ORDER NO. SD83022407C8

Service Manual

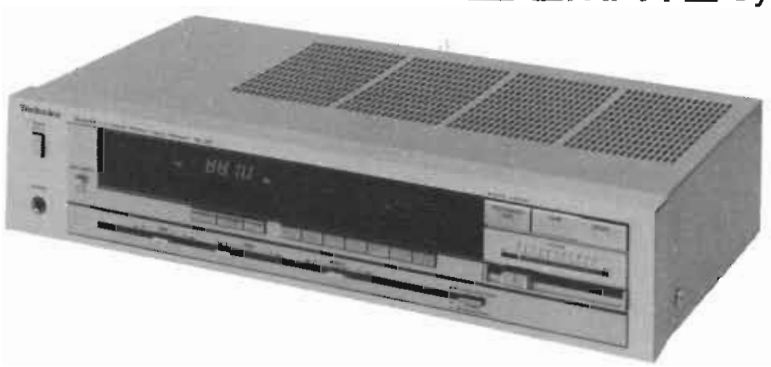
QUARTZ Synthesizer FM/AM Stereo Receiver

SA-210

[EX],[EH],[XA],[XL]

SA-210(K)

[EX],[EH]



* The colors of this model included silver and black.
* The black type model is provided with (K) in the Service Manual.

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

Specifications

(Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ AMPLIFIER SECTION

40 Hz~20 kHz continuous power output	
both channels driven	2 × 25W (4Ω)
	2 × 25W (8Ω)
40 Hz~16 kHz continuous power output	
both channels driven	2 × 25W (4Ω)
	2 × 25W (8Ω)
1 kHz continuous power output	
both channels driven	2 × 27W (4Ω)
	2 × 27W (8Ω)
Total harmonic distortion	
rated power at 40 Hz~20 kHz	0.8% (4Ω)
	0.5% (8Ω)
rated power at 40 Hz~16 kHz	0.8% (4Ω)
	0.5% (8Ω)
rated power at 1 kHz	0.5% (4Ω)
	0.5% (8Ω)
half power at 1 kHz	0.05% (8Ω)
−26 dB power at 1 kHz	0.1% (4Ω)
50 mW power at 1 kHz	0.12% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 4Ω	0.8%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.5%
Power bandwidth	
both channels driven, −3 dB	10 Hz~30 kHz (4Ω)
Damping factor	15 (4Ω), 30 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
TAPE/AUX	150 mV/18kΩ
PHONO maximum input voltage (1 kHz, RMS)	150 mV
Frequency response	
PHONO	RIAA standard curve
	±0.8 dB (30 Hz~15 kHz)
TAPE/AUX (Volume at max)	5 Hz~70 kHz (−3 dB)
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
S/N	
rated power (4Ω)	
PHONO	70 dB (IHF, A: 73 dB)
TAPE/AUX	88 dB (IHF, A: 95 dB)
−26 dB power (4Ω)	
PHONO	64 dB
TAPE/AUX	66 dB
50 mW power (4Ω)	
PHONO	62 dB
TAPE/AUX	62 dB
Loudness control (volume at −30 dB) (built in)	50 Hz, +5 dB
Output voltage and impedance	
TAPE REC OUT	150 mV
Channel balance, TAPE/AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, TAPE/AUX 1 kHz	55 dB
Headphones output level and impedance	420 mV/330Ω
Load impedance	4Ω~16Ω

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz
Sensitivity	
S/N 30 dB	1.9 μV (300Ω), 1.3 μV (75Ω)
S/N 26 dB	1.7 μV (300Ω), 1.2 μV (75Ω)
S/N 20 dB	1.5 μV (300Ω), 0.9 μV (75Ω)
IHF usable sensitivity	1.9 μV (IHF '58)
IHF 46 dB stereo quieting sensitivity	22 μV/75Ω
Total harmonic distortion	
MONO	0.15%
STEREO	0.3%
S/N	
MONO	60 dB (77 dB, IHF)
STEREO	58 dB (71 dB, IHF)
Frequency response	20 Hz~15 kHz, +1 dB~ −2 dB
Alternate channel selectivity	±400 kHz 70 dB
Capture ratio	1 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	75 dB
Spurious response rejection at 98 MHz	82 dB

Technics

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

AM suppression	50 dB
Stereo separation	
1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	−33 dB (−35 dB, IHF)
38 kHz	−50 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	300Ω (balanced) 75Ω (unbalanced)

■ AM TUNER SECTION

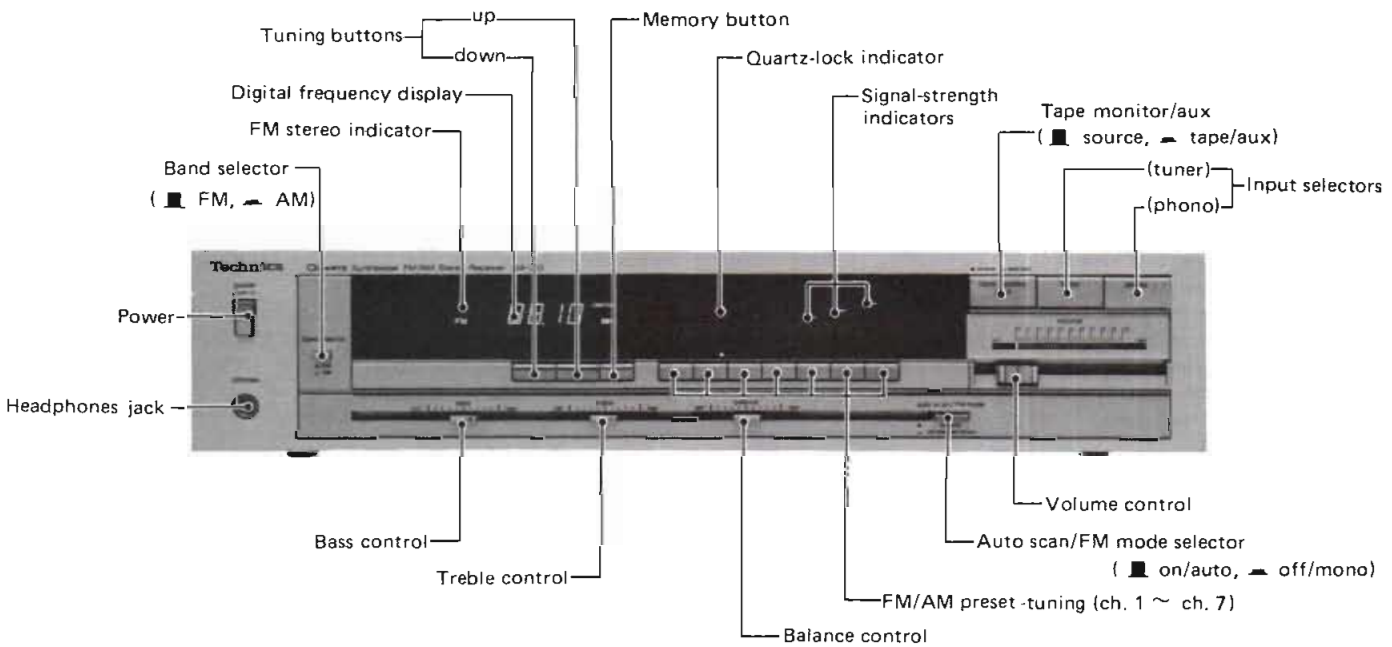
Frequency range	522~1611 kHz (9 kHz-step) 530~1620 kHz (10 kHz-step)
Sensitivity (S/N 20 dB)	20 μV, 300 μV/rn
Selectivity	55 dB
Image rejection at 1,000 kHz	40 dB
IF rejection at 1,000 kHz	60 dB

■ GENERAL

Power consumption	220W
Power supply	
For United Kingdom and Australia	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
For others	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 97 × 243 mm (16-15/16" × 3-13/16" × 9-9/16")
Weight	5.1 kg (11.2 lb.)

■ CONTENTS

■ LOCATION OF CONTROLS



ORDER NO. SD83022407C8–A

DEUTSCH

QUARTZ Synthesizer FM/AM Stereo Receiver SA-210/SA-210(K)

- This booklet contains the specifications and adjusting procedures for SA-210, written Germany, French and Spanish.
- File this manual together with the SA-210 service manual (Order No. SD83022407C8).

- Diese Broschüre enthält die technischen Daten und die Beschreibungen der Justiermethoden für SA-210 in deutscher, französischer und spanisher Sprache.
- Bewahren Sie das Büchlein zusammen mit der Bedienungsanleitung für SA-210 (Betstell-Nr. SD83022407C8) auf.

- Cette brochure contient les spécifications et les procédures de réglage pour le SA-210, écrites en allemand, en français et en espagnol.
- Classer ce manuel en même temps qu'avec le manuel de service du SA-210 (N° d'ordre: SD83022407C8).

- Este librito contiene las especificaciones y procedimientos de ajuste para SA-210, escritas en alemán, francés y español.
- Guardar este manual juntamente con el manual de servicio de SA-210 (Pedido N°. SD83022407C8).

DEUTSCH

■ TECHNISCHE DATEN (Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 40 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 25W (4 Ω)
	2 × 25W (8 Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	
beide Kanäle ausgesteuert	2 × 25W (4 Ω)
	2 × 25W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 27W (4 Ω)
	2 × 27W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 40 Hz ~ 20 kHz	0,8% (4 Ω)
	0,5% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0,8% (4 Ω)
	0,5% (8 Ω)
Nennleistung bei 1 kHz	0,5% (4 Ω)
	0,5% (8 Ω)
halbe Nennleistung bei 1 kHz	0,05% (8 Ω)
−26 dB Leistung bei 1 kHz	0,1% (4 Ω)
50 mW Leistung bei 1 kHz	0,12% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,8%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,5%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	10 Hz ~ 30 kHz (4 Ω)
Dämpfungsfaktor	15 (4 Ω), 30 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono	2,5 mV/47 kΩ
Tape/Aux	150 mV/18 kΩ
Maximale TA-Eingangsspannung (1 kHz, eff.)	150 mV
Frequenzgang	
Phono	RIAA-Standardkurve
	±0,8 dB (30 Hz ~ 15 kHz)
Tape/Aux (max. Lautstärke)	5 Hz ~ 70 kHz(−3 dB)
Klangregler	
Baßregler (BASS)	50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ −10 dB
Geräuschabstand	
Nennleistung (4 Ω)	
Phono	70 dB (nach IHF, A: 73 dB)
Tape/Aux	88 dB (nach IHF, A: 95 dB)
−26 dB Leistung (4 Ω)	
Phono	64 dB
Tape/Aux	66 dB
50 mW Leistung (4 Ω)	
Phono	62 dB
Tape/Aux	62 dB
Gehörrichtige Lautstärkekorrektur (Loudness)	
(bei −30 dB Ausgangsleistung) (eingebaut)	50 Hz, +5 dB
Ausgangsspannung und -impedanz	
Tape Aufnahme (TAPE REC OUT)	150 mV
Kanalabweichung (Tape/Aux, 250 Hz ~ 6300 Hz)	±1 dB
Übersprechdämpfung (Tape/Aux, 1 kHz)	55 dB
Kopfhörerpegel und -impedanz	420 mV/330 Ω
Lautsprecherimpedanz	4 Ω ~ 16 Ω

■ UKW-TUNERTEIL

Wellenbereich	87,50 ~ 108,00 MHz
Eingangsempfindlichkeit	
S/R 30 dB	1,9 μV (300 Ω), 1,3 μV (75 Ω)
S/R 26 dB	1,7 μV (300 Ω), 1,2 μV (75 Ω)
S/R 20 dB	1,5 μV (300 Ω), 0,9 μV (75 Ω)
Nutzempfindlichkeit nach IHF	1,9 μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF	22 μV/75 Ω
Gesamtklirrfaktor	
Mono	0,15%
Stereo	0,3%
Geräuschabstand	
Mono	60 dB (77 dB nach IHF)
Stereo	58 dB (71 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+1 dB ~ −2 dB)
Trennschärfe bei Störsender	±400 kHz 70 dB
Einfangverhältnis	1 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	55 dB
ZF-Dämpfung bei 98 MHz	75 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	82 dB
MW-Unterdrückung	50 dB

Übersprechdämpfung	
1 kHz	40 dB
10 kHz	30 dB
Trägerrest	
19 kHz	−33 dB (−35 dB nach IHF)
38 kHz	−50 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,5 dB
Begrenzereinsatz	1,2 μV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	300 Ω (symmetrisch) 75 Ω (unsymmetrisch)

■ MW-TUNERTEIL

Wellenbereiche	522 ~ 1611 kHz (9 kHz-step) 530 ~ 1620 kHz (10 kHz-step)
Eingangsempfindlichkeit (S/R 20 dB)	20 μV, 300 μV/m
Trennschärfe	55 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	40 dB
ZF-Dämpfung bei 1000 kHz	60 dB

■ ALLGEMEINE DATEN

Leistungsaufnahme	220 W
Netzspannung	
Für Kontinentaleuropa	Wechselstrom 50 Hz/60 Hz, 220V
Für andere Länder	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 97 × 243 mm
Gewicht	5,1 kg

■ MESSUNGEN UND JUSTIERUNGEN

Anmerkung: Die AM OSC-Spule (L202) und AM ZFT (T201) sind bereits justiert und benötigen keine Justierung.

