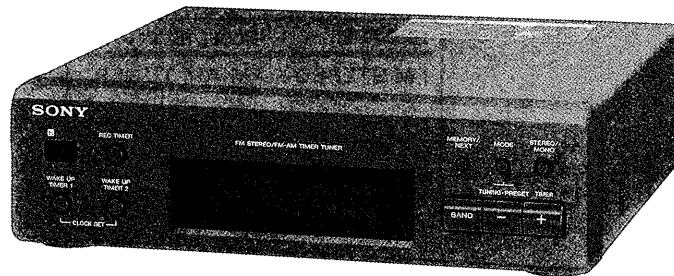


ST-H3700

SERVICE MANUAL

AEP Model
UK Model



This set is the tuner section in MHC-2700/3700

TABLE OF CONTENTS

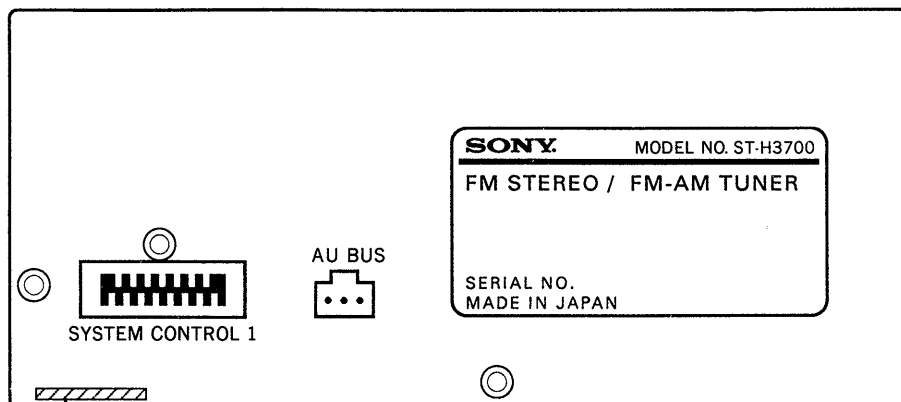
SPECIFICATIONS		<u>Section</u>	<u>Title</u>	<u>Page</u>
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FM tuner section		1-1.	Supply of Power During Services	2
Tuning range	87.5 — 108 MHz	1-2.	Service Mode to Check Timer ON-OFF	2
Antenna terminals	75 ohm unbalanced	1-3.	Service Mode to Check FL Tube and Key Input	3
Intermediate frequency	10.7 MHz	1-4.	How to Forcefully Turn Power ON	3
AM tuner section		2. GENERAL		4
Tuning range	AEP, UK, Germany model: MW: 531—1,602kHz LW: 153—279kHz Italian model: MW: 522—1,611kHz LW: 144—288kHz	Parts Identification		4
Antenna	AM loop antenna, External antenna terminals	Clock Setting		4
Intermediate frequency	450 kHz	Tuning in Automatically		5
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		Storing Stations		6
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Design and specifications subject to change without notice.

FM STEREO/FM-AM TUNER
SONY®

MODEL IDENTIFICATION

—BACK PANEL—



4-948-729-01 (AE) : AEP, UK model
 4-948-729-11 (IT) : Italian (IT) model
 4-948-729-21 (AE4) : Germany (G) model

SECTION 1 SERVICING NOTES

1-1. SUPPLY OF POWER DURING SERVICES

Because the equipment is not provided with any power supply, it is operated with power supplied from the amplifier TA-H2700/H3700 used in the series. The equipment requires the following 4 types of voltages. Therefore, connect the equipment to TA-H2700/H3700 for services such as repairing with power supplied, because it will be too complicated to supply these voltages individually.

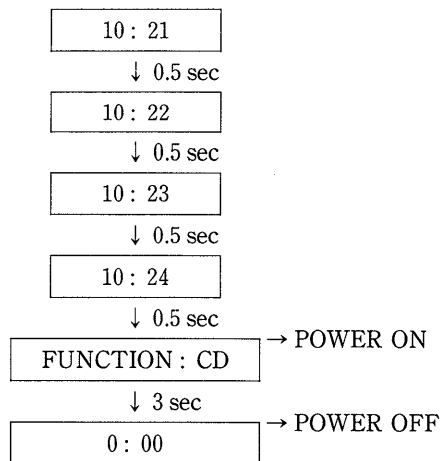
VOLTAGE	MAJOR CIRCUIT IN USE
AC 3.9V	FL tube filament voltage (VF)
DC -24V	Display controller IC701 grid voltage (VG)
DC 5.6V	Display controller IC701, Tuner PLL IC81 Vcc
DC 12V	Tuner RF, FM/AM DET IC21 Vcc

1-2. SERVICE MODE TO CHECK TIMER ON-OFF

It is possible to check whether the timer normally functions while being connected with an amplifier.

- (1) Connect the equipment to the amplifier TA-H2700/H3700 and set the SYSTEM POWER switch to STANDBY state.
- (2) Set the time of the tuner to any time.
- (3) Press 3 switches "BAND", "—" and "MEMORY/NEXT" at the same time (while pressing "BAND" and "—" beforehand, finally press "MEMORY/NEXT")

- (4) FL display tube



- (5) Completion

Note : After completion of the checking above, data preset in the memory IC702 is erased while resetting the memory to the next page state upon shipping from the works, so be sure to recover the same frequency as that before the repairing.

• Frequencies initially preset

	AEP, UK, Germany model			Italian model		
	FM	MW	LW	FM	MW	LW
1	87.5MHz	531kHz	153kHz	87.5MHz	522kHz	144kHz
2	88.0MHz	603kHz	162kHz	88.0MHz	603kHz	162kHz
3	98.0MHz	999kHz	216kHz	98.0MHz	999kHz	216kHz
4	100.0MHz	1404kHz	270kHz	100.0MHz	1404kHz	270kHz
5	108.0MHz	1602kHz	279kHz	108.0MHz	1611kHz	288kHz
6—20	*1	*2	*2	*1	*2	*2

*1 The same frequency values are set for the preset memory No. 6—No. 10, No. 11—No. 15 and No. 16—No. 20 as for No. 1—No. 5 respectively.

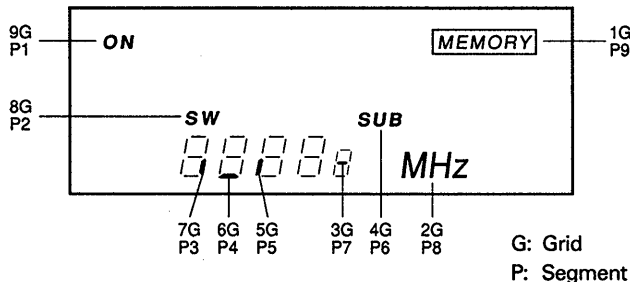
*2 The same frequency values are set for the preset memory No. 6—No. 10 as for No. 1—No. 5.

1-3. SERVICE MODE TO CHECK FL TUBE AND KEY INPUT

It is possible to check FL tube all ON grid, segment and key input.

- (1) Connect the equipment to the amplifier TA-H2700/H3700 and remove the AC cord of the amplifier out of the AC receptacle.
- (2) While pressing 3 switches “BAND”, “-” and “MEMORY/NEXT” at the same time, insert the AC cord of the amplifier into the receptacle.
- (3) Thus, all FL display tubes light up. By pressing “+” or “TIMER CONTROL” in this state, partial lighting or key input checking, respectively, is effected.

Partial lighting: Indicates the mode to check complete connection between the grid and segment of the FL tube. The condition is normal when the following indication is effected. By pressing “+” or “-” in the partial lighting mode, the status returns to key input checking or all ON in (3), respectively.



Key input checking: Shows the mode to check key input into 9 keys on the front panel. “0” is indicated at first, and every time a different key is pressed, indicated number is increased. After completion of pressing all 9 keys, “PASS” is indicated. (Once a key is pressed, pressing it again is rejected.)

- (4) After the completion of the checking, the equipment recovers normal operation by once removing the AC cord and inserting it again into the AC receptacle.

1-4. HOW TO FORCEFULLY TURN POWER ON

The equipment is not provided with any power switch. Therefore, power ON/OFF is controlled in the amplifier side. However, even without an amplifier, power is supplyable to the equipment according to the following methods provided any type of power is available, e.g. using a special jig or supplying the 4 types of voltages individually. (When power is supplied from the amplifier, power is turned ON only for the tuner.)

- (1) Supply power.
- (2) Press 3 switches “STEREO/MONO”, “-” and “MEMORY/NEXT” at the same time. (Press “STEREO/MONO” and “-” beforehand, and finally press “MEMORY/NEXT”.)

However, when the equipment is started up by the methods above, service modes TIMER ON/OFF and FL tube and key input checking are not operable.

SECTION 2 GENERAL

This section is extracted from instruction manual.

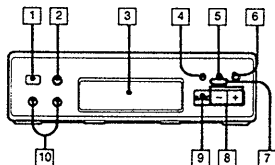
Parts Identification

A

Refer to the pages indicated in ● for use of the buttons.

Tuner Section A

- 1 Remote control sensor
- 2 REC TIMER button
- 3 Display window
- 4 MEMORY/NEXT button
- 5 MODE button
- 6 STEREO/MONO (stereo/monaural) button
- 7 TUNING/PRESET indicators
- 8 TUNING · PRESET/TIMER -/+ buttons
- 9 BAND selector
- 10 WAKE UP TIMER 1, 2 /CLOCK SET buttons

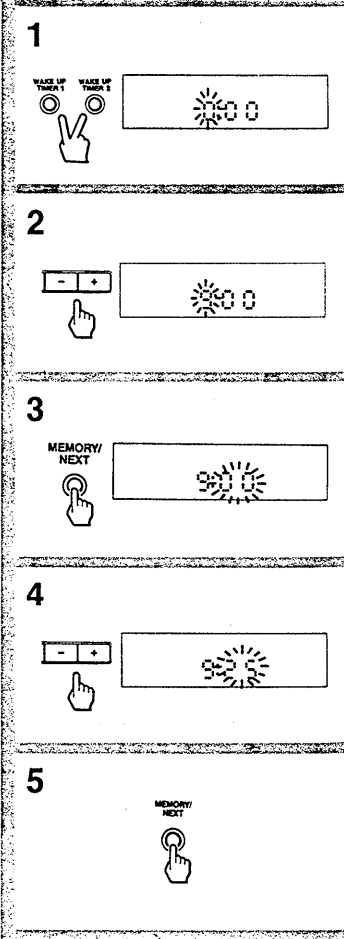
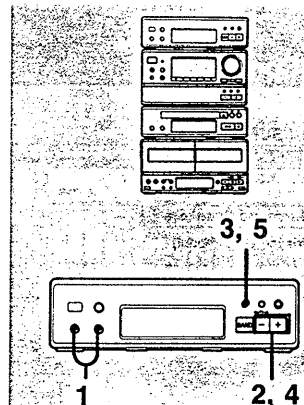


Clock Setting

Setting the Clock

Example: Set to 9:25 in the morning.

