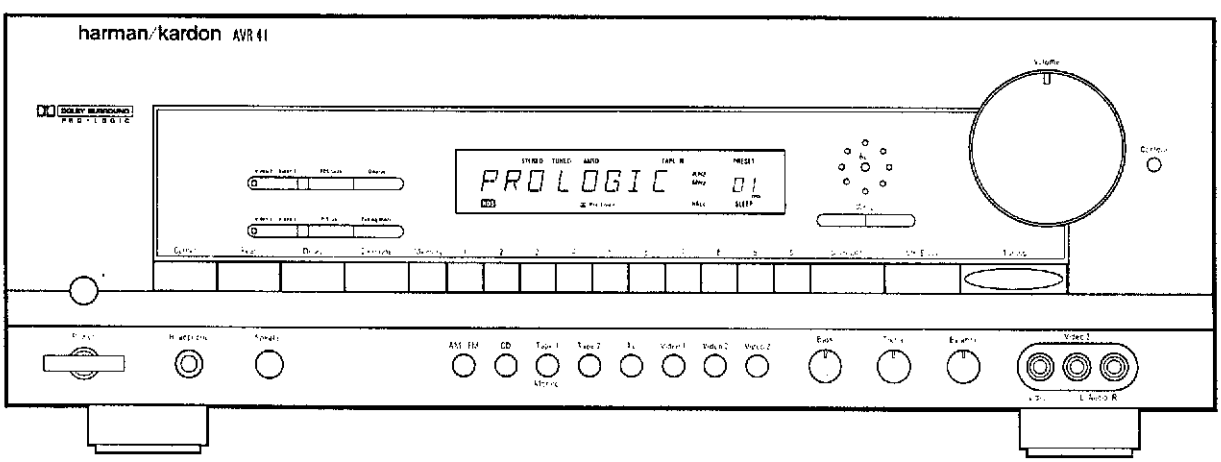
1차초안 97. 11/3

The Harman Kardon
Model AVR40/41
AUDIO AND VIDEO RECEIVER

Manual A

Technical Manual



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harman/kardon

Parts and Service Office
80 Crossways Park West, Woodbury, N.Y. 11797
1112-AVR40/41 G9710 1200 Printed in Korea

SPECIFICATIONS

⊙ FRONT AMP SECTION

	Nominal	Limit
RMS Output Power		
THD: 0.09%, 8 ohms	≥70 W	≥65 W
Both Channel Driven (20 Hz - 20 kHz)		
THD at 65 W, 8 ohms		
20 Hz	≤0.09%	≤0.2%
1 kHz	≤0.09%	≤0.2%
20 kHz	≤0.09%	≤0.2%
IM Distortion at 65 W, 8 ohms		
60:7000 Hz = 4:1	≤0.2%	≤0.3%
Input Sensitivity at 65 W, 8 ohms		
CD, AUX, VCR	200±15 mV	200±30 mV
S/N Ratio Input Shorted at Volume Max.		
(WTD IHF-A) at 65 W, 8 ohms		
CD, AUX	≥95 dB	≥92 dB
TV, VCR1,2	≥93 dB	≥90 dB
Tone Control		
Bass: 50 Hz	±10 dB±1.5 dB	±10 dB±2 dB
Treble: 10 kHz	±10 dB±1.5 dB	±10 dB±2 dB
Frequency Response at 1 W, 8 ohms (CD/AUX)		
20 Hz, 20 kHz	± 0.5 dB	± 1 dB
Channel Crosstalk Input Shorted at 65 W, 8 ohms		
1 kHz	≥60 dB	≥55 dB
10 kHz	≥45 dB	≥40 dB

⊙ CENTER AMP SECTION

	Nominal	Limit
RMS Output Power		
THD (0.3%, 8 ohms, 1 kHz)		
Only Center Channel Driven	≥55 W	≥50 W
S/N Ratio (Input Level : 300mV at 1W)		
Input Shorted, IHF-A WTD	≥75 dB	≥70 dB
Frequency Response at -3 dB		
Normal	120 Hz - 60 kHz	120 Hz - 50 kHz
Wide	40 Hz - 60 kHz	50 Hz - 50 kHz

⊙ REAR AMP SECTION

	Nominal	Limit
RMS Output Power		
THD (0.7%, 8 ohms, 1 kHz)		
Both Rear Channel Driven	≥55 W	≥50 W
S/N Ratio (Input Level : 300mA at 1W)		
Input Shorted, IHF-A WTD		
Dolby	≥68 dB	≥65 dB
Hall	≥68 dB	≥65 dB
Frequency Response at -3 dB		
8 ohms, Dolby Pro-Logic	60 Hz - 7 kHz (±0.5 k)	60 Hz - 6.5 kHz (±1.0 k)

⊙ VIDEO AMP SECTION

	Nominal	Limit
Input Sensitivity/Impedance		
Video 1, Video 2, Video 3	1 V_{P-P}/75 Ω	1 V_{P-P}/75 Ω
Output Level/Impedance		
Video 1, REC out, TV Monitor out		
	1 V_{P-P}/75 Ω	1 V_{P-P}/75 Ω
Frequency Response at -3 dB	DC-10 MHz	5 - 6 MHz
Crosstalk at 1.0 MHz	≥50 dB	≥45 dB

⊙ FM SECTION

	Nominal	Limit
Tuning Cover Range		
USA/Canada : 75 kHz DIV. (100kHz Step)	87.5 - 108.0 MHz	
Europe : 40 kHz DIV. (50kHz Step)	87.5 - 108.0 MHz	
Usable Sensitivity		
USA/Canada : 30 dB S/N	≤14.2 dbf	≤17.2 dbf
Europe : 26 dB S/N		
Image Rejection (at 106 MHz)		
USA/Canada	≥40 dB	≥30 dB
Europe	≥60 dB	≥70 dB
IF Rejection (at 90 MHz)	≥80 dB	≥70 dB
Full Limiting (at -3dB)	≤12.2 dbf	≤15.2 dbf
Quieting Sensitivity (at 98.1 MHz)		
IHF Band Pass Filter		
Mono	≤19.2 dbf	≤23.2 dbf
Stereo :		
USA/Canada (50dB S/N)	≤40.2 dbf	≤43.2 dbf
Europe (46dB S/N)	≤45.3 dbf	≤48.3 dbf
Distortion (1 kHz, at 98.1 MHz)		
IHF Band Pass Filter		
Mono	≤0.3 %	≤0.5 %
Stereo	≤0.5 %	≤0.8 %
S/N Ratio (1 mV Input, at 98.1 MHz)		
IHF Band Pass Filter		
Mono	≥70 dB	≥63 dB
Stereo	≥65 dB	≥60 dB
Frequency Response (at +1dB, -3dB)		
	10 Hz - 15 kHz	20 Hz - 15.3 kHz
AM Rejection Ratio (100 uV - 20 mV Input)		
	≥55 dB	≥50 dB
Search Level (at 98.1 MHz)	31.2 ±3 dbf	31.2 ±6 dbf
Automatic Stereo Threshold (at 98.1 MHz)		
	29.2 ±3 dbf	29.2 ±6 dbf
Muting Threshold (at 98.1 MHz)	29.2 ±3 dbf	29.2 ±6 dbf
Overload at 98.1 MHz		
(100% MOD. 100mV RF Input)	≤0.2 %	≤0.5 %
Suprious Response (at 98.1 MHz)		
Antenna Input 3uV	≥90 dB	≥80 dB
Capture Ratio at 40/60 dbf	≤2 dB	≤2.5 dB
Alternative Channel Selectivity (at 98.1 MHz ± 400 kHz)		
	≥50 dB	≥45 dB
Stereo Separation (at 98.1 MHz, 1mV Input)		
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 1mV Input)		
Mono	500 ± 100 mV	500 ± 150 mV
Stereo	450 ± 100 mV	450 ± 150 mV

⊙ AM SECTION

	Nominal	Limit
Tuning Cover Range		
USA/Canada : 10 kHz Step	520 - 1710 kHz	
Europe : 9 kHz Step	522 - 1611 kHz	
Usable Sensitivity (400 Hz, 30% MOD. S/N 20 dB)		
	≤500 uV/m	≤800 uV/m
Image Rejection (at 1400 kHz)	≥35 dB	≥30 dB
IF Rejection (at 600 kHz)	≥60 dB	≥50 dB
AGC Figure of Merit (From 100mV/m at 1000 kHz)		
	≥55 dB	≥50 dB
Distortion (400 Hz, 30% MOD. 10mV/m Input)		
	≤0.8 %	≤1.5 %
IF Bandwidth (6dB Down, 350uV/m)		
	5 - 8 kHz	4- 9 kHz
Audio Response (5mV/m Input 1 kHz 0 dB, 1000 kHz)		
at -6dB	80 Hz - 2.3 kHz	100 Hz - 2 kHz
Selectivity (at 350uV/m)		
±10 kHz	≥25 dB	≥20 dB
S/N Ratio (1000kHz, With antenna Input 10mV/m)		
	≥45 dB	≥40 dB
RF Overload (400 Hz 80% MOd. 100mV/m Input)		
	≤5 %	≤10 %
Search Level (at 1000kHz)	800 uV ± 5 dB	800 uV ± 6 dB
Output Voltage (400 Hz 30% MOD. 10Mv/M Input)		
	165 ± 30 mV	165 ± 40mV
Whistle	≤10 %	≤15 %

⊙ GENERAL

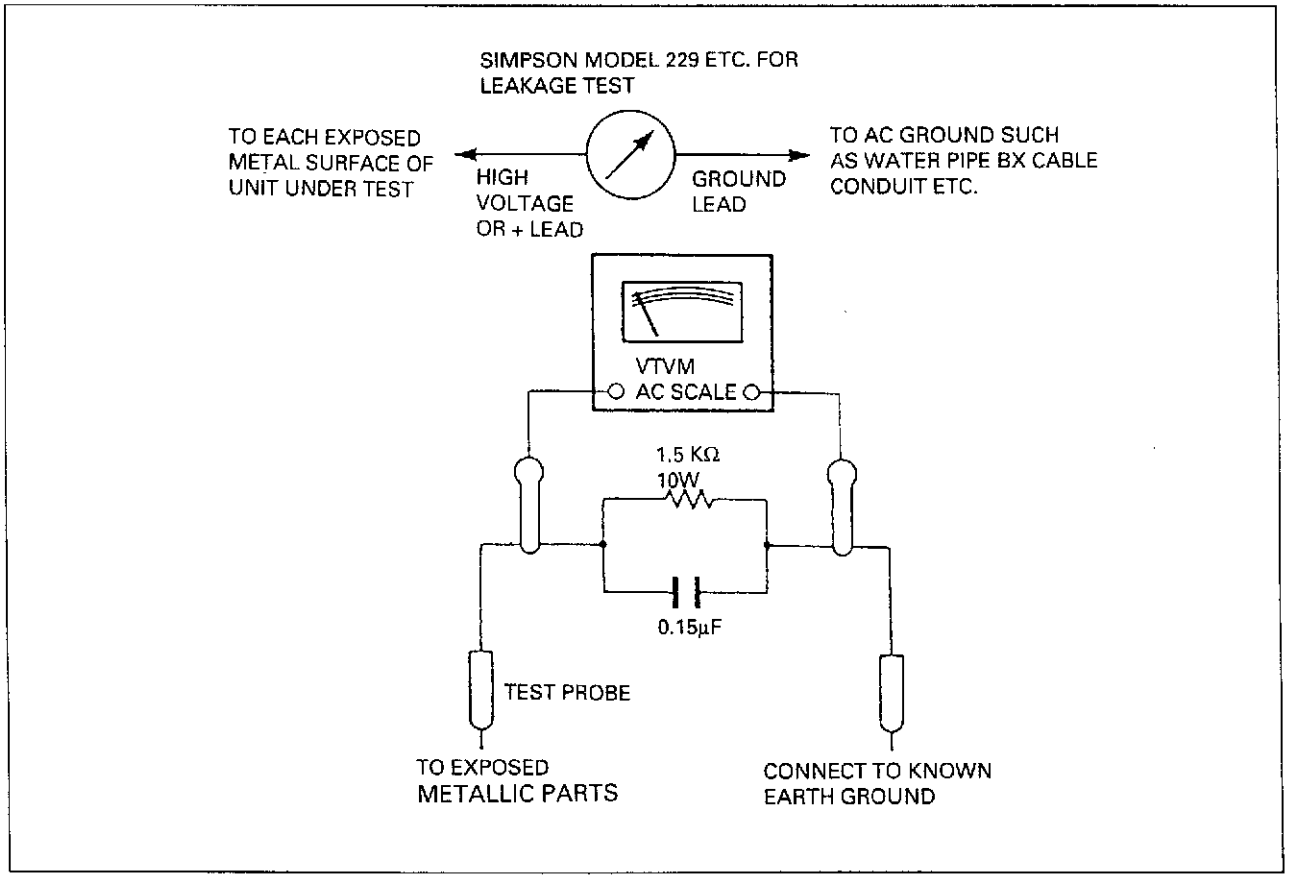
Power Consumption :	
USA/Canada	2 A
Europe	570 W
Power Supplies :	
USA/Canada	AC 120 V, 60 Hz
Europe	AC 230 V, 50 Hz
Dimensions (W×H×D):	
inches	17 3/8 x 5 2/5 x 15
mm	440×141.5×380 mm
Weight (lbs/kgs)	27 lbs, 12.3 kg

These specifications are service target specs.
Specifications and components are subject to change without notice.
Overall performance will maintained or improved.

LEAKAGE TEST

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

1. Inspect all lead dress to makes 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, connect a 1500 Ohm, 10-watt resistor paralleled by a 0.15µF 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.



DISASSEMBLY PROCEDURES

REFER TO PAGES 26-29.

[1] COVER TOP REMOVAL.

Remove 6 screws (S98 to S103)and then remove the Cover Top 1 .

[2] COVER BOTTOM REMOVAL.

Remove 13 screws (S3 to S6 , S62 to S65, S67 , S68 and S70 to S72) and then remove the Cover Bottom 2 .

[3] FRONT PANEL ASSEMBLY REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Disconnect (Connector703-1) from the Tuner P.C.Board (PCB15).
3. Disconnect (Connector113-1) from the VCR2 P.C.Board (PCB9).
4. Disconnect (Connector116, Connector111) from the Main P.C.Board (PCB1).
5. Disconnect (Connector702-1, Connector603) from the Power P.C.Board (PCB6).
6. Remove the Card Cable from (Connector107) on the Main P.C.Board (PCB1).
7. Remove 10 screws (S1 to S10) and then remove the Front Panel Assembly AA .

[4] VCR2 P.C.BOARD (PCB9) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove the Front Panel Assembly AA , referring to the previous step [3].
3. Remove 2 screws (S25 and S26) and then remove the VCR2 P.C.Board (PCB9).

[5] TONE P.C.BOARD (PCB2) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove the Front Panel Assembly AA , referring to the previous step [3].
3. Pull out the knobs 42 (Bass/Treble/Balance)
4. Remove the Hex Nuts from the variable resistors 15 , 16 and then remove the Tone P.C.Board (PCB2).

[6] VOLUME P.C.BOARD (PCB4) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove the Front Panel Assembly AA , referring to the previous step [3].
3. Disconnect (Connector700, Connector705-1) from the Volume P.C.Board (PCB4).
4. Pull out the volume knob 41 with volume LED P.C.Board (PCB5)
5. Remove the Hex Nut from Volume-motor and then remove the Volume P.C.Board (PCB4).

[7] HEADPHONE P.C.BOARD (PCB8) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove the Front Panel Assembly AA , referring to the previous step [3].
3. Remove 2 screws (S13 and S14) and then remove the Headphone P.C.Board (PCB8).

[8] FRONT & POWER SW P.C.BOARD (PCB4 & PCB7) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Do steps [3] and [7].
3. Disconnect (Connector705-1) from the Volume P.C.Board (PCB4).
4. Remove 11 screws (S11, S12 , S15 to S24) and then remove the Front & Power SW P.C.Board (PCB4 & PCB7).

[9] TUNER P.C.BOARD (PCB15) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Disconnect (Connector703-1) from the Tuner P.C.Board (PCB15).
3. Remove 2 screws (S92 and S95) and then remove the Tuner P.C.Board (PCB15).

[10] SURROUND P.C.BOARD (PCB11) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove 2 screws (S90 and S91) and then remove the Surround P.C.Board (PCB11).

[11] VIDEO P.C.BOARD (PCB12) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Remove 2 screws (S87 and S88) and then remove the Video P.C.Board (PCB12).

[12] CENTER SPEAKER P.C.BOARD (PCB13) REMOVAL

1. Remove the Cover Top 1 , referring to the previous step [1].
2. Disconnect (Connector117-1) from the Center Speaker P.C.Board (PCB13).
3. Remove 2 screws (S83 and S84) and then remove the Center Speaker P.C.Board (PCB13).

13 SURROUND AMP & REAR SPEAKER P.C.BOARD (PCB10 & PCB14) REMOVAL

1. Remove the Cover Top ❶, referring to the previous step 1.
2. Disconnect (Connector117-1) from the Center Speaker P.C.Board (PCB13).
3. Unsolder all leads of (Q414, Q410, Q413, Q427, Q424 and Q428) from copper track on the Surround AMP P.C.Board (PCB8).
4. Remove 4 screws (❹❷, ❹❸, ❽❶, ❽❷) and then remove the Surround AMP & Rear Speaker P.C.Board (PCB10 & PCB14).

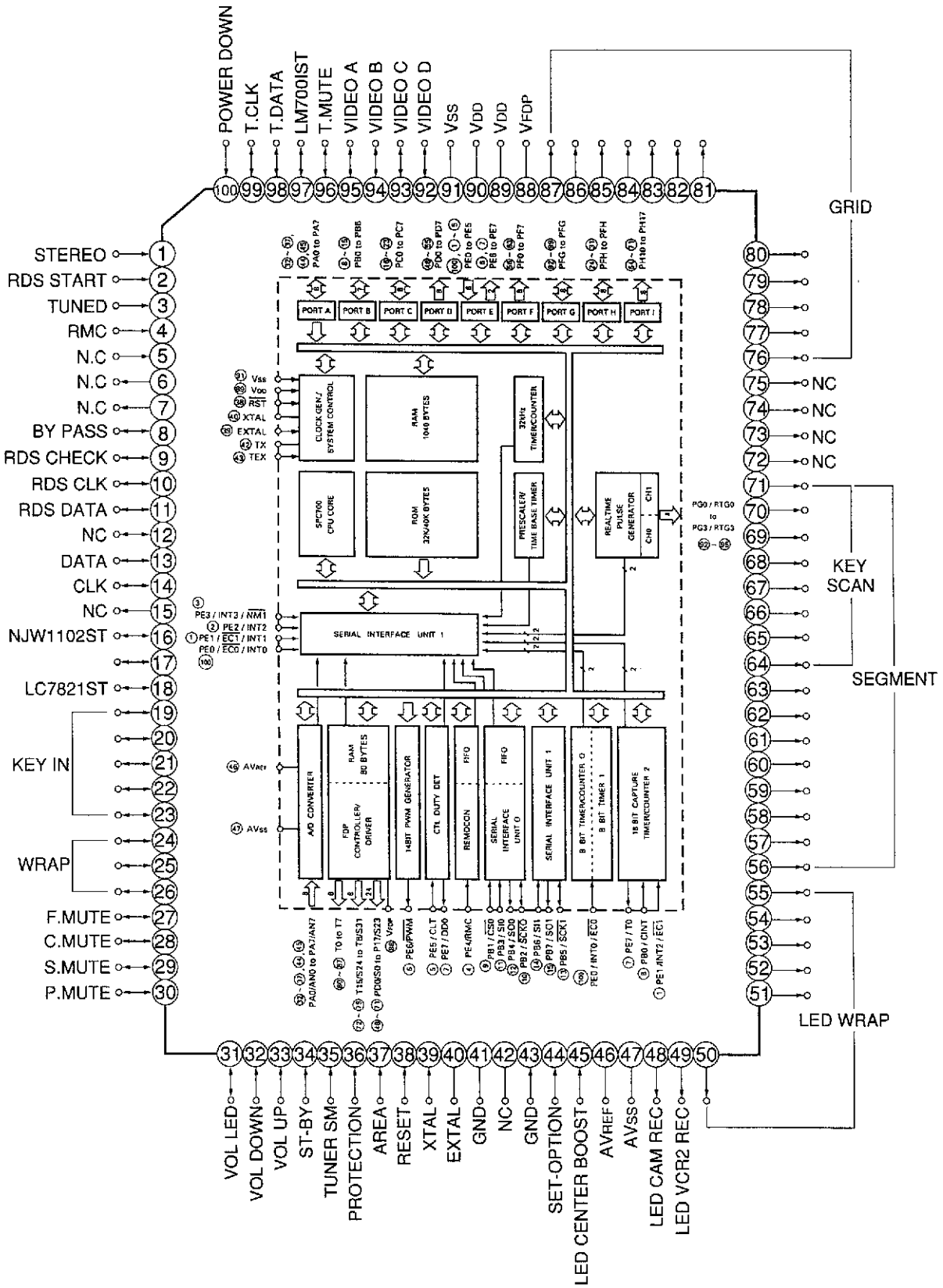
14 MAIN P.C.BOARD (PCB1) REMOVAL

1. Remove the Cover Top ❶, referring to the previous step 1.
2. Do steps 2, 3, 8, 9, 10, and 12.
3. Disconnect (Connector102, Connector103, Connector104) from the Main P.C.Board (PCB1).
4. Unsolder all leads of (Q216L/R, Q211L/R, Q215L/R, Q186, IC105, P201,) from copper track on the Main P.C.Board (PCB1)
5. Remove 8 screws (❹❹, ❹❻, ❺❶, ❻❼, ❼❶, ❼❹ ~ ❼❻) and then remove the Main P.C.Board (PCB1).

CIRCUIT DESCRIPTION

1. CPU CIRCUITS (IC 301: CXP82432A 153Q DWP467)

1) PIN DESCRIPTION & BLOCK DIAGRAM



2) INPUT/OUTPUT TERMINAL FUNCTIONS

Pin No.	Symbol	Description
1	STEREO	When receiving low level, it turn on the stereo flag of FL.
2	RDS START	Input for LC7073 data start.
3	TUNED	Input for station detector signal in searching tuning. Searching up or down stops when station detector reached a certain level.
4	RMC	Input for remote control signal. (At "L", it is active)
5 ~ 7	NC	Not Used!
8	BY PASS	Output signal is as follows to control surround mode. (H : By Pass , L : Others)
9	RDS CHECK	
10, 11	RDS CLK/DATA	Input for LC7073 clock and data signal.
12, 15	NC	Not Used!
13, 14	DATA/CLK	Output for data and clock signal to LC7821, NJW1102, NJU9702 and TC9299, LM7001.
16	NJW1102ST	Output to enable NJW1102, NJU9702 and TC9299.
17		Pull Down
18	LC7821ST	Output to enable LC7821.
19 ~ 23	KEY IN	Input data of K1~ K5 for keyscan.
24 ~ 26	WRAP	Output voltage to control wrap LED.
27	F. 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 or stereo is changed. 4. When the protection terminal's level is low. 5. When "-∞ mute signal "is received from the commander.
28	C. 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 selected. 4. When test tone mode is switched on, or when output is not directed to center. 5. When the protection terminal's level is low. 6. When "-∞ mute signal "is received from the commander.
29	S. 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. 3. When test tone mode is switched on, or when output is not directed to surround. 4. When delay time is selected. 5. When the protection terminal's level is low. 6. When "-∞ mute signal "is received from the commander.
30	P. MUTE	Output for all amplifier mute. Output high level under the following conditions. 1. When power is turned on or off. 2. When the protection terminal's level is low.

<table>
<tr><td>31</td><td>VOL LED</td><td>Output signal to turn on or off the LED which is used master volume indicator It is high in turning on and low level in turning off.</td></tr>
<tr><td>32, 33</td><td>VOL DOWN/UP</td><td>Output signal to turn up or down volume motor (at high, it is active)</td></tr>
<tr><td>34</td><td>ST-BY</td><td>Output voltage to control stand-by LED is as follows.
When power is turned on by power switch or remocon,
it is high level. Else, it is low level. (keeping last level)</td></tr>
<tr><td>35</td><td>TUNER SM</td><td></td></tr>
<tr><td>36</td><td>PROTECTION</td><td>Input for protection signal.
If it is low, all channel mute signal levels are turned to high.</td></tr>
<tr><td>37</td><td>AREA</td><td>Input to select frequency band & step according to regiens.
<table>
<tr><td>AREA</td><td>USA</td><td>EUROPE</td></tr>
<tr><td>Step FM/AM</td><td>100 K / 10 K</td><td>50 K / 9 K</td></tr>
<tr><td>Voltage</td><td>0 V</td><td>1 V</td></tr>
<tr><td>μ - Com A/D</td><td>0 V</td><td>1.4 ~ 0.6 V</td></tr>
</table></td></tr>
<tr><td>38</td><td>RESET</td><td>Input to reset micom.</td></tr>
<tr><td>39, 40</td><td>XTAL/EXTAL</td><td>Input and Output pin for connecting a crystal oscillator.</td></tr>
<tr><td>41. 43, 47</td><td>GND</td><td>Provides the ground potential.</td></tr>
<tr><td>42</td><td>NC</td><td>Not Used!</td></tr>
<tr><td>44</td><td>SET-OPTION</td><td>Output to select the of AVR40 or AVR41.
<table>
<tr><td>MODEL</td><td>AVR 40</td><td>AVR 41</td></tr>
<tr><td>Voltage</td><td>0 V</td><td>2.5 V</td></tr>
<tr><td>μ - Com A/D</td><td>0 ~ 1 V</td><td>2 ~ 3 V</td></tr>
</table></td></tr>
<tr><td>45</td><td>LED CENTER BOOST</td><td>Output voltage to control Center Boost LED is as follows.
When Center Boost is selected.</td></tr>
<tr><td>46</td><td>AVREF</td><td>Provides the reference potential.</td></tr>
<tr><td>47</td><td>AVSS</td><td>Ground.</td></tr>
<tr><td>48</td><td>LED CAM REC</td><td>Output voltage to control CAM REC LED is as follows.
When CAM REC is selected.</td></tr>
<tr><td>49</td><td>LED VCR2 REC</td><td>Output voltage to control VCR2 REC LED is as follows.
When VCR REC is selected.</td></tr>
<tr><td>50 ~ 55</td><td>LED WRAP</td><td>Output voltage to control WRAP LED is as follows.
When WRAP up or down button is pressed.</td></tr>
<tr><td>56 ~ 63</td><td>SEGMENT</td><td>Segment signal output for FIP.</td></tr>
<tr><td>64 ~ 71</td><td>SEGMENT/KEY SCAN</td><td>Segment signal output for FIP and Data output for key scan.</td></tr>
<tr><td>72 ~ 75</td><td>NC</td><td>Not Used!</td></tr>
<tr><td>76 ~ 87</td><td>GRID</td><td>Grid signal output for FIP.</td></tr>
<tr><td>88</td><td>VFDD</td><td>Power supply of the FIP controller.</td></tr>
<tr><td>89, 90</td><td>VDD</td><td>Power supply.</td></tr>
<tr><td>91</td><td>VSS</td><td>Ground.</td></tr>
<tr><td>92 ~ 95</td><td>VIDEO</td><td>Switch control for Video IC BA7625 (IC601).</td></tr>
<tr><td>96</td><td>T. MUTE</td><td>Output for tuner mute.
Output high level under the following conditions.
1. When Power is turned on or off.
2. When Tuner band or FM mode is changed.
3. When Tuner Up or Down button is pressed.
4. When preset button is pressed.
5. When preset number displayed changes daring memory scan.
6. When the protection terminal's level is low.
7. When "-∞ mute signal" is received from the commander.</td></tr>
<tr><td>97</td><td>LC7001ST</td><td>Output to enable LM7001.</td></tr>
</table>

98, 99	T · DATA/T · CLK	Output data and clock signal to LM7001.
100	POWER DOWN	Input for power down. (at low, it is active)

3) KEY MATRIX (AVR40 Only)

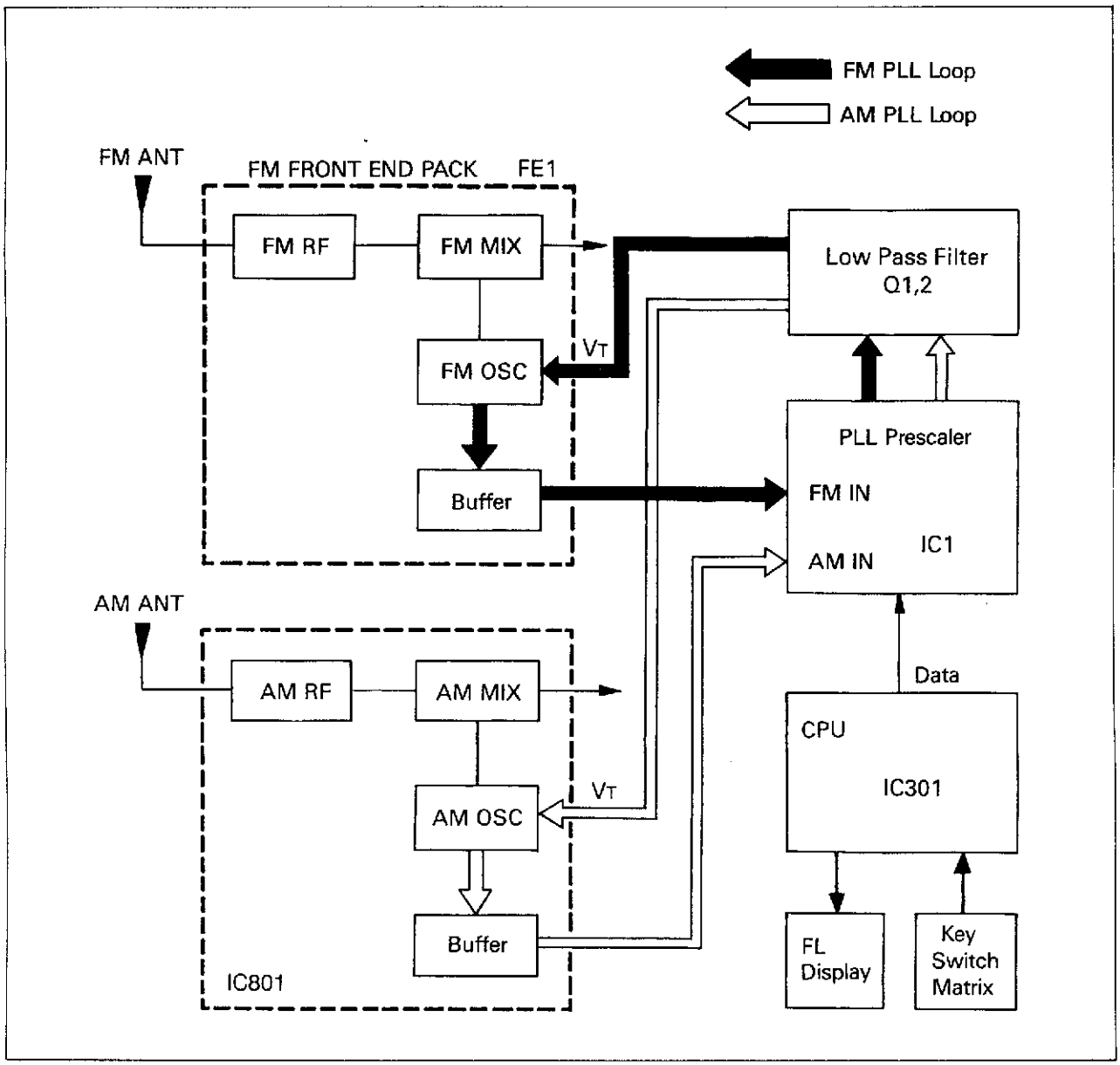
PIN NO.	64	65	66	67	68	69	70	71
19		ST-BY	Video 2 -> Video 1	Video 3 -> Video 1		P. SCAN	Tuning Mode	
20	Rear	Center			Delay	Calibrate	Memory	1
21	6	7	8	9	5	4	3	2
22	TV	Video 1	Video 2	Video 3	TAPE 2	Tape 1 Monitor	CD	AM/FM
23	Tuning Up	Tuning Down	WRAP Up	WRAP Down	CTR · BOOST	Surround	⌀	

3) KEY MATRIX (AVR41 Only)

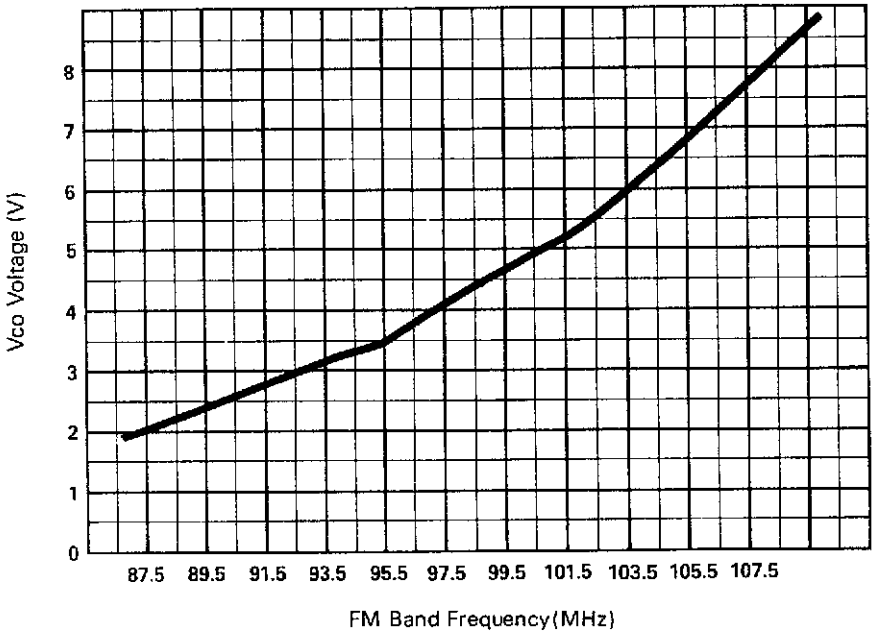
PIN NO.	64	65	66	67	68	69	70	71
19		ST-BY	P · SCAN	Tuning Mode	Video 2 -> Video 1	RDS Seek	Display	
20	Rear	Center		Video 3 -> Video 1	Delay	Calibrate	Memory	1
21	6	7	8	9	5	4	3	2
22	TV	Video 1	Video 2	Video 3	TAPE 2	Tape 1 Monitor	CD	AM/FM
23	Tuning Up	Tuning Down	WRAP Up	WRAP Down	CTR · BOOST	Surround	⌀	

2. DIGITAL TUNING SYSTEM DESCRIPTION

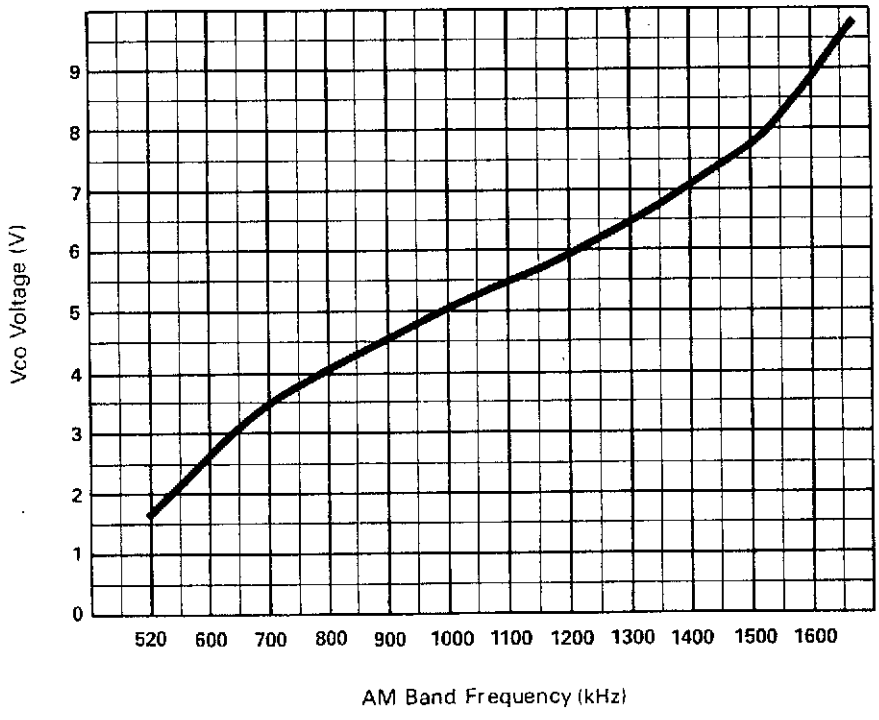
1) DIGITAL TUNING SYSTEM



2) VCO VS. FM BAND FREQUENCY CURVE



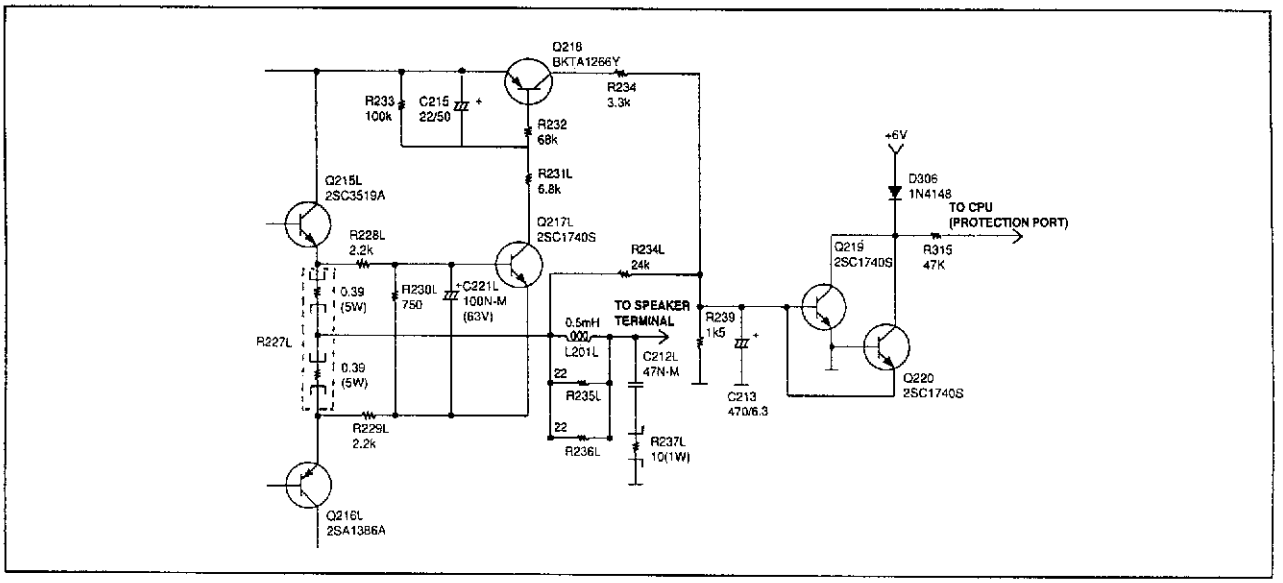
3) VCO VS. AM BAND FREQUENCY CURVE



3. PROTECTION CIRCUITS

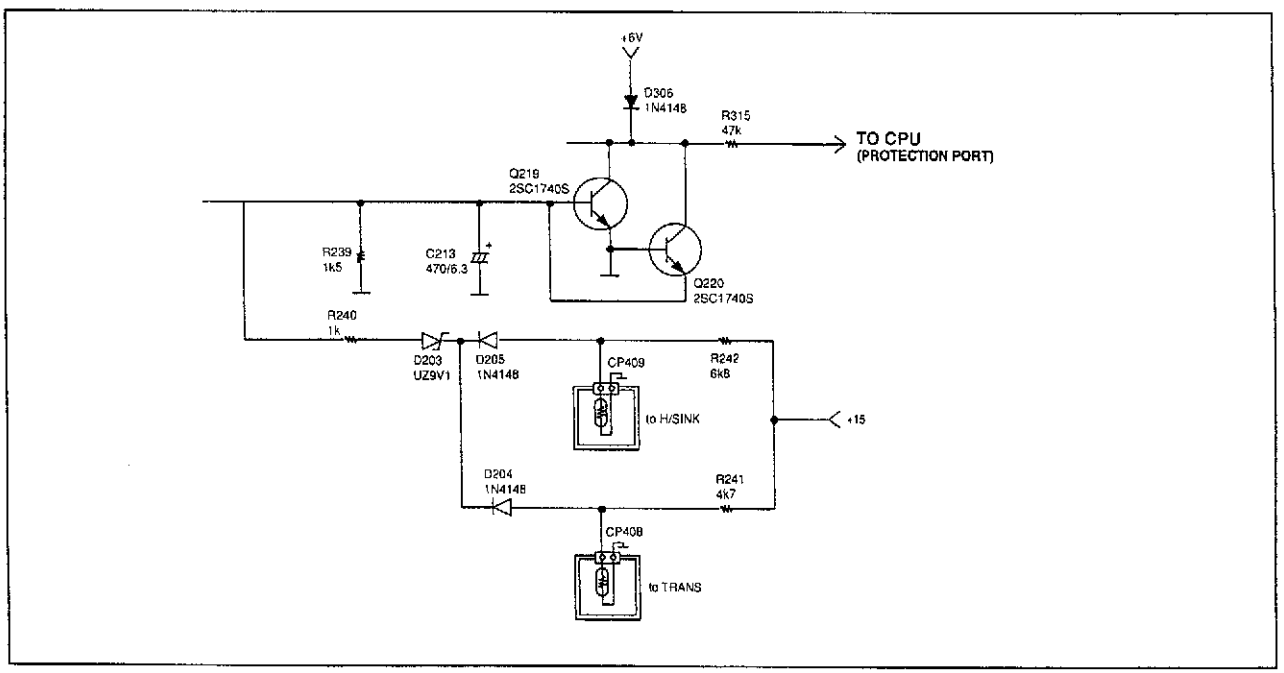
1) SPEAKER PROTECTION CIRCUIT

The CPU protects both this unit and the speakers when an abonormally high current flows in Q215 L/R/C/SL and Q216 L/R/C/SL due to excessive input drive, too low of a load impedance, or short of the speaker terminals. If currunt increase is excessive the voltage across R227 L/R/C/SL turns on Q217 L/R/C/SL then Q218 turns on Q219.
It makes the protection port of the CPU to low state.
Then the power is turned off.



