1	Bolts	1
49	SGE263	45 r.p.m Adapter	1

Printed in Japan
790676T-(G)