

# ST-SA3ES

## SERVICE MANUAL

AEP Model



### SPECIFICATIONS

<b>FM tuner section</b>		<b>Separation</b>	60 dB at 1 kHz
<b>Frequency range</b>	87.5 - 108.0 MHz	<b>Selectivity</b>	at 400 kHz WIDE 80 dB NARROW 90 dB
<b>Antenna terminals</b>	75 ohms, unbalanced		at 300 kHz WIDE 45 dB NARROW 70 dB
<b>Intermediate frequency</b>	10.7 MHz	<b>Output</b>	at 40 kHz deviation 600 mV
<b>Sensitivity</b>	at 26 dB quieting (mono) 10.3 dBf, 0.9 $\mu$ V/75 $\Omega$ at 46 dB quieting (stereo) 38.5 dBf, 23 $\mu$ V/75 $\Omega$	<b>AM tuner section</b>	
<b>Usable sensitivity (IHF)</b>	10.3 dBf, 0.9 $\mu$ V/ 75 $\Omega$	<b>Frequency range</b>	MW: 531 - 1,602 kHz (9 kHz step) LW: 153 - 279 kHz (1 kHz step)
<b>S/N</b>	at 40 kHz deviation 80 dB (mono), 76 dB (stereo)	<b>Intermediate frequency</b>	450 kHz
<b>Harmonic distortion</b>	WIDE 0.02% (mono), 0.03% (stereo) NARROW 0.05% (mono), 0.07% (stereo)	<b>Usable Sensitivity</b>	(with AM loop aerial) MW: 200 $\mu$ V/m LW: 700 $\mu$ V/m
<b>Frequency response</b>	15 Hz - 15 kHz (+0.2/-0.5 dB)	<b>Signal-to-noise ratio</b>	MW: 54 dB (50 mV/m, 999 kHz) LW: 50 dB (50 mV/m, 216 kHz)

— Continued on next page —

FM STEREO FM/AM TUNER  
**SONY**®



## TABLE OF CONTENTS

Harmonic distortion	0.3% (50 mV/m, 400 Hz)
Selectivity	50 dB
<b>General</b>	
Power requirements	220-230 V, AC 50/60 Hz
Power consumption	13 W
Input impedance	75 ohms
Input connector	IEC-male
Dimensions	430 x 98 x 340 mm
Weight	4.5 kg
Supplied accessories	Audio cord (1) AM loop aerial (1) FM wire aerial (1)

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Design and specifications are subject to change without notice.

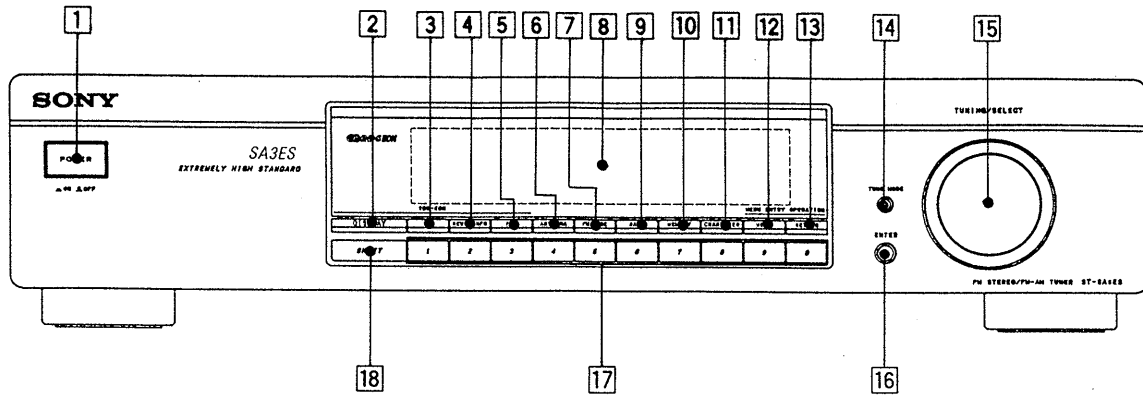
### SAFETY-RELATED COMPONENT WARNING !!

**COMPONENTS IDENTIFIED BY MARK  $\Delta$  OR DOTTED LINE WITH MARK  $\Delta$  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.**

# SECTION 1

## GENERAL

### Front Panel



- 1 POWER switch
- 2 DISPLAY button
- 3 TA button
- 4 NEWS/INFO button
- 5 PTY button
- 6 ANTENNA button
- 7 FM MODE button
- 8 Display window
- 9 BAND button
- 10 MEMORY button
- 11 CHARACTER button
- 12 MENU button
- 13 RETURN button
- 14 TUNE MODE button
- 15 TUNING/SELECT knob
- 16 ENTER button
- 17 Preset buttons
- 18 SHIFT button

## SECTION 3 TEST MODE

### 1. Circuit Check Mode

Set to the reception frequency that the circuit can STEREO RDS stations. (Set the input level to above 70 dB.)

1. Turn OFF the power.
2. While pressing [4] and [MENU] together, turn ON [POWER].

• The items in the following table will be checked automatically in order every 2 seconds.

Display	Items	DISPLAY		NG
		FM RDS	AM (MW, LW)	
Tuned	AST signal =LOW	OK or NG	/	IC251 NG, RV251 adjustments
IF Frq	IF COUNT OK	OK or NG	OK or NG	FE101, IC251 NG, or IF count buffer amp (Q251, Q401) NG
Sig Level	SI LEVEL $\geq$ 70dB	OK or NG	OK or NG	IC221 NG, RV221 adjustments
Stereo	ST signal=LOW	OK or NG	/	IC301 NG, RV301 adjustments
RDS Signal	RDS DATA OK	OK or NG	/	IC801 NG

**NOTE :** The preset data will be erased when this test mode is used. Therefore, take down the data before setting this mode and preset the data again after completing operations in this mode.

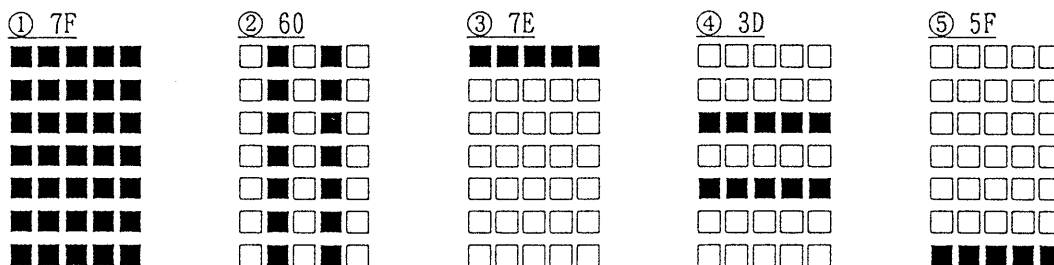
## 2. Display Tube Check and KEY Check mode

**NOTE :** Do not perform this check mode when replacing display tubes or excepting when replacing a microcomputer.

1. Turn OFF the power.
2. While pressing [1] and [MENU] together, turn ON [POWER].
3. While continuously pressing [1] and [MENU] together, check the following.

Microcomputer version indication (1 sec) → All light up "7F" → Dot area only "60" → Dot area only "7E"  
 ↓  
 Dot area only "5F" ← Dot area only "3D"

Indication test pattern



\* The indication test patterns from ② to ⑤ are indicated on only even grids.

The display changes every 1 sec.

4. Release [1] and [MENU]. The KEY CHECK mode will be set.
5. All key numbers will be displayed.  
Key Number : 24
6. Each time the key is pressed, the key number will be counted down.  
Each key will be counted only once, at the first time.
7. When all keys have been pressed, the process will end.

**NOTE :** As contents of the Factory Preset will be written into memory after completing this check mode, delete contents of memory according to 4. Forced RESET.

## 3. Entering the Factory Preset (In case perform just to write memory of the Factory Preset.)

1. Turn OFF the power.
2. While pressing [3] and [MENU] together, turn ON [POWER].

## 4. Forced RESET (Used to delete the contents of Factory Preset when it is written into the preset memory.)

Clears all the RAMs and sets the initial state

1. Turn OFF the power.
2. While pressing [5] and [MENU] together, turn ON [POWER].

## SECTION 3

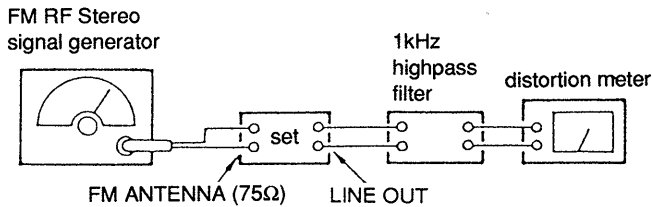
### ELECTRICAL ADJUSTMENTS

#### Precautions in Repairing

If the front end unit fails, it is difficult to repair the inner circuits, so replace the entire front end unit.

#### FM SECTION

0dB = 1μV



- Standard Setting of FM Stereo RF Signal Generator.

