

ST-D7L/D9L

SERVICE MANUAL

AEP Model
UK Model



ST-D7L and ST-D9L are FM stereo/FM AM tuner units in LBT-D7 and LBT-D9, respectively.

SPECIFICATION

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

FM tuner section

Tuning range 87.5 – 108 MHz
Antenna terminals 75 ohms unbalanced
300 ohms balanced

Intermediate frequency 10.7 MHz

	(at 40 kHz deviation)
Sensitivity	at 46 dB quieting 19.5 dBf, 5 μ V (mono): AEP, UK model 2.5 μ V (mono): G-AEP model 39.5 dBf, 50 μ V (stereo): AEP, UK model 25 μ V (stereo): G-AEP model
Usable sensitivity	11.5 dBf, 2 μ V (IHF): AEP, UK model 1 μ V (IHF): G-AEP model
Signal-to-noise ratio	74 dB (mono) 69 dB (stereo)
Harmonic distortion at 1 kHz	0.3% (mono) 0.5% (stereo)
Separation at 1 kHz	40 dB
Frequency response	40 Hz – 12.5 kHz $\pm$ 0.5 dB 30 Hz – 15 kHz $\begin{smallmatrix} +0.5 \\ -2.0 \end{smallmatrix}$ dB
Selectivity	at 300 kHz 50 dB: AEP, UK model 60 dB: G-AEP model
Image response ratio	50 dB: AEP, UK model 80 dB: G-AEP model
IF response ratio	90 dB: AEP, UK model 93 dB: G-AEP model

MW/LW tuner section

	MW	LW
Tuning range	522 – 1,611 kHz	144 – 288 kHz
Antenna	Layout-free AM antenna, External antenna terminal	
Intermediate frequency	450 kHz	
Usable sensitivity	layout-free Antenna	
	400 μ V/m (999 kHz)	700 μ V/m (216 kHz)
Signal-to-noise ratio	54 dB (50 mV/m)	50 dB (50 mV/m)
Harmonic distortion	0.3% (50 mV/m, 400 Hz)	
Selectivity	35 dB (9 kHz)	

General

Dimensions Approx. 355 x 55 x 275 mm (w/h/d)
(14 x 2 $\frac{1}{4}$ x 10 $\frac{7}{8}$ inches)
incl. projecting parts and controls
Weight Approx. 1.8 kg (4 lb) net

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND 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.

FM STEREO/FM-AM TUNER
SONY[®]

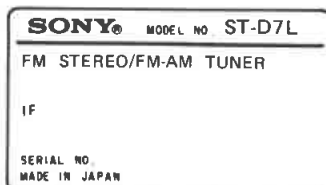


AUD

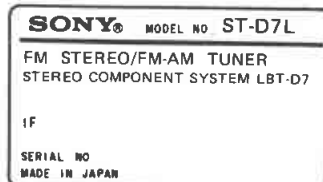
MODEL IDENTIFICATION

— Specification Labels —

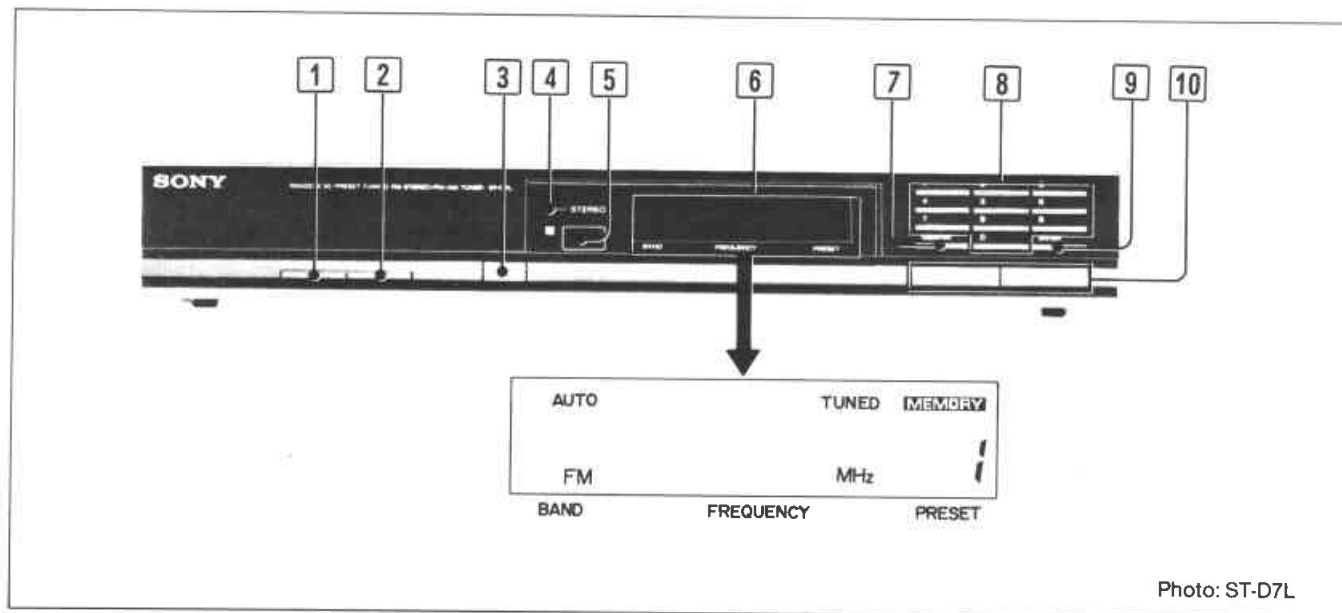
AEP, UK MODEL



G-AEP MODEL



FUNCTION OF CONTROLS ST-D7L



1 AUTO/MANUAL tuning selector

With each press, the tuning mode changes.

2 MEMORY SCAN button

Used with the tuning + or – button to check the preset stations.

3 BAND selector

4 STEREO indicator

5 Remote sensor

Receives the infrared ray command transmitted from the supplied Remote Commander.

6 Band/frequency display

Displays the band, frequency, FM tuning mode (for the ST-D7L only), preset station number, TUNED indication and MEMORY indication.

7 MEMORY button

8 Preset buttons

Used for quick tuning of frequently used radio stations.

