

# Service Manual



ST-C03



ST-C03K

FM/AM Stereo Tuner

## ST-C03

(E),(EG),(EB),(XGH),  
(XGF),(XE),(XA),(XAL)

## ST-C03K

(EG)

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

### Areas

- \* [E] and [EG] are available in European and Scandinavia.
- \* [EB] is available in Belgium.
- \* [XGH] is available in Holland.
- \* [XGF] is available in France.
- \* [XE] is available in United Kingdom.
- \* [XA] is available in Asia, Latin America, Middle East and Africa.
- \* [XAL] is available in Australia.

## TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

[DIN 45 500]

### FM TUNER SECTION

Frequency range	87.5 ~ 108.0 MHz	
Sensitivity	1.9 $\mu$ V (IHF, usable)	
S/N 30 dB	2.0 $\mu$ V (300 $\Omega$ ), 1.3 $\mu$ V (75 $\Omega$ )	
S/N 26 dB	1.8 $\mu$ V (300 $\Omega$ ), 1.2 $\mu$ V (75 $\Omega$ )	
S/N 20 dB	1.6 $\mu$ V (300 $\Omega$ ), 0.9 $\mu$ V (75 $\Omega$ )	
IHF 46 dB stereo quieting sensitivity	20 $\mu$ V/75 $\Omega$	
Total harmonic distortion	MONO	0.08%
	STEREO	0.15%
S/N	MONO	68 dB (77 dB, IHF)
	STEREO	65 dB (72 dB, IHF)
Frequency response	20 Hz ~ 15 kHz, +0.5 dB ~ -1.5 dB	
Alternate channel selectivity	75 dB	
Capture ratio	1.0 dB	
Image rejection at 98 MHz	65 dB	
IF rejection at 98 MHz	85 dB	
Spurious response rejection at 98 MHz	90 dB	
AM suppression	52 dB	
Stereo separation	1 kHz	45 dB
	10 kHz	35 dB
Carrier leak	19 kHz	-30 dB (-40 dB, IHF)
	38 kHz	-50 dB (-40 dB, IHF)
Channel balance (250 Hz ~ 6,300 Hz)	$\pm$ 1.0 dB	
Limiting point	1.2 $\mu$ V	

Power bandwidth	IF amplifier	180 kHz
	FM demodulator	1000 kHz
Antenna terminals		300 $\Omega$ (balanced)
		75 $\Omega$ (unbalanced)

### AM TUNER SECTION

Frequency range	522 ~ 1611 kHz
Sensitivity (S/N 20 dB)	30 $\mu$ V, 250 $\mu$ V/m
Selectivity $\pm$ 9 kHz	30 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

### GENERAL

Output voltage	0.3V
	0.6V (IHF)
Power consumption	12W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Batteries for memory back-up (optional)	three "AA" size batteries
	DC 4.5V
Dimensions (WxHxD)	297 x 49 x 244mm
Weight	2.8 kg

## TECHNISCHE DATEN

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

[DIN 45 500]

## UKW-TUNERTEIL

Wellenbereich	87,5 ~ 108,0 MHz	
Eingangsempfindlichkeit	1,9µV (nutzbar nach IHF)	
S/R 30 dB	2,0µV (300Ω), 1,3µV (75Ω)	
S/R 26 dB	1,8µV (300Ω), 1,2µV (75Ω)	
S/R 20 dB	1,6µV (300Ω), 0,9µV (75Ω)	
Stereoschaltsschwelle bei 46 dB nach IHF	20µV/75Ω	
Gesamtklirrfaktor	Mono	0,08%
	Stereo	0,15%
Geräuschabstand	Mono	68 dB (77 dB nach IHF)
	Stereo	65 dB (72 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+0,5 dB ~ -1,5 dB)	
Trennschärfe bei Störsender	75 dB	
Einfangverhältnis	1,0 dB	
Spiegelfrequenz-Dämpfung bei 98 MHz	65 dB	
ZF-Dämpfung bei 98 MHz	85 dB	
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	90 dB	
AM-Unterdrückung	52 dB	
Übersprechdämpfung	1 kHz	45 dB
	10 kHz	35 dB
Trägerrest	19 kHz	-30 dB (-40 dB nach IHF)
	38 kHz	-50 dB (-40 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB	
Begrenzereinsatz	1,2µV	

Bandbreite	ZF-Verstärker	180 kHz
	UKW-Demodulator	1000 kHz
Antennenanschluß	300Ω (symmetrisch) 75Ω (unsymmetrisch)	

## AM-TUNERTEIL

Wellenbereiche	522 ~ 1611 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30µV, 250µV/m
Trennschärfe ±9 kHz	30 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	50 dB
ZF-Dämpfung bei 1000 kHz	40 dB

## ALLGEMEINE DATEN

Ausgangsspannung	0,3V
Leistungsaufnahme	0,6V (IHF)
Netzspannung	12W
	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Batterien für den Speicher (Sonderzubehör)	drei Batterien "AA" (4,5V)
Abmessungen (B x H x T)	297 x 49 x 244mm
Gewicht	2,8 kg

## CARACTERISTIQUES TECHNIQUES

Sujet à changement sans préavis.

[DIN 45 500]

## SECTION SYNTONISATEUR FM

Gamme de fréquence	87,5 ~ 108,0 MHz	
Sensibilité	1,9µV (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)	
Sensibilité stéréo au seuil de 46 dB, IHF	20µV/75Ω	
Distorsion harmonique totale	MONO	0,08%
	STEREO	0,15%
Signal/Bruit	MONO	68 dB (77 dB, IHF)
	STEREO	65 dB (72 dB, IHF)
Réponse de fréquence	20 Hz ~ 15 kHz, +0,5 dB ~ -1,5 dB	
Sélectivité alternée par canal	75 dB	
Taux de capture	1,0 dB	
Rejection d'image à 98 MHz	65 dB	
Rejection FI à 98 MHz	85 dB	
Rejection de réponse parasite à 98 MHz	90 dB	
Suppression AM	52 dB	
Séparation stéréophonique	1 kHz	45 dB
	10 kHz	35 dB
Fuite de porteuse	19 kHz	-30 dB (-40 dB, IHF)
	38 kHz	-50 dB (-40 dB, IHF)
Equilibrage de canaux (250 Hz ~ 6,300 Hz)	±1,0 dB	
Point de limite	1,2µV	

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
Sensibilité (S/B 20 dB)	30µV, 250µV/m
Sélectivité ±9 kHz	30 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

## DIVERS

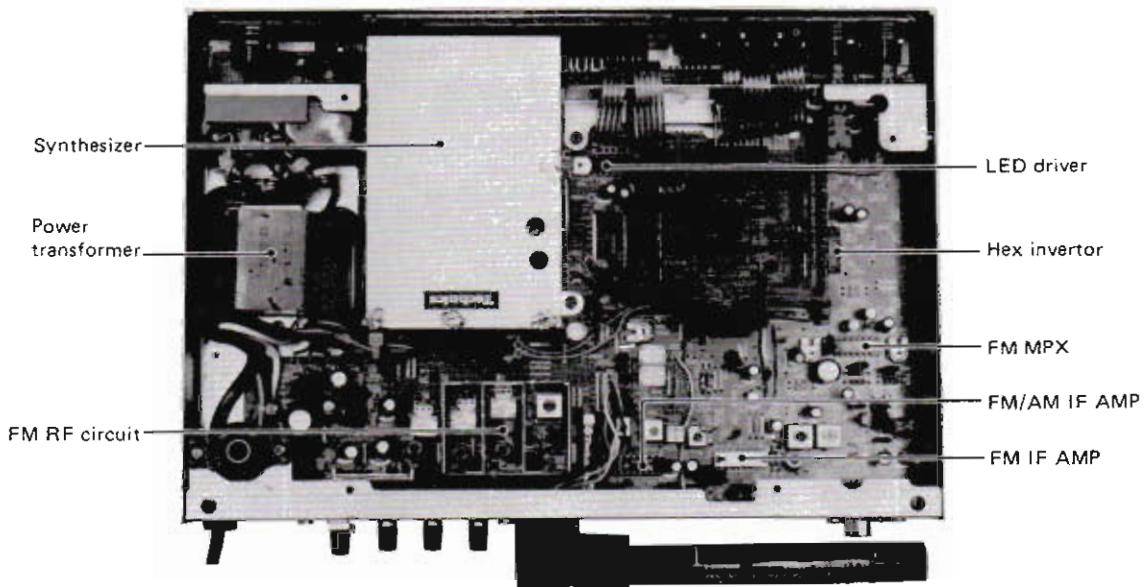
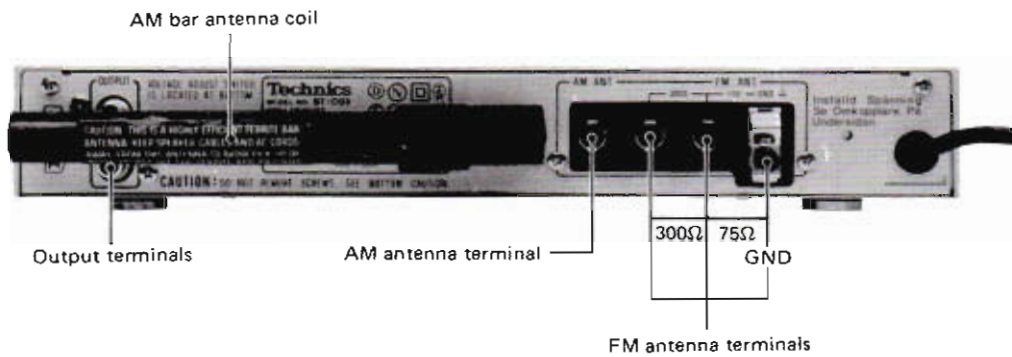
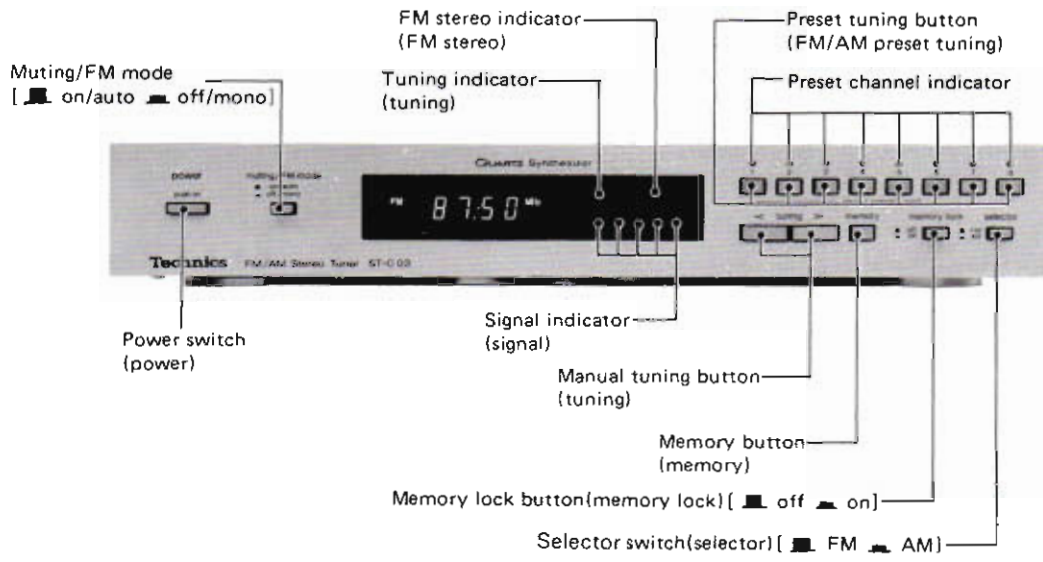
Tension de sortie	0,3V
	(0,6V IHF)
Consommation	12W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Piles pour préservation des mémoires (en option)	trois piles de type AA (C.C.: 4,5V)
Dimensions (L x H x Pr)	297 x 49 x 244mm
Poids	2,8 kg

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■ LOCATION OF CONTROLS



## ■ HOW TO REMOVE THE PRINTED CIRCUIT BOARD

1. Remove the 4 setscrews (①~④ in Fig. 1) used to fasten the bottom board.
2. Remove the bottom board.
3. Remove the 2 setscrews (⑤, ⑥ in Fig. 1) used to fasten the rear panel.
4. Remove the 6 setscrews (⑦,⑨~⑫,⑭ in Fig. 2) used to fasten the printed circuit board.
5. Remove the printed circuit board to backward.
6. Remove the 2 setscrews (⑧,⑬ in Fig. 2) used to fasten the shield cover.
7. Remove the shield cover.
8. To reassemble, reverse the above procedure.

