

Service Manual

FM/AM STEREO RECEIVER

SA-200

SA-200K

(X), (XA), (XAL)

(XGH), (E), (EG)



* SA-200K is different in appearance and colour tone. (Refer to page 13)

- * The models SA-200(X) and SA-200(XA) are available in Asia, Latin America, Middle East and Africa only.
- * The model SA-200(XAL) is available in Australia only.
- * The models SA-200(XGH) and SA-200K(XGH) are available in Holland only.
- * The models SA-200(E, EG), and SA-200K(E, EG), are available in Scandinavia and European only.

TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

[DIN 45 500]

AMPLIFIER SECTION

1 kHz continuous power output	
both channels driven	2 x 30 W (4Ω), 2 x 27 W (8Ω)
40 Hz ~ 16 kHz continuous power output	
both channels driven	2 x 27 W (4Ω), 2 x 25 W (8Ω)
20 Hz ~ 20 kHz continuous power output	
both channels driven	2 x 25 W (8Ω)
Power bandwidth	
both channels driven, -3 dB	10 Hz ~ 25 kHz (4Ω)
Total harmonic distortion	
rated power at 1 kHz	0.04% (4Ω, 8Ω)
rated power at 40 Hz ~ 16 kHz	0.04% (4Ω, 8Ω)
rated power at 20 Hz ~ 20 kHz	0.04% (8Ω)
half power at 20 Hz ~ 20 kHz	0.025% (8Ω)
half power at 1 kHz	0.009% (8Ω)
-26 dB power at 1 kHz	0.06% (4Ω)
50 mW power at 1 kHz	0.2% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz = 4:1, 4 Ω	0.04%
rated power at 60 Hz: 7 kHz = 4:1, SMPTE, 8Ω	0.04%
Residual hum & noise	0.6mV
Damping factor	16 (4Ω), 32 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47 kΩ
AUX	150 mV/33 kΩ
PLAYBACK (TAPE), REC/PLAY	180 mV/39 kΩ
PHONO maximum input voltage (1 kHz, RMS)	130 mV
S/N	
rated power at 4 Ω	PHONO 70 dB (IHF, A: 78 dB) AUX 88 dB (IHF, A: 95 dB)
-26 dB power at 4 Ω	PHONO 68 dB, AUX 77 dB
50 mW power at 4 Ω	PHONO 64 dB, AUX 65 dB
Frequency response	PHONO RIAA standard curve 30Hz ~ 15kHz, ±0.5 dB AUX 20 Hz ~ 20 kHz, ±0.5 dB 10 Hz ~ 30 kHz, -1 dB
Tone controls	BASS 50 Hz, +10 dB ~ -10 dB TREBLE 10 kHz, +10 dB ~ -10 dB
Loudness control (volume at -30 dB)	50 Hz, +9 dB
Output voltage and impedance	REC OUT (TAPE) 150 mV REC/PLAY 30mV/80kΩ
Channel balance (250 Hz ~ 6300 Hz), AUX	±1.0 dB
Channel separation at 1 kHz, AUX	55 dB
Headphones output level and impedance	330mV/330Ω
Load impedance	MAIN or REMOTE 4 ~ 16Ω MAIN + REMOTE 8 ~ 16Ω

FM TUNER SECTION

Frequency range	88 ~ 108 MHz
Antenna impedance	300Ω (balanced), 75Ω (unbalanced)
Sensitivity (±40 kHz deviation)	
S/N 30 dB	1.9μV (300Ω), 1.3μV (75Ω)
S/N 26 dB	1.7μV (300Ω), 1.2μV (75Ω)
S/N 20 dB	1.5μV (300Ω), 0.9μV (75Ω)
IHF usable sensitivity	1.9μV (IHF '58)
IHF S/N 46 dB stereo quieting sensitivity	22μV (75Ω)
Total harmonic distortion	MONO 0.15% STEREO 0.3%
S/N (±40kHz deviation)	MONO 60 dB (IHF: 75 dB) STEREO 58 dB (IHF: 70 dB)
Frequency response	20Hz ~ 15 kHz, +1, -2 dB 20 Hz ~ 14 kHz, ±1.5 dB
Alternate channel selectivity	70 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	70 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	1 kHz 45 dB, 10 kHz 35 dB
Leak carrier	19 kHz -33 dB (-40 dB, IHF) 38 kHz -48 dB (-50 dB, IHF)
Limiting point	1.2μV
Bandwidth	IF amplifier 180 kHz FM demodulator 1000 kHz
Channel balance (250 Hz ~ 6300 Hz)	±1.5 dB

AM TUNER SECTION

Frequency range	525 ~ 1605 kHz
Sensitivity (S/N 20 dB)	30μV, 300μV/m
Selectivity	30 dB
Image rejection at 1000 kHz	45 dB
IF rejection at 1000 kHz	40 dB

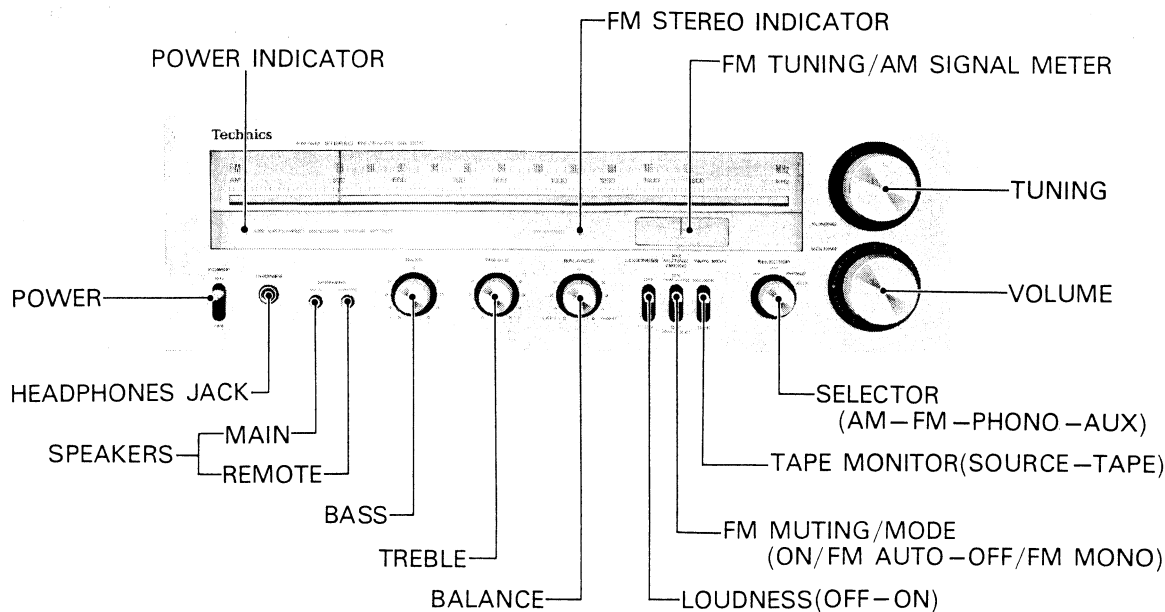
GENERAL

Power consumption	300W
Power supply (50 Hz/60 Hz)	110V/120V/220V/240V
Dimensions (W x H x D)	430 x 142 x 300 mm (16 1/8" x 5 5/8" x 11 3/8")
Weight	7.2kg (15.9 lb.)

Technics

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

■ LOCATION OF CONTROLS (Front Panel)



TECHNISCHE DATEN [DIN 45 500] Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

VERSTÄRKERTEIL

Dauertonleistung bei 1 kHz beide Kanäle zusammen angesteuert	2 x 30 W (4Ω) 2 x 27 W (8Ω)
Dauertonleistung bei 40 Hz ~ 16 kHz beide Kanäle zusammen angesteuert	2 x 27 W (4Ω) 2 x 25 W (8Ω)
Dauertonleistung bei 20 Hz ~ 20 kHz beide Kanäle zusammen angesteuert	2 x 25 W (8Ω)
Leistungsbandsbreite beide Kanäle zusammen angesteuert, -3 dB	10 Hz ~ 25 kHz (4Ω)
Harmonische Verzerrungen	
Nennausgangsleistung bei 1 kHz	0,04% (4Ω, 8Ω)
Nennausgangsleistung bei 40 Hz ~ 16 kHz	0,04% (4Ω, 8Ω)
Nennausgangsleistung bei 20 Hz ~ 20 kHz	0,04% (8Ω)
Halber Ausgangsleistung bei 20 Hz ~ 20 kHz	0,025% (8Ω)
Halber Ausgangsleistung bei 1 kHz	0,009% (8Ω)
-26 dB Ausgangsleistung bei 1 kHz	0,06% (4Ω)
50 mW Ausgangsleistung bei 1 kHz	0,2% (4Ω)
Intermodulationsverzerrung	
Nennausgangsleistung bei 250 Hz: 8 kHz = 4:1, 4Ω	0,04%
Nennausgangsleistung bei 60 Hz: 7 kHz = 4:1, 8Ω	0,04%
Hum & Noise	0,6 mV
Dämpfungsfaktor	16 (4Ω), 32 (8Ω)
Eingangsempfindlichkeit & Impedanz	
PHONO	2,5 mV/47 kΩ
AUX	150 mV/33 kΩ
PLAYBACK (TAPE), REC/PLAY Eingang	180 mV/39 kΩ
PHONO Maximale Eingangsspannungen (1 kHz RMS)	130 mV
Fremdspannungsabstand	
Nennausgangsleistung bei 4Ω PHONO 70 dB (IHF, A: 78 dB)	
AUX 88 dB (IHF, A: 95 dB)	
-26 dB Ausgangsleistung bei 4Ω PHONO	68 dB
AUX	77 dB
50 mW Ausgangsleistung bei 4Ω PHONO	64 dB
AUX	65 dB
Frequenzgang PHONO	RIAA Standardkurve 30 Hz ~ 15 kHz, ±0,5 dB
AUX	20 Hz ~ 20 kHz, ±0,5 dB 10 Hz ~ 30 kHz, -1 dB
Klangregler BÄSSE	50 Hz, +10 dB ~ -10 dB
HÖHEN	10 kHz, +10 dB ~ -10 dB
Gehörgerechte Lautstärkekorrektur (Lautstärke bei -30 dB)	50 Hz, +9 dB
Ausgangsspannungen & Impedanz REC OUT (TAPE)	150 mV
REC/PLAY Aufnahme	30 mV/80kΩ
Kanalabweichung (250Hz ~ 6300Hz), AUX	±1,0 dB
Kanaltrennung bei 1 kHz, AUX	55 dB
Kopfhörerpegel und Ausgangsimpedanz	330 mV/330Ω

Endimpedanz	MAIN oder REMOTE	4 ~ 16Ω
	MAIN und REMOTE	8 ~ 16Ω

UKW-TUNERTEIL

Empfangsbereich	88 ~ 108 MHz
Antennenanschluss	300Ω (symmetrisch), 75Ω (asymmetrisch)
Empfindlichkeit (±40 kHz Hub)	
30 dB Fremdspannungsabstand	1,9μV (300Ω), 1,3μV (75Ω)
26 dB Fremdspannungsabstand	1,7μV (300Ω), 1,2μV (75Ω)
20 dB Fremdspannungsabstand	1,5μV (300Ω), 0,9μV (75Ω)
IHF Empfindlichkeit	1,9μV (IHF '58)
46 dB Fremdspannungsabstand Empfindlichkeit, IHF	22μV (75Ω), STEREO
Harmonische Verzerrung	MONO 0,15%
	STEREO 0,3%
Fremdspannungsabstand (±40 kHz Hub)	
MONO	60 dB (IHF: 75 dB)
STEREO	58 dB (IHF: 70 dB)
Frequenzgang	20 Hz ~ 15 kHz, +1 -2 dB
	20 Hz ~ 14 kHz, ±1,5 dB
Selektivität	70 dB
Gleichwellen-Selektion	1,2 dB
Spiegelselektion bei 98 MHz	70 dB
ZF-Festigkeit bei 98 MHz	90 dB
Unselektivitätsfestigkeit bei 98 MHz	30 dB
AM-Unterdrückung	55 dB
Stereo Übersprechdämpfung	1 kHz 45 dB, 10 kHz 35 dB
Trägerrest	19 kHz -33 dB (-40 dB, IHF)
	38 kHz -48 dB (-50 dB, IHF)
Begrenzung, Einsatzpunkt	1,2μV
Bandbreite ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,5 dB

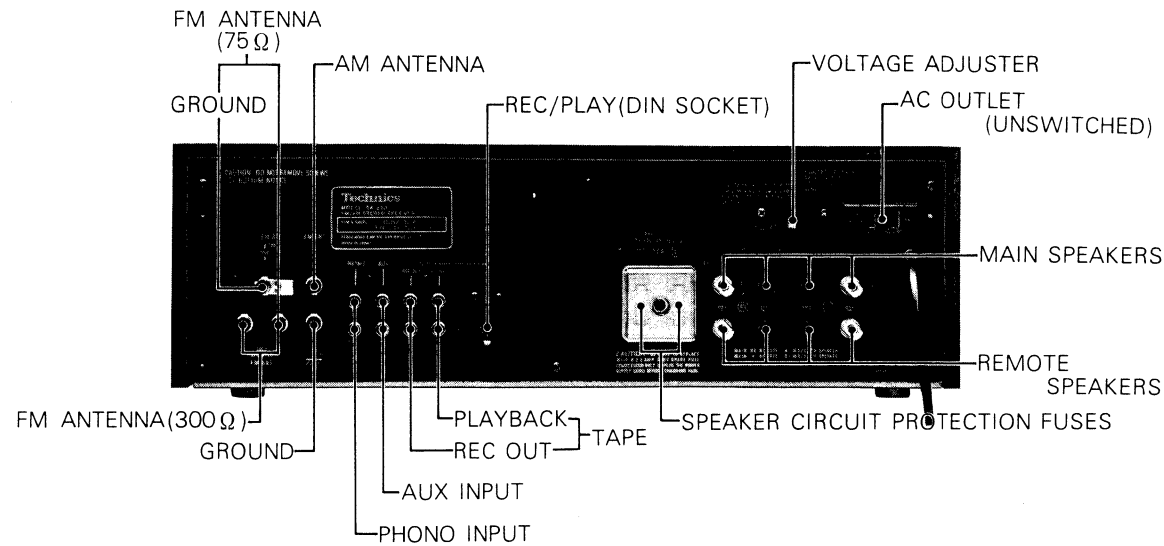
AM-TUNERTEIL

Empfangsbereich	525 ~ 1605 kHz
Empfindlichkeit	
(20 dB Fremdspannungsabstand)	30μV, 300μV/m
Selektivität	30 dB
Spiegelselektion bei 1000 kHz	45 dB
ZF-Festigkeit bei 1000 kHz	40 dB

ALLGEMEINE DATEN

Leistungsaufnahme	300W
Netzspannung umschaltbar (50 Hz/60Hz)	110V/120V/220V/240V
Abmessungen (B x H x T)	430 x 142 x 300mm
Gewicht	7,2 kg

■ LOCATION OF CONTROLS (Rear Panel)



* This photo shows only the products for (X) and (XA).

