

ST-S170

SERVICE MANUAL

*AEP Model
UK Model
East European Model*



SPECIFICATIONS

Tuner		Automatic tuning threshold	30 dBf
Circuit system	FM stereo, FM/AM superheterodyne tuner Quartz-locked PLL digital synthesizer system	Output	410 mV, 4.7 kohms (at 40 kHz deviation)
FM tuner		AM tuner	
Frequency range	AEP, UK Model : 87.5 MHz ~ 108 MHz East European Model : 65~74 MHz at 10 kHz step 87.5~108 MHz at 50 kHz step	Frequency range	EXCEPT Italian Model : MW : 531 ~ 1,602 kHz LW : 153 ~ 279 kHz Italian Model : MW : 522 ~ 1,611 kHz LW : 144 ~ 288 kHz
Antenna terminals	AEP, UK, East European Models : 75 ohms unbalanced	Antenna	AM loop antenna External antenna terminal
Intermediate frequency	10.7 MHz	Intermediate frequency	450 kHz
Sensitivity (at 46 dB quieting)	18.0 dBf, 2.2 μ V (mono) 40.0 dBf, 24.5 μ V (stereo)	Usable Sensitivity (with AM loop antenna)	300 μ V/m (999 kHz) 1 mV/m (216 kHz)
Usable sensitivity (IHF)	19.5 dBf, 5 μ V	Signal-to-noise ratio	54 dB (50 mV/m) (999 kHz) 50 dB (50 mV/m) (216 kHz)
Signal-to-noise ratio	(at 75kHz deviation) 80 dB (mono) 75 dB (stereo) (at 40 kHz deviation) 74 dB (mono) 69 dB (stereo)	Harmonic distortion	0.5% (50 mV/m, 400 kHz)
Harmonic distortion	0.3% (mono) 0.5% (stereo) (at 1kHz)	Selectivity	32 dB
Separation	40 dB (at 1 kHz)	General	
Frequency response	AEP, UK Model : 40 Hz ~ 12.5 kHz $\pm$ 0.5dB East European Model : 30 Hz ~ 15 kHz $\pm$ 0.5 dB	Power requirements	EXCEPT UK Model : 220 ~ 230V AC (or 240V AC adjustable by authorized Sony personnel), 50/60 Hz UK Model : 240V AC (or 220 ~ 230V AC adjustable by authorized Sony personnel), 50/60 Hz
Selectivity	AEP, UK Model : 60 dB (at 300 kHz) 80 dB (at 400 kHz) Germany, Italian Model : 65 dB (at 300 kHz) East European Model : 55 dB (at 400 kHz)	Power consumption	10 W
Capture ratio	1.0 dB	Dimensions	Approx. 430 $\times$ 85 $\times$ 295mm (w/h/d) (17 $\times$ 3 $\frac{3}{8}$ $\times$ 11 $\frac{5}{8}$ inches)
AM suppression ratio	AEP, UK Model : 65 dB East European Model : 54 dB	Weight	Approx. 2.8 kg (6 lb 3oz)
Image response ratio	AEP, UK Model : 70 dB East European Model : 50dB	Accessories supplied	Remote control cord (1) Connecting cord(1) FM antenna(1) (EXCEPT Germany Model) AM loop antenna(1)
IF response ratio	70 dB		
Spurious response ratio	80 dB		
Muting threshold	30 dBf		

Design and specifications are subject to change without notice.

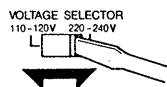
FM STEREO/FM-AM TUNER
SONY®

PRECAUTIONS

On safety

- Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage

Where purchased	Operating voltage
Canada	120 V AC, 60 Hz
United Kingdom	240 V AC, 50/60 Hz
Continental Europe	220-230 V AC, 50/60 Hz (240 V AC, adjustable by authorized Sony personnel)
Other countries	110-120 or 220-240 V AC, 50/60 Hz (Adjustable using the voltage selector at the rear)



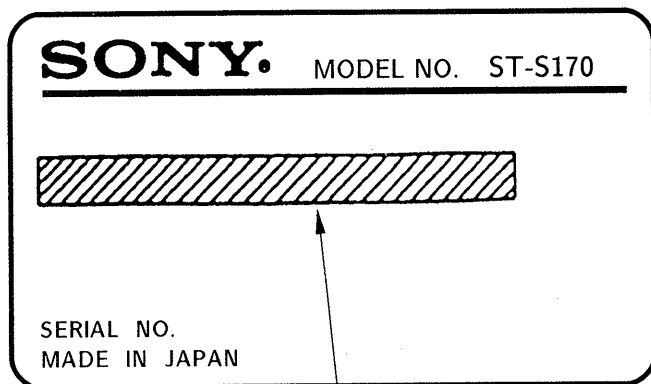
- Should any solid object or liquid fall into the unit, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Do not pull the cord itself.

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MODEL IDENTIFICATION

- Specification Label -



UK Model : AC 240V ~ 50/60Hz

AEP, IT, GERMANY East European

Model : AC 220V - 230V ~ 50/60Hz 10W

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.

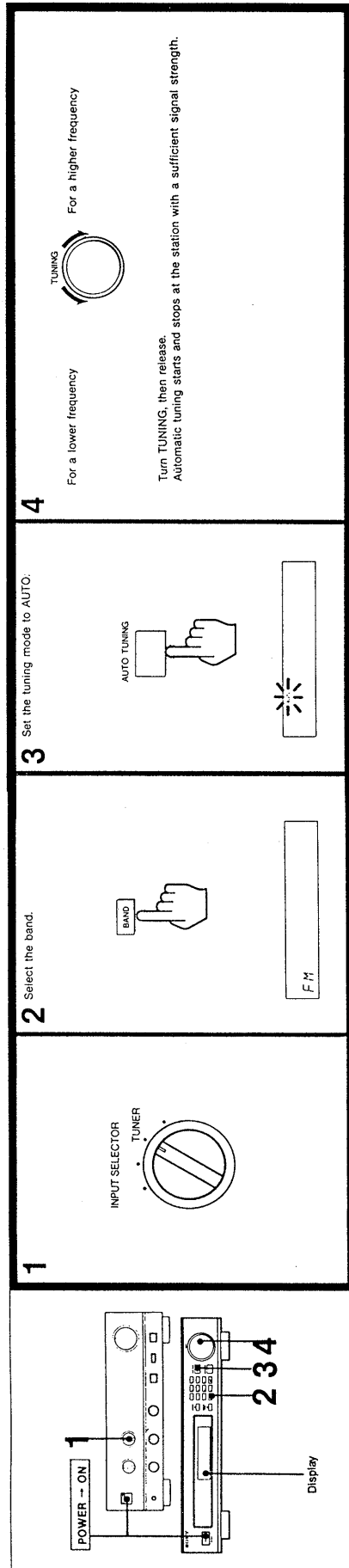
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

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.

Receiving Broadcasts

Tuning In Automatically

Before reception, be sure to connect the AM and FM antenna.



To receive other stations
When the received station is not the one you want, turn TUNING again.

Indications in the display window

- The STEREO indication appears when an FM stereo program of sufficient signal strength is received.
- The SIGNAL meter indicates the signal strength of a station tuned in.

To change the AM tuning interval (except European and U.K. models)
The AM tuning interval is preset at the factory to 9 kHz or 10 kHz.
To use the unit where the frequency allocation system is based on the other interval, make the following adjustments.