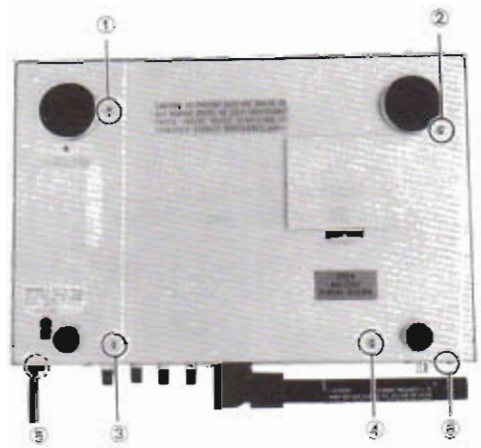


Fig. 1

## ■ HOW TO REMOVE SWITCHES

1. Remove the 2 setscrews (⑮,⑯ in Fig. 3) used to fasten the printed circuit board.
2. Remove the printed circuit board.
3. Push the LED in the direction of arrows (in Fig. 3).
4. Remove the adhesion (⑰ in Fig. 4) used to fasten the LED holder.
5. Unsolder the switch.
6. Remove the switch.
7. To reassemble, reverse the above procedure and note the following.
  - (1) Fix the LED holder (⑰,⑱ in Fig. 4) by adhesion.

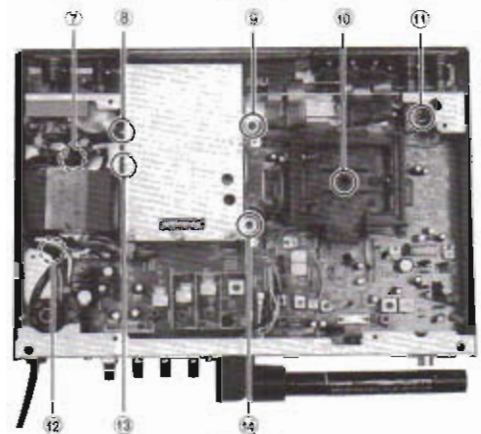


Fig. 2



Fig. 4



Fig. 3

## ■ 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. 5.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in fig. 6.

### 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.

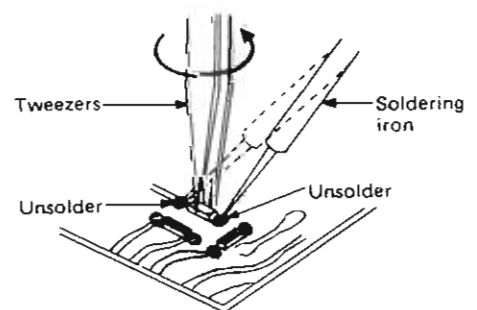


Fig. 5

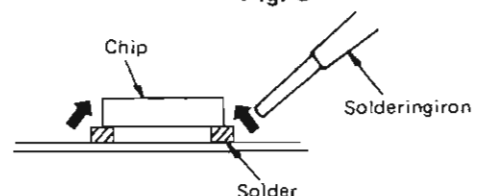


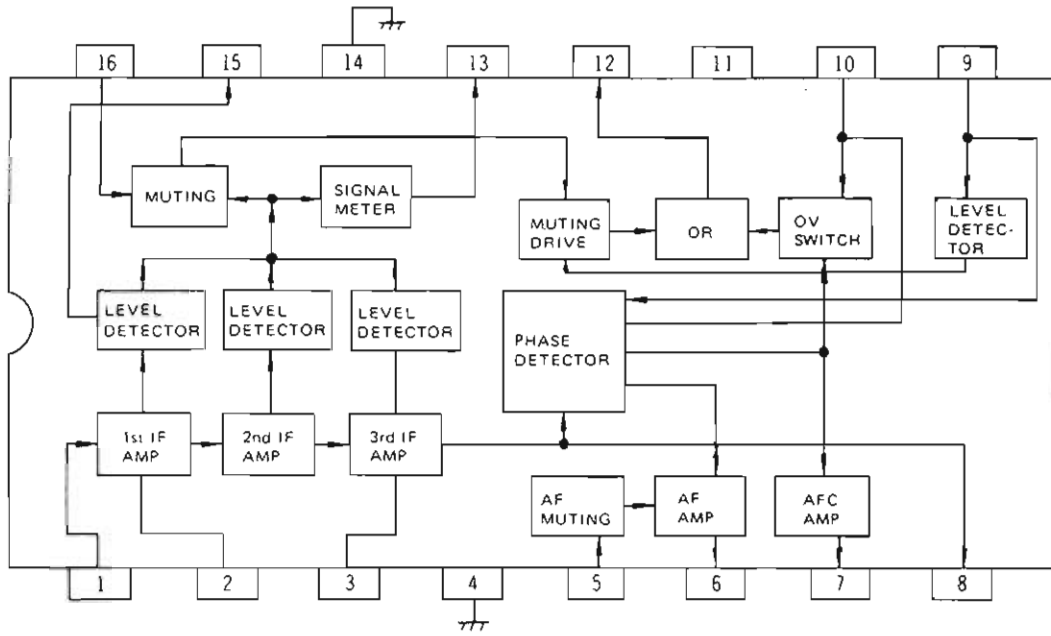
Fig. 6

## ■ NOTE FOR REPLACING CHIPS

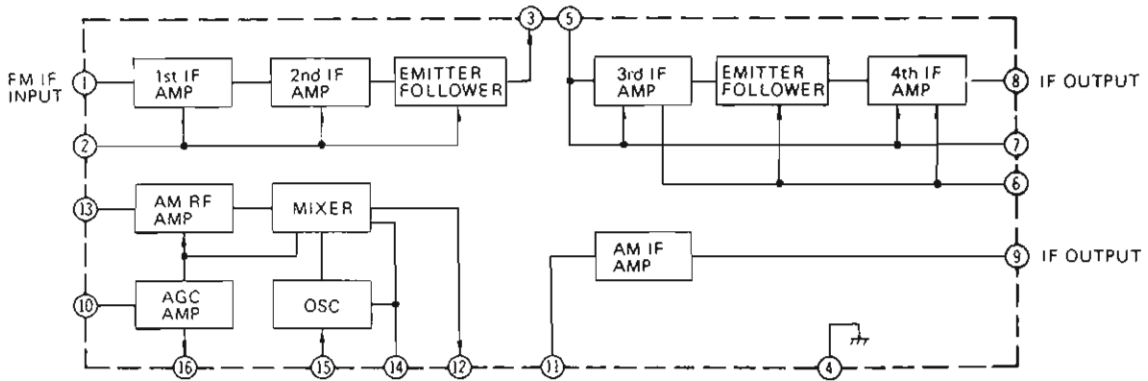
1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60 W) and tweezers for replacing chips.

Color	Original Parts Name
Black	Chip Resistor
Brown	Chip Capacitor
Black	Chip Jumper

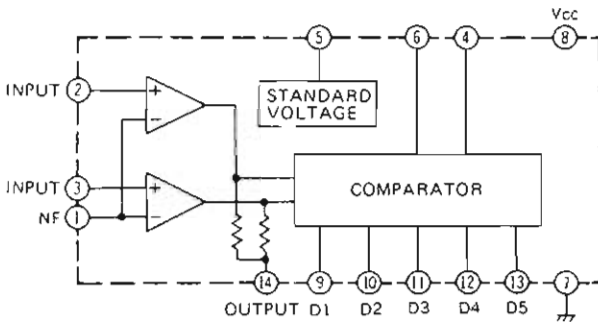
■ BLOCK DIAGRAM OF IC'S



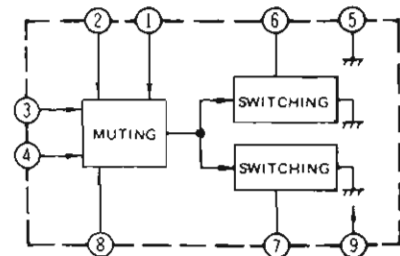
IC101  
(RV1μPC1167C)  
FM IF AMP/DETECTOR



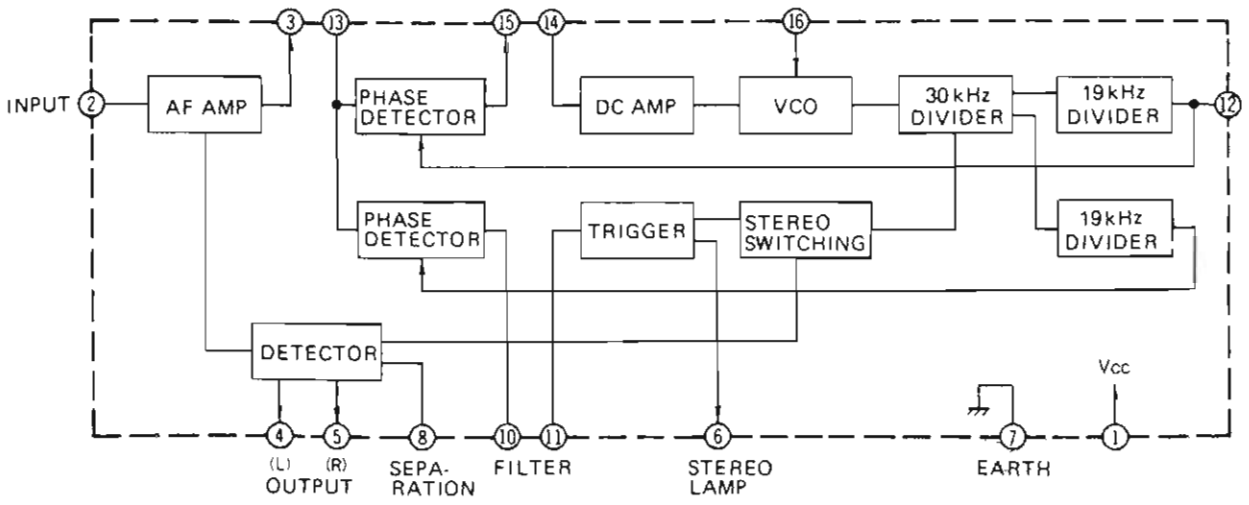
IC201  
(AN217PBB)  
FM-IF AMP, AM OSCILLATOR, AM-IF AMP