* The products for other destinations except (X) and (XA) are not equipped with AC outlet.

CARACTERISTIQUES TECHIQUES

Sujet à changement sans préavis.

[DIN 45 500]

PARTIE AMPLIFICATEUR

Puissance RMS (continue) à 1 kHz
pour l'ensemble des canaux excités

2 x 30 W (4 Ω)
2 x 27 W (8 Ω)

Puissance RMS (continue) à 40 Hz ~ 16 kHz
pour l'ensemble des canaux excités

2 x 27 W (4 Ω)
2 x 25 W (8 Ω)

Puissance RMS (continue) à 20 Hz ~ 20 kHz
pour l'ensemble des canaux excités

2 x 25 W (8 Ω)

Largeur de bande de puissance

pour l'ensemble des canaux excités, -3 dB
10 Hz ~ 25 kHz (4 Ω)

Distorsion harmonique totale

pour la puissance mesurée à 1 kHz 0,04% (4 Ω, 8 Ω)
pour la puissance mesurée à 40 Hz ~ 16 kHz 0,04% (4 Ω, 8 Ω)
pour la puissance mesurée à 20 Hz ~ 20 kHz 0,04% (8 Ω)
pour la demi-puissance mesurée à 20 Hz ~ 20 kHz

0,025% (8 Ω)

pour la demi-puissance mesurée à 1 kHz 0,009% (8 Ω)

pour une puissance mesurée de -26 dB, 1 kHz 0,06% (4 Ω)

pour une puissance mesurée de 50 mW, 1 kHz 0,2% (4 Ω)

Distorsion d'intermodulation

pour la puissance mesurée à 250 Hz: 8 kHz=4:1, 4 Ω 0,04%

pour la puissance mesurée à 60 Hz: 7 kHz=4:1, 8 Ω 0,04%

Tension résiduelle de bruit

0,6 mV

Facteur d'amortissement

16 (4 Ω), 32 (8 Ω)

Sensibilité & impédance d'entrée

PHONO 2,5 mV/47 k Ω

AUX 150 mV/33 k Ω

PLAYBACK (TAPE), REC/PLAY entrée 180 mV/39 k Ω

Voltage d'entrée maximum (PHONO, 1 kHz, RMS)

130 mV

Rapport signal/bruit

pour la puissance nominale, 4 Ω

PHONO 70 dB (IHF, A: 78 dB)

AUX 88 dB (IHF, A: 95 dB)

pour une sortie de -26 dB, 4 Ω PHONO 68 dB, AUX 77 dB

pour une sortie de 50 mW, 4 Ω PHONO 64 dB, AUX 65 dB

Réponse de fréquence

PHONO Courbe standard RIAA

30 Hz ~ 15 kHz, ±0,5 dB

AUX 20 Hz ~ 20 kHz, ±0,5 dB

10 Hz ~ 30 kHz, -1 dB

Régage de la tonalité

BASS (graves) 50 Hz, +10 dB ~ -10 dB

TREBLE (aigus) 10 kHz, +10 dB ~ -10 dB

Correction physiologique (volume à -30 dB)

50 Hz, +9 dB

Tension de sortie & impédance REC OUT (TAPE)

150 mV

REC/PLAY 30 mV/80 k Ω

Equilibrage de canaux (250 Hz ~ 6300 Hz), AUX

±1,0 dB

Ecart canaux à 1 kHz, AUX

55 dB

Niveau des écouteurs et impédance de sortie

330 mV/330 Ω

Impédance de charge PRINCIPALE ou ELOIGNEE

4 ~ 16 Ω

PRINCIPALE + ELOIGNEE 8 ~ 16 Ω

PARTIE TUNER FM

Gamme reçue

88 ~ 108 MHz

Impédance d'antenne 300 Ω (symétrique) 75 Ω (asymétrique)

Sensibilité (± 40 kHz déviation)

Signal/bruit 30 dB 1,9 μV (300 Ω), 1,3 μV (75 Ω)

Signal/bruit 26 dB 1,7 μV (300 Ω), 1,2 μV (75 Ω)

Signal/bruit 20 dB 1,5 μV (300 Ω), 0,9 μV (75 Ω)

IHF Sensibilité 1,9 μV (IHF '58)

IHF Sensibilité pour 46 dB

22 μV (75 Ω), STEREO

Distorsion harmonique totale

0,15%

MONO

0,3%

STEREO

Signal/bruit (± 40 kHz déviation) MONO

60 dB (IHF: 75 dB)

STEREO 58 dB (IHF: 70 dB)

Réponse de fréquence

20 Hz ~ 15 kHz, +1 dB

20 Hz ~ 14 kHz, ±1,5 dB

Sélectivité alternée par canal

70 dB

Taux de capture

1,2 dB

Réjection de fréquence image à 98 MHz

70 dB

Réjection FI à 98 MHz

90 dB

Réjection de réception non sélective à 98 MHz

80 dB

Suppression AM

55 dB

Séparation stéréophonique

1 kHz 45 dB, 10 kHz 35 dB

Courant porteur de dispersion

19 kHz -33 dB (-40 dB, IHF)

38 kHz -48 dB (-50 dB, IHF)

Point limite

1,2 μV

Largeur de bande Amplificateur FI

180 kHz

Démodulateur FM

1000 kHz

Equilibrage de canaux (250 Hz ~ 6300 Hz)

±1,5 dB

PARTIE TUNER AM

Gamme reçue

525 ~ 1605 kHz

Sensibilité (Rapport S/B 20 dB)

30 μV, 300 μV/m

Sélectivité

30 dB

Réjection de fréquence image à 1000 kHz

45 dB

Réjection FI à 1000 kHz

40 dB

GENERALITES

Consommation

300 W

Alimentation (50 Hz/60 Hz)

110V/120V/220V/240V

Dimensions (L x H x Pr)

430 x 142 x 300 mm

Poids

7,2 kg

■ ALIGNMENT INSTRUCTIONS

ENGLISH

Notes:

1. Loudness switch OFF
2. Band selector switch AM/FM (FM, RF FM-IF)
3. FM muting/mode switch OFF/FM MONO
4. Speaker switch ON
5. Tape monitor switch SOURCE

6. Maintain line voltage at rated voltage.

7. Output of signal generator should be no higher than necessary to obtain an output reading.

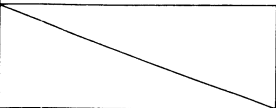
SIGNAL GENERATOR		DIAL SETTING	INDICATOR (AC VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS	
CONNECTION	FREQUENCY					
AM ALIGNMENT						
1	High side through 0.001 μ F to AM antenna trimmer terminal. Common to chassis.	455kHz (30%Mod. with 400Hz)	Point of non-interference	Connect VTVM or scope to TP201 , through 0.1 μ F	T201 (1st IFT) Z201 (2nd IFT)	●Adjust for maximum output
2	Fashion loop of several turns of wire and radiate signal into loop of receiver	600kHz (30%Mod. with 400Hz)	600kHz	Connect VTVM or scope to speaker terminals of receiver.	L202 (OSC Coil) L201 (ANT Coil)	●Adjust for maximum output. Adjust L201 by moving coil bobbin along ferrite core.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver	1500kHz (30%Mod.) with 400Hz)	1500kHz	Connect VTVM or scope to speaker terminals of receiver.	CT5 (OSC Trimmer) CT4 (ANT Trimmer)	●Adjust for maximum output ●Repeat steps (2) and (3)
FM-IF ALIGNMENT						
4		No Signal	Point of non-interference.	Tuning meter of set.	T101 (DISCRI IFT) (A) Orange Core	●FM muting/mode switch to ON/FM AUTO. ●Adjust for center position of tuning meter.
FM-RF ALIGNMENT						
5	Connect to FM 300 Ω antenna terminal through FM dummy antenna.	90MHz (100%Mod. with 400Hz)	90MHz	Connect scope to speaker terminals of receiver.	L5 (OSC Coil) L3 (RF-DET Coil) L1 (ANT Coil)	●FM muting/mode switch to OFF/FM MONO. ●Adjust for maximum amplitude and symmetrical curve (Refer to fig. 4).
6	Connect to FM 300 Ω antenna terminal through FM dummy antenna.	106MHz (100%Mod. with 400Hz)	106MHz	Connect scope to speaker terminals of receiver.	CT3 (OSC Trimmer) CT2 (RF DET Trimmer) CT1 (ANT Trimmer)	●Adjust for maximum amplitude and symmetrical curve. ●Repeat steps (5) and (6).
FM MONO DISTORTION ALIGNMENT						
7	Connect to FM 300 Ω antenna terminal through FM dummy antenna. Apply 60 dB to set.	100MHz (100%Mod. with 400Hz)	100MHz	Connect distortion meter to speaker terminals of receiver.	T101 (DISCRI IFT) (B)- Green Core	●Adjust for minimum distortion of left output. ●Repeat steps (4) and (7).
FM MUTING LEVEL ALIGNMENT						
8	Connect to FM 300 Ω antenna terminal through FM dummy antenna. Apply 16dB(6.3 μ V) to set.	100MHz (100%Mod. with 400Hz)	100MHz	Connect VTVM or scope to speaker terminals	VR101	●FM muting/mode switch to "ON/FM AUTO". ●Adjust so that output can be obtained.
FM MPX PILOT ALIGNMENT						
Using a frequency counter			Using alternate system			
9	1 100MHz Non-modulated mono signal applied to set. (Apply 60dB) 2 FM muting/mode switch to "ON/FM AUTO" 3 Connect frequency counter to TP301 through resistor (100k Ω). 4 Adjust VR301 to 19kHz, $\pm$ 30Hz.			1 Apply stereo signal from generator or stereo station to receiver. 2 Adjust VR301 until stereo indicator lights up. Cement arm of VR301 as shown in fig. 5.		
Notes: 1. Stereo modulator ● Connect stereo modulator output to EXT MOD terminal of signal generator. 						

