

Service Manual

QUARTZ Synthesizer FM/AM Stereo Receiver

SA-C02

[XA], [EB], [E],
[XGH], [XGF]

SA-C02(K)

[EG]



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

* [XA] is available in Asia, Latin America, Middle East and Africa.
* [EB] is available in Belgium.
* [E] and [EG] are available in European and Scandinavia.
* [XGH] is available in Holland.
* [XGF] is available in France.

TECHNICAL 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 x 20W (8Ω)
40 Hz ~ 16 kHz continuous power output both channels driven	2 x 20W (8Ω)
1 kHz continuous power output both channels driven	2 x 21W (8Ω)
Total harmonic distortion	
rated power at 40 Hz ~ 20 kHz	0.3% (8Ω)
rated power at 40 Hz ~ 16 kHz	0.3% (8Ω)
rated power at 1 kHz	0.3% (8Ω)
half power at 40 Hz ~ 20 kHz	0.08% (8Ω)
half power at 1 kHz	0.05% (8Ω)
-26 dB power at 1 kHz	0.1% (8Ω)
50 mW power at 1 kHz	0.1% (8Ω)
Intermodulation distortion	
rated power at 60 Hz : 7 kHz = 4:1, SMPTE, 8	0.3%
Power bandwidth	
both channels driven, -3 dB	5 Hz ~ 50 kHz (8Ω)
Damping factor	30 (8Ω)
Input sensitivity and impedance	
PHONO	2.5mV/47kΩ
AUX, TAPE	150mV/27kΩ
PHONO Maximum input voltage (1 kHz, RMS)	120mV
S/N	
rated power (8Ω)	
PHONO	70 dB (IHF, A : 79 dB)
AUX	90 dB (IHF, A : 97 dB)
-26 dB power (8Ω)	
PHONO	64 dB
AUX	64 dB

50 mW power (8Ω)

PHONO

64 dB

AUX

64 dB

Frequency response

PHONO

RIAA standard curve, ± 1.5 dB
(RIAA standard curve, ± 0.8 dB, REC OUT)

AUX, TAPE

5 Hz ~ 50 kHz (-3 dB)
± 1 dB (20 Hz ~ 20 kHz)

Tone controls

BASS

50 Hz, + 10 dB ~ -10 dB

TREBLE

20 kHz, + 10 dB ~ -10 dB

Loudness control (volume at -30 dB)

50 Hz, + 9 dB

Output voltage and impedance

TAPE REC OUT

150mV

Channel balance, AUX 250 Hz ~ 6,300 Hz

± 1.5 dB

Channel separation, AUX 1kHz

55 dB

Headphones output level and impedance

300mV/330Ω

Load impedance

8Ω ~ 16Ω

FM TUNER SECTION

Frequency range

87.5 ~ 108 MHz

Sensitivity

2.0μV (IHF, usable)

S/N 30 dB

2.0μV (300Ω), 1.3μV (75Ω)

S/N 26 dB

1.8μV (300Ω), 1.2μV (75Ω)

S/N 20 dB

1.6μV (300Ω), 0.9μV (75Ω)

Total harmonic distortion

MONO

0.15%

STEREO

0.3%

S/N

MONO

62 dB (70 dB, IHF)

STEREO

60 dB (68 dB, IHF)

Technics

Matsushita Electric Trading Co., Ltd.

P.O. Box 288, Central Osaka Japan

Frequency response	20 Hz ~ 15 kHz, +1 dB ~ -2 dB	Antenna terminals	300 Ω (balanced) 75 Ω (unbalanced)
	20 Hz ~ 13 kHz, +1.5 dB ~ -1.5 dB		
Alternate channel selectivity	60 dB	AM TUNER SECTION	
Capture ratio	1.0 dB	Frequency range	522 ~ 1611 kHz
Image rejection at 98 MHz	50 dB	Sensitivity (S/N 20 dB)	300 μV/m
IF rejection at 98 MHz	70 dB	Selectivity ± 9 kHz	35 dB
Spurious response rejection at 98 MHz	70 dB	Image rejection at 1,000 kHz	50 dB
AM suppression	55 dB	IF rejection at 1,000 kHz	40 dB
Stereo separation		GENERAL	
1 kHz	45 dB	Power consumption	180W
10 kHz	35 dB	Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Carrier leak		Dimensions (W x H x D)	297 x 74 x 288mm (11-11/16" x 2-29/32" x 11-11/32")
19 kHz	-30 dB	Weight	5.3 kg (11.7 lb.)
38 kHz	-50 dB (-35 dB, IHF, 19/38 kHz)		
Channel balance (250 Hz ~ 6,300 Hz)	± 1.5 dB		
Limiting point	1.2 μV		
Bandwidth			
IF amplifier	180 kHz		
FM demodulator	1000 kHz		

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

VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 40 Hz ~ 20 kHz	2 x 20W (8 Ω)
beide Kanäle angesteuert	
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	2 x 20W (8 Ω)
beide Kanäle angesteuert	
Dauerton-Ausgangsleistung bei 1 kHz	2 x 21W (8 Ω)
beide Kanäle angesteuert	
Gesamtklirrfaktor	
Nennleistung bei 40 Hz ~ 20 kHz	0.3% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0.3% (8 Ω)
Nennleistung bei 1 kHz	0.3% (8 Ω)
halbe Nennleistung bei 40 Hz ~ 20 kHz	0.08% (8 Ω)
halbe Nennleistung bei 1 kHz	0.05% (8 Ω)
-26 dB Leistung bei 1 kHz	0.1% (8 Ω)
50 mW Leistung bei 1 kHz	0.1% (8 Ω)
Intermodulationsfaktor	
Nennleistung bei 60 Hz : 7 kHz = 4 : 1, nach SMPTE, 8 Ω	0.3%
Leistungsbandbreite	
beide Kanäle angesteuert bei -3 dB	5 Hz ~ 50 kHz (8 Ω)
Dämpfungsfaktor	30 (8 Ω)
Eingangsempfindlichkeit und -Impedanz	
PHONO	2.5mV/47k Ω
AUX, TAPE	150mV/27k Ω
Maximale TA-Eingangsspannung (1 kHz, eff.)	120mV
Geräuschabstand	
Nennleistung (8 Ω)	
PHONO	70 dB (nach IHF, A : 79 dB)
AUX	90 dB (nach IHF, A : 97 dB)
-26 dB Leistung (8 Ω)	
PHONO	64 dB
AUX	64 dB
50 mW Leistung (8 Ω)	
PHONO	64 dB
AUX	64 dB
Frequenzgang	
PHONO	RIAA-Standardkurve, ± 1.5 dB (RIAA-Standardkurve, ± 0.8 dB, REC OUT)
AUX, TAPE	5 Hz ~ 50 kHz (-3 dB) ± 1 dB (20 Hz ~ 20 kHz)

Klangregler

Baßregler (BASS)	50 Hz, +10 dB ~ -10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ -10 dB
Gehörliche Lautstärkekorrektur (Loudness)	(bei -30 dB Ausgangsleistung) 50 Hz, +9 dB
Ausgangsspannung und -Impedanz	
Tape Aufnahmeausgang (TAPE REC OUT)	150mV
Kanalabweichung (Aux, 250 Hz ~ 6,300 Hz)	± 1,5 dB
Übersprechdämpfung (Aux, 1 kHz)	55 dB
Kopfhörerpegel und -impedanz	300mV/330 Ω
Lautsprecherimpedanz	8 Ω ~ 16 Ω

UKW-TUNERTEIL

Wellenbereich	87.5 ~ 108 MHz
Eingangsempfindlichkeit	2.0 μV (nutzbar nach IHF)
S/R 30 dB	2.0 μV (300 Ω), 1.3 μV (75 Ω)
S/R 26 dB	1.8 μV (300 Ω), 1.2 μV (75 Ω)
S/R 20 dB	1.6 μV (300 Ω), 0.9 μV (75 Ω)
Gesamtklirrfaktor	
MONO	0.15%
STEREO	0.3%
Geräuschabstand	
MONO	62 dB (70 dB nach IHF)
STEREO	60 dB (68 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+ 1 dB ~ -2dB) 20 Hz ~ 13 kHz (+ 1.5 dB ~ -1.5 dB)
Trennschärfe bei Störsender	60 dB
Einfangverhältnis	1.0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	50 dB
ZF-Dämpfung bei 98 MHz	70 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	70 dB
AM-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	45 dB
10 kHz	35 dB
Trägerrest	
19 kHz	-30 dB
38 kHz	-50 dB
	(-35 dB nach IHF, 19/38kHz)

Kanalabweichung (250 Hz ~ 6,300 Hz)	± 1.5 dB	Trennschärfe ± 9 kHz	35 df
Begrenzereinsatz	1.2µV	Spiegelfrequenz-Dämpfung bei 1,000 kHz	50df
Bandbreite		ZF-Dämpfung bei 1,000 kHz	40 df
ZF-Verstärker	180 kHz	ALLGEMEINE DATEN	
UKW-Demodulator	1000 kHz	Leistungsaufnahme	180V
Antennenanschluß	300Ω (symmetrisch) 75Ω (unsymmetrisch)	Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
AM-TUNERTEIL		Abmessungen (B x H x T)	297 x 74 x 288mm
Wellenbereiche	522 ~ 1611 kHz	Gewicht	5.3 k
Eingangsempfindlichkeit (S/R 20 dB)	300µV/m		

CARACTERISTIQUES TECHNIQUES [DIN 45 500] Sujet à changement sans préavis.

SECTION AMPLIFICATEUR

Puissance de sortie continue de 40 Hz ~ 20 kHz, les deux canaux en circuit	2 x 20W (8Ω)
Puissance de sortie continue de 40 Hz ~ 16 kHz, les deux canaux en circuit	2 x 20W (8Ω)
Puissance de sortie continue à 1 kHz, les deux canaux en circuit	2 x 21W (8Ω)
Distorsion harmonique totale	
à puissance nominale (40 Hz ~ 20 kHz)	0.3% (8Ω)
à puissance nominale (40 Hz ~ 16 kHz)	0.3% (8Ω)
à puissance nominale (1 kHz)	0.3% (8Ω)
à demi-puissance (40 Hz ~ 20 kHz)	0.08% (8Ω)
à demi-puissance (1 kHz)	0.05% (8Ω)
puissance de -26 dB à 1 kHz	0.1% (8Ω)
puissance de 50mW à 1 kHz	0.1% (8Ω)
Distorsion d'intermodulation	
à puissance nominale à 60 Hz : 7 kHz =4:1, SMPTE, 8	0.3%
Réponse de fréquences	
les deux canaux en circuit, -3 dB	5 Hz ~ 50 kHz (8Ω)
Coefficient d'amortissement	30 (8Ω)
Sensibilité et impédance d'entrée	
PHONO	2.5mV/47kΩ
AUX, BANDE (AUX, TAPE)	150mV/27kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)	120mV
Signal/Bruit	
à puissance nominale (8Ω)	
PHONO	70 dB (IHF, A: 79 dB)
AUX (AUX)	90 dB (IHF, A: 97 dB)
puissance de -26 dB (8Ω)	
PHONO	64 dB
AUX (AUX)	64 dB
puissance de 50mW (8Ω)	
PHONO	64 dB
AUX (AUX)	64 dB
Réponse de fréquence	
PHONO	Courbe nominale RIAA, ± 1,5 dB
AUX, BANDE (AUX, TAPE)	(Courbe nominale RIAA, ± 0.8 dB, REC OUT) 5 Hz ~ 50 kHz (-3 dB) ± 1 dB (20 Hz ~ 20 kHz)
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)	50 Hz, + 9 dB
Tension de sortie et impédance	
BANDE SORTIE ENREGISTREMENT (TAPE REC OUT)	
	150mV
Equilibrage des canaux, AUX 250 Hz ~ 6,300 Hz	± 1.5 df
Séparation des canaux, AUX 1 kHz	55 df
Niveau de sortie des casques et impédance	300mV/330Ω
Impédance de charge	8Ω ~ 16Ω

SECTION SYNTONISATEUR FM

Gamme de fréquence	87.5 ~ 108 MHz
Sensibilité	2.0µV (IHF utilisable)
S/B 30 dB	2.0µV (300Ω), 1.3µV (75Ω)
S/B 26 dB	1.8µV (300Ω), 1.2µV (75Ω)
S/B 20 dB	1.6µV (300Ω), 0.9µV (75Ω)
Distorsion harmonique totale	
MONO	0.15%
STEREO	0.3%
Signal/Bruit	
MONO	62 dB (70 dB, IHF)
STEREO	60 dB (68 dB, IHF)
Réponse de fréquence	20 Hz ~ 15 kHz, + 1 dB ~ -2 dB 20 Hz ~ 13 kHz, + 1.5 dB ~ -1.5 dB
Sélectivité alternée par canal	60 dB
Taux de capture	1.0 dB
Rejection d'image à 98 MHz	50 dB
Rejection FI à 98 MHz	70 dB
Rejection de réponse parasite à 98 MHz	70 dB
Suppression AM	55 dB
Séparation stéréophonique	
1kHz	45 dB
10kHz	35 dB
Fuite de porteuse	
19 kHz	-30 dB
38 kHz	-50 dB
Equilibrage de canaux (250 Hz ~ 6,300 Hz)	± 1.5 dB
Point de limite	1.2µV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	300Ω (symétrique) 75Ω (symétrique)

SECTION SYNTONISATEUR AM

Gamme de fréquence	522~1611 kHz
Sensibilité (S/B 20 dB)	300 μ V/m
Sélectivité \pm 9 kHz	35 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

