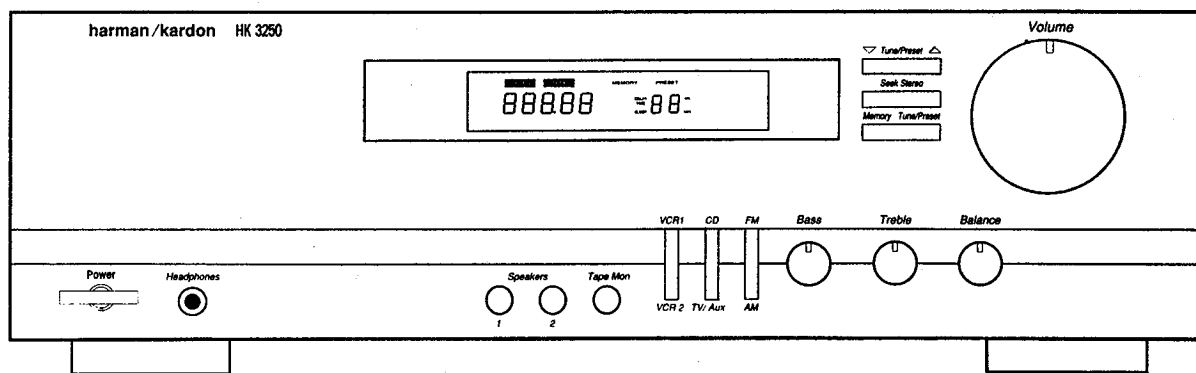


The Harman Kardon Model HK3250 AUDIO AND VIDEO RECEIVER

Manual A

Technical Manual



■ CONTENTS ■

SPECIFICATIONS	2	GENERAL UNIT	25
LEAKAGE TEST	4	PRINTED CIRCUIT BOARDS	27
CONTROLS AND FUNCTIONS	5	ELECTRICAL PARTS LIST	31
BLOCK DIAGRAM	7	SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM	35
DISASSEMBLY PROCEDURES	9	TRANSISTORS LEAD IDENTIFICATION	38
CIRCUIT DESCRIPTION	11	PACKAGE	39
ALIGNMENT PROCEDURES	18	WIRING DIAGRAM	41
TROUBLESHOOTING	21	SCHEMATIC DIAGRAMS (I, II, III)	42
GENERAL UNIT PARTS LIST	24		

harman/kardon

Parts and Service Office
80 Crossways Park West, Woodbury, N.Y. 11797
1112-HK3250A G9603 1200 Printed in Korea

SPECIFICATIONS

● FRONT AMP SECTION

	Nominal	Limit
RMS Output Power		
THD 3 %, 4 ohms	≥ 67 W	≥ 65 W
Both Channel Driven (40 Hz-10 kHz)		
THD at 67 W, 4 ohms		
40 Hz	≤ 0.2 %	≤ 0.3 %
1 kHz	≤ 0.2 %	≤ 0.3 %
10 kHz	≤ 0.2 %	≤ 0.3 %
IM Distortion at 67 W, 4 ohms, 60:7000 Hz = 4:1		
	≤ 0.1 %	≤ 0.3 %
Input Sensitivity at 67 W, 4 ohms		
CD, AUX, VCR	170 mV	170±30 mV
S/N Ratio Input Shorted at Volume Max. (WTD IHF-A) at 67 W, 4 ohms		
CD, AUX	≥ 95 dB	≥ 90 dB
TV, VCR1, 2	≥ 85 dB	≥ 80 dB
Tone Control		
Bass, 50 Hz	± 10 dB	± 10±2 dB
Treble, 10 kHz	± 10 dB	± 10±2 dB
Frequency Response at 1 W, 4 ohms		
CD/AUX		
20 Hz, 20 kHz	± 1.0 dB	± 1.5 dB
Channel Crosstalk Input Shorted at 67 W, 4 ohms		
1 kHz	≥ 60 dB	≥ 50 dB
10 kHz	≥ 47 dB	≥ 45 dB

● FM SECTION

	Nominal	Limit
Tuning Cover Range 50 kHz Step		
Low	87.5 MHz	
High	108.0 MHz	
Usable Sensitivity 75 ohms Input		
S/N 30 dB UL/CSA	≤ 14.2 dBf	≤ 17.2 dBf
S/N 26 dB Europe		
Image Rejection at 106 MHz		
UL/CSA	≥ 40 dB	≥ 35 dB
Europe	≥ 80 dB	≥ 70 dB
IF Rejection, at 90 MHz	≥ 80 dB	≥ 70 dB
Full Limiting at -3 dB	≤ 12.2 dBf	≤ 15.2 dBf
50 dB Quieting Sensitivity at 98 MHz, 75 k DEV		
IHF Band Pass Filter		
Mono	≤ 20.2 dBf	≤ 23.3 dBf
Stereo	≤ 40.3 dBf	≤ 43.3 dBf
Distortion, 1 kHz 100 % MOD at 98 MHz		
IHF Band Pass Filter		
Mono	≤ 0.3 %	≤ 0.5 %
Stereo	≤ 0.5 %	≤ 0.7 %

S/N Ratio, 1 mV 75K, DEV Input, 100 % MOD, at 98 MHz
IHF Band Pass Filter

Mono	≥ 70 dB	≥ 65 dB
Stereo	≥ 65 dB	≥ 60 dB
Frequency Response, 20 Hz-15 kHz		
	± 1.5 dB	± 3 dB
AM-Rejection Ratio		
(100 μV-20 mV Input)	≥ 60 dB	≥ 50 dB
Search Level (at 98 MHz)	31.2 dBf	31.2± 5 dBf
Automatic Stereo Threshold at 98 MHz		
	31.2 dBf	31.2± 5 dBf
Muting Threshold. at 98 MHz	31.2 dBf	31.2± 5 dBf
Overload. at 98 MHz		
100 % MOD 100 mV RF Input	≤ 0.3 %	≤ 0.5 %
Suprious Response.		
at 98 MHz Antenna Input 3 μV	≥ 70 dB	≥ 60 dB
Capture Ratio 40/60 dBf	≤ 2 dB	≤ 2.5 dB
Alternative Channel Selectivity. ≥ 65 dB		≥ 55 dB
Input at 98 MHz		
Stereo Separation, 100% MOD, 1 mV Input at 98 MHz		
IHF Band Pass Filter		
100 Hz	≥ 40 dB	≥ 35 dB
1 kHz	≥ 45 dB	≥ 40 dB
10 kHz	≥ 35 dB	≥ 30 dB
Output Voltage at 75 kHz DEV, 1 kHz MOD, 1 mV Input		
Mono	600 mV 600± 150 mV	
Stereo	550 mV 550± 150 mV	

● AM SECTION

	Nominal	Limit
Tuning Cover Range. 10 kHz/9 kHz Step		
Low	520/522 kHz	
High	1710/1611 kHz	
Usable Sensitivity.		
400Hz, 30% MOD, S/N 20 dB	≤ 500 μV/m	≤ 1000 μV/m
Image Rejection at 1400 kHz	≥ 35 dB	≥ 30 dB
IF Rejection at 600 kHz	≥ 50 dB	≥ 45 dB
AGC Figure of Merit.	≥ 50 dB	≥ 45 dB
From 100 mV/m at 1000 kHz		
Distortion.	≤ 0.8 %	≤ 1.5 %
400 Hz, 30% MOD, 5 mV/m Input		
IF Bandwidth	6 kHz	4-11 kHz
6 dB Down, 350 μV/m		
Audio Response, 5 mV/m Input 1 kHz 0 dB, 1000 kHz		
at -6 dB	80 -2.2 kHz	100 2 kHz
Selecticity at 350 μV/m		
± 10 kHz	≥ 25 dB	≥ 20 dB

S/N Ratio, 1000 kHz, With Antenna Input 5 mV/m

≥ 43 dB ≥ 40 dB

RF Overload, 400 Hz 80 % MOD, 100 mV/m Input

≤ 5 % ≤ 10 %

Search Level, (at 1000 kHz) 800 μ V 800 $\pm$ 6 dB μ V

Output Voltage, 400 Hz 30 % MOD 5 mV/m Input

200 mV 200 $\pm$ 40 mV

Whistle ≤ 10 % ≤ 15 %

Note : Nominal speces represent the design specs. All units should be able to approximate these. Some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable ; in no case should a unit fail to meet limit specs. This manual is based on the Europe Standard wiring diagram, and information on regional component variations through use of parts list. Design and specifications are subject to change without notice for improvement.

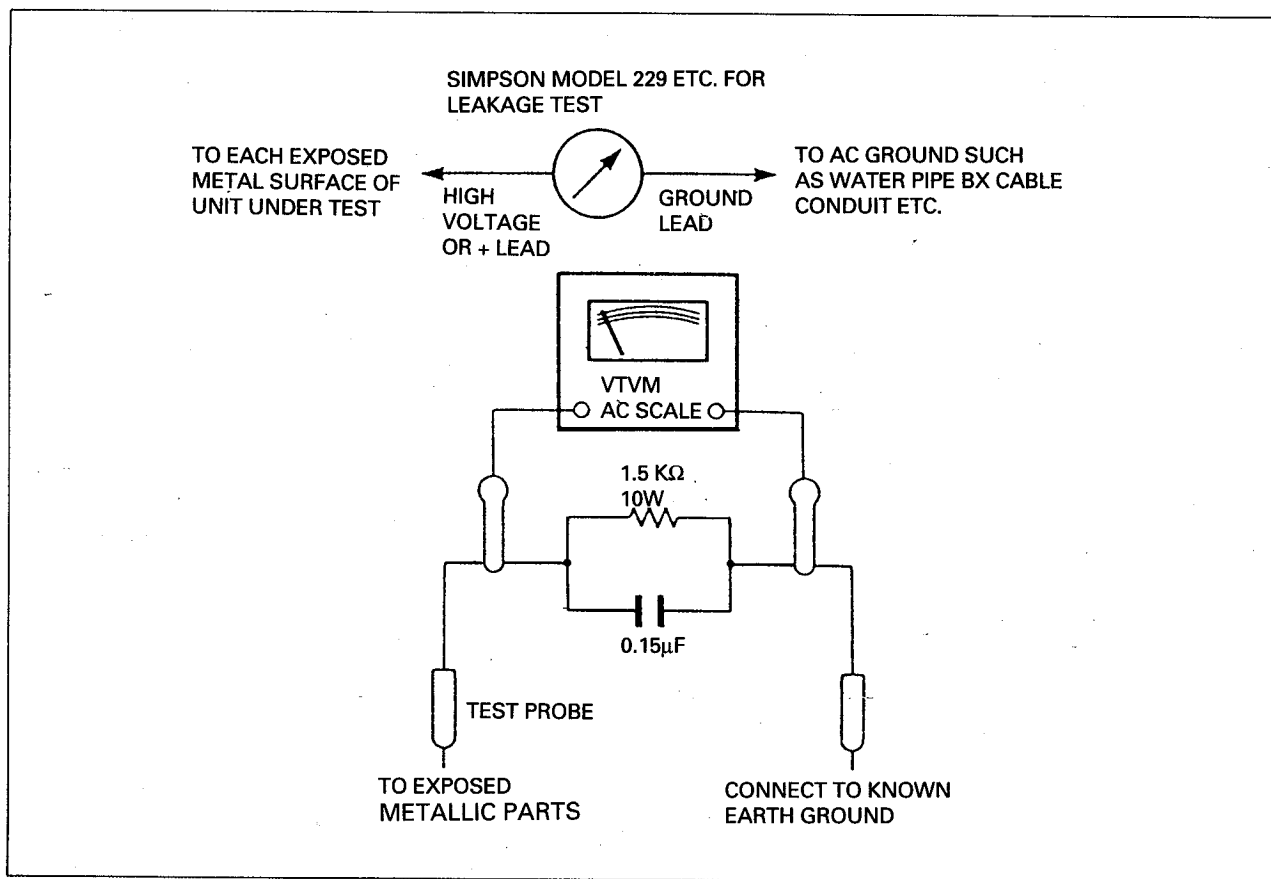
LEAKAGE TEST

Before returning the unit to the user, perform the following safety checks:

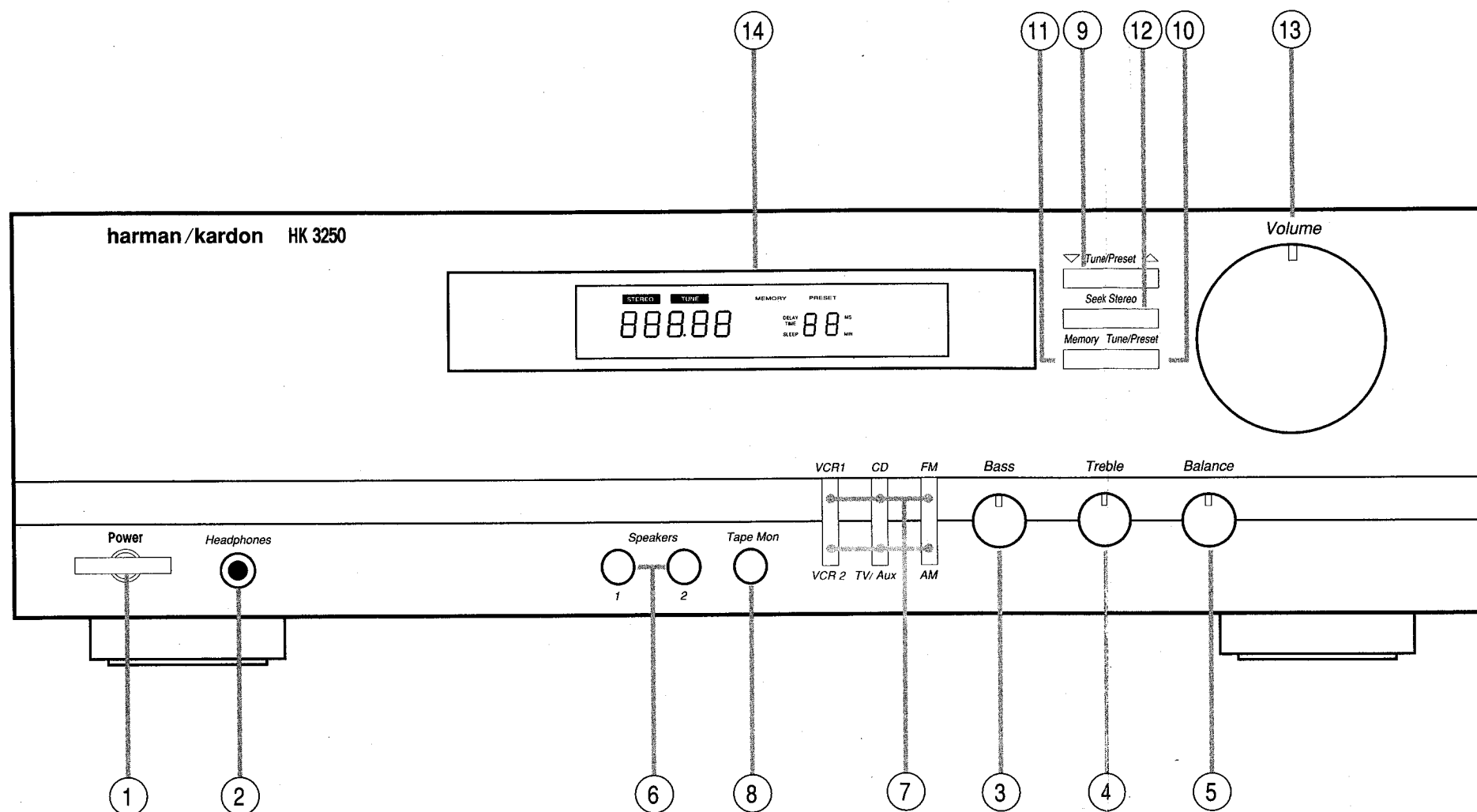
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metallic parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. Which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows: Plug the power cord directly into a 230-volt AC receptacle (do not use an Isolation Transformer for this test).

Using two clip leads, connects a 1500 Ohm, 10-watt resistor paralleled by a 0.15 μ F capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 Ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)

A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



CONTROLS AND FUNCTIONS



1. POWER BUTTON

Press this button to turn the power on. Press again to turn the power off. If you connect the other components to the switched outlet, it can also be used as a system power button.

2. HEADPHONE JACK

Stereo headphones can be plugged into this jack for private listening. Headphone impedance should be between 8 and 2K ohms. Best results between 200 and 400 ohms.

3. BASS CONTROL

Modifies the low-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

4. TREBLE CONTROL

Modifies the high-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

5. BALANCE CONTROL

This control is used for balancing the relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume from the left speaker, counterclockwise rotation reduces the volume from the right speaker.

6. 1/2 SPEAKER SWITCHES

This switches allow you to select various combinations of speakers as follows ;

- To drive 1 pair of speakers, push only the speaker 1 switch in.
- To drive a second pair of speakers, push only the speaker 2 switch in.
- To drive both pairs of speakers, push both 1 and 2 switches in.
- To use headphones for private listening or monitoring, leave both 1 and 2 switches pushed out

7. INPUT FUNCTION SELECTOR BUTTONS

Press these buttons to select the desired input source.

8. TAPE MONITOR BUTTON

Press this button to select input from a tape deck.

9. TUNE/PRESET BUTTON

When AUTO is not lit, the TUNE/PRESET buttons will allow you to tune to a station manually.

10. TUNE/PRESET SCAN BUTTONS

Press the TUNE/PRESET button to light up PRESET then use the up/down buttons momentarily to scan the preset station frequencies. The receiver stops at each preset location from 1-30 that has been entered in memory. Hold the button down to skip through the presets quickly. In the TUNE mode press these buttons to change selected frequencies.

11. STATION MEMORY BUTTON

Use this button to store an AM or FM frequency. Press this button and select one of 30 preset locations to store the frequency with the TUNE/PRESET buttons while the MEM indicator blinks, press MEMORY again to store preset station.

NOTE : When you store a frequency in a memory location that already contains a frequency, you replace the previous frequency. If your receiver is disconnected from AC power for more than about 2 weeks, it loses all stored frequencies.

12. SEEK STEREO BUTTON

Press this button, "Auto" will illuminate in the display. Then press the TUNE/PRESET button. The tuner will automatically seek out stations in your area that have enough signal strength to be listenable. The tuner will stop on stations until the SEEK/STEREO button is pressed again.

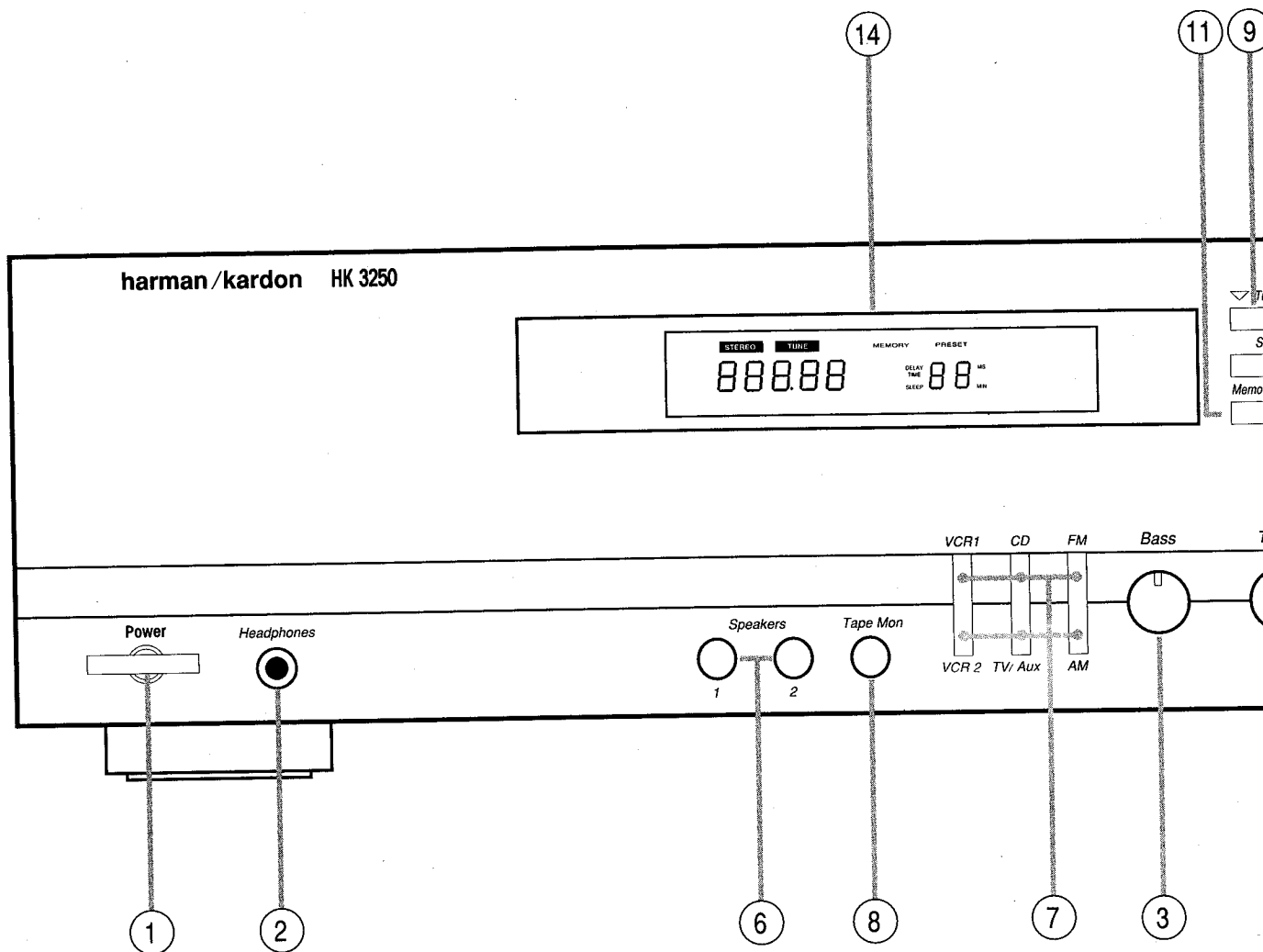
13. VOLUME CONTROL

Turn the VOLUME clockwise to increase the volume and counterclockwise to decrease it.

14. DISPLAY WINDOW

This window shows the state of operation for easier control of the receiver. It also contains the IR Remote Sensor.

CONTROLS AND FUNCTIONS



1. POWER BUTTON

Press this button to turn the power on. Press again to turn the power off. If you connect the other components to the switched outlet, it can also be used as a system power button.

2. HEADPHONE JACK

Stereo headphones can be plugged into this jack for private listening. Headphone impedance should be between 8 and 2K ohms. Best results between 200 and 400 ohms.

3. BASS CONTROL

Modifies the low-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

4. TREBLE CONTROL

Modifies the high-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

5. BALANCE CONTROL

This control is used for balancing the relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume from the left speaker, counterclockwise rotation reduces the volume from the right speaker.

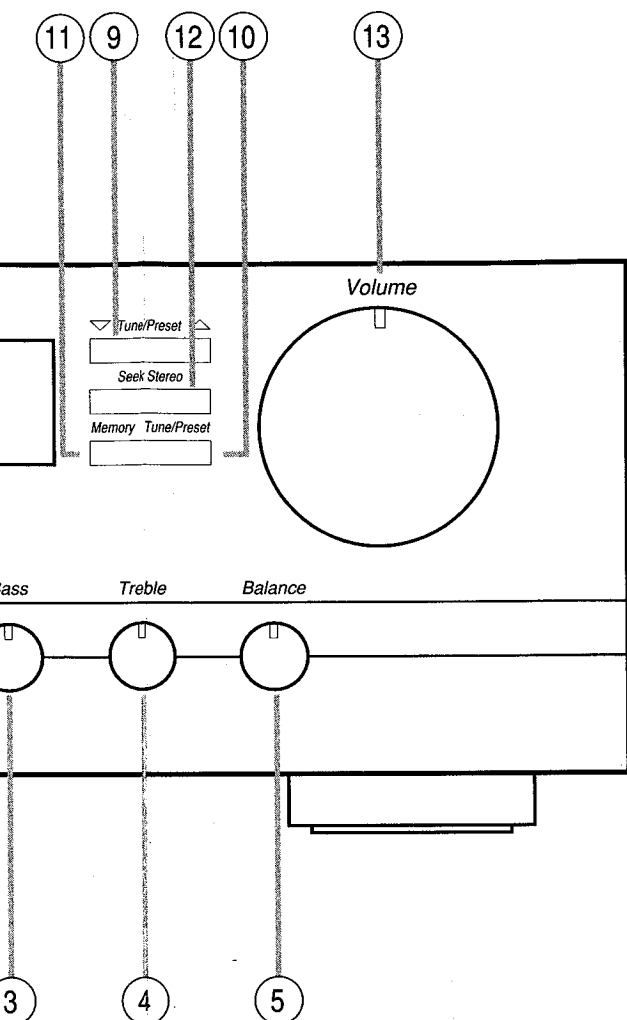
6. 1/2 SPEAKER SWITCH

This switches allow you to select various combinations of speakers as follows ;

- To drive 1 pair of speakers, push only the speaker 1 switch
- To drive a second pair of speakers, push only the speaker 2 switch
- To drive both pairs of speakers, push both 1 and 2 switches
- To use headphones for private listening or monitoring, push both 1 and 2 switches pushed in

7. INPUT FUNCTION SELECTION BUTTONS

Press these buttons to select the desired input source.



8. TAPESwitches

low you to select
ations of speakers as

ir of speakers, push
aker 1 switch in.

cond pair of speakers,
e speaker 2 switch in.

n pairs of speakers,
and 2 switches in.

phones for private
onitoring, leave both
hes pushed out

CTION SELECTOR

tons to select the
ource.

8. TAPE MONITOR BUTTON

Press this button to select input from a tape deck.

9. TUNE/PRESET BUTTON

When AUTO is not lit, the TUNE/PRESET buttons will allow you to tune to a station manually.

10. TUNE/PRESET SCAN BUTTONS

Press the TUNE/PRESET button to light up PRESET then use the up/down buttons momentarily to scan the preset station frequencies. The receiver stops at each preset location from 1-30 that has been entered in memory. Hold the button down to skip through the presets quickly. In the TUNE mode press these buttons to change selected frequencies.

11. STATION MEMORY BUTTON

Use this button to store an AM or FM frequency. Press this button and select one of 30 preset locations to store the frequency with the TUNE/PRESET buttons while the MEM indicator blinks, press MEMORY again to store preset station.

NOTE : When you store a frequency in a memory location that already contains a frequency, you replace the previous frequency. If your receiver is disconnected from AC power for more than about 2 weeks, it loses all stored frequencies.

12. SEEK STEREO BUTTON

Press this button, "Auto" will illuminate in the display. Then press the TUNE/PRESET button. The tuner will automatically seek out stations in your area that have enough signal strength to be listenable. The tuner will stop on stations until the SEEK/STEREO button is pressed again.

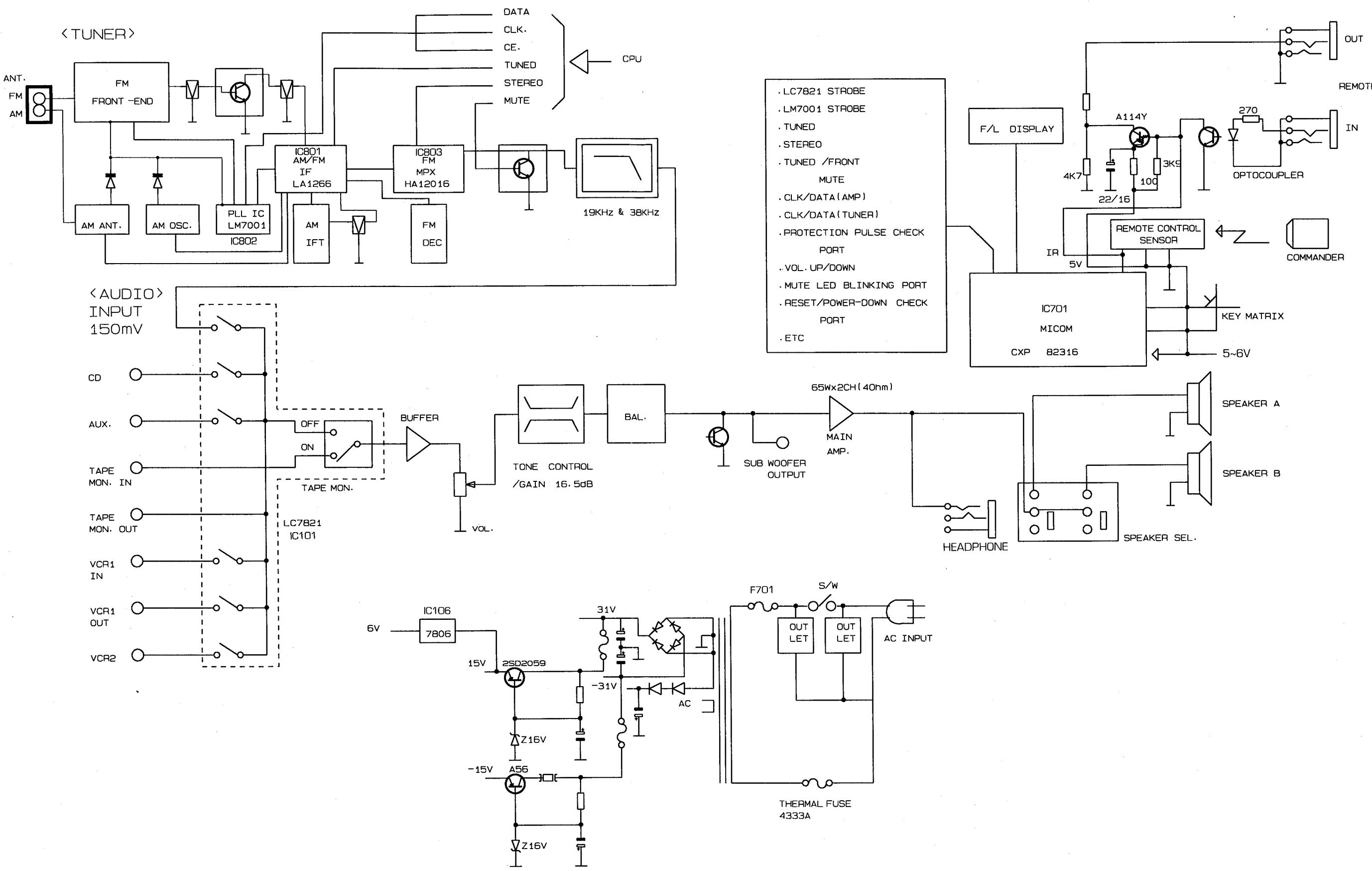
13. VOLUME CONTROL

Turn the VOLUME clockwise to increase the volume and counterclockwise to decrease it.

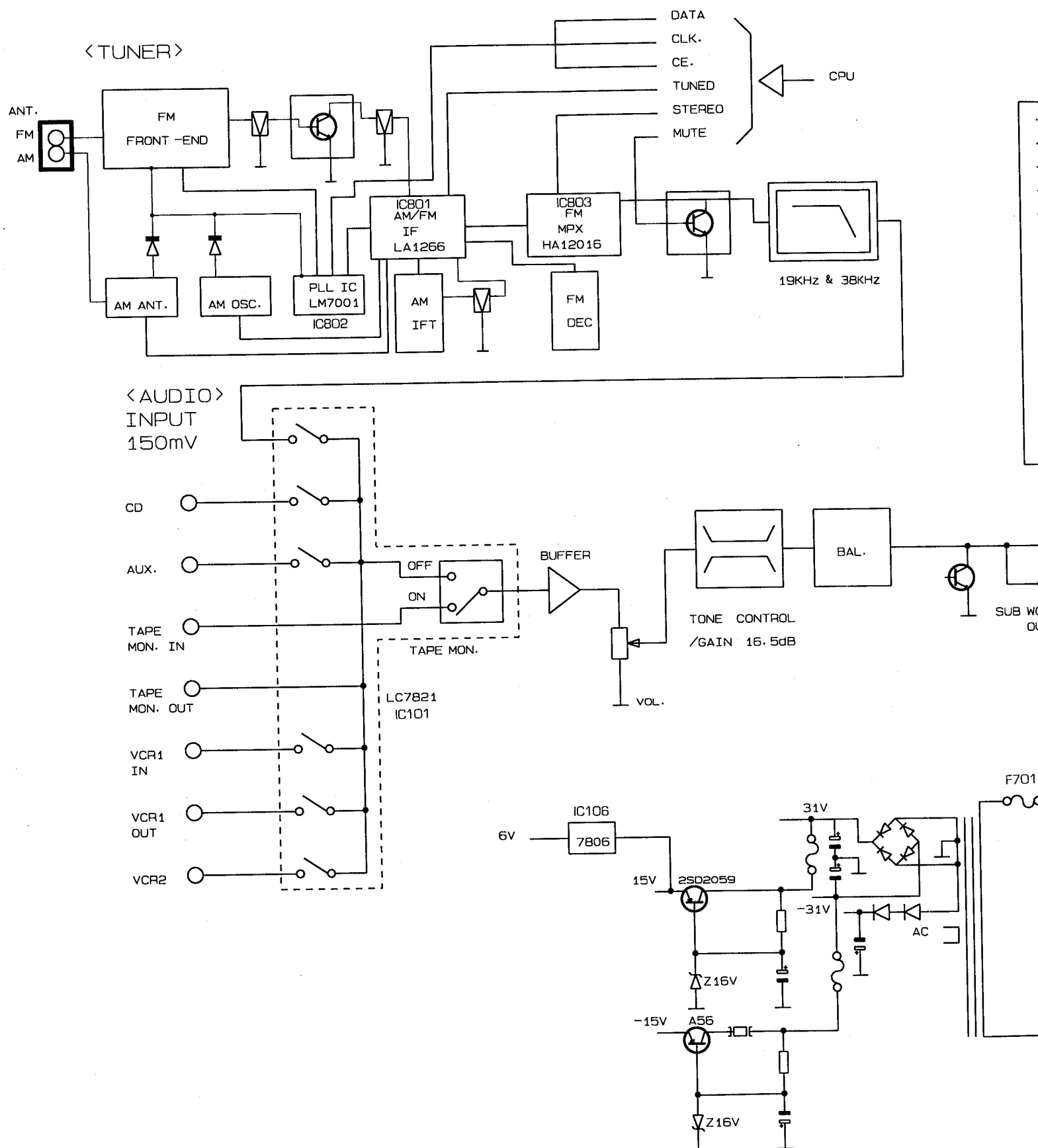
14. DISPLAY WINDOW

This window shows the state of operation for easier control of the receiver. It also contains the IR Remote Sensor.

