

# STR-AV220/AV320

## SERVICE MANUAL

US Model  
Canadian Model



Photo : STR-AV320

### SPECIFICATIONS

#### Audio Power Specifications

#### POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8-ohm load, both channels driven, from 40-20,000 Hz, rated 50 watts (STR-AV320) or 40 watts (STR-AV220) per channel minimum RMS power, with no more than 0.8% total harmonic distortion from 250 milliwatts to rated output.

#### Other Specifications

##### Amplifier section

Continuous RMS power output (8 ohms, at 1 kHz less than 0.8% total harmonic distortion)

STR-AV320 : 65 watts + 65 watts  
STR-AV220 : 50 watts + 50 watts

Dynamic power

	4 ohms	8 ohms
STR-AV 220	60 W + 60 W	55 W + 55 W
STR-AV 320	75 W + 75 W	65 W + 65 W

at 1 kHz, IHF

Harmonic distortion

Less than 0.8% at rated output

Frequency response

PHONO: RIAA equalization curve  $\pm 0.5$  dB  
CD, VIDEO, TAPE: 10 Hz - 50 kHz  $\pm 0.5$  dB

Inputs

	Sensitivity	Impedance	S/N (weighting network, input level)
PHONO	2.5 mV	50 kilohms	74 dB 72 dB* (A, 2.5 mV)
CD VIDEO TAPE	150 mV	50 kilohms	95 dB 80 dB* (A, 150 mV)

\* 78 IHF

#### Outputs

REC OUT, VIDEO (AUDIO) OUT	Voltage 150 mV Impedance 10 kilohms
SPEAKER A, B	Accepts speakers of 8 - 16 ohms
HEADPHONES	Accepts low and high impedance headphones

Tone controls

BASS:  $\pm 10$  dB at 100 Hz  
TREBLE:  $\pm 10$  dB at 10 kHz

Muting

-20 dB

DBFB

+12 dB at 70 Hz

	FM tuner section	AM tuner section
Tuning range	87.5 - 108 MHz	530 - 1,710 kHz
Antenna terminals	300 ohms, balanced 75 ohms, unbalanced	External antenna terminal
Sensitivity at 50 dB quieting	18.3 dBf, 4.5 $\mu$ V (mono) 38.3 dBf, 45 $\mu$ V (stereo)	—
Usable sensitivity	11.2 dBf, 2 $\mu$ V (IHF)	Loop antenna: 500 $\mu$ V (at 1,000 kHz)
Signal-to-noise ratio	76 dB (mono) 70 dB (stereo)	54 dB (at 50 mV/m)
Harmonic distortion	0.2% (mono), 0.4% (stereo) at 1 kHz	0.3% (at 50 mV/m, 400 Hz)
Selectivity	60 dB at 400 kHz	40 dB at 10 kHz
Separation	45 dB at 1 kHz	—
Frequency response	30 Hz - 15 kHz $\pm 0.5$ dB	—

#### General

System

Tuner section: PLL quartz-locked digital synthesizer system  
Preamplifier section: low-noise NF type equalizer amp  
Power amplifier section: quasi-complementary SEPP

— Continued on page 2 —

# FM STEREO FM-AM RECEIVER

# SONY®



Power requirements	120 V AC, 60 Hz
Power consumption	U.S.A. model: 100 watts (STR-AV320) 90 watts (STR-AV220) Canadian model: 160 watts (STR-AV320) 140 watts (STR-AV220) In standby condition: 5 watts (STR-AV320 only)
AC outlets	One switched (100 watts)
Dimensions	Approx. 430 × 110 × 295 mm (w/h/d) (17 × 4 5/16 × 11 5/8 inches) including projecting parts and controls
Weight	Approx. 5.2 kg (11 lbs 7 oz) net (STR-AV220) Approx. 6.2 kg (13 lbs 11 oz) net (STR-AV320)
Accessories supplied	Remote Commander RM-S103 (1) (STR-AV320 only) Sony batteries SUM 3(NS) (2) (STR-AV320 only) FM wired antenna (1) AM loop antenna (1)

Design and specifications subject to change without notice.


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**SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

**SAFETY CHECK-OUT (US Model)**

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

**LEAKAGE TEST**

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

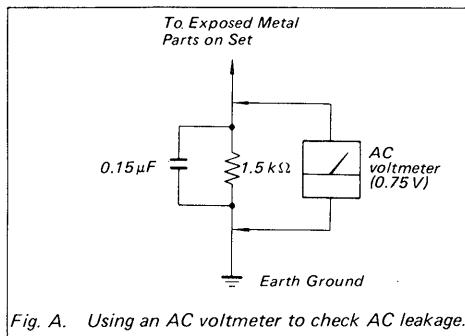


Fig. A. Using an AC voltmeter to check AC leakage.

**WARNING !!**

**ADVARSEL!**

Lithiumbatteri – Eksplosionsfare  
Udskiftning må kun foretages  
af en sagkyndig, og som  
beskrevet i servicemanualen.

**LITHIUM BATTERY**

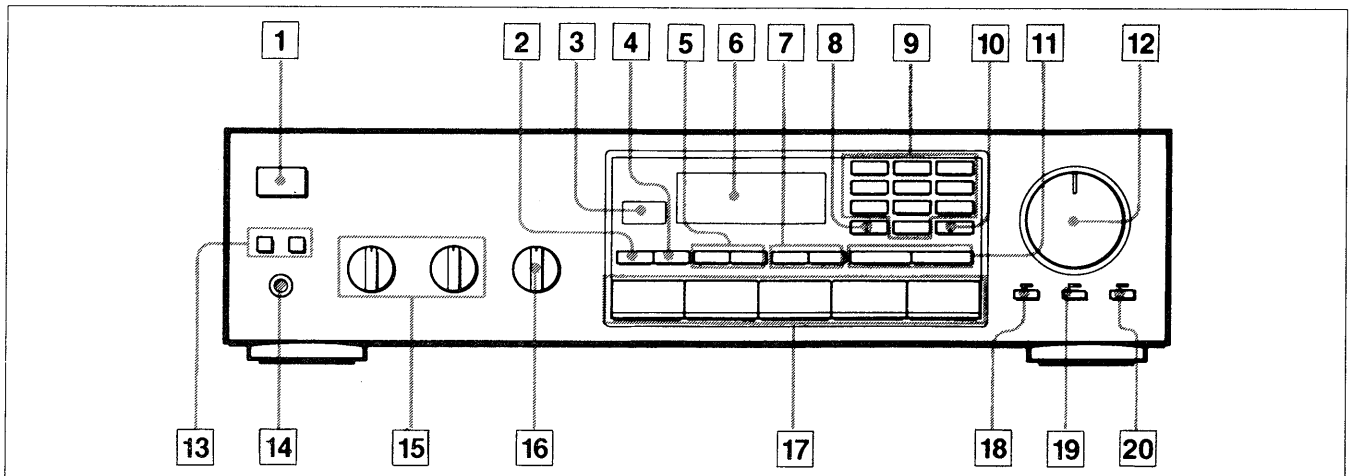
SHOULD ONLY BE CHANGED BY TECHNICAL PERSONNEL. THERE IS A RISK FOR EXPLOSION AT A WRONG HANDLING.

“Batteriet må kun udskiftes med et batteri af samme fabrikat og type”.

Because of the risk for explosion the battery must be replaced with the same type and manufacture.

## SECTION 1 GENERAL

### 1-1. LOCATION AND FUNCTION OF CONTROLS



- 1 POWER switch**
- 2 DIRECT TUNING button**
- 3 Remote sensor (STR-AV320 only)**
- 4 FM MODE button**  
When an FM stereo program is noisy or hard to receive, press this button. The STEREO indicator goes out (the sound is heard in monaural, but the reception will be improved). To return to the stereo mode, press again or change the frequency.
- 5 BAND selectors**
- 6 Display window**
- 7 TUNING +/- buttons**
- 8 MEMORY button**
- 9 Numeric buttons**
- 10 SHIFT button**
- 11 PRESET +/- buttons**
- 12 VOLUME control and indicator**  
The indicator is only equipped with the STR-AV320
- 13 SPEAKERS selectors**  
Depress to select which speaker system to drive. For both speaker systems, depress A and B.
- 14 HEADPHONES jack (stereo phone jack)**
- 15 TONE controls**  
Turn the TREBLE control to adjust the high frequency sound. Turn BASS control to adjust the low frequency sound.
- 16 BALANCE control**  
Turn clockwise to decrease the left channel volume, and turn counterclockwise to decrease the right channel volume.
- 17 Function selectors**
- 18 DBFB (Dynamic Bass Feed Back) button and indicator**  
To reinforce the bass frequency sound, press this button.
- 19 MUTING button and indicator (STR-AV320 only)**  
Press to attenuate the sound level immediately (-20 dB ATT). Pressing this button makes the indicator be lighted. To restore the sound level, press again.
- 20 SURROUND button and indicator**  
To obtain the surround effect, press this button.

### Remote Commander RM-S103 (STR-AV320 only)

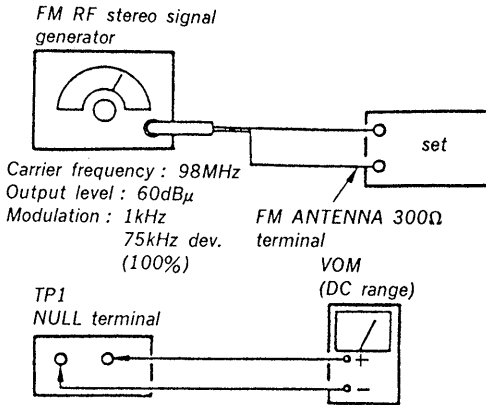
- 
- 1 POWER button**
  - 2 DBFB button**
  - 3 TUNER PRESET +/- and SHIFT buttons**
  - 4 VOLUME +/- buttons**
  - 5 SURROUND button**
  - 6 MUTING button**
  - 7 CD player operation buttons**  
D. (disc) SKIP: When your CD player is equipped with multi-disc changer, use this button to select loaded disc.  
CD ▶: Selects the CD function and starts CD playback.
  - 8 DECK B operation buttons (also for single tape deck)**  
DECK B ◀▶: Select tape function and start tape playback on deck B.
  - 9 DECK A operation buttons**  
DECK A ◀▶: Select tape function and start tape playback on deck A.
  - 10 Function select buttons.**

## SECTION 2 ELECTRICAL ADJUSTMENTS

### FM SECTION

#### • FM Discriminator (NULL) Adjustment

Setting :



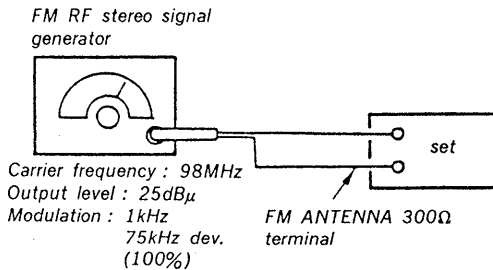
#### Procedure :

1. Tune the set to 98MHz.
2. Adjust T21 for 0V reading on the VOM.

Note : FM Tuning Level adjustment should be made after FM discriminator adjustment.

#### • FM Stereo Operation Level Adjustment

Setting :

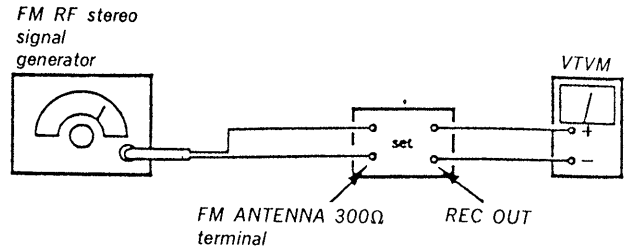


#### Procedure :

1. Tune the set to 98MHz.
2. Adjust RV24 so that the STEREO LED goes on.

#### • FM Stereo Separation Adjustment

Setting :



#### Procedure :

Tune the set to 98MHz.

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ <sub>1</sub> Adjust RV21 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV21 for minimum reading.

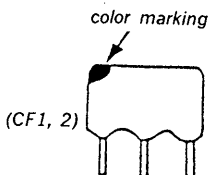
L-CH Stereo separation : Ⓐ - Ⓑ

R-CH Stereo separation : Ⓒ - Ⓓ

The separations of both channels should be equal.

#### Note on Ceramic Filter (CF1, 2) Replacement.

This set employs two ceramic filters (CF1, 2) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by (\* A, \* B) connection is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.



