ST-S117

SERVICE MANUAL

AEP Model
UK Model

Discard ST-S117 Service Manual
(No. 9-956-373-11) previously issued.
This Service Manual contains it.

Photo : AEP model

SPECIFICATIONS

Tuner

Circuit system: FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

FM tuner

Frequency range: 87.5 – 108 MHz
Antenna terminals: 75 ohms unbalanced
Intermediate frequency: 10.7 MHz
Sensitivity: 18.0 dBf, 2.2 μV (mono)
40.0 dBf, 24.5 μV (stereo)
(at 46 dB quieting)
Signal-to-noise ratio: 74 dB (mono)
69 dB (stereo)
(at 40 kHz deviation)
Harmonic distortion: 0.3% (mono), 0.5% (stereo) (at 1 kHz)
Separation: 40 dB (at 1 kHz)
Frequency response: 40 Hz - 12.5 kHz ±0.5 dB
Selectivity: Model for German, Italian, and UK : 80 dB (at 400 kHz)
Model for other countries: 55 dB (at 400 kHz)
Capture ratio: 1.0 dB
AM suppression ratio: 54 dB
Image response ratio: 50 dB
IF response ratio: 90 dB
Spurious response ratio: 70 dB
Automatic tuning threshold: 17.8 μV (30 dBf)
Output: 410 mV, 4.7 kohms (at 40 kHz deviation)

AM tuner

Frequency range: MW: 531 – 1,602 kHz
LW: 153 – 279 kHz
Antenna: AM loop antenna
External antenna terminal
Intermediate frequency: 450 kHz
Usable sensitivity (with AM loop antenna)
300 μV/m (999 kHz)
1 mV/m (216 kHz)
Signal-to-noise ratio: 54 dB (50 mV/m) (999 kHz)
50 dB (50 mV/m) (216 kHz)
Harmonic distortion: 0.5% (50 mV/m, 400 Hz)
Selectivity: 32 dB

General

Power requirements: 220 – 230 V AC , 50/60 Hz
Power consumption: 9 W
Dimensions: Approx. 430 × 85 × 295 mm (w/h/d)
(17 × 3 3/8 × 11 5/8 inches)
Weight: Approx. 2.8 kg (6 lb 3 oz)
Accessories supplied:
Remote control cord (1)
Connecting cord (1)
FM antenna (1)
AM loop antenna (1)

Design and specifications subject to change without notice.

FM STEREO/FM-AM TUNER

SONY®

TABLE OF CONTENTS

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.

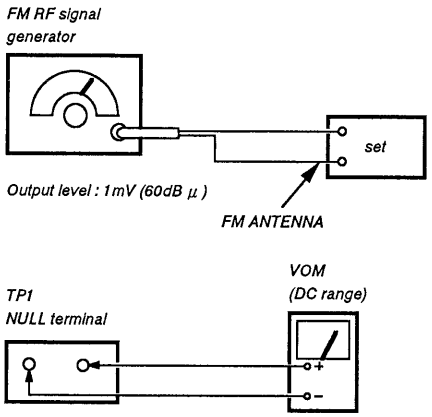
SECTION 1
ELECTRICAL ADJUSTMENTS

FM SECTION

SSG	Carrier frequency	98MHz
	Modulation	MONO : 1kHz, 40kHz deviation
		STEREO : Audio 1kHz, 16.25kHz deviation Pilot 19kHz, 7.5kHz deviation Sub-carrier 38kHz, 16.25kHz deviation

• FM Discriminator Alignment (NULL check)

Setting :



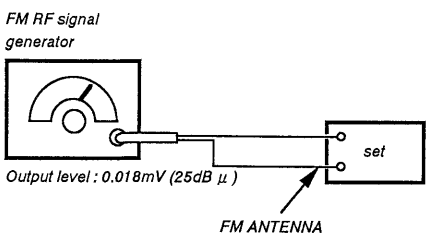
Procedure :

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 alignment.

• FM Tuning Level Adjustment

Setting :

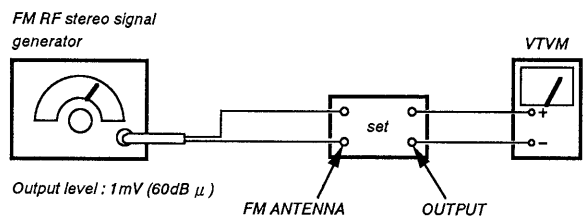


Procedure :

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

• FM Stereo Separation Adjustment

Setting :



Procedure :

Tune the set to 98MHz

FM stereo Signal generator Output	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ 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.

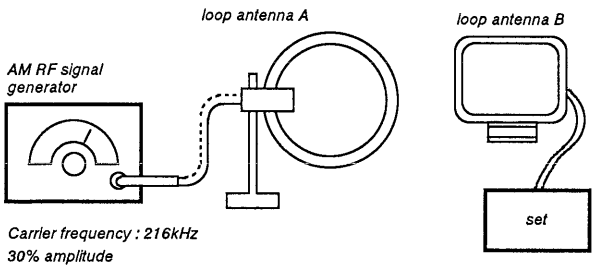
AM SECTION

• AM Tuning Level Adjustment

Setting :

BAND selector : LW

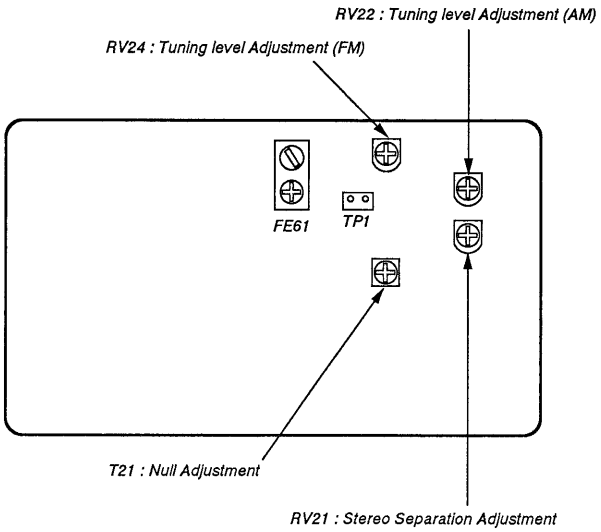
Procedure :



1. Set loop antenna A so that the loop antenna B input level becomes 65dBμ/m.
2. Tune the set to 216kHz.
3. Adjust the RV22 so that the TUNED LED goes on.

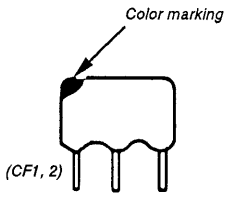
Parts Arrangement Diagram for Adjustments

– tuner board –



Note on Ceramic Filter (CF1, 2) Replacement.

This set employs three ceramic filters (CF1, 2) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by D708, D709 mounted is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.



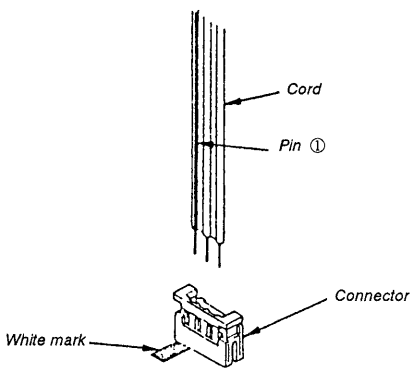
○ : Mounted
× : Not Mounted

Ceramic filter		Mount		FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	*A D708	*B D709	
White	10.750	×	○	10.750
Red	10.700	○	○	10.700
Black	10.650	○	×	10.650

FM intermediate frequency is determined by the three types as shown above. Ceramic filters of same center frequency. i. e., of same color coding should be used for CF1 and CF2.
When replacing the ceramic filters, perform, the FM Discriminator Adjustment.

[Note on Inserting the cord to the connector on Tuner Board]

- Insert the cord to the connector fitting Pin ① of the cord in accordance with the white mark on the board at the connector as shown in the figure.



SECTION 2
EXPLANATION OF IC TERMINALS

TMP47C670N-1247 is a hight-speed, hight-functional 4 bit single chip microcomputer with a built- in fluorescent display lamp drive circuit, a 4 bit A/D conversion input, and a 14 bit D/A conversion output.

