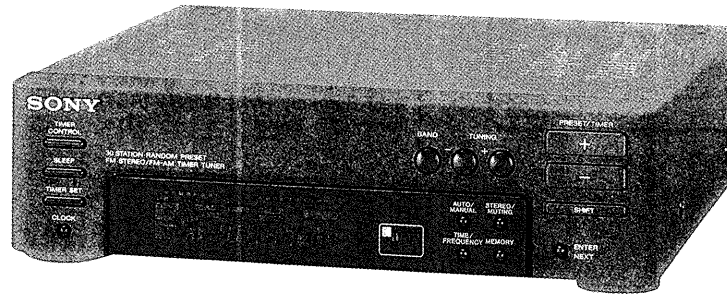


# ST-H300

## SERVICE MANUAL

*AEP Model  
UK Model*



This set is the tuner section in MHC-3500.

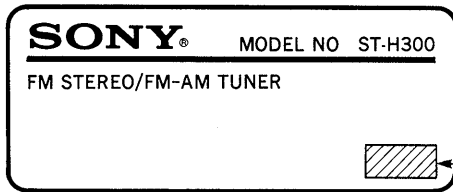
### SPECIFICATIONS

System	FM stereo, FM/AM superheterodyne tuner
<b>FM tuner section</b>	
Tuning range	87.5 – 108 MHz
Antenna	Telescopic antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz
<b>AM tuner section</b>	
Tuning range	MW: 522 – 1,611 kHz, LW 144 – 288 kHz (Italian model) MW: 531 – 1,602 kHz, LW: 153 – 279 kHz (except Italian model)
Antenna	AM loop antenna, External antenna terminals
Intermediate frequency	450 kHz

FM-AM TIMER TUNER  
**SONY**®

**MODEL IDENTIFICATION**

—Model Number Label—



{ AEP, UK, Model : (AE)  
 West Germany (WG) Model : (AE4)  
 Itarian (IT) Model : (IT)

● **Power supply for service**

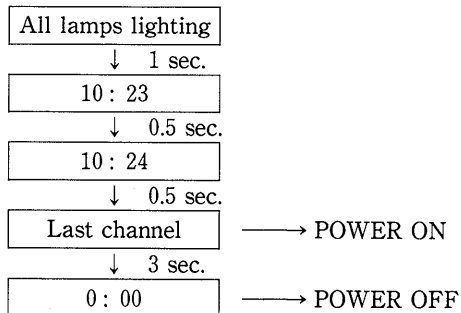
Since this machine has no power source in itself, the power is supplied form AMP TA-H300 used for this series. As shown in the following table, this machine requires 4types of voltage, and supplying each type of voltage separately makes complicated connections.

Accordingly, make connection with TA-H300 at time of service, such as electrifying repair.

- AC 3.9V FL-tube filament voltage
- DC -24V Display controller IC701, grid voltage
- DC 5V Display controller IC701,  $V_{CC}$
- DC 13V PLL control voltage

● **Service mode for checking the timer ON/OFF**

- 1) Connect with AMP TA-H300 and set the power switch of TA-H300 to the state of STANDBY.
- 2) Set the time of tuner to a proper time (any time).
- 3) Press 3 switches simultaneously, namely, TUNING - , SHIFT and ENTER.
- 4) FL-tube display



- 5) End

## —Caution for Service—

## • Reset of IC701

The display controller IC701 is reset by short-circuiting both edges of C702 (0.47 $\mu$ F) while power OFF and discharging electricity.

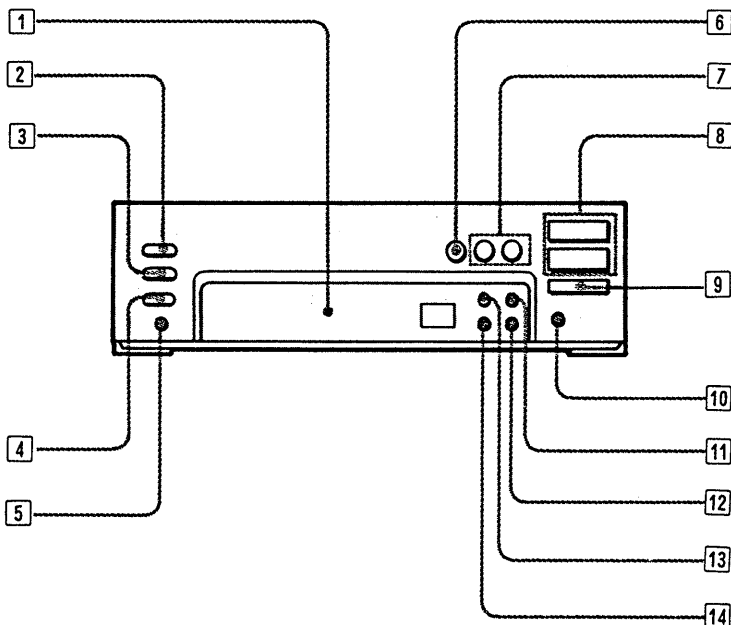
After resetting, the following frequencies are pre-set to the memory.

When the repair is completed, return the memory to the preceding state (content).

FM	AM/MW		LW	
	AEP, UK model	WG, Italian model	AEP, UK model	WG, Italian model
A1 87.5 MHz	A6 531 kHz	A6 522 kHz	B1 153 kHz	B1 144 kHz
A2 88.0 MHz	A7 603 kHz	A7 603 kHz	B2 171 kHz	B2 162 kHz
A3 98.0 MHz	A8 999 kHz	A8 999 kHz	B3 216 kHz	B3 216 kHz
A4 100.0 MHz	A9 1404 kHz	A9 1404 kHz	B4 261 kHz	B4 270 kHz
A5 108.0 MHz	A0 1602 kHz	A0 1611 kHz	B5 281 kHz	B5 288 kHz

## SECTION 1 GENERAL

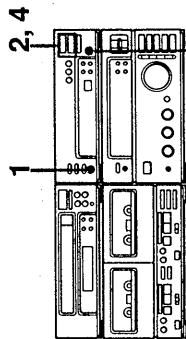
### 1-1. PARTS IDENTIFICATION



#### Tuner Section

- 1 Display window
- 2 TIMER CONTROL button
- 3 SLEEP timer button
- 4 TIMER SET button
- 5 CLOCK button
- 6 BAND selector
- 7 TUNING/+/− buttons
- 8 PRESET/TIMER −/+ buttons.
- 9 SHIFT (memory page select) button
- 10 ENTER/NEXT button
- 11 STEREO/MUTING button
- 12 MEMORY button
- 13 AUTO/MANUAL tuning button
- 14 TIME/FREQUENCY button
- 15 Remote control sensor

1-2. CLOCK SETTING



**1** **CLOCK**

**2** **PRESET/TIMER**

**3** **ENTER/NEXT**

**4** **PRESET/TIMER**

**5** **ENTER/NEXT**

**Setting the Clock**

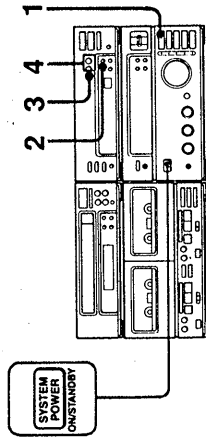
Example: Set to 9:25 in the morning.

- 1 Press **CLOCK**.
- 2 Set the hour with **PRESET/TIMER** +/- buttons
- 3 Press **ENTER/NEXT**.
- 4 Set the minute with **PRESET/TIMER** +/- buttons.
- 5 Press **ENTER/NEXT**.  
The clock starts operating.

**When a power interruption occurs**  
The time will blink and the clock will be behind by the length of time of the power interruption. After the power is restored, the display must be reset to the proper time. (Timer setting is not cancelled by power interruption.)

**To change the frequency display into the time display**  
Press **TIME/FREQUENCY**. Each time you press **TIME/FREQUENCY**, the display changes.

1-3. RADIO

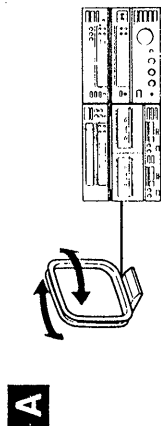


**1** **TUNER**

**2** **BAND**

**3** **AUTO/MANUAL**

**4** **TUNING**



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 **TUNER**.
- 2 Press **BAND** repeatedly until the desired band appears.  
As you press **BAND**, the band changes as follows: FM → MW → LW
- 3 Press **AUTO/MANUAL**.  
Make sure that **AUTO** appears in the display.
- 4 Tune in to the station with **TUNING** + or -.
- 5 For receiving FM stations with the stereo effect, press **STEREO/MUTING** so that **MUTING** appears.