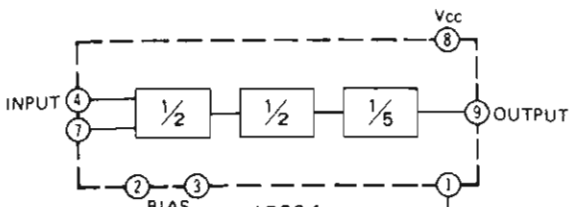
IC102  
(RVILB1416)  
LED DRIVER



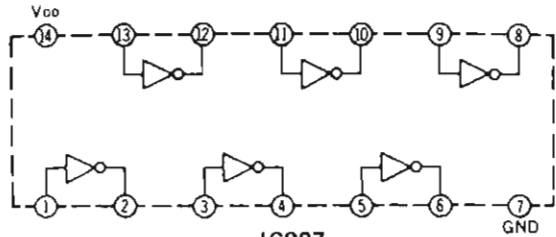
IC401  
(AN6135)  
MUTING



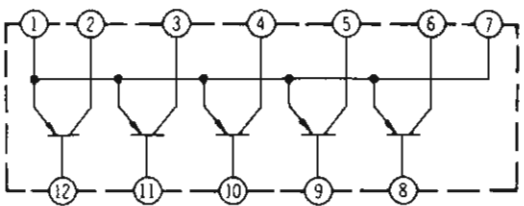
**IC301**  
(RVILA3350S)  
FM MPX



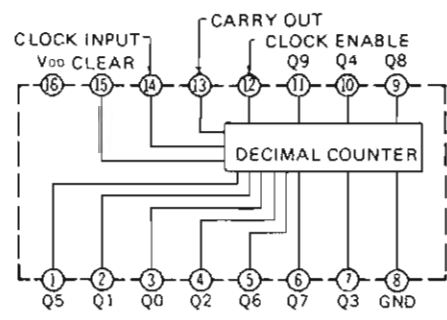
**IC904**  
(AN6821)  
FM PRESCALER



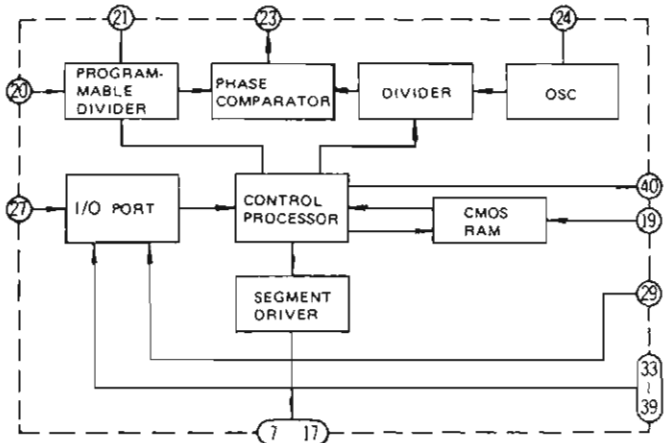
**IC907**  
(RVIMSM4069RS)  
HEX INVERTER



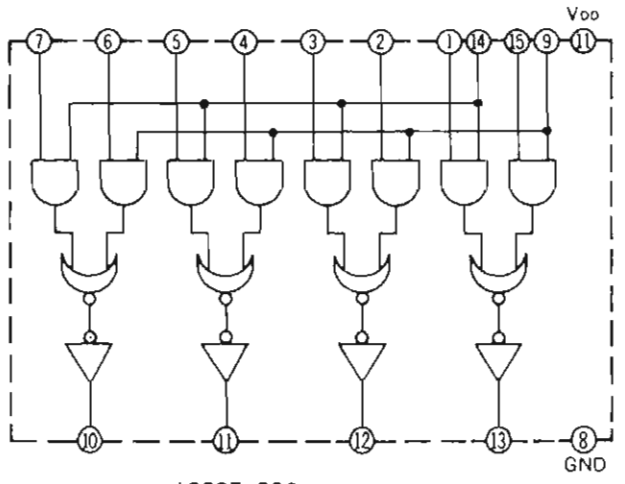
**IC901, 902**  
(RVITA57)  
DIGIT DRIVER



**IC908**  
(RVIMSM4017RS)  
DECADE COUNTER/DIVIDER



**IC903**  
(MN6045A)  
PLL CONTROLLER RAM



**IC905, 906**  
(RVIMSM4019RS)  
QUAD AND/OR SELECT GATE

**ALIGNMENT INSTRUCTIONS ENGLISH**

Notes:						
1. Power switch . . . . . on		3. Selector switch . . . . .		AM/FM		
2. Muting/FM mono switch . . . . . off/mono		4. 300Ω FM dummy antenna . . . . .		Refer to fig. 7		
		5. Maintain line voltage at 120 volts				
AM ALIGNMENT						
SIGNAL GENERATOR		FREQUENCY DISPLAY SETTING	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS	
CONNECTION	FREQUENCY					
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	450kHz (30% Mod. with 400Hz)	Point of non-interference.	Connect AC VTVM or scope to TP3.	T201 (AM 1st IFT) T202 (AM 2nd IFT)	Adjust for maximum reading on VTVM.
2	—	no-signal	522kHz	Connect DC VTVM between TP1 and earth.	L203 (AM OSC Coil)	Adjust for 1.5±0.05V reading on DC VTVM.
3	—	no-signal	1611kHz	Connect DC VTVM between TP1 and earth.	CT202 (AM OSC Trimmer)	Adjust for 20±0.1V reading on DC VTVM. Repeat steps 3 and 4.
4	Fashion loop of several turns of wire and radiate signal into loop of receiver.	549kHz	549kHz	Connect AC VTVM or scope to output terminals.	L201 (AM ANT Coil)	Adjust for maximum output.
5	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1503kHz	1503kHz	Connect AC VTVM or scope to output terminals.	CT201 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps 4 and 5.
FM IF ALIGNMENT						
6	Connect to TP2	10.7MHz	Point of non-interference.	Connect scope to TP6.	T1 (FM IFT)	1. Pull out the core of T101. 2. Adjust for maximum amplitude and proper linearity between ±100kHz markers.
FM RF ALIGNMENT						
7	—	no-signal	87.50MHz	Connect DC VTVM between TP1 and earth.	L5 (FM OSC Coil)	Adjust for 2.6±0.05V reading on DC VTVM.
8	—	no-signal	108.00MHz	Connect DC VTVM between TP1 and earth.	CT4 (FM OSC Trimmer)	Adjust for 16±0.1V reading on DC VTVM. Repeat steps 7 and 8.
9	Connect to FM 300Ω antenna terminal through FM dummy antenna.	90.0MHz (100% Mod. with 1kHz)	90.00MHz	Connect AC VTVM or scope to output terminals.	L3 (FM DET Coil) L2 (FM ANT Coil) L1 (FM ANT Coil)	Adjust for maximum output.
10	Connect to FM 300Ω antenna terminal through FM dummy antenna.	106.0MHz (100% Mod. with 1kHz)	106.00MHz	Connect AC VTVM or scope to output terminals.	CT3(FM DET Trimmer) CT2(FM ANT Trimmer) CT1(FM ANT Trimmer)	Adjust for maximum output.
DC BALANCE AND FM MONO DISTORTION ALIGNMENT						
11	Connect to FM 300Ω antenna terminal through FM dummy antenna (60dB)	98.0MHz (100% Mod. with 1kHz)	98.00MHz	Connect DC VTVM between TP4 and TP5 through resistors. (fig. 8)	T101 (FM IFT)	Adjust for 0V reading on DC VTVM.
12	Connect to FM 300Ω antenna terminal through FM dummy antenna (60dB)	98.0MHz (100% Mod. with 1kHz)	98.00MHz	Connect distortion meter to output terminal	T102 (FM IFT)	Adjust for minimum distortion of left output.
FM MPX VCO ALIGNMENT						
13	—	no-signal	Point of non-interference	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.
TUNING METER ALIGNMENT						
14	Connect to FM 300Ω antenna terminal through FM dummy antenna (60dB)	98.1MHz (100% Mod. with 1kHz)	98.10MHz	—	VR101	Adjust VR101 so that the 5th LED illuminate.

Notes: 1. Stereo modulator . . . . . • Connect stereo modulator output to EXT MOD terminal of signal generator. 2. FM signal generator . . . . . • Pilot signal modulation to "10%". 3. Selector switch to "FM auto" . . . . . • Frequency approximately 100MHz/Output level to "72dB (IHF)" • Modulation mode to "FM"				
FM SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE & MODE RATE	INDICATOR (AC VTVM)	ADJUSTMENT POINT	REMARKS
<b>FM STEREO SEPARATION ALIGNMENT</b>				
15 FM 300Ω antenna terminals through FM dummy antenna.	(1kHz 30% Modulation) MODE L (and R) Pilot signal to "ON".	Connect VTVM to output terminal through low pass filter. (Refer to fig. 9)	VR302	<ul style="list-style-type: none"> <li>• Frequency display at 98.0MHz.</li> <li>• Make adjustment so that when the antenna input is subjected to L modulation (or R modulation), R channel output (or L channel output) becomes minimum.</li> </ul>
<b>FM STEREO DISTORTION ALIGNMENT</b>				
16 Connect to FM 300Ω antenna terminal through FM dummy antenna. 98.0MHz 60dB	(1 kHz 100% Modulation) MODE R	Connect distortion meter to output terminal of receiver.	T1 (FM IFT)	Adjust for minimum distortion of right output.

**■ ABGLEICHANWEISUNGEN DEUTSCH**

(Für Deutschland)

Anmerkungen: 1. Netzschalter . . . . . eingeschaltet 2. Tondämpfung/UKW-Mono-Schalter . . . . . ausgeschaltet/mono 3. Wahlschalter . . . . . MW/UKW 4. 300 Ohm UKW-Kunstantenne . . . . . Siehe Abbildung 7 5. Netzspannung auf 120 Volt halten.						
<b>MW-ABGLEICH</b>						
SIGNALGENERATOR (MESSENDER)		FREQUENZ-ANZEIGEEINSTELLUNG	MEßGERÄT (VTVM oder OSZILLOSKOP) (VERZERRUNGSMESSER)	EINSTELLUNGSPUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
1	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 TP3 (Testpunkt) verbinden.	T201(MW erster ZFT) T202(MW zweiter ZFT)	Auf maximalen Anzeigewert des Röhrenvoltmeters (VTVM) einstellen.
2	—	Kein Signal	522kHz	Das Gleichstromröhrenvoltmeter zwischen TP1 (Testpunkt) und Erde verbinden.	L203 (MW-Schwingspule)	Auf 1.5V±0,05 auf dem Gleichstromröhrenvoltmeter einstellen.
3	—	Kein Signal	1611kHz	Das Gleichstromröhrenvoltmeter zwischen TP1 und Erde verbinden.	CT202 (MW-Schwingertrimmer)	Auf 20V±0,1 auf dem Gleichstromröhrenvoltmeter einstellen. Die Schritte 3 und 4 wiederholen.
4	Testschleife aus mehreren Windungen eines Drahtes fertigen, und Signal in die Eingangsschleife des Gerätes senden.	549kHz	549kHz	Das Wechselstromröhrenvoltmeter oder Oszilloskop mit den Ausgangsklemmen verbinden.	L201 (MW-Schwingertrimmer)	Auf maximalen Ausgang einstellen.
5	Testschleife aus mehreren Windungen eines Drahtes fertigen, und Signal in die Eingangsschleife des Gerätes senden.	1503kHz	1503kHz	Das Wechselstromröhrenvoltmeter oder Oszilloskop mit den Ausgangsklemmen verbinden.	CT201 (MW-Armenstrimmer)	Auf maximalen Ausgang einstellen. Die Schritte 4 und 5 wiederholen.
<b>UKW-ZF-ABGLEICH</b>						
6	Mit TP2 (Testpunkt) verbinden	10.7MHz	Störungsfreie Stelle	Oszilloskop mit TP6 verbinden.	T1 (UKW-ZFT)	(1) Den Kern (Spule) von T101 herausziehen. (2) Auf maximale Amplitude und richtiger Linearität zwischen den 100kHz Markierungen einstellen.