PIN FUNCTIONS

Pin No.	Pin name	I/O	Description
1	VKK	Power	Power terminal for fluorescent display lamp drive.
2 – 11	S0 – S9	O	FL lamp segement output.
14	CINO	I	Signal input.
15	K01	I	Key input.
16	K02	I	Key input.
17	K03	I	Key input.
18	TEST	I	Terminal for shipping test. (Not used on the set)
19	X IN	I	Oscillator connection terminal .(Hight frequency)
20	X OUT	O	
21	$\overline{\text{RESET}}$	I	Reset signal input.
22	$\overline{\text{HOLD}}$	I	Demand/release signal input for hold operation.
24	R60	I	Key input.
25	R60	I	Key input.
27	R63	I	Signal meter level conversion.
28	P10	O	Key output.
29	P11	O	Key output.
30	P12	O	Key output.
31	P13	O	Key output.
32	VSS	Power	GND (0V)
33	P20	O	Key output.
34	P21	O	Key output.
35	P22	O	Key output.
37	R70	I	AUTO STOP level input. TUNED input.
39	R72	O	MUTING input.
40	R73	I	STEREO input.
41	$\overline{\text{INT2}}$	I	Remote controller input.
42	R81	I	Rotary encoder input.
43	R82	I	Rotary encoder input.
44	R83	O	CE output.
45	SI	I	Serial data input.
46	SO	O	Serial data output.
47	$\overline{\text{SCK}}$	O	Serial clock output.
54 – 62		O	FL lamp digit output.
64	VDD	Power	+5V

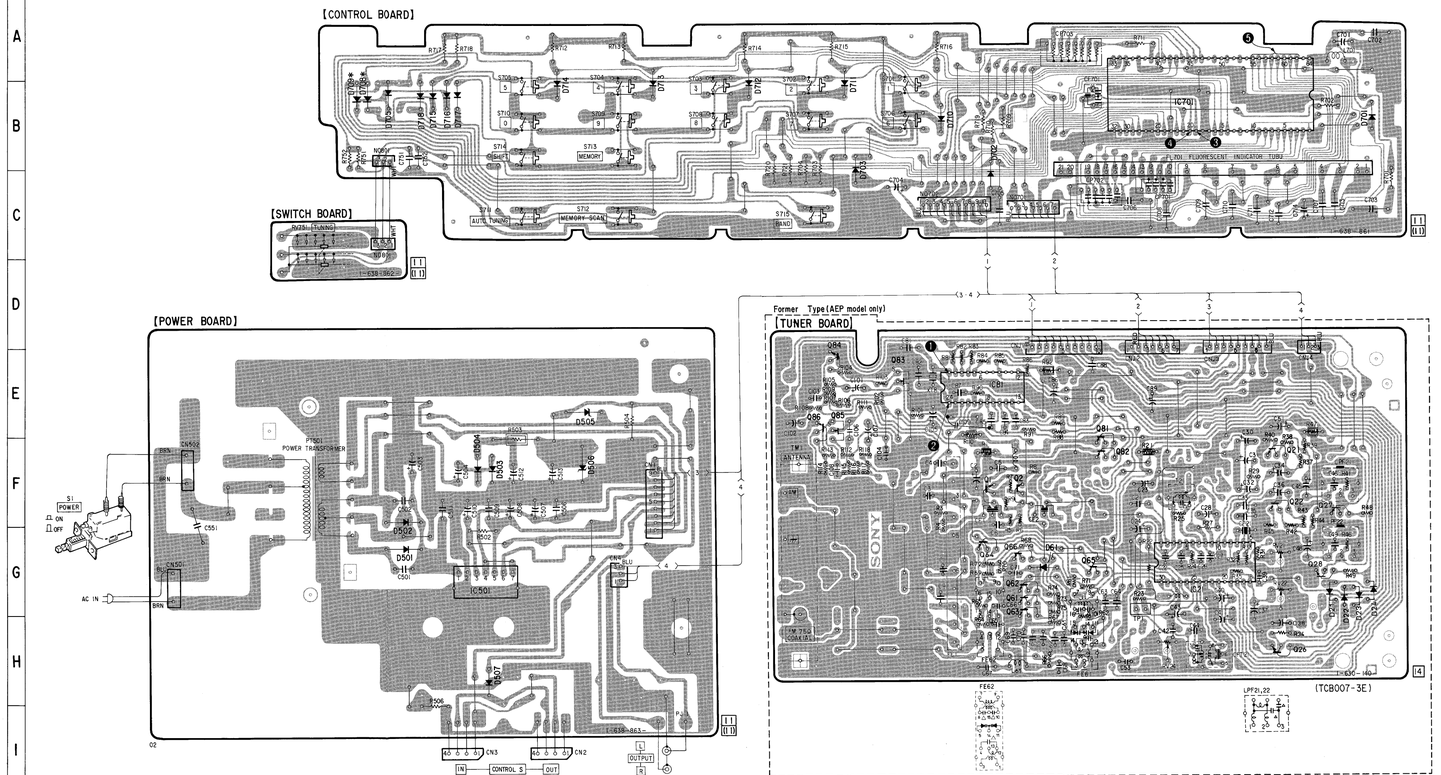
SECTION 3
DIAGRAMS

3-1. PRINTED WIRING BOARDS

● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D21	G - 15	IC21	G - 14
D22	G - 15	IC81	E - 11
D23	G - 16	IC501	G - 6
D24	G - 16	IC701	B - 14
D61	G - 12		
D501	G - 5	Q1	F - 11
D502	F - 5	Q2	F - 12
D503	F - 6	Q21	F - 15
D504	F - 6	Q22	F - 15
D505	F - 7	Q26	H - 15
D506	F - 7	Q27	F - 15
D507	H - 6	Q28	G - 15
D701	B - 16	Q61	G - 12
D702	C - 11	Q62	G - 12
D703	B - 10	Q63	G - 12
D705	B - 5	Q64	G - 11
D708	B - 4	Q65	G - 13
D709	B - 4	Q81	E - 13
D710	B - 11	Q82	F - 13
D711	B - 11	Q83	E - 10
D712	B - 9	Q84	E - 10
D713	B - 8	Q85	E - 10
D714	B - 7	Q86	E - 9
D715	B - 5		
D716	B - 5		
D717	B - 5		
D718	B - 5		

Note:
- ○— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- [ ]— : indicates side identified with part number.
- ▨ : Pattern on the side which is seen.

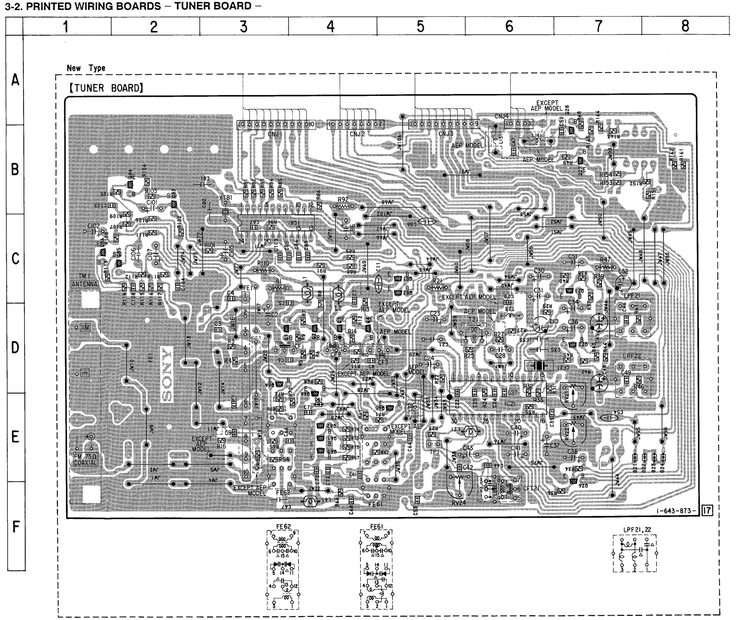


● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D21	E - 7	Q27	B - 7
D22	E - 7	Q28	B - 7
D23	E - 8	Q61	E - 4
D24	E - 8		
D61	E - 4	Q62	E - 4
		Q63	E - 4
		Q64	D - 3
IC21	E - 6	Q65	E - 5
IC81	C - 3	Q66	E - 4
		Q81	C - 5
Q1	D - 3	Q82	C - 5
Q2	D - 4	Q83	B - 2
Q3	D - 4	Q84	B - 2
Q4	D - 4	Q85	C - 2
Q21	C - 7	Q86	C - 1
Q22	D - 7		
Q26	F - 7		