AM (MW)-EINSTELLUNG

• Stellungen und zu benutzende Geräte

1. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM)
2. AM (MW)-Meßsender (AM-SG)
3. Bereichsschalter . . . . . AM
4. AM (MW) Wellenverteilungs-Wahlschalter auf Position "9kHz" stellen.
5. Netzspannung auf ihren Sollwerthalten.
6. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute ablesung.
7. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	MW-HF-ABGLEICH					
1	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Antenne-neingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwächer Eingang)	612kHz (400Hz Modulat., 30%)	612kHz	Oszilloskop oder Wechselstrom-Voltmeter uber den Lautsprecher schließen	L201 (Ant. Spule)	1. Auf max. Ausgang abgleichen 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
2		1503kHz (400Hz Modulat., 30%)	1503kHz		CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (1) und (2) wiederholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.

FM (UKW)-EINSTELLUNG

• Stellungen und zu benutzenden Geräte

1. UKW-Meßsender (FM-SG)
2. Verzerrungsmesser
3. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM)
4. Signalfrequenzmesser (meßbar für 19kHz und 76MHz)
5. Bereichsschalter . . . . . FM
6. Den UKW-Betriebsartenschalter auf die "mono"-position stellen.
7. Die anderen Einstellungen sind gleich wie beider MW-Justierung.
8. Stereo-Modular (oder Trennmesser)

*** Vorbereitung des UKW-Meßoszillators (UKW-MO)**

1. Die Normal-Eingangs eistung dieses Gerätes beträgt 60dB (1mV), 400Hz, 100% Modulation. (Wegen der Dämpfung bei Verwendung von Koaxialkabeln, muß die MO-Ausgangsleistung 6dB oder mehr (IHF) betragen; d. h. wenn die Eingangsleistung 60dB beträgt, muß der MO-Ausgang 66dB betragen.)

Nr.	FM (UKW) MESSENDER ANSCHLUSS	FM (UKW) MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
3	FM-SG an den FM-Antennenanschluß entsprechend Abb. 17. (60dB an den Antennenanschluß legen.)	100.1MHz (400Hz Modulat., 100%)	100.1MHz	Ein Gleichstromrören-voltmeter zwishen TP203 und TP204 über eine Drosselspule verbinden. (Siehe Abb. 17)	T202 (Diskriminator FT)	1. Den Kern von T202 so justieren, daß die gemessene Spannung im signallosen Modus 0mV im 300mV Bereich beträgt.
4		100.1MHz (400Hz Modulat., 100%)	100.1MHz	Klirrfaktor-Meßbrücke uber den Lautsprecher schließen	T203 (Diskriminator FT)	1. T203 Kern für minimale Verzerrung der rechten und linken Kanäle justieren.

UKW-STEREO-DEKODER-ABGLEICH	
UNTER VERWENDUNG EINES ZAHLES	ALTERNATIV-MEB METHODE
1. Unmoduliertes Mono-Signal 100.1MHz in das Gerät speisen. 2. FM muting/mode-Schalter auf "on/FM auto" stellen. 3. Zähler über einen Widerstand 100k ohm an TP301 schließen. 4. **VR301** auf 19kHz ±30Hz einstellen.	1. Stereosignal entweder von einem Stereogenerator. Oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 19 gezeigt.

5

FRANÇAIS

■ CARACTERISTIQUES (Sujet à changement sans préaris.)

(DIN 45 500)

■ SECTION AMPLIFICATEUR

Puissance de sortie continue de 40 Hz~20 kHz, les deux canaux en circuit 2 × 25W (4Ω), 2 × 25W (8Ω)

Puissance de sortie continue de 40 Hz~16 kHz, les deux canaux en circuit 2 × 25W (4Ω), 2 × 25W (8Ω)

Puissance de sortie continue à 1 kHz les deux canaux en circuit 2 × 27W (4Ω), 2 × 27W (8Ω)

Distorsion harmonique totale
- **à puissance nominale (40 Hz~20 kHz)** 0,8% (4Ω), 0,5% (8Ω)
- **à puissance nominale (40 Hz~16 kHz)** 0,8% (4Ω), 0,5% (8Ω)
- **à puissance nominale (1 kHz)** 0,5% (4Ω), 0,5% (8Ω)
- **à demi-puissance (1 kHz)** 0,05% (8Ω)
- **puissance de −26 dB à 1 kHz** 0,1% (4Ω)
- **puissance de 50 mW à 1 kHz** 0,12% (4Ω)

Distorsion d'intermodulation
- **à puissance nominale a 250 Hz: 8 kHz=4:1, 4Ω** 0,8%
- **à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω** 0,5%

Réponse de fréquences
- **les deux canaux en circuit, −3 dB** 10 Hz~30 kHz (4Ω)

Coefficient d'amortissement 15 (4Ω), 30 (8Ω)

Sensibilité et impédance d'entrée
- **PHONO** 2,5 mV/47kΩ
- **BANDE/AUX (TAPE/AUX)** 150 mV/18kΩ

PHONO (tension d'entrée maximum, 1 kHz RMS) 150 mV

Signal/Bruit
- **à puissance nominale (4Ω)**
  - **PHONO** 70 dB (IHF, A: 73 dB)
  - **BANDE/AUX (TAPE/AUX)** 88 dB (IHF, A: 95 dB)
- **puissance de −26 dB (4Ω)**
  - **PHONO** 64 dB
  - **BANDE/AUX (TAPE/AUX)** 66 dB
- **puissance de 50 mW (4Ω)**
  - **PHONO** 62 dB
  - **BANDE/AUX (TAPE/AUX)** 62 dB

Réponse de fréquence
- **PHONO** Courbe nominale RIAA ±0,8 dB (30 Hz~15 kHz)
- **BANDE/AUX (TAPE/AUX) (volume au maximum)** 5 Hz~70 kHz (−3 dB)

Réglage de la tonalité
- **BASSES (BASS)** 50 Hz, +10 dB~ −10 dB
- **AIGUS (TREBLE)** 20 kHz, +10 dB~ −10 dB

Compensateur physiologique (volume à −30 dB) (incorporé) 50 Hz, +5 dB

Tension de sortie et impédance
- **SORTIE ENREGISTREMENT/BANDE (TAPE REC OUT)** 150 mV

Equilibrage des canaux, TAPE/AUX 250 Hz~6 300 Hz ±1 dB

Séparation des canaux, TAPE/AUX 1 kHz 55 dB

Niveau de sortie des casques et impédance 420 mV/330Ω

Impédance de charge 4Ω~16Ω

■ SECTION SYNTONISATEUR FM

Gamme de fréquence 87,50~108,00 MHz

Sensibilité
- **S/B 30 dB** 1,9 μV (300Ω), 1,3 μV (75Ω)
- **S/B 26 dB** 1,7 μV (300Ω), 1,2 μV (75Ω)
- **S/B 20 dB** 1,5 μV (300Ω), 0,9 μV (75Ω)

Sensibilité utilisable IHF 1,9 μV (IHF '58)

Sensibilité stéréo au seuil de 46 dB, IHF 22 μV/75Ω

Distorsion harmonique totale
- **MONO** 0,15%
- **STEREO** 0,3%

Signal/Bruit
- **MONO** 60 dB (77 dB, IHF)
- **STEREO** 58 dB (71 dB, IHF)

Réponse de fréquence 20 Hz~15 kHz, +1 dB~ −2 dB

Sélectivité alternée par canal ±400 kHz 70 dB

Taux de capture 1 dB

Rejection d'image à 98 MHz 55 dB

Rejection FI à 98 MHz 75 dB

Rejection de réponse parasite à 98 MHz 82 dB

Suppression AM 50 dB

Séparation stéréophonique
- **1 kHz** 40 dB
- **10 kHz** 30 dB

Fuite de porteuse
- **19 kHz** −33 dB (−35 dB, IHF)
- **38 kHz** −50 dB (−50 dB, IHF)

Equilibrage de canaux (250 Hz~6,300 Hz) ±1,5 dB

Point de limite 1,2 μV

Largeur de bande
- **Amplificateur FI** 180 kHz
- **Démodulateur FM** 1000 kHz

Bornes d'antenne 300Ω (symétrique), 75Ω (asymétrique)

■ SECTION SYNTONISATEUR AM

Gamme de fréquence 522~1611 kHz (9 kHz-step), 530~1620 kHz (10 kHz-step)

Sensibilité (S/B 20 dB) 20 μV, 300 μV/m

Sélectivité 55 dB

Réjection d'image à 1,000 kHz 40 dB

Réjection FI à 1,000 kHz 60 dB

■ DIVERS

Consommation 220W

Alimentation
- **Pour l'Europe** CA 50 Hz/60 Hz, 220V
- **Autres** CA 50 Hz/60 Hz, 110V/120V/220V/240V

Dimensions (L×H×Pr) 430 × 97 × 243 mm

Poids 5,1 kg

■ MEDICIONES Y AJUSTES

Note: Bobina AM OSC (L202) y AM IFT (T201) han sido ya ajustados.

AJUSTE DE AM

• Puesta y Uso de equido

1. Voltimetros electronicos de CA y CC (VTVA).
2. Generador de señales AM (AM-SG)
3. Poner selector FM-AM en position "AM".
4. Poner selector de asignación AM en posición "9kHz step".
5. Mantener voltaje de línea a voltaje nominal.
6. La salida de generador de señales no debe ser mayor que la necesaria para obtener una lectura de salida.
7. Para el ajuste use un destornillador no metálico.

Nº.	AM GENERADOR DE SEÑALES CONEXION	AM GENERADOR DE SEÑALES FRECUENCIA	A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	AJUSTE RF-AM					
1	Conector AM-SG a terminal de antena AM a través de capacitor 200pF. Cumún a chasis. (Entrada débil)	612kHz (Mod. 30% (con 400Hz)	612kHz	Conectar VTVM de CA u osciloscopio a terminales de "SPEAKER" (altavoz).	L201 (Bobina ANT AM)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de L201 con destornillador.
2		1503kHz (Mod. 30% (con 400Hz)	1503kHz	Conectar VTVM de CA u osciloscopio a terminales de "SPEAKER" (altavoz).	CT201 (Trimer de ANT AM)	1. Ajustor para solida máxima. 2. Repetir pasos (1) y (2) hasta que la frecuencia se adapte correctamente a la escala del cuadrante.

AJUSTE DE FM

• Equipo usado

1. Generador de señales FM (FM-SG)
2. Analizador de distortion.
3. Osciloscopio.
4. Voltimetros electrónicos de CA y CC (VTVM).
5. Frecuencimetro (19kHz y 108MHz medibles).
6. Poner selector FM-AM en posicion "FM"
7. Poner el interruptor de modalidad FM en la posición "MONO".
8. Otras puestas son las mismas que en ajuste AM.

*** Preparación de generador de señales FM (FM-SG)**

1. La entrada standard del aparato es 60dB (1mV), 400Hz, modulación 100% (Debido a atenuación usando cables coaxiales La salida SG ha de ser 6dB más. Es decir, cuando la entrada 60dB, la salida de SG ha de ser 66dB.)

	FM GENERADOR DE SEÑALES CONEXION	FM GENERADOR DE SEÑALES FRECUENCIA	A FREQUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	AJUSTE DE DISTORSION FM MONO					
3	Conectar SG-FM a terminal de antenna FM refiriendo a Fig. 17. (Aplicar 60dB a terminal de antena)	100.10MHz (Mod. 100% con 400Hz)	100.10MHz	Conector VTVM CC entre terminal TP203 y TP204 a través de bobina de choque. (Referira Fig. 17).	T202 (Discri. IFT)	1. Ajustar núcleo de T202 de manera que voltaje medido en modalidad de señal se 0mV en gama de 300mV.
4		100.10MHz (Mod. 100% con 400Hz)	100.10MHz	Conectar osciloscopio a terminal "speaker" (altavoz)	T203 (Discri. IFT)	1. Ajustar núcleo de T203 de manera que distorsión de canales derecho e izquierdo se minimice.
	AJUSTE DE V.C.O. MPX de FM					
	USANDO UN FREQUENCIMETRO			USANDO SISTEMA ALTERNATIVO		
5	1. Señal mono no modulada de 100.10MHz 60dB aplicada al aparato. 2. Interruptor de modalidad/sinlenciador FM a "auto FM". 3. Conectar frecuencimetro a TP301 a través de resistor (100kΩ). (Vea la Fig. 18.) 4. Ajustar **VR301** a 19kHz ± 30Hz.			1. Aplicar una señal estereofónica al aparato o recibir una emisión estereofónica. 2. Ajustar **VR301** y fijar el contacto deslizante de **VR301** en el medio de la gama-ON del indicador estereofónico. (Vea la Fig. 19.)		