- 1 Turn on the power and tune in any AM station.
- 2 Turn off the power.
- 3 Press POWER while pressing the "0"PRESET button to set to 10 kHz.
(To set to 9 kHz, press "9" instead.)

When the interval is changed, all preset stations which you have memorized will be erased. After changing the interval, be sure to preset the stations again.

SECTION 1 GENERAL

This section is extracted from instruction manual.

SECTION 2 ELECTRICAL ADJUSTMENTS

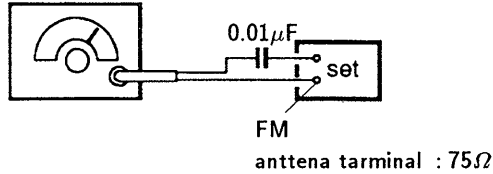
2-1. FM SECTION

FM NULL Adjustment

Setting :

BAND switch : FM

Procedure :



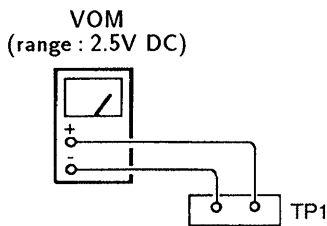
Carrier frequency : 98MHz

Output level : 1mV (60dB)

Modulation : 1kHz, 40kHz deviation (100%)

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

Note : When the ceramic filter is replaced, adjustments should be made.



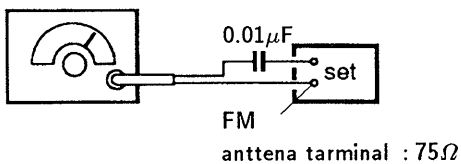
STEREO Indication Lighting Level Adjustment

Setting :

STEREO/MUTE switch : OFF

BAND switch : FM

Procedure :



Carrier frequency : 98MHz

Output level : 17.9μV (25dB)

Mode : Stereo

Modulation :

Audio (1kHz) : 16.25kHz deviation (40.625%)

Pilot (19kHz) : 7.5kHz deviation (18.75%)

Sub-channel (38kHz) : 16.25kHz deviation (40.625%)

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

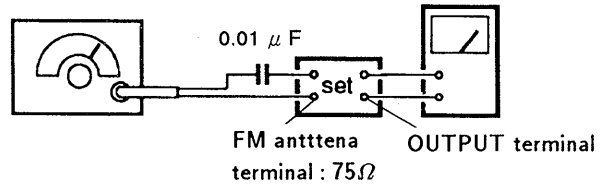
FM Stereo Separation Adjustment

Setting :

STEREO/MUTE switch : ON (STEREO)

BAND switch : FM

Procedure :



Carrier frequency : 98MHz

Output level : 1mV (60dB)

Mode : Stereo

Modulation :

Audio (1kHz) : 16.25kHz deviation (40.625%)

Pilot (19kHz) : 7.5kHz deviation (18.75%)

Sub-channel (38kHz) : 16.25kHz deviation (40.625%)

FM stereo signal generator output channel	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.

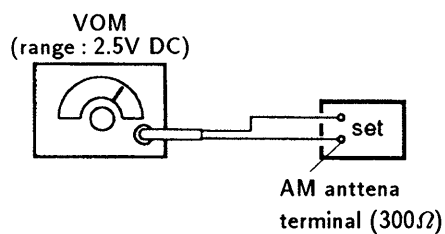
2-2. AM SECTION

SIGNAL LEVEL METER Lighting Level Adjustment

Setting :

BAND switch : LW

Procedure :