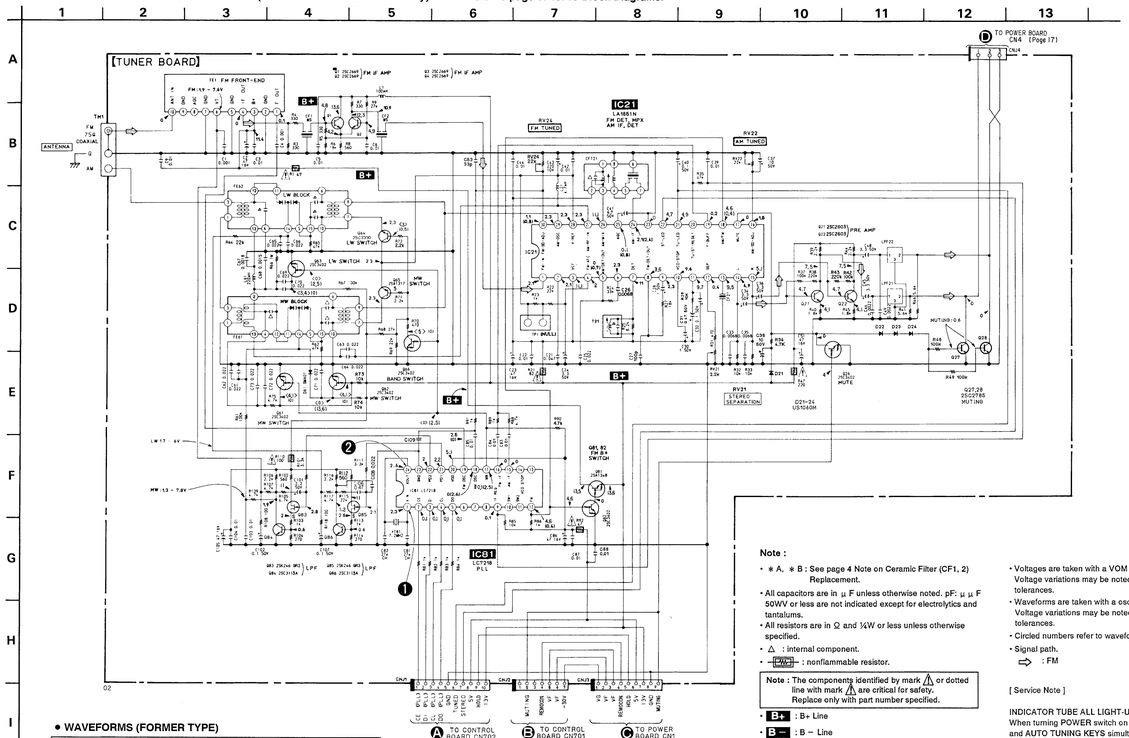
Note:
- ○— : parts extracted from the component side.
- [ ]— : indicates side identified with part number.
- ▨ : Pattern on the side which is seen.
- Abbreviation
  IT : Italian
  G : German

3-2. PRINTED WIRING BOARDS – TUNER BOARD –

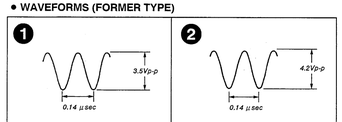


3-3. SCHEMATIC DIAGRAM – TUNER SECTION – (FORMER TYPE : AEP model only)

● Refer to page 17 for IC Block Diagrams.



● WAVEFORMS (FORMER TYPE)



Note :

- ＊A, ＊B : See page 4 Note on Ceramic Filter (CF1, 2) Replacement.
- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.
- ⚠ : nonflammable resistor.

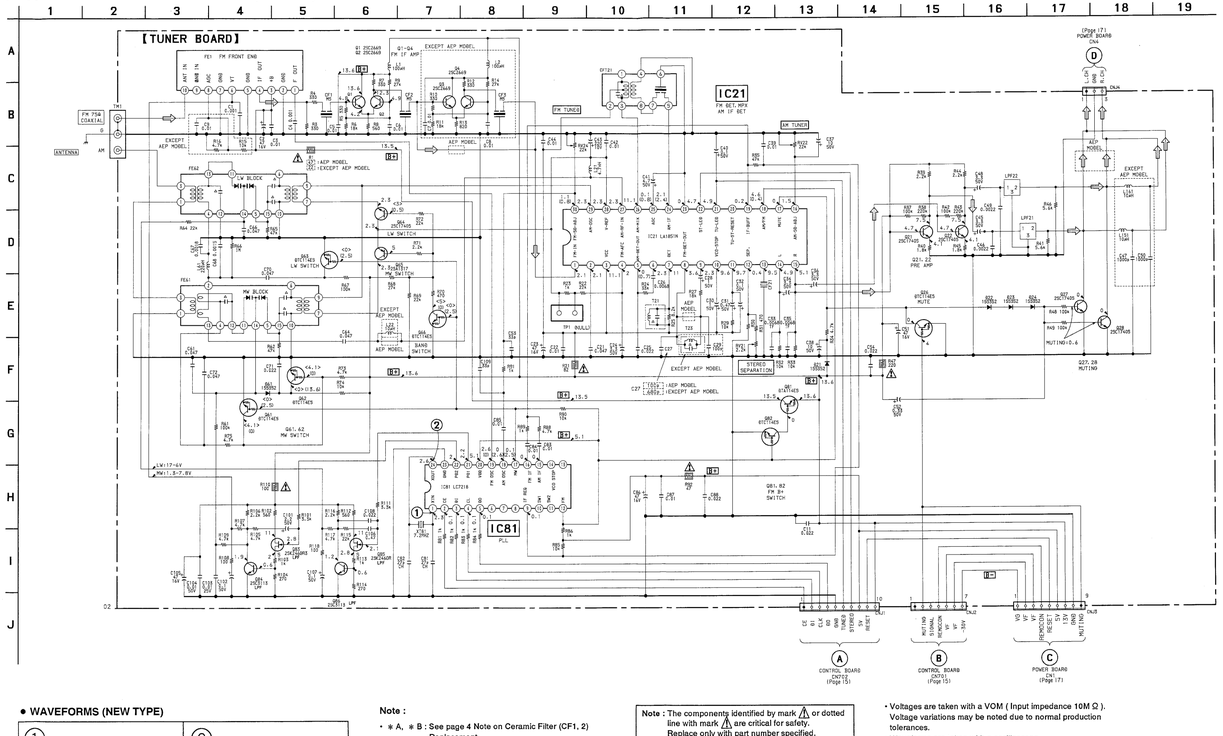
Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- B+ : B+ Line
- B− : B − Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM or MW
  ⟨ ⟩ : LW
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : FM

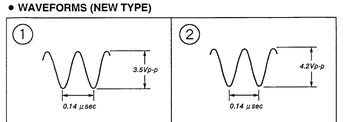
[Service Note]

INDICATOR TUBE ALL LIGHT-UP MODE
When turning POWER switch on while pressing PRESET 1 and AUTO TUNING KEYS simultaneously, all the segments of FL701 will light.

3-4. SCHEMATIC DIAGRAM – TUNER SECTION – (NEW TYPE)



● WAVEFORMS (NEW TYPE)



Note :

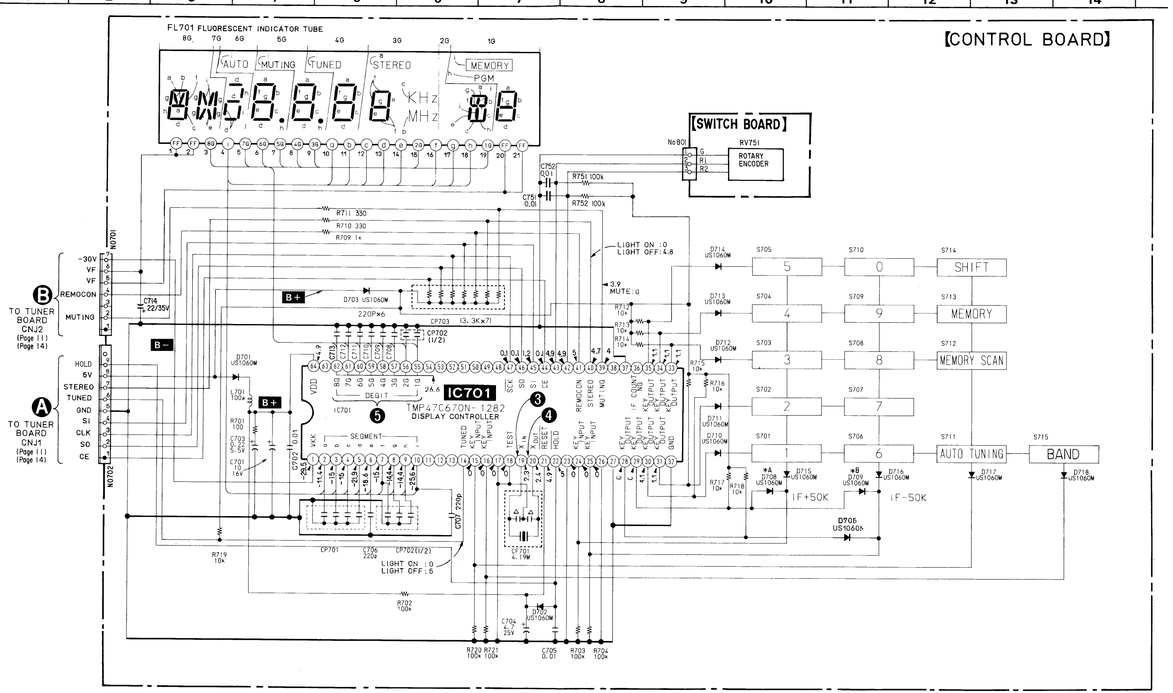
- ＊A, ＊B : See page 4 Note on Ceramic Filter (CF1, 2) Replacement.
- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.
- ⚠ : nonflammable resistor.