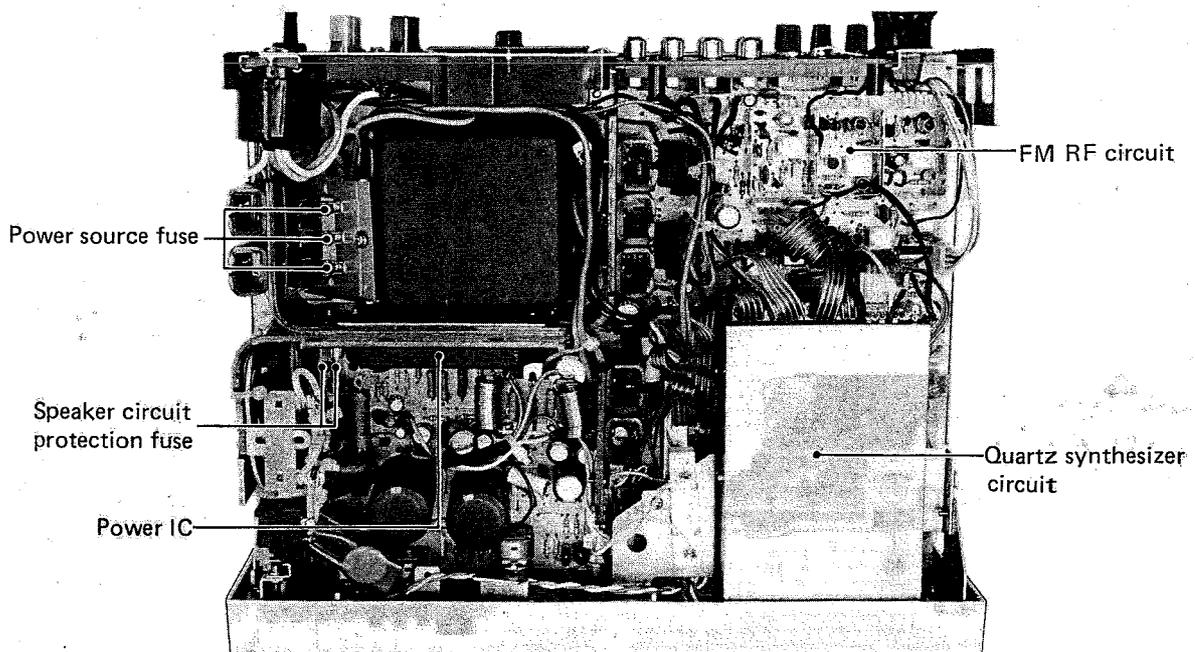
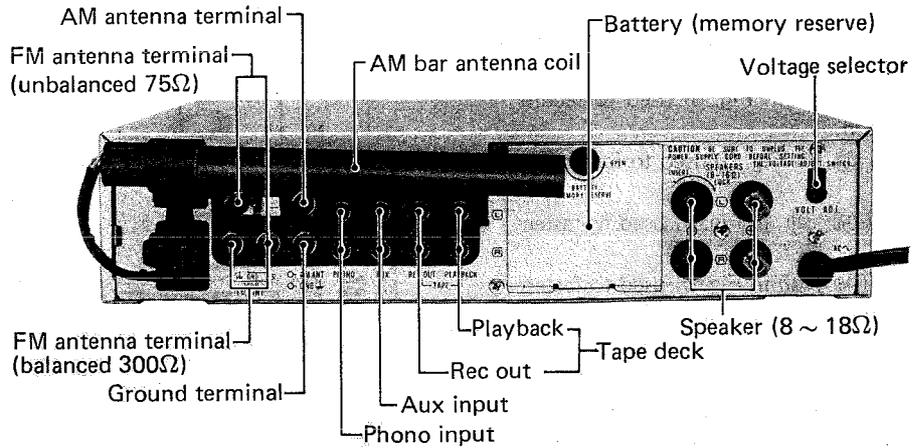
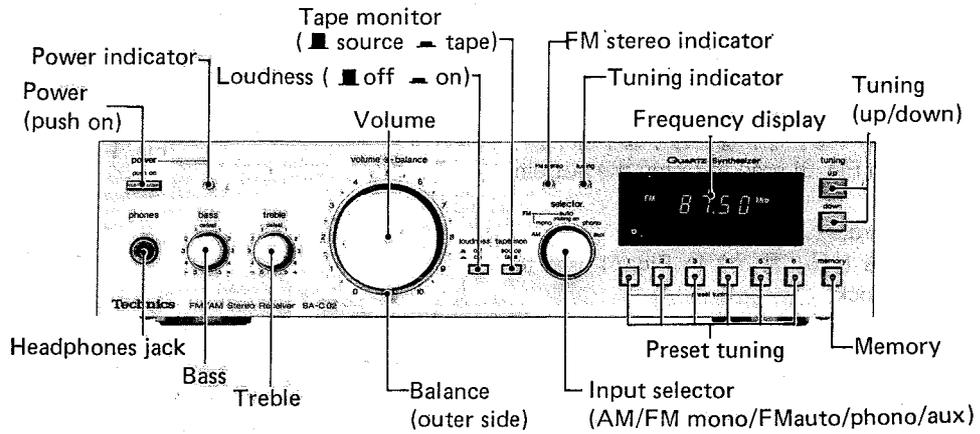
DIVERS

Consommation	180W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L x H x Pr)	297 x 74 x 288 mm
Poids	5.3 kg

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■ LOCATION OF CONTROLS



HOW TO REMOVE THE PRINTED CIRCUIT BOARD

1. Pull out the knobs from front panel.
2. Loosen the 1 setscrew (① in Fig. 1) used to fasten the cabinet cover.
3. Remove the 6 setscrews (②, ③ in Fig. 2 and ⑩, ⑬, ⑳, ㉕ in Fig. 3) used to fasten the cabinet cover.
4. Slide the cabinet cover toward the rear.
5. Remove the 12 setscrews (⑤, ⑦, ⑧, ⑪, ⑫, ⑭, ⑮, ⑰, ⑱, ㉓, ㉔ in Fig. 3) used to fasten the bottom boardd.
6. Remove the bottom board.
7. Remove the 3 setscrews (㉖, ㉘, ㉙ in Fig. 4) used to fasten the synthesizer block.
8. Cut the 2 lead clampers. (㉚, ㉛ in Fig. 4)
9. Unsolder the leadwires (㉜, ㉝ in Fig. 7) from synthesizer block.
10. Pull out the 5 sockets (CP901 ~ CP905 from synthesizer block.
11. Remove the 8 setscrews (④, ⑥, ⑨ in Fig. 3 and ㉗, ㉘ ~ ㉚ in Fig. 4) used to fasten the front panel and power switch.
12. Pull out the 5 sockets (CP101 ~ CP104, CP301) and remove the front panel.
13. Remove the 5 nuts (㉛ ~ ㉞ in Fig. 5) used to secure the jack, volume and switch.
14. Remove the 1 setscrew (㉞ in Fig. 3) used to fasten the fuse holder.
15. Remove the 2 setscrews (⑩, ⑪ in Fig. 3) used to fasten the heatsink.
16. Remove the 2 setscrews (㉟, ㊱ in Fig. 6) used to fasten the earth (ground) terminal and printed circuit board.
17. Pull out the 1 socket (CP201) from core antenna.
18. Unsolder the leadwire (㊲ in Fig. 6) from battery terminal.
19. Cut the 4 leadclampers (㊳ ~ ㊵ in Fig. 6)
20. Remove the printed circuit board obliquely toward the backside.
21. To reassemble, reverse the above procedure and note the followings.

1. For the connecting positions of leadwires and sockets, refer to the printed circuit board wiring view.
2. When checking the set while removing the printed circuit board insulate the power switch and fuse holder by insulating tape.
3. Rearrange the leadwires as shown in Fig. 7.

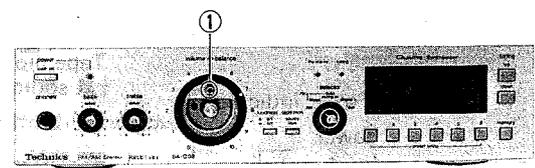


Fig. 1

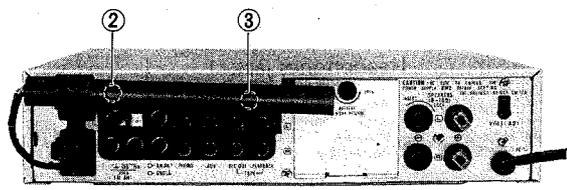


Fig. 2

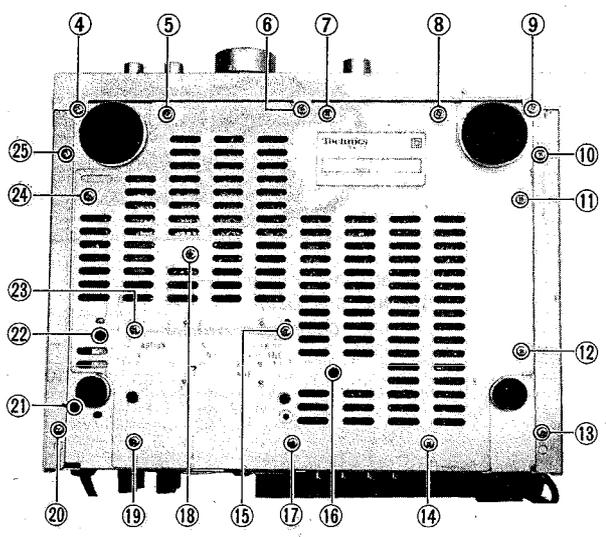


Fig. 3

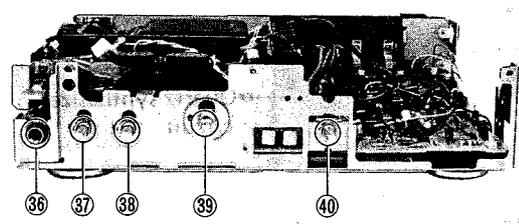


Fig. 5

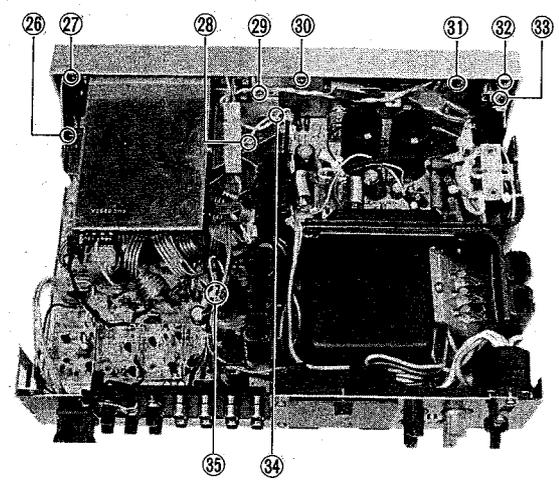


Fig. 4

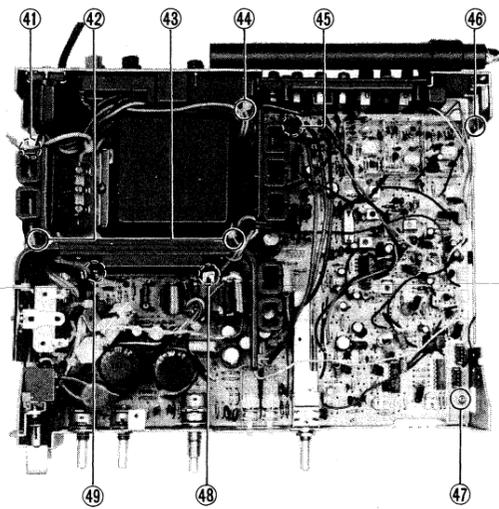


Fig. 6

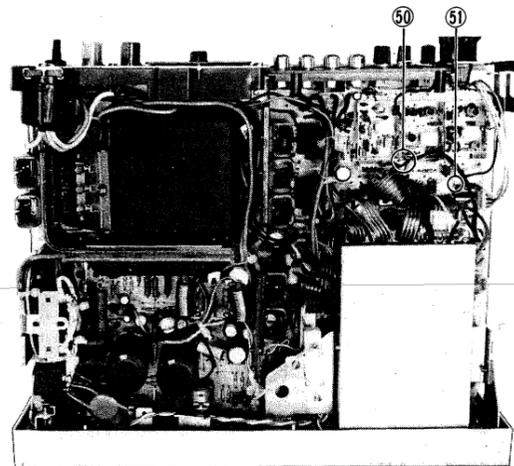


Fig. 7

■ HOW TO REMOVE THE POWER IC

1. Remove the cabinet cover.
2. Remove the synthesizer block.
3. Remove the front panel.
4. Remove the 12 setscrews (5, 7, 8, 11, 12, 14, 15, 17, 18, 19, 23, 24 in Fig. 3) used to fasten the bottom board.

5. Remove the 2 setscrews (48, 49 in Fig. 6) used to fasten the power IC.
6. Unsolder the terminals of power IC. (Refer to the printed circuit board wiring view).

■ HOW TO REPLACE CHIPS

(RESISTOR, CAPACITOR, JUMPER)

1. Remove solder from chip by using solder sucker.
2. Remove chip with tweezers by rotating it while removing solder as shown in fig. 8.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in fig. 9.

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.

Color	Original Parts Name
Black	Chip Resistor
Brown	Chip Capacitor
Black	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 60 W) and tweezers for replacing chips.

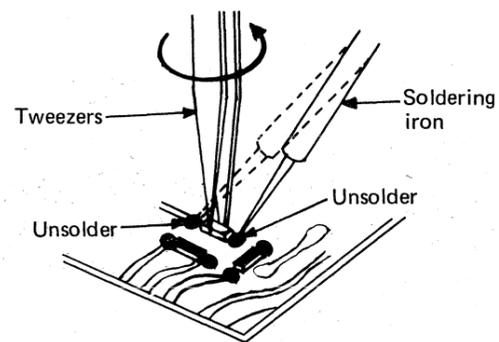


Fig. 8

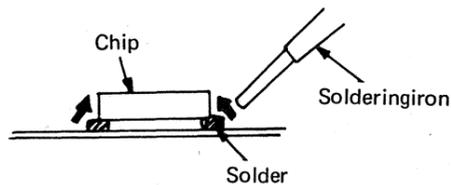
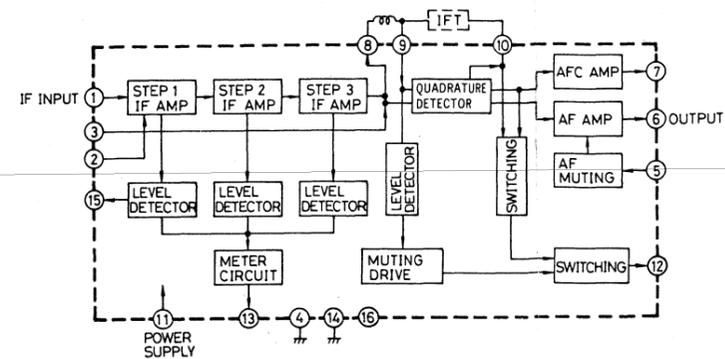