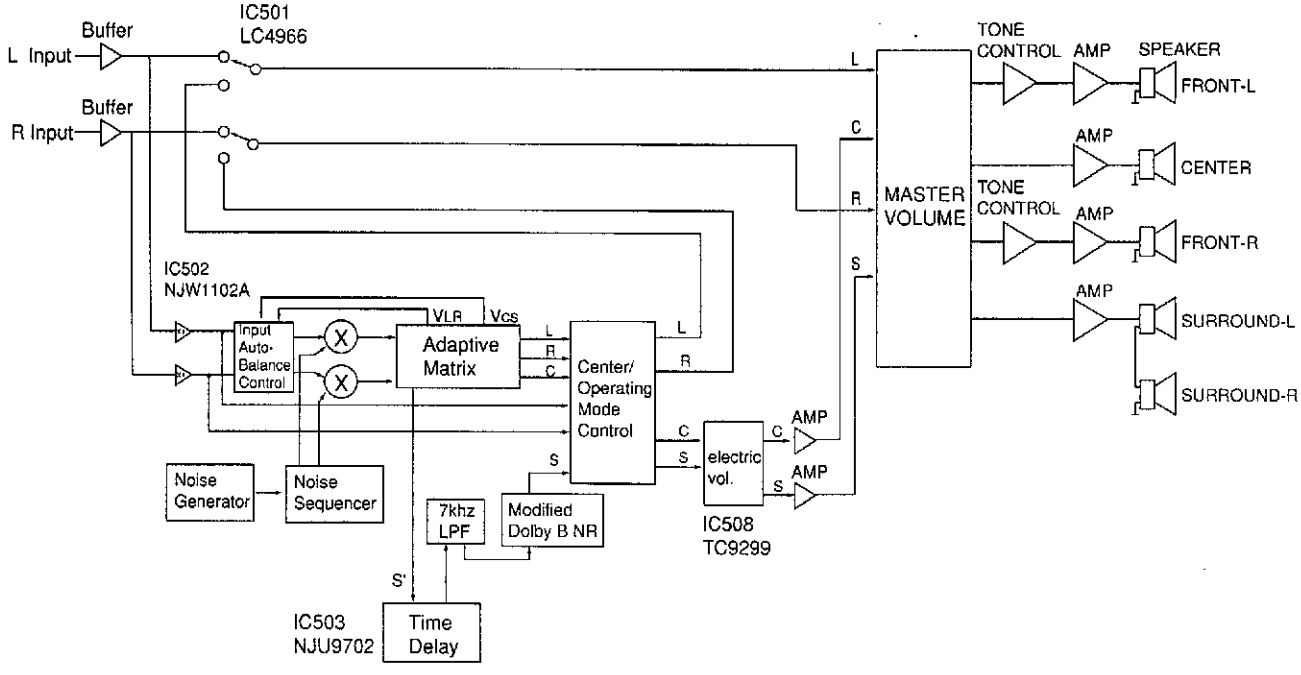
2) THERMAL PROTECTION CIRCUIT

This receiver has an overload thermal protection circuits to guard against abnormal operation.
When the temperature of TRANS POSISTOR installed with the main tranformer or H/SINK POSISTOR rises abnormally, the resistance of the posistor becomes large Q219 is turned on.
It makes the protection port of the CPU to low state. Then the power is turned off.



4. SURROUND CIRCUITS

This model incorporates a surround processor circuit.
Fig. 1 is a block diagram of the surround processor circuit.
The microprocessor transfers the data to the Dolby Pro-Logic decoder and Time Delay Device to operate the circuits in each made.



<Block diagram of the surround processor circuit>
Fig. 1

1) OFF

Set to this mode to listen to ordinary stereo sound.
The rear L/R and center outputs will be muted.

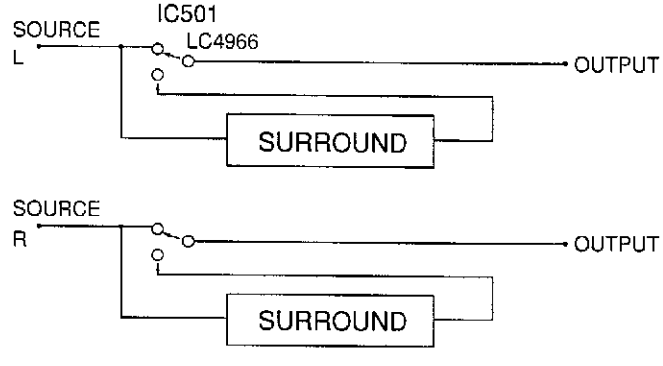
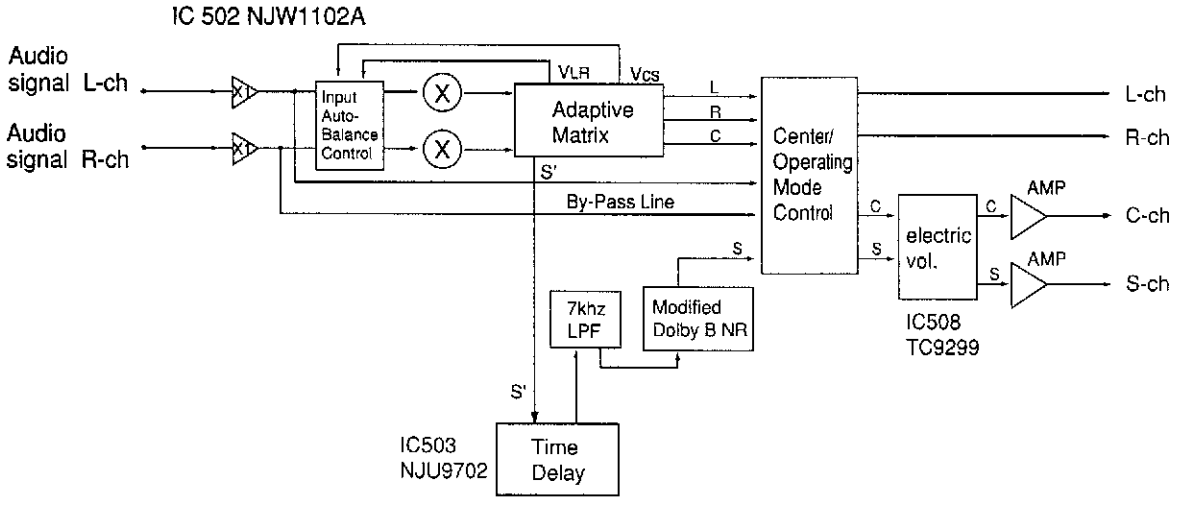


Fig. 2

2) DOLBY PRO-LOGIC CIRCUIT (MOVIE)

Dolby Pro-Logic is a sound effect system for movies developed by the Dolby Laboratories Licensing Corp. IC502 (NJW1102A) is a Dolby Pro-Logic decoder IC.
When an audio signal recorded using the Dolby-Logic system is sent to this IC, the left, right, center and surround components are separated.
The surround signal component is delayed by the delay IC503 (NJU9702).
Fig. 3 shows the configuration of the dolby decoder.



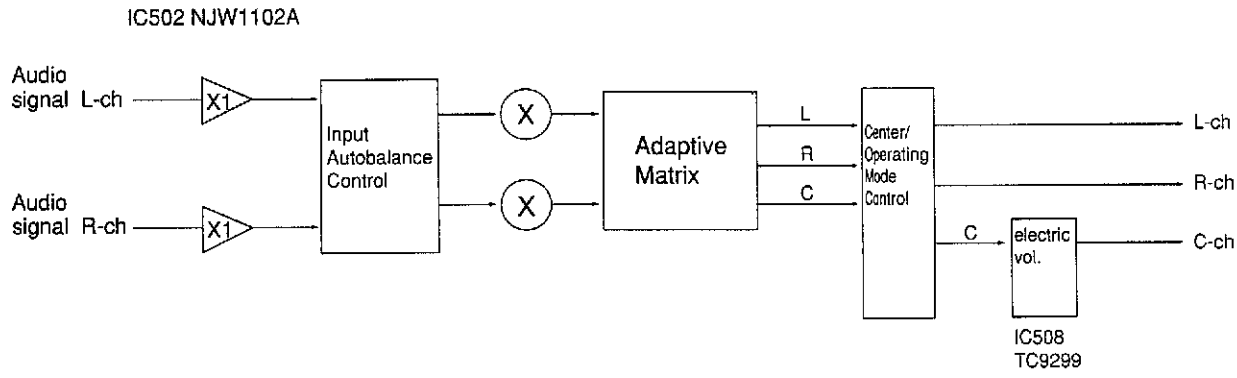
< Flow of signals within the system in the Dolby Pro-Logic mode>
Fig. 3

With Dolby pro logic, three center modes depend on the use of a center speaker as follows.

SMALL	: Bass frequencies are sent only to the Left and Right Front channels. Select this mode when the Center Speaker is samaller than the Left and Right speakers.
LARGE	: Bass frequencies are sent to the Left, Center and Right speakers. Select this mode when the Center speaker is approximately the same size as the Left and Right speakers.
PHANTOM (MUSIC)	: Center channel information is sent to the Left and Right speakers. Select this mode when you do not have a center channel speaker.

3) 3-STEREO CIRCUIT (Pro-Logic. No Rear)

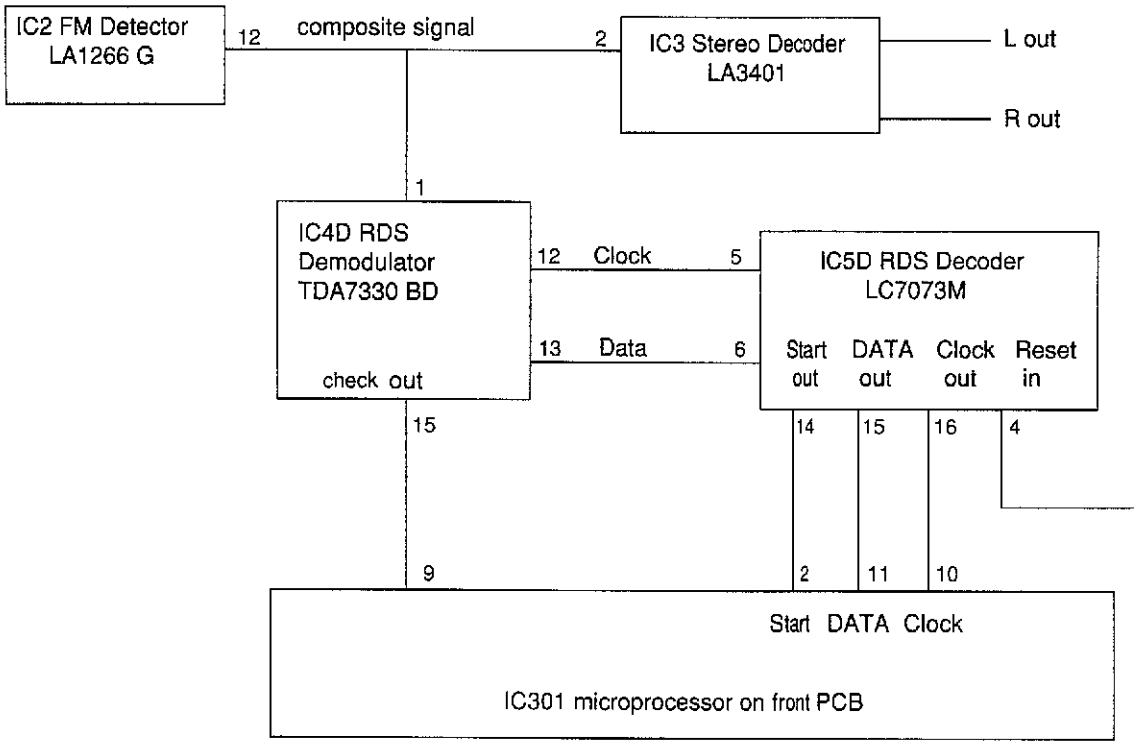
In 3-stereo mode, surround sound is sent to front Left channel and front Right channel and no surround sound is sent to surround channel.



< Flow of signal within the system in the 3-stereo mode>

Fig. 4

5. RDS CIRCUITS



< RDS decoder, block diagram>
Fig. 6

IC301 Pin and function description for RDS
Pin 9 R1 => Output for RDS indication
Pin 2 Start => Serial data start output
Pin 11 DATA => Serial data output
Pin 10 Clock => Serial data output clock

RDS information in the composiste signal is fed to pin 1 of RDS Detector (IC4D).
IC4D performs the following functions;
- Remove Low frequency audio information and pass the 57 kHz subcarier.
- Lock onto the 57 kHz subcarier, recover the clock signal and get the demodulation of original RDS data.
The Low level signal from pin 15 of IC4D is fed to pin 9 of the microprocessor (IC301).
The recovered clock signal from pin 12 of IC4D is fed to pin 5 of the RDS decoder (IC5D).
The decoded Low signal from pin 3 of IC4D is fed to pin 6 of IC5D.
The RDS Detector (IC5D) performs the following functions;
Logic reset (During power on, pin 4 is momentarely connected to ground for chip reset.)
Convert serial data from pin 6 (Data in) and pin 5 (Clock) into parralel data.
Error detection and correction.
It provide group syncronization.
The Low level momentarely signal from pin 14 of IC5D, is fed to pin 2 of the microprocessor (IC301), and let you know the start point of one block of RDS data.
The data signal from pin 15 of IC5D, fed to pin 11 of the microprocessor (IC301), and let you knob the content of RDS data.
The clock signal from pin 16 of IC5D, is fed to pin 10 of the microprocessor (IC301), and let you knob the frequency clock of RDS data.

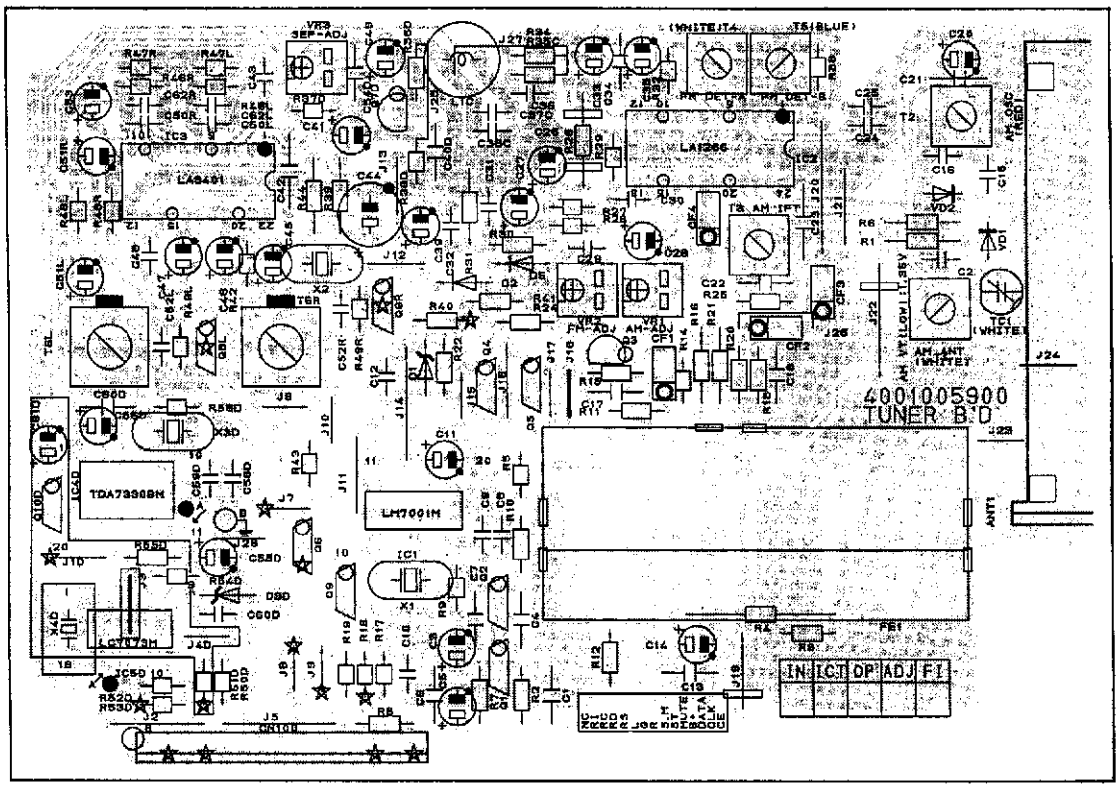
ALIGNMENT PROCEDURES

1. Equipment Required

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

Note : Disconnect external FM antenna prior to alignment.

2. Alignment and Test Points (PCB1)



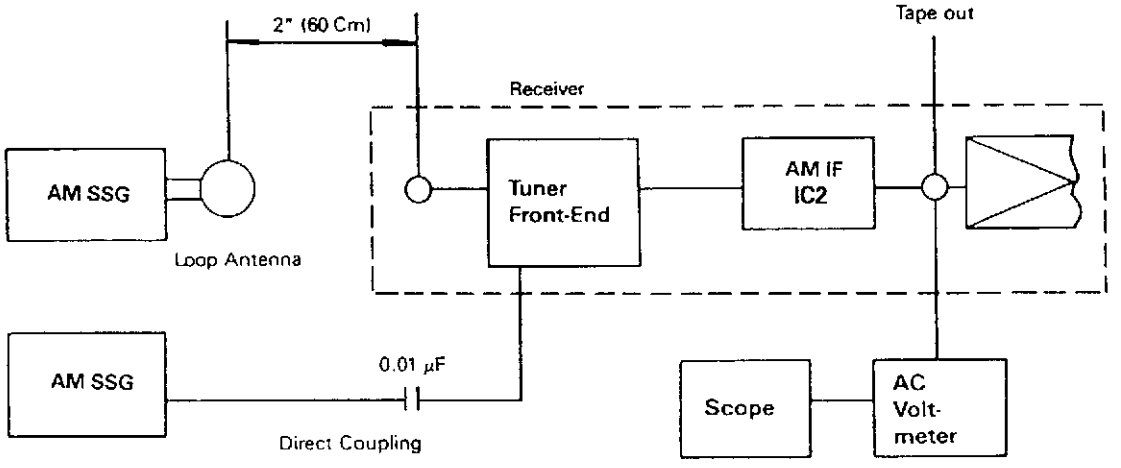
3. AM IF and RF Alignment

Preparation

1. Output of Signal Generator should not be higher than necessary to 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 J 22	T2	1.2 V reading
2	594 kHz (400 Hz, Mod.)	594 kHz	AC Voltmeter to TAPE OUT jack	T1 (ANT Coil)	Maximum reading
3	1404 kHz (400 Hz, Mod.)	1404 kHz	AC Voltmeter to TAPE OUT jack	TC1 (ANT Trimmer)	Maximum reading

4	999 kHz (400 Hz, Mod.)	999 kHz	AC Voltmeter to TAPE OUT jack	TC3 (IFT)	Maximum reading
5	999 kHz (400 Hz, Mod.)	999 kHz		VR1	FL display 'TUNED' indication on receiver with AM SSG Output level of 800 μV/m



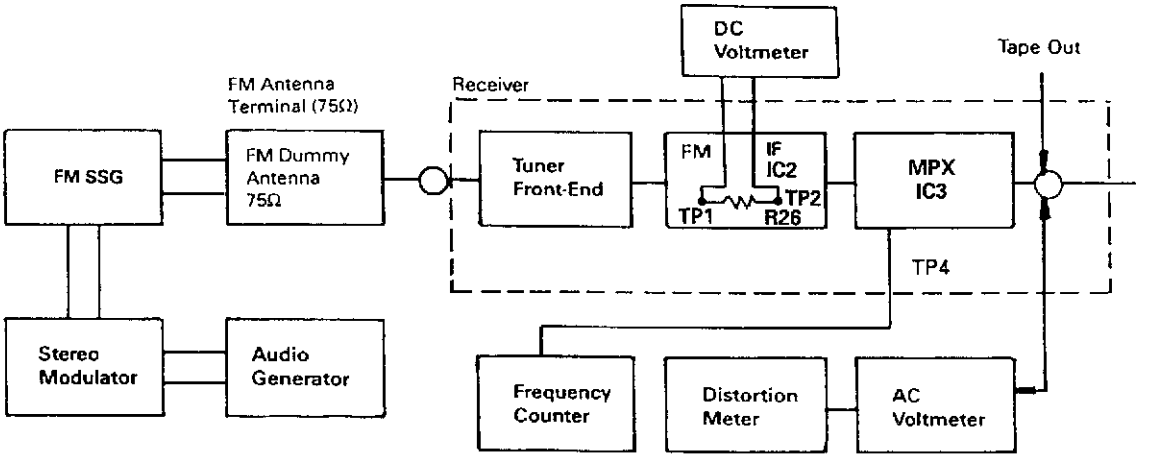
AM Alignment Connection

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 (for Europe)
   75 kHz (for USA/Canada)

Step	Signal Generator Frequency	Receiver Frequency Display	Equipment Connection	Adjustment Point	Adjust for
1	98.0 kHz (1 kHz, Mod.)	98.0 MHz	DC Voltmeter to R26 (TP1 and TP2)	T4 (WHITE)	Zero Reading on DC Voltmeter
2	98.0 kHz (1 kHz, Mod.)	98.0 MHz	Distortion meter to TAPE OUT jack	T5 (BLUE)	Minimum distortion
3	98.0 kHz (1 kHz, Mod.)	98.0 MHz		VR2	FL display 'TUNED' indication on receiver with FM SSG Output level of 10 μV/m



FM RF/IF and MPX Alignment Connection

5. MPX Alignment

Preparation

1. Switch : Press to FM.
2. Tuner for 98 MHz on band.
3. Signal Generator output level : 1000 μV
4. Deviation : 40 kHz for Europe
   75 kHz for USA/Canada
5. Connect Signal Generator to FM antenna terminal through FM dummy antenna (75 Ω)

Step	19kHz Modulation Level	Signal Generator Frequency setting	Equipment Connection	Adjustment Point	Adjust for
1	8% Mod.	Composite to channel 1kHz R	Distortion meter to TAPE OUT jack	FM IFT Coil (in F/E Pack)	Minimum Distortion
2	8% Mod.	Composite to channel 1kHz R	AC Voltmeter to TAPE OUT jack of R channel		Confirm Audio output as about 520 mV and ref. as "0 dB"
3	8% Mod.	Composite to channel 1kHz L	AC Voltmeter to TAPE OUT jack of R channel	VR3	AC Voltmeter reading should be at least 40 dB below.
4	8% Mod.	Composite to channel 1kHz L	AC Voltmeter to TAPE OUT jack of L channel		Same as Step 2.
5	8% Mod.	Composite to channel 1kHz R	AC Voltmeter to TAPE OUT jack of R channel	VR3	AC Voltmeter reading should be at least 40 dB below.

If you could not obtain -40dB readings in Steps 4 and 5 (compared with Step 2 and 4), readjust VR3 until you obtain -40dB readings for both Steps 4 and 5. Nominal is -45dB.

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 short. C) Damaged rectifier (D108 to D111) or damaged transistor (Q215L/R/C/SL to Q216L/R/C/SL) 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 Q215L/R, Q216L/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 Q215L/R, Q216L/R on the Main Amp Board. Locate and correct the defect. B) Break in copper foil of printed circuit board. Repair the trace. C) Short in speaker output terminal. Repair or replace.
FM inoperative.	A) Defective front-end. (FTA3-506H) Replace. B) Defective FM switch. Replace the switch. C) Defective transistors Q1, Q2, Q3, IC1, IC2 Replace the defective transistor(s) or IC(s). D) Defective coil T4 or T5. Replace the coil(s). E) Defective lead-in. Repair or replace the lead-in. F) Ceramic filters CF803 (Europe Only) defective. Replace the defective ceramic filter(s). G) Defective controller circuit component. Replace.

Speaker works normally but headphones inoperative.	A) Headphone plug does not mate with jack. Replace the jack. B) Defective resistor R395L/R. Replace.
Poor multiplex separation.	A) Improper adjustment. Readjust VR3. (Refer to MPX Alignment.) B) IC3 defective. Replace. C) Variable resistor VR3 defective. Replace the variable resistor(s).
STEREO indicator does not light.	A) Defective indicator in FL. Replace. B) Defective IC3. Replace the defective component.
FM volume not sufficient.	A) If volume from both L and R channels is not loud enough: Front end section defective. Faulty IC2, Coil T4, T5. If sound of one channel is not loud enough: Defective T6L, T6R.
FM Mono has no effect.	A) Defective FM MODE switch. Replace.
AM inoperative.	A) Damaged IC2 of tuner board. Replace. B) Defective T1, T2, T3, or CF4 of Tuner Board. Replace the defective component(s). C) Defective AM switch. Replace. D) Defective varicap diodes VD1, VD2 Replace varicap diods(s). E) Damaged AM loop antenna. Repair or replace. F) Defective controller circuit component. Replace.
Bass control has no effect.	A) Variable resistor BASS defective. Replace. B) Defective R705L/R, R706L/R, C705L/R, C706L/R. Replace the defective component(s).
Treble control has no effect.	A) Variable resistor TREBLE defective. B) Defective R707L/R, R708L/R, C707L/R, C708L/R. Replace the defective components(s).
Manual tune inoperative.(UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Replace. B) Defective IC301. Replace.

Auto tune inoperative.(Up/Down)	A) Poor contact in Up/Down key. Repair or replace. B) Defective IC301. Replace. C) Defective tuner circuit components. Replace. D) In case of FM oniy, improper adjustment of FM front-end. Readjust.
Memory setting (Keys 1-10) inoperative.	A) Poor contact in memory keys 1-10. Replace. B) Poor contact in memory set key. Replace. C) Defective IC301. Replace the defective component.
FL inoperative.	A) FL defective. Replace. B) Defective IC301. Replace. C) Defective X301. Replace.
Noisy volume control.	A) Defective volume control. Replace. B) Defective capacitors C566 or C568 Replace the defective capacitor(s).
Remote Control Unit inoperative.	A) Weak battery. Replace. B) Defective. Replace. C) Defective IC301 (Front Board) or RMC301. Replace.

GENERAL UNIT PARTS LIST

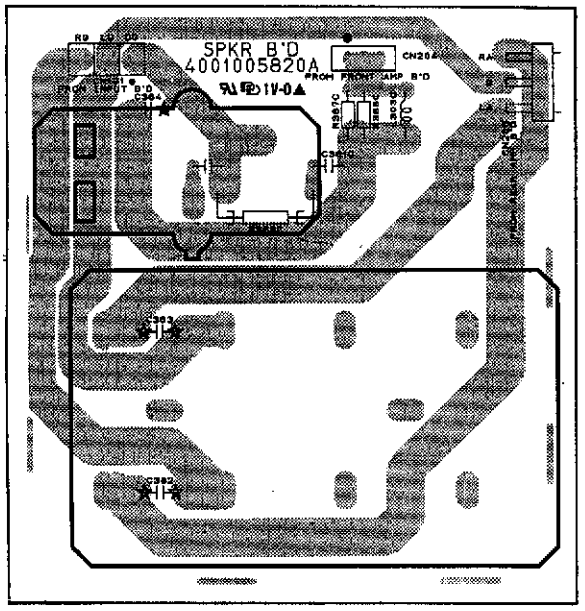
REF. NO.	DESCRIPTION	New Part No	Q't	Version
	PACKAGE			
	BOX CARTON	6017040990120	1	
	BOX CARTON	6017040990130	1	AVR41(Only)
	POLY BAG	6337041222201A	1	
	FILM SOFT PE	6327040302010	1	
	CUSHION POLY	6230043784010	1	
	ACCESSORIES			
	ANTENNA AM LOOP STAND-TYPE	E601010000000	1	
	ANTENNA WIRE FM	E605010010000	1	
	MATCHING TRANS	L109284007100	1	AVR40(USA Only)
	MATCHING TRANS	L109284007200	1	
	COMMANDER ASS'Y	8300040601010	1	
	COMMANDER ASS'Y	8300040602010	1	AVR41(Only)
	BATTERY 1.5V AA(R6M)	G670001R50010	2	
	MANUAL INSTRUCTION	5707045960010	1	AVR40(USA Only)
	MANUAL INSTRUCTION	5707045970010	1	
	RCA CORD 1P 3.5 MM	L063041230000	2	
	CABINET & CHASSIS			
1	WINDOW, FL	5077040913010	1	
1	WINDOW, FL	5077040923010	1	AVR41(Only)
2	FILTER, FL	5200041222010	1	
3	DEFUSER	1230040100010	1	
4	KNOB ROTARY	5097054701010	3	
5	PANEL FRONT	3067042251010	1	
5	PANEL FRONT	3067042251020	1	AVR41(Only)
6	BUTTON POWER	509704537101A	1	
7	LIGHT SHIELD	4470042662010	1	
8	INDICATOR POWER	5160040573010	1	
9	BUTTON PUSH	5097054691010	1	
10	BUTTON 4KEY	5097046581010	1	
10	BUTTON 6KEY	5097046511010	1	AVR41(Only)
11	BUTTON LEVEL (4KEY)	5097046521010	1	
12	BUTTON TUNNING (11KEY)	5097046561010	1	
13	BUTTON FUNCTION (5KEY)	5097046551010	1	
14	BUTTON SURROUND(3KEY)	5097046531010	1	
15	BUTTON 2KEY(A)	5097054671010	1	
16	JACK RCA 3P(GOLD)	G606040300000	1	
17	KNOB VOLUME	5097046501010	1	
18	INDICATOR VOLUME	516004083301A	1	
19	BUTTON LOUD	5097053861010	1	
20	ROTARY VOLUME	C452111402200	1	
21	ROTARY VOLUME	C454121402800	2	
22	SPONGE CUSHION B	4050043895010	1	
23	SHIELD FENCE	3070046326010	1	
24	SPONGE	4050043325010	1	
25	FL CM1564C AVR40/41	K530001790010	1	
26	BUTTON SPEAKER	5097053841010	2	
27	BUTTON S/W JACK	4010056196010	1	
28	H/PONE JACK(GOLD,3P)	G402040161330	1	
29	BUFFER RS-717	4050045669010	1	
30	COVER TOP	3000045396010	1	
31	CHASSIS FRONT	321041066010	1	
32	FASTENER	4420040323010	2	
33	MOTOR VOLUME	C49514530322	1	
34	COVER BOTTOM	431041986010	1	
35	FOOT P/L (H/S)	4007040255010	4	
36	FRAME R	3200047716010	1	
37	HOLD PCB	4320044741010	1	
38	RCA JACK (6P)	G603600460010	3	
39	SPK TERMINAL (4P)	G040404204220	1	
40	HEAT SINK REG TR(15X30)	2120044338010	1	
41	HEAT SINK REG TR(24X45)	2120044298010	2	
42	HEAT SINK REG TR(15X30)	2120044338010	6	
43	BRACKET PCB	4010056206010	1	
44	HEAT SINK POWER	2120040898010	1	
45	FRAME L	3200047706010	1	
46	POWER TRANS 120V/60HZ	8200281011610	1	AVR40(USA Only)
46	POWER TRANS 230V/50HZ	8200281011310	1	
47	INSULATION COVER	1240044032010	1	AVR41(Only)
48	AC OUTLET	G435040110000	1	
48	AC OUTLET	G435040060000	1	AVR40(USA Only)
49	SPK TERMINAL (2P)	G611040350000	1	
50	SPK TERMINAL (4P)	G594040540000	1	
51	BUSHING TERMINAL	2410040270010	6	
52	RCA JACK 2P(Y)	G601201150010	2	
53	MULTY ROOM JACK (2P)	G402042130000	1	
54	RCA JACK (4P)	G602400450020	1	
55	RCA JACK (6P)	G603600460010	1	
56	ANT TERMINAL	G59004046000A	1	
56	ANT TERMINAL	G590040470000	1	AVR40(USA Only)
57	CHASSIS BACK	3207042756010	1	AVR40(USA Only)
57	CHASSIS BACK	3207042756020	1	AVR41(Only)
57	CHASSIS BACK	3207042756030	1	
58	PLUG JUMPER	L063040750000	2	
59	AC POWER CORD	L061041210010	1	AVR40(USA Only)
59	AC POWER CORD 2.5A/250V	L051040411030	1	
60	CORD STOPPER	4380040162010	1	
	SWITCHS			
SW1	POWER S/W(TV5)	G000041610000	1	
SW2	TACT S/W	G180040500010	1	
SW3	PUSH S/W(2/2)	G000040960000	1	
SW4-SW36	TACT S/W	G180040500010	32	
SW39	PUSH S/W	G000041830000	1	
	HARDWARE KIT			
S1-S5	SCREW #B BTT3x8B	B020030083B10	5	
S6-S11	SCREW #B WPTT3x6Y	B020030061W10	6	
S12-S58	SCREW #B BTT3x8B	B020030083B10	46	
S59-S66	SCREW #B WPTT3x6Y	B020030061W10	8	
S67-S69	SCREW #B BTT3x8B	B020030083B10	3	
S71-S75	SCREW #B BTT3x8B	B020030083B10	5	

REF. NO.	DESCRIPTION	New Part No	Q't	Version
S76-S80	SCREW #B WPTT3x6Y	B020030061W10	5	
S81-S87	SCREW #B BTT3x8B	B020030083B10	7	
S88/S89	SCREW HEAT SINK	1507041136010	2	
S90	SCREW #B BTT3x8B	B020030083B10	1	
S91	SCREW HEAT SINK	1507041136010	1	
S92	SCREW GUIDE 3X16Y	1507041456010	1	
S93	SCREW #B BTT3x8B	B020030083B10	1	
S94-S96	SCREW HEAT SINK	1507041136010	3	
S97	SCREW GUIDE 3X16Y	1507041456010	1	
S98/S99	SCREW #B BTT3x8B	B020030083B10	2	
S101-S104	SCREW #B BTT3x8B	B020030083B10	4	
S105	SCREW GUIDE 3X16Y	1507041456010	1	
S106	SCREW HEAT SINK	1507041136010	1	
S107	SCREW #B BTT3x8B	B020030083B10	1	
S108	SCREW HEAT SINK	1507041136010	1	
S109-S112	SCREW #B WPTT3x6Y	B020030061W10	4	
S113-S125	SCREW #B BTT3x8B	B020030083B10	12	
S126-S129	SCREW #B WPTT3x6Y	B020030061W10	4	
S130-S135	SCREW #B BTT3x8B	B020030083B10	6	
S136	SCREW GROUND	1507040996010	1	
S137	SCREW #B BTT3x8B	B020030083B10	1	
S138	SCREW GROUND	1507040996010	1	
S139	SCREW #B BTT3x8B	B020030083B10	1	
S140	SCREW GROUND	1507040996010	1	
S141-S145	SCREW #B BTT3x8B	B020030083B10	5	
S146/S147	SCREW GROUND	1507040996010	2	
S148	SCREW #B BTT3x8B	B020030083B10	1	
S149/S150	SCREW GROUND	1507040996010	2	
S151	SCREW #B BTT3x8B	B020030083B10	1	
S152	SCREW GROUND	1507040996010	1	
S153-S156	SCREW #B BTT3x8B	B020030083B10	4	
	MISCELLANEOUS			
	ST/BY TRANS 120V/60HZ	8200281011410	1	AVR40(USA Only)
	ST/BY TRANS 230V/50HZ	8200281011510	1	
	LOCKING TIE	4330040533010	1	
	CABLE TIE	4330040343010	6	

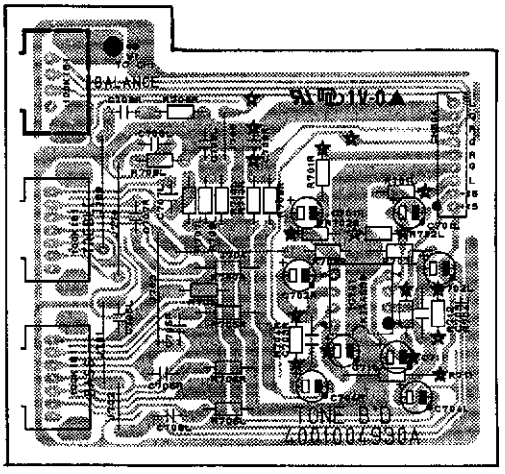
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts 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.