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■ MESURAGES ET RÉGLAGES

Nota: La bobine de l'oscillateur de la modulation d'am plitude (L202) et le transformateur de fréquence intermédiaire de modulation d'amplitude (T201) ont déjà été ajustés et ne nécessitent plus de réglage.

REGLAGE DE AM

• Réglage et équipement utilisé

1. Voltmètres électronique de courant altèrnatif et de courant continu (VTVM)
2. Générateur du signal AM (AM-SG)
3. Sélecteur de gamme . . . . . AM
4. Régler le sélecteur d'attribution AM sur la position "9kHz step"
5. Conservel la tension du secteur à la tension nominale.
6. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
7. Utiliser un tournevis non-métallique pour la réfage.

N°	AM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE RF-AM					
1	Raccorder le générateur de signaux AM (modulation d'amplitude) à la borne d'antenne AM par l'intermédiaire d'un condensateur de 200 pF, en ser référant à la Fig. 7. (Entrée faible)	612kHz (modulé à 30% par 400Hz)	612kHz	Branchez un c.a. voltmétre électronique ou nu oscilloscope sur les bornes de haut-parleur.	L201 (Bobine Ant.)	1. Régler au maximum de signal de sortie. 2. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
2		1503kHz (modulé à 30% par 400Hz)	1503kHz		CT201 (Trimmer Ant.)	1. Régler au maximum de signal de sortie. 2. Refaire les étapes (1) et (2) jusqu'à ce que le fréquence s'aligne correctement avec l'affichage du cadran.

REGLAGE DE FM

• Réglage et équipen, ent untilisé

1. Générateur du signal FM (FM-SG)
2. Jauge de distorsion.
3. Oscilloscope.
4. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
5. Compteur de fréquence (19kHz et 108MHz mesurable).
6. Sélecteur d'entrée sur la position "FM".
7. Placer le sélecteur de mode FM sur la position "mono".
8. Les autres réglages sont les mèmes que pour la mise au point de l'amplitude modulée (AM).

*** Préparatif du générateur de signaux à Modulation de Fréquence (FM-SG)**

1. L'entrée normale de l'appareil est de 60dB (1mV). 400Hz, modulation de 100% , (Du fait de l'atténuation, utiliser des câbles coaxiaux. La sortie du générateur de signaux devra être de plus de 60dB (1HF). C'est-à-dire que lorsque l'entrée est de 60dB, la sortie du générateur de signaux devra être de 66dB).

	FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE LA DISTORSION FM EN MONO					
3	Raccorder de générateur de signaux FM à la borne d'antenne FM en se référant à la Fig. 17. (Appliquer 60dB à la borne d'antenne.)	100.1MHz (modulé à 100% par 400Hz)	100.1MHz	Brancher le voltmètre électronique a c.c. aux bornes TP203 et TP204. (Voir la Fig. 17)	T202 (Transfor FI discri.)	1. Régler e noyau T202 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0mV dans la gamme des 300mV.
4		100.1MHz (modulé à (100% par 400Hz)	100.1MHz	Branchez un distor-tion métre sur les bornes de haut-parleur de appareil	T203 (Transfor FI discri.)	1. Régler le noyou T203 de telle sorte que la distor-tion des canaux droit et gauche soit la plus faible.

REGLAGE PILOTE MULTIPLEX FM

	AVEC UN ERÈQUENCEMÈNTRE	PAR UN OUTRE SYSTÈME
5	1. Signal mono 100.1MHz non modulé appliqué à l'appareil. 2. Commutateur de silencieux sur "on/FM auto". 3. Branchez le fréquencermètre sur TP301 à travers une. 4. Régler **VR301** sur 19kHz ± 30Hz.	1. Appliquez à l'appareil un signal stéréo provenant d'un générateur ou de la réception d'un émetteur. 2. Régler **VR301** jusque à ce que l'indicateur de stéréo-phonic s'allume. Collez le curseur le **VR301** comme indiqué sur la fig. 19.

ESPAÑOL

■ ESPECIFICACIONES (Estas especificaciones están sujetas a cualquier cambio sin previo eviso.)

(DIN 45 500)

■ SECCION AMPLIFICADOR

Potencia continua de 40 Hz~20 kHz	
en ambos canales	2 × 25W (4Ω)
	2 × 25W (8Ω)
Potencia continua de 40 Hz~16 kHz	
en ambos canales	2 × 25W (4Ω)
	2 × 25W (8Ω)
Potencia continua de 1 kHz	
en ambos canales	2 × 27W (4Ω)
	2 × 27W (8Ω)
Distorsión armónica total	
potencia de régimen a 40 Hz~20 kHz	0,8% (4Ω)
	0,5% (8Ω)
potencia de régimen a 40 Hz~16 kHz	0,8% (4Ω)
	0,5% (8Ω)
potencia de régimen a 1 kHz	0,5% (4Ω)
	0,5% (8Ω)
mitad de potencia a 1 kHz	0,05% (8Ω)
−26 dB de potencia a 1 kHz	0,1% (4Ω)
50 mW de potencia a 1 kHz	0,12% (4Ω)
Distorsión por intermodulación	
potencia de régimen a 250 Hz: 8 kHz=4:1, 4Ω	0,8%
potencia de régimen a 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0,5%
Ancho de banda de potencia	
con ambos canales, −3 dB	10 Hz~30 kHz (4Ω)
Factor de amortiguamiento	15 (4Ω), 30 (8Ω)
Sensibilidad e impedancia de entrada	
TOCADISC. (PHONO)	2,5 mV/47kΩ
GRAB./AUX. (TAPE/AUX)	150 mV/18kΩ
Voltaje máximo de entrada de PHONO (1 kHz, RMS)	150 mV
Relación de señal a ruido	
potencia de régimen (4Ω)	
TOCADISC. (PHONO)	70 dB (IHF, A: 73 dB)
GRAB./AUX. (TAPE/AUX)	88 dB (IHF, A: 95 dB)
−26 dB de potencia (4Ω)	
TOCADISC. (PHONO)	64 dB
GRAB./AUX. (TAPE/AUX)	66 dB
50 mW de potencia (4Ω)	
TOCADISC. (PHONO)	62 dB
GRAB./AUX. (TAPE/AUX)	62 dB
Respuesta de frecuencia	
TOCADISC. (PHONO)	curva RIAA estándar ±0,8 dB (30 Hz~15 kHz)
GRAB./AUX. (TAPE/AUX) (volumen al máximo)	5 Hz~70 kHz (−3 dB)
Controles de tono	
BAJOS (BASS)	50 Hz, +10 dB~ −10 dB
AGUDOS (TREBLE)	20 kHz, +10 dB~ −10 dB
Control de sonoridad (volumen a −30 dB) (incorporado)	50 Hz, +5 dB
Voltaje e impedancia de salida	
GRAB. SAL. GRAB.(TAPE REC OUT)	150 mV
Equilibrio de canales, TAPE/AUX 250 Hz~6 300 Hz	−1 dB
Separación de canales, TAPE/AUX 1 kHz	55 dB
Impedancia y nivel de salida de los auriculares	420 mV/330Ω
Impedancia de carga	4Ω~16Ω

■ SECCION PARA SINTONIZADOR FM

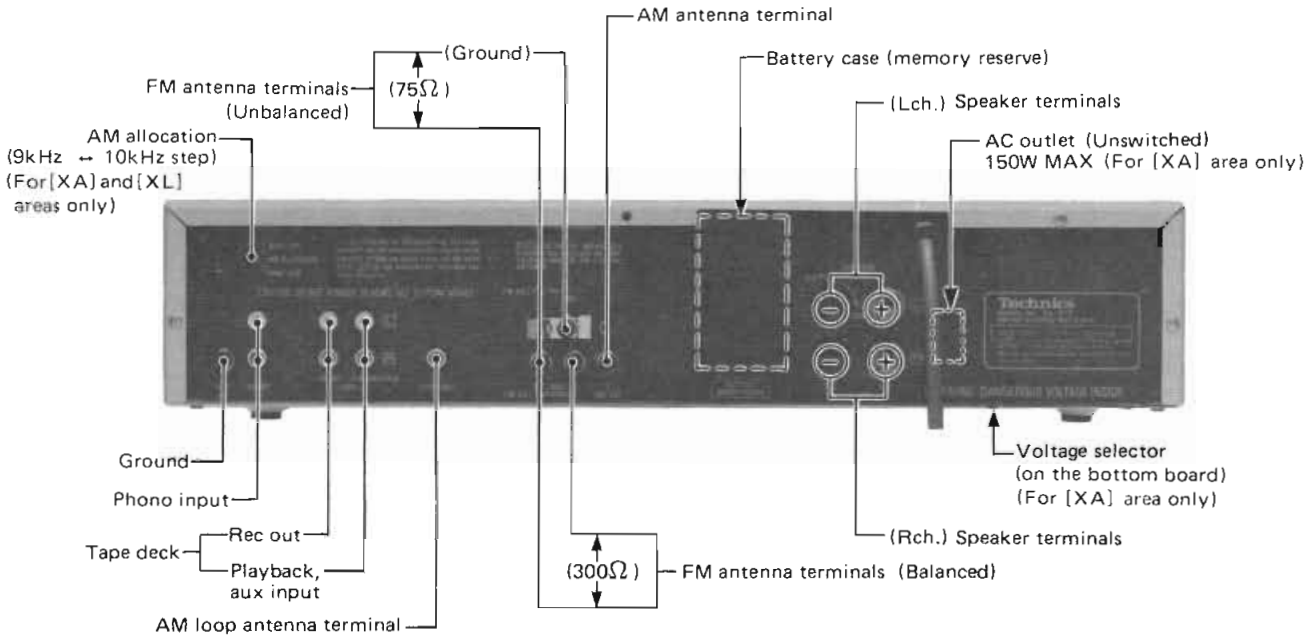
Gama de frecuencias	87,50~108,00 MHz
Sensibilidad	
Señal a ruido 30 dB	1,9 μV (300Ω), 1,3 μV (75Ω)
Señal a ruido 26 dB	1,7 μV (300Ω), 1,2 μV (75Ω)
Señal a ruido 20 dB	1,5 μV (300Ω), 0,9 μV (75Ω)
Sensibilidad utilizable IHF	1,9 μV (IHF '58)
Sensibilidad de acallamiento estéreo de 46 dB IHF	22 μV/75Ω
Distorsión armónica total	
MONO. (MONO)	0,15%
ESTEREO (STEREO)	0,3%
Relación de señal a ruido	
MONO. (MONO)	60 dB (77 dB, IHF)
ESTEREO (STEREO)	58 dB (71 dB, IHF)
Respuesta de frecuencia	20 Hz~15 kHz, +1 dB~ −2 dB
Selectividad alternada de canal	±400 kHz 70 dB
Relación de captura	1 dB
Rechazo de imagen a 98 MHz	55 dB
Rechazo de F.I. a 98 MHz	75 dB
Rechazo de respuesta espuria a 98 MHz	82 dB
Supresión AM	50 dB
Separación estereofónica	
1 kHz	40 dB
10 kHz	30 dB
Fuga de onda portadora	
19 kHz	−33 dB (−35 dB, IHF)
38 kHz	−50 dB (−50 dB, IHF)
Equilibrio de canales 250 Hz~6 300 Hz	±1,5 dB
Punto de limite	1,2 μV
Ancho de banda	
Amplificador FI	180 kHz
Demodulador FM	1000 kHz
Bornes de antena	300Ω (equilibrado)
	75Ω (no equilibrado)

■ SECCION PARA SINTONIZADOR AM

Gama de frecuencias	522~1611 kHz (9 kHz-step)
	530~1620 kHz (10 kHz-step)
Sensibilidad (Relación de señal a ruido de 20 dB)	20 μV, 300 μV/m
Selectividad	55 dB
Rechazo de imagen a 1.000 kHz	40 dB
Rechazo de F.I. a 1.000 kHz	60 dB

■ GENERAL

Consumo de energia	220W
Alimentación de energía	
Para Europa continental	CA 50 Hz/60 Hz, 220V
Para otros paises	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensiones (An.×Al.×Prof.)	430 × 97 × 243 mm
Peso	5,1 kg



- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.

* [XA] area is provided with voltage selector and AC outlet.
* 240V (50/60Hz) for Australia.
* 220V((50/60Hz) for Continental Europe.
* 110V/120V/220V/240V (50/60Hz) for other [XA] area.
* [XA] and [XL] areas are provided with AM allocation switch.
* Phono input capacitance is about 150pF.