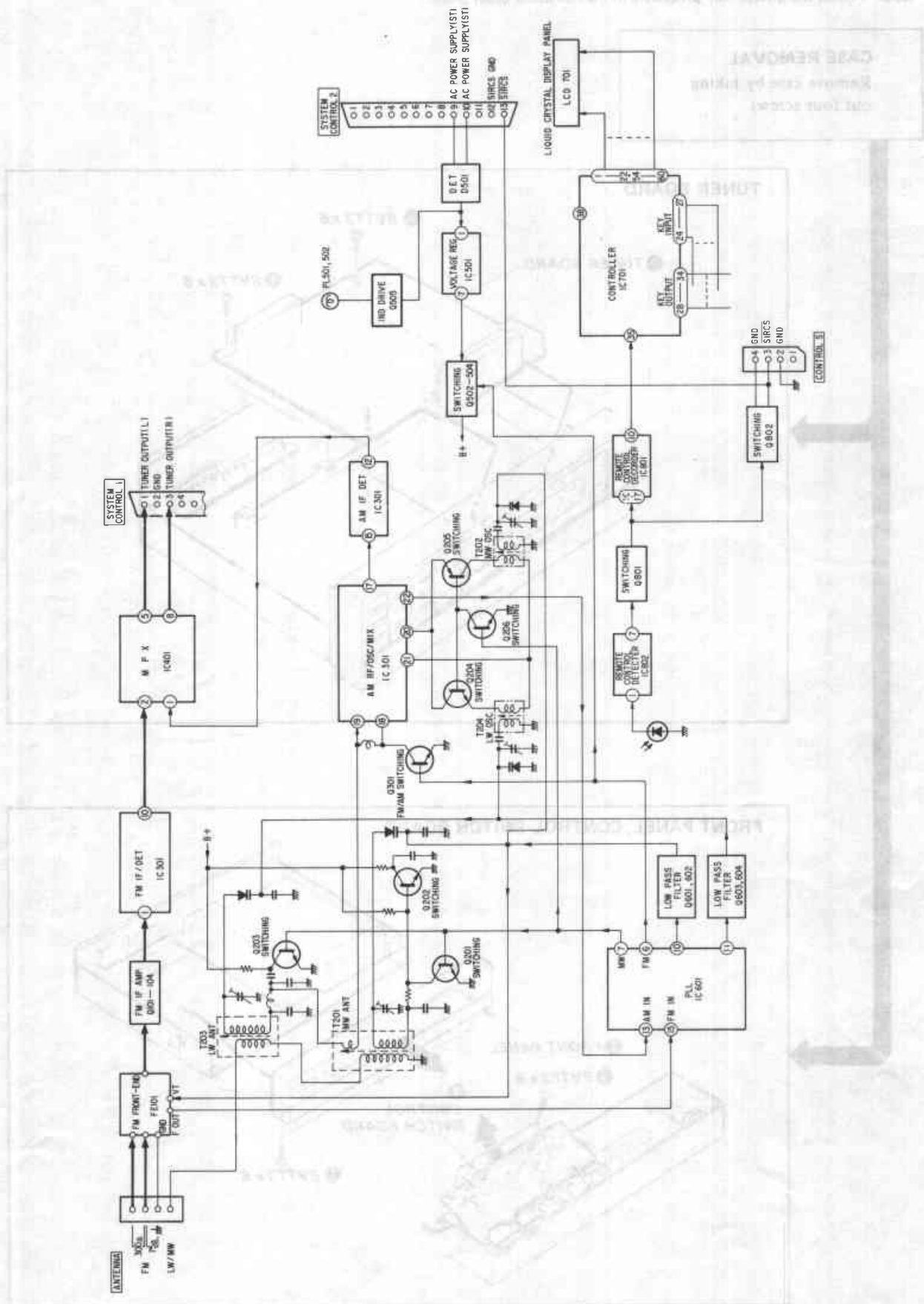
9 ENTER button

10 Tuning + and – buttons

Press the + button to tune in a higher frequency and the – button for a lower frequency.
Hold the button down for continuous change of frequency.

SECTION 1

BLOCK DIAGRAM



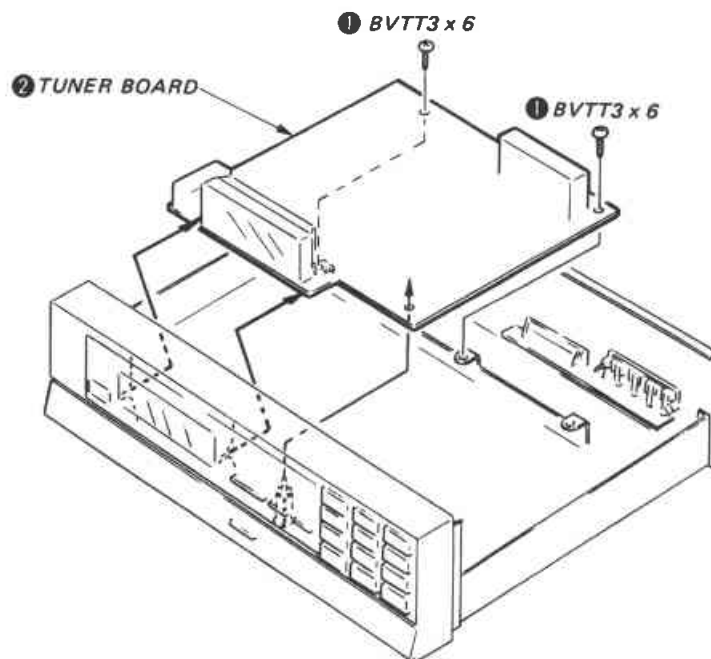
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

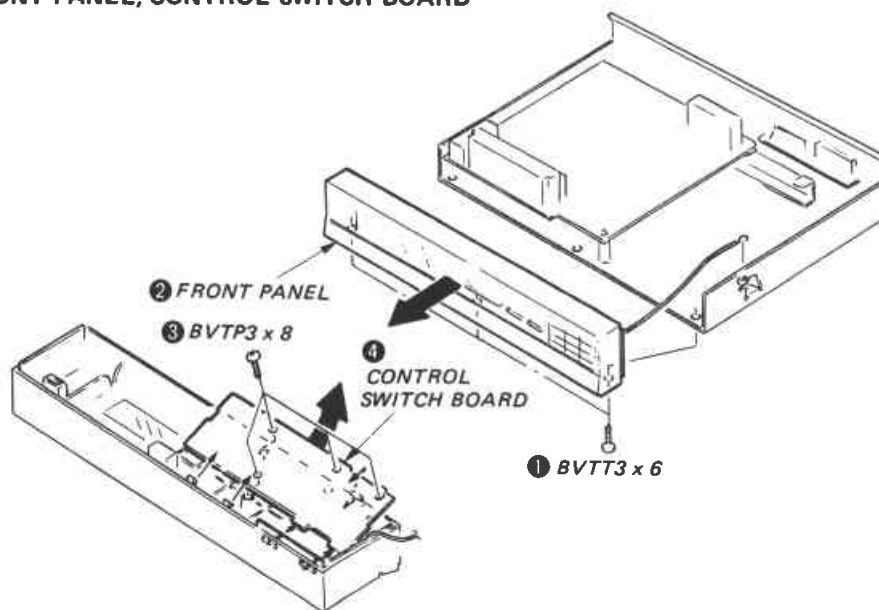
CASE REMOVAL

Remove case by taking out four screws.

TUNER BOARD



FRONT PANEL, CONTROL SWITCH BOARD



SECTION 3 ADJUSTMENTS

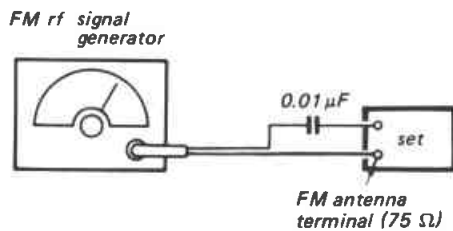
FM SECTION

FM Discriminator Alignment

Setting:

BAND select button FM

Procedure:

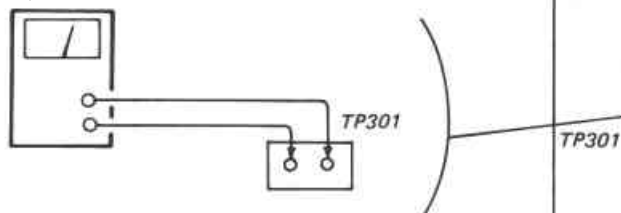


Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Modulation: 1 kHz, 40 kHz deviation (100%)

1. Tune the set to 98 MHz.
2. Adjust T301 for 0 V reading on the VOM. NULL Adjustment

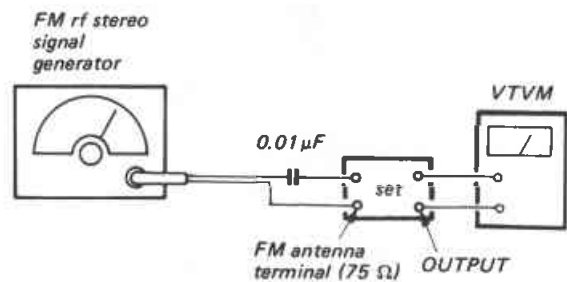
Note: When the ceramic filter is replaced, these adjustments should be made.

VOM
(range: 2.5 V dc)



FM stereo Separation Adjustment

Procedure:



Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Mode: Stereo
Modulation:
Audio (1 kHz): 33.75 kHz deviation (40.6%)
Pilot (19 kHz): 7.5 kHz deviation (18.8%)
Sub-channel (38 kHz): 33.75 kHz deviation (40.6%)

M stereo generator out channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ [Ⓐ] Adjust RV401 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ [Ⓒ] Adjust RV401 for minimum reading.

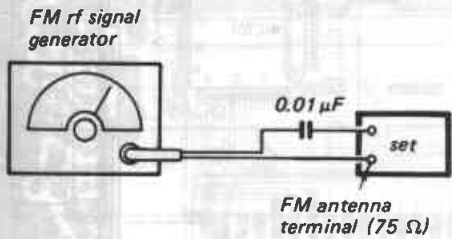
Stereo separation: Ⓐ - Ⓑ[Ⓐ]
Stereo separation: Ⓒ - Ⓓ[Ⓒ]

parations of both channels should be equal.

The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement.

M TUNED Indication Lighting Level Adjustment

Setting:



Carrier frequency: 98 MHz
Modulation: 1 kHz, 40 kHz deviation (100%)
Output level: 17.8 μV (25 dB)

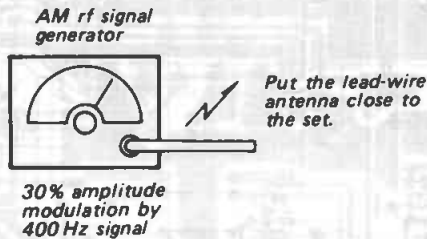
1. Tune the set to 98 MHz.
2. Adjust RV301 so that the TUNED indicator lights up.

MW/LW SECTION

MW adjustment should be performed

Setting:

BAND select button: MW/LW



• Rej
sevi
trac
by

MW T
Adju on V
1,40
CT

AM FREQUENCY COVERAGE ADJUSTMENT

adjustment part	reading on VOM	frequency indication
T202	1.0 ± 0.2 V	522 kHz
CT202	9 ± 0.4 V	1,611 kHz

T202

CT202

AM IF ALIGNMENT

Adjust for a maximum reading on VTVM.