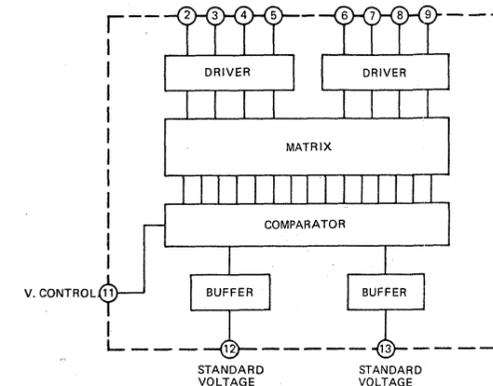
Fig. 9

■ BLOCK DIAGRAM OF IC'S

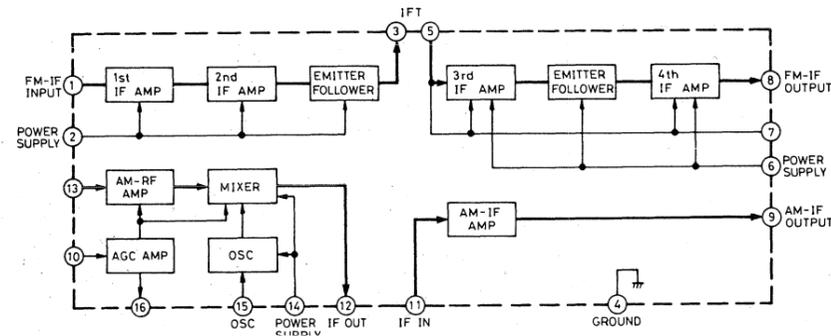
• This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



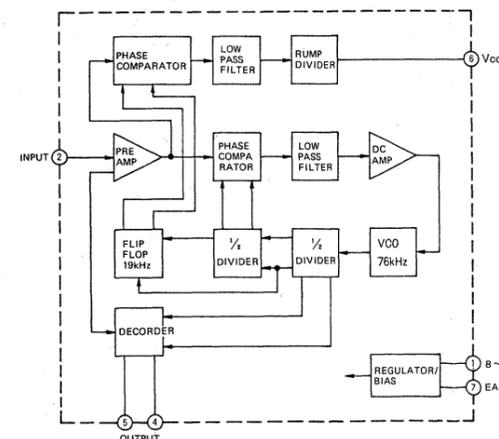
IC101
(AN377SD)
FM IF amplifier & detector



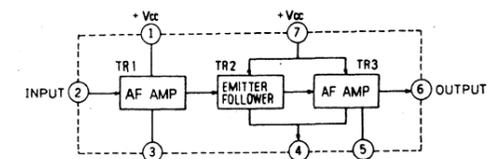
IC102
(RV1UAA170L)
LED driver



IC201
(AN217P)
FM IF amplifier &
AM converter



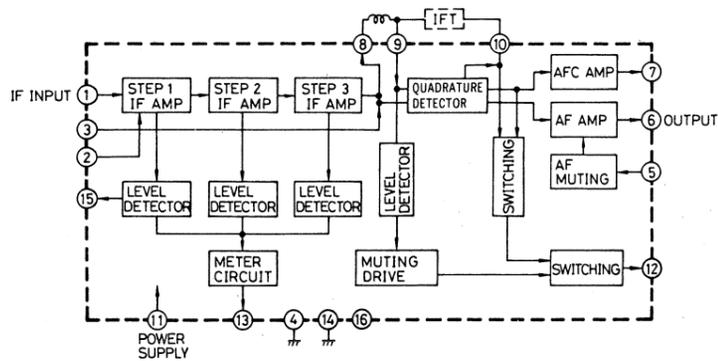
IC301
(RV1LA3350S)
FM MPX



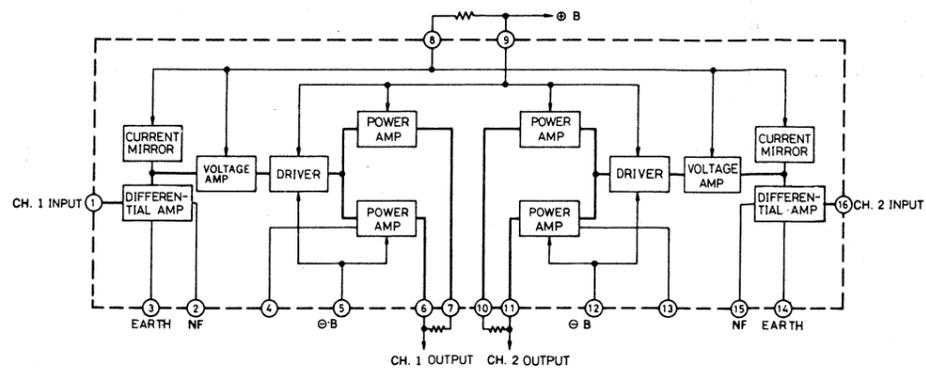
IC401, 402
(SV1TA7129P)
Equalizer amplifier

■ BLOCK DIAGRAM OF IC'S

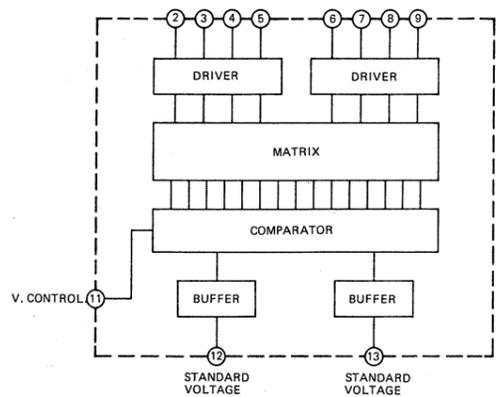
- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



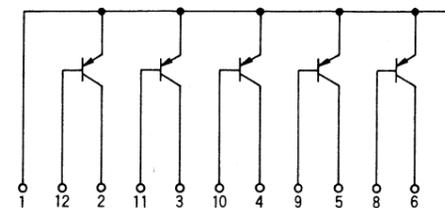
IC101
(AN377SD)
FM IF amplifier & detector



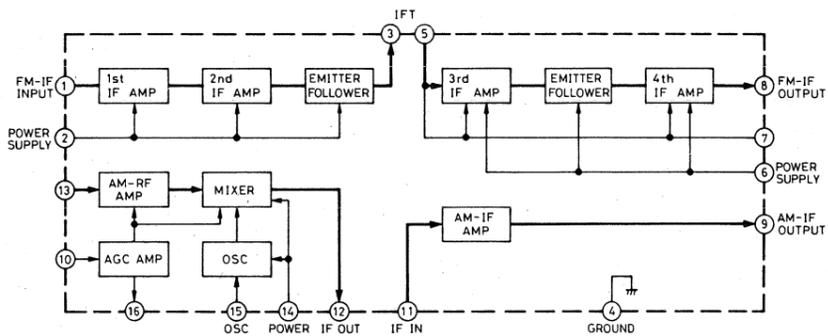
IC601
(SVISTK459K)
2 channel power amplifier



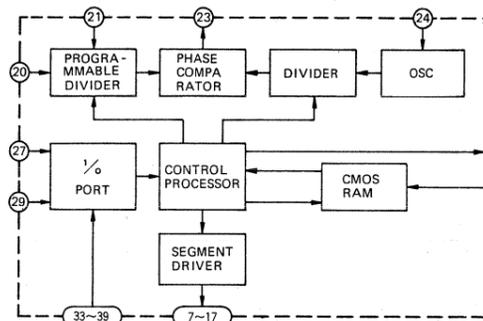
IC102
(RVIUAA170L)
LED driver



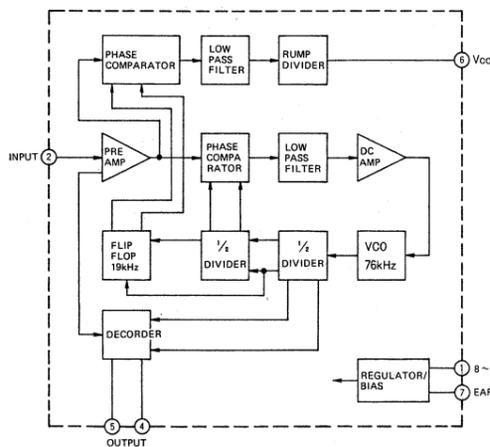
IC901, 902
(RVITA57)
Digit driver



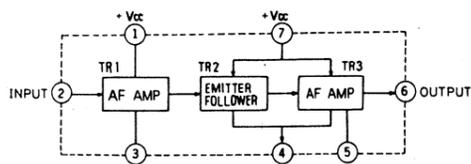
IC201
(AN217P)
FM IF amplifier & AM converter



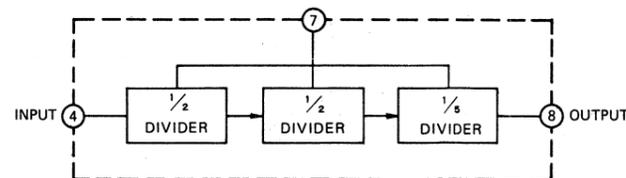
IC903
(MN6045E)
CPU



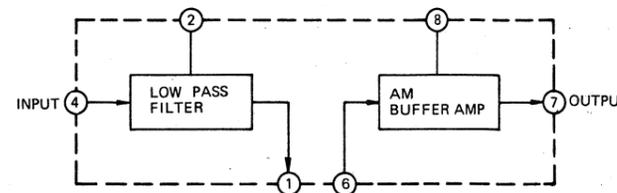
IC301
(RVILA3350S)
FM MPX



IC401, 402
(SVITA7129P)
Equalizer amplifier



IC904
(AN6820)
FM prescaler



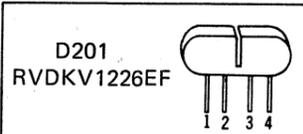
IC905
(AN7910)
AM buffer & low pass filter

PRINTED CIRCUIT BOARD WIRING VIEW

Earth (Ground) Lines
Circuit View on Top of P.C.B.

Note: The main P.C.B. has been changed

Changed part



	OLD	NEW
Part No. of P.C.B.	RUP1016XA	RUP1016XA-1
Contents of changed		Refer to page 9

TERMINAL GUIDE OF TRANSISTOR & IC

<p>2SC1567</p>	<p>AN6820 AN7910</p>	<p>2SK49</p>
<p>2SA812 2SC1623</p>	<p>SVISTK459K</p>	<p>SVITA7129P</p>
<p>RVITA57</p>	<p>2SC1675 2SC1674 2SC828 2SC945 2SC829 2SA733 2SD592 2SC945 2SC1047</p>	
<p>MN6045E</p>	<p>AN377SD RVIUAA170L AN217PBB RVILA3350S</p>	

BATTERIES 4.5V
SUM3(N)x3

IC903
MN6045E
CPU

1	5.8V	21	2.6V
2	5.8V	22	5.8V
3	3.3V	23	2.9V
4	0V	24	2.6V
5	0V	25	2.6V
6	2.4V	26	0V
7	4.4V	27	0V
8	4.4V	28	0V
9	2.6V	29	5.8V
10	3.5V	30	5.8V
11	2.6V	31	0V
12	2.6V	32	5.8V
13	2.6V	33	5.8V
14	3.5V	34	5.8V
15	3.5V	35	0V
16	4.4V	36	5.8V
17	4.4V	37	0V
18	0V	38	0V
19	0V	39	0V
20	2.6V	40	0V

IC905
AN7910
LOW PASS FILTER

1	1.5V
2	33.0V
3	3.0V
4	3.0V
5	0V
6	2.7V
7	4.0V
8	5.5V

IC904
AN6820
PRE SCALER

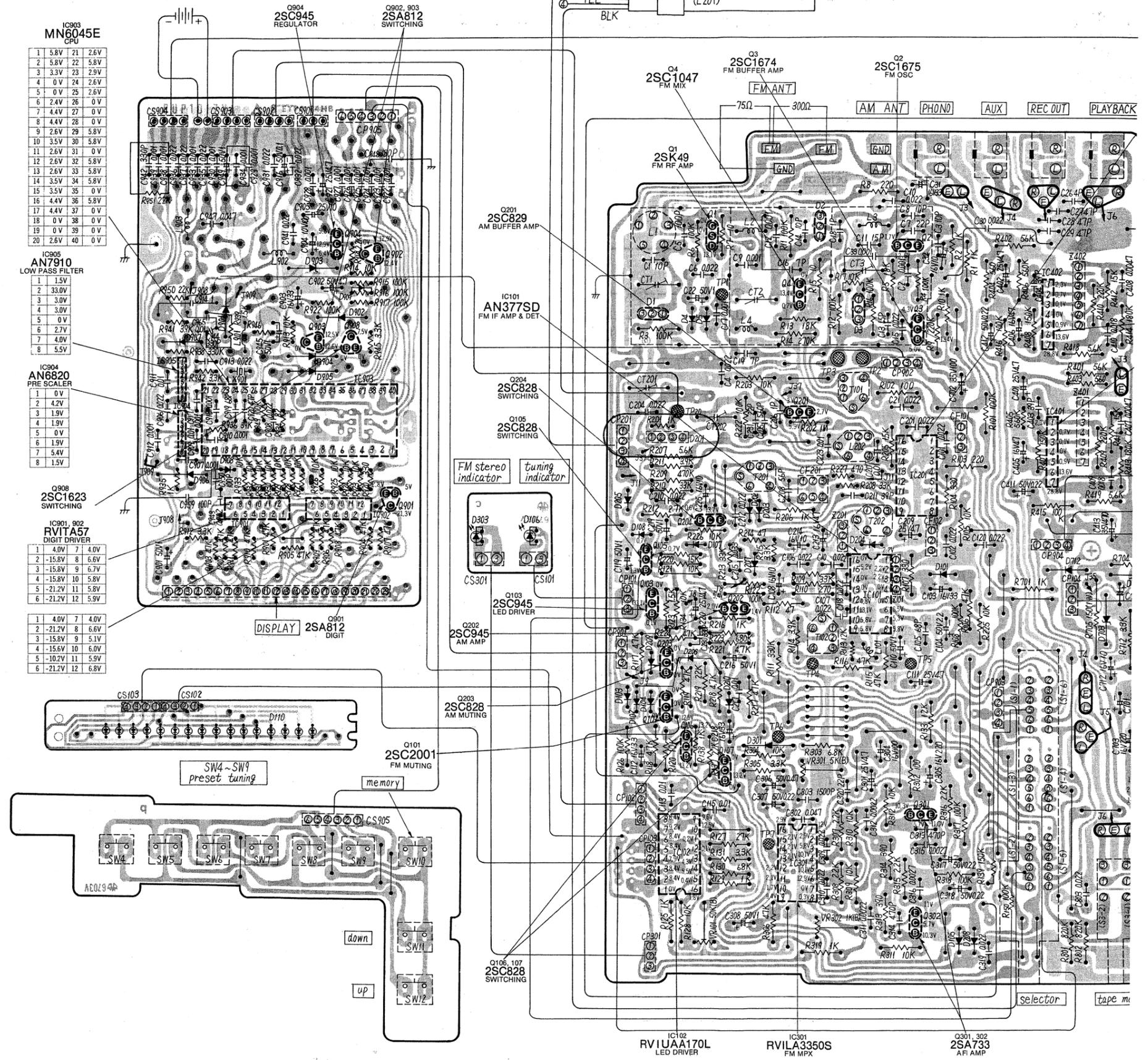
1	0V
2	4.2V
3	1.9V
4	1.9V
5	0V
6	1.9V
7	5.4V
8	1.5V