**Tuning in Manually**

- 1 Press **TUNER**.
- 2 Select band by pressing **BAND**.
- 3 Press **AUTO/MANUAL** so that **AUTO** disappears from the display.
- 4 Tune in to the station with **TUNING** + or -.

**Indicator on the display**

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

**When an FM stereo program is noisy or hard to receive**

Press **STEREO/MUTING** so that **MUTING** disappears from the display. There will be no stereo effect, but the reception will be improved. Press again to restore the stereo effect.

**Antenna adjustment**

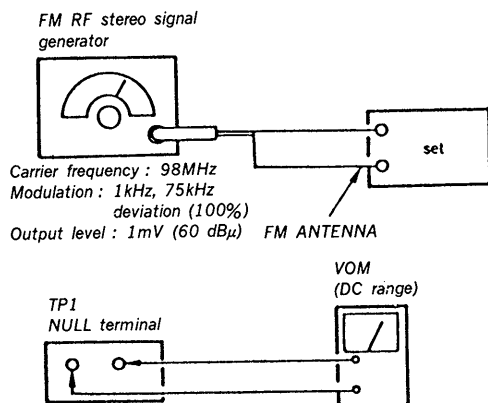
For MW and LW reception, find the best location for the AM loop antenna.

## SECTION 2 ELECTRICAL ADJUSTMENTS

### FM SECTION

#### • FM Discriminator Alignment (NULL check)

Setting :

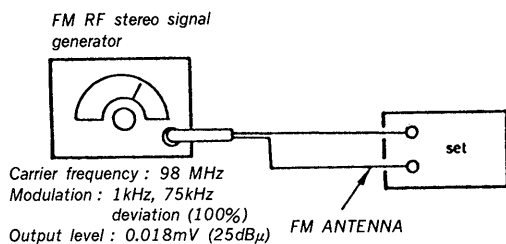


#### Procedure :

1. Tune the set to 98 MHz.
  2. Adjust T21 for 0 V reading on the VOM.
- Note: FM TUNING LEVEL adjustment should be made after FM discriminator alignment.

#### • FM TUNING LEVEL Adjustment

Setting :

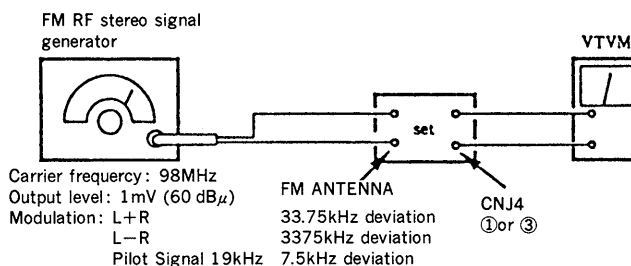


#### Procedure :

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

#### • FM Stereo Separation Adjustment

Setting :



#### Procedure :

Tune the set to 98 MHz

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 : Ⓐ—Ⓑ

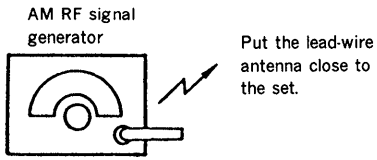
R-CH Stereo separation : Ⓒ—Ⓓ

The separations of both channels should be equal.

## AM SECTION

### • AM TUNING LEVEL Adjustment

Setting :

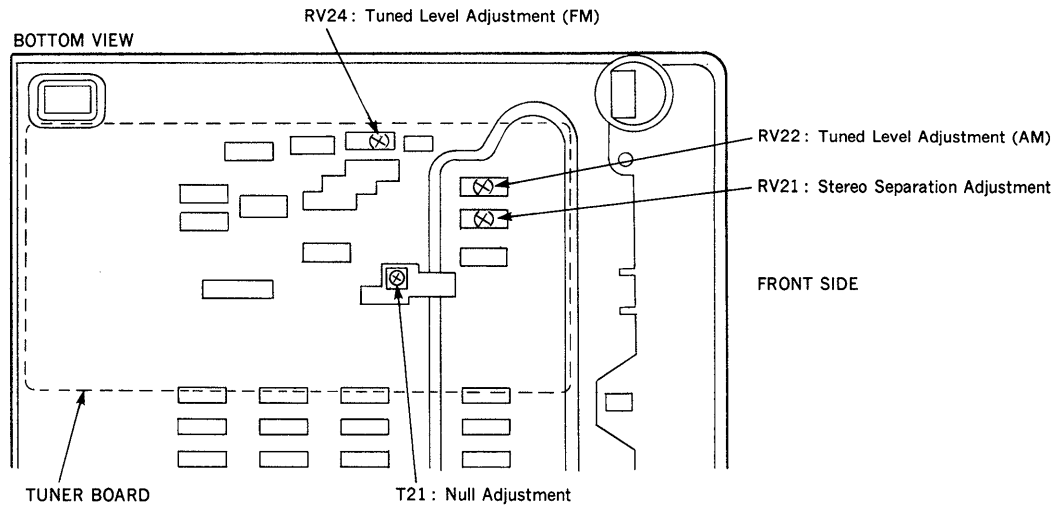


Carrier frequency: 216kHz  
30% amplitude modulation by 400Hz signal  
Output level: LW 68dB $\mu$

### Procedure :

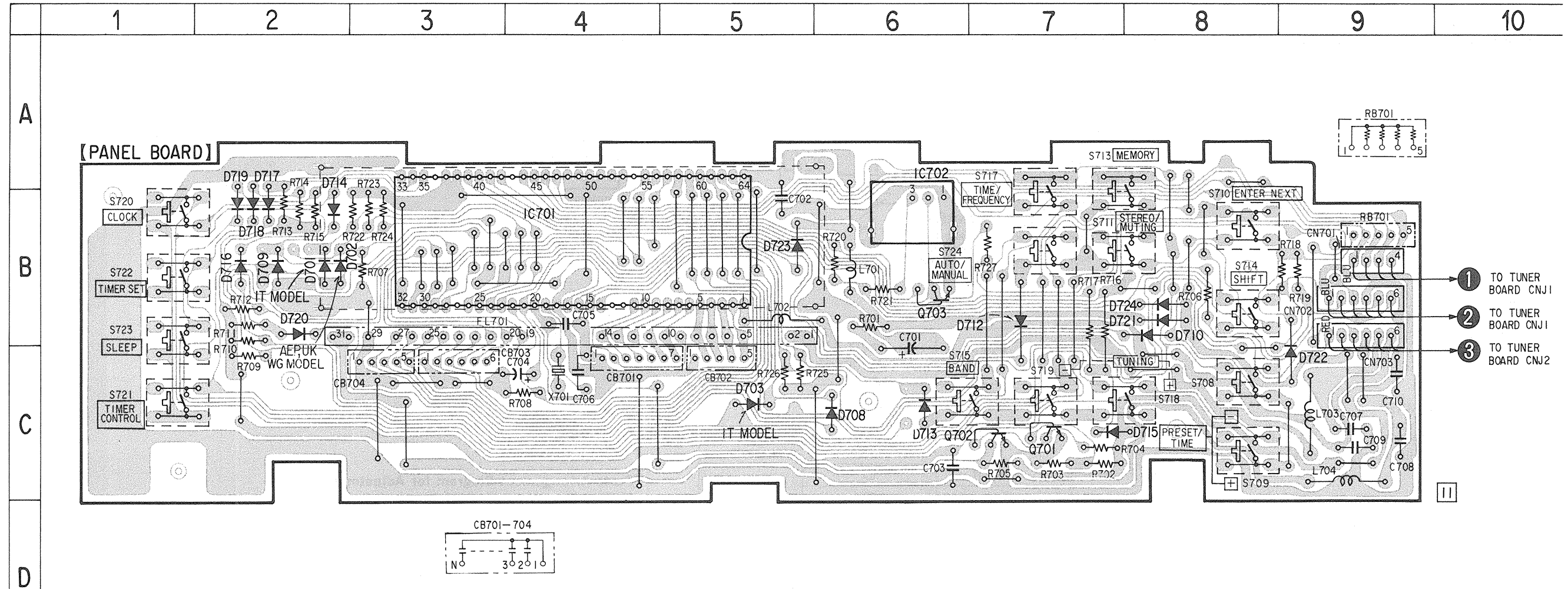
1. Tune the set to 216 kHz.
2. Adjust the RV22 so that the TUNED LED goes on.