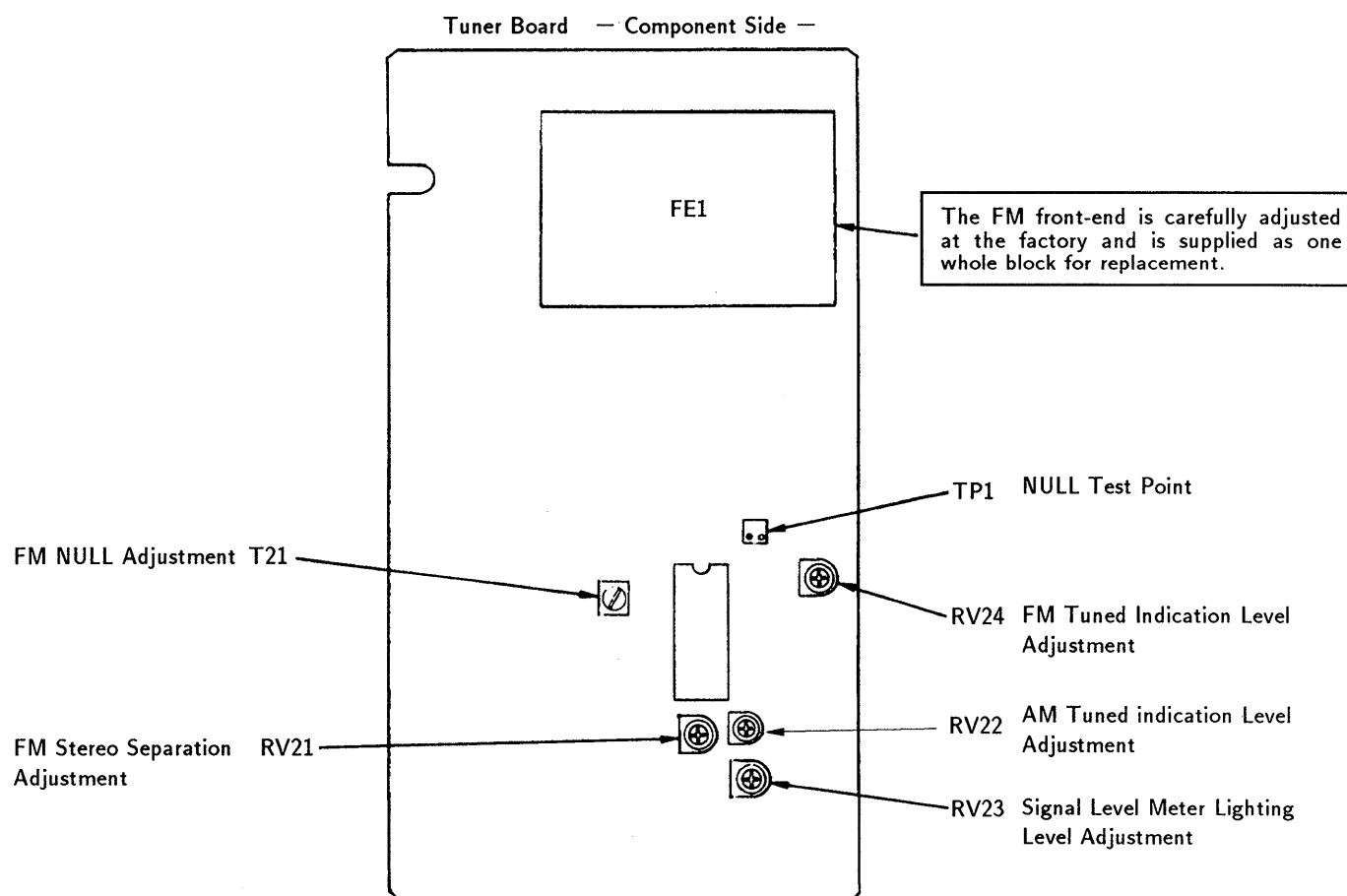
Carrier frequency : 216kHz

Output level : 94 dBμ/m

Modulation : 400Hz, 30% modulation

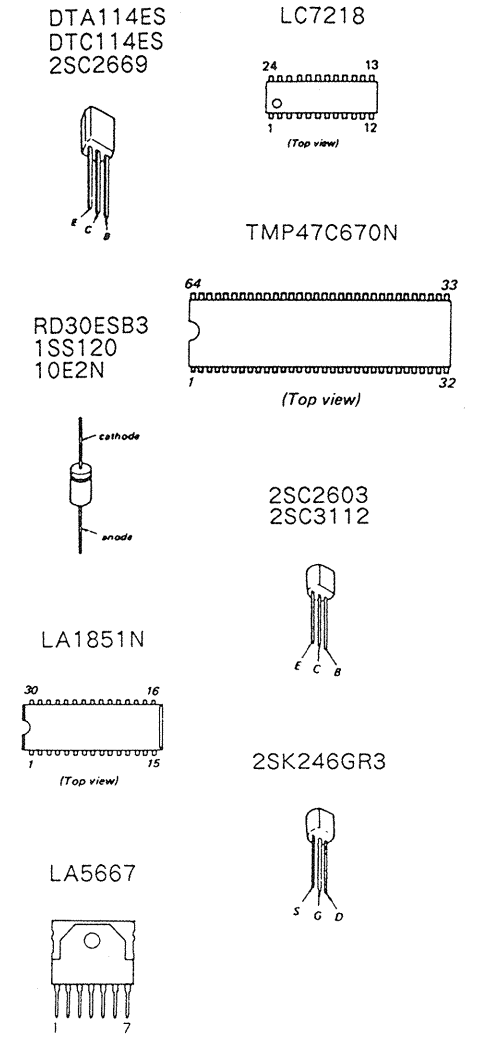
1. Tune the set to 216kHz.
2. Adjust RV23 until the scale-5 on SIGNAL METER indicator lights up.