450 kHz

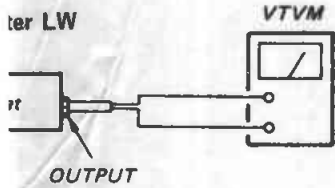
T302

T302

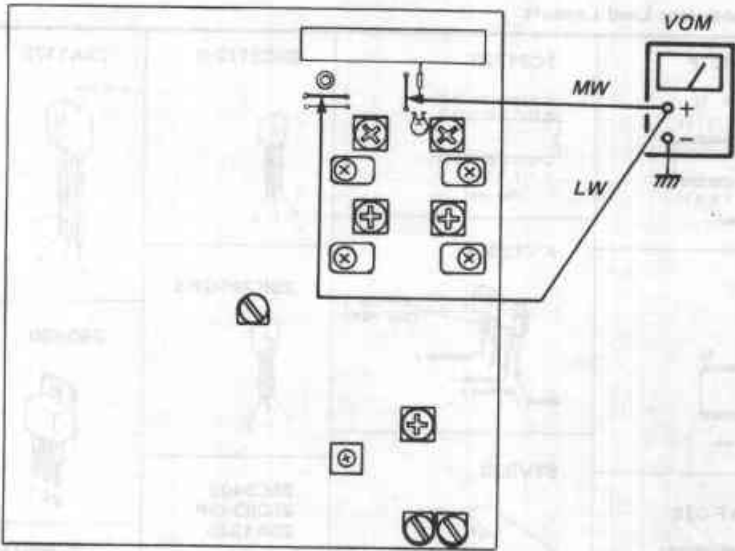
AM TUNED IND

BAND select s

1. Output 50 generator.
2. Adjust RV

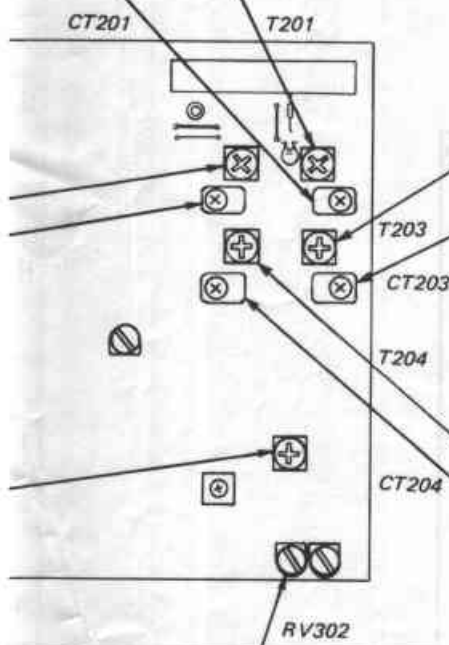


At the procedures in each adjustment times, and the frequency coverage and range adjustments should be finally done with trimmer capacitors.



CHECKING ADJUSTMENT	
Adjust for a maximum reading on VOM.	
Hz	603 kHz
Trimmer	T201

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
162 kHz	270 kHz
T203	CT203



adjustment part	reading on VOM	frequency indication
T204	1 ± 0.2 V	144 kHz
CT204	9 ± 0.4 V	288 kHz

LW FREQUENCY COVERAGE ADJUSTMENT

ION LIGHTING LEVEL ADJUSTMENT
1: LW
V(94dB), 216kHz from AM rf signal
so that the LED lights up.

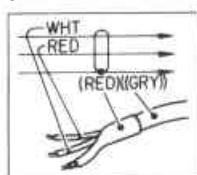
SECTION 4
DIAGRAMS4-1. MOUNTING
DIAGRAM

● Semiconductor Lead Layouts

M50760-421P (Top view)	TC9172P (Top view)	2SC3112-B 	2SA1175
LA1265 LA3401 (Top view)	KV1236Z (MARKING SIDE VIEW)	2SK246GR3 	2SD880
TC9302AF-018 (MARKING SIDE VIEW)	S1VB20 	2SC3402 2SC634SP 2SA1345 	2SC380TMY
LA5666 (Marking side view)	1SS132 		
CX20106A (Marking side view)	PH302D 		
	SLP9070 		

Note:

- Color code of sleeving over the end of the jacket.

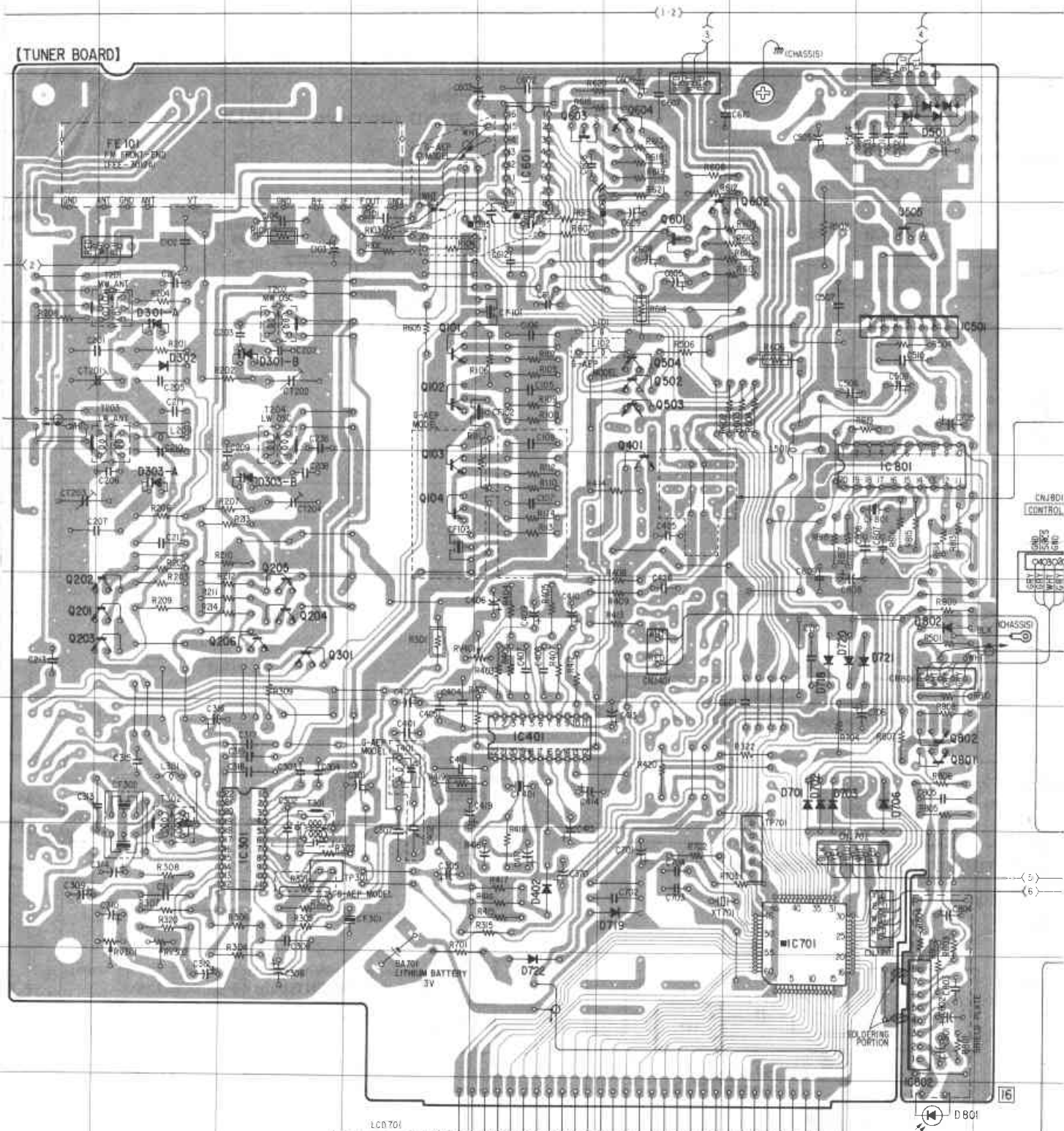


- : parts extracted from the component side.
- : part mounted on the conductor side.
- ⬅ : indicates side identified with part number.