### [Parts Arrangement Diagram for Adjustments]



SECTION 3  
DIAGRAMS

3-1. PRINTED WIRING BOARD—PANEL SECTION—



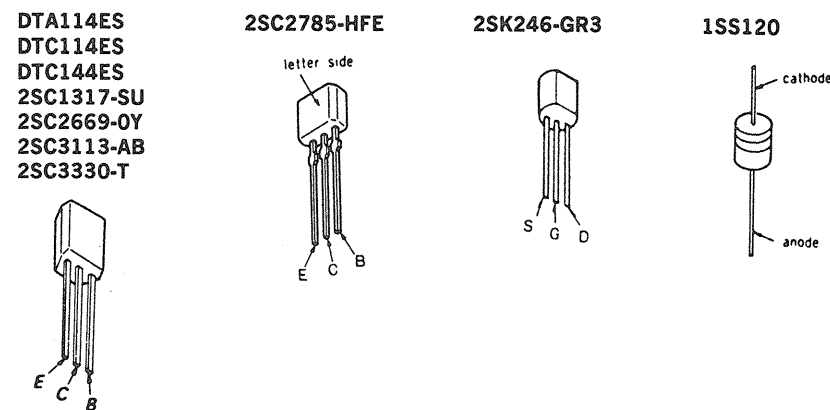
• Semiconductor Location

Ref. No.	Location
D701	B-2
D702	B-2
D703	C-5
D708	C-6
D709	B-2
D710	B-8
D712	B-7
D713	C-6
D714	B-2
D715	C-6
D716	B-2
D717	B-2
D718	B-2
D719	B-2
D720	B-2
D721	B-8
D722	C-9
D723	B-5
D724	B-8
IC701	B-4
IC702	B-6
Q701	C-1
Q702	C-7
Q703	B-6

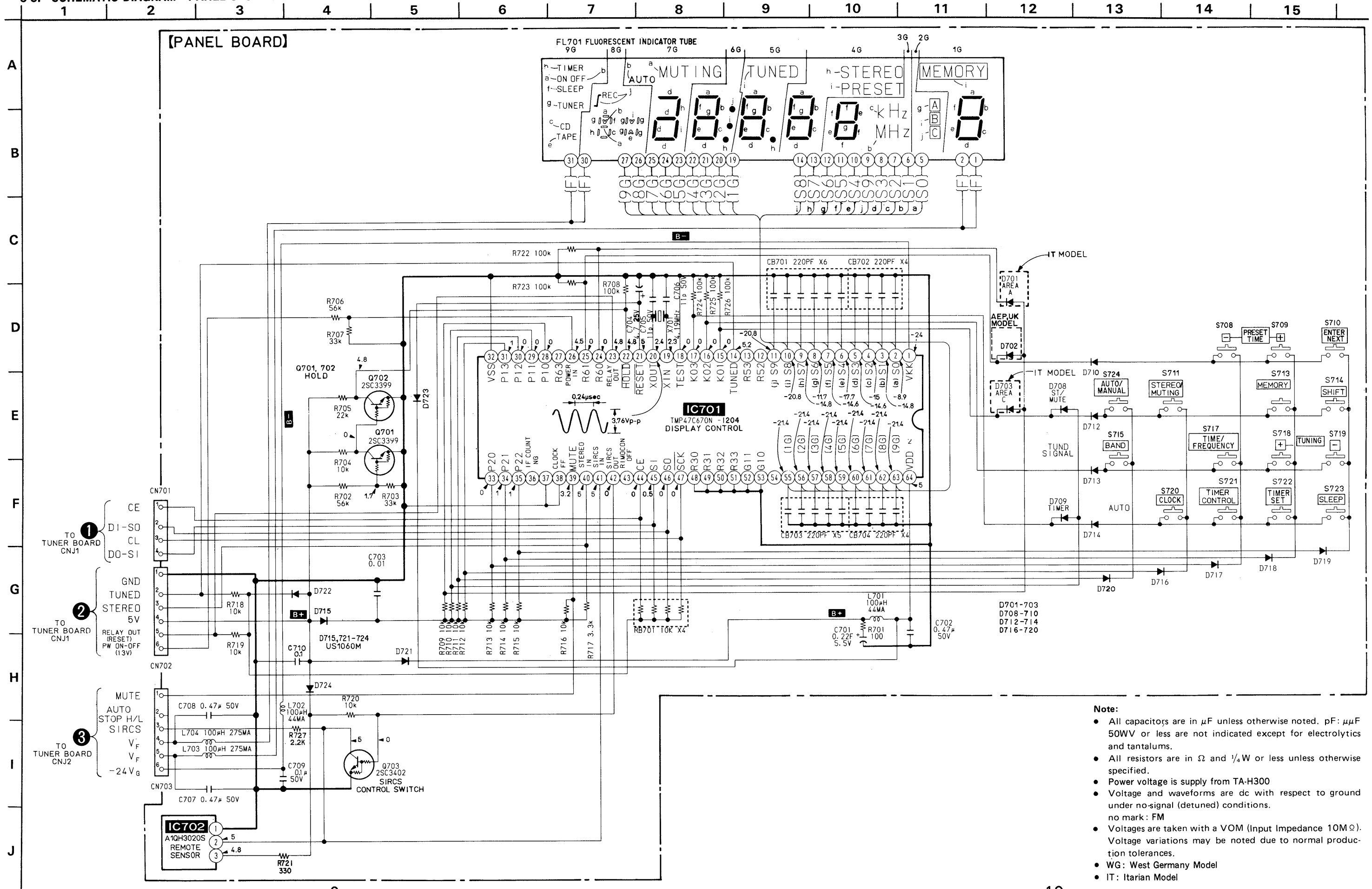
Note:

- — : parts extracted from the component side.
- WG: West Germany Model
- IT: Itarian Model

3-2. SEMICONDUCTOR LEAD LAYOUTS



3-3. SCHEMATIC DIAGRAM—PANEL SECTION—

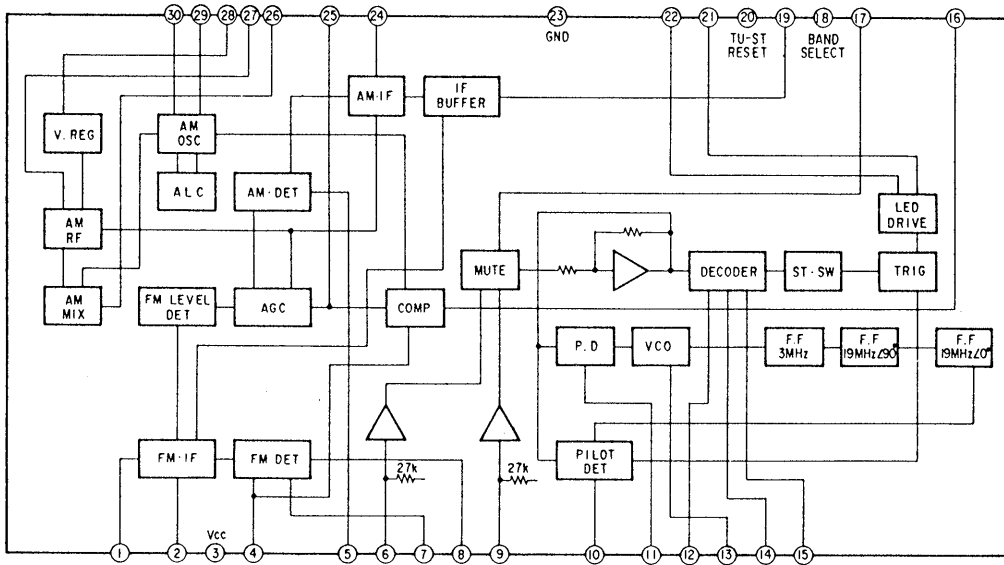


- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$  50VV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
  - Power voltage is supply from TA-H300
  - 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.
  - WG: West Germany Model
  - IT: Italian Model