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if eigher of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again

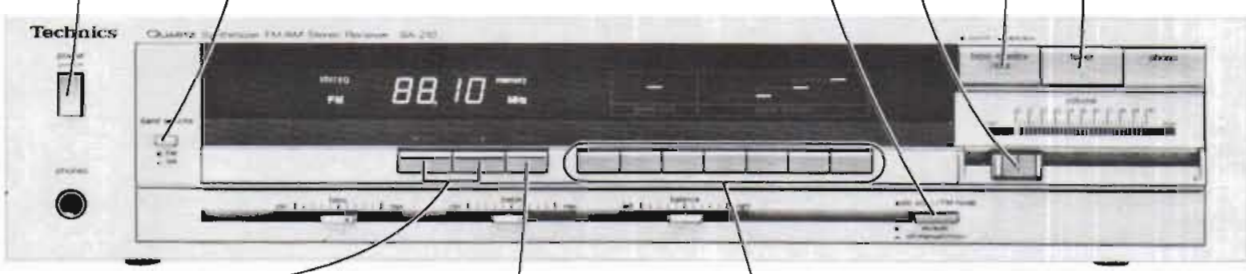
Note:
When the protection circuitry functions the unit will not operate unless the power is first turned off and then on again.

■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power supply and short-circuit of the power supply capacitors (C702, C703, 4700μF) with a resistor (about 10Ω, 5W) to discharge the charged voltage. Do not short both ends of C702 and C703 with a screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current is free of abnormality. The consumed current at 60Hz/50Hz in no signal mode is shown below with respect to supply voltage 110V/120V/220V/240V.

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50 Hz	120 ~ 420mA	110 ~ 410mA	60 ~ 210mA	50 ~ 200mA
	60 Hz	110 ~ 410mA	100 ~ 400mA	50 ~ 200mA	40 ~ 190mA

■ HOW TO PRESET RADIO BROADCAST FREQUENCIES



❹ **"on/auto" (▬—▮)**

❸ **"0—1"** Set volume control to low position for easier tuning.

❻ **"on" (▮—▬)**

❷ **"source" (▬—▮)**

❺ **"FM" (▬—▮):** for FM broadcasting stations
"AM" (▮—▬): for AM broadcasting stations

❶ **"tuner" (▮—▬)**

❼ **Press one of the tuning buttons.**
(The broadcast station will automatically be selected.)
Note:
If automatic selection can not be made, set the automatic-scan/FM mode selector to the "off (manual)/ mono" position and then tune manually.

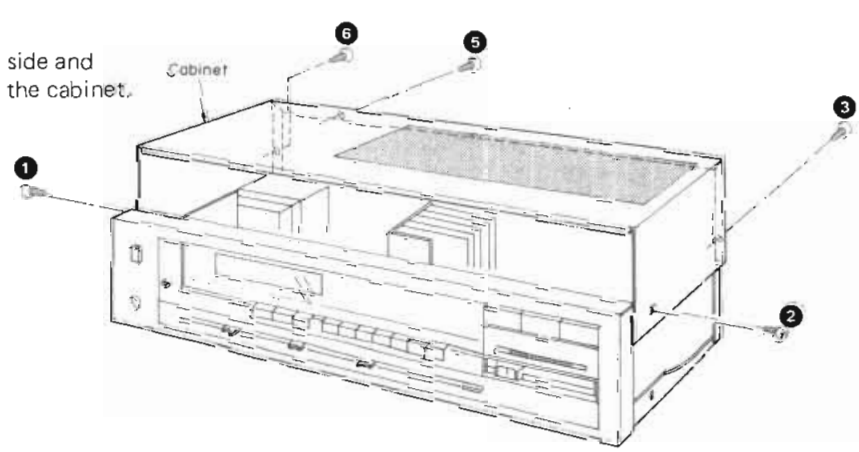
❽ **Press the memory button.**
(The memory indicator will illuminate for about 5 seconds.)

❾ **While the memory indicator is illuminated, press the preset-tuning button (1~7) which you want to use for that station.**
When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.
Note:
If the memory indication illumination stops before you press the button, once again repeat step (8) and then step (9).

■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet**

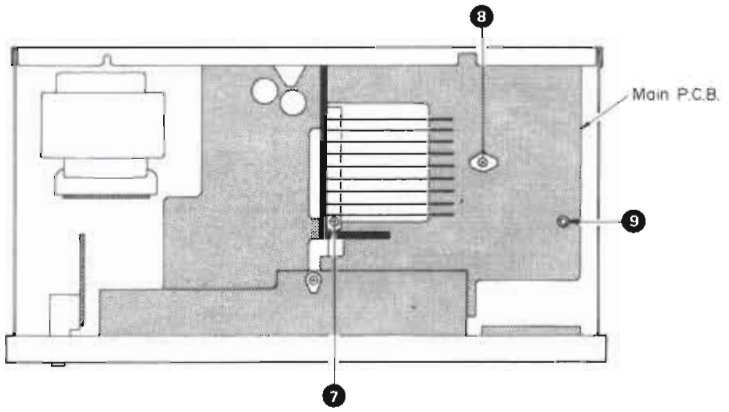
1. Remove the 2 setscrews (Fig. 1: ❶ ❷) on the side and 3 setscrews (Fig. 1: ❸ , ❺ , ❻) on the back of the cabinet.
2. Remove the cabinet upward.



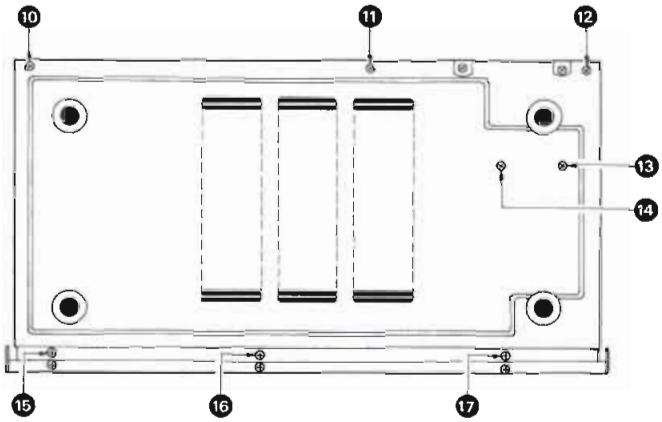
[Fig. 1]

• How to remove the bottom board

1. Remove the 2 setscrews (Fig. 2: ❼ ❽) and lock pin (Fig. 2: ❾) which secure the main P.C.B. from inside the set.
2. Remove the 8 setscrews (Fig. 3: ❿ ~ ⓱) of the bottom board.
3. Remove the bottom board.



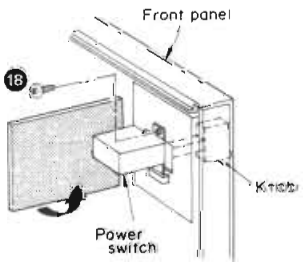
[Fig. 2]



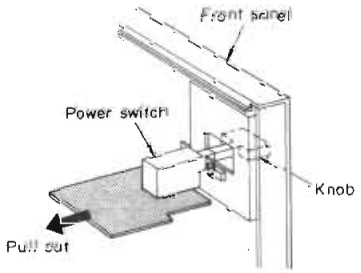
[Fig. 3]

• How to remove the power switch.

1. Remove the setscrew (Fig. 4: ⓲) of the power switch.
2. Next, lay down the power switch P.C.B. as shown in Fig. 5, and remove the power switch from the front panel.



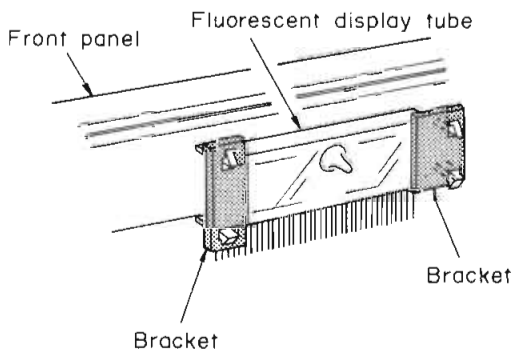
[Fig. 4]



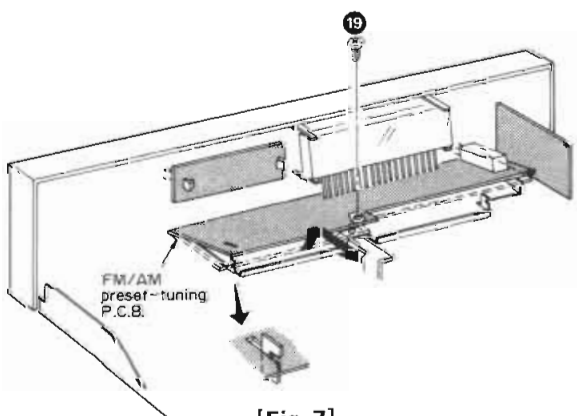
[Fig. 5]

• How to remove the front panel

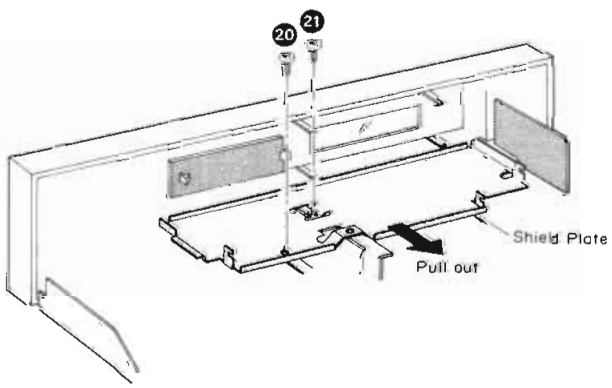
1. Remove the cabinet.
2. Remove the 2 brackets (Fig. 6) of the fluorescent display tube.
3. Remove the setscrew (Fig. 7: ⓳) of the FM/AM preset-tuning P.C.B., and then detach the FM/AM preset-tuning P.C.B.
4. Remove the 2 setscrews (Fig. 8: ⓴ ㉑) of the shield plate, and then detach the shield plate.
5. Remove the 3 input selector knobs by pushing them from inside the front panel by use of a screwdriver or the like. (Refer to Fig. 9)
6. Remove the 3 setscrews (Fig. 3: ⓯~ ⓱) which secure the front panel from the bottom.
7. Next, release the side claws of the front panel to pull out the front panel toward you. (Fig. 10)



[Fig. 6]



[Fig. 7]



[Fig. 8]

FM ADJUSTMENT

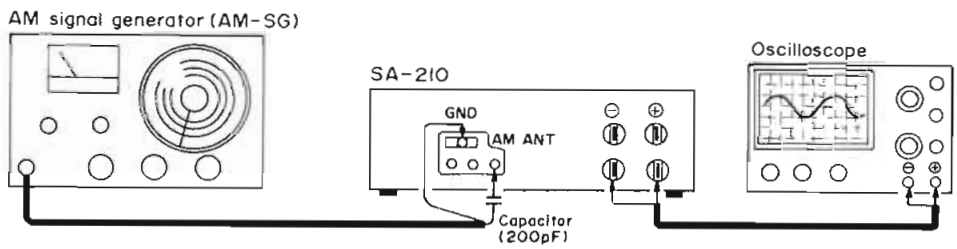
*** Setting and Equipment used**

1. FM signal generator (FM-SG)
2. Oscilloscope.
3. Distortion analyser.
4. DC electronic voltmeters (VTVM).
5. Frequency counter (19kHz and 108MHz measurable).
6. Set band selector to "FM" position.
7. Set Automatic-scan/FM mode selectot to "off/mono" position.
8. Other setting are the same as in AM adjustment.

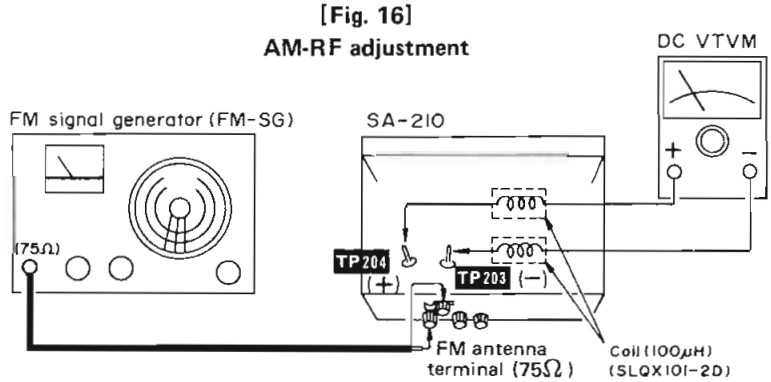
*** Preparation of FM signal generator (FM-SG)**

1. The standard input of the set is 60dB(1mV), 400Hz 100% modulation.
   (Because of attenuation, using coaxial cables. SG output must be 6dB plus (IHF). That is, when input 60dB, SG output is to be 66dB.)