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

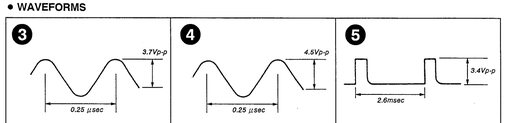
- B+ : B+ Line
- B− : B − Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM or MW
  ⟨ ⟩ : LW
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : FM
- Abbrevition
  IT : Italian
  G : German

3-5. SCHEMATIC DIAGRAM – CONTROL SECTION –

● Refer to page 12 for Note.

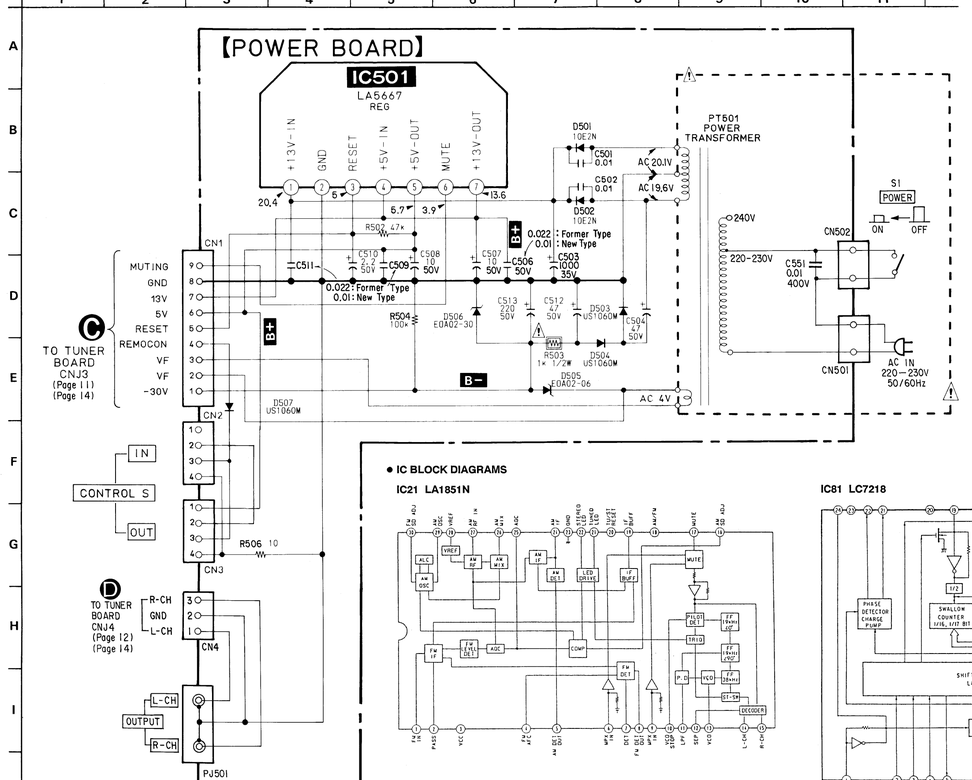


● WAVEFORMS

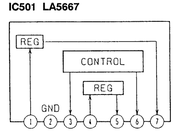


3-6. SCHEMATIC DIAGRAM – POWER SECTION –

● Refer to page 12 for Note.