SIGNALGENERATOR (MESSENDER)		FREQUENZ-ANZEIGEEIN-STELLUNG	MEßGERÄT (VTVM oder OSZILLOSKOP) (VERZERRUNGSMESSER)	EINSTELLUNGS-PUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
<b>UKW-HF-ABGLEICH</b>						
7	—	Kein Signal	87.50MHz	Das Gleichstromröhrenvoltmeter zwischen TP1 und Erde verbinden.	L5 (UKW-Schwingspule)	Auf 26V±0.05 auf dem Gleichstromröhrenvoltmeter einstellen.
8	—	Kein Signal	108.00MHz	Das Gleichstromröhrenvoltmeter zwischen TP1 und Erde verbinden.	CT4 (UKW-Schwingertrimmer)	Auf 16V±0.1 auf dem Gleichstromröhrenvoltmeter einstellen. Die Schritte 7 und 8 wiederholen.
9	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	90.0MHz (100% moduliert bei 1kHz)	90.00MHz	Das Wechselstromröhrenvoltmeter oder Oszilloskop mit den Ausgangsklemmen verbinden.	L3(UKW-Detektorspule) L2(UKW-Antennen-spule) L1(UKW-Antennen-spule)	Auf maximalen Ausgang einstellen.
10	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	106.0MHz (100% moduliert bei 1kHz)	106.00MHz	Das Wechselstromröhrenvoltmeter oder Oszilloskop mit den Ausgangsklemmen verbinden.	CT3(UKW-Detektortrimmer) CT2(UKW-Antennentrimmer) CT1(UKW-Antennentrimmer)	Auf maximalen Ausgang einstellen.
<b>GLEICHSTROMBALANCE UND UKW-MONO-VERZERRUNGSABGLEICH</b>						
11	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden.	98.0MHz (100% moduliert bei 1kHz)	98.00MHz	Das Gleichstromröhrenvoltmeter über Widerstände mit den Testpunkten TP4 und TP5 verbinden.(Siehe Abb.8)	T101 (UKW-ZFT)	Auf 0V auf dem Gleichstromröhrenvoltmeter einstellen.
12	Die UKW-Kunstantenne (60dB) über den 300 Ohm UKW-Antennenanschluss verbinden.	98.0MHz (100% moduliert bei 1kHz)	98.00MHz	Verzerrungsmesser mit den Ausgangsklemmen verbinden.	T102 (UKW-ZFT)	Auf minimalste Verzerrung des linken Ausgangs einstellen.
<b>UKW-MPX VCO-ABGLEICH</b>						
13	—	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.
<b>ABSTIMMANZEIGEABGLEICH</b>						
14	Die UKW-Kunstantenne (60dB) über den 300 Ohm UKW-Antennenanschluss verbinden.	98.1MHz (100% moduliert bei 1kHz)	98.10MHz	—	VR101	Den einstellbaren Widerstand VR101 so einstellen, daß die fünfte Leuchtdiode (LED) auf leuchtet.
<p>Anmerkungen:</p> <p>1. Stereo-Modulator . . . . . • Den Stereo-Modulatorausgang mit den EXT MOD Klemmen des Signalgenerators verbinden. Pilotsignalmodulation auf 10% bringen.</p> <p>2. UKW-Signalgenerator . . . . . • Frequenzwert ungefähr 100MHz/Ausgangspegel auf 72dB (1HF)</p> <p>3. Wahlschalter auf "FM auto" . . . . . • Modulationsart auf FM (UKW)</p>						
UKW-SIGNAL-GENERATORVERBINDUNG	STEREO-MODULATORBETRIEBSART UND RATEN	MEßGERÄT (WECHSELSTROMRÖHREN-VOLTMETER)		EIN-STELLUNGSPUNKTE	BEMERKUNGEN	
<b>UKW-STEREO-KANALTRENNUNGSABGLEICH</b>						
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. 9)	VR302	• Frequenzanzeige auf 98.0MHz. • 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.	
<b>UKW-STEREO-VERZERRUNGSABGLEICH</b>						
16	Die UKW-Kunstantenne über den 300 Ohm UKW-Antennenanschluss verbinden. 98.0MHz 60dB	(1kHz 100% moduliert) Betriebsart R	Den Verzerrungsmesser mit den Ausgangsklemmen des Gerätes verbinden.	T3 (UKW ZFT)	Auf minimalste Verzerrung des rechten Ausgangs einstellen.	

## INSTRUCTIONS D'ALIGNEMENT FRANÇAIS

- Notes:
- |   |            |   |             |
|---|------------|---|-------------|
| 1. Commutateur d'alimentation . . . . .                     | Marche     | 3. Commutateur de sélection . . . . .           | AM/FM       |
| 2. Commutateur compensation physiologique/FM mono . . . . . | Arrêt/mono | 4. Antenne fictive FM de 300Ω . . . . .         | Voir Fig. 7 |
|   |            | 5. Maintenir la ligne sous tension à 120 volts. |             |

## ALIGNEMENT AM

	GENERATEUR DE SIGNAL		REGLAGE DE L'AFFICHAGE DE FREQUENCE	TEMOIN (VTVM or OSCILLOSCOPE) (COMPTEUR DE DISTORSTION)	POINTS DE REGLAGE	REMARQUES
	CONNEXION	FREQUENCE				
1	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 TP3	T201(AM 1er IFT) T202(AM 2eme IFT)	Régler sur la lecture maximale du VTVM
2	—	Non-signal	522kHz	Brancher le VTVM CC entre TP1 et la terre	L203(bobine AM OSC)	Régler la lecture du VTVM CC sur 1,5±0,05V
3	—	Non-signal	1611kHz	Brancher le VTVM CC entre TP1 et la terre	CT202 (Trimmer AM OSC)	Régler la lecture du VTVM CC sur 20±0,1V. Refaire les étapes 3 et 4
4	Effectuer des boucles de plusieurs tours de fil et passer le signal dans la boucle du récepteur.	549kHz	549kHz	Brancher le VTVM CA ou l'oscilloscope aux bornes de sortie.	L201 (bobine AM ANT)	Régler sur la sortie maximale.
5	Effectuer des boucles de plusieurs tours de fils et passer le signal dans la boucle du récepteur.	1503kHz	1503kHz	Brancher le VTVM CA ou l'oscilloscope aux bornes de sortie.	CT201 (Trimmer AM ANT)	Régler sur la sortie maximale. Refaire les étapes 4 et 5.

## ALIGNEMENT DE FM IF

6	Brancher à TP2	10,7MHz	Point de non-interférence	Brancher l'oscilloscope à TP6	T1 (FM IFT)	1. Extraire le noyau de TP101. 2. Régler sur l'amplitude maximale et la linéarité appropriée entre les marqueurs de ±100kHz
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## ALIGNEMENT DE FM RF

7	—	Non-signal	87,50MHz	Brancher le VTVM CC entre TP1 et la terre	L5 (bobine FM OSC)	Régler la lecture du VTVM CC sur 26±0,05V
8	—	Non-signal	108,00MHz	Brancher la VTVM CC entre TP1 et la terre	CT4 (Trimmer FM OSC)	Régler la lecture du VTVM CC sur 26±0,05V. Refaire les étapes 7 et 8
9	Brancher la borne de l'antenne de 300Ω FM par l'antenne fictive FM.	90,00MHz (100% de mod. avec 1kHz)	90,00MHz	Brancher le VTVM CA ou l'oscilloscope aux bornes de sortie.	L3(Bobine FM DET) L2(Bobine FM ANT) L1(Bobine FM ANT)	Régler sur la sortie maximale.
10	Brancher la borne de l'antenne FM de 300Ω par l'antenne fictive FM.	106,00MHz (100% de mod. avec 1kHz)	106,00MHz	Brancher le VTVM CA ou l'oscilloscope aux bornes de sortie.	CT3(Trimmer FM DET) CT2(Trimmer FM ANT) CT1(Trimmer FM ANT)	Régler sur la sortie maximale.

## ALIGNEMENT DE L'EQUILIBRAGE DE CC ET DELA DISTORSTION DE FM MONO

11	Brancher la borne de l'antenne FM de 300Ω par l'antenne fictive FM (60dB)	98,00MHz (100% de mod. avec 1kHz)	98,00MHz	Brancher le VTVM CC entre TP4 et TP5 par les résistances (Fig. 8)	T101 (FM IFT)	Régler la lecture du VTVM CC sur 0V.
12	Brancher la borne de l'antenne FM de 300Ω par l'antenne fictive FM (60dB)	98,00MHz (100% de mod. avec 1kHz)	98,00MHz	Brancher le compteur de distorsion à la borne de sortie	T102 (FM IFT)	Régler sur la distorsion minimale de la sortie gauche