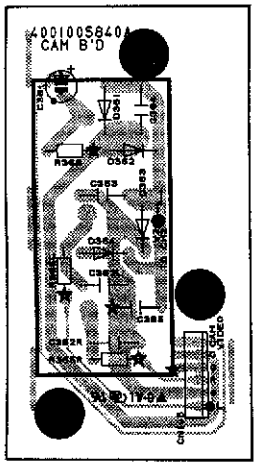
PCB9 (SPKR-TER)



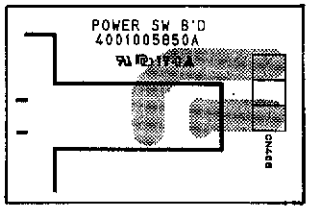
PCB15 (TONE)



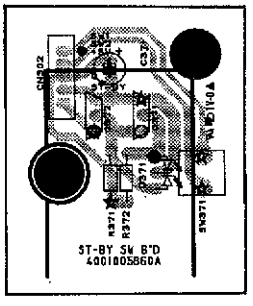
PCB10 (CAM)



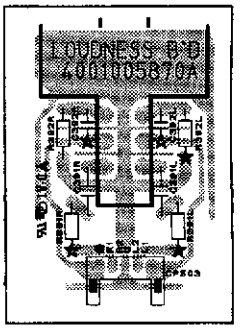
PCB6 (POWER PUSH-SW)



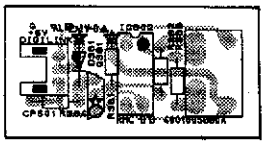
PCB7 (ST-BY SW)



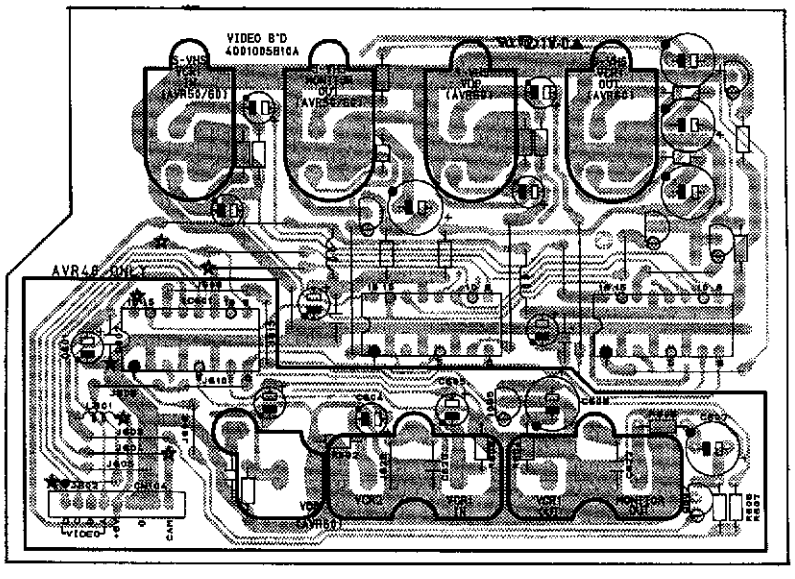
PCB11 (LOUDNESS)



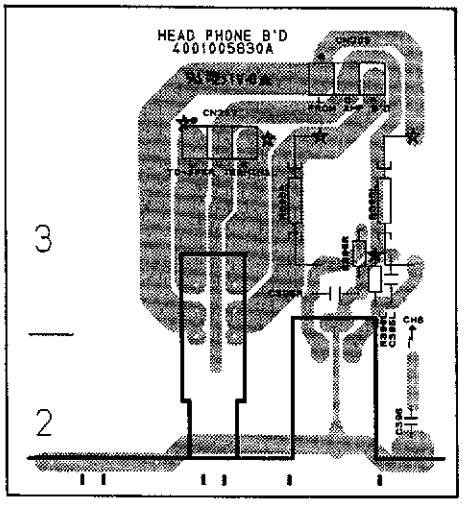
PCB12 (RMC)



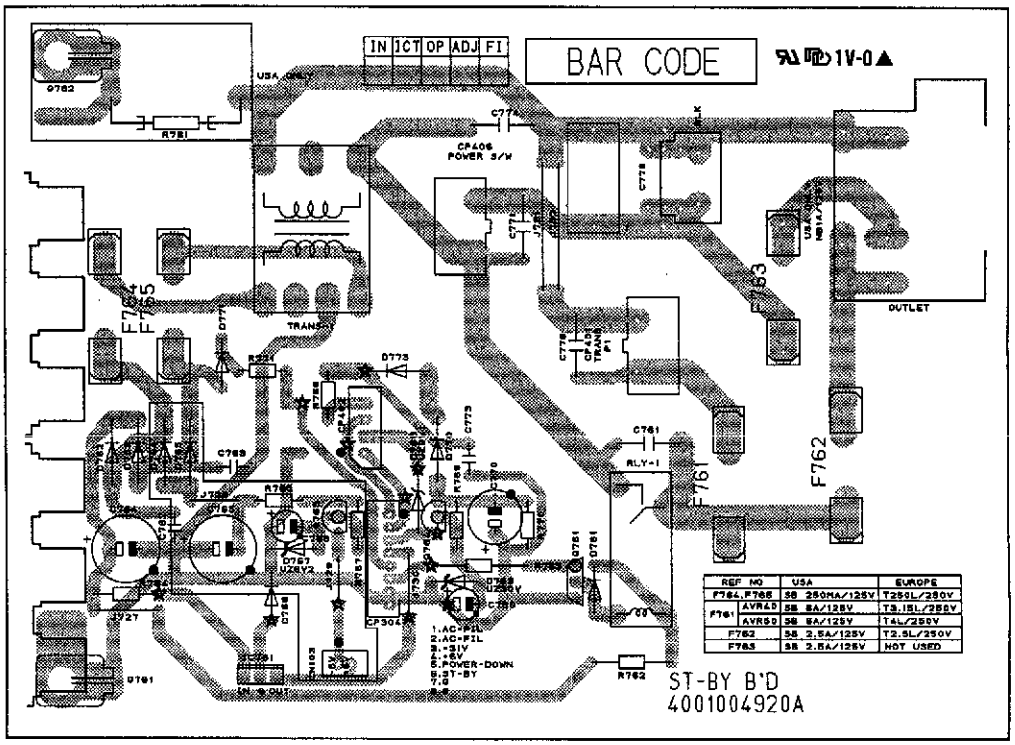
PCB14 (VIDEO)



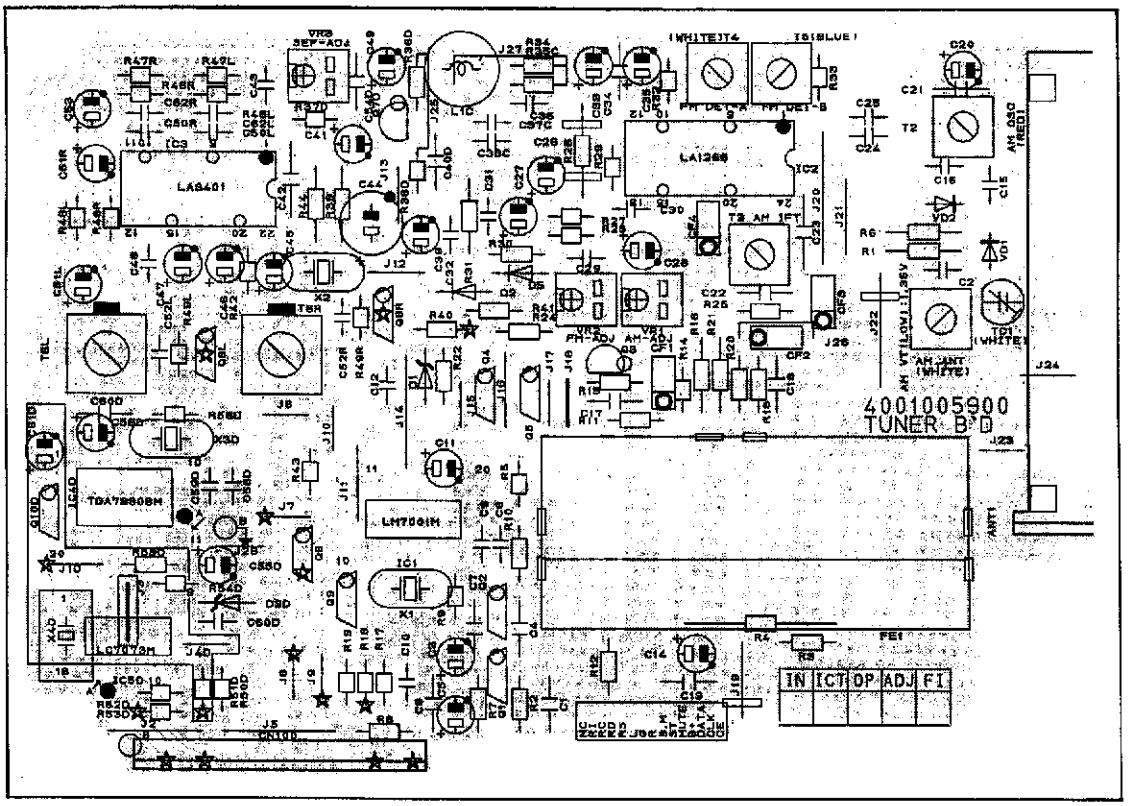
PCB8 (HEAD-PHONE)



PCB17 (ST-BY)



PCB1 (TUNER)



ELECTRICAL PARTS LIST

REF. NO.	DESCRIPTION						New Part No	Q'ty	Version
	CAPACITORS								
C1	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	1	
C2	CERAMIC DISC	0.047	μF	50 V	Z		D004473097060	1	
C3	ELECTROLYTIC SG	3.3	μF	50 V	M		D0403R3087100	1	
C4	CERAMIC TUBULAR	0.01	μF	50 V			D005103773530	1	
C5	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	
C6	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	1	
C7	CERAMIC TUBULAR	0.01	μF	50 V			D005103773530	1	
C8/C9	CERAMIC DISC CH	18	pF	50 V			D000150167070	2	
C10	CERAMIC DISC	100	pF	50 V	J		D004101067060	1	
C11	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	
C12	CERAMIC DISC	0.022	μF	50 V	Z		D004223097060	1	
C13	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	1	
C14	ELECTROLYTIC SG	100	μF	16 V	M		D040101083100	1	
C15	POLY	470	pF	50 V	J		D022471067050	1	
C16	CERAMIC DISC CH	15	pF	50 V			D000150167070	1	
C17/C18	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	2	
C20	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C21/C22	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	2	
C23	CERAMIC TUBULAR	0.01	μF	50 V			D005103773530	1	
C24/C25	CERAMIC DISC	0.022	μF	50 V	Z		D004223097060	1	
C26	ELECTROLYTIC SG	0.47	μF	50V	M		D040R47087100	1	
C27	ELECTROLYTIC SG	3.3	μF	50 V	M		D0403R3087100	1	
C28	ELECTROLYTIC SG	4.7	μF	50 V	M		D0404R7087100	1	
C29	CERAMIC DISC	0.022	μF	50 V	Z		D004223097060	1	
C30	CERAMIC DISC	0.022	μF	50 V	Z		D004223097060	1	
C31	MYLAR	0.003	μF	100 V	J		D02033206C060	1	
C32	MYLAR	0.039	μF	100 V	J		D02039306C060	1	
C33	ELECTROLYTIC SG	1	μF	50 V	M		D040010087050	1	
C34	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	1	
C35	ELECTROLYTIC SG	100	μF	16 V	M		D040101083100	1	
C36	CERAMIC DISC	330	pF	50 V	J		D004331067060	1	
C37C	CERAMIC DISC	82	pF	50 V	J		D000820067060	1	AVR40(EU Only)
C38C	CERAMIC DISC	100	pF	50 V	J		D004101067060	1	AVR40(EU Only)
C39	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C40D	CERAMIC TUBULAR	0.022	μF	25 V			D005223574530	1	AVR40(EU Only)
C41	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C42	CERAMIC TUBULAR	0.047	μF	50 V			D005473097530	1	
C43	CERAMIC DISC	680	pF	50 V	J		D004681067060	1	
C44	ELECTROLYTIC SG	100	μF	16 V	M		D040101083100	1	
C45	ELECTROLYTIC SG	1	μF	50 V	M		D040010087050	1	
C46	ELECTROLYTIC SG	0.22	μF	50 V	M		D040R22087100	1	
C47	ELECTROLYTIC SG	1	μF	50 V	M		D040010087050	1	
C48	CERAMIC DISC	0.022	μF	50 V	Z		D004223097060	1	
C49	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C51L/R	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	2	
C50L/R	CERAMIC DISC	560	pF	50 V	J		D004561067060	2	AVR40(USA Only)
C53	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C54D	CERAMIC TUBULAR	270	pF	50 V			D005271077530	1	AVR41(Only)
C55D	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	AVR41(Only)
C56D	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	AVR41(Only)
C57D	CERAMIC TUBULAR	0.1	μF	50 V			D005104097530	1	AVR41(Only)
C58D/C59D	CERAMIC DISC	27	pF	50 V	J		D004270067060	2	AVR41(Only)
C60D	CERAMIC DISC	0.1	μF	50 V	Z		D004104097060	1	AVR41(Only)
C61D	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	AVR41(Only)
C62L/R	CERAMIC DISC	56	pF	50 V	J		D004560067060	2	AVR40(USA Only)
C63	CERAMIC TUBULAR	10	pF	50 V			D001100067530	1	AVR41(Only)
	CONNECTOR								
CN100	PLUG 10P,35238-1010						L12252419100A	1	
	CERAMIC FILTERS								
CF1	10M7S3GH						E430107000150	1	
CF2	10M7S3GH						E430107000150	1	AVR40(EU Only)
CF3	10M7S3GH						E430107000150	1	
CF4	CFM2-450BL						E431450000120	1	
	DIODES								
D1	ZENER, UZ 5.1 BSB						K06005R114520	1	
D2	SWITCHING,1N4148M						K000414801520	1	
D3D	ZENER,UZ 5.1 BSB						K06005R114520	1	AVR41(Only)
VD1/VD2	VARACTOR, SVC321SPA-C						K080032100520	2	
	INTEGRATED CIRCUITS								
IC1	LM7001M						J124700100010	1	
IC2	LA1266G						J124126600010	1	
IC3	LA3401						J124340100010	1	
IC4D	TDA7330BD						J020733000010	1	AVR41(Only)
IC5D	LC7073M						J124707300010	1	AVR41(Only)
	TRANSISTORS								
Q1/Q2	2SC1740S, NPN						J5021740S0010	2	
Q3	KTC1923Y/KTC3194Y,NPN						J5023194Y0050	1	
Q4-Q6	KRA107M/DTA114YS,PNP						J601107M00050	3	
Q7D	2SC1740S, NPN						J5021740S0010	1	AVR40(EU Only)
Q8L/R	DTC323TS, NPN						J602323TS0050	2	
Q9	KRA107M/DTA114YS,PNP						J601107M00050	1	
Q10D	DTC114YS,NPN						J6020114Y0050	1	AVR41(Only)
	RESISTORS								

REF. NO.	DESCRIPTION						New Part No	Q'ty	Version
R1	CARBON FILM	100	kohm	1/5W	J		C00001046P520	1	
R2	CARBON FILM	5.6	kohm	1/5W	J		C00005626P520	1	
R3	CARBON FILM	22	kohm	1/5W	J		C00002236P520	1	
R4	CARBON FILM	100	kohm	1/5W	J		C00001046P520	1	
R5	METAR FILM	220	ohm	1/5W	J		C06002216P520	1	
R5	METAR FILM	470	ohm	1/5W	J		C06004716P520	1	AVR41(Only)
R6	CARBON FILM	100	kohm	1/5W	J		C00001046P520	1	
R7	CARBON FILM	10	kohm	1/5W	J		C00001036P520	1	
R8	METAR FILM	270	ohm	1/5W	J		C06002716P520	1	
R9	METAR FILM	560	ohm	1/5W	J		C06005616P520	1	
R10	METAR FILM	1	kohm	1/5W	J		C06001026P520	1	
R11	METAR FILM	180	ohm	1/5W	J		C06001816P520	1	
R12	METAR FILM	560	ohm	1/5W	J		C06005616P520	1	
R13	METAR FILM	3.3	kohm	1/5W	J		C06003326P520	1	
R14	METAR FILM	560	ohm	1/5W	J		C06005616P520	1	
R15	METAR FILM	470	ohm	1/5W	J		C06004716P520	1	
R16	METAR FILM	100	ohm	1/5W	J		C06001016P520	1	
R17-R19	METAR FILM	1	kohm	1/5W	J		C06001026P520	3	
R20	METAR FILM	330	ohm	1/5W	J		C06003316P520	1	
R21	METAR FILM	270	ohm	1/5W	J		C06002716P520	1	
R22	METAR FILM	470	ohm	1/5W	J		C06004716P520	1	
R24	METAR FILM	4.7	kohm	1/5W	J		C06004726P520	1	
R25	CARBON FILM	68	kohm	1/5W	J		C00006836P520	1	
R26	CARBON FILM	27	kohm	1/5W	J		C00002736P520	1	AVR40(USA Only)
R26	CARBON FILM	39	kohm	1/5W	J		C00003936P520	1	
R27	CARBON FILM	10	kohm	1/5W	J		C00001036P520	1	
R28	CARBON FILM	22	kohm	1/5W	J		C00002236P520	1	
R29	METAR FILM	22	ohm	1/5W	J		C06002206P520	1	
R30	METAR FILM	4.7	kohm	1/5W	J		C06004726P520	1	
R31	CARBON FILM	10	kohm	1/5W	J		C00001036P520	1	
R31	CARBON FILM	2.7	kohm	1/5W	J		C06002726P520	1	AVR41(Only)
R32	CARBON FILM	5.6	kohm	1/5W	J		C00005626P520	1	
R33	METAR FILM	3.3	kohm	1/5W	J		C06003326P520	1	
R34	METAR FILM	100	ohm	1/5W	J		C06001016P520	1	
R35C	METAR FILM	1.8	kohm	1/5W	J		C06001826P520	1	AVR40(EU Only)
R37D	METAR FILM	22	ohm	1/5W	J		C06002206P520	1	AVR40(EU Only)
R38D	METAR FILM	1	kohm	1/5W	J		C06001026P520	1	AVR40(EU Only)
R39	METAR FILM	100	ohm	1/5W	J		C06001016P520	1	
R40	CARBON FILM	47	kohm	1/5W	J		C00004736P520	1	
R41	CARBON FILM	22	kohm	1/5W	J		C00002236P520	1	
R42	METAR FILM	3.3	kohm	1/5W	J		C06003326P520	1	
R43	CARBON FILM	22	kohm	1/5W	J		C00002236P520	1	
R44	CARBON FILM	47	kohm	1/5W	J		C00004736P520	1	
R46L/R	CARBON FILM	120	kohm	1/5W	J		C00001246P520	2	AVR40(USA Only)
R46L/R	CARBON FILM	220	kohm	1/5W	J		C00002246P520	2	
R47L/R	CARBON FILM	180	kohm	1/5W	J		C00001846P520	2	AVR40(USA Only)
R47L/R	CARBON FILM	270	kohm	1/5W	J		C00002746P520	2	
R48L/R	METAR FILM	2.7	kohm	1/5W	J		C06002726P520	2	
R49L/R	METAR FILM	3.3	kohm	1/5W	J		C06003326P520	2	
R50D	METAR FILM	680	ohm	1/5W	J		C06006816P520	1	AVR41(Only)
R51D-R54D	CARBON FILM	10	kohm	1/5W	J		C00001036P520	4	AVR41(Only)
R55D	METAR FILM	1	kohm	1/5W	J		C06001026P520	1	AVR41(Only)
R56D	CARBON FILM	47	kohm	1/5W	J		C00004736P520	1	AVR40(EU Only)
R56D	CARBON FILM	2.2	ohm	1/5W	J		C00002256P520	1	AVR41(Only)
R57L/R	METAR FILM	1.5	kohm	1/5W	J		C06001526P520	2	
	COILS								
T1	AM-ANT						D304564300000	1	
T2	AM-OSC						D940111027000	1	
T3	AM-IFT P-7SB						D950010050000	1	
T4	FM-DET-A						D970010040000	1	
T5	FM-DET-B						D970010060000	1	
T6L/R	MPX(19/38kHz) BLK						E401500100000	2	
L1C	20M8H						D330208001120	1	AVR41(Only)
	SEMI FIXED VARIABLE RESISTORS								
VR1	SEMI, 5K(B)				50 V		C541502115000	1	
VR2	SEMI, 50K(B)				50 V		C541503115000	1	
VR3	SEMI, 200K(B)				50 V		C541204115000	1	
	MISCELLANEOUS								
TC1	TRIMMER	10	pF				D110100901100	1	
X1	X7M2						E800720000080	1	
X2	CSB456F						E830456000050	1	
X3D	X4M332						E800433200060	1	AVR41(Only)
X4D	CST4M						E830400000070	1	AVR41(Only)
FE1	FTH4-460H						E900446000110	1	
FE1	FTA3-506H						E900350600110	1	AVR40(USA Only)
	CAPACITORS								
C112/C113	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C120L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C121L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C122L/R	CERAMIC TUBULAR	47	pF	50 V			D001470067530	2	
C123L/R	CERAMIC TUBULAR	47	pF	50 V			D001470067530	2	
C124L/R	MYLAR	0.018	μF	100 V	J		D02033206C060	2	
C125L/R	MYLAR	0.047	μF	100 V	J		D02047306C060	2	
C126L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C127	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	

REF. NO.	DESCRIPTION						New Part No	Q'ty	Version
C128SL	MYLAR	0.047	μF	100 V	J		D02047306C060	1	
C128L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C130L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C131-C135	MYLAR	0.1	μF	250 V	K		D02010407H080	5	
C138	CERAMIC DISC	0.005	μF	50 V	Z		D004472097060	1	
C141/C142	ELECTROLYTIC HM	10000	μF	63 V			D040103088360	2	
C150-C153	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	4	
C154	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	
C155	ELECTROLYTIC SG	10	μF	35 V	M		D040100085100	1	
C156	ELECTROLYTIC SA	2200	μF	35 V	M		D040222085230	1	
C157	ELECTROLYTIC SG	1000	μF	35 V	M		D040102085200	1	
C158	ELECTROLYTIC SG	470	μF	35 V	M		D040471085200	1	
C159/C160	MYLAR	0.047	μF	100V	J		D02047306C060	2	
C161/C162	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C163	ELECTROLYTIC SG	1	μF	50 V	M		D040010087050	1	
C164	MYLAR	0.047	μF	100 V	J		D02047306C060	1	
C166/C167	CERAMIC DISC	0.1	μF	50 V	Z		D004104097060	2	
C168	CERAMIC TUBULAR	100	pF	50 V			D001101077530	1	
C169	CERAMIC DISC	0.047	μF	50 V	Z		D004473097060	1	
C171	CERAMIC TUBULAR	0.1	μF	50 V			D005104097530	1	
C172/C173	CERAMIC DISC	0.1	μF	50 V	Z		D004104097060	2	
C188L/R	CERAMIC TUBULAR	100	pF	50 V			D001101077530	2	
C189L/R	CERAMIC DISC	22	pF	50 V	J		D004220067060	2	
C191L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
C192L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
C193L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
C194L/R	CERAMIC DISC	22	pF	50 V	J		D004220067060	2	
C195L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
C196L/R	CERAMIC DISC	22	pF	50 V	J		D004220067060	2	
C198L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
C199L/R	CERAMIC DISC	100	pF	50 V	J		D004101067060	2	
	CONNECTORS								
CN106	LEAD ASS'Y 3P						L022031433320	1	
CN202	LEAD ASS'Y 4P						L022042233320	1	
CN210	LEAD ASS'Y 2P						L020022541660	1	
CN211	LEAD ASS'Y 3P						L020034541660	1	
CN501	LEAD ASS'Y 3P						L022032633320	1	
CP100	B'D TO B'D WAFER 10P						L102532911010	1	
CP101	WAFER 3P						L104353130300	1	
CP102	B'D TO B'D WAFER 8P						L102532910800	1	
CP103	WAFER 2P						L101220020000	1	
CP104	WAFER 9P						L101220090000	1	
CP105	WAFER 6P						L101220060000	1	
CP107	B'D TO B'D WAFER 8P						L102532910800	1	
CP212	B'D TO B'D WAFER 8P						L101507600800	1	
CP403	WAFER 5P						L104353130500	1	
CP404	WAFER 5P						L104353130600	1	
CP301	FFC WAFER 25P						L131520452500	1	
	DIODES								
D108-D111	RECTIFIER, PX6A03						K040060300000	4	
D112-D114	SWITCHING, 1N4148M						K000414801520	3	
D117-D122	RECTIFIER, 1N4003						K040400300520	6	
D123	SWITCHING, 1N4148M						K000414801520	1	
	FUSES								
F101	SB 1A 125 V						G650102121150	1	AVR40(USA Only)
F101	T1L 250 V						G650162251160	1	
F102	SB 1A 125 V						G650102121150	1	AVR40(USA Only)
F102	T1L 250 V						G650162251160	1	
	INTEGRATED CIRCUITS								
IC102-IC103	LC7821						J040782100010	2	
IC105	NJM2068DD						J121206800000	1	
IC106L/R	KIA4559P/KIA75559P						J121455900010	2	
IC107L/R	GD4051B DIP						J040405100010	2	
IC108	KA7815						J126781500020	1	
IC109	KA7915						J126791500020	1	
IC110	KA7806						J126780600120	1	
	RESISTORS								
R114/R115	METAL FILM	220	ohm	1/5W	J		C06002216P520	2	
R129L/R	CARBON FILM	100	kohm	1/5W	J		C00001046P520	2	
R130L/R	CARBON FILM	100	kohm	1/5W	J		C00001046P520	2	
R131L/R	METAL FILM	100	ohm	1/5W	J		C06001018P520	2	
R132L/R	CARBON FILM	10	kohm	1/5W	J		C00001036P520	2	
R133L/R	METAL FILM	220	ohm	1/5W	J		C06002216P520	2	
R134L/R	METAL FILM	220	ohm	1/5W	J		C06002216P520	2	
R135L/R	CARBON FILM	10	kohm	1/5W	J		C00001036P520	2	
R136L/R	CARBON FILM	10	kohm	1/5W	J		C00001036P520	2	
R137L/R	CARBON FILM	10	kohm	1/5W	J		C00001036P520	2	
R138L/R	CARBON FILM	62	kohm	1/5W	J		C00006236P520	2	
R140L/R	CARBON FILM	62	kohm	1/5W	J		C00006236P520	2	
R143L/R	CARBON FILM	24	kohm	1/5W	J		C00002436P520	2	
R144L/R	CARBON FILM	39	kohm	1/5W	J		C00003936P520	2	
R145L/R	CARBON FILM	62	kohm	1/5W	J		C00006236P520	2	
R147L/R	CARBON FILM	62	kohm	1/5W	J		C00006236P520	2	
R150L/R	CARBON FILM	24	kohm	1/5W	J		C00002436P520	2	
R151L/R	CARBON FILM	39	kohm	1/5W	J		C00003936P520	2	
R152-R154	METAL FILM	1	kohm	1/5W	J		C06001026P520	3	
R155	CARBON FILM	5.6	kohm	1/5W	J		C00005626P520	1	

REF. NO.	DESCRIPTION						New Part No	Q'ty	Version
R156SL	METAL FILM	10	ohm	1W	J		C060010065520	1	
R157/R158	METAL FILM	220	ohm	1/5W	J		C06002216P520	2	
R159	CARBON FILM	100	kohm	1/5W	J		C00001046P520	1	
R160	METAL FILM	4.7	ohm	1W	J		C0604R7065520	1	
R162/R163	METAL FILM	22	ohm	2W			C060022066520	2	
R164L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R165L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R167L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R168L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R169L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R170L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R171L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R172L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R175	METAL FILM	1	kohm	1/5W	J		C06001026P520	1	
R176/R177	CARBON FILM	10	kohm	1/5W	J		C00001036P520	2	
R178	CARBON FILM	5.6	kohm	1/5W	J		C00005626P520	1	
R179L/R	METAL FILM	1	kohm	1/5W	J		C06001026P520	2	
R191L/R	CARBON FILM	47	kohm	1/5W	J		C00004736P520	2	
R192L/R	CARBON FILM	47	kohm	1/5W	J		C00004736P520	2	
R193L/R	CARBON FILM	47	kohm	1/5W	J		C00004736P520	2	
R198L/R	CARBON FILM	47	kohm	1/5W	J		C00004736P520	2	
R199L/R	CARBON FILM	47	kohm	1/5W	J		C00004736P520	2	

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	CAPACITORS								
C201C	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	1	
C201L/R	ELECTROLYTIC SG	47	μF	16 V	M		D040470083100	2	
C202C	CERAMIC TUBULAR	68	pF	50 V	J		D001680067530	1	
C202L/R	CERAMIC TUBULAR	68	pF	50 V	J		D001680067530	2	
C203C	ELECTROLYTIC SG	33	μF	25 V	M		D040330084100	1	
C203L/R	ELECTROLYTIC SG	33	μF	25 V	M		D040330084100	2	
C204C	ELECTROLYTIC SG	470	μF	10 V	M		D040471082100	1	
C204L/R	ELECTROLYTIC SG	470	μF	10 V	M		D040471082100	2	
C205C	ELECTROLYTIC SG	10	μF	50 V	M		D040100087050	1	
C205L/R	ELECTROLYTIC SG	10	μF	50 V	M		D040100087050	2	
C207C	ELECTROLYTIC SG	4.7	μF	50 V	M		D0404R7087100	1	
C207L/R	ELECTROLYTIC SG	4.7	μF	50 V	M		D0404R7087100	2	
C208C	CERAMIC TUBULAR	12	pF	50 V	J		D001120067530	1	
C208L/R	CERAMIC TUBULAR	12	pF	50 V	J		D001120067530	2	
C209C	ELECTROLYTIC SG	330	μF	50 V	M		D040331087200	1	
C209L/R	ELECTROLYTIC SG	330	μF	50 V	M		D040331087200	2	
C210C	ELECTROLYTIC SG	330	μF	50 V	M		D040331087200	1	
C210L/R	ELECTROLYTIC SG	330	μF	50 V	M		D040331087200	2	
C211C	MYLAR	0.1	μF	63 V	K		D020104078060	1	
C211L/R	MYLAR	0.1	μF	63 V	K		D020104078060	2	
C212L/R	MYLAR	0.047	μF	100 V	J		D02047306C060	2	
C213	ELECTROLYTIC SG	470	μF	10 V	M		D040471082100	1	
C214C	CERAMIC TUBULAR	560	pF	50 V			D005561077530	1	
C214L/R	CERAMIC TUBULAR	560	pF	50 V			D005561077530	2	
C215	ELECTRIC(SG) 5X11	22	μF	50 V	M		D040220087100	1	
C223C	ELECTROLYTIC SG	22	μF	16 V	M		D040220083100	1	
C223L/R	ELECTROLYTIC SG	22	μF	16 V	M		D040220083100	2	
C225C	MYLAR	0.1	μF	63 V	K		D020104078060	1	
C225L/R	MYLAR	0.1	μF	63 V	K		D020104078060	2	
	CONNECTORS								
CN203	LEAD ASS'Y 3P						L022032033320	1	
CN206	HOUSING B'D TO B'D 8P						L101507600800	1	
CN212	HOUSING B'D TO B'D 8P						L101507600800	1	
CP201	WAFER 9P						L101220090000	1	
CP202	WAFER 4P						L101220040000	1	
CP204	WAFER 3P						L104202000310	1	
CP205	WAFER 3P						L104353130300	1	
CP206	WAFER B'D TO B'D 8P						L101507600800	1	
	DIODES								
D201C	SWITCHING,1N4148M						K000414801520	1	
D201L/R	SWITCHING,1N4148M						K000414801520	2	
D202C	SWITCHING,1N4148M						K000414801520	1	
D202L/R	SWITCHING,1N4148M						K000414801520	2	
D203	ZENOR, UZ 9.1 BSC						K06009R124520	1	
D204/D205	SWITCHING,1N4148M						K000414801520	2	
	COILS								
L201L/R	INDUCTOR, 0.47uH						D330R47001020	2	
	TRANSISTORS								
Q201	DTC114YS, NPN						J6020114Y0050	1	
Q203C	KTA1268, PNP						J5001268B0050	1	
Q203L/R	KTA1268, PNP						J5001268B0050	2	
Q204C	KTA1268, PNP						J5001268B0050	1	
Q204L/R	KTA1268, PNP						J5001268B0050	2	
Q205C	KTA1268, PNP						J5001268B0050	1	
Q205L/R	KTA1268, PNP						J5001268B0050	2	
Q206C	BKTA1266/KTA1015Y, PNP						J5001266Y0050	1	
Q206L/R	BKTA1266/KTA1015Y, PNP						J5001266Y0050	2	
Q207C	BKTC3200/KTC2240BL,NPN						J5023200B0050	1	
Q207L/R	BKTC3200/KTC2240BL,NPN						J5023200B0050	2	
Q208C	BKTC3200/KTC2240BL,NPN						J5023200B0050	1	
Q208L/R	BKTC3200/KTC2240BL,NPN						J5023200B0050	2	