○ : short

× : open

Ceramic filter		Connection		FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	* A (D326)	* B (D327)	
White	10.750	×	○	10.750
Red	10.700	×	×	10.700
Black	10.650	○	○	10.650

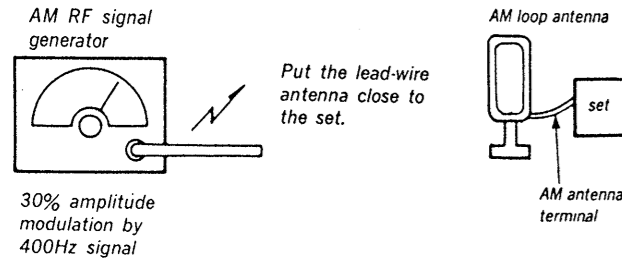
# SECTION 3 DIAGRAMS

3-1. BLOCK DIAGRAM

## AM SECTION

### • AM Meter Adjustment

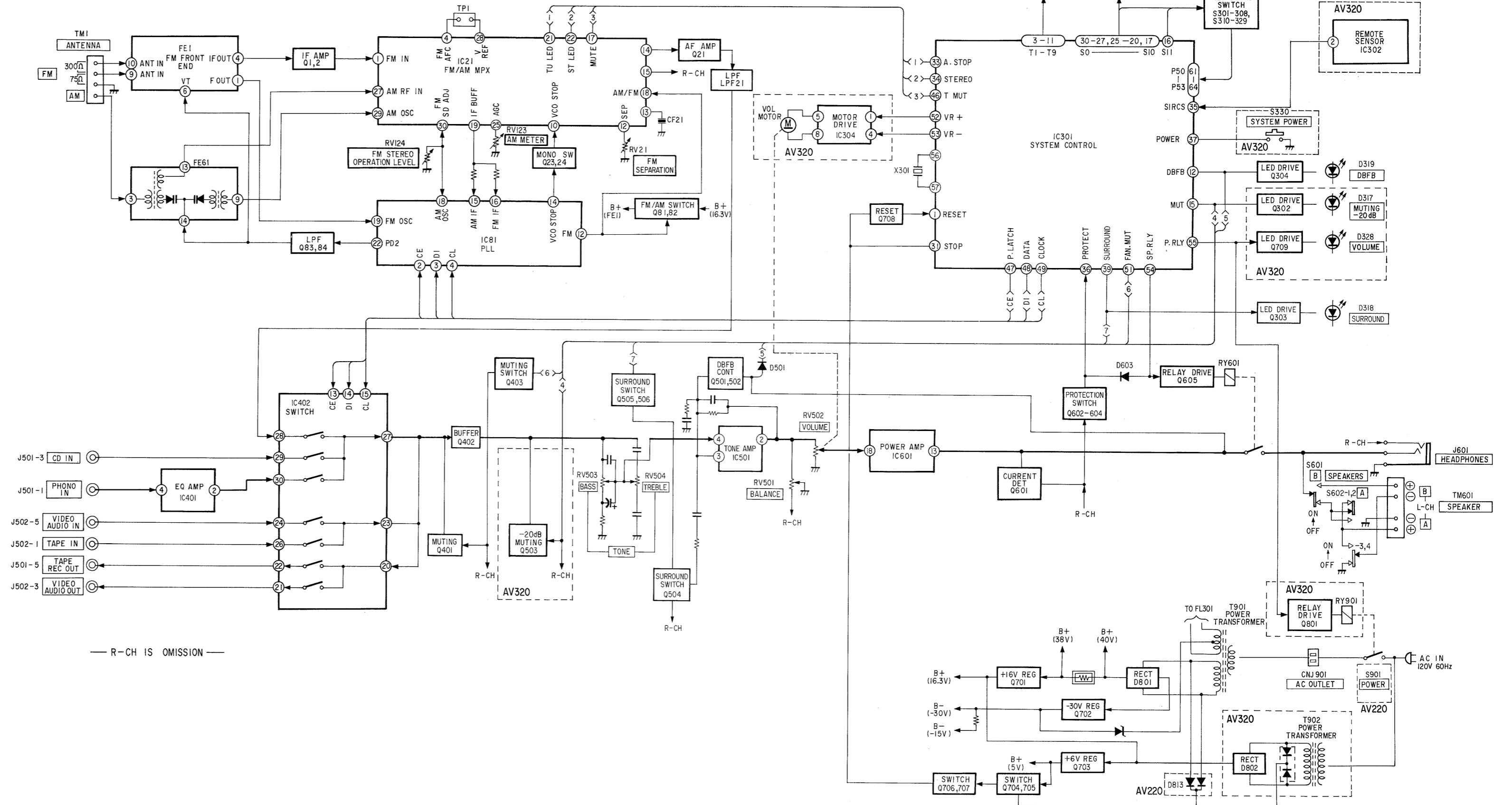
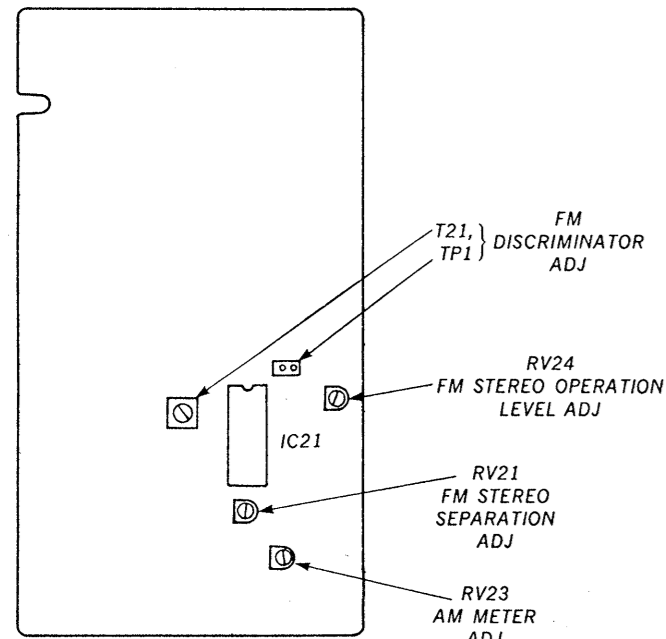
Setting :



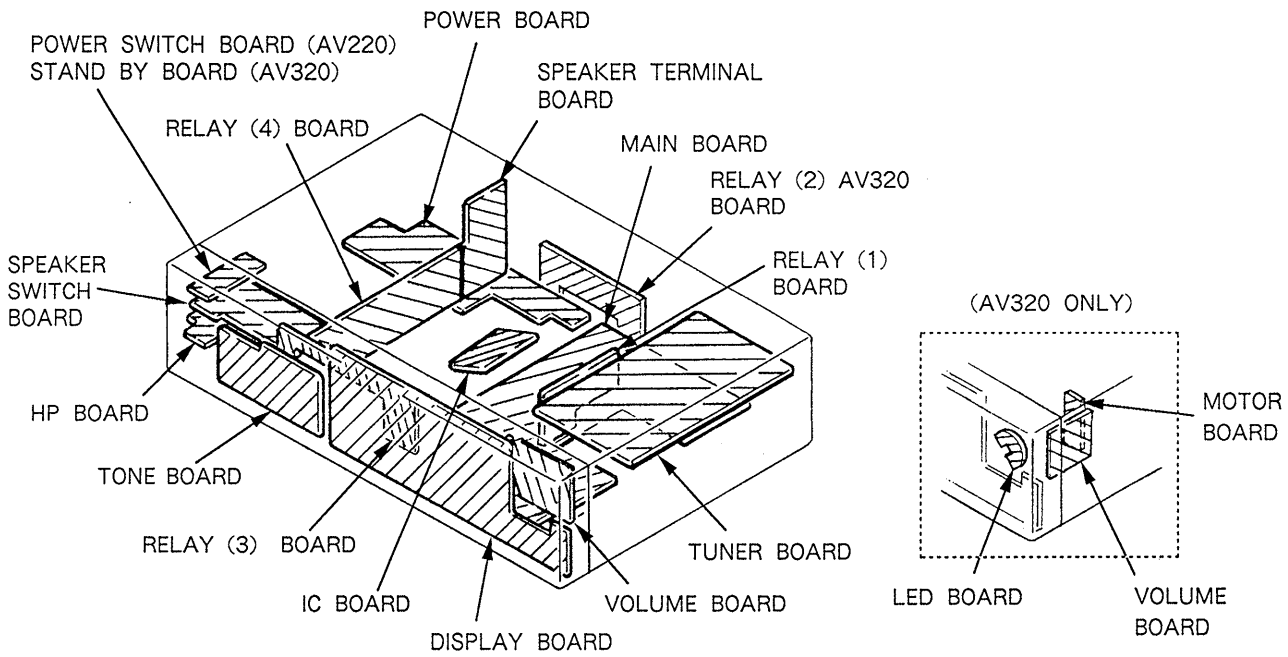
Procedure :