STEREO STANDARD SIGNAL	MONAURAL STANDARD SIGNAL
Carrier frequency : 98MHz	Carrier frequency : 98MHz
Modulation : Audio 1kHz	Modulation : Audio
Main channel (L+R) : 33.75kHz deviation	1kHz
Sub channel (L-R) : 33.75kHz deviation	75kHz deviation
Pilot : 7.5kHz deviation	

#### How to switch IF BAND WIDE/NARROW

##### Method 1 :

1. Push the MENU key and turn the TUNING/SELECT to indicate "Reception" on the fluorescent display tube, then press the ENTER key.
2. Turn the TUNING/SELECT to indicate "ATT/IF Band" on the fluorescent display tube, then press the ENTER key.
3. Turn the TUNING/SELECT to indicate "ANT ATT: OFF" on the fluorescent display tube, then press the ENTER key.
4. Turn the TUNING/SELECT to indicate "IF: NARROW" or "IF: WIDE" on the fluorescent display tube, then press the ENTER key.

When the IF BAND: NARROW is set, "NARROW" is indicated on the fluorescent display tube.

5. Set WIDE after the operation.

##### Method 2 :

After the test modes "2. Display Tube Check and KEY Check mode" or "3. Entering the Factory Preset", "IF : NARROW" and "IF : WIDE" are switched every time pressing [RETURN] key.

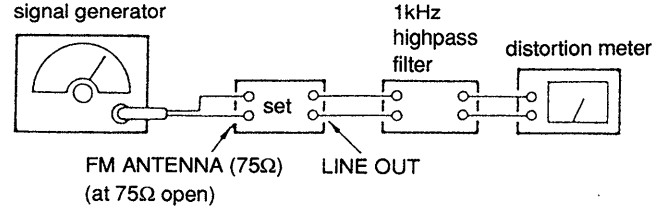
This function does not work if the power is turned off once. Set "WIDE" after the all adjustments.

#### FM Discriminator ADJUSTMENT (NULL and MONO Distortion Adjustment)

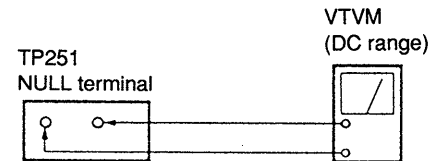
##### Setting :

IF BAND : WIDE

FM RF Stereo signal generator



Modulation : Monaural Standard signal  
Output level : 6mV (76dBμ)



##### Procedure :

1. Tune the set to 98 MHz.
2. Adjust T252 for 0V reading on the VTVM.  
..... NULL
3. Adjust T253 for a minimum reading on the distortion meter.  
..... MONO Distortion
4. Repeat the adjustments of 2 and 3 several times.

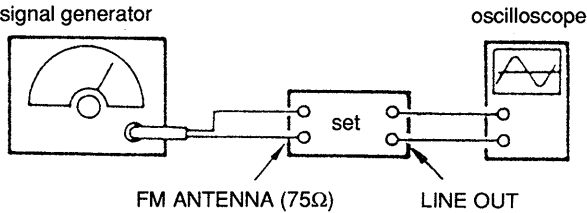
**Note :** When replacing the ceramic filter, perform this alignment.

## Front End IFT/STEREO Distortion Rate Adjustment

### Setting :

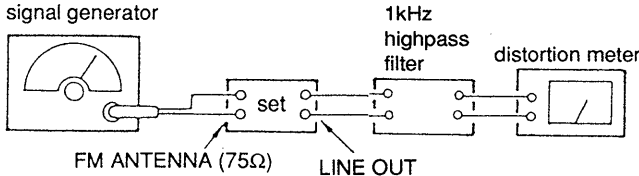
IF BAND : WIDE

FM RF Stereo  
signal generator



Modulation : Monaural Standard signal  
Output level :  $2.2\mu\text{V}$  (7dB $\mu$ ) (at 75 $\Omega$  open)

FM RF Stereo  
signal generator



Modulation : Stereo Standard signal  
Output level : 6mV (76dB $\mu$ ) (at 75 $\Omega$  open)

### Procedure :

1. Tune the set to 98 MHz.
2. Remove the top cover of the front end (FE101).
3. Adjust IFT1 of the front end (FE101) to put the noise up-and-down and symmetrically on the waveform of the oscilloscope.
4. Adjust the front end (FE101) IFT1 to minimize the STEREO distortion rate.
5. Attach the removed top cover of the front end (FE101) as it was.

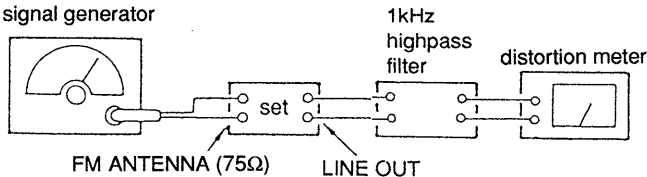
**Note :** Do not turn more than a half turn from the core position which is adjusted on the front end IFT adjustment.

## Narrow THD Adjustment

### Setting :

IF BAND : NARROW

FM RF Stereo  
signal generator



Modulation : Stereo Standard signal  
Output level : 10mV (80dB $\mu$ ) (at 75 $\Omega$  open)

### Procedure :

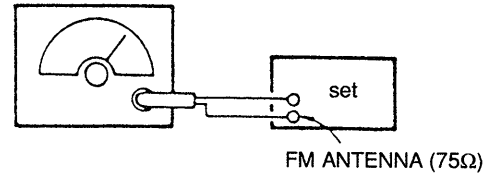
1. Tune the set to 98 MHz.
2. Set "IF BAND : NARROW" according to the procedure of "How to switch IF BAND WIDE/NARROW" on page 6.
3. Set SSG output level to 80dB $\mu$ .
4. Adjust RV232 for a minimum reading on the distortion meter.

## Stereo Level Adjustment

### Setting :

IF BAND : WIDE

FM RF Stereo  
signal generator



Modulation : Stereo Standard signal  
Output level :  $32\mu\text{V}$  (30dB) (at 75 $\Omega$  open)

### Procedure :

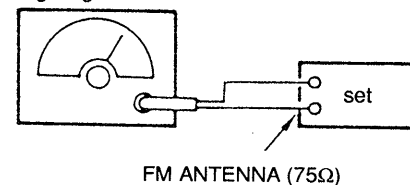
1. Tune the set to 98 MHz.
2. Adjust RV251 so that the "STEREO" indicator goes on.

## Narrow Gain Adjustment

### Setting :

IF BAND : NARROW

FM RF Stereo  
signal generator



Modulation : Stereo Standard signal  
Output level :  $32\mu\text{V}$  (30dB) (at 75 $\Omega$  open)

### Procedure :

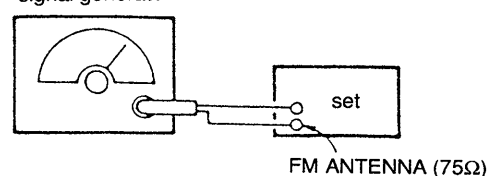
1. Tune the set to 98 MHz.
2. Set "IF BAND : NARROW" according to the procedure of "How to switch IF BAND WIDE/NARROW" on page 6.
3. Adjust RV231 so that the "STEREO" indicator goes on.

## FM Meter Level Adjustment

### Setting :

IF BAND : WIDE

FM RF Stereo  
signal generator



Modulation : Stereo Standard signal  
Output level : 3mV (76dB $\mu$ ) (at 75 $\Omega$  open)

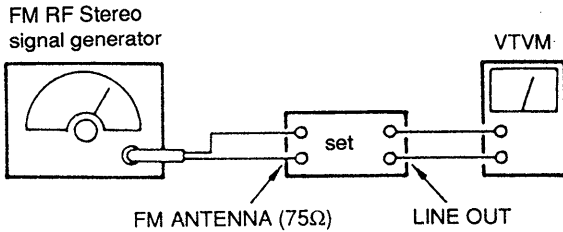
### Procedure :

1. Tune the set to 98 MHz.
2. Press [DISPLAY] key to display the digital signal, then adjust RV221 to be displayed as "SIG 70dB".