REF. NO.	DESCRIPTION	New Part No	Q'ty	Version
Q208C	KTA1268, PNP	J5001268B0050	1	
Q209L/R	KTA1268, PNP	J5001268B0050	2	
Q210C	KTC3206Y, NPN	J5023206Y0050	1	
Q210L/R	KTC3206Y, NPN	J5023206Y0050	2	
Q211C	KTA1024Y, PNP	J5001024Y0050	1	
Q211L/R	KTA1024Y, PNP	J5001024Y0050	2	
Q212C	2SC4137, NPN	J5024137V0130	1	
Q212L/R	2SC4137, NPN	J5024137V0130	2	
Q213C	2SC4883, NPN	J5024883Y0000	1	
Q213L/R	2SC4883, NPN	J5024883Y0000	2	
Q214C	2SA1859, PNP	J5001859Y0000	1	
Q214L/R	2SA1859, PNP	J5001859Y0000	2	
Q215C	2SC3519A, NPN	J5023519Y0000	1	
Q215L/R	2SC3519A, NPN	J5023519Y0000	2	
Q216C	2SA1386A, PNP	J5001386Y0000	1	
Q216L/R	2SA1386A, PNP	J5001386Y0000	2	
Q217C	2SC1740S, NPN	J5021740S0010	1	
Q217L/R	2SC1740S, NPN	J5021740S0010	2	
Q218	BKTA1266/KTA1015Y, PNP	J5001266Y0050	1	
Q219/Q220	2SC1740S, NPN	J5021740S0010	2	
	RESISTORS			
R201C	METAL FILM 1 kohm 1/5W J	C06001026P520	1	
R201L/R	METAL FILM 1 kohm 1/5W J	C06001026P520	2	
R202C	METAL FILM 68 ohm 1/5W J	C06006806P520	1	
R202L/R	METAL FILM 68 ohm 1/5W J	C06006806P520	2	
R203C	CARBON FILM 33 kohm 1/5W J	C00003326P520	1	
R203L/R	CARBON FILM 33 kohm 1/5W J	C00003326P520	2	
R204C	CARBON FILM 10 kohm 1/5W J	C00001036P520	1	
R204L/R	CARBON FILM 10 kohm 1/5W J	C00001036P520	2	
R205C	METAL FILM 150 ohm 1/5W J	C06001516P520	1	
R205L/R	METAL FILM 150 ohm 1/5W J	C06001516P520	2	
R206C	METAL FILM 15 ohm 1/5W J	C06001506P520	1	
R206L/R	METAL FILM 15 ohm 1/5W J	C06001506P520	2	
R207C	METAL FILM 15 ohm 1/5W J	C06001506P520	1	
R207L/R	METAL FILM 15 ohm 1/5W J	C06001506P520	2	
R208C	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R208L/R	CARBON FILM 750 ohm 1/5W J	C00007516P520	2	
R209C	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R209L/R	CARBON FILM 750 ohm 1/5W J	C00007516P520	2	
R210C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R210L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R211C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R211L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R212C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R212L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R213C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R213L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R214C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R214L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R215C	METAL FILM 4.7 kohm 1/5W J	C06004726P520	1	
R215L/R	METAL FILM 4.7 kohm 1/5W J	C06004726P520	2	
R216C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R216L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R217C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R217L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R218C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R218L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R219C	METAL FILM 1.2 kohm 1/5W J	C06001226P520	1	
R219L/R	METAL FILM 1.2 kohm 1/5W J	C06001226P520	2	
R220C	METAL FILM 910 ohm 1/5W J	C06009116P520	1	
R220L/R	METAL FILM 910 ohm 1/5W J	C06009116P520	2	
R221C	METAL FILM 820 ohm 1/5W J	C06008216P520	1	
R221L/R	METAL FILM 820 ohm 1/5W J	C06008216P520	2	
R222C	CARBON FILM 22 kohm 1/5W J	C00002236P520	1	
R222L/R	CARBON FILM 22 kohm 1/5W J	C00002236P520	2	
R223C	CARBON FILM 22 kohm 1/5W J	C00002236P520	1	
R223L/R	CARBON FILM 22 kohm 1/5W J	C00002236P520	2	
R224C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R224L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R227C	MPR DUAL RESISTO 0.39 ohm 5 W J	C144R39069300	1	
R227L/R	MPR DUAL RESISTO 0.39 ohm 5 W J	C144R39069300	2	
R228C	METAL FILM 2.2 kohm 1/5W J	C06002226P520	1	
R228L/R	METAL FILM 2.2 kohm 1/5W J	C06002226P520	2	
R229C	METAL FILM 2.2 kohm 1/5W J	C06002226P520	1	
R229L/R	METAL FILM 2.2 kohm 1/5W J	C06002226P520	2	
R230C	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R230L/R	CARBON FILM 750 ohm 1/5W J	C00007516P520	2	
R231C	CARBON FILM 6.8 kohm 1/5W J	C00006826P520	1	
R231L/R	CARBON FILM 6.8 kohm 1/5W J	C00006826P520	2	
R232	CARBON FILM 68 kohm 1/5W J	C00006836P520	1	
R233	CARBON FILM 100 kohm 1/5W J	C00001046P520	1	
R234	METAL FILM 3.3 kohm 1/5W J	C06003326P520	1	
R235L/R	METAL FILM 22 ohm 1/5W J	C06002206P520	2	
R236L/R	METAL FILM 22 ohm 1/5W J	C06002206P520	2	
R237L/R	METAL FILM 10 ohm 1W J	C060010065520	2	
R238C	CARBON FILM 24 kohm 1/5W J	C00002436P520	1	
R238L/R	CARBON FILM 24 kohm 1/5W J	C00002436P520	2	
R239	METAL FILM 1.5 kohm 1/5W J	C06001526P520	1	
R240	METAL FILM 1 kohm 1/5W J	C06001026P520	1	
R241	METAL FILM 4.7 kohm 1/5W J	C06004726P520	1	
R242	CARBON FILM 6.8 kohm 1/5W J	C00006826P520	1	
R243	CARBON FILM 150 kohm 1/5W J	C00001546P520	1	
R244C	CARBON FILM 33 kohm 1/5W J	C00003326P520	1	
R244L/R	CARBON FILM 33 kohm 1/5W J	C00003326P520	2	
R245C	CARBON FILM 3 kohm 1/5W J	C00003026P520	1	
R245L/R	CARBON FILM 3 kohm 1/5W J	C00003026P520	2	
R246C	METAL FILM 560 ohm 1/5W J	C06005616P520	1	
R246L/R	METAL FILM 560 ohm 1/5W J	C06005616P520	2	
R247C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R247L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R248C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R248L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R249C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R249L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R250C	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R250L/R	METAL FILM 82 ohm 1/5W J	C06008206P520	2	
R251C	CARBON FILM 33 kohm 1/5W J	C00003326P520	1	
R251L/R	CARBON FILM 33 kohm 1/5W J	C00003326P520	2	
R252	CARBON FILM 10 kohm 1/5W J	C00001036P520	1	
[illegible]				
	CAPACITORS			
C201SL	ELECTROLYTIC SG 47 µF 16 V M	D040470083100	1	
C202SL	CERAMIC TUBULAR 100 pF 50 V	D001101077530	1	
C203SL	ELECTRIC(SG) 6X11 33 µF 25 V M	D040330084100	1	
C204SL	ELECTROLYTIC SG 470 µF 10 V M	D040471082100	1	
C205SL	ELECTROLYTIC SG 10 µF 50 V M	D040100087050	1	
C206SL	CERAMIC TUBULAR 47 pF 50 V	D001470067530	1	
C208SL	CERAMIC TUBULAR 12 pF 50 V J	D001120067530	1	
C209SL	ELECTRIC(SG) 10X20 330 µF 50 V M	D040331087200	1	
C210SL	ELECTRIC(SG) 10X20 330 µF 50 V M	D040331087200	1	
C211SL	MYLAR 0.1 µF 63 V K	D020104078060	1	
C214SL	CERAMIC TUBULAR 560 pF 50 V	D005561077530	1	
C223SL	ELECTROLYTIC SG 22 µF 16 V M	D040220083100	1	
C225SL	MYLAR 0.1 µF 63 V K	D020104078060	1	
	CONNECTORS			
CP203	WAFER 3P	L101220030000	1	
CP209	WAFER 3P	L101220030000	1	
CP210	WAFER 2P	L104353130200	1	
CP211	WAFER 3P	L104353130300	1	
	DIODES			
D201SL	SWITCHING, 1N4148M	K000414801520	1	
D202SL	SWITCHING, 1N4148M	K000414801520	1	
	COIL			
L201SL	INDUCTOR, 0.47uH	D330R47001020	1	
	TRANSISTORS			
Q203SL	KTA1268, PNP	J5001268B0050	1	
Q204SL	KTA1268, PNP	J5001268B0050	1	
Q205SL	KTA1268, PNP	J5001268B0050	1	
Q206SL	BKTA1266/KTA1015Y, PNP	J5001266Y0050	1	
Q207SL	BKTC3200/KTC2240BL, NPN	J5023200B0050	1	
Q208SL	BKTC3200/KTC2240BL, NPN	J5023200B0050	1	
Q210SL	KTC3206Y, NPN	J5023206Y0050	1	
Q211SL	KTA1024Y, PNP	J5001024Y0050	1	
Q212SL	2SC4137, NPN	J5024137V0130	1	
Q215SL	2SD2390	J5032390Y0000	1	
Q216SL	2SB1560	J5011560Y0000	1	
Q217SL	2SC1740S, NPN	J5021740S0010	1	
	RESISTORS			
R201SL	METAL FILM 1 kohm 1/5W J	C06001026P520	1	
R202SL	METAL FILM 68 ohm 1/5W J	C06006806P520	1	
R203SL	CARBON FILM 33 kohm 1/5W J	C00003326P520	1	
R204SL	CARBON FILM 10 kohm 1/5W J	C00001036P520	1	
R205SL	METAL FILM 150 ohm 1/5W J	C06001516P520	1	
R206SL	METAL FILM 15 ohm 1/5W J	C06001506P520	1	
R207SL	METAL FILM 15 ohm 1/5W J	C06001506P520	1	
R208SL	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R209SL	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R210SL	METAL FILM 560 ohm 1/5W J	C06005616P520	5	
-R214SL				
R217SL	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R218SL	METAL FILM 82 ohm 1/5W J	C06008206P520	1	
R219SL	METAL FILM 1.2 kohm 1/5W J	C06001226P520	1	
R220SL	METAL FILM 470 ohm 1/5W J	C06004716P520	1	
R222SL	CARBON FILM 22 kohm 1/5W J	C00002236P520	1	
R223SL	CARBON FILM 22 kohm 1/5W J	C00002236P520	1	
R225SL	METAL FILM 3.3 ohm 1/5W J	C0503R306P520	1	
R226SL	METAL FILM 3.3 ohm 1/5W J	C0503R306P520	1	
R227SL	MPR DUAL RESISTO 0.33 ohm 5 W J	C144R33069300	1	
R228SL	METAL FILM 1.8 kohm 1/5W J	C06001826P520	1	
R229SL	METAL FILM 2.2 kohm 1/5W J	C06002226P520	1	
R230SL	CARBON FILM 750 ohm 1/5W J	C00007516P520	1	
R231SL	CARBON FILM 6.8 kohm 1/5W J	C00006826P520	1	
R235SL	METAL FILM 10 ohm 1W J	C060010065520	1	
R238SL	CARBON FILM 24 kohm 1/5W J	C00002436P520	1	
R244SL	CARBON FILM 33 kohm 1/5W J	C00003326P520	1	

REF. NO.	DESCRIPTION					New Part No	Q'ty	Version
R245SL	CARBON FILM	3	kohm	1/5W	J	C00003D26P520	1	
R246SL	METAL FILM	560	ohm	1/5W	J	C06005616P520	1	
R247SL	METAL FILM	47	ohm	1W	J	C06004706S520	1	
R249SL	METAL FILM	47	ohm	1W	J	C06004706S520	1	
R251SL	CARBON FILM	33	kohm	1/5W	J	C00003326P520	1	
	CAPACITORS							
C301	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	1	
C302	ELECTROLYTIC SG	1	µF	50 V	M	D040010057050	1	
C303	CERAMIC TUBULAR	0.047	µF	50 V		D005473097530	1	
C304	CERAMIC TUBULAR	0.022	µF	25 V		D005223574530	1	
C305	ELECTROLYTIC SG	0.047	µF	5.5 V	M	D090473700200	1	
C306	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C307	CERAMIC TUBULAR	0.047	µF	50 V		D005473097530	1	
C308	ELECTROLYTIC SG	100	µF	10 V	M	D040101082060	1	
C309	CERAMIC TUBULAR	1000	pF	50 V		D005102077530	1	
C310	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	
C311	ELECTROLYTIC SSE	1	µF	50 V	M	D040010087020	1	
	CONNECTORS							
CN301	FFC-52045-25					L301188253090	1	
CN303	LEAD ASS'Y 10P					L022103633320	1	
CN304	LEAD ASS'Y 8P					L022083533320	1	
CP301	FFC WAFER 25P					L131520452500	1	
CP302	WAFER 5P					L101220050010	1	
	DIODES							
D303/D304	SLR-34URCF25					K500032101120	2	
D305-D315	SWITCHING, 1N4148M					K000414801520	11	
D316-D324	SLR-34PGF25					K500035100000	9	
D325	SLR-34URCF25					K500032101120	1	
D326	ZENER, UZ 4.3BSB					K06004R314520	1	
	INTEGRATED CIRCUIT							
IC301	CXP82432A-153Q DWP467					J020824321530	1	
	COILS							
L301/L302	INDUCTOR 1mH(04)					D330102001040	1	
	TRANSISTORS							
Q301	2SC1740S, NPN					J502174080010	1	
Q302-Q310	DTC114YS, NPN					J6020114Y0050	9	
	RESISTORS							
R301/R302	METAL FILM	820	ohm	1/5W	J	C06008216P520	2	
R303	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R304	METAL FILM	330	ohm	1/5W	J	C06003316P520	1	
R305-R308	CARBON FILM	10	kohm	1/5W	J	C00001036P520	4	
R309	METAL FILM	3.9	kohm	1/5W	J	C06003926P520	1	
R310/R311	CARBON FILM	47	kohm	1/5W	J	C00004736P520	2	
R312	CARBON FILM	43	kohm	1/5W	J	C00004336P520	1	
R313/R314	CARBON FILM	15	kohm	1/5W	J	C00001536P520	2	
R315	CARBON FILM	47	kohm	1/5W	J	C00004736P520	1	
R316	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R317	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R318-R326	CARBON FILM	100	kohm	1/5W	J	C00001046P520	9	
R327	CARBON FILM	47	kohm	1/5W	J	C00004736P520	1	
R328-R338	CARBON FILM	100	kohm	1/5W	J	C00001046P520	11	
R339-R348	METAL FILM	820	ohm	1/5W	J	C06008216P520	10	
R349	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R350	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R351	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R352	METAL FILM	4.7	kohm	1/5W	J	C06004726P520	1	
R353-R360	CARBON FILM	220	kohm	1/5W	J	C00002246P520	8	
R361	METAL FILM	100	ohm	1/5W	J	C06001016P520	1	
	MISCELLANEOUS							
FL301	CM1564C					K530001790010	1	
RMC301	MODULE CRV1G342-185BD					E940342210000	1	
SW302	SKHV10910D1 KB581					G180040500010	1	
SW303	SKHV10910D1 KB581					G180040500010	1	
SW305	SKHV10910D1 KB581					G180040500010	31	
-SW335								
X301	RESONATOR, CST10M					E630100000050	1	
CN406	LEAD ASS'Y					L010023521660	1	
R371	METAL FILM	220	ohm	1/5W	J	C06002216P520	1	
R372	METAL FILM	270	ohm	1/5W	J	C06002716P520	1	
Q371	DTC114YS, NPN					J6020114Y0050	1	
Q372	DTC114YS, NPN					J6020114Y0050	1	
D371	SPR-54MDW3					K500055106050	1	
CN302	LEAD ASS'Y 5P					L022051433320	1	
SW371	SKHV10910D1 KB581					G180040500010	1	
C396	CERAMIC DISC	0.1	µF	50 V	Z	D004104097060	1	

REF. NO.	DESCRIPTION					New Part No	Q'ty	Version
CN205	LEAD ASS'Y 3P					L020033041660	1	
CN207	LEAD ASS'Y 3P					L020034541660	1	
R395L/R	METAL FILM	470	ohm	2W	J	C06004716S520	2	
R396L/R	METAL FILM	1.5	kohm	1/5W	J	C06001526P520	2	
C382-C384	CERAMIC DISC	0.005	µF	50 V	Z	D004472097060	3	
R386C	METAL FILM	22	ohm	1/5W	J	C06002206P520	1	
R387C	METAL FILM	22	ohm	1/5W	J	C06002206P520	1	
R388C	METAL FILM	10	ohm	1W	J	C06001065520	1	
L303C	INDUCTOR, 0.47uH					D330R47001020	1	
CN101	LEAD ASS'Y 3P					L020033041660	1	
CN204	LEAD ASS'Y 3P					L021031833310	1	
CP207	WAFER 3P					L104202000310	1	
C361	ELECTROLYTIC SSE	47	µF	16 V	M	D040470083020	1	
C362L/R	CERAMIC TUBULAR	100	pF	50 V		D001101077530	2	
C363-C365	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	3	
R365L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R366	METAL FILM	75	ohm	1/5W	J	C06007506P520	1	
D361-D364	SWITCHING, 1N4148M					K000414801520	4	
CN105	LEAD ASS'Y 6P					L012063577320	1	
C391L/R	CERAMIC TUBULAR	330	pF	50 V	K		2	
C392L/R	MYLAR BOX	0.1	µF	63 V	J	D020154068050	2	
R391L/R	CARBON FILM	33	kohm	1/5W	J	C00003326P520	2	
R392L/R	CARBON FILM	3.3	kohm	1/5W	J	C00003326P520	2	
CP503	WAFER 5P					L101220050000	1	
R382	METAL FILM	47	ohm	1/5W	J	C06004706P520	1	
R383	METAL FILM	270	ohm	1/5W	J	C06002716P520	1	
R384	METAL FILM	3.9	kohm	1/5W	J	C06003926P520	1	
D381	SWITCHING, 1N4148M					K000414801520	1	
Q381	KRA107M/DTA114YS,PNP					J601107M00050	1	
IC302	LTV817					K814817000001	1	
CP501	WAFER 3P					L101220030000	1	
C501-C504	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	4	
C505	POLY	680	pF	50 V	J	D022681067050	1	
C506/C507	MYLAR BOX	0.1	µF	63 V	J	D020104068050	2	
C508	POLY	680	pF	50 V	J	D022681067050	1	
C509/C510	MYLAR BOX	0.1	µF	63 V	J	D020104068050	2	
C511	ELECTROLYTIC SG	22	µF	16 V	M	D040220083100	1	
C512	ELECTROLYTIC SG	220	µF	16 V	M	D040221083100	1	
C513	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	1	
C514	MYLAR	0.005	µF	100 V	J	D02047206C060	1	
C515	ELECTROLYTIC SG	22	µF	16 V	M	D040220083100	1	
C516/C517	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	2	
C518/C519	MYLAR BOX	0.1	µF	63 V	J	D020104068050	2	
C520	ELECTROLYTIC SG	10	µF	35 V	M	D040100085100	1	
C521	ELECTROLYTIC SG	220	µF	10 V	M	D040221082100	1	
C522	CERAMIC TUBULAR	560	pF	50 V		D005561077530	1	
C523	MYLAR	0.006	µF	100 V	J	D02056206C060	1	
C524	MYLAR	0.047	µF	100V	J	D02047306C060	1	
C525	MYLAR BOX	0.68	µF	63 V	J	D020684068050	1	
C526/C527	MYLAR BOX	0.22	µF	63 V	J	D020224068050	2	
C528/C529	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C530/C531	MYLAR BOX	0.22	µF	63 V	J	D020224068050	2	
C532	MYLAR BOX	0.1	µF	63 V	J	D020104068050	1	
C533/C534	MYLAR BOX	0.047	µF	63 V	J	D020473068050	2	
C535/C536	MYLAR BOX	0.1	µF	63 V	J	D020104068050	2	
C537/C538	MYLAR	0.002	µF	100 V	J	D02022206C060	2	
C539	MYLAR BOX	0.1	µF	63 V	J	D020104068050	1	
C540	MYLAR	0.001	µF	100 V	J	D02010206C060	1	
C541	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	1	
C542	MYLAR	0.006	µF	100 V	J	D02056206C060	1	
C543	CERAMIC TUBULAR	560	pF	50 V		D005561077530	1	
C544	MYLAR BOX	0.1	µF	63 V	J	D020104068050	1	
C545/C546	MYLAR BOX	0.047	µF	63 V	J	D020473068050	2	
C547	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	1	
C548	MYLAR BOX	0.1	µF	63 V	J	D020104068050	1	
C549	CERAMIC TUBULAR	560	pF	50 V		D005561077530	1	
C550	MYLAR	0.002	µF	100 V	J	D02022206C060	1	
C551	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C552	ELECTROLYTIC SG	100	µF	10 V	M	D040101082060	1	
C553	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C554	ELECTROLYTIC SG	100	µF	10 V	M	D040101082060	1	
C555/C556	CERAMIC TUBULAR	220	pF	50 V		D005221077530	1	
C557	CERAMIC TUBULAR	100	pF	50 V		D001101077530	1	
C558/C559	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	1	
C560	ELECTROLYTIC SG	0.47	µF	50 V	M	D040R47087100	1	
C561	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	
C562	CERAMIC TUBULAR	680	pF	50 V		D005681077530	1	
C563	CERAMIC TUBULAR	100	pF	50 V		D001101077530	1	
C564	ELECTROLYTIC SG	0.47	µF	50 V	M	D040R47087100	1	
C565	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	

REF. NO.	DESCRIPTION					New Part No	Q't	Version
C566	ELECTROLYTIC SG	100	µF	10 V	M	D040101082060	1	
C567	ELECTROLYTIC SG	100	µF	16 V	M	D040101083100	1	
C568	ELECTROLYTIC SG	100	µF	10 V	M	D040101082060	1	
C569-C576	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	8	
C577	ELECTROLYTIC SG	0.47	µF	50 V	M	D040R47087100	1	
C578	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	
C579	CERAMIC TUBULAR	1000	pF	50 V		D005102077530	1	
C580	CERAMIC TUBULAR	100	pF	50 V		D005101077530	1	
C581	ELECTROLYTIC SG	0.47	µF	50 V	M	D040R47087100	1	
C582	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	
C583	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C584/C585	ELECTROLYTIC SG	1	µF	50 V	M	D040010087050	2	
C586	ELECTROLYTIC SG	220	µF	16 V	M	D040221083100	1	
C587	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C588	ELECTROLYTIC SG	47	µF	35 V	M	D040470085100	1	
C589	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C591	ELECTROLYTIC SG	10	µF	50 V	M	D040100087050	1	
C592	ELECTROLYTIC SG	0.47	µF	50 V	M	D040R47087100	1	
	CONNECTORS							
CN102	HOUSING, 8P					L122524190800	1	
CN107	HOUSING, 8P					L122524190800	1	
CN502	LEAD ASS'Y, 12P					L022120833320	1	
CN503	LEAD ASS'Y, 5P					L022051033320	1	
CP106	WAFER 3P					L101220030000	1	
CP303	WAFER 10P					L101220100000	1	
CP504	WAFER 9P					L101220090000	1	
	DIODE							
D501	SWITCHING, 1N4148M					K000414801520	1	
D502	ZENER, UZ 11.0 BSC					K060110024520	1	
D503	SWITCHING, 1N4148M					K000414801520	1	
	INTEGRATED CIRCUITS							
IC501	LC4966					J080496600000	1	
IC502	NJW1102AFG1					J081110200000	1	
IC503	NJU9702G					J120970200010	1	
IC504	KIA4559P/KIA75559P					J121455900010	1	
IC505	TA7291S, MOTOR DRIVER					J127729100000	1	
IC506	NJM2068DD					J121206800000		
IC507	KIA4559P/KIA75559P					J121455900010	1	
IC508	TC9299P					J084929900000	1	
	TRANSISTORS							
Q501	DTC114YS, NPN					J6020114Y0050	1	
Q502	DTA114YS/KRA107M, PNP					J6000114Y0010	1	
Q503/Q504	DTC114YS, NPN					J6020114Y0050	2	
	RESISTORS							
R501/R502	METAL FILM	100	ohm	1/5W	J	C06001016P520	2	
R503	CARBON FILM	150	kohm	1/5W	J	C00001546P520	1	
R504/R505	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R506	CARBON FILM	15	kohm	1/5W	J	C00001536P520	1	
R507	CARBON FILM	47	kohm	1/5W	J	C00004736P520	1	
R508	CARBON FILM	7.5	kohm	1/5W	J	C00007526P520	1	
R509	CARBON FILM	15	kohm	1/5W	J	C00001536P520	1	
R510	CARBON FILM	47	kohm	1/5W	J	C00004736P520	1	
R511	CARBON FILM	7.5	kohm	1/5W	J	C00007526P520	1	
R512/R513	CARBON FILM	22	kohm	1/5W	J	C00002236P520	2	
R514	CARBON FILM	4.7	ohm	1/5W	J	C00004756P520	1	
R515	CARBON FILM	3	kohm	1/5W	J	C00003026P520	1	
R516	METAL FILM	82	ohm	1/5W	J	C06006206P520	1	
R517	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R518	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R519	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R520	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R521	METAL FILM	4.7	kohm	1/5W	J	C06004726P520	1	
R522	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R523	CARBON FILM	15	kohm	1/5W	J	C00001536P520	1	
R524	CARBON FILM	22	kohm	1/5W	J	C00002236P520	1	
R525	CARBON FILM	330	kohm	1/5W	J	C00003346P520	1	
R526/R527	CARBON FILM	15	kohm	1/5W	J	C00001536P520	2	
R528	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R529	CARBON FILM	15	kohm	1/5W	J	C00001536P520	1	
R530/R531	METAL FILM	22	ohm	1/5W	J	C06002206P520	2	
R532	CARBON FILM	15	kohm	1/5W	J	C00001536P520	1	
R533	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R534	CARBON FILM	43	kohm	1/5W	J	C00004336P520	1	
R535/R536	METAL FILM	100	ohm	1/5W	J	C06001016P520	1	
R537	CARBON FILM	1	ohm	1/5W	J	C00001058P520	1	
R538-R540	METAL FILM	1	kohm	1/5W	J	C06001026P520	3	
R541/R542	METAL FILM	100	ohm	1/5W	J	C06001016P520	1	
R543/R544	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R545/R546	CARBON FILM	3.6	kohm	1/5W	J	C00003626P520	1	
R547/R548	METAL FILM	1.2	kohm	1/5W	J	C06001226P520	1	
R549	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R550	CARBON FILM	100	kohm	1/5W	J	C00001046P520	1	
R551	METAL FILM	4.7	ohm	1/5W	J	C0604R706P520	1	
R552	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R553/R554	METAL FILM	100	ohm	1/5W	J	C06001016P520	2	
R555-R558	CARBON FILM	100	kohm	1/5W	J	C00001046P520	4	
R559/R560	METAL FILM	100	ohm	1/5W	J	C06001016P520	2	

REF. NO.	DESCRIPTION					New Part No	Q't	Version
R561/R562	CARBON FILM	47	kohm	1/5W	J	C00004736P520	2	
R563/R564	METAL FILM	820	ohm	1/5W	J	C06008216P520	2	
R565	CARBON FILM	9.1	kohm	1/5W	J	C00009126P520	1	
R566	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R567-R570	CARBON FILM	100	kohm	1/5W	J	C00001046P520	4	
R571/R572	METAL FILM	4.7	kohm	1/5W	J	C06004726P520	2	
R573/R574	METAL FILM	5.1	kohm	1/5W	J	C06005126P520	2	
R575	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R576/R577	METAL FILM	100	ohm	1/5W	J	C06001016P520	2	
R578-R580	METAL FILM	1	kohm	1/5W	J	C06001026P520	3	
R581/R582	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R591/R592	CARBON FILM	5.1	kohm	1/5W	J	C00005126P520	2	
	MISCELLANEOUS							
X501	RESONATOR, CST2M					E630200000050	1	
	[illegible]							
C602	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C604/C605	ELECTROLYTIC SG	2.2	µF	50 V	M	D0402R2087100	2	
C606/C607	ELECTRIC(SG)10X12.	470	µF	16 V	M	D040471083200	2	
C620	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C622	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
R602-R605	METAL FILM	75	ohm	1/5W	J	C06007506P520	4	
R606/R607	METAL FILM	100	ohm	1/5W	J	C06001016P520	2	
Q601	8KTA1266/KTA1015Y, PNP					J5001266Y0050	1	
Q602	8KTA1266/KTA1015Y, PNP					J5001266Y0050	1	
L601	INDUCTOR, 100UH					D330101001020	1	
IC601	BA7625					J121206800000	1	
CN104	LEAD ASS'Y, 9P					L022091433320	1	
	[illegible]							
C701L/R	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C702L/R	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C703L/R	CERAMIC TUBULAR	22	pF	50 V	J	D005220067530	2	
C704L/R	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C705L/R	MYLAR BOX	0.033	µF	63 V	J	D020333068050	2	
C706L/R	MYLAR BOX	0.1	µF	63 V	J	D020154068050	2	
C707L/R	MYLAR BOX	0.004	µF	63 V	J	D02039206C050	2	
C708L/R	MYLAR BOX	0.018	µF	100 V	J	D02018306C050	2	
C709L/R	CERAMIC DISC	100	pF	50 V	J	D004101067060	2	
C710/C711	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	2	
	CONNECTOR							
CN504	LEAD ASS'Y, 9P					L012092258320	1	
	INTEGRATED CIRCUIT							
IC701	KIA4559P/KIA75559P					J121455900010	1	
	RESISTORS							
R701L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R702L/R	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R703L/R	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R704L/R	CARBON FILM	1	ohm	1/5W	J	C00001058P520	2	
R705L/R	CARBON FILM	18	kohm	1/5W	J	C00001836P520	2	
R706L/R	METAL FILM	3.9	kohm	1/5W	J	C06003926P520	2	
R707L/R	METAL FILM	1.2	kohm	1/5W	J	C06001226P520	2	
R708L/R	METAL FILM	560	ohm	1/5W	J	C06005616P520	2	
R709L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R710L/R	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R711/R712	METAL FILM	470	ohm	1/5W	J	C06004716P520	2	
	[illegible]							
C721C/SL	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C722C/SL	CERAMIC TUBULAR	100	pF	50 V		D001101077530	2	
C723C/SL	CERAMIC TUBULAR	100	pF	50 V		D001101077530	2	
C724C/SL	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C725C/SL	CERAMIC TUBULAR	100	pF	50 V		D001101077530	2	
C726/C727	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	2	
C728L/R	CERAMIC DISC	100	pF	50 V	J	D004101067060	2	
C729L/R	CERAMIC TUBULAR	150	pF	50 V	K	D005151077530	2	
C730L/R	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	2	
C731L/R	CERAMIC TUBULAR	1000	pF	50 V		D005102077530	2	
C732L/R	ELECTROLYTIC SG	4.7	µF	50 V	M	D0404R7087100	2	
C733/C734	ELECTROLYTIC SG	47	µF	16 V	M	D040470083100	2	
C735C	CERAMIC DISC	100	pF	50 V	J	D004101067060	1	
C735L/R	CERAMIC DISC	100	pF	50 V	J	D004101067060	2	
C735SL	CERAMIC DISC	100	pF	50 V	J	D004101067060	2	
C736L/R	CERAMIC DISC	100	pF	50 V	J	D004101067060	2	
C737	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
C737C/SL	CERAMIC TUBULAR	1000	pF	50 V		D005102077530	2	
C738	CERAMIC TUBULAR	0.1	µF	50 V		D005104097530	1	
	CONNECTOR							
CN201	LEAD ASS'Y, 9P					L012092258320	1	
CN209	LEAD ASS'Y, 3P					L021035071320	1	
CP502	WAFER 12P					L101220120000	1	
	INTEGRATED CIRCUITS							
IC721	KIA4559S/KIA75559P					J121455900010	1	
IC722	KIA4559S/KIA75559P					J121455900010	1	
	RESISTORS							

REF. NO.	DESCRIPTION					New Part No	Q't	Version
R721C/SL	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R722C/SL	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R723C/SL	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R724C/SL	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R725C/SL	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R726C/SL	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R727/R728	METAL FILM	470	ohm	1/5W	J	C06004716P520	2	
R729C	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	1	
R729L/R	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	2	
R729SL	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	2	
R730	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	1	
R730C/SL	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	2	
R731	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R731C/SL	CARBON FILM	10	kohm	1/5W	J	C00001036P520	2	
R732L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R733L/R	CARBON FILM	47	kohm	1/5W	J	C00004736P520	2	
R734L/R	CARBON FILM	100	kohm	1/5W	J	C00001046P520	2	
R735/R736	METAL FILM	470	ohm	1/5W	J	C06004716P520	2	
R737C	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R737L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
R737SL	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R738L/R	METAL FILM	1	kohm	1/5W	J	C06001026P520	2	
	DIODE							
D721	SWITCHING, 1N4148M					K000414801520	1	
D721C/SL	SWITCHING, 1N4148M					K000414801520	2	
	TRANSISTORS							
Q721C/SL	DTC323TS, NPN					J602323TS0050	2	
Q722C	KTD1302, NPN					J5031302B005A	1	
Q722L/R	KTD1302, NPN					J5031302B005A	2	
Q722SL	KTD1302, NPN					J5031302B005A	1	
Q723	DTA114YS/KRA107M, PNP					J6000114Y0010	1	
Q723C/SL	DTA114YS/KRA107M, PNP					J6000114Y0010	2	
Q724	2SC1740S, NPN					J5021740S0010	1	
Q724C/SL	2SC1740S, NPN					J5021740S0010	2	
Q725L/R	DTC323TS, NPN					J602323TS0050	2	

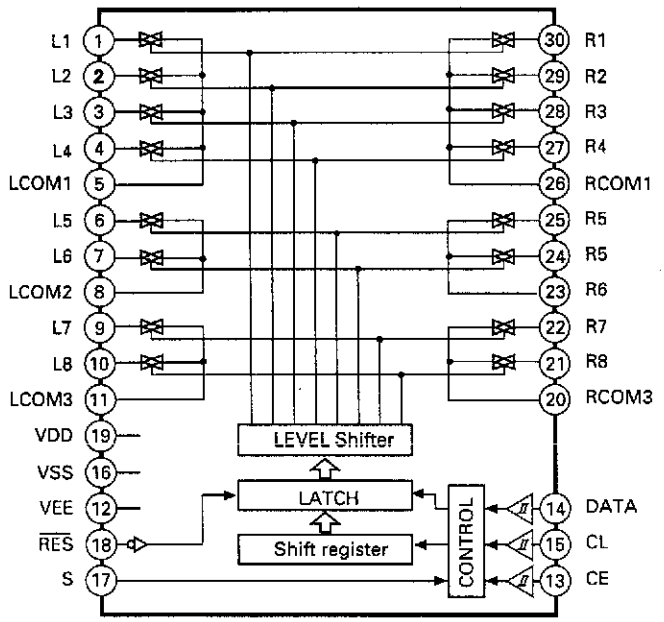
PCB(PCB13) ASSEMBLY(SURROUND)

C761	CERAMIC(RADIAL)	0.005	μF	400 V	Z	D00847208K040	1	
C762/C763	MYLAR	0.047	μF	100 V	J	D02047306C060	2	
C764	ELECTRIC(SG) 13X20	1000	μF	25 V	M	D040102084200	1	
C769	ELECTROLYTIC SG	10	μF	50 V	M	D040100087050	1	
C770	ELECTROLYTIC SG	47	μF	50 V	M	D040470087100	1	
C771	CERAMIC(RADIAL)	0.005	μF	400 V	Z	D00847208K040	1	
C773	MYLAR	0.22	μF	63 V	M	D020224078060	1	
C774	CERAMIC(RADIAL)	0.005	μF	400 V	Z	D00847208K040	1	
C775	MYLAR	0.1	μF	250 V	K	D02010407H080	1	
C776	CERAMIC(RADIAL)	0.005	μF	400 V	Z	D00847208K040	1	
	DIODES							
D761	SWITCHING, 1N4148M					K000414801520	1	
D762/D763	RECTIFIER, 1N4003					K040400300520	2	
D766	SWITCHING, 1N4148M					K000414801520	1	
D768	ZENER, UZ 9.1 BSC					K06009R124520	1	
D769	ZENER, UZ 30.0 BSD					K060300034520	1	
D770	RECTIFIER, 1N4003					K040400300520	1	
D771	SWITCHING, 1N4148M					K000414801520	1	
D773	RECTIFIER, 1N4003					K040400300520	1	
	FUSES							
F761	SB6A/125V					G650632121150	1	AVR40(USA Only)
F762/F763	SB2.5A/125V					G650252251140	2	
F764/F765	SB250mA/125V					G650251251140	2	
	INTEGRATED CIRCUIT							
IC761	GL7805					J126780500260	1	
	TRANSISTORS							
Q761	2SC1740S, NPN					J5021740S0010	1	
Q764	MPSA56, PNP					J5005600Y0050	1	
	RESISTORS							
R761	METAL FILM	3.3	ohm	1/2W	J	C060033574530	1	
R762	METAL FILM	120	ohm	1/5W	J	C06001216P520	1	
R763	METAL FILM	3.3	kohm	1/5W	J	C06003326P520	1	
R764	METAL FILM	56	ohm	1/5W	J	C06005606P520	1	
R766	METAL FILM	56	ohm	1/5W	J	C06005606P520	1	
R769	METAL FILM	1	kohm	1/5W	J	C06001026P520	1	
R770	CARBON FILM	10	kohm	1/5W	J	C00001036P520	1	
R771	METAL FILM	4.7	kohm	1/5W	J	C06004726P520	1	
	CONNECTOR							
CN103	LEAD ASS'Y					L022024533320	1	
CP301	FFC WAFER 25P					L131520452500	1	
CP304	WAFER 8P					L101220080000	1	
CP401	FFC WAFER 25P					L104353130300	1	
CP402	WAFER 4P					L102526703010	1	
CP406	WAFER 3P					L104353130300	1	

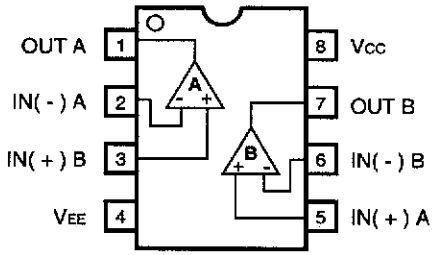
REF. NO.	DESCRIPTION	New Part No	Q't	Version
★ THE ASS'Y PCB *FRONT(PCB5)* INCLUDE BELOWS.				
(1) THE ASS'Y PCB POWER PUSH-SW(PCB6).				
(2) THE ASS'Y PCB ST-BY SW(PCB7).				
(3) THE ASS'Y PCB HEAD-PHONE(PCB8).				
(4) THE ASS'Y PCB SPKR-TER(PCB9).				
(5) THE ASS'Y PCB CAM(PCB10) .				
(6) THE ASS'Y PCB LOUDNESS(PCB11).				
(7) THE ASS'Y PCB RMC(PCB12).				
(8) THE ASS'Y PCB VIDEO(PCB14).				
★ THE ASS'Y PCB *SURROUND(PCB13)* INCLUDE BELOWS.				
(1) THE ASS'Y PCB TONE(PCB15)				
(2) THE ASS'Y PCB PRE IN/OUT(PCB16).				
(3) THE ASS'Y PCB ST-BY(PCB17).				