Q908
2SC1623
SWITCHING

1	4.0V	7	4.0V
2	-15.8V	8	6.6V
3	-15.8V	9	6.7V
4	-15.8V	10	5.8V
5	-21.2V	11	5.8V
6	-21.2V	12	5.9V

IC901, 902
RVITA57
DIGIT DRIVER

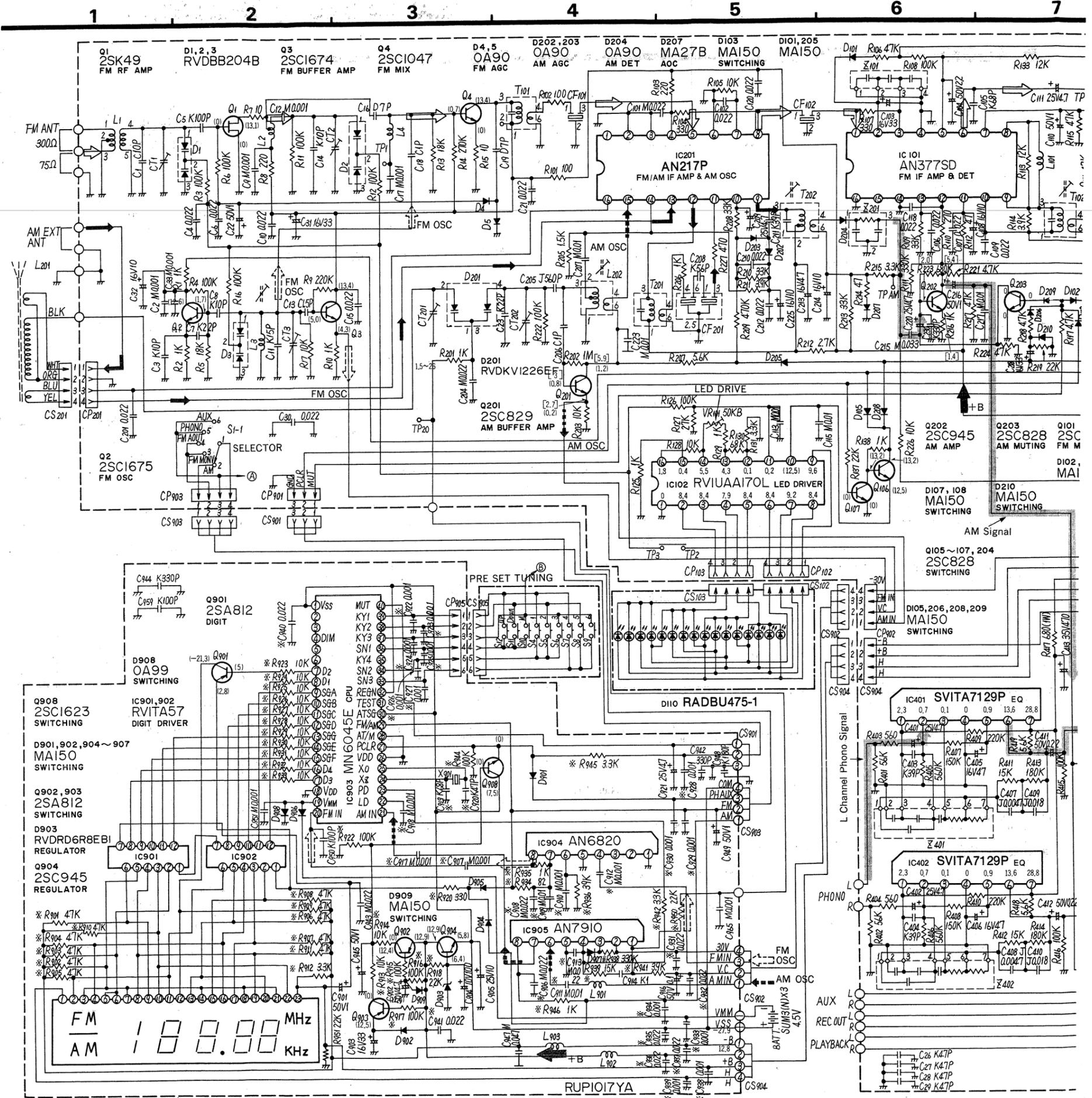
1	4.0V	7	4.0V
2	-21.2V	8	6.6V
3	-15.8V	9	5.1V
4	-15.6V	10	6.0V
5	-10.2V	11	5.9V
6	-21.2V	12	6.8V



SCHEMATIC DIAGRAM.....Model SA-C02/K

Notes:

- S1-1~S1-6: Input selector switch in "AM." position.
- AM ↔ ③ FM mono ↔ ④ FM auto ↔ ⑤ phono ↔ ⑥ aux
- S2: Loudness switch in "off" position.
- S3: Tape monitor switch in "source" position.
- S4~S9: Preset tuning switch.
- S10: Memory switch.
- S11: Tuning down switch.
- S12: Tuning up switch.
- S14: Power source switch in "off" position
- S15: Voltage selector switch in "240V" position.
- Chip resistors and capacitors are shown by (*) mark.
- Indicated voltage 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 monaural or no-signal mode. (○ muting on mode)
 - Figures in [] stand for DC voltage in AM mode.
 - Figures in □ stand for DC voltage in FM signal reception mode.
 - Quartz synthesizer circuit AM: 531kHz, FM:88.00MHz mode.
- Signal lines
 - FM (↔) FM osc, AM (■) AM osc, AF (→)
 - ⊕ B or ⊖ B voltage line.
- This schematic diagram may be modified at any time with the development of new technology.
- △ indicates that only parts specified by the manufacturer be used for safety.



1	(0.8)	11	(0.8)
2	(0)	12	(6.8)
3	(0)	13	(0.7)
4	(8.9)	14	(1.1)
5	(1.1)	15	(1.2)
6	(0)	16	(0.7)
7	(1.1)	17	(1.1)
8	(8.9)	18	(1.5)
9	(6.8)	19	(1.2)
10	(1.1)	20	(6.6)
11	(1.5)	21	(0.7)

1	(2.2)	7	(5.3)
2	(2.9)	8	(5.8)
3	(3.7)	9	(5.8)
4	(0)	10	(4.8)
5	(1.6)	11	(13.1)
6	(0)	12	(4.8)
7	(0)	13	(4.5)
8	(0)	14	(0)
9	(6.5)	15	(5.2)
10	(5.9)	16	(0)
11	(7.0)	17	(0)

1	(12)	10	(1.7)
2	(11.5)	11	(2.1)
3	(2.9)	12	(2.1)
4	(5.8)	13	(2.1)
5	(5.5)	14	(2.2)
6	(10.1)	15	(2.1)
7	(0)	16	(2.1)
8	(10.1)	17	(2.1)
9	(9.6)	18	(2.1)
10	(10.1)	19	(2.1)
11	(9.6)	20	(2.1)
12	(12.9)	21	(2.1)
13	(0.8)	22	(2.1)
14	(0.3)	23	(2.9)
15	(0.3)	24	(6.4)
16	(0.3)	25	(6.4)

1	(5.8)	15	(3.5)	29	(5.8)
2	(5.8)	16	(4.4)	30	(0)
3	(3.3)	17	(4.4)	31	(5.8)
4	(0)	18	(0)	32	(0)
5	(0)	19	(0)	33	(5.8)
6	(2.4)	20	(2.6)	34	(5.8)
7	(4.4)	21	(2.6)	35	(5.8)
8	(4.4)	22	(5.8)	36	(5.8)
9	(2.6)	23	(2.9)	37	(5.8)
10	(3.5)	24	(2.6)	38	(0)
11	(2.6)	25	(2.6)	39	(0)
12	(2.6)	26	(0)	40	(0)
13	(2.6)	27	(0)	41	(0)
14	(3.5)	28	(0)	42	(0)

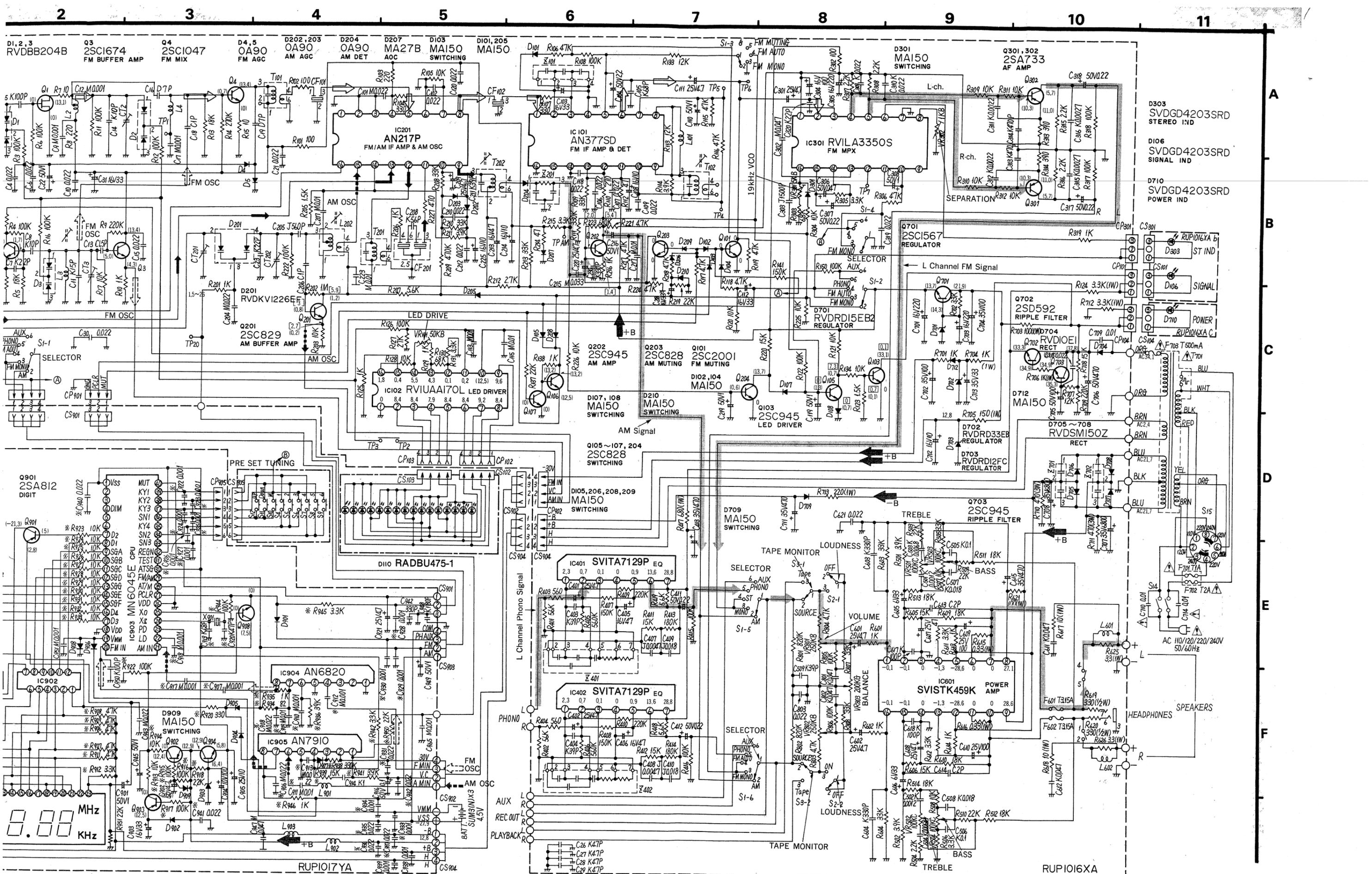
1	(4.0)	7	(4.0)
2	(-15.8)	8	(6.6)
3	(-15.8)	9	(6.7)
4	(-15.8)	10	(5.8)
5	(-21.2)	11	(5.8)
6	(-21.2)	12	(5.9)

1	(4.0)	7	(4.0)
2	(-21.2)	8	(6.6)
3	(-15.8)	9	(5.1)
4	(-15.6)	10	(6.0)
5	(-10.2)	11	(5.9)
6	(-21.2)	12	(6.8)

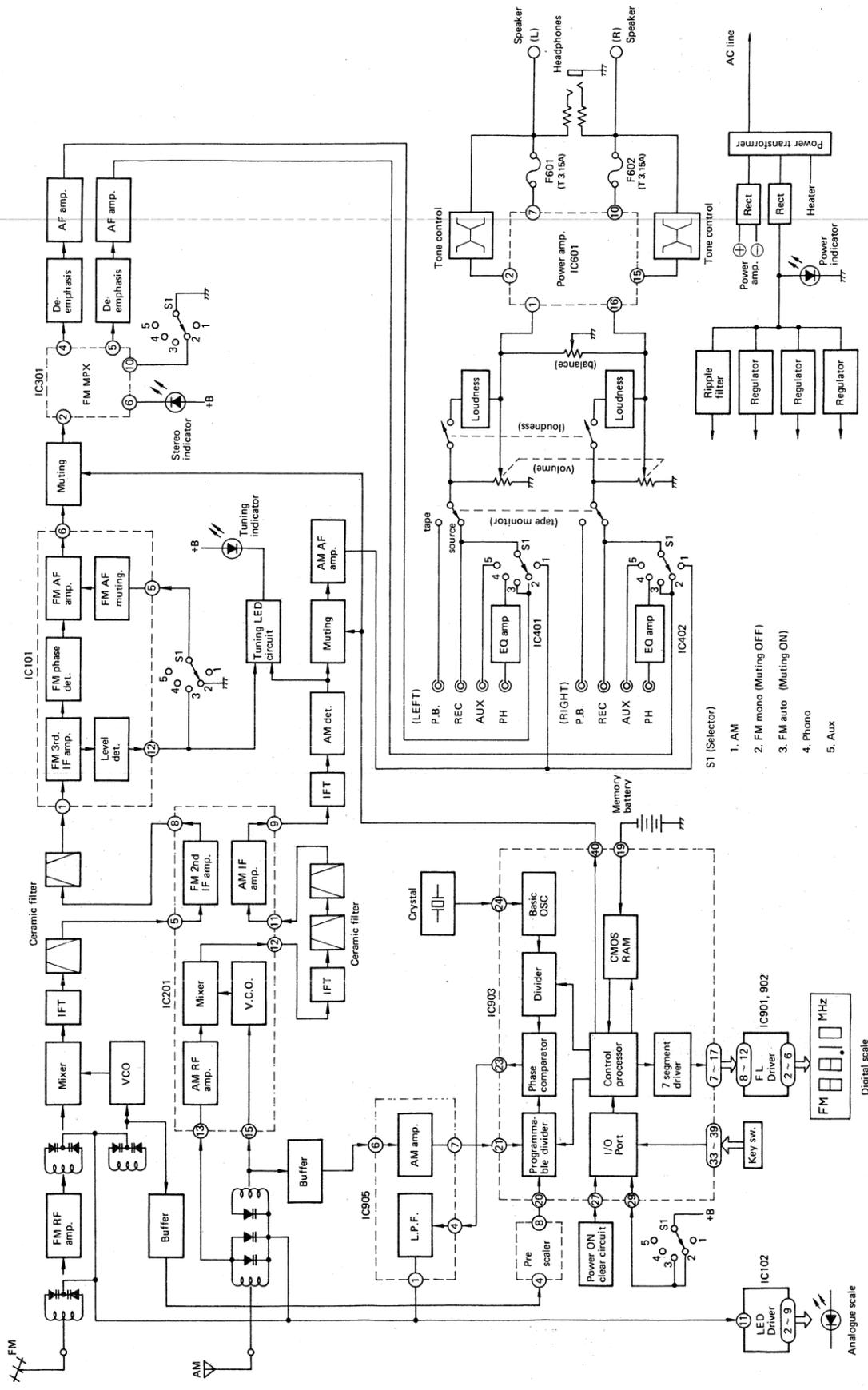
1	(0)	5	(0)
2	(4.2)	6	(0)
3	(1.9)	7	(5.4)
4	(0)	8	(0)
5	(1.9)	9	(1.5)
6	(0)	10	(0)