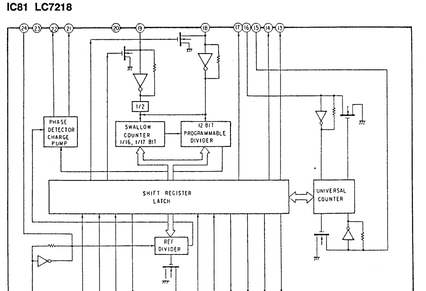
IC501 LA5667



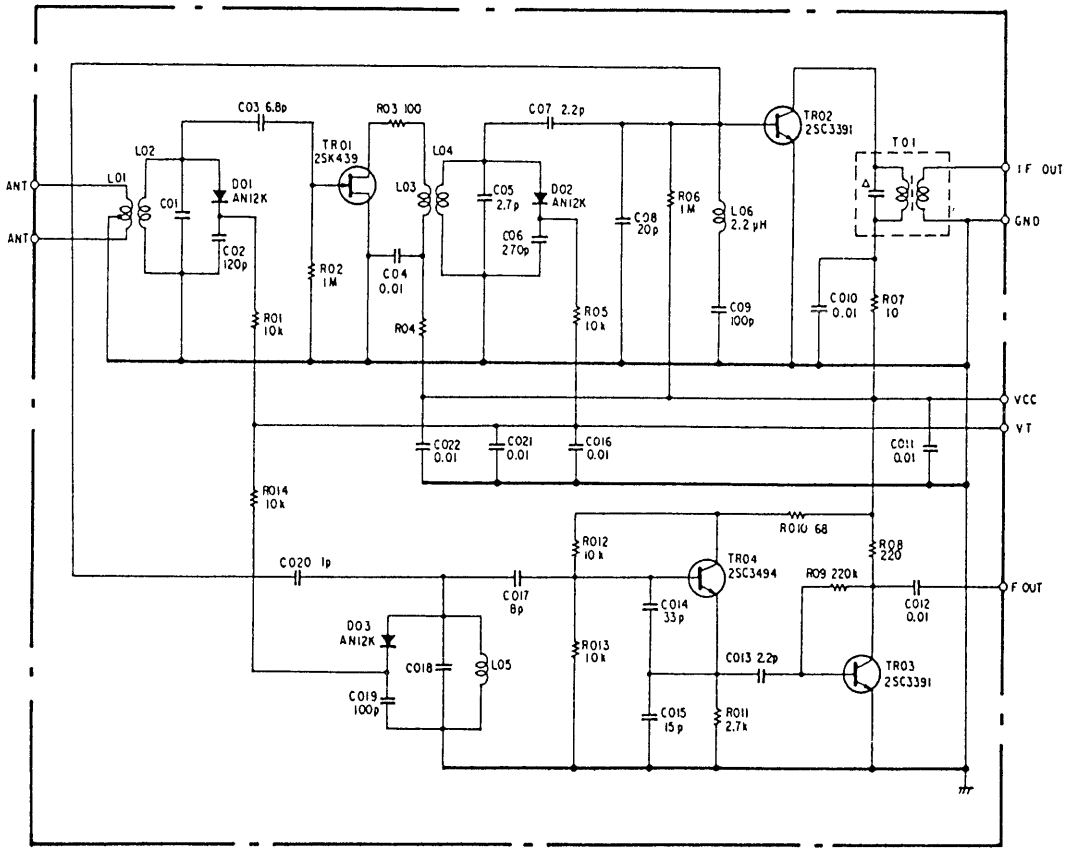
● IC BLOCK DIAGRAMS

IC21 LA1851N

IC81 LC7218



3-7. FE/(FRONT END) SCHEMATIC DIAGRAM

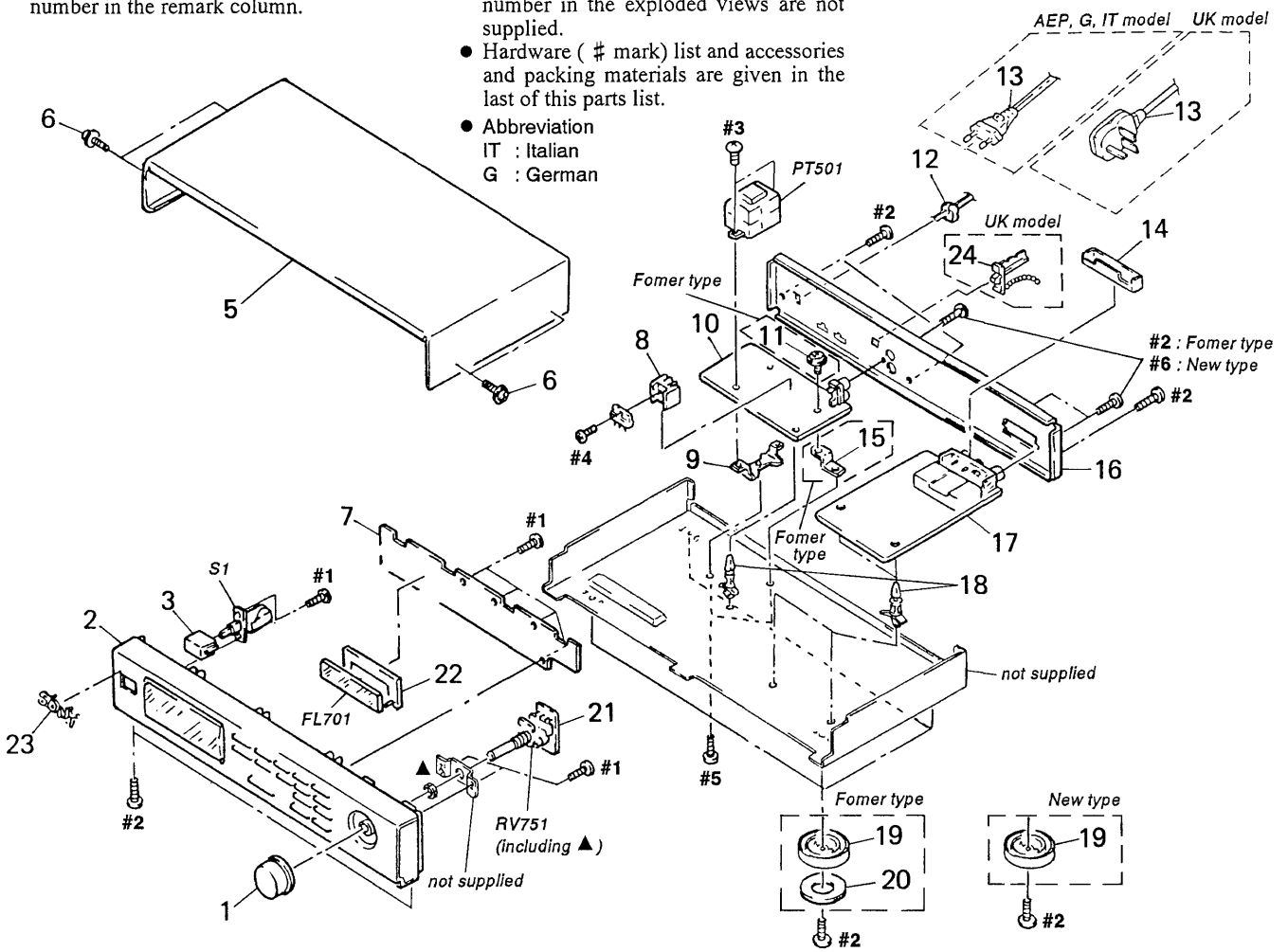


SECTION 4
EXPLODED VIEW

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- 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.
- 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
  IT : Italian
  G : German

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



Ref. No.	Part No.	Description	Remark
1	4-945-523-01	KNOB (TUNE)	
2	X-4941-649-1	PANEL ASSY, FRONT (Former Type)	
2	X-4946-105-1	PANEL ASSY, FRONT (New Type)	
3	3-354-912-01	KNOB, POWER (Former Type)	
3	4-917-460-01	KNOB, POWER (New Type)	
5	4-923-457-01	CASE	
6	3-704-366-01	SCREW (CASE) (M3×8)	
* 7	A-4345-162-A	CONTROL BOARD, COMPLETE (Former Type)	
* 7	A-4378-124-A	CONTROL BOARD, COMPLETE (New Type)	
* 8	4-363-146-31	HEAT SINK, V.OUT	
* 9	4-917-044-01	BRACKET (PT)	
* 10	1-638-863-11	POWER BOARD	
11	4-886-821-11	SCREW, S TIGHT, +PTTWH 3×6 (Former Type)	
12	3-703-244-00	BUSHING, CORD	
⚠13	1-575-651-11	CORD, POWER (AEP) (Former Type)	
⚠13	1-575-651-21	CORD, POWER (AEP, G, IT) (New Type)	
⚠13	1-696-907-11	CORD, POWER (UK)	
* 14	4-924-988-11	PLATE (ST), GROUND	
* 15	3-332-563-01	BRACKET (P) (Former Type)	
* 16	4-944-121-61	PANEL, BACK (AE1) (Former Type)	
* 16	4-944-121-91	PANEL, BACK (AE2) (Former Type)	

Ref. No.	Part No.	Description	Remark
* 16	4-975-134-01	PANEL, BACK (AEP) (New Type)	
* 16	4-975-134-11	PANEL, BACK (G, IT)	
* 16	4-975-134-21	PANEL, BACK (UK)	
* 17	A-4345-492-A	TUNER BOARD, COMPLETE (AEP)	(Former Type)
* 17	A-4378-126-A	TUNER BOARD, COMPLETE (AEP) (New Type)	
* 17	A-4378-128-A	TUNER BOARD, COMPLETE (UK, G, IT)	
* 18	3-346-265-11	HOLDER, PC BOARD (Former Type)	
* 18	3-346-265-31	HOLDER, PC BOARD (New Type)	
19	X-3304-938-2	FOOT ASSY (Former Type)	
19	4-956-885-11	FOOT (F58175S2W) (New Type)	
* 20	4-923-836-11	CUSHION (Former Type)	
* 21	1-638-862-11	SWITCH BOARD	
* 22	4-945-525-01	HOLDER, FL TUBE	
23	4-925-334-11	EMBLEM (5-A), SONY	
24	4-956-370-12	BAND, PLUG FIXED (UK)	
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT	
⚠PT501	1-450-009-11	TRANSFORMER, POWER	
RV751	1-466-513-11	ENCODER, ROTARY (TUNING)	
S1	1-554-920-21	SWITCH, PUSH (AC POWER) (1 KEY)	(Former Type)
S1	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY)	(New Type)

SECTION 5
ELECTRICAL PARTS LIST

CONTROL

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.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μA.... , uPA.... : μPA....
  uPB.... : μPB.... , uPC.... : μPC....
  uPD.... : μPD....
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Abbreviation
  IT : Italian
  G : German

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

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

Ref.No.	Part No.	Description			Remark
*	A-4345-162-A	CONTROL BOARD, COMPLETE (Former Type)			
*	A-4378-124-A	CONTROL BOARD, COMPLETE (New Type)			
		**********			
		< CAPACITOR >			
C701	1-126-157-11	ELECT	10uF	20%	16V
C702	1-162-306-11	CERAMIC	0.01uF	30%	16V
C703	1-104-905-11	CAP, DOUBLE LAYERS	0.22F		
C704	1-126-163-11	ELECT	4.7uF	20%	50V
C705	1-162-306-11	CERAMIC	0.01uF	30%	16V
C706-713					
	1-162-286-21	CERAMIC	220PF	10%	50V
C714	1-124-916-11	ELECT	22uF	20%	63V
C751	1-162-306-11	CERAMIC	0.01uF	30%	16V
C752	1-162-306-11	CERAMIC	0.01uF	30%	16V
		< VIBRATOR >			
CF701	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)			
		< COMPOSITION CIRCUIT BLOCK >			
CP701	1-233-148-11	COMPOSITION CIRCUIT BLOCK			
CP702	1-233-187-11	COMPOSITION CIRCUIT BLOCK			
CP703	1-233-185-11	COMPOSITION CIRCUIT BLOCK			
		< DIODE >			
D701	8-719-815-85	DIODE	1S1585		
D702	8-719-815-85	DIODE	1S1585		
D703	8-719-815-85	DIODE	1S1585		
D705	8-719-815-85	DIODE	1S1585		
D708	8-719-815-85	DIODE	1S1585	(Former Type)	
D709	8-719-815-85	DIODE	1S1585	(Former Type)	
D710-718					
	8-719-815-85	DIODE	1S1585		