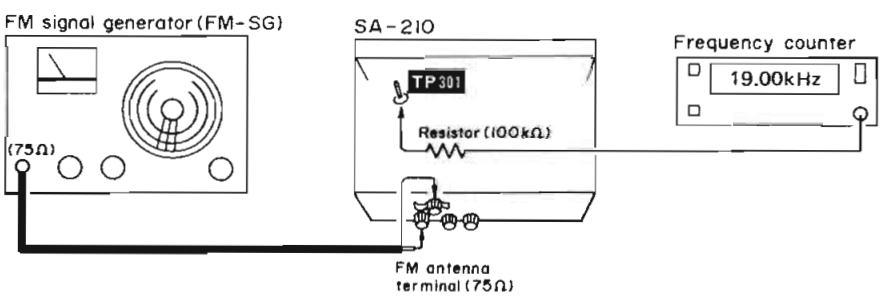
Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	FM MONO DISTORTION ADJUSTMENT					
3	Connect FM-SG to FM antenna terminal referring to Fig. 17. (Apply 60dB to antenna terminal)	100.10 MHz (100% Mod. with 400 Hz)	100.10 MHz	Connect DC VTVM to between TP203 and TP204 through choke coil. (Refer to Fig. 17)	T202 (Discri. IFT)	1. Adjust T202 core so that voltage measured in signal mode is 0mV in 300mV range. 2. Adjust T203 core so that distortion of right and left channels are minimized.
4		100.10 MHz (100% Mod. with 400 Hz)	100.10 MHz	Connect distortion analyser to "speaker" terminal of the set.	T203 (Discri. IFT)	
	FM MPX PILOT (VCO) ADJUSTMENT					
	USING A FREQUENCY COUNTER			**USING ALTERNATE SYSTEM**		
5	1 100.10MHz 60 dB Non-modulated mono signal applied to set. (Refer to Fig. 18) 2. Set Automatic-scan/FM mode selector to "on/auto" position. 3. Connect frequency counter to TP301 through resistor (100kΩ). 4. Adjust **VR301** to 19kHz ± 30Hz.			1. Apply stereo signal from generator or stereo station to tuner. 2. Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in Fig. 19.		



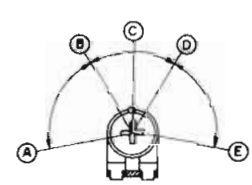
[Fig. 16]
AM-RF adjustment



[Fig. 17]
FM-IF adjustment

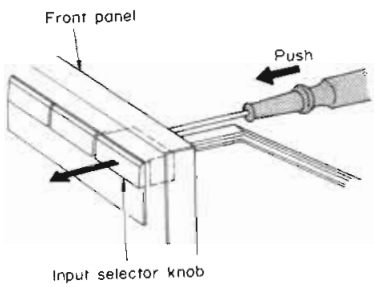


[Fig. 18] FM MPX PILOT (VCO) adjustment

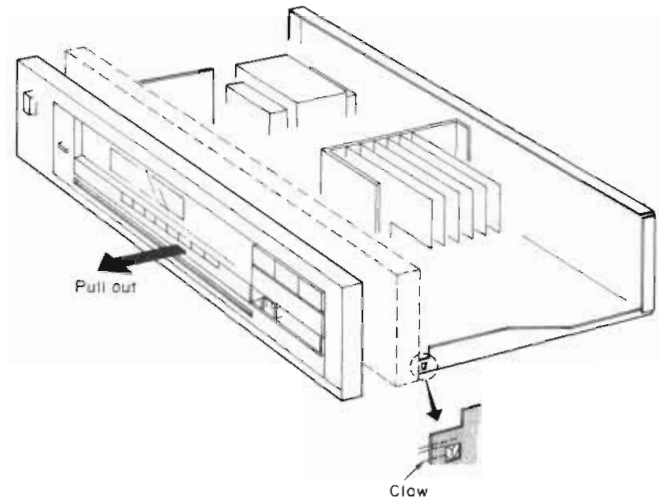


A–B, D–E Stereo OFF Position.
B–D Stereo ON Position. (indicator Lighting)
C Adjust Point of Pilot Circuit.

[Fig. 19]



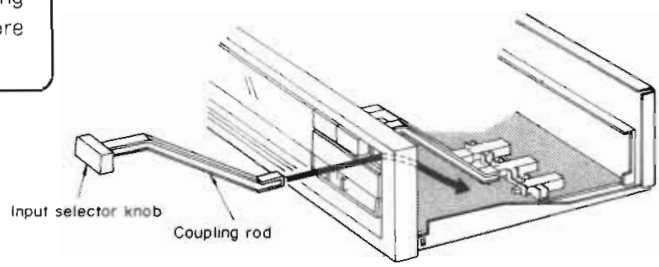
[Fig. 9]



[Fig. 10]

NOTE

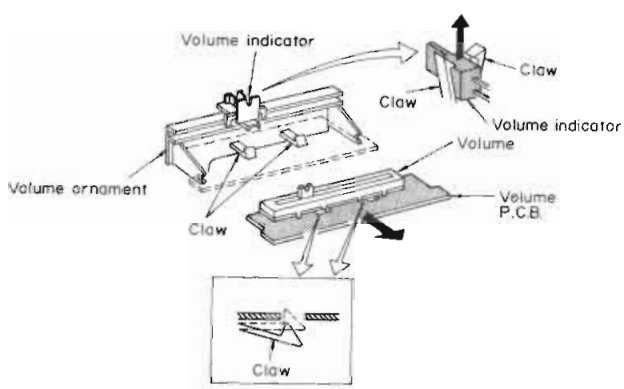
To set the input selector knob, fit the knob to the coupling rod as in Fig. 11, and set it through the front panel before attaching it to the switch.



[Fig. 11]

- **How to remove the volume P.C.B. and volume indicator**

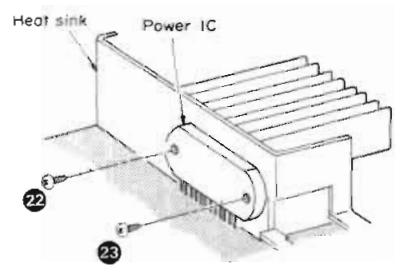
1. The volume P.C.B. is secured with the 2 claws projected from the volume ornament. So, release the claws with a screwdriver, and pull out the volume P.C.B. as shown in Fig. 12.
2. When removing the volume indicator, release the 2 claws which secure the volume indicator, and then remove the indicator upward. In this case, do not bend the claws excessively.



[Fig. 12]

- **How to remove the power amplifier IC**

1. Remove the cabinet and bottom board.
2. Unsolder of power IC.
3. Remove the 2 setscrews (Fig. 13: ㉒ ㉓) used to secure the power IC on the heat sink, and then pull the power IC.
4. When mounting the power IC, apply silicone compound or equivalent heat diffuser to the rear side of power IC, and then follow the steps 1~4 reversely.



[Fig. 13]

- **How to replace chips (resistors)**

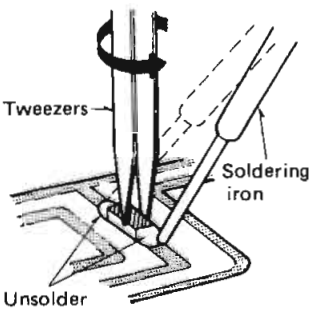
1. Unsolder from chip by using solder sucker.
2. Remove chip with tweezers by rotating it while removing solder as shown in Fig. 14.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in Fig. 15.

Notes:

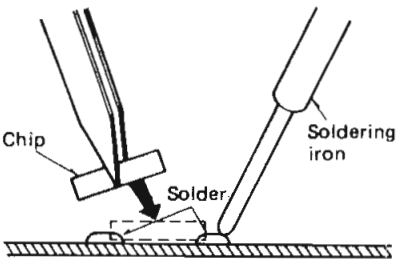
1. Do not use chip again which is removed from printed circuit board.
2. Use lead wire with insulator for replacement instead of chip jumper.

- **Note for replacing chips**

1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60W) and tweezers for replacing chips.



[Fig. 14]



[Fig. 15]

■ MEASUREMENTS AND ADJUSTMENTS

Note: AM OSC coil (L202) and AM IFT (T201) have been already adjusted, and require no adjustment.

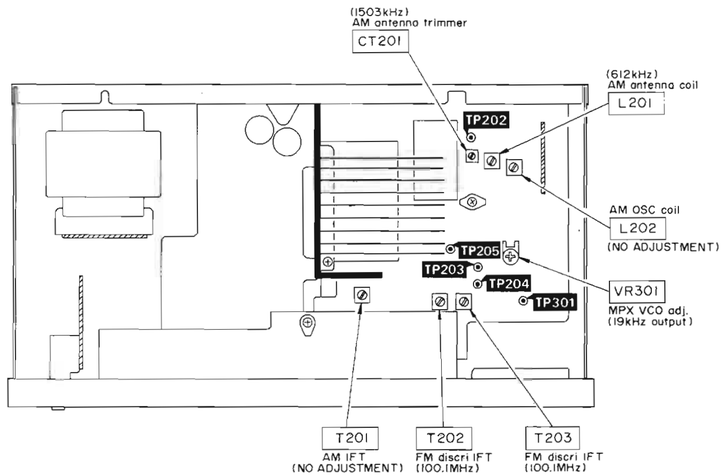
AM ADJUSTMENT

*** Setting and Equipment used**

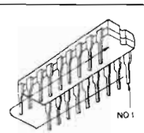
1. AC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Set Band selector to "AM" position.
4. Maintain line voltage at rated voltage.
5. Output of signal generator should be no higher than necessary to obtain an output reading.
6. Use a non-metal screwdriver for the adjustment.
7. Set AM allocation selector to "AM 9kHz step" position. (For [XA], [XL] areas only)

Step No.	AM SIGNAL GENERATOR CONNECTION	AM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-RF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor referring to Fig. 16. (Weak input)	612kHz (30% Mod. with 400Hz)	612kHz	Connect AC VTVM or scope to "speaker" terminal of the set.	L201 (ANT Coil)	1. Adjust for maximum output. 2. Adjust core of L201 by screwdriver.
2		1503kHz (30% Mod. with 400Hz	1503kHz	Connect AC VTVM or scope to "speaker" terminal of the set.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat steps (1) and (2) until the frequency correctly matches the frequency display.

• Adjustment points

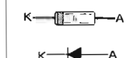


■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S



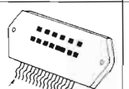
AN6873N	18pin
AN7273A	
SVID1703C018	28pin
SVIμPB553C-E	8pin
SVINJ4559DDM	
SVIμPC1161C3	16pin

MA150TA

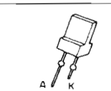


MA27WA

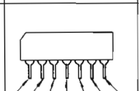
SVIK4141-2M



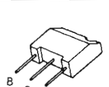
LN224RP



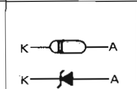
AN7072N



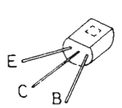
2SD636



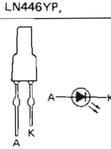
SVDMZ□□□□



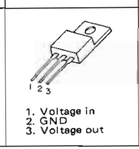
2SA564A, 2SA992, 2SC829, 2SC945, 2SC1685