1	(1.5)	5	(0)
2	(3.0)	6	(2.7)
3	(3.0)	7	(4.0)
4	(3.0)	8	(5.5)

Ref. No.	Product Part No.	Standardized Part No.
Q101, 105 ~107, 203, 204, 703	2SC828	2SC1328
D4, 5, 202~204	OA90	2OA90
D101~105, 107, 108, 205, 206, 208~210, 301, 709, 901, 902, 904~907	MA150	MA162A
D908	OA99	2-OA99
D704	RVD10E1	SM112



BLOCK DIAGRAM



ALIGNMENT INSTRUCTIONS ENGLISH

Notes:
 1. Loudness switch off
 2. Tape monitor switch source
 3. Selector switch AM/FM-mono
 4. 300Ω FM dummy antenna. . . Refer to fig. 11
 5. Maintain line voltage at 110 volts.

SCALE LED ALIGNMENT					
PERPARATION	ADJUSTMENT POINT	REMARKS			
1	VR101	① Unsolder leadwire of between TP3 and TP2 ② Supply DC 6.8 volts between TP3 and earth ① Adjust VR101 so that the 8th and 9th LED illuminate. (Fig. 10) ② Solder leadwire of between TP3 and TP2.			
AM ALIGNMENT					
SIGNAL GENERATOR CONNECTION	FREQUENCY	FREQUENCY DISPLAY SETTING	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS
2	Fashion loop of several turns of wire and radiate signal into loop of receiver.	450kHz (30% Mod. with 400Hz)	Point of non-interference.	T201 (AM 1st IFT) T202 (AM 2nd IFT)	Adjust for maximum reading on VTVM.
3	—	no-signal	531kHz	L202 (AM OSC Coil)	Adjust for 1.45~1.5V reading on DC VTVM.
4	—	no-signal	1602kHz	CT202 (AM OSC Trimmer)	Adjust for 20.0~20.2V reading on DC VTVM. Repeat steps 3 and 4.
5	Fashion loop of several turns of wire and radiate signal into loop of receiver.	549kHz	549kHz	L201 (AM ANT Coil)	Adjust for maximum output.
6	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1503kHz	1503kHz	CT201 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps 5 and 6.
FM IF ALIGNMENT					
7	Connect to FM 300Ω antenna terminal through FM dummy antenna.	10.7MHz	Point of non-interference.	T102 (FM IFT)	Adjust for 60mV reading on DC VTVM.
FM RF ALIGNMENT					
8	—	no-signal	87.50MHz	L3 (FM OSC Coil)	Adjust for 1.5V reading on DC VTVM.
9	—	no-signal	108.00MHz	CT3 (FM OSC Trimmer)	Adjust for 20V reading on DC TVTM. Repeat steps 8 and 9
10	Connect to FM 300Ω antenna terminal through FM dummy antenna.	90MHz (100% Mod. with 1kHz)	90.00MHz	L2 (FM DET Coil) L1 (FM ANT Coil)	• Add weak input so that noise is included in the output wave form.
11	Connect to FM 300Ω antenna terminal through FM dummy antenna.	106MHz (100% Mod. with 1kHz)	106.00MHz	CT2 (FM DET Trimmer) CT1 (FM ANT Trimmer) T101 (FM IFT)	• Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 12) • Repeat steps 10 and 11.
FM MONO DISTORTION ALIGNMENT					
12	Connect to FM 300Ω antenna terminal through FM dummy antenna (60dB)	98 MHz (100% Mod. with 1kHz)	98.00MHz	T102 (FM IFT)	Adjust for minimum distortion of left output.
13	① Repeat steps 7 and 12. ② Confirm that DC balance voltage less than 60mV. ③ Confirm that mono distortion less than 0.3%.				
FM MPX VCO ALIGNMENT					
14	—	no-signal	Point of non-interference	VR301	① Set selector switch to "FM auto". ② Adjust for 19kHz ±30Hz reading on frequency counter.

Not
 15 FM thr ante
 16 Cor ante FM 98N
 An 1. 2.E
 1 ① ②
 Te Wi Er Ge
 2
 3
 4
 5 Te wi Ei Gr
 6 Te wi Ei G

ALIGNMENT INSTRUCTIONS ENGLISH

Notes: 1. Loudness switch off 2. Tape manitor switch source 3. Selector switch AM/FM-mono 4. 300Ω FM dummy antenna. . . Refer to fig. 11 5. Maintain line voltage at 110 volts.						
SCALE LED ALIGNMENT						
PERPARATION		ADJUSTMENT POINT		REMARKS		
① Unsolder leadwire of between TP3 and TP2 ② Supply DC 6.8 volts between TP3 and earth		VR101		① Adjust VR101 so that the 8th and 9th LED illuminate. (Fig. 10) ② Solder leadwire of between TP3 and TP2.		
AM ALIGNMENT						
SIGNAL GENERATOR		FREQUENCY DISPLAY SETTING	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS	
CONNECTION	FREQUENCY					
2 Fashion loop of several turns of wire and radiate signal into loop of receiver.		450kHz (30% Mod. with 400Hz)	Point of non-inter-ferece.	Connect AC VTVM or scope to R215.	T201 (AM 1st IFT) T202 (AM 2nd IFT)	Adjust for maximum reading on VTVM.
3 —		no-signal	531kHz	Connect DC VTVM between TP20 and earth.	L202 (AM OSC Coil)	Adjust for 1.45~1.5V reading on DC VTVM.
4 —		no-signal	1602kHz	Connect DC VTVM between TP20 and earth.	CT202 (AM OSC Trimmer)	Adjust for 20.0~20.2V reading on DC VTVM. Repeat steps 3 and 4.
5 Fashion loop of several turns of wire and radiate signal into loop of receiver.		549kHz	549kHz	Connect AC VTVM or scope to speaker terminals.	L201 (AM ANT Coil)	Adjust for maximum output.
6 Fashion loop of several turns of wire and radiate signal into loop of receiver.		1503kHz	1503kHz	Connect AC VTVM or scope to speaker terminals.	CT201 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps 5 and 6.
FM IF ALIGNMENT						
7 Connect to FM 300Ω antenna terminal through FM dummy antenna.		10.7MHz	Point of non-inter-ferece.	Connect DC VTVM to R116 through coil. (fig. 13)	T102 (FM IFT)	Adjust for 60mV reading on DC VTVM.
FM RF ALIGNMENT						
8 —		no-signal	87.50MHz	Connect DC VTVM between TP3 and earth.	L3 (FM OSC Coil)	Adjust for 1.5V reading on DC VTVM.
9 —		no-signal	108.00MHz	Connect DC VTVM between TP3 and earth.	CT3 (FM OSC Trimmer)	Adjust for 20V reading on DC TVTM. Repeat steps 8 and 9
10 Connect to FM 300Ω antenna terminal through FM dummy antenna.		90MHz (100% Mod. with 1kHz)	90.00MHz	Connect scope to speaker terminals of receiver.	L2 (FM DET Coil) L1 (FM ANT Coil)	• Add weak input so that noise is included in the output wave form. • Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 12) • Repeat steps 10 and 11.
11 Connect to FM 300Ω antenna terminal through FM dummy antenna.		106MHz (100% Mod. with 1kHz)	106.00MHz	Connect scope to sepaker terminals of receiver.	CT2 (FM DET Trimmer) CT1 (FM ANT Trimmer) T101 (FM IFT)	
FM MONO DISTORTION ALIGNMENT						
12 Connect to FM 300Ω antenna terminal through FM dummy antenna (60dB)		98 MHz (100% Mod. with 1kHz)	98.00MHz	Connect distortion meter to speaker terminal of receiver.	T102 (FM IFT)	Adjust for minimum distortion of left output.
① Repeat steps 7 and 12. ② Confirm that DC balance voltage less than 60mV. ③ Confirm that mono distortion less than 0.3%.						
FM MPX VCO ALIGNMENT						
14 —		no-signal	Point of non-inter-ferece	Connect frequency counter to TP7 through resistor (100kΩ).	VR301	① Set selector switch to "FM auto". ② Adjust for 19kHz ±30Hz reading on frequency counter.

Notes: 1. Stereo modulator 2. FM signal generator 3. Selector switch to "FM auto"				
• Connect stereo modulator output to EXT MOD terminal of signal generator. • Pilot signal modulation to "10%". • Frequency approximately 100MHz/Output level to "72dB (IHF)" • Modulation mode to "FM"				
FM SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE & MOD RATE	INDICATOR (AC VTVM)	ADJUSTMENT POINT	REMARKS
FM STEREO SEPARATION ALIGNMENT				
15 FM 300Ω antenna terminals through FM dummy antenna.	(1kHz 30% Modulation) MODE L (and R) Pilot signal to "ON".	Connect VTVM to speaker terminal through low pass filter. (Refer to fig. 14)	VR302	• Frequency display at 98MHz. • Make adjustment so taht when the antenna input is subjected to L modulation (or R modulation). R channel output (or L channel output) becomes minimum.
FM STEREO DISTORTION ALIGNMENT				
16 Connect to FM 300Ω antenna terminal through FM dummy antenna. 98MHz 60 dB.	(1 kHz 100% Modulation) MODE R	Connect distortion meter to speaker terminal of receiver.	T101 (FM IFT)	Adjust for minimum distortion of right output.

ANWEISUNGES FÜR ABGLEICHUNG DEUTSCH

(Für Deutschland)

Anmerkungen: 1. "Loudness"-Schalter off 2. Bandmonitorhalter source 3. Wahlschalter MW/UKW-mono 4. 300 Ohm UKW-Kunstantenne Siehe Abbildung 11 5. Netzspannung auf 110 Volt halten.						
SKALA LED ALIGNMENT						
VORBEREITUNG		JUSTIERPUNKT	ANMERKUNGEN			
① Leitungsdraht zwischen TP3 und TP2 löslöten. ② 6-8 Volt Gleichstrom zwischen TP3 und Erdung zuführen.		VR101	1 VR101 so abstimmen, daß die achte und neunte LED aufleuchten. (Abb.10) 2 Leitungsdraht zwischen TP3 und TP2 anlöten.			
MW-ABLEICH						
SIGNALGENERATOR (MESSENDER)		FREQUENZ-ANZEIGEEIN-STELLUNG	MEßGERÄT (VTVM oder OSZILLOSKOP) (VERZERRUNGSMESSER)	EINSTELLUNGS-PUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
2 Testschleife aus mehreren Windungen eines Drahtes fertigen, und Signal in die Empfangsschleife des Gerätes senden.		450kHz (30% moduliert bei 400Hz)	Störungsfreie Stelle	Das Röhrenvoltmeter (VTVM) oder Oszilloskop mit R215 (Testpunkt) verbinden.	T201 (MW erster ZFT) T202 (MW zweiter ZFT)	Auf maximalen Anzeigewert des Röhrenvoltmeters (VTVM) einstellen.
3 —		Kein Signal	531 kHz	Das Gleichstromröhrenvoltmeter zwischen TP20 (Testpunkt) und Erde verbinden.	L203 (MW-Schwingspule)	Auf 1.45 ~ 1.5V auf dem Gleichstromröhrenvoltmeter einstellen.
4 —		Kein Signal	1602 kHz	Das Gleichstromröhrenvoltmeter zwischen TP20 und Erde verbinden.	CT202 (MW-Schwingertrimmer)	Auf 20.0~20.2V auf dem Gleichstromröhrenvoltmeter einstellen. Die Schritte 3 und 4 wiederholen.
5 Testschleife aus mehreren windungen eines Drahtes fertigen und Signal in die Eingangsschleife des Gerätes senden.		549 kHz	549 kHz	Wechselstrom-Röhrenvoltmeter oder Oszillographen an Lautsprecheranschlüsse anschließen.	L201 (MW-Schwingertrimmer)	Auf maximalen Ausgang einstellen.
6 Testschleife aus mehreren Windungen eines Drahtes fertigen, und Signal in die Eingangsschleife des Gerätes senden.		1503kHz	1503kHz	Wechsestrom-Röhrenvoltmeter oder Oszillographen an Lautsprecheranschlüsse anschließen.	CT201 (MW-Antennentrimmer)	Auf maximalen Ausgang einstellen. Die Schritte 5 und 6 wiederholen.