## Stereo Separation Adjustment

### Setting :

IF BAND : NARROW (NARROW SEPARATION)  
WIDE (WIDE SEPARATION)



Modulation : Stereo Standard signal  
Output level : 6mV (76dBμ) (at 75Ω open)

### Procedure :

1. Refer to "How to switch IF BAND WIDE/NARROW" on page 6.

FM stereo Signal generator Output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ <sup>ⓑ</sup> IF BAND WIDE : Adjust RV301 for minimum reading on VTVM IF BAND NARROW : Adjust RV302 for minimum reading on VTVM
R-CH	R-CH	ⓒ
L-CH	R-CH	Ⓓ <sup>ⓓ</sup> IF BAND WIDE : Adjust RV301 for minimum reading on VTVM IF BAND NARROW : Adjust RV302 for minimum reading on VTVM

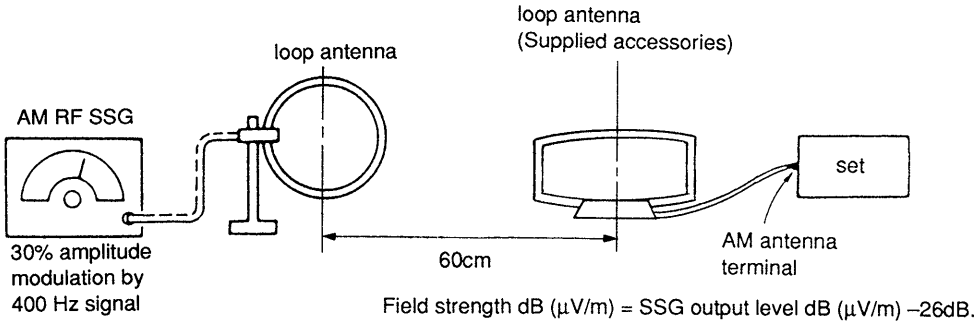
L-CH Stereo separation : Ⓐ - Ⓑ

R-CH Stereo separation : ⓒ - Ⓓ

The separations of both channels should be equal.

**AM SECTION**

**Setting :**  
**BAND : LW**

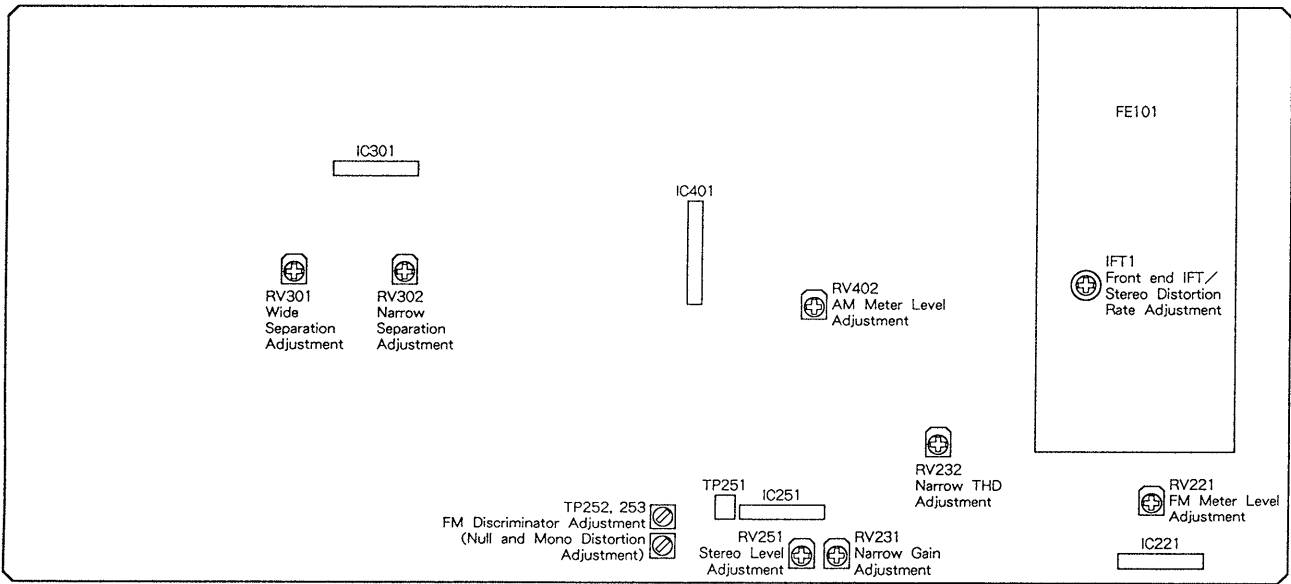


**AM Meter Level Adjustment**

**Setting :**  
 Carrier frequency : 216kHz  
 Modulation : 400Hz, 30% modulation

- Procedure :**
1. Set AM RF signal generator so that the AM antenna input level becomes 74dBµ/m.
  2. Adjust RV402 so that 1 to 10 indication bars light up on the signal meter.