BLOCK DIAGRAM



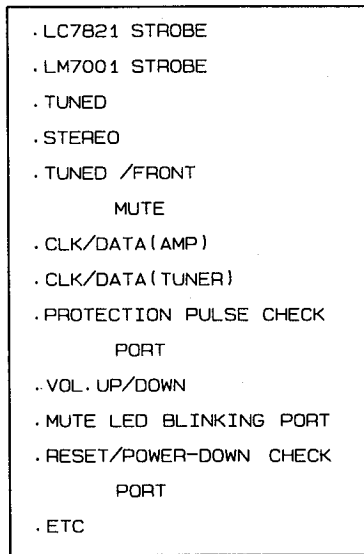
BLOCK DIAGRAM



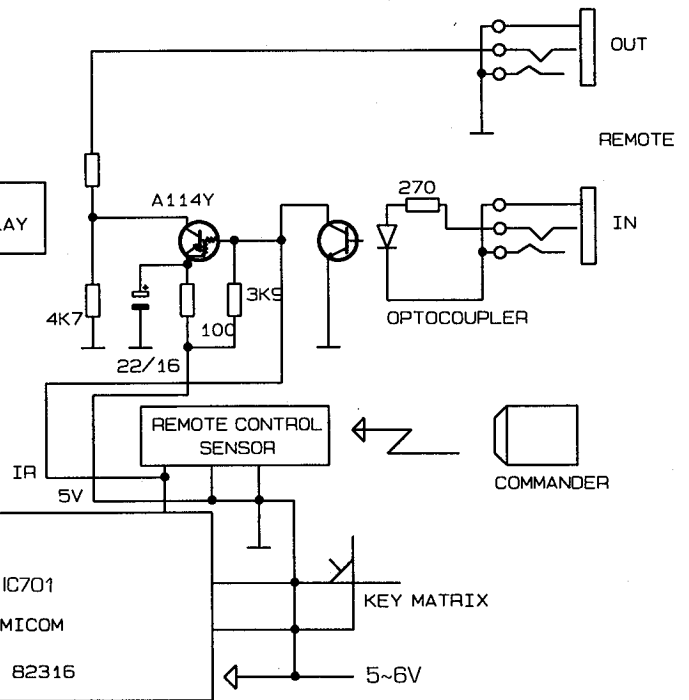
CPU

38KHz

BAL.



F/L DISPLAY



IC701
MICOM
CXP 82316

65Wx2CH (40W)

MAIN
AMP.

SUB WOOFER
OUTPUT

SPEAKER A

SPEAKER B

HEADPHONE

SPEAKER SEL.

F701

S/W

AC INPUT

OUT
LETOUT
LET

THERMAL FUSE
4333A

DISASSEMBLY PROCEDURES

1 Cover Top Removal (Figure 1)

1. Remove 4 screws (① to ④) from the both sides of chassis.
2. Remove 2 screws (⑤ and ⑥) from the chassis back.
3. Carefully lift the cover top to remove.

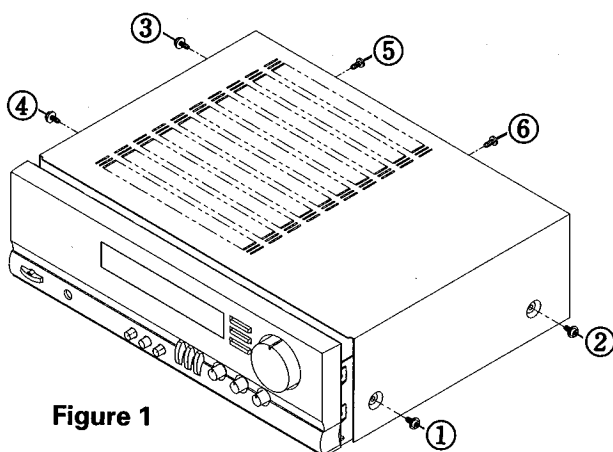


Figure 1

2 Cover Bottom Removal (Figure 2)

1. Remove 12 screws (① to ⑫) from the cover bottom.
2. Carefully lift the cover bottom to remove.

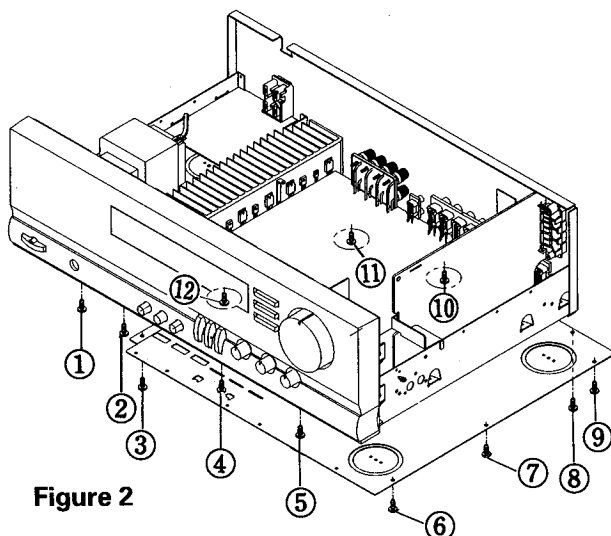


Figure 2

3 Panel Front Assembly Removal (Figure 3)

1. Remove the cover top and cover bottom (Refer to step 1 and 2).
2. Remove 4 screws (① to ④) from both sides of the panel front.
3. Remove a screw ⑤ from the bottom.
4. Disconnect CNT114, CNT107, CNT116, CNT119 from the Main PC Board.
5. Disconnect CNT122 from the Outlet PC Board.

6. Disconnect CNT105-1 from the Front PC Board.
7. Remove a screw ⑥ from the right frame to release lug wire.
8. Remove a screw ⑦ from the left frame to release lug wire.

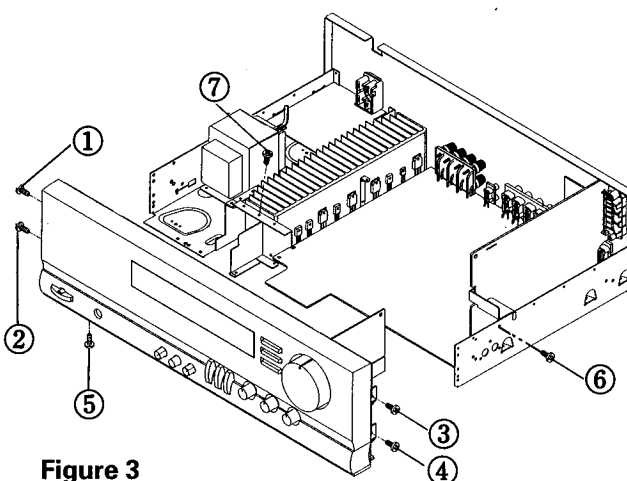


Figure 3

4 Volume and Front PC Board Removal (Figure 4)

1. Remove the panel front assembly. (Refer to step 3).
2. Disconnect CNT700 from the Volume PC Board.
3. Disconnect CNT701 from the Front PC Board.
4. Pull the knob (Volume) from the panel front.
5. Remove the hex nut from the volume motor and remove 5 screws (① to ⑤) from the Front PC Board to release the Volume and Front PC Board.

5 Tone PC Board Removal (Figure 4)

1. Remove the panel front assembly. (Refer to step 3).
2. Pull the knobs (Bass/Treble/Balance) from the panel front assembly.
3. Remove the hex nuts from the variable resistors to release the Tone PC Board.

6 SPKR Selector PC Board Removal (Figure 4)

1. Remove the panel front assembly (Refer to step 3).
2. Disconnect CNT120 from the Speaker Selector PC Board.
3. Remove 2 screws (⑥ and ⑦) from the speaker selector switch.

7 Head Phone PC Board Removal (Figure 4)

1. Remove the panel front assembly (Refer to step 3)
2. Remove a screw ⑧ from the headphone jack.
3. Remove 2 screws ⑨ and ⑩ from the power switch to release the Headphone PC Board.
4. Disconnect CNT120 from the Speaker Selector PC Board.

8 Power LED PC Board Removal (Figure 4)

1. Remove the panel front assembly (Refer to step 3)
2. Remove the Headphone PC Board (Refer to step 7)
3. Remove 2 screws ⑪ and ⑫ from the Power LED PC Board to release the PC Board.
4. Disconnect CNT701 from the Front PC Board.

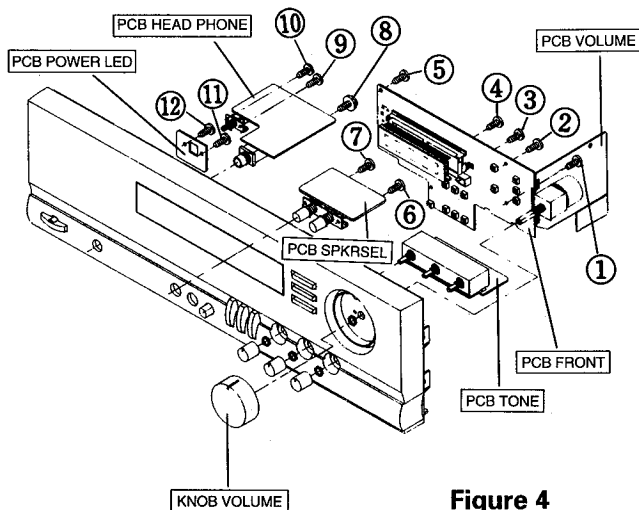


Figure 4

9 Tuner PC Board Removal (Figure 5)

1. Remove the cover top (Refer to step 1)
2. Remove a screw ⑬ from the Tuner PC Board bracket.
3. Remove 2 screws ⑭ and ⑮ from the chassis back.
4. Disconnect CNT106 from the Main PC Board to release the Tuner PC Board.

10 Sub-woofer PC Board Removal (Figure 4)

1. Remove the cover top (Refer to step 1)
2. Remove 2 screws ⑯ and ⑰ from the chassis back.
3. Disconnect CNT113 from the Subwoofer PC Board.

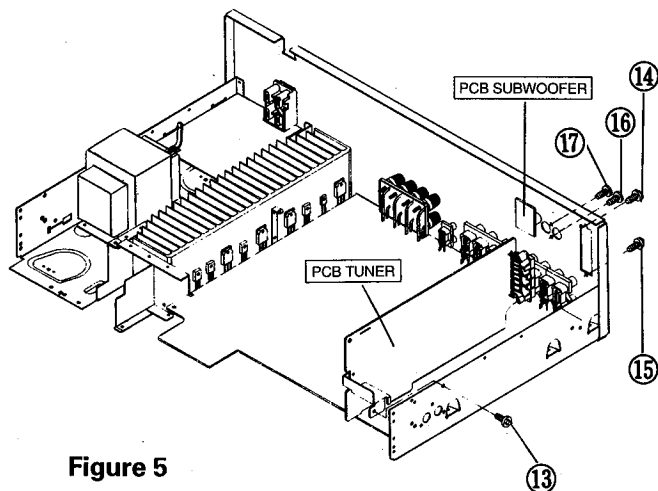


Figure 5

11 Outlet PC Board Removal (Figure 6)

1. Remove the cover top (Refer to step 1).
2. Remove 2 screws ① and ② from the chassis back.
3. Disconnect CNT101-1, CNT122 from the Outlet P.C Board.
4. Remove 2 screws ③ and ④ from the Outlet P.C Board.

12 Main P.C Board Removal (Figure 6)

1. Remove the cover top (Refer to step 1)
2. Remove the Panel front assembly (Refer to step 3)
3. Do step 9, 10.
4. Remove 8 screws ⑤ and ⑫ from the chassis back.
5. Remove 4 screws ⑪ and ⑭ from the Main P.C Board top.
6. Disconnect CNT103, CNT102, CNT115 from the Main P.C Board.
7. Unsolder all leads of Q216L/R, Q211L/R, Q215L/R, Q186, IC106 P201 in the Main P.C Board.
8. Release the Main P.C Board.

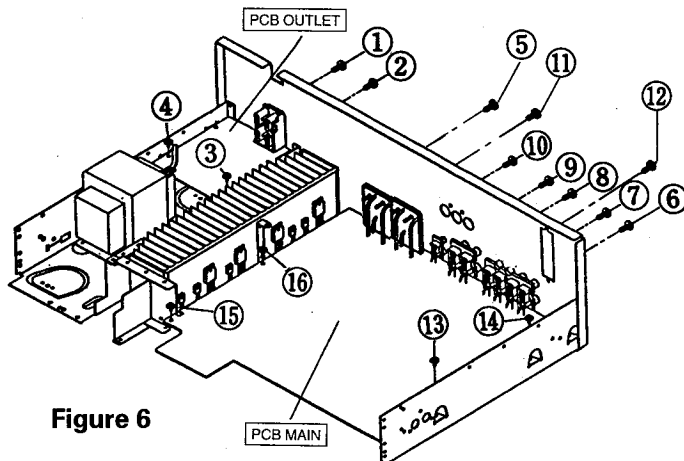
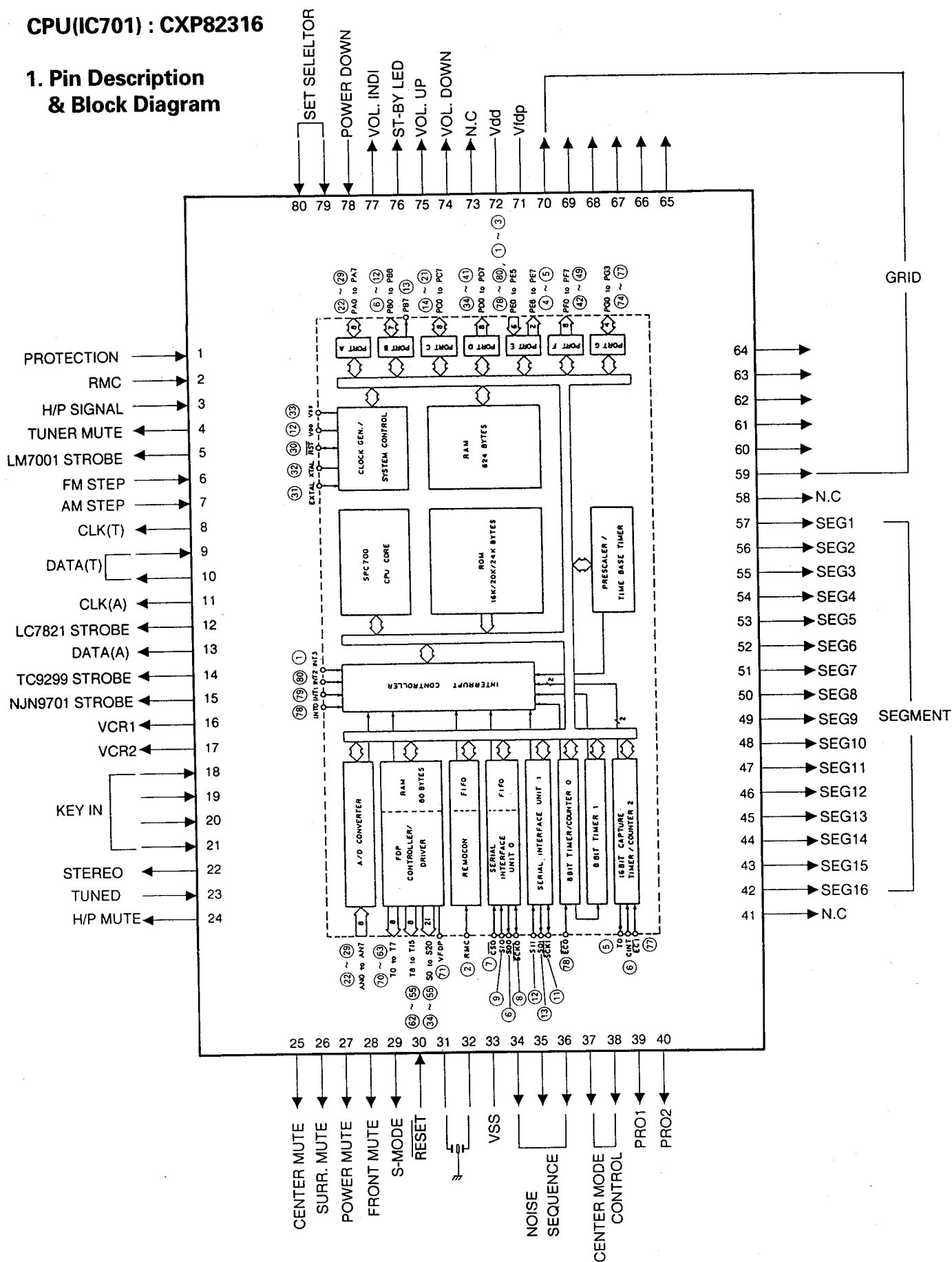


Figure 6

CIRCUIT DESCRIPTION

CPU(IC701) : CXP82316

1. Pin Description
& Block Diagram

2. Input and Output Terminal Functions

Pin. No.	Symbol	Description																				
1	PROTECTION	Input for protection signal. If it is low, all channel mute signal level is turned to high. Except for first 3 second it doesn't check protection.																				
2	RMC	Input for remote control signal.("L-active")																				
3	H/P SIGNAL	Input for headphone signal.																				
4	TUNER MUTE	Output for tuner mute. Output,high under the following conditions. 1. When power is turned on or off. 2. When tuner band is changed. 3. When tuner up or down button is pressed. 4. When preset button is pressed. 5. When preset number display changes during memory scan. 6. When the protection port is low. 7. When "-∞ mute signal" is received from the commander.																				
5	LM7001 STROBE	Output to enable IC LM7001.																				
6, 7	STEP	Input to select step. <table><tr><td>BAND</td><td>STEP</td><td>6</td><td>7</td></tr><tr><td>FM</td><td>50 K</td><td>L</td><td>H</td></tr><tr><td>AM</td><td>10 K</td><td>L</td><td>H</td></tr><tr><td>FM</td><td>50 K</td><td>L</td><td>L</td></tr><tr><td>AM</td><td>9 K</td><td>L</td><td>L</td></tr></table>	BAND	STEP	6	7	FM	50 K	L	H	AM	10 K	L	H	FM	50 K	L	L	AM	9 K	L	L
BAND	STEP	6	7																			
FM	50 K	L	H																			
AM	10 K	L	H																			
FM	50 K	L	L																			
AM	9 K	L	L																			
8,10	CLK(T),DATA(T)	Output, clock and dataa signal to IC LM7001.																				
11,13	CLK(A),DATA(A)	Output, clock and data signal to ICs, LC7821, NJU9701 and TC9299.																				
12	LC7821 STROBE	Output to enable IC LC7821.																				
14	TC9299 STROBE	Output to enable IC TC9299.																				
15	NJN9701 STROBE	Output to enable IC NJN9701.																				
16, 17	VCR1/VCR2	Output to select the video signal of VCR1 or VCR2. Output data for each mode is as follows. <table><tr><td>MODE</td><td>18</td><td>19</td></tr><tr><td>VCR1</td><td>H</td><td>L</td></tr><tr><td>VCR2</td><td>L</td><td>H</td></tr><tr><td>ELSE</td><td>△</td><td>△</td></tr></table> △;keeping last state.	MODE	18	19	VCR1	H	L	VCR2	L	H	ELSE	△	△								
MODE	18	19																				
VCR1	H	L																				
VCR2	L	H																				
ELSE	△	△																				
18~21	KEY INPUT	Input data of K ₁ - K ₄ for key scan.																				
22	STEREO	Receiving low level, it turns on the stereo flag of FL.																				
23	TUNED	Input for station detector signal in searching turning. Stops searching up or down when station detector reached a certain level.																				
24	H/P MUTE	Output for headphone mute. Output, low level under the following conditions. 1. When power is turned on or off. 2. When headphone plug is removed from headphone jack.																				
25	CENTER MUTE	Output for center mute. Output, low level under the following conditions. 1. When power is turned on or off. 2. When center mode is turned on or off. 3. When center mode is switched. 4. When test tone mode is switched on, or when output is not directed to center.																				

Pin. No.	Symbol	Description																								
26	SURR MUTE	Output for surround mute. Output,low level under the following conditions. 1. When power is turned on or off. 2. When surround mode is turned on or off.(Keeping low level in surr. off.) 3. When test tone mode is changed, or when output is not directed to surround. 4. When delay time is switched. 5. When the protection terminal's level is low. 6. When "-∞ mute signal" is received from the commander. 7. When headphone jack is inserted.																								
27	POWER MUTE	Output for all amp. mute. Output,low level under the following conditions. 1. When power is turned on or off. 2. When the protection terminal's level is low.																								
28	FRONT MUTE	Output for main mute. Output,low level under the following conditions. 1. When power is turned on or off. 2. When function is changed. 3. When mono and stereo is changed. 4. When the protection terminal's level is low. 5. When "-∞ mute signal " is received from the commander. 6. When headphone plug is inserted.																								
29	S-MODE	Output voltage to control surround mode. Prologic:5V, 3-stereo:2.5V, bypass:0V																								
30	RESET	Input to reset micom																								
31,32	EXTAL, XTAL	Input and output pin for a oscillator crystal.																								
33	VSS	Provides the ground potential.																								
34 ~ 36	NOISE SEQUENCE	Output signal to select output channel in testing tone. Output signal for 2 second per each channel in order L,C,R,S. <table><tr><th>MODE PIN No.</th><th>L</th><th>C</th><th>R</th><th>S</th><th>TEST TONE OFF</th></tr><tr><td>34</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td></tr><tr><td>35</td><td>L</td><td>L</td><td>H</td><td>H</td><td>△</td></tr><tr><td>36</td><td>L</td><td>H</td><td>L</td><td>H</td><td>△</td></tr></table>	MODE PIN No.	L	C	R	S	TEST TONE OFF	34	L	L	L	L	H	35	L	L	H	H	△	36	L	H	L	H	△
MODE PIN No.	L	C	R	S	TEST TONE OFF																					
34	L	L	L	L	H																					
35	L	L	H	H	△																					
36	L	H	L	H	△																					
37, 38	CENTER MODE CONTROL	Output data to control center mode. <table><tr><th>MODE PIN No.</th><th>NOR MAL</th><th>PHAN TOM</th><th>WIDE</th></tr><tr><td>37</td><td>H</td><td>L</td><td>L</td></tr><tr><td>38</td><td>L</td><td>L</td><td>H</td></tr></table>	MODE PIN No.	NOR MAL	PHAN TOM	WIDE	37	H	L	L	38	L	L	H												
MODE PIN No.	NOR MAL	PHAN TOM	WIDE																							
37	H	L	L																							
38	L	L	H																							
39, 40	PRO1, PRO2	Input for protection signal.																								
41	NC	Not used.																								
42 ~ 57	S16-S1	Output for segment.																								
58	NC	Not used.																								
59 ~ 70	G1-G12	Output for grid.																								
71	Vfdp	Input power supply of the FL controller.																								
72	Vdd	Power supply.																								
73	NC	Not used.																								
74, 75	VOL. UP/DOWN	Output signal to turn up or down volume moter.																								

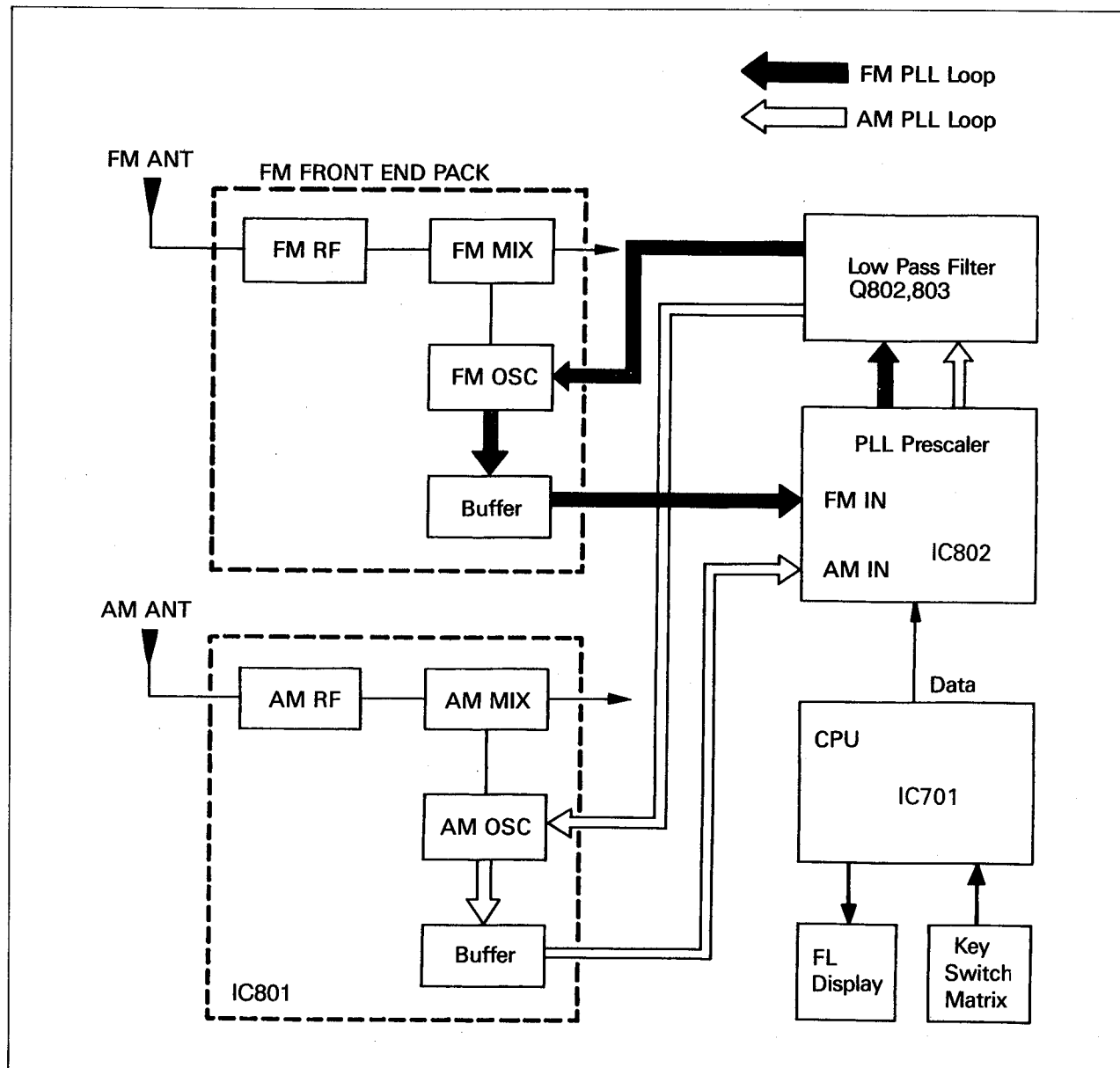
Pin. No.	Symbol	Description												
76	ST-BY LED	Output to control ST-BY LED. When power is turned on by power s/w or off by remocon, it is high level. Else, it is low level. (Keeping last level)												
77	VOL. INDI.	Output signal to turn on or off the led which is used to master volume indicator. It is high level in turning on and low level in turning off.												
78	PD	Input for power down. (At "L", it is active)												
79, 80	SELECTOR	Input signal to select one of three sets(AVR10, AVI100 and HK3250). <table><tr><th>SET</th><th>AVR10</th><th>AVI100</th><th>HK3250</th></tr><tr><td>79</td><td>H</td><td>L</td><td>L</td></tr><tr><td>80</td><td>L</td><td>L</td><td>H</td></tr></table>	SET	AVR10	AVI100	HK3250	79	H	L	L	80	L	L	H
SET	AVR10	AVI100	HK3250											
79	H	L	L											
80	L	L	H											

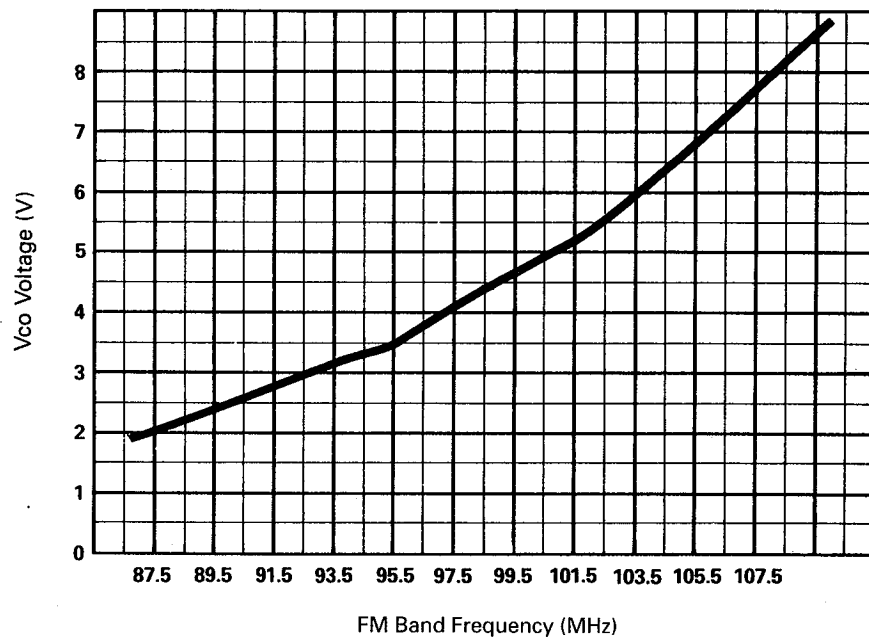
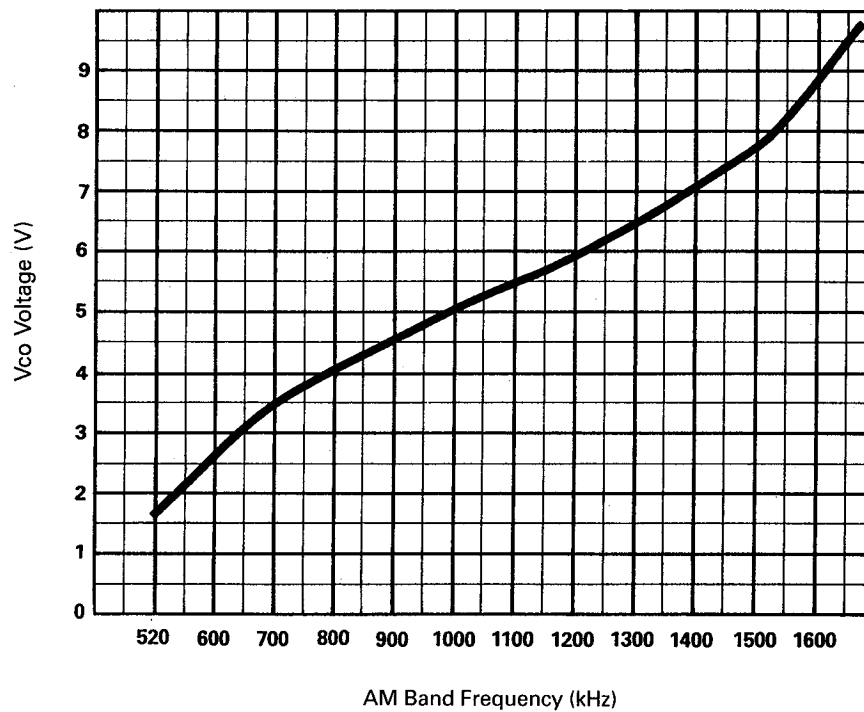
3. Key Matrix

PIN NO.	51	52	53	54
18	SURR1. BYPASS	SURR. MODE	SEEK STEREO	PRESET UP
19	TAPE MON.	VCR1	TUNER ▼ PRESET ▲	PRESET DOWN
20	TV/VCR2	CD	MEMORY	
21	AUX	FM	AM	

4. Digital Tuning System Description

DIGITAL TUNING SYSTEM



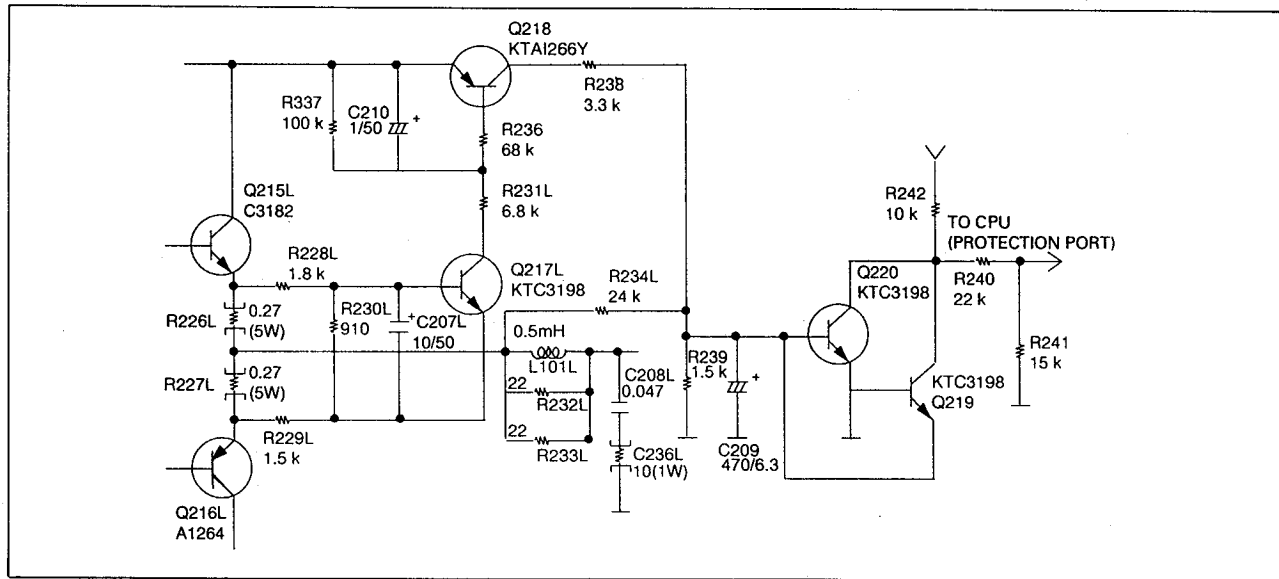
Vco vs. FM Band Frequency Curve**Vco vs. AM Band Frequency Curve**

5. Protection Circuits

SPEAKER PROTECTION CIRCUIT

The CPU protects both this unit and the speakers when an abnormally high current flows in Q215 L/R and Q216 L/R due to excessive input drive, too low of a load impedance, or short of the speaker terminals. If current increase is excessive the voltage across R226 L/R or R227 L/R turns on Q217 L/R, then Q218 turns on Q220.

It makes the protection port of the CPU to low state.
Then all channels are muted and the display is turned off.

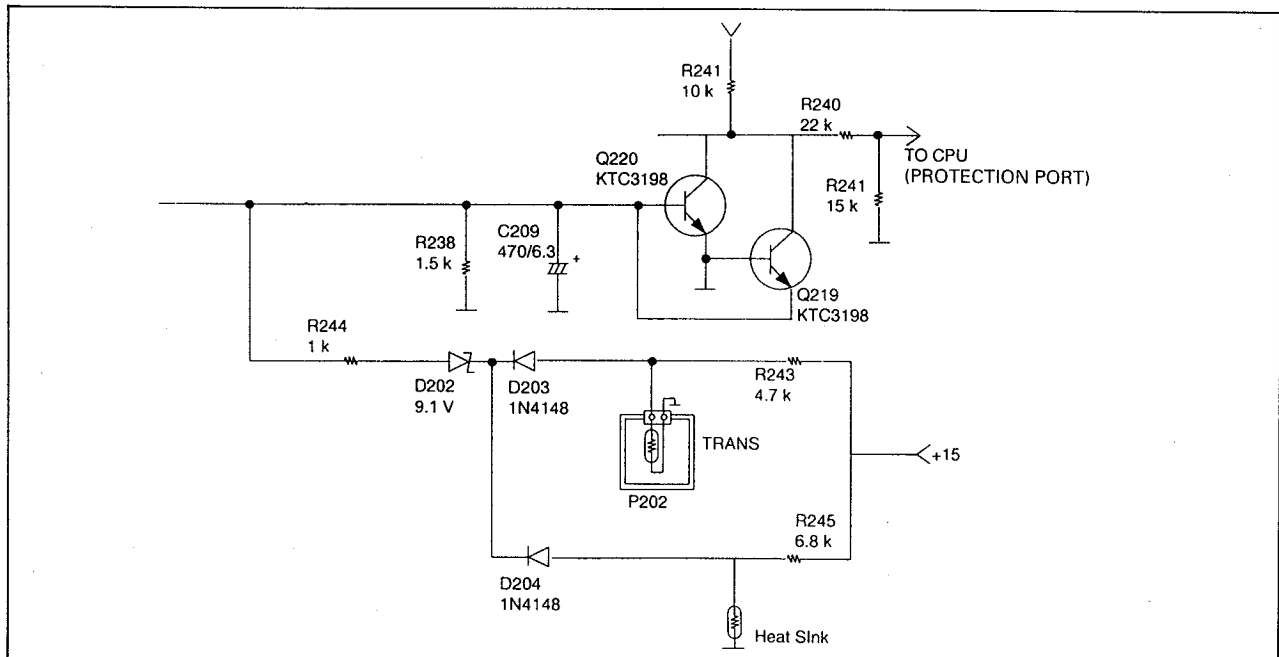


THERMAL PROTECTION CIRCUIT

This receiver has a overload thermal protection circuits to guard against abnormal operation.