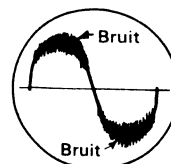
■ ABGLEICHANWEISUNGEN XXXXXXXXXX DEUTSCH

(Für Deutschland)

Anmerkungen:				5. Tape/Monitor-Umschalter SOURCE	
1. Loudness-Schalter OFF				6. Die Netzspannung auf ihren Sollwert einstellen.	
2. Bereichsschalter (AM (AM Abgleich) FM (FM Abgleich))				7. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.	
3. FM Muting/mode-Schalter OFF/FM MONO					
4. Lautsprecher-Schalter ON					
AM/UKW MESSENDER		SKALENZEIGEREIN- STELLUNG DES TUNER	ANZEIGE (Wechselstrom Röhrenvoltmeter oder Oszillograph bzw. Klirrfaktor-Meßgerät)		ABGLEICHSPUNKTE
ANSCHLUSS	FREQUENZ		BEMERKUNGEN		
AM-ABGLEICH					
Heißes Ende des Meßsenders über einen 0,001µF Kondensator an den AM Antenneneingang schließen. Kaltes Ende an Masse.	455kHz (400Hz Modulat., 30%)	Kein Empfang	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	T201 (1. IFT) Z201 (2. IFT)	• Auf max. Ausgang abgleichen.
Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	600kHz (400Hz Modulat., 30%)	600kHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	L202 (Osc. Spule) L201 (Ant. Spule)	• Auf max. Ausgang abgleichen. • L201 wird abgeglichen, indem die Spule am Ferritstab entlanggeschoben wird.
Das Meßsendersignal induktiv in den Tuner speisen, Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	1500kHz (400Hz Modulat., 30%)	1500kHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	CT5 (Osc. Trimmer) CT4 (Ant. Trimmer)	• Auf max. Ausgang abgleichen. • Schritt (2) und (3) sind zu wiederholen.
UKW ZF-ABGLEICH					
	Kein Signal	Kein Empfang	Abstimmmanzeige.	T101 (Diskriminator IFT) [A]	• FM Muting-Schalter auf ON stellen. • Den Abstimmungsanzeiger auf den zentrum Wert einstellen.
UKW HF-ABGLEICH					
Meßsender über eine Kunstantenne an den UKW- Antenneneingang schließen.	87,5MHz (400Hz Modulat., 100%)	87,5MHz (Frequenz Min.)	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	L5 (Osc. Spule)	• FM Muting-Schalter auf OFF stellen. • Auf max. Ausgang abgleichen.
Meßsender über eine Kunstantenne an den UKW- Antenneneingang schließen.	90MHz (400Hz Modulat., 100%)	90MHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	L3 (Det. Spule) L1 (Ant. Spule)	• Auf max. Amplitude bei entsprechender Linearität abgleichen. (Vgl. Abb. 4)
Meßsender über eine Kunstantenne an den UKW- Antenneneingang schließen.	106MHz (400Hz Modulat., 100%)	106MHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	CT3 (Osc. Trimmer) CT2 (Det. Trimmer) CT1 (Ant. Trimmer)	• Auf max. Amplitude bei entsprechender Linearität abgleichen. (Vgl. Abb. 4) • Schritt (5), (6) und (7) sind zu wiederholen.
ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
Meßsender über eine Kunstantenne an den UKW- Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Klirrfaktor-Meßbrücke über den Lautsprecher schließen.	T101 (Diskriminator IFT) [B]	• Auf min. Verzerrung auf der Klirrfaktor-Meß- brücke abgleichen. • Schritt (4) und (8) sind zu wiederholen.
UKW-MUTING-ABGLEICH					
Meßsender über eine Kunstantenne an den UKW- Antenneneingang schließen. Meßsender auf 16 dB (6,3µV) einstellen.	100MHz (400Hz Modulat., 100%)	100MHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	VR101	• Muting Schalter auf "ON" stellen. • So einstellen, daß ein Ausgang zu vernehmen ist.
UKW-STEREO-DEKODER-ABGLEICH					
Unter Verwendung eines Zählers			Alternativ-Meßmethode		
1. Unmoduliertes Mono-Signal 100 MHz in das Gerät speisen.			1. Stereosignal entweder von einem Stereogenerator oder einem Sender einspeisen.		
2. FM Muting-Schalter auf "ON /FM AUTO" stellen.			2. VR301 so einstellen, bis die Stereolampe auf leuchtet.		
3. Zähler über einen Widerstand 100K ohm an TP301 schließen.			Schleifer von VR301 sichern, wie in Abb. 5 gezeigt.		
4. VR301 auf 19kHz ±30Hz einstellen.					
KANALTRENNUNG-ABGLEICH					
Anmerkungen:					
1. Stereo-Modulator Ausgang des Stereo-Modulators an den Eingang EXT MOD des Meßsenders schließen. Eingebauter Oszillator 1kHz/Pilotton-Modulation 10%					
2. UKW Meßsender Auf etwa 100MHz einstellen. Ausgangspegel 72dB (IHF). Modulation FM					
3. Bereichsschalter FM					
4. Muting/Mode-Schalter ON/FM AUTO					
ANSCHLUSS DES UKW MESSENDERS	STEREO MODULATOR MODE oder MOD. RATE	ANZEIGE (Röhrenvoltmeter oder Oszillograph)		ABGLEICHSPUNKTE	ANMERKUNGEN
Meßsender über eine Kunstan- tenne an den UKW-Antenne- neingang schließen.	L (und R) Modulation 30%	Röhrenvoltmeter oder Oszillograph über Tiefpassfilter an den Tuner-Ausgang schließen. Vgl. Abb. 6.		VR302	• Auf min. (Ausgang rechter (und linker) abgleichen.

■ INSTRUCTIONS D'ALIGNEMENT XXXXXXXXXX FRANCAIS

Notes:						
1. Commutateur de physiologique (loudness) OFF			5. Commutateur de contrôle auditif SOURCE (relâchée)			
2. Sélecteur de gamme { AM (Alignement AM) FM (Alignement FM)			6. Conserver la tension du secteur à la tension nominale.			
3. Commutateur de silencieux OFF/FM MONO			7. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.			
4. Commutateur d'enceintes ON						
AM/FM GENERATEUR		AIGUILLE SUR LE CADRAN	INDICATEUR(C.A. VOLTMÈTRE ÉLECTRONIQUE OSCILLOSCOPE OU DISTORSIONMÈTRE);	POINTS DE REGLAGE	OBSERVATIONS	
BRANCHMENT	FREQUENCE					
ALIGNEMENT AM						
1	Côté chaud, à travers 0.001µF, sur le trimmer de l'antenne AM, commum an shâssis	455kHz (modulé à 30% par 400Hz)	Point sans signal	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	T201 (1 transfo FI) Z201 (2 transfo FI) • Réglez au maximum de signal de sortie.	
2	Faire une boucle de quelques tours et rayonner le signal dans le cadre du l'ampli-tuner	600kHz (modué à 30% par 400Hz)	600kHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	L202 (bobine OSC) L201 (bobine ANT) • Réglez au maximum de signal de sortie. Réglez L201 en déplaçant la bobine le long du noyau de ferrite.	
3	Faire une boucle de quelques tours et rayonner le signal dans le cadre du l'ampli-tuner.	1500kHz (modulé à 30% par 400Hz)	1500kHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	CT5 (trimmer OSC) CT4 (trimmer ANT) • Réglez au maximum de signal de sortie. • Recommencez les étapes (2) et (3).	
ALIGNEMENT FI-FM						
4		Sans signal	point sans signal	Indicateur d'accord de l'appareil	T101 (Transfo FI discr.) [A] • Commutateur de silencieux sur ON. • Réglez pour atteindre position médiane sur l'indicateur d'accord.	
ALIGNEMENT RF-FM						
5	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	90MHz (modulé à 100% par 400Hz)	90MHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	L5 (bobine OSC) L3 (bobine DET) L1 (bobine ANT) • Commutateur de silencieux sur OFF. • Régler au maximum d'amplitude et de symétrie. (Voir fig. 1)	
6	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	106MHz (modulé à 100% par 400Hz)	106MHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	CT3 (trimmer OSC) CT2 (trimmer DET) CT1 (trimmer ANT) • Régler au maximum d'amplitude et de symétrie. (Voir fig. 1) • Recommencez les étapes (5) et (6)	
REGLAGE DE LA DISTORSION FM EN MONO						
7	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Branchez un distorsio mètre sur les bornes de haut-parleur de l'appareil.	T101 (Transfo FI discr.) [B] • Réglez au minimum d'indication du distorsio mètre. Recommencez les étapes (4) et (7).	
REGLAGE DU SEUIL DU SILENCIEUX D'ACCORD						
8	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 16 dB (6.3µV).	100MHz (modulé à 100% par 400Hz)	100MHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner	VR101 • Commutateur de silencieux sur "ON" • Régler pour obtenir une lecture en sortie.	
ALIGNEMENT DU PILOTE MULTIPLEX FM						
Avec un fréquencemètre			Par un outre système			
9	1. Signal mono 100 MHz non modulé appliqué à l'appareil.			1. Appliquez à l'appareil un signal stéréo provenant d'un générateur ou de la réception d'un émetteur.		
	2. Commutateur de silencieux sur "ON/FM AUTO"			2. Réglez VR301 jusqu'à ce que l'indicateur de stéréophonie s'allume. Collez le curseur de VR301 comme indiqué sur la fig. 2.		
	3. Branchez le fréquencemètre sur TP301 à travers une résistance de 100kΩ.					
	4. Réglez VR301 sur 19kHz ±30Hz.					
REGLAGE DE LA SEPARATION DES CANAUX						
Notes:						
1. Modulateur stéréo			Branchez sa sortie sur la prise EXT. MOD. du générateur.			
2. Générateur de signal			OSC interne 1kHz Modulation du signal pilote 10%			
3. Commutateur de gamme FM			Fréquence env. 100MHz, niveau de sortie 72dB (IHF), genre de modulation sur FM.			
			4. Commutateur de silencieux ON/FM AUTO			
BRANCHEMENT DU GÉNÉRATEUR DE SIGNAL		MODE DU MODULATEUR STEREO ET TAUX DE MODULATION		INDICATEUR (VOLTMÈTRE ELECTRO-NIQUE OU OSCILLOSCOPE)	POINTS DE REGLAGE	OBSERVATIONS
10	Borne d'antenne FM à travers antenne fictive.	Gauche (et droite) à 30% de modulation.		Sur les bornes de haut-parleur à travers un filtre passe-bas, voir fig. 3.	VR302	• Réglez au minimum de sortie droite (et gauche)



Sinusoidale

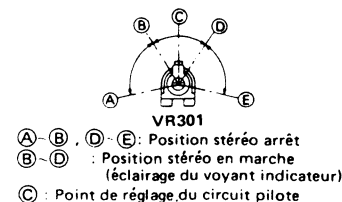


Fig. 2

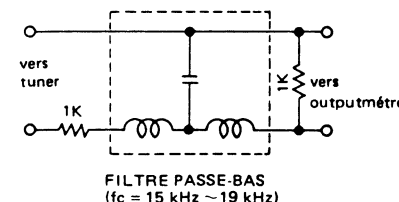
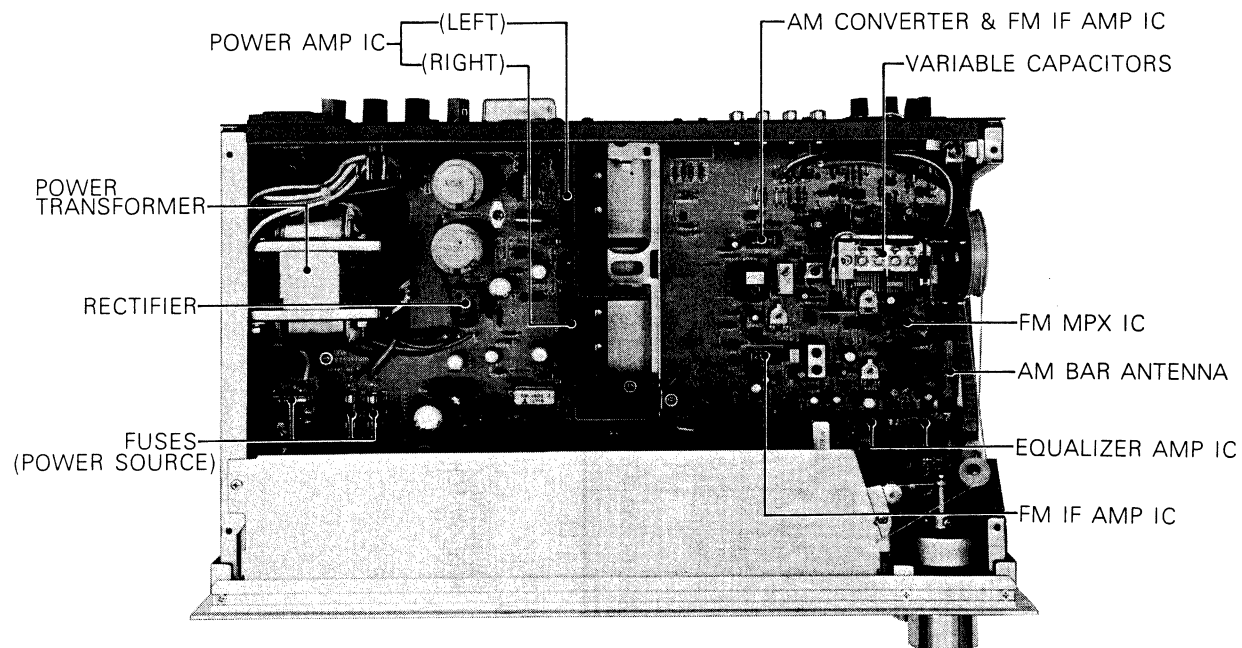


Fig. 3

■ PRINTED CIRCUIT BOARD VIEW



■ NOTE

The unit is provided with the speaker circuit protection fuses at the right and left channels respectively. The fuse is to prevent the power IC from destruction, should the speaker terminals be short-circuited. Accordingly, if the unit fails to function upon completion of the speaker connections, check the speaker circuit protection fuses first of all for possible blowing.