2-3. ADJUSTMENT PARTS LOCATION



SECTION 3
DIAGRAMS

3-1. SEMICONDUCTOR LEAD LAYOUTS



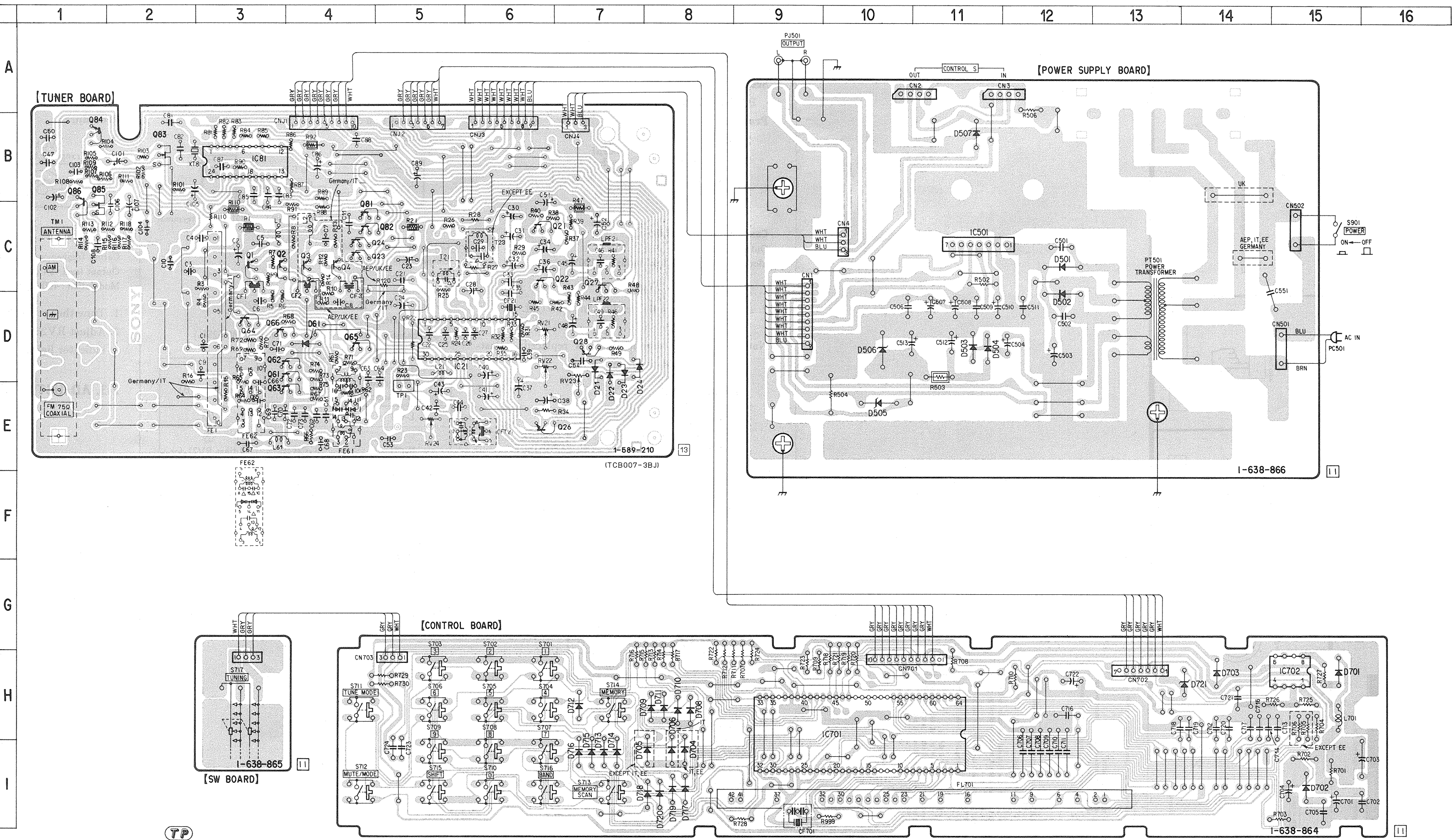
● Semiconductor Location

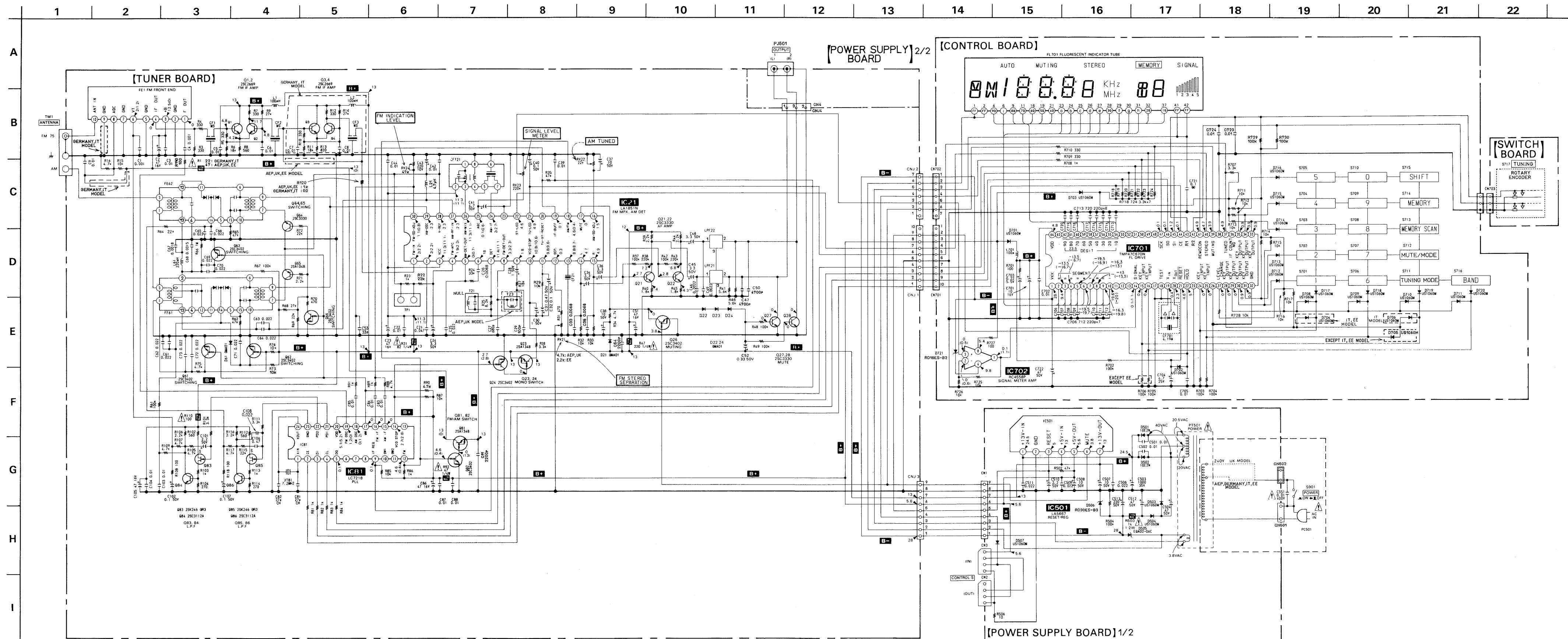
Ref. No.	Location	Ref. No.	Location
D21	D-7	Q1	C-3
D22	D-7	Q2	C-3
D23	D-7	Q3	C-4
D24	D-7	Q4	C-4
D61	D-4	Q21	C-6
D501	C-12	Q22	C-6
D502	D-12	Q23	C-4
D503	D-11	Q24	C-4
D504	D-11	Q26	E-6
D505	E-10	Q27	C-7
D506	D-10	Q28	D-7
D507	B-11	Q61	D-3
D701	H-15	Q62	D-3
D702	I-15	Q63	E-3
D703	H-14	Q64	D-3
D704	I-8	Q65	D-4
D705	I-8	Q66	D-3
D706	H-8	Q81	C-4
D708	H-8	Q82	C-4
D709	H-8	Q83	B-2
D710	H-8	Q84	B-1
D711	H-8	Q85	B-1
D712	H-7	Q86	B-1
D713	I-7		
D714	I-7		
D715	I-7		
D716	I-7		
D717	I-8		
D718	I-8		
D719	I-8		
D720	I-8		
D721	H-14		
IC21	D-5		
IC81	B-3		
IC501	C-11		
IC701	H-10		
IC702	H-15		

Note :

- : parts extracted from the component side.
- : indicates side identified with part number.
- IT : Italian
- EE : East European

3-2. PRINTED WIRING BOARDS





Note:

- All capacitors are in μF unless otherwise noted.
- μF : μF 50WV or less are not indicated except for electrolytics
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- $\square$: nonflammable resistor.
- $\sim$: fusible resistor.

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

- **B+**: B+ Line
- **B-**: B- Line

- $\square$: adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark: FM
- () : AM
- Voltages are taken with a VOM (Input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\Rightarrow$: FM

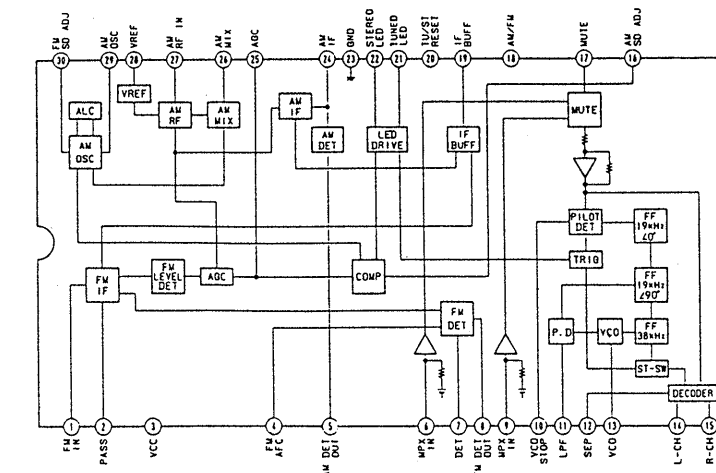
(Service Note)

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.

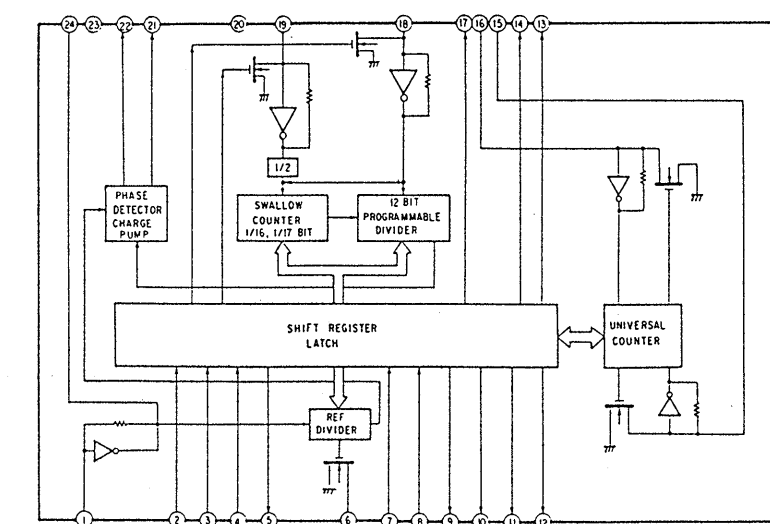
- IT: Italian
- EE: East European

• IC BLOCK DIAGRAM

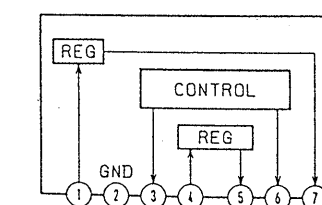
IC21 LA1851N



IC81 LC7218



IC501 LA5667



● IC701 SYSTEM CONTROLLER (TMP47C670N-1247)

TMP47C670N-1247 contains the following function 4 bit signal chip microprocessor.