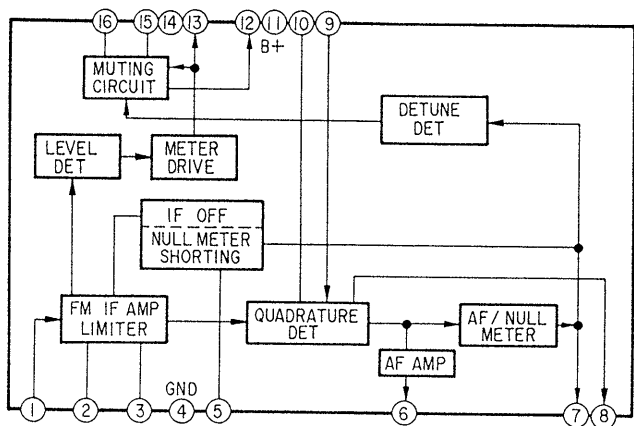
**Adjustment Location :**



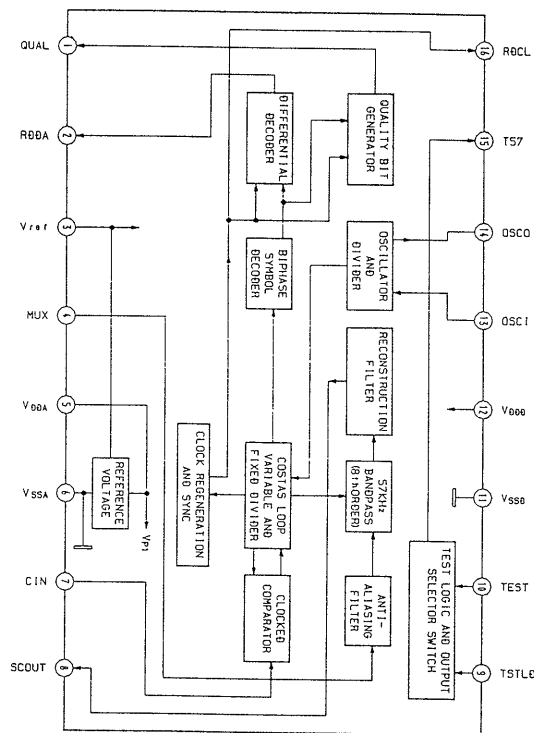
# SECTION 4 DIAGRAMS

## 4-1. IC BLOCK DIAGRAMS

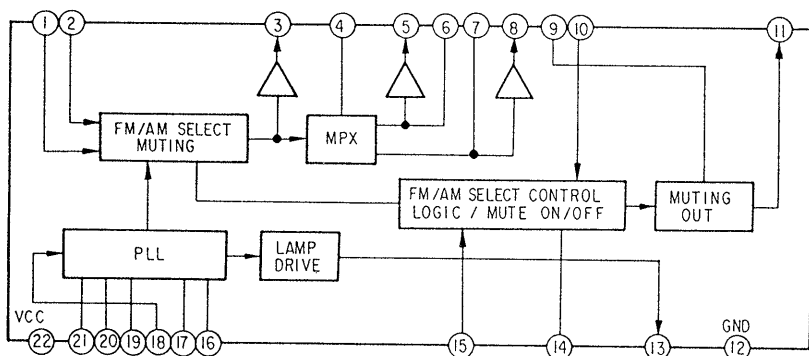
**IC221, IC251 LA1235**



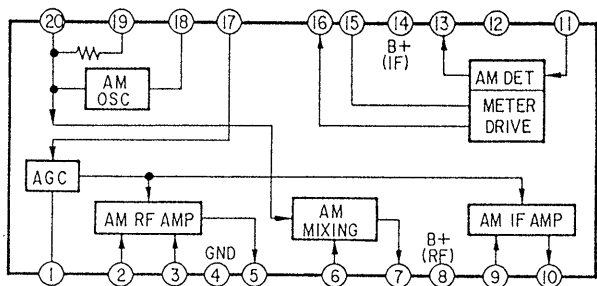
**IC801 SAA6579T**



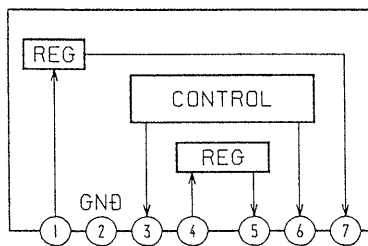
**IC301 LA3401**



**IC401 LA1245**



**IC901 LA5667**



## 4-2. IC PIN FUNCTION

### • IC701 $\mu$ PD780205GF (SYSTEM CONTROL FL DRIVE)

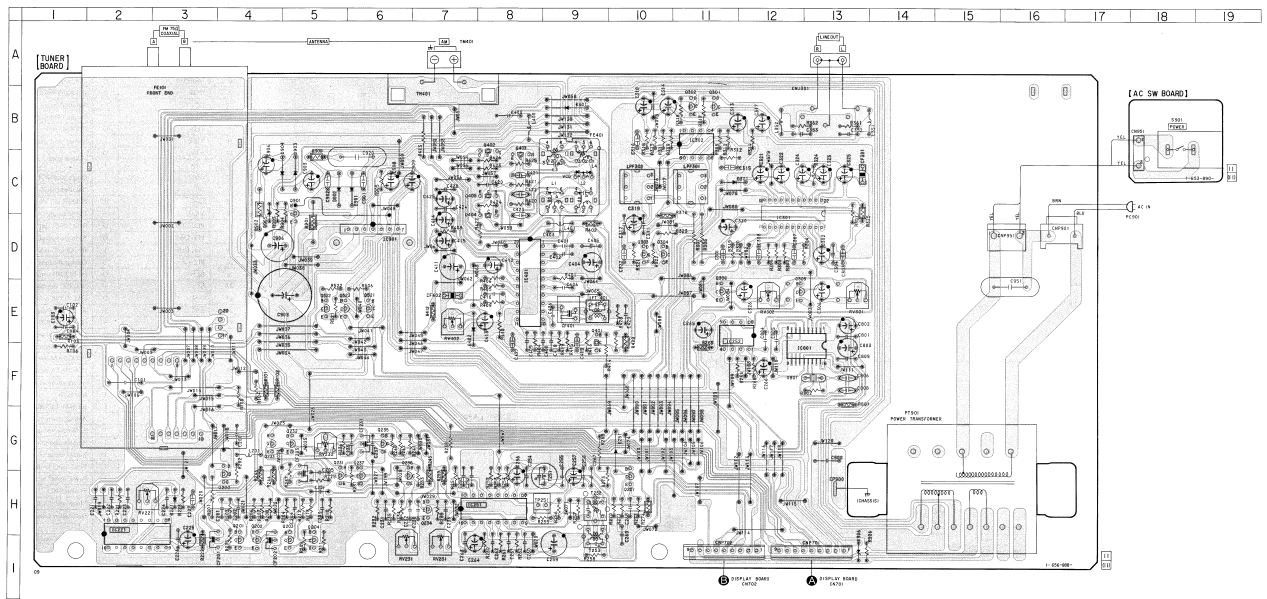
Pin No.	Pin Name	I/O	Function												
1	VDD	–	Power supply (+5V)												
2	$\overline{\text{ANT}}$	O	ANT A/ $\overline{\text{B}}$ switching output (open)												
3	ATT	O	ANT ATT on/off switching output (open)												
4	$\overline{\text{BAND1}}$	O	FM/ $\overline{\text{AM}}$ BAND switching output (open)												
5	$\overline{\text{BAND2}}$	O	AM BAND $\overline{\text{MW/LW}}$ switching output (open)												
6	IF-B	O	IF BAND $\overline{\text{WIDE/NARROW}}$ switching output (open)												
7	NC	–	Not used (open)												
8	MONO	O	Forced FM MONO on/off output (open)												
9	$\overline{\text{TUN}}$	O	TUNING action detection output (open)												
10	$\overline{\text{RESET}}$	I	System reset input												
11	4.19	O	} Main system clock (4.19 MHz)												
12	4.19	I													
13	GND	I	Single chip MODE select input (GND)												
14	NC	–	Not used (open)												
15	$\overline{\text{LOCK}}$	I	PROGRAM SW $\overline{\text{on/off}}$ detection input												
16	VDD	–	Power supply (+5V)												
17	$\overline{\text{PLL CLK}}$	O	Serial clock output for PLL LC72130												
18	PLL DATA	O	Serial data output for PLL LC72130												
19	PLL DIN	I	IF COUNT data input and PLL condition detection												
20	PLL CE	O	CE signal output for PLL LC72130												
21	$\overline{\text{BLN}}$	O	HI-BLEND on/off switching output												
22	$\overline{\text{ST}}$	I	STEREO display detection input												
23	CAL	O	CAL TONE on/off switching output												
24	$\overline{\text{AST}}$	I	AUTO STOP signal detection input												
25	AVSS	–	GND of the A/D converter												
26	$\overline{\text{MUTE}}$	O	Muting signal on/off switching output												
27	EON	O	Receive Reception, outside control output												
28	$\overline{\text{PGM}}$	I	PROGRAM SW $\overline{\text{SET/OFF}}$ detection input												
29	RDS DATA	I	RDS DATA input												
30	R2	I	Rotary encoder phase detection input												
31, 32	KEY2, KEY1	I	Key input												
33	SI	I	SIGNAL LEVEL input												
34	AVDD	–	Analog power supply of the A/D converter (+5V)												
35	AVREF	I	Reference voltage of the A/D converter (+5V)												
36	$\overline{\text{RIN}}$	I	Remote controller signal input												
37	R1	I	Rotary encoder number of rotations detection input												
38	$\overline{\text{RDS CLK}}$	I	Clock input for RDS DATA from SAA6579T												
39	POWER	I	Power on/off monitor input												
40	VSS	–	System GND												
41, 42	IS5, IS4	I	Model and function setting input												
43 to 45	IS3 to IS1	I	Destination detection setting input												
			<table border="1"> <tr> <td></td> <td>S1</td> <td>S2</td> <td>S3</td> </tr> <tr> <td>AEP, German, Italian model</td> <td>L</td> <td>L</td> <td>L</td> </tr> <tr> <td>EE model</td> <td>H</td> <td>L</td> <td>L</td> </tr> </table>		S1	S2	S3	AEP, German, Italian model	L	L	L	EE model	H	L	L
				S1	S2	S3									
AEP, German, Italian model	L	L	L												
EE model	H	L	L												
46	VDD	–	Power supply (+5V)												
47 to 78	P1 to P32	O	Segment signal output to the FL tube (FL701)												
79	VLOAD	–	Power supply to the FL tube (FL701) (–30V)												
80 to 84	P33 to P37	O	Segment signal output to the FL tube (FL701)												
85 to 100	I6G to I1G	O	Grid signal output to the FL tube (FL701)												

4-3. PRINTED WIRING BOARD — TUNER SECTION —

Semiconductor Location

Part No.	Location
IC201	H-3
IC202	G-10
IC301	C-11
IC401	B-9
IC402	E-7
IC501	C-6
IC502	C-5
IC503	C-5
IC504	C-4
IC505	C-4
IC506	I-13
IC201	H-2
IC251	H-8
IC252	E-11
IC301	C-12
IC302	B-11
IC401	E-8
IC402	E-13
IC501	D-6
Q200	G-3
Q201	I-4
Q202	I-4
Q203	I-5
Q204	I-5
Q205	G-5
Q206	G-5
Q207	G-4
Q208	H-7
Q209	G-6
Q210	G-6
Q211	G-6
Q212	H-10
Q201	B-11
Q301	B-11
Q302	D-10
Q303	D-10
Q304	E-12
Q305	E-12
Q306	E-11
Q401	E-9
Q402	B-8
Q403	C-8
Q404	C-8
Q405	C-8
Q501	E-8
Q502	E-8
Q503	E-8
Q504	C-5

Note:  
 • — parts extracted from the component side.  
 • — parts extracted from the conductor side.  
 • — internal component.  
 • — Pattern from the side which enable seeing.