IC FUNCTIONAL BLOCK DIAGRAM

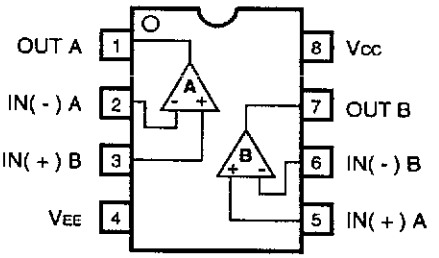
IC102, IC103 : LC7821



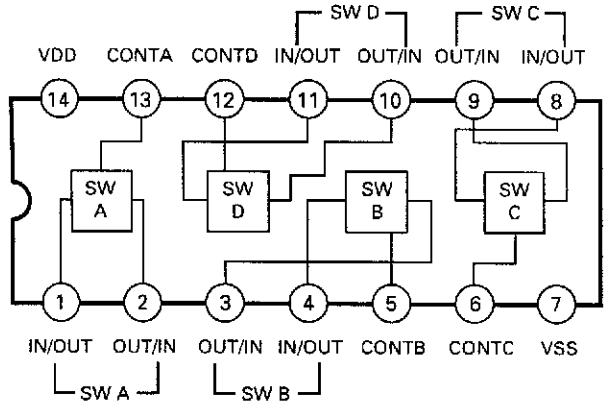
IC105, IC506 : NJM2068DD



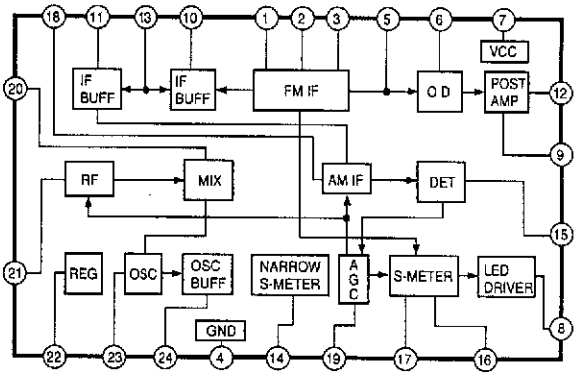
IC106L/R, IC701, IC721, IC722, IC504, IC507 : KIA4559P



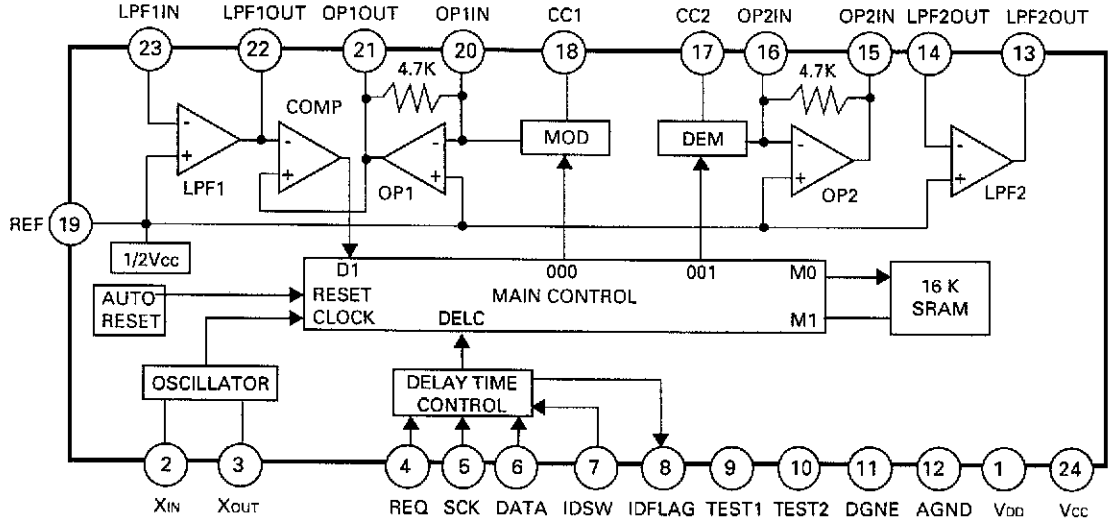
IC501 : LC4966B



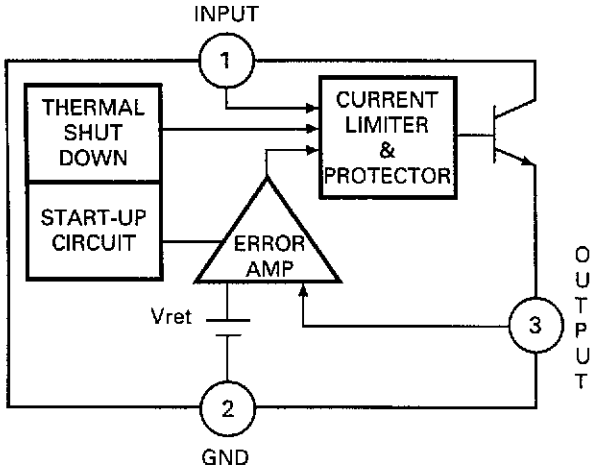
IC2 : LA1266G



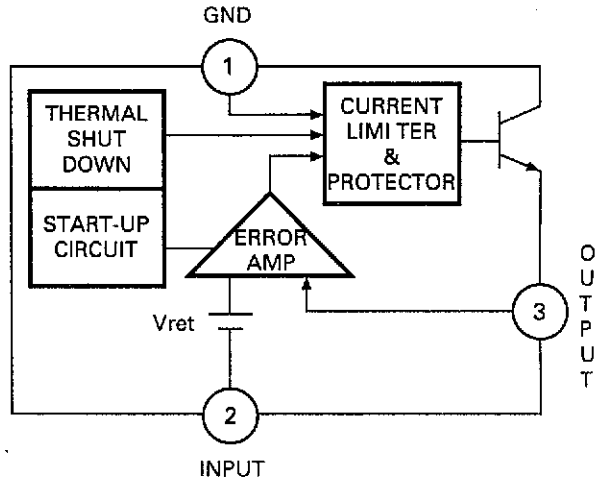
IC503 : NJU9702



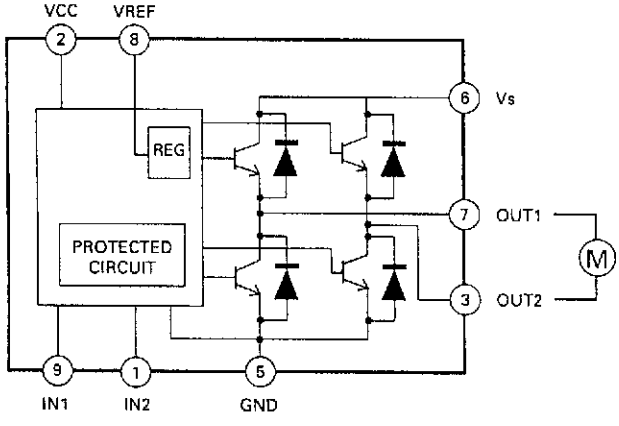
IC110 : KA7806PI
IC108 : KA7815PI
IC761 : GD7805



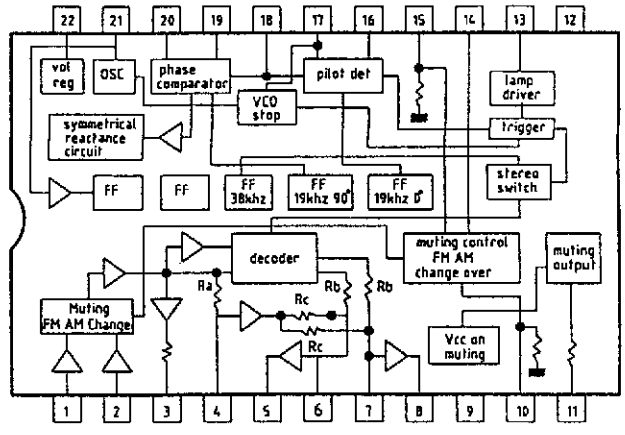
IC109 : KA7915PI



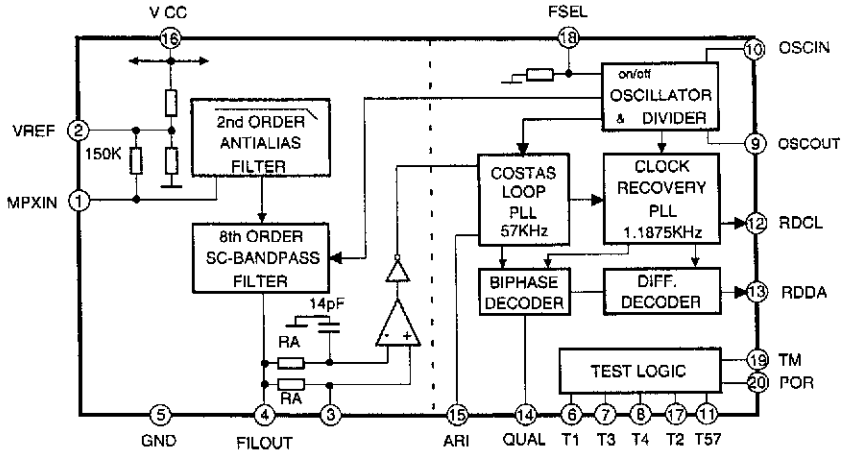
IC505 : TA7291S



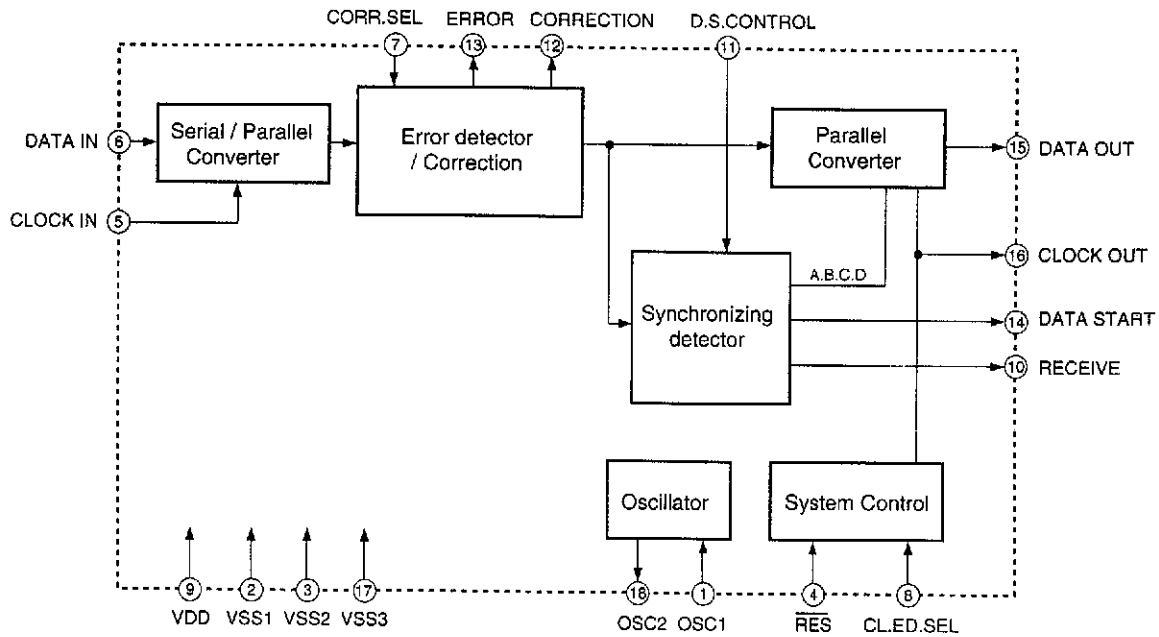
IC3 : LA3401



IC4D : TDA7330BD



IC5D : LC7073M

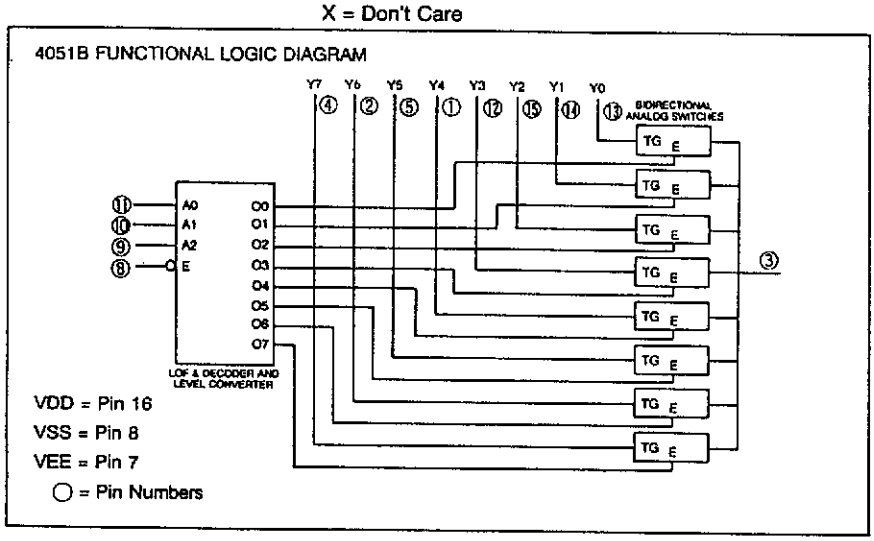


IC107L/R : GD4051

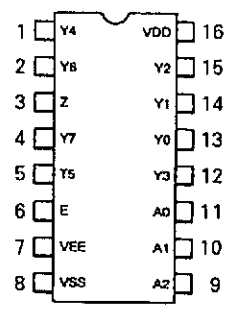
TRUTH TABLE

INPUTS				CHANNELS							
E	A_2	A_1	A_0	Y_0-Z	Y_1-Z	Y_2-Z	Y_3-Z	Y_4-Z	Y_5-Z	Y_6-Z	Y_7-Z
L	L	L	L	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
L	L	L	H	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
L	L	H	L	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
L	L	H	H	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
L	H	L	L	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
L	H	L	H	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
L	H	H	L	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
L	H	H	H	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
H	X	X	X	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

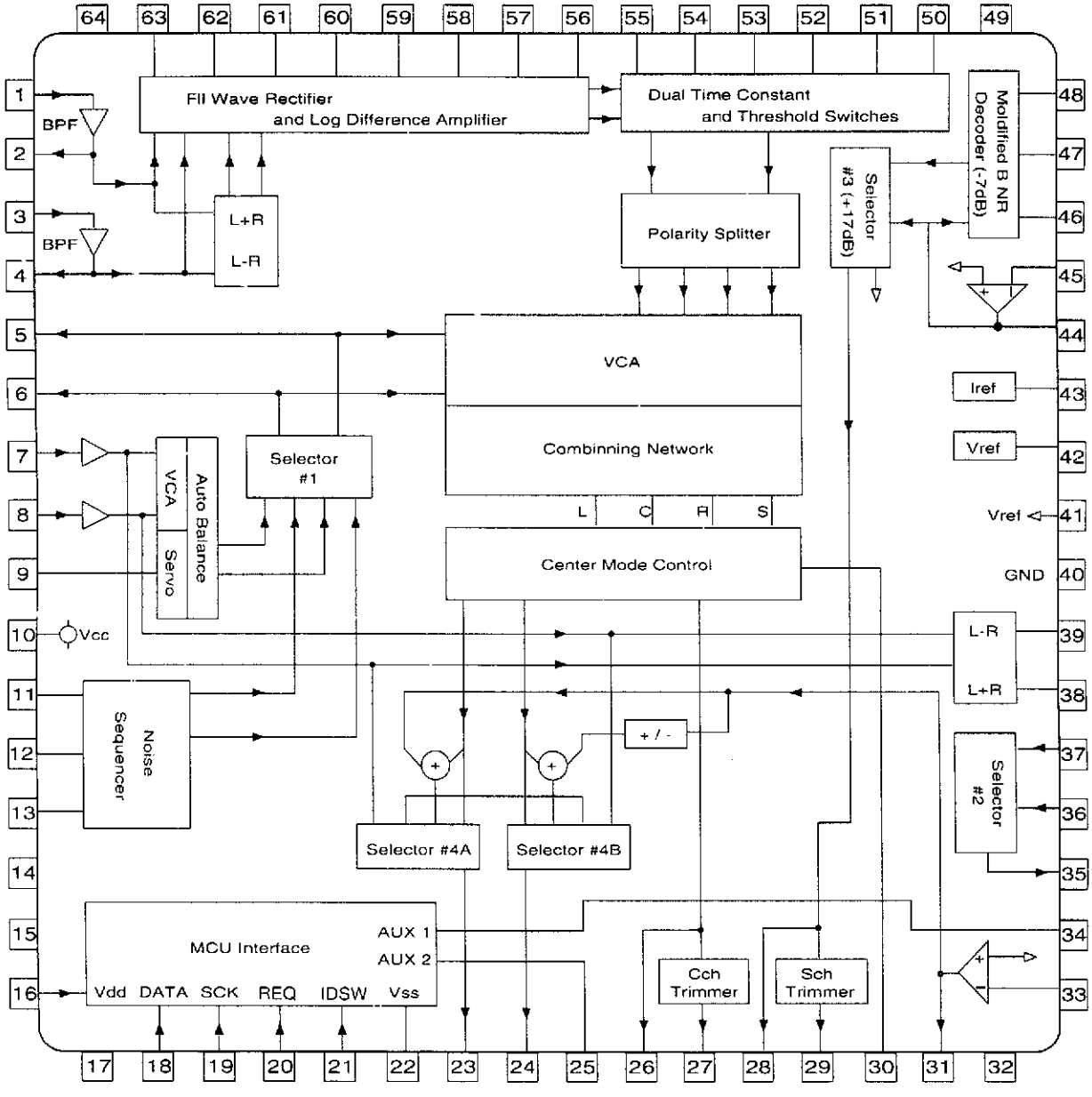
L = LOW Level
H = HIGH Level
X = Don't Care



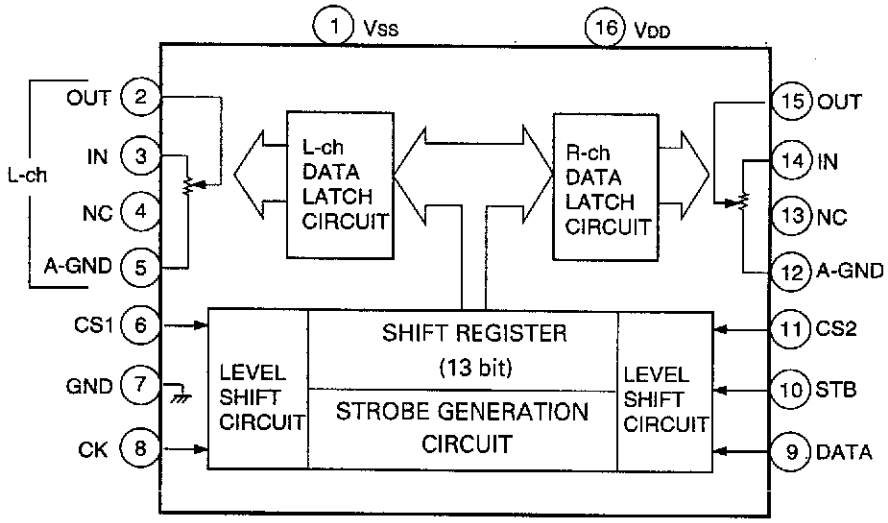
Top View



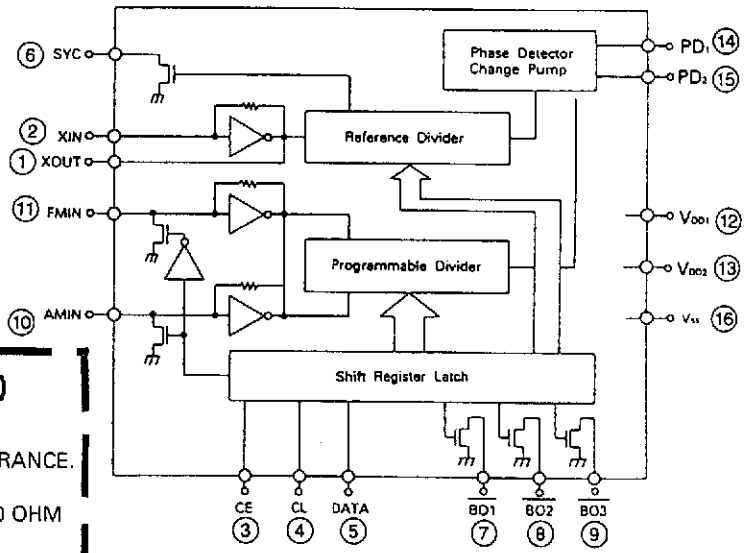
IC502 : NJW1102AFGI



IC508 : TC9299



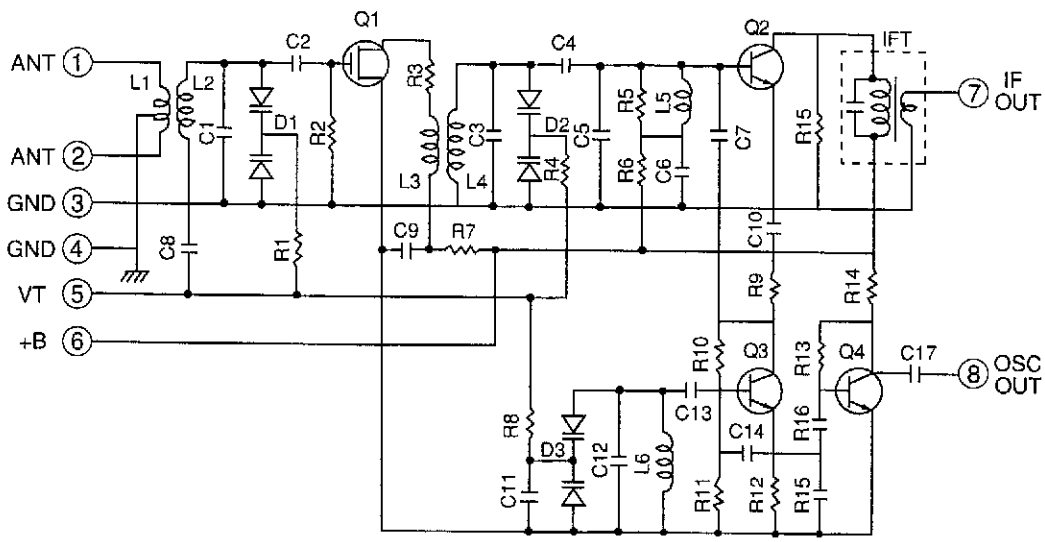
IC1 : LM7001



FE1 : FM FRONT - END (FE 407-G60)

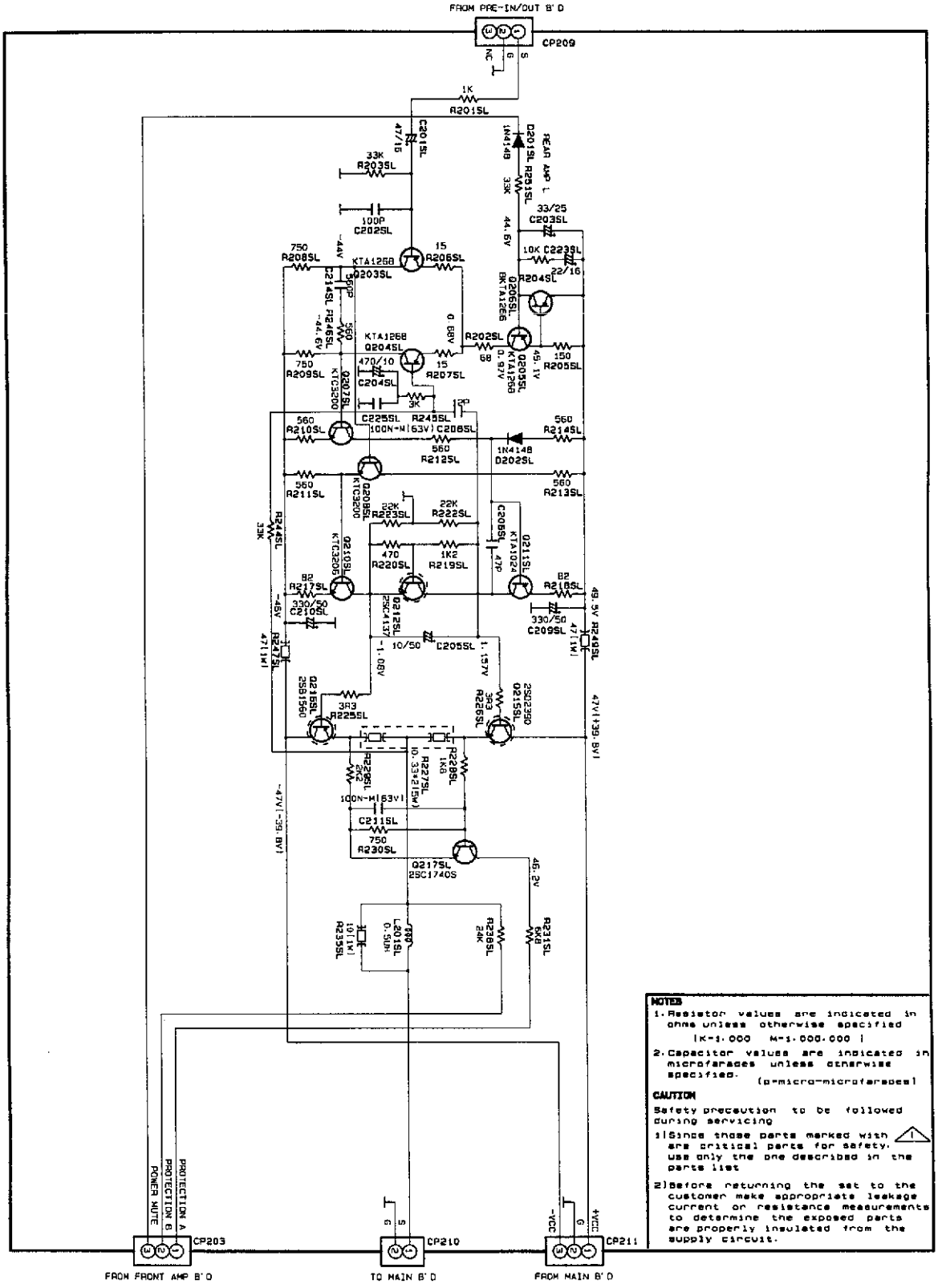
NOTES

1) TERMINAL NUMBER REFER TO OVERALL APPEARANCE.
2) RECEIVING FREQUENCY : 87.5 ~ 108 MHz
3) INPUT IMPEDANCE : ① ~ ④ 75 OHM, ① ~ ② 300 OHM
4) OUTPUT IMPEDANCE : 360 OHMS
5) SUPPLY VOLTAGE : +B → 12 V
6) TUNING VOLTAGE : Vt 1.6 ~ 8.0 V
7) AGC VOLTAGE : 5 V



SCHEMATIC DIAGRAM (I)

PCB4 (REAR)



NOTES

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

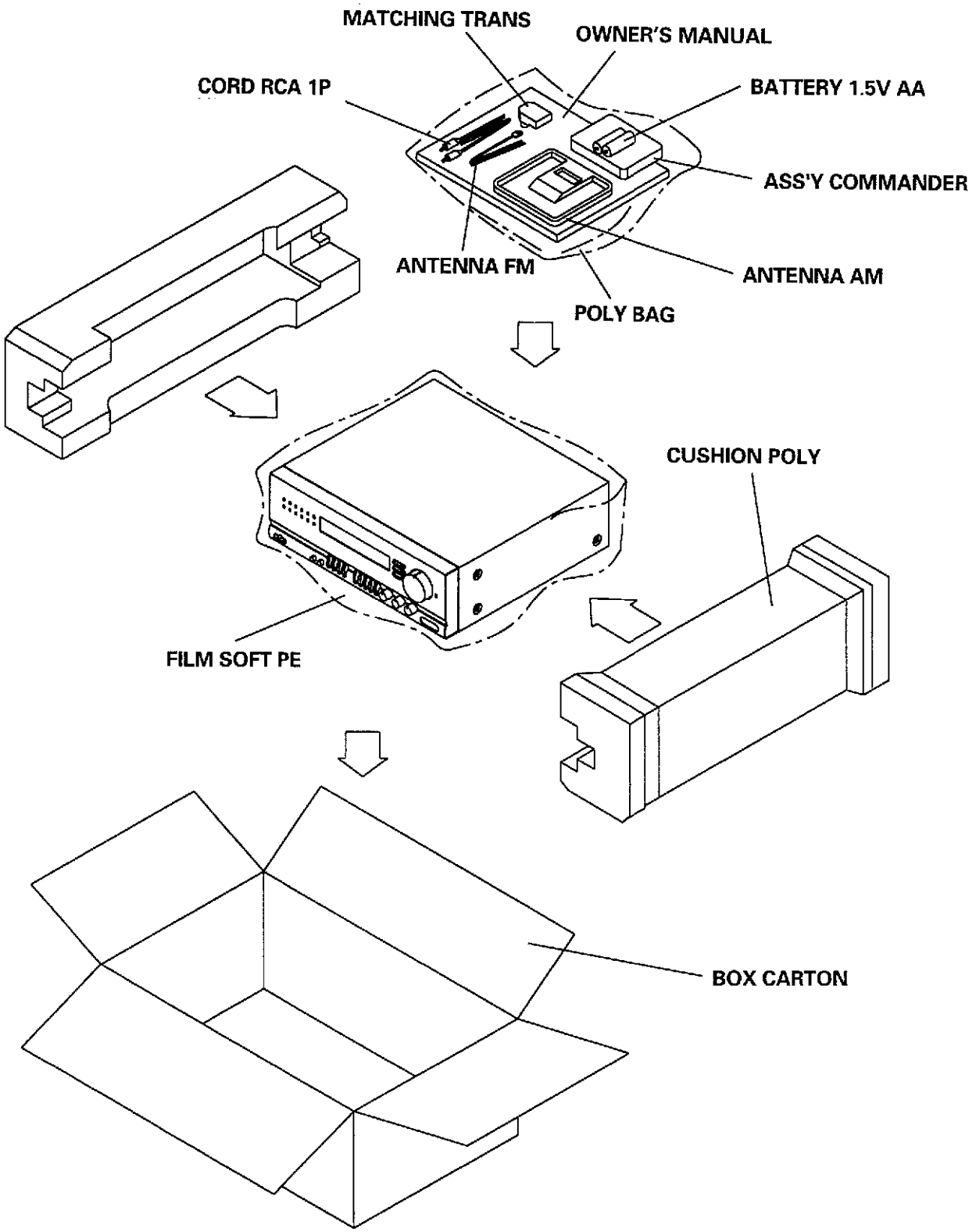
CAUTION

Safety precaution to be followed during servicing

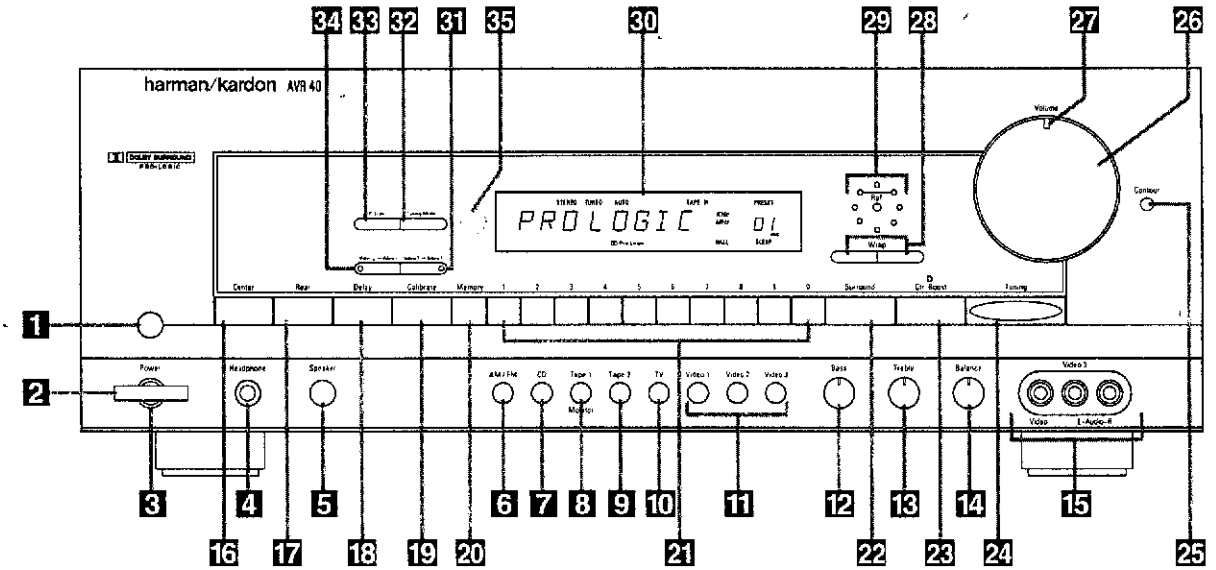
1) Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list

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.

PACKAGE


MATCHING TRANS
OWNER'S MANUAL
CORD RCA 1P
BATTERY 1.5V AA
ASS'Y COMMANDER
ANTENNA FM
ANTENNA AM
POLY BAG
CUSHION POLY
FILM SOFT PE
BOX CARTON

CONTROLS AND FUNCTIONS



1 Main Power Switch : Press this button to apply power to the AVR40 & AVR41. When the switch is pressed the unit is placed in a Stadnby mode,as indicated by the amber LED **3** surrounding the System Power control **2** . This button MUST be pressed in to operate the unit regardless of the status of the Power switch at the bottom of the front panel. To turn the unit off and prevent the use of the remote control this switch should be pressed until it pops out to extend from the front panel so that the word "OFF" may be read at the top of the switch.

NOTE : In normal operation this switch may be left in the "on" position.

2 System Power Control : When the Main Power Switch **1** is pressed in, press this button to turn on the AVR40 & AVR41, press it again to turn the unit off. Note that the Power Indicator surrounding the switch **3** will turn green when the unit is on.

3 Power Indicator : This LED will illuminate in amber when the unit is in the Standby mode, to signal that the unit is ready to be turned on. When the unit is in operation the indicator will turn green.

4 Headphone Jack : Stereo headphones can be plugged into this jack for private listening headphone inpedance should be between 8 and 2k ohms. Best results between 200 and 400 ohms.

5 Speaker Switch : Press this button to turn off the front left/right speakers. When the speakers are off the selected program source may still be heard through the headphone jack.

6 AM/FM Selector : Press this button to select the tuner as your listening source. Press it again to change between AM and FM frequency bands.

7 CD : Press this button to select your CD player as the listening source.

8 Tape 1/Monitor : Set Tape1 Monitor to the "off" position when you want to hear the other input functions. Press this button to monitor the cassette deck connected to the Tape 1 Mon input jacks.

9 Tape 2 : Press this button to select the recorder connected to the TV Inputs on the rear panel as your listening source.

10 TV : Press this button to select the device recorder connected to the Tape 2 Inputs as your listening source.

11 Video Sources : Press these buttons to select any of the sources connected to an audio video input as your listening source.
The selected input will also be routed to the device connected to the Video Monitor Output on the rear panel.

NOTE : When the AVR40&AVR41 is in the Standby mode, as indicated by the Power Indicator **3** illuminating in amber, the unit may be turned on by pressing any of the Source Selection buttons.

12 Bass Control : Turn this control to modify the low frequency output of the left/right channels by as much as ±10dB.
Set this control to a suitable position for your taste and room acoustics.

13 Treble Control : Turn this control to modify the high frequency output of the left/right channels by as much as ±10dB.
Set this control to a suitable position for your taste and room acoustics.

14 Balance Control : Turn this control to change the relative volume for the front left/right channels.

NOTE : For normal operation of the surround modes this control should be at the midpoint, or "12 O'clock" position.

15 Video 3 : This alternate set of Audio/Video inputs may be used for the connection of a camcorder or video game. Select this input by pressing the Vedeo 3 button on the front panel.

16 Center Channel Mode Selector : Press this button to select the type of center channel speaker used. If there is no center channel speaker press the button until the information display reads No Center.
The mode changes as below, when the button is pressed in succenssion.
Center Mode
→ Small Center → Large Center → No Center →

The Display window shows each mode
Small : Select this mode if you use a small Center speaker. The bass Sound of the Conter channel is reproduced from the front speakers. because the small speaker cannot produce enough bass
Large: Select this mode if you use a modium-to-Large Center speaker. The bass Sound is reproduced from the Center Speaker.

NOTE : Select this mode if you not use a Center Speakers.

17 Rear Channel : Press this button to configure the AVR40 & AVR41 for the presence or absence of rear speakers.

18 Delay Time Adjust : Press this button to adjust the delay time between the front and rear channels.
Adjusts the surround delay time in steps.
For Dolby surround 20ms is standard.
→ 15ms → 20ms → 25ms → 30ms →

19 Calibrate : Press this button to turn on the calibration circuits that are used to adjust the output levels of the AVR40 & AVR41. Once the button is pressed you may adjust the levels of the center and rear channels using the Level - / Level + buttons on the remote control while listening to the current input source.
To calibrate the system using the internal test tone, press this button first, and than press the Calibrate button on the remote.

20 Tuner Memory Button : Press this button to store an AM or Fm frequency in the unit's memory. The MEM indicator will flash in the display to remind you to choose a nemeric location using Numeric Buttons on the front panel. Storing as station in a memory location that has already been used will overwrite the existing data.

NOTE : The preset memories are protected from power loss for two weeks. If the unit is unplugged for more two weeks, all stored frequencies will be erased.

21 Numeric Buttons : Use these buttons to enter or recall stations from the tuner memory.

22 Surround Mode : Press this button to select the desired surround listening mode.
The mode is changed between Pro-Logic and Phantom and Hall.

23 Center Boost : Press this button to increase the level of the center channel output ±4dB above that of the left/right channels for increased dialog intelligibility. A red LED will illuminate above the button when the circuit is engaged.

24 Tuning Button : Press the left side of the button to tune lower frequency stations and the right side of the button to tune higher frequency stations. When a station with a strong frequency is tuned, the TUNED indicator will illuminate in the Information Display.

25 Contour : Press this button when listening at low levels to activate special circuits that compensate for the response of the human ear at lower volumes. In the off position the unit will provide flat frequency response.

26 Volume Control : Rotate this control to raise or lower the volume. Note that this is motorized control, and when the volume is changed using the remote control it will move in response to remote commands.

27 Mute/Volume Indicator : In normal operation this green LED provides a relative indication of the unit's volume level. When the AVR40 & AVR41 is in the MUTE mode, this indicator flashes to remind you that output to the speakers has momentarily been silenced.

28 Wrap : When the Dolby Pro Logic or Hall modes are in use, press these buttons to increase or decrease the amount of effect for the Wrap circuit.

29 Wrap Indicator : These LEDs indicate the degree of Wrap that has been selected.

30 Information Display : The indicators in this display illuminate to provide visual dispaly of the unit's operation.

AVR40 **31** AVR41 **36**
Video 3 -> Video 1 Dubbing : Press this button to make a recording from the device connected to the front panel Video 3 input **15** to Video 1. The copy may be made while another input is the listening source for the main system outputs.

AVR40 **32** , AVR41 **31**
FM Mode : Press this button to select the stereo or mono mode for FM tuning. In the STEREO mode a STEREO indicator will illuminate in the information display, and stereo reception will be provided when stations are transmitting stereo signals. In the MONO mode the left and right signals from stereo broadcasts will be mixed together and reproduced through all channels. Select MONO for better reception of weak signals. This button is also used to select AUTO or MANUAL tuning. In the AUTO mode the tuner will stop only at stations with a strong signal.

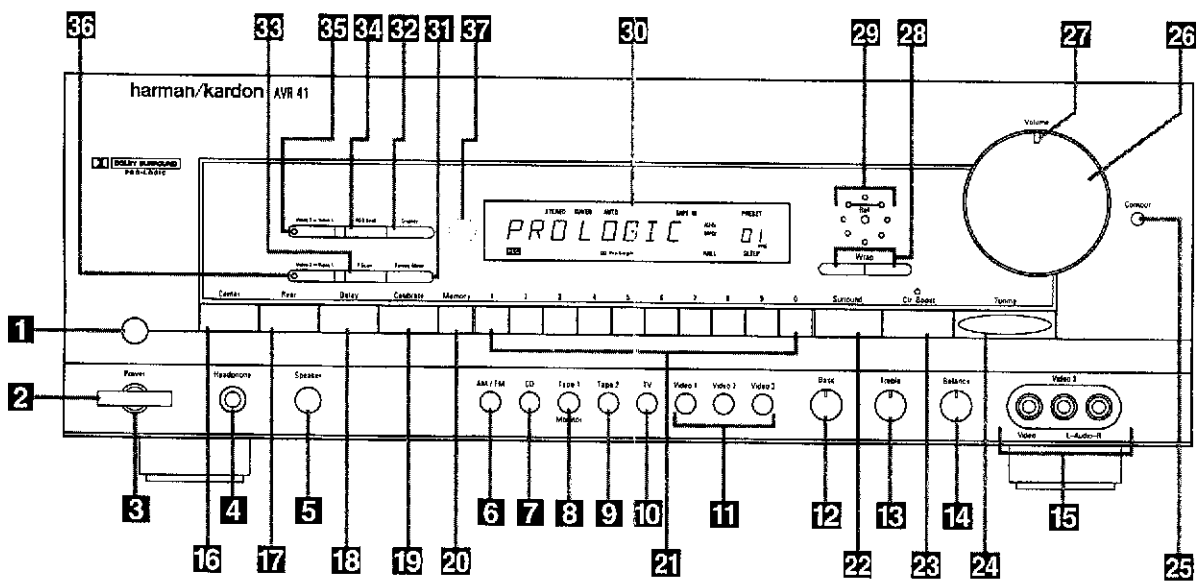
AVR41 **32** Display : When the FM Tuner is in use, press this button to select any type of RDS information to be displayed, or hold it in to dim or extinguish the front panel display. For all other inputs. Press and hold this button once to dim the front panel display to half brightness.
Pressing it again will turn the display off.
Press the display button or any other front panel button to return the display to full brightness.

33 P-Scan Button : Press this button to scan the stations entered in the unit's memory. When the desired station is reached, press the button again to stop the scan.