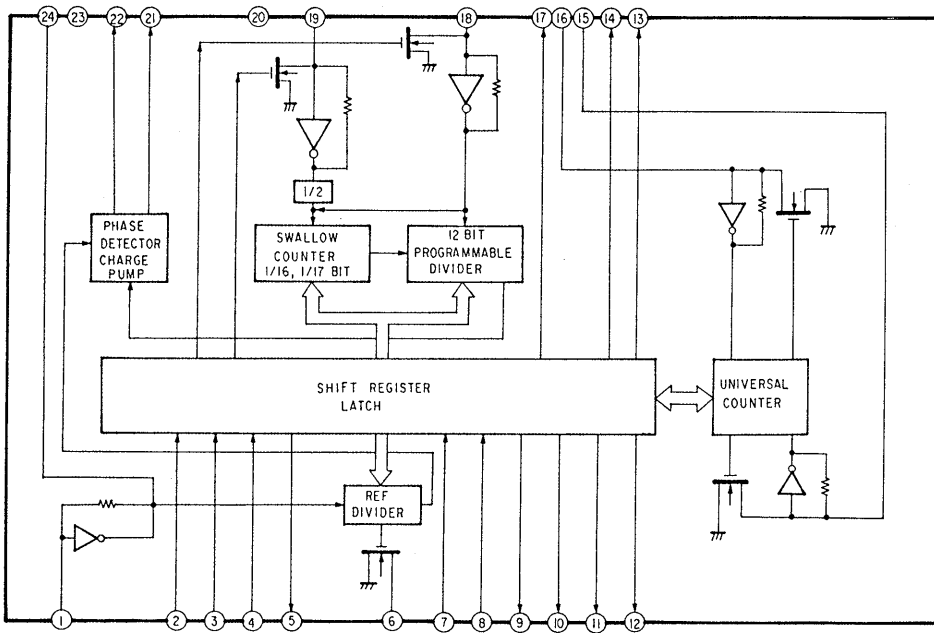


• IC Block Diagrams

IC21 LA1858N

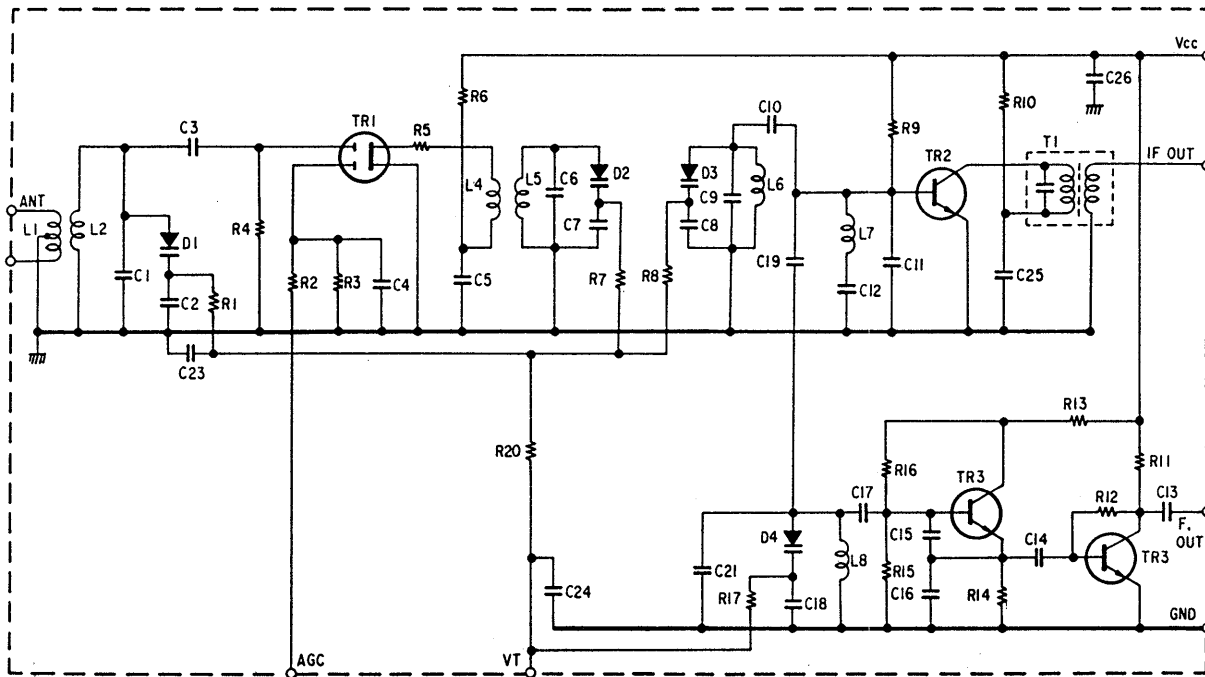


IC81 LC7218

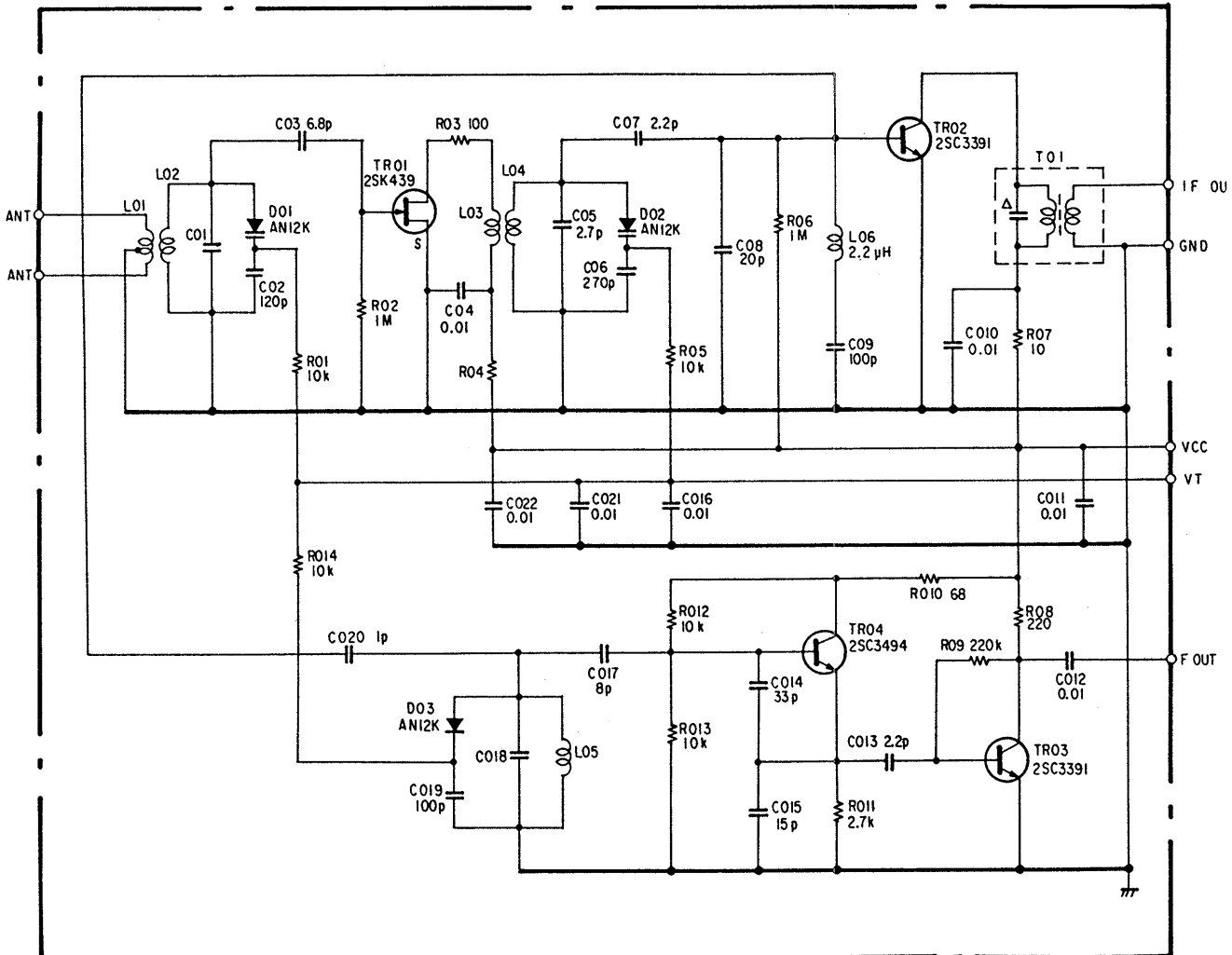


3-4. FM FRONT-END SCHEMATIC DIAGRAMS

FE1 (WG, IT Model)