- FL tube drive circuit
- 4 bit A/D conversion input
- 14 bit A/D convention output

Pin No.	Pin Name	I/ O	Description
1	VKK	—	Power supply for FL tube drive. (Built-in)
2 - 10	a - i	O	FL tube segment output.
11	—	O	FL tube segment output. (Not used)
12, 13	—	—	Not used.
14	SIGNAL	I	Signal meter input.
15, 16	KEY INPUT	I	Key scan input.
17	—	I	Key scan input. (Not used)
18	TEST	I	Test terminal. (GND)
19	XIN	I	} X'tal oscillator.
20	XOUT	O	
21	<u>RESET</u>	I	Reset signal input.
22	<u>HOLD</u>	I	Hold request/reject signal input.
23	—	—	Not used. (GND)
24, 25	KEY INPUT	I	Key scan input.
26	—	—	Not used. (Ground)
27	LEVEL CHANGE	I	Input for signal meter level selector.
28 - 31	KEY OUTPUT	O	Key scan output.
32	Vss	—	Ground.
33 - 35	KEY OUTPUT	O	Key scan output.
36	IF COUNT		Not used. (Open)
37	TUNED	I	Auto stop level input.
38	—	—	Not used. (Ground)
39	MUTING	O	Muting output.
40	STEREO	I	stereo indicator input.
41	REMOCON	I	Remote control input.
42, 43	R2, R1	I	Rotary encoder input.
44	CE	O	Chip enable output.
45	SI	I	Serial data input.
46	SO	O	serial data output.
47	<u>SCK</u>	O	serial data transfer clock output.
48 - 53	—	—	Not used. (Open)
54 - 62	1G - 9G	O	digit output for FL tube.
63	—	—	Not used. (Open)
64	VDD	—	Power supply voltage. (+5V)

SECTION 4 EXPLODED VIEW

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) (RED)

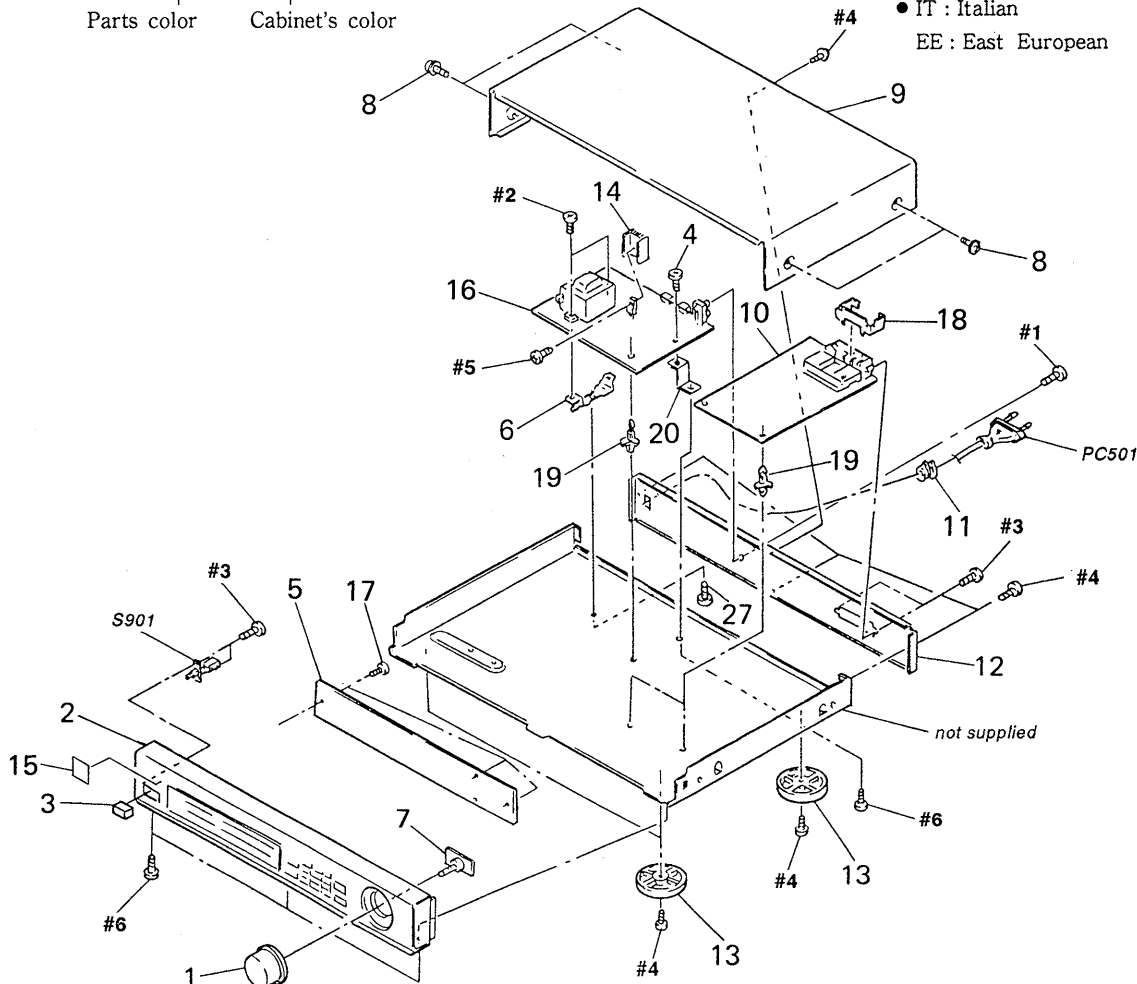
↑ ↑
 Parts color Cabinet's color

- 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 is given in the last of this parts list.

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.

- IT : Italian
- EE : East European



Ref.No.	Part No.	Description	Remark
1	4-944-125-01	KNOB (DIA. 44)	
2	X-4941-669-1	PANEL ASSY, FRONT	
3	3-354-912-01	KNOB, POWER	
4	4-886-821-11	SCREW, S TIGHT, *PTWH 3X6	
* 5	A-4341-891-A	CONTROL BOARD, COMPLETE (AEP, UK)	
* 5	A-4341-895-A	CONTROL BOARD, COMPLETE (GERMANY)	
* 5	A-4341-896-A	CONTROL BOARD, COMPLETE (IT)	
* 5	A-4347-326-A	CONTROL BOARD, COMPLETE (EE)	
* 6	4-917-044-01	BRACKET (PT)	
* 7	1-638-865-11	SWITCH BOARD	
8	3-704-366-01	SCREW (CASE) (M3X8)	
9	4-923-457-01	CASE	
* 10	A-4345-364-A	TUNER BOARD, COMPLETE (AEP, UK)	
* 10	A-4345-366-A	TUNER BOARD, COMPLETE (GERMANY, IT)	
* 10	A-4347-701-A	TUNER BOARD, COMPLETE (EE)	
* 11	3-703-244-00	BUSHING (2104), CORD	
12	4-944-121-11	PANEL, BACK (AEP, EE)	

Ref.No.	Part No.	Description	Remark
12	4-944-121-21	PANEL, BACK (GERMANY)	
12	4-944-121-31	PANEL, BACK (UK)	
12	4-944-121-41	PANEL, BACK (IT)	
13	4-943-148-42	FOOT (F58175SW)	
* 14	4-363-146-31	HEAT SINK, V. OUT	
15	3-703-710-41	STICKER, SONY SYMBOL (12) (AEP, UK)	
* 16	A-4341-893-A	POWER BOARD, COMPLETE (AEP)	
* 16	A-4341-894-A	POWER BOARD, COMPLETE (UK)	
* 16	A-4347-327-A	POWER BOARD, COMPLETE (EE)	
17	4-928-635-01	SCREW, +B (2.6X8) TAPPING	
* 18	4-924-988-11	PLATE (ST), GROUND	
* 19	3-346-265-11	HOLDER, PC BOARD	
* 20	3-332-563-01	BRACKET (P)	
PC501	1-575-651-11	CORD, POWER (AEP, IT, GERMANY, EE)	
PC501	1-575-652-11	CORD, POWER (UK)	
S901	1-554-920-21	SWITCH, POWER (POWER)	

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.....: μ A....., uPA.....: μ PA.....
uPB.....: μ PB....., uPC.....: μ PC.....
uPD.....: μ PD.....
- CAPACITORS
uF: μ F
- COILS
uH: μ H