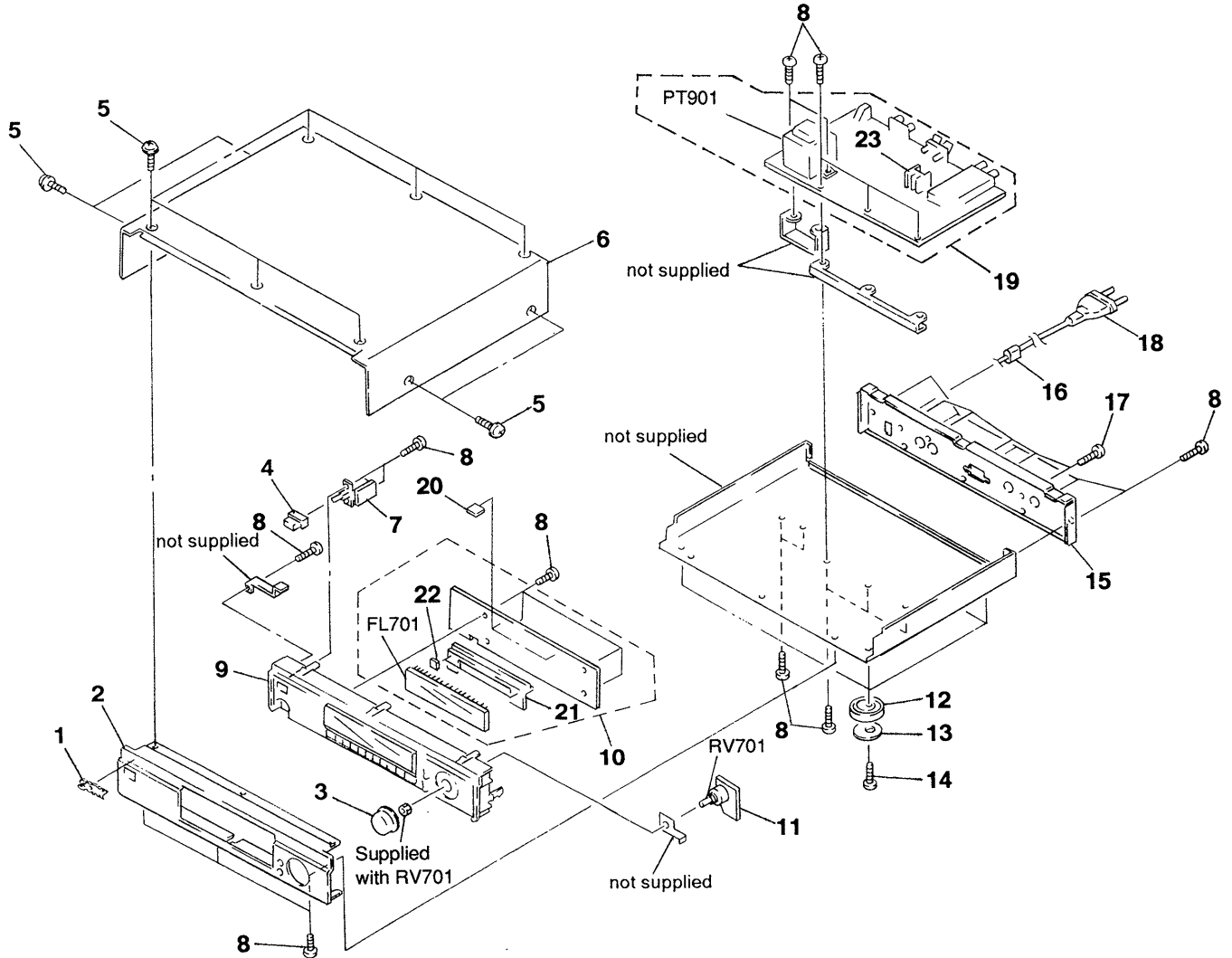
## SECTION 5 EXPLODED VIEW

**NOTE:**

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “ \* ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation  
 G : German model  
 IT : Italian model  
 EE : East European model

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



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-942-568-01	EMBLEM (NO. 5), SONY		* 15	4-974-313-11	PANEL, BACK (AEP, IT, G)	
2	4-970-683-51	PANEL, FRONT		* 15	4-974-313-21	PANEL, BACK (EE)	
3	4-970-684-01	KNOB (T)		16	3-703-244-00	BUSHING, CORD	
4	4-917-460-01	KNOB, POWER		17	3-704-515-41	SCREW (BV/RING)	
5	3-704-366-01	SCREW (CASE) (M3X8)		$\triangle$ 18	1-575-651-21	CORD, POWER	
6	4-974-321-11	CASE		* 19	A-4377-992-A	TUNER BOARD, COMPLETE (AEP, IT, G)	
* 7	1-656-890-11	AC SW BOARD		* 19	A-4377-993-A	TUNER BOARD, COMPLETE (EE)	
8	4-967-961-01	SCREW (3X8) (SPECIAL)		20	9-911-842-XX	CUSHION (S)	
9	X-4946-076-1	BASE ASSY (B/3), PANEL		* 21	4-945-292-01	HOLDER, INDICATION TUBE	
* 10	A-4377-994-A	DISPLAY BOARD, COMPLETE (AEP, IT, G)		* 22	4-921-941-71	CUSHION (FL)	
* 10	A-4377-995-A	DISPLAY BOARD, COMPLETE (EE)		* 23	4-911-383-01	HEAT SINK	
* 11	1-656-891-11	ENCODER BOARD		FL701	1-517-177-21	INDICATOR TUBE, FLUORESCENT	
12	4-970-123-01	FOOT (F50180S)		$\triangle$ PT901	1-423-525-11	TRANSFORMER, POWER	
13	4-970-124-01	CUSHION (F50180S)		RV701	1-466-336-22	ENCODER, ROTARY (TUNING/SELECT)	
14	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3					

## SECTION 6

# ELECTRICAL PARTS LIST

## AC SW

## DISPLAY

**NOTE:**

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

When indicating parts by reference number, please include the board name.

- 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.
- RESISTORS  
All resistors are in ohms  
METAL: Metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F : nonflammable
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$  A..., uPA...:  $\mu$  PA..., uPB...:  $\mu$  PB...,  
uPC...:  $\mu$  PC..., uPD...:  $\mu$  PD...
- CAPACITORS  
uF :  $\mu$  F
- COILS  
uH :  $\mu$  H
- Abbreviation  
G : German model  
IT : Italian model  
EE : East European model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	1-656-890-11	AC SW BOARD ***** < SWITCH >				< IC >	
				IC701	8-759-338-20	IC uPD780205GF-011-3B9	
				IC702	8-749-923-43	IC GP1U57XB	
$\Delta$ S901	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)				< TRANSISTOR >	
		*****		Q701	8-729-119-78	TRANSISTOR 2SC2785-HFE	
*	A-4377-994-A	DISPLAY BOARD, COMPLETE (AEP, IT, G) *****				< RESISTOR >	
*	A-4377-995-A	DISPLAY BOARD, COMPLETE (EE) *****		R700	1-249-437-11	CARBON 47K 5% 1/4W (EE)	
*	4-921-941-71	CUSHION (FL)		R702	1-249-429-11	CARBON 10K 5% 1/4W	
*	4-945-292-01	HOLDER, INDICATION TUBE < CAPACITOR >		R703	1-249-437-11	CARBON 47K 5% 1/4W	
				R704	1-249-437-11	CARBON 47K 5% 1/4W	
C517	1-126-051-11	ELECT 47uF 20% 35V		R705	1-249-419-11	CARBON 1.5K 5% 1/4W F	
C701	1-162-306-11	CERAMIC 0.01uF 30% 16V		R707	1-249-441-11	CARBON 100K 5% 1/4W	
C702	1-162-306-11	CERAMIC 0.01uF 30% 16V		R708	1-249-441-11	CARBON 100K 5% 1/4W	
C703	1-162-209-31	CERAMIC 27PF 5% 50V		R709	1-247-807-31	CARBON 100 5% 1/4W	
C704	1-162-209-31	CERAMIC 27PF 5% 50V		R710	1-249-406-11	CARBON 120 5% 1/4W F	
C706	1-162-306-11	CERAMIC 0.01uF 30% 16V		R711	1-249-406-11	CARBON 120 5% 1/4W F	
C707	1-126-051-11	ELECT 47uF 20% 35V		R712	1-249-407-11	CARBON 150 5% 1/4W F	
C708	1-162-306-11	CERAMIC 0.01uF 30% 16V		R713	1-249-408-11	CARBON 180 5% 1/4W F	
C709	1-162-306-11	CERAMIC 0.01uF 30% 16V		R714	1-247-815-91	CARBON 220 5% 1/4W	
C710	1-162-306-11	CERAMIC 0.01uF 30% 16V		R715	1-249-410-11	CARBON 270 5% 1/4W F	
C711	1-126-059-11	ELECT 10uF 20% 50V		R716	1-249-411-11	CARBON 330 5% 1/4W	
C712	1-104-905-11	CAP, DOUBLE LAYERS 0.22F		R717	1-249-413-11	CARBON 470 5% 1/4W F	
C713	1-162-306-11	CERAMIC 0.01uF 30% 16V		R718	1-249-414-11	CARBON 560 5% 1/4W F	
C714	1-126-045-11	ELECT 2.2uF 20% 50V		R719	1-249-416-11	CARBON 820 5% 1/4W F	
		< DIODE >		R720	1-249-418-11	CARBON 1.2K 5% 1/4W F	
D701	8-719-815-85	DIODE 1S1585		R721	1-249-421-11	CARBON 2.2K 5% 1/4W F	
D702	8-719-815-85	DIODE 1S1585		R723	1-247-807-31	CARBON 100 5% 1/4W	
D703	8-719-815-85	DIODE 1S1585		R724	1-249-406-11	CARBON 120 5% 1/4W F	
D705	8-719-815-85	DIODE 1S1585		R725	1-249-406-11	CARBON 120 5% 1/4W F	
D707	8-719-815-85	DIODE 1S1585		R726	1-249-407-11	CARBON 150 5% 1/4W F	
		< FLUORESCENT INDICATOR >		R727	1-249-408-11	CARBON 180 5% 1/4W F	
FL701	1-517-177-21	INDICATOR TUBE, FLUORESCENT		R728	1-247-815-91	CARBON 220 5% 1/4W	
				R729	1-249-410-11	CARBON 270 5% 1/4W F	
				R730	1-249-411-11	CARBON 330 5% 1/4W	
				R731	1-249-413-11	CARBON 470 5% 1/4W F	
				R732	1-249-414-11	CARBON 560 5% 1/4W F	
				R733	1-249-416-11	CARBON 820 5% 1/4W F	
				R734	1-249-418-11	CARBON 1.2K 5% 1/4W F	
				R735	1-249-421-11	CARBON 2.2K 5% 1/4W F	
				R736	1-249-424-11	CARBON 3.9K 5% 1/4W F	