When the temperature of TRANS POSISTOR installed with the main transformer or H/SINK POSISTOR rises abnormally, the resistance of the posistor becomes larger and Q220 is turned on.

It makes the protection port of the CPU to low state. Then all channels are muted and the display is turned off.



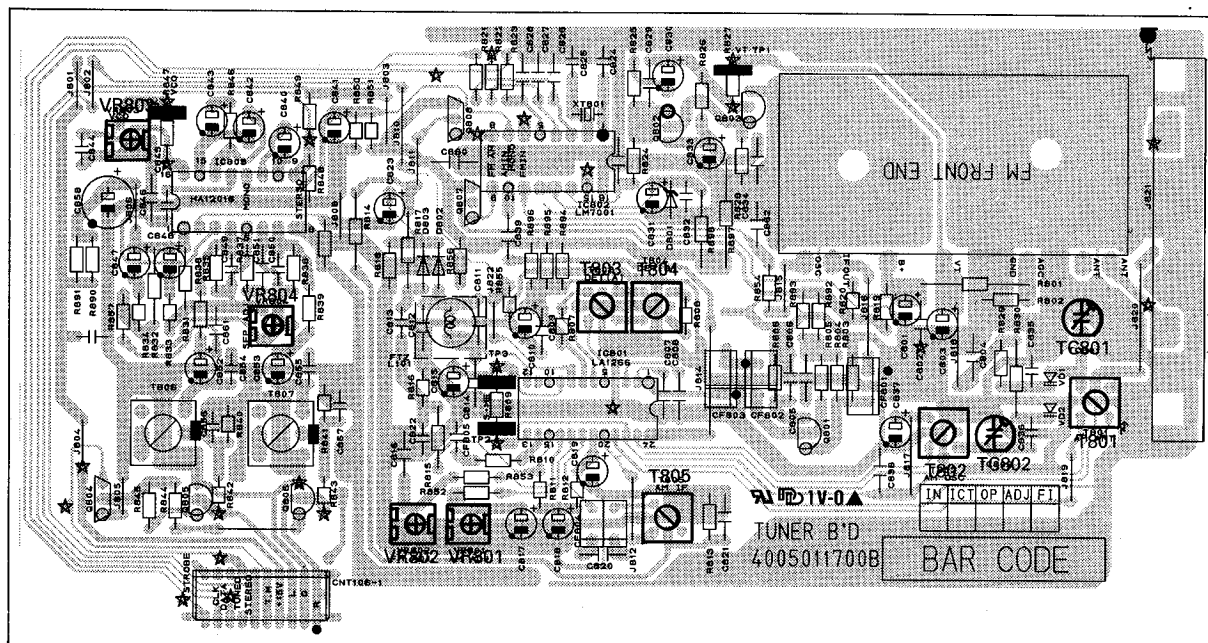
ALIGNMENT PROCEDURES

1. Equipment Required

- AM Standard Signal Generator (AM SSG)
- Oscilloscope
- AC Voltmeter
- FM Standard Signal Generator (FM SSG)
- Stereo Modulator
- Audio Generator
- Distortion Meter
- DC Voltmeter
- Frequency Counter

Note : Disconnect external FM antenna prior to alignment.

2. Alignment and Test Points (PCB9)



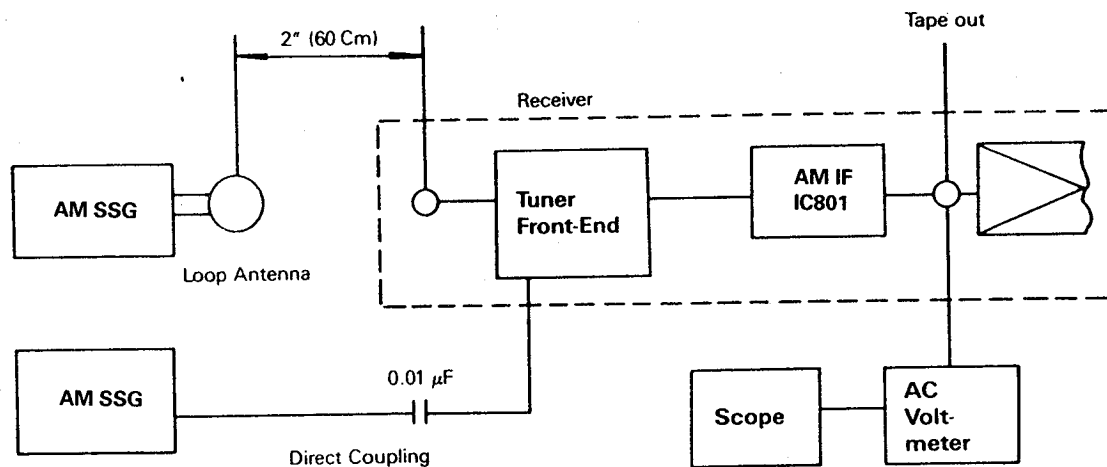
3. AM IF and RF Alignment

Preparation

1. Output of Signal Generator should not be higher than necessary to obtain an optimum output reading.
2. Signal Generator Modulation : 30%
3. Switch : Press to AM.

Step	Signal Generator Frequency	Receiver Frequency on the Display	Equipment Connection	Adjustment Point	Adjust for
1	999 kHz (400 Hz, Mod.)	522 kHz	DC Voltmeter TP1	T802	1.2 V reading
		1611 kHz	DC Voltmeter TP1	TC802	8.5 V reading
2	594 kHz (400 Hz, Mod.)	594 kHz	Same as Step 1.	T801 (ANT Coil)	Same as Step 1
3	1404 kHz (400 Hz, Mod.)	1404 kHz	Same as Step 1.	TC801 (ANT Trimmer)	Same as Step 1

4	450 kHz (400 Hz, Mod.)	Place at a non-interference spot around 600 kHz	AC voltmeter to TAPE OUT jack.	T805 (IFT)	Maximum reading
5	999 kHz (400 Hz, Mod.)	999 kHz	Same as Step 1.	VR801	FL display 'TUNED' Indication on receiver with AM SSG Output level of 800 μ V/m



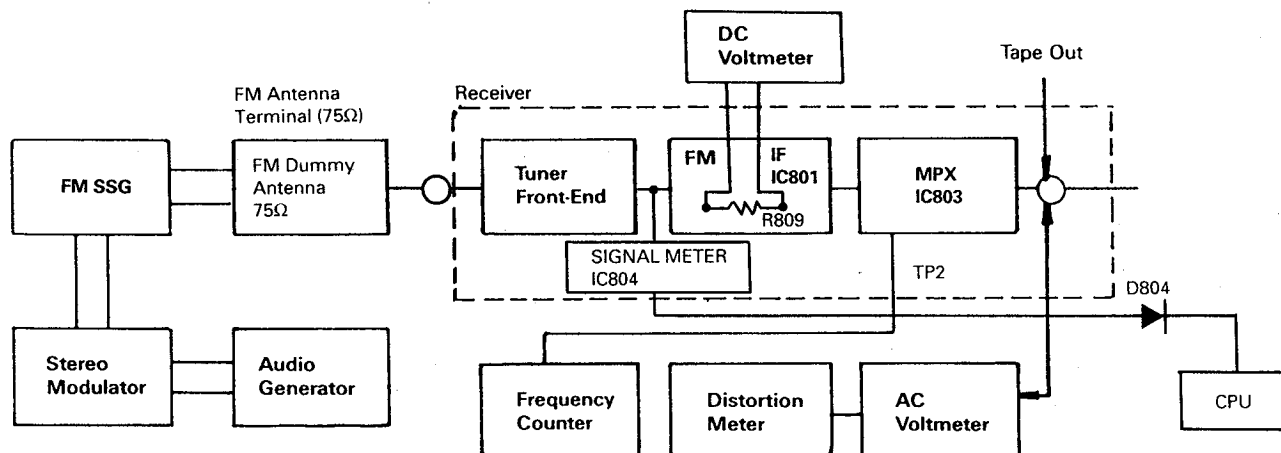
AM Alignment Connection

4. FM IF Alignment

Preparation

1. Signal Generator output should be no higher than necessary to obtain an optimum output reading.
2. Switch Press to FM.
3. Signal generator deviation : 40 kHz.

Step	Signal Generator Frequency	Receiver Frequency Display	Equipment Connection	Adjustment Point	Adjust for
1	98.0 MHz (1 kHz, Mod.)	98.0 MHz	Distortion meter to TAPE OUT jack	T804	Minimum distortion
2	98.0 MHz (1 kHz, Mod.)	98.0 MHz	Same as Step 1	VR802	FL display 'TUNED' Indication on receiver with FM SSG output level of 10 μ V/m
3	98.0 MHz (1 kHz, Mod.)	98.0 MHz	DC Volt meter to R809 (PCB9)	T803	Zero reading on DC volt meter.



5. MPX Alignment, SM Alignment

Preparation

1. Switch : Press to FM.
2. Tuner for 98 MHz on band.
3. Signal Generator output level : 1000 μ V.
4. Deviation : 40 kHz, at 100% modulation of composite signal.
5. Connect Signal Generator to FM antenna terminal through FM dummy antenna (75 Ω).

Step	19 kHz Modulation Level	Signal Generator Frequency Setting	Equipment Connection	Adjustment Point	Adjust for
1	Pilot off	Carrier only	Frequency counter connect to TP2 (HOT) of PCB and ground	VR803	76 kHz
2	8% Mod.	Composite to channel 1 kHz R	AC voltmeter to TAPE OUT jack of R channel	—	Adjust for about 450mV of audio output
3	8% Mod.	Composite to channel 1 kHz L	AC voltmeter to TAPE OUT jack of R channel	VR804	AC voltmeter reading should be at least 40 dB below.
4	8% Mod.	Composite to channel 1 kHz R	AC voltmeter to TAPE OUT jack of L channel	VR804	Same as Step 3.
5	8% Mod.	Composite to channel 1 kHz L or R	AC voltmeter to TAPE OUT jack Lor R channel	VR805	FL display 'SIG 60 dB' indication on receiver with FM SSG output level of 1000 μ V/m
If you could not obtain -40dB readings in Steps 3 and 4 (compared with Step 2), readjust VR804 until you obtain -40dB readings for both Steps 3 and 4. Nominal is -45 dB.					

TROUBLESHOOTING

Symptom	Cause and Remedy
Receiver inoperative. (FL indicator does not light.)	A) Faulty AC power cord. Replace. B) Defective the power switch. Replace. C) Broken wire in the power transformer. Replace the power transformer. D) Blown fuse. Replace the fuse.
Fuse blows when power is turned on.	A) Defective power transformer. Replace. B) Short on the primary or secondary of the transformer circuitry. Repair the trace. C) Damaged rectifier (D208 to D211) or damaged transistor (Q216, Q217). Replace the defective component(s). D) Short circuit in the amplifier circuit. Replace the shorted component(s) in the amplifier circuit.
Power indicator lights but no sound from both channels.	A) Defect in transistor Q215 L/R, Q216 L/R on the Main Amp Board. Replace the defective component(s).
One channel does not work when volume is at maximum with a test signal applied to the center terminal of volume control VR5 of the dead channel.	A) Defect in transistors Q215 L/R, Q216 L/R on the Main Amp Board Locate and correct the defect. B) Break in copper foil of printed circuit board. Repair the circuit trace. C) Short in speaker output terminal. Repair or replace.
Speaker works normally but headphones inoperative.	A) Headphone plug does not match with the jack. Replace the jack. B) Defective resistor R728L/R. Replace.
FM inoperative	A) Defective front-end. (FIH3-505H) Replace. B) Defective FM switch. Replace the switch. C) Defective transistors Q801, Q805, Q806, IC801, IC803 Replace the defective transistor(s) or IC(s). D) Defective coil T803 or T804. Replace the coil(s). E) Defective lead-in. Repair or replace the lead-in. F) Ceramic filters CF801, CF802, CF803 defective. Replace the defective ceramic filter(s). G) Defective controller circuit component. Replace.

Symptom	Cause and Remedy
Poor multiplex separation.	A) Improper adjustment. Readjust VR803 and VR804. (Refer to MPX Alignment.) B) IC803 defective. Replace. C) Variable resistor VR803 or VR804 defective. Replace the variable resistor(s).
FM volume not sufficient	A) If volume from both L and R channels is not loud enough : Front end section defective. Faulty IC801, Coil T803, Defective C838 of tuner Board. If sound of one channel is not loud enough: Defective T806, T807
FM Mono has no effect.	A) Defective FM MODE switch. Replace.
AM inoperative.	A) Damaged IC801 of tuner board. Replace. B) Defective T801, T802, T805 or CF804 of tuner board. Replace the defective component(s). C) Resistors R829, R817 defective. Replace the defective component(s). D) Capacitors C836, C818, C813 defective. Replace the defective capacitor(s). E) Defective AM switch. Replace. F) Defective varicap diodes VD1, VD2 Replace varicap diode(s). G) Damaged AM loop antenna. Repair or replace. H) Defective controller circuit component. Replace.
Bass control has no effect	A) Variable resistor BASS defective. Replace. B) Defective R129L/R, R131L/R, C126L/R, C128L/R. Replace the defective component(s).

Symptom	Cause and Remedy
Treble control has no effect.	A) Variable resistor TREBLE defective. B) Defective R130L/R, R132L/R, C127L/R, C129L/R. Replace the defective components(s).
Auto tune inoperative. (UP/DOWN)	A) Poor contact in Up/Down key. Repair or replace. B) Defective IC701. Replace. C) Defective tuner circuit component. Replace. D) In case of FM only, improper adjustment of FM front-end. Readjust.
Manual tune inoperative. (UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Replace. B) Defective IC701. Replace.
Memory setting inoperative.	A) Poor contact in memory set key. Replace. B) Defective IC701. Replace the defective component.
FL inoperative.	A) FL defective. Replace. B) Defective IC701. Replace. C) Defective X-700. Replace.
Noisy Volume control.	A) Defective volume control. Replace. B) Defective capacitors C701 or C703 Replace the defective capacitor(s).
Remote Control Unit inoperative.	A) Weak Battery. Replace. B) Defective. Replace. C) Defective IC701 (CPU Board) or IC01. Replace.

GENERAL UNIT PARTS LIST

Ref. No.	Description	Mfr. Part No.	Q'ty
CABINET & CHASSIS			
1	Panel, Front, ABS, Black	048501035021	1
2	Button, Power, ABS, Black	048545128611	1
3	Knob, Volume, ABS, Black	048543059811	1
4	Indicator, Volume	8555048610	1
5	Knob, Rotary(Bass/Treble/Balance)	048545124311	3
6	Window, Display	8553019720	1
7	Filter FL	048555048512	1
8	Spring, Power	6555008720	1
9	Spring, Indicator	6555008730	2
10	Indicator, Power	8545128810	1
11	Jack, Phone	4438004510	1
12	Switch, Power, Push Type	4628055910	1
13	Knob, Speaker	048545124111	2
14	Switch, Speaker, Push Type	4628060610	1
15	Button, Preset, ABS, Black, 5key	048543065011	1
16	Button, Function, ABS, Black, 7key	048543064911	1
17	Volume, Bass/Treble	3208068910	2
18	Volume, Balance	3208068810	1
19	Shield Fence, Tone	6165149710	1
20	Switch, Tact	4658004810	14
21	Volume, Motor, 50 k(A)	3228019910	1
22	Holder, FL	6043010210	1
23	Foot, Hot-Stamping, Gold	046033102510	4
24	Frame Left, SECC, 1t	6121607640	1
25	Bracket, Heatsink	6503031410	1
26	Bracket, PCB	6505139720	1
27	Heatsink, Power	7502008740	1
28	Clamp Wire	6528302540	1
29	Bracket, Tuner	6505139810	1
30	Frame Right, SECC, 1t	6122633520	1
31	Cover, Button, SECC, 1t	6122420410	1
32	Terminal Antenna	4408108310	1
33	Jack, RCA, 4P	4438103110	2
34	Jack, RCA, 6P	4438103210	1
35	Jack, Multi, 2P	4438007510	1
36	Terminal Speaker, Screw Type, 8P	4408105810	1
37	Jack, RCA, 2P	4438111410	1
38	Chassis, Back, SECC, 1t	046102042721	1
39	Stopper Holder	6518002310	1
△ 40	Cord, AC Power	4308001410	1
41	Clamp Wire	6525002610	1
42	Cover, Top, SECC, Black	046122029611	1
△ 43	Outlet, AC	4448104810	1
44	Locking Tie	6528002810	1
HARDWARE KIT			
S1-S21	Screw #2BTC 3x8B, Black	8109230083	21
S22	Screw Wsher	8155001210	1
S23-S26	Screw WSAM 4x8B	8159440083	4
S27-S29	Screw #2WPTC 3x8Y	8159230081	3
S30/S31	Screw #2BTC 3x8B, Black	8109230083	2
S32	Screw #2WPTC 3x8Y	8159230081	1
S33-S35	Screw #2BTC 3x8B, Black	8109230083	3
S36/S37	Screw #2WPTC 3x8Y	8159230081	2
S38-S43	Screw HEX MSPW 3x12Y, Yellow	8099130121	6
S44	Screw, Heatsink	8109230083	1
S45	Screw HEX MSPW 3x12Y, Yellow	8099130121	1
S46/S47	Screw #2BTC 3x8B, Black	8109230083	2
S48/S49	Screw #2WPTC 3x8Y	8159230081	2
S50-S63	Screw #2BTC 3x8B, Black	8109230083	14
S64/S65	Screw #1PT 3x10B, Black	8119130103	2
S66-S69	Screw #2BTC 3x8B, Black	8109230083	4
S70-S80	Screw #1PT 3x10B, Black	8119130103	11
S81/S82	Screw #2BTC 3x8B, Black	8109230083	2
S83-S86	Screw WSAM 4x8B	8159440083	4
S87/S88	Screw #2BTC 3x8B, Black	8109230083	2
MISCELLANEOUS			
△ Trans	Power Transformer, 120 V, 60 Hz	2828100297	1
	FPC Cable, 19P, 270mm	4118619275	1

1. This parts list for HK3250 230V version is based on 120V version.

2. Each initial in the Remark is denoted as follows.

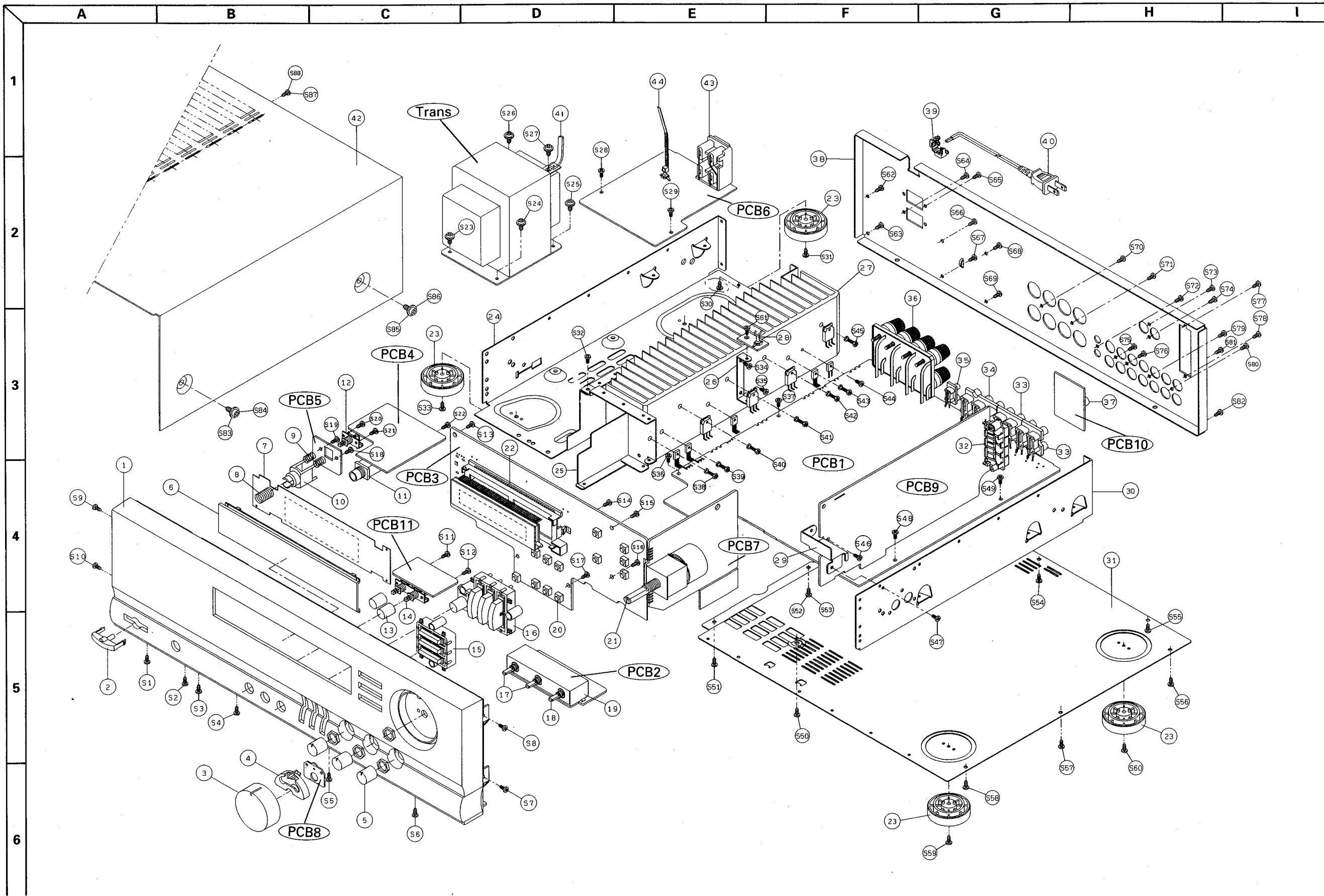
C: Changed, D: Deleted, A: Added

Ref. No.	Description	Mfr. Part No.	Q'ty	Remark
CABINET & CHASSIS				
32	Terminal Antenna	4408101610	1	C
38	Chassis Back, SECC, Black	046102042751	1	C
40 △	Cord AC Power	4308000430	1	C
43 △	Outlet, AC	4448103610	1	C
MISCELLANEOUS				
Trans △	Power Transformer, 230 V, 50 Hz	2828100461	1	C

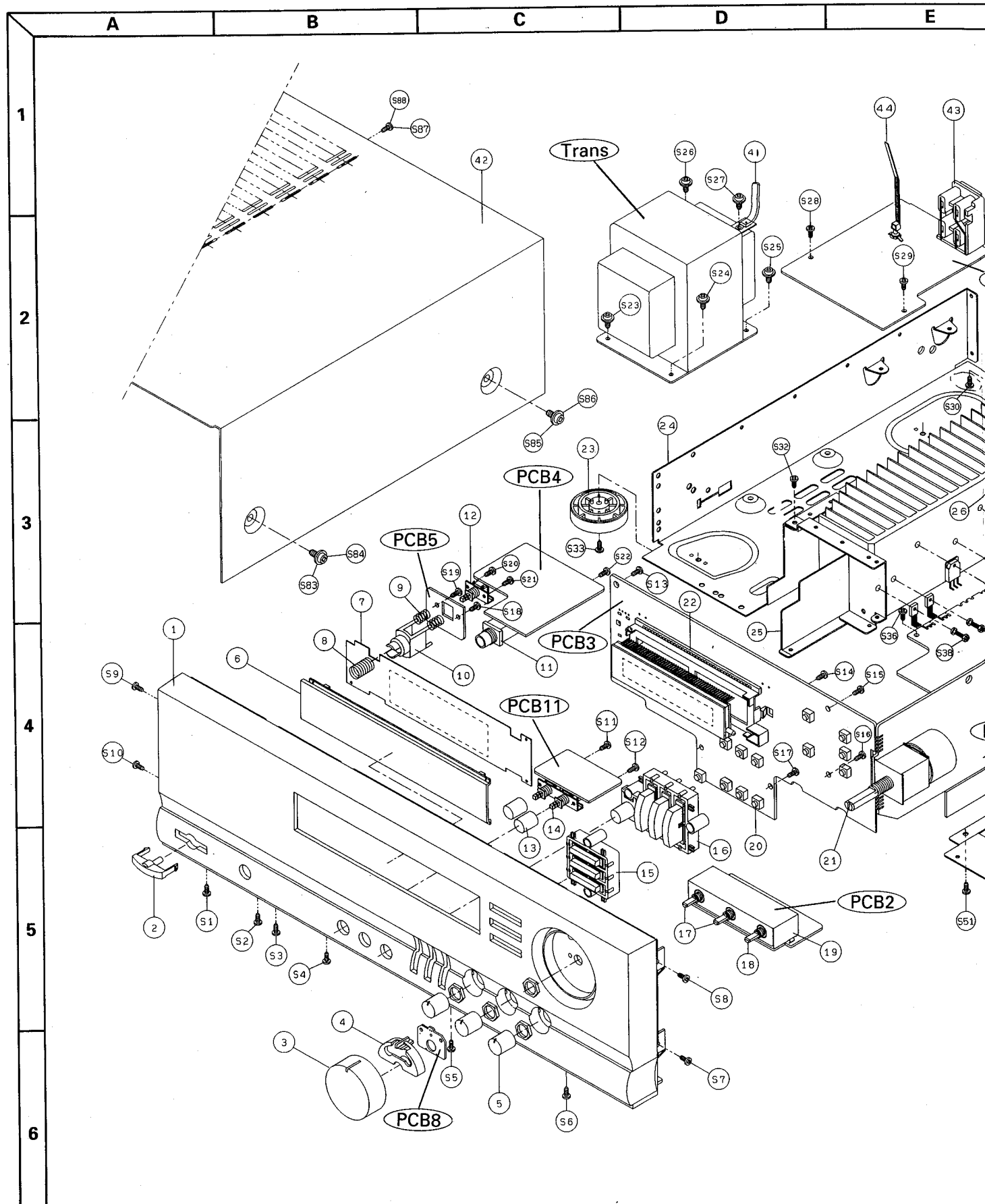
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol △ in the part list are of special significance to safety. When replacing a component identified with △, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

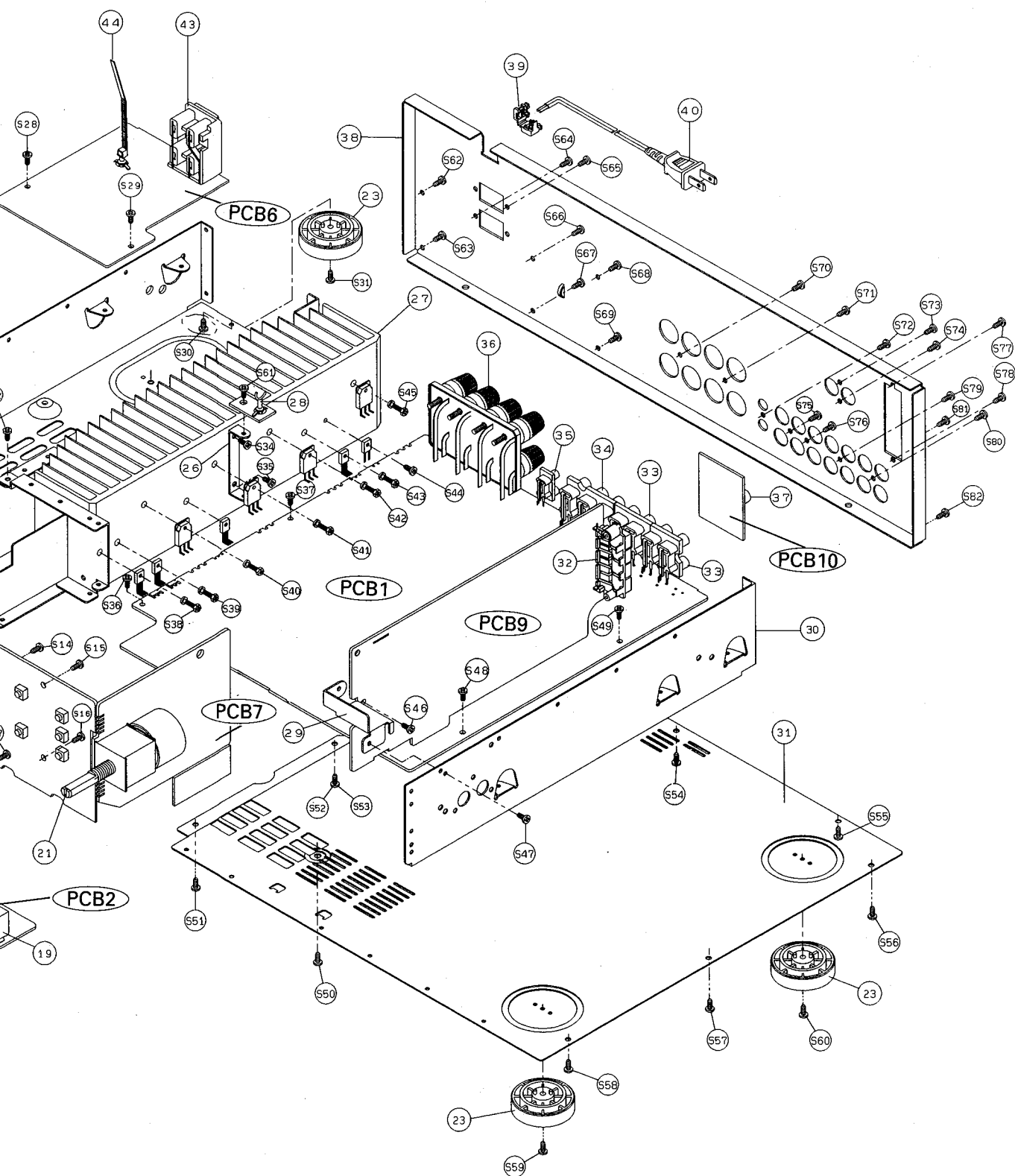
GENERAL UNIT



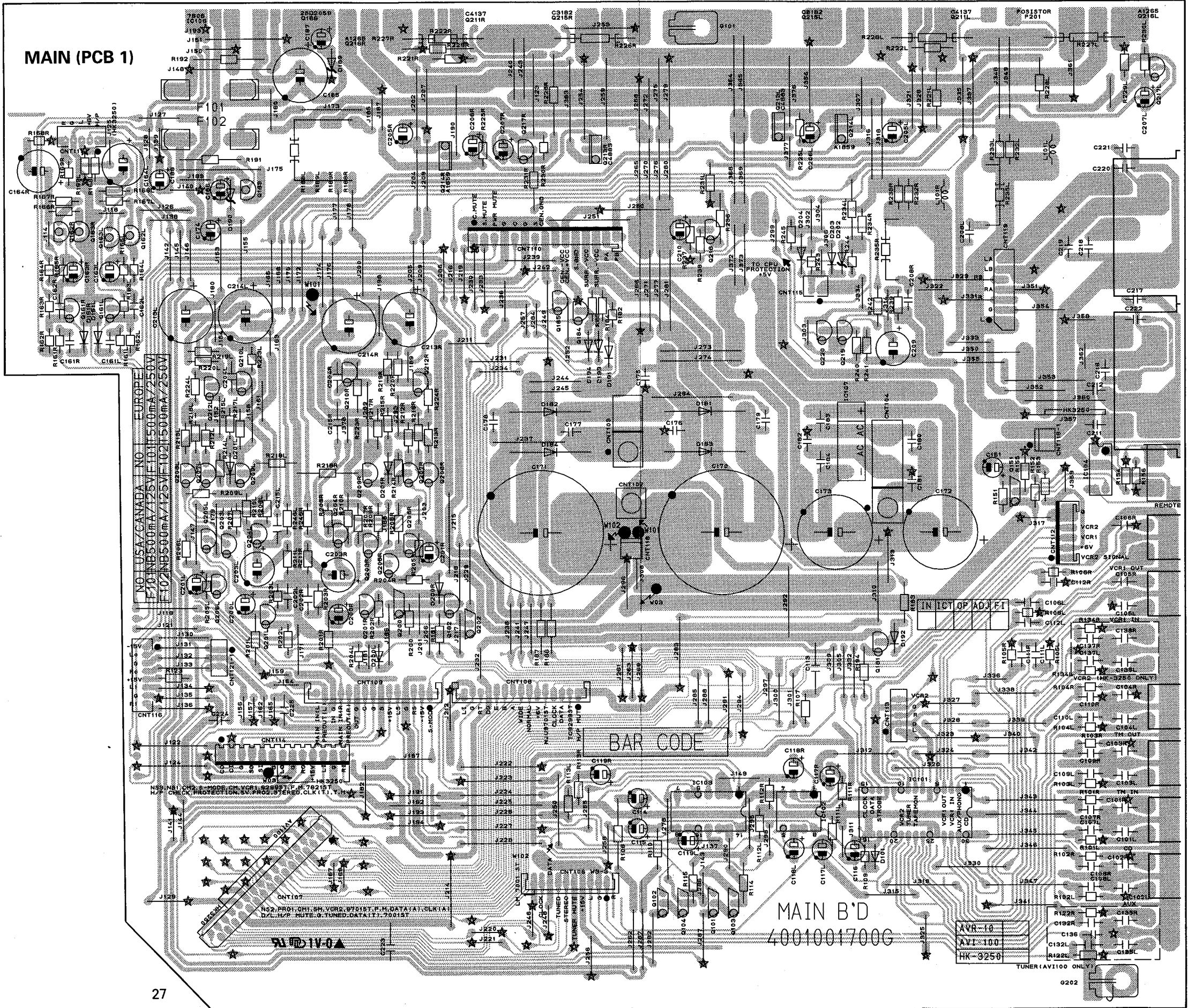
GENERAL UNIT



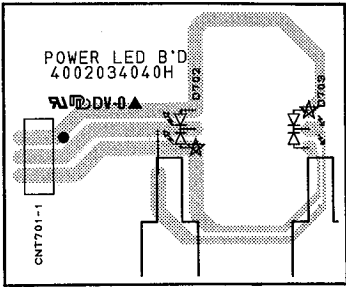
E	F	G	H	I
---	---	---	---	---



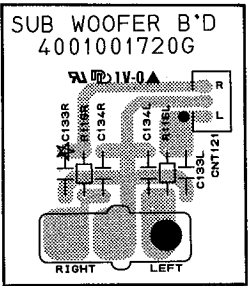
PRINTED CIRCUIT BOARDS



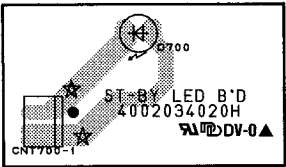
POWER LED (PCB 5)



SUB-WOOFER (PCB 10)