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

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

- IT: Italian
- EE: East European

Ref. No.	Part No.	Description	Remark
*	A-4341-891-A	CONTROL BOARD, COMPLETE (AEP, UK) *****	
*	A-4341-895-A	CONTROL BOARD, COMPLETE (GERMANY) *****	
*	A-4341-896-A	CONTROL BOARD, COMPLETE (IT) *****	
*	A-4347-326-A	CONTROL BOARD, COMPLETE (EE) *****	
		< CAPACITOR >	
C701	1-126-157-11	ELECT 10uF 20% 16V	
C702	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C703	1-125-486-11	DUBLE LAYERS 0.22F 5.5V	
C704	1-126-163-11	ELECT 4.7uF 20% 50V	
C705	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C706	1-162-286-31	CERAMIC 220PF 10% 50V	
C707	1-162-286-31	CERAMIC 220PF 10% 50V	
C708	1-162-286-31	CERAMIC 220PF 10% 50V	
C709	1-162-286-31	CERAMIC 220PF 10% 50V	
C710	1-162-286-31	CERAMIC 220PF 10% 50V	
C711	1-162-286-31	CERAMIC 220PF 10% 50V	
C712	1-162-286-31	CERAMIC 220PF 10% 50V	
C713	1-162-286-31	CERAMIC 220PF 10% 50V	
C714	1-162-286-31	CERAMIC 220PF 10% 50V	
C715	1-162-286-31	CERAMIC 220PF 10% 50V	
C716	1-162-286-31	CERAMIC 220PF 10% 50V	
C717	1-162-286-31	CERAMIC 220PF 10% 50V	
C718	1-162-286-31	CERAMIC 220PF 10% 50V	
C719	1-162-286-31	CERAMIC 220PF 10% 50V	
C720	1-162-286-31	CERAMIC 220PF 10% 50V	
C721	1-136-165-00	FILM 0.1uF 5% 50V	
C722	1-124-910-11	ELECT 47uF 20% 50V	

Ref. No.	Part No.	Description	Remark
C723	1-101-004-00	CERAMIC 0.01uF 50V	
C724	1-101-004-00	CERAMIC 0.01uF 50V	
		< FILTER >	
CF701	1-577-359-21	VIBRATOR, CERAMIC 4.19MHz	
		< DIODE >	
D701	8-719-912-20	DIODE 1SS120	
D702	8-719-912-20	DIODE 1SS120	
D703	8-719-912-20	DIODE 1SS120	
D704	8-719-912-20	DIODE 1SS120 (IT, EE)	
D705	8-719-912-20	DIODE 1SS120 (EXCEPT IT, EE)	
D706	8-719-912-20	DIODE 1SS120 (IT)	
D708	8-719-912-20	DIODE 1SS120	
D709	8-719-912-20	DIODE 1SS120	
D710	8-719-912-20	DIODE 1SS120	
D711	8-719-912-20	DIODE 1SS120	
D712	8-719-912-20	DIODE 1SS120	
D713	8-719-912-20	DIODE 1SS120	
D714	8-719-912-20	DIODE 1SS120	
D715	8-719-912-20	DIODE 1SS120	
D716	8-719-912-20	DIODE 1SS120	
D717	8-719-912-20	DIODE 1SS120	
D718	8-719-912-20	DIODE 1SS120	
D719	8-719-912-20	DIODE 1SS120	
D720	8-719-912-20	DIODE 1SS120	
D721	8-719-110-49	DIODE RD18ES-B2	
		< FILTER >	
FL701	1-519-513-11	INDICATOR TUBE, FLUORESCENT (AEP, UK)	
FL701	1-519-614-11	INDICATOR TUBE, FLUORESCENT (EE)	

CONTROL

SWITCH

POWER

Ref.No.	Part No.	Description	Remark
		< IC >	
IC701	8-759-065-25	IC TMP47C670N-S170 (EE)	
IC701	8-759-246-23	IC TMP47C670N-SOX3014 (AEP, UK)	
IC702	8-759-945-58	IC RC4558P	
		< COIL >	
L701	1-410-521-11	INDUCTOR 100uH	
		< RESISTOR >	
R701	1-249-405-11	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	
R705	1-249-441-11	CARBON 100K 5% 1/4W (EXCEPT EE)	
R706	1-249-441-11	CARBON 100K 5% 1/4W (EXCEPT EE)	
R707	1-249-423-11	CARBON 3.3K 5% 1/4W	
R708	1-249-417-11	CARBON 1K 5% 1/4W	
R709	1-249-411-11	CARBON 330 5% 1/4W	
R710	1-249-411-11	CARBON 330 5% 1/4W	
R711	1-249-429-11	CARBON 10K 5% 1/4W	
R712	1-249-429-11	CARBON 10K 5% 1/4W	
R713	1-249-429-11	CARBON 10K 5% 1/4W	
R714	1-249-429-11	CARBON 10K 5% 1/4W	
R715	1-249-429-11	CARBON 10K 5% 1/4W	
R716	1-249-429-11	CARBON 10K 5% 1/4W	
R717	1-249-429-11	CARBON 10K 5% 1/4W	
R718	1-249-423-11	CARBON 3.3K 5% 1/4W	
R719	1-249-423-11	CARBON 3.3K 5% 1/4W	
R720	1-249-423-11	CARBON 3.3K 5% 1/4W	
R721	1-249-423-11	CARBON 3.3K 5% 1/4W	
R722	1-249-423-11	CARBON 3.3K 5% 1/4W	
R723	1-249-423-11	CARBON 3.3K 5% 1/4W	
R724	1-249-423-11	CARBON 3.3K 5% 1/4W	
R725	1-249-429-11	CARBON 10K 5% 1/4W	
R726	1-249-429-11	CARBON 10K 5% 1/4W	
R727	1-249-405-11	CARBON 100 5% 1/4W	
R728	1-249-429-11	CARBON 10K 5% 1/4W	
R729	1-249-441-11	CARBON 100K 5% 1/4W	
R730	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)	

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(TUNE MODE)	
S712	1-554-303-21	SWITCH, TACTILE(MUTE/MODE)	
S713	1-554-303-21	SWITCH, TACTILE(MEMORY SCAN)	
S714	1-554-303-21	SWITCH, TACTILE(MEMORY)	
S715	1-554-303-21	SWITCH, TACTILE(SHIFT)	
S716	1-554-303-21	SWITCH, TACTILE(BAND)	

*	1-638-865-11	SWITCH BOARD	

		< SWITCH >	
S717	1-466-513-11	ENCODER, ROTARY(TUNING)	

*	A-4341-893-A	POWER BOARD, COMPLETE (AEP)	

*	A-4341-894-A	POWER BOARD, COMPLETE (UK)	

*	A-4347-327-A	POWER BOARD, COMPLETE (EE)	

*	4-363-146-31	HEAT SINK, V. OUT	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2	
		< CAPACITOR >	
C501	1-101-004-00	CERAMIC 0.01uF	50V
C502	1-101-004-00	CERAMIC 0.01uF	50V
C503	1-126-105-11	ELECT 1000uF	20% 35V
C504	1-124-910-11	ELECT 47uF	20% 50V
C506	1-101-005-00	CERAMIC 22000PF	50V
C507	1-124-907-11	ELECT 10uF	20% 50V
C508	1-124-907-11	ELECT 10uF	20% 50V
C509	1-101-005-00	CERAMIC 22000PF	50V
C510	1-124-925-11	ELECT 2.2uF	20% 100V
C511	1-101-005-00	CERAMIC 22000PF	50V
C512	1-124-910-11	ELECT 47uF	20% 50V
C513	1-124-911-11	ELECT 220uF	20% 50V
△C551	1-161-744-00	CERAMIC 0.01uF	400V