## ALIGNEMENT DU FM MPX VCO

13	—	Non-signal	Point de non-interférence	Brancher le fréquencemètre à TP7 par la résistance (100kΩ)	VR301	1. Placer le commutateur de sélection sur "FM auto" 2. Régler la lecture du fréquencemètre sur 19kHz±30Hz
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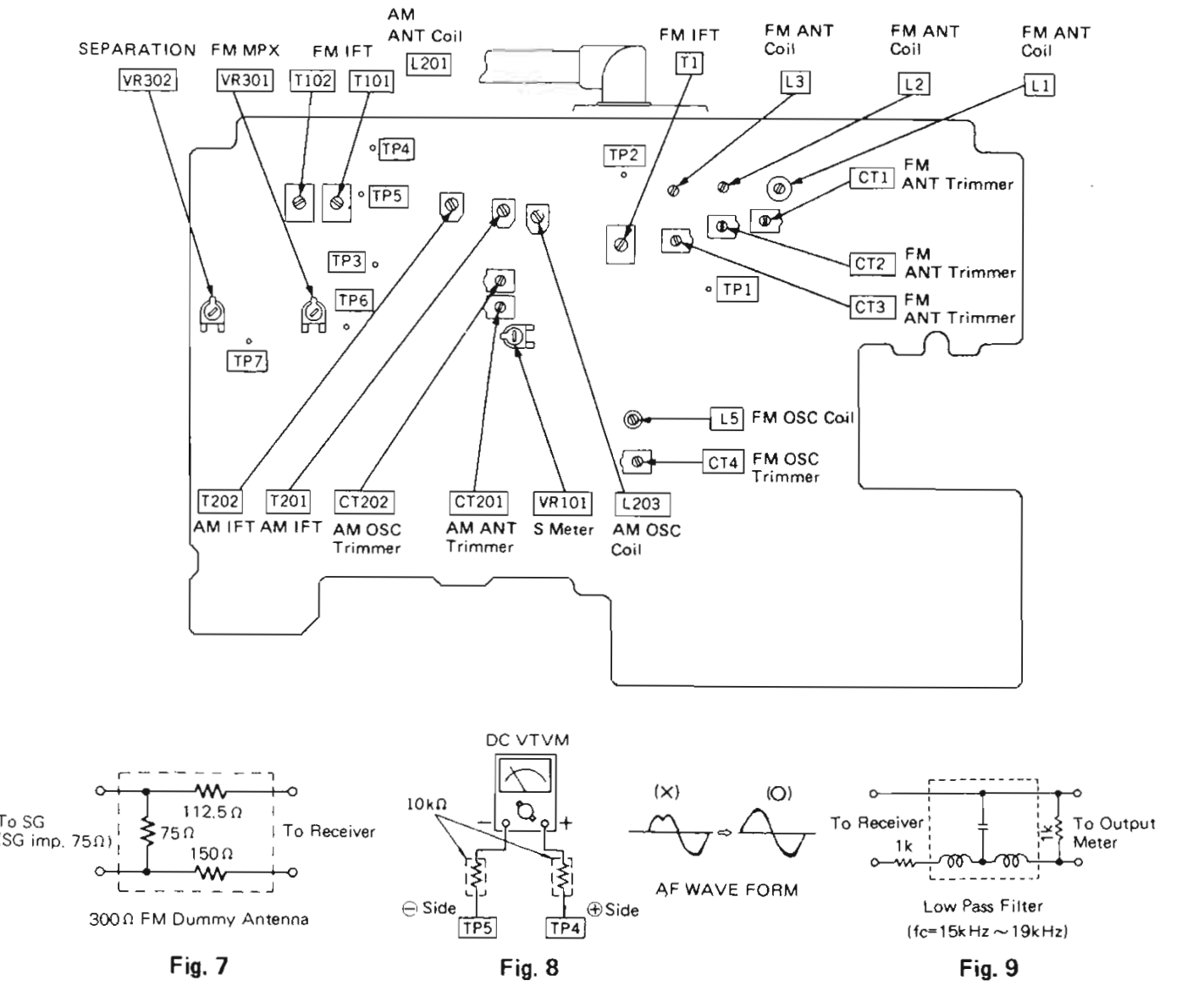
## ALIGNEMENT DU COMPTEUR D'ACCORD

14	Brancher la borne de l'antenne FM de 300Ω par l'antenne fictive FM (60dB)	98,10MHz (100% de mod. avec 1kHz)	98,10MHz	—	VR101	Régler la VR101 de telle sorte que la 5ème LED s'allume.
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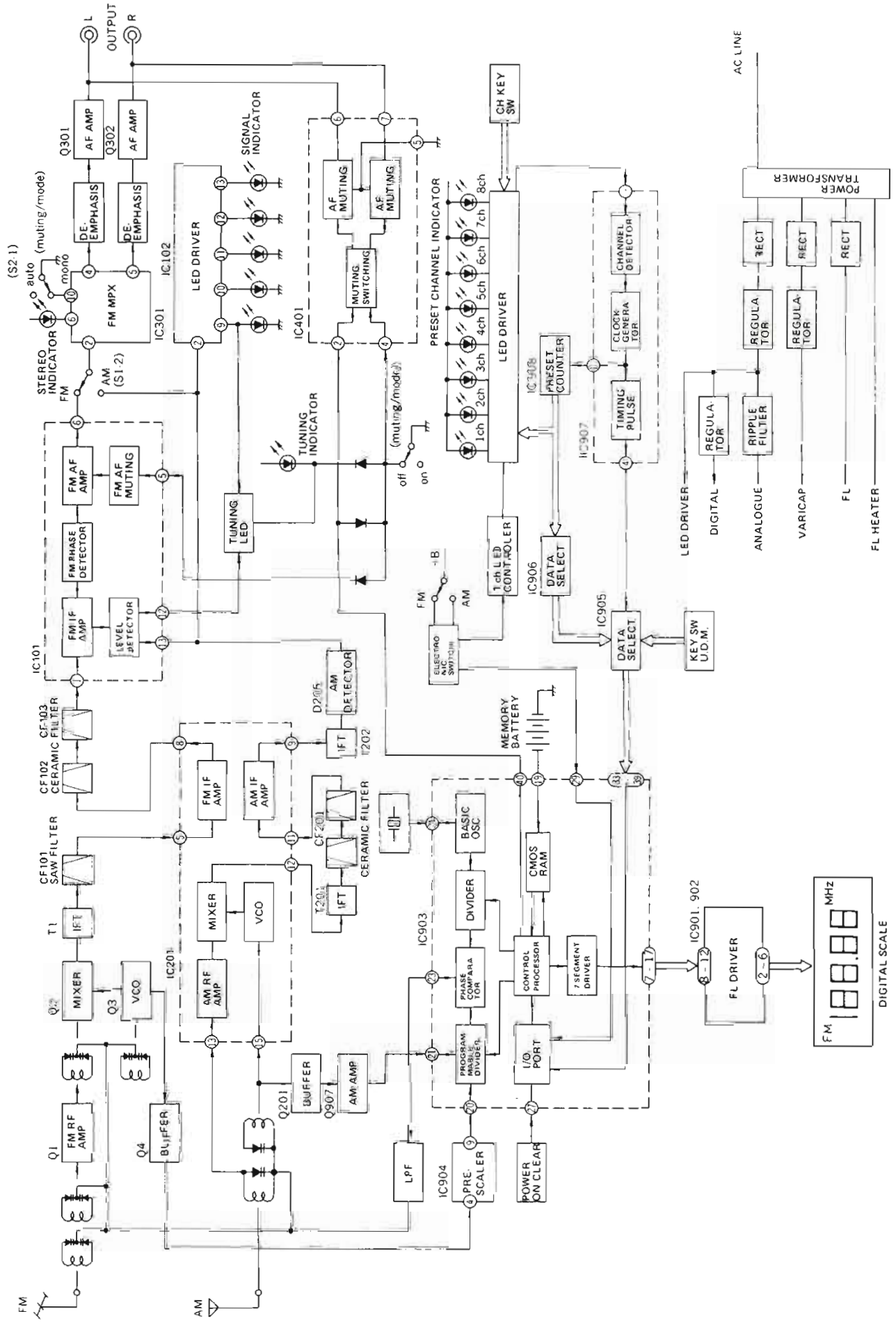
Notes: 1. Modulateur stéréo . . . . . • Brancher la sortie du modulateur stéréo à la borne EXT MOD du générateur de signal.  
 2. Générateur de signal FM . . . . . • Modulation du signal pilote à "10%"  
 3. Commutateur de sélection sur "FM auto" . . . . . • Régler le niveau approximatif de fréquence 100MHz/sortie sur "72dB (HF)"  
 • 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
<b>ALIGNEMENT DE LA SEPARATION DE FM STEREO</b>				
15 Brancher les bornes d'antenne FM de 300Ω par l'antenne fictive FM	(1kHz modulation de 30%) signal pilote Mode L (et R) sur "ON".	Brancher le VTVM à la borne de sortie par le filtre passe bas (Voir la Fig. 9)	VR302	• Affichage de la fréquence de 98,0MHz. • 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.
<b>ALIGNEMENT DE LA DISTORSION FM STEREO</b>				
16 Brancher la borne de l'antenne FM de 300Ω par l'antenne fictive FM, 98,0MHz, 60dB	(1kHz, modulation de 30%) MODE R	Brancher le compteur de distorsion à la borne de sortie du récepteur.	T1 (FM IFT)	Régler sur la distorsion minimale de la sortie droite.

■ ALIGNMENT POINTS

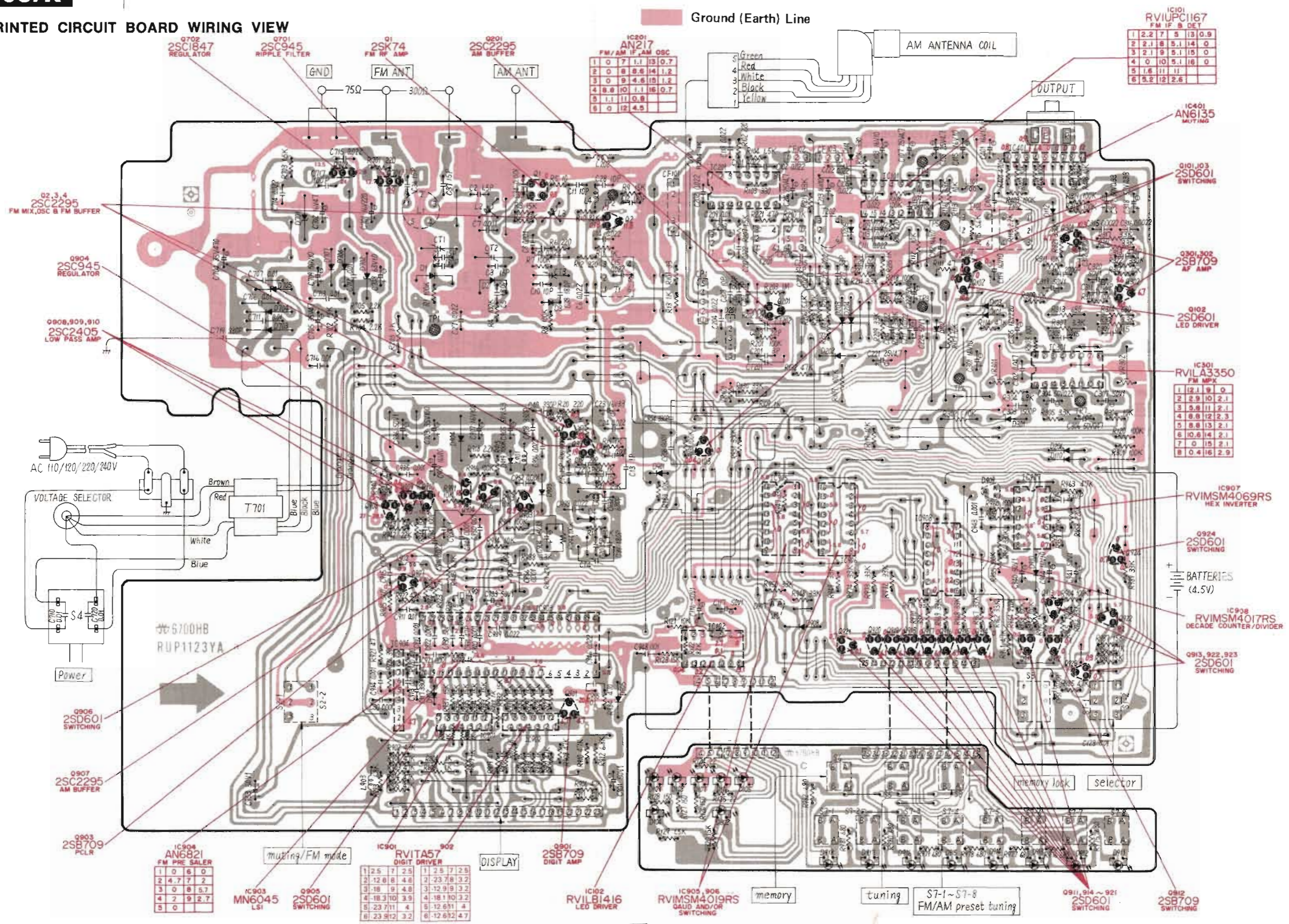


■ BLOCK DIAGRAM



PRINTED CIRCUIT BOARD WIRING VIEW

Ground (Earth) Line



1	0	7	1.1	13	0.7	
2	0	8	8.8	14	1.2	
3	0	9	4.6	15	1.2	
4	8	8	10	1.1	16	0.7
5	1.1	11	0.8			
6	0	12	4.5			