- 1 Press WAKE UP TIMER 1 and 2 at the same time.
- 2 Set the hour with the - or + button.
- 3 Press MEMORY/NEXT.
- 4 Set the minute with the - or + button.
- 5 Press MEMORY/NEXT.
The clock starts operating.



When a power interruption occurs
The clock, timer and Wake up Volume settings are all erased, and "0:00" will flash on the display.

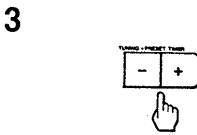
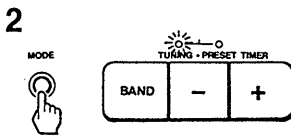
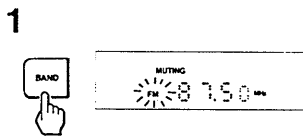
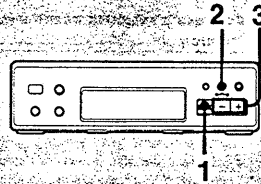
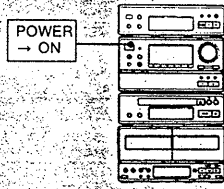
To change the frequency display to the time display
Press CLOCK DISP. on the remote commander. Press it again to change to the frequency display.

Radio

The automatic tuning allows you to receive stations whose signal is strong enough. When the signal is too weak, use the manual tuning.

Tuning in Automatically

- 1 Press BAND repeatedly until the desired band appears. As you press BAND, the band changes as follows:
FM → MW → LW
 - 2 Press MODE so that the TUNING Indicator lights up.
 - 3 Keep - or + depressed for more than 1 second. "AUTO" appears on the display and the unit tunes in a station automatically.
- Repeat step 3 until the desired station appears.



Radio

Tuning in Manually

- 1 Press BAND repeatedly until the desired band appears.
- 2 Press MODE so that the TUNING Indicator lights up.
- 3 Press - or + repeatedly until the desired station appears.

Indicator on the display

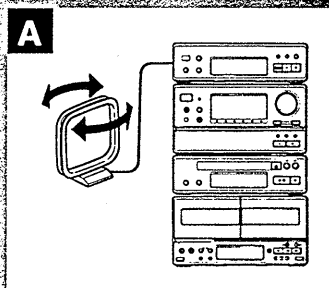
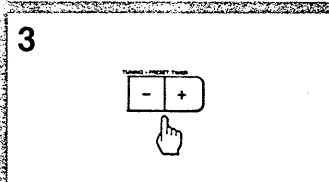
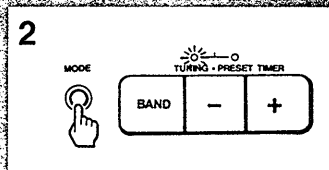
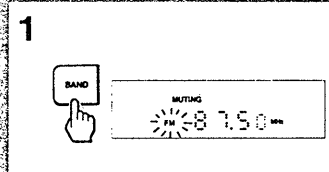
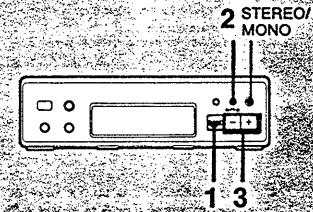
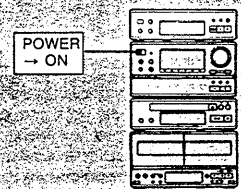
TUNED: Appears when a station with sufficient signal strength is tuned in.
STEREO: Appears when an FM stereo program with sufficient signal strength is received.

Antenna adjustment **A**

For MW and LW reception, find the best location for the supplied AM loop antenna.

When an FM program is noisy or hard to receive

Press STEREO/MONO so that "MONO" appears in the display. There will be no stereo effect, but the reception will be improved. Press the button again to restore the stereo effect.



Radio

Storing Stations

You can store up to 20 FM stations, 10 MW stations and 10 LW stations in a desired sequence, so that you can tune in the stored station directly by entering the preset station number. This operation is not possible with the remote commander.

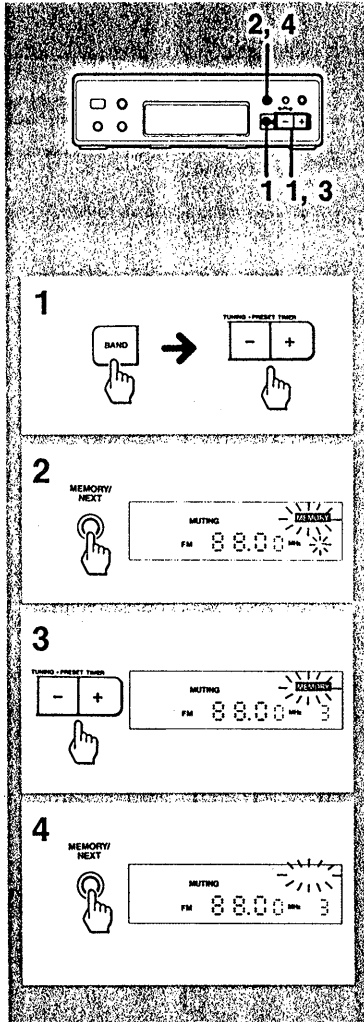
- 1 Tune in the desired station.
- 2 Press MEMORY/NEXT. "MEMORY" and the preset station numbers appear on the display.
- 3 While "MEMORY" is on (for several seconds), press - or + to select a desired preset number.
- 4 Press MEMORY/NEXT. "MEMORY" disappears, and the station is stored.

Repeat step 1 to 4 for each station to be stored.

If you cannot store a station successfully Press MEMORY/NEXT again so that "MEMORY" appears, and then proceed with steps 3 and 4 above. Be sure to operate while "MEMORY" is on (about 4 seconds).

When you have selected the wrong preset station number
Press MEMORY/NEXT again and then proceed with the steps 3 and 4.

To change the preset station
Store a desired station at the desired preset number by proceeding with the above steps. The station previously preset will be erased. Erasing only is not possible.



Radio

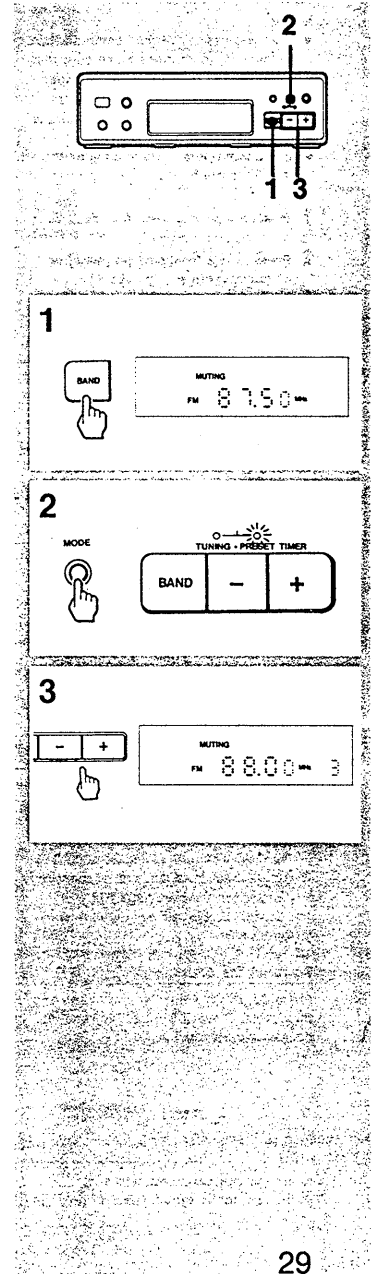
To Tune in a Preset Station

Notes:
• When you use the remote commander for the following operations make sure that the display of the remote commander shows "TUNER". If not, press TUNER on the remote commander.
• You cannot operate the buttons on the lid if the lid is open.

- 1 Press BAND to select a desired band.
- 2 Press MODE so that the PRESET indicator lights up.
- 3 Press - or + to select the desired preset station number.

To tune in a preset station directly

Possible only with the remote commander.
1 Press BAND to select a desired band.
2 Press the numeric buttons to select the desired preset station number.



SECTION 3 ELECTRICAL ADJUSTMENTS

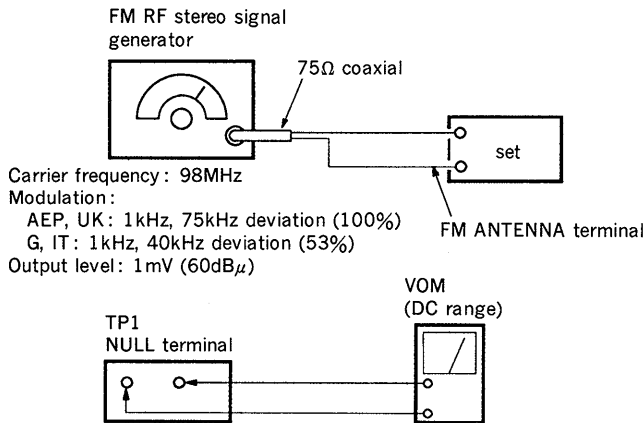
Precautions in Repairing

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

FM SECTION

FM Discriminator Adjustment (NULL Adjustment)

Setting :



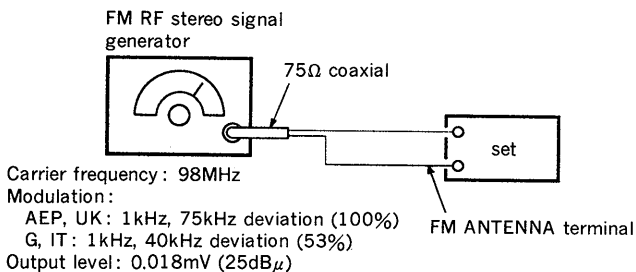
Procedure :

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

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

FM Tuning Level Adjustment

Setting :



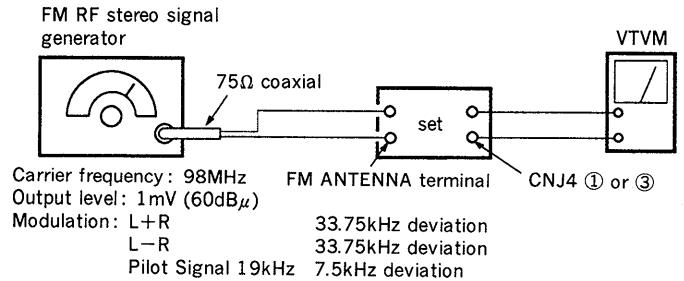
Procedure :

1. Tune the set to 98MHz.
2. Adjust T24 so that the TUNED indicator goes on.

- G : Germany model
- IT : Italian model

FM Stereo Separation Adjustment

Setting :



Procedure :

Tune the set to 98MHz.