**DISPLAY    ENCODER    TUNER**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
△R737	1-249-401-11	CARBON	47 5% 1/4W F	*	1-656-891-11	ENCODER BOARD *****	
R738	1-249-417-11	CARBON	1K 5% 1/4W F			< VARIABLE RESISTOR >	
R739	1-249-433-11	CARBON	22K 5% 1/4W				
R740	1-247-895-00	CARBON	470K 5% 1/4W				
R741	1-249-413-11	CARBON	470 5% 1/4W F		RV701 1-466-336-22	ENCODER, ROTARY (TUNING/SELECT)	
R742	1-249-413-11	CARBON	470 5% 1/4W F				
						*****	
R743	1-249-413-11	CARBON	470 5% 1/4W F	*	A-4377-992-A	TUNER BOARD, COMPLETE (AEP, IT, G) *****	
R744	1-249-413-11	CARBON	470 5% 1/4W F				
R745	1-249-413-11	CARBON	470 5% 1/4W F				
R746	1-249-413-11	CARBON	470 5% 1/4W F				
R747	1-249-413-11	CARBON	470 5% 1/4W F	*	A-4377-993-A	TUNER BOARD, COMPLETE (EE) *****	
R748	1-249-413-11	CARBON	470 5% 1/4W F				
R750	1-249-413-11	CARBON	470 5% 1/4W F	*	4-911-383-01	HEAT SINK	
R751	1-249-413-11	CARBON	470 5% 1/4W F			< CAPACITOR >	
R752	1-249-413-11	CARBON	470 5% 1/4W F				
R753	1-249-413-11	CARBON	470 5% 1/4W F				
		< SWITCH >					
S702	1-554-303-21	SWITCH, TACTILE (SHIFT)			C101 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S703	1-554-303-21	SWITCH, TACTILE (1)			C102 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S704	1-554-303-21	SWITCH, TACTILE (2)			C103 1-126-024-11	ELECT 220uF 20% 16V	
S705	1-554-303-21	SWITCH, TACTILE (3)			C104 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S706	1-554-303-21	SWITCH, TACTILE (4)			C200 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S707	1-554-303-21	SWITCH, TACTILE (5)			C201 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S708	1-554-303-21	SWITCH, TACTILE (6)			C202 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S709	1-554-303-21	SWITCH, TACTILE (7)			C203 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S710	1-554-303-21	SWITCH, TACTILE (8)			C204 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S711	1-554-303-21	SWITCH, TACTILE (9)			C205 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S712	1-554-303-21	SWITCH, TACTILE (0)			C221 1-162-282-31	CERAMIC 100PF 10% 50V	
S713	1-554-303-21	SWITCH, TACTILE (ENTER)			C222 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S714	1-554-303-21	SWITCH, TACTILE (DISPLAY)			C223 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S715	1-554-303-21	SWITCH, TACTILE (TA)			C224 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S716	1-554-303-21	SWITCH, TACTILE (NEWS/INFO)			C225 1-126-022-11	ELECT 47uF 20% 16V	
S717	1-554-303-21	SWITCH, TACTILE (PTY)			C226 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S718	1-554-303-21	SWITCH, TACTILE (ANTENNA)			C227 1-136-165-00	FILM 0.1uF 5% 50V	
S719	1-554-303-21	SWITCH, TACTILE (FM MODE)			C230 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S720	1-554-303-21	SWITCH, TACTILE (BAND)			C231 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S721	1-554-303-21	SWITCH, TACTILE (MEMORY)			C232 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S722	1-554-303-21	SWITCH, TACTILE (CHARACTER)			C235 1-162-215-31	CERAMIC 47PF 5% 50V	
S723	1-554-303-21	SWITCH, TACTILE (MENU)			C236 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S724	1-554-303-21	SWITCH, TACTILE (RETURN)			C237 1-162-306-11	CERAMIC 0.01uF 30% 16V	
S725	1-554-303-21	SWITCH, TACTILE (TUNE MODE)			C251 1-162-306-11	CERAMIC 0.01uF 30% 16V	
		< VIBRATOR >			C252 1-162-306-11	CERAMIC 0.01uF 30% 16V	
X701	1-760-422-11	VIBRATOR, CRYSTAL (4.19MHz)			C253 1-162-306-11	CERAMIC 0.01uF 30% 16V	
					C254 1-162-288-31	CERAMIC 330PF 10% 50V	
					C255 1-162-290-31	CERAMIC 470PF 10% 50V	
					C256 1-126-044-11	ELECT 1uF 20% 50V	
					C257 1-126-022-11	ELECT 47uF 20% 16V	
					C258 1-162-306-11	CERAMIC 0.01uF 30% 16V	
					C259 1-126-022-11	ELECT 47uF 20% 16V	
					C260 1-162-306-11	CERAMIC 0.01uF 30% 16V	
					C261 1-162-306-11	CERAMIC 0.01uF 30% 16V	
					C262 1-162-306-11	CERAMIC 0.01uF 30% 16V	

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

# TUNER

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C263	1-162-306-11	CERAMIC	0.01uF 30% 16V	C420	1-162-306-11	CERAMIC	0.01uF 30% 16V
C264	1-126-043-11	ELECT	0.47uF 20% 50V	C421	1-136-161-00	FILM	0.047uF 5% 50V
C265	1-126-022-11	ELECT	47uF 20% 16V	C422	1-164-019-11	CERAMIC	10PF 0.5PF 50V
C266	1-126-059-11	ELECT	10uF 20% 50V	C423	1-102-973-00	CERAMIC	100PF 5% 50V
C267	1-161-494-00	CERAMIC	0.022uF 25V	C424	1-162-306-11	CERAMIC	0.01uF 30% 16V
C268	1-162-294-31	CERAMIC	0.001uF 10% 50V	C425	1-126-059-11	ELECT	10uF 20% 50V
C269	1-162-306-11	CERAMIC	0.01uF 30% 16V	C426	1-162-306-11	CERAMIC	0.01uF 30% 16V
C301	1-136-161-00	FILM	0.047uF 5% 50V	C427	1-102-074-00	CERAMIC	0.001uF 10% 50V
C302	1-126-059-11	ELECT	10uF 20% 50V	C428	1-162-211-31	CERAMIC	33PF 5% 50V
C303	1-136-161-00	FILM	0.047uF 5% 50V	C429	1-162-306-11	CERAMIC	0.01uF 30% 16V
C304	1-162-288-31	CERAMIC	330PF 10% 50V	C801	1-162-306-11	CERAMIC	0.01uF 30% 16V
C306	1-126-059-11	ELECT	10uF 20% 50V	C802	1-126-045-11	ELECT	2.2uF 20% 50V
C307	1-130-468-00	MYLAR	560PF 5% 50V	C803	1-126-022-11	ELECT	47uF 20% 16V
C308	1-130-468-00	MYLAR	560PF 5% 50V	C804	1-162-288-31	CERAMIC	330PF 10% 50V
C311	1-162-302-11	CERAMIC	0.0022uF 30% 16V	C805	1-162-291-31	CERAMIC	560PF 10% 50V
C312	1-162-302-11	CERAMIC	0.0022uF 30% 16V	C806	1-102-527-11	CERAMIC	82PF 5% 50V
C313	1-126-059-11	ELECT	10uF 20% 50V	C808	1-101-880-00	CERAMIC	47PF 5% 50V
C314	1-126-059-11	ELECT	10uF 20% 50V	C809	1-162-306-11	CERAMIC	0.01uF 30% 16V
C315	1-110-335-11	MYLAR	100PF 5% 50V	C900	1-162-306-11	CERAMIC	0.01uF 30% 16V
C316	1-110-335-11	MYLAR	100PF 5% 50V	C901	1-101-004-00	CERAMIC	0.01uF 50V
C317	1-126-303-11	ELECT	3.3uF 20% 50V	C902	1-101-004-00	CERAMIC	0.01uF 50V
C318	1-126-303-11	ELECT	3.3uF 20% 50V	C903	1-126-051-11	ELECT	47uF 20% 50V
C319	1-126-022-11	ELECT	47uF 20% 16V	C904	1-126-051-11	ELECT	47uF 20% 50V
C320	1-126-044-11	ELECT	1uF 20% 50V	C905	1-124-602-00	ELECT	2200uF 20% 35V
C321	1-126-044-11	ELECT	1uF 20% 50V	C906	1-126-053-11	ELECT	220uF 20% 50V
C322	1-126-044-11	ELECT	1uF 20% 50V	C908	1-126-059-11	ELECT	10uF 20% 50V
C323	1-126-043-11	ELECT	0.47uF 20% 50V	C909	1-126-059-11	ELECT	10uF 20% 50V
C324	1-126-044-11	ELECT	1uF 20% 50V	C920	1-130-789-00	FILM	1uF 5% 100V
C325	1-126-051-11	ELECT	47uF 20% 50V	△C951	1-161-741-00	CERAMIC	0.001uF 10% 400V
C326	1-126-022-11	ELECT	47uF 20% 16V				
C327	1-136-161-00	FILM	0.047uF 5% 50V			< FILTER >	
C352	1-162-294-31	CERAMIC	0.001uF 10% 50V	CF201	1-567-389-11	FILTER, CERAMIC	
C353	1-162-294-31	CERAMIC	0.001uF 10% 50V	CF202	1-567-389-11	FILTER, CERAMIC	
C400	1-162-211-31	CERAMIC	33PF 5% 50V	CF203	1-567-389-11	FILTER, CERAMIC	
C401	1-162-306-11	CERAMIC	0.01uF 30% 16V	CF231	1-567-107-71	FILTER, CERAMIC	
C402	1-162-306-11	CERAMIC	0.01uF 30% 16V	CF301	1-567-250-11	OSCILLATOR, CERAMIC	
C403	1-162-306-11	CERAMIC	0.01uF 30% 16V	CF401	1-527-826-00	FILTER, CERAMIC	
C404	1-126-022-11	ELECT	47uF 20% 16V	CF402	1-527-981-00	FILTER, CERAMIC	
C405	1-162-306-11	CERAMIC	0.01uF 30% 16V			< CONNECTOR >	
C406	1-162-306-11	CERAMIC	0.01uF 30% 16V	CNJ301	1-568-250-21	JACK, PIN 2P (LINE OUT)	
C408	1-162-306-11	CERAMIC	0.01uF 30% 16V			< CONNECTOR >	
C409	1-162-294-31	CERAMIC	0.001uF 10% 50V	CNP701	1-766-282-11	PIN, CONNECTOR (PC BOARD) 9P	
C410	1-162-306-11	CERAMIC	0.01uF 30% 16V	CNP702	1-766-282-11	PIN, CONNECTOR (PC BOARD) 9P	
C411	1-126-022-11	ELECT	47uF 20% 16V	CNP901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P	
C412	1-126-044-11	ELECT	1uF 20% 50V	CNP951	1-564-321-00	PIN, CONNECTOR 2P	
C413	1-126-044-11	ELECT	1uF 20% 50V			< DIODE >	
C414	1-126-163-11	ELECT	4.7uF 20% 50V	D221	8-719-815-85	DIODE 1S1585	
C415	1-126-303-11	ELECT	3.3uF 20% 50V				
C418	1-161-494-00	CERAMIC	0.022uF 25V				
C419	1-102-074-00	CERAMIC	0.001uF 10% 50V				