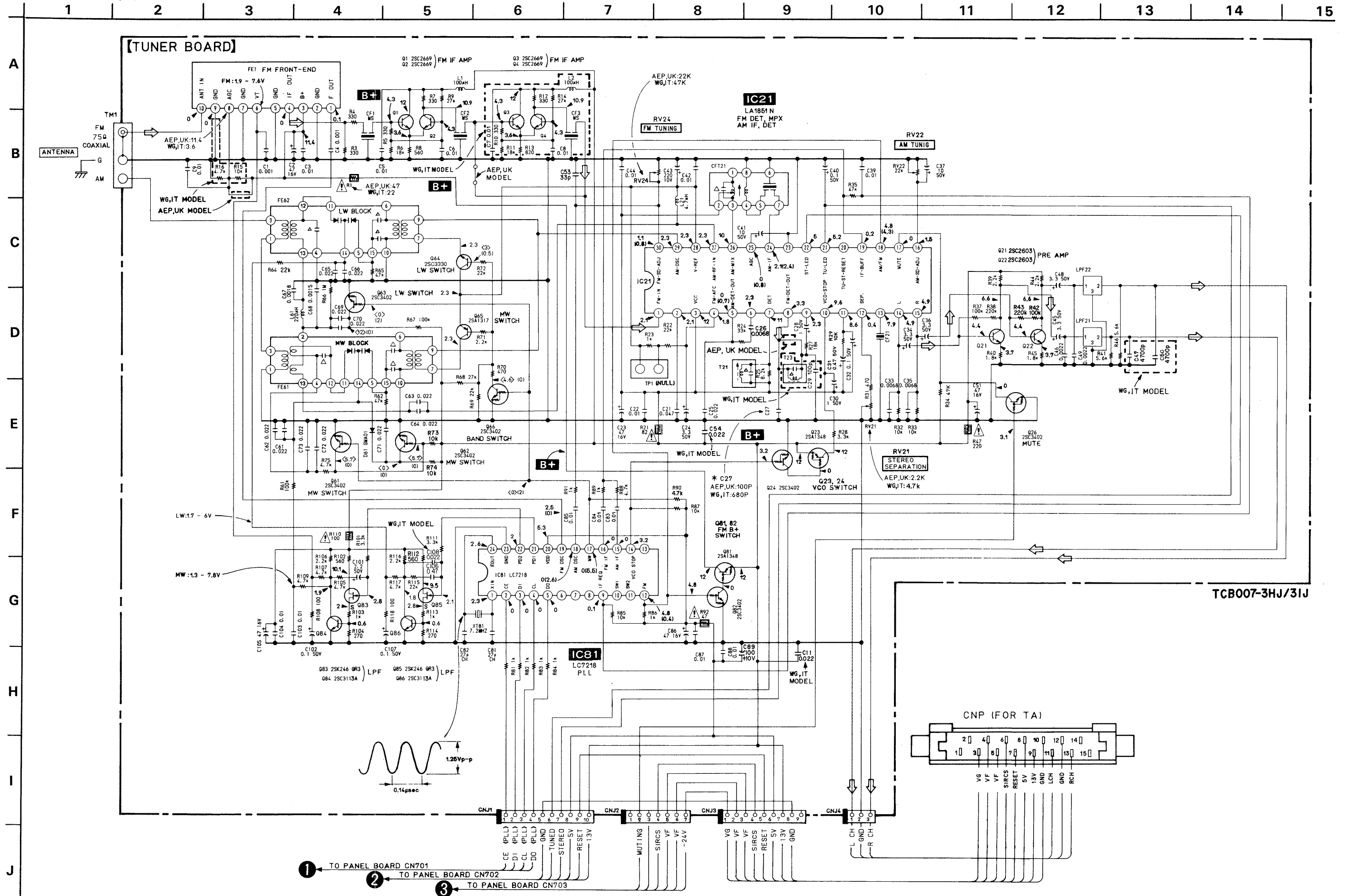


FE1 (AEP, UK Model)

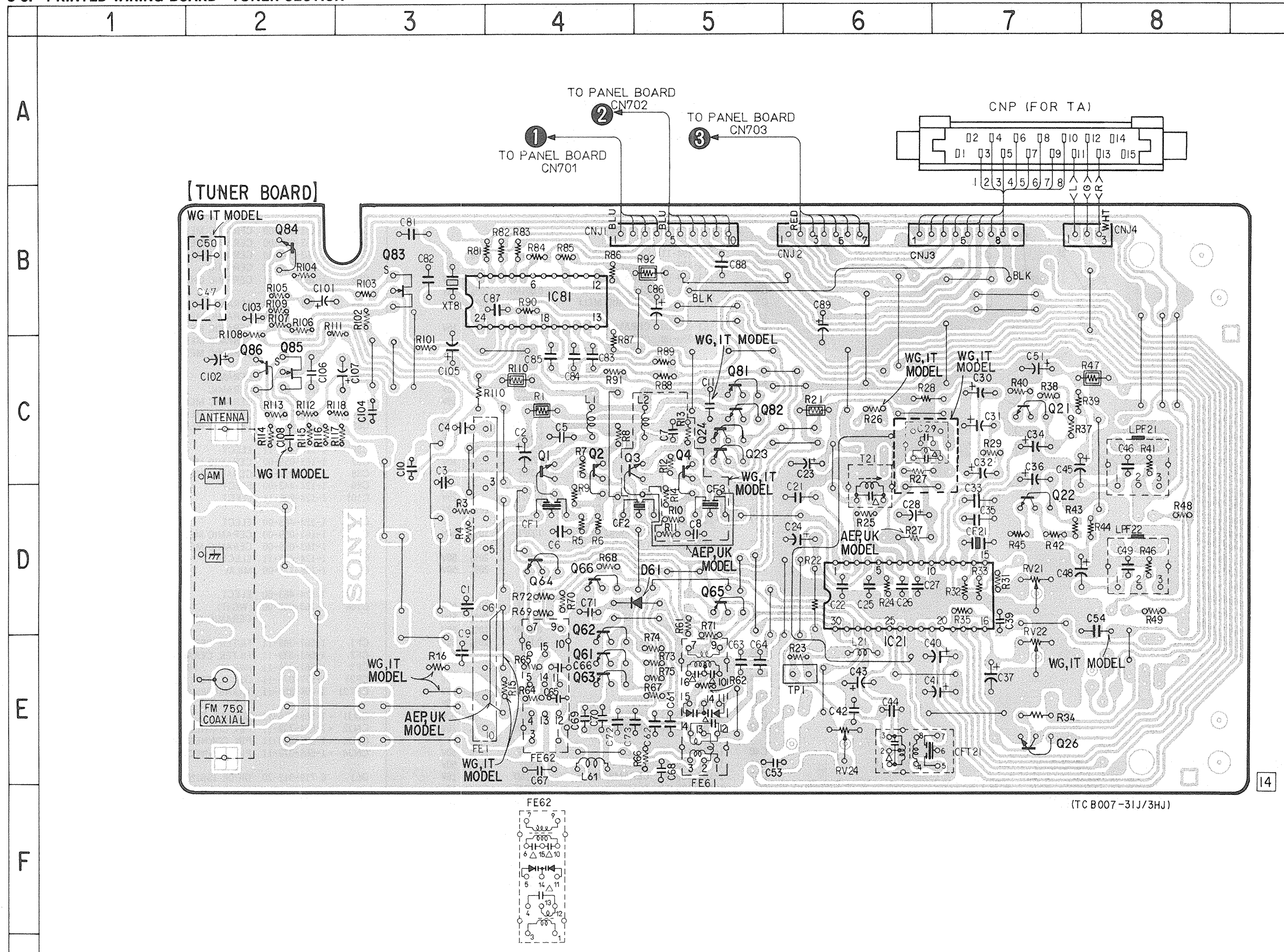


3-5. SCHEMATIC DIAGRAM—TUNER SECTION—

• Refer to page 11 for IC Block Diagrams



3-6. PRINTED WIRING BOARD—TUNER SECTION—



• Semiconductor Location

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

Note:

- : parts extracted from the component side.
- : indicates side identified with part number.
- WG : West Germany Model
- IT : Itarian Model

Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F}$  50VV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- $\Delta$  : internal component.
- $\text{R}$  : nonflammable resistor.