LN346GR, LN846RP
LN446YP,

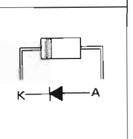


AN7812

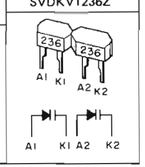


1. Voltage in
2. GND
3. Voltage out

SVDS2V20,
SVDSR1K2

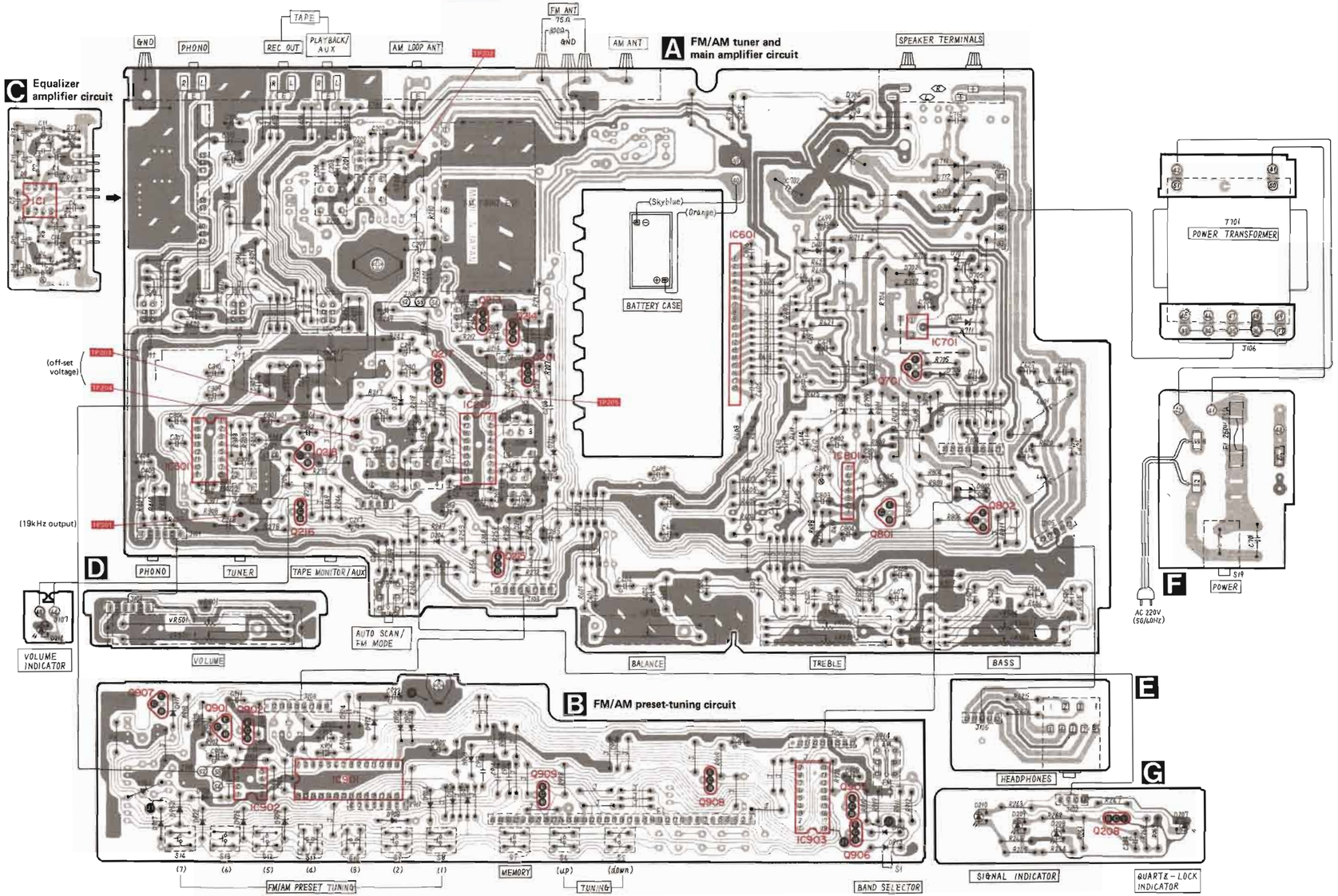


SVDKV1236Z



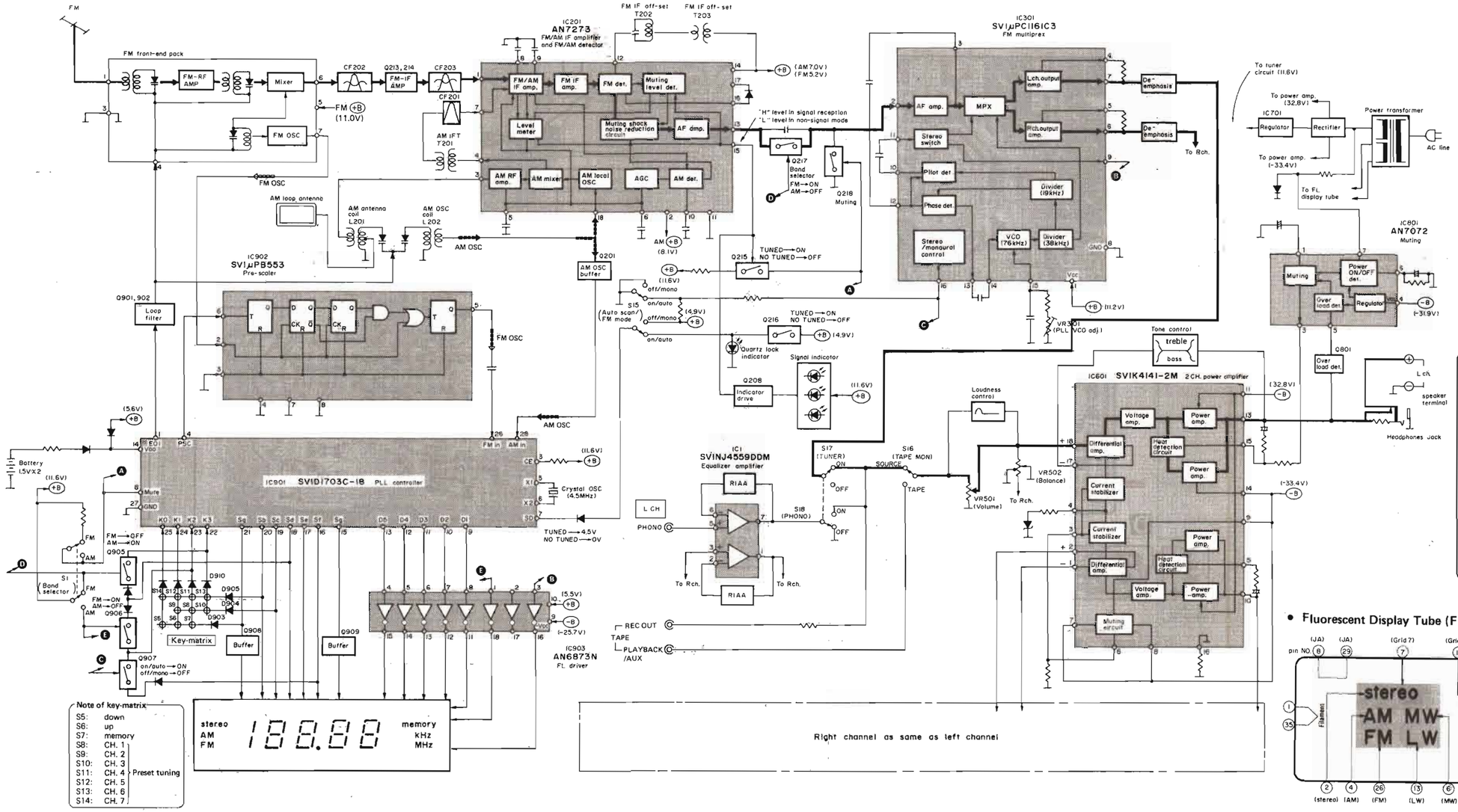
■ PRINTED CIRCUIT BOARD

Ground (Earth) lines



SA-210 SA-210

■ BLOCK DIAGRAM



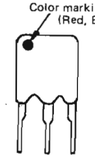
• Operational description of IC (IC801) for muting (with power on/off, overload)

1. Muting operation with power ON.
   With power turned ON, AC voltage is applied to terminal ⑦ of IC801. Then, condenser C604 connected to terminal ① is charged, and the voltage of terminal ① gradually rises. When the voltage reaches about −4V (about 5 sec. after power ON), the muting circuit turns off, and then −30.6V is generated at terminal ③. The voltage of terminal ③ is supplied to the voltage amplifier circuit of IC601, thus operating power IC.
2. Muting operation with power OFF.
   With power turned OFF, condenser C604 connected to terminal ① is discharged, causing the voltage of C604 to drop, and then the muting circuit in IC turns ON. With the muting circuit turned ON, the voltage of terminal ③ becomes 0V, and then power supply to the voltage amplifier circuit of IC601 is discontinued.
3. Muting operation with power amplifier over-loaded.
   With speaker terminals short-circuited, a large quantity of current flows into R617 (R618), causing the voltage rise. The voltage causes Q801 (Q802) to turn ON, and then overload detecting signal is applied to terminal ⑤. When the potential difference between terminals ④ and ⑤ reaches about 0.7V, condenser C604 is discharged the same as for muting operation with power OFF. As a result, the muting circuit turns ON and the voltage of terminal ③ becomes 0V.

NOTE

• Use of ceramic filters in pairs

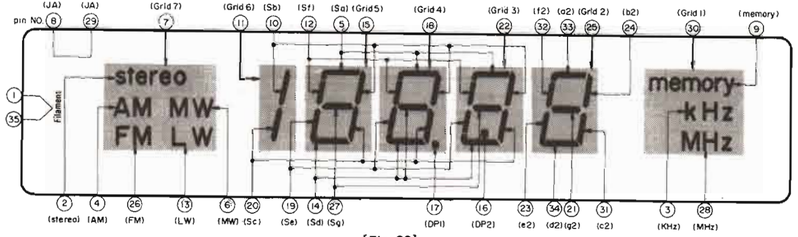
The ceramic filters (CF202, CF203) for FM-IF circuit are available in three ranks. For this machine, be sure to use the ceramics of the same rank in a pair.
At repairing and replacement, pay close attention to the diodes (D907, D908) for use as different diodes must be used depending on each rank of the ceramic filters.



RANK (color)	D907	D908	CENTER FREQUENCY
Red	X	X	10.70 MHz
Orange	X	O	10.73 MHz
Blue	O	O	10.67 MHz

Notes: O Mark Diode is used.
X Mark Diode is not used.

• Fluorescent Display Tube (FL)



[Fig. 20]

■ SCHEMATIC DIAGRAM

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

*The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ○ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

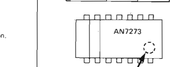
Notes:

1. **S1:** Band selector switch in "**FM**" position.
   FM ↔ AM
2. **S5, 6:** Tuning switch
   [S5 – down (tuning to lower frequency)
   S6 – up (tuning to higher frequency)]
3. **S7:** Memory switch. (manual ↔ auto)
4. **S8 ~ 14:** Preset tuning switch.
   [S8 – CH. 1 S11 – CH. 4 S14 – CH. 6
   S9 – CH. 2 S12 – CH. 5
   S10 – CH. 3 S13 – CH. 6]
5. **S15:** Automatic-scan/FM mode selector switch in "**on/auto**" position.
   on/auto ↔ off (manual)/mono
6. **S16:** Tape monitor/aux selector switch in "**source**" position.
   source ↔ tape/aux
7. **S17, 18:** Input selector switch in "**tuner**" position.
   [S17 – tuner
   S18 – phono]
8. **S19:** Power source switch in "**on**" position.
9. **S20 [XA, XL] only** : AM allocation selector switch in "**10kHz step**" position.
   9kHz step ↔ 10kHz step
   (Other areas are **9kHz** step.)
10. **S21 [XA] only** : Voltage selector switch in "**240V**" position.
    110V ↔ 120V ↔ 240V ↔ 220V
11. Important safety notice:
    Components identified by △ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
12. 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.
    * Figures in ( ) stand for DC voltage in FM signal mode.
    * Figures in < > stand for DC voltage in FM stereo signal reception mode.
    * Figures in [ ] stand for DC voltage in AM signal reception mode.
13. Positive voltage lines / AF signal lines / FM signal / FM IF / AM signal / AM IF / Negative voltage lines

NOTE

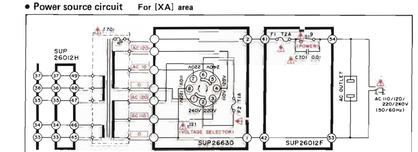
AN 7273 (IC201) is available in A rank (AN7273A) and B rank (AN7273B). Either rank can be used for this unit, but the suitable resistor must be used according to the rank as shown in the table below. So, keep this point in mind when repairing or replacing the unit.

RANK / Ref. No.	A	B
R211	4.7kΩ	1.8kΩ
R280	560kΩ	470kΩ

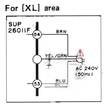


"A" painted in this position or red mark on main body stands for A rank, and similarly, "B" or green mark stands for B rank.

● Power source circuit For [XA] area



For [XL] area



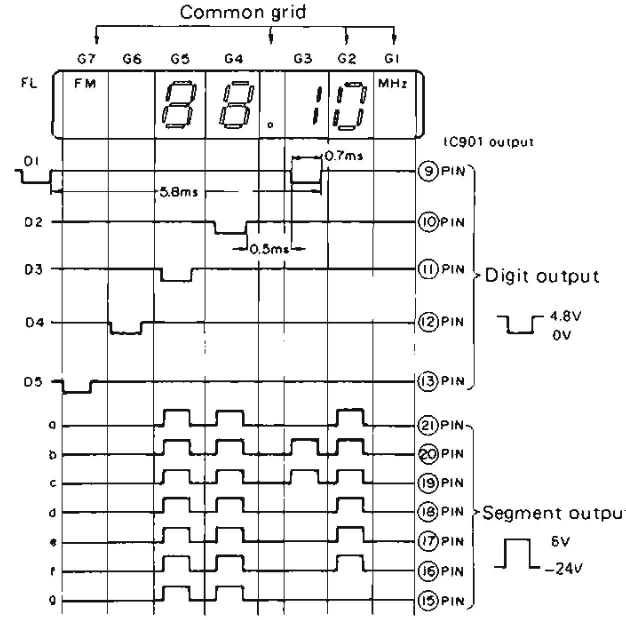
* [XL] is available in Australia.

* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.