1. Tune the set to 1,050kHz.
2. Adjust the RV23 so that the 5 point segment of the signal meter go on.

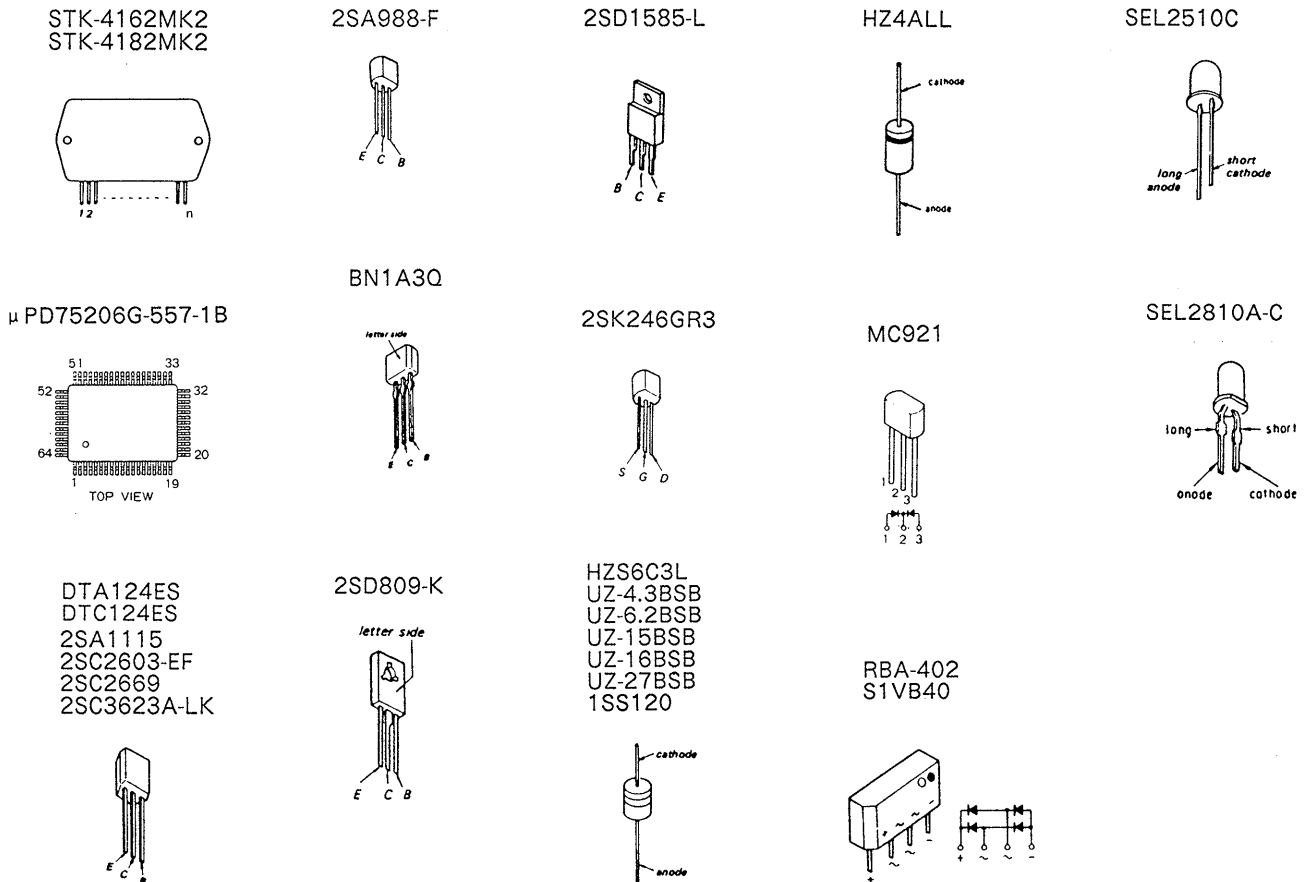
Adjustment Location : tuner board



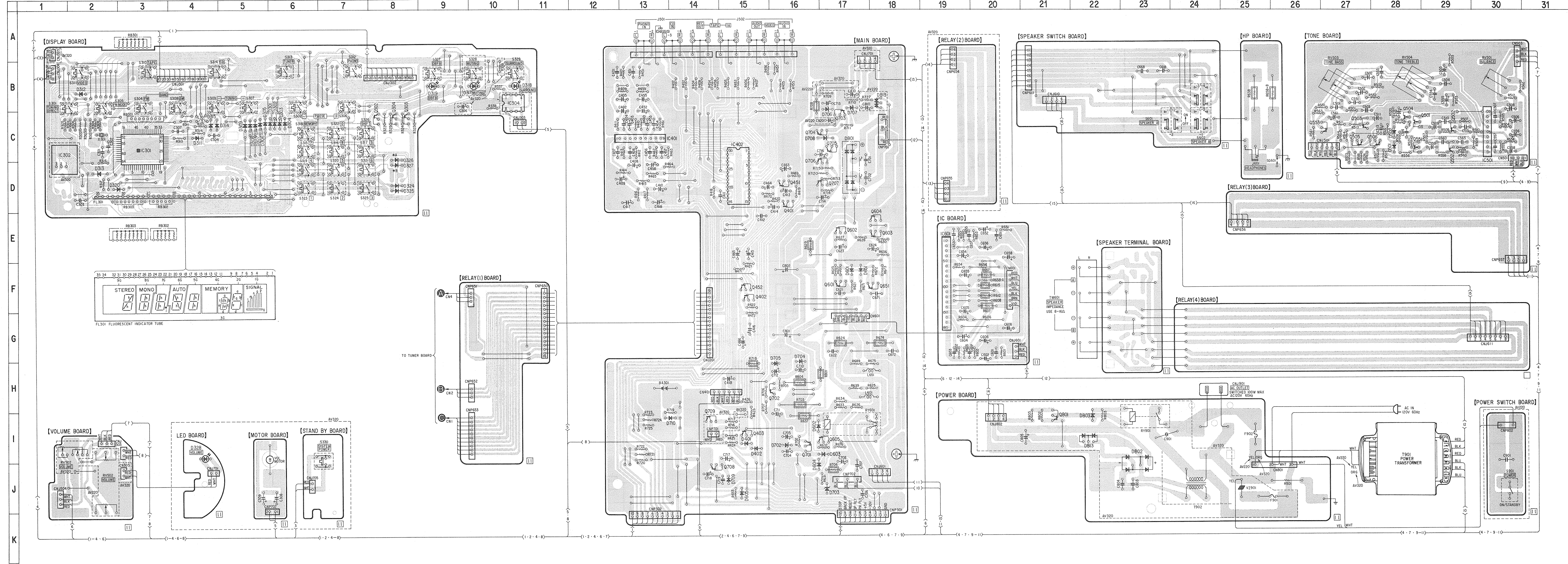
## CIRCUIT BOARDS LOCATION



## 3-2. SEMICONDUCTOR LEAD LAYOUTS

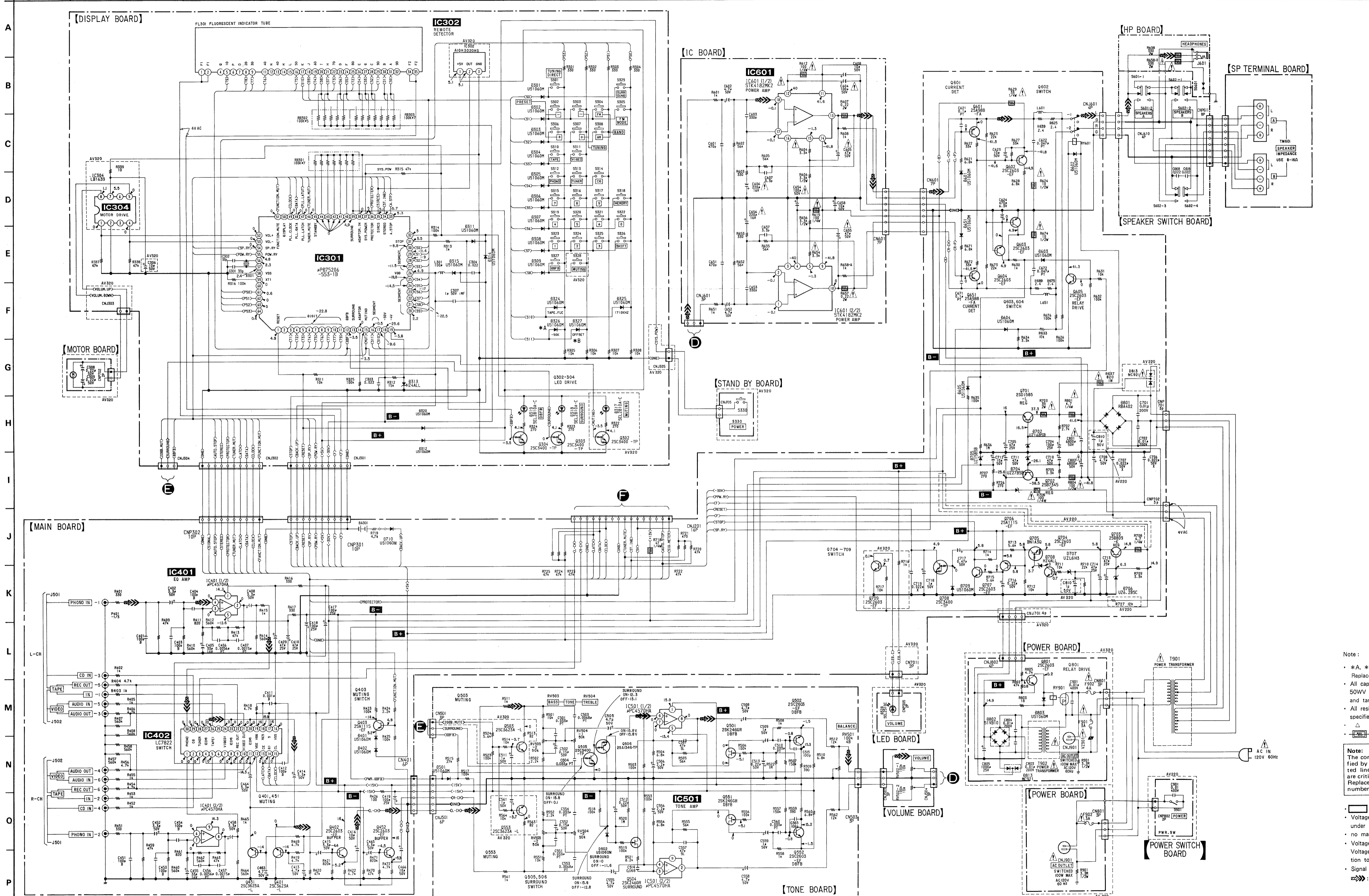


Ref. No.	Location	Ref. No.	Location
IC301	C-3	D306	C-5
IC302	C-1	D307	C-5
IC304	B-10	D308	C-5
IC401	C-13	D309	C-5
IC402	D-15	D311	C-4
IC501	C-30	D312	B-2
IC601	F-19	D313	D-2
		D314	C-4
Q302	C-8	D315	C-4
Q303	C-8	D317	B-10
Q304	C-8		
Q401	D-16	D318	B-10
Q402	F-15	D319	B-9
		D320	D-3
Q403	I-15	D324	D-8
Q451	D-16	D325	D-8
Q452	F-15		
Q501	C-29	D326	C-8
Q502	C-29	D327	D-8
		D328	I-4
Q503	C-27	D401	I-15
Q504	C-28	D402	I-15
Q505	C-28		
Q506	C-28	D501	C-28
Q551	C-29	D502	C-28
		D601	F-17
Q552	C-29	D602	I-16
Q553	C-27	D603	I-17
Q601	F-17		
Q602	E-17	D604	J-16
Q603	E-18	D605	J-15
		D651	F-17
Q604	E-18	D702	I-16
Q605	I-17	D703	J-17
Q651	F-18		
Q701	I-16	D704	H-16
Q702	H-16	D705	H-16
		D706	B-17
Q703	C-17	D707	B-17
Q704	C-17	D708	C-17
Q705	C-17		
Q706	D-17	D709	J-15
Q707	D-17	D710	I-14
		D801	D-17
Q708	J-14	D802	J-23
Q709	I-14	D803	I-22
Q801	I-21		
		D813	B-18
D301	C-6	D813	I-22
D302	C-6		
D303	C-6		
D304	C-6		
D305	C-5		



Note:

- : parts extracted from the component side.
- : parts mounted on the conductor side.
- : indicates side identified with part number.
- \*A, \*B: See page 4 for Note on Ceramic Filter (CF1, 2) Replacement.



Note:

- \*A, \*B: See page 4 for Note on Ceramic Filter (CF1, 2) Replacement.
- All capacitors are in  $\mu F$  unless otherwise noted.  $\mu F$ :  $\mu F$  50VW or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{2}W$  or less unless otherwise specified.
- $\Delta$ : internal component.
- $\square$ : nonflammable resistor.

Note:

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- $\square$ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- \* mark: PHONE
- Voltagés are taken with a VOM (Input impedance 10M  $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- $\Rightarrow$ : PHONO





3-8. EXPLANATION OF IC301 ( $\mu$ PD75206)

PIN No.	SIGNAL NAME	FUNCTION	I/O	ACTIVE
1	RESET	Micro Computer RESET	I	L
2	T0	FL tube indication (invalid) digit	O	H
3	T1	FL tube indication digit T1	O	H
4	T2	FL tube indication digit T2	O	H
5	T3	FL tube indication digit T3	O	H
6	T4	FL tube indication digit T4	O	H
7	T5	FL tube indication digit T5	O	H
8	T6	FL tube indication digit T6	O	H
9	T7	FL tube indication digit T7	O	H
10	T8	FL tube indication digit T8	O	H
11	T9	FL tube SIGNAL indication digit T9	O	H
12	T10/PH3	DBFB Output	O	H
13	T11/PH2	IF WIDE/NARROW Output	O	H
14	T12/PH1	Adapter Output	O	H
15	T13/PH0	-20dB Muting Output	O	H
16	T14/S11	FL tube indication Segment/Diode S11	O	H
17	T15/S10	FL tube indication Segment/Diode S10	O	H
18	V road	FL tube pulldown power supply	-	-
19	V pre	FL tube driver power supply	-	-
20	S9	FL tube indication Segment/Diode S9	O	H
21	S8	FL tube indication Segment/Key Scan S8	O	H
22	S7	FL tube indication Segment/Key Scan S7	O	H
23	S6	FL tube indication Segment/Key Scan S6	O	H
24	S5	FL tube indication Segment/Key Scan S5	O	H
25	S4	FL tube indication Segment/Key Scan S4	O	H
26	Vdd	Micro Computer power supply	-	-
27	S3	FL tube indication Segment/Key Scan S3	O	H
28	S2	FL tube indication Segment/Key Scan S2	O	H
29	S1	FL tube indication Segment/Key Scan S1	O	H
30	S0	FL tube indication Segment/Key Scan S0	O	H
31	P00/INT4	Signal to cut power supply STOP	I	L
32	P01/SCK	Serial latch for electrical adjustment use Sl. LAT	I	L

-Continued on page 22-

PIN No.	SIGNAL NAME	FUNCTION	I/O	ACTIVE
33	P02/S0	Tuner Auto Stop input ASTP	I	L
34	P03/S1	Tuner Stereo input STEREO	I	L
35	P10/INT0	Remote Control Signal input SIRCS	I	L
36	P11/INT1	Protector input PROTECT	I	L
37	P12/INT2	System Power Key input PKEY	I	L
38	P13/TI0	Adapter Mechanical Switch input AKEY	I	H
39	P20	Surround output SURROUND	O	H
40	P21	Video Control A VCRA	O	H
41	P22	Video Control B VCRB	O	H
42	P23/BUZ	Video Inhibit VCRI	O	H
43	P30	Protector Muting PMUT	O	L
44	P31	Source Direct Output	O	H
45	P32	Standby LED Output STANBY	O	H
46	P33	Tuner Muting TMUTE	O	H
47	P60	PLL/7822 Latch PLAT	O	H
48	P61	PLL/7822/SI Data DATA	I/O	H
49	P62	PLL/7822/SI Clock CLOK	I/O	H
50	P63	IF WIDE/NARROW Display output	O	H
51	P40	Function Muting FMUTE	O	L
52	P41	Motor Volume UP VOL+	O	H
53	P42	Motor Volume DOWN VOL-	O	H
54	P43	Speaker Relay SP. RY	O	H
55	PP0	Power Relay POW. RY	O	H
56	X1	Ceramic Oscillator	-	-
57	X2	Ceramic Oscillator	-	-
58	Vss	Micro Computer GND	-	-
59	XT1	-	-	-
60	XT2	-	-	-
61	P50	P50 Key Scan Input	I	H
62	P51	P51 Key Scan Input	I	H
63	P52	P52 Key Scan Input	I	H
64	P53	P53 Key Scan Input	I	H

## SECTION 4

### EXPLODED VIEWS

**NOTE:**



- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.


- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

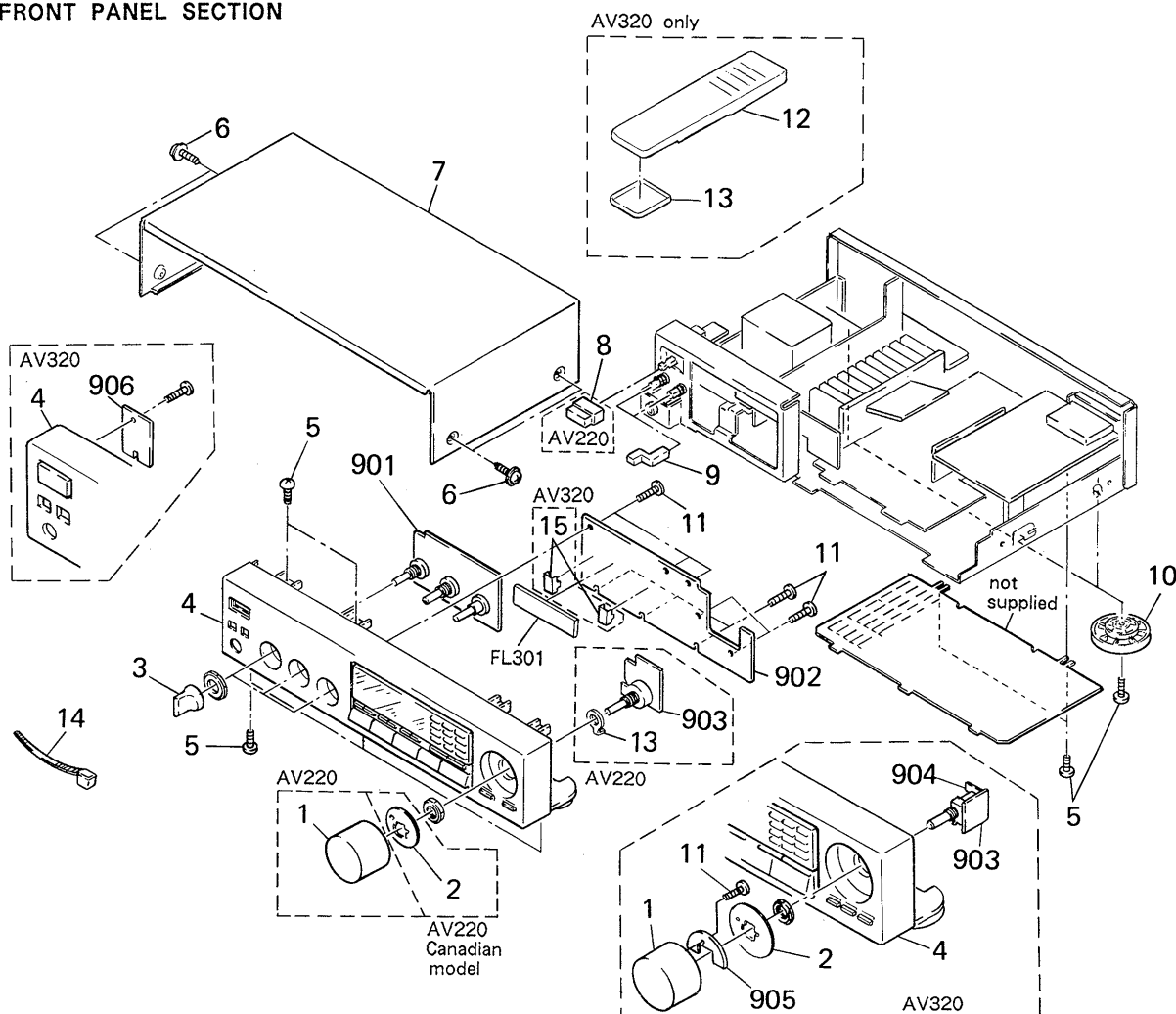
- Color Indication of Appearance Parts Example:

(RED) ... KNOB, BALANCE (WHITE)

↑  
Cabinet's Color↑  
Parts' Color

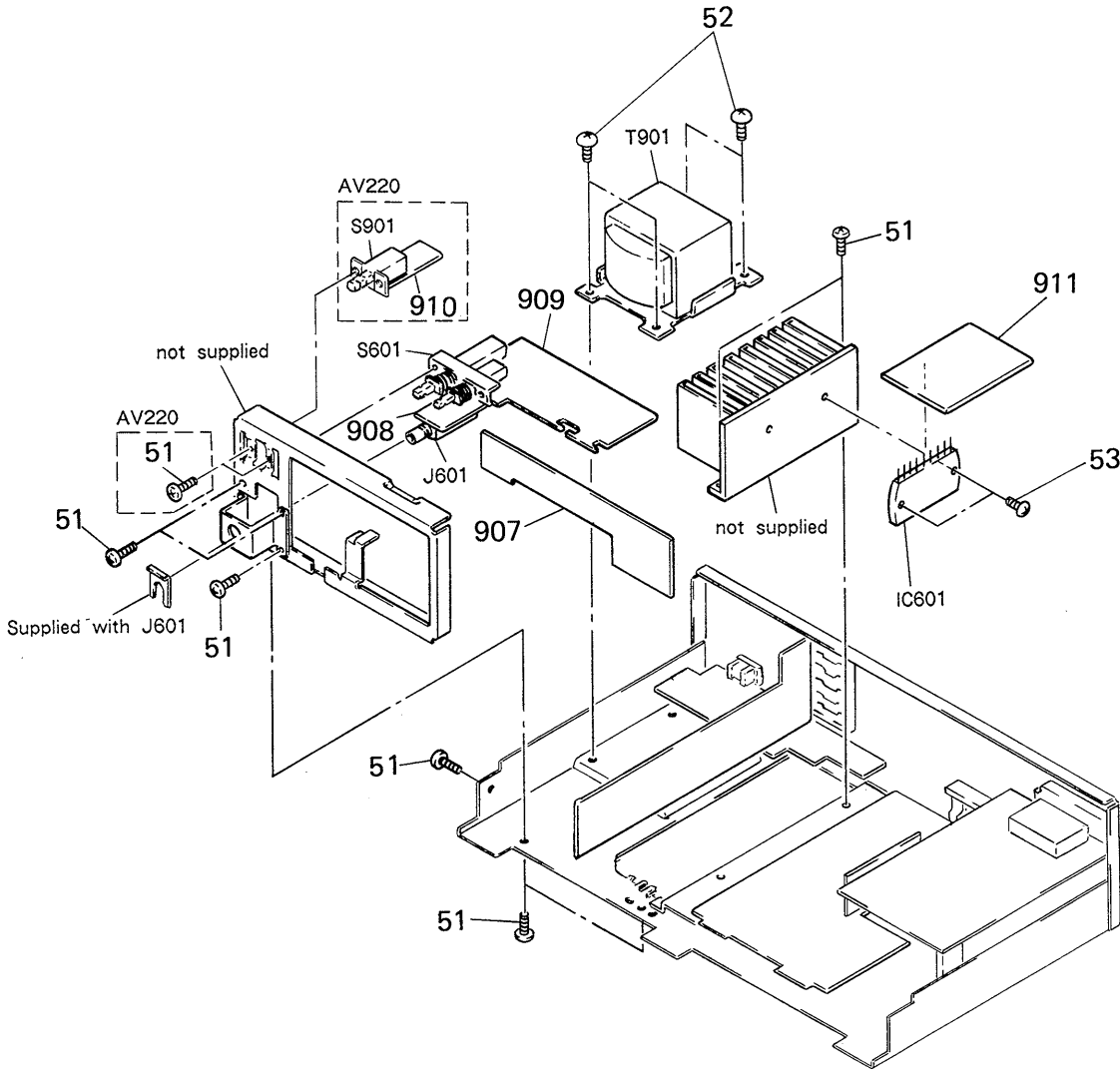
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.




Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.






**(1) FRONT PANEL SECTION**

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-925-121-01	(AV320)...KNOB (V2)		12	1-465-423-11	REMOTE COMMANDER (RM-S103)	
	4-925-121-71	(AV220)...KNOB (V2)		13	2-181-754-01	(AV320)...COVER, BATTERY	
2	*4-931-603-01	SPACER		14	3-701-748-00	CLAMP	
3	4-916-745-01	KNOB (DIA.21)		15	*4-924-989-01	HOLDER (FL TUBE)	
4	X-4906-829-1	(AV320)...PANEL ASSY, FRONT		901	*A-4334-398-A	(AV320)...MOUNTED PCB, TONE	
	X-4906-830-1	(AV220)...PANEL ASSY, FRONT			*A-4334-413-A	(AV220)...MOUNTED PCB, TONE	
5	7-682-548-05	SCREW +BVT 3X8 (S)		902	*A-4334-395-A	(AV320)...MOUNTED PCB, DISPLAY	
6	3-704-366-01	SCREW (CASE) (M3X8)			*A-4334-467-A	(AV220)...MOUNTED PCB, DISPLAY	
7	4-925-066-01	CASE		903	*1-634-063-11	PC BOARD, VOLUME	
8	3-354-912-01	(AV220:US).....KNOB, POWER		905	*1-634-064-11	(AV320)...PC BOARD, LED	
	4-917-460-01	(AV220:Canadian)...KNOB, POWER		906	*1-634-062-11	(AV320)...PC BOARD, SYSTEM POWER	
9	4-906-872-01	KNOB, SQUARE		FL301	1-519-509-11	INDICATOR TUBE, FLUORESCENT	
10	X-4885-950-1	FOOT ASSY					
11	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S					