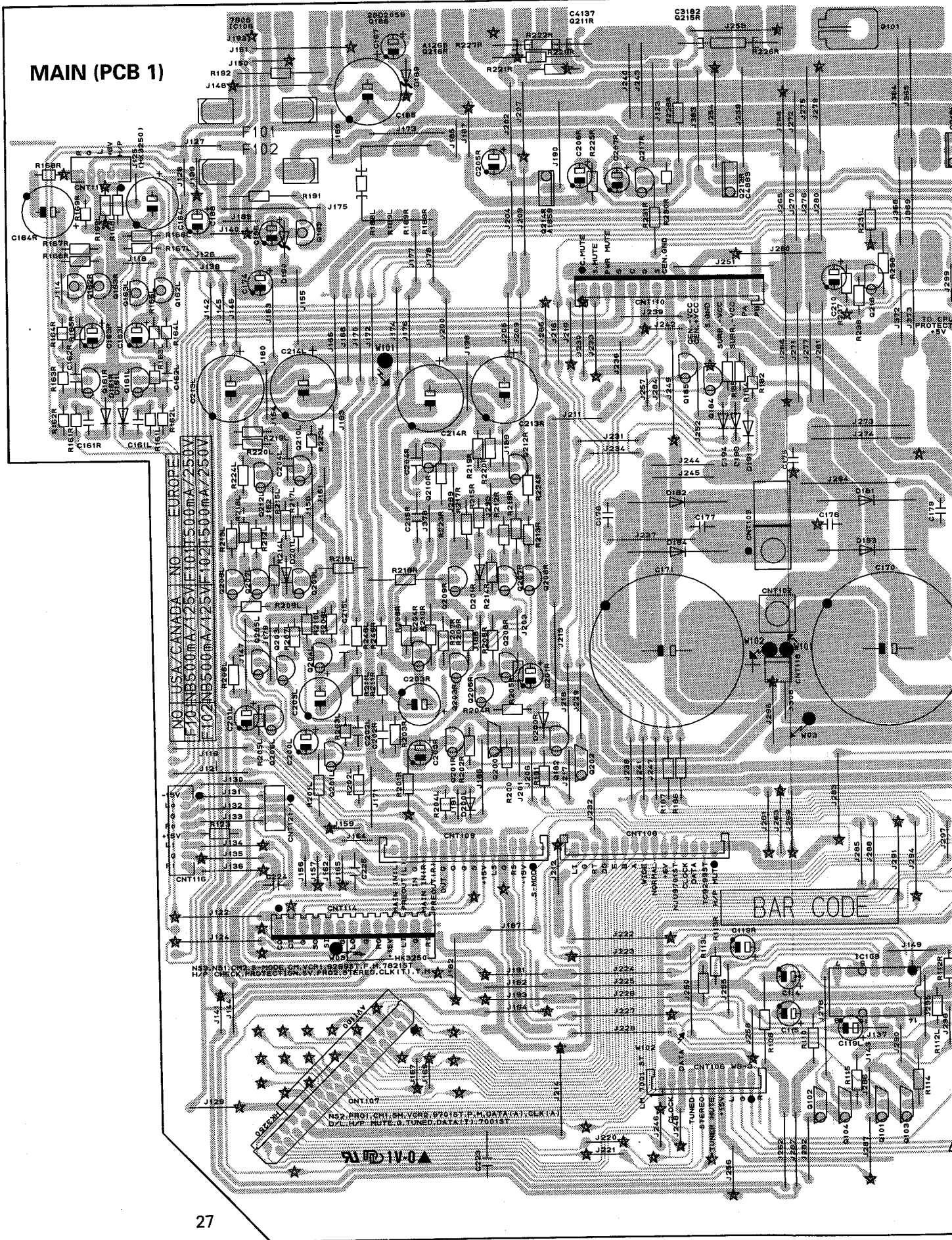


ST-BY LED (PCB 8)

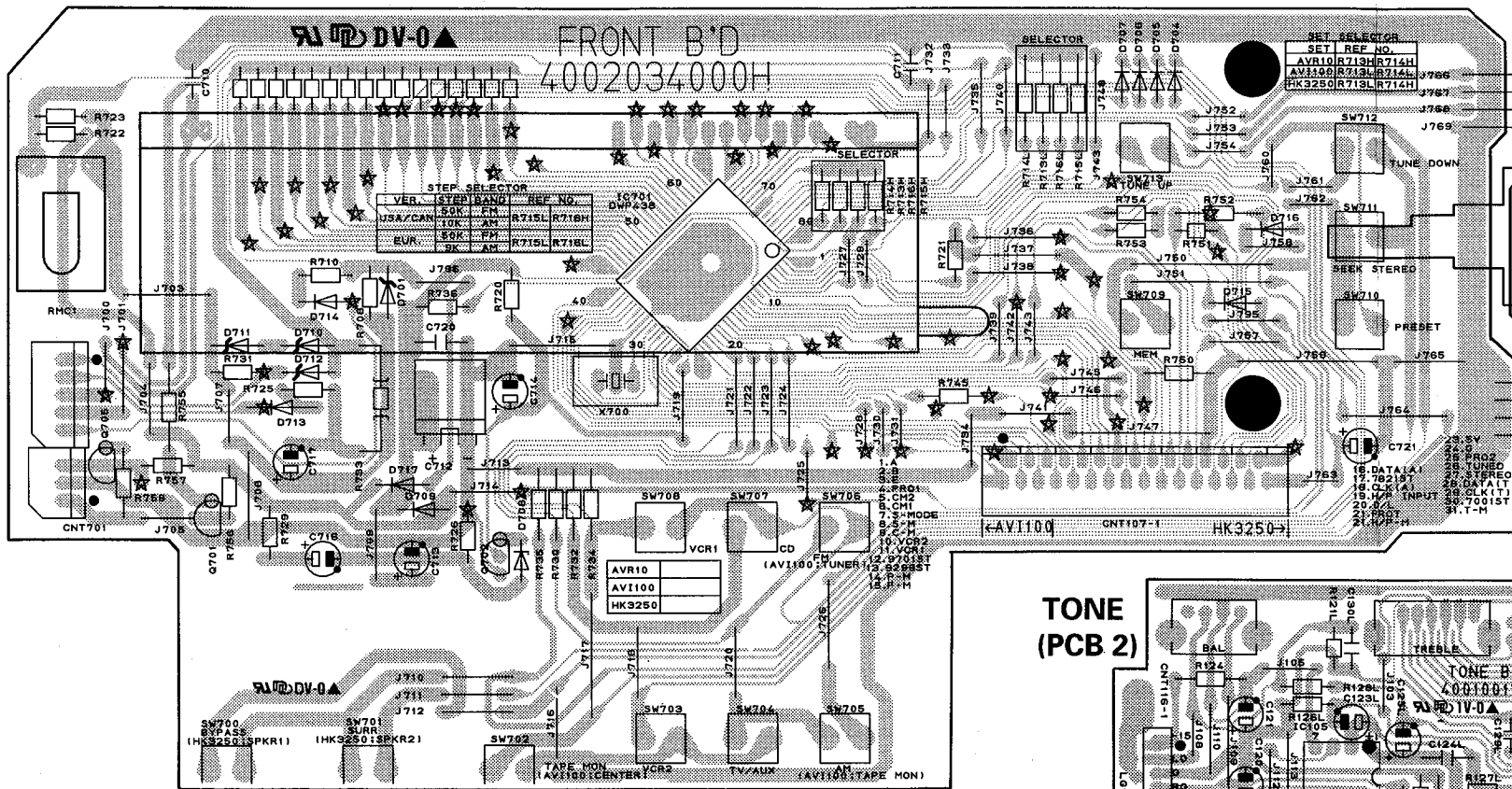


PRINTED CIRCUIT BOARDS

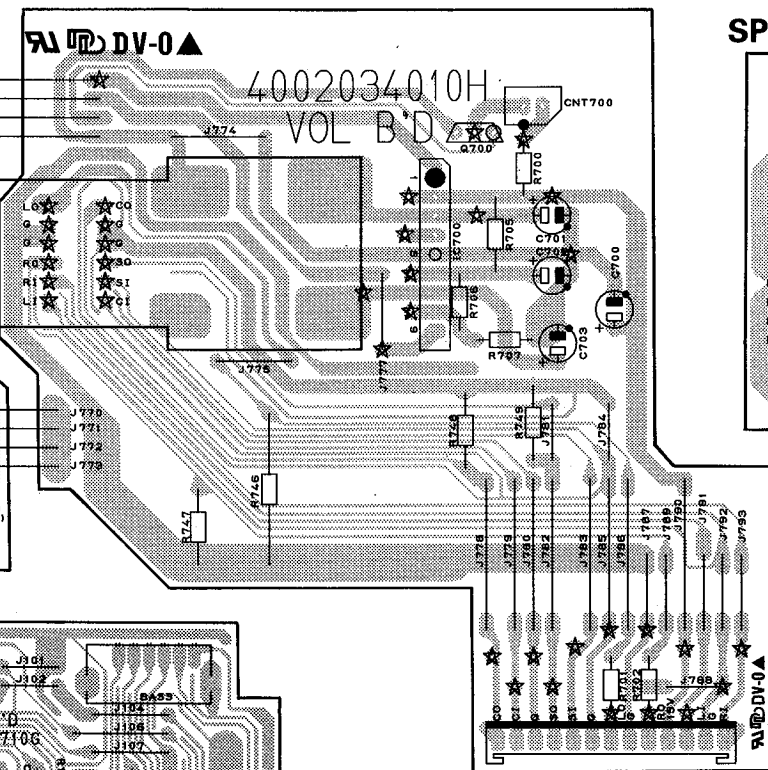
MAIN (PCB 1)



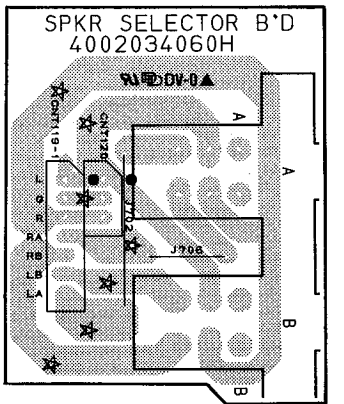
FRONT (PCB 3)



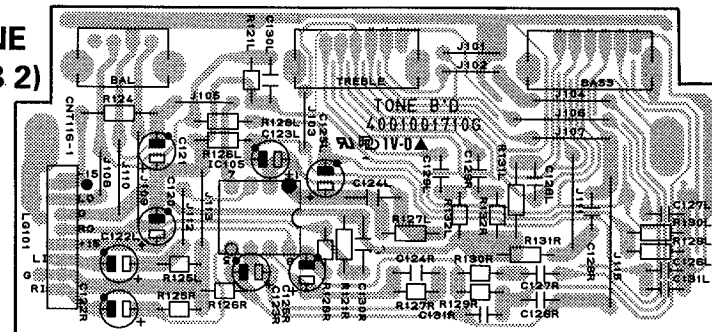
VOLUME (PCB 7)



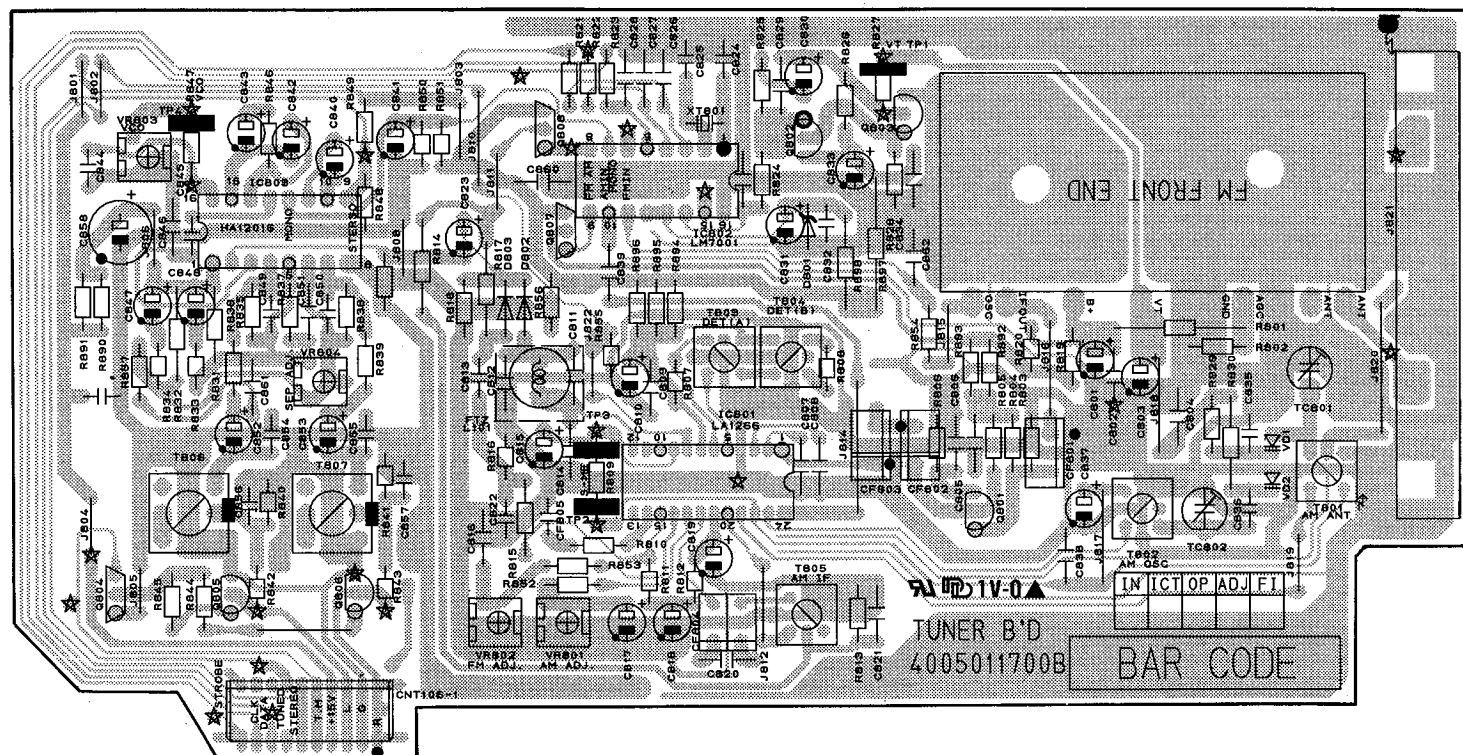
SPEAKER SEL. (PCB 11)



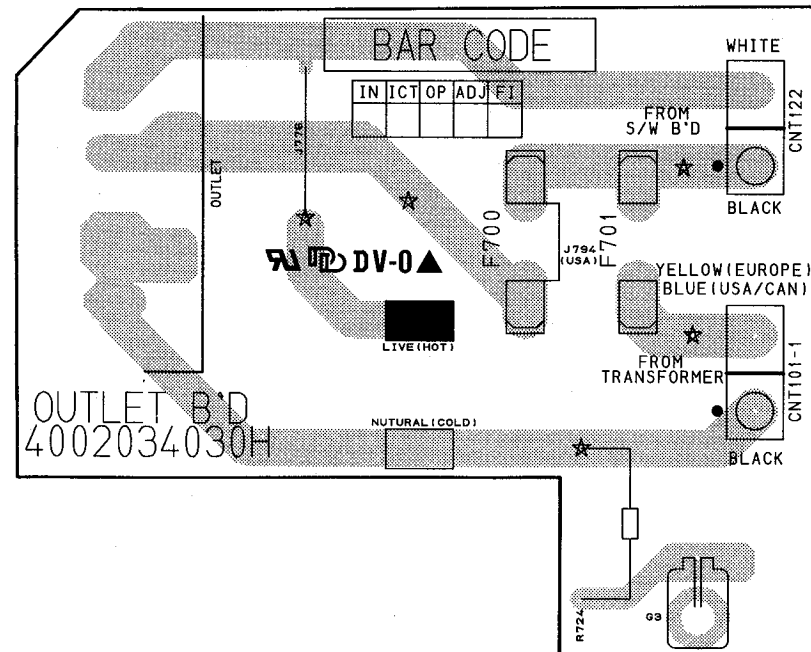
TONE (PCB 2)



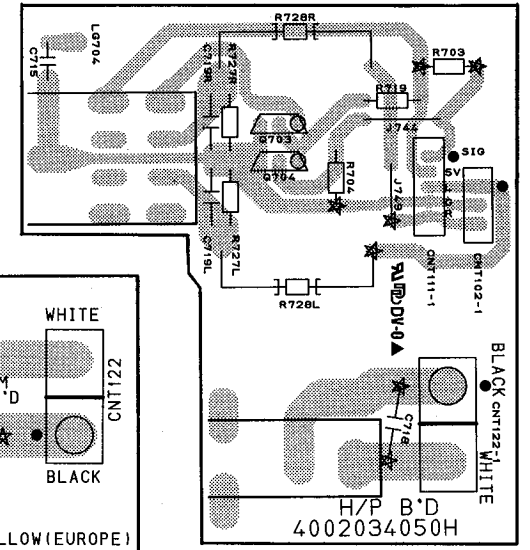
TUNER (PCB 9)



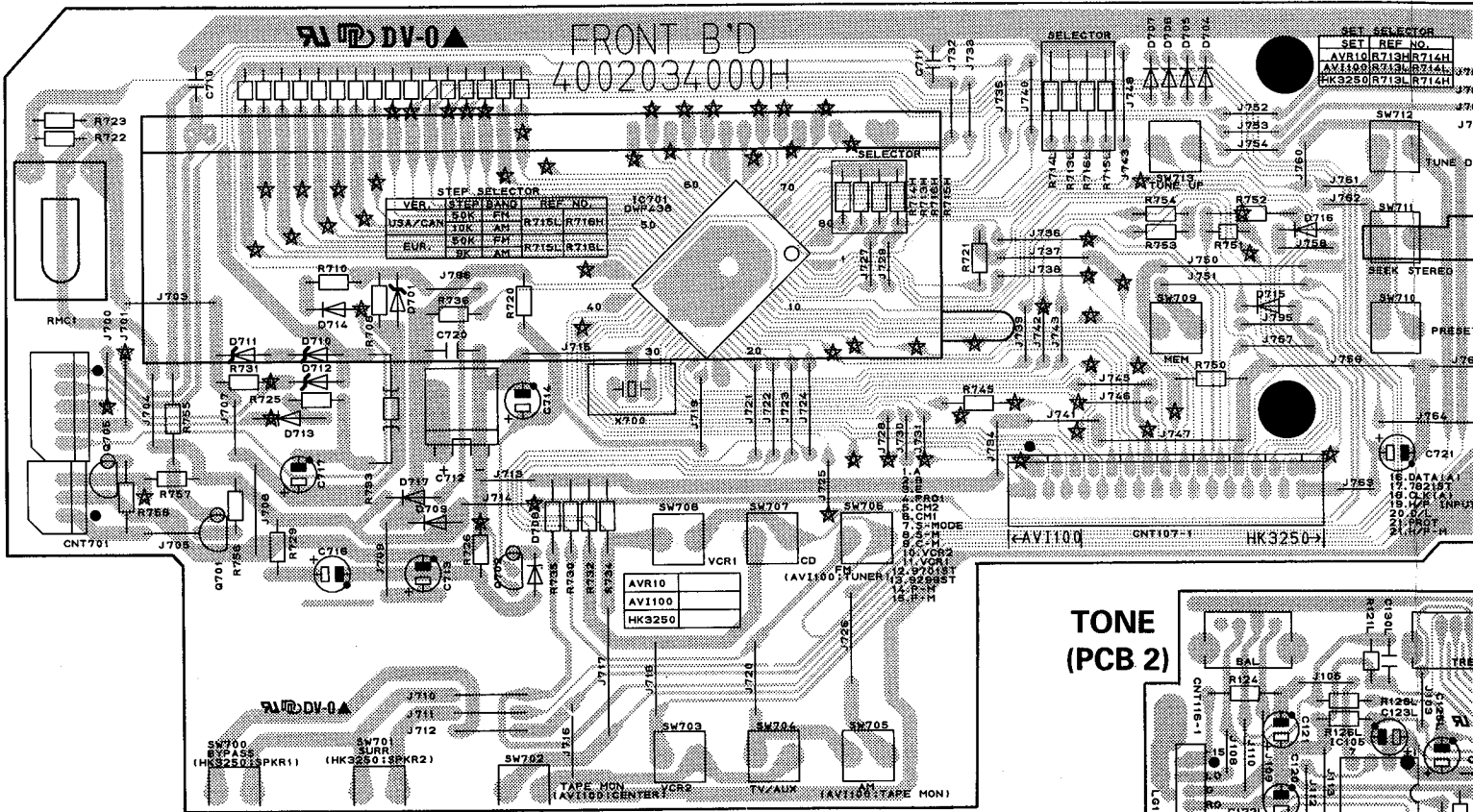
OUTLET (PCB 6)



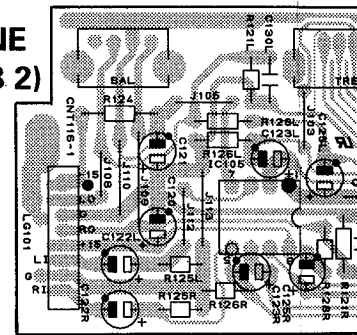
HEADPHONE (PCB 4)



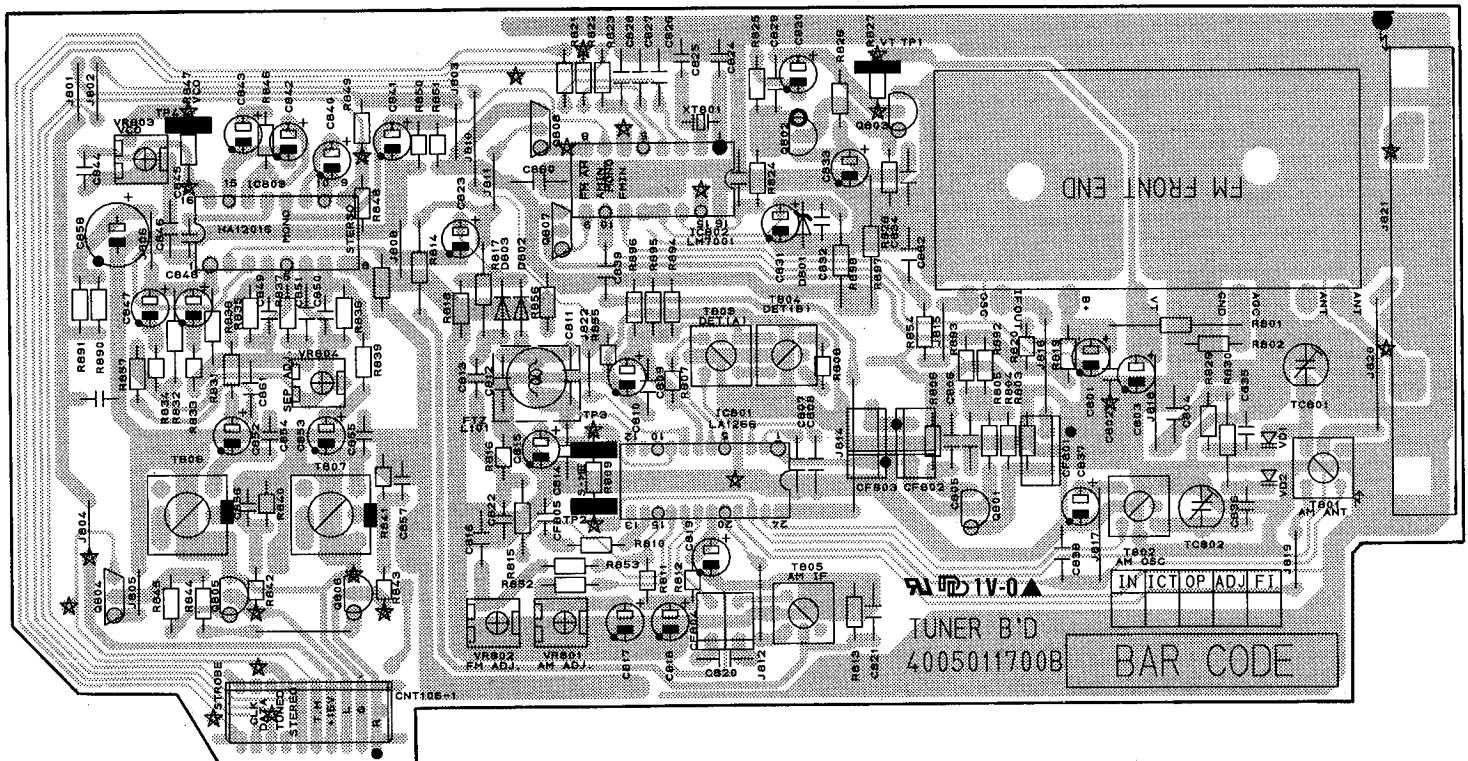
FRONT (PCB 3)



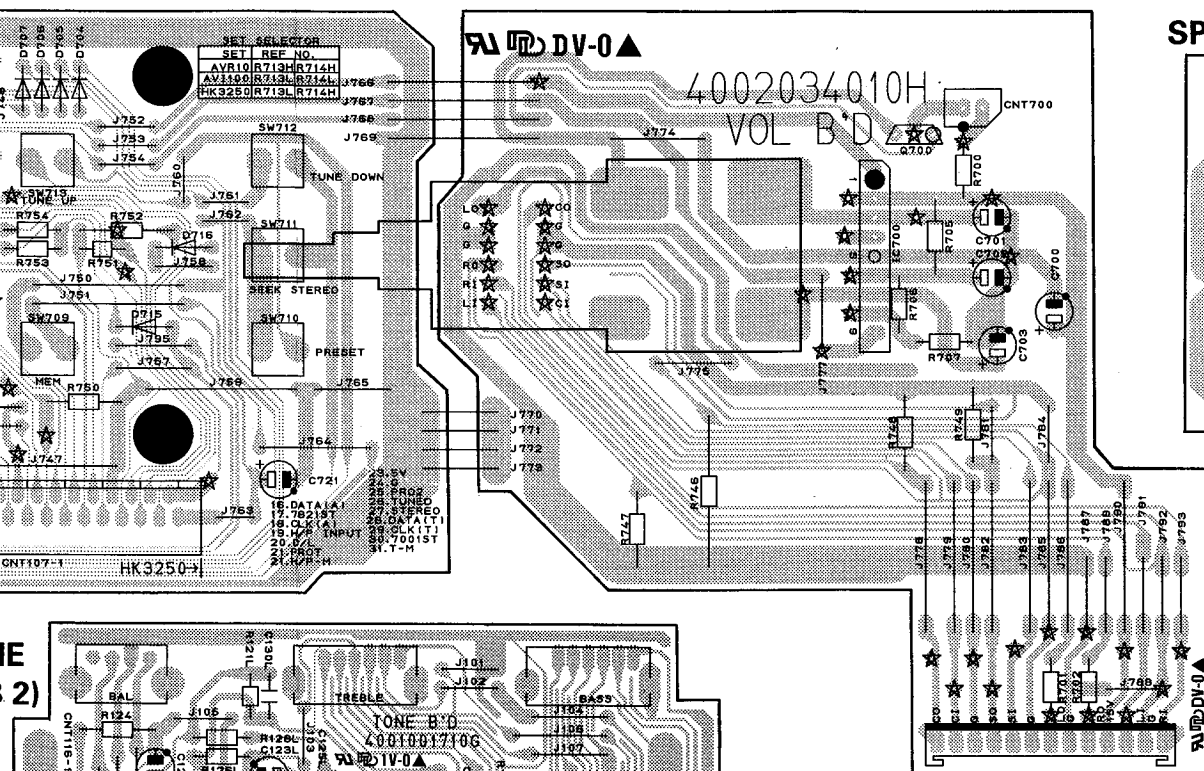
TONE (PCB 2)



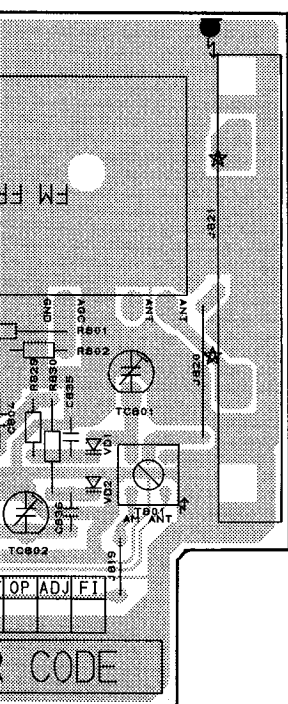
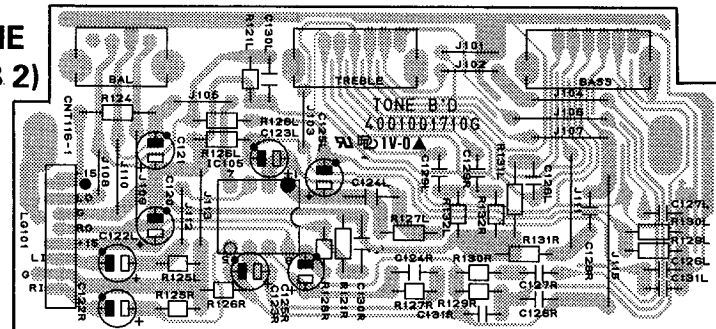
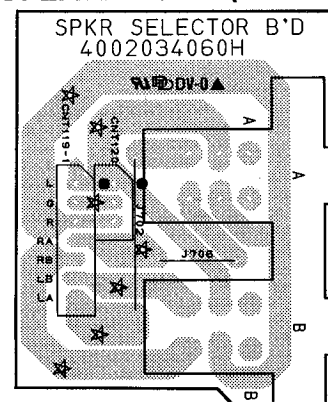
TUNER (PCB 9)



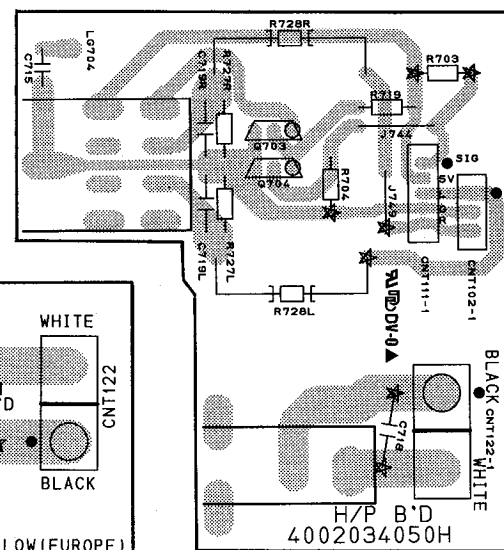
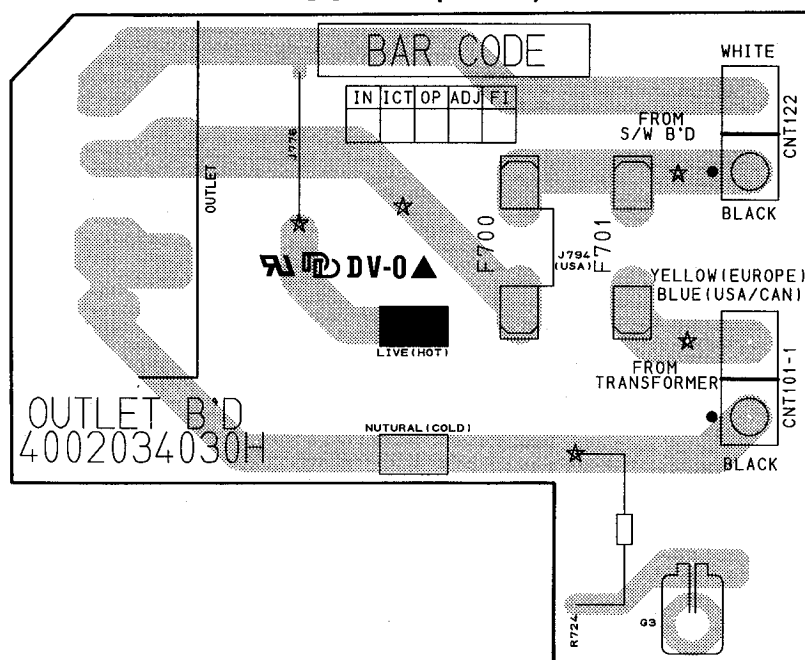
VOLUME (PCB 7)



SPEAKER SEL. (PCB 11)



OUTLET (PCB 6)



HEADPHONE (PCB 4)

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE : Products marked with Δ have special characteristics important to safety.
If you replace any of these components, read carefully the product safety notice in this manual.
Don't degrade the safety of the product through improper servicing.
Resistor/Capacitor tolerance – D : (±0.5%), J : (±5%), K : (±10%), M : (±20%), Z : +80, – 20%

Ref. No.	Description	Mfr. Part No.	Q'ty
PCB1 ASSEMBLY P.C. BOARD MAIN			
CAPACITORS			
C107L/R	Ceramic Tubular	100 pF 50 V K	3519101935 2
C108L/R	Ceramic Tubular	100 pF 50 V K	3519101935 2
C109L/R	Ceramic Tubular	100 pF 50 V K	3519101935 2
C111L/R	Ceramic Tubular	100 pF 50 V K	3519101935 2
C113	Ceramic Tubular	100 pF 50 V K	3519101935 1
C114/C115	Electrolytic SG	47 μF 16 V M	3479347031 2
C116	Electrolytic SG	1 μF 50 V M	3479310971 1
C117L/R	Electrolytic SG	4.7 μF 50 V M	3479347971 2
C118L/R	Electrolytic SG	47 μF 16 V M	3479347031 2
C120/C121	Electrolytic SG	47 μF 16 V M	3479347031 2
C136	Ceramic Disk	0.1 μF 50 V J	3509104512 1
C151	Electrolytic HS	22 μF 10 V M	3479322021 1
Δ C170/C171	Electrolytic HS	6800 μF 50 V M	3419568224 2
C174	Electrolytic SG	4.7 μF 50 V M	3479347971 1
C175-C184	Mylar	0.047 μF 100 V J	3679473120 10
C185	Electrolytic SG	330 μF 50 V M	3409333179 1
C186-C188	Electrolytic SG	4.7 μF 50 V M	3479347971 3
C200L/R	Electrolytic SG	47 μF 16 V M	3479347031 2
C201L/R	Electrolytic SG	1 μF 50 V M	3479310971 2
C202L/R	Ceramic Tubular	68 pF 50 V J	3579680130 2
C203L/R	Electrolytic SG	470 μF 6.3 V M	3479347111 2
C204L/R	Ceramic Tubular	47 pF 50 V J	3519470935 2
C205L/R	Electrolytic SG	10 μF 50 V M	3479310071 2
C206L/R	Electrolytic SG	4.7 μF 50 V M	3479347971 2
C207L/R	Mylar	0.068 μF 100 V J	3679683120 2
C208L/R	Mylar	0.047 μF 100 V J	3679473120 2
C209	Electrolytic SG	470 μF 6.3 V M	3479347111 1
C210	Electrolytic SG	1 μF 50 V M	3479310971 1
C211	Ceramic Disc	0.0022 μF 50 V Z	3579222130 1
C213L/R	Electrolytic SG	330 μF 50 V M	3409333179 2
C214L/R	Electrolytic SG	330 μF 50 V M	3409333179 2
C215L/R	Ceramic Tubular	3.3 pF 50 V J	3519033935 2
C216	Mylar	0.047 μF 100 V J	3679473120 1
C217	Ceramic Disc	0.0022 μF 50 V Z	3579222130 1
C222	Mylar	0.047 μF 100 V J	3679473120 1
CONNECTORS			
CNT102-1	Pin Base, 1P		4428525860 1
CNT103-1	Pin Base, 2P		4428525780 1
CNT106	Wafer, 10P, B'D to B'D		4428550100 1
CNT107	Wafer FPC, 19P		4428509017 1
CNT114	Wafer, 7P, B'D to B'D Type		4428505410 1
CNT115	Wafer, 2P		4428516110 1
CNT116	Wafer, 8P		4428516710 1
CNT118	Lead Ass'y, 2P, 200mm, to CNT118-1		436102203601 1
CNT119	Wafer, 7P		4408100927 1
CNT121	Lead Ass'y, 3P, 300mm		436203303332 1
DIODES			
D101	1N4148, Switching		2058322101 1
Δ D181-D184	1N5402, Rectifier		2058100105 4
Δ D189/D190	BZ 16BM		2258599120 2
D191	1N4148, Switching		2058322101 1
D200L/R	1N4148, Switching		2058322101 2
D201L/R	1N4148, Switching		2058322101 2
D202	UZ 9.1BSC		2258599107 1
D203/D204	1N4148, Switching		2058322101 2
FUSES			
Δ F101	NB 125 V, 0.5 A		5508201621 1
Δ F102	NB 125 V, 0.5 A		5508201621 1
INTEGRATED CIRCUITS			
IC101	LC7821		2168017132 1
IC102	KIA4559P (KIA75559P), OP Amp		2168206104 1
IC104	LTV-817, Optocoupler		2408000136 1
Δ IC106	KIA7806PI, Regulator		2168606110 1
COILS			
L101L/R	Inductor, 0.5uH		2648001010 2
POSISTORS			
P201	Ass'y Posistor, 280mm		052438000280 1
P202	PTH9M04BE222TS2F33		2438012200 1
TRANSISTORS			
Q151	DTA114YS/KRA107M		2238006103 1