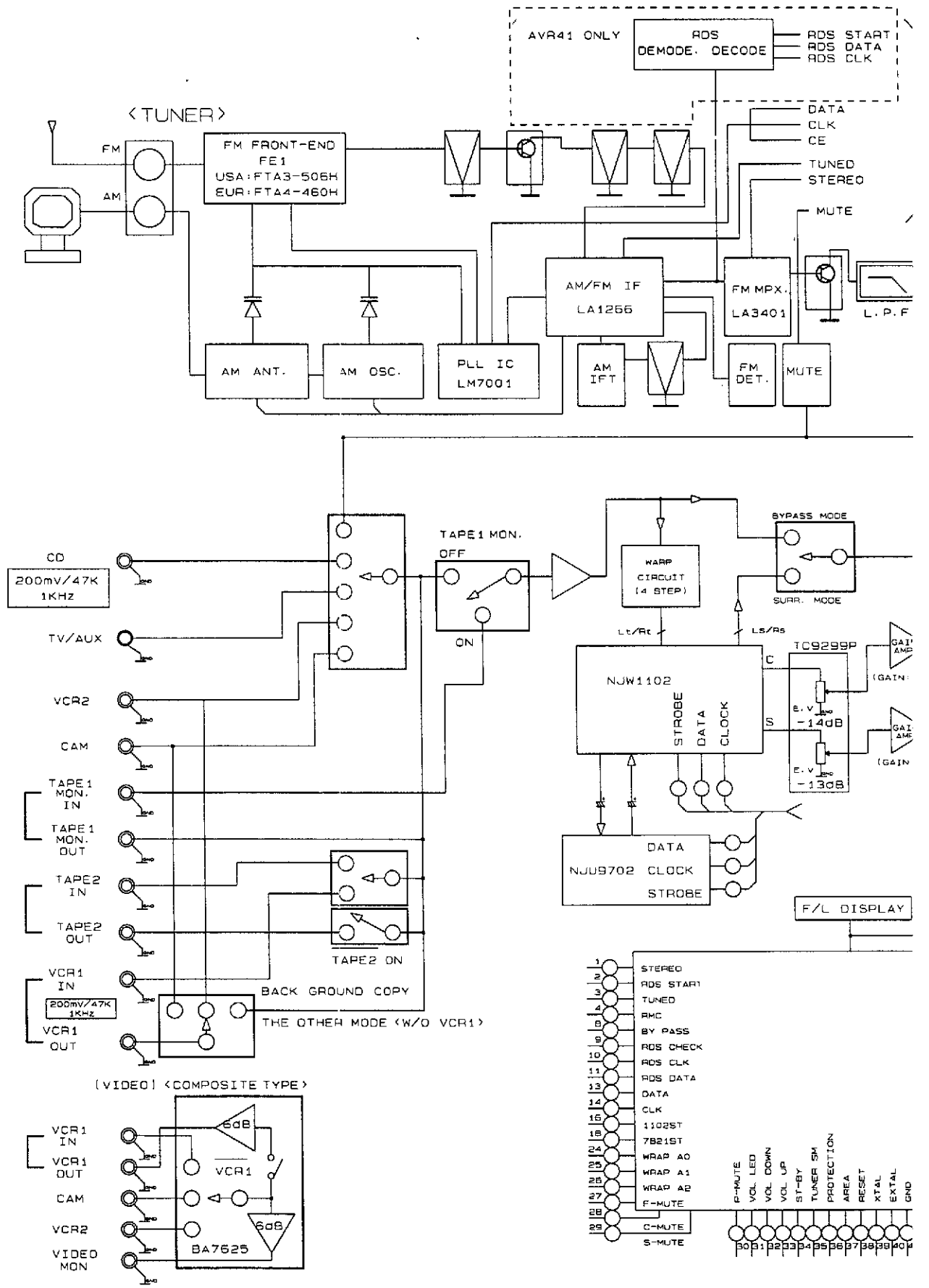
AVR40 **34** , AVR41 **35**
Video 2 -> Video 1 Dubbing : Press this button to make a recording from the device connected to the Video 2 Input to VCR 1. The copy may be made while another input is the listening source for the main system outputs.

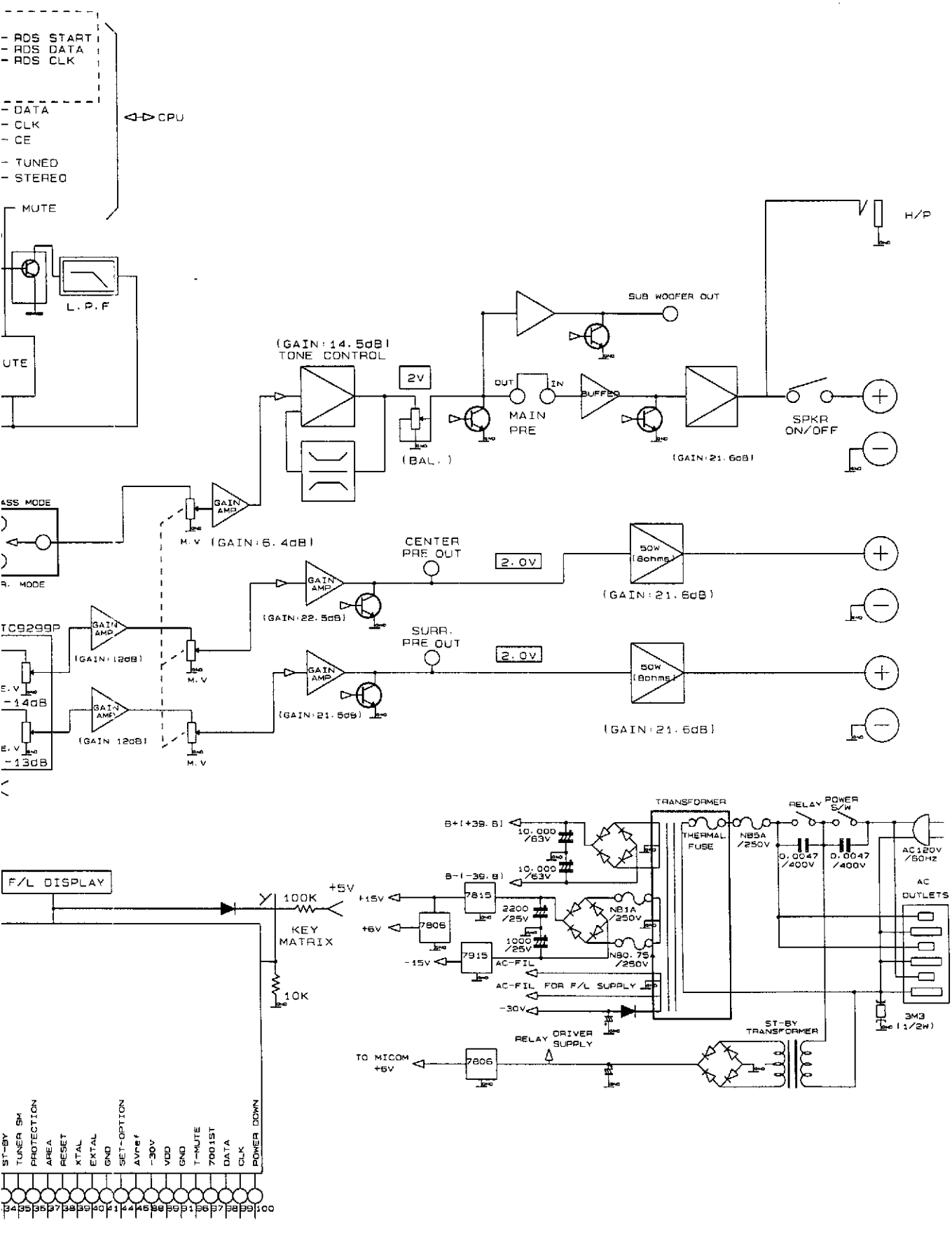
AVR41 **34**
RDS Seek : Press this button to tune only RDS Stations of a specitic "PTY" or programme type, Each press of the button will cycle through the list of PTY types. To seek any station with an acceptable signal press the Tuning Mode button **31** until the RDS indicator goes out, and press the Tuning button **24** .

AVR40 **35** , AVR41 **37**
Remote Sensor: This sensor receives the signals from the remote control to operate the unit.
Do not block this area.

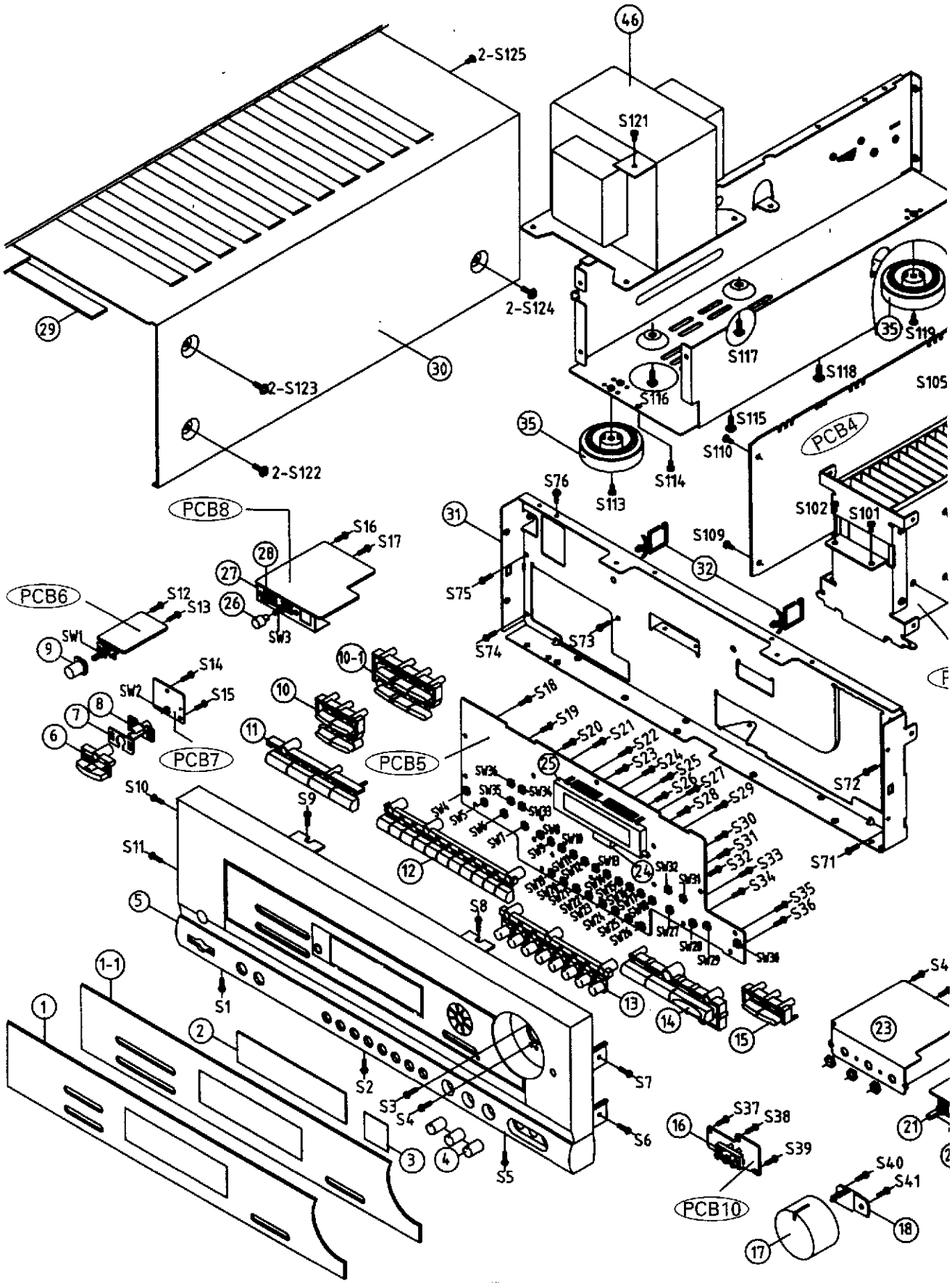


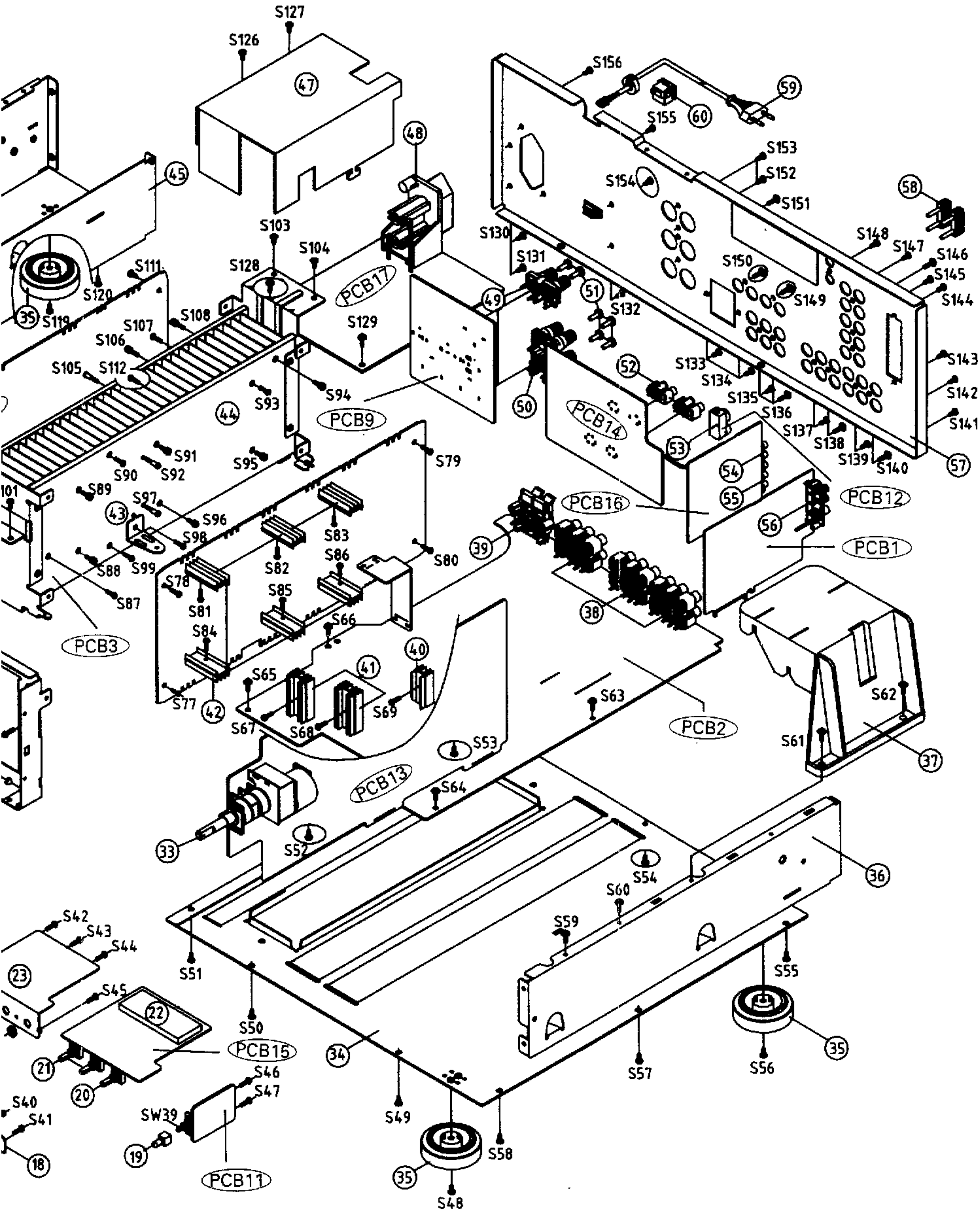
BLOCK DIAGRAM




- RDS START
- RDS DATA
- RDS CLK
- DATA
- CLK
- CE
- TUNED
- STEREO
CPU
MUTE
L.P.F
H/P
SUB WOOFER OUT
(GAIN:14.5dB)
TONE CONTROL
2V
OUT
IN
MAIN
PRE
BUFFER
(BAL.)
(GAIN:21.6dB)
SPKR
ON/OFF
ASS MODE
R. MODE
M.V
(GAIN:6.4dB)
CENTER
PRE OUT
2.0V
50W
(8ohms)
(GAIN:21.6dB)
(GAIN:22.5dB)
TC9299P
(GAIN:12dB)
-14dB
-13dB
SURR.
PRE OUT
2.0V
50W
(8ohms)
(GAIN:21.6dB)
(GAIN:21.5dB)
(GAIN:12dB)
F/L DISPLAY
100K
+5V
KEY
MATRIX
10K
B+(+39.8)
B-(-39.8)
10,000
/63V
10,000
/63V
+15V
7815
+6V
7806
-15V
7915
2200
/25V
1000
/25V
AC-FIL
NB1A
/250V
NB0.75A
/250V
AC-FIL FOR F/L SUPPLY
-30V
TRANSFORMER
THERMAL
FUSE
NB5A
/250V
RELAY
POWER
S/W
0.0047
/400V
0.0047
/400V
AC120V
/60Hz
AC
OUTLETS
3M3
(1/2W)
ST-BY
TRANSFORMER
RELAY DRIVER
SUPPLY
TO MICOM
+6V
7806
ST-BY
TUNER SM
PROTECTION
AREA
RESET
XTAL
EXTAL
GND
SET-OPTION
AVref
-30V
VDD
GND
T-MUTE
7001ST
DATA
CLK
POWER DOWN
34 35 36 37 38 39 40 41 44 45 88 89 91 96 97 98 99 100

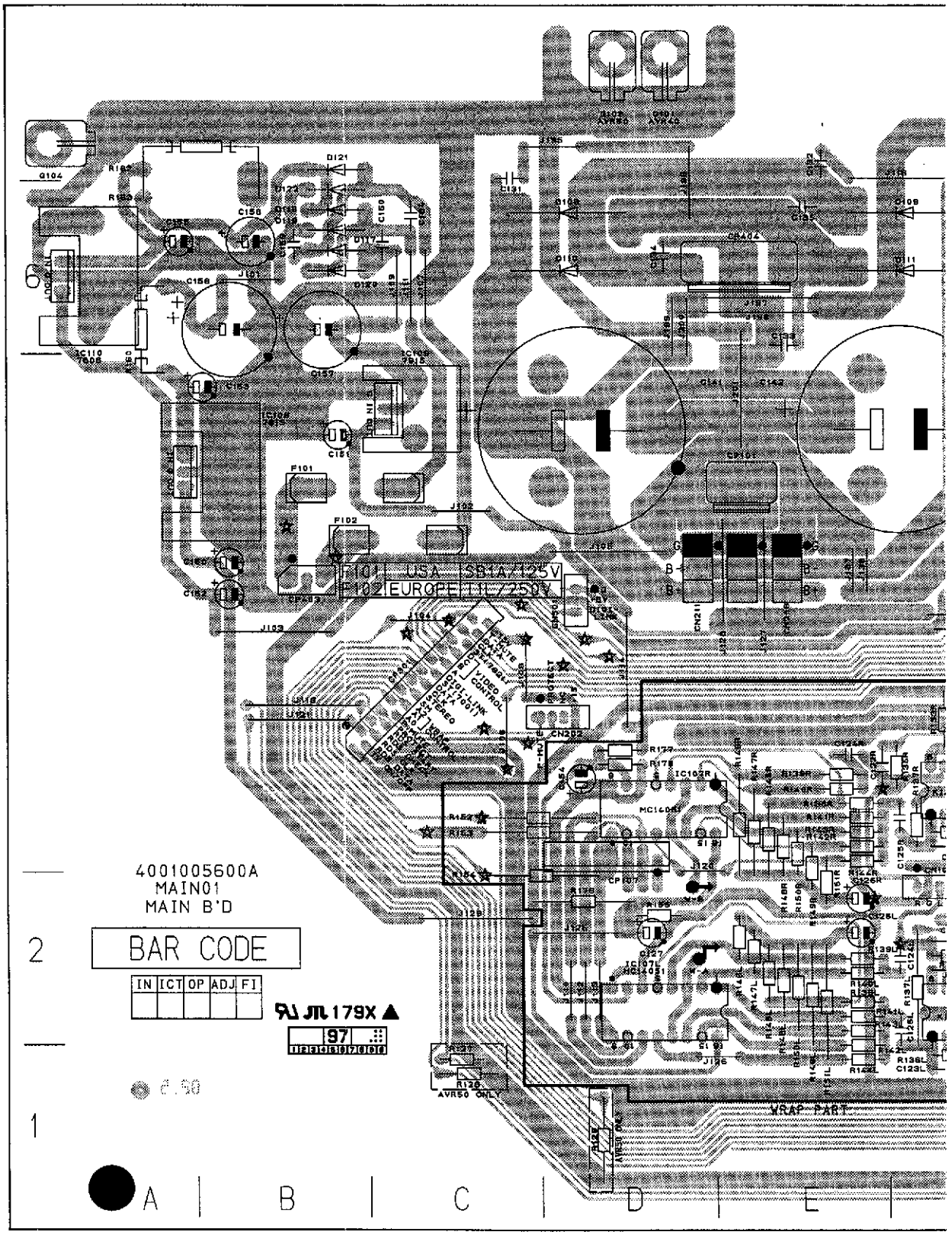
GENERAL UNIT EXPLODED VIEW



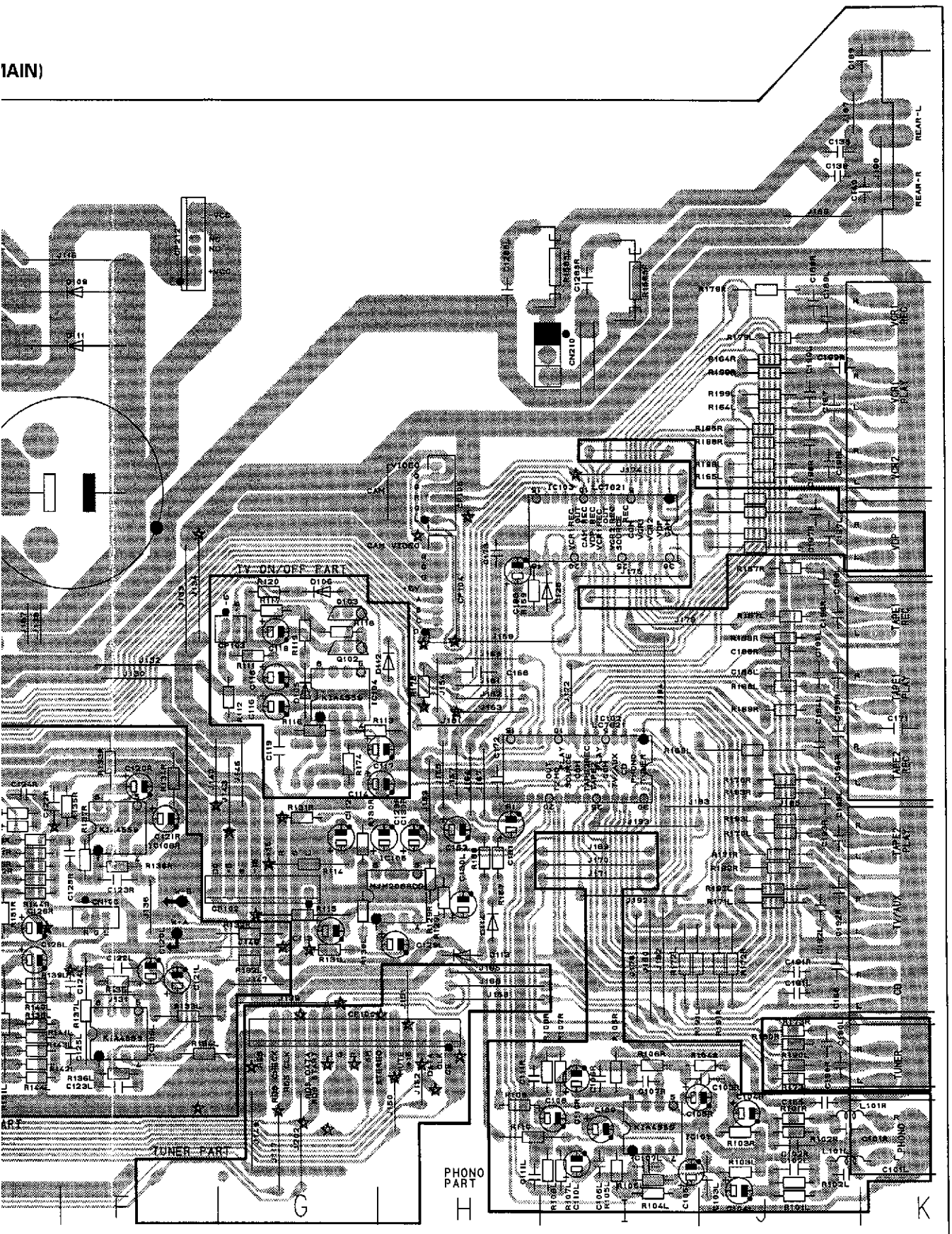

S127
S126
47
S156
59
60
S155
S153
S152
S151
S154
58
48
45
S103
S104
S128
PCB17
S130
S131
49
51
S132
S148
S147
S146
S145
S144
S150
S149
35
S120
S119
S111
S108
S107
S106
S105
S112
S129
S94
S93
44
PCB9
52
PCB14
50
S133
S134
S135
S136
S137
S138
S139
S140
S143
S142
S141
57
53
54
55
56
PCB12
PCB16
PCB1
S91
S90
S92
S95
S79
S89
S97
S96
S98
43
S99
S88
S87
PCB3
S83
S82
S86
S80
S78
S81
S85
S84
S77
42
39
38
S66
S65
41
40
S69
S67
S68
S63
PCB2
S62
S61
37
S53
PCB13
S64
33
S52
S54
36
S60
S59
S42
S43
S44
23
S45
22
S51
S50
S55
PCB15
34
21
20
S46
S47
35
S57
S56
S40
S41
SW39
19
18
PCB11
S49
S58
35
S48

PRINTED CIRCUIT BOARDS

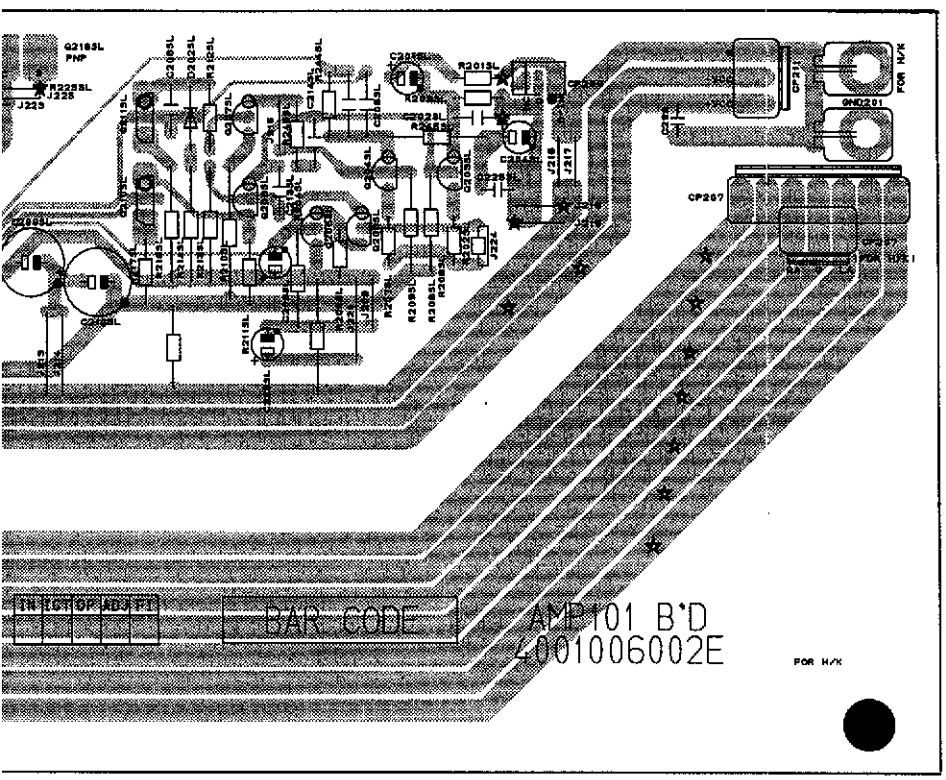
PCB2 (MAIN)



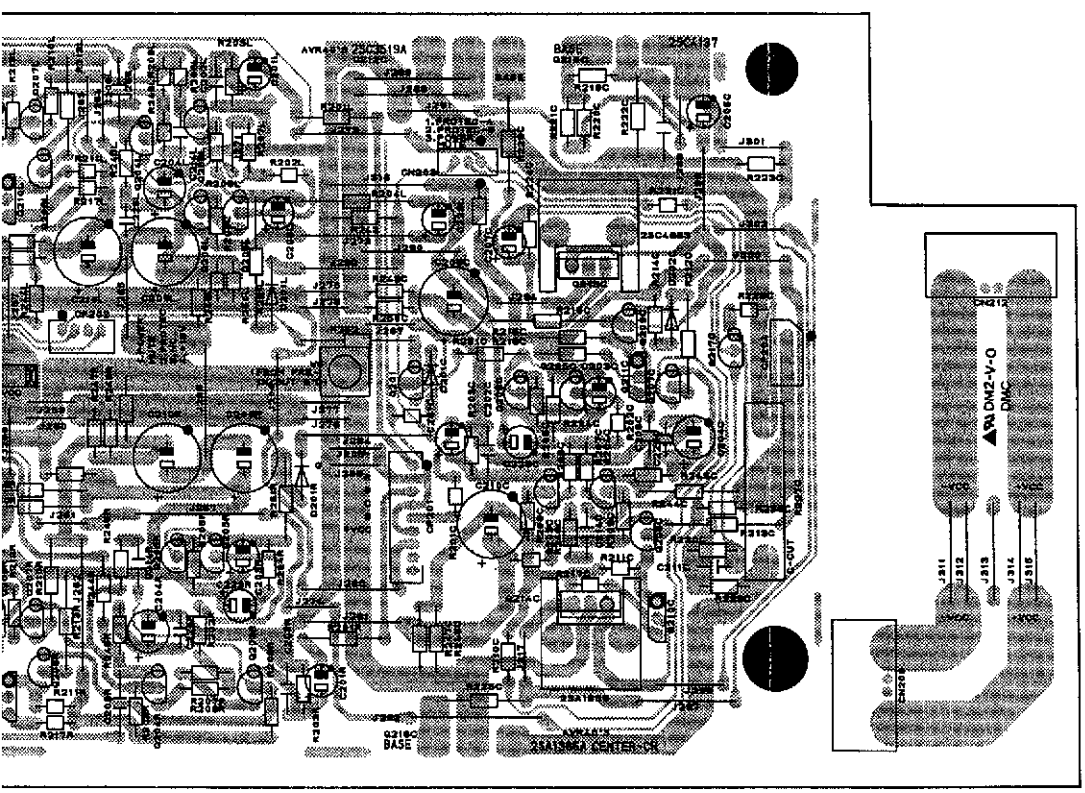
1AIN)


TV ON/OFF PART
TUNER PART
PHONO PART
REAR-L
REAR-R
TAPE REC
TAPE PLAY
VCR REC
VCR PLAY
TV/AUX
TUNER
PHONO
F
G
H
I
J
K

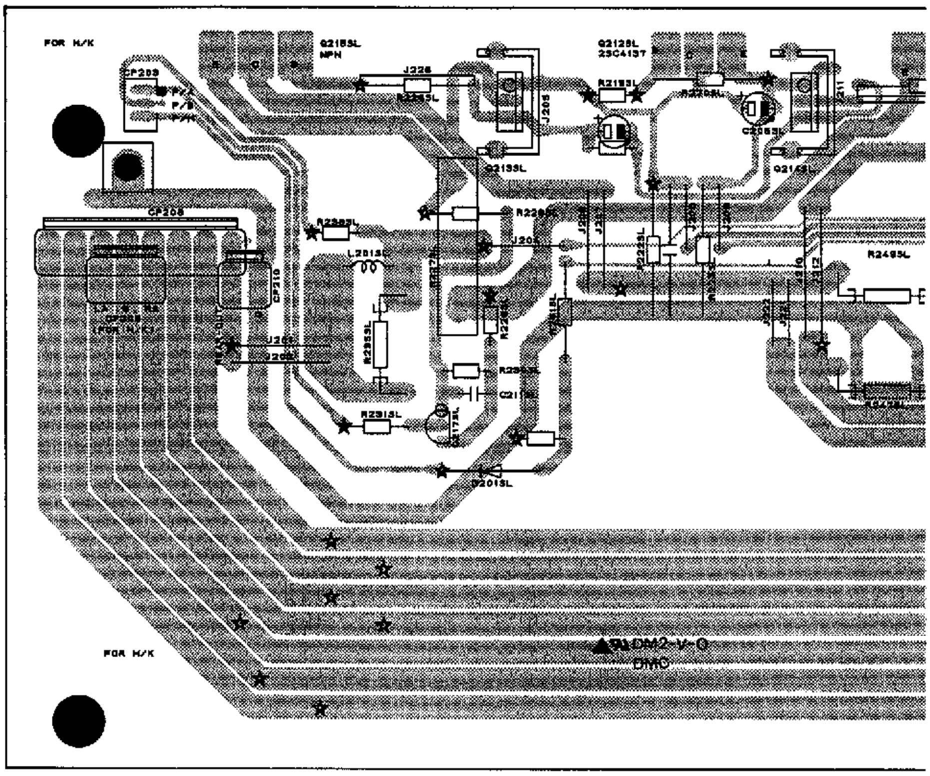
FRONT-AMP)



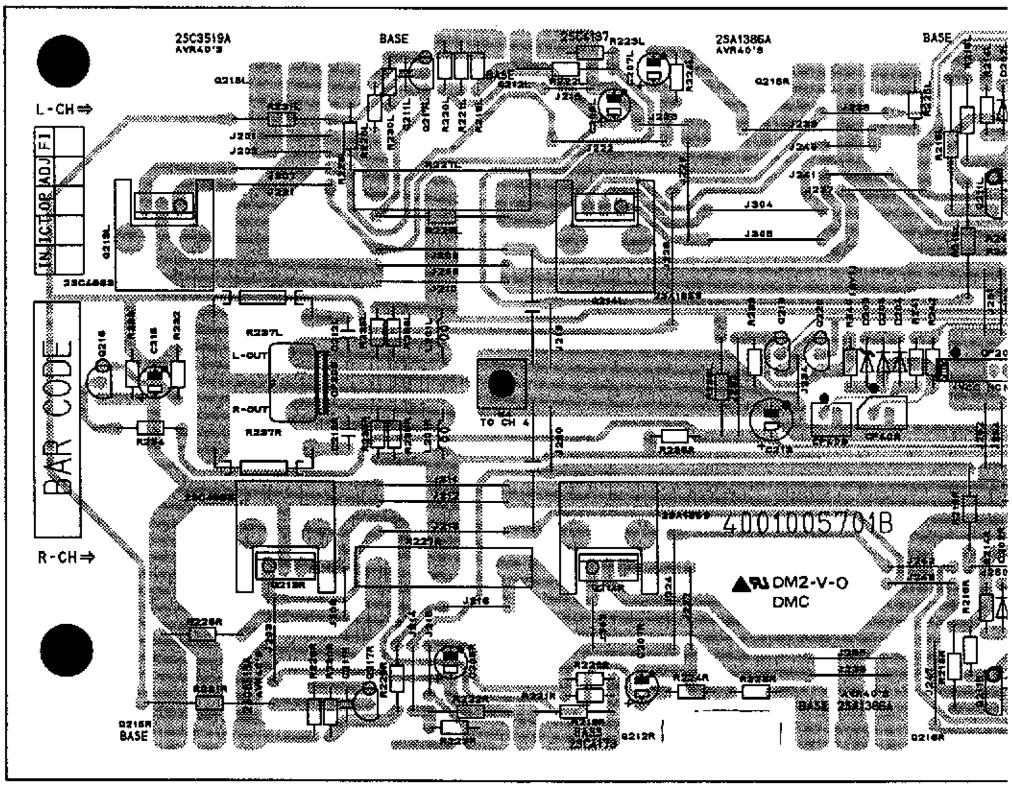
REAR-AMP)