SIGNALGENERATOR (MESSENDER)		* FREQUENZ-ANZEIGEEIN- STELLUNG	MEßGERÄT (VTVM oder OSZILLOSKOP) (VERZERRUNGSMESSER)	EINSTELLUNGS- PUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
UKW-ZF-ABGLEICH						
7	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	10.7MHz	Störungsfreie Stelle	Gleichstrom-Röhrenvoltmeter durch Spule an R116 anschließen. (Abb. 13)	T102 (UKW-ZFT)	Auf 60 mV auf dem Gleichstromröhrenvoltmeter einstellen.
UKW-HF-ABGLEICH						
8	—	Kein Signal	87.50MHz	Das Gleichstromröhrenvoltmeter zwischen TP3 und Erde verbinden.	L3 (UKW-Schwingsplue)	Auf 1,5 V auf dem Gleichstromröhrenvoltmeter einstellen.
9	—	Kein Signal	108.00MHz	Das Gleichstromröhrenvoltmeter zwischen TP3 und Erde verbinden.	CT3 (UKW-Schwingertrimmer)	Auf 20 V auf dem Gleichstromröhrenvoltmeter einstellen. Die Schritte 8 und 9 wiederholen.
10	Durch UKW-Antennenersatzstromkreis an den FM 300Ω - Antennenanschluß anschließen.	90MHz (100% moduliert bei 1kHz)	90.00MHz	Oszillographen an die Lautsprecherausgänge des Receivers anschließen.	L2 (UKW-Detektor-spule) L1 (UKW-Antennen-spule)	Schwache Eingabe hinzufügen, so daß in der Ausgangswellenform Rauschen enthalten ist. So abgleichen, daß die Ausgangswellenform vertikal symmetrisch ist. (Abb. 12) Schritte 10 und 11 wiederholen.
11	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	106.0MHz (100% moduliert bei 1kHz)	106.00MHz	Oszillographen an die Lautsprecherausgänge des Receivers anschließen.	CT2 (UKW-Detektortrimmer) CT1 (UKW-Antennentrimmer) T101 (UKW-ZFT)	
ABGLEICH DER UKW-MONO-VERZERRUNG T101 (UKW-ZFT)						
12	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	98MHz (100% moduliert bei 1kHz)	98.00MHz	Klirrfaktormesser an die Lautsprecherausgänge des Receivers anschließen.	T102 (UKW-ZFT)	Auf minimalste Verzerrung des linken Ausgangs einstellen.
13	① Schritte 7 und 12 wiederholen. ② Überprüfen, daß die Gleichstrom-Balancespannung weniger als 60mV beträgt. ③ Überprüfen, daß die Mono-Verzerrung weniger als 0,3% beträgt.					
UKW-MPX VCO-ABGLEICH						
14	—	Kein Signal	Störungsfreie Stelle	Den Frequenzzähler über Widerstand (100 kOhm) mit TP7 (Testpunkt) verbinden.	VR301	① Den Wahlschalter auf "FM auto" stellen. ② Auf 19kHz±30Hz auf dem Frequenzzähler einstellen.
Anmerkungen: 1. Stereo-Modulator • Den Stereo-Modulatorausgang mit den EXT MOD Klemmen des Signalegenerators verbinden. Pilotsignalmodulation auf 10% bringen.. 2. UKW-Signalgenerator • Frequenzwert ungefähr 100MHz/Ausgangsspegel auf 72dB (IHF) 3. Wahlschalter auf "FM auto" • Modulationsart auf FM (UKW)						
UKW SIGNAL-GENERATORVERBINDUNG	STEREO-MODULATORBETRIEBSART UND RATEN	MEßGERÄT (WECHSELSTROMRÖHREN-VOLTMETER)		EIN- STELLUNGSPUKTE	BEMERKUNGEN	
UKW-STEREO-KANALTRENNUNGSABGLEICH						
15	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	(1kHz 30% moduliert) Betriebsart L (und R) Pilotsignal "ON" eingeschaltet.	Das Voltmeter über den "low pass" Filter mit den Ausgangsklemmen verbinden. (Siehe Abb. 14)	VR302	• Frequenzanzeige auf 98MHz. • Den Abgleich so vornehmen, daß bei Eingabe von Modulation in den linken Kanal, der rechte Kanal minimalen Ausgang anzeigt. Und entsprechender Weise im Umgekehrten Fall.	
UKW-STEREO-VERZERRUNGSABGLEICH						
16	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden. 98MHz 60dB	(1kHz 100% moduliert) Betriebs art R	Den Verzerrungsmesser mit den Ausgangsklemmen des Gerätes verbinden.	T101 (UKW ZFT)	Auf minimalste Verzerrung des rechten Ausgangs einstellen.	

INSTRUCTIONS D'ALIGNEMENT — FRANÇAIS

- Notes:**
 1. Compensateur physiologique Arrêt
 2. Commutateur de contrôle de bande Source
 3. Commutateur de sélection AM/FM-mono
 4. Antenne fictive FM de 300Ω Voir Fig. 11
 5. Maintenir la ligne sous tension à 110 volts.

ALIGNEMENT DES LED D'ECHELLE

PREPARATION	POINT DE REGLAGE	REMARQUES
1. Démonter le fil entre TP3 et TP2. 2. Alimenter 6.8V CC centre TP3 et la terre.	VR101	① Régler VR101 de telle sorte que les 8ème et 9ème LED s'allument. (Fig.10) ② Souder le fil entre TP3 et TP3.

ALIGNEMENT AM

GENERATEUR DE SIGNAL		REGLAGE DE L'AFFICHAGE DE FREQUENCE	TEMOIN (VTVM or OSCILLOSCOPE) (COMPTEUR DE DISTORSTION)	POINTS DE REGLAGE	REMARQUES
CONNEXION	FREQUENCE				
Effectuer des boucles de plusieurs tours de fil et passer le signal dans la boucle du récepteur	450kHz (30% de mod. avec 400Hz)	Points de non-interférence	Brancher le VTVM CA ou l'oscilloscope à R215	T201 (AM1er IFT) T202 (AM 2eme IFT)	Régler sur la lecture maximale du VTVM
—	Non-signal	531kHz	Brancher le VTVM CC entre TP20 et la terre	L203 (bobine AM OSC)	Régler la lecture du VTVM CC sur 1.45~1.5 V
—	Non-signal	1602kHz	Brancher le VTVM CC entre TP20 et la terre	CT202 (Trimmer AM OSC)	Régler la lecture du VTVM CC sur 20.0~20.2V. Refaire les étapes 3 et 4.
Effectuer des boucles de plusieurs tours de fil et passer le signal dans la boucle du récepteur.	549kHz	549kHz	Brancher un VTVM CA ou un oscilloscope aux bornes du haut-parleur	L201 (bobine AM ANT)	Régler sur la sortie maximale.
Effectuer des boucles de plusieurs tours de fils et passer le signal dans la boucle du récepteur.	1503kHz	1503kHz	Brancher un VTVM CA ou un oscilloscope aux bornes du haut-parleur	CT201 (Trimmer AM ANT)	Régler sur la sortie maximale. Refaire les étapes 5 et 6.

ALIGNEMENT DE FM IF

Brancher la borne de l'antenne FM 300Ω par l'antenne fictive FM.	10,7MHz	Point de non-interférence	Brancher un VTVM CC à R116 par la bobine (Fig. 13)	T102 (FM IFT)	Régler la lecture du VTVM CC sur 60mV.
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ALIGNEMENT DE FM RF

—	Non-signal	87,50MHz	Brancher le VTVM CC entre TP3 et la terre	L3 (bobine FM OSC)	Régler la lecture du VTVM CC sur 1.5V
—	Non-signal	108,00MHz	Brancher la VTVM CC entre TP3 et la terre	CT3 (Trimmer FM OSC)	Régler la lecture du VTVM CC sur 20V. Refaire les étapes 8 et 9
Brancher à la borne de l'antenne FM 300Ω par une antenne fictive FM.	90MHz (100% de mod. avec 1kHz)	90,00MHz	Brancher l'oscilloscope aux bornes du haut-parleur du récepteur.	L2 (bobine FM DET) L1 (bobine FM ANT)	<ul style="list-style-type: none"> Alimenter une entrée faible de telle sorte que le parasite soit compris dans la forme d'ondes de sortie. Effectuer le réglage de telle sorte que la forme d'ondes de sortie soit verticalement symétrique (Fig. 12) Refaire les étapes 10 et 11.
Brancher la borne de l'antenne FM 300Ω par l'antenne fictive FM.	106,0MHz (100% de mod. avec 1kHz)	106,00MHz	Brancher l'oscilloscope aux bornes du haut-parleur du récepteur.	CT2(Trimmer FM DET) CT1(Trimmer FM ANT) T101(FM IFT)	

ALIGNEMENT DE LA DISTORSION DE FM MONO

Brancher la borne de l'antenne FM 300Ω par l'antenne fictive FM (60dB)	98MHz (100% de mod. avec 1kHz)	98,00MHz	Brancher le compteur de distorsion à la borne du haut-parleur du récepteur.	T102 (FM IFT)	Régler sur la distorsion minimale de la sortie gauche
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- ① Refaire les étapes 7 et 12.
 ② Vérifier que la tension d'équilibre CC soit inférieure à 60mV.
 ③ Vérifier que la distorsion mono soit inférieure à 0,3%.

ALIGNEMENT DU FM MPX VCO						
14	—	Non-signal	Point de non-interférence	Brancher le fréquencemètre à TP7 par la résistance (100k Ω)	VR301	① Placer le commutateur de sélection sur "FM auto" ② Régler la lecture du fréquencemètre sur 19kHz \pm 30Hz
Notes: 1. Modulateur stéréo					• Brancher la sortie du modulateur stéréo à la borne EXT MOD du générateur de signal. • Modulation du signal pilote à "10%"	
2. Générateur de signal FM					• Régler le niveau approximatif de fréquence 100MHz/sortie sur "72dB (IHF)"	
3. Commutateur de sélection sur "FM auto"					• Mode de modulation sur "FM"	
CONNEXION DU GÉNÉRATEUR DE SIGNAL FM	MODE & TAUX DE MOD. DU MODULATEUR STEREO	TEMOIN (VTVM CA)	POINT DE REGLAGE	REMARQUES		
ALIGNEMENT DE LA SEPARATION DE FM STEREO						
15	Brancher les bornes d'antenne FM 300 Ω par l'antenne fictive FM	(1kHz modulation de 30%) signal pilote Model L (et R) sur "ON".	Brancher le VTVM à la borne de sortie par le filtre passe bas (Voir la Fig. 14)	VR302	• Affichage de la fréquence de 98MHz. • Régler de telle sorte que l'entrée de l'antenne soit sujette à la modulation L (ou modulation R). La sortie du canal R (ou la sortie du canal L) devient minimale.	
ALIGNEMENT DE LA DISTORSION FM STEREO						
16	Brancher la borne de l'antenne FM 300 Ω par l'antenne fictive FM. 98MHz, 60dB	(1kHz, modulation de 30%) MODE R	Brancher le compteur de distorsion à la borne de sortie du récepteur.	T101 (FM IFT)	Régler sur la distorsion minimale de la sortie droite.	

■ ALIGNMENT POINTS

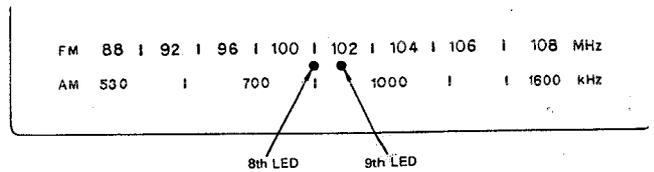
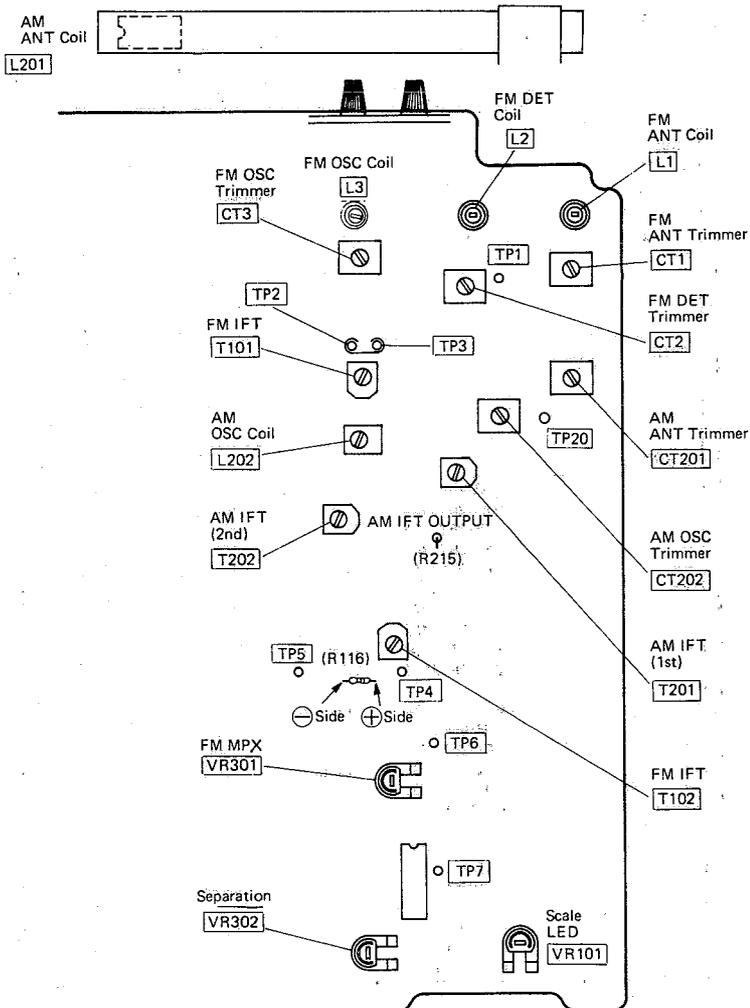


Fig. 10

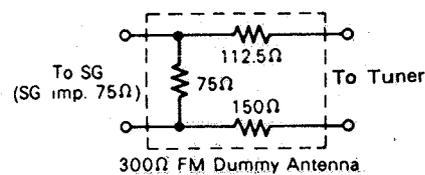


Fig. 11

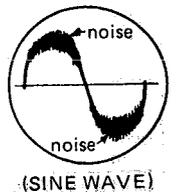


Fig. 12

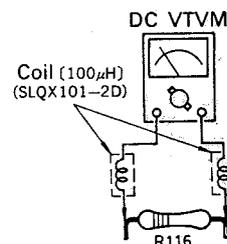


Fig. 13

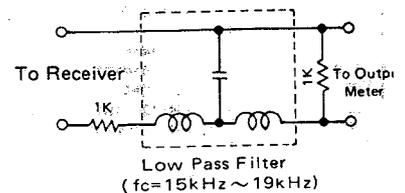


Fig. 14

REPLACEMENT PARTS LIST (Electric Parts)