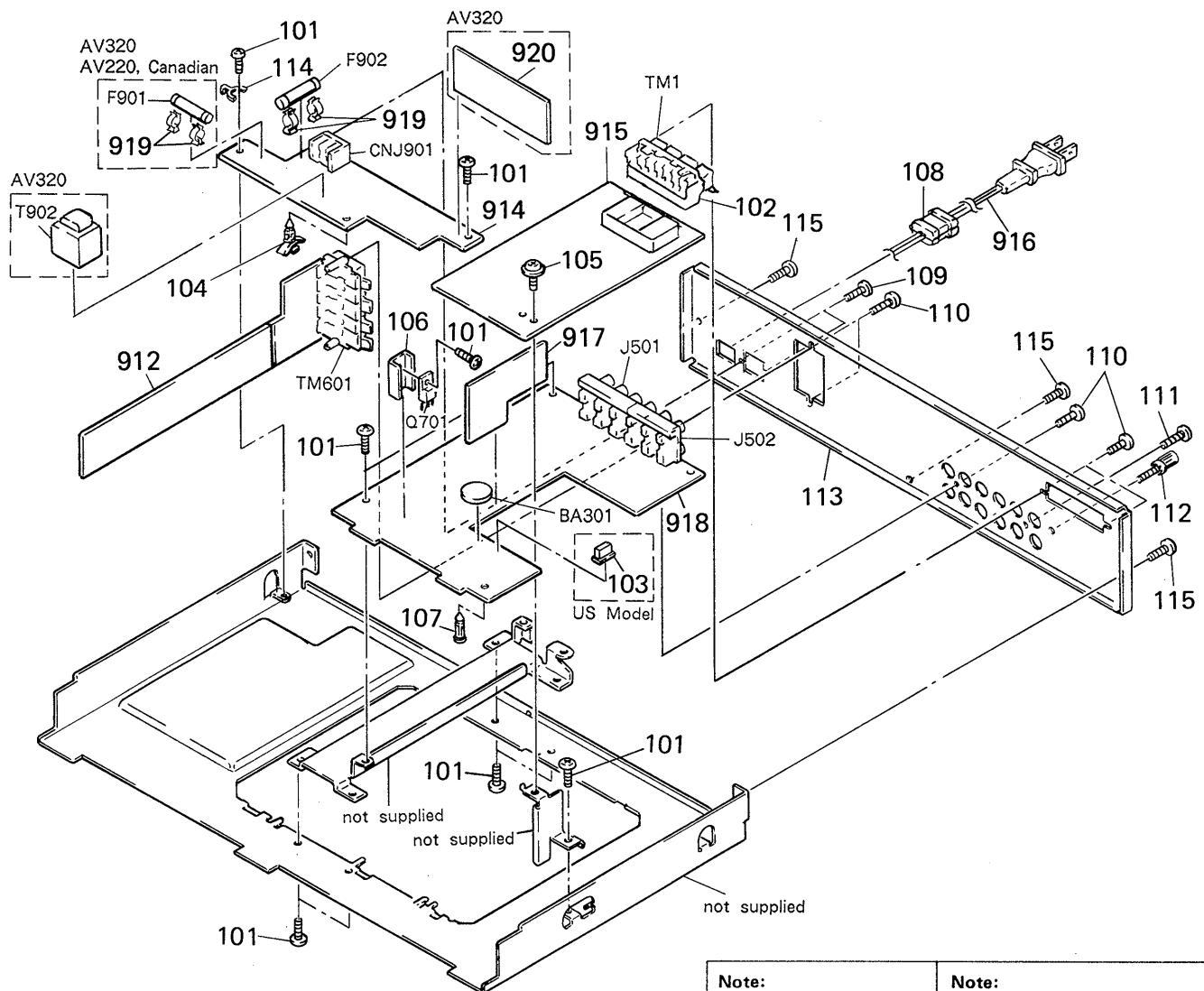
(2) CHASSIS SECTION-1



<p><b>Note:</b> The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.</p>	<p><b>Note:</b> Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	7-682-548-04	SCREW +BVTT 3X8 (S)		IC601	 8-749-900-24	(AV220)...IC STK4182MK2	
52	7-682-560-04	SCREW +BVTT 4X6 (S)		IC601	 8-749-900-34	(AV320)...IC STK4182MK2	
53	7-685-650-79	SCREW +BVTP 3X16 TYPE2 N-S		J601	1-507-863-51	JACK, LARGE TYPE (HEADPHONES)	
904	*1-634-061-11	(AV320)...PC BOARD, MOTOR		S601	1-571-485-11	SWITCH, PUSH (2 KEY) (SPEAKER A)	
907	*1-634-067-11	(AV220)...PC BOARD, RELAY (3)		S602	1-571-485-11	SWITCH, PUSH (2 KEY) (SPEAKER B)	
908	*1-634-070-11	PC BOARD, HEADPHONE		S901	 1-554-920-11	(AV220)...SWITCH, PUSH (AC POWER)(1 KEY)	
909	*1-634-069-11	PC BOARD, SPEAKER SWITCH		T901	 1-449-965-11	(AV220)...TRANSFORMER, POWER	
910	*1-634-072-11	(AV220)...PC BOARD, POWER SWITCH		T901	 1-449-966-11	(AV320)...TRANSFORMER, POWER	
911	*1-634-060-11	PC BOARD, IC					

## (3) CHASSIS SECTION-2



**Note:**  
The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
101	7-682-548-04	SCREW +BVTT 3X8 (S)		914	*1-634-068-11	PC BOARD, POWER	
102	*4-924-988-11	PLATE (ST), GROUND		915	*A-4303-279-A	MOUNTED PCB, TUNER (TCB007-21K2)	
103	*1-565-514-11	(US)...SOCKET, CONNECTOR 2P		916	▲1-557-577-11	CORD, POWER	
104	*3-346-265-11	HOLDER, PC BOARD		917	*1-634-065-11	PC BOARD, RELAY (1)	
105	2-383-566-00	SCREW		918	*A-4334-394-A	(AV320)...MOUNTED PCB, MAIN	
106	*4-880-403-11	HEAT SINK			*A-4334-410-A	(AV220)...MOUNTED PCB, MAIN	
107	*3-669-610-00	SPACER		919	1-533-183-11	HOLDER, FUSE	
108	*3-703-244-00	BUSHING (2104), CORD		920	*1-634-066-11	(AV320)...PC BOARD, RELAY (2)	
109	7-685-647-79	SCREW +BTP 3X10 TYPE2 N-S		BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)	
110	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S		CNJ901	▲1-540-058-11	OUTLET, AC (POLAR)	
111	7-621-849-00	SCREW, TAPPING		F901	▲1-532-970-11	FUSE, GLASS TUBE (3A/125V)	
112	3-706-165-00	SCREW		F902	▲1-576-029-11	FUSE, GLASS TUBE (4A/125V)	
113	*4-931-096-01	(AV320:US)...PANEL, BACK		J501	1-565-320-11	JACK, PIN 6P	
	*4-931-096-11	(AV220:US)...PANEL, BACK		J502	1-565-320-11	JACK, PIN 6P	
	*4-931-096-21	(AV320:Canadian)...PANEL, BACK		Q701	8-729-107-25	TRANSISTOR 2SD1585-L	
	*4-931-096-31	(AV220:Canadian)...PANEL, BACK		T902	▲1-448-517-21	(AV320)...TRANSFORMER, POWER	
114	*4-904-446-01	PLATE, GROUND		TM601	1-536-706-00	TERMINAL BOARD (SPEAKER)	
115	7-682-548-09	SCREW +BVTT 3X8 (S)					
912	*1-634-073-11	PC BOARD, RELAY (4)					
913	*1-634-071-11	PC BOARD, SP TERMINAL					

## SECTION 5

### ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**MF:  $\mu$ F, PF:  $\mu$  $\mu$ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**In each case, U:  $\mu$ , for example:UA...:  $\mu$ A..., UPA...:  $\mu$ PA...,UPC...:  $\mu$ PC, UPD...:  $\mu$ PD...

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

**• TUNER BOARD**

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
C1	1-162-294-31	CERAMIC CHIP 0.001MF	C83	1-163-059-00	CERAMIC MELF 0.01MF
C2	1-124-477-11	ELECT 47MF	C84	1-163-059-00	CERAMIC MELF 0.01MF
C3	1-163-059-00	CERAMIC MELF 0.01MF	C85	1-163-059-00	CERAMIC MELF 0.01MF
C4	1-162-294-31	CERAMIC CHIP 0.001MF	C86	1-124-477-11	ELECT 47MF
C5	1-163-059-00	CERAMIC MELF 0.01MF	C87	1-163-059-00	CERAMIC MELF 0.01MF
C6	1-163-059-00	CERAMIC MELF 0.01MF	C88	1-163-059-00	CERAMIC MELF 0.01MF
C9	1-163-059-00	CERAMIC MELF 0.01MF	C101	1-124-925-11	ELECT 2.2MF
C10	1-162-516-11	CERAMIC CHIP 100PF	C102	1-124-463-00	ELECT 0.1MF
C21	1-101-006-00	CERAMIC 0.047MF	C103	1-163-059-00	CERAMIC MELF 0.01MF
C22	1-163-059-00	CERAMIC MELF 0.01MF	C104	1-163-059-00	CERAMIC MELF 0.01MF
C23	1-124-477-11	ELECT 47MF	C105	1-124-477-11	ELECT 47MF
C24	1-123-382-00	ELECT 3.3MF	CC2	1-249-366-11	CARBON MELF 0
C25	1-163-059-00	CERAMIC MELF 0.01MF	CC3	1-249-366-11	CARBON MELF 0
C26	1-163-019-00	CERAMIC CHIP 0.0068MF	CC11	1-249-366-11	CARBON MELF 0
C27	1-162-516-11	CERAMIC CHIP 100PF	CF1	1-567-389-11	FILTER, CERAMIC
C28	1-124-499-11	ELECT 1.0MF	CF2	1-567-389-11	FILTER, CERAMIC
C29	1-162-516-11	CERAMIC CHIP 100PF	CF21	1-577-075-11	OSCILLATOR, CERAMIC
C30	1-124-499-11	ELECT 1.0MF	CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)
C31	1-124-902-00	ELECT 0.47MF	CNJ1	*1-568-276-11	SOCKET, CONNECTOR 10P
C32	1-124-463-00	ELECT 0.1MF	CNJ2	1-568-269-11	SOCKET, CONNECTOR 3P
C33	1-130-482-00	PE TEREPHTHALATE 0.0082MF	CNJ4	1-568-307-11	SOCKET, CONNECTOR 3P
C34	1-123-382-00	ELECT 3.3MF	FE1	1-463-857-11	FRONT END (FM)
C35	1-130-482-00	PE TEREPHTHALATE 0.0082MF	FE61	1-236-461-11	ENCAPSULATED COMPONENT
C36	1-123-382-00	ELECT 3.3MF	IC21	8-759-821-45	IC LA1851N
C37	1-123-875-11	ELECT 10MF	IC81	8-759-820-91	IC LC7218
C39	1-163-059-00	CERAMIC MELF 0.01MF	L1	1-410-645-31	MICRO INDUCTOR 100UH 10%
C40	1-124-463-00	ELECT 0.1MF	L21	1-410-171-11	MICRO INDUCTOR 1MMH 10%
C41	1-124-927-11	ELECT 4.7MF	LPF21	1-235-164-00	FILTER, LOW PASS
C42	1-163-059-00	CERAMIC MELF 0.01MF	LPF22	1-235-164-00	FILTER, LOW PASS
C43	1-126-176-11	ELECT 220MF	Q1	8-729-230-99	TRANSISTOR 2SC2669-OY
C44	1-163-059-00	CERAMIC MELF 0.01MF	Q2	8-729-230-99	TRANSISTOR 2SC2669-OY
C45	1-123-382-00	ELECT 3.3MF	Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE
C46	1-161-375-00	CERAMIC CHIP 0.0022MF	Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE
C48	1-123-382-00	ELECT 3.3MF	Q23	8-729-900-61	TRANSISTOR DTA114ES
C49	1-161-375-00	CERAMIC CHIP 0.0022MF	Q24	8-729-900-80	TRANSISTOR DTC114ES
C51	1-124-477-11	ELECT 47MF	Q81	8-729-900-61	TRANSISTOR DTA114ES
C61	1-163-063-00	CERAMIC MELF 0.022MF	Q82	8-729-900-80	TRANSISTOR DTC114ES
C62	1-163-063-00	CERAMIC MELF 0.022MF	Q83	8-729-202-67	TRANSISTOR 2SK246GR3
C63	1-163-063-00	CERAMIC MELF 0.022MF	Q84	8-729-230-93	TRANSISTOR 2SC3113AB
C64	1-163-063-00	CERAMIC MELF 0.022MF			
C81	1-102-961-00	CERAMIC 27PF			
C82	1-102-961-00	CERAMIC 27PF			