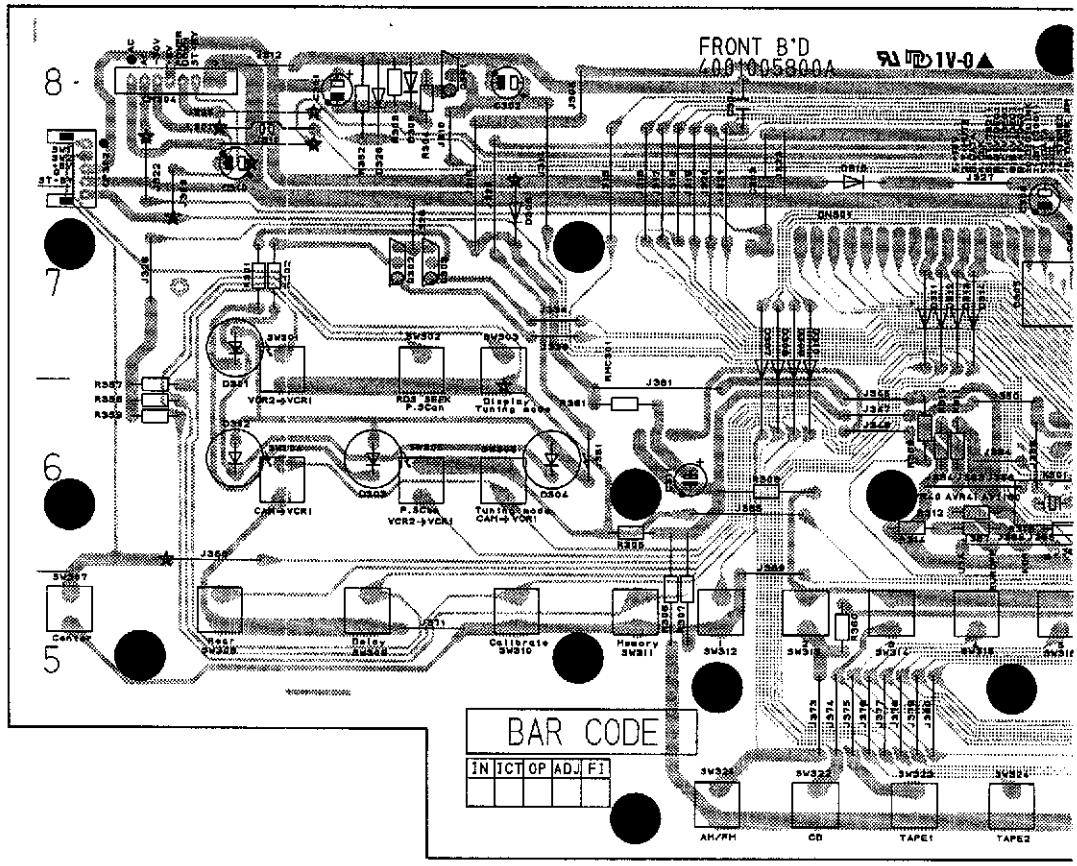
PCB3


FOR H/K
FOR H/K
DM2-V-O
DMC

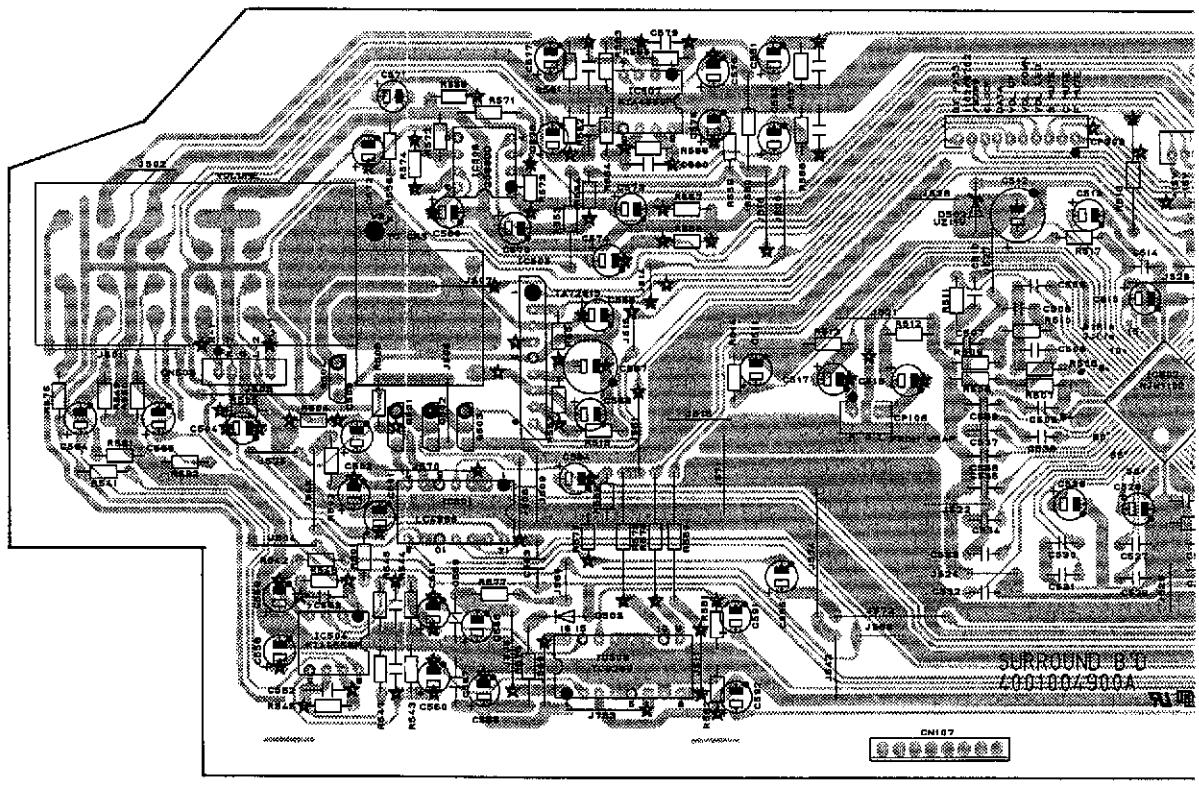
PCB4


2SC3519A
BASE
2SA1386A
L-CH⇒
BAR CODE
TO CH 4
4001005701B
DM2-V-O
DMC
R-CH⇒

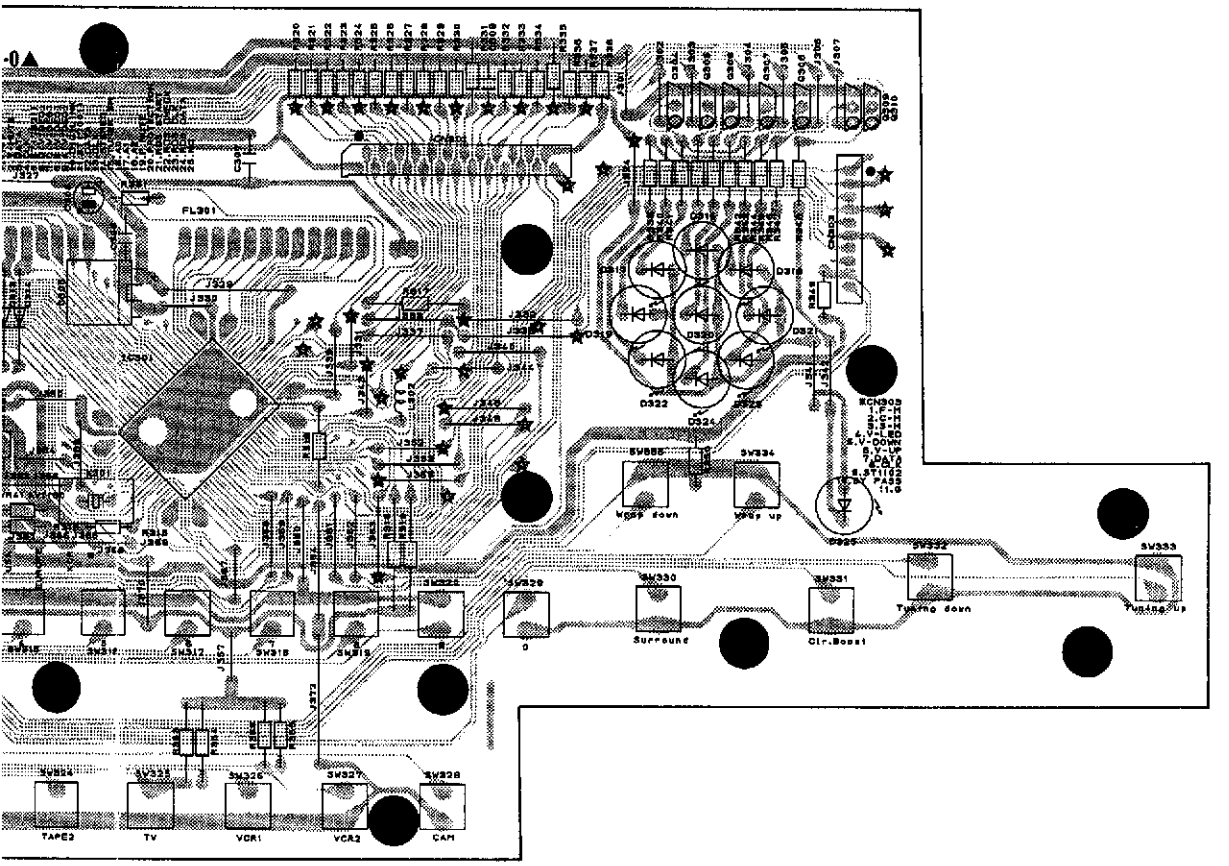
PCB5 (FRONT)



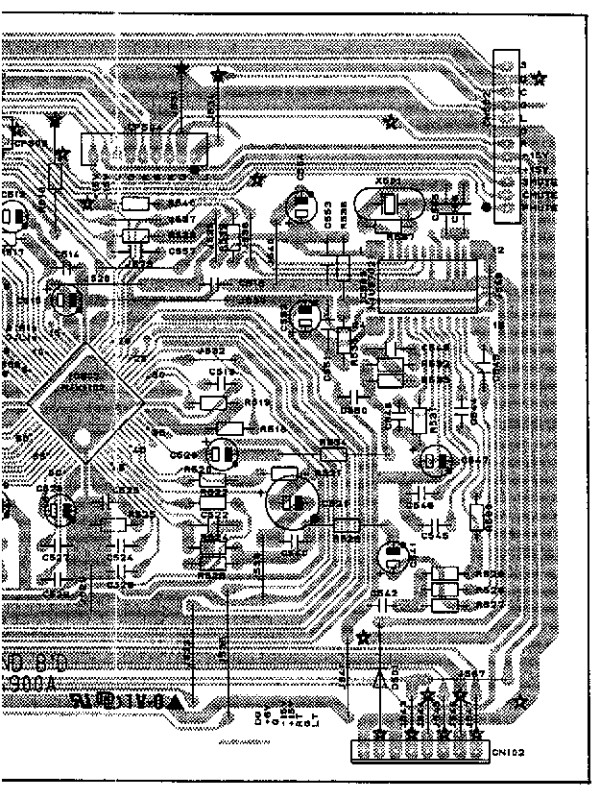
PCB13 (SURROUND)



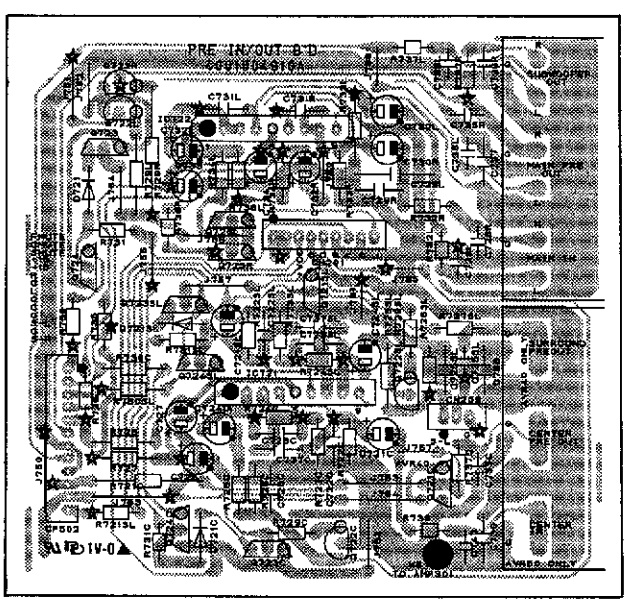
FRONT)



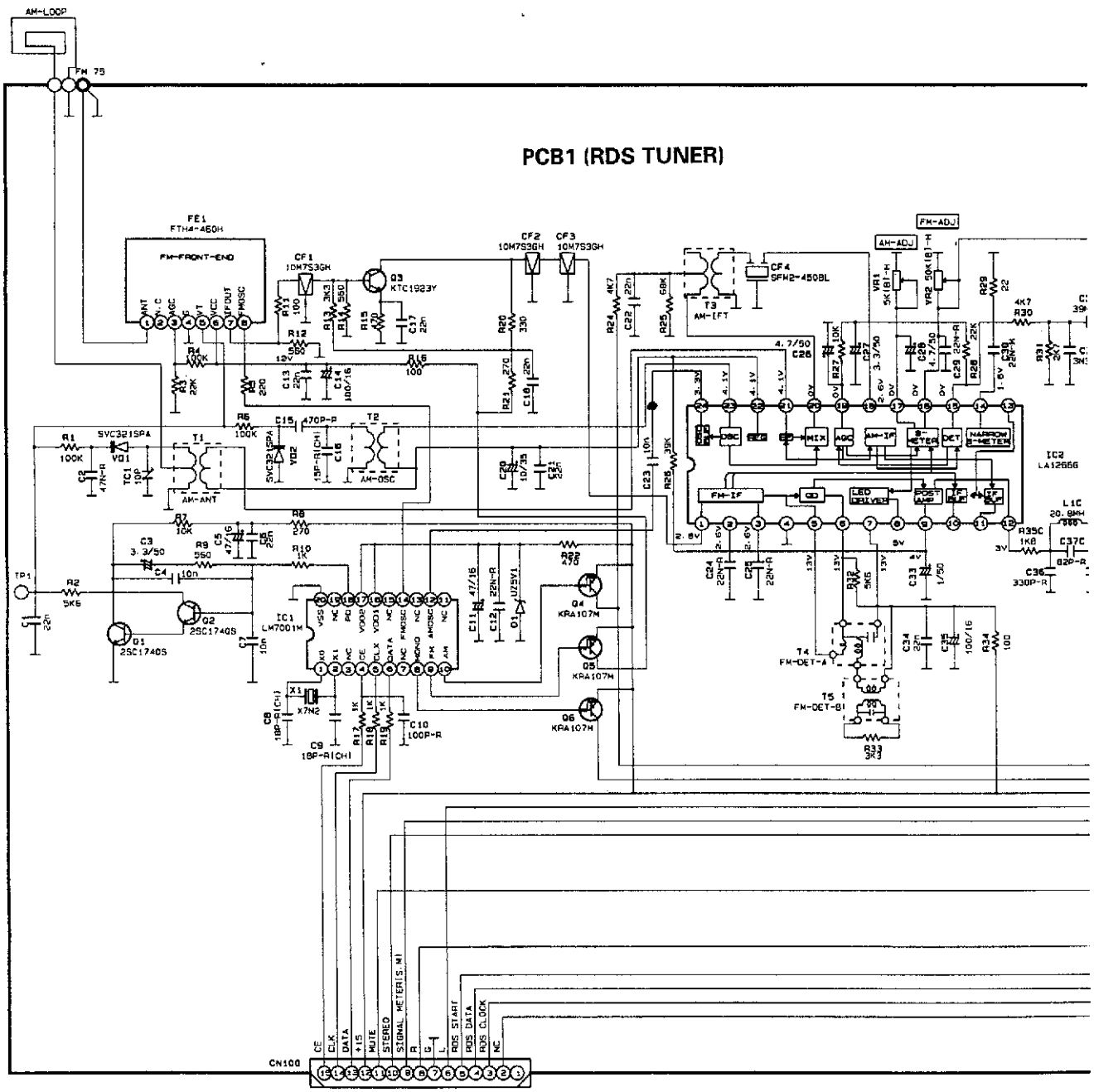
)

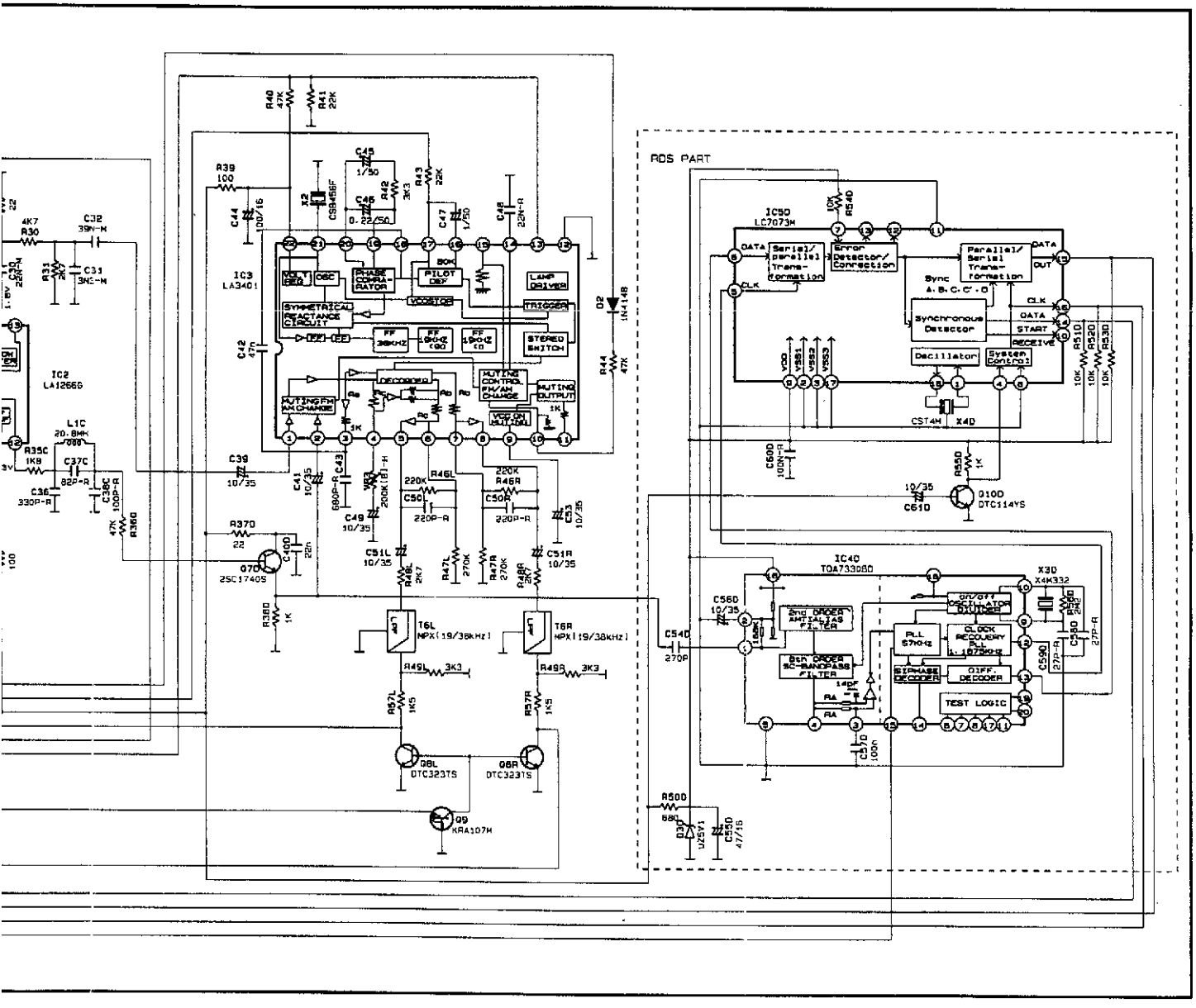


PCB16 (PRE IN/OUT)



SCHEMATIC DIAGRAM (II)





NOTES

1-Resistor values are indicated in ohms unless otherwise specified (K=1.000 M=1.000.000)

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

CAUTION

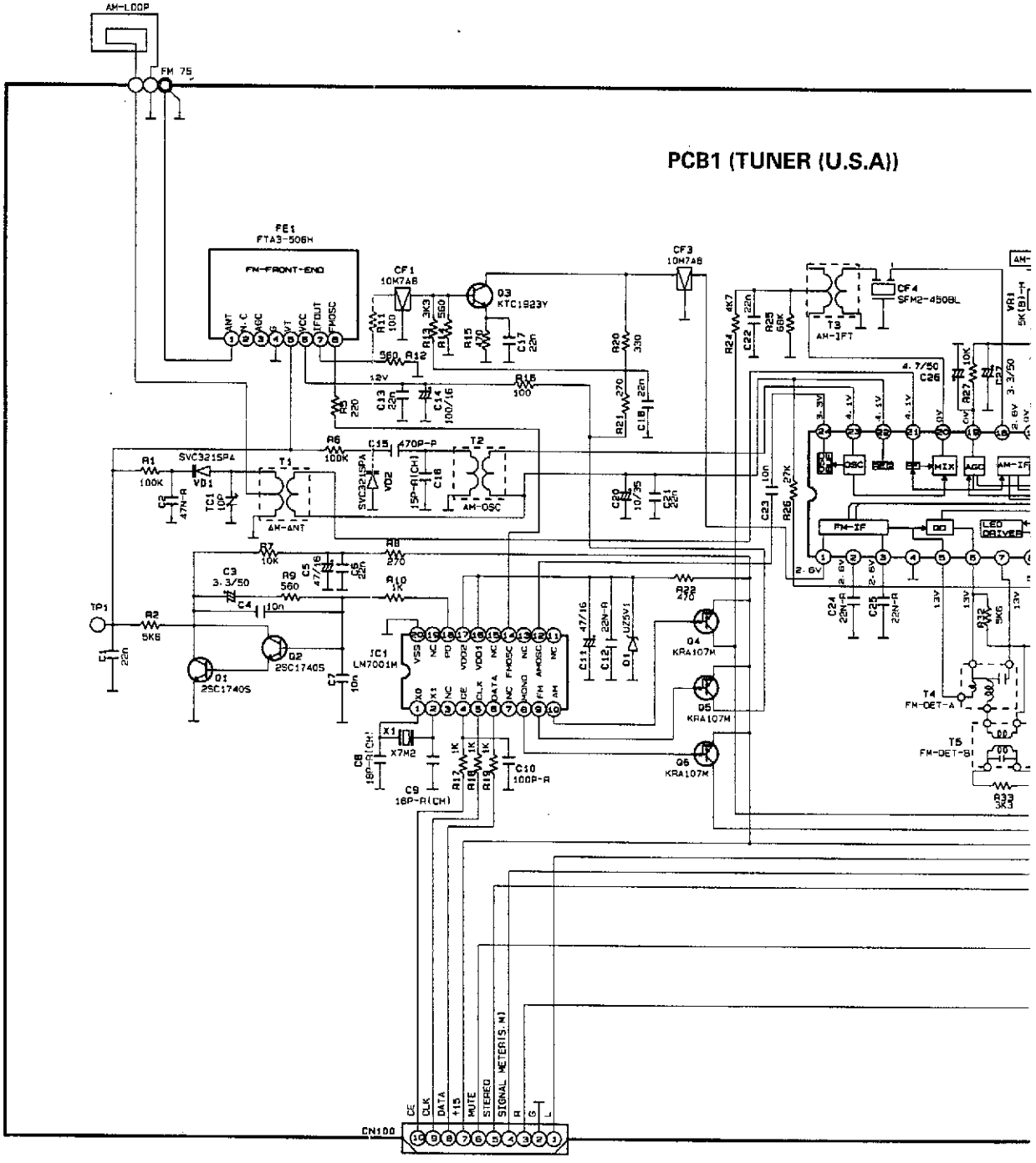
Safety precaution to be followed during servicing

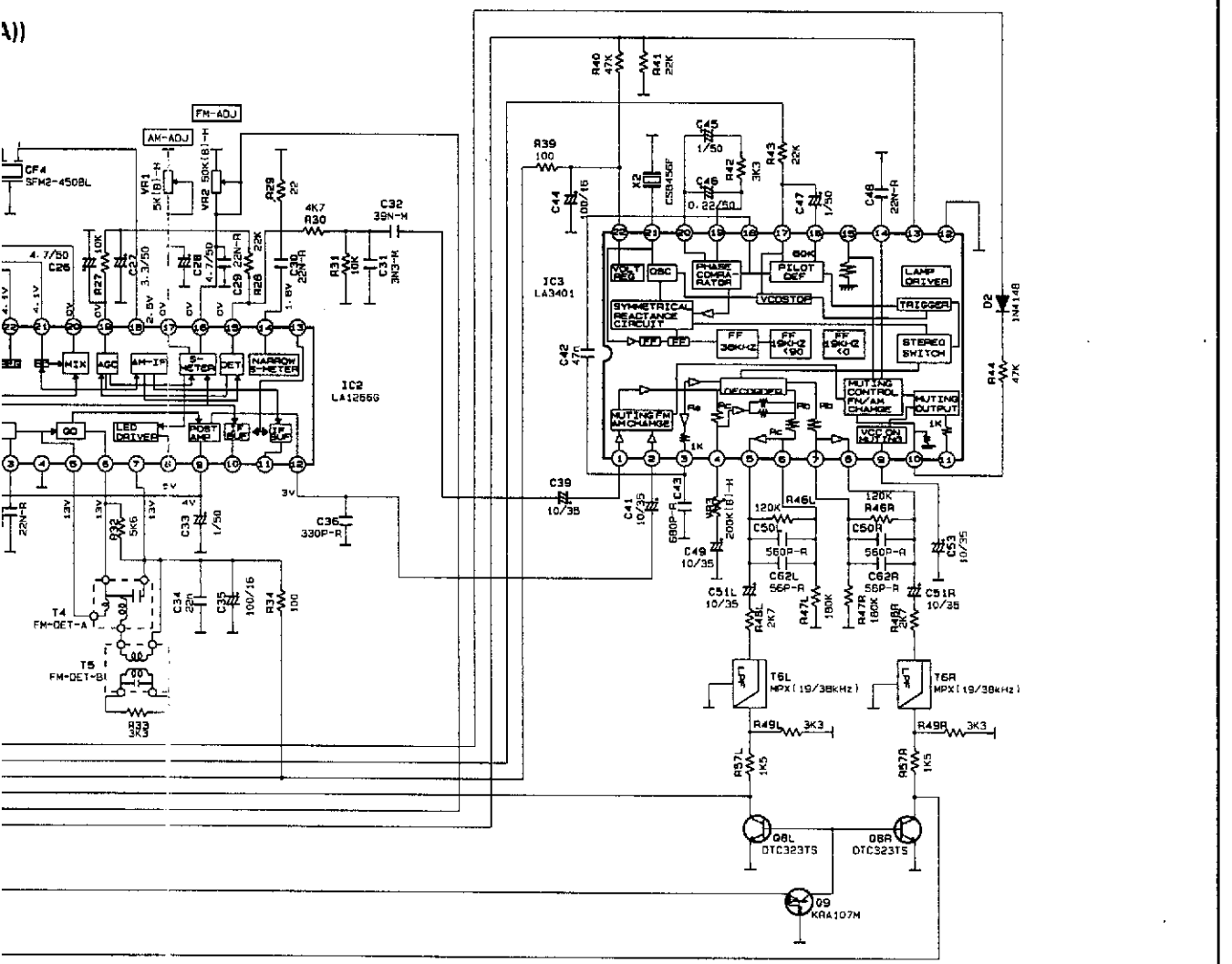
1)Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list

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.

D5
D9
R56
C62

SCHEMATIC DIAGRAM (III)





NOTES

1. Resistor values are indicated in ohms unless otherwise specified
   [K=1,000 M=1,000,000]
2. Capacitor values are indicated in microfarades unless otherwise specified.
   [p=micro-microfarades]

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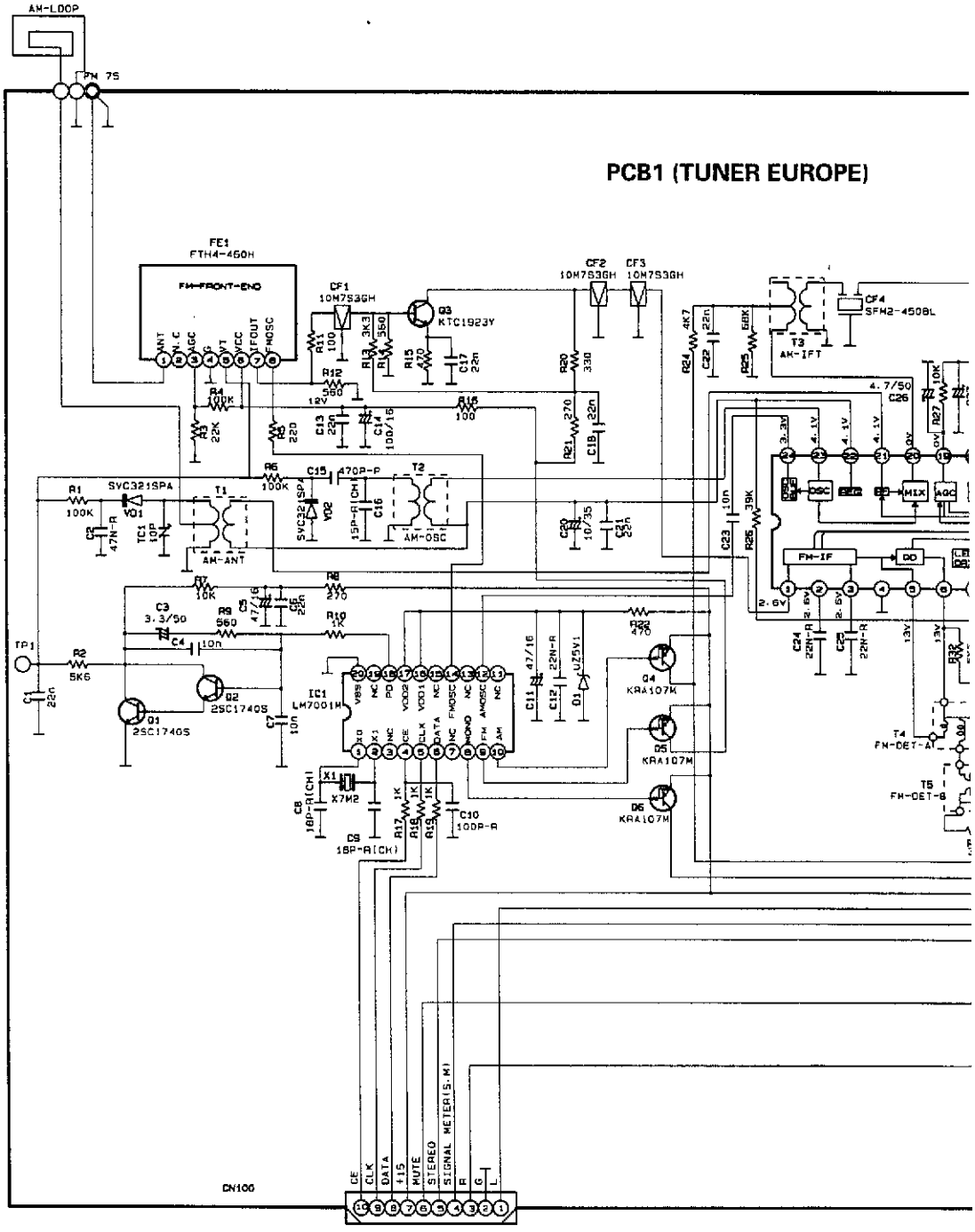
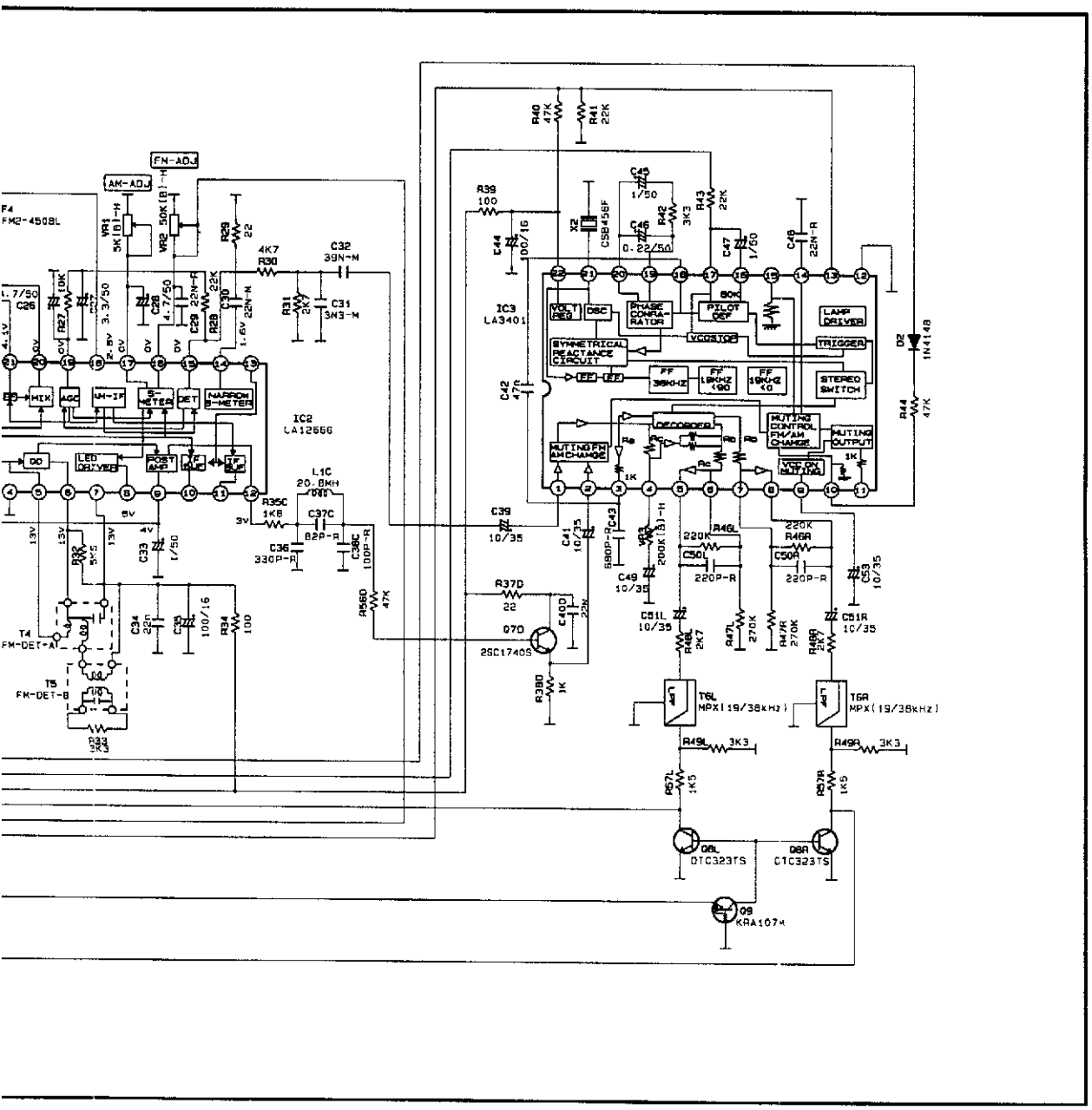
Q6
Q8
R56
C62

SCHEMATIC DIAGRAM (IV)





NOTES

1. Resistor values are indicated in ohms unless otherwise specified
   [K=1,000 M=1,000,000]
2. Capacitor values are indicated in microfarades unless otherwise specified.
   [p=micro-microfarades]

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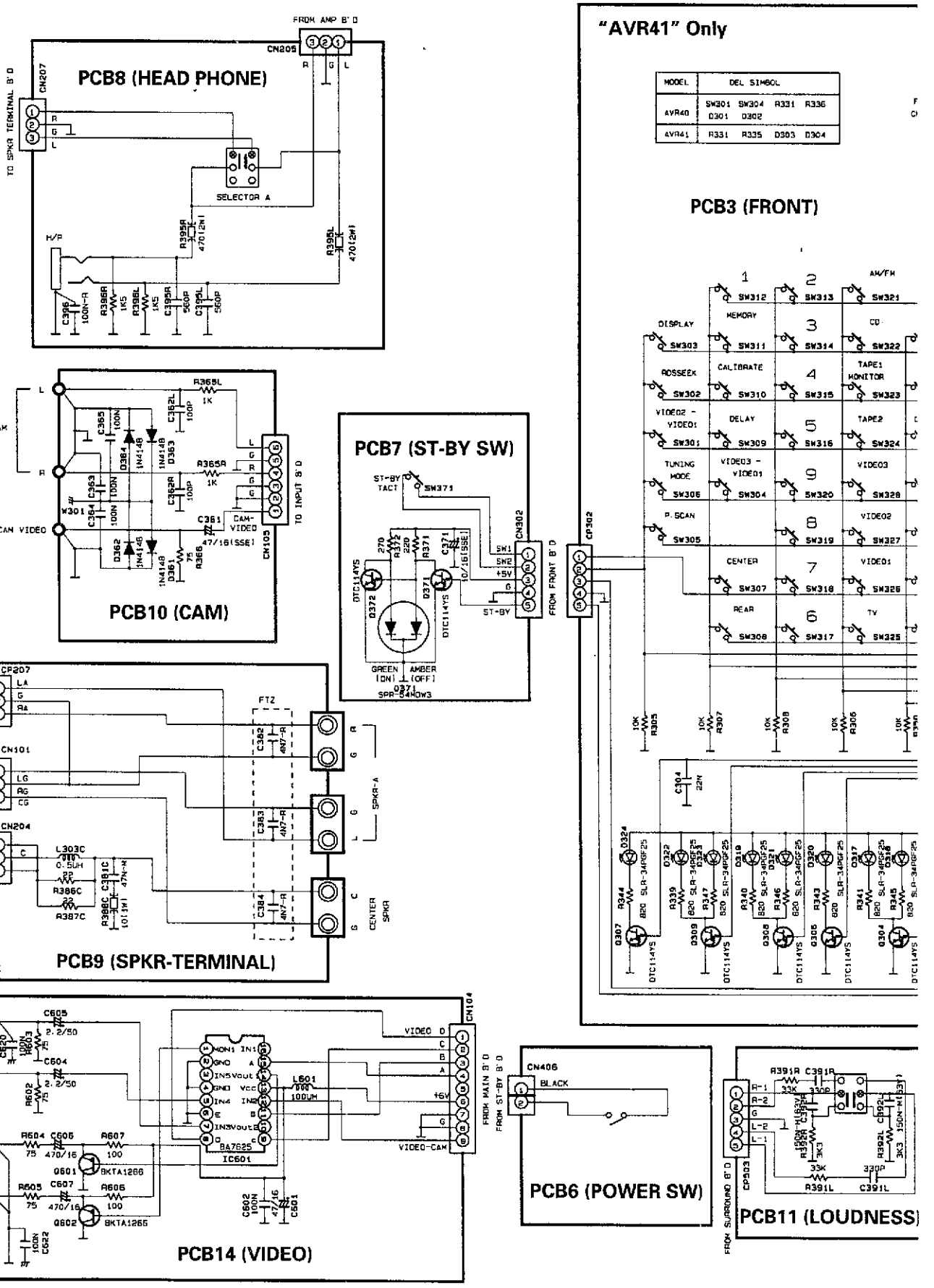
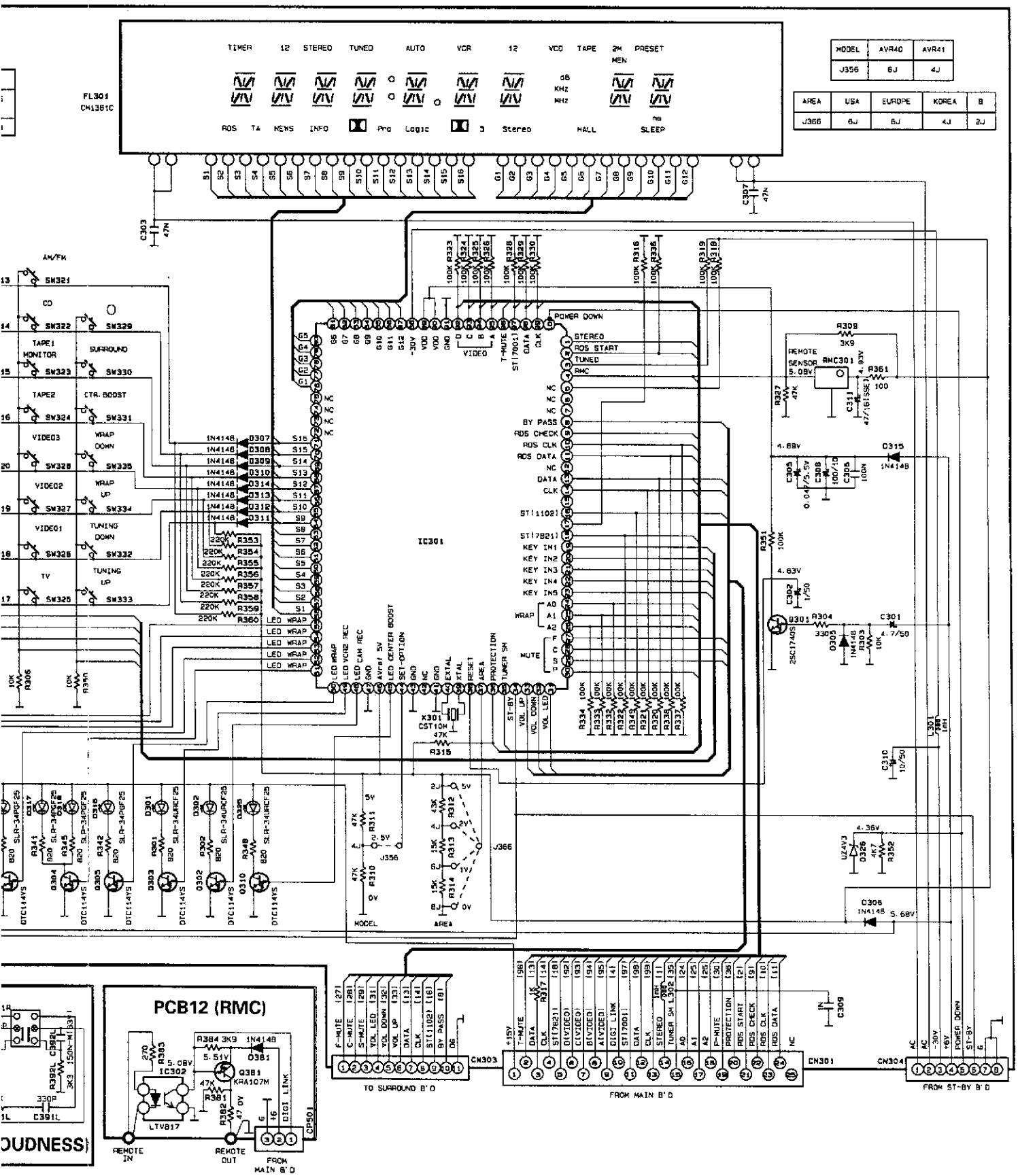
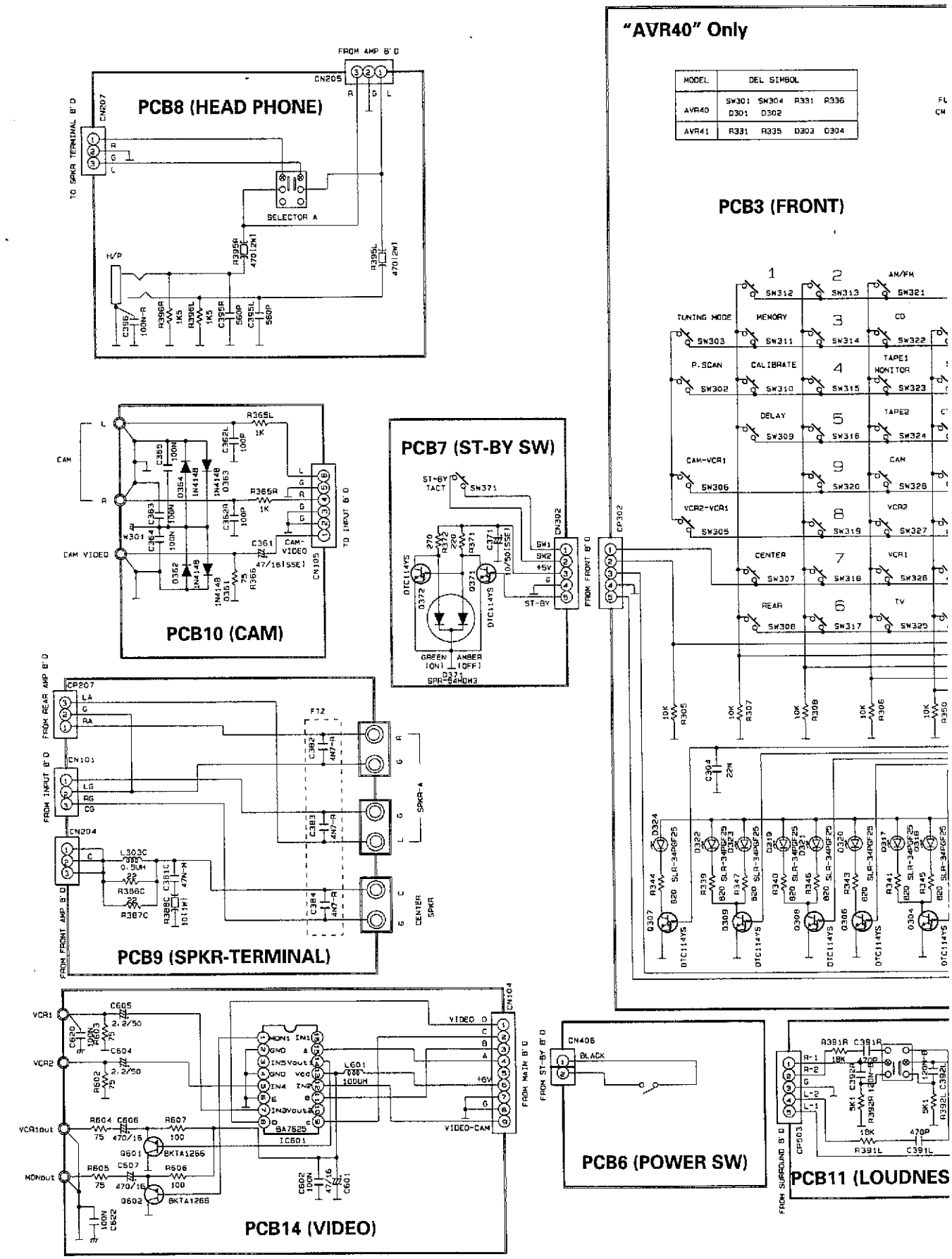
D5
D9
R56
C62