- Notes:** 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts order.
2. Δ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC101	AN377SD	IC, FM IF Amplifier & AM Converter
IC102	RVIUAA170L	IC, LED Driver
IC201	AN217P-BB	IC, FM, AM IF Amplifier & AM Oscillator
IC301	RVILA3350S	IC, FM Multiplex
IC401, 402	SVITA7129P	IC, Equalizer Amplifier
IC601	SVISTK459K	IC, Power Amplifier
IC901, 902	RVITA57	IC, Digit Driver
IC903	MN6045E	IC, CPU
IC904	AN6820	IC, FM Pre Scaler
IC905	AN7910	IC, AM Buffer Amplifier & Low Pass Filter
TRANSISTOR		
Q1	2SK49-H1	Transistor, FM RF Amplifier (Use in ranks F1 or F2)
Q2	2SC1675-L1	Transistor, FM Oscillator (Use in ranks M1 or M2)
Q3	2SC1674-M	Transistor, Buffer Amplifier
Q4	2SC1047-C	Transistor, FM Mixer
Q101	2SC2001-K	Transistor, FM Muting
Q105, 106, 107, 203, 204, Q302	2SC1328-T	Transistor, FM Muting, Switching AM Muting & Ripple Filter
Q201	2SA733-P1	Transistor, LED Driver, AM Amplifier (Use in ranks P2 or Q1)
Q301, 302	2SC829-C	Transistor, Buffer Amplifier
Q701	2SA733-P1	Transistor, AF Amplifier
Q702	2SC1567-Q	Transistor, Regulator
	2SD592AE-R	Transistor, Ripple Filter
Q901, 902, 903	2SA812	Transistor, Digit, switching
Q103, 202, 703, 904	2SC945-P2	Transistor, Regulator, Ripple Filter
Q908	2SC1623	Transistor, Switching
DIODES		
D1, 2, 3	RVDBB204B	Diode, FM Variable Capacitor
D4, 5, 202~204	20A90	Diode, FM/AM AGC, AM Detector
D101 ~ 105, 107, 108, 205, 206, 208 ~ 210, 301, 709, 712, 901, 902, 904~909	MA162A	Diode, Switching
D106, 303, 710	SVDGD4203SRD	Light Emitting Diode, Tuning, Stereo & Power Indicator
D201	RVDKV1226EF	Diode, AM Variable Capacitor
D207	MA27B1	Diode Operation Compensator
D701	RVDRD15EB2	Diode, Regulator
D702	RVDRD33EB2	Diode, Regulator
D703	RVDRD12FC	Diode, Regulator
D704	SM112	Diode, Rectifier
D705 ~ 708	Δ RVDSM1502	Diode, Rectifier
D903	RVDRD6R8EB1	Diode, Regulator
D110	Δ RADBU475-1	Light Emitting Diode, Frequency Scale
COILS and TRANSFORMERS		
L1	SLA4N2-O	Coil, FM Antenna
L2	RLA4N8-O	Coil, FM Tuning
L3	RLO4N126-O	Coil, FM Oscillator
L4	RLQY30SI-O	Coil, IF Trap
L101	RLQX1801-K	Coil, FM Detector
L201	RLF2E45-O	Coil, AM Antenna
L202	RLO2M25-K	Coil, AM Oscillator
L601, 602	RLQY21G2-O	Coil, Choke
L901	RLQZ4701-D	Coil, Choke
L902, 903	RLQ1014-Y	Coil, Choke
T101	RLI4M101	Transformer, FM IF
T102	RLI4M101	Transformer, FM IF
T201	RLI2M213	Transformer, AM IF
T202	RLI2M401	Transformer, AM IF
T701	Δ RLT5M31-P	Power Transformer
CERAMIC FILTERS		
CF101, 102	RVFSFE107MKA	Ceramic Filter (FM 10.7MHz)

Ref. No.	Part No.	Part Name & Description
CF201	RVFSFZ450B7	Ceramic Filter (AM450kHz)
CRYSTAL		
X1	RVCA11520NZN	Crystal, 11.52 MHz
COMPONENT COMBINATIONS		
Z101	EXF3SL04	Component Combination
Z201	EXAF203Z471R	Component Combination
Z401, 402	EXA6SD01C	Component Combination
Z701, 702	RXAF103P22HD	Component Combination
VARIABLE RESISTORS		
VR101	EVNK4AA00B54	LED Adjustment, 50k Ω (B)
VR301	EVNM4AA00B53	MPX Adjustment, 5k Ω (B)
VR302	EVNK4AA00B13	Separation Adjustment, 1k Ω (B)
VR501 ~ 504	EWKGA045C15	Bass & Treble Control, 100k Ω (C)
VR801 ~ 803	EWKFRAF22382	Volume & Balance Control, 200k Ω (G)
VARIABLE CAPACITORS		
CT1, 2, 3, 201, 202	RCVIPX10AGS	Trimmer
FUSES		
F601, 602	Δ XBA2C31TRO	Fuse, (250V T3.15A), Speaker Circuit
F701	Δ XBA2C10TRO	Fuse, (250V T1A), Power Source
F702	Δ XBA2C20TRO	Fuse (250V T2A), Power Source
F703	Δ XBA2C05TRO	Fuse (250V T500mA), Power Source
SWITCHES		
S1	RSR5F01Z-J	Switch, Selector
S2, 3	RSH2B03Z-J	Switch, Loudness, Tape Monitor
S4 ~ S10	RSH1A06Z-H	Switch, Preset, Memory
S11, 12	RSH1A06Y-H	Switch, Tuning
S14	RSH1B04Z-S	Switch, Power
S15	Δ ESE37208	Switch, Voltage Selector
DISPALY TUBE		
	RAD7BT01S	Display, Frequency
RESISTORS		
R1, 2	ERD25FJ102	Carbon, 1k Ω , 1/4W, \pm 5%
R3, 4	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%
R5	ERD25TJ183	Carbon, 18k Ω , 1/4W, \pm 5%
R6	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%
R7	ERD25FJ100	Carbon, 10 Ω , 1/4W, \pm 5%
R8	ERD25FJ221	Carbon, 220 Ω , 1/4W, \pm 5%
R9	ERD25TJ224	Carbon, 220k Ω , 1/4W, \pm 5%
R10	ERD25FJ102	Carbon, 1k Ω , 1/4W, \pm 5%
R11, 12	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%
R13	ERD25TJ183	Carbon, 18k Ω , 1/4W, \pm 5%
R14	ERD25TJ274	Carbon, 270k Ω , 1/4W, \pm 5%
R15	ERD25FJ100	Carbon, 10 Ω , 1/4W, \pm 5%
R16	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%
R17	ERD25FJ103	Carbon, 10k Ω , 1/4W, \pm 5%
R101, 102	ERD25FJ101	Carbon, 100 Ω , 1/4W, \pm 5%
R103	ERD25FJ221	Carbon, 220 Ω , 1/4W, \pm 5%
R104	ERD25FJ331	Carbon, 330 Ω , 1/4W, \pm 5%
R105	ERD25FJ103	Carbon, 10k Ω , 1/4W, \pm 5%
R106	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%
R107	ERD25FJ331	Carbon, 330 Ω , 1/4W, \pm 5%
R108	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%
R109	ERD25TJ333	Carbon, 33k Ω , 1/4W, \pm 5%
R110	ERD25FJ271	Carbon, 270 Ω , 1/4W, \pm 5%

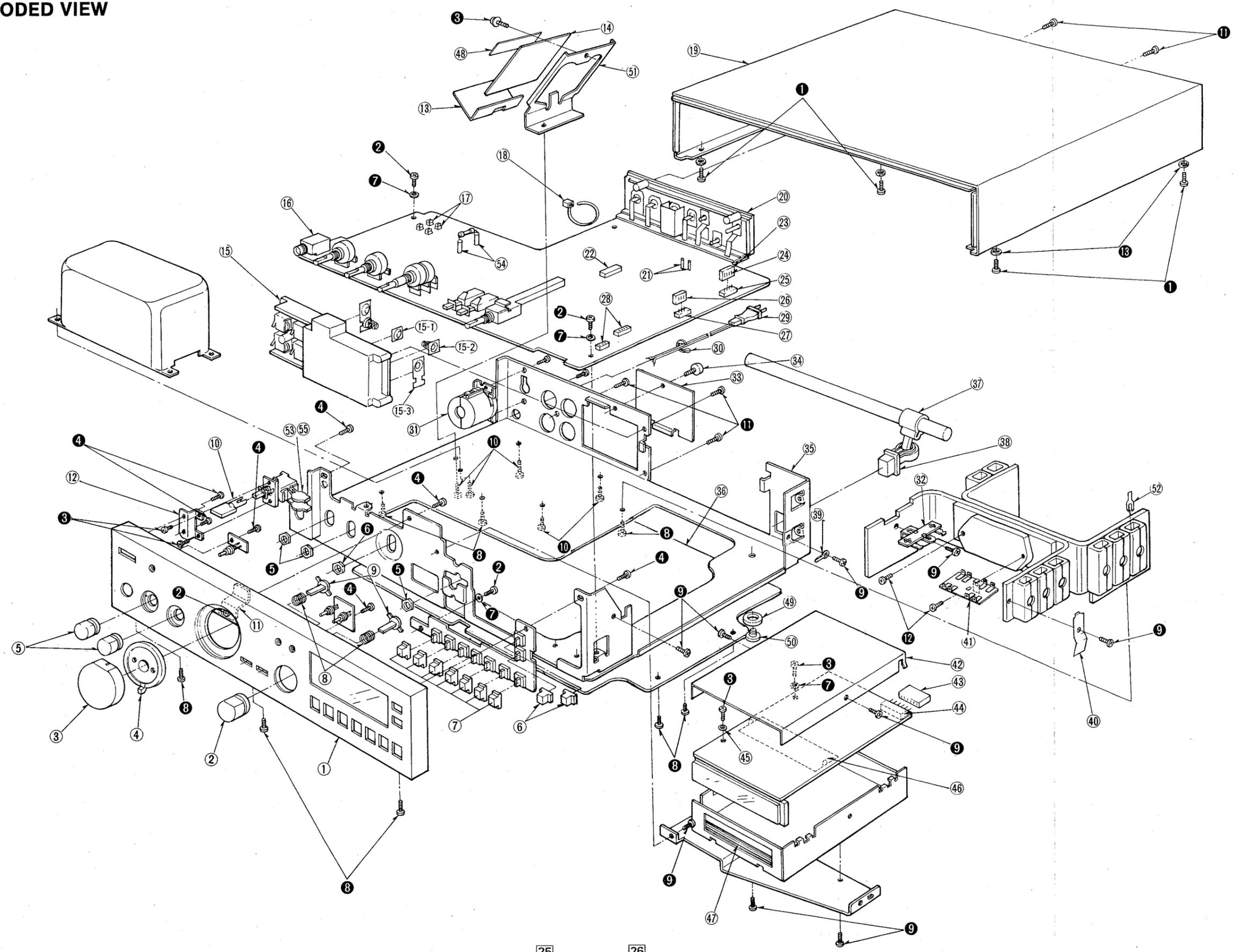
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
R111	ERD25TJ334	Carbon, 330kΩ, 1/4W, ± 5%	R509, 510	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%
R112	ERD25FJ470	Carbon, 47Ω, 1/4W, ± 5%	R511, 512	ERD25TJ183	Carbon, 18kΩ, 1/4W, ± 5%
R113	ERD25TJ123	Carbon, 12kΩ, 1/4W, ± 5%	R513, 514	ERD25TJ183	Carbon, 18kΩ, 1/4W, ± 5%
R114	ERD25FJ392	Carbon, 3.9kΩ, 1/4W, ± 5%	R601, 602	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%
R115, 116	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	R603, 604	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%
R117, 118	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	R605, 606	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%
R119	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	R609, 610	ERD25TJ183	Carbon, 18kΩ, 1/4W, ± 5%
R120, 121	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R611, 612	ERD25FJ332	Carbon, 3.3kΩ, 1/4W, ± 5%
R122	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	R613, 614	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%
R123	ERD25FJ152	Carbon, 1.5kΩ, 1/4W, ± 5%	R615, 616	ERX1ANJR33	Metal Film, 0.33Ω, 1W, ± 5%
R124	ERG1ANJ332	Metal Oxide, 3.3kΩ, 1W, ± 5%	R617, 618	ERG1ANJ100	Metal Oxide, 10Ω, 1W, ± 5%
R125	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R619, 620	ERD50FJ331	Carbon, 330Ω, 1/2W, ± 5%
R126	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	R621	ERG1ANJ101	Metal Oxide, 100Ω, 1W, ± 5%
R127	ERD25TJ273	Carbon, 27kΩ, 1/4W, ± 5%	R625, 626	ERX1ANJ3R3	Metal Film, 3.3Ω, 1W, ± 5%
R128	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R701	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%
R129	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R702	ERD25FJ682	Carbon, 6.8kΩ, 1/4W, ± 5%
R130	ERD25TJ683	Carbon, 68kΩ, 1/4W, ± 5%	R703	ERF108MJ101	Carbon, 100Ω, 10W, ± 5%
R131	ERD25FJ332	Carbon, 3.3kΩ, 1/4W, ± 5%	R704	ERG1ANJ102	Metal Oxide, 1kΩ, 1W, ± 5%
R133	ERD25TJ123	Carbon, 12kΩ, 1/4W, ± 5%	R705	ERG1ANJ151	Metal Oxide, 150Ω, 1W, ± 5%
R134	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R706	ERG1ANJ102	Metal Oxide, 1kΩ, 1W, ± 5%
R137	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%	R707	ERD25TJ123	Carbon, 12kΩ, 1/4W, ± 5%
R138	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R708	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%
R141	ERD25TJ154	Carbon, 150kΩ, 1/4W, ± 5%	R709	ERD25TJ224	Carbon, 220kΩ, 1/4W, ± 5%
R150	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	R710, 711	ERG3ANJ471	Metal Oxide, 470Ω, 3W, ± 5%
R201	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R712	ERG1ANJ332	Metal Oxide, 3.3kΩ, 1W, ± 5%
R202	ERD25TJ105	Carbon, 1MΩ, 1/4W, ± 5%	R713	ERG1ANJ221	Metal Oxide, 220Ω, 1W, ± 5%
R203	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R715	ERC12ZGM335	Solid, 3.3MΩ, 1/2W, ± 20%
R205	ERD25FJ152	Carbon, 1.5kΩ, 1/4W, ± 5%	R801, 802	ERD25TJ824	Carbon, 820kΩ, 1/4W, ± 5%
R206	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R803, 804	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%
R207	ERD25FJ562	Carbon, 5.6kΩ, 1/4W, ± 5%	R805, 806	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%
R208	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%	R807, 808	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%
R209	ERD25TJ474	Carbon, 470kΩ, 1/4W, ± 5%	R901, 902	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R210	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%	R903, 904	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R211	ERD25FJ392	Carbon, 3.9kΩ, 1/4W, ± 5%	R905, 906	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R212	ERD25FJ272	Carbon, 2.7kΩ, 1/4W, ± 5%	R907, 908	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R213	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%	R909, 910	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R214	ERD25FJ470	Carbon, 47Ω, 1/4W, ± 5%	R911	ERD10TJ473	Carbon, 47kΩ, 1/8W, ± 5%
R215	ERD25FJ332	Carbon, 3.3kΩ, 1/4W, ± 5%	R912	ERD10TJ332	Carbon, 3.3kΩ, 1/8W, ± 5%
R216	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R913, 914	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R217	ERD25TJ473	Carbon, 47Ω, 1/4W, ± 5%	R915, 916	ERD10TJ104	Carbon, 100kΩ, 1/8W, ± 5%
R218	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	R917	ERD10TJ104	Carbon, 100kΩ, 1/8W, ± 5%
R219	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%	R918	ERD10TJ222	Carbon, 2.2kΩ, 1/8W, ± 5%
R220	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	R920	ERD10TJ331	Carbon, 330Ω, 1/8W, ± 5%
R221	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	R922	ERD10TJ104	Carbon, 100kΩ, 1/8W, ± 5%
R222	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	R923, 924	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R223	ERD25TJ684	Carbon, 680kΩ, 1/4W, ± 5%	R925, 926	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R224	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	R927, 928	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R225, 226	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R929, 930	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R227	ERD25FJ471	Carbon, 470Ω, 1/4W, ± 5%	R931, 932	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R302	ERD25FJ101	Carbon, 100Ω, 1/4W, ± 5%	R933	ERD10TJ103	Carbon, 10kΩ, 1/8W, ± 5%
R303	ERD25FJ682	Carbon, 6.8kΩ, 1/4W, ± 5%	R934	ERD10TJ820	Carbon, 82Ω, 1/8W, ± 5%
R304	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R935	ERD10TJ102	Carbon, 1kΩ, 1/8W, ± 5%
R305	ERD25FJ332	Carbon, 3.3kΩ, 1/4W, ± 5%	R936	ERD10TJ393	Carbon, 39kΩ, 1/8W, ± 5%
R306	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	R938	ERD10TJ334	Carbon, 330kΩ, 1/8W, ± 5%
R307, 308	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	R939	ERD10TJ153	Carbon, 15kΩ, 1/8W, ± 5%
R309, 310	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R941	ERD10TJ392	Carbon, 3.9kΩ, 1/8W, ± 5%
R311, 312	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	R942	ERD10TJ332	Carbon, 3.3kΩ, 1/8W, ± 5%
R313, 314	ERD25FJ391	Carbon, 390Ω, 1/4W, ± 5%	R944	ERD10TJ104	Carbon, 100kΩ, 1/8W, ± 5%
R315, 316	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	R945	ERD10TJ332	Carbon, 3.3kΩ, 1/8W, ± 5%
R317, 318	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	R946	ERD10TJ102	Carbon, 1kΩ, 1/8W, ± 5%
R319	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	R950	ERD10TJ223	Carbon, 22kΩ, 1/8W, ± 5%
R401, 402	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	R951	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%
R403, 404	ERD25FJ561	Carbon, 560Ω, 1/4W, ± 5%			
R405, 406	ERD25TJ564	Carbon, 560kΩ, 1/4W, ± 5%			
R407, 408	ERD25TJ154	Carbon, 150kΩ, 1/4W, ± 5%			
R409, 410	ERD25TJ224	Carbon, 220kΩ, 1/4W, ± 5%			
R411, 412	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%			
R413, 414	ERD25TJ184	Carbon, 180kΩ, 1/4W, ± 5%			
R415, 416	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%			
R417	ERG1ANJ681	Metal Oxide, 680Ω, 1W, ± 5%			
R418, 419	ERD25FJ562	Carbon, 5.6kΩ, 1/4W, ± 5%			
R501, 502	ERD25FJ392	Carbon, 3.9kΩ, 1/4W, ± 5%			
R503, 504	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%			
R505, 506	ERD25FJ332	Carbon, 3.3kΩ, 1/4W, ± 5%			
R507, 508	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%			