1	2.2	7	5	13	0.9
2	2.1	8	5.1	14	0
3	2.1	9	5.1	15	0
4	0	10	5.1	16	0
5	1.6	11	11		
6	5.2	12	2.6		

1	12	9	0	
2	2	9	10	2.1
3	3	8	11	2.1
4	8	8	12	2.3
5	8	8	13	2.1
6	10	8	14	2.1
7	0	15	2.1	
8	0	16	2.9	

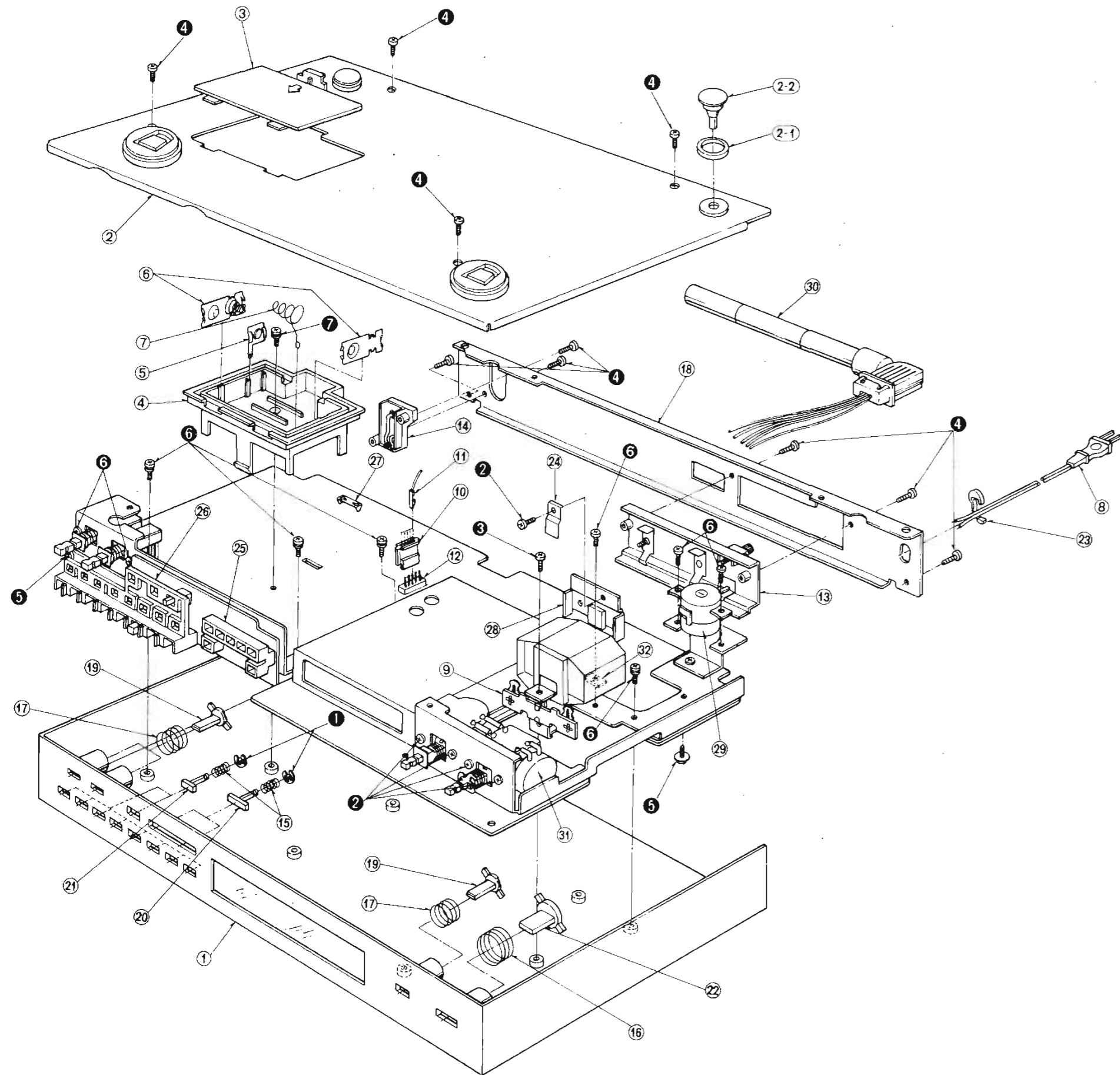
1	0	6	0	
2	4	7	2	
3	0	8	5	7
4	2	9	2	7
5	0			

1	2	5	7	2	5	
2	1	2	8	8	4	8
3	1	8	9	4	8	
4	1	8	3	10	3	9
5	2	3	7	11	4	
6	2	3	9	12	3	2

1	2	5	7	2	5	
2	1	2	8	8	4	8
3	1	8	9	4	8	
4	1	8	3	10	3	9
5	2	3	7	11	4	
6	2	3	9	12	3	2



EXPLODED VIEW



REPLACEMENT PARTS LIST ..... Cabinet & Chassis Parts

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

Ref. No.	Part No.	Part Name & Description
<b>CABINET and CHASSIS</b>		
1	RYMT003N	Cabinet Assembly
2	RYLTC03E	Bottom Board Assembly
2-1	SGXB03	Ring, Rear Side Foot
2-2	SHG1487	Foot, Rear Side
3	RYNTC03N	Battery Cover Assembly
4	RJB3016Z	Battery Case
5	RJC14A	Terminal, Battery + Side
6	RJC730Z	Terminal, Battery + - Side
7	RJC322Z	Spring, Battery - Side
8 [except XE, XAL]	RJA23Z	AC Cord, Power Source
8 [XE]	RJA45Z	AC Cord, Power Source
8 [XAL]	RJA44Z	AC Cord, Power Source
9	RJR29Z	Terminal
10	RJS217Y	Socket, Core Antenna
11	RJT462Z	Terminal, Socket
12	RJP116Z	Plug, Socket
13	SJF4419-3	Terminal, Antenna
14	SJF3225A-1	Terminal, Output
15	RDS3052Z	Spring, Preset & Tuning Button
16	RD55132Z	Spring, Power Source Button
17	SUS123-1	Spring, Switch Button
18 [except XA, XAL]	SGP1430-2C	Rear Panel
18 [XA]	SGP1430-2E	Rear Panel
18 [XAL]	SGP1430-2F	Rear Panel
19	SBC205-1	Button, Selector
20	RBC212Z	Button, Tuning
21	RBC213Z	Button, Preset
22	RBC230Z	Button, Power Source
23	RHR141Z	Bushing, AC Cord
24	RUS397Z	Spring, Q702
25	RMP125Z	Holder, LED
26	RMP126Z	Holder, LED
27	RMC171Y	Shield Cover, IC1
28	RMY62YS	Heat Sink, Q702
29	RUV387Z	Cover, Voltage Selector
30	SGXA4029-2	Caution Label
31	RHR325Z	Cover, Capacitor
32	RHM117Z	Spacer, Transformer
<b>SCREWS and WASHERS</b>		
1	XUC2FT	E Ring, Button M'tg
2	XSN3+8B	Screw, Switch M'tg
3	XTN3+8B	Screw, Terminal M'tg
4	XTN3+8BFN	Screw, Bottom Board M'tg
5	XTN3+8B	Screw, Chassis M'tg
6	XSN3+8BNS	Screw, Circuit Board M'tg
7	XSN3+8BNS	Screw, Gimmit Board M'tg
<b>ACCESSORIES</b>		
A1	SSA267	Cord, FM Indoor Antenna
A2	SJF2241	Connection Cord
A3 [XAL]	RJP16ZS	Plug, AC Cord
<b>PACKING PARTS</b>		
P1	X7H36X40A04	Polyethylene Bag
P2	X2B10X20A04	Polyethylene Bag
P3	SPS1769-1	Pad, Bottom
P4	SPS1771-2	Pad, Upper
P5 [except XGF]	FPK919Z	Carton Box
P6 [XGF]	FPK919Y	Carton Box
	RQX8542Z	Instruction Book

REPLACEMENT PARTS LIST ..... Electric Parts

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

Ref. No.	Part No.	Part Name & Description
<b>INTEGRATED CIRCUITS</b>		
IC101	SVIUPC1167C	IC, FM IF Amplifier & Detector
IC102	RVILB1416	IC, LED Driver
IC201	AN217P-BB	IC, FM/AM IF Amplifier & AM Oscillator
IC301	RV1LA3350S	IC, FM Multiplex
IC401	AN6135	IC, Muting
IC901, 902	RV1TA57	IC, Digit Driver
IC903	MN6045E	IC, PLL CONTROLLER RAM
IC904	AN6821	IC, FM Pre-Scaler
IC905, 906	RVIMS4019RS	IC, Quad And/Or Select Gate
IC907	RVIMS4069RS	IC, Hex Inverter
IC908	RVIMS4017RS	IC, Decade Counter/Divider
<b>TRANSISTORS</b>		
Q1	3SK74-L1	Transistor, FM RF Amplifier
Q2, 3, 4, 201, 907	25C2295B	Transistor, FM Mixer, Oscillator, Buffer & AM Buffer
Q101~103, 911, 922~924	25D601	Transistor, Switching, LED Driver
Q301, 302, 901	25B709	Transistor, AM Amplifier, Digit Amplifier
Q701, 904	25C945-P2	Transistor, Ripple Filter, Regulator
Q702	25C1847-R	Transistor, Regulator
Q903, 912	25B709R	Transistor, Regulator
Q906, 913~921	25D601	Transistor, Switching
Q908, 909, 910	25C2405-S	Transistor, Low Pass Amplifier
<b>DIODES</b>		
D1 ~ 4	RVDMV104	Diode, Variable Capacitance
D101, 103, 110, 111, 112, 202, 206, 301, 901, 903, 905, 908, 910, 919	MA162A	Diode, Switching
D102	RVDKB265E	Diode, Operation Compensator
D104, 107~109, 302	LN217RF-3	Light Emitting Diode, Tuning, Signal & Stereo
D105, 106	LN317GF-2	Light Emitting Diode, Signal
D201	RVDKV1221	Diode, Variable Capacitance
D203~205, 902	20A90	Diode, AM AGC, AM Detector & Switching
D701	RVDRD13FB	Diode, Regulator
D702	RVDRD33FB1	Diode, Regulator
Δ D703, 704	SM112	Diode, Rectifier
Δ D705, 706, 707	SM112	Diode, Rectifier
D904	RVDVD6RBE1	Diode, Regulator
D907, 909	MA151WK	Diode, Switching
D911 ~ 918	RVDGL9PRA2	Light Emitting Diode, Preset
<b>COILS and TRANSFORMERS</b>		
L1	SLA4N2-O	Coil, FM RF
L2, 3	RL04N128-O	Coil, FM RF
L4	RLQY15G5G-O	Coil, IF Trap
L5	RL04N126-O	Coil, FM Oscillator
L101	RLQX2701-K	Coil, Phase Shift
L201	RLF2D127	Coil, AM Antenna
L202, 901, 903	RLQX1014-Y	Coil, Choke
L203	RLQ2M25-K	Coil, AM Oscillator
L902	RLQ24701-D	Coil, Choke
L904	RLQ21003-Y	Coil, Choke
T1	SLI4C109	Transformer, FM IF
T101	SLI4C511-K	Transformer, FM IF
T102	SLI4C513-K	Transformer, FM IF
T201	RLI2M213-K	Transformer, AM IF
T202	RLI2M401-M	Transformer, AM IF
T701	Δ RLTSJ265-W	Transformer, Power Source
<b>CERAMIC FILTERS</b>		
CF101	SVFF107MC1-A	Ceramic Filter, 10.7MHz
CF102, 103	RVFSFE107LKA	Ceramic Filter, 10.7MHz
CF201	RVFSF245067	Ceramic Filter, 450kHz
<b>VARIABLE RESISTORS</b>		
VR101, 302	EVNKA4A00B13	Meter, Separation Adjustment
VR301	EVNMAA00B53	PLL VCO 19kHz Adjustment
<b>VARIABLE CAPACITORS</b>		
CT1~4, 201	RCV1PX10AGS	Trimmer
CT202	RCV1PX20AGS	Trimmer
<b>SWITCHES</b>		
S1, 3	RSHX013Z	Switch, Memory Lock & Selector
S2	RSHQ211Z	Switch, Muting & FM Mode
S4	RSH1804Z	Switch, Power Source
S5 ~ 8	EVQ04R13K	Switch, Tuning, Preset & Memory
S9	Δ RSR4A01V	Switch, Voltage Selector