< CONNECTOR >

CN1	1-568-284-11	SOCKET, CONNECTOR 9P
CN2	1-564-980-11	PIN, CONNECTOR 4P (CONTROL S OUT)
CN3	1-564-980-11	PIN, CONNECTOR 4P (CONTROL S IN)
CN4	1-568-278-11	SOCKET, CONNECTOR 3P
CN501	1-564-321-00	PIN, CONNECTOR 2P
CN502	1-564-321-21	PIN, CONNECTOR 2P

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

POWER

TUNER

Ref. No.	Part No.	Description	Remark
< DIODE >			
D501	8-719-200-77	DIODE 10E2N	
D502	8-719-200-77	DIODE 10E2N	
D503	8-719-912-20	DIODE 1SS120	
D504	8-719-912-20	DIODE 1SS120	
D505	8-719-912-81	DIODE EQA02-06C	
D506	8-719-110-73	DIODE RD30ES-B3	
D507	8-719-912-20	DIODE 1SS120	
< IC >			
IC501	8-759-820-09	IC LA5667	
< JACK >			
PJ501	1-565-352-11	JACK, PIN 2P(OUTPUT)	
< TRANSFORMER >			
△PT501	1-449-400-11	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	

*	A-4345-364-A	TUNER BOARD, COMPLETE (AEP, UK)	

*	A-4345-366-A	TUNER BOARD, COMPLETE (GERMANY, IT)	

*	A-4347-701-A	TUNER BOARD, COMPLETE (EE)	

*	4-924-988-11	PLATE (ST), GROUND	
< CAPACITOR >			
C1	1-162-294-31	CERAMIC CHIP 1000PF 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 1000PF 20% 25V	
C5	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C6	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C7	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C8	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C9	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C10	1-162-516-11	CERAMIC CHIP 100PF 10% 50V	
C11	1-101-005-00	CERAMIC 22000PF 50V	
C21	1-101-006-00	CERAMIC 0.047uF 50V	
C22	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	

Ref. No.	Part No.	Description	Remark
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 22000PF 25V	
C26	1-163-019-11	CERAMIC CHIP 6800PF 20% 12V	
C27	1-163-007-11	CERAMIC CHIP 680PF 20% 50V	
C28	1-124-903-11	ELECT 1uF 20% 50V	
C29	1-162-516-11	CERAMIC CHIP 100PF 10% 50V	
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	1-123-382-00	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	1-161-375-00	CERAMIC CHIP 2200PF 20% 25V	
C47	1-163-017-00	CERAMIC CHIP 4700PF 25V	
C48	1-123-382-00	ELECT 3.3uF 20% 100V	
C49	1-161-375-00	CERAMIC CHIP 2200PF 20% 25V	
C50	1-163-017-00	CERAMIC CHIP 4700PF 25V	
C51	1-124-477-11	ELECT 47uF 20% 25V	
C52	1-124-252-00	ELECT 0.33uF 20% 50V	
C53	1-163-105-00	CERAMIC 33PF 5% 50V	
C54	1-101-005-00	CERAMIC 22000PF 50V	
C61	1-163-063-00	CERAMIC MELF 22000PF 25V	
C62	1-163-063-00	CERAMIC MELF 22000PF 25V	
C63	1-163-063-00	CERAMIC MELF 22000PF 25V	
C64	1-163-063-00	CERAMIC MELF 22000PF 25V	
C65	1-163-063-00	CERAMIC MELF 22000PF 25V	
C66	1-163-063-00	CERAMIC MELF 22000PF 25V	
C67	1-102-120-00	CERAMIC 0.0018uF 10% 50V	
C68	1-163-011-11	CERAMIC CHIP 1500PF 20% 25V	
C69	1-163-063-00	CERAMIC MELF 22000PF 25V	
C70	1-163-063-00	CERAMIC MELF 22000PF 25V	
C71	1-163-063-00	CERAMIC MELF 22000PF 25V	
C72	1-163-063-00	CERAMIC MELF 22000PF 25V	
C73	1-163-063-00	CERAMIC MELF 22000PF 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	

Note: 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
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 MELF 22000PF	25V
C109	1-102-963-00	CERAMIC 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 (GERMANY, IT)	
CF21	1-577-075-11	OSCILLATOR, CERAMIC	
CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)	
< 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	8-719-912-20	DIODE 1SS120	
D22	8-719-912-20	DIODE 1SS120	
D23	8-719-912-20	DIODE 1SS120	
D24	8-719-912-20	DIODE 1SS120	
D61	8-719-912-20	DIODE 1SS120	
< FRONT END >			
FE1	1-463-857-11	FRONT END, FM (GERMANY, IT)	
FE1	1-463-862-21	FRONT END, FM (AEP, UK)	
FE1	1-465-560-11	FRONT END, FM (EE)	
< ENCAPSULATED COMPONENTFRONT >			
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	MICRO INDUCTOR 100uH	

Ref.No.	Part No.	Description	Remark
L2	1-410-645-31	INDUCTOR 100uH (GERMANY, IT)	
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-XX	TRANSISTOR 2SC26690Y	
Q2	8-729-230-XX	TRANSISTOR 2SC26690Y	
Q3	8-729-230-XX	TRANSISTOR 2SC26690Y (GERMANY, IT)	
Q4	8-729-230-XX	TRANSISTOR 2SC26690Y (GERMANY, IT)	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q23	8-729-900-61	TRANSISTOR DTA114ES	
Q24	8-729-900-80	TRANSISTOR DTA114ES	
Q26	8-729-900-80	TRANSISTOR DTC114ES	
Q27	8-729-620-05	TRANSISTOR 2SC2603-EF (AEP, UK)	
Q27	8-729-820-24	TRANSISTOR 2SC23330-T (EE)	
Q28	8-729-620-05	TRANSISTOR 2SC2603-EF (AEP, UK)	
Q28	8-729-820-24	TRANSISTOR 2SC23330-T (EE)	
Q61	8-729-900-80	TRANSISTOR DTC114ES	
Q62	8-729-900-80	TRANSISTOR DTC114ES	
Q63	8-729-900-80	TRANSISTOR DTC114ES	
Q64	8-729-620-05	TRANSISTOR 2SC2603-EF (AEP, UK)	
Q64	8-729-820-24	TRANSISTOR 2SC23330-T (EE)	
Q65	8-729-119-76	TRANSISTOR 2SA1175-HFE	
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	8-729-201-84	TRANSISTOR 2SC3112B (EE)	
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB (AEP, UK)	
Q85	8-729-202-67	TRANSISTOR 2SK246GR3	
Q86	8-729-201-84	TRANSISTOR 2SC3112B (EE)	
Q86	8-729-230-93	TRANSISTOR 2SC3113-AB (AEP, UK)	
< RESISTOR >			
△R1	1-249-397-11	CARBON 22 5% 1/4W F (GERMANY, IT)	
△R1	1-249-401-11	CARBON 47 5% 1/4W F (AEP, UK, EE)	
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	
R10	1-249-329-11	CARBON MELF 330 5% 1/8W	