FM stereo Signal generator Output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV21 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV21 for minimum reading.

L-CH Stereo separation : Ⓐ—Ⓑ

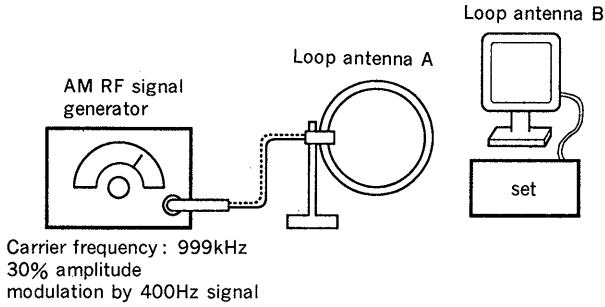
R-CH Stereo separation : Ⓒ—Ⓓ

The separations of both channels should be equal.

AM SECTION

AM Tuning Level Adjustment

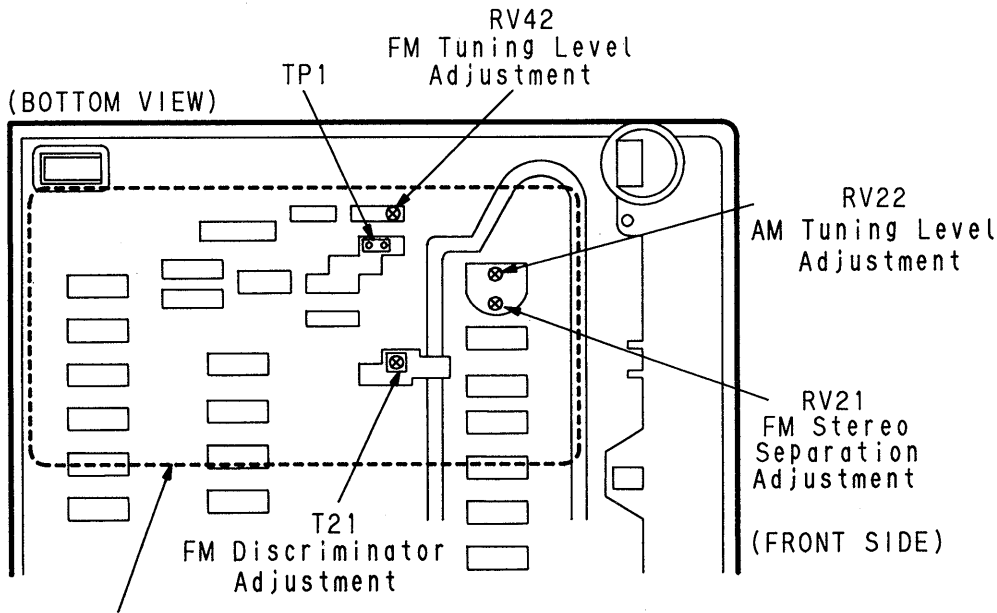
Setting :



Procedure :

1. Set loop antenna A so that the loop antenna B input level becomes $58\text{dB}\mu/\text{m}$ ($0.8\text{mV}/\text{m}$)
2. Tune the set to 999kHz.
3. Adjust the RV22 so that the TUNED indicator goes on.

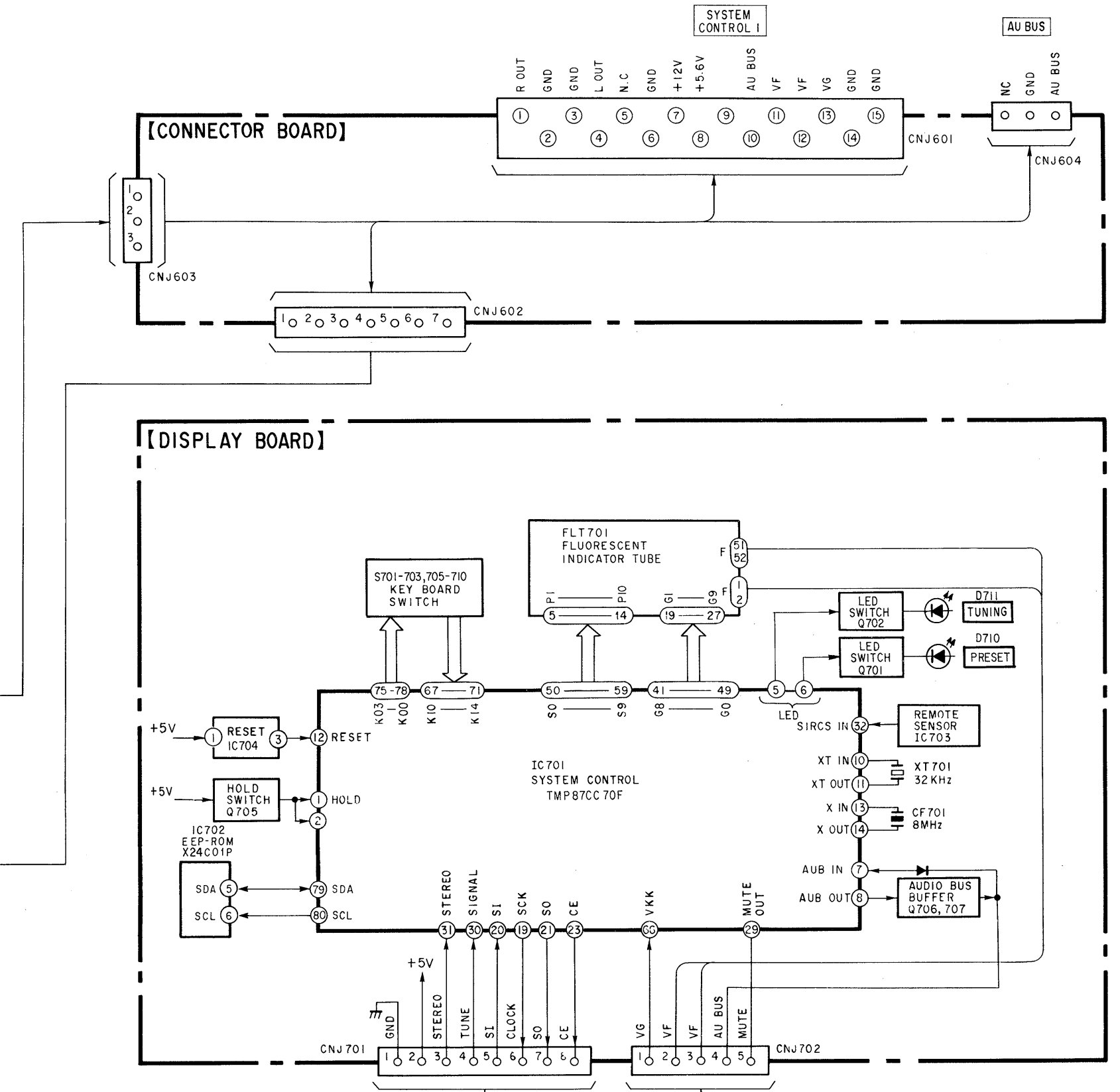
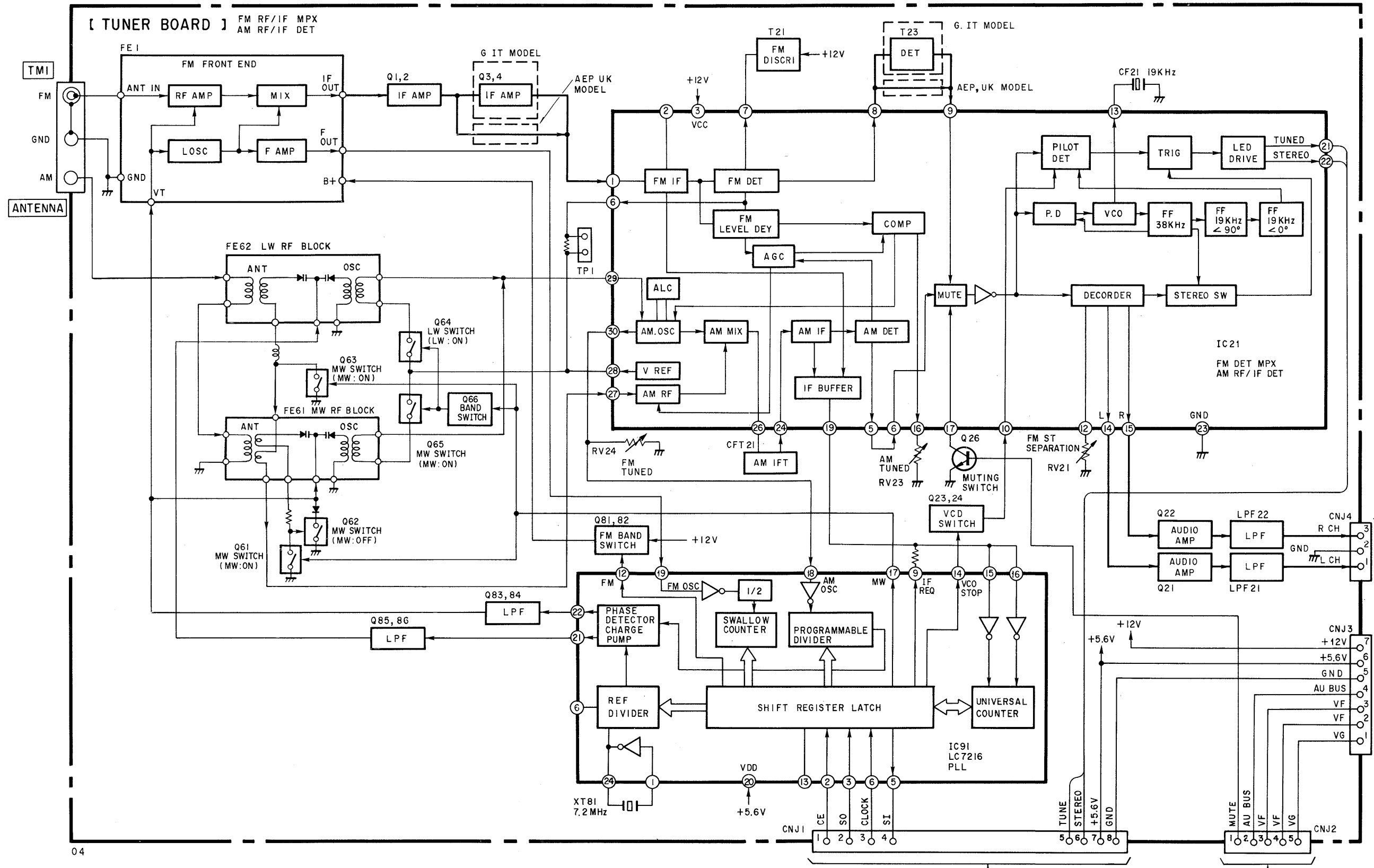
Adjustment Location :