Ref. No.	Part No.	Part Name & Description
<b>DISPLAY TUBE</b>		
	RAD7BT01S	Display, Frequency
<b>CRYSTAL</b>		
X901	RVCA11520NZN	Crystal
<b>RESISTORS</b>		
R1	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R2	RRD18KK333	Chip, 33kΩ, 1/8W, ±10%
R3	RRD18KK153	Chip, 15kΩ, 1/8W, ±10%
R4	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R5	RRD18KK100	Chip, 10Ω, 1/8W, ±10%
R6	RRD18KK221	Chip, 220Ω, 1/8W, ±10%
R7, 8	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R9	RRD18KK153	Chip, 15kΩ, 1/8W, ±10%
R10	RRD18KK823	Chip, 82kΩ, 1/8W, ±10%
R11	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R12	RRD18KK221	Chip, 220Ω, 1/8W, ±10%
R13, 14, 15	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R16, 17	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R18	RRD18KK224	Chip, 220kΩ, 1/8W, ±10%
R19	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R20	RRD18KK221	Chip, 220Ω, 1/8W, ±10%
R21	RRD18KK273	Chip, 27kΩ, 1/8W, ±10%
R23	RRD18KK150	Chip, 15Ω, 1/8W, ±10%
R101	RRD18KK330	Chip, 33kΩ, 1/8W, ±10%
R102	RRD18KK221	Chip, 220Ω, 1/8W, ±10%
R103	RRD18KK331	Chip, 330Ω, 1/8W, ±10%
R104	RRD18KK152	Chip, 15kΩ, 1/8W, ±10%
R106	RRD18KK331	Chip, 330Ω, 1/8W, ±10%
R108	ERD25TJ104	Carbon, 100kΩ, 1/4W, ±5%
R109	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R110	RRD18KK271	Chip, 270Ω, 1/8W, ±10%
R111	RRD18KK470	Chip, 47Ω, 1/8W, ±10%
R112	ERD25FJ103	Carbon, 10kΩ, 1/4W, ±5%
R113	RRD18KK183	Carbon, 18kΩ, 1/4W, ±5%
R114	RRD18KK473	Chip, 47kΩ, 1/8W, ±10%
R115	RRD18KK562	Chip, 56kΩ, 1/8W, ±10%
R116	ERD25FJ392	Carbon, 39kΩ, 1/4W, ±5%
R117	RRD18KK103	Chip, 10kΩ, 1/8W, ±10%
R118	RRD18KK222	Chip, 2.2kΩ, 1/8W, ±10%
R119	RRD18KK104	Chip, 10kΩ, 1/8W, ±10%
R120	RRD18KK103	Chip, 10kΩ, 1/8W, ±10%
R121	RRD18KK823	Chip, 82kΩ, 1/8W, ±10%
R122	RRD18KK153	Chip, 15kΩ, 1/8W, ±10%
R124, 125	RRD18KK220	Chip, 22Ω, 1/8W, ±10%
R126, 127	RRD18KK151	Chip, 150Ω, 1/8W, ±10%
R128	RRD18KK151	Chip, 150Ω, 1/8W, ±10%
R129	RRD18KK152	Chip, 15kΩ, 1/8W, ±10%
R130	RRD18KK333	Chip, 33kΩ, 1/8W, ±10%
R131	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R132	RRD18KK473	Chip, 47kΩ, 1/8W, ±10%
R201	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R202	RRD18KK222	Chip, 2.2kΩ, 1/8W, ±10%
R203	RRD18KK105	Chip, 1MΩ, 1/8W, ±10%
R204	RRD18KK107	Chip, 1kΩ, 1/8W, ±10%
R205	ERD25FJ102	Carbon, 1kΩ, 1/4W, ±5%
R206	RRD18KK562	Chip, 56kΩ, 1/8W, ±10%
R207	RRD18KK152	Chip, 15kΩ, 1/8W, ±10%
R208	RRD18KK392	Chip, 39kΩ, 1/8W, ±10%
R209	RRD18KK333	Chip, 33kΩ, 1/8W, ±10%
R210	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R211	RRD18KK101	Chip, 100Ω, 1/8W, ±10%
R212	RRD18KK274	Chip, 270kΩ, 1/8W, ±10%
R213	RRD18KK182	Chip, 1.8kΩ, 1/8W, ±10%
R214	RRD18KK332	Chip, 3.3kΩ, 1/8W, ±10%
R215	RRD18KK102	Chip, 1kΩ, 1/8W, ±10%
R216	RRD18KK223	Chip, 22kΩ, 1/8W, ±10%
R218	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R219	RRD18KK333	Chip, 33kΩ, 1/8W, ±10%
R221	RRD18KK471	Chip, 470Ω, 1/8W, ±10%
R301	RRD18KK104	Chip, 100kΩ, 1/8W, ±10%
R302	RRD18KK104	Carbon, 10kΩ, 1/4W, ±5%
R303	RRD18KK101	Chip, 100Ω, 1/8W, ±10%
R304	RRD18KK682	Chip, 6.8kΩ, 1/8W, ±10%
R305	RRD18KK332	Chip, 3.3kΩ, 1/8W, ±10%
R306	RRD18KK103	Chip, 10kΩ, 1/8W, ±10%

Ref. No.	Part No.	Part Name & Description
R307, 308	<b>ERD25FJ332</b>	Carbon, 3.3kΩ, 1/4W, ± 5%
R309, 310	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R311, 312	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R313, 314	<b>ERD25FJ681</b>	Carbon, 680Ω, 1/4W, ± 5%
R316, 317	<b>ERD25FJ332</b>	Carbon, 3.3kΩ, 1/4W, ± 5%
R318, 319	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R320	RRD18XK152	Chip, 1.5kΩ, 1/8W, ±10%
R321, 322	RRD18XK334	Chip, 330kΩ, 1/8W, ±10%
R401	RRD18XK474	Chip, 470kΩ, 1/8W, ±10%
R402	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R403	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R406	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R407	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R408	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R701	RRD18XK221	Chip, 220Ω, 1/8W, ±10%
R702	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R703	RRD18XK152	Chip, 1.5kΩ, 1/8W, ±10%
R704, 705	RRD18XK222	Chip, 2.2kΩ, 1/8W, ±10%
R804	<b>ERD25FJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%
R805, 806	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%
R807, 808	<b>ERD25FJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%
R809, 810	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%
R811	<b>ERD25FJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%
R812, 813	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%
R814	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%
R901, 902	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R903, 904	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R905, 906	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R907, 908	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R909, 910	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R911	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R912	RRD18XK682	Chip, 6.8kΩ, 1/8W, ±10%
R913, 914	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R915, 916	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R918	RRD18XK222	Chip, 2.2kΩ, 1/8W, ±10%
R919	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R920	RRD18XK471	Chip, 470Ω, 1/8W, ±10%
R921	RRD18XK470	Chip, 47Ω, 1/8W, ±10%
R922	RRD18XK472	Chip, 4.7kΩ, 1/8W, ±10%
R923	RRD18XK222	Chip, 2.2kΩ, 1/8W, ±10%
R924	RRD18XK684	Chip, 680kΩ, 1/8W, ±10%
R925	RRD18XK561	Chip, 560Ω, 1/8W, ±10%
R926	RRD18XK393	Chip, 39kΩ, 1/8W, ±10%
R927, 928	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R929, 930	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R931, 932	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R933, 934	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R935, 936	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R937	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R938	RRD18XK332	Chip, 3.3kΩ, 1/8W, ±10%
R940	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R942	RRD18XK223	Chip, 22kΩ, 1/8W, ±10%
R943	RRD18XK563	Chip, 56kΩ, 1/8W, ±10%
R944	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R945	<b>ERD25FJ682</b>	Carbon, 33kΩ, 1/4W, ± 5%
R946	RRD18XK472	Chip, 4.7kΩ, 1/8W, ±10%
R947, 948	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R949, 950	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R951	RRD18XK334	Chip, 330kΩ, 1/8W, ±10%
R952, 953	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R954	RRD18XK224	Chip, 330kΩ, 1/8W, ±10%
R955	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R956	RRD18XK334	Chip, 220kΩ, 1/8W, ±10%
R957, 958	RRD18XK224	Chip, 220kΩ, 1/8W, ±10%
R959	RRD18XK223	Chip, 22kΩ, 1/8W, ±10%
R960	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R961	RRD18XK472	Chip, 4.7kΩ, 1/8W, ±10%
R962	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R963	RRD18XK473	Chip, 47kΩ, 1/8W, ±10%
R964, 965	RRD18XK104	Chip, 100kΩ, 1/8W, ±10%
R966, 967	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R968, 969	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R970, 971	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R972, 973	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R974	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R975, 976	RRD18XK681	Chip, 680Ω, 1/8W, ±10%
R977, 978	RRD18XK681	Chip, 680Ω, 1/8W, ±10%
R979, 980	RRD18XK681	Chip, 680Ω, 1/8W, ±10%
R981, 982	RRD18XK681	Chip, 680Ω, 1/8W, ±10%
R983	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R984	RRD18XK471	Chip, 470Ω, 1/8W, ±10%
R985, 986	RRD18XK472	Chip, 4.7kΩ, 1/8W, ±10%
R987, 988	RRD18XK153	Chip, 15kΩ, 1/8W, ±10%
R989	RRD18XK333	Chip, 33kΩ, 1/8W, ±10%
R990	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%
R991	RRD18XK103	Chip, 10kΩ, 1/8W, ±10%
R992	RRD18XK102	Chip, 1kΩ, 1/8W, ±10%