Ref.No.	Part No.	Description								
R1	△.1-249-401-11	CARBON(SMALL)	47	5%	1/4W	F				
R3	1-249-329-11	CARBON MELF	330	5%	1/8W					
R4	1-249-329-11	CARBON MELF	330	5%	1/8W					
R5	1-249-329-11	CARBON MELF	330	5%	1/8W					
R6	1-249-350-11	CARBON MELF	18K	5%	1/8W					
R7	1-249-329-11	CARBON MELF	330	5%	1/8W					
R8	1-249-332-11	CARBON MELF	560	5%	1/8W					
R9	1-249-352-11	CARBON MELF	27K	5%	1/8W					
R21	△.1-249-404-00	CARBON(SMALL)	82	5%	1/4W	F				
R22	1-249-248-11	CARBON(SMALL)	8.2K	5%	1/4W					
R23	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R24	1-249-353-11	CARBON MELF	33K	5%	1/8W					
R25	1-249-346-11	CARBON MELF	8.2K	5%	1/8W					
R27	1-249-432-11	CARBON(SMALL)	18K	5%	1/4W					
R28	1-249-423-11	CARBON(SMALL)	3.3K	5%	1/4W					
R29	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R31	1-249-331-11	CARBON MELF	470	5%	1/8W					
R32	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R33	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R35	1-249-355-11	CARBON MELF	47K	5%	1/8W					
R36	1-249-429-11	CARBON(SMALL)	10K	5%	1/4W					
R37	1-249-359-11	CARBON MELF	100K	5%	1/8W					
R38	1-249-363-11	CARBON MELF	220K	5%	1/8W					
R39	1-249-339-11	CARBON MELF	2.2K	5%	1/8W					
R40	1-249-338-11	CARBON MELF	1.8K	5%	1/8W					
R41	1-249-344-11	CARBON MELF	5.6K	5%	1/8W					
R42	1-249-359-11	CARBON MELF	100K	5%	1/8W					
R43	1-249-363-11	CARBON MELF	220K	5%	1/8W					
R44	1-249-339-11	CARBON MELF	2.2K	5%	1/8W					
R45	1-249-338-11	CARBON MELF	1.8K	5%	1/8W					
R46	1-249-344-11	CARBON MELF	5.6K	5%	1/8W					
R47	△.1-249-409-11	CARBON(SMALL)	220	5%	1/4W	F				
R48	1-249-359-11	CARBON MELF	100K	5%	1/8W					
R49	1-249-359-11	CARBON MELF	100K	5%	1/8W					
R61	1-249-359-11	CARBON MELF	100K	5%	1/8W					
R62	1-249-355-11	CARBON MELF	47K	5%	1/8W					
R63	1-249-315-11	CARBON MELF	22	5%	1/8W					
R81	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R82	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R83	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R84	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R85	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R86	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R87	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R88	1-249-343-11	CARBON MELF	4.7K	5%	1/8W					
R89	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R90	1-249-347-11	CARBON MELF	10K	5%	1/8W					
R91	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R92	△.1-249-401-11	CARBON(SMALL)	47	5%	1/4W	F				
R101	1-249-341-11	CARBON MELF	3.3K	5%	1/8W					
R102	1-249-332-11	CARBON MELF	560	5%	1/8W					
R103	1-249-335-11	CARBON MELF	1K	5%	1/8W					
R104	1-249-328-11	CARBON MELF	270	5%	1/8W					
R105	1-249-343-11	CARBON MELF	4.7K	5%	1/8W					
R106	1-249-339-11	CARBON MELF	2.2K	5%	1/8W					
R107	1-249-343-11	CARBON MELF	4.7K	5%	1/8W					
R108	1-249-323-11	CARBON MELF	100	5%	1/8W					
R109	1-249-343-11	CARBON MELF	4.7K	5%	1/8W					
R110	△.1-249-405-11	CARBON(SMALL)	100	5%	1/4W	F				
RV21	1-238-013-11	RES, ADJ, CARBON	2.2K			(FM SEP)				
RV23	1-238-021-11	RES, ADJ, CARBON	220K			(AM METER)				
RV24	1-238-017-11	RES, ADJ, CARBON	22K			(FM TUNING)				
T21	1-404-852-11	COIL, DISCRIMINATOR				(PRIMARY)				
TM1	*1-537-225-11	TERMINAL BOARD				(ANT (F) TYPE)				
TP1	*1-560-060-00	PIN, CONNECTOR				2P				
XT81	1-577-126-11	VIBRATOR, CRYSTAL				7.2MHz				

**Note:**

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

**Note:**

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



## • EXCEPT FOR TUNER BOARD

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description			
901	*A-4334-398-A	(AV320)...MOUNTED PCB, TONE	C414	1-123-382-00	ELECT	3.3MF	20%	50V
	*A-4334-413-A	(AV220)...MOUNTED PCB, TONE	C415	1-123-382-00	ELECT	3.3MF	20%	50V
902	*A-4334-395-A	(AV320)...MOUNTED PCB, DISPLAY	C416	1-123-875-11	ELECT	10MF	20%	50V
	*A-4334-467-A	(AV220)...MOUNTED PCB, DISPLAY	C417	1-124-478-11	ELECT	100MF	20%	25V
903	*1-634-063-11	PC BOARD, VOLUME	C418	1-124-478-11	ELECT	100MF	20%	25V
904	*1-634-061-11	(AV320)...PC BOARD, MOTOR	C419	1-124-478-11	ELECT	100MF	20%	25V
905	*1-634-064-11	(AV320)...PC BOARD, LED	C451	1-102-106-00	CERAMIC	100PF	10%	50V
906	*1-634-062-11	(AV320)...PC BOARD, SYSTEM POWER	C452	1-123-382-00	ELECT	3.3MF	20%	50V
907	*1-634-067-11	(AV220)...PC BOARD, RELAY (3)	C453	1-102-106-00	CERAMIC	100PF	10%	50V
908	*1-634-070-11	PC BOARD, HEADPHONE	C454	1-102-106-00	CERAMIC	100PF	10%	50V
909	*1-634-069-11	PC BOARD, SPEAKER SWITCH	C455	1-124-963-11	ELECT	33MF	20%	16V
910	*1-634-072-11	(AV220)...PC BOARD, POWER SWITCH	C456	1-130-480-00	MYLAR	0.0056MF	5%	50V
911	*1-634-060-11	PC BOARD, IC	C457	1-130-473-00	MYLAR	0.0015MF	5%	50V
912	*1-634-073-11	PC BOARD, RELAY (4)	C458	1-123-382-00	ELECT	3.3MF	20%	50V
913	*1-634-071-11	PC BOARD, SP TERMINAL	C463	1-124-927-11	ELECT	4.7MF	20%	50V
914	*1-634-068-11	PC BOARD, POWER	C464	1-123-382-00	ELECT	3.3MF	20%	50V
915	*A-4303-279-A	MOUNTED PCB, TUNER (TCB007-21K2)	C465	1-123-382-00	ELECT	3.3MF	20%	50V
916	△ 1-557-577-11	CORD, POWER	C466	1-123-875-11	ELECT	10MF	20%	50V
917	*1-634-065-11	PC BOARD, RELAY (1)	C501	1-130-489-00	MYLAR	0.033MF	5%	50V
918	*A-4334-394-A	(AV320)...MOUNTED PCB, MAIN	C502	1-124-250-00	ELECT	0.15MF	20%	50V
	*A-4334-410-A	(AV220)...MOUNTED PCB, MAIN	C503	1-130-481-00	MYLAR	0.0068MF	5%	50V
919	1-533-183-11	HOLDER, FUSE	C504	1-130-489-00	MYLAR	0.033MF	5%	50V
920	*1-634-066-11	(AV320)...PC BOARD, RELAY (2)	C505	1-124-927-11	ELECT	4.7MF	20%	50V
BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)	C506	1-124-925-11	ELECT	2.2MF	20%	50V
C301	1-162-211-31	CERAMIC	C507	1-101-880-00	CERAMIC	47PF	10%	50V
C302	1-162-211-31	CERAMIC	C508	1-124-927-11	ELECT	4.7MF	20%	50V
C303	1-161-055-00	CERAMIC	C509	1-131-347-00	TANTALUM	1MF	10%	25V
C304	1-161-055-00	CERAMIC	C510	1-130-489-00	MYLAR	0.033MF	5%	50V
C306	1-123-875-11	(AV320)...ELECT	C511	1-124-791-11	(AV320)...ELECT	1MF	20%	50V
C307	1-136-746-11	FILM	C512	1-124-464-11	ELECT	0.22MF	20%	50V
C308	1-124-464-11	(AV320)...ELECT	C513	1-124-464-11	ELECT	0.22MF	20%	50V
C309	1-124-464-11	(AV320)...ELECT	C514	1-130-493-00	MYLAR	0.068MF	5%	50V
C401	1-102-106-00	CERAMIC	C515	1-102-106-00	CERAMIC	100PF	10%	50V
C402	1-123-382-00	ELECT	C551	1-130-489-00	MYLAR	0.033MF	5%	50V
C403	1-102-106-00	CERAMIC	C552	1-124-250-00	ELECT	0.15MF	20%	50V
C404	1-102-106-00	CERAMIC	C553	1-130-481-00	MYLAR	0.0068MF	5%	50V
C405	1-124-963-11	ELECT	C554	1-130-489-00	MYLAR	0.033MF	5%	50V
C406	1-130-480-00	MYLAR	C555	1-124-927-11	ELECT	4.7MF	20%	50V
C407	1-130-473-00	MYLAR	C556	1-124-925-11	ELECT	2.2MF	20%	50V
C408	1-123-382-00	ELECT	C557	1-101-880-00	CERAMIC	47PF	10%	50V
C409	1-124-477-11	ELECT	C558	1-124-927-11	ELECT	4.7MF	20%	50V
C410	1-124-477-11	ELECT	C559	1-131-347-00	TANTALUM	1MF	10%	25V
C411	1-102-074-00	CERAMIC	C560	1-130-489-00	MYLAR	0.033MF	5%	50V
C412	1-102-106-00	CERAMIC	C561	1-124-791-11	(AV320)...ELECT	1MF	20%	50V
C413	1-124-927-11	ELECT	C565	1-102-106-00	CERAMIC	100PF	10%	50V
			C601	1-162-286-31	CERAMIC	220PF	10%	50V

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Ref.No.	Part No.	Description								Ref.No.	Part No.	Description
C602	1-124-927-11	ELECT	4.7MF	20%	50V					CNJ504*1-506-707-31	PLUG, CONNECTOR (2.5MM) 3P	
C603	1-162-288-31	CERAMIC	330PF	10%	50V					CNJ601*1-506-707-11	PLUG, CONNECTOR (2.5MM) 3P	
C604	△ 1-124-122-11	ELECT	100MF	20%	50V					CNJ610*1-569-509-11	CONNECTOR (SOCKET) 4P	
										CNJ611*1-562-573-11	SOCKET, CONNECTOR 8P	
C605	△ 1-124-910-11	ELECT	47MF	20%	50V					CNJ701*1-569-509-11	(AV320)...CONNECTOR (SOCKET) 4P	
C606	△ 1-124-120-11	ELECT	220MF	20%	16V					CNJ802*1-569-509-11	CONNECTOR (SOCKET) 4P	
C607	1-162-193-31	CERAMIC	3.3PF	10%	50V					CNJ901△ 1-540-058-11	OUTLET, AC (POLAR)	
C608	1-123-875-11	ELECT	10MF	20%	50V					CNP301 1-565-419-11	PIN, CONNECTOR 10P	
C618	1-161-055-00	CERAMIC	0.022MF	10%	25V					CNP302 1-565-419-11	PIN, CONNECTOR 10P	
C621	1-130-495-00	MYLAR	0.1MF	5%	50V					CNP303*1-564-777-11	(AV320)...PLUG, CONNECTOR (2.5MM) 2P	
C622	1-130-491-00	MYLAR	0.047MF	5%	50V					CNP611*1-569-508-11	PIN, CONNECTOR 8P	
C623	1-123-875-11	ELECT	10MF	20%	50V					CNP650*1-569-410-11	PIN, CONNECTOR (PC BOARD) 16P	
C624	1-124-472-11	ELECT	470MF	20%	6.3V					CNP651*1-569-388-11	PIN, CONNECTOR (PC BOARD) 3P	
C651	1-162-286-31	CERAMIC	220PF	10%	50V					CNP652*1-569-388-11	PIN, CONNECTOR (PC BOARD) 3P	
C652	1-124-927-11	ELECT	4.7MF	20%	50V					CNP653*1-569-395-11	PIN, CONNECTOR (PC BOARD) 10P	
C653	1-162-288-31	CERAMIC	330PF	10%	50V					CNP654*1-506-529-11	PIN CONNECTOR, B-B 4P	
C654	△ 1-124-122-11	ELECT	100MF	20%	50V					CNP655*1-506-529-11	PIN CONNECTOR, B-B 4P	
C655	△ 1-124-910-11	ELECT	47MF	20%	50V					CNP656*1-506-529-11	PIN CONNECTOR, B-B 4P	
C656	△ 1-124-120-11	ELECT	220MF	20%	16V					CNP657*1-506-529-11	PIN CONNECTOR, B-B 4P	
C657	1-162-193-31	CERAMIC	3.3PF	10%	50V					CNP701*1-535-116-00	TERMINAL	
C658	1-123-875-11	ELECT	10MF	20%	50V					CNP702*1-535-116-00	TERMINAL	
C668	1-161-055-00	CERAMIC	0.022MF	10%	25V					CNP802*1-535-139-00	(AV220)...BASE POST 19MM(10MM PITCH) 2F	
C671	1-130-495-00	MYLAR	0.1MF	5%	50V					D301	8-719-912-20	DIODE 1SS120
C672	1-130-491-00	MYLAR	0.047MF	5%	50V					D302	8-719-912-20	DIODE 1SS120
C701	1-106-367-00	MYLAR	0.01MF	5%	200V					D303	8-719-912-20	DIODE 1SS120
C702	1-106-367-00	MYLAR	0.01MF	5%	200V					D304	8-719-912-20	DIODE 1SS120
C704	1-124-478-11	ELECT	100MF	20%	25V					D305	8-719-912-20	DIODE 1SS120
C705	1-124-477-11	ELECT	47MF	20%	25V					D306	8-719-912-20	DIODE 1SS120
C706	1-161-055-00	CERAMIC	0.022MF	10%	50V					D307	8-719-912-20	DIODE 1SS120
C707	1-161-055-00	CERAMIC	0.022MF	10%	50V					D308	8-719-912-20	DIODE 1SS120
C708	1-124-927-11	ELECT	4.7MF	20%	50V					D309	8-719-912-20	DIODE 1SS120
C710	1-124-910-11	ELECT	47MF	20%	50V					D311	8-719-912-20	DIODE 1SS120
C711	1-124-910-11	ELECT	47MF	20%	50V					D312	8-719-912-20	DIODE 1SS120
C712	1-123-875-11	ELECT	10MF	20%	50V					D313	8-719-914-11	DIODE HZ4ALL
C713	1-124-477-11	ELECT	47MF	20%	25V					D314	8-719-912-20	DIODE 1SS120
C714	1-124-477-11	ELECT	47MF	20%	25V					D315	8-719-912-20	DIODE 1SS120
C716	1-124-464-11	ELECT	0.22MF	20%	50V					D317	8-719-301-52	(AV320)...DIODE SEL2810A-C (MUTING)
C717	1-124-902-00	ELECT	0.47MF	20%	50V					D318	8-719-301-52	DIODE SEL2810A-C (SURROUND)
C718	1-124-791-11	ELECT	1MF	20%	50V					D319	8-719-301-52	DIODE SEL2810A-C (DBFB)
C719	1-161-055-00	CERAMIC	0.022MF	10%	50V					D320	8-719-912-20	DIODE 1SS120
C801	△ 1-126-307-11	ELECT	6800MF	20%	50V					D324	8-719-912-20	DIODE 1SS120
C802	△ 1-126-307-11	ELECT	6800MF	20%	50V					D325	8-719-912-20	DIODE 1SS120
C803	1-106-367-00	(AV320)...MYLAR	0.01MF	5%	200V					D326	8-719-912-20	DIODE 1SS120
C804	1-106-367-00	(AV320)...MYLAR	0.01MF	5%	200V					D327	8-719-912-20	DIODE 1SS120
C805	1-124-557-11	(AV320)...ELECT	1000MF	20%	25V					D328	8-719-303-00	(AV320)...DIODE SEL2510C (VOLUME)
C810	1-124-791-11	ELECT	1MF	20%	50V					D401	8-719-912-20	DIODE 1SS120
C820	1-124-477-11	(AV220)...ELECT	47MF	20%	25V					D402	8-719-912-20	DIODE 1SS120
C901	1-161-744-00	CERAMIC	0.01MF	400V						D501	8-719-912-20	DIODE 1SS120
CN305	*1-564-777-11	(AV320)...PLUG, CONNECTOR (2.5MM) 2P								D502	8-719-912-20	DIODE 1SS120
CN401	*1-564-779-11	PLUG, CONNECTOR (2.5MM) 6P								D601	8-719-912-20	DIODE 1SS120
CN801	*1-535-140-00	BASE POST 19MM (10MM PITCH) 3P								D602	8-719-912-20	DIODE 1SS120
CNJ201	*1-569-411-11	SOCKET, CONNECTOR (PC BOARD) 16P								D603	8-719-912-20	DIODE 1SS120
CNJ301	*1-562-334-00	SOCKET, CONNECTOR 10P								D604	8-719-912-20	DIODE 1SS120
CNJ302	*1-562-334-00	SOCKET, CONNECTOR 10P								D605	8-719-912-20	DIODE 1SS120
CNJ303	*1-506-778-11	PLUG, CONNECTOR (2.5MM) 2P								D651	8-719-912-20	DIODE 1SS120
CNJ304	*1-506-680-11	PLUG, CONNECTOR (2.5MM) 3P								D702	8-719-010-86	DIODE UZ-16BSB
CNJ305	*1-506-778-11	PLUG, CONNECTOR (2.5MM) 2P								D703	8-719-010-29	DIODE UZ-4.3BSB
CNJ503	*1-506-707-11	PLUG, CONNECTOR (2.5MM) 3P								D704	8-719-011-07	DIODE UZ-27BSB