Ref. No.	Description	Mfr. Part No.	Q'ty
Q181/Q182	BKTC3198Y (KTC1815Y), NPN		2208606104 2
Q183	MPSA56Y, PNP		2208206113 1
Q186	2SD2059Y (KTD2059Y)		2028406123 1
Q200	DTC114YS		2208622106 1
Q201L/R	KTD1302, NPN		2208606112 2
Q202	DTA114YS/KRA107M		2238006103 1
Q203L/R	KTA1268 (KTA970BL), PNP		2208206104 2
Q204L/R	KTA1268 (KTA970BL), PNP		2208206104 2
Q205L/R	KTA1268 (KTA970BL), PNP		2208206104 2
Q206L/R	KTA1266Y (KTA1015Y), PNP		2208206105 2
Q207L/R	BKTC3200BL (KTC2240BL), NPN		2208606108 2
Q208L/R	BKTC3200BL (KTC2240BL), NPN		2208606108 2
Q209L/R	KTA1268 (KTA970BL), PNP		2208206104 2
Q210L/R	KTA1024Y (BKTA949Y), PNP		2208206102 2
Q211L/R	2SC4137, NPN, Bias		2008622110 2
Q212L/R	KTC3206Y (BKTC2229Y), NPN		2208606107 2
Q213L/R	KSC2690AY, NPN		2008602102 2
Q214L/R	KSA1220AY, PNP		2008202101 2
Δ Q215L/R	2SC3181N-O		2028307100 2
Δ Q216L/R	2SA1264N-O		2028007100 2
Q217L/R	BKTC3198Y (KTC1815Y), NPN		2208606104 2
Q218	KTA1266Y (KTA1015Y), PNP		2208206105 1
Q219/Q220	BKTC3198Y (KTC1815Y), NPN		2208606104 2
RESISTORS			
R101L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R102L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R103L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R104L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R105L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R106L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R107	Carbon Film	1 kohm 1/5 W J	3069102970 1
R108	Carbon Film	150 ohm 1/5 W J	3069151970 1
R109	Carbon Film	100 kohm 1/5 W J	3069104970 1
R110	Carbon Film	150 ohm 1/5 W J	3069151970 1
R111L/R	Carbon Film	100 kohm 1/5 W J	3069104970 2
R112L/R	Carbon Film	220 kohm 1/5 W J	3069224970 2
R123	Carbon Film	150 ohm 1/5 W J	3069151970 1
R151	Carbon Film	3.9 kohm 1/5 W J	3069392970 1
R152	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R153	Carbon Film	100 ohm 1/5 W J	3069101970 1
R154	Carbon Film	47 ohm 1/5 W J	3069470970 1
R155	Carbon Film	47 kohm 1/5 W J	3069473970 1
R156	Carbon Film	270 ohm 1/5 W J	3069271970 1
R181	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R182	Carbon Film	47 kohm 1/5 W J	3069473970 4
R183-R185	Carbon Film	47 kohm 1/5 W J	3069473970 4
R188L/R	Metal Film	47 ohm 1 W J	3029470470 2
R189L/R	Metal Film	47 ohm 1 W J	3029470470 2
R191/R192	Carbon Film	4.7 kohm 1/5 W J	3069472970 2
R200	Carbon Film	150 kohm 1/5 W J	3069154970 2
R201L/R	Carbon Film	330 ohm 1/5 W J	3069331970 2
R202L/R	Carbon Film	3.3 kohm 1/5 W J	3069332970 2
R203L/R	Carbon Film	33 kohm 1/5 W J	3069333970 2
R204L/R	Carbon Film	33 kohm 1/5 W J	3069333970 2
R205L/R	Carbon Film	10 kohm 1/5 W J	3069103970 2
R206L/R	Carbon Film	270 ohm 1/5 W J	3069271970 2
R207L/R	Carbon Film	390 ohm 1/5 W J	3069391970 2
R208L/R	Carbon Film	390 ohm 1/5 W J	3069391970 2
R209L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
R210L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
R211L/R	Carbon Film	1.8 kohm 1/5 W J	3069182970 2
R212L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R213L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R214L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R215L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R216L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R217L/R	Carbon Film	560 ohm 1/5 W J	3069561970 2
R218L/R	Carbon Film	4.7 kohm 1/5 W J	3069472970 2
R219L/R	Carbon Film	22 kohm 1/5 W J	3069223970 2
R220L/R	Carbon Film	22 kohm 1/5 W J	3069223970 2
R221L/R	Metal Film	1.21 kohm 1/4 W F	3027121125 2
R222L/R	Metal Film	442 ohm 1/4 W F	3027442025 2
R223L/R	Carbon Film	82 ohm 1/5 W J	3069820970 2
R224L/R	Carbon Film	82 ohm 1/5 W J	3069820970 2
R225L/R	Carbon Film	82 ohm 1/5 W J	3069820970 2
Δ R226L/R	Cement	0.27 ohm 5 W J	3059027776 2
Δ R227L/R	Cement	0.27 ohm 5 W J	3059027776 2
R228L/R	Carbon Film	1.8 kohm 1/5 W J	3069182970 2

Ref. No.	Description	Mfr. Part No.	Q'ty
R229L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
R230L/R	Carbon Film	910 ohm 1/5 W J	3069911970 2
R231L/R	Carbon Film	6.8 kohm 1/5 W J	3069682970 2
R232L/R	Carbon Film	22 ohm 1/5 W J	3069220970 2
R233L/R	Carbon Film	22 ohm 1/5 W J	3069220970 2
R234L/R	Carbon Film	24 kohm 1/5 W J	3069243970 2
R235L/R	Metal Film	10 ohm 1 W J	3029100470 2
R236	Carbon Film	68 kohm 1/5 W J	3069683970 1
R237	Carbon Film	100 kohm 1/5 W J	3069104970 1
R238	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R239	Carbon Film	1.5 kohm 1/5 W J	3069152970 1
R240	Carbon Film	22 kohm 1/5 W J	3069223970 1
R241	Carbon Film	15 kohm 1/5 W J	3069153970 1
R242	Carbon Film	10 kohm 1/5 W J	3069103970 1
R243	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R244	Carbon Film	1 kohm 1/5 W J	3069102970 1
R245	Carbon Film	6.8 kohm 1/5 W J	3069682970 1
R246L/R	Carbon Film	33 kohm 1/5 W J	3069333970 2
MISCELLANEOUS			
	Terminal Ground		4235007310 2
	Clip Fuse		4255001010 4
33	Jack, RCA, 4P		4438103110 2
34	Jack, RCA, 6P		4438103210 1
35	Jack, Multi, 2P		4438007510 1
36	Terminal Speaker, Screw Type, 8P		4408105810 1
PCB2 ASSEMBLY P.C. BOARD TONE			
CAPACITORS			
C122L/R	Electrolytic SG	47 μF 16 V M	3479347031 2
C123L/R	Electrolytic SG	4.7 μF 50 V M	3479347971 2
C124L/R	Ceramic Tubular	47 pF 50 V J	3519470935 2
C125L/R	Electrolytic SG	4.7 μF 50 V M	3479347971 2
C126L/R	Mylar	0.027 μF 100 V J	3679273120 2
C127L/R	Mylar	0.0033 μF 100 V J	3679332120 2
C128L/R	Mylar	0.15 μF 63V K	3679154297 2
C129L/R	Mylar	0.018 μF 100 V J	3679183120 2
C130L/R	Ceramic Tubular	330 pF 50 V K	3519331935 2
CONNECTOR			
CNT116-1	Lead Ass'y, 8P, 120mm		436208123332 1
INTEGRATED CIRCUIT			
IC105	KIA4559P (KIA75559P), OP Amp		2168206104 1
RESISTORS			
R124	Carbon Film	150 ohm 1/5 W J	3069151970 1
R121L/R	Carbon Film	100 kohm 1/5 W J	3069104970 2
R125L/R	Carbon Film	100 kohm 1/5 W J	3069104970 2
R126L/R	Carbon Film	270 kohm 1/5 W J	3069274970 2
R127L/R	Carbon Film	1 Mohm 1/5 W J	3069105970 2
R128L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R129L/R	Carbon Film	18 kohm 1/5 W J	3069183970 2
R130L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R131L/R	Carbon Film	3.9 kohm 1/5 W J	3069392970 2
R132L/R	Carbon Film	620 ohm 1/5 W J	3069621970 2
MISCELLANEOUS			
17	Volume, Bass/Treble		3208068910 2
18	Volume, Balance		3208068810 1
19	Shield Fence, Tone		6165149710 1
PCB3 ASSEMBLY P.C. BOARD FRONT			
CAPACITORS			
C710/C711	Mylar	0.047 μF 100 V J	3679473120 2
C712	Back-Up	0.047 μF 5.5 V M	3439247315 1
C713	Electrolytic SG	47 μF 10 V M	3479347021 1
C714	Electrolytic SG	1 μF 50 V M	3479310971 1
C716	Electrolytic SG	10 μF 50 V M	3479310071 1
C717	Electrolytic SG	100 μF 50 V M	3479310171 1
C720	Ceramic Disc	0.022 μF 50 V Z	3519223530 1
C721	Electrolytic SG	0.47 μF 50 V M	3479347871 1
DIODES			
D701	UZ 4.3BSB		2258599102 1
D704-D709	1N4148, Switching		2058322101 6
D710/D711	UZ 16.0BSD		2258599117 2
D712	UZ 9.1BSC		2258599107 1
D713	1N4002, Rectifier		2258100135 1
D714	1N4148, Switching		2058322101 1
D716	1N4148, Switching		2058322101 1
FIP			
FL700	FL Display CM1361C		2328002306 1

Ref. No.	Description	Mfr. Part No.	Q'ty
INTEGRATED CIRCUIT			
IC701	CXP82316, CPU	2138322189	1
TRANSISTORS			
Q701	BKTC3198Y (KTC1815Y), NPN	2208606104	1
Q702	BKTC3198Y (KTC1815Y), NPN	2208606104	1
RESISTORS			
R708	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R710	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R713H	Carbon Film	47 kohm 1/5 W J	3069473970 1
R714L	Carbon Film	47 kohm 1/5 W J	3069473970 1
R715H	Carbon Film	47 kohm 1/5 W J	3069473970 1
R716L	Carbon Film	47 kohm 1/5 W J	3069473970 1
R717	Carbon Film	470 ohm 1/5 W J	3069471970 1
R718	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R720	Carbon Film	100 kohm 1/5 W J	3069104970 1
R721	Carbon Film	330 ohm 1/5 W J	3069331970 1
R722	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R723	Carbon Film	47 kohm 1/5 W J	3069473970 1
R725	Carbon Film	100 ohm 1/5 W J	3069101970 1
R726	Carbon Film	10 kohm 1/5 W J	3069103970 1
R729	Carbon Film	330 ohm 1/5 W J	3069331970 1
R730	Carbon Film	100 kohm 1/5 W J	3069104970 1
R731	Carbon Film	15 kohm 1/5 W J	3069153970 1
R732	Carbon Film	100 kohm 1/5 W J	3069104970 1
R733	Metal Film	390 ohm 1 W J	3029391470 1
R734/R735	Carbon Film	100 kohm 1/5 W J	3069104970 2
R745	Carbon Film	1 kohm 1/5 W J	3069102970 1
REMOTE SENSOR			
RMC1	TEMT5380(38 kHz)	2408005001	1
RESONATOR			
X700	CST10MTW-TF01	3938124010	1
CONNECTORS			
CNT105-1	Wafer, 5P, Angle	4428513450	1
CNT107-1	Wafer FPC, 19P	4428519826	1
CNT701	Wafer, 2P, Angle	4428513420	1
MISCELLANEOUS			
22	Holder FL	6043010210	1
20	Switch, Tact	4658004810	14
PCB4 ASSEMBLY P.C. BOARD HEADPHONE			
CAPACITORS			
C715	Ceramic Disc.	0.1 μF 50V Z	3579104530 1
C718	SPK-Killer	0.0047 μF 400V	3548472340 1
C719L/R	Ceramic Disc.	0.047 μF 50 V Z	3579473530 2
TRANSISTORS			
Q703/Q704	DTC114YS		2208622106 2
RESISTORS			
R703	Carbon Film	2 kohm 1/5 W J	3069202970 1
R704	Carbon Film	10 kohm 1/5 W J	3069103970 1
R719	Carbon Film	10 kohm 1/5 W J	3069103970 1
R728L/R	Carbon Film	100 ohm 1/5 W J	3069101970 2
CONNECTORS			
CNT122-1	Lead Ass'y, 2P, 300mm, LV Type	4358850230	1
CNT120-1	Lead Ass'y, 3P, 220mm	436102303331	
MISCELLANEOUS			
11	Jack, Phone	4438004510	1
12	Switch, Power, Push Type	4628055910	1
PCB5 ASSEMBLY P.C. BOARD POWER LED			
D702/D703	SLR-34GC, Green	2371124701	2
CNT701-1	Lead Ass'y, 2P, 180mm	436102183331	1
PCB6 ASSEMBLY P.C. BOARD OUTLET			
F700	Jumper	1508400802	1
F701	NB 125 V, 5 A	5508203021	1
R724	Carbon Film	3.3 Mohm 1/2 W J	3029335380 1
CNT101-1	Pin Base, 2P	4428525780	1
CNT122	Pin Base, 2P	4428525780	1
	Clip Fuse	4255001010	2
	Pin Solder	4228001410	2
	Terminal Ground	4235007310	1
43	Outlet, AC	4448104810	1

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE : Products marked with Δ have special characteristics important to safety.

If you replace any of these components, read carefully the product safety notice in this manual.

Don't degrade the safety of the product through improper servicing.

Resistor/Capacitor tolerance – D : ($\pm 0.5\%$), J : ($\pm 5\%$), K : ($\pm 10\%$), M : ($\pm 20\%$), Z : +80, – 20%

Ref. No.	Description	Mfr. Part No.	Q'ty	Ref. No.	Description	Mfr. Part No.	Q'ty
PCB1 ASSEMBLY P.C. BOARD MAIN				Q181/Q182	BKTC3198Y(KTC1815Y), NPN	2208606104	2
CAPACITORS				Q183	MPSA56Y, PNP	2208206113	1
C107/LR	Ceramic Tubular	100 μ F 50 V K	3519101935 2	Q186	2SD2059Y(KTD2059Y)	2028406123	1
C108/LR	Ceramic Tubular	100 μ F 50 V K	3519101935 2	Q200	DTC114YS	2208622106	1
C109/LR	Ceramic Tubular	100 μ F 50 V K	3519101935 2	Q201/LR	KTD1302, NPN	2208606112	2
C111/LR	Ceramic Tubular	100 μ F 50 V K	3519101935 2	Q202	DTA114YS/KRA107M	2238006103	1
C113	Ceramic Tubular	100 μ F 50 V K	3519101935 1	Q203/LR	KTA1268(KTA970BL), PNP	2208206104	2
C114/C115	Electrolytic SG	47 μ F 16 V M	3479347031 2	Q204/LR	KTA1268(KTA970BL), PNP	2208206104	2
C116	Electrolytic SG	1 μ F 50 V M	3479310971 1	Q205/LR	KTA1268(KTA970BL), PNP	2208206105	2
C117/LR	Electrolytic SG	4.7 μ F 50 V M	3479347971 2	Q206/LR	KTA1266Y(KTA1015Y), PNP	2208606108	2
C118/LR	Electrolytic SG	47 μ F 16 V M	3479347031 2	Q207/LR	BKTC3200BL(KTC2240BL), NPN	2208606108	2
C120/C121	Electrolytic SG	47 μ F 16 V M	3479347031 2	Q208/LR	BKTC3200BL(KTC2240BL), NPN	2208206104	2
C136	Ceramic Disk	0.1 μ F 50 V J	3509104512 1	Q209/LR	KTA1268(KTA970BL), PNP	2208206102	2
C151	Electrolytic SG	22 μ F 10 V M	3479322021 1	Q210/LR	KTA1024Y(BKTA949Y), PNP	2008622110	2
Δ C170/C171	Electrolytic HS	6800 μ F 50 V M	3419568224 2	Q211/LR	2SC4137, NPN, Bias	2208606107	2
C174	Electrolytic SG	4.7 μ F 50 V M	3479347971 1	Q212/LR	KTC3206Y(BKTC2229Y), NPN	2008602102	2
C175-C184	Mylar	0.047 μ F 100 V J	3679473120 10	Q213/LR	KSC2690AY, NPN	2008202101	2
C185	Electrolytic SG	330 μ F 50 V M	3409333179 1	Q214/LR	KSA1220AY, PNP	2028307100	2
C186-C188	Electrolytic SG	4.7 μ F 50 V M	3479347971 3	Δ Q215/LR	2SC3181N-O	2028007100	2
C200/LR	Electrolytic SG	47 μ F 16 V M	3479347031 2	Δ Q216/LR	2SA1264N-O	2208606104	2
C201/LR	Electrolytic SG	1 μ F 50 V M	3479310971 2	Q217/LR	BKTC3198Y(KTC1815Y), NPN	2208206105	1
C202/LR	Ceramic Tubular	68 μ F 50 V J	3579680130 2	Q218	KTA1266Y(KTA1015Y), PNP	2208606104	2
C203/LR	Electrolytic SG	470 μ F 6.3 V M	3479347111 2	Q219/Q220	BKTC3198Y(KTC1815Y), NPN		
C204/LR	Ceramic Tubular	47 μ F 50 V J	3519470935 2	RESISTORS			
C205/LR	Electrolytic SG	10 μ F 50 V M	3479310071 2	R101/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C206/LR	Electrolytic SG	4.7 μ F 50 V M	3479347971 2	R102/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C207/LR	Mylar	0.068 μ F 100 V J	3679683120 2	R103/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C208/LR	Mylar	0.047 μ F 100 V J	3679473120 2	R104/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C209	Electrolytic SG	470 μ F 6.3 V M	3479347111 1	R105/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C210	Electrolytic SG	1 μ F 50 V M	3479310971 1	R106/LR	Carbon Film	1 kohm 1/5 W J	3069102970 2
C211	Ceramic Disc	0.0022 μ F 50 V Z	3579222130 1	R107	Carbon Film	1 kohm 1/5 W J	3069102970 1
C213/LR	Electrolytic SG	330 μ F 50 V M	3409333179 2	R108	Carbon Film	150 ohm 1/5 W J	3069151970 1
C214/LR	Electrolytic SG	330 μ F 50 V M	3409333179 2	R109	Carbon Film	100 kohm 1/5 W J	3069104970 1
C215/LR	Ceramic Tubular	3.3 μ F 50 V J	3519033935 2	R110	Carbon Film	150 ohm 1/5 W J	3069104970 2
C216	Mylar	0.047 μ F 100 V J	3679473120 1	R111/LR	Carbon Film	100 kohm 1/5 W J	3069224970 2
C217	Ceramic Disc	0.0022 μ F 50 V Z	3579222130 1	R112/LR	Carbon Film	220 kohm 1/5 W J	3069151970 1
C222	Mylar	0.047 μ F 100 V J	3679473120 1	R123	Carbon Film	150 ohm 1/5 W J	3069392970 1
CONNECTORS				R151	Carbon Film	3.9 kohm 1/5 W J	3069332970 1
CNT102-1	Pin Base, 1P		4428525860 1	R152	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
CNT103-1	Pin Base, 2P		4428525780 1	R153	Carbon Film	100 ohm 1/5 W J	3069101970 1
CNT106	Wafer, 10P, B'D to B'D		4428550100 1	R154	Carbon Film	47 ohm 1/5 W J	3069470970 1
CNT107	Wafer FPC, 19P		4428509017 1	R155	Carbon Film	47 kohm 1/5 W J	3069473970 1
CNT114	Wafer, 7P, B'D to B'D Type		4428505410 1	R156	Carbon Film	270 ohm 1/5 W J	3069271970 1
CNT115	Wafer, 2P		4428516110 1	R181	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
CNT116	Wafer, 8P		4428516710 1	R182	Carbon Film	47 kohm 1/5 W J	3069473970 4
CNT118	Lead Ass'y, 2P, 200mm, to CNT118-1		436102203601 1	R183-R185	Carbon Film	47 kohm 1/5 W J	3069473970 4
CNT119	Wafer, 7P		4408100927 1	R188/LR	Metal Film	47 ohm 1 W J	3029470470 2
CNT121	Lead Ass'y, 3P, 300mm		436203303332 1	R189/LR	Metal Film	47 ohm 1 W J	3029470470 2
DIODES				R191/R192	Carbon Film	4.7 kohm 1/5 W J	3069472970 2
D101	1N4148, Switching		2058322101 1	R200	Carbon Film	150 kohm 1/5 W J	3069154970 2
Δ D181-D184	1N5402, Rectifier		2058100105 4	R201/LR	Carbon Film	330 kohm 1/5 W J	3069331970 2
Δ D189/D190	BZ 16BM		2258599120 2	R202/LR	Carbon Film	3.3 kohm 1/5 W J	3069332970 2
D191	1N4148, Switching		2058322101 1	R203/LR	Carbon Film	33 kohm 1/5 W J	3069333970 2
D200/LR	1N4148, Switching		2058322101 2	R204/LR	Carbon Film	33 kohm 1/5 W J	3069333970 2
D201/LR	1N4148, Switching		2058322101 2	R205/LR	Carbon Film	10 kohm 1/5 W J	3069103970 2
D202	UZ 9.1BSC		2258599107 1	R206/LR	Carbon Film	270 ohm 1/5 W J	3069271970 2
D203/D204	1N4148, Switching		2058322101 2	R207/LR	Carbon Film	390 ohm 1/5 W J	3069391970 2
FUSES				R208/LR	Carbon Film	390 ohm 1/5 W J	3069391970 2
Δ F101	NB 125 V, 0.5 A		5508201621 1	R209/LR	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
Δ F102	NB 125 V, 0.5 A		5508201621 1	R210/LR	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
INTEGRATED CIRCUITS				R211/LR	Carbon Film	1.8 kohm 1/5 W J	3069182970 2
IC101	LC7821		2168017132 1	R212/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
IC102	KIA4559P (KIA75559P), OP Amp		2168206104 1	R213/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
IC104	LTV-817, Optocoupler		2408000136 1	R214/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
Δ IC106	KIA7806PI, Regulator		2168606110 1	R215/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
COILS				R216/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
L101/LR	Inductor, 0.5uH		2648001010 2	R217/LR	Carbon Film	560 ohm 1/5 W J	3069561970 2
POSISTORS				R218/LR	Carbon Film	4.7 kohm 1/5 W J	3069472970 2
P201	Ass'y Posistor, 280mm		052438000280 1	R219/LR	Carbon Film	22 kohm 1/5 W J	3069223970 2
P202	PTH9M04BE222TS2F33		2438012200 1	R220/LR	Carbon Film	22 kohm 1/5 W J	3069223970 2
TRANSISTORS				R221/LR	Metal Film	1.21 kohm 1/4 W F	3027121125 2
Q151	DTA114YS/KRA107M		2238006103 1	R222/LR	Metal Film	442 ohm 1/4 W F	3027442025 2
				R223/LR	Carbon Film	82 ohm 1/5 W J	3069820970 2
				R224/LR	Carbon Film	82 ohm 1/5 W J	3069820970 2
				R225/LR	Carbon Film	82 ohm 1/5 W J	3069820970 2
				Δ R226/LR	Cement	0.27 ohm 5 W J	3059027776 2
				Δ R227/LR	Cement	0.27 ohm 5 W J	3059027776 2
				R228/LR	Carbon Film	1.8 kohm 1/5 W J	3069182970 2

Ref. No.	Description	Mfr. Part No.	Q'ty
R229L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970 2
R230L/R	Carbon Film	910 ohm 1/5 W J	3069911970 2
R231L/R	Carbon Film	6.8 kohm 1/5 W J	3069682970 2
R232L/R	Carbon Film	22 ohm 1/5 W J	3069220970 2
R233L/R	Carbon Film	22 ohm 1/5 W J	3069220970 2
R234L/R	Carbon Film	24 kohm 1/5 W J	3069243970 2
R235L/R	Metal Film	10 ohm 1 W J	3029100470 2
R236	Carbon Film	68 kohm 1/5 W J	3069683970 1
R237	Carbon Film	100 kohm 1/5 W J	3069104970 1
R238	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R239	Carbon Film	1.5 kohm 1/5 W J	3069152970 1
R240	Carbon Film	22 kohm 1/5 W J	3069223970 1
R241	Carbon Film	15 kohm 1/5 W J	3069153970 1
R242	Carbon Film	10 kohm 1/5 W J	3069103970 1
R243	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R244	Carbon Film	1 kohm 1/5 W J	3069102970 1
R245	Carbon Film	6.8 kohm 1/5 W J	3069682970 1
R246L/R	Carbon Film	33 kohm 1/5 W J	3069333970 2
MISCELLANEOUS			
	Terminal Ground		4235007310 2
	Clip Fuse		4255001010 4
33	Jack, RCA, 4P	4438103110	2
34	Jack, RCA, 6P	4438103210	1
35	Jack, Multi, 2P	4438007510	1
36	Terminal Speaker, Screw Type, 8P	4408105810	1

PCB2 ASSEMBLY P.C. BOARD TONE

CAPACITORS			
C122L/R	Electrolytic SG	47 μ F 16 V M	3479347031 2
C123L/R	Electrolytic SG	4.7 μ F 50 V M	3479347971 2
C124L/R	Ceramic Tubular	47 pF 50 V J	3519470935 2
C125L/R	Electrolytic SG	4.7 μ F 50 V M	3479347971 2
C126L/R	Mylar	0.027 μ F 100 V J	3679273120 2
C127L/R	Mylar	0.0033 μ F 100 V J	3679332120 2
C128L/R	Mylar	0.15 μ F 63V K	3679154297 2
C129L/R	Mylar	0.018 μ F 100 V J	3679183120 2
C130L/R	Ceramic Tubular	330 pF 50 V K	3519331935 2
CONNECTOR			
CNT116-1	Lead Ass'y, 8P, 120mm		436208123332 1
INTEGRATED CIRCUIT			
IC105	KIA4559P (KIA75559P), OP Amp		2168206104 1

RESISTORS			
R124	Carbon Film	150 ohm 1/5 W J	3069151970 1
R121L/R	Carbon Film	100 kohm 1/5 W J	3069104970 2
R125L/R	Carbon Film	100 kohm 1/5 W J	3069104970 2
R126L/R	Carbon Film	270 kohm 1/5 W J	3069274970 2
R127L/R	Carbon Film	1 Mohm 1/5 W J	3069105970 2
R128L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R129L/R	Carbon Film	18 kohm 1/5 W J	3069183970 2
R130L/R	Carbon Film	1 kohm 1/5 W J	3069102970 2
R131L/R	Carbon Film	3.9 kohm 1/5 W J	3069392970 2
R132L/R	Carbon Film	620 ohm 1/5 W J	3069621970 2

MISCELLANEOUS			
17	Volume, Bass/Treble		3208068910 2
18	Volume, Balance		3208068810 1
19	Shield Fence, Tone		6165149710 1

PCB3 ASSEMBLY P.C. BOARD FRONT

CAPACITORS			
C710/C711	Mylar	0.047 μ F 100 V J	3679473120 2
C712	Back-Up	0.047 μ F 5.5 V M	3439247315 1
C713	Electrolytic SG	47 μ F 10 V M	3479347021 1
C714	Electrolytic SG	1 μ F 50 V M	3479310971 1
C716	Electrolytic SG	10 μ F 50 V M	3479310071 1
C717	Electrolytic SG	100 μ F 50 V M	3479310171 1
C720	Ceramic Disc	0.022 μ F 50 V Z	3519223530 1
C721	Electrolytic SG	0.47 μ F 50 V M	3479347871 1

DIODES			
D701	UZ 4.3BSB		2258599102 1
D704-D709	1N4148, Switching		2058322101 6
D710/D711	UZ 16.0BSD		2258599117 2
D712	UZ 9.1BSC		2258599107 1
D713	1N4002, Rectifier		2258100135 1
D714	1N4148, Switching		2058322101 1
D716	1N4148, Switching		2058322101 1
FIP			
FL700	FL Display CM1361C		2328002306 1

Ref. No.	Description	Mfr. Part No.	Q'ty
IC701	INTEGRATED CIRCUIT CXP82316, CPU		2138322189 1
TRANSISTORS			
Q701	BKTC3198Y (KTC1815Y), NPN		2208606104 1
Q702	BKTC3198Y (KTC1815Y), NPN		2208606104 1
RESISTORS			
R708	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R710	Carbon Film	4.7 kohm 1/5 W J	3069472970 1
R713H	Carbon Film	47 kohm 1/5 W J	3069473970 1
R714L	Carbon Film	47 kohm 1/5 W J	3069473970 1
R715H	Carbon Film	47 kohm 1/5 W J	3069473970 1
R716L	Carbon Film	47 kohm 1/5 W J	3069473970 1
R717	Carbon Film	470 ohm 1/5 W J	3069471970 1
R718	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R720	Carbon Film	100 kohm 1/5 W J	3069104970 1
R721	Carbon Film	330 ohm 1/5 W J	3069331970 1
R722	Carbon Film	3.3 kohm 1/5 W J	3069332970 1
R723	Carbon Film	47 kohm 1/5 W J	3069473970 1
R725	Carbon Film	100 ohm 1/5 W J	3069101970 1
R726	Carbon Film	10 kohm 1/5 W J	3069103970 1
R729	Carbon Film	330 ohm 1/5 W J	3069331970 1
R730	Carbon Film	100 kohm 1/5 W J	3069104970 1
R731	Carbon Film	15 kohm 1/5 W J	3069153970 1
R732	Carbon Film	100 kohm 1/5 W J	3069104970 1
R733	Metal Film	390 ohm 1 W J	3029391470 1
R734/R735	Carbon Film	100 kohm 1/5 W J	3069104970 2
R745	Carbon Film	1 kohm 1/5 W J	3069102970 1
REMOTE SENSOR			
RMC1	TEMT5380(38 kHz)		2408005001 1
RESONATOR			
X700	CST10MTW-TF01		3938124010 1
CONNECTORS			
CNT105-1	Wafer, 5P, Angle		4428513450 1
CNT107-1	Wafer FPC, 19P		4428519826 1
CNT701	Wafer, 2P, Angle		4428513420 1
MISCELLANEOUS			
22	Holder FL		6043010210 1
20	Switch, Tact		4658004810 14

PCB4 ASSEMBLY P.C. BOARD HEADPHONE

CAPACITORS			
C715	Ceramic Disc.	0.1 μ F 50V Z	3579104530 1
C718	SPK-Killer	0.0047 μ F 400V	3548472340 1
C719L/R	Ceramic Disc.	0.047 μ F 50 V Z	3579473530 2

TRANSISTORS			
Q703/Q704	DTC114YS		2208622106 2

RESISTORS			
R703	Carbon Film	2 kohm 1/5 W J	3069202970 1
R704	Carbon Film	10 kohm 1/5 W J	3069103970 1
R719	Carbon Film	10 kohm 1/5 W J	3069103970 1
R728L/R	Carbon Film	100 ohm 1/5 W J	3069101970 2

CONNECTORS			
CNT122-1	Lead Ass'y, 2P, 300mm, LV Type		4358850230 1
CNT120-1	Lead Ass'y, 3P, 220mm		436102303331

MISCELLANEOUS			
11	Jack, Phone		4438004510 1
12	Switch, Power, Push Type		4628055910 1

PCB5 ASSEMBLY P.C. BOARD POWER LED

D702/D703	SLR-34GC, Green		2371124701 2
CNT701-1	Lead Ass'y, 2P, 180mm		436102183331 1

PCB6 ASSEMBLY P.C. BOARD OUTLET

F700	Jumper		1508400602 1
F701	NB 125 V, 5 A		5508203021 1
R724	Carbon Film	3.3 Mohm 1/2 W J	3029335380 1
CNT101-1	Pin Base, 2P		4428525780 1
CNT122	Pin Base, 2P		4428525780 1
	Clip Fuse		4255001010 2
	Pin Solder		4228001410 2
	Terminal Ground		4235007310 1
43	Outlet, AC		4448104810 1