Ref. No.	Part No.	Part Name & Description
R993	RRD18XK682	Chip, 6.8kΩ, 1/8W, ±10%
R994	<b>ERD25TJ104</b>	Carbon, 100kΩ, 1/4W, ± 5%
<b>CAPACITORS</b>		
C1	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C2	ECUX1H1R5CC	Chip, 1.5pF, 50V, ±0.25pF
C3	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C4, 5	ECUX1H181KC	Chip, 180pF, 50V, ±10%
C6	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C7, 8	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C10	ECUX1H100KC	Chip, 10pF, 50V, ±0.5pF
C11	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C12	ECUX1H181K	Chip, 180pF, 50V, ±10%
C13	ECCD1H010C	Ceramic, 1pF, 50V, ±0.25pF
C14, 15	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C16	ECUX1H102MD	Chip, 0.001μF, 50V, ±20%
C17	ECUX1H100KC	Chip, 10pF, 50V, ±10%
C18	ECUX1H220KC	Chip, 22pF, 50V, ±10%
C19	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C20	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C22	ECUX1H010CC	Chip, 1pF, 50V, ±0.25pF
C23	<b>ECEA1CS330</b>	Electrolytic, 33μF, 16V
C24	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C27	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C28	ECUX1H100KC	Chip, 10pF, 50V, ±10%
C30	ECUX1H102MD	Chip, 0.001μF, 50V, ±20%
C34	ECUX1H102MD	Chip, 0.001μF, 50V, ±20%
C36, 37	ECUX1H150KC	Chip, 15pF, 50V, ±10%
C38, 39	ECUX1H181KC	Chip, 180pF, 50V, ±10%
C40, 41	ECCD1H331K	Ceramic, 330pF, 50V, ±10%
C42	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C101, 102	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C103	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C104	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C105	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±10%
C106	ECUX1H101K	Chip, 100pF, 50V, ±10%
C107, 108	<b>ECEA25Z4R7</b>	Electrolytic, 4.7μF, 25V
C109	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C111	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C112	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C113	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C114	ECUX1H103ZF	Chip, 0.01μF, 50V, ±10%
C115	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C116, 117	<b>ECEA50Z1</b>	Electrolytic, 1μF, 50V
C118	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C119	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C122	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ±10%
C123	ECUX1H103MD	Chip, 0.01μF, 50V, ±20%
C201	ECUX1H030DC	Chip, 3pF, 50V, ±0.5pF
C202	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C203	ECUX1H220KC	Chip, 22pF, 50V, ±10%
C204	ECUX1H223MD	Chip, 0.022μF, 50V, ±20%
C206	ECQ505561JZ	Styrol, 560pF, 50V, ± 5%
C207	ECUX1H010CC	Chip, 1pF, 50V, ±0.25pF
C208	ECUX1H100KC	Chip, 10pF, 50V, ±10%
C209	ECUX1H103MD	Chip, 0.01μF, 50V, ±20%
C210, 211	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C212	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C213	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C214	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C215	ECUX1H560KC	Chip, 56pF, 50V, ±10%
C216	<b>ECEA25Z4R7</b>	Electrolytic, 4.7μF, 25V
C217	ECUX1H330KC	Chip, 33pF, 50V, ±10%
C218	ECUX1H223ZF	Chip, 0.022μF, 50V, ±10%
C219, 220	ECUX1H103MD	Chip, 0.01μF, 50V, ±20%
C221	<b>ECEA25Z4R7</b>	Electrolytic, 4.7μF, 25V
C222	<b>ECEA50Z1</b>	Electrolytic, 0.1μF, 50V
C224	<b>ECEA50Z1</b>	Electrolytic, 1μF, 50V
C301	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C302	ECQM1H473MZ	Polyester, 0.047μF, 50V, ±20%
C303	ECQ505152JZ	Styrol, 1500pF, 50V, ± 5%
C304	<b>ECEA50Z1</b>	Electrolytic, 0.22μF, 50V
C305	<b>ECEA1CS221</b>	Electrolytic, 220μF, 16V
C306	<b>ECEA50Z1</b>	Electrolytic, 0.47μF, 50V
C307	<b>ECEA50Z1</b>	Electrolytic, 1μF, 50V
C308, 309	ECQM1H153KZ	Polyester, 0.015μF, 50V, ±10%
C310, 311	ECQM1H272KZ	Polyester, 2700pF, 50V, ±10%
C312, 313	ECKD1H471KB	Ceramic, 470pF, 50V, ±10%
C315, 316	ECQM1H222KZ	Polyester, 2200pF, 50V, ±10%
C317, 318	<b>ECEA50Z1</b>	Electrolytic, 0.33μF, 50V
C319, 320	<b>ECEA50Z1</b>	Electrolytic, 1μF, 50V
C401	<b>ECEA1HS100</b>	Electrolytic, 10μF, 50V
C701	<b>ECEA1CS221</b>	Electrolytic, 220μF, 16V
C702	<b>ECEA1ES470</b>	Electrolytic, 47μF, 25V
C703	<b>ECEA1VS101</b>	Electrolytic, 100μF, 35V

Ref. No.	Part No.	Part Name & Description
C704	ECEA1VS471	Electrolytic, 470 $\mu$ F, 35V
C705	ECEA1HS470	Electrolytic, 47 $\mu$ F, 50V
C706, 707	ECKD2H103PE	Ceramic, 0.01 $\mu$ F, 500V, $\pm 100\%$
C708	ECEA1JS100	Electrolytic, 10 $\mu$ F, 63V
C709	ECEA1HS470	Electrolytic, 47 $\mu$ F, 50V
C710	ECKDKC103PE	Ceramic, 0.01 $\mu$ F, $\pm 100\%$
C711, 712	ECKD2H103PE	Ceramic, 0.01 $\mu$ F, 500V, $\pm 100\%$
C713	ECKD2H103PE	Ceramic, 0.01 $\mu$ F, 500V, $\pm 100\%$
C714, 715	ECUX1H223ZF	Chip, 0.022 $\mu$ F, 50V, $\pm 20\%$
C716	ECUX1H103MD	Chip, 0.01 $\mu$ F, 50V, $\pm 20\%$
C717	ECUX1H101K	Chip, 100pF, 50V, $\pm 10\%$
C720	ECKDKC103PF	Ceramic, 0.01 $\mu$ F, 50V, $\pm 100\%$
C901	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C903	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C904	ECEA1CS330	Electrolytic, 33 $\mu$ F, 16V
C905	ECEA50Z3R3	Electrolytic, 3.3 $\mu$ F, 50V
C906	ECUX1H223ZF	Chip, 0.022 $\mu$ F, 50V, $\pm 20\%$
C907	ECEA1ES101	Electrolytic, 100 $\mu$ F, 25V
C908	ECUX1H331KD	Chip, 330pF, 50V, $\pm 10\%$
C909	ECEA1HS100	Electrolytic, 10 $\mu$ F, 50V
C910	ECUX1H102ZF	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C911	ECUX1H103ZF	Chip, 0.01 $\mu$ F, 50V, $\pm 20\%$
C913	ECUX1H103ZF	Chip, 0.01 $\mu$ F, 50V, $\pm 20\%$
C914	ECUX1H102ZF	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C915	ECUX1H101K	Chip, 100pF, 50V, $\pm 10\%$
C916	ECKD1H223ZF	Ceramic, 0.022 $\mu$ F, 50V, $\pm 20\%$
C917	ECUX1H331KD	Chip, 330pF, 50V, $\pm 10\%$

Ref. No.	Part No.	Part Name & Description
C920	ECUX1H102ZF	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C921	ECUX1H102MD	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C922	ECUX1H102ZF	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C930	ECUX1H680KC	Chip, 68pF, 50V, $\pm 10\%$
C931	ECUX1H470KC	Chip, 47pF, 50V, $\pm 10\%$
C932	ECUX1H681K	Chip, 680pF, 50V, $\pm 10\%$
C935	ECUX1H102ZF	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C936	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C937	ECQE1105KZ	Polyester, 1 $\mu$ F, 50V, $\pm 10\%$
C938	ECKD1H223ZF	Ceramic, 0.022 $\mu$ F, 50V, $\pm 20\%$
C939	ECUX1H223ZF	Chip, 0.022 $\mu$ F, 50V, $\pm 20\%$
C940	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C941	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C942	ECUX1H331KD	Chip, 330pF, 50V, $\pm 10\%$
C943	ECUX1H102MD	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C944	ECEA1HS100	Electrolytic, 10 $\mu$ F, 50V
C946	ECUX1H223ZF	Chip, 0.022 $\mu$ F, 50V, $\pm 20\%$
C947	ECUX1H101K	Chip, 100pF, 50V, $\pm 10\%$
C948	ECUX1H103MD	Chip, 0.01 $\mu$ F, 50V, $\pm 20\%$
C949	ECUX1H102MD	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C950	ECUX1H103MD	Chip, 0.01 $\mu$ F, 50V, $\pm 20\%$
C951, 952	ECUX1H102MD	Chip, 0.001 $\mu$ F, 50V, $\pm 20\%$
C953	ECEA50Z1	Electrolytic, 1 $\mu$ F, 50V
C954	ECCD1H331K	Ceramic, 330pF, 50V, $\pm 10\%$
C955	ECFVD104MD	Semi-Conductor, 0.1 $\mu$ F, 25V, $\pm 20\%$
C956	ECKD1H102MD	Ceramic, 0.001 $\mu$ F, 50V, $\pm 20\%$
C957	ECFVD103MD	Semi-Conductor, 0.01 $\mu$ F, 25V, $\pm 20\%$
C958	ECKD1H102MD	Ceramic, 0.001 $\mu$ F, 50V, $\pm 20\%$

## CHANGE OF PARTS LIST

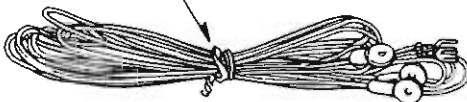
# ST-C03K (EG)

Note: This parts list included only the changes of the model ST-C03 parts list.

Ref. No.	Change of Part No.		Part Name & Description
	ST-C03	ST-C03K	
<b>CABINET</b>			
1	RYMTC03N	RYMTC03KEG	Cabinet Assembly
2	RYUTC03E	RYUTC03KEG1	Bottom Board Assembly
2-1	SGX803	SGX803-1	Ring, Rear Side Feet
3	RYNTC03N	RYNTC03KEG	Battery Cover Assembly
8	—	RJA23Z	AC Cord
18	SGP1430-2C	SGP1430-2D	Rear Panel
19	SBC205-1	SBC205-2	Button, Selector
20	RBC212Z	RBC212Z1	Button, Tuning
21	RBC213Z	RBC213Z1	Button, Preset
22	RBC220Z	RBC220Z1	Button, Power Source
<b>SCREWS</b>			
④	XTB3+8BFN	XTB3+8BFZ	Screw, Bottom Board M'tg
<b>PACKING PARTS</b>			
	—	RPK919Z	Gift Box

## ACCESSORIES

A1(SSA267)



A2(SJP2241)



A3(RJP16ZS) (XA) only