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

TUNER

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
R11	1-249-350-11	CARBON MELF	18K	5%	1/8W	R83	1-249-335-11	CARBON MELF	1K	5%	1/8W
R12	1-249-329-11	CARBON MELF	330	5%	1/8W	R84	1-249-335-11	CARBON MELF	1K	5%	1/8W
R13	1-219-334-11	CARBON MELF	820	5%	1/8W	R85	1-249-347-11	CARBON MELF	10K	5%	1/8W
R14	1-249-352-11	CARBON MELF	27K	5%	1/8W	R86	1-249-335-11	CARBON MELF	1K	5%	1/8W
R15	1-249-347-11	CARBON MELF	10K	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
R16	1-249-343-11	CARBON MELF	4.7K	5%	1/8W						
△R21	1-249-404-00	CARBON	82	5%	1/4W F	R89	1-249-335-11	CARBON MELF	1K	5%	1/8W
R22	1-249-433-11	CARBON	22K	5%	1/4W	R90	1-249-343-11	CARBON MELF	4.7K	5%	1/8W
R23	1-249-335-11	CARBON MELF	1K	5%	1/8W	R91	1-249-335-11	CARBON MELF	1K	5%	1/8W
R24	1-249-353-11	CARBON MELF	33K	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
R25	1-249-346-11	CARBON MELF	8.2K	5%	1/8W						
R26	1-249-340-11	CARBON MELF	2.7K	5%	1/8W	R102	1-249-332-11	CARBON MELF	560	5%	1/8W
R27	1-249-432-11	CARBON	18K	5%	1/4W	R103	1-249-335-11	CARBON MELF	1K	5%	1/8W
R28	1-249-423-11	CARBON	3.3K	5%	1/4W	R104	1-249-328-11	CARBON MELF	270	5%	1/8W
R29	1-249-347-11	CARBON MELF	10K	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
R31	1-249-331-11	CARBON MELF	470	5%	1/8W						
R32	1-249-347-11	CARBON MELF	10K	5%	1/8W	R107	1-249-343-11	CARBON MELF	4.7K	5%	1/8W
R33	1-249-347-11	CARBON MELF	10K	5%	1/8W	R108	1-249-323-11	CARBON MELF	100	5%	1/8W
R34	1-249-425-11	CARBON	4.7K	5%	1/4W	R109	1-249-343-11	CARBON MELF	4.7K	5%	1/8W
R35	1-249-355-11	CARBON MELF	47K	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
R37	1-249-359-11	CARBON MELF	100K	5%	1/8W						
R38	1-249-363-11	CARBON MELF	220K	5%	1/8W	R112	1-249-332-11	CARBON MELF	560	5%	1/8W
R39	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	R113	1-249-335-11	CARBON MELF	1K	5%	1/8W
R40	1-249-338-11	CARBON MELF	1.8K	5%	1/8W	R114	1-249-328-11	CARBON MELF	270	5%	1/8W
R41	1-249-344-11	CARBON MELF	5.6K	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
R42	1-249-359-11	CARBON MELF	100K	5%	1/8W						
R43	1-249-363-11	CARBON MELF	220K	5%	1/8W	R117	1-249-343-11	CARBON MELF	4.7K	5%	1/8W
R44	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	R118	1-249-323-11	CARBON MELF	100	5%	1/8W
R45	1-249-338-11	CARBON MELF	1.8K	5%	1/8W	R120	1-249-335-11	CARBON	1K	5%	1/4W(AEP, UK, EE)
R46	1-249-344-11	CARBON MELF	5.6K	5%	1/8W						
								< VARIABLE RESISTOR >			
△R47	1-249-409-11	CARBON	220	5%	1/4W F						
R48	1-249-359-11	CARBON MELF	100K	5%	1/8W	RV21	1-238-013-11	RES, ADJ, CARBON 2.2K(SEPARATION) (EE)			
R49	1-249-359-11	CARBON MELF	100K	5%	1/8W	RV21	1-238-015-11	RES, ADJ, CARBON 4.7K(SEPARATION) (AEP, UK)			
R61	1-249-359-11	CARBON MELF	100K	5%	1/8W	RV22	1-238-017-11	RES, ADJ, CARBON 22K (AM TUNED)			
R62	1-249-355-11	CARBON MELF	47K	5%	1/8W	RV23	1-238-021-11	RES, ADJ, CARBON 220K(LEVEL)			
						RV24	1-238-019-11	RES, ADJ, CARBON 47K (STEREO INDICATION)			
R64	1-249-315-11	CARBON MELF	22K	5%	1/8W						
R65	1-249-355-11	CARBON MELF	47K	5%	1/8W			< TRANSFORMER >			
R66	1-215-493-00	CARBON MELF	1M	5%	1/5W						
R67	1-249-359-11	CARBON MELF	100K	5%	1/8W	T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR(NULL)			
R68	1-249-352-11	CARBON MELF	27K	5%	1/8W	T23	1-236-465-11	ENCAPSULATED COMPONENT(AEP, UK)			
R69	1-249-351-11	CARBON MELF	22K	5%	1/8W			< TERMINAL >			
R70	1-249-331-11	CARBON MELF	470	5%	1/8W						
R71	1-249-339-11	CARBON MELF	2.2K	5%	1/8W						
R72	1-249-351-11	CARBON MELF	22K	5%	1/8W	* TM1	1-537-138-31	TERMINAL BOARD(ANT)			
R73	1-249-347-11	CARBON MELF	10K	5%	1/8W			< CONNECTOR >			
R74	1-249-347-11	CARBON MELF	10K	5%	1/8W						
R75	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	* TP1	1-560-060-00	PIN, CONNECTOR 2P			
R81	1-249-335-11	CARBON MELF	1K	5%	1/8W						
R82	1-249-335-11	CARBON MELF	1K	5%	1/8W						

Note: 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
		< CRYSTAL >	
XT81	1-577-126-11	VIBRATOR, CRYSTAL(7.2MHz)	

		MISCELLANEOUS	

△PC501	1-575-651-11	CORD, POWER (AEP, IT, GERMANY, EE)	
△PC501	1-575-652-11	CORD, POWER (UK)	
△S901	1-554-920-21	SWITCH, POWER (POWER)	

		ACCESSORIES & PACKING MATERIALS	

	1-501-369-11	ANTENNA	
	1-501-374-11	ANTENNA, LOOP(EXCEPT GERMANY)	
	1-558-233-11	CORD (WITH CONNECTOR)(SIRCS)4P	
	1-558-271-11	CORD, CONNECTION	
	1-559-533-11	CORD, CONNECTION	
*	3-704-343-01	SHEET (STANDARD), PROTECTION(EXCEPT EE)	
	3-753-264-11	MANUAL, INSTRUCTION	
		(ENGLISH, FRENCH, ITALIAN, SPANISH)(AEP, IT, UK)	
	3-753-264-41	MANUAL, INSTRUCTION	
		(GERMAN, DUTCH, SWEDISH, PORTUGUESE)(AEP, GERMANY)	
	3-753-264-61	MANUAL, INSTRUCTION	
		(ENGLISH, GERMAN, POLISH, RUSSIAN)(EE)	
*	4-930-835-01	CUSHION	
*	4-944-049-01	INDIVIDUAL CARTON	

HARDWARE LIST			

#1	7-621-849-00	SCREW (BV/RING)	
#2	7-682-550-04	SCREW +BVTT 3X12 (S)	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#4	7-682-548-09	SCREW +BVTT 3X8 (S)	
#5	7-685-646-79	SCREW +BVTP 3X8 TYPE2	
#6	7-682-547-09	SCREW +BVTT 3X6 (S)	

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

- IT : Italian
- EE : East European