CAPACITORS

Ref. No.	Part No.	Part Name & Description
C1	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C2	ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C3	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C4	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C5	ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C6	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C7	ECCD1H220KC	Ceramic, 22pF, 50V, ±10%
C8	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C9	ECKD1H102ZF	Ceramic, 0.001μF, 50V, ±80%
C10	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C11	ECCD1H150KC	Ceramic, 15pF, 50V, ±10%

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
C12	ECKD1H102ZF	Ceramic, 0.001μF, 50V, ±80%	C501, 502	ECQM1H122KZ	Polyester, 0.0012μF, 50V, ±10%
C13	ECCD1H1R5C	Ceramic, 1.5pF, 50V, ±0.25pF	C503, 504	ECQM1H682KZ	Polyester, 0.0068μF, 50V, ±10%
C14	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%	C505, 506	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C15	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C507, 508	ECQM1H183KZ	Polyester, 0.018μF, 50V, ±10%
C16	ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF	C509	ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C17	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%	C601, 602	ECEA1JS4R7	Electrolytic, 4.7μF, 63V
C18	ECCD1H010C	Ceramic, 1pF, 50V, ±0.25pF	C603, 604	ECCD1H331K	Ceramic, 330pF, 50V, ±10%
C19	ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF	C605, 606	ECEA1CS330	Electrolytic, 33μF, 16V
C21	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C607, 608	ECEA1ES470	Electrolytic, 47μF, 25V
C22	ECEA2AS010	Electrolytic, 1μF, 100V	C609, 610	ECEA1ES101	Electrolytic, 100μF, 25V
C26, 27	ECCD1H470K	Ceramic, 47pF, 50V, ±10%	C611, 612	ECQM1H473K	Polyester, 0.047μF, 50V, ±10%
C28, 29	ECCD1H470K	Ceramic, 47pF, 50V, ±10%	C613, 614	ECCD1H020C	Ceramic, 2pF, 50V, ±0.25pF
C30	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C615	ECEA1VS471	Electrolytic, 470μF, 35V
C31	ECEA1CS330	Electrolytic, 33μF, 16V	C617, 618	ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C32	ECEA1HS100	Electrolytic, 10μF, 50V	C621	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C33	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%	C701	ECEA1CS221	Electrolytic, 220μF, 16V
C101	ECKD1H223MD	Ceramic, 0.022μF, 50V, ±20%	C702	ECEA1VS101	Electrolytic, 100μF, 35V
C102	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C703	ECEA1CS221	Electrolytic, 220μF, 16V
C103	ECEA1CS330	Electrolytic, 33μF, 16V	C704	ECEA1VS101	Electrolytic, 100μF, 35V
C104	ECEA2AS2R2	Electrolytic, 2.2μF, 100V	C705	ECEA1HS101	Electrolytic, 100μF, 50V
C105	ECCD1H680K	Ceramic, 68pF, 50V, ±10%	C706	ECEA1JS471	Electrolytic, 470μF, 63V
C106, 107	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C707, 708	ECEA1CS330	Electrolytic, 330μF, 35V
C108	ECEA1HS100	Electrolytic, 10μF, 50V	C709	ECCD2H103PF	Ceramic, 0.01μF, 500V, ±10%
C109	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C710	ECKDDL103Z	Ceramic, 0.01μF, 250VAC, ±80%
C110	ECEA2AS010	Electrolytic, 1μF, 100V	C711	ECEA1VS471	Electrolytic, 470μF, 35V
C111	ECEA1JS4R7	Electrolytic, 4.7μF, 63V	C712	ECEA1ES470	Electrolytic, 47μF, 25V
C112	ECEA1CS330	Electrolytic, 33μF, 16V	C713	ECEA1VS330	Electrolytic, 33μF, 35V
C113	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%	C714	ECCD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C115	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±80%	C801, 802	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C118	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C803	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%
C119	ECEA2AS010	Electrolytic, 1μF, 100V	C901	ECEA2AS010	Electrolytic, 1μF, 100V
C120, 201	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C902	ECEA1JS4R7	Electrolytic, 4.7μF, 63V
C204	ECCD1H223MD	Ceramic, 0.022μF, 50V, ±20%	C903	ECEA1CS330	Electrolytic, 33μF, 16V
C205	ECQS05561JZ	Polyester, 560pF, 50V, ±5%	C904	ECEA1AS101	Electrolytic, 100μF, 10V
C206	ECCD1H010C	Ceramic, 1pF, 50V, ±0.25pF	C905	ECEA1HS100	Electrolytic, 10μF, 50V
C207	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%	C906	ECKD1H223MD	Ceramic, 0.022μF, 50V, ±20%
C208	ECCD1H560K	Ceramic, 56pF, 50V, ±10%	C907	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C209	ECEA1JS4R7	Electrolytic, 4.7μF, 63V	C908	ECKD1H223MD	Ceramic, 0.022μF, 50V, ±20%
C210	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±80%	C909	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C211	ECCD				

EXPLODED VIEW



REPLACEMENT PARTS LIST (Cabinet & Chassis Parts)

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS					
1	RYPAC02XA	Front Panel Assembly	35	RYMAC02XA	Rear Panel Assembly (W/chassis)
2	SBN785	Knob, Selector Switch	36 [XA] only	RYUAC02XA	Bottom Board Assembly
3	RBN472Z	Knob, Volume Control	36	RYUAC02E	Bottom Board Assembly
4	RBN471Z	Knob, Balance Control	37	SMA205	Bracket, AM Antenna Coil
5	RBN473Z	Knob, Bass & Treble Control	38	SMA207	Bracket, AM Antenna Coil
6	RBC162Z	Button, Tuning	39	RJT202B	Terminal
7	RBC161Z	Button, Preset	40	RUS365Z	Spring
8	RDS5121Z	Spring, Button	41	RJR801-2	Terminal
9	SBC205-1	Button, Loudness & Tape Monitor Switch	42	RMC539Z	Shield Cover
10	SBC207-1	Button, Power Switch	43	RJS112Y-X	Socket
11	RUL571Z	Bracket, Cabinet	44	RJP144Z	Plug
12	RMW167Z	Bracket, Power Switch	45	RNW322	Washer
13	△ RMX180Z	Cover, Fuse	46	RMC566Z	Shield Cover
14	△ RJF8A	Holder, Fuse	47	RHG485Z	Rubber, Display Tube
15	RWBAC02M	Battery Case Assembly (with SP Terminal)	48	RQT1012Z	Indicating Sheet
15-1	RJC314A	Terminal, Battery ⊕ Side	49	SGX803	Ring, Rear Side Feet
15-2	RJC322Z	Spring, Battery ⊖ Side	50	SHG1487	Foot, Rear Side
15-3	RJC302Z	Terminal, Battery ⊕ ⊖ Side	51	RMF40Z	Bracket, Fuse Holder
16	XCJ6P21E-A	Jack, Headphones	52	RJT705	Terminal
17	RJF7A	Terminal, Speaker Fuse	53	RHR325Z	Cover, Capacitor
18	RHR993Z	Lead Clamper	54	SMX51-3	Insulator
19	RYFAC02XA	Cabinet Assembly	55	RHR1059Z	Cover, Capacitor
20	RJF1072Y	Terminal, Input & Antenna	SCREWS and WASHERS		
21	RJP44-1	Pin, Test Point	①	XSB3+8BNS	Screw, Cabinet M'tg
22	RMC506Z	Shield Cover, IC	②	XSN3+8S	Screw, Cabinet M'tg
23	RJS216Y-X	Socket (4 Pin)	③	XSN3+6S	Screw, Switch Bracket M'tg
24	RJT462Z-X	Terminal, Socket	④	XTN3+8B	Screw, Front Panel M'tg
25	RJP107Z	Plug (4 Pin), Socket	⑤	XNS8	Nut, Switch M'tg
26	RJS253Y-X	Socket (3 Pin)	⑥	XNS9	Nut, Volume M'tg
27	RJP137Z	Plug (3 Pin), Socket	⑦	XWG3	Washer
28	RJS145Z-Q	Socket (4 Pin)	⑧	XSB3+6BNS	Screw, Bottom Board M'tg
29	△ RJA23Z-Y	AC Cord, Power Source	⑨	XTN3+6B	Screw, Terminal M'tg
30	△ RHR141Z	Bushing, AC Cord	⑩	XSN3+6BVS	Screw, Power Transformer M'tg
31	△ SUV453	Cover, Voltage Selector	⑪	XTB3+12BFN	Screw, Battery Case M'tg
32	△ RJP29Z	Terminal	⑫	XSN3+20S	Screw, Power IC M'tg
33	RYNAC02N	Battery Cover Assembly	⑬	XWC3B	Washer
34	RHK1Z	Screw, Battery Cover M'tg			

CHANGE OF PARTS LIST SA-C02K (EG)

Note: This parts list included only the changes of the model SA-C02 parts list.

Ref. No.	Change of Part No.		Part Name & Description
	SA-C02	SA-C02K	
CABINET			
1	RYPAC02XA	RYPAC02KEG1	Front Panel Assembly
2	SBN785	SBN785-1	Knob, Selector Switch
3	RBN472Z	RBN472Z1	Knob, Volume Control
4	RBN471Z	RBN471Z1	Knob, Balance Control
5	RBN473Z	RBN473Z1	Knob, Bass & Treble Control
6	RBC162Z	RBC162Z1	Button, Tuning
7	RBC161Z	RBC161Z1	Button, Preset
9	SBC205-1	SBC205-2	Button, Loudness & Tape Monitor
10	SBC207-1	SBC207-2	Button, Power Switch
19	RYFAC02XA	RYFAC02KEG0	Cabinet Assembly
33	RYNAC02N	RYNAC02KEG0	Battery Cover Assembly
35	RYMAC02XA	RYMAC02KEG0	Rear Panel Assembly (W/Chassis)
36	RYUAC02XA	RYUAC02KEG1	Bottom Board Assembly
49	SGX803	SGX803-1	Ring, Rear Side Feet
SCREWS			
①	XSB3+8BNS	XSB3+8FZS	Screw, Cabinet M'tg
⑧	XSB3+6BNS	XSB3+6FZS	Screw, Bottom Board M'tg
⑪	XTB3+12BFN	XTB3+12BFZ	Screw, Battery Case M'tg
ACCESSORY			
A3	RJP16ZS		

■ REPLACEMENT PARTS LIST (Accessories & Packings)

Ref. No.		Part No.	Part Name & Description
ACCESSORIES			
A1		SSA267	Cord, FM Indoor Antenna
A2	△	XBA2C31TRO	Fuse, Speaker Circuit
A3 [XA] only	△	RJP16ZS	Plug, AC Cord
PACKING PARTS			
P1		XZB40X40A04	Polyethylene Bag
P2		RPN9285Z	Pad Complete (Upper & Lower)
P3		RPK936Z	Carton Box
P3 [XGF] only		RPK936Y	Carton Book
P4		RQX6547Z	Instruction Book

● Accessories