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D301-A	2-C	IC-301	3-H
D301-B	3-D	IC-401	5-H
D302	2-D	IC-501	8-C
D303-A	2-E	IC-601	5-B
D303-B	3-E	IC-701	7-H
D401	10-I	IC-801	8-E
D402	5-H	IC-802	8-I
D501	8-B	Q101	4-D
D701	7-G	Q102	4-D
D702	7-G	Q103	4-E
D703	7-G	Q104	4-E
D706	8-G	Q201	1-F
D709	12-I	Q202	1-F
D710	11-I	Q203	1-F
D711	11-I	Q204	3-F
D712	12-I	Q205	3-E
D713	15-J	Q206	3-F
D714	15-I	Q301	3-F
D715	15-H	Q401	6-D
D716	14-H	Q501	7-B
D717	14-H	Q502	6-D
D718	7-F	Q503	6-D
D719	6-H	Q504	6-D
D720	7-F	Q505	8-C
D721	8-F	Q601	6-C
D801	8-J	Q602	7-C
D802	8-F	Q603	5-B
		Q604	6-B
		Q801	8-G
		Q802	8-G

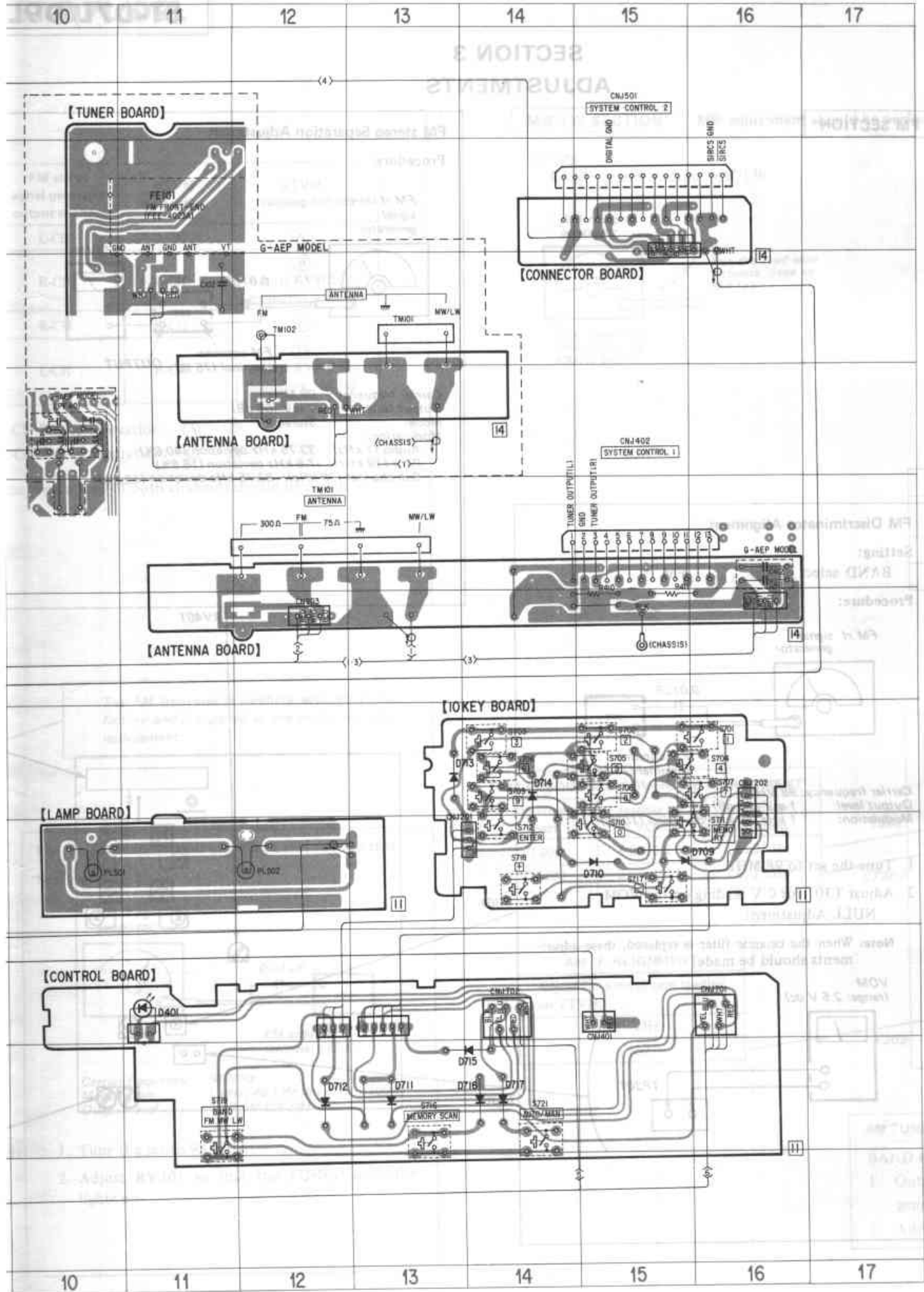
[TUNER BOARD]



LC1701
LCD CRISTAL DISPLAY PANEL 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