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Ref.No.	Part No.	Description
D705	8-719-010-82	DIODE UZ-15BSB
D706	8-719-010-47	DIODE UZ-6.2BSC
D707	8-719-933-41	DIODE HZS6C3L
D708	8-719-914-11	DIODE HZ4ALL
D709	8-719-912-20	DIODE 1SS120
D710	8-719-912-20	DIODE 1SS120
D801	8-719-312-09	DIODE RBA-402
D802	8-719-511-40	(AV320)...DIODE S1VB40
D803	8-719-912-20	(AV320)...DIODE 1SS120
D813	8-719-000-06	DIODE MC921
F901	1-532-970-11	FUSE, GLASS TUBE (3A/125V)
F902	1-576-029-11	FUSE, GLASS TUBE (4A/125V)
FL301	1-519-509-11	INDICATOR TUBE, FLUORESCENT
IC301	8-759-146-04	IC UPD75206G-553-1B
IC302	8-749-920-59	(AV320)...IC A1QH3020S
IC304	8-759-820-62	(AV320)...IC LB1639
IC401	8-759-112-93	IC UPC4570HA-1
IC402	8-759-805-14	IC LC7822
IC501	8-759-112-93	IC UPC4570HA-1
IC601	8-749-900-24	(AV220)...IC STK4162MK2
IC601A	8-749-900-34	(AV320)...IC STK4182MK2
J501	1-565-320-11	JACK, PIN 6P
J502	1-565-320-11	JACK, PIN 6P
J601	1-507-863-51	JACK, LARGE TYPE (HEADPHONES)
L301	1-410-521-11	INDUCTOR 100UH
L601	*1-420-872-00	COIL, AIR CORE
L651	*1-420-872-00	COIL, AIR CORE
Q302	8-729-900-36	(AV320)...TRANSISTOR DTC124ES
Q303	8-729-900-36	TRANSISTOR DTC124ES
Q304	8-729-900-36	TRANSISTOR DTC124ES
Q401	8-729-141-30	TRANSISTOR 2SC3623A-LK
Q402	8-729-620-05	TRANSISTOR 2SC2603-EF
Q403	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q451	8-729-141-30	TRANSISTOR 2SC3623A-LK
Q452	8-729-620-05	TRANSISTOR 2SC2603-EF
Q501	8-729-202-67	TRANSISTOR 2SK246GR3
Q502	8-729-620-05	TRANSISTOR 2SC2603-EF
Q503	8-729-141-30	(AV320)...TRANSISTOR 2SC3623A-LK
Q504	8-729-202-67	TRANSISTOR 2SK246GR3
Q505	8-729-900-36	TRANSISTOR DTC124ES
Q506	8-729-900-63	TRANSISTOR DTA124ES
Q551	8-729-202-67	TRANSISTOR 2SK246GR3
Q552	8-729-620-05	TRANSISTOR 2SC2603-EF
Q553	8-729-141-30	(AV320)...TRANSISTOR 2SC3623A-LK
Q601	8-729-108-14	TRANSISTOR 2SA988-F
Q602	8-729-620-05	TRANSISTOR 2SC2603-EF
Q603	8-729-620-05	TRANSISTOR 2SC2603-EF
Q604	8-729-620-05	TRANSISTOR 2SC2603-EF
Q605	8-729-620-05	TRANSISTOR 2SC2603-EF
Q651	8-729-108-14	TRANSISTOR 2SA988-F
Q701	8-729-107-25	TRANSISTOR 2SD1585-L
Q702	8-729-113-34	TRANSISTOR 2SB734-5
Q703	8-729-180-92	TRANSISTOR 2SD809-K
Q704	8-729-620-05	TRANSISTOR 2SC2603-EF
Q705	8-729-115-22	TRANSISTOR BN1A3Q
Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q707	8-729-620-05	TRANSISTOR 2SC2603-EF

Ref.No.	Part No.	Description
Q708	8-729-900-36	TRANSISTOR DTC124ES
Q709	8-729-620-05	(AV320)...TRANSISTOR 2SC2603-EF
Q801	8-729-620-05	(AV320)...TRANSISTOR 2SC2603-EF
R301	1-249-411-11	CARBON 330 5% 1/4W
R302	1-249-411-11	CARBON 330 5% 1/4W
R303	1-249-411-11	CARBON 330 5% 1/4W
R304	1-249-411-11	CARBON 330 5% 1/4W
R305	1-249-429-11	CARBON 10K 5% 1/4W
R306	1-249-429-11	CARBON 10K 5% 1/4W
R307	1-249-429-11	CARBON 10K 5% 1/4W
R308	1-249-429-11	CARBON 10K 5% 1/4W
R311	1-249-429-11	CARBON 10K 5% 1/4W
R312	1-249-431-11	CARBON 15K 5% 1/4W
R313	1-249-417-11	CARBON 1K 5% 1/4W
R314	1-249-441-11	CARBON 100K 5% 1/4W
R315	1-249-437-11	CARBON 47K 5% 1/4W
R316	1-249-441-11	CARBON 100K 5% 1/4W
R322	1-249-410-11	(AV320)...CARBON 270 5% 1/4W
R323	1-249-410-11	CARBON 270 5% 1/4W
R324	1-249-410-11	CARBON 270 5% 1/4W
R325	1-249-441-11	CARBON 100K 5% 1/4W
R337	1-249-437-11	CARBON 47K 5% 1/4W
R338	1-249-437-11	CARBON 47K 5% 1/4W
R339	1-249-393-11	(AV320)...CARBON 10 5% 1/4W
R401	1-249-411-11	CARBON 330 5% 1/4W
R402	1-249-417-11	CARBON 1K 5% 1/4W
R403	1-249-417-11	CARBON 1K 5% 1/4W
R404	1-249-425-11	CARBON 4.7K 5% 1/4W
R405	1-249-417-11	CARBON 1K 5% 1/4W
R406	1-249-425-11	CARBON 4.7K 5% 1/4W
R407	1-247-897-11	CARBON 560K 5% 1/4W
R408	1-247-897-11	CARBON 560K 5% 1/4W
R409	1-249-437-11	CARBON 47K 5% 1/4W
R410	1-247-897-11	CARBON 560K 5% 1/4W
R411	1-249-416-11	CARBON 820 5% 1/4W
R412	1-247-897-11	CARBON 560K 5% 1/4W
R413	1-249-437-11	CARBON 47K 5% 1/4W
R414	1-247-897-11	CARBON 560K 5% 1/4W
R415	1-249-417-11	CARBON 1K 5% 1/4W
R416	1-249-411-11	CARBON 330 5% 1/4W
R417	1-249-411-11	CARBON 330 5% 1/4W
R418	1-249-425-11	CARBON 4.7K 5% 1/4W
R419	1-249-425-11	CARBON 4.7K 5% 1/4W
R420	1-249-437-11	CARBON 47K 5% 1/4W
R421	1-247-901-11	CARBON 820K 5% 1/4W
R422	1-249-425-11	CARBON 4.7K 5% 1/4W
R423	1-249-441-11	CARBON 100K 5% 1/4W
R424	1-249-421-11	CARBON 2.2K 5% 1/4W
R425	1-249-441-11	CARBON 100K 5% 1/4W
R426	1-249-405-11	CARBON 100 5% 1/4W
R451	1-249-411-11	CARBON 330 5% 1/4W
R452	1-249-417-11	CARBON 1K 5% 1/4W
R453	1-249-417-11	CARBON 1K 5% 1/4W
R454	1-249-425-11	CARBON 4.7K 5% 1/4W
R455	1-249-417-11	CARBON 1K 5% 1/4W
R456	1-249-425-11	CARBON 4.7K 5% 1/4W
R457	1-247-897-11	CARBON 560K 5% 1/4W