TUNER BOARD

SECTION 4
DIAGRAMS

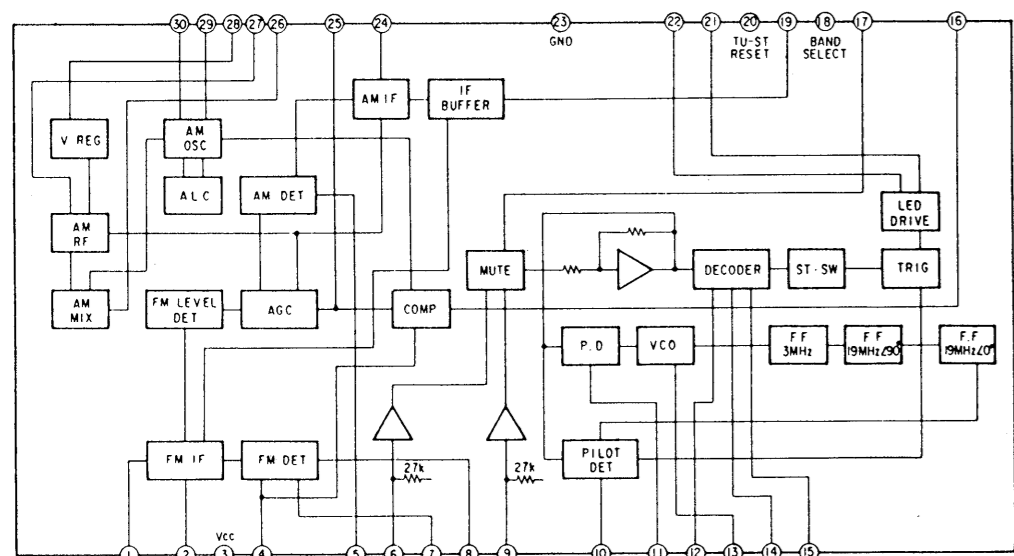
4-1. BLOCK DIAGRAM



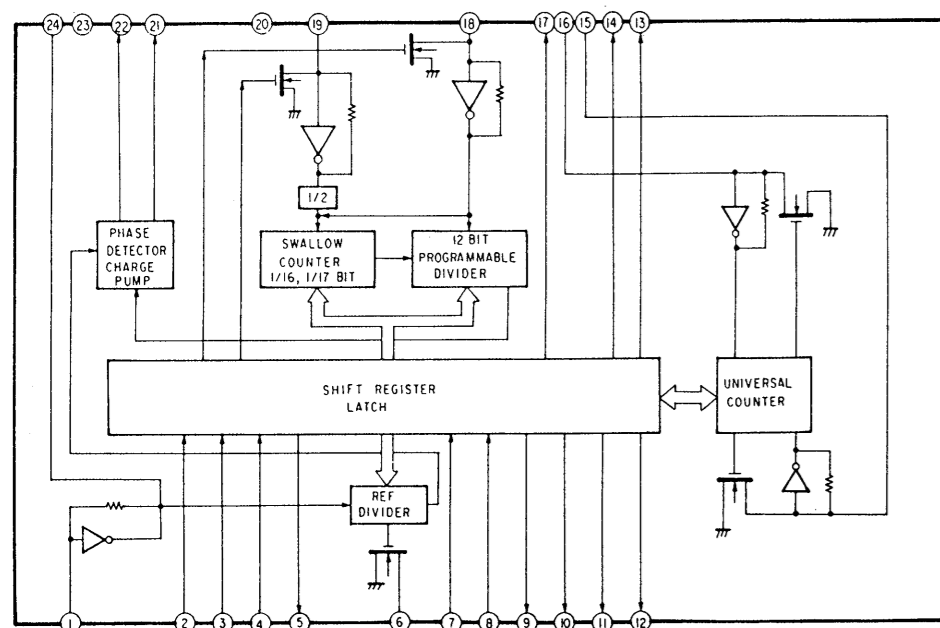
4-2. SCHEMATIC DIAGRAM—TUNER SECTION—

• IC Block Diagrams

IC21 LA1851N



IC81 LC7218

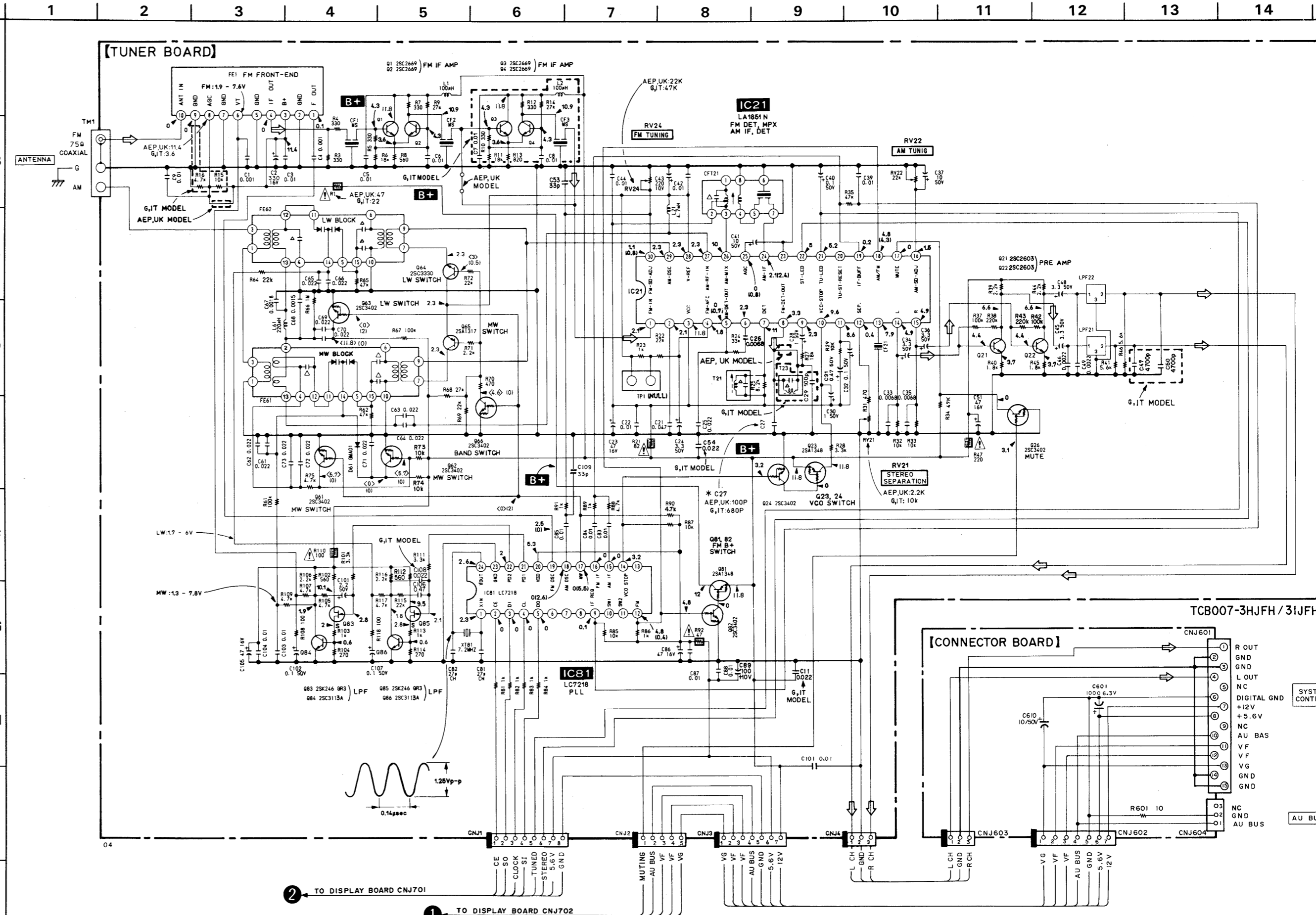


Note:

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

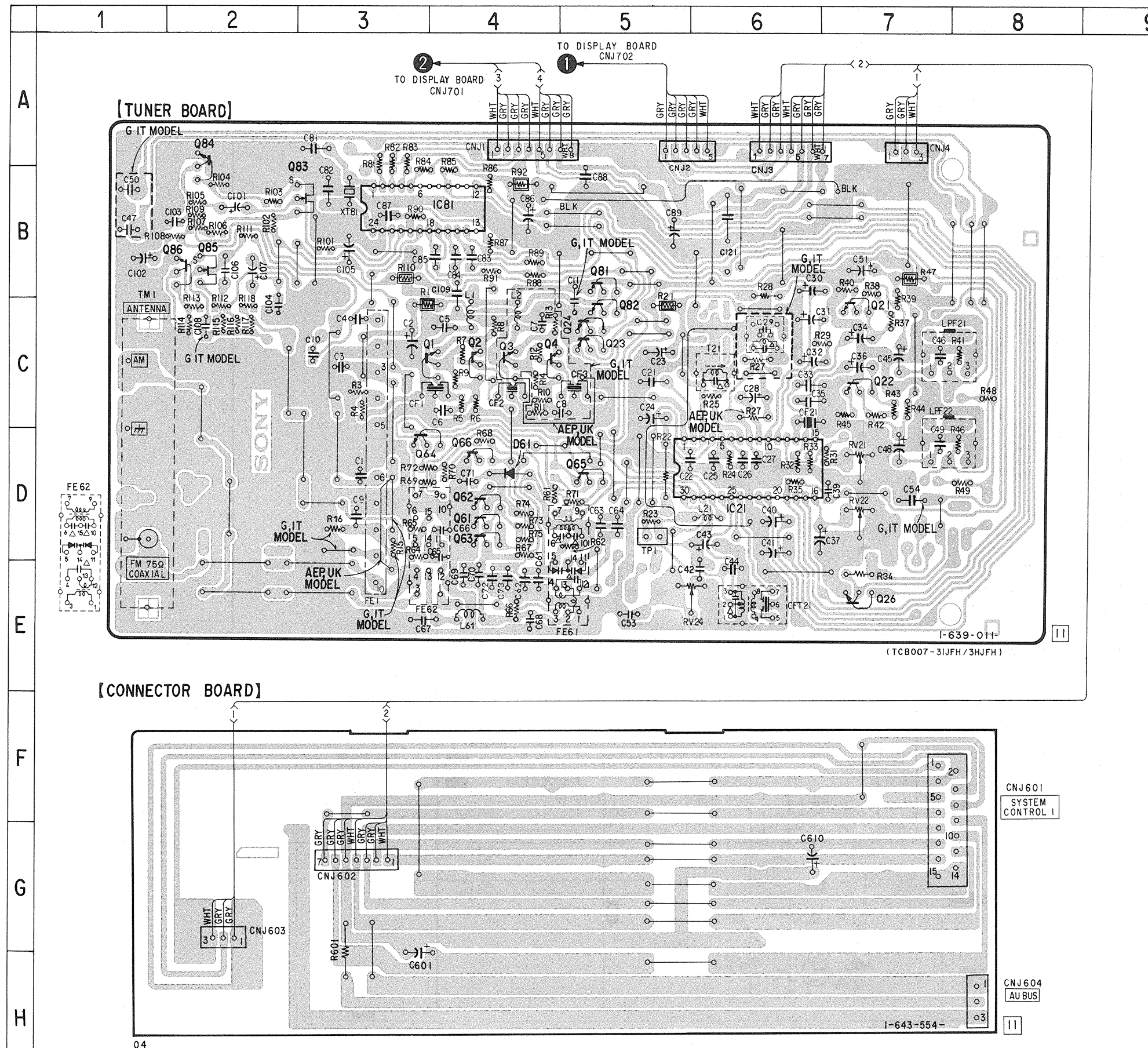
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- \square : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark: FM
(): MW
< >: LW
- 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.
- Signal path.
 \Rightarrow : FM
- G: Germany model
- IT: Italian model



4-3. PRINTED WIRING BOARDS—TUNER SECTION— Refer to page 22 for Semiconductor Lead Layouts.

● Semiconductor Location

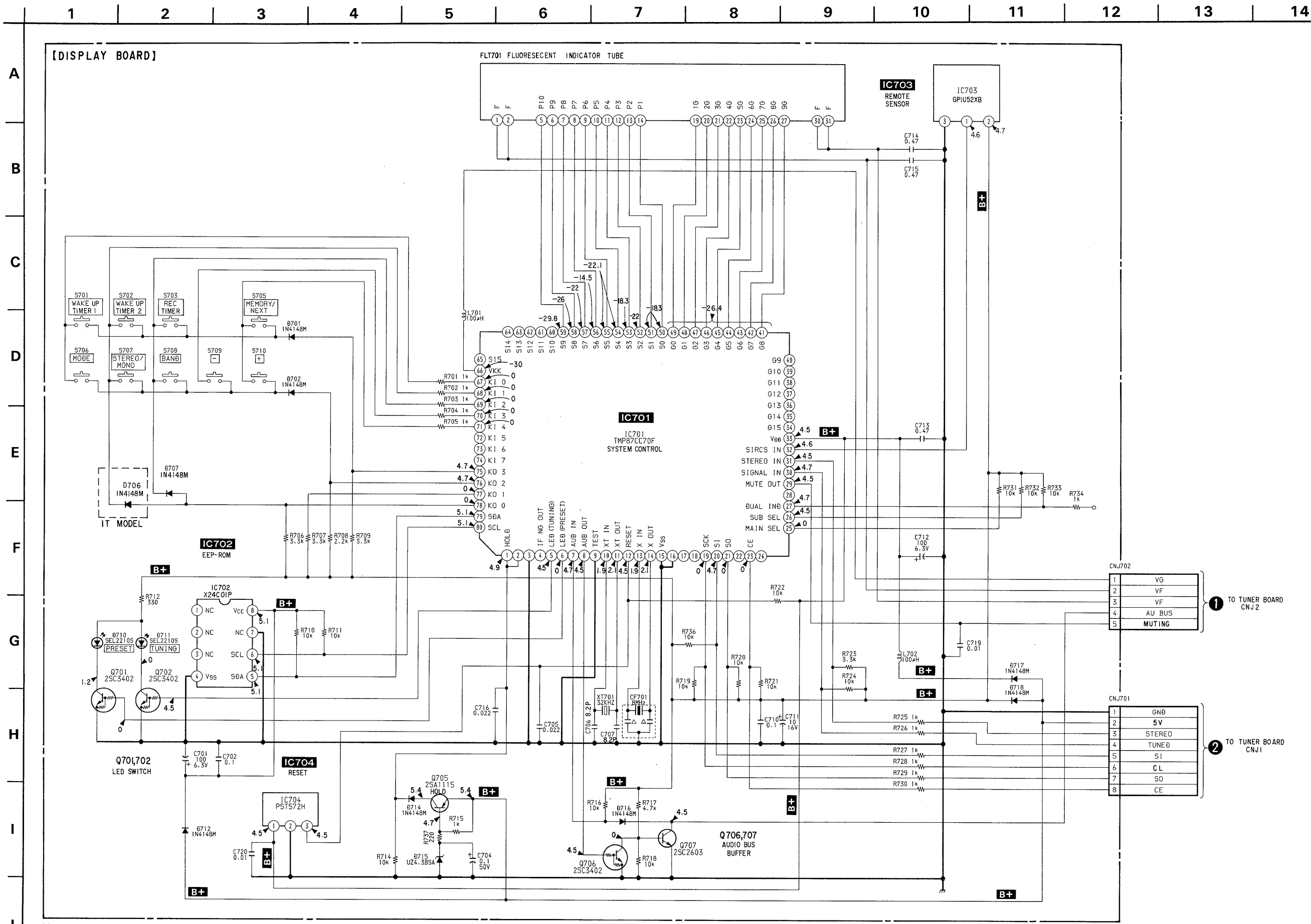


Ref. No.	Location
D61	D-4
IC21	D-6
IC81	B-4
Q1	C-4
Q2	C-4
Q3	C-4
Q4	C-4
Q21	C-7
Q22	C-7
Q23	C-5
Q24	C-5
Q26	E-7
Q61	D-4
Q62	D-4
Q63	D-4
Q64	D-3
Q65	D-5
Q66	D-4
Q81	B-5
Q82	C-5
Q83	B-3
Q84	A-2
Q85	B-2
Q86	B-2

Note:

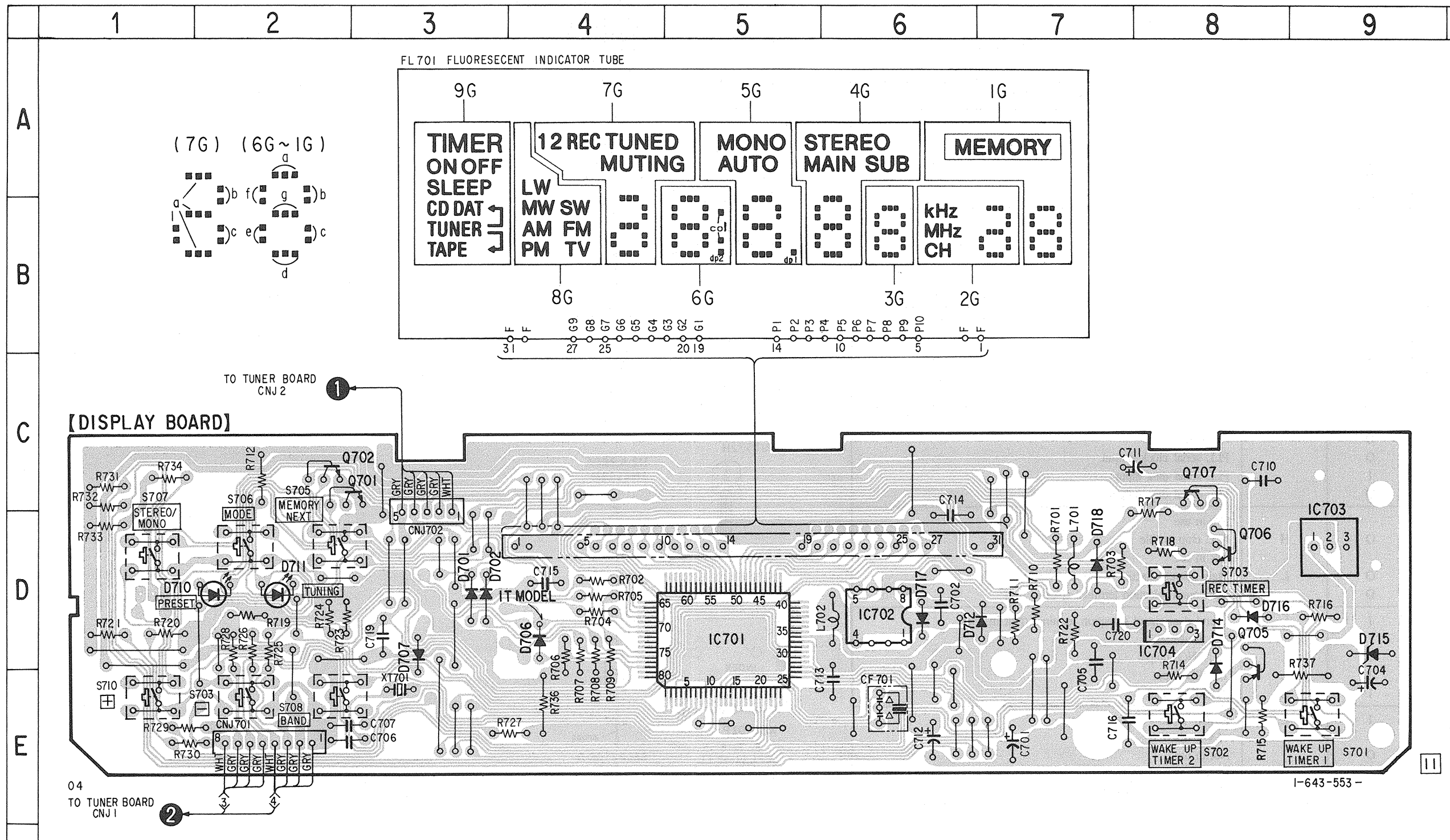
- —○— : parts extracted from the component side.
- G : Germany model
- IT : Italian model