Ref. No.	Description	Mfr. Part No.	Q'ty
PCB7 ASSEMBLY P. C. BOARD VOLUME			
CAPACITORS			
C700	Electrolytic SG 10 μ F 50 V M	3479310071	1
C701	Electrolytic SG 100 μ F 10 V M	3479310121	1
C702	Electrolytic SG 100 μ F 16 V M	3479310131	1
C703	Electrolytic SG 100 μ F 10 V M	3479310121	1
INTEGRATED CIRCUIT			
IC700	TA7291S	2168007204	1
TRANSISTOR			
Q700	DTC114TS	2208622108	1
RESISTORS			
R700	Carbon Film 680 ohm 1/5 W J	3069681970	1
R701/R702	Carbon Film 1 kohm 1/5 W J	3069102970	2
R705	Carbon Film 4.7 ohm 1/5 W J	3069479970	1
R706	Carbon Film 10 kohm 1/5 W J	3069103970	1
R707	Carbon Film 3 kohm 1/5 W J	3069302970	1
CONNECTORS			
CNT114-1	Wafer, 7P	4438302958	1
CNT700	Wafer, 2P	4428508210	1
MISCELLANEOUS			
21	Volume, Motor, 50 k(A)	3228019910	1
PCB8 ASSEMBLY P. C. B. ST-BY LED			
D700	SLR 40MG3, Green	2308220324	1
CNT700-1	Lead Ass'y, 2P, 180mm	435102183181	1
PCB9 ASSEMBLY P. C. B. TUNER			
CAPACITORS			
C801	Electrolytic SG 100 μ F 25 V M	3479310141	1
C802	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C804-C809	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	6
C810	Electrolytic SG 47 μ F 25 V M	3479347041	1
C813	Mylar 0.047 μ F 100 V J	3679473120	1
C814	Ceramic Tubular 330 pF 50 V K	3519331935	1
C815	Electrolytic SG 0.47 μ F 50 V M	3479347871	1
C816	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C817	Electrolytic SG 4.7 μ F 50 V M	3479347971	1
C818	Electrolytic SG 3.3 μ F 50 V M	3479333971	1
C819	Electrolytic SG 4.7 μ F 50 V M	3479347971	1
C820	Ceramic Tubular 47 pF 50 V J	3519470935	1
C821	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C822	Mylar 0.0027 μ F 100 V J	3679272120	1
C823	Electrolytic SG 2.2 μ F 50 V M	3479322971	1
C824/C825	Ceramic Disc, CH 33 pF 50 V J	3528330210	2
C828	Ceramic Tubular 100 pF 50 V K	3519101935	1
C829	Ceramic Tubular 0.01 μ F 50 V Z	3519103935	1
C830	Electrolytic SG 1 μ F 50 V M	3479310971	1
C831	Electrolytic SG 47 μ F 25 V M	3479347041	1
C832	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C833	Electrolytic SG 47 μ F 25 V M	3479347041	1
C834	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C835	Ceramic Disc 0.047 μ F 50 V Z	3579473530	1
C836	Poly 470 pF 50 V J	3615471110	1
C837	Electrolytic SG 10 μ F 50 V M	3479310071	1
C838	Ceramic Tubular 0.022 μ F 50 V Z	3519223935	1
C839	Ceramic Tubular 0.01 μ F 50 V Z	3519103935	1
C840	Electrolytic SG 3.3 μ F 50 V M	3479333971	1
C841/C842	Electrolytic SG 1 μ F 50 V M	3479310971	2
C843	Electrolytic SG 3.3 μ F 50 V M	3479333971	1
C844	Poly 1000 pF 50 V J	3615102110	1
C845	Mylar 0.047 μ F 100 V J	3679473120	1
C846	Ceramic Tubular 680 pF 50 V J	3519681935	1
C847/C848	Electrolytic SG 22 μ F 25 V M	3479322041	2
C849/C850	Mylar 0.0015 μ F 100 V J	3679152120	2
C851	Ceramic Tubular 150 pF 50 V K	3519151935	1
C852/C853	Electrolytic SG 2.2 μ F 50 V M	3479322971	2
C854/C855	Mylar 0.0022 μ F 100 V J	3679222120	2
C858	Electrolytic SG 100 μ F 25 V M	3479310141	1
FILTERS			
CF801/802	SFE10.7MS3GH-ATF21	3978011011	2
CF804	Ceramic, SFZ450F	3908001380	1
CF805	Ceramic, BFU450C	3908001020	1
DIODES			
D801	UZ 5.1BSB	2258599103	1
D802/D803	1N4148, Switching	2058322101	2

Ref. No.	Description	Mfr. Part No.	Q'ty
INTEGRATED CIRCUITS			
IC801	LA1266	2168017128	1
IC802	HA12016	2168411105	1
IC803	LM7001	2138017112	1
TRANSISTORS			
Q801	KTC1923Y(KTC3194Y), NPN	2208406103	1
Q802	2SK168, N-CH., FET	2018211100	1
Q803	BKTC3200BL(KTC2240BL), NPN	2208606108	1
Q804	DTA114YS/KRA107M	2238006103	1
Q805/Q806	KTD1302, NPN	2208606112	2
Q807/Q808	DTA114YS/KRA107M	2238006103	2
RESISTORS			
R803	Carbon Film 470 ohm 1/5 W J	3069471970	1
R804	Carbon Film 3.3 kohm 1/5 W J	3069332970	1
R805	Carbon Film 330 ohm 1/5 W J	3069331970	1
R806	Carbon Film 470 ohm 1/5 W J	3069471970	1
R807	Carbon Film 10 kohm 1/5 W J	3069103970	1
R808	Carbon Film 3.3 kohm 1/5 W J	3069332970	1
R809	Carbon Film 47 kohm 1/5 W J	3069473970	1
R810	Carbon Film 82 ohm 1/5 W J	3069820970	1
R811	Carbon Film 24 kohm 1/5 W J	3069243970	1
R812	Carbon Film 10 kohm 1/5 W J	3069103970	1
R813	Carbon Film 68 kohm 1/5 W J	3069683970	1
R814	Carbon Film 4.7 kohm 1/5 W J	3069472970	1
R815	Carbon Film 2.2 kohm 1/5 W J	3069222970	1
R816	Carbon Film 2.7 kohm 1/5 W J	3069272970	1
R817/R818	Carbon Film 100 kohm 1/5 W J	3069104970	2
R819/R820	Carbon Film 220 ohm 1/5 W J	3069221970	2
R821-R823	Carbon Film 1 kohm 1/5 W J	3069102970	3
R824	Carbon Film 820 ohm 1/5 W J	3069821970	1
R825	Carbon Film 1.5 kohm 1/5 W J	3069152970	1
R826	Carbon Film 10 kohm 1/5 W J	3069103970	1
R827	Carbon Film 1 kohm 1/5 W J	3069102970	1
R828	Carbon Film 100 ohm 1/5 W J	3069101970	1
R829/R830	Carbon Film 100 kohm 1/5 W J	3069104970	2
R831/R832	Carbon Film 22 kohm 1/5 W J	3069223970	2
R833/R834	Carbon Film 2.7 kohm 1/5 W J	3069272970	2
R835/R836	Carbon Film 47 kohm 1/5 W J	3069473970	2
R837	Carbon Film 3.9 kohm 1/5 W J	3069392970	1
R838-R841	Carbon Film 3.3 kohm 1/5 W J	3069332970	4
R842/R843	Carbon Film 1 kohm 1/5 W J	3069102970	2
R844/R845	Carbon Film 3.3 kohm 1/5 W J	3069332970	2
R846	Carbon Film 1 kohm 1/5 W J	3069102970	1
R847	Carbon Film 5.6 kohm 1/5 W J	3069562970	1
R848	Carbon Film 22 kohm 1/5 W J	3069223970	1
R849	Carbon Film 47 kohm 1/5 W J	3069473970	1
R850/R851	Carbon Film 10 kohm 1/5 W J	3069103970	2
R852	Carbon Film 1 kohm 1/5 W J	3069102970	1
R854	Carbon Film 100 ohm 1/5 W J	3069101970	1
R855	Carbon Film 22 kohm 1/5 W J	3069223970	1
R856	Carbon Film 47 kohm 1/5 W J	3069473970	1
R890-R898	Carbon Film 270 ohm 1/5 W J	3069271970	9
COILS			
T801	AM-ANT	2608201120	1
T802	AM-OSC	2638201150	1
T803	FM Quad DET(A)	2838501110	1
T804	FM Quad DET(B)	2838501210	1
T805	AM-IFT, P-7SB	2848001250	1
T806	Filter, '19KHz/38KHz, MPX BLK	2658001050	1
T807	Filter, '19KHz/38KHz, MPX BLK	2658001050	1
TRIMMERS			
TC801	TZ03-T200FR	3838001010	1
TC802	TZ03-T110FR	3838001000	1
SEMI FIXED RESISTORS			
VR801	5 k(B)	3248050243	1
VR802	20 k(B)	3248020343	1
VR803	5 k(B)	3248050243	1
VR804	200 k(B)	3248020443	1
CRYSTAL			
XT801	7.2MHz	3978101031	1
DIODE VARECTOR			
VD1/VD2	KV1236Z	2058819106	1
MISCELLANEOUS			
32	F/E FTH3-505H 3 Terminal Antenna	3928101790	1
		4408108310	1

Ref. No.	Description	Mfr. Part No.	Q'ty
PCB10 ASSEMBLY P.C. BOARD SUB-WOOFER OUT			
R116L/R	Carbon Film 1 kohm 1/5 W J	3069102970	2
CNT121	Wafer, 3P	4428516210	1
37	Jack, RCA, 2P	4438111410	1
PCB11 ASSEMBLY P.C. BOARD SPEAKER SELECTOR			
CNT119-1	Lead Ass'y, 7P, 400mm	436107403401	1
CNT110	Wafer, 3P	4428505710	1
14	Switch, Speaker, Push Type	4628060610	1

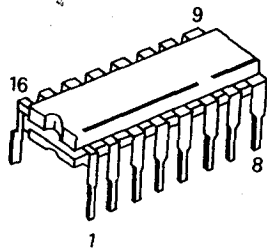
1. This parts list for HK3250 230V version is based on 120V version.
 2. Each initial in the Remark is denoted as follows.
 C: Changed, D: Deleted, A: Added

Ref. No.	Description	Mfr. Part No.	Q'ty	Remark
PCB6 ASSEMBLY P.C. BOARD OUTLET				
FUSE				
△ F700	T 250 V, 1 A	5508302035	1	C
△ F701	T 250 V, 3.15 A	5508302735	1	C
RESISTOR				
R724	Carbon Film 3.3 Moh 1/2 W J	3029335380	1	D
MISCELLANEOUS				
△ 43	Outlet, AC	4448103610	1	C
PCB9 ASSEMBLY P.C. BOARD TUNER				
CAPACITORS				
C811	Ceramic Tubular 82 pF 50 V J	3519820935	1	A
C812	Ceramic Tubular 100 pF 50 V J	3519101935	1	A
C861	Ceramic Tubular 270 pF 50 V K	3519271935	1	A
FILTERS				
CF803	SFE10.7MS3GH-ATF21	3908011011	1	A
RESISTORS				
R801	Carbon Film 62 kohm 1/5 W J	3069623970	1	A
R802	Carbon Film 100 kohm 1/5 W J	3069104970	1	A
R809	Carbon Film 56 kohm 1/5 W J	3069563970	1	C
R857	Carbon Film 1 kohm 1/5 W J	3069102970	1	A
COIL				
L101	Inductor, 20.8 mH	2648601430	1	A
SEMI FIXED RESISTOR				
VR804	500 k(B)	3248050443	1	C
MISCELLANEOUS				
	FE407-G60, Front-end	3928801890	1	C
32	Terminal Antenna	4408101610	1	C

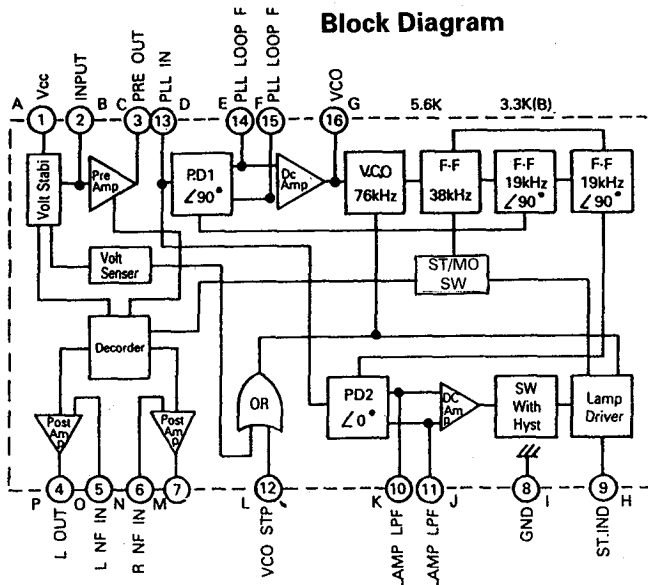
SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM

HA12016 : IC803

Package Outline

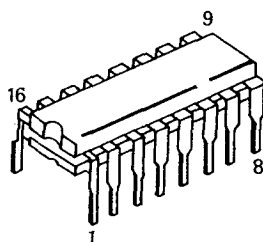


Block Diagram

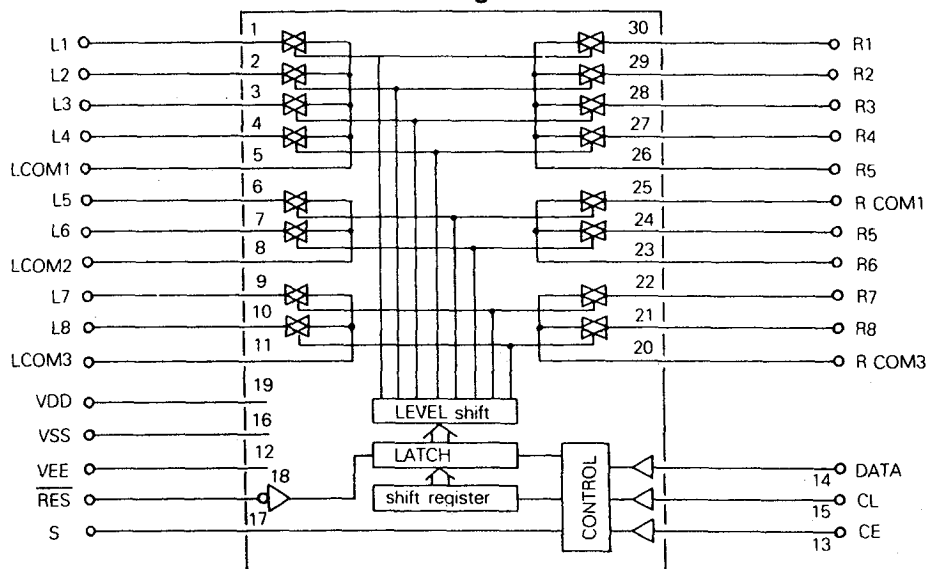


LC7821 : IC101

Package Outline

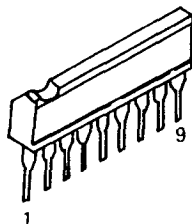


Block Diagram

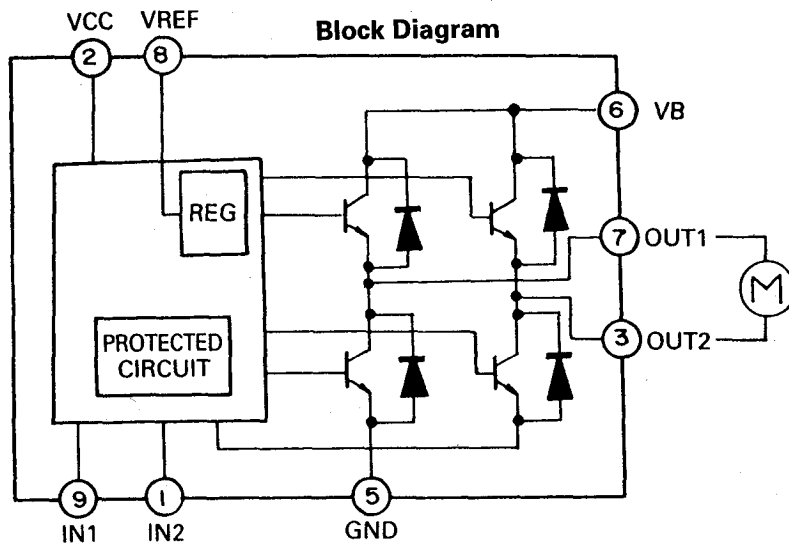


TA7291S : IC700

Package Outline

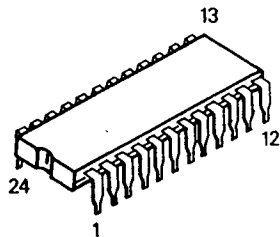


Block Diagram

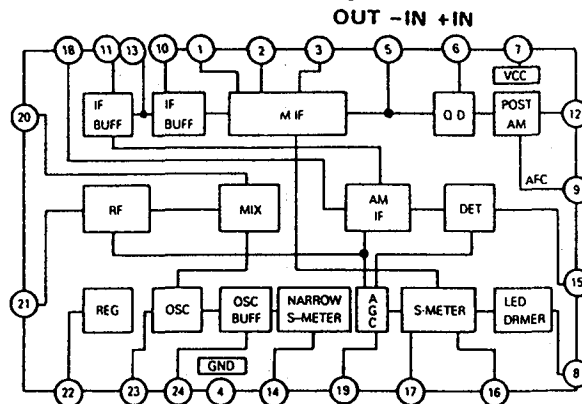


LA1266 : IC801

Package Outline

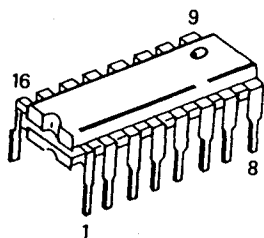


Block Diagram

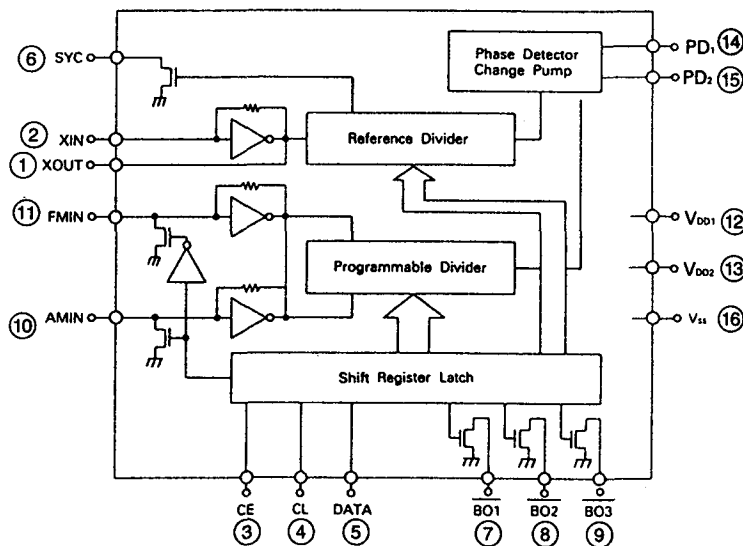


LM7001 : IC802

Package Outline

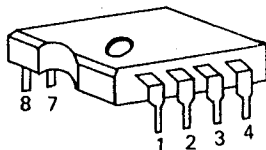


Block Diagram

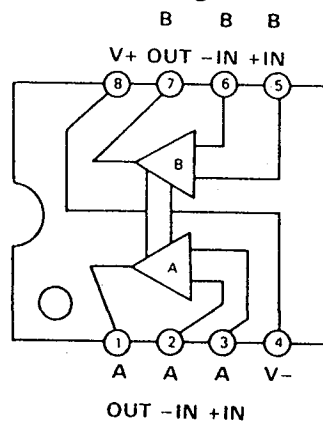


(KIA 4559P/KIA75559P)
IC102, IC105, IC304, IC305,

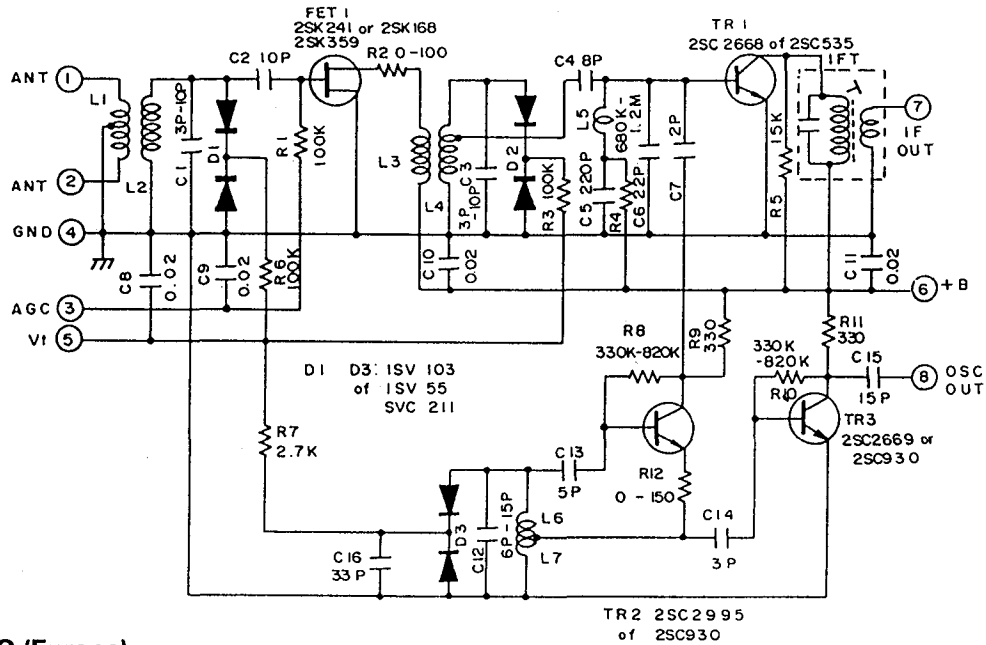
Package Outline



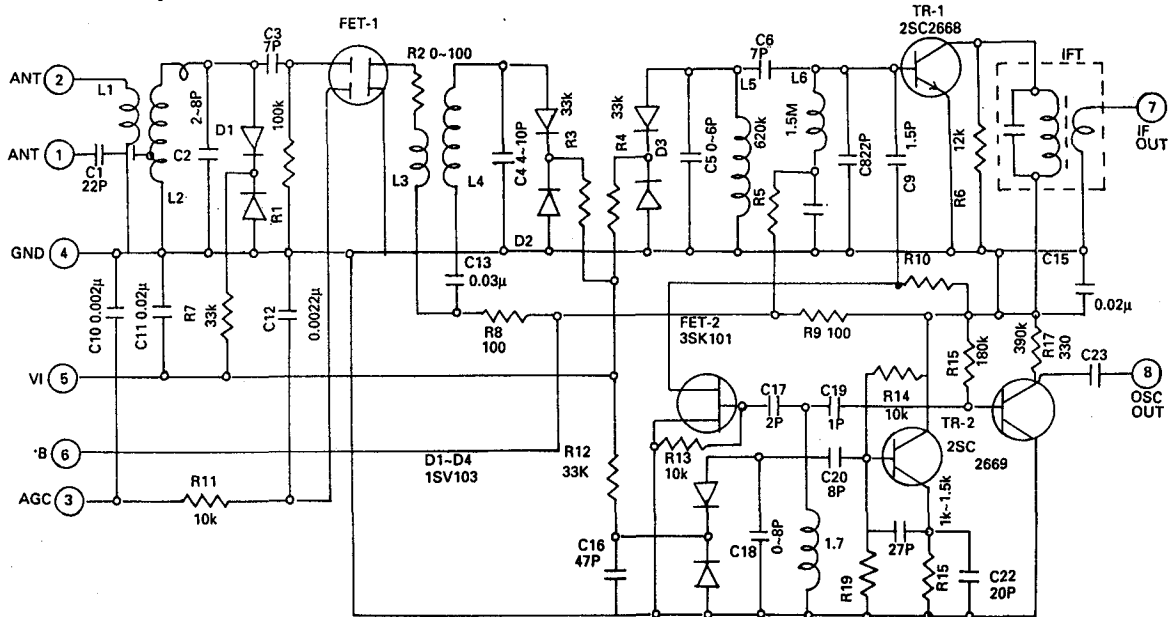
Block Diagram



FRONT-END : FE FTH3-505H(USA/CA)

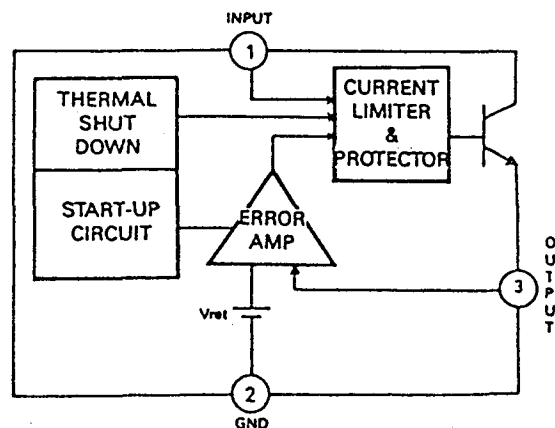
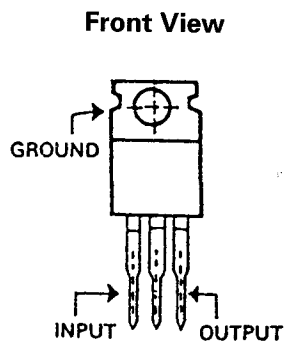


FE407-G60 (Europe)

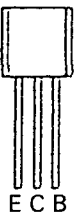
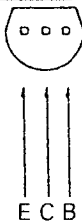
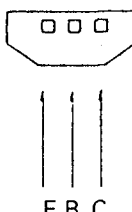
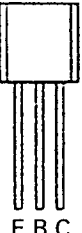
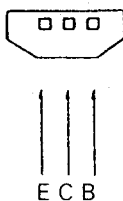
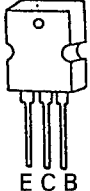
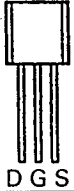
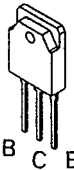


GD78XX : IC105

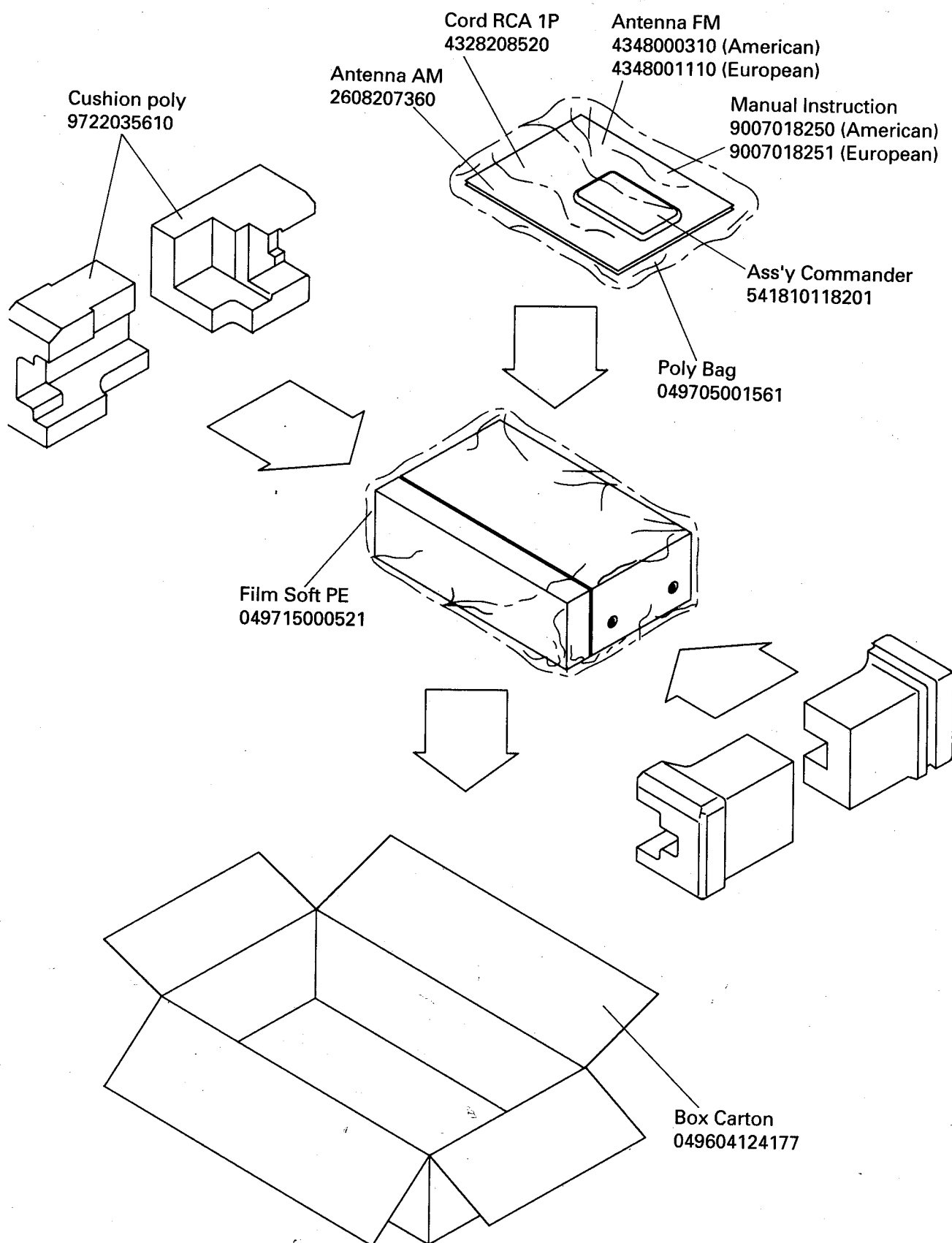
Block Diagram



TRANSISTORS LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
KTD1302 KTC3200/KTC2240 KTC3198/KTC1815 KTC1923/KTC3194 KTA2400 KTA1268/KTA970 KTA1266/KTA1015	 E C B	 E C B
DTC114YS DTA114YS	 E C B	 E B C
MPSA06 MPSA56	 E B C	 E C B
KTA1024 KTC3206	 E C B	 E C B
2SC4137 2SC4883 2SA1859	 E C B	 E C B
2SK168D	 D G S	 D G S
2SA1265N-O 2SC3182N-O	 B C E	 B C E
TERMINAL NAME		
D→DRAIN G→GATE S→SOURCE		B→BASE C→COLLECTOR E→EMITTER