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Ref.No.	Part No.	Description					Ref.No.	Part No.	Description			
R458	1-247-897-11	CARBON	560K	5%	1/4W	R607	△1-217-151-00	RES, METAL PLATE 0.22				
R459	1-249-437-11	CARBON	47K	5%	1/4W	R608	1-249-417-11	CARBON	1K	5%	1/4W	
R460	1-247-897-11	CARBON	560K	5%	1/4W	R612	△1-249-405-11	CARBON	100	5%	1/4W	F
						R615	△1-249-405-11	CARBON	100	5%	1/4W	F
R461	1-249-416-11	CARBON	820	5%	1/4W	R621	1-249-427-11	CARBON	6.8K	5%	1/4W	
R462	1-247-897-11	CARBON	560K	5%	1/4W	R622	1-249-435-11	CARBON	33K	5%	1/4W	
R463	1-249-437-11	CARBON	47K	5%	1/4W	R623	1-249-433-11	CARBON	22K	5%	1/4W	
R464	1-247-897-11	CARBON	560K	5%	1/4W	R624	△1-247-727-11	CARBON	10	5%	1/2W	F
R465	1-249-417-11	CARBON	1K	5%	1/4W	R625	1-247-768-00	CARBON	2.4	5%	1/4W	
R469	1-249-425-11	CARBON	4.7K	5%	1/4W	R626	1-249-441-11	CARBON	100K	5%	1/4W	
R470	1-249-437-11	CARBON	47K	5%	1/4W	R627	1-249-435-11	CARBON	33K	5%	1/4W	
R471	1-247-901-11	CARBON	820K	5%	1/4W	R628	1-249-427-11	CARBON	6.8K	5%	1/4W	
R472	1-249-425-11	CARBON	4.7K	5%	1/4W	R629	△1-249-399-11	CARBON	33	5%	1/4W	F
R501	1-249-429-11	CARBON	10K	5%	1/4W	R630	1-249-417-11	CARBON	1K	5%	1/4W	
R502	1-249-421-11	CARBON	2.2K	5%	1/4W	R631	1-249-429-11	CARBON	10K	5%	1/4W	
R503	1-249-441-11	CARBON	100K	5%	1/4W	R632	1-249-441-11	CARBON	100K	5%	1/4W	
R504	1-249-427-11	CARBON	6.8K	5%	1/4W	R633	1-249-429-11	CARBON	10K	5%	1/4W	
R505	1-249-438-11	CARBON	56K	5%	1/4W	R634	1-249-423-11	CARBON	3.3K	5%	1/4W	
R506	1-249-441-11	CARBON	100K	5%	1/4W	R635	1-249-441-11	CARBON	100K	5%	1/4W	
R507	1-247-883-00	CARBON	150K	5%	1/4W	R636	1-247-903-00	CARBON	1M	5%	1/4W	
R508	1-249-417-11	CARBON	1K	5%	1/4W	R637	△1-216-432-00	METAL OXIDE	820	5%	1W	F
R509	1-249-412-11	CARBON	390	5%	1/4W	R638	△1-216-454-11	METAL OXIDE	390	5%	2W	F
R510	1-249-427-11	CARBON	6.8K	5%	1/4W	R639	1-247-768-00	CARBON	2.4	5%	1/4W	
R511	1-249-417-11	CARBON	1K	5%	1/4W	R651	1-249-417-11	CARBON	1K	5%	1/4W	
R512	1-249-430-11	CARBON	12K	5%	1/4W	R652	1-249-438-11	CARBON	56K	5%	1/4W	
R513	1-249-404-00	(AV320)...CARBON	82	5%	1/4W	R653	1-249-411-11	CARBON	330	5%	1/4W	
R514	1-249-429-11	(AV320)...CARBON	10K	5%	1/4W	R654	△1-249-421-11	(AV220)...CARBON	2.2K	5%	1/4W	
R515	1-249-434-11	CARBON	27K	5%	1/4W	R654	△1-249-423-11	(AV320)...CARBON	3.3K	5%	1/4W	
R516	1-249-434-11	CARBON	27K	5%	1/4W	R655	1-249-438-11	CARBON	56K	5%	1/4W	
R517	1-249-441-11	CARBON	100K	5%	1/4W	R656	1-247-756-11	(AV220)...CARBON	2.2K	5%	1/2W	
R518	1-249-441-11	CARBON	100K	5%	1/4W	R656	1-247-758-11	(AV320)...CARBON	3.3K	5%	1/2W	
R519	1-249-441-11	CARBON	100K	5%	1/4W	R657	△1-217-151-00	RES, METAL PLATE 0.22				
R520	1-247-903-00	CARBON	1M	5%	1/4W	R658-A	1-249-417-11	CARBON	1K	5%	1/4W	
R521	1-249-428-11	CARBON	8.2K	5%	1/4W	R658-B	1-216-454-11	METAL OXIDE	390	5%	2W	F
R522	1-247-903-00	CARBON	1M	5%	1/4W	R671	1-249-427-11	CARBON	6.8K	5%	1/4W	
R523	1-249-441-11	(AV320)...CARBON	100K	5%	1/4W	R672	1-249-435-11	CARBON	33K	5%	1/4W	
R524	1-249-426-11	(AV320)...CARBON	5.6K	5%	1/4W	R673	1-249-433-11	CARBON	22K	5%	1/4W	
R551	1-249-429-11	CARBON	10K	5%	1/4W	R674	△1-247-727-11	CARBON	10	5%	1/2W	F
R552	1-249-421-11	CARBON	2.2K	5%	1/4W	R675	1-247-768-00	CARBON	2.4	5%	1/4W	
R553	1-249-441-11	CARBON	100K	5%	1/4W	R676	1-249-441-11	CARBON	100K	5%	1/4W	
R554	1-249-427-11	CARBON	6.8K	5%	1/4W	R689	1-247-768-00	CARBON	2.4	5%	1/4W	
R555	1-249-438-11	CARBON	56K	5%	1/4W	R702	1-249-422-11	CARBON	2.7K	5%	1/4W	
R556	1-249-441-11	CARBON	100K	5%	1/4W	R703	△1-216-448-11	METAL OXIDE	39	5%	2W	F
R557	1-247-883-00	CARBON	150K	5%	1/4W	R705	1-249-423-11	CARBON	3.3K	5%	1/4W	
R558	1-249-417-11	CARBON	1K	5%	1/4W	R706	△1-249-405-11	CARBON	100	5%	1/4W	F
R559	1-249-412-11	CARBON	390	5%	1/4W	R707	1-249-410-11	CARBON	270	5%	1/4W	
R560	1-249-427-11	CARBON	6.8K	5%	1/4W	R708	△1-249-389-11	CARBON	4.7	5%	1/4W	F
R561	1-249-417-11	CARBON	1K	5%	1/4W	R709	1-249-423-11	CARBON	3.3K	5%	1/4W	
R562	1-249-430-11	CARBON	12K	5%	1/4W	R710	1-249-429-11	(AV220)...CARBON	10K	5%	1/4W	
R563	1-249-404-00	(AV320)...CARBON	82	5%	1/4W	R710	1-249-433-11	(AV320)...CARBON	22K	5%	1/4W	
R564	1-249-429-11	(AV320)...CARBON	10K	5%	1/4W	R711	1-249-429-11	CARBON	10K	5%	1/4W	
R601	1-249-417-11	CARBON	1K	5%	1/4W	R712	1-249-429-11	CARBON	10K	5%	1/4W	
R602	1-249-438-11	CARBON	56K	5%	1/4W	R713	1-249-426-11	CARBON	5.6K	5%	1/4W	
R603	1-249-411-11	CARBON	330	5%	1/4W	R714	1-249-417-11	CARBON	1K	5%	1/4W	
R604	△1-249-421-11	(AV220)...CARBON	2.2K	5%	1/4W	R715	1-249-426-11	CARBON	5.6K	5%	1/4W	
R604	△1-249-423-11	(AV320)...CARBON	3.3K	5%	1/4W	R716	1-249-417-11	(AV320)...CARBON	1K	5%	1/4W	
R605	1-249-438-11	CARBON	56K	5%	1/4W	R717	1-249-429-11	(AV320)...CARBON	10K	5%	1/4W	
R606	1-247-756-11	(AV220)...CARBON	2.2K	5%	1/2W							
R606	1-247-758-11	(AV320)...CARBON	3.3K	5%	1/2W							

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Ref.No.	Part No.	Description
R718	△ 1-249-401-11	CARBON 47 5% 1/4W F
R719	1-249-425-11	CARBON 4.7K 5% 1/4W
R720	1-249-437-11	CARBON 47K 5% 1/4W
R721	1-249-413-11	CARBON 470 5% 1/4W
R722	1-249-437-11	CARBON 47K 5% 1/4W
R723	1-249-437-11	CARBON 47K 5% 1/4W
R724	1-249-437-11	CARBON 47K 5% 1/4W
R725	1-249-437-11	CARBON 47K 5% 1/4W
R726	1-249-410-11	CARBON 270 5% 1/4W
R727	1-249-430-11	(AV220)...CARBON 12K 5% 1/4W
R801	△ 1-249-389-11	CARBON 4.7 5% 1/4W F
R802	1-249-437-11	(AV320)...CARBON 47K 5% 1/4W
R803	1-249-396-11	(AV320)...CARBON 18 5% 1/4W
R804	△ 1-247-739-11	CARBON 100 5% 1/2W F
R805	1-249-425-11	(AV320)...CARBON 4.7K 5% 1/4W
R901	1-202-725-00	SOLID 3.3M 10% 1/2W
RB301	1-233-081-11	COMPOSITION CIRCUIT BLOCK
RB302	1-232-955-11	COMPOSITION CIRCUIT BLOCK
RB303	1-232-998-11	COMPOSITION CIRCUIT BLOCK
RV501	1-238-942-11	RES, VAR, CARBON 100K (BALANCE)
RV502	1-238-074-11	(AV220)...RES, VAR, CARBON 100K/100K (VOLUME)
RV502	1-238-943-11	(AV320)...RES, VAR, CARBON 100K/100K (VOLUME)
RV503	1-238-941-11	RES, VAR, CARBON 50K/50K (TONE BASS)
RV504	1-238-941-11	RES, VAR, CARBON 50K/50K (TONE TREBLE)
RY601	1-515-533-11	RELAY
RY901	1-515-720-11	(AV320)...RELAY
S301	1-554-303-21	SWITCH, KEY BOARD (TUNING DIRECT)
S302	1-554-303-21	SWITCH, KEY BOARD (PRESET -)
S303	1-554-303-21	SWITCH, KEY BOARD (TUNING -)
S304	1-554-303-21	SWITCH, KEY BOARD (BAND FM)
S305	1-554-303-21	SWITCH, KEY BOARD (FM MODE)
S306	1-554-303-21	SWITCH, KEY BOARD (PRESET +)
S307	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
S308	1-554-303-21	SWITCH, KEY BOARD (BAND AM)
S310	1-554-303-21	SWITCH, KEY BOARD (TAPE)
S311	1-554-303-21	SWITCH, KEY BOARD (VIDEO)
S312	1-554-303-21	SWITCH, KEY BOARD (PHONO)
S313	1-554-303-21	SWITCH, KEY BOARD (TUNING)
S314	1-554-303-21	SWITCH, KEY BOARD (CD)
S315	1-554-303-21	SWITCH, KEY BOARD (7)
S316	1-554-303-21	SWITCH, KEY BOARD (8)
S317	1-554-303-21	SWITCH, KEY BOARD (9)
S318	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S319	1-554-303-21	SWITCH, KEY BOARD (4)

Ref.No.	Part No.	Description
S320	1-554-303-21	SWITCH, KEY BOARD (5)
S321	1-554-303-21	SWITCH, KEY BOARD (6)
S322	1-554-303-21	SWITCH, KEY BOARD (0)
S323	1-554-303-21	SWITCH, KEY BOARD (1)
S324	1-554-303-21	SWITCH, KEY BOARD (2)
S325	1-554-303-21	SWITCH, KEY BOARD (3)
S326	1-554-303-21	SWITCH, KEY BOARD (SHIFT)
S327	1-554-303-21	SWITCH, KEY BOARD (DBFB)
S328	1-554-303-21	(AV320)...SWITCH, KEY BOARD (MUTING)
S329	1-554-303-21	SWITCH, KEY BOARD (SURROUND)
S330	1-554-303-21	(AV320)...SWITCH, KEY BOARD (SYSTEM POWER)
S601	1-571-485-11	SWITCH, PUSH (2 KEY) (SPEAKER A)
S602	1-571-485-11	SWITCH, PUSH (2 KEY) (SPEAKER B)
S901	△ 1-554-920-11	(AV220)..SWITCH, PUSH(AC POWER)(1 KEY)
T901	△ 1-449-965-11	(AV220)...TRANSFORMER, POWER
T901	△ 1-449-966-11	(AV320)...TRANSFORMER, POWER
T902	△ 1-448-517-21	(AV320)...TRANSFORMER, POWER
TM601	1-536-706-00	TERMINAL BOARD (SPEAKER)
VZ901	△ 1-807-293-11	(AV320)...VARISTOR (SNR-14A 140K)
X301	1-567-170-00	OSCILLATOR, CERAMIC (4.194MHz)

ACCESSORY & PACKING MATERIAL

1-465-423-11	(AV320)...REMOTE COMMANDER (RM-S103)
1-501-374-11	ANTENNA, LOOP
2-181-754-01	(AV320)...COVER, BATTERY
3-751-607-21	MANUAL, INSTRUCTION(ENGLISH)
3-751-607-31	(Canadian)...MANUAL, INSTRUCTION (ENGLISH,FRENCH)
*4-931-010-01	CUSHION (BOTTOM)
*4-931-011-01	CUSHION (TOP)
*4-931-097-01	(AV220)...INDIVIDUAL CARTON
*4-931-098-01	(AV320)...INDIVIDUAL CARTON

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