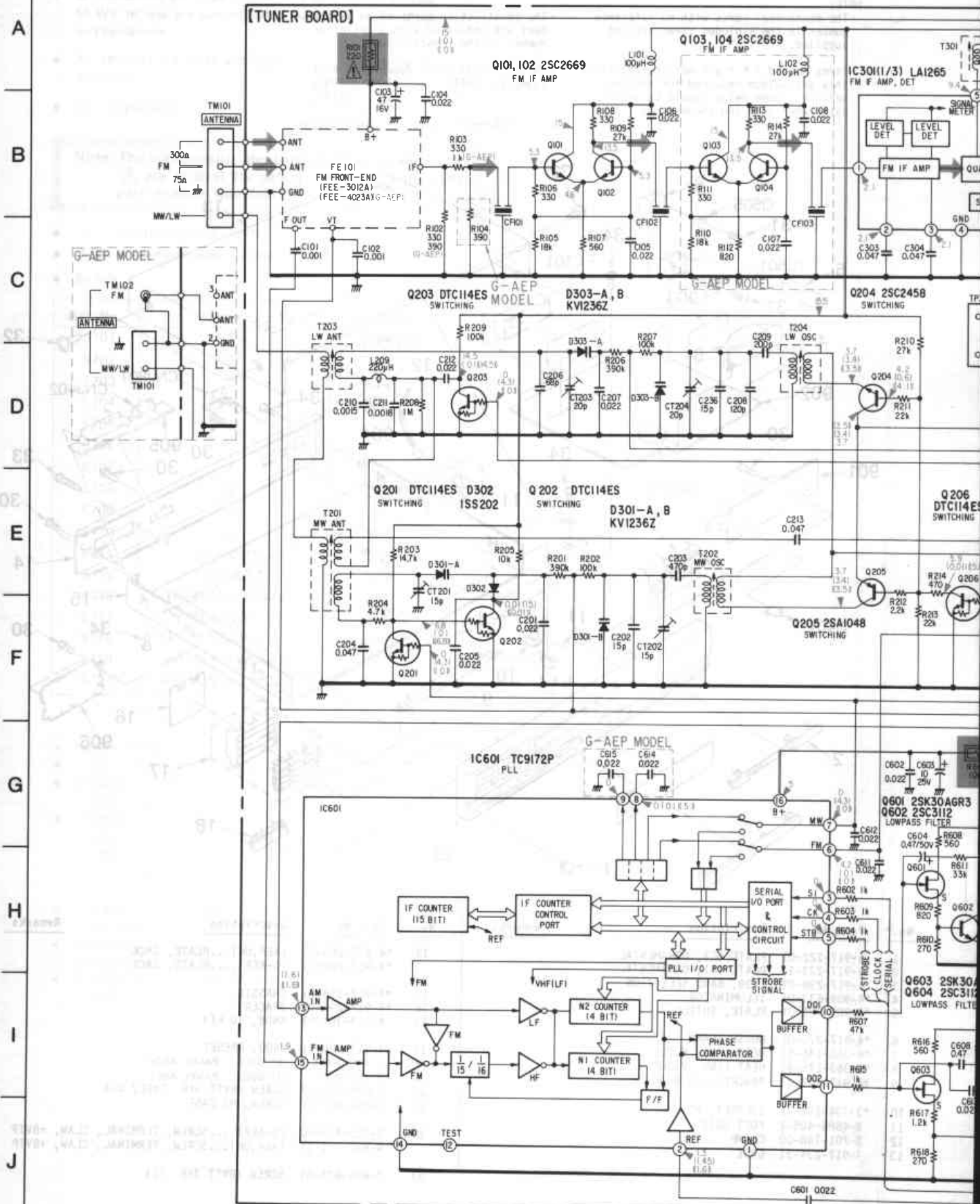
AUTO MANUAL TUNED MUTING MEMORY

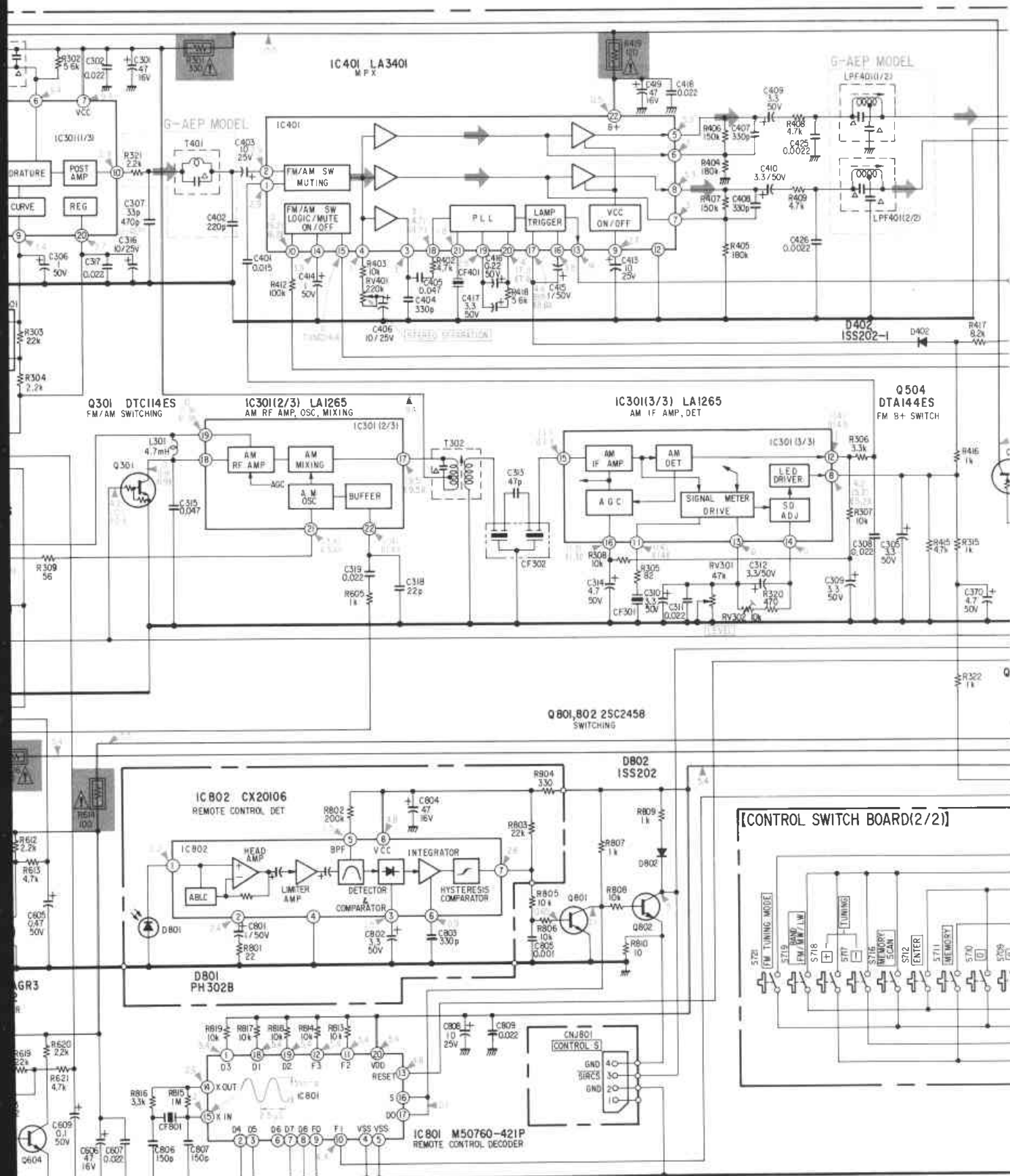
MWLW 00.00 kHz
SWFM 00.00 MHz



4-2. SCHEMATIC DIAGRAM

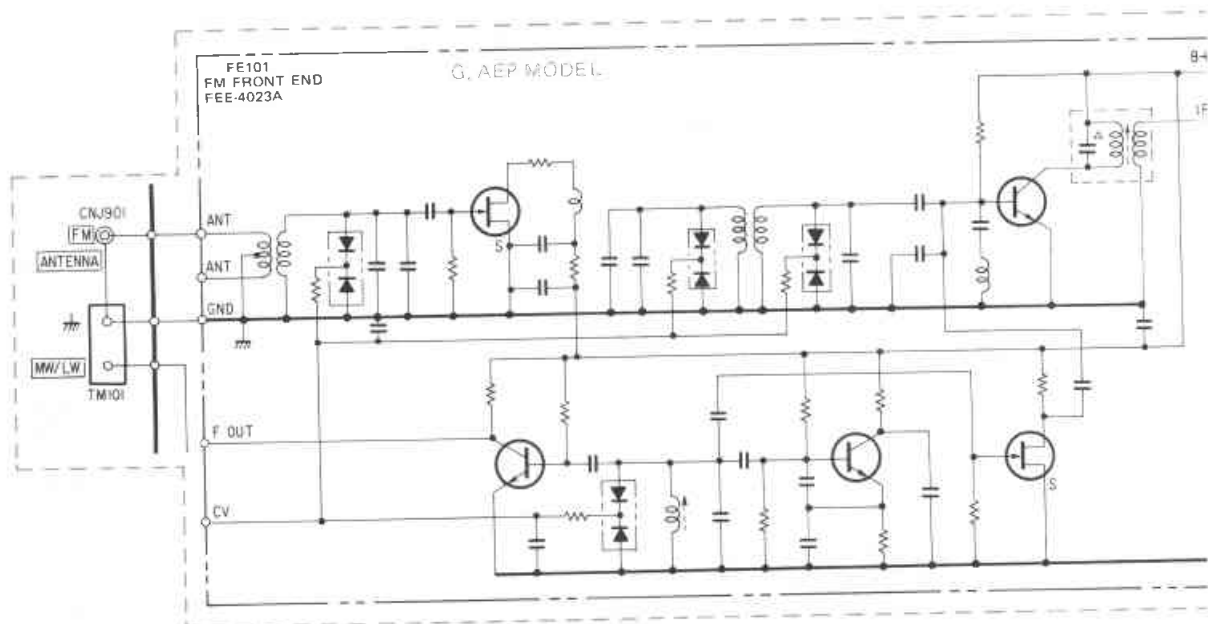
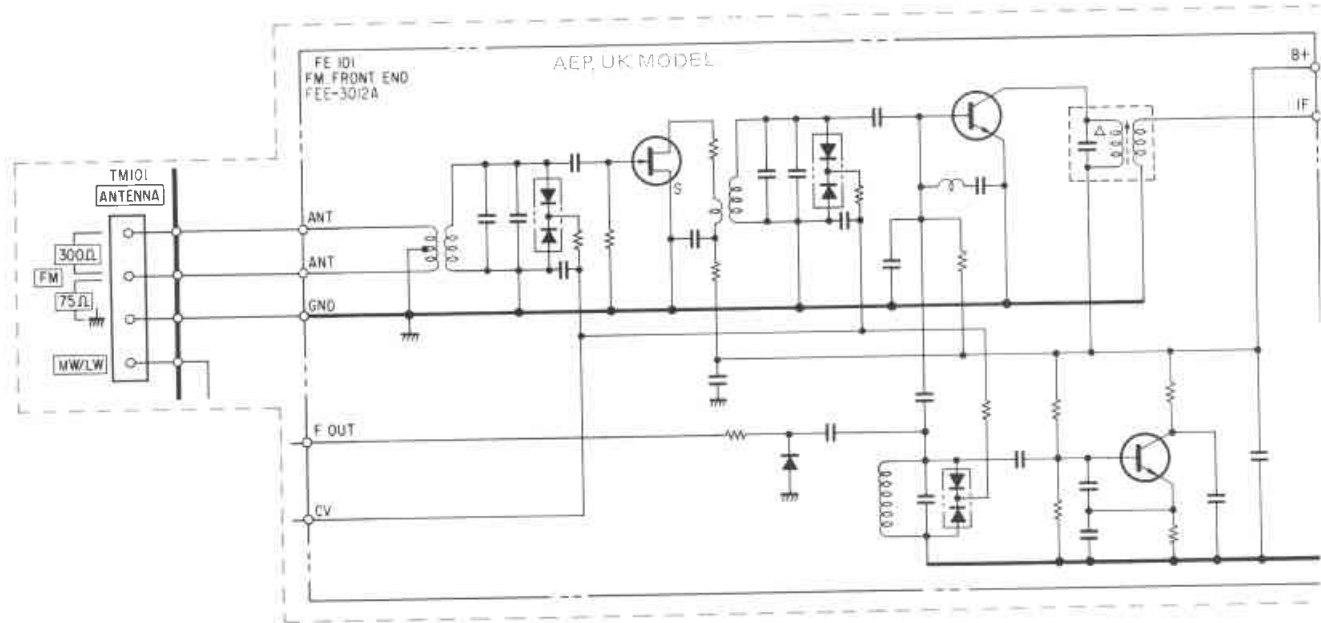
● Refer to page 14 for FM FRONT END schematic diagram and page 15 for note.