4-4. SCHEMATIC DIAGRAM —DISPLAY SECTION—



4-5. PRINTED WIRING BOARD—DISPLAY SECTION— • Refer to page 22 for Semiconductor Lead Layouts.

• Semiconductor Location



Ref. No.	Location
D701	D-3
D702	D-3
D706	D-4
D707	D-3
D710	D-2
D711	D-2
D712	D-6
D714	D-8
D715	D-9
D716	D-8
D717	D-6
D718	D-7
IC701	D-5
IC702	D-6
IC703	D-9
IC704	D-8
Q701	C-2
Q702	C-2
Q705	D-8
Q706	D-8
Q707	C-8

Note on Printed Wiring Board:

- — : parts extracted from the component side.
- IT : Italian model

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$ 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions. no mark : FM
- Voltages are taken with a VOM (Input Impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- IT : Italian model

4-6. PIN DESCRIPTION

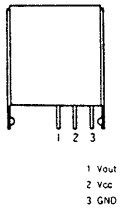
• IC701 System Controller (TMP87CC70F)

The terminals work to control tuner section (IC21, 81), FL tube display and reading and writing of IC702 (preset data), etc. according to key input and signal from the remote controller.

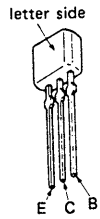
PIN No.	PIN NAME	I/O	ACTIVE	PIN FUNCTION
1	HOLD	I	↓	HOLD detecting interrupt terminal
2	HOLD RESET	I	↑	HOLD resetting interrupt terminal
3		I		Not in use
4	IF NGOUT	O	H	IF count NG output
5	LED1	O	H	TUNING LED ON
6	LED2	O	H	PRESET LED ON
7	AUB IN	I	L	AUDIO BUS input
8	AUB OUT	O	L	AUDIO BUS output
9	TEST	I	H	Test terminal
10	XT IN	I		Low frequency oscillator connection terminal (32KHz)
11	XT OUT	O		Low frequency oscillator connection terminal (32KHz)
12	RESET	I	L	Reset signal input
13	X IN	I		High frequency oscillator connection terminal (8MHz)
14	X OUT	O		High frequency oscillator connection terminal (8MHz)
15	VSS			GND
16		I		Not in use
17, 18		O		Not in use
19	SCK	O		PLL serial clock output
20	SI	I		PLL serial data input
21	SO	O		PLL serial data output
22				Not in use
23	CE	O	H	PLL chip enable
24				Not in use
25	MAIN SEL	O	L	Main sound selection terminal (Not in use)
26	SUB SEL	O	L	Sub sound selection terminal (Not in use)
27	DUAL IND	I	L	Sound dual signal detection terminal (Not in use)
28				Not in use
29	MUTE OUT	O	L	MUTING output
30	SIGNAL IN	I	L	TUNED input
31	STEREO IN	I	L	STEREO input
32	SIRCS IN	I	L	SIRCS input
33	VDD			+5V
34 - 40		O		Not in use
41 - 49	G0 - G8	O	H	FL tube digit output
50 - 59	S0 - S9	O	H	FL tube segment output
60 - 65		O	H	Not in use
66	VKK			FL tube driving power supply
67 - 71	KI0 - KI4	I	H	Key input
72		I		Not in use
73, 74				Not in use
75 - 78	KO0 - KO3	O	H	Key output
79	SDA	I/O		Data input/output for EEPROM
80	SCL	O		Clock output for EEPROM

4-7. SEMICONDUCTOR LEAD LAYOUTS

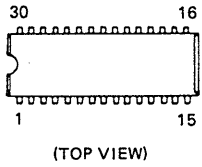
GP1U52XB



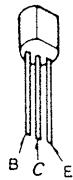
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2SC2785-HFE



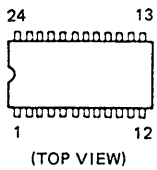
LA1851N



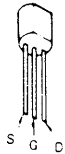
2SC3330-T



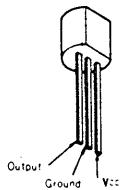
LC7218



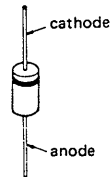
2SK246-GR3



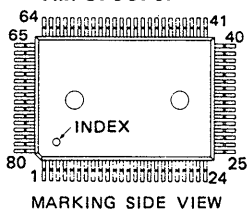
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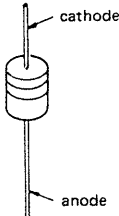
UZ-4.3BSA
1N4148M



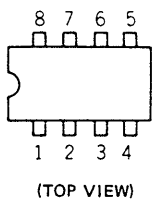
TMP87CC70F



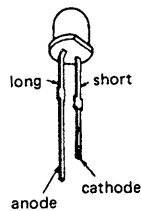
1SS120



X24C01P



SEL2210S-D



DTA114ES
DTC114ES
2S2603-EF
2SC2669-0Y
2SC3113-AB



SECTION 5 EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- -XX, -X mean standardized parts, so they may have some differences from the original one.

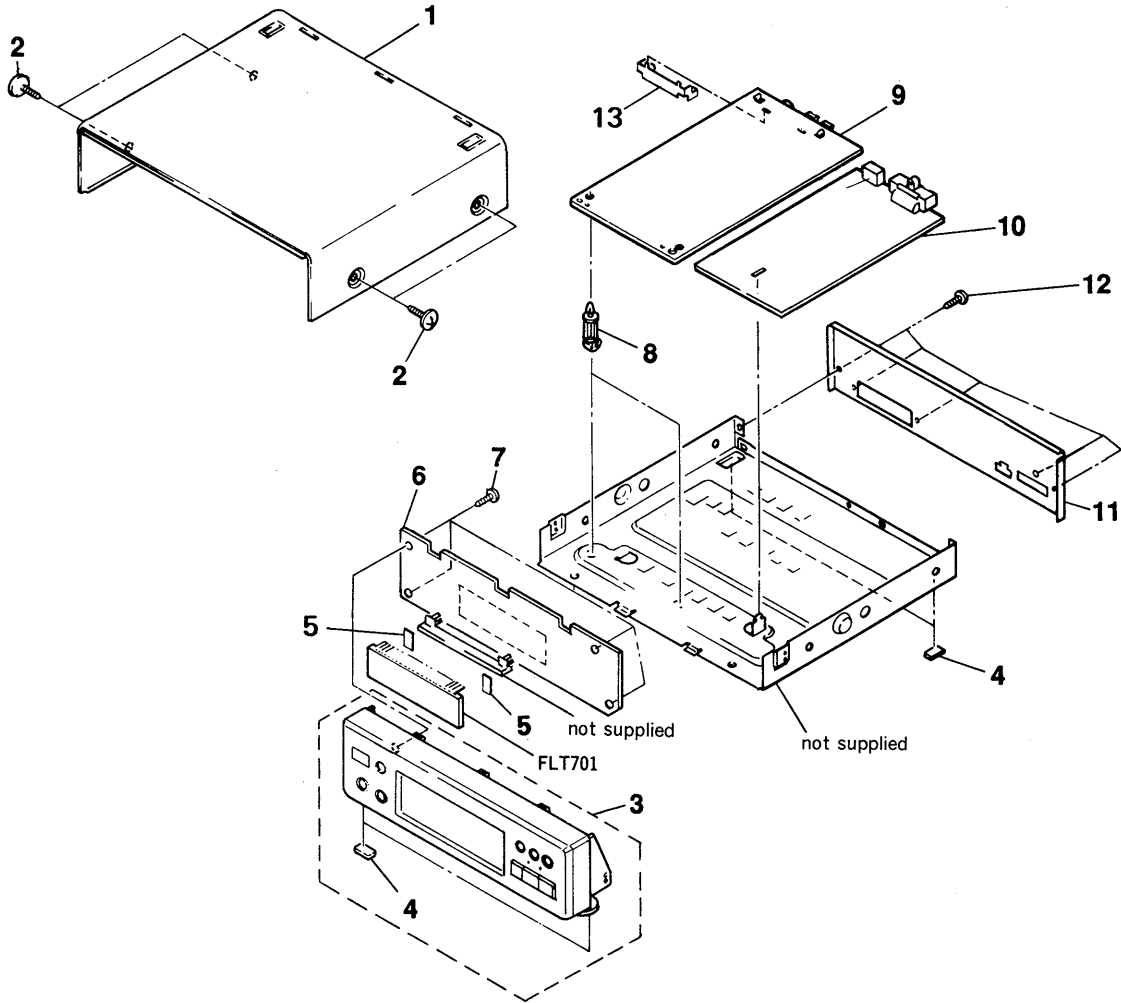
- Color Indication of Appearance Parts
Example:

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

↑ ↑
Parts Color Cabinet's Color

- Hardware (# mark) list is given in the last of this parts list.