■ ALIGNMENT POINTS

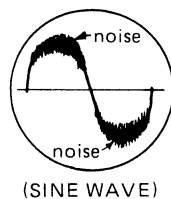
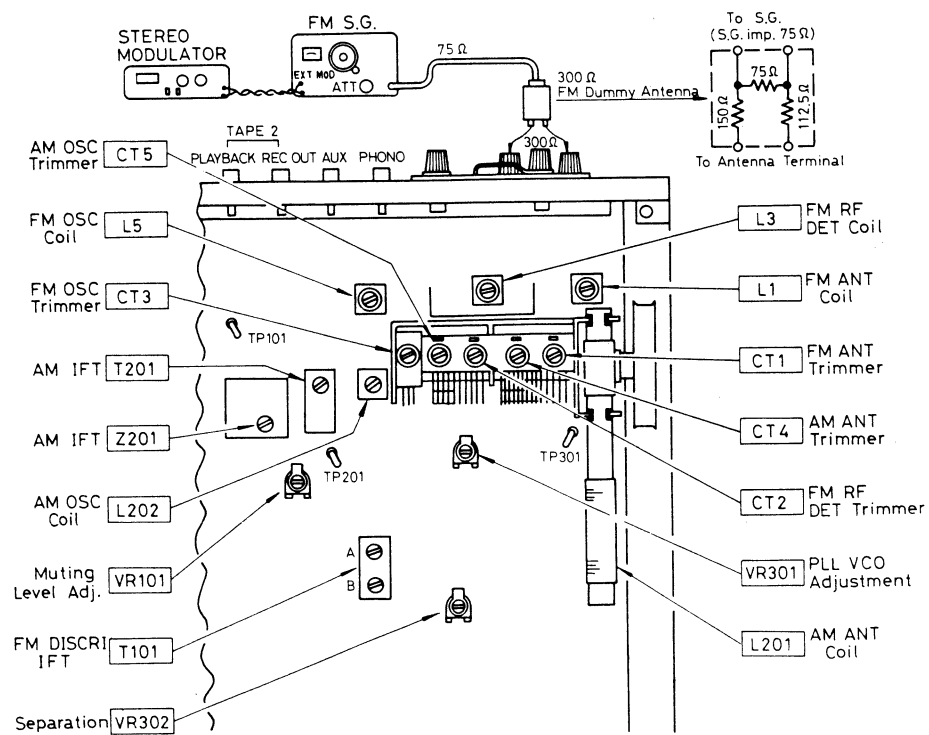


Fig. 4 (Abb. 4)

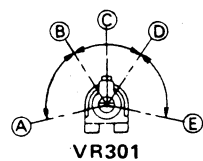


Fig. 5 (Abb. 5)

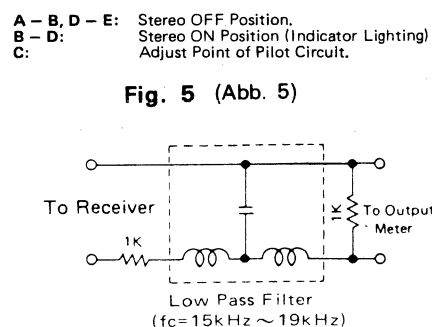
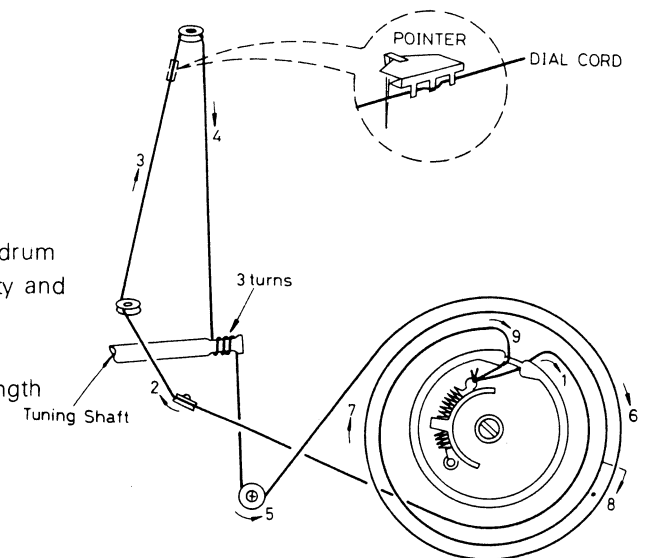


Fig. 6 (Abb. 6)

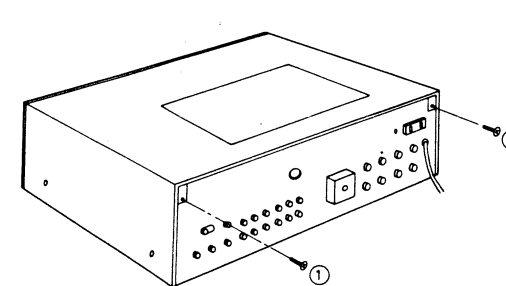
■ DIAL CORD INSTALLATION GUIDE

- For threading a fresh cord, proceed as follows.
 1. Prepare a fresh cord more than 200cm(78-3/4") in length.
 2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor).
 3. Direct the cord in the order from 1 to 9.
 4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state. Tuning
 5. Fix the knot of the cord with the bond.



■ TO REMOVE CABINET

1. Remove the two cabinet mounting screws (nos ①, ② screws in fig. 7).
2. Remove the four cabinet mounting screws (nos ①~④ screws in fig. 8).
3. Sliding it toward Ⓐ direction and lifting it upward Ⓑ direction as shown in fig. 8.
4. When the cabinet is installed, insert the metal fitting of cabinet (as shown in fig. 9) into the space between the front panel and light reflector.



F.g. 7

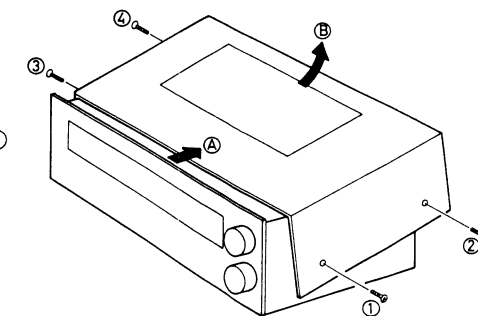


Fig. 8

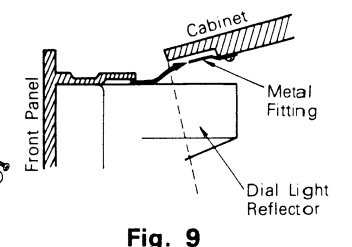


Fig. 9

■ THE UNIT CAN USE TWO DIFFERENT PARTS IN VOLTAGE ADJUSTER

1. When using the part number ESE37200, connect as shown in fig. 10.
2. When using the part number SSR53S, connect as shown in fig. 11.

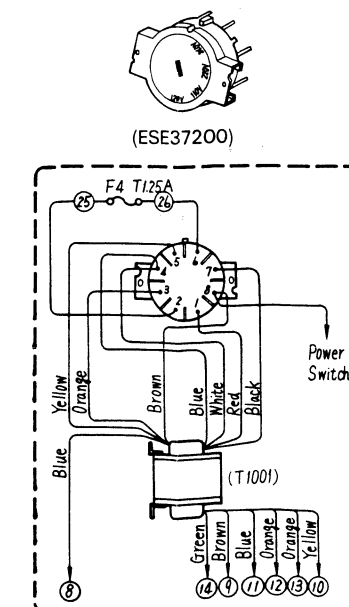


Fig. 10

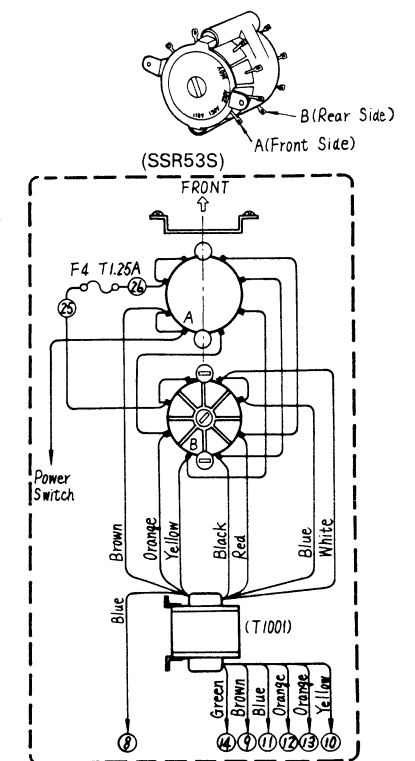
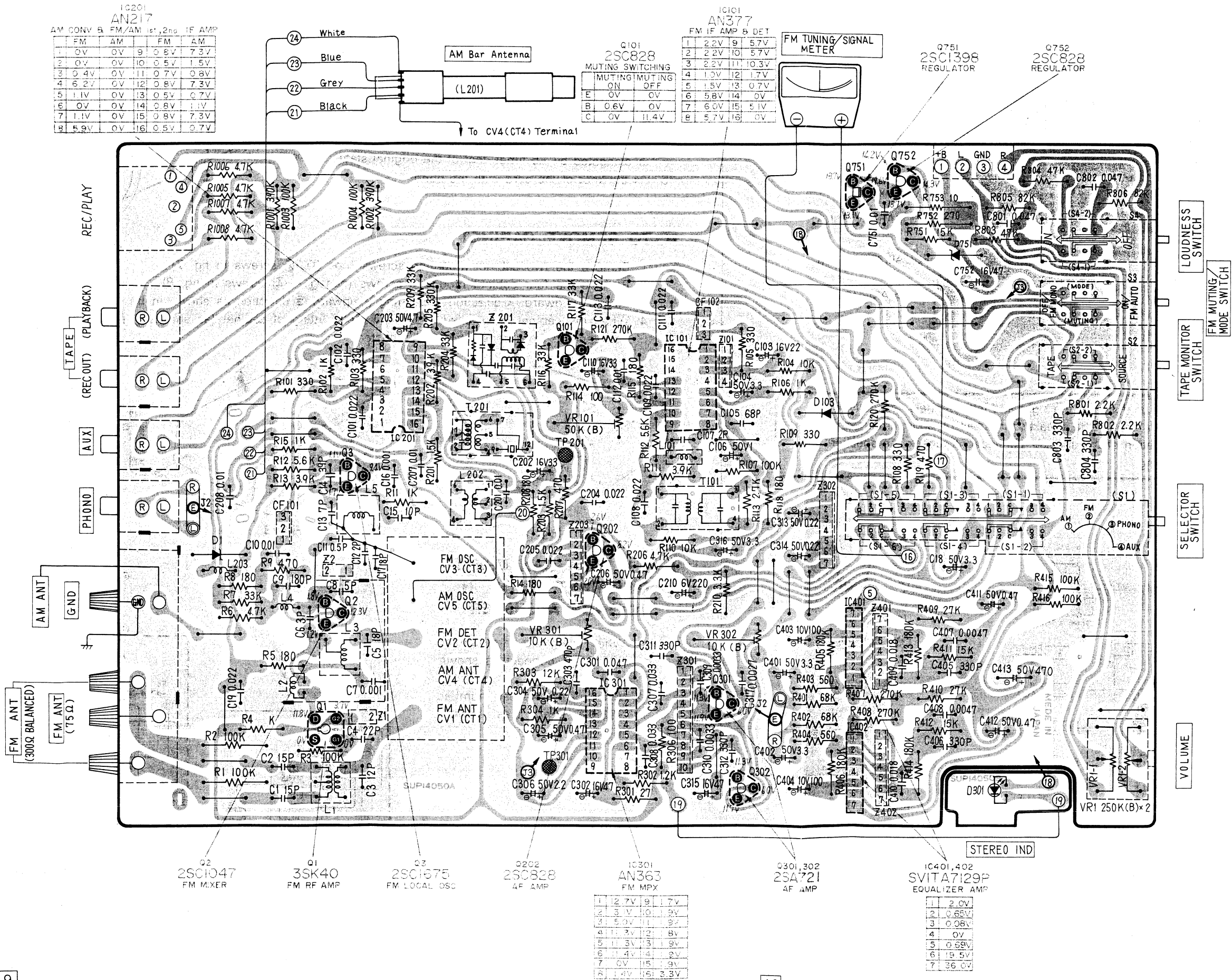