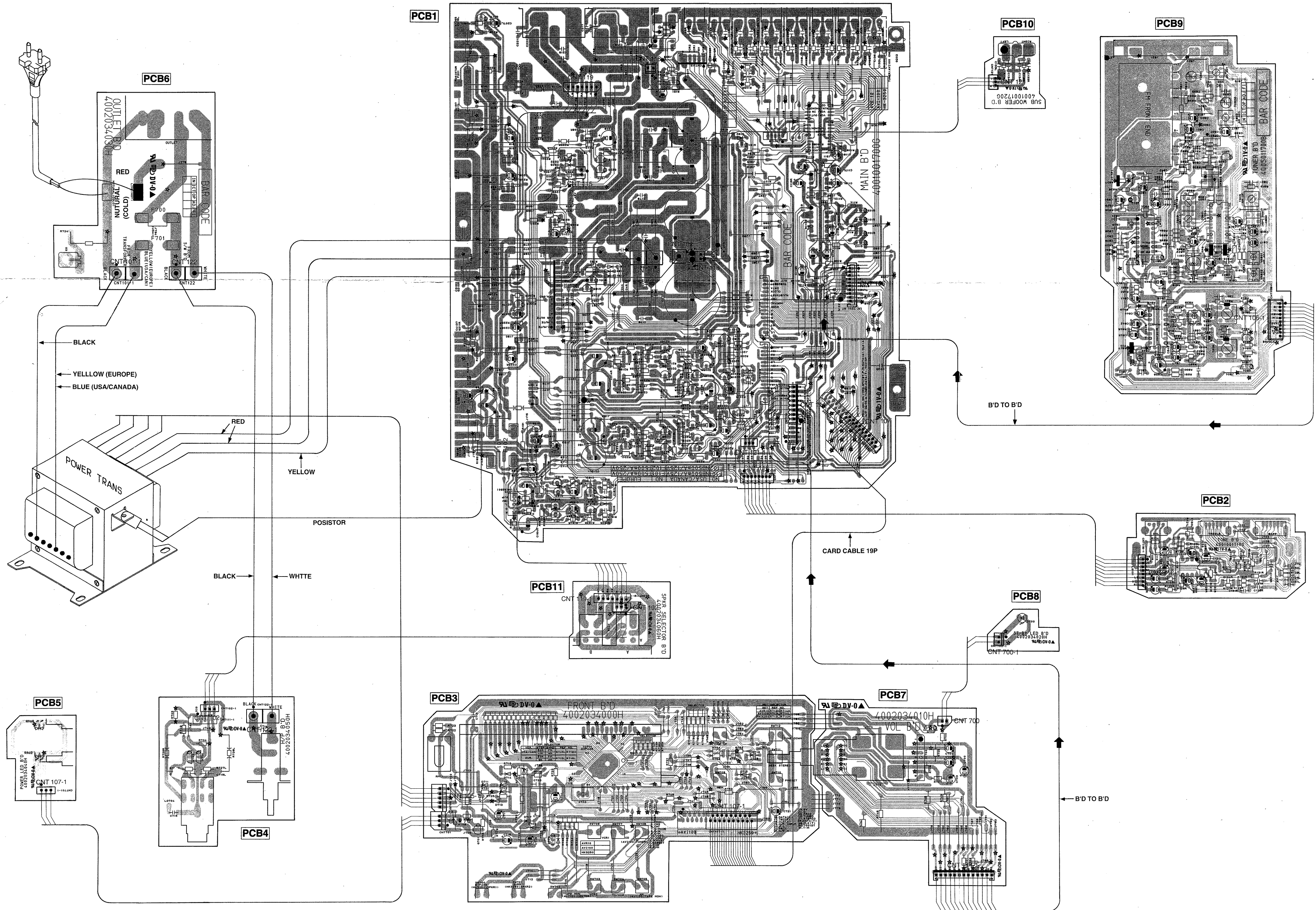
PACKAGE



WIRING DIAGRAM

A B C D E F G H I J K L M

1
2
3
4
5
6
7
8
9



WIRING DIAGRAM

A

B

C

D

E

1

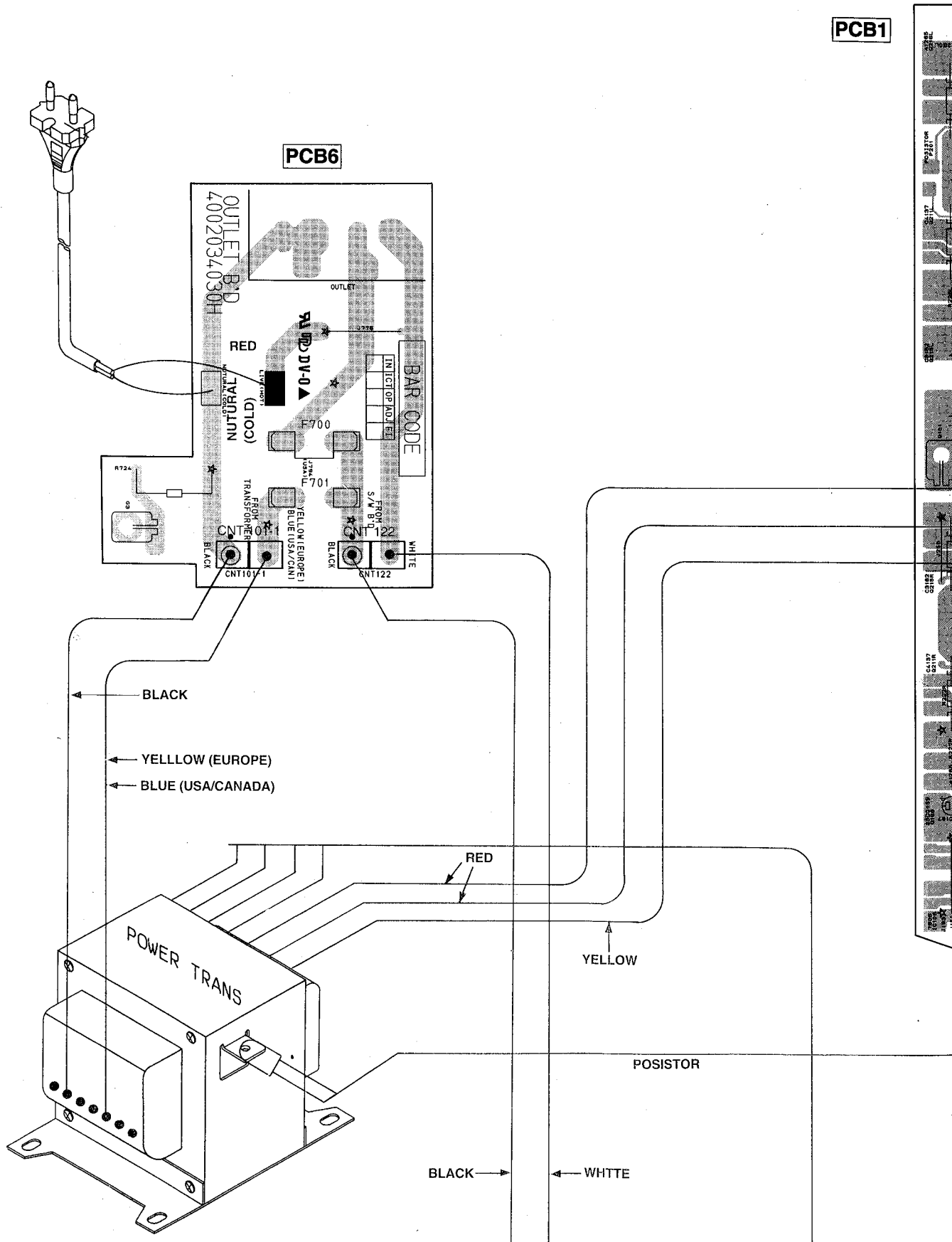
2

3

4

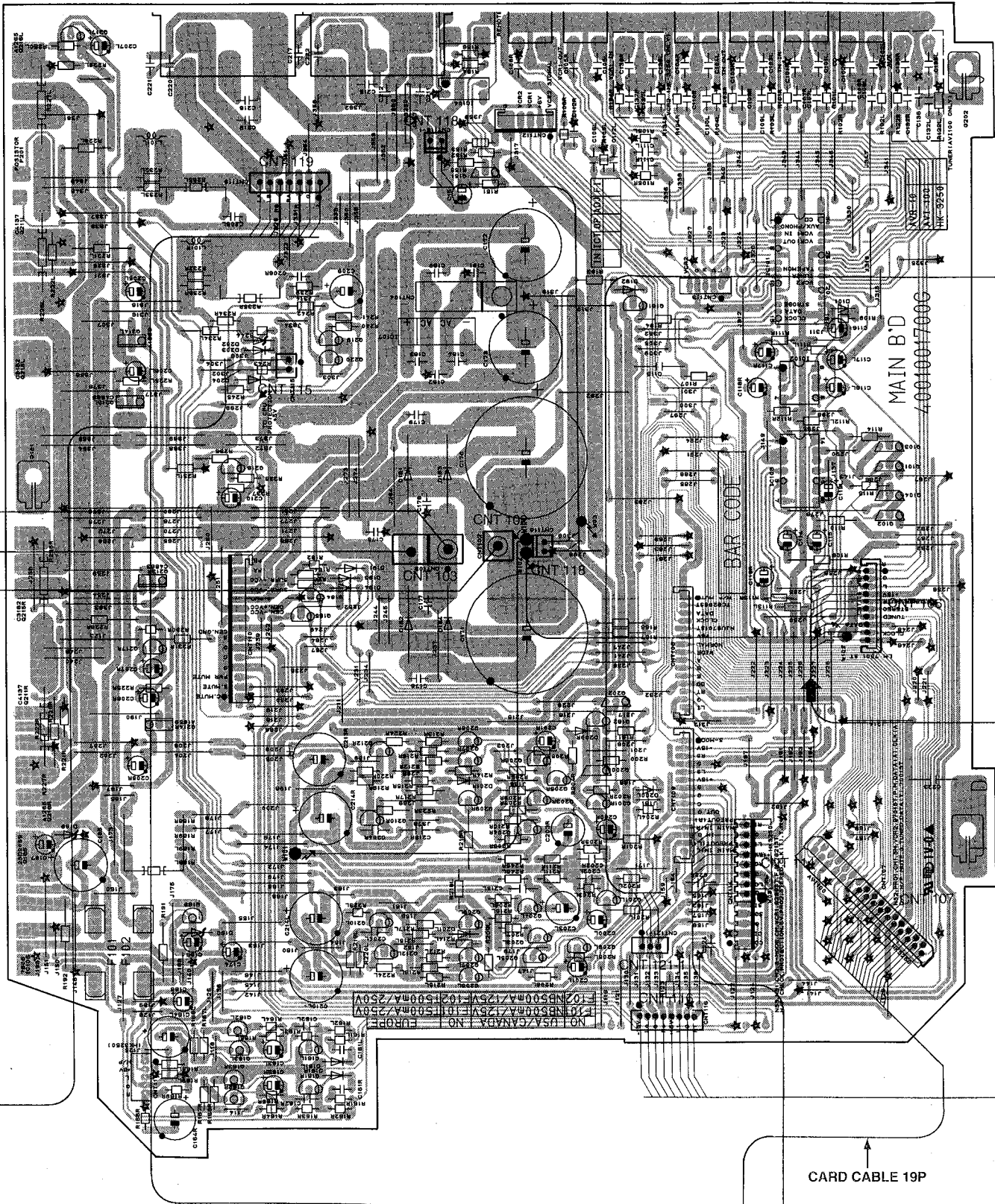
5

6

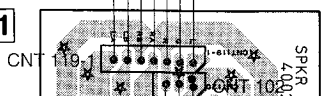


E | F | G | H | I | J

PCB1

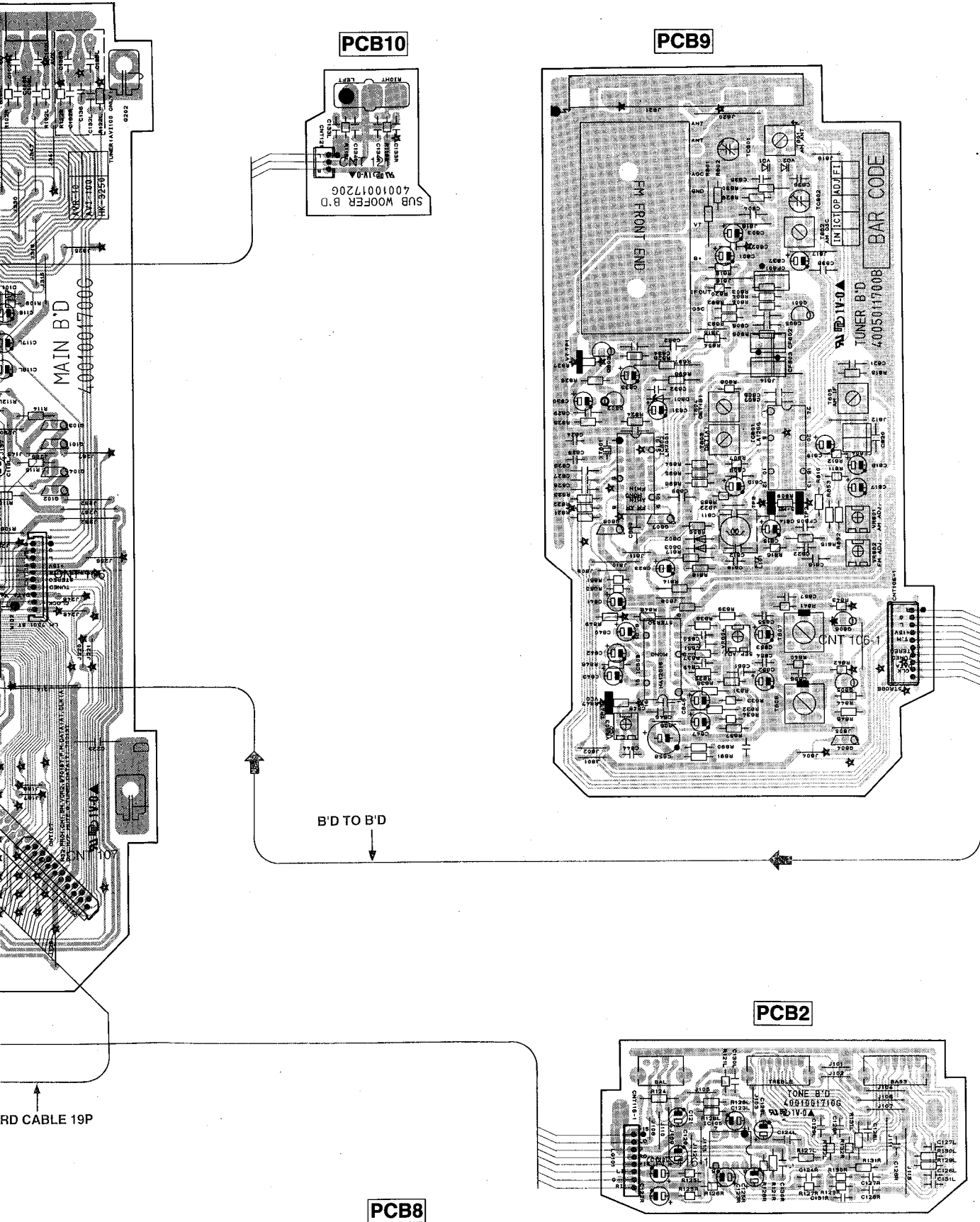


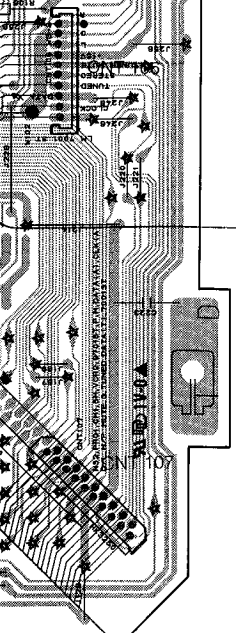
PCB11



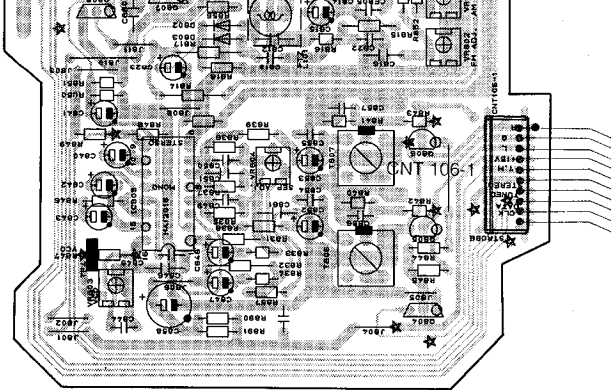
CARD CABLE 19P

I J K L M

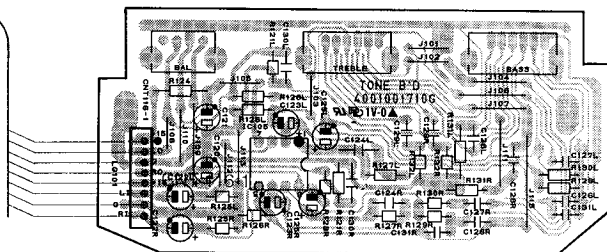




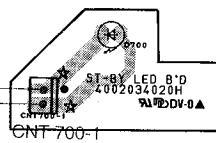
B'D TO B'D



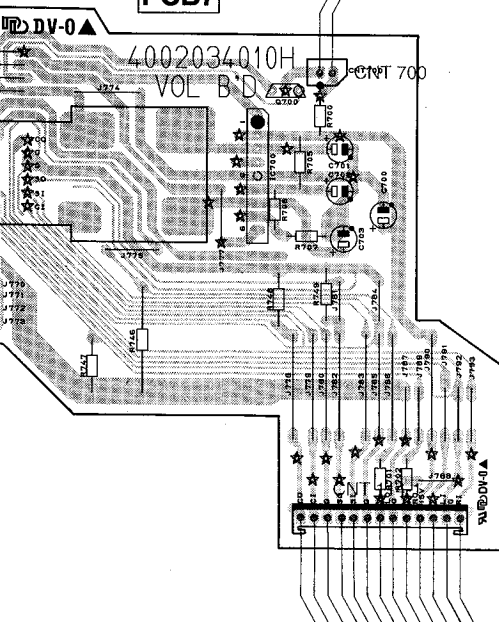
PCB2



PCB8

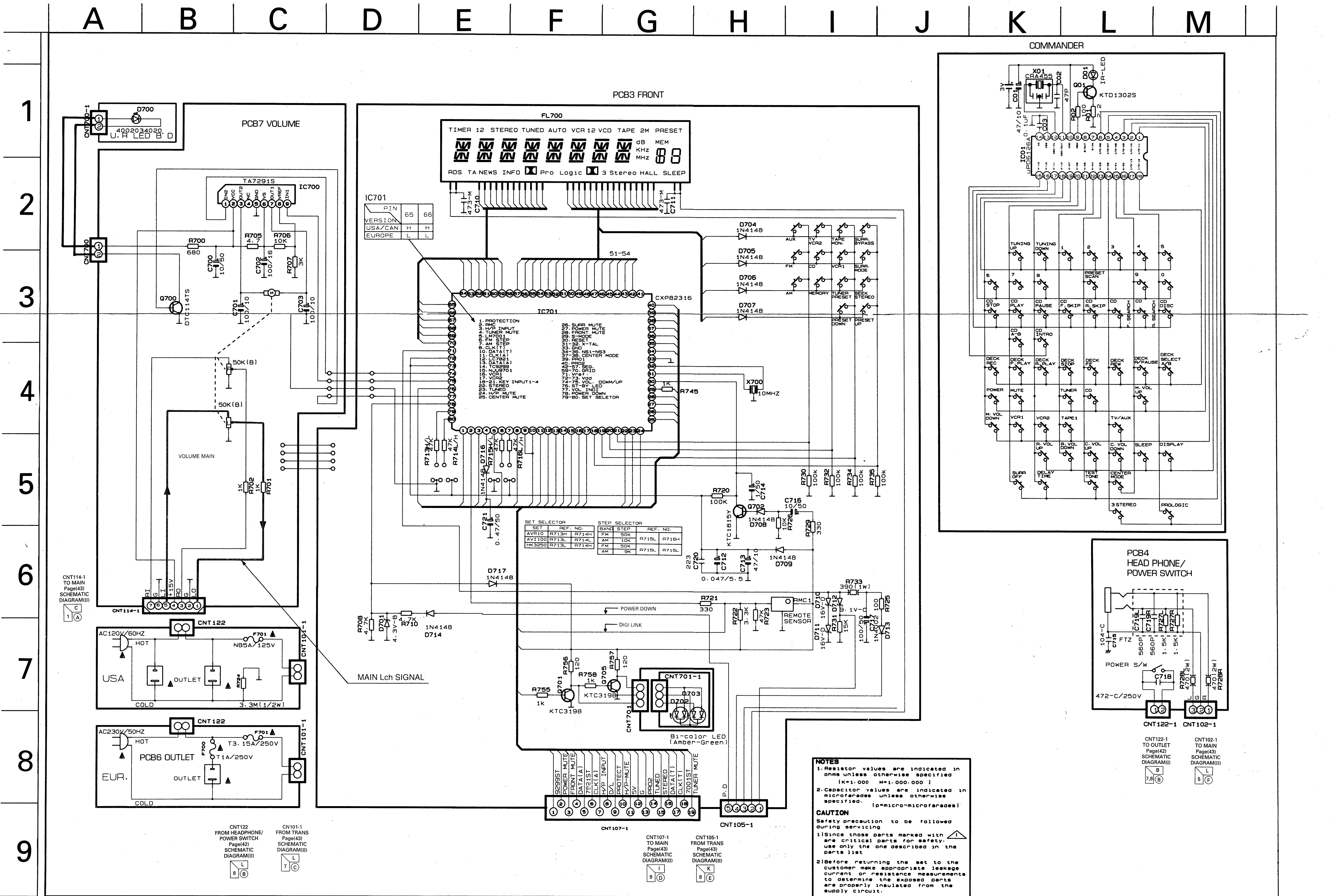


PCB7



B'D TO B'D

SCHEMATIC DIAGRAM I



NOTES

1. Resistor values are indicated in ohms unless otherwise specified. (K=1,000 M=1,000,000)

2. Capacitor values are indicated in microfarads unless otherwise specified. (p=micro-microfarads)

CAUTION

Safety precaution to be followed during servicing:

1) Since those parts marked with a triangle are critical parts for safety, use only the one described in the parts list.

2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

SCHEMATIC DIAGRAM I

A

B

C

D

E

1

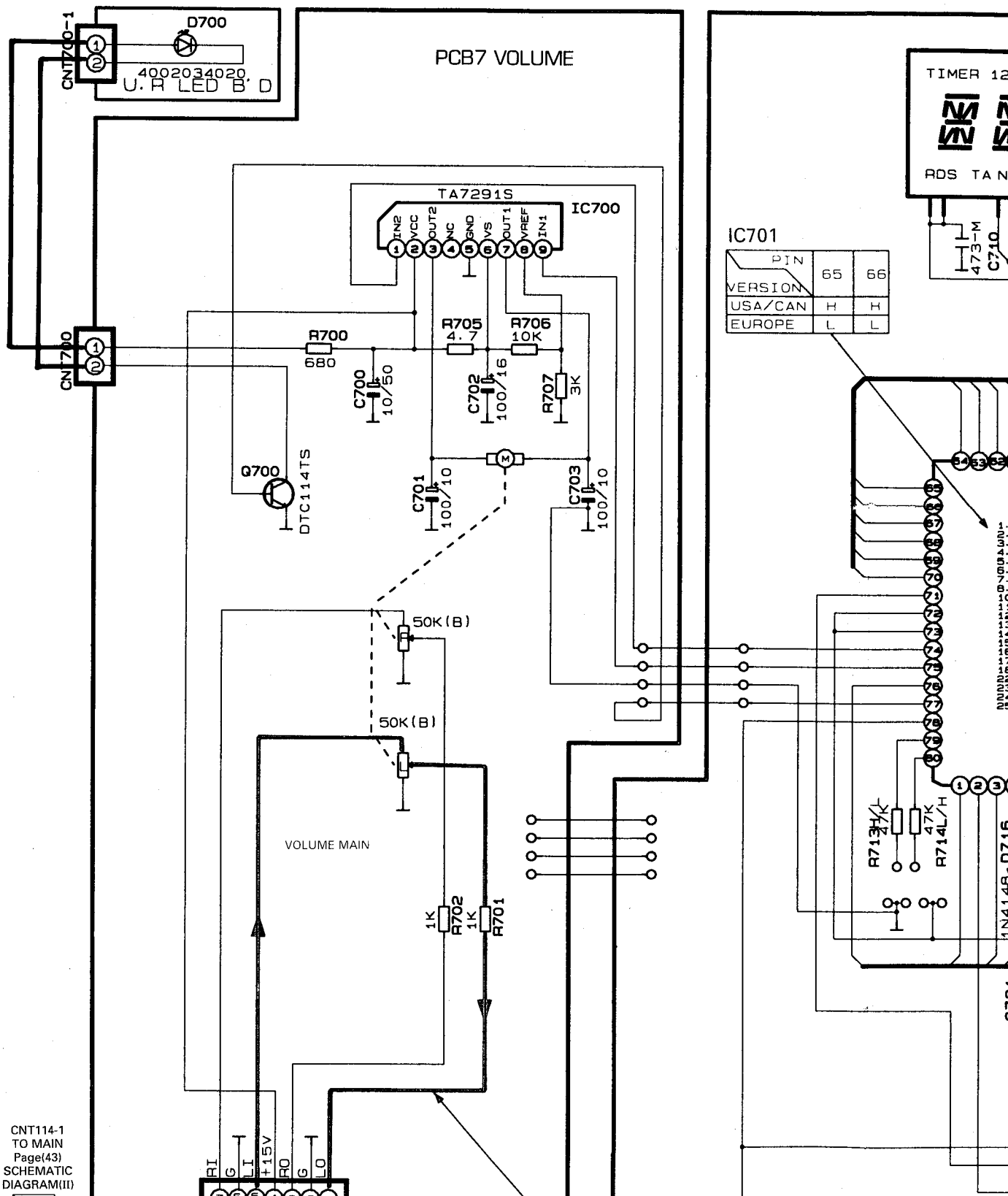
2

3

4

5

6



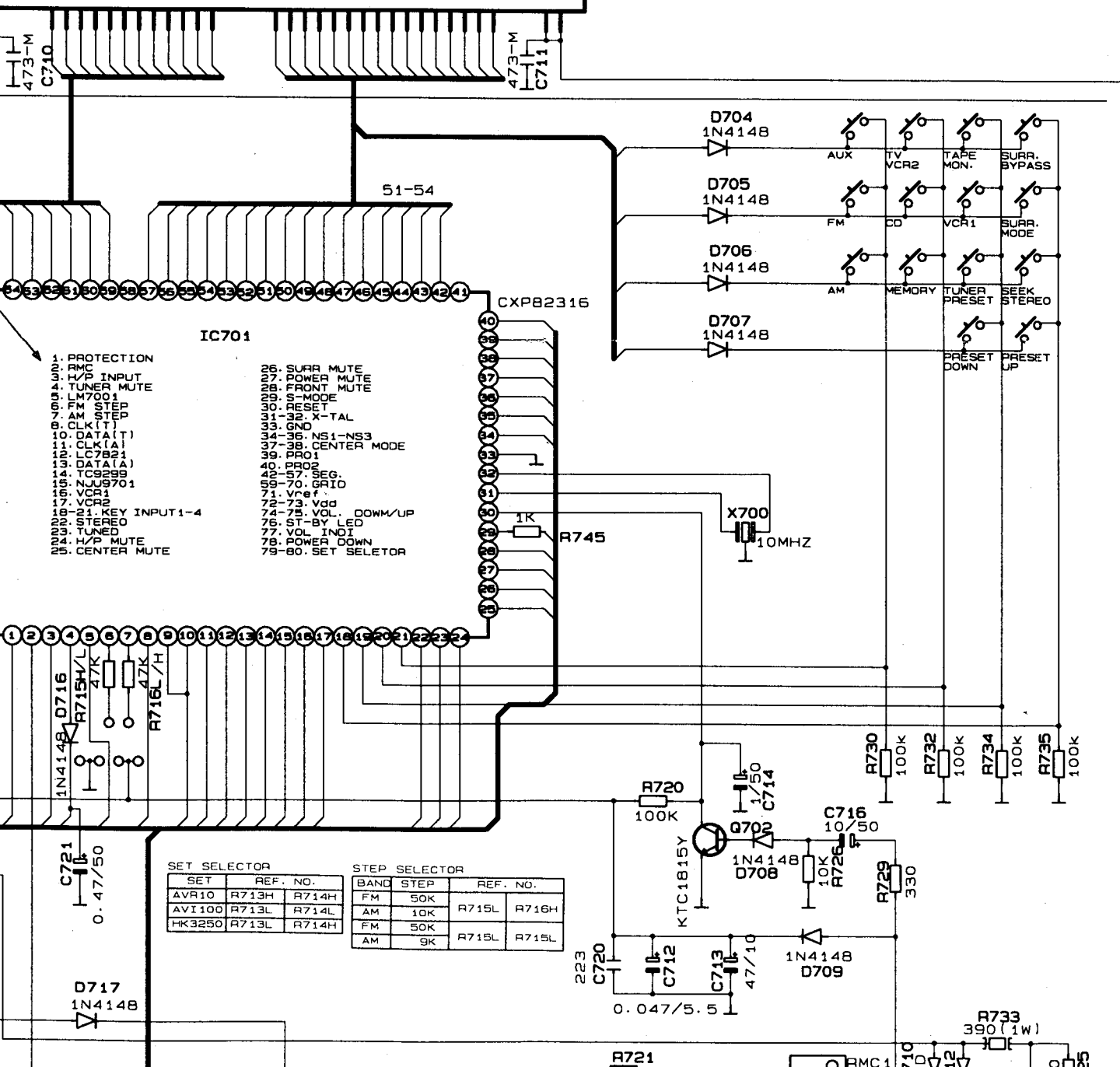
E F G H I J

PCB3 FRONT

FL700

MEM 12 STEREO TUNED AUTO VCR 12 VCD TAPE 2M PRESET

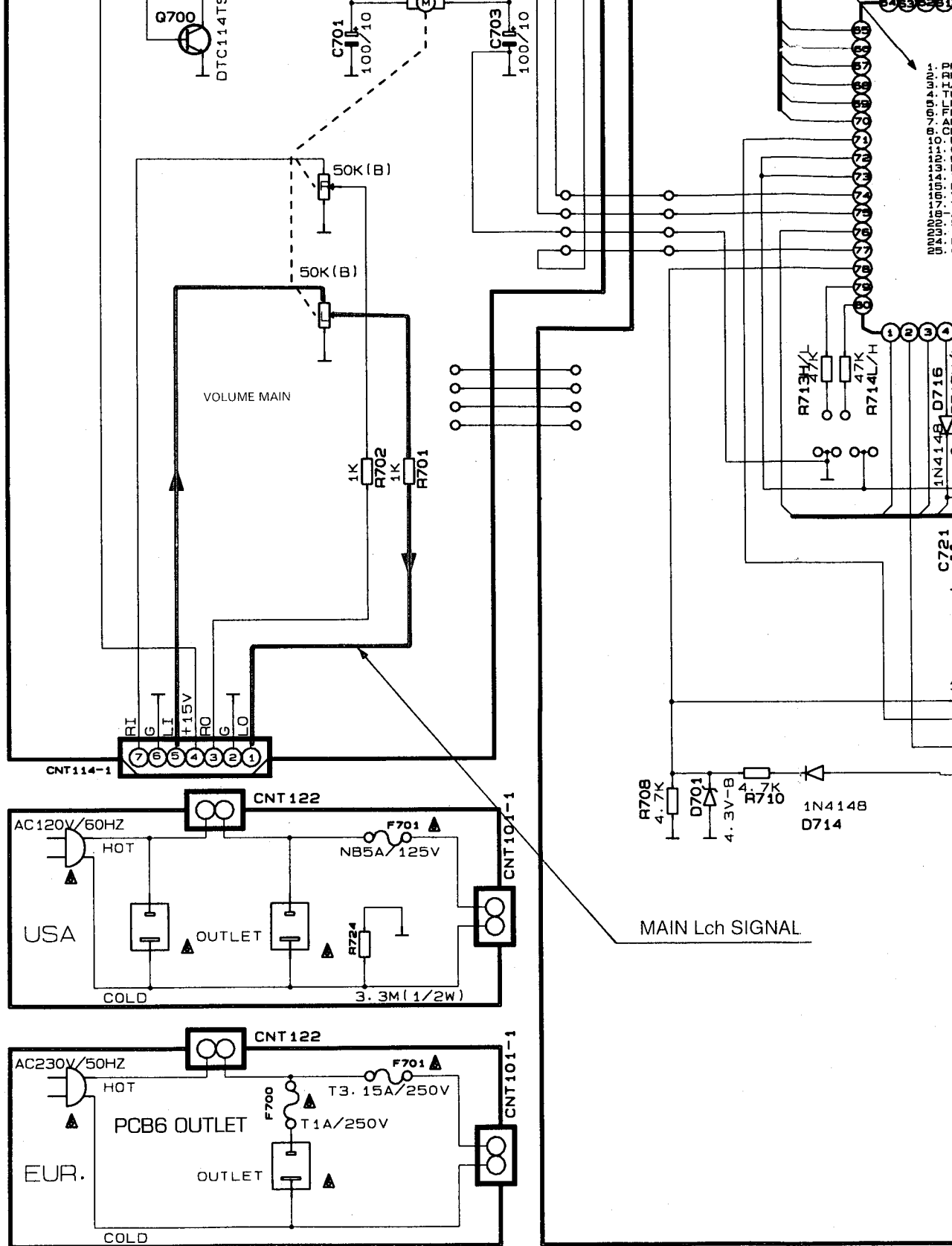
dB MEM
KHz
MHz 88
S TA NEWS INFO ☒ Pro Logic ☒ 3 Stereo HALL SLEEP



M

PCB4
HEAD PHONE/
POWER SWITCH

CNT114-1
TO MAIN
Page(43)
SCHEMATIC
DIAGRAM(II)

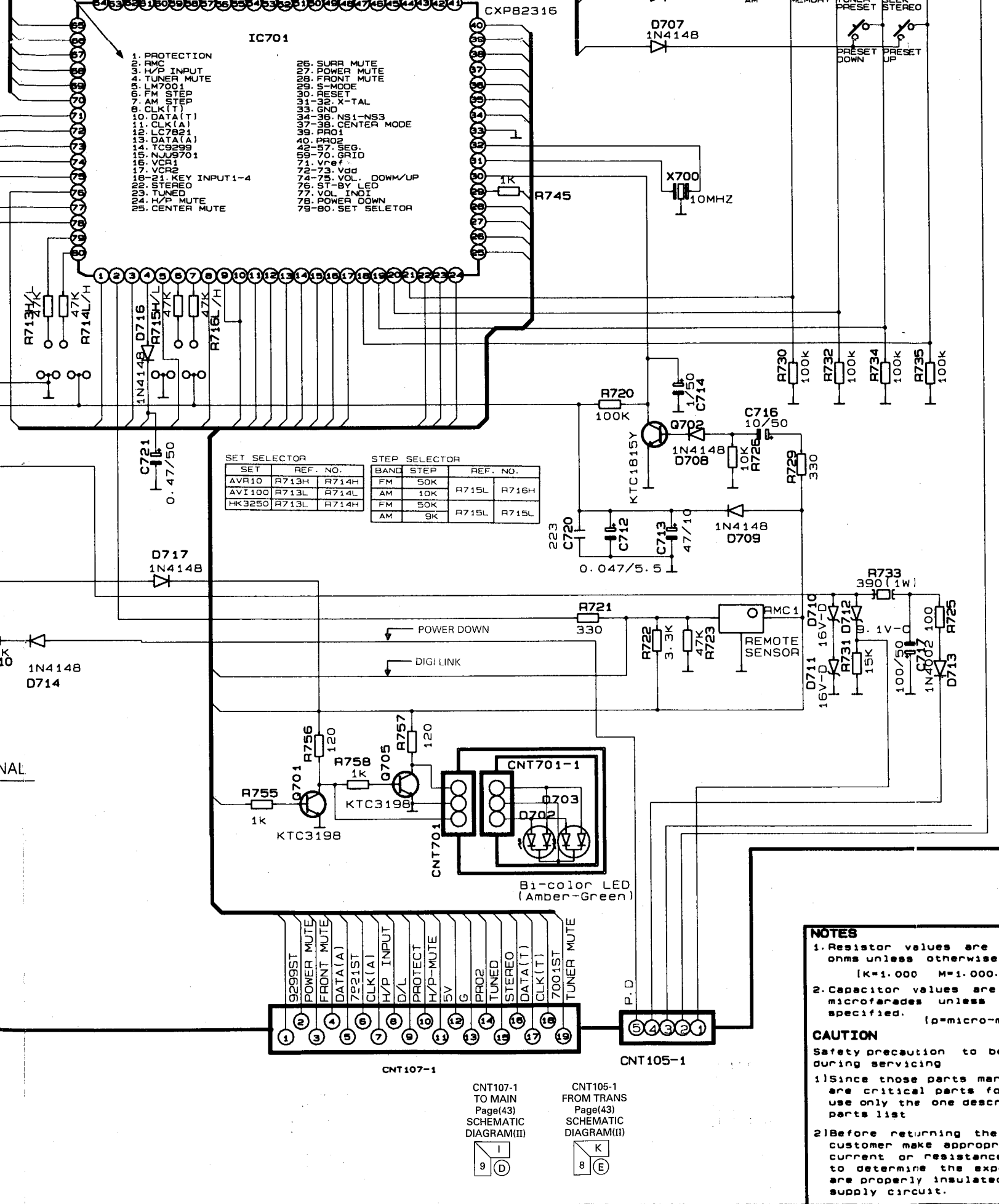


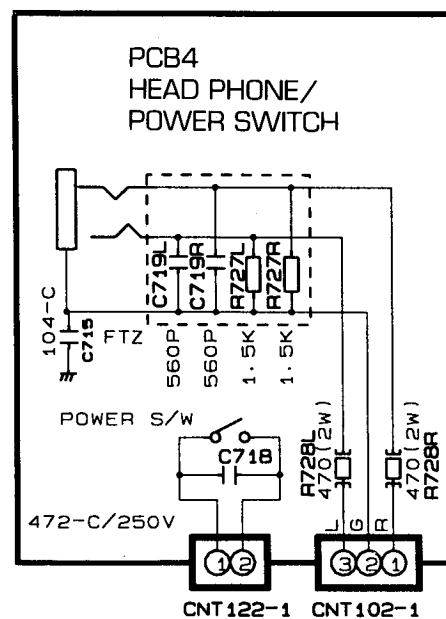
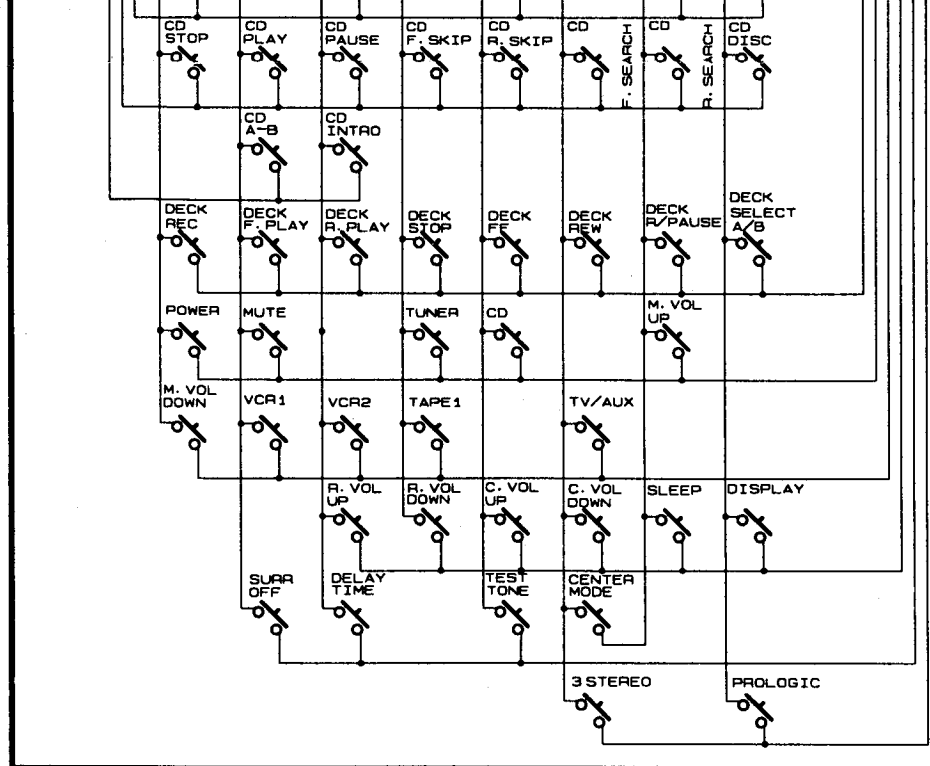
CNT122
FROM HEADPHONE/
POWER SWITCH
Page(42)
SCHEMATIC
DIAGRAM(II)



CNT101-1
FROM TRANS
Page(43)
SCHEMATIC
DIAGRAM(II)







CNT102-1
TO MAIN
Page(43)
SCHEMATIC
DIAGRAM(IJ)