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D251	8-719-815-85	DIODE	1S1585	Q202	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
D301	8-719-815-85	DIODE	1S1585	Q203	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
D401	8-719-815-85	DIODE	1S1585	Q204	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
D402	8-719-815-85	DIODE	1S1585				
D901	8-719-970-02	DIODE	1SR139-400	Q231	8-729-904-39	TRANSISTOR	DTC114TS
D902	8-719-970-02	DIODE	1SR139-400	Q232	8-729-904-39	TRANSISTOR	DTC114TS
D903	8-719-970-02	DIODE	1SR139-400	Q233	8-729-904-39	TRANSISTOR	DTC114TS
D904	8-719-970-02	DIODE	1SR139-400	Q234	8-729-119-78	TRANSISTOR	2SC2785-HFE
D905	8-719-982-21	DIODE	MTZJ-30C	Q235	8-729-119-78	TRANSISTOR	2SC2785-HFE
D906	8-719-922-03	DIODE	MTZJ-18C	Q236	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
		< GROUND PLATE >		Q237	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
EP900	4-957-933-01	PLATE, GROUND		Q251	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
		< FRONTEND >		Q301	8-729-922-37	TRANSISTOR	2SD2144S-UVW
FE101	1-233-384-11	ENCAPSULATED COMPONENT (ANTENNA) (EE)		Q302	8-729-922-37	TRANSISTOR	2SD2144S-UVW
FE101	1-693-289-11	FRONT END (ANTENNA) (AEP, IT, G)		Q303	8-729-202-67	TRANSISTOR	2SK246-GR3
FE401	1-233-312-11	ENCAPSULATED COMPONENT		Q304	8-729-900-89	TRANSISTOR	DTC144ES
		< IC >		Q305	8-729-904-39	TRANSISTOR	DTC114TS
IC221	8-759-812-35	IC	LA1235	Q306	8-729-904-39	TRANSISTOR	DTC114TS
IC251	8-759-812-35	IC	LA1235	Q401	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4
IC252	8-759-634-51	IC	M5218AP	Q402	8-729-231-20	TRANSISTOR	2SK161-YGR
IC301	8-759-801-80	IC	LA3401	Q403	8-729-922-37	TRANSISTOR	2SD2144S-UVW
IC302	8-759-634-51	IC	M5218AP	Q404	8-729-922-37	TRANSISTOR	2SD2144S-UVW
IC401	8-759-812-45	IC	LA1245	Q405	8-729-922-37	TRANSISTOR	2SD2144S-UVW
IC801	8-759-065-98	IC	SAA6579T	Q521	8-729-900-89	TRANSISTOR	DTC144ES
IC901	8-759-820-09	IC	LA5667	Q522	8-729-119-76	TRANSISTOR	2SA1175-HFE
		< IFT >		Q523	8-729-119-78	TRANSISTOR	2SC2785-HFE
IFT401	1-404-326-00	TRANSFORMER, IF		Q901	8-729-900-65	TRANSISTOR	DTA144ES
		< COIL >				< RESISTOR >	
L201	1-410-521-11	INDUCTOR	100uH	△R101	1-249-405-11	CARBON	100 5% 1/4W F
L351	1-410-509-11	INDUCTOR	10uH	△R102	1-249-405-11	CARBON	100 5% 1/4W F
L352	1-410-509-11	INDUCTOR	10uH	△R103	1-249-405-11	CARBON	100 5% 1/4W F
L400	1-414-142-11	INDUCTOR	1uH	R104	1-249-429-11	CARBON	10K 5% 1/4W
L401	1-410-521-11	INDUCTOR	100uH	R105	1-249-437-11	CARBON	47K 5% 1/4W
		< FILTER >		R106	1-249-441-11	CARBON	100K 5% 1/4W
LPF301	1-235-164-00	FILTER, LOW PASS		R201	1-249-411-11	CARBON	330 5% 1/4W
LPF302	1-235-164-00	FILTER, LOW PASS		R202	1-249-411-11	CARBON	330 5% 1/4W
		< TRANSFORMER >		R203	1-249-411-11	CARBON	330 5% 1/4W
△PT901	1-423-525-11	TRANSFORMER, POWER		R204	1-249-432-11	CARBON	18K 5% 1/4W
		< TRANSISTOR >		R205	1-249-414-11	CARBON	560 5% 1/4W F
Q200	8-729-231-20	TRANSISTOR	2SK161-YGR	R206	1-249-413-11	CARBON	470 5% 1/4W F
Q201	8-729-230-99	TRANSISTOR	2SC26690Y-TPE4	R207	1-249-411-11	CARBON	330 5% 1/4W
				R208	1-249-434-11	CARBON	27K 5% 1/4W
				R209	1-249-411-11	CARBON	330 5% 1/4W
				R210	1-249-432-11	CARBON	18K 5% 1/4W
				R211	1-249-414-11	CARBON	560 5% 1/4W F
				R212	1-249-411-11	CARBON	330 5% 1/4W
				R213	1-249-434-11	CARBON	27K 5% 1/4W
				R221	1-249-411-11	CARBON	330 5% 1/4W
				△R222	1-249-405-11	CARBON	100 5% 1/4W F
				R223	1-247-883-00	CARBON	150K 5% 1/4W