Ref.No.	Part No.	Description			Remark
		< FLUORESCENT INDICATOR TUBE >			
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC701	8-759-246-23	IC TMP47C670N-1247			
		< COIL >			
L701	1-410-521-11	INDUCTOR	100uH		
		< RESISTOR >			
R701	1-247-807-31	CARBON	100	5%	1/4W
R702	1-249-441-11	CARBON	100K	5%	1/4W
R703	1-249-441-11	CARBON	100K	5%	1/4W
R704	1-249-441-11	CARBON	100K	5%	1/4W
R709	1-249-417-11	CARBON	1K	5%	1/4W
R710	1-249-411-11	CARBON	330	5%	1/4W
R711	1-249-411-11	CARBON	330	5%	1/4W
R712-719					
	1-249-429-11	CARBON	10K	5%	1/4W
R720	1-249-441-11	CARBON	100K	5%	1/4W
R721	1-249-441-11	CARBON	100K	5%	1/4W
R751	1-249-441-11	CARBON	100K	5%	1/4W
R752	1-249-441-11	CARBON	100K	5%	1/4W
		< SWITCH >			
S701	1-554-303-21	SWITCH, TACTILE (1)			
S702	1-554-303-21	SWITCH, TACTILE (2)			
S703	1-554-303-21	SWITCH, TACTILE (3)			
S704	1-554-303-21	SWITCH, TACTILE (4)			
S705	1-554-303-21	SWITCH, TACTILE (5)			
S706	1-554-303-21	SWITCH, TACTILE (6)			
S707	1-554-303-21	SWITCH, TACTILE (7)			

CONTROL | POWER | SWITCH | TUNER (Former)

Ref. No.	Part No.	Description			Remark
S708	1-554-303-21	SWITCH, TACTILE (8)			
S709	1-554-303-21	SWITCH, TACTILE (9)			
S710	1-554-303-21	SWITCH, TACTILE (0)			
S711	1-554-303-21	SWITCH, TACTILE (AUTO TUNING)			
S712	1-554-303-21	SWITCH, TACTILE (MEMORY SCAN)			
S713	1-554-303-21	SWITCH, TACTILE (MEMORY)			
S714	1-554-303-21	SWITCH, TACTILE (SHIFT)			
S715	1-554-303-21	SWITCH, TACTILE (BAND)			
**********					
*	1-638-863-11	POWER BOARD			
		**********			
		< CAPACITOR >			
C501	1-164-096-11	CERAMIC	0.01uF		50V
C502	1-164-096-11	CERAMIC	0.01uF		50V
C503	1-126-952-11	ELECT	1000uF	20%	35V
C504	1-126-967-11	ELECT	47uF	20%	50V
C506	1-101-005-00	CERAMIC	22000PF		50V
					(Former Type)
C506	1-164-096-11	CERAMIC	0.01uF		50V
					(New Type)
C507	1-126-964-11	ELECT	10uF	20%	50V
C508	1-126-964-11	ELECT	10uF	20%	50V
C509	1-101-005-00	CERAMIC	22000PF		50V
					(Former Type)
C509	1-164-096-11	CERAMIC	0.01uF		50V
					(New Type)
C510	1-124-925-11	ELECT	2.2uF	20%	100V
C511	1-101-005-00	CERAMIC	22000PF		50V
					(Former Type)
C511	1-164-096-11	CERAMIC	0.01uF		50V
					(New Type)
C512	1-126-967-11	ELECT	47uF	20%	50V
C513	1-126-969-11	ELECT	220uF	20%	50V
⚠C551	1-161-744-00	CERAMIC	0.01uF		400V
		< CONNECTOR >			
CN1	1-506-503-11	PIN, CONNECTOR 9P			
CN2	1-564-980-11	PIN, CONNECTOR 4P			
CN3	1-564-980-11	PIN, CONNECTOR 4P			
CN4	1-564-337-00	PIN, CONNECTOR 3P			
CN501	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN502	1-564-321-00	PIN, CONNECTOR 2P			
		< DIODE >			
D501	8-719-200-82	DIODE 11ES2			
D502	8-719-200-82	DIODE 11ES2			
D503	8-719-815-85	DIODE 1S1585			
D504	8-719-815-85	DIODE 1S1585			
D505	8-719-903-61	LED SLP361B			
D506	8-719-982-22	DIODE MTZJ-30D			
D507	8-719-815-85	DIODE 1S1585			
		< IC >			
IC501	8-759-820-09	IC LA5667			
		< JACK >			
PJ501	1-565-352-11	JACK, PIN 2P (OUT PUT)			
		< TRANSFORMER >			
⚠PT501	1-450-009-11	TRANSFORMER, POWER			
		< RESISTOR >			
R502	1-249-437-11	CARBON	47K	5%	1/4W
⚠R503	1-247-752-11	CARBON	1K	5%	1/2W F
R504	1-249-441-11	CARBON	100K	5%	1/4W
R506	1-249-393-11	CARBON	10	5%	1/4W
**********					
*	1-638-862-11	SWITCH BOARD			
		**********			
		< VARIABLE RESISTOR >			
RV751	1-466-513-12	ENCODER, ROTARY (TUNING)			
**********					
*	A-4345-492-A	TUNER BOARD, COMPLETE (AEP)			
					(Former Type)
		**********			
		< CAPACITOR >			
C1	1-162-294-31	CERAMIC CHIP	0.001uF	20%	25V
C2	1-124-477-11	ELECT	47uF	20%	25V
C3	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C4	1-162-294-31	CERAMIC CHIP	0.001uF	20%	25V
C5	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C6	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C9	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C21	1-101-006-00	CERAMIC	0.047uF		50V
C22	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C23	1-124-477-11	ELECT	47uF	20%	25V
C24	1-123-382-00	ELECT	3.3uF	20%	100V
C25	1-163-063-00	CERAMIC MELF	0.022uF		25V
C26	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C27	1-163-516-11	CERAMIC CHIP	100PF	10%	50V
C28	1-124-903-11	ELECT	1uF	20%	50V
C30	1-124-903-11	ELECT	1uF	20%	50V

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

TUNER (Former)

Ref.No.	Part No.	Description			Remark
C31	1-124-902-00	ELECT	0.47uF	20%	50V
C32	1-124-463-00	ELECT	0.1uF	20%	50V
C33	1-130-481-00	MYLAR	0.0068uF	5%	50V
C34	1-123-382-00	ELECT	3.3uF	20%	100V
C35	1-130-481-00	MYLAR	0.0068uF	5%	50V
C36	1-123-382-00	ELECT	3.3uF	20%	100V
C37	1-124-907-11	ELECT	10uF	20%	50V
C38	1-124-907-11	ELECT	10uF	20%	50V
C39	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C40	1-124-463-00	ELECT	0.1uF	20%	50V
C41	1-124-927-11	ELECT	4.7uF	20%	100V
C42	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C43	1-126-176-11	ELECT	220uF	20%	10V
C44	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C45	1-123-382-00	ELECT	3.3uF	20%	100V
C46	1-163-059-00	CERAMIC MELF	0.0022uF	20%	25V
C48	1-123-382-00	ELECT	3.3uF	20%	100V
C49	1-161-375-00	CERAMIC MELF	0.0022uF	20%	25V
C51	1-124-477-11	ELECT	47uF	20%	25V
C53	1-163-467-11	CERAMIC CHIP	33PF	5%	50V
C61	1-163-063-00	CERAMIC MELF	0.022uF		25V
C62	1-163-063-00	CERAMIC MELF	0.022uF		25V
C63	1-163-063-00	CERAMIC MELF	0.022uF		25V
C64	1-163-063-00	CERAMIC MELF	0.022uF		25V
C65	1-163-063-00	CERAMIC MELF	0.022uF		25V
C66	1-163-063-00	CERAMIC MELF	0.022uF		25V
C67	1-102-120-00	CERAMIC	0.0018uF	10%	50V
C68	1-162-523-11	CERAMIC CHIP	0.0015uF	20%	25V
C69	1-163-063-00	CERAMIC CHIP	0.022uF		25V
C70	1-163-063-00	CERAMIC CHIP	0.022uF		25V
C71	1-163-063-00	CERAMIC CHIP	0.022uF		25V
C72	1-163-063-00	CERAMIC CHIP	0.022uF		25V
C73	1-163-063-00	CERAMIC CHIP	0.022uF		25V
C81	1-102-961-00	CERAMIC	27PF	5%	50V
C82	1-102-961-00	CERAMIC	27PF	5%	50V
C83	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C84	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C85	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C86	1-124-477-11	ELECT	47uF	20%	25V
C87	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C88	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C101	1-124-925-11	ELECT	2.2uF	20%	100V
C102	1-124-463-00	ELECT	0.1uF	20%	50V
C103	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C104	1-163-059-00	CERAMIC MELF	0.01uF	20%	16V
C105	1-124-477-11	ELECT	47uF	20%	25V
C106	1-136-173-00	FILM	0.47uF	5%	50V
C107	1-124-463-00	ELECT	0.1uF	20%	50V
C108	1-163-063-00	CERAMIC CHIP	0.022uF		25V