4-3. FM FRONT END SCHEMATIC DIAGRAMS



Note:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$ 50 WV 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.
-  : signal path.

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

- Δ : internal component.
-  : nonflammable resistor.
- Switch

Ref. No.	Switch	Position
S701	1	OFF
S702	2	OFF
S703	3	OFF
S704	4	OFF
S705	5	OFF
S706	6	OFF
S707	7	OFF
S708	8	OFF
S709	9	OFF
S710	0	OFF
S711	MEMORY	OFF
S712	ENTER	OFF
S716	MEMORY SCAN	OFF
S717	TUNING -	OFF
S718	TUNING +	OFF
S719	BAND FM/MW/LW	OFF
S721	FM TUNING MODE	OFF

-  : B+bus.
-  : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 $\text{k}\Omega/\text{V}$).
no mark: FM
() : MW
(()) : LW
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in detuned mode by using oscilloscope.
- Voltage variations may be noted due to normal production tolerances.

SECTION 5
EXPLODED VIEW AND PARTS LIST

- 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.

•The construction parts of an assembled part are indicated with a collation number in the remark column.

•Color Indication of Appearance Parts
Example: (RED) KNOB, BALANCE (WHITE)
Cabinet's Color Parts' Color
-
- | No. | Part No. | Description | Remarks | No. | Part No. | Description | Remarks |
|-----|---------------|-----------------------|---------|-----|---------------|---|---------|
| 1 | 4-917-222-01 | PLATE (C), ORNAMENTAL | | 14 | *4-917-289-01 | (AEP,UK)...PLATE, JACK | |
| 2 | 4-917-223-11 | PLATE (A), ORNAMENTAL | | | *4-917-289-11 | (G-AEP)...PLATE, JACK | |
| 3 | 4-917-298-01 | KNOB, BAND SELECTION | | 15 | *4-912-118-51 | CHASSIS | |
| 4 | *4-909-633-01 | ILLUMINATOR | | 16 | *4-917-295-01 | SPACER | |
| 5 | *4-909-705-01 | PLATE, SHIELD | | 17 | 4-919-301-01 | KNOB, 10 KEY | |
| 6 | *4-917-275-01 | HOUSE, LAMP | | 18 | 4-917-299-01 | KNOB, PRESET | |
| 7 | *4-363-146-51 | HEAT SINK, V.OUT | | 19 | X-4917-209-1 | (ST-D7L)...PANEL ASSY | |
| 8 | *4-363-146-41 | HEAT SINK, V.OUT | | | X-4917-208-1 | (ST-D9L)...PANEL ASSY | |
| 9 | *4-917-297-01 | BRACKET, PC BOARD | | 30 | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 N-S | |
| 10 | *3-704-198-21 | SUPPORT, PC | | 31 | 4-886-821-01 | SCREW, M3 CASE | |
| 11 | X-4886-405-2 | FOOT ASSY | | 32 | 3-703-473-00 | (G-AEP)...SCREW, TERMINAL, CLAW, +BVTP | |
| 12 | 3-701-748-00 | CLAMP | | | 4-887-711-11 | (AEP,UK)...SCREW, TERMINAL, CLAW, +BVTP | |
| 13 | 4-917-234-31 | CASE | | 33 | 7-685-871-01 | SCREW +BVTT 3X6 (S) | |
- 16—

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

- 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: μ F, PF: μ F.

RESISTORS

- All resistors are in ohms.
- F : nonflammable

COILS

• MMH : mH, UH : μ H

SEMICONDUCTORS

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

The components identified by shading and mark are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	*1-621-751-11	PC BOARD, CONTROL			
902	*A-4351-559-A	(AEP,UK)...MOUNTED PCB, TUNER			
	*A-4351-560-A	(G-AEP)...MOUNTED PCB, TUNER			
903	*1-621-753-11	PC BOARD, LAMP			
904	*1-618-353-11	PC BOARD, CONNECTOR			
905	*1-618-352-11	PC BOARD, ANTENNA			
906	*1-621-752-11	PC BOARD, 10 KEY			
BA701	1-528-120-00	BATTERY, LITHIUM (CR-2025)			
C101	1-162-294-31	CERAMIC	0.001MF	10%	50V
C102	1-162-294-31	CERAMIC	0.001MF	10%	50V
C103	1-123-332-00	ELECT	47MF	20%	16V
C104	1-161-494-00	CERAMIC	0.022MF	30%	25V
C105	1-161-494-00	CERAMIC	0.022MF	30%	25V
C106	1-161-494-00	CERAMIC	0.022MF	30%	25V
C107	1-161-494-00	CERAMIC	0.022MF	30%	25V
C108	1-161-494-00	CERAMIC	0.022MF	30%	25V
C201	1-161-494-00	CERAMIC	0.022MF	30%	25V
C202	1-102-951-00	CERAMIC	15PF	5%	50V
C203	1-130-014-00	FILM	470PF	5%	50V
C204	1-101-006-00	CERAMIC	0.047MF		50V
C205	1-161-494-00	CERAMIC	0.022MF	30%	25V
C206	1-101-890-00	CERAMIC	75PF	5%	50V
C207	1-161-494-00	CERAMIC	0.022MF	30%	25V
C208	1-102-703-21	CERAMIC	120PF	5%	50V
C209	1-136-010-00	FILM	200PF	5%	50V
C210	1-161-374-11	CERAMIC	0.0015MF	30%	16V
C211	1-102-120-00	CERAMIC	0.0018MF	10%	50V
C212	1-161-494-00	CERAMIC	0.022MF	30%	25V
C213	1-101-006-00	CERAMIC	0.047MF		50V
C236	1-102-805-00	CERAMIC	22PF	5%	50V
C301	1-123-332-00	ELECT	47MF	20%	16V
C302	1-161-494-00	CERAMIC	0.022MF	30%	25V
C303	1-101-006-00	CERAMIC	0.047MF		50V
C304	1-101-006-00	CERAMIC	0.047MF		50V
C305	1-123-382-00	ELECT	3.3MF	20%	50V
C306	1-123-380-00	ELECT	1MF	20%	50V
C307	1-162-211-31	(AEP,UK)...CERAMIC 33PF	5%		50V
C307	1-162-290-31	(G-AEP)...CERAMIC 470P	5%		50V
C308	1-161-494-00	CERAMIC	0.022MF	30%	25V
C309	1-123-382-00	ELECT	3.3MF	20%	50V
C310	1-123-382-00	ELECT	3.3MF	20%	50V
C311	1-161-494-00	CERAMIC	0.022MF	30%	25V
C312	1-123-382-00	ELECT	3.3MF	20%	50V
C313	1-162-215-31	CERAMIC	47PF	5%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C314	1-123-369-00	ELECT	4.7MF	20%	50V
C315	1-101-006-00	CERAMIC	0.047MF		50V
C316	1-123-356-00	ELECT	10MF	20%	25V
C317	1-161-494-00	CERAMIC	0.022MF	30%	25V
C318	1-162-207-31	CERAMIC	22PF	5%	50V
C319	1-161-494-00	CERAMIC	0.022MF	30%	25V
C370	1-123-369-00	ELECT	4.7MF	20%	50V
C401	1-108-583-00	MYLAR	0.015MF	5%	50V
C402	1-162-286-31	(G-AEP)...CERAMIC 220P	10%		50V
C403	1-123-356-00	ELECT	10MF	20%	25V
C404	1-162-288-31	CERAMIC	330PF	10%	50V
C405	1-108-595-00	MYLAR	0.047MF	5%	50V
C406	1-123-356-00	ELECT	10MF	20%	25V
C407	1-162-286-31	(G-AEP)...CERAMIC 220P	10%		50V
C407	1-162-288-31	(AEP,UK)...CERAMIC 330PF	10%		50V
C408	1-162-286-31	(G-AEP)...CERAMIC 220P	10%		50V
C408	1-162-288-31	(AEP,UK)...CERAMIC 330PF	10%		50V
C409	1-123-382-00	ELECT	3.3MF	20%	50V
C410	1-123-382-00	ELECT	3.3MF	20%	50V
C411	1-162-294-31	(G-AEP)...CERAMIC 0.001MF	10%		50V
C412	1-162-294-31	(G-AEP)...CERAMIC 0.001MF	10%		50V
C413	1-123-356-00	ELECT	10MF	20%	25V
C414	1-123-380-00	ELECT	1MF	20%	50V
C415	1-123-380-00	ELECT	1MF	20%	50V
C416	1-124-464-11	ELECT	0.22MF	20%	50V
C417	1-123-382-00	ELECT	3.3MF	20%	50V
C418	1-161-494-00	CERAMIC	0.022MF	30%	25V
C419	1-123-332-00	ELECT	47MF	20%	16V
C425	1-101-002-00	CERAMIC	0.0022MF		50V
C426	1-101-002-00	CERAMIC	0.0022MF		50V
C501	1-101-004-00	CERAMIC	0.01MF		50V
C502	1-101-004-00	CERAMIC	0.01MF		50V
C503	1-101-004-00	CERAMIC	0.01MF		50V
C504	1-101-004-00	CERAMIC	0.01MF		50V
C505	1-126-105-11	ELECT	1000MF	20%	35V
C506	1-123-356-00	ELECT	10MF	20%	25V
C507	1-161-494-00	CERAMIC	0.022MF	30%	25V
C509	1-123-332-00	ELECT	47MF	20%	16V
C510	1-161-494-00	CERAMIC	0.022MF	30%	25V
C515	1-101-005-00	CERAMIC	0.022MF		50V
C601	1-161-494-00	CERAMIC	0.022MF	30%	25V
C602	1-161-494-00	CERAMIC	0.022MF	30%	25V
C603	1-123-356-00	ELECT	10MF	20%	25V
C604	1-123-379-00	ELECT	0.47MF	20%	50V
C605	1-123-379-00	ELECT	0.47MF	20%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C606	1-123-332-00	ELECT	47MF	20%	16V
C607	1-161-494-00	CERAMIC	0.022MF	30%	25V
C608	1-130-776-00	FILM	0.47MF	5%	63V
C609	1-124-463-00	ELECT	0.1MF	20%	50V
C610	1-101-005-00	CERAMIC	0.022MF		50V
C611	1-101-005-00	CERAMIC	0.022MF		50V
C612	1-101-005-00	CERAMIC	0.022MF		50V
C613	1-101-005-00	CERAMIC	0.022MF		50V
C614	1-101-005-00	(G-AEP)...CERAMIC	0.022MF		50V
C615	1-101-005-00	(G-AEP)...CERAMIC	0.022MF		50V
C616	1-101-005-00	(AEP,UK)...CERAMIC	0.022MF		50V
C701	1-123-333-00	ELECT	100MF	20%	16V
C702	1-161-494-00	(G-AEP)...CERAMIC	0.022MF	30%	25V
C703	1-101-880-00	CERAMIC	47PF	5%	50V
C704	1-101-880-00	CERAMIC	47PF	5%	50V
C705	1-123-369-00	ELECT	4.7MF	20%	50V
C706	1-123-380-00	ELECT	1MF	20%	50V
C710	1-161-494-00	(G-AEP)...CERAMIC	0.022MF	30%	25V
C801	1-123-611-00	ELECT	1MF	20%	50V
C802	1-124-258-00	ELECT	3.3MF	20%	50V
C803	1-162-288-31	CERAMIC	330PF	10%	50V
C804	1-124-236-00	ELECT	47MF	20%	16V
C805	1-162-294-31	CERAMIC	0.001MF	10%	50V
C806	1-101-361-00	CERAMIC	150PF	5%	50V
C807	1-101-361-00	CERAMIC	150PF	5%	50V
C808	1-123-356-00	ELECT	10MF	20%	25V
C809	1-101-005-00	CERAMIC	0.022MF		50V
CF101	1-567-389-11	FILTER, CERAMIC			
CF102	1-567-389-11	FILTER, CERAMIC			
CF103	1-567-389-11	(G-AEP)...FILTER, CERAMIC			
CF301	1-527-981-00	FILTER, CERAMIC			
CF302	1-527-937-00	FILTER, CERAMIC			
CF401	1-567-250-11	OSCILLATOR, CERAMIC			
CF801	1-527-532-00	OSCILLATOR, CERAMIC			
CNJ401*1	564-506-11	PLUG, CONNECTOR 3P			
CNJ402	1-562-068-13	SOCKET, CONNECTOR 13P			
CNJ501	1-562-068-13	SOCKET, CONNECTOR 13P			
CNJ701*1	564-507-11	PLUG, CONNECTOR 4P			
CNJ702*1	564-508-11	PLUG, CONNECTOR 5P			
CNJ801	1-559-125-11	CORD (WITH CONNECTOR)			
CT201	1-141-180-00	CAP, TRIMMER 15P			
CT202	1-141-180-00	CAP, TRIMMER 15P			
CT203	1-141-171-00	CAP, TRIMMER 20P			
CT204	1-141-171-00	CAP, TRIMMER 20P			