- G : Germany model
- IT : Italian model



Ref.No.	Part No.	Description	Remark
* 1	4-944-423-41	CASE (K206522)	
	2	3-363-099-01 SCREW (CASE +3X8 TP2)	
	3	X-4942-571-1 PANEL ASSY, FRONT	
	4	4-930-336-21 FOOT (FELT)	
* 5	4-932-810-11	CUSHION (FL)	
* 6	A-4345-967-A	DISPLAY BOARD, COMPLETE (AEP, UK, G)	
* 6	A-4345-970-A	DISPLAY BOARD, COMPLETE (IT)	
	7	4-928-635-01 SCREW, +BV (2. 6X8) TAPPING	
* 8	4-914-008-01	HOLDER, PCB	

Ref.No.	Part No.	Description	Remark
* 9	A-4303-367-A	TUNER BOARD, COMPLETE (TCB007-3HJFH) (AEP, UK)	
* 9	A-4303-368-A	TUNER BOARD, COMPLETE (TCB007-3IJFH) (G, IT)	
* 10	1-643-554-11	CONNECTOR BOARD	
* 11	4-948-729-01	PANEL (EXP), BACK (AEP, UK)	
* 11	4-948-729-11	PANEL (EXP), BACK (IT)	
* 11	4-948-729-21	PANEL (EXP), BACK (G)	
	12	7-685-647-79 SCREW +BVTP 3X10 TYPE2 N-S	
* 13	4-924-988-11	PLATE (ST), GROUND	
	FLT701	1-519-709-11 INDICATOR TUBE, FLUORESCENT	

TUNER

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -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 Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

- G : Germany model
- IT : Italian model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-4303-367-A	TUNER BOARD, COMPLETE (TCB007-3HJFH)	(AEP, UK)	C42	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
	A-4303-368-A	TUNER BOARD, COMPLETE (TCB007-3I JFH)	(G, IT)	C43	1-126-176-11	ELECT 220uF 20% 10V	
	*****			C44	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
*	4-924-988-11	PLATE (ST), GROUND		C45	1-123-382-00	ELECT 3.3uF 20% 100V	
	< CAPACITOR >			C46	1-161-375-00	CERAMIC CHIP 0.0022uF 20% 25V	
C1	1-162-294-11	CERAMIC CHIP 0.001uF 20% 25V		C47	1-163-170-00	CERAMIC CHIP 0.0047uF 20% 25V (G, IT)	
C2	1-124-119-00	ELECT 330uF 20% 16V		C48	1-123-382-00	ELECT 3.3uF 20% 100V	
C3	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C49	1-161-375-00	CERAMIC CHIP 0.0022uF 20% 25V	
C4	1-162-294-31	CERAMIC CHIP 0.001uF 20% 25V		C50	1-163-170-00	CERAMIC CHIP 0.0047uF 20% 25V (G, IT)	
C5	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C51	1-124-477-11	ELECT 47uF 20% 25V	
C6	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C53	1-163-105-00	CERAMIC CHIP 33pF 5% 50V	
C7	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V (G, IT)		C54	1-101-005-00	CERAMIC 0.022uF 50V (G, IT)	
C8	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V (G, IT)		C61	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C9	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C62	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C11	1-101-005-00	CERAMIC 0.022uF 50V (G, IT)		C63	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C21	1-101-006-00	CERAMIC 0.047uF 50V		C64	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C22	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C65	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C23	1-124-477-11	ELECT 47uF 20% 25V		C66	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C24	1-123-382-00	ELECT 3.3uF 20% 100V		C67	1-102-120-00	CERAMIC 0.0018uF 10% 50V	
C25	1-163-063-00	CERAMIC MELF 0.022uF 25V		C68	1-163-111-11	CERAMIC CHIP 0.0015uF 20% 25V	
C26	1-163-019-00	CERAMIC CHIP 0.0068uF 20% 12V		C69	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C27	1-162-516-11	CERAMIC CHIP 100pF 10% 50V (AEP, UK)		C70	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C27	1-163-007-11	CERAMIC CHIP 680pF 20% 50V (G, IT)		C71	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C28	1-124-903-11	ELECT 1.0uF 20% 50V		C72	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C29	1-162-516-11	CERAMIC CHIP 100pF 10% 50V (G, IT)		C73	1-163-063-00	CERAMIC MELF 0.022uF 25V	
C30	1-124-903-11	ELECT 1.0uF 20% 50V		C81	1-102-961-00	CERAMIC 27pF 5% 50V	
C31	1-124-902-00	ELECT 0.47uF 20% 50V		C82	1-102-961-00	CERAMIC 27pF 5% 50V	
C32	1-124-463-00	ELECT 0.1uF 20% 50V		C83	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C33	1-130-481-00	MYLAR 0.0068uF 5% 50V		C84	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C34	1-123-382-00	ELECT 3.3uF 20% 100V		C85	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C35	1-130-481-00	MYLAR 0.0068uF 5% 50V		C86	1-124-477-11	ELECT 47uF 20% 25V	
C36	1-123-382-00	ELECT 3.3uF 20% 100V		C87	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C37	1-124-907-11	ELECT 10uF 20% 50V		C88	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V	
C39	1-163-059-00	CERAMIC MELF 0.01uF 20% 16V		C89	1-124-443-00	ELECT 100uF 20% 10V	
C40	1-124-463-00	ELECT 0.1uF 20% 50V		C101	1-124-925-11	ELECT 2.2uF 20% 100V	
C41	1-124-907-11	ELECT 10uF 20% 50V		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	

Ref. No.	Part No.	Description	Remark
C107	1-124-463-00	ELECT 0.1uF 20% 50V	
C108	1-163-063-00	CERAMIC MELF 0.022uF 25V (G, IT)	
C109	1-162-211-31	CERAMIC 33pF 5% 50V	
C121	1-161-379-00	CERAMIC 0.01uF 30% 16V (G, IT)	
< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC	
CF2	1-567-389-11	FILTER, CERAMIC	
CF3	1-567-389-11	FILTER, CERAMIC (G, IT)	
< OSCILLATOR >			
CF21	1-577-075-11	OSCILLATOR, CERAMIC (19KHz)	
< IF TRANSFORMER >			
CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)	
< CONECTOR >			
* CNJ1	1-564-342-11	SOCKET, CONNECTOR 8P	
* CNJ2	1-564-339-00	PIN, CONNECTOR 5P	
* CNJ3	1-564-341-11	PIN, CONNECTOR 7P	
* CNJ4	1-564-337-00	PIN, CONNECTOR 3P	
< DIODE >			
D61	8-719-912-20	DIODE 1SS120	
< FM FRONT END >			
FE1	1-463-857-11	FRONT END, FM (G, IT)	
FE1	1-463-862-21	FRONT END, FM (AEP, UK)	
< ENCAPSULATED COMPONENT >			
FE61	1-236-462-11	ENCAPSULATED COMPONENT (MW RF)	
FE62	1-236-463-11	ENCAPSULATED COMPONENT (LW RF)	
< IC >			
IC21	8-759-821-45	IC LA1851N	
IC81	8-759-820-91	IC LC7218	
< INDUCTOR >			
L1	1-410-645-31	MICRO INDUCTOR 100uH	
L2	1-410-645-31	MICRO INDUCTOR 100uH (G, IT)	
L21	1-407-500-00	MICRO INDUCTOR 4.7mH	
L61	1-410-525-11	MICRO INDUCTOR 220uH	
< LOW PASS FILTER >			
LPF21	1-235-164-00	FILTER, LOW PASS	
LPF22	1-235-164-00	FILTER, LOW PASS	

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q1	8-729-230-99	TRANSISTOR 2SC2669-0Y	
Q2	8-729-230-99	TRANSISTOR 2SC2669-0Y	
Q3	8-729-230-99	TRANSISTOR 2SC2669-0Y (G, IT)	
Q4	8-729-230-99	TRANSISTOR 2SC2669-0Y (G, 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 DTC114ES	
Q26	8-729-900-80	TRANSISTOR DTC114ES	
Q61	8-729-900-80	TRANSISTOR DTC114ES	
Q62	8-729-900-80	TRANSISTOR DTC114ES	
Q63	8-729-900-80	TRANSISTOR DTC114ES	
Q64	8-729-820-24	TRANSISTOR 2SC3330-T	
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	8-729-230-93	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 (SMALL) 22 5% 1/4W F (G, IT)	
△R1	1-249-401-11	CARBON (SMALL) 47 5% 1/4W F (AEP, UK)	
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 (G, IT)	
R11	1-249-350-11	CARBON MELF 18K 5% 1/8W (G, IT)	
R12	1-249-329-11	CARBON MELF 330 5% 1/8W (G, IT)	
R13	1-249-334-11	CARBON MELF 820 5% 1/8W (G, IT)	
R14	1-249-352-11	CARBON MELF 27K 5% 1/8W (G, IT)	
R15	1-249-374-11	CARBON MELF 10K 5% 1/8W (G, IT)	
R16	1-249-343-11	CARBON MELF 4.7K 5% 1/8W (G, IT)	
△R21	1-249-404-00	CARBON (SMALL) 82 5% 1/4W F	
R22	1-249-433-11	CARBON (SMALL) 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 (SMALL) 18K 5% 1/4W	
R28	1-249-423-11	CARBON (SMALL) 3.3K 5% 1/4W	
R29	1-249-347-11	CARBON MELF 10K 5% 1/8W	