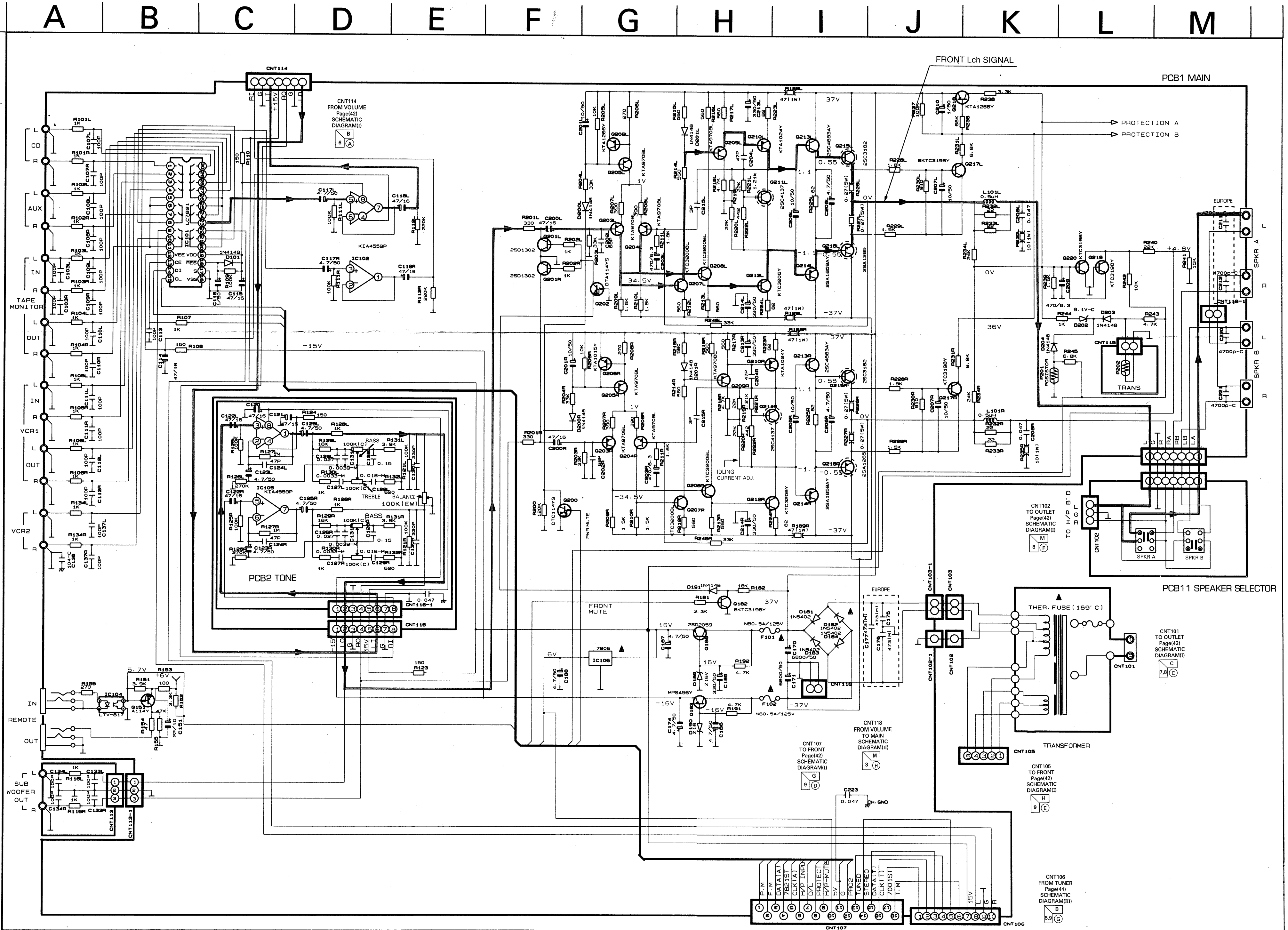
2. Capacitor values are indicated in microfarades unless otherwise specified. [p=micro-microfarades]

Safety precaution to be followed during servicing

1] Since those parts marked with are critical parts for safety, use only the one described in the parts list

2] Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

SCHEMATIC DIAGRAM II



CNT118-1
FROM MAIN
Page(43)
SCHEMATIC
DIAGRAM(III)

CNT101
TO OUTLET
Page(42)
SCHEMATIC
DIAGRAM(II)

CNT105
TO FRONT
Page(42)
SCHEMATIC
DIAGRAM(II)

CNT106
FROM TUNER
Page(44)
SCHEMATIC
DIAGRAM(III)

SCHEMATIC DIAGRAM II

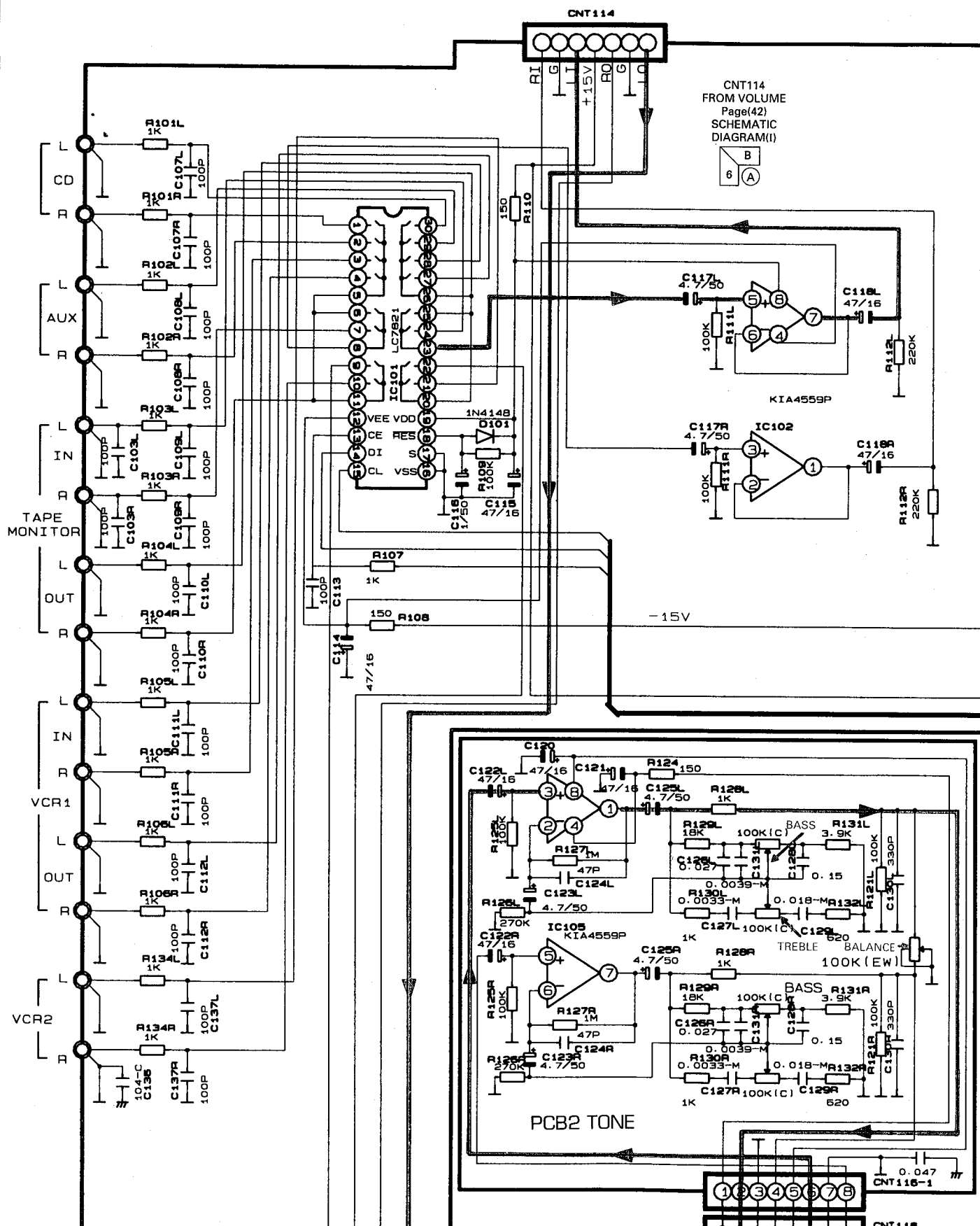
A

B

C

D

F



E

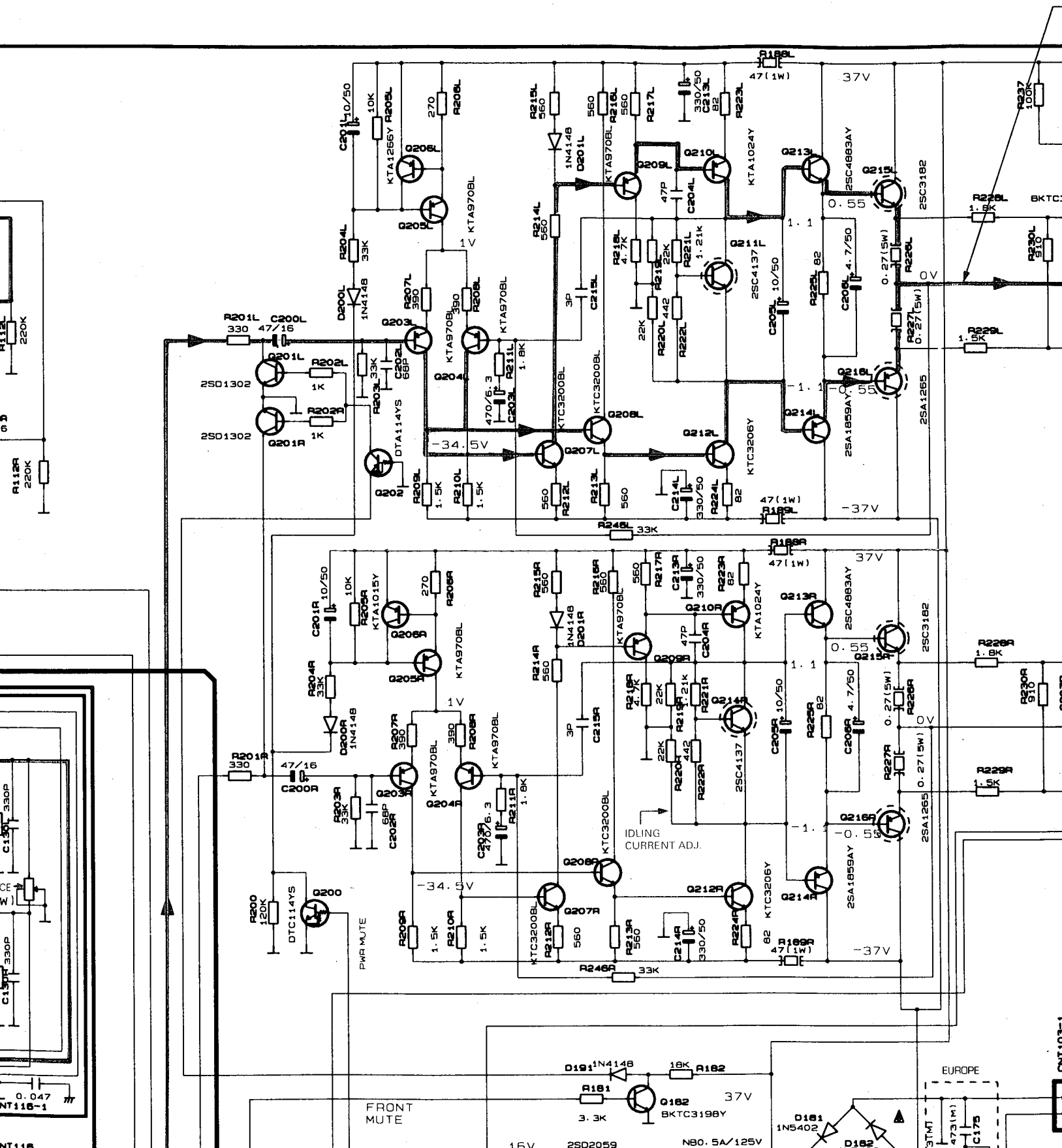
F

G

H

I

J





SCHEMATIC DIAGRAM III

A B C D E F G H I J K L M

1

2

3

4

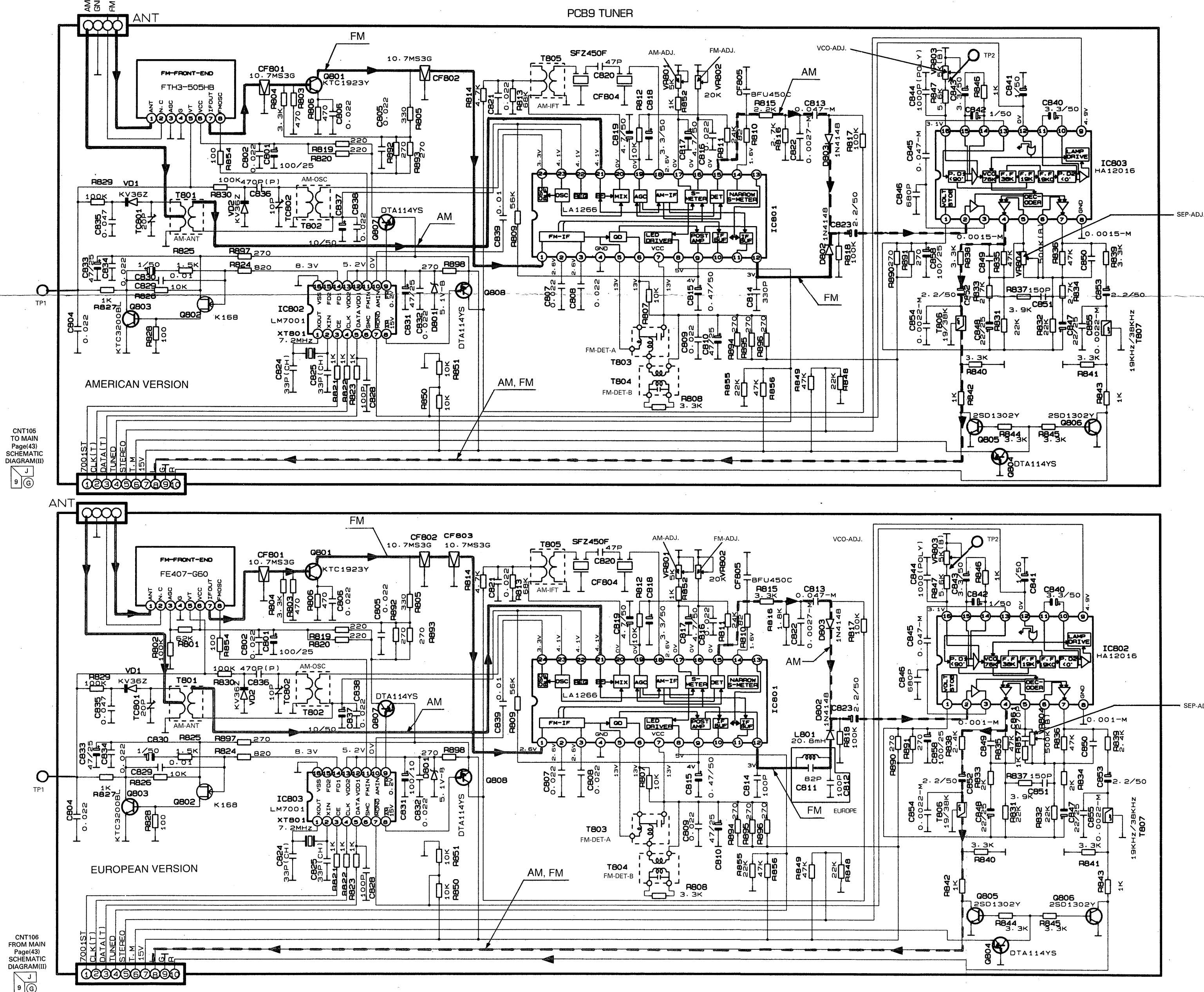
5

6

7

8

9



NOTES

1. Resistor values are indicated in ohms unless otherwise specified (K=1,000 M=1,000,000)
2. Capacitor values are indicated in microfarads unless otherwise specified. (p=micro-microfarads)

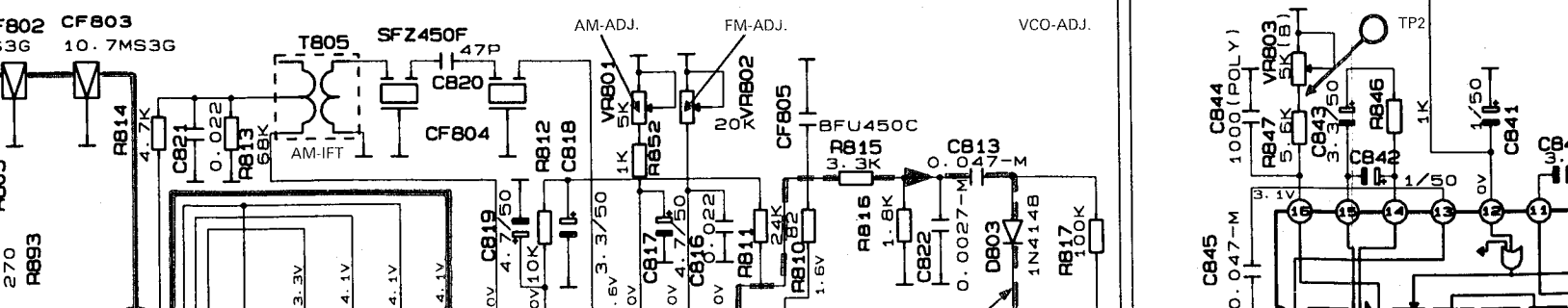
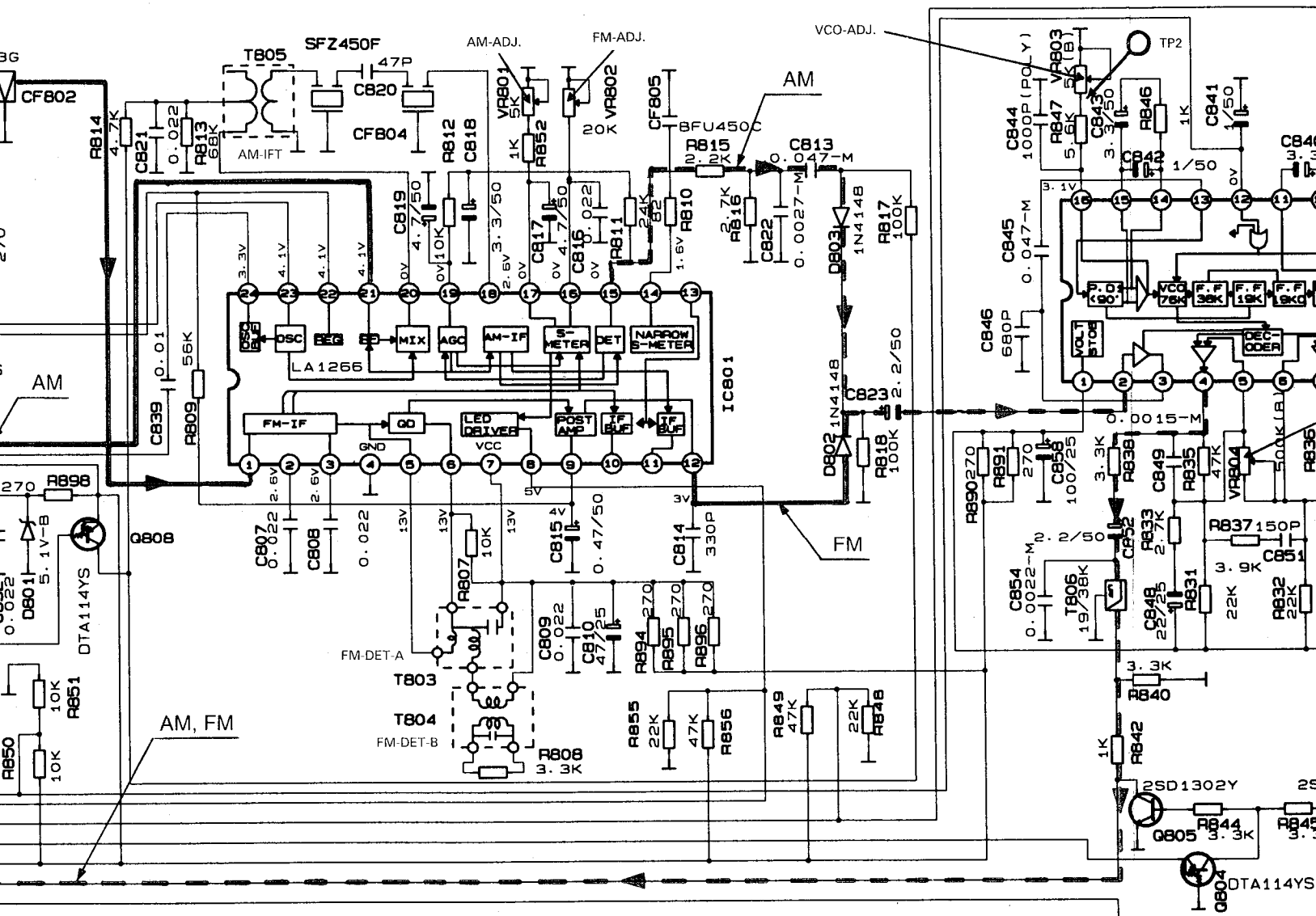
CAUTION

Safety precaution to be followed during servicing

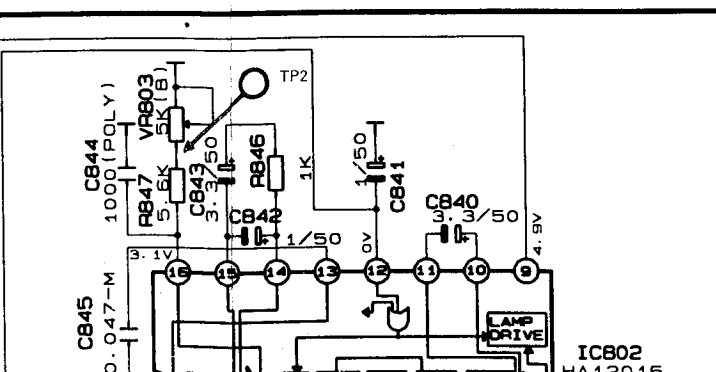
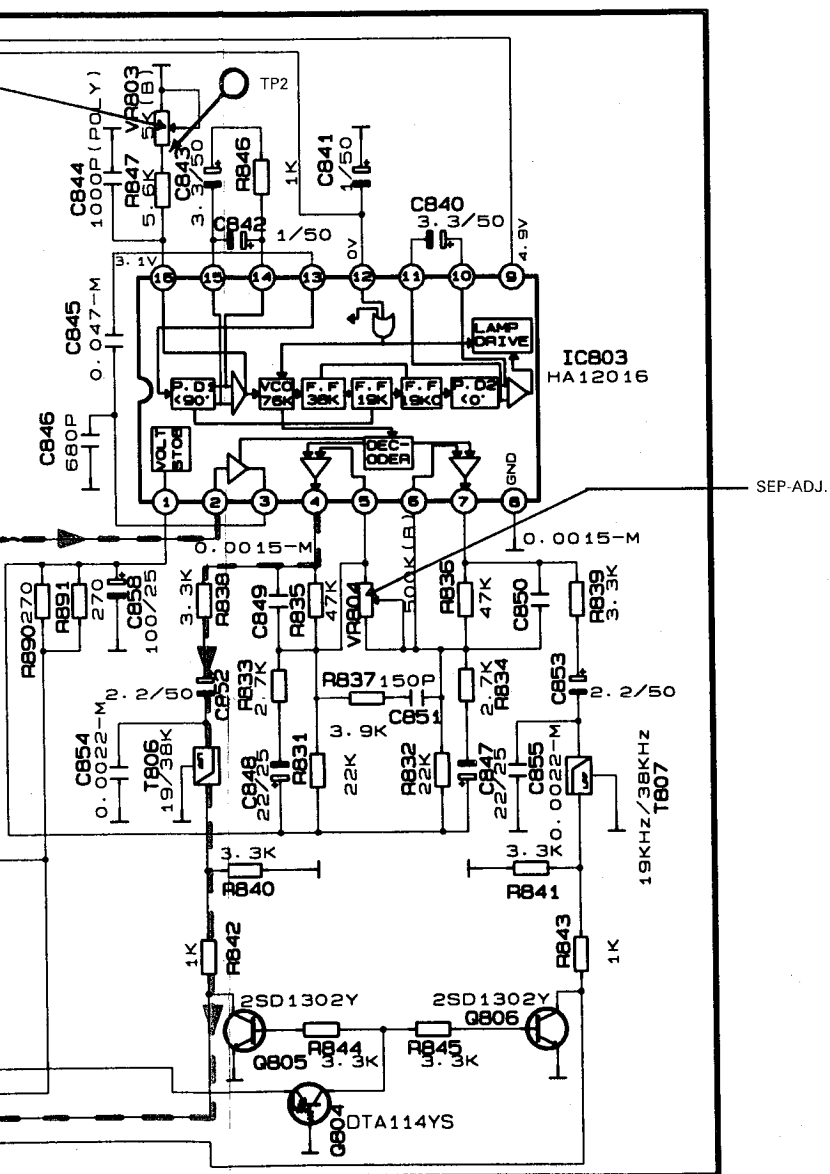
- 1) Since those parts marked with a triangle are critical parts for safety, use only the one described in the parts list.
- 2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

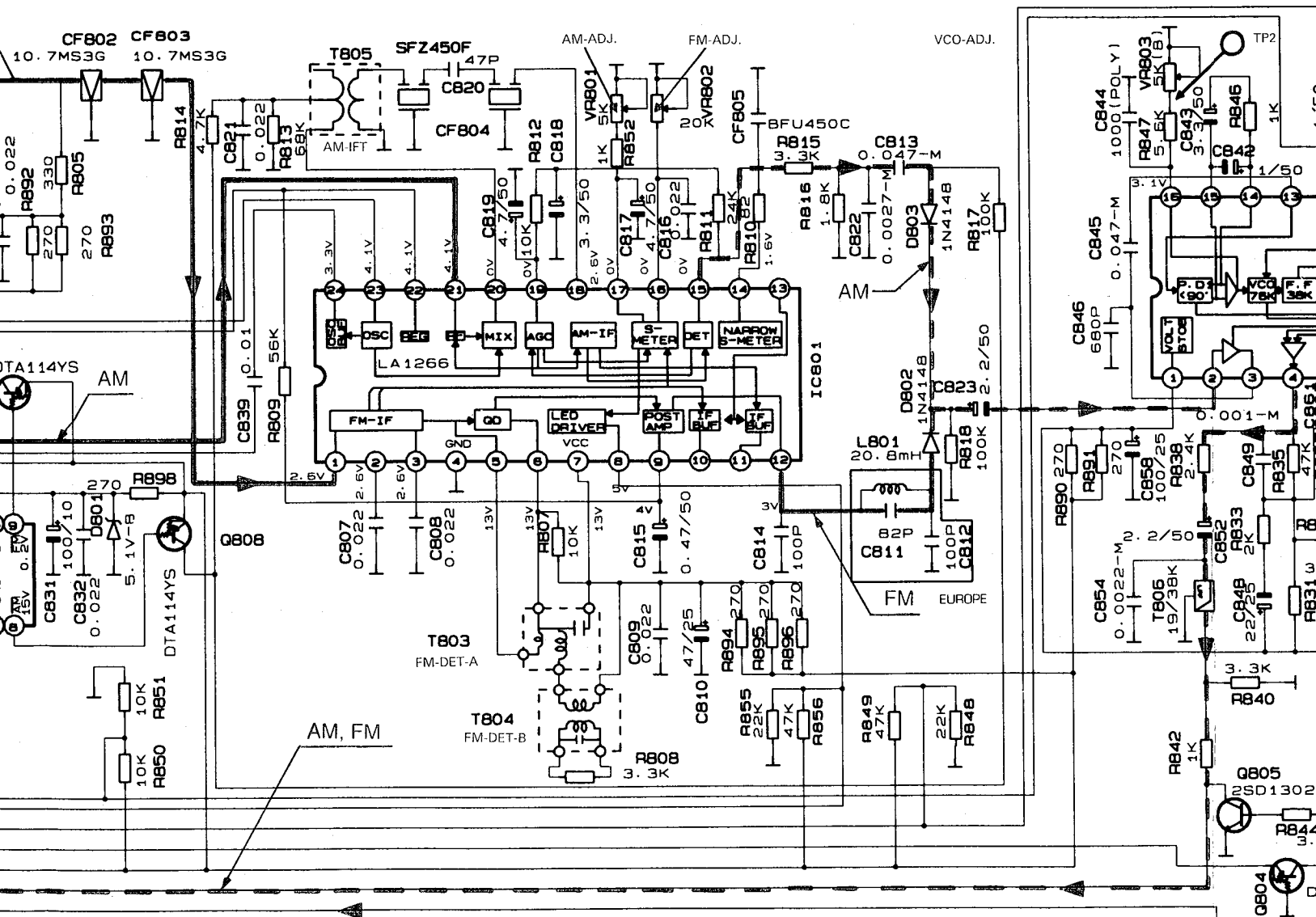
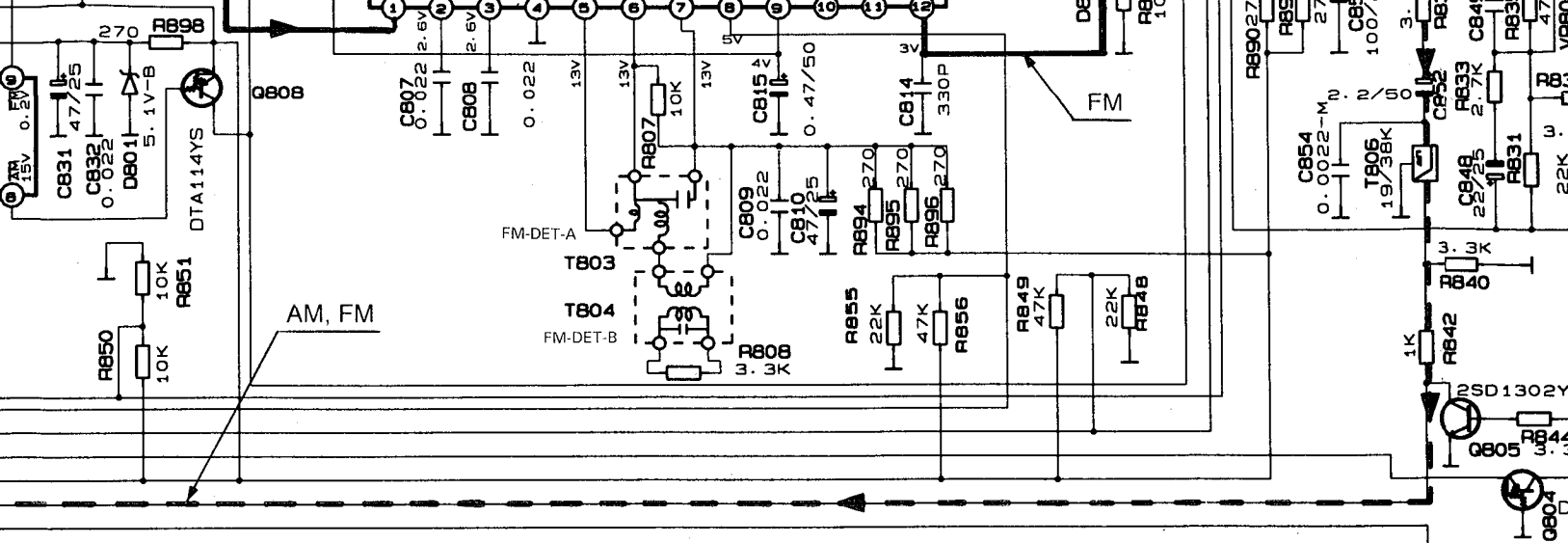
E F G H I J

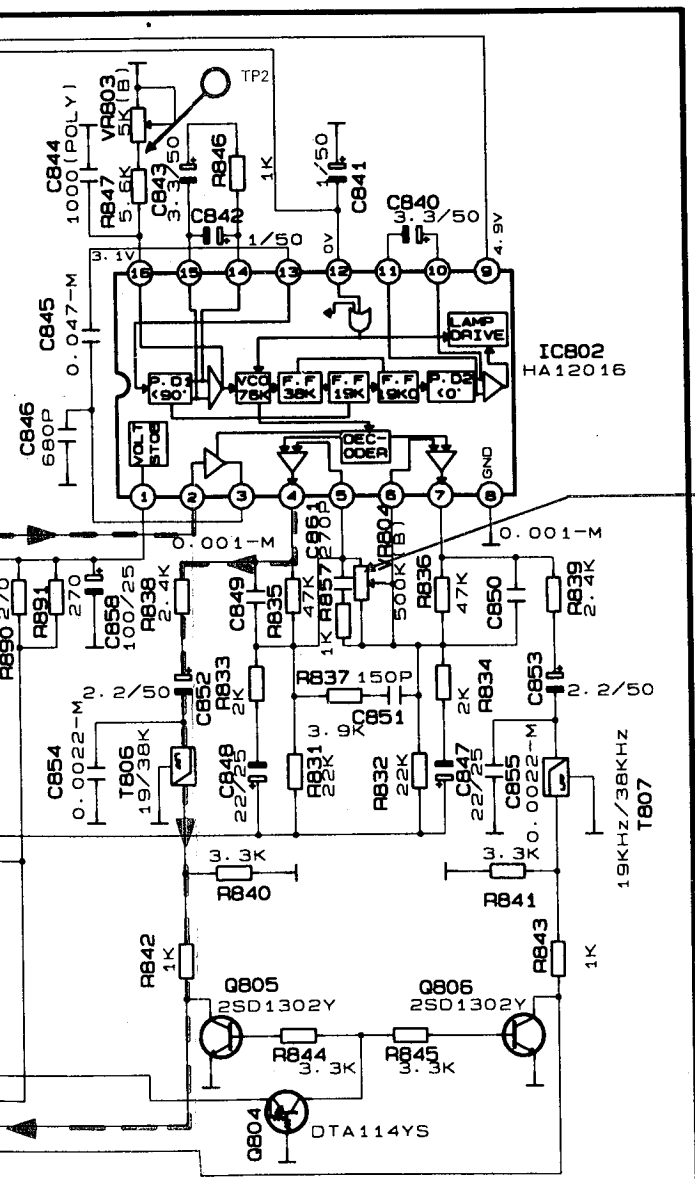
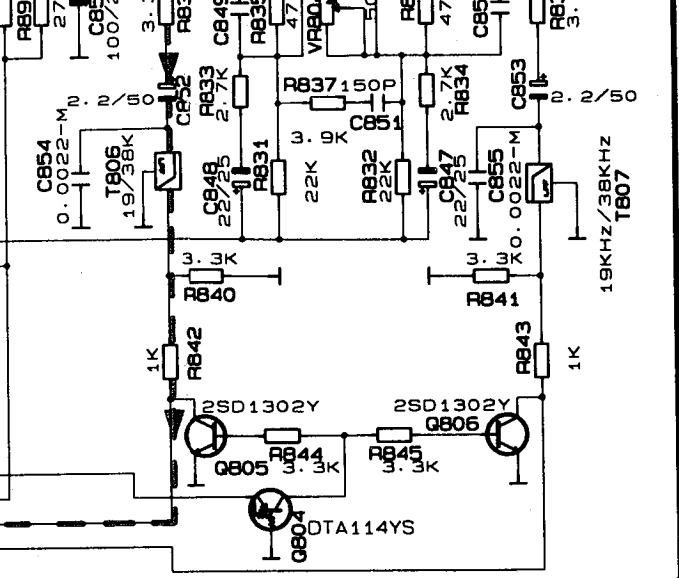
PCB9 TUNER



M







SEP-ADJ.

NOTES

1. Resistor values are indicated in ohms unless otherwise specified
(K=1,000 M=1,000,000)
2. Capacitor values are indicated in microfarads unless otherwise specified.
(p=micro-microfarads)

CAUTION

Safety precaution to be followed during servicing

- 1) Since those parts marked with  are critical parts for safety, use only the one described in the parts list
- 2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.