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

- $\square$  : adjustment for repair.
- Power voltage is supply from TA-H300
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  - no mark : FM
  - ( ) : AM
  - < : LW
  - > : LW
- Voltages are taken with a VOM (Input Impedance  $10\text{M}\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  - $\rightarrow$  : FM
- WG : West Germany Model
- IT : Itarian Model

## SECTION 4 EXPLODED VIEW

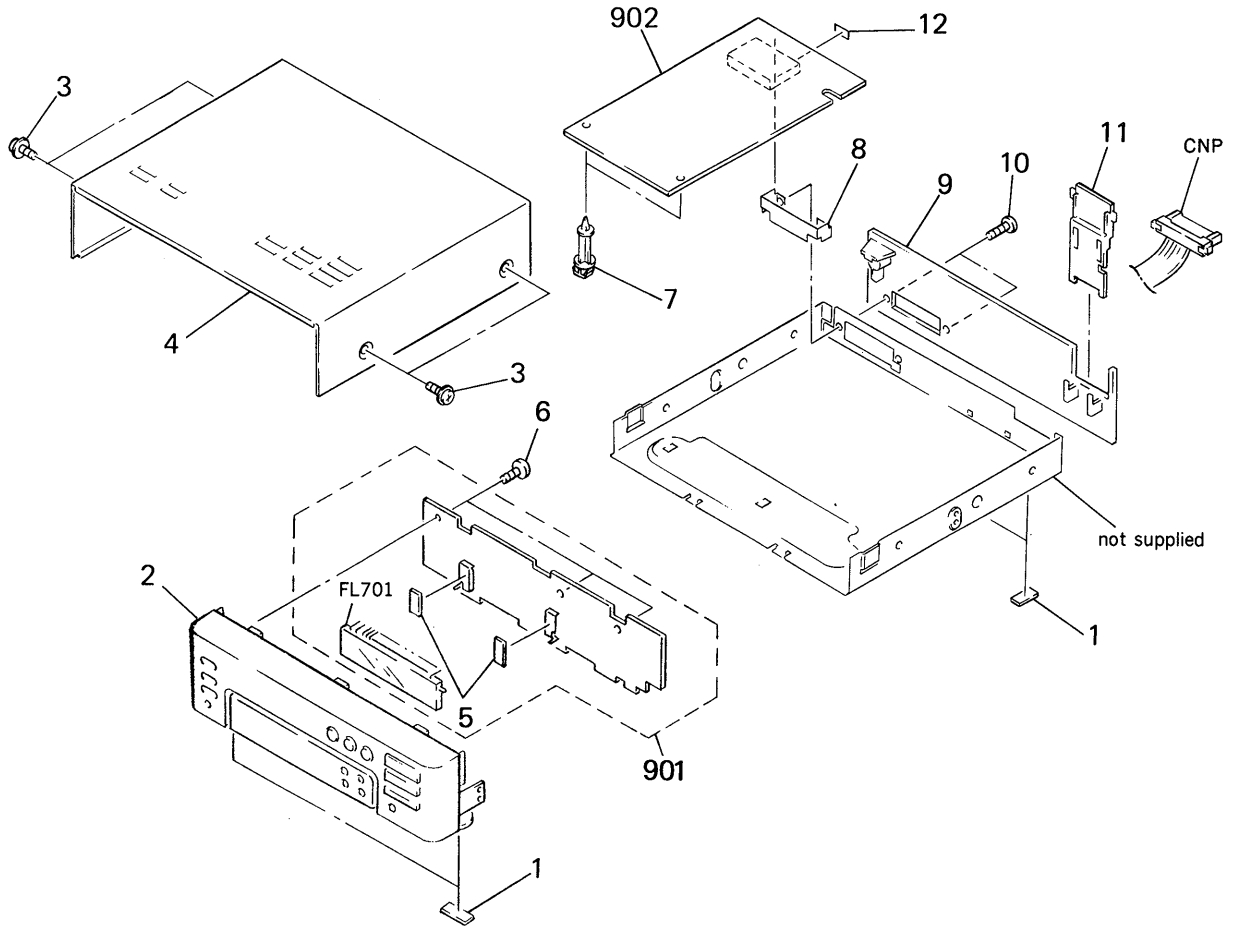
**NOTE:**

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

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts  
Example:  
(RED) ... KNOB, BALANCE (WHITE)  
↑ Cabinet's Color                      ↑ Parts Color

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

- WG: West Germany Model
- IT: Italian Model



Ref.No	Part No.	Description	Remarks	Ref.No	Part No.	Description	Remarks
1	4-930-336-01	FOOT (FELT)		10	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
2	X-4930-316-1	PANEL ASSY (EX), FRONT		11	*4-930-344-01	HOLDER (CONNECTION CORD)	
3	3-704-366-01	SCREW (CASE) (M3X8)		12	*4-612-009-01	(WG, IT)... SPACER (A)	
4	4-932-844-11	CASE		901	A-4334-654-A	(IT)... MOUNTED PCB, PANEL	
5	4-932-810-01	CUSHION (FL)		901	*A-4334-653-A	(AEP, UK, WG)... MOUNTED PCB, PANEL	
6	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S		902	*A-4303-187-A	(AEP, UK)... MOUNTED PCB, TUNER (TCB007-3HJ)	
7	*4-914-008-01	HOLDER, PCB		902	*A-4303-188-A	(WG, IT)... MOUNTED PCB, TUNER (TCB007-3IJ)	
8	*4-924-988-11	PLATE(ST), GROUND		CNP	1-575-679-11	CORD (WITH CONNECTOR)	
9	*4-930-346-01	PANEL (ST), BACK		FL701	1-517-587-11	INDICATOR TUBE, FLUORESCENT	