FUNCTION OF TERMINAL (PLL CONTROLLER IC901)

Terminal No.	Terminal	Description of terminal
1	E01 (Error out)	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
2	E02 (Error out)	
3	CE (Chip Enable)	This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D5) terminals are off, but the memory is held.
4	PSC (Prescaler Control)	This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (26) until the content of the inside swallow counter is 0. When the swallow counter comes to 0, the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16.
5	X1 (Crystal)	Connecting terminal for crystal oscillator. The crystal connected is at 4.5 MHz.
6	X2 (Crystal)	
7	SD (Station Detector)	This input terminal detects the reception of a broadcasting station. The voltage is 4.2V during reception, and otherwise 0V.
8	MUT (Muting)	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level.
9 ~ 13	D1 (Digit Outputs) ~ D5	Digit signal output terminal for display. (Refer to Fig. 20)
14	VDD	Power supply terminal of the device.
15 ~ 21	a (Segment Outputs) ~ g	Segment signal output terminal for display. (Refer to Fig. 20)
22 ~ 25	K3 (Key Return Signal Inputs) ~ K0	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source. 4V / 0V
26	FM (Pulse swallow oscillation input)	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by pre-scaler. 2.8V / 1.6V, 1.2V; 6 ~ 7 MHz
27	E (Ground)	Ground terminal
28	AM (Direct oscillation input)	Input terminal for AM OSC output. 2.8V / 1.7V, 1.1V; 1 MHz ~ 2 MHz

Digits and segment output voltage of IC901 (PLL controller)



[Fig. 20]

RESISTORS & CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω. (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF. (microfarad). $P = 10^{-6}\mu F$.
6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

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

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

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

Numbering System of Capacitor

Example

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

Capacitor Type	Voltage: ECEA Type	Voltage: Other	Tolerance
ECEA : Electrolytic ECCD : Ceramic ECKD : Ceramic ECQM : Polyester ECQP : Polypropylene ECET : Electrolytic ECEA...N: Non Polar Electrolytic ECBT : Axial Leaded Type Ceramic ECQE : Polyester	OJ : 6.3V 1A : 10V 1C : 16V 1E : 25V 1H : 50V 50 : 50V 25 : 25V MY : 125V AC	2H : 500V DC 1 : 100V	C : ±0.25pF J : ±5% K : ±10% N : ±30% Z : +80%, −20% Y : ±22%

Ref. No.	Part No.	Value
RESISTORS		
R1, 2	ERD10TLJ391U	390
R3, 4	ERO10MKG2213	221K
R5, 6	ERO10MKG5622	56.2K
R7, 8	ERD10TLJ271U	270
R9, 10	ERD10TLJ680U	68
R11, 12	ERD10TLJ184U	180K
R13, 14	ERD10TLJ123U	12K
R15, 16	ERD10TLJ563U	56K
R17, 18	ERD10TLJ102U	1K
R201 S	ERD25TJ104	100K
R202 S	ERD25FJ102	1K
R203 S	ERD25FJ562	5.6K
R204 S	ERD25FJ681	680
R205 S	ERD25FJ102	1K
R206 S	ERD25FJ222	2.2K
R207 S	ERD25FJ562	5.6K
R208 S	ERD25TJ684	680K
R210 S	ERD25FJ470	47
R211 S	ERD25FJ472	4.7K
R212 S	ERD25TJ684	680K
R213 S	ERD25FJ102	1K
R214 S	ERD25TJ684	680K
R215 S	ERD25FJ391	390
R217 S	ERD25FJ331	330
R218 S	ERD25FJ102	1K
R240 S	ERD25FJ472	4.7K
R241 S	ERD25FJ103	10K
R242 S	ERD25TJ104	100K
R243 S	ERD25TJ273	27K
R244 S	ERD25TJ473	47K
R245 S	ERD25FJ272	2.7K
R246 S	ERD25FJ103	10K
R247 S	ERD25TJ333	33K
R248 S	ERD25TJ104	100K
R249 S	ERD25TJ334	330K
R251 S	ERD25FJ561	560
R253 S	ERD25FJ103	10K
R254 S	ERD25TJ124	120K
R255 S	ERD25TJ683	68K
R256 S	ERD25TJ104	100K
R257 S	ERD25FJ222	2.2K
R259 S	ERD25TJ473	47K
R260 S	ERD25FJ103	10K
R261 S	ERD25FJ561	560
R262 S	ERD25FJ151	150
R263 S	ERD25FJ270	27
R264 S	ERD25FJ221	220
R265 S	ERD25FJ121	120
R266 S	ERD25FJ102	1K
R267 S	ERD25FJ271	270
R268 S	ERD25FJ102	1K
R269 S	ERD25FJ682	6.8K
R270 S	ERD25FJ102	1K
R272, 273 S	ERD25FJ101	100
R274 S	ERD25FJ561	560
R276 S	ERD25FJ271	270
R277 S	ERD25TJ473	47K
R278, 279 S	ERD25FJ562	5.6K
R280 S	ERD25TJ564	560K
R301 S	ERD25FJ220	22
R303, 304 S	ERD25TJ223	22K
R305 S	ERD25TJ334	330K
R306 S	ERD25TJ153	15K
R307, 308 S	ERD25FJ332	3.3K
R309, 310 S	ERD25TJ104	100K
R311 S	ERD25TJ223	22K
R401, 402 S	ERD25FJ222	2.2K
R403, 404 S	ERD25FJ331	330
R405, 406 S	ERD25TJ684	680K
R407, 408 S	ERD25TJ473	47K
R409, 410 S	ERD25TJ823	82K
R498, 499 [XL] only	ERD25FJ100	10
R501, 502 S	ERD25FJ222	2.2K
R503, 504 S	ERD25FJ561	560
R505, 506 S	ERD25TJ124	120K
R507, 508 S	ERD25TJ183	18K
R509, 510 S	ERD25FJ222	2.2K
R601, 602 S	ERD25FJ102	1K
R603, 604 S	ERD25TJ393	39K
R605, 606 S	ERD25TJ123	12K
R607, 608 S	ERD25TJ473	47K
R609, 610 ⚠	ERDS1FJ122	1.2K
R611, 612 S	ERD25TJ153	15K
R613, 614 ⚠	ERDS1FJ222	2.2K
R615, 616 ⚠	ERDS1FJ222	2.2K
R617, 618 S	ERX2ANJR22	0.22
R619, 620 ⚠	ERDS1FJ100	10
R621 ⚠	ERDS1FJ101	100
R622 S	ERG1ANJ152	1.5K
R623 ⚠	ERDS1FJ470	47
R625, 626 ⚠	ERDS1FJ331	330
R697 ⚠	ERDS1FJ470	47
R698 S	ERD25FJ103	10K
R699 S	ERD25FJ272	2.7K
R702 ⚠	ERDS1FJ390	39
R703 ⚠	ERDS1FJ102	1K
R704 S	ERG2ANJ391	390
R705 S	ERD25FJ681	680
R707 ⚠	ERDS1FJ152	1.5K
R708 ⚠	ERDS1FJ122	1.2K
R709 S	ERD25FJ102	1K
R710 ⚠	ERDS1FJ390	39
R711 S	ERD25FJ471	470
R712 ⚠	ERDS1FJ6R8	6.8
R715 S	ERD25FJ101	100
R716 S	ERD25FJ221	220
R731 S	ERD25FJ101	100
R801, 802 S	ERD25FJ331	330
R803, 804 S	ERD25TJ153	15K
R805, 806 S	ERD25TJ273	27K
R807 S	ERD25TJ154	150K
R809 S	ERD25TJ393	39K
R810 ⚠	ERDS1FJ330	33
R901 S	ERD25FJ102	1K
R902 S	ERD25FJ561	560
R903 S	ERD25TJ223	22K
R908 S	ERD25FJ220	22
R909, 910 S	ERD25TJ683	68K
R911, 912 S	ERD25TJ124	120K
R913 S	ERD25TJ104	100K
R914 S	ERD25FJ561	560
R918, 919 S	ERD25TJ104	100K
R920 S	ERD25FJ152	1.5K
R930 S	ERD25TJ335	3.3M
R951 [XA,XL] only S	ERD25TJ124	120K
R952 [XA,XL] only S	ERD25TJ683	68K

Ref. No.	Part No.	Value
CAPACITORS		
C1, 2 S	ECEA50M3R3R	3.3
C3, 4 S	ECCD1H101K	100P
C5, 6 S	ECKD1H471KB	470P
C7, 8 S	ECQM1H223JZ	0.022
C9, 10 S	ECQM1H682JZ	0.0068
C11, 12 ⚠	ECEA1HN010S	1
C13, 14 S	ECEA1CS330	33
C201	ECBT1C223NYY	0.022
C202 S	ECQM1H473JZ	0.047
C203 S	ECCD1H100KC	10P
C204	ECQP1471JZ	470P
C205 S	ECEA1AS101	100
C206 S	ECEA50Z3R3	3.3
C207 S	ECCD1H180KC	18P
C208, 209	ECBT1C103ZYY	0.01
C210	ECBT1C223NYY	0.022
C211 S	ECEA1HS100	10
C212	ECBT1C103ZYY	0.01
C213 S	ECEA50Z1	1
C214 S	ECKD1H223ZF	0.022
C215	ECBT1H331KBY	330P
C216	ECBT1C223NYY	0.022
C217 S	ECEA50Z1	1
C218 S	ECEA1HS100	10
C230 S	ECQM1H183JZ	0.018
C231 S	ECEA50Z2R2	2.2
C232 S	ECEA50Z1	1
C233 S	ECEA50Z3R3	3.3
C234 S	ECEA50Z2R2	2.2
C235 S	ECEA1ES101	100
C236 S	ECCD1H330K	33P
C237	ECBT1C103ZYY	0.01
C238 S	ECCD1H101K	100P
C239 S	ECCD1H470K	47P
C244 S	ECCD1H080CC	8P
C245	ECBT1C103ZYY	0.01
C246 [XA] only	ECBT1C103ZYY	0.01
C247, 248	ECBT1C103ZYY	0.01
C249 S	ECEA50ZR47	0.47
C251, 252 [XL] only	ECKDHS101MB	100P
C253, 254 [XL] only	ECKDHS102MD	0.001
C299 [EX,EH] only	ECKD1H102ZF	0.001
C301 S	ECEA1CS471	470
C305	ECQP1471JZ	470P
C303 S	ECCD1H470K	47P
C306 S	ECEA50ZR47	0.47
C307 S	ECEA50Z1	1
C308 S	ECQM1H473JZ	0.047
C309, 310 S	ECEA25Z4R7	4.7
C311, 312 S	ECQM1H153JZ	0.015
C401, 402	ECBT1H331KBY	330P
C403 S	ECQM1H333JZ	0.033
C404 S	ECQM1H333JZ	0.033
C501, 502 S	ECQM1H222JZ	0.0022
C503, 504 S	ECQM1H223JZ	0.022
C505, 506 S	ECQM1H183JZ	0.018
C507, 508 S	ECQM1H104JZ	0.1
C601, 602 S	ECCD1H101K	100P
C603, 604 S	ECEA50Z2R2	2.2
C605, 606 S	ECCD1H221K	220P
C607, 608 S	ECEA1HS100	10
C609, 610 S	ECCD1H050CC	5P
C611, 612 S	ECEA1AS470	47
C613, 614 S	ECCD1H220K	22P
C615, 616 ⚠	ECEA1EN100S	10
C618 S	ECQM1H104JZ	0.1
C619 S	ECEA1HS101	100
C621 S	ECQM1H104JZ	0.1
C623, 624 S	ECQM1H104JZ	0.1
C697 S	ECKD1H103ZF	0.01
C699 S	ECEA1HS470	47
C701 ⚠	ECKDKC103PF2	0.01
C702, 703	ECETS42V472U	4700
C704 S	ECKD1H103ZF	0.01
C706 S	ECEA1ES470	47
C707 [XA,XL] only S	ECKD2H103PE	0.01
C708 S	ECEA1ES470	47
C709 S	ECKD1H103ZF	0.01
C710 S	ECEA1ES101	100
C711 S	ECEA1ES101	100
C712	ECBT1C103ZYY	0.01
C713 [EX,EH] only	ECQE1104KN	0.1
C801 S	ECEA1HS100	10
C802, 803 S	ECEA50Z3R3	3.3
C804 S	ECEA1ES470	47
C805 S	ECEA1HS101	100
C899 ⚠	ECEA1EN220S	22
C901	ECBT1C103ZYY	0.01
C902 S	ECEA25M4R7R	4.7
C903, 904	ECBT1C103ZYY	0.01
C905 S	ECCD1H180KC	18P
C906 S	ECCD1H150KC	15P
C907 S	ECEA0JS102	1000
C908 S	ECEA0JS102	1000
C909 S	ECEA25Z4R7	4.7
C911 S	ECEA1ES470	47
C912, 913	ECBT1H331KBY	330P
C914, 915	ECBT1H331KBY	330P
C922 S	ECEA1HS100	10
C923, 924	ECBT1C103ZYY	0.01
C951 [XA,XL] only	ECBT1C103ZYY	0.01

REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ −marked parts are used for black only, while ○ −marked parts are for silver type only.
4. Part other than Ⓚ − and ○−marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "S" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