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

# TUNER

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R225	1-249-411-11	CARBON	330 5% 1/4W	R314	1-249-413-11	CARBON	470 5% 1/4W F
R231	1-249-411-11	CARBON	330 5% 1/4W	R315	1-249-413-11	CARBON	470 5% 1/4W F
R232	1-249-431-11	CARBON	15K 5% 1/4W	△R316	1-249-401-11	CARBON	47 5% 1/4W F
R233	1-249-411-11	CARBON	330 5% 1/4W	R317	1-249-413-11	CARBON	470 5% 1/4W
R234	1-249-395-11	CARBON	15 5% 1/4W F	R318	1-249-413-11	CARBON	470 5% 1/4W
R235	1-249-434-11	CARBON	27K 5% 1/4W	R319	1-249-437-11	CARBON	47K 5% 1/4W
R236	1-247-815-91	CARBON	220 5% 1/4W	R320	1-249-437-11	CARBON	47K 5% 1/4W
R237	1-249-441-11	CARBON	100K 5% 1/4W	R321	1-249-427-11	CARBON	6. 8K 5% 1/4W F
R238	1-249-429-11	CARBON	10K 5% 1/4W	R322	1-247-903-00	CARBON	1M 5% 1/4W
R239	1-249-429-11	CARBON	10K 5% 1/4W	R323	1-249-437-11	CARBON	47K 5% 1/4W
R240	1-249-431-11	CARBON	15K 5% 1/4W	R324	1-249-426-11	CARBON	5. 6K 5% 1/4W
R241	1-249-427-11	CARBON	6. 8K 5% 1/4W F	△R325	1-249-401-11	CARBON	47 5% 1/4W F
R242	1-249-427-11	CARBON	6. 8K 5% 1/4W F	R361	1-249-437-11	CARBON	47K 5% 1/4W
△R244	1-249-393-11	CARBON	10 5% 1/4W F	R362	1-249-437-11	CARBON	47K 5% 1/4W
△R245	1-249-393-11	CARBON	10 5% 1/4W F	R401	1-249-421-11	CARBON	2. 2K 5% 1/4W F
△R246	1-249-393-11	CARBON	10 5% 1/4W F	△R402	1-249-409-11	CARBON	220 5% 1/4W F
R251	1-249-411-11	CARBON	330 5% 1/4W	R404	1-249-413-11	CARBON	470 5% 1/4W F
R252	1-249-437-11	CARBON	47K 5% 1/4W	R405	1-247-807-31	CARBON	100 5% 1/4W
R253	1-249-439-11	CARBON	68K 5% 1/4W	R406	1-249-404-00	CARBON	82 5% 1/4W F
R254	1-249-421-11	CARBON	2. 2K 5% 1/4W F	R408	1-249-429-11	CARBON	10K 5% 1/4W
R255	1-249-421-11	CARBON	2. 2K 5% 1/4W F	R409	1-249-429-11	CARBON	10K 5% 1/4W
R256	1-249-432-11	CARBON	18K 5% 1/4W	R410	1-249-430-11	CARBON	12K 5% 1/4W
R257	1-249-424-11	CARBON	3. 9K 5% 1/4W F	△R412	1-249-407-11	CARBON	150 5% 1/4W F
R258	1-249-422-11	CARBON	2. 7K 5% 1/4W F	R413	1-249-429-11	CARBON	10K 5% 1/4W
△R259	1-249-405-11	CARBON	100 5% 1/4W F	R414	1-249-441-11	CARBON	100K 5% 1/4W
R260	1-249-438-11	CARBON	56K 5% 1/4W	R415	1-247-883-00	CARBON	150K 5% 1/4W
R261	1-249-437-11	CARBON	47K 5% 1/4W	R416	1-249-417-11	CARBON	1K 5% 1/4W F
R262	1-249-441-11	CARBON	100K 5% 1/4W	R418	1-249-417-11	CARBON	1K 5% 1/4W F
R264	1-249-426-11	CARBON	5. 6K 5% 1/4W	R419	1-249-422-11	CARBON	2. 7K 5% 1/4W F
△R265	1-249-401-11	CARBON	47 5% 1/4W F	R420	1-249-441-11	CARBON	100K 5% 1/4W
R268	1-249-433-11	CARBON	22K 5% 1/4W	R421	1-249-417-11	CARBON	1K 5% 1/4W F
R269	1-249-441-11	CARBON	100K 5% 1/4W	R422	1-249-418-11	CARBON	1. 2K 5% 1/4W F
R270	1-247-883-00	CARBON	150K 5% 1/4W	R423	1-249-418-11	CARBON	1. 2K 5% 1/4W F
R271	1-249-417-11	CARBON	1K 5% 1/4W F	R424	1-249-421-11	CARBON	2. 2K 5% 1/4W F
R272	1-249-417-11	CARBON	1K 5% 1/4W F	R425	1-249-420-11	CARBON	1. 8K 5% 1/4W F
R273	1-249-422-11	CARBON	2. 7K 5% 1/4W F	R426	1-249-421-11	CARBON	2. 2K 5% 1/4W F
△R274	1-249-393-11	CARBON	10 5% 1/4W F	△R428	1-249-422-11	CARBON	2. 7K 5% 1/4W F
R301	1-249-421-11	CARBON	2. 2K 5% 1/4W F	△R429	1-249-421-11	CARBON	10 5% 1/4W F
R302	1-247-883-00	CARBON	150K 5% 1/4W	R506	1-249-429-11	CARBON	10K 5% 1/4W
R303	1-247-883-00	CARBON	150K 5% 1/4W	R521	1-249-423-11	CARBON	3. 3K 5% 1/4W F
R304	1-247-878-00	CARBON	91K 5% 1/4W	R522	1-249-433-11	CARBON	22K 5% 1/4W
R305	1-247-878-00	CARBON	91K 5% 1/4W	△R801	1-249-401-11	CARBON	47 5% 1/4W F
R306	1-249-421-11	CARBON	2. 2K 5% 1/4W F	R802	1-249-421-11	CARBON	2. 2K 5% 1/4W F
R307	1-249-421-11	CARBON	2. 2K 5% 1/4W F	△R900	1-249-397-11	CARBON	22 5% 1/4W F
R308	1-249-426-11	CARBON	5. 6K 5% 1/4W	△R901	1-249-482-11	CARBON	4. 7 5% 1/2W F
R309	1-249-426-11	CARBON	5. 6K 5% 1/4W	△R902	1-247-747-11	CARBON	470 5% 1/2W F
R310	1-249-426-11	CARBON	5. 6K 5% 1/4W	R903	1-249-441-11	CARBON	100K 5% 1/4W
R311	1-249-426-11	CARBON	5. 6K 5% 1/4W	R904	1-249-437-11	CARBON	47K 5% 1/4W
R312	1-249-424-11	CARBON	3. 9K 5% 1/4W F	R905	1-249-437-11	CARBON	47K 5% 1/4W
R313	1-249-424-11	CARBON	3. 9K 5% 1/4W F	R906	1-249-437-11	CARBON	47K 5% 1/4W

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
< VARIABLE RESISTOR >			
RV221	1-237-460-11	RES, ADJ, CARBON 20K	
RV231	1-237-459-11	RES, ADJ, CARBON 10K	
RV232	1-237-456-11	RES, ADJ, CARBON 1K	
RV251	1-237-459-11	RES, ADJ, CARBON 10K	
RV301	1-237-462-11	RES, ADJ, CARBON 100K	
RV302	1-237-462-11	RES, ADJ, CARBON 100K	
RV402	1-237-459-11	RES, ADJ, CARBON 10K	
< TRANSFORMER >			
T251	1-235-126-00	ENCAPSULATED COMPONENT	
T252	1-404-845-11	COIL, DISCRI (PRIMARY)	
T253	1-404-846-11	COIL, DISCRI (SECONDARY)	
< TERMINAL >			
TM401	1-537-897-11	TERMINAL BOARD, PUSH (ANTENNA) 2P (ANTENNA)	
< TEST PIN >			
* TP251	1-565-513-11	PIN, CONNECTOR 2P	
< VIBRATOR >			
X801	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)	
*****			
MISCELLANEOUS			
*****			
△18	1-575-651-21	CORD, POWER	
FL701	1-517-177-21	INDICATOR TUBE, FLUORESCENT	
△PT901	1-423-525-11	TRANSFORMER, POWER	
RV701	1-466-336-22	ENCODER, ROTARY (TUNING/SELECT)	
*****			
ACCESSORIES & PACKING MATERIALS			
*****			
	1-501-594-11	ANTENNA (FM)	
	1-501-761-41	ANTENNA, LOOP	
	1-590-925-31	CORD, CONNECTION (AUDIO 100cm)	
	3-798-043-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (AEP, IT)	
	3-798-043-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP, IT)	
	3-798-043-41	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN, POLISH) (EE)	
	3-798-043-61	MANUAL, INSTRUCTION (GERMAN) (G)	
*	4-974-634-11	INDIVIDUAL CARTON	
*	4-974-636-01	CUSHION	

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**9-960-256-11**

**Sony Corporation**  
**Consumer A&V Products Company**  
**Home A&V Products Div.**

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**English**  
95F097550-1  
Printed in Germany  
© 1995. 6  
**Published by Home A&V Products Div.**  
**Quality Engineering Dept.**

# ST-SA3ES

## SONY SERVICE MANUAL

AEP Model

### SUPPLEMENT-1

**Subject : GOLD MODEL ADDITION**

(ENG-96008)

The Gold model is added.  
In this SUPPLEMENT-1, only the differences compared with the Black model are mentioned.  
As for not mentioned in this manual, refer to the previous issued service manual.

Page	Ref No.	Black model			Gold model		
		Part No.	Description	Remark	Part No.	Description	Remark
21	1	*** EXPLODED VIEWS ***			*** EXPLODED VIEWS ***		
		4-942-568-01	EMBLEM (NO.5), SONY		4-942-568-21	EMBLEM (NO.5), SONY	
		4-970-683-51	PANEL, FRONT		4-970-683-71	PANEL, FRONT	
		4-970-684-01	KNOB (T)		4-970-684-11	KNOB (T)	
		4-917-460-01	KNOB, POWER		4-917-460-51	KNOB, POWER	
	5	3-704-366-01	SCREW (CASE) (M3X8)		3-704-366-71	SCREW (CASE)	
		6	4-974-321-11	CASE	* 4-974-321-51	CASE	
	9	X-4946-076-1	BASE ASSY (B/3), PANEL		X-4947-487-1	BASE ASSY (N/3), PANEL	