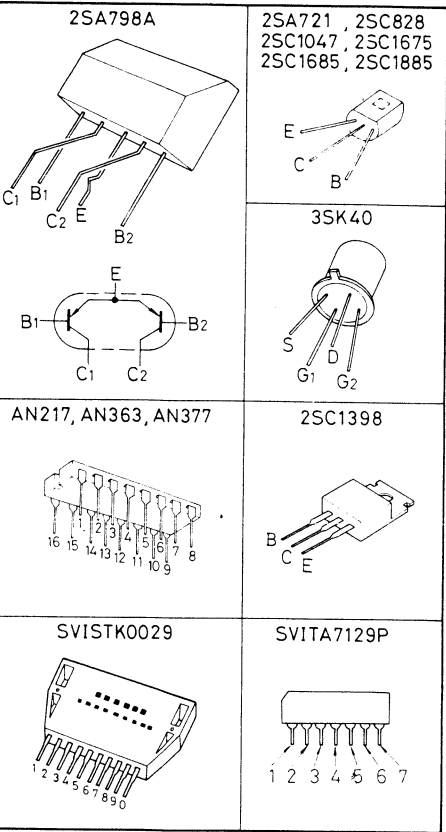
Fig. 11

FM/AM TUNER AND EQUALIZER CIRCUIT BOARD

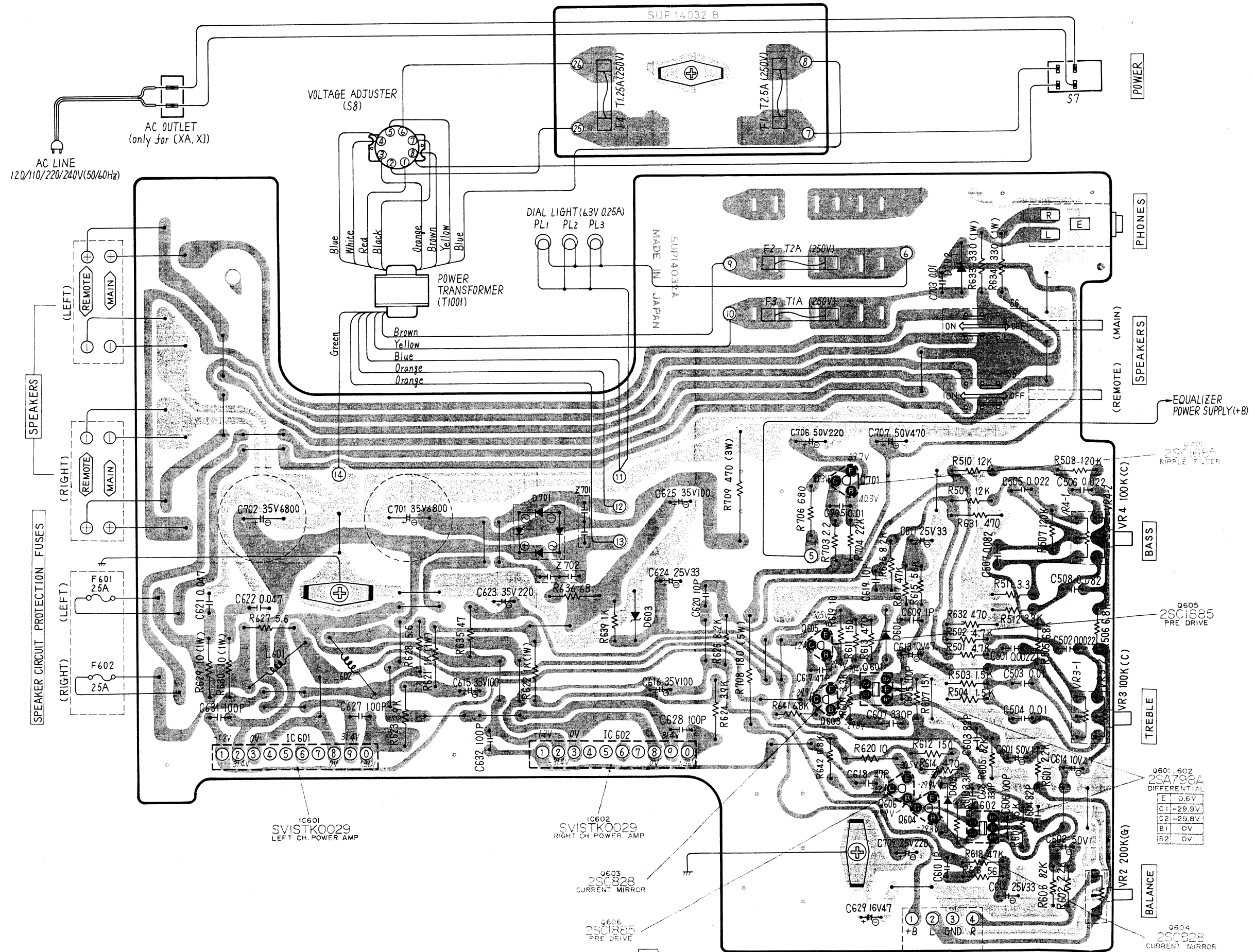
Earth (Ground) Lines

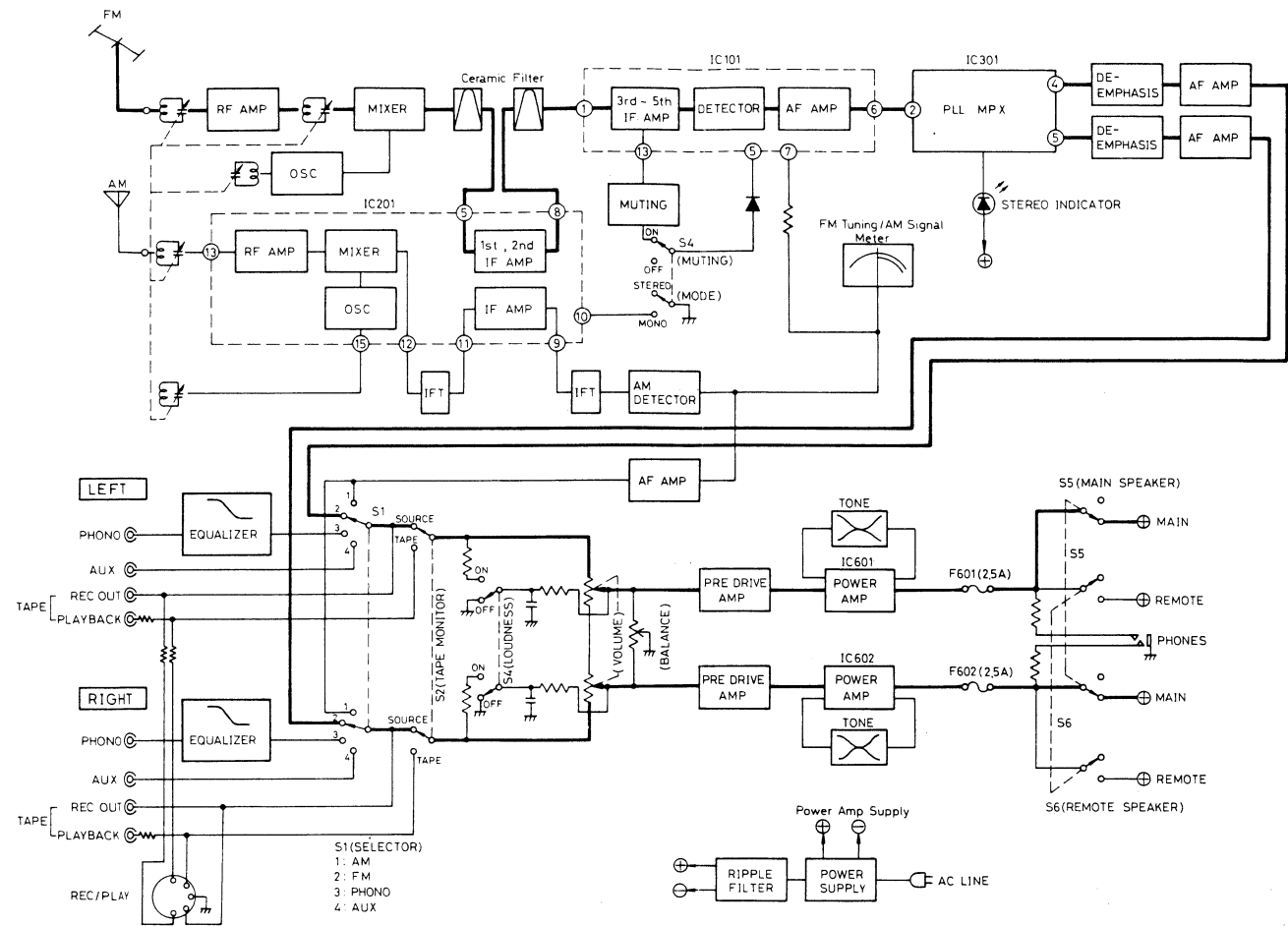


TERMINAL GUIDE OF TRANSISTOR AND IC



■ TONE, MAIN AMPLIFIER AND POWER SUPPLY CIRCUIT BOARD





Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
L601, 602	SLQY15G-3U	Coil, Power Amplifier Output	2	
T101	SL14D513-Z	Transformer, FM IF Detector	1	
T201	SL17D101-M	Transformer, AM IF	1	
T1001 (XAL) only	SLT5P151-W	Transformer, Power Source	1	
T1001	SLT5P149-W	Transformer, Power Source	1	○ ○
COMPONENT COMBINATIONS				
Z1	EXRP102Z223C	Component Combination, 22k Ω & 0.001 μ F	1	
Z2	EXRP103PI02C	Component Combination, 1k Ω & 0.01 μ F	1	
Z101	EXF3SL04C	Component Combination, 0.01 μ F (X3)	1	
Z201	SL19F101-Z	Component Combination, AM Detector	1	
Z203	EXB-H85005K	Component Combination, Resistors	1	
Z301	EXB-H8007K	Component Combination, Resistors	1	
Z302	EXA6YD04CL	Component Combination, 39k Ω (X2), 100k Ω (X2), 820pF (X2)	1	
Z401, 402	EXA6SD01C	Component Combination, Equalizer	2	
Z701, 702	EXRF-S203Z5	Component Combination, 0.01 μ F (X2)	2	
CERAMIC FILTERS				
CF101, 102	SVFEI07MS8-A	Ceramic Filter, Red, 10.7MHz	each 2	}
	SVFEI07MS8-B	Ceramic Filter, Blue, 10.67MHz		
	SVFEI07MS8-C	Ceramic Filter, Orange, 10.73MHz		
	SVFEI07MS8-D	Ceramic Filter, Black, 10.64MHz		
	SVFEI07MS8-E	Ceramic Filter, White, 10.76MHz		
(Use pair ranks as same as CF101 and CF102.)				
VARIABLE RESISTORS				
VR1	EWFMKA031BF5	Volume Control, 250k Ω (B)	1	
VR2	EVHGPAF25G25	Balance Control, 200k Ω (G)	1	
VR3, 4	EWKB9AF25C15	Bass & Treble Control, 100k Ω (C)	2	
VR101	EVL53AA00B54	Muting Level Adjustment, 50k Ω (B)	1	
VR301	EVTS3MA00B14	PLL VCO Adjustment, 10k Ω (B)	1	
VR302	EVL53AA00B14	Separation Adjustment, 10k Ω (B)	1	
VARIABLE CAPACITORS				
CV1~CV5 (CT1~CT5)	ECVC75K144A	Variable Capacitor, with Trimmer	1	
LAMPS				
PL1, 2, 3	XAMR62S	Lamp, Dial (6.3V 0.25A)	3	
FUSES				
F1	XBA2C25TRO	Fuse, T 2.5A(250V) Power Primary	1	
F2	XBA2C20TRO	Fuse, T 2A(250V) Lamp	1	
F3	XBA2C10TRO	Fuse, T 1A(250V) Power Secondary	1	
F4	XBA2C12TRO	Fuse, T 1.25A(250V) Power Primary	1	
F601, 602	XBA2C25SSO	Fuse, 2.5A(250V) Speaker Circuit	2	
SWITCHES				
S1	ESRM164F25E	Selector	1	
S2	SSL121	Switch, Tape Monitor	1	
S3, 4	SSL123	Switch, FM Muting & Loudness	2	
S5, 6	SSH223S	Switch, Main & Remote Speakers	2	
S7	ESL2191	Switch, Power Source	1	
S8	SSR53S	Switch, Voltage Adjuster (See page 8)	1	
S8	ESE37200	Switch, Voltage Adjuster (See page 8)	1	



SA-200K
(E),(EG),(XGH)

- * The model SA-200K(E, EG) is available in European and Scandinavia only.
- * The model SA-200K(XGH) is available in Holland only.

Note:

This parts list included only the changes of the model SA-200(E, EG) and SA-200(XGH) parts list.

Ref. No.	Change of Part No.		Part Name & Description	Per Set	Remarks
	SA-200	SA-200K		(Pcs.)	
CABINET and CHASSIS PARTS					
2	SGWA200X	SGWA200KD	Panel, Front Ass'y	1	○
24	SGX6579	SGX6579-1	Bracket, Dial Scale Left Side	1	○
26	SDH461A	SDH461-1A	Plate, Dial Scale	1	○
31	SGX6577	SGX6577-1	Bracket, Dial Scale Right Side	1	○
33	SDP1129	SDP1129-1	Pointer, Dial	1	
53(E)only	SGP1370A	SGP1370B	Rear Panel	1	○
53(EG,XGH)	SGPA200D	SGPA200KD	Rear Panel, SGP1370B with Name Plate (SGT16650)	1	○
PACKING PARTS					
P7	SPG1517	SPG1507	Carton Box	1	○

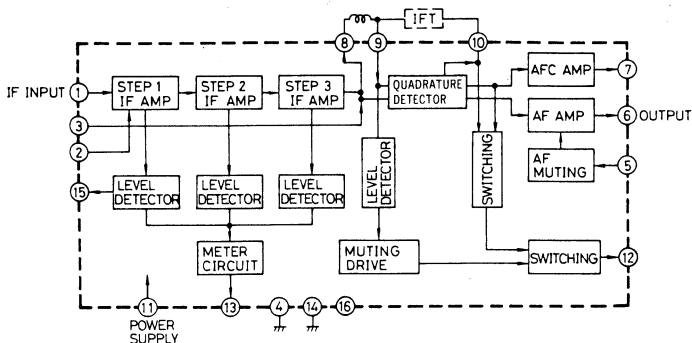
REPLACEMENT PARTS LIST

NOTES 1: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.