Ref.No.	Part No.	Description			Remark
C109	1-102-963-00	CERAMIC	33PF	5%	50V
		< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC			
CF2	1-567-389-11	FILTER, CERAMIC			
CFT21	1-404-853-11	TRANSFORMER, IF(CERAMIC FILTER)			
		< VIBRATOR >			
CF21	1-577-075-11	OSCILLATOR, CERAMIC			
		< CONNECTOR >			
* CNJ1	1-564-666-11	PIN, CONNECTOR 10P			
* CNJ2	1-564-341-11	PIN, CONNECTOR 7P			
* CNJ3	1-568-313-11	SOCKET, CONNECTOR 9P			
CNJ4	1-568-269-11	SOCKET, CONNECTOR 3P			
		< DIODE >			
D21-24	8-719-912-20	DIODE	1SS120		
D61	8-719-912-20	DIODE	1SS120		
		< FRONT END >			
FE1	1-463-862-21	FRONT END (FM)			
FE61	1-236-462-11	ENCAPSULATED COMPONENT			
FE62	1-236-463-11	ENCAPSULATED COMPONENT			
		< IC >			
IC21	8-759-821-45	IC	LA1851N		
IC81	8-759-820-91	IC	LC7218		
		< COIL >			
L1	1-410-645-31	INDUCTOR	100uH		
L21	1-407-500-00	INDUCTOR	4.7mH		
L61	1-410-525-11	INDUCTOR	220uH		
		< FILTER >			
LPF21	1-235-164-00	FILTER, LOW PASS			
LPF22	1-235-164-00	FILTER, LOW PASS			
		< TRANSISTOR >			
Q1	8-729-230-99	TRANSISTOR	2SC2669-OY		
Q2	8-729-230-99	TRANSISTOR	2SC2669-OY		
Q21	8-729-119-78	TRANSISTOR	2SC2785HFE		
Q22	8-729-119-78	TRANSISTOR	2SC2785HFE		
Q26	8-729-900-80	TRANSISTOR	DTC114ES		
Q27	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q28	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q61	8-729-900-80	TRANSISTOR	DTC114ES		
Q62	8-729-900-80	TRANSISTOR	DTC114ES		

TUNER (Former)

Ref. No.	Part No.	Description				Remark
Q63	8-729-900-80	TRANSISTOR	DTC114ES			
Q64	8-729-620-05	TRANSISTOR	2SC2603-EF			
Q65	8-729-821-04	TRANSISTOR	2SA1317-STU			
Q66	8-729-900-80	TRANSISTOR	DTC114ES			
Q81	8-729-900-61	TRANSISTOR	DTA114ES			
Q82	8-729-900-80	TRANSISTOR	DTC114ES			
Q83	8-729-202-67	TRANSISTOR	2SK246-GR3			
Q84	8-729-230-93	TRANSISTOR	2SC3113-AB			
Q85	8-729-202-67	TRANSISTOR	2SK246-GR3			
Q86	8-729-230-93	TRANSISTOR	2SC3113-AB			
		< RESISTOR >				
⚠R1	1-249-401-11	CARBON	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%	1/8	
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	82	5%	1/4W	F
R22	1-249-433-11	CARBON	22K	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	18K	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	
R34	1-249-425-11	CARBON	4.7K	5%	1/4W	
R35	1-249-355-11	CARBON MELF	47K	5%	1/8W	
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	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	
R64	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R65	1-249-355-11	CARBON MELF	47K	5%	1/8W	

Ref. No.	Part No.	Description				Remark
R66	1-249-073-11	CARBON MELF	1M	5%	1/5W	
R67	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R68	1-249-352-11	CARBON MELF	27K	5%	1/8W	
R69	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R70	1-249-331-11	CARBON MELF	470	5%	1/8W	
R71	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R72	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R73	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R74	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R75	1-249-343-11	CARBON MELF	4.7K	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	
R88	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R89	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R90	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R91	1-249-335-11	CARBON MELF	1K	5%	1/8W	
⚠R92	1-249-401-11	CARBON	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	100	5%	1/4W	F
R111	1-249-341-11	CARBON MELF	3.3K	5%	1/8W	
R112	1-249-332-11	CARBON MELF	560	5%	1/8W	
R113	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R114	1-249-328-11	CARBON MELF	270	5%	1/8W	
R115	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R116	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R117	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R118	1-249-323-11	CARBON MELF	100	5%	1/8W	
		< VARIABLE RESISTOR >				
RV21	1-238-013-11	RES, ADJ, CARBON 2.2K				(STEREO SEPARATION)
RV22	1-238-017-11	RES, ADJ, CARBON 22K (AM TUNED)				
RV24	1-238-017-11	RES, ADJ, CARBON 22K (FM TUNED)				
		< TRANSFORMER >				
T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR				

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

TUNER (Former) TUNER (New)

Ref. No.	Part No.	Description			Remark
		< TERMINAL >			
* TM1	1-537-138-31	TERMINAL BOARD (ANTENNA)			
		< TEST PIN >			
* TP1	1-560-060-00	PIN, CONNECTOR 2P (NULL)			
		< VIBRATOR >			
XT81	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)			
**********					
*	A-4378-126-A	TUNER BOARD, COMPLETE (AEP) (New Type)			
*	A-4378-128-A	TUNER BOARD, COMPLETE (UK, G, IT)			
		**********			
		< CAPACITOR >			
C1	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C2	1-126-967-11	ELECT	47uF	20%	16V
C3	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C4	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C5	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C6	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C7	1-164-232-11	CERAMIC CHIP	0.01uF		50V (UK, G, IT)
C8	1-164-232-11	CERAMIC CHIP	0.01uF		50V (UK, G, IT)
C9	1-164-232-11	CERAMIC CHIP	0.01uF		50V (UK, G, IT)
C11	1-164-097-11	CERAMIC	0.022uF		50V
C21	1-101-006-00	CERAMIC	0.047uF		50V
C22	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C23	1-126-967-11	ELECT	47uF	20%	16V
C24	1-126-111-11	ELECT	3.3uF	20%	50V
C25	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C26	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C27	1-163-137-00	CERAMIC CHIP	680PF	5%	50V (UK, G, IT)
C27	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (AEP)
C28	1-124-903-11	ELECT	1uF	20%	50V
C29	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (UK, G, IT)
C30	1-124-903-11	ELECT	1uF	20%	50V
C31	1-124-902-00	ELECT	0.47uF	20%	50V
C32	1-124-463-00	ELECT	0.1uF	20%	50V
C33	1-130-481-00	MYLAR	0.0068uF	5%	50V
C34	1-126-111-11	ELECT	3.3uF	20%	50V
C35	1-130-481-00	MYLAR	0.0068uF	5%	50V
C36	1-126-111-11	ELECT	3.3uF	20%	50V
C37	1-126-964-11	ELECT	10uF	20%	50V
C38	1-126-964-11	ELECT	10uF	20%	50V
C39	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C40	1-124-463-00	ELECT	0.1uF	20%	50V
C41	1-124-927-11	ELECT	4.7uF	20%	100V
C42	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C43	1-126-923-11	ELECT	220uF	20%	10V
C44	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C45	1-126-111-11	ELECT	3.3uF	20%	50V
C46	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C47	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V (UK, G, IT)
C48	1-126-111-11	ELECT	3.3uF	20%	50V
C49	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C50	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V (UK, G, IT)
C51	1-126-967-11	ELECT	47uF	20%	16V
C52	1-124-252-00	ELECT	0.33uF	20%	50V
C53	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C54	1-164-097-11	CERAMIC	0.022uF		50V
C61	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C64	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C66	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C67	1-102-120-00	CERAMIC	0.0018uF	10%	50V
C68	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C70	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C71	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C72	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C81	1-102-961-00	CERAMIC	27PF	5%	50V
C82	1-102-961-00	CERAMIC	27PF	5%	50V
C83	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C84	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C85	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C86	1-126-967-11	ELECT	47uF	20%	16V
C87	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C88	1-164-097-11	CERAMIC	0.022uF		50V
C101	1-124-925-11	ELECT	2.2uF	20%	100V
C102	1-124-463-00	ELECT	0.1uF	20%	50V
C103	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C104	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C105	1-126-967-11	ELECT	47uF	20%	16V
C106	1-136-173-00	FILM	0.47uF	5%	50V
C107	1-124-463-00	ELECT	0.1uF	20%	50V
C108	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C109	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
		< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC			
CF2	1-567-389-11	FILTER, CERAMIC			
CF3	1-567-389-11	FILTER, CERAMIC (UK, G, IT)			

TUNER (New)