## SECTION 5 ELECTRICAL PARTS LIST

**NOTE:**

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

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

- All resistors are in ohms.
- F: nonflammable

**COILS**

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

**SEMICONDUCTORS**

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

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

- WG: West Germany Model
- IT: Italian Model

**TUNER**

Ref.No	Part No.	Description									
<b>CAPACITOR</b>											
C1	1-162-294-11	CERAMIC CHIP	0.001MF	20%	25V						
C2	1-124-477-11	ELECT	47MF	20%	16V						
C3	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C4	1-162-294-31	CERAMIC CHIP	0.001MF	20%	25V						
C5	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C6	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C7	1-163-059-00	(WG,IT).... CERAMIC MELF	0.01MF	20%	16V						
C8	1-163-059-00	(WG, IT).... CERAMIC MELF	0.01MF	20%	16V						
C9	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C10	1-162-516-11	CERAMIC CHIP	100PF	10%	50V						
C11	1-101-005-00	(WG,IT)....CERAMIC	0.022MF		50V						
C21	1-101-006-00	CERAMIC	0.047MF		50V						
C22	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C23	1-124-477-11	ELECT	47MF	20%	16V						
C24	1-123-382-00	ELECT	3.3MF	20%	50V						
C25	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C26	1-163-019-00	CERAMIC CHIP	0.0068MF	20%	12V						
C27	1-162-516-11	(AEP,UK).... CERAMIC CHIP	100PF	10%	50V						
C27	1-163-007-11	(WG,IT).... CERAMIC CHIP	680PF	20%	50V						
C28	1-124-791-11	ELECT	1.0MF	20%	50V						
C29	1-162-516-11	(WG,IT).... CERAMIC CHIP	100PF	10%	50V						
C30	1-124-791-11	ELECT	1.0MF	20%	50V						
C31	1-124-902-00	ELECT	0.47MF	20%	50V						
C32	1-124-463-00	ELECT	0.1MF	20%	50V						
C33	1-130-481-00	FILM	0.0068MF	5%	50V						
C34	1-123-382-00	ELECT	3.3MF	20%	50V						
C35	1-130-481-00	FILM	0.0068MF	5%	50V						
C36	1-123-382-00	ELECT	3.3MF	20%	50V						
C37	1-123-875-11	ELECT	10MF	20%	50V						
C39	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C40	1-124-463-00	ELECT	0.1MF	20%	50V						
C41	1-123-875-11	ELECT	10MF	20%	50V						
C42	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C43	1-126-176-11	ELECT	220MF	20%	10V						
C44	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C45	1-123-382-00	ELECT	3.3MF	20%	50V						
C46	1-161-375-00	CERAMIC CHIP	0.0022MF	20%	25V						
C47	1-163-170-00	(WG,IT).... CERAMIC CHIP	0.0047MF	20%	25V						
C48	1-123-382-00	ELECT	3.3MF	20%	50V						
C49	1-161-375-00	CERAMIC CHIP	0.0022MF	20%	25V						
C50	1-163-170-00	(WG,IT).... CERAMIC CHIP	0.0047MF	20%	25V						
C51	1-124-477-11	ELECT	47MF	20%	16V						
C53	1-163-105-00	CERAMIC CHIP	33PF	5%	50V						
C54	1-101-005-00	(WG,IT)....CERAMIC	0.022MF		50V						
C61	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C62	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C63	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C64	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C65	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C66	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C67	1-102-120-00	CERAMIC	0.0018MF	10%	50V						
C68	1-163-111-11	CERAMIC CHIP	0.0015MF	20%	25V						
C69	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C70	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C71	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C72	1-163-063-00	CERAMIC MELF	0.022MF		25V						
C73	1-163-063-00	CERAMIC MELF	0.022MF		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	0.01MF	20%	16V						
C84	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C85	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C86	1-124-477-11	ELECT	47MF	20%	16V						
C87	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C88	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C89	1-124-443-00	ELECT	100MF	20%	10V						
C101	1-124-925-11	ELECT	2.2MF	20%	50V						
C102	1-124-463-00	ELECT	0.1MF	20%	50V						
C103	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C104	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V						
C105	1-124-477-11	ELECT	47MF	20%	16V						
C106	1-136-173-00	MILAL	0.47MF	5%	50V						
C107	1-124-463-00	ELECT	0.1MF	20%	50V						
C108	1-163-063-00	(WG,IT).... CERAMIC MELF	0.022MF		25V						
CF1	1-567-389-11	FILTER, CERAMIC									
CF2	1-567-389-11	FILTER, CERAMIC									
CF3	1-567-389-11	(WG,IT)....FILTER,CERAMIC									
CF21	1-577-075-11	OSCILLATOR, CERAMIC (19KHz)									
CFT21	1-404-853-11	TRANSFORMER,IF(CERAMIC FILTER)									
CNJ1	*1-568-276-11	SOCKET, CONNECTOR 10P									
CNJ2	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P									
CNJ3	*1-568-419-11	PIN, CONNECTOR 9P									
CNJ4	*1-568-372-11	PIN, CONNECTOR 3P									
D61	8-719-912-20	DIODE 1SS120									
FE1	1-463-857-11	(WG,IT)....FRONT END (FM)									
FE1	1-463-862-21	(AEP,UK)....FRONT END, FM									
FE61	1-236-462-11	ENCAPSULATED COMPONENT (MW RF)									
FE62	1-236-463-11	ENCAPSULATED COMPONENT (LW RF)									
IC21	8-759-821-45	IC LA1851N									
IC81	8-759-820-91	IC LC7218									
L1	1-410-645-31	MICRO INDUCTOR 100UH									
L2	1-410-645-31	(WG,IT)....MICRO INDUCTOR 100UH									
L21	1-407-500-00	MICRO INDUCTOR 4.7MMH									
L61	1-410-525-11	MICRO INDUCTOR 220UF									
LPF21	1-235-164-00	FILTER, LOW PASS									
LPF22	1-235-164-00	FILTER, LOW PASS									
Q1	8-729-230-99	TRANSISTOR 2SC2669-OY									
Q2	8-729-230-99	TRANSISTOR 2SC2669-OY									

Ref.No	Part No.	Description	Ref.No	Part No.	Description
Q3	8-129-230-99	(WG,IT).... TRANSISTOR 2SC2669-OY	R43	1-249-363-11	CARBON MELF 220K 5% 1/8W
Q4	8-129-230-99	(WG,IT).... TRANSISTOR 2SC2669-OY	R44	1-249-339-11	CARBON MELF 2.2K 5% 1/8W
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	R45	1-249-338-11	CARBON MELF 1.8K 5% 1/8W
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	R46	1-249-344-11	CARBON MELF 5.6K 5% 1/8W
Q23	8-729-900-61	TRANSISTOR DTA114ES	R47	△1-249-409-11	CARBON (SMALL) 220 5% 1/4W F
Q24	8-729-900-80	TRANSISTOR DTC114ES	R48	1-249-359-11	CARBON MELF 100K 5% 1/8W
Q26	8-729-900-80	TRANSISTOR DTC114ES	R49	1-249-359-11	CARBON MELF 100K 5% 1/8W
Q61	8-729-900-80	TRANSISTOR DTC114ES	R61	1-249-359-11	CARBON MELF 100K 5% 1/8W
Q62	8-729-900-80	TRANSISTOR DTC114ES	R62	1-249-355-11	CARBON MELF 47K 5% 1/8W
Q63	8-729-900-80	TRANSISTOR DTC114ES	R64	1-249-351-11	CARBON MELF 22K 5% 1/8W
Q64	8-729-820-24	TRANSISTOR 2SC3330-T	R65	1-249-355-11	CARBON MELF 47K 5% 1/8W
Q65	8-729-820-10	TRANSISTOR 2SA1317-SU	R66	1-215-493-00	CARBON MELF 1M 5% 1/5W
Q66	8-729-900-80	TRANSISTOR DTC114ES	R67	1-249-359-11	CARBON MELF 100K 5% 1/8W
Q81	8-729-900-61	TRANSISTOR DTA114ES	R68	1-249-352-11	CARBON MELF 27K 5% 1/8W
Q82	8-729-900-80	TRANSISTOR DTC114ES	R69	1-249-351-11	CARBON MELF 22K 5% 1/8W
Q83	8-729-202-67	TRANSISTOR 2SK246GR3	R70	1-249-331-11	CARBON MELF 470 5% 1/8W
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB	R71	1-249-339-11	CARBON MELF 2.2K 5% 1/8W
Q85	8-729-202-67	TRANSISTOR 2SK246GR3	R72	1-249-351-11	CARBON MELF 22K 5% 1/8W
Q86	8-729-230-93	TRANSISTOR 2SC3113-AB	R73	1-249-347-11	CARBON MELF 10K 5% 1/8W
			R74	1-249-347-11	CARBON MELF 10K 5% 1/8W
<b>RESISTOR</b>					
R1	△1-249-397-11	(WG, IT).... CARBON (SMALL) 22 5% 1/4W F	R75	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R1	△1-249-401-11	(AEP,UK).... CARBON (SMALL) 47 5% 1/4W F	R81	1-249-335-11	CARBON MELF 1K 5% 1/8W
R3	1-249-329-11	CARBON MELF 330 5% 1/8W	R82	1-249-335-11	CARBON MELF 1K 5% 1/8W
R4	1-249-329-11	CARBON MELF 330 5% 1/8W	R83	1-249-335-11	CARBON MELF 1K 5% 1/8W
R5	1-249-329-11	CARBON MELF 330 5% 1/8W	R84	1-249-335-11	CARBON MELF 1K 5% 1/8W
R6	1-249-350-11	CARBON MELF 18K 5% 1/8W	R85	1-249-347-11	CARBON MELF 10K 5% 1/8W
R7	1-249-329-11	CARBON MELF 330 5% 1/8W	R86	1-249-335-11	CARBON MELF 1K 5% 1/8W
R8	1-249-332-11	CARBON MELF 560 5% 1/8W	R87	1-249-347-11	CARBON MELF 10K 5% 1/8W
R9	1-249-352-11	CARBON MELF 27K 5% 1/8W	R88	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R10	1-249-329-11	(WG,IT).... CARBON MELF 330 5% 1/8W	R89	1-249-335-11	CARBON MELF 1K 5% 1/8W
R11	1-249-350-11	(WG,IT).... CARBON MELF 18K 5% 1/8W	R90	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R12	1-249-329-11	(WG,IT).... CARBON MELF 330 5% 1/8W	R91	1-249-335-11	CARBON MELF 1K 5% 1/8W
R13	1-249-334-11	(WG,IT).... CARBON MELF 820 5% 1/8W	R92	△1-249-401-11	CARBON (SMALL) 47 5% 1/4W F
R14	1-249-352-11	(WG,IT).... CARBON MELF 27K 5% 1/8W	R101	1-249-341-11	CARBON MELF 3.3K 5% 1/8W
R15	1-249-347-11	(WG,IT).... CARBON MELF 10K 5% 1/8W	R102	1-249-332-11	CARBON MELF 560 5% 1/8W
R16	1-249-343-11	(WG,IT).... CARBON MELF 4.7K 5% 1/8W	R103	1-249-335-11	CARBON MELF 1K 5% 1/8W
R21	1-249-404-00	CARBON (SMALL) 82 5% 1/4W F	R104	1-249-328-11	CARBON MELF 270 5% 1/8W
R22	1-249-433-11	CARBON (SMALL) 22K 5% 1/4W	R105	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R23	1-249-335-11	CARBON MELF 1K 5% 1/8W	R106	1-249-339-11	CARBON MELF 2.2K 5% 1/8W
R24	1-249-353-11	CARBON MELF 33K 5% 1/8W	R107	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R25	1-249-346-11	CARBON MELF 8.2K 5% 1/8W	R108	1-249-323-11	CARBON MELF 100 5% 1/8W
R26	1-249-340-11	(WG,IT).... CARBON MELF 2.7K 5% 1/8W	R109	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R27	1-249-432-11	CARBON (SMALL) 18K 5% 1/4W	R110	△1-249-405-11	CARBON (SMALL) 100 5% 1/4W F
R28	1-249-423-11	CARBON (SMALL) 3.3K 5% 1/4W	R111	1-249-341-11	CARBON MELF 3.3K 5% 1/8W
R29	1-249-347-11	CARBON MELF 10K 5% 1/8W	R112	1-249-332-11	CARBON MELF 560 5% 1/8W
R31	1-249-331-11	CARBON MELF 470 5% 1/8W	R113	1-249-335-11	CARBON MELF 1K 5% 1/8W
R32	1-249-347-11	CARBON MELF 10K 5% 1/8W	R114	1-249-328-11	CARBON MELF 270 5% 1/8W
R33	1-249-347-11	CARBON MELF 10K 5% 1/8W	R115	1-249-351-11	CARBON MELF 22K 5% 1/8W
R34	1-249-437-11	CARBON (SMALL) 47K 5% 1/4W	R116	1-249-339-11	CARBON MELF 2.2K 5% 1/8W
R35	1-249-355-11	CARBON MELF 47K 5% 1/8W	R117	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R37	1-249-359-11	CARBON MELF 100K 5% 1/8W	R118	1-249-323-11	CARBON MELF 100 5% 1/8W
R38	1-249-363-11	CARBON MELF 220K 5% 1/8W	RV21	1-238-013-11	(AEP,UK).... RES, ADJ, CARBON 2.2K
R39	1-249-339-11	CARBON MELF 2.2K 5% 1/8W	RV21	1-238-015-11	(WG,IT).... RES, ADJ, CARBON 4.7K
R40	1-249-338-11	CARBON MELF 1.8K 5% 1/8W	RV22	1-238-017-11	RES, ADJ, CARBON 22K
R41	1-249-344-11	CARBON MELF 5.6K 5% 1/8W	RV24	1-238-017-11	(AEP,UK).... RES, ADJ, CARBON 22K
R42	1-249-359-11	CARBON MELF 100K 5% 1/8W	RV24	1-238-019-11	(WG,IT).... RES, ADJ, CARBON 47K
			T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR
			T23	1-236-465-11	(WG,IT).... ENCAPSULATED COMPONENT
			TM1	*1-537-138-31	TERMINAL BOARD (ANTENNA)
			TP1	*1-560-060-00	PIN, CONNECTOR 2P
			XT81	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)