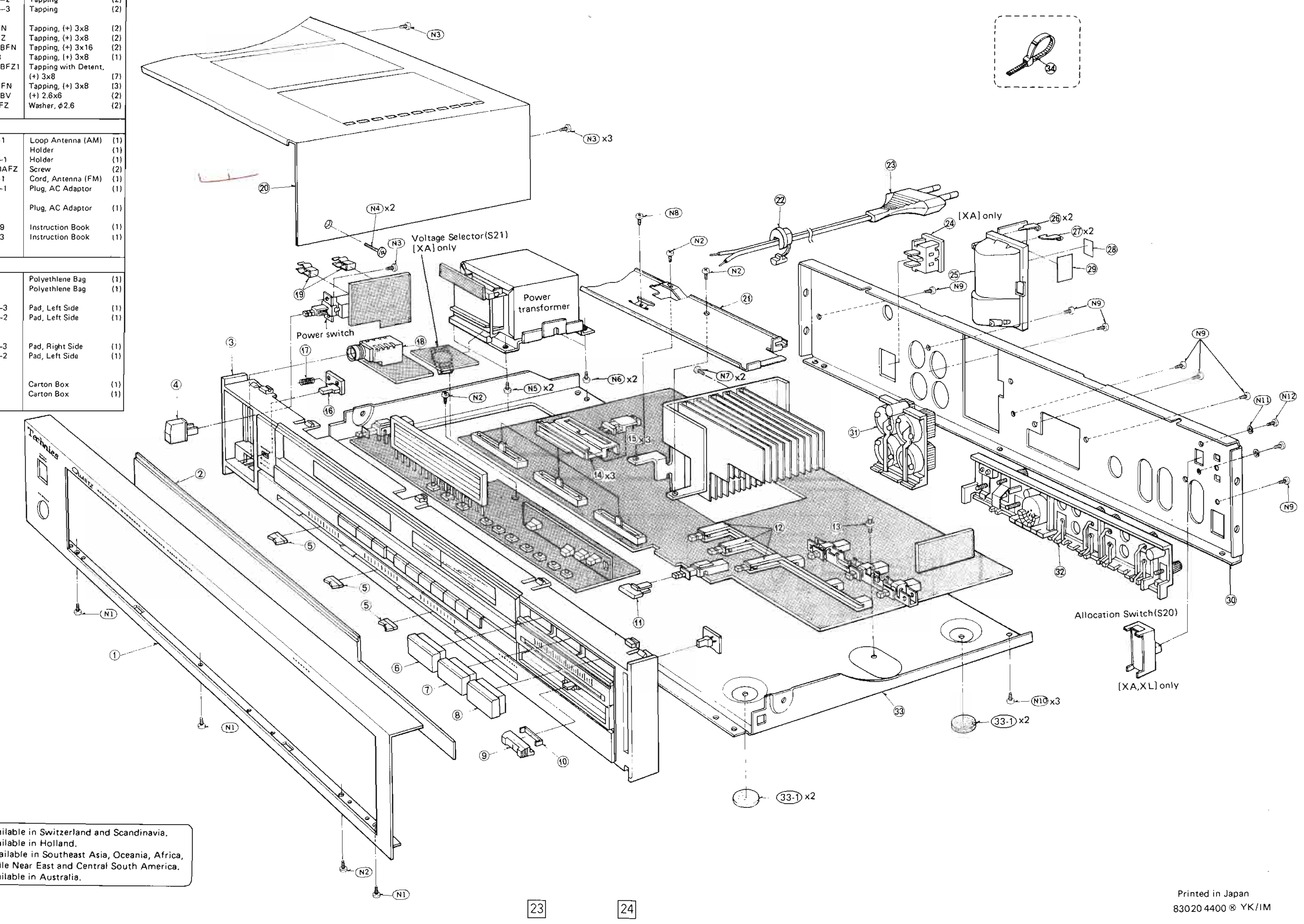
Black type model No. : SA-210 (K)

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	SVINJ4559DDM	Equalizer Amp
IC201	AN7273A	FM IF DET & AM Converter
IC301	SVIUPC1161C3	FM Multiplex
IC601	SVIK4141−2M	2ch. Power Amp
IC701	SVIUPC7812H	Regulator
IC801	AN7072N	Muting & Protection
IC901	SVID1703C018	PLL Controller
IC902	SVIUPB553AC	Pre Scaler
IC903	AN6873N	FL Driver
TRANSISTORS		
Q201 S	2SC1685−Q	AM OSC Buffer
Q208	2SD636−R	Signal Indicator Drive
Q213, 214 S	2SC829−C1	FM IF Amp
Q215, 217, 218 S	2SC1685−Q	Switching & Muting
Q216 S	2SA722−S	Switching
Q701 S	2SC1685−Q	Regulator
Q801, 802	2SA992−E	Over Load Detector
Q901, 902 S	2SC945−Q	Loop Filter
Q905~907 S	2SA722−S	Switching
Q908, 909 S	2SC1685−Q	Buffer
Q951 [XA,XL] only S	2SA722−S	Switching
DIODES		
D201	SVDKV1236Z	AM Variable Capacitor
D205, 206 S	MA162A	Switching
D207	LN846RP	LED, Quartz Lock Ind. Red
D208 ~ 210	LN446YP	LED, Signal Ind. Amber
D211, 212 S	MA162A	Switching
D213	MA27W−A	Detector
D214	LN224RP	LED, Volume Indicator, Red
D601	SVDMZ308B	8V, Zener
D702	SVDMZ303B	3V, Zener
D703	MA1160M	16V, Zener
D704	SVDMZ314C	14V, Zener
D705 S⚠	SVDSR1K2	Rectifier
D706, 804	SVDMZ306B	6V, Zener
D707	SVDMZ322A	22V, Zener
D708	SVDMZ306C1	6V, Zener
D711~714 ⚠	SVDS2V20	Rectifier
D798 S	MA162A	Rectifier
D799 S⚠	SVDSR1K2	Rectifier
D801~803 S	MA162A	Switching
D901~905 S	MA162A	Switching
D907~914 S	MA162A	Switching
D922, 923 S	MA162A	Switching
D928 S	MA162A	Switching
D951 [XA,XL] S	MA162A	Switching
D962 [EX] S	MA162A	Switching
D961 Except [XA,XL] S	MA162A	Switching
COILS		
L201	SLA2C5−P	AM Antenna Coil
L202	SL02C29R−P	AM OSC Coil
L601, 602	SLQY15G−30	Choke Coil
FUSES		
F1 [XA] ⚠	XBA2C20TRO	250V, T2A
F1 [other] ⚠	XBA2C10TRO	250V, T1A
F2 [XA] ⚠	XBA2C10TRO	250V, T1A
TRANSFORMERS		
T201	SLI2C143−M	AM IFT
T202	SLI4C535−Z	FM IF
T203	SLI4C537−Z	FM IF
T701 [XL] ⚠	SLT5M299−W	Power Source
T701 [XA] ⚠	SLT5N405−W	Power Source
T701 [other] ⚠	SLT5M297−W	Power Source
VARIABLE RESISTORS		
VR301	EVN75AA00B53	VCO Adj 5KΩ (B)
VR501	EWE00605A15S	Volume Control, 100KΩ (A)
VR502	EVD00305G15S	Balance Control, 100KΩ (G)
VR503, 504	EWD00205C15S	Tone Control, 100KΩ (C)
VARIABLE CAPACITOR		
CT201	SVCTY121B269	AM Antenna Trimmer
COMPONENT COMBINATIONS		
Z301, 302	EXRP181K473C	180pF, 47KΩ
Z901	EXBP87104M	100KΩ (x7)
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT29ZA	
CRYSTAL		
X901	SVQ43U452−D	4.5MHz
FM FRONT END		
	SNVFE306E05	Front End
CERAMIC FILTERS		
CF201	SVFSFZ450F7L	AM, 450KHz
CF202, 203	SVFE107MS8A	FM, 10.7MHz (Red)
	SVFE107MS8B	FM, 10.67MHz (Blue)
	SVFE107MS8C	FM, 10.73MHz (Orange)
		(Use pair ranks as same as CF202 and CF203)
SWITCHES		
S1	SSH1083	Band Selector
S5~14	SSG13	Tuning (Up, Down), Memory, FM/AM Preset Tuning
S15	SSH1097	Auto Scan/FM Mode
S16~18	SSH3047	Tape Monitor & Input Selector
S19 ⚠	SSH1071	Power Source
S20 [XA,XL] only	SSS43	AM Allocation Selector
S21 [XA] only ⚠	ESE37219	Voltage Selector

Ref. No.	Part No.	Description & Pcs
CABINET AND CHASSIS PARTS		
1 ○	SGWA210M	Front Panel (1)
1 Ⓚ	SGWA210KE	Front panel (1)
2 ○	SGU319SA	Transparent Plate (1)
2 Ⓚ	SGU319BA	Transparent Plate (1)
3 ○	SGXA210M	Front Sub Panel Ass'y (1)
3 Ⓚ	SGXA210KE	Front Sub Panel Ass'y (1)
4	SBC337−1M	Button, Power Switch (1)
5 ○	SBD69−2M	Knob, Bass, Treble and Balance (3)
5 Ⓚ	SBD69−1M	Knob, Bass, Treble and Balance (3)
6	SBC549−2	Button, Tape (1)
7	SBC547−1	Button, Tuner (1)
8	SBC551−1	Button, Phono (1)
9 ○	SBD71	Knob, Volume (1)
9 Ⓚ	SBD71−1	Knob, Volume (1)
10	SHR9653	Spacer, Volume Knob (1)
11	SBC545	Button (1)
12	SUB139−1	Connection Rod, Input Selector Switch (3)
13	SHR401−1	Lock Pin (1)
14 ○	SGX7475	Ornament, Bass, Treble and Balance (3)
14 Ⓚ	SGX7475−1	Ornament, Bass, Treble and Balance (3)
15	SBZ663−1	Shaft, Knob (Bass, Treble, Balance) (3)
16 ○	SBC483−2	Button, Band Selector (1)
16 Ⓚ	SBC483−4	Button, Band Selector (1)
17	SUS257	Spring, Button (Band Selector) (1)
18	SJJ71E	Jack, Headphone (1)
19	SJT347	Holder, Fuse (2)
20 ○	SKC1190S1	Cabinet (1)
20 Ⓚ	SKC1190BB1	Cabinet (1)
21	SMC1041	Bracket (1)
22 [XL]	SHR131	Bushing, AC Cord (1)
22 [Other]	SHR127	Bushing, AC Cord (1)
23 [XL] ⚠	QFC1207MA	AC Cord (1)
23 [XA] ⚠	SJA111	AC Cord (1)
23 [Other] ⚠	SJA88	AC Cord (1)
24 [XA] only ⚠	SJS9221	Socket, AC Outlet (1)
25	SJB3005−1	Battery Case (1)
26	SJC7	Terminal, Battery (2)
27	SJC9	Terminal, Battery (2)
28	SGK1569−1	Label, (+) (−) (1)
29	SQK4779	Caution Label (1)
30 [EX]	SGP3490−2A	Rear Panel (1)
30 [EH]	SGP3490−2B	Rear Panel (1)
30 [XL]	SGP3490−4A	Rear Panel (1)
30 [XA]	SGP3490−5A	Rear Panel (1)
31	SJF4431−1	Terminal Board (Speaker) (1)
32	SJF8037−10N	Terminal Board (Input) (1)
33 [XA]	SKUA210X	Bottom Board Ass'y (1)
33 [Other]	SKUA210E	Bottom Board Ass'y (1)
33−1	[SKL245−2]	Foot (4)
34	SHR301	Clamper, lead Wire (2)
SCREWS		
N1 S	XTB3+8BFN	Tapping, (+) 3x8 (3)
N2	XTB3+8BFZ1	Tapping with Detent, (+) 3x8 (3)
N3 S	XTB3+8BFN	Tapping, (+) 3x8 (5)
N4 ○	SNE2095−2	Tapping (2)
N4 Ⓚ	SNE2095−3	Tapping (2)
N5 S	XTB3+8FN	Tapping, (+) 3x8 (2)
N6 S	XTB3+8FZ	Tapping, (+) 3x8 (2)
N7 S	XTB3+16BFN	Tapping, (+) 3x16 (2)
N8 S	XTN3+8B	Tapping, (+) 3x8 (1)
N9	XTBS3+8BFZ1	Tapping with Detent, (+) 3x8 (7)
N10 S	XTB3+8BFN	Tapping, (+) 3x8 (3)
N11 S	XSN26+6BV	(+) 2.6x6 (2)
N12 S	XWA26BFZ	Washer, φ2.6 (2)
ACCESSORIES		
A1	SSA611−1	Loop Antenna (AM) (1)
A2	SMA231	Holder (1)
A3	SMA233−1	Holder (1)
A4	XTN3+10AFZ	Screw (2)
A5	SSA267−1	Cord, Antenna (FM) (1)
A6 [XA] only	SJP5213−1	Plug, AC Adaptor (1)
A7	SJP5215	Plug, AC Adaptor (1)
A8 [XA]	SQF11549	Instruction Book (1)
A8 [Other]	SQF11713	Instruction Book (1)
PACKING PARTS		
P1 ○	SPP699	Polyethlene Bag (1)
P1 Ⓚ	SPP649	Polyethlene Bag (1)
P2 [XL]	SPS3515−3	Pad, Left Side (1)
P2 [Other]	SPS3515−2	Pad, Left Side (1)
P3 [XL]	SPS3517−3	Pad, Right Side (1)
P3 [Other]	SPS3517−2	Pad, Left Side (1)
P4 [XL]	SPG4289	Carton Box (1)
P4 [Other]	SPG4287	Carton Box (1)

Areas
- [EX] is available in Switzerland and Scandinavia.
- [EH] is available in Holland.
- [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- [XL] is available in Australia.

EXPLODED VIEWS



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