Ref. No.	Part No.	Description	Remark
CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)	
		< VIBRATOR >	
CF21	1-577-075-11	OSCILLATOR, CERAMIC	
		< CONNECTOR >	
* CNJ1	1-568-937-11	PIN, CONNECTOR 10P	
* CNJ2	1-568-934-11	PIN, CONNECTOR 7P	
* CNJ3	1-568-936-11	PIN, CONNECTOR 9P	
CNJ4	1-506-468-11	PIN, CONNECTOR 3P	
		< DIODE >	
D21-24	8-719-988-62	DIODE 1SS355	
D61	8-719-988-62	DIODE 1SS355	
		< FRONT END >	
FE1	1-463-857-11	FRONT END (FM) (UK, G, IT)	
FE1	1-463-862-21	FRONT END (FM) (AEP)	
FE61	1-236-462-11	ENCAPSULATED COMPONENT	
FE62	1-236-463-11	ENCAPSULATED COMPONENT	
		< IC >	
IC21	8-759-821-45	IC LA1851N	
IC81	8-759-175-87	IC LC7218-S	
		< COIL >	
L1	1-410-482-31	INDUCTOR 100uH	
L2	1-410-482-31	INDUCTOR 100uH (UK, G, IT)	
L21	1-407-500-00	INDUCTOR 4.7mH	
L22	1-410-509-11	INDUCTOR 10uH (UK, G, IT)	
L61	1-408-425-00	INDUCTOR 220uH	
L151	1-410-509-11	INDUCTOR 10uH (UK, G, IT)	
L161	1-410-509-11	INDUCTOR 10uH (UK, G, IT)	
		< FILTER >	
LPF21	1-235-164-00	FILTER, LOW PASS	
LPF22	1-235-164-00	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q2	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q3	8-729-230-99	TRANSISTOR 2SC2669-OY (UK, G, IT)	
Q4	8-729-230-99	TRANSISTOR 2SC2669-OY (UK, G, IT)	
Q21	8-729-901-40	TRANSISTOR 2SC1740S-QT	
Q22	8-729-901-40	TRANSISTOR 2SC1740S-QT	
Q26	8-729-900-80	TRANSISTOR DTC114ES	
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q28	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q61	8-729-900-80	TRANSISTOR DTC114ES	
Q62	8-729-900-80	TRANSISTOR DTC114ES	
Q63	8-729-900-80	TRANSISTOR DTC114ES	
Q64	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q65	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q66	8-729-900-80	TRANSISTOR DTC114ES	
Q81	8-729-900-61	TRANSISTOR DTA114ES	
Q82	8-729-900-80	TRANSISTOR DTC114ES	
Q83	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB	
Q85	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q86	8-729-230-93	TRANSISTOR 2SC3113-AB	
		< RESISTOR >	
⚠R1	1-249-397-11	CARBON 22 5% 1/4W F	(UK, G, IT)
⚠R1	1-249-401-11	CARBON 47 5% 1/4W F	(AEP)
R3	1-216-037-00	METAL CHIP 330 5% 1/10W	
R4	1-216-037-00	METAL CHIP 330 5% 1/10W	
R5	1-216-037-00	METAL CHIP 330 5% 1/10W	
R6	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R7	1-216-037-00	METAL CHIP 330 5% 1/10W	
R8	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R9	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R10	1-216-037-00	METAL CHIP 330 5% 1/10W	(UK, G, IT)
R11	1-216-079-00	METAL CHIP 18K 5% 1/10W	(UK, G, IT)
R12	1-216-037-00	METAL CHIP 330 5% 1/10W	(UK, G, IT)
R13	1-216-047-91	METAL GLAZE 820 5% 1/10W	(UK, G, IT)
R14	1-216-083-00	METAL CHIP 27K 5% 1/10W	(UK, G, IT)
R15	1-216-073-00	METAL CHIP 10K 5% 1/10W	(UK, G, IT)
R16	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(UK, G, IT)
⚠R21	1-249-404-00	CARBON 82 5% 1/4W F	
R22	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R23	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R24	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R25	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R27	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R29	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R31	1-216-041-00	METAL CHIP 470 5% 1/10W	
R32	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R33	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R34	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	

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

TUNER (New)

Ref. No.	Part No.	Description				Remark
R35	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R36	1-216-295-91	CONDUCTOR, CHIP (2012)				
R37	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R38	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R39	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R40	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R41	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R42	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R43	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R44	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R45	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R46	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
⚠R47	1-249-409-11	CARBON	220	5%	1/4W	F
R48	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R49	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R61	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R62	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R64	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R65	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R66	1-216-121-91	METAL GLAZE	1M	5%	1/10W	
R67	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R68	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R69	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R70	1-216-041-00	METAL CHIP	470	5%	1/10W	
R71	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R73	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R74	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R75	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R81	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R82	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R83	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R84	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R85	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R86	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R88	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R89	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R90	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R91	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
⚠R92	1-249-401-11	CARBON	47	5%	1/4W	F
R101	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R102	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R103	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R104	1-216-035-00	METAL CHIP	270	5%	1/10W	
R105	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R106	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R107	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R108	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R109	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
⚠R110	1-249-405-11	CARBON	100	5%	1/4W	F
R111	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R112	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R113	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R114	1-216-035-00	METAL CHIP	270	5%	1/10W	
R115	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R116	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R117	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R118	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R151	1-216-295-91	CONDUCTOR, CHIP (2012)				
R152	1-216-295-91	CONDUCTOR, CHIP (2012)				
R153	1-216-295-91	CONDUCTOR, CHIP (2012)				
R154	1-216-295-91	CONDUCTOR, CHIP (2012)				
R161-165	1-216-295-91	CONDUCTOR, CHIP (2012)				
		< VARIABLE RESISTOR >				
RV21	1-241-762-11	RES, ADJ, CARBON 2.2K				(STEREO SEPARATION)
RV22	1-241-765-11	RES, ADJ, CARBON 22K (AM TUNED)				
RV24	1-241-765-11	RES, ADJ, CARBON 22K (FM TUNED)				
		< TRANSFORMER >				
T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR				
T23	1-235-126-00	ENCAPSULATED COMPONENT (UK, G, IT)				
		< TERMINAL >				
* TM1	1-537-138-31	TERMINAL BOARD (ANTENNA)				
		< TEST PIN >				
* TP1	1-560-060-00	PIN, CONNECTOR 2P (NULL)				
		< VIBRATOR >				
XT81	1-577-126-21	VIBRATOR, CRYSTAL (7.2MHz)				
**********						
		MISCELLANEOUS				
		**********				
⚠13	1-575-651-11	CORD, POWER (AEP) (Former Type)				
⚠13	1-575-651-21	CORD, POWER (AEP, G, IT) (New Type)				
⚠13	1-696-907-11	CORD, POWER (UK)				
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT				
⚠PT501	1-450-009-11	TRANSFORMER, POWER				
RV751	1-466-513-11	ENCODER, ROTARY (TUNING)				
S1	1-554-920-21	SWITCH, PUSH (AC POWER) (1 KEY)				(Former Type)

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

Ref. No.	Part No.	Description	Remark
S1	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY)	(New Type)

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ACCESSORIES & PACKING MATERIALS

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	1-501-369-11	ANTENNA (FM) (Former Type)	
	1-501-374-11	ANTENNA, LOOP	
	1-501-594-11	ANTENNA (FM) (New Type)	
	1-558-233-11	CORD (WITH CONNECTOR) (SIRCS) 4P	
	1-559-533-11	CORD, CONNECTION (Former Type)	
	1-558-271-11	CORD, CONNECTION (New Type)	
*	3-704-343-01	SHEET (STANDARD) , PROTECTION	(Former Type)
	3-753-281-11	MANUAL, INSTRUCTION (AEP, UK, IT)	(ENGLISH/FRENCH/SPANISH/ITALIAN)
	3-753-281-41	MANUAL, INSTRUCTION (AEP, G)	(DUTCH/SWEDISH/PORTUGUESE/GERMAN)
*	3-948-574-01	SHEET (ROLL), PROTECTION (New Type)	
*	4-917-074-01	CUSHION (Former Type)	
*	4-966-661-02	CUSHION (New Type)	
*	4-966-660-51	INDIVIDUAL CARTON (New Type)	
*	4-944-049-11	INDIVIDUAL CARTON (Former Type)	

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HARDWARE LIST

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#1	7-672-773-93	SCREW (PANEL 2.6 TP2) (Former Type)
#1	4-951-620-01	SCREW (2.6×8), +BVTP (New Type)
#2	7-685-646-79	SCREW +BVTP 3×8 TYPE2 N-S
#3	7-682-550-04	SCREW +BVTT 3×12 (S)
#4	7-685-646-79	SCREW +BVTP 3×8 TYPE2 (Former Type)
#4	7-685-646-81	SCREW +BVTP 3×8 TYPE2 (New Type)
#5	7-685-871-01	SCREW +BVTT 3×6 (S)
#6	3-704-515-11	SCREW (BV/RING) (New Type)

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