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

TUNER

DISPLAY

CONNECTOR

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R31	1-249-331-11	CARBON MELF 470 5% 1/8W		R106	1-249-339-11	CARBON MELF 2.2K 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	1-249-437-11	CARBON (SMALL) 47K 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 (SMALL) 100 5% 1/4W F	
R37	1-249-359-11	CARBON MELF 100K 5% 1/8W		R111	1-249-341-11	CARBON MELF 3.3K 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	
R42	1-249-359-11	CARBON MELF 100K 5% 1/8W		R116	1-249-339-11	CARBON MELF 2.2K 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				< VARIABLE RESISTOR >	
R46	1-249-344-11	CARBON MELF 5.6K 5% 1/8W		RV21	1-238-598-11	RES, ADJ, CARBON 2.2K (AEP, UK)	
△R47	1-249-409-11	CARBON (SMALL) 220 5% 1/4W F		RV21	1-238-600-11	RES, ADJ, CARBON 10K (G, IT)	
R48	1-249-359-11	CARBON MELF 100K 5% 1/8W		RV22	1-238-601-11	RES, ADJ, CARBON 22K	
R49	1-249-359-11	CARBON MELF 100K 5% 1/8W		RV24	1-238-601-11	RES, ADJ, CARBON 22K (AEP, UK)	
R61	1-249-359-11	CARBON MELF 100K 5% 1/8W		RV24	1-238-602-11	RES, ADJ, CARBON 47K (G, IT)	
R62	1-249-355-11	CARBON MELF 47K 5% 1/8W				< TRANSFORMER >	
R64	1-249-351-11	CARBON MELF 22K 5% 1/8W		T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR	
R65	1-249-355-11	CARBON MELF 47K 5% 1/8W		T23	1-236-465-11	ENCAPSULATED COMPONENT (G, IT)	
R66	1-215-493-00	CARBON MELF 1M 5% 1/5W				< TERMINAL >	
R67	1-249-359-11	CARBON MELF 100K 5% 1/8W		* TM1	1-537-138-31	TERMINAL BOARD (ANTENNA)	
R68	1-249-352-11	CARBON MELF 27K 5% 1/8W				< CONNECTOR PIN >	
R69	1-249-351-11	CARBON MELF 22K 5% 1/8W		* TP1	1-560-060-00	PIN, CONNECTOR 2P	
R70	1-249-331-11	CARBON MELF 470 5% 1/8W				< CRYSTAL VIBRATOR >	
R71	1-249-339-11	CARBON MELF 2.2K 5% 1/8W		XT81	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)	
R72	1-249-351-11	CARBON MELF 22K 5% 1/8W		*****			
R73	1-249-347-11	CARBON MELF 10K 5% 1/8W		* A-4345-967-A	DISPLAY BOARD, COMPLETE (AEP, UK, G)		
R74	1-249-347-11	CARBON MELF 10K 5% 1/8W		* A-4345-970-A	DISPLAY BOARD, COMPLETE (IT)		
R75	1-249-343-11	CARBON MELF 4.7K 5% 1/8W		*****			
R81	1-249-335-11	CARBON MELF 1K 5% 1/8W		* 1-643-554-11	CONNECTOR BOARD		
R82	1-249-335-11	CARBON MELF 1K 5% 1/8W		*****			
R83	1-249-335-11	CARBON MELF 1K 5% 1/8W		* 4-932-810-11	CUSHION (FL)		
R84	1-249-335-11	CARBON MELF 1K 5% 1/8W		* 4-944-441-01	HOLDER (FL TUBE)		
R85	1-249-347-11	CARBON MELF 10K 5% 1/8W				< CAPACITOR >	
R86	1-249-335-11	CARBON MELF 1K 5% 1/8W		C601	1-124-471-00	ELECT 1000uF 20% 6.3V	
R87	1-249-347-11	CARBON MELF 10K 5% 1/8W		C610	1-124-907-11	ELECT 10uF 20% 50V	
R88	1-249-343-11	CARBON MELF 4.7K 5% 1/8W		C701	1-126-177-11	ELECT 100uF 20% 10V	
R89	1-249-335-11	CARBON MELF 1K 5% 1/8W		C702	1-164-159-11	CERAMIC 0.1uF 50V	
R90	1-249-343-11	CARBON MELF 4.7K 5% 1/8W		C704	1-124-463-00	ELECT 0.1uF 20% 50V	
R91	1-249-335-11	CARBON MELF 1K 5% 1/8W					
△R92	1-249-401-11	CARBON (SMALL) 47 5% 1/4W F					
R101	1-249-341-11	CARBON MELF 3.3K 5% 1/8W					
R102	1-249-332-11	CARBON MELF 560 5% 1/8W					
R103	1-249-335-11	CARBON MELF 1K 5% 1/8W					
R104	1-249-328-11	CARBON MELF 270 5% 1/8W					
R105	1-249-343-11	CARBON MELF 4.7K 5% 1/8W					

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

DISPLAY

CONNECTOR

Ref. No.	Part No.	Description	Remark
C705	1-161-494-00	CERAMIC	0.022uF 25V
C706	1-162-198-31	CERAMIC	8.2PF 10% 50V
C707	1-162-198-31	CERAMIC	8.2PF 10% 50V
C710	1-164-159-11	CERAMIC	0.1uF 50V
C711	1-126-157-11	ELECT	10uF 20% 16V
C712	1-126-177-11	ELECT	100uF 20% 10V
C713	1-136-173-00	FILM	0.47uF 5% 50V
C714	1-136-173-00	FILM	0.47uF 5% 50V
C715	1-136-173-00	FILM	0.47uF 5% 50V
C716	1-161-494-00	CERAMIC	0.022uF 25V
C719	1-162-306-11	CERAMIC	0.01uF 20% 16V
C720	1-162-306-11	CERAMIC	0.01uF 20% 16V
< VIBRATOR >			
CF701	1-579-125-11	VIBRATOR, CERAMIC (8MHz)	
< CONNECTOR >			
* CNJ601	1-566-859-11	SOCKET, CONNECTOR 15P (SYSTEM CONTROL1)	
* CNJ602	1-564-341-11	PIN, CONNECTOR 7P	
* CNJ603	1-564-337-00	PIN, CONNECTOR 3P	
* CNJ604	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)	
* CNJ701	1-564-342-11	PIN, CONNECTOR 8P	
* CNJ702	1-564-339-00	PIN, CONNECTOR 5P	
< DIODE >			
D701	8-719-987-63	DIODE 1N4148M	
D702	8-719-987-63	DIODE 1N4148M	
D706	8-719-987-63	DIODE 1N4148M (IT)	
D707	8-719-987-63	DIODE 1N4148M	
D710	8-719-301-39	LED SEL2210S-D (PRESET)	
D711	8-719-301-39	LED SEL2210S-D (TUNING)	
D712	8-719-987-63	DIODE 1N4148M	
D714	8-719-987-63	DIODE 1N4148M	
D715	8-719-010-28	DIODE UZ-4.3BSA	
D716	8-719-987-63	DIODE 1N4148M	
D717	8-719-987-63	DIODE 1N4148M	
D718	8-719-987-63	DIODE 1N4148M	
< FLUORESCENT INDICATOR >			
FLT701	1-519-709-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC701	8-759-059-85	IC TMP87CC70F	
IC702	8-759-500-31	IC X24C01P	
IC703	8-749-920-83	IC GP1U52XB	
IC704	8-759-515-58	IC PST572H	

Ref. No.	Part No.	Description	Remark
< COIL >			
L701	1-410-521-11	INDUCTOR	100uH
L702	1-410-521-11	INDUCTOR	100uH
< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR	DTC114ES
Q702	8-729-900-80	TRANSISTOR	DTC114ES
Q705	8-729-119-76	TRANSISTOR	2SA1175-HFE
Q706	8-729-900-80	TRANSISTOR	DTC114ES
Q707	8-729-620-05	TRANSISTOR	2SC2603-EF
< RESISTOR >			
R601	1-249-393-11	CARBON	10 5% 1/4W
R701	1-249-417-11	CARBON	1K 5% 1/4W
R702	1-249-417-11	CARBON	1K 5% 1/4W
R703	1-249-417-11	CARBON	1K 5% 1/4W
R704	1-249-417-11	CARBON	1K 5% 1/4W
R705	1-249-417-11	CARBON	1K 5% 1/4W
R706	1-249-423-11	CARBON	3.3K 5% 1/4W
R707	1-249-423-11	CARBON	3.3K 5% 1/4W
R708	1-249-421-11	CARBON	2.2K 5% 1/4W
R709	1-249-423-11	CARBON	3.3K 5% 1/4W
R710	1-249-429-11	CARBON	10K 5% 1/4W
R711	1-249-429-11	CARBON	10K 5% 1/4W
R712	1-249-411-11	CARBON	330 5% 1/4W
R714	1-249-429-11	CARBON	10K 5% 1/4W
R715	1-249-417-11	CARBON	1K 5% 1/4W
R716	1-249-429-11	CARBON	10K 5% 1/4W
R717	1-249-425-11	CARBON	4.7K 5% 1/4W
R718	1-249-429-11	CARBON	10K 5% 1/4W
R719	1-249-429-11	CARBON	10K 5% 1/4W
R720	1-249-429-11	CARBON	10K 5% 1/4W
R721	1-249-429-11	CARBON	10K 5% 1/4W
R722	1-249-429-11	CARBON	10K 5% 1/4W
R723	1-249-423-11	CARBON	3.3K 5% 1/4W
R724	1-249-429-11	CARBON	10K 5% 1/4W
R725	1-249-417-11	CARBON	1K 5% 1/4W
R726	1-249-417-11	CARBON	1K 5% 1/4W
R727	1-249-417-11	CARBON	1K 5% 1/4W
R728	1-249-417-11	CARBON	1K 5% 1/4W
R729	1-249-417-11	CARBON	1K 5% 1/4W
R730	1-249-417-11	CARBON	1K 5% 1/4W
R731	1-249-429-11	CARBON	10K 5% 1/4W
R732	1-249-429-11	CARBON	10K 5% 1/4W
R733	1-249-429-11	CARBON	10K 5% 1/4W
R734	1-249-417-11	CARBON	1K 5% 1/4W
R736	1-249-429-11	CARBON	10K 5% 1/4W
R737	1-249-409-11	CARBON	220 5% 1/4W

DISPLAY

CONNECTOR

Ref. No.	Part No.	Description	Remark
< SWITCH >			
S701	1-554-303-21	SWITCH, TACTILE (WAKE UP TIMER 1)	
S702	1-554-303-21	SWITCH, TACTILE (WAKE UP TIMER 2)	
S703	1-554-303-21	SWITCH, TACTILE (REC TIMER)	
S705	1-554-303-21	SWITCH, TACTILE (MEMORY/NEXT)	
S706	1-554-303-21	SWITCH, TACTILE (MODE)	
S707	1-554-303-21	SWITCH, TACTILE (STEREO/MONO)	
S708	1-554-303-21	SWITCH, TACTILE (BAND)	
S709	1-554-303-21	SWITCH, TACTILE (-)	
S710	1-554-303-21	SWITCH, TACTILE (+)	
< VIBRATOR >			
XT701	1-527-997-21	VIBRATOR, CRYSTAL (32KHz)	