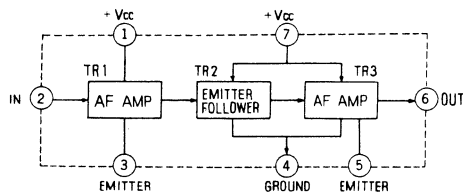
2. **S** indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS				
IC101	AN377	IC, FM IF Amplifier & FM Detector	1	
IC201	AN217P-BB	IC, FM IF Amplifier & AM Converter	1	
IC301	AN363	IC, FM Multiplex	1	
IC401, 402	SVTA7129P	IC, Equalizer Amplifier	2	
IC601, 602	SVSTK0029	IC, Power Amplifier	2	○
TRANSISTORS				
Q1	3SK40-M	Transistor, FM RF Amplifier	1	
Q2	25C1047-C	Transistor, FM Mixer (Use in ranks C or D)	1	
Q3	25C1675-L1	Transistor, FM Local Oscillator	1	
Q101, 202	25C1328-T	Transistor, Muting & AM AF Amplifier (Use in ranks S, T or U)	2	
Q301, 302	25A902S-F	Transistor, FM AF Amplifier (Use in ranks F or G)	2	
Q601, 602	25A798A-G2	Transistor, Differential Amplifier (Use in ranks F2 or G2)	2	
Q603, 604	25C1328-T	Transistor, Current Mirror (Use in ranks S or T)	2	
Q605, 606	25C1885-Q	Transistor, Pre Driver (Use in ranks Q or R)	2	
Q701	25C1685-T	Transistor, Ripple Filter (Use in ranks S or T)	1	
Q751	25C1398-Q	Transistor, Regulator (Use in ranks P, Q or R)	1	
Q752	25C1328-T	Transistor, Regulator (Use in ranks S, T or U)	1	
DIODES				
D1	SVDMZ303BM	Diode, 3V Zener	1	
D103	OA99	Diode, Switching	1	
D301	LN25RP	Light Emitting Diode, Stereo Indicator	1	
D601, 602	MA27B	Diode, Current Mirror	2	
D603	SVDMZ322	Diode, 22V Zener	2	
D701	SVDS4VB10	Rectifier	1	
D702	5MT12	Rectifier	1	
D751	SVDMZ414	Diode, 14V Zener	1	
COILS and TRANSFORMERS				
L1	SLA4P25	Coil, FM Antenna	1	
L2	RLQY25S2	Coil, Choke	1	
L3	SLD4P13	Coil, FM RF Detector	1	
L4	RLQY15G5	Coil, Choke	1	
L5	SLO4P31	Coil, FM Local Oscillator	1	
L101	SLQX180-2	Coil, Choke	1	
L201	SUF2C11	Coil, AM Bar Antenna	1	
L202	SLQ2C3-P	Coil, AM Local Oscillator	1	
L203	SLQX101-2D	Coil, Choke	1	

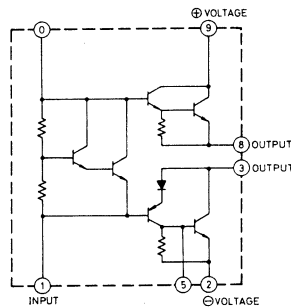
■ BLOCK DIAGRAM OF INTEGRATED CIRCUITS



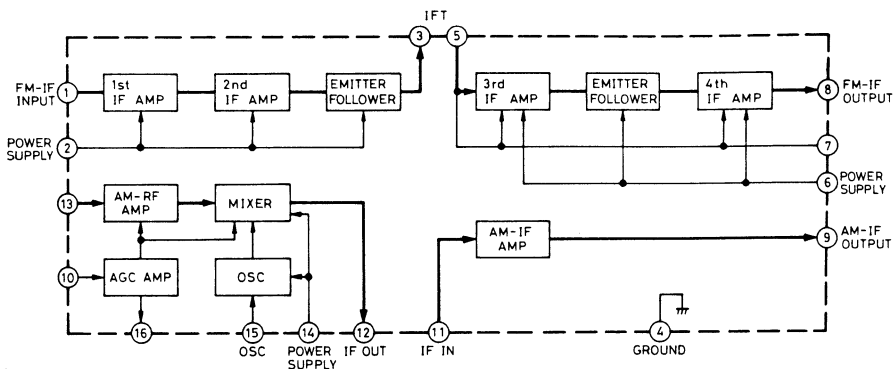
IC101 (AN377)
FM IF Amplifier & Detector



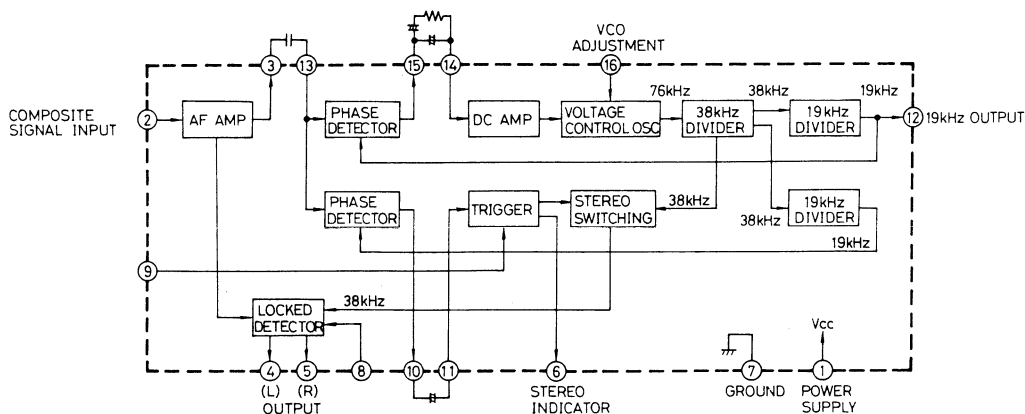
IC401, 402 (SVITA7129P) Equalizer Amplifier



IC601, 602 (SVISTK0029)
Power Amplifier



IC201 (AN217)
FM IF Amplifier & AM Converter



IC301 (AN363)
FM Multiplex

NOTES 2:

Guide letters of Resistor and Capacitor indicate.

Resistors

ERD Carbon ERG Metal oxide
ERO Metal film ERX Metal film
ERF Non-flammable

Capacitors

ECC Ceramic ECK Ceramic
ECQM Polyester ECQS Polystyrene
ECE Electrolytic

Ref. No.	Part No.	
RESISTORS		
R1, 2 (The product for (XAL) are not provided.)	ERD50TJ104	
R3	ERD25TJ104	
R4	ERD25TJ563	
R5	ERD25TJ181	
R6	ERD25TJ472	
R7	ERD25TJ333	
R8	ERD25TJ181	
R9	ERD25TJ471	
R11	ERD25TJ102	
R12	ERD25TJ562	
R13	ERD25TJ392	
R14	ERD25TJ181	
R15	ERD25TJ102	
R101	ERD25TJ331	
R102	ERD25TJ102	
R103	ERD25TJ331	
R104	ERD25TJ103	
R105	ERD25TJ331	
R106	ERD25TJ102	
R107	ERD25TJ104	
R108, 109	ERD25TJ331	
R110	ERD25TJ103	
R111	ERD25TJ392	
R112	ERD25TJ562	
R113	ERD25TJ272	
R114	ERD25TJ101	
R115	ERD25TJ181	
R116, 117	ERD25TJ333	
R118	ERD25TJ181	
R119	ERD25TJ471	
R120, 121	ERD25TJ274	
R201	ERD25TJ152	
R202	ERD25TJ392	
R203	ERD25TJ152	
R204	ERD25TJ333	
R205	ERD25TJ334	
R206	ERD25TJ472	
R207	ERD25TJ471	
R208	ERD25TJ181	
R209	ERD25TJ333	
R210	ERD25TJ332	
R301	ERD25TJ270	
R302	ERD25TJ122	
R303	ERD25TJ123	
R304	ERD25TJ102	
R306	ERD25TJ101	
R401, 402	ERO25CKG6802	

Ref. No.	Part No.	
R403, 404	ERD25TJ561	
R405, 406	ERO25CKG1803	
R407, 408	ERO25CKG2703	
R409, 410	ERD25TJ273	
R411, 412	ERD25TJ153	
R413, 414	ERD25TJ184	
R415, 416	ERD25TJ104	
R501, 502	ERD25TJ472	
R503, 504	ERD25TJ152	
R505, 506	ERD25TJ682	
R507, 508	ERD25TJ124	
R509, 510	ERD25TJ123	
R511, 512	ERD25TJ332	
R601, 602	ERD25TJ222	
R605, 606	ERD25TJ823	
R607, 608	ERD25TJ153	
R609, 610	ERD25TJ332	
R611, 612	ERD25TJ151	
R613, 614	ERD25TJ471	
R615, 616	ERD25TJ563	
R617, 618	ERD25TJ473	
R619, 620	ERD14FJ100	
R621, 622	ERG1ANJ102	
R623, 624	ERD12FJ392	
R625, 626	ERD14FJ822	
R627, 628	ERD14FJ5R6	
R629, 630	ERX1ANJ100	
R631, 632	ERD14FJ471	
R633, 634	ERG1ANJ331	
R635	ERD14FJ470	
R636	ERD14FJ680	
R639	ERD25TJ102	
R641, 642	ERD25TJ682	
R703	ERD18FAJ2R2	
R704	ERD25TJ223	
R706	ERD14FJ681	
R708	ERF5SJ181	
R709	ERG3ANJ471	
R751	ERD25TJ153	
R752	ERD12FJ271	
R753	ERD12FJ100	
R801, 802	ERD25TJ222	
R803, 804	ERD25TJ473	
R805, 806	ERD25TJ823	
R1001, 1002	ERD25TJ394	
R1003, 1004	ERD25TJ104	
R1005~1008	ERD25TJ472	

Ref. No.	Part No.	
CAPACITORS		
C1, 2	ECCD1H150KC	
C3	ECCD1H120KC	
C4	ECCD1H220KC	
C5	ECCD1H180KR	
C6	ECCD1H030CC	
C7	ECKD1H102MDA	
C8	ECCD1H050CC	
C9	ECCD1H181K	
C10	ECKD1H103ZF	
C11	ECCD1H0R5CC	
C12	ECCD1H020CC	
C13	ECCD1H070DC	
C14	ECCD1H390KC	
C15	ECCD1H100KC	
C16	ECKD1H102MDA	
C17	ECCD1H180KR	
C18	ECEA50Z3R3	
C19	ECKD1H223ZF	
C101, 102	ECKD1H223ZF	
C103	ECEA1CS220	
C51, 52(XAL)only	ECKDHS101MB	
C104	ECEA50Z3R3	
C105	ECCD1H680K	
C106	ECEA50Z1	
C107	ECCD1H020CC	
C108, 109	ECKD1H223ZF	
C110	ECEA1CS330	
C111	ECKD1H223ZF	
C112	ECKD1H103ZF	
C113	ECKD1H223ZF	
C201	ECKD1H103MD	
C202	ECEA1CS330	
C203	ECEA1JS4R7	
C204, 205	ECQM1H223KZ	
C206	ECEA2ASR47	
C207, 208	ECKD1H103ZF	
C210	ECEA1AS221	
C251(XAL)only	ECKDHS102MD	
C301	ECQM1H473KZ	
C302	ECEA1ES470	
C303	ECQS05471JZ	
C304	ECEA50ZR22	
C305	ECEA50ZR47	
C306	ECEA50M2R2R	

Ref. No.	Part No.	
C307, 308	ECQM1H333JZ	
C309, 310	ECQM1H332KZ	
C311, 312	ECKD1H331KB	
C313, 314	ECEA50ZR22	
C315	ECEA1ES470	
C316	ECEA50Z3R3	
C317	ECQM1H272KZ	
C401, 402	ECEA50M3R3R	
C403, 404	ECEA1AS101	
C405, 406	ECKD1H331KB	
C407, 408	ECQM1H472JZ	
C409, 410	ECQM1H183JZ	
C411, 412	ECEA50MR47R	
C413	ECEA1JS471	
C501, 502	ECQM1H222KZ	
C503, 504	ECQM1H103KZ	
C505, 506	ECQM1H223KZ	
C507, 508	ECQM1H823KZ	
C601, 602	ECEA50M1R	
C603, 604	ECCD1H820K	
C605, 606	ECCD1H101K	
C607, 608	ECKD1H331KB	
C609, 610	ECCD1H010C	
C611, 612	ECEA1VS330	
C613, 614	ECEA1ES470	
C615, 616	ECEA1VS101	
C617, 618	ECCD2H470K	
C619, 620	ECCD1H100K	
C621, 622	ECQM1H473KZ	
C623	ECEA1VS221	
C624	ECEA1VS330	
C625	ECEA1VS101	
C627, 628	ECCD1H101K	
C629	ECEA1ES470	
C631, 632	ECCD1H101K	
C701, 702	ECET35R6800S	
C703	ECKD1H103ZF	
C705	ECKD1H103ZF	
C706	ECEA1HS221	
C707	ECEA1JS471	
C709	ECEA1ES221	
C751	ECKD1H103ZF	
C752	ECEA1ES470	
C801, 802	ECQM1H473KZ	
C803, 804	ECKD1H331KB	

Schematic Diagram

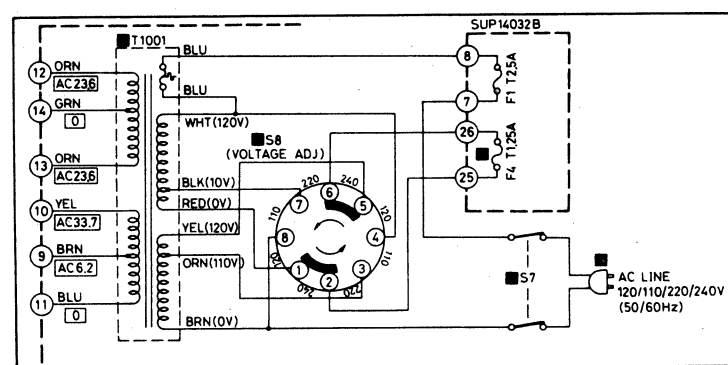
Model SA-200/SA-200K

Notes:

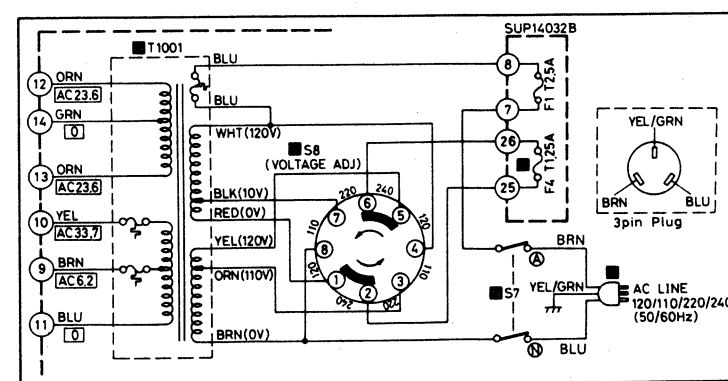
- S1-1~S1-6: Selector switch in "AM" position.
① AM → ② FM → ③ PHONO → ④ AUX
- S2-1, S2-2: Tape monitor switch in "SOURCE" position.
- S3: FM muting/mode switch in "ON/AUTO" position.
- S4-1, S4-2: Loudness switch in "OFF" position.
- S5: Remote speaker switch in "OFF" position.
- S6: Main speaker switch in "ON" position.
- S7: Power source switch in "ON" position.
- S8: Voltage adjustment switch in "240V" position.
240V ↔ 220V ↔ 110V ↔ 120V
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
 - Not apply signal to set and muting switch to OFF condition.
 - AM signal reception.
 - FM muting to ON condition.
 - FM stereo signal reception.
- AF signal lines. → FM signal lines. → AM signal lines.
- Indicates that only parts specified by the manufacturer be used for safety.
- This schematic diagram may be modified at any time with the development of new technology.

POWER SOURCE CIRCUITRY OF PRODUCTS FOR (E, EG), (XGH) & (XAL)

Products for Scandinavia/European(E, EG) and Holland(XGH) only

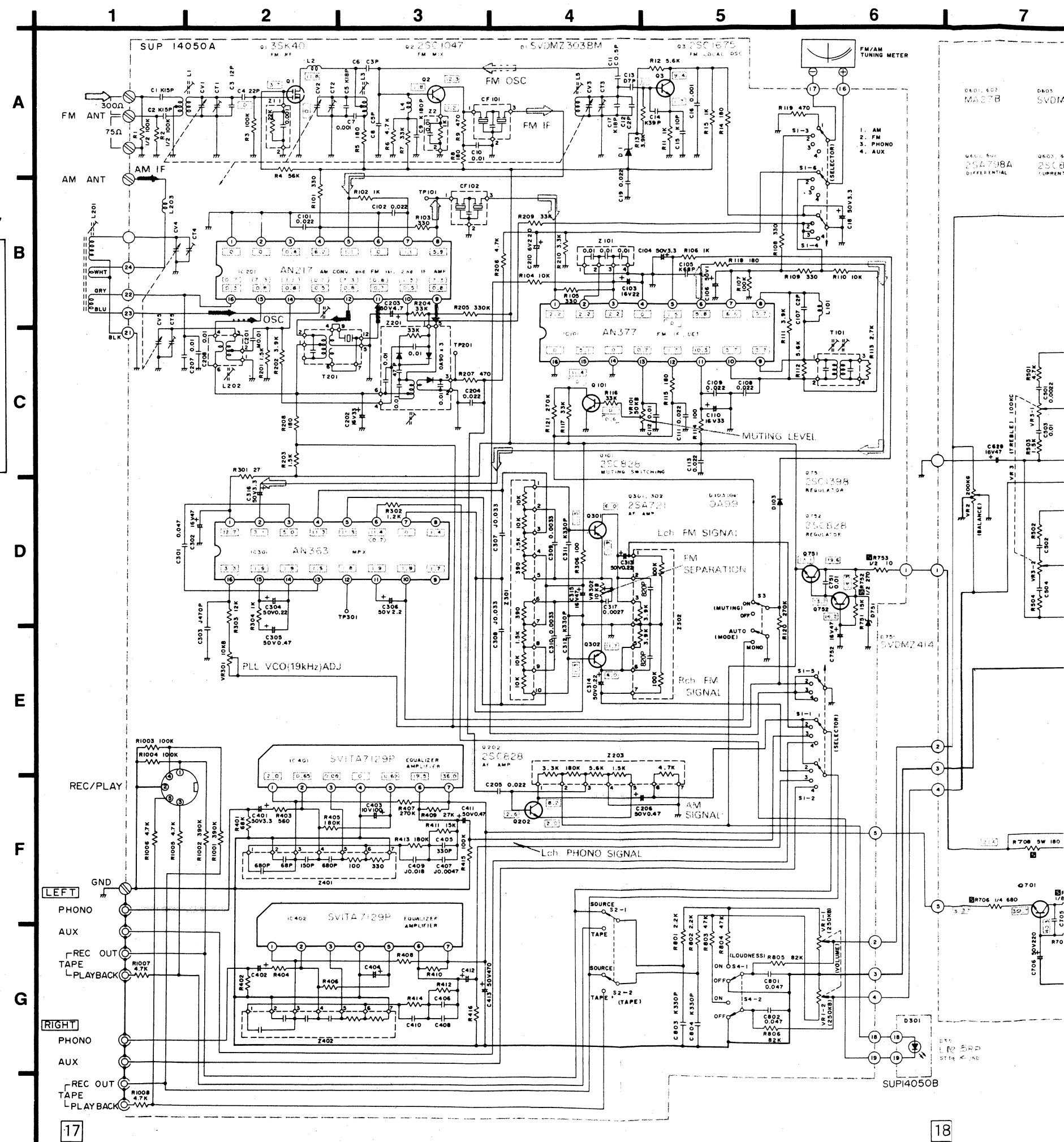
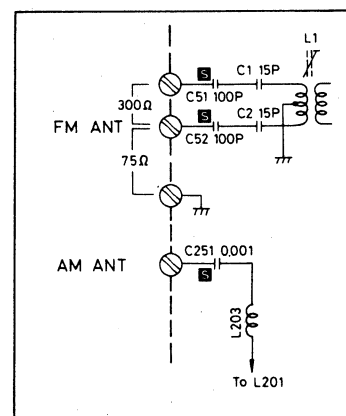


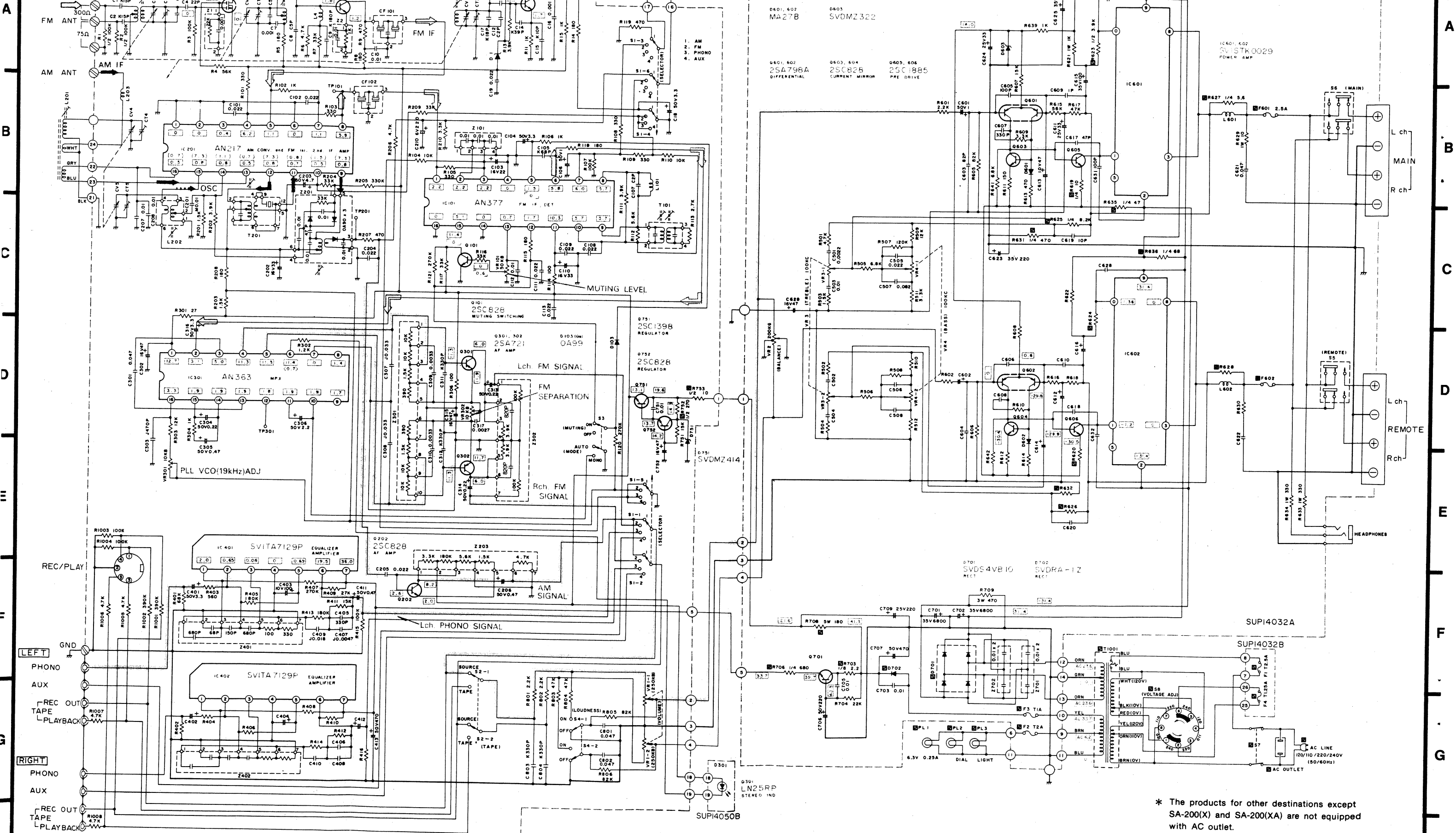
Product for Australia(XAL) only



ANTENNA CAPACITORS

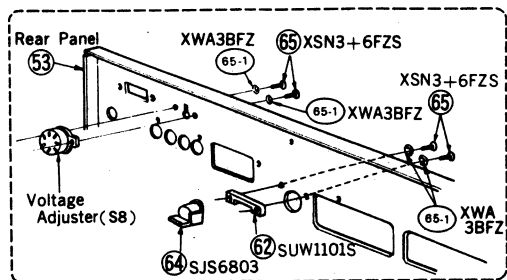
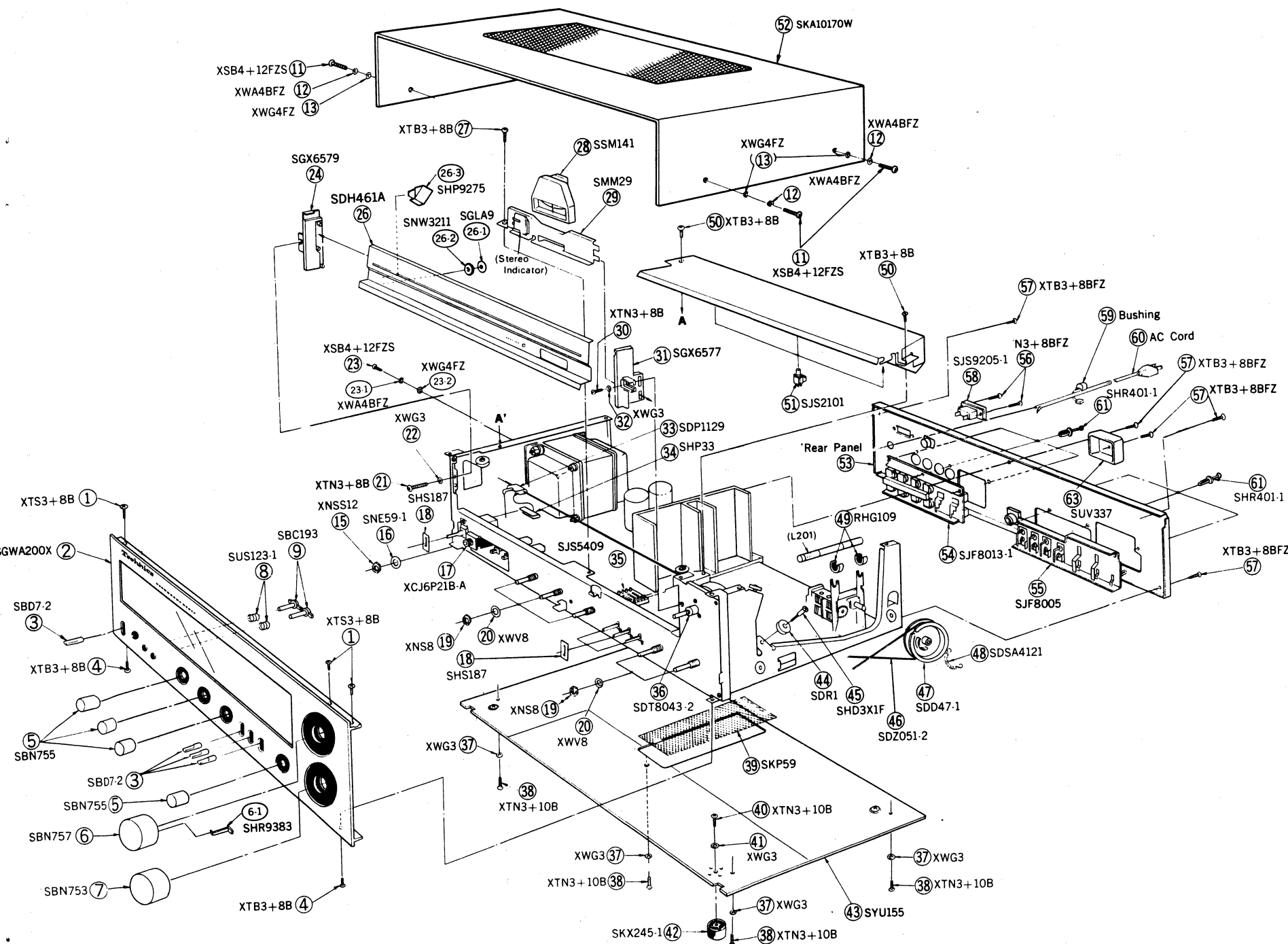
Product for Australia(XAL) only





* The products for other destinations except SA-200(X) and SA-200(XA) are not equipped with AC outlet.