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

## EXCEPT FOR TUNER

Ref.No	Part No.	Description
901	A-4334-654-A	(IT)....MOUNTED PCB, PANEL
901	*A-4334-653-A	(AEP, UK, WG)....MOUNTED PCB, PANEL
902	*A-4303-187-A	(AEP,UK)....MOUNTED PCB, TUNER (TCB007-3HJ)
902	*A-4303-188-A	(WG, IT)....MOUNTED PCB, TUNER (TCB007-3IJ)

## CAPACITOR

C701	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V
C702	1-136-173-00	FILM	0.47MF	5%	50V
C703	1-162-306-11	CERAMIC	0.01MF	20%	16V
C704	1-126-094-11	ELECT	4.7MF	20%	25V
C705	1-162-200-31	CERAMIC	11PF	5%	50V
C706	1-162-200-31	CERAMIC	11PF	5%	50V
C707	1-136-173-00	FILM	0.47MF	5%	50V
C708	1-136-173-00	FILM	0.47MF	5%	50V
C709	1-164-159-11	CERAMIC	0.1MF		50V
C710	1-164-159-11	CERAMIC	0.1MF		50V

CB701	1-233-130-11	COMPOSITION CIRCUIT BLOCK
CB702	1-233-148-11	COMPOSITION CIRCUIT BLOCK
CB703	1-233-187-11	COMPOSITION CIRCUIT BLOCK
CB704	1-233-148-11	COMPOSITION CIRCUIT BLOCK

CN701	*1-568-279-11	SOCKET, CONNECTOR 4P
CN702	*1-568-281-11	SOCKET, CONNECTOR 6P
CN703	*1-568-281-11	SOCKET, CONNECTOR 6P

D701	8-719-912-20	(IT)....DIODE 1SS120
D702	8-719-912-20	(AEP, UK, WG)....DIODE 1SS120
D703	8-719-912-20	(IT)....DIODE 1SS120
D708	8-719-912-20	DIODE 1SS120
D709	8-719-912-20	DIODE 1SS120

D710	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	8-719-912-20	DIODE 1SS120
D722	8-719-912-20	DIODE 1SS120
D723	8-719-912-20	DIODE 1SS120
D724	8-719-912-20	DIODE 1SS120

FL701	1-519-517-11	INDICATOR TUBE, FLUORESCENT
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IC701	8-759-239-79	IC TMP47C670N-1204
IC702	8-749-920-59	IC A1QH3020S

L701	1-410-521-11	INDUCTOR	100UH
L702	1-410-521-11	INDUCTOR	100UH
L703	1-408-080-00	INDUCTOR	100UH
L704	1-408-080-00	INDUCTOR	100UH

Q701	8-729-900-89	TRANSISTOR DTC144ES
Q702	8-729-900-89	TRANSISTOR DTC144ES
Q703	8-729-900-80	TRANSISTOR DTC114ES

Ref.No	Part No.	Description
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## RESISTOR

R701	1-249-405-11	CARBON	100	5%	1/4W
R702	1-249-438-11	CARBON	56K	5%	1/4W
R703	1-249-435-11	CARBON	33K	5%	1/4W
R704	1-249-429-11	CARBON	10K	5%	1/4W
R705	1-249-433-11	CARBON	22K	5%	1/4W
R706	1-249-438-11	CARBON	56K	5%	1/4W
R707	1-249-435-11	CARBON	33K	5%	1/4W
R708	1-249-441-11	CARBON	100K	5%	1/4W
R709	1-249-429-11	CARBON	10K	5%	1/4W
R710	1-249-429-11	CARBON	10K	5%	1/4W
R711	1-249-429-11	CARBON	10K	5%	1/4W
R712	1-249-429-11	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	1-249-423-11	CARBON	3.3K	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	1-249-411-11	CARBON	330	5%	1/4W
R722	1-249-441-11	CARBON	100K	5%	1/4W
R723	1-249-441-11	CARBON	100K	5%	1/4W
R724	1-249-441-11	CARBON	100K	5%	1/4W
R725	1-249-441-11	CARBON	100K	5%	1/4W
R726	1-249-441-11	CARBON	100K	5%	1/4W
R727	1-249-421-11	CARBON	2.2K	5%	1/4W

RB701	1-233-125-11	COMPOSITION CIRCUIT BLOCK
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S708	1-554-596-21	SWITCH, KEY BOARD (PRESET/TIME -)
S709	1-554-596-21	SWITCH, KEY BOARD (PRESET/TIME +)
S710	1-554-596-21	SWITCH, KEY BOARD (ENTER NEXT)
S711	1-554-596-21	SWITCH, KEY BOARD (STEREO/MUTING)
S713	1-554-596-21	SWITCH, KEY BOARD (MEMORY)

S714	1-554-596-21	SWITCH, KEY BOARD (SHIFT)
S715	1-554-596-21	SWITCH, KEY BOARD (BAND)
S717	1-554-596-21	SWITCH, KEY BOARD (TIME/FREQUENCY)
S718	1-554-596-21	SWITCH, KEY BOARD (TUNING +)
S719	1-554-596-21	SWITCH, KEY BOARD (TUNING -)

S720	1-554-596-21	SWITCH, KEY BOARD (CLOCK)
S721	1-554-596-21	SWITCH, KEY BOARD (TIMER CONTROL)
S722	1-554-596-21	SWITCH, KEY BOARD (TIMER SET)
S723	1-554-596-21	SWITCH, KEY BOARD (SLEEP)
S724	1-554-596-21	SWITCH, KEY BOARD (AUTO/MANUAL)

X701	1-567-821-21	VIBRATOR, CRYSTAL (4.19MHz)
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