ELECTRICAL PARTS

Ref.No.	Part No.	Description	
D301	8-719-902-79	DIODE KV1236Z	
D302	8-719-940-76	DIODE 1SS132	
D303	8-719-902-79	DIODE KV1236Z	
D401	1-807-689-11	DIODE SLP9070	
D402	8-719-940-76	DIODE 1SS132	
D501	8-719-511-20	DIODE S1V820	
D701	8-719-940-76	DIODE 1SS132	
D702	8-719-940-76	DIODE 1SS132	
D703	8-719-940-76	DIODE 1SS132	
D706	8-719-940-76	DIODE 1SS132	
D709	8-719-940-76	DIODE 1SS132	
D710	8-719-940-76	DIODE 1SS132	
D711	8-719-940-76	DIODE 1SS132	
D712	8-719-940-76	DIODE 1SS132	
D713	8-719-940-76	DIODE 1SS132	
D714	8-719-940-76	DIODE 1SS132	
D715	8-719-940-76	DIODE 1SS132	
D716	8-719-940-76	DIODE 1SS132	
D717	8-719-940-76	DIODE 1SS132	
D718	8-719-940-76	DIODE 1SS132	
D719	8-719-940-76	DIODE 1SS132	
D720	8-719-940-76	DIODE 1SS132	
D721	8-719-940-76	DIODE 1SS132	
D722	8-719-940-76	DIODE 1SS132	
D801	8-719-118-33	DIODE PHOTO PH302D	
D802	8-719-940-76	DIODE 1SS132	
FE101	1-463-609-11	(AEP,UK)...FRONT END, FM (FEE-3012A)	
FE101	1-463-837-11	(G-AEP)...FRONT END, FM (FEE-4023A)	
IC301	8-759-801-81	IC LA1265	
IC401	8-759-801-80	IC LA3401	
IC501	8-759-802-61	IC LA5666	
IC601	8-759-202-63	IC TC9172P	
IC701	8-759-207-45	IC TC9302AF-018	
IC801	8-759-603-43	IC M50760-421P	
IC802	8-752-602-54	IC CX20106A	
L101	1-410-564-21	MICRO INDUCTOR 100UH	
L102	1-410-564-21	(G-AEP)...MICRO INDUCTOR 100UH	
L209	1-410-568-21	MICRO INDUCTOR 220UH	
L301	1-408-920-11	MICRO INDUCTOR 4.7MMH	
L501	1-410-564-21	MICRO INDUCTOR 100UH	
LCD701	1-807-767-11	DISPLAY PANEL, LIQUID CRYSTAL	
LP401	1-235-221-00	FILTER, LOW PASS	
PL501	1-518-576-31	LAMP, PILOT	
PL502	1-518-576-31	LAMP, PILOT	