EXPLODED VIEW



REPLACEMENT PARTS LIST

NOTES: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. [X] indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
CABINET and CHASSIS PARTS				
1	XTS3+8B	Screw, Front Panel M'tg	3	
2	SGWA200X	Panel, Front Ass'y	1	
3	SBD7-2	Knob, Lever Switches	4	
4	XTB3+8B	Screw, Front Panel M'tg	2	
5	SBN755	Knob, Bass, Treble, Balance & Selector	4	
6	SBN757	Knob, Tuning	1	
6-1	SHR9383	Spacer, Tuning Knob	1	
7	SBN753	Knob, Volume	1	
8	SUS123-1	Spring, Speaker Push Switches	2	
9	SBC193	Button, Speaker Switches	2	
11	XSB4+12FZS	Screw, Cabinet M'tg	4	
12	XWA4BFZ	Washer, Spring	4	
13	XWG4FZ	Washer	4	
15	XNS12	Nut, Headphones Jack M'tg	1	
16	SNE59-1	Washer, Headphones Jack	1	
17	XCJ6P21B-A	Jack, Headphones	1	
18	SHS187	Shading Cloth, Lever Switches	4	
19	XNS8	Nut, Volumes & Selector M'tg	5	
20	XWV8	Washer, Volumes & Selector	5	
21	XTN3+8B	Screw, Dial Scale Bracket Left M'tg	1	
22	XWG3	Washer, Left Bracket Screw	1	
23	XSB4+12FZS	Screw, Power Transformer M'tg	4	
23-1	XWA4BFZ	Washer, Spring	4	
23-2	XWG4FZ	Washer	4	
24	SGX6579	Bracket, Dial Scale Left Side	1	
26	SDH461A	Plate, Dial Scale	1	*
26-1	SGLA9	Panel Light, Orange	1	
26-2	SNW3211	Washer, Panel Light	1	
26-3	SHP9275	Paper, Panel Light	1	
27	XTB3+8B	Screw, Meter Bracket M'tg	1	
28	SSM141	Meter, Signal & Tuning	1	
29	SMM29	Bracket, Meter	1	*
30	XTN3+8B	Screw, Dial Scale Bracket Right M'tg	1	
31	SGX6577	Bracket, Dial Scale Right Side	1	
32	XWG3	Washer, Right Bracket Screw	1	
33	SDP1129	Pointer, Dial	1	*
34	SHP33	Sheet, Pointer Slider	1	
35	SJS5409	Connector, 4 pin	1	
36	SDT8043-2	Shaft, Tuning	1	*
37	XWG3	Washer, Bottom Board Screw	7	
38	XTN3+10B	Screw, Bottom Board M'tg	7	
39	SKP59	Ventilation Plate	1	
40	XTN3+10B	Screw, Feet M'tg	4	
41	XWG3	Washer, Feet Screw	4	
42	SKX245-1	Foot Set	4	
43	SYU155	Bottom Board	1	*
44	SDR1	Pulley, Dial Cord	4	
45	SHD3X1F	Screw, Pulley M'tg	4	*
46	SDZ051-2	Cord, Dial 200cm (78-3/4")	1roll	
47	SDD47-1	Drum, Variable Capacitor	1	
48	SDSA4121	Spring, Dial Cord	1	
49	RHG109	Rubber Cushion, AM Bar Antenna	2	
50	XTB3+8B	Screw, Reflection Cover M'tg	2	
51	SJS2101	Holder, Dial Lamp	3	
52	SKA10170W	Cabinet	1	
53(E)	SGP1370A	Rear Panel	1	
53(EG.XGH)	SGPA200D	Rear Panel, SGP1370A with Name Plate SGT16590	1	
53(XAL)	SGPA200L	Rear Panel, SGP1370-2A with Name Plate SGT16710	1	
53(XA,X)	SGP1370-1A	Rear Panel	1	
54	SJF8013-1	Terminal, Speakers	1	
55	SJF8005	Terminal, Input & Antenna	1	
56(XA,X)only	XTN3+8BFZ	Screw, AC Outlet M'tg	2	
57	XTB3+8BFZ	Screw, Rear Panel & Fuse Cover M'tg	7	
58(XA,X)only	SJS9205-1	Socket, AC Outlet	1	
59(XAL)only	SHR131	Bushing, AC Cord	1	
59	SHR127	Bushing, AC Cord	1	
60(XAL)only	QFC1207M	AC Cord, Power Source	1	
60	RJA232C	AC Cord, Power Source	1	
61	SHR401-1	Latch, Speaker & Input Terminal M'tg	6	
62	SUW1101S	Bracket, DIN Socket	1	*
63	SUV337	Cover, Speaker Fuses	1	
64	SJS6803	Socket, DIN (Tape deck REC/PLAY)	1	
65	XSN3+6FZS	Screw, Voltage Adjuster & DIN Socket M'tg	4	
65-1	XWA3BFZ	Washer, Spring	4	

ACCESS

PACKIN

REPLACEMENT PARTS LIST

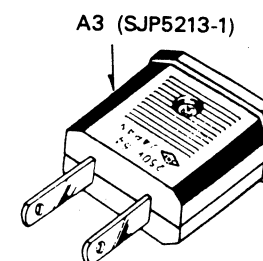
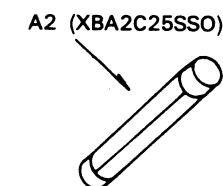
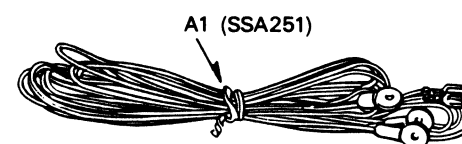
NOTES: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. ■ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
CABINET and CHASSIS PARTS				
1	XTS3+8B	Screw, Front Panel M'tg	3	
2	SGWA200X	Panel, Front Ass'y	1	○
3	SBD7-2	Knob, Lever Switches	4	
4	XTB3+8B	Screw, Front Panel M'tg	2	
5	SBN755	Knob, Bass, Treble, Balance & Selector	4	
6	SBN757	Knob, Tuning	1	
6-1	SHR9383	Spacer, Tuning Knob	1	
7	SBN753	Knob, Volume	1	
8	SUS123-1	Spring, Speaker Push Switches	2	
9	SBC193	Button, Speaker Switches	2	
11	XSB4+12FZS	Screw, Cabinet M'tg	4	
12	XWA4BFZ	Washer, Spring	4	
13	XWG4FZ	Washer	4	
15	XN5S12	Nut, Headphones Jack M'tg	1	
16	SNE59-1	Washer, Headphones Jack	1	
17	XCJ6P21B-A	Jack, Headphones	1	
18	SHS187	Shading Cloth, Lever Switches	4	
19	XNS8	Nut, Volumes & Selector M'tg	5	
20	XWV8	Washer, Volumes & Selector	5	
21	XTN3+8B	Screw, Dial Scale Bracket Left M'tg	1	
22	XWG3	Washer, Left Bracket Screw	1	
23	XSB4+12FZS	Screw, Power Transformer M'tg	4	
23-1	XWA4BFZ	Washer, Spring	4	
23-2	XWG4FZ	Washer	4	
24	SGX6579	Bracket, Dial Scale Left Side	1	
26	SDH461A	Plate, Dial Scale	1	*
26-1	SGLA9	Panel Light, Orange	1	
26-2	SNW3211	Washer, Panel Light	1	
26-3	SHP9275	Paper, Panel Light	1	
27	XTB3+8B	Screw, Meter Bracket M'tg	1	
28	SSM141	Meter, Signal & Tuning	1	
29	SMM29	Bracket, Meter	1	*
30	XTN3+8B	Screw, Dial Scale Bracket Right M'tg	1	
31	SGX6577	Bracket, Dial Scale Right Side	1	
32	XWG3	Washer, Right Bracket Screw	1	
33	SDP1129	Pointer, Dial	1	*
34	SHP33	Sheet, Pointer Slider	1	
35	SJS5409	Connector, 4 pin	1	
36	SDT8043-2	Shaft, Tuning	1	*
37	XWG3	Washer, Bottom Board Screw	7	
38	XTN3+10B	Screw, Bottom Board M'tg	7	
39	SKP59	Ventilation Plate	1	
40	XTN3+10B	Screw, Feet M'tg	4	
41	XWG3	Washer, Feet Screw	4	
42	SKX245-1	Foot Set	4	
43	SYU155	Bottom Board	1	*
44	SDR1	Pulley, Dial Cord	1	
45	SHD3X1F	Screw, Pulley M'tg	4	*
46	SDZ051-2	Cord, Dial 200cm (78-3/4")	1 roll	
47	SDD47-1	Drum, Variable Capacitor	1	
48	SDSA4121	Spring, Dial Cord	1	
49	RHG109	Rubber Cushion, AM Bar Antenna	2	
50	XTB3+8B	Screw, Reflection Cover M'tg	2	
51	SJS2101	Holder, Dial Lamp	3	
52	SKA10170W	Cabinet	1	
53(E)	SGP1370A	Rear Panel	1	○
53(EG,XGH)	SGPA200D	Rear Panel, SGP1370A with Name Plate SGT16590	1	○
53(XAL)	SGPA200L	Rear Panel, SGP1370-2A with Name Plate SGT16710	1	○
53(XA,X)	SGP1370-1A	Rear Panel	1	○
54	SJF8013-1	Terminal, Speakers	1	
55	SJF8005	Terminal, Input & Antenna	1	
56(XA,X)only	XTN3+8BFZ	Screw, AC Outlet M'tg	2	
57	XTB3+8BFZ	Screw, Rear Panel & Fuse Cover M'tg	7	
58(XA,X)only	SJS9205-1	Socket, AC Outlet	1	
59(XAL)only	SHR131	Bushing, AC Cord	1	
59	SHR127	Bushing, AC Cord	1	
60(XAL)only	QFC1207M	AC Cord, Power Source	1	
60	RJA23ZC	AC Cord, Power Source	1	
61	SHR401-1	Latch, Speaker & Input Terminal M'tg	6	
62	SUW1101S	Bracket, DIN Socket	1	*
63	SUV337	Cover, Speaker Fuses	1	
64	SJS6803	Socket, DIN (Tape deck REC/PLAY)	1	
65	XSN3+6FZS	Screw, Voltage Adjuster & DIN Socket M'tg	4	
65-1	XWA3BFZ	Washer, Spring	4	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
ACCESSORIES				
A1	SSA251	Cord, FM Indoor Antenna	1	
A2	XBA2C25SSO	Fuse, 2.5A(250V) Speaker Circuit	2	
A3(XA,X)only	SJP5213-1	Plug Adapter, AC Power	1	
PACKING PARTS				
P1	SPP495	Polyethylene Bag	1	
P2(XAL)only	SPS1591	Pad, Left Side	1	
P2	SPS1591-1	Pad, Left Side	1	
P3(XAL)only	SPS1593	Pad, Right Side	1	
P3	SPS1593-1	Pad, Right Side	1	
P4(XAL)only	SPS1651	Pad, Bottom Side	1	
P4	SPS1649	Pad, Bottom Side	1	
P5(XAL)only	SPS1657	Pad, Right Side	1	
P5	SPS1655	Pad, Right Side	1	
P6	SPS1653	Pad, Right Front Side	1	
P7(XAL)only	SPG1519	Carton Box	1	○
P7	SPG1517	Carton Box	1	○
P8(E,EG,XGH)	SQF1899	Instructions Book, Printed Matter	1	○
P8(XA,X,XAL)	SQF1901	Instructions Book, Printed Matter	1	○

Notes: * (X) and (XA) are available in Asia, Latin America, Middle East and Africa only.
* (XAL) is available in Australia only.
* (XGH) is available in Holland only.
* (E) and (EG) are available in Scandinavia and European only.

ACCESSORIES



PACKINGS