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q101	8-729-201-96	TRANSISTOR 2SC380TMY
Q102	8-729-201-96	TRANSISTOR 2SC380TMY
Q103	8-729-201-96	(G-AEP)...TRANSISTOR 2SC380TMY
Q104	8-729-201-96	(G-AEP)...TRANSISTOR 2SC380TMY
Q201	8-729-806-28	TRANSISTOR 2SC3402
Q202	8-729-806-28	TRANSISTOR 2SC3402
Q203	8-729-806-28	TRANSISTOR 2SC3402
Q204	8-729-600-27	TRANSISTOR 2SC634SP
Q205	8-729-117-54	TRANSISTOR 2SA1175
Q206	8-729-806-28	TRANSISTOR 2SC3402
Q301	8-729-806-28	TRANSISTOR 2SC3402
Q401	8-729-806-28	TRANSISTOR 2SC3402
Q502	8-729-806-28	TRANSISTOR 2SC3402
Q503	8-729-600-27	TRANSISTOR 2SC634SP
Q504	8-729-806-20	TRANSISTOR 2SA1345
Q505	8-729-288-02	TRANSISTOR 2SD880
Q601	8-729-202-67	TRANSISTOR 2SK246GR3
Q602	8-729-201-84	TRANSISTOR 2SC3112B
Q603	8-729-202-67	TRANSISTOR 2SK246GR3
Q604	8-729-201-84	TRANSISTOR 2SC3112B
Q801	8-729-600-27	TRANSISTOR 2SC634SP
Q802	8-729-600-27	TRANSISTOR 2SC634SP
R101	1-247-704-11	(AEP,UK)...CARBON 220 5% 1/4W F
R101	1-247-821-00	(G-AEP)...CARBON 390 5% 1/6W
R102	1-249-411-11	(AEP,UK)...CARBON 330 5% 1/6W
R102	1-247-831-00	(G-AEP)...CARBON 1K 5% 1/6W
R103	1-249-411-11	CARBON 330 5% 1/6W
R104	1-247-821-00	(G-AEP)...CARBON 390 5% 1/6W
R105	1-249-432-11	CARBON 18K 5% 1/6W
R106	1-249-411-11	CARBON 330 5% 1/6W
R107	1-249-414-11	CARBON 560 5% 1/6W
R108	1-249-411-11	CARBON 330 5% 1/6W
R109	1-249-434-11	CARBON 27K 5% 1/6W
R201	1-215-483-00	CARBON 390K 5% 1/6W
R202	1-249-441-11	CARBON 100K 5% 1/6W
R203	1-249-425-11	CARBON 4.7K 5% 1/6W
R204	1-249-425-11	CARBON 4.7K 5% 1/6W
R205	1-249-429-11	CARBON 10K 5% 1/6W
R206	1-215-483-00	CARBON 390K 5% 1/6W
R207	1-249-441-11	CARBON 100K 5% 1/6W
R208	1-215-493-00	CARBON 1M 5% 1/6W
R209	1-249-441-11	CARBON 100K 5% 1/6W
R210	1-249-434-11	CARBON 27K 5% 1/6W
R211	1-249-433-11	CARBON 22K 5% 1/6W
R212	1-249-421-11	CARBON 2.2K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R213	1-249-433-11	CARBON 22K 5% 1/6W
R214	1-249-413-11	CARBON 470 5% 1/6W
R301	1-247-706-11	CARBON 330 5% 1/4W F
R302	1-247-849-00	CARBON 5.6K 5% 1/6W
R303	1-247-768-00	CARBON 2.4 5% 1/6W
R304	1-247-864-00	CARBON 24K 5% 1/6W
R305	1-249-404-00	CARBON 82 5% 1/6W
R306	1-249-423-11	CARBON 3.3K 5% 1/6W
R307	1-249-429-11	CARBON 10K 5% 1/6W
R308	1-249-429-11	CARBON 10K 5% 1/6W
R309	1-249-402-11	CARBON 56 5% 1/6W
R315	1-249-417-11	CARBON 1K 5% 1/6W
R320	1-249-413-11	CARBON 470 5% 1/6W
R321	1-249-421-11	(G-AEP)...CARBON 2.2K 5% 1/6W
R322	1-249-417-11	CARBON 1K 5% 1/6W
R402	1-249-425-11	CARBON 4.7K 5% 1/6W
R403	1-249-429-11	CARBON 10K 5% 1/6W
R404	1-247-885-00	CARBON 180K 5% 1/6W
R405	1-247-885-00	CARBON 180K 5% 1/6W
R406	1-215-473-00	CARBON 150K 5% 1/6W
R407	1-215-473-00	CARBON 150K 5% 1/6W
R408	1-249-425-11	CARBON 4.7K 5% 1/6W
R409	1-249-425-11	CARBON 4.7K 5% 1/6W
R410	1-249-425-11	CARBON 4.7K 5% 1/6W
R411	1-249-425-11	CARBON 4.7K 5% 1/6W
R412	1-249-441-11	CARBON 100K 5% 1/6W
R413	1-247-717-11	CARBON 2.2K 5% 1/4W
R414	1-249-441-11	CARBON 100K 5% 1/6W
R415	1-249-425-11	CARBON 4.7K 5% 1/6W
R416	1-249-417-11	CARBON 1K 5% 1/6W
R417	1-249-428-11	CARBON 8.2K 5% 1/6W
R418	1-247-849-00	CARBON 5.6K 5% 1/6W
R419	1-247-701-11	CARBON 120 5% 1/4W F
R420	1-249-429-11	CARBON 10K 5% 1/6W
R501	1-249-393-11	CARBON 10 5% 1/6W
R502	1-206-452-00	METAL OXIDE 3.6 5% 2W F
R504	1-249-437-11	CARBON 47K 5% 1/6W
R506	1-249-429-11	CARBON 10K 5% 1/6W
R602	1-249-417-11	CARBON 1K 5% 1/6W
R603	1-249-417-11	CARBON 1K 5% 1/6W
R604	1-249-417-11	CARBON 1K 5% 1/6W
R605	1-249-417-11	CARBON 1K 5% 1/6W
R606	1-247-700-11	CARBON 100 5% 1/4W F
R607	1-249-437-11	CARBON 47K 5% 1/6W
R608	1-249-414-11	CARBON 560 5% 1/6W

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R609	1-249-416-11	CARBON	820	5%	1/6W
R610	1-249-410-11	CARBON	270	5%	1/6W
R611	1-249-435-11	CARBON	33K	5%	1/6W
R612	1-249-421-11	CARBON	2.2K	5%	1/6W
R613	1-249-425-11	CARBON	4.7K	5%	1/6W
R614	1-249-700-11	CARBON	100	5%	1/4W F
R615	1-249-417-11	CARBON	1K	5%	1/6W
R616	1-249-414-11	CARBON	560	5%	1/6W
R617	1-249-418-11	CARBON	1.2K	5%	1/6W
R618	1-249-410-11	CARBON	270	5%	1/6W
R619	1-249-433-11	CARBON	22K	5%	1/6W
R620	1-249-421-11	CARBON	2.2K	5%	1/6W
R621	1-249-425-11	CARBON	4.7K	5%	1/6W
R701	1-249-425-11	CARBON	4.7K	5%	1/6W
R702	1-249-405-11	CARBON	100	5%	1/6W
R703	1-249-423-11	CARBON	3.3K	5%	1/6W
R704	1-249-425-11	CARBON	4.7K	5%	1/6W
R801	1-249-397-11	CARBON	22	5%	1/6W
R802	1-215-476-00	CARBON	200K	5%	1/6W
R803	1-249-433-11	CARBON	22K	5%	1/6W
R804	1-249-411-11	CARBON	330	5%	1/6W
R805	1-249-429-11	CARBON	10K	5%	1/6W
R806	1-249-429-11	CARBON	10K	5%	1/6W
R807	1-249-417-11	CARBON	1K	5%	1/6W
R808	1-249-429-11	CARBON	10K	5%	1/6W
R809	1-249-417-11	CARBON	1K	5%	1/6W
R810	1-249-393-11	CARBON	10	5%	1/6W
R813	1-249-429-11	CARBON	10K	5%	1/6W
R814	1-249-429-11	CARBON	10K	5%	1/6W
R815	1-215-493-00	CARBON	1M	5%	1/6W
R816	1-249-423-11	CARBON	3.3K	5%	1/6W
R817	1-249-429-11	CARBON	10K	5%	1/6W
R818	1-249-429-11	CARBON	10K	5%	1/6W
R819	1-249-429-11	CARBON	10K	5%	1/6W
RV301	1-228-996-00	RES, ADJ, CARBON 47K			
RV302	1-230-630-11	RES, ADJ, CARBON 10K			
RV401	1-228-998-00	RES, ADJ, CARBON 220K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S701	1-554-303-21	SWITCH, KEY BOARD
S702	1-554-303-21	SWITCH, KEY BOARD
S703	1-554-303-21	SWITCH, KEY BOARD
S704	1-554-303-21	SWITCH, KEY BOARD
S705	1-554-303-21	SWITCH, KEY BOARD
S706	1-554-303-21	SWITCH, KEY BOARD
S707	1-554-303-21	SWITCH, KEY BOARD
S708	1-554-303-21	SWITCH, KEY BOARD
S709	1-554-303-21	SWITCH, KEY BOARD
S710	1-554-303-21	SWITCH, KEY BOARD
S711	1-554-303-21	SWITCH, KEY BOARD
S712	1-554-303-21	SWITCH, KEY BOARD
S716	1-554-303-21	SWITCH, KEY BOARD
S717	1-554-303-21	SWITCH, KEY BOARD
S718	1-554-303-21	SWITCH, KEY BOARD
S719	1-554-303-21	SWITCH, KEY BOARD
S721	1-554-303-21	SWITCH, KEY BOARD
T201	1-402-080-11	COIL, ANT (MW)
T202	1-406-089-11	COIL (OSC)
T203	1-402-071-11	COIL (ANT)
T204	1-406-207-11	COIL, LW (OSC)
T301	1-404-659-11	COIL, DISCRIMINATOR
T302	1-404-535-11	COIL (IFT)
T401	1-235-126-00	(G-AEP)...ENCAPSULATED COMPONENT
TM101	1-536-707-00	(G-AEP)...TERMINAL, PUSH 2P
TM101	1-536-708-00	(AEP,UK)...TERMINAL, PUSH 4P
TM102	1-563-199-11	(G-AEP)...CONNECTOR PAL
TP301	*1-560-060-00	PIN, CONNECTOR 2P
TP701	*1-560-063-00	PIN, CONNECTOR 5P
XT701	1-567-767-11	VIBRATOR, CRYSTAL

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