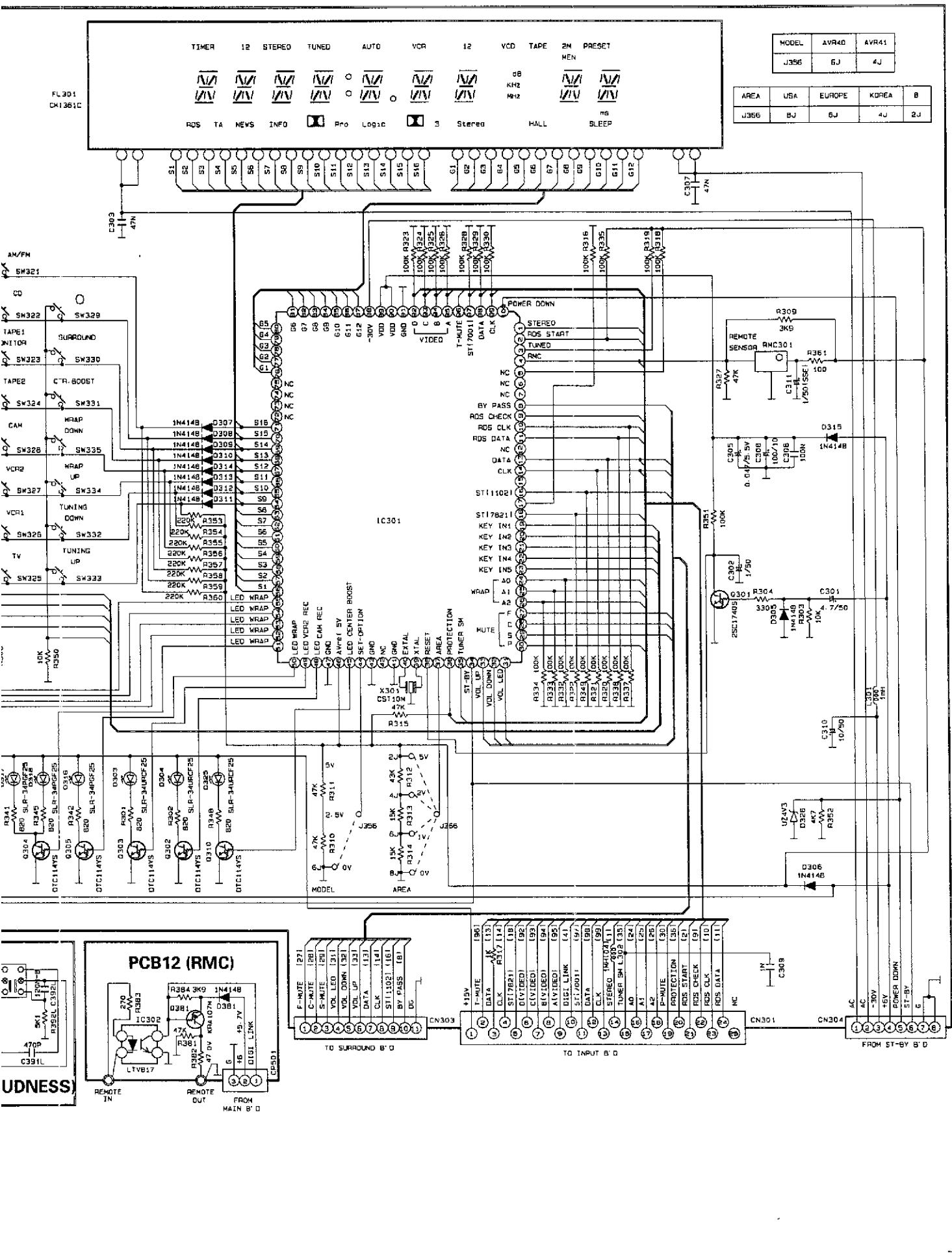
SCHEMATIC DIAGRAM (V)



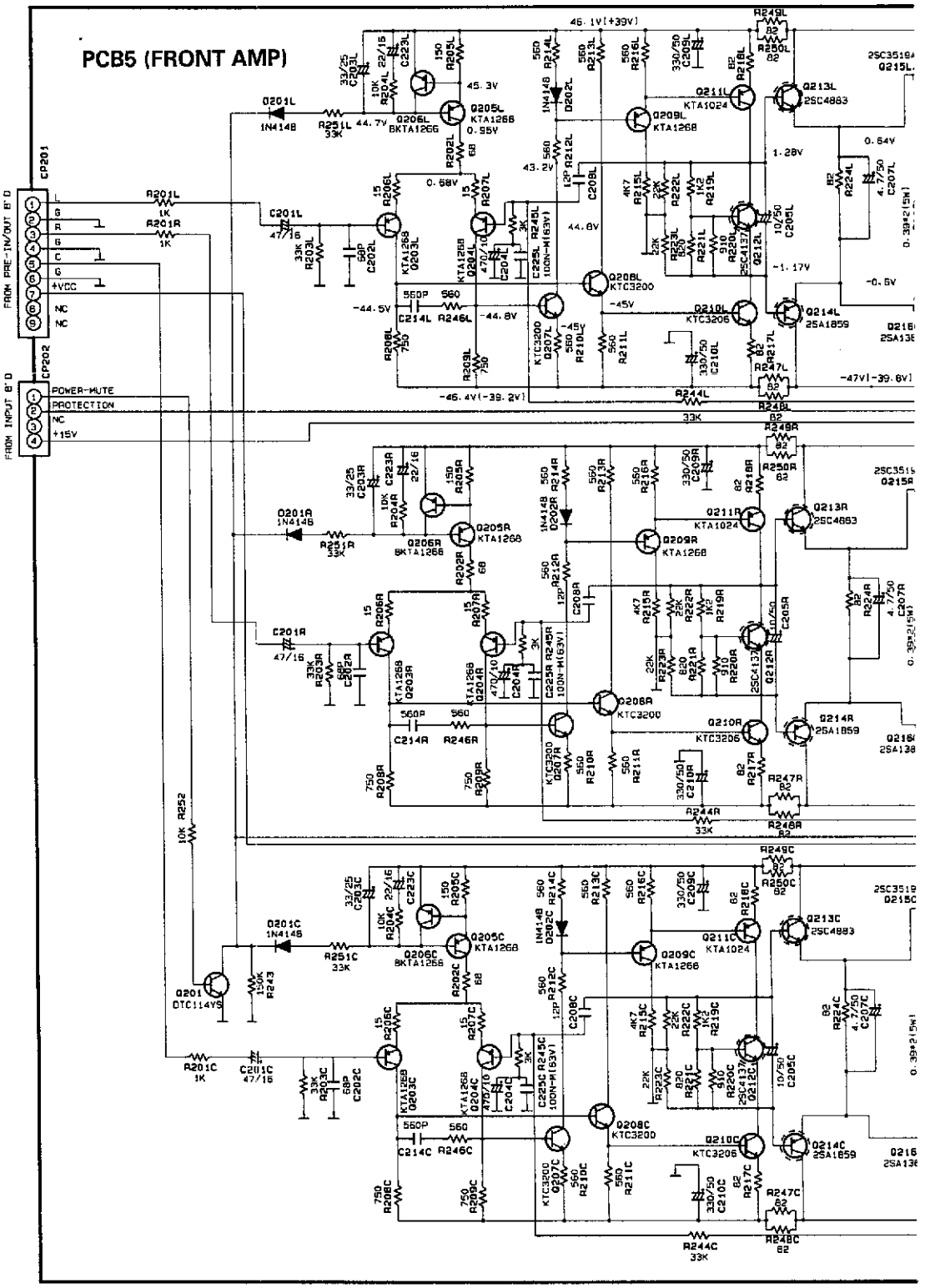

FL301
CM1381C
TIMER
12
STEREO
TUNED
AUTO
VCR
12
VCD
TAPE
2H
PRESET
MEM
dB
KHz
MHz
ms
RDS
TA
NEWS
INFO
Pro Logic
3 Stereo
HALL
SLEEP
IC301
POWER DOWN
STEREO
RDS START
TUNED
RMC
BY PASS
RDS CHECK
RDS CLK
RDS DATA
DATA
CLK
ST(11021)
ST(7821)
KEY IN1
KEY IN2
KEY IN3
KEY IN4
KEY IN5
MUTE
LED WRAP
LED VCR2 REC
LED CAM REC
LED CENTER BOOST
SET-OPTION
PROTECTION
TUNER SM
ST-BY
VOL UP
VOL DOWN
VOL LED
X301
CST10M
47K
R315
AM/FM
SW321
CD
SW322
SW329
TAPE1 MONITOR
SURROUND
SW323
SW330
TAPE2
CTR. BOOST
SW324
SW331
VIDEO3
WRAP DOWN
SW328
SW335
VIDEO2
WRAP UP
SW327
SW334
VIDEO1
TUNING DOWN
SW326
SW332
TV
TUNING UP
SW325
SW333
REMOTE SENSOR
RMC301
5.08V
R308
3K9
R361
100
R327
47K
C311
47/16(SSE)
4.89V
D315
1N4148
C305
C308
100/10
C305
100N
0.047/5.5V
R361
100K
4.83V
C302
1/50
Q301
2SC1740S
R304
330
C301
4.7/50
D305
1N4148
R303
10K
C310
10/50
L301
100
18H
4.36V
UZ4V3
D326
4K7
R352
D306
1N4148
5.68V
MODEL
J356
AREA
J366
5V
0V
2V
1V
R312
43K
R313
15K
R314
15K
R311
47K
R310
47K
CN303
CN301
CN304
TO SURROUND B'D
FROM MAIN B'D
FROM ST-BY B'D
C309
PCB12 (RMC)
IC302
LTV817
Q381
KRA107M
R384 3K9
1N4148
D381
5.51V
5.08V
270
R383
47K
R381
R382
47
REMOTE IN
REMOTE OUT
FROM MAIN B'D
CP501
DIGI LINK
MODEL
AVR40
AVR41
J356
6J
4J
AREA
USA
EUROPE
KOREA
B
J366
6J
6J
4J
2J

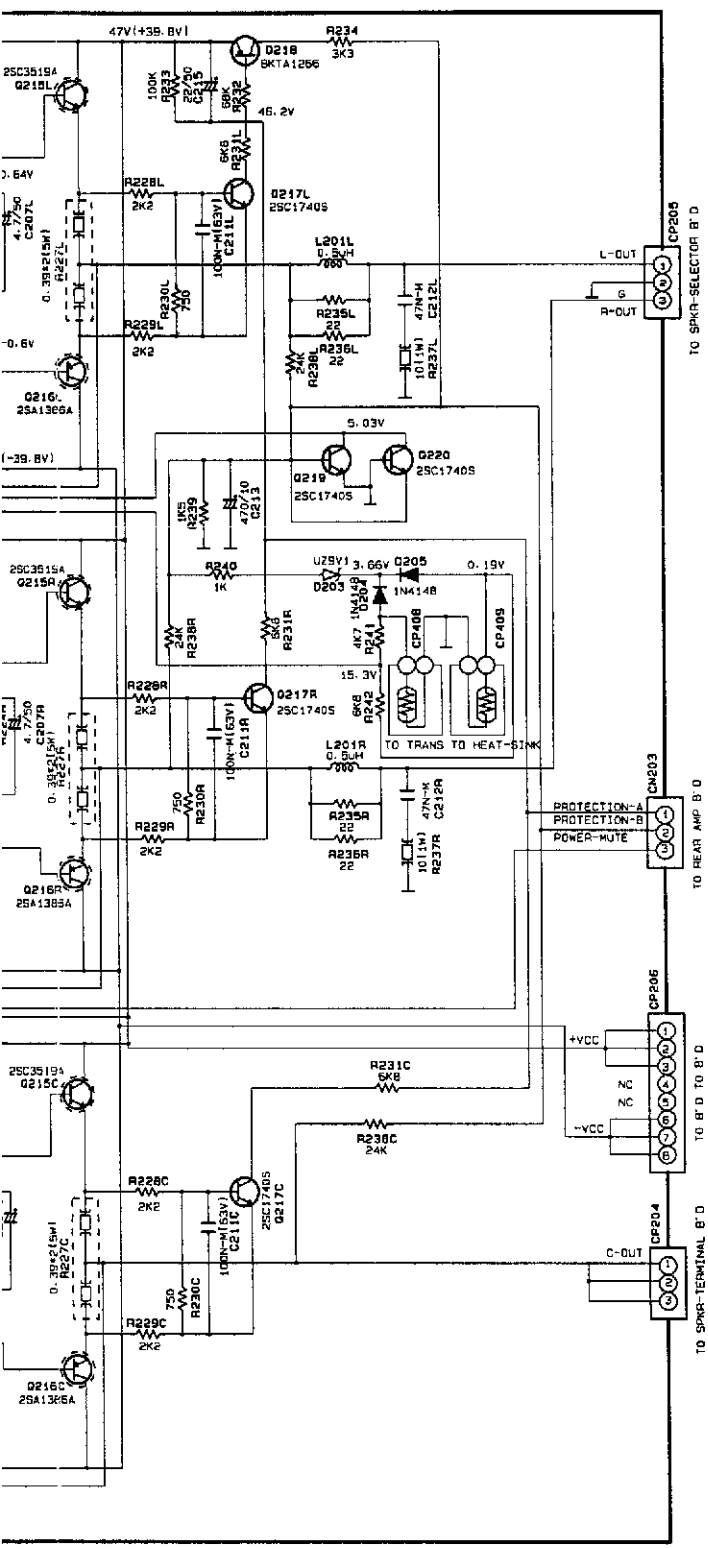
SCHEMATIC DIAGRAM (VI)




TIMER 12 STEREO TUNED AUTO VCR 12 VCD TAPE 2M PRESET MEM
FL301 CM1361C
RDS TA NEWS INFO Pro Logic 3 Stereo HALL SLEEP
MODEL AVR40 AVR41
J356 6J 4J
AREA USA EUROPE KOREA B
J356 8J 6J 4J 2J
IC301
POWER DOWN
STEREO
RDS START
TUNED
RMC
REMOTE SENSOR
RMC301
BY PASS
RDS CHECK
RDS CLK
RDS DATA
LED WRAP
LED VCR2 REC
LED CAM REC
LED CENTER BOOST
MUTE
PCB12 (RMC)
IC302
LTV817
REMOTE IN
REMOTE OUT
FROM MAIN B'D
TO SURROUND B'D
TO INPUT B'D
FROM ST-BY B'D
CN303
CN301
CN304

SCHEMATIC DIGRAM (VII)





NOTES

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

CAUTION

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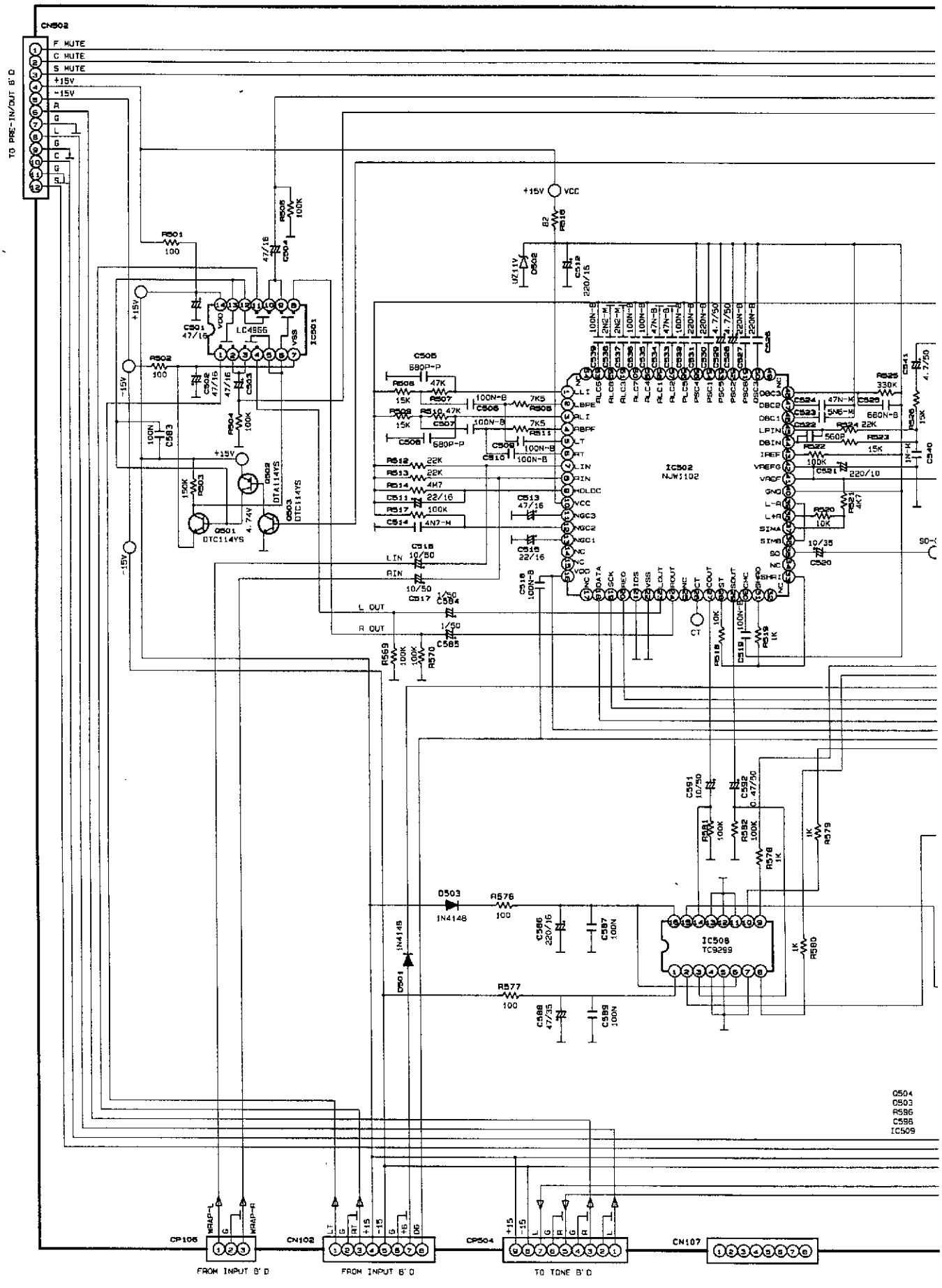
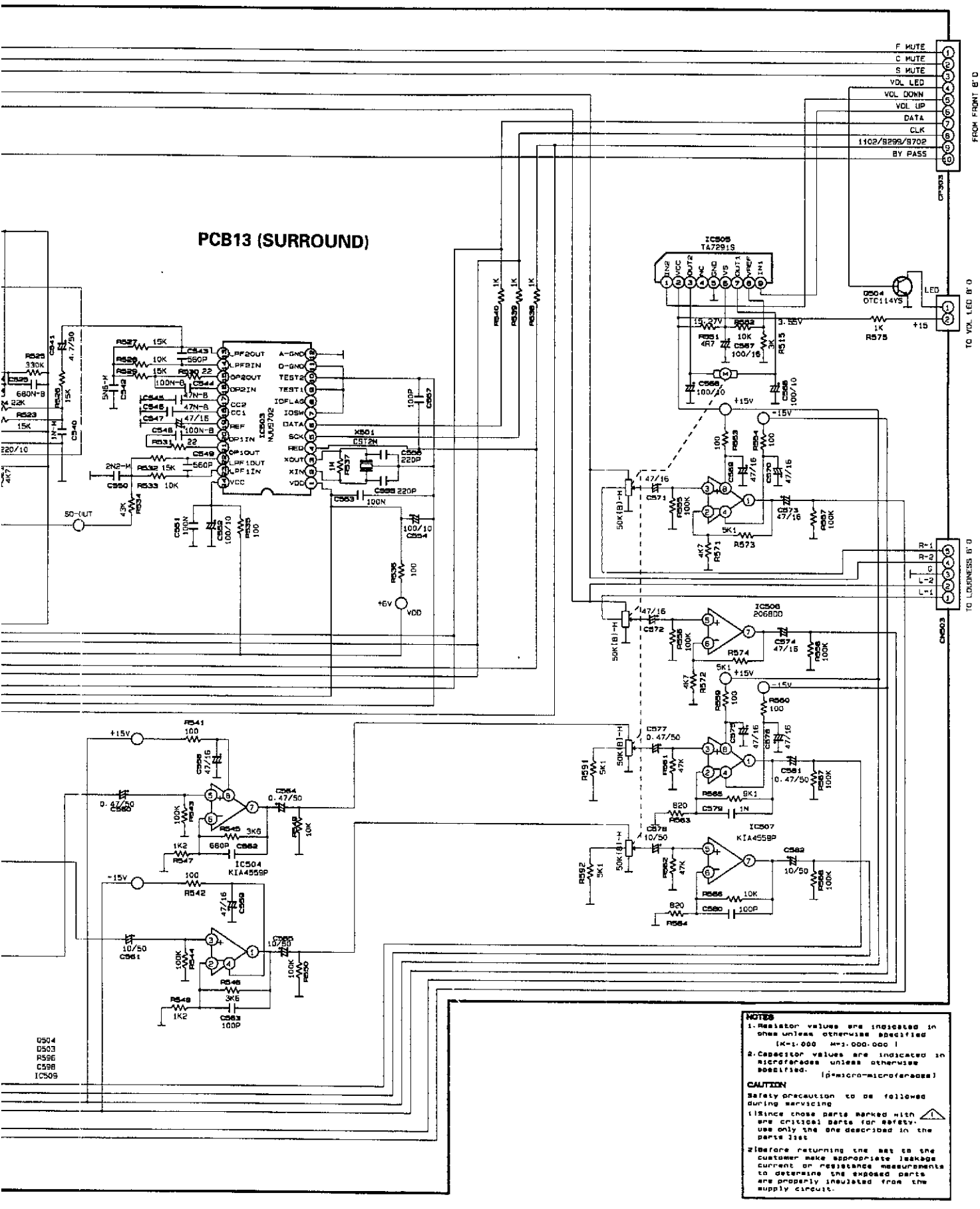
2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

SCHEMATIC DIAGRAM (X)





NOTES

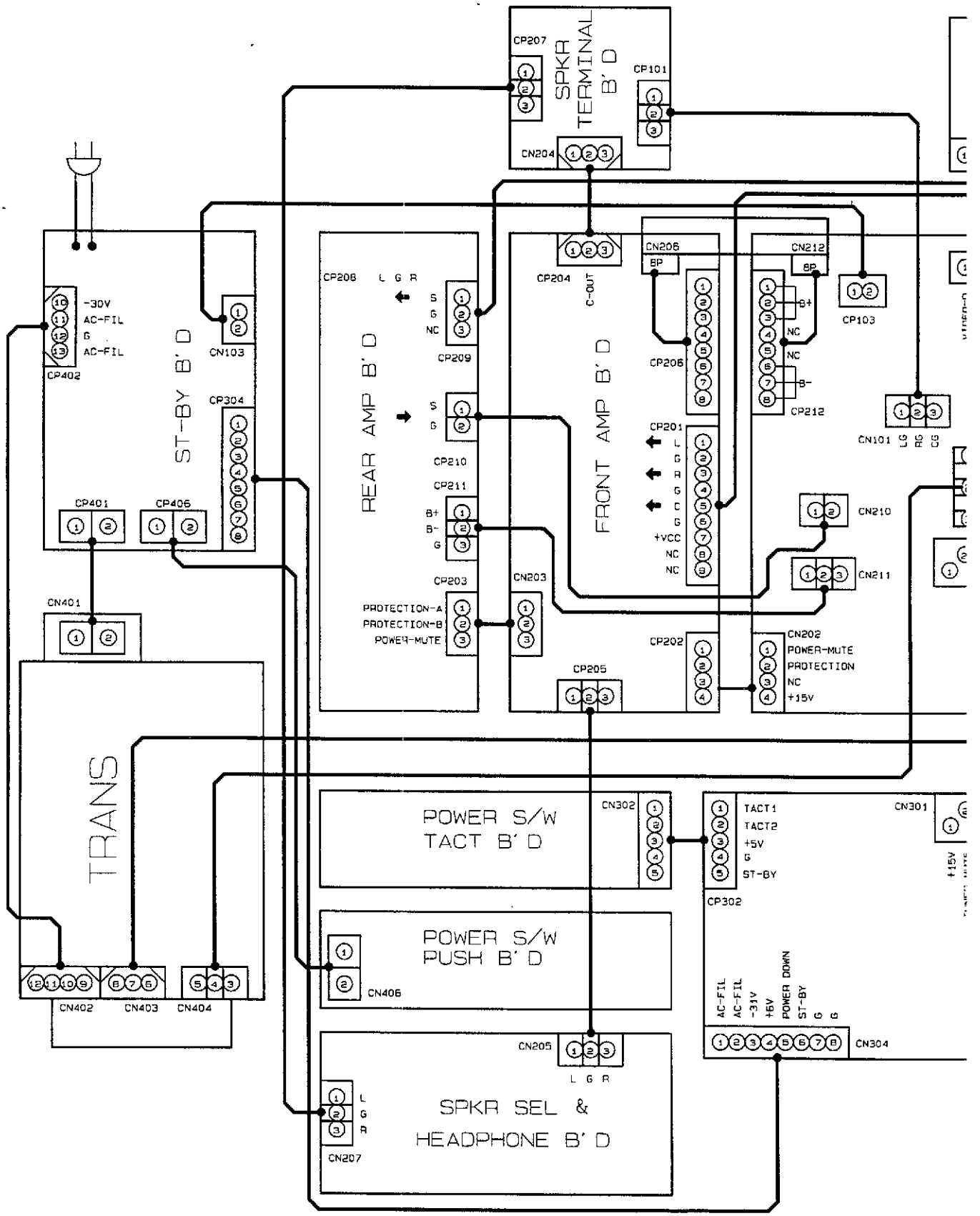
1. Resistor values are indicated in ohms unless otherwise specified (K=1,000 M=1,000,000)
2. Capacitor values are indicated in microfarades unless otherwise specified. (p=micro-microfarades)

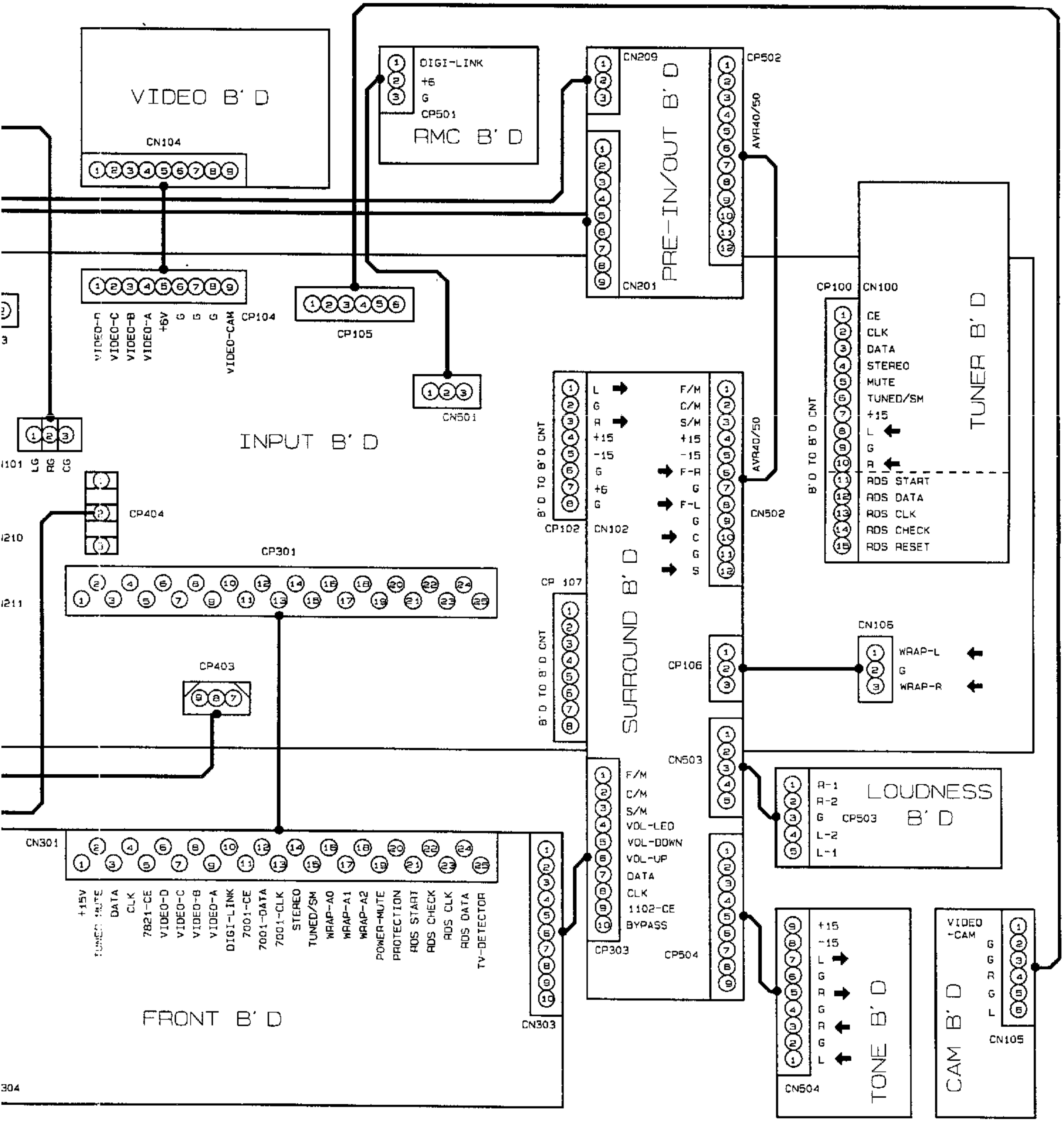
CAUTION

Safety precaution to be followed during servicing

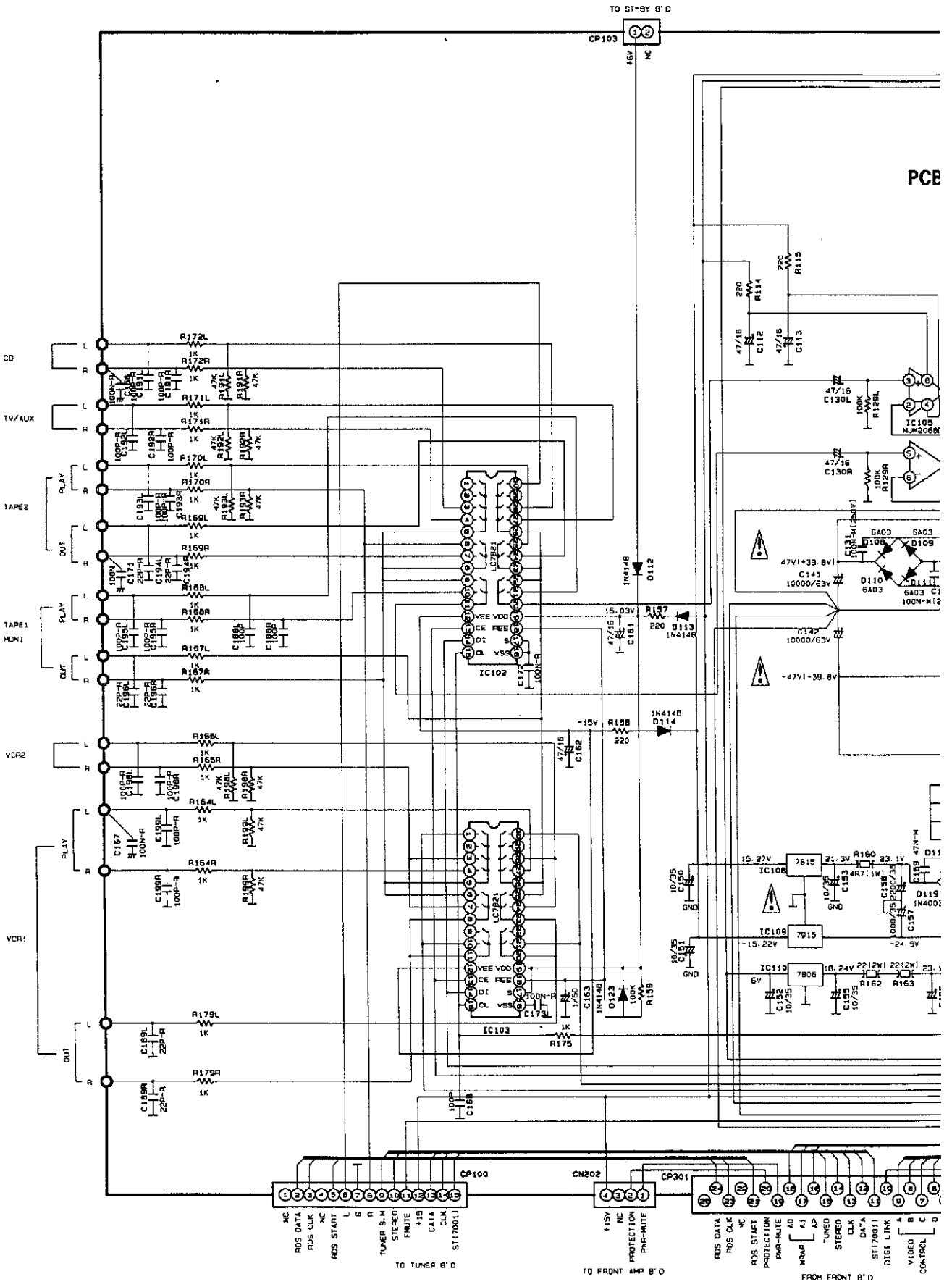
1. Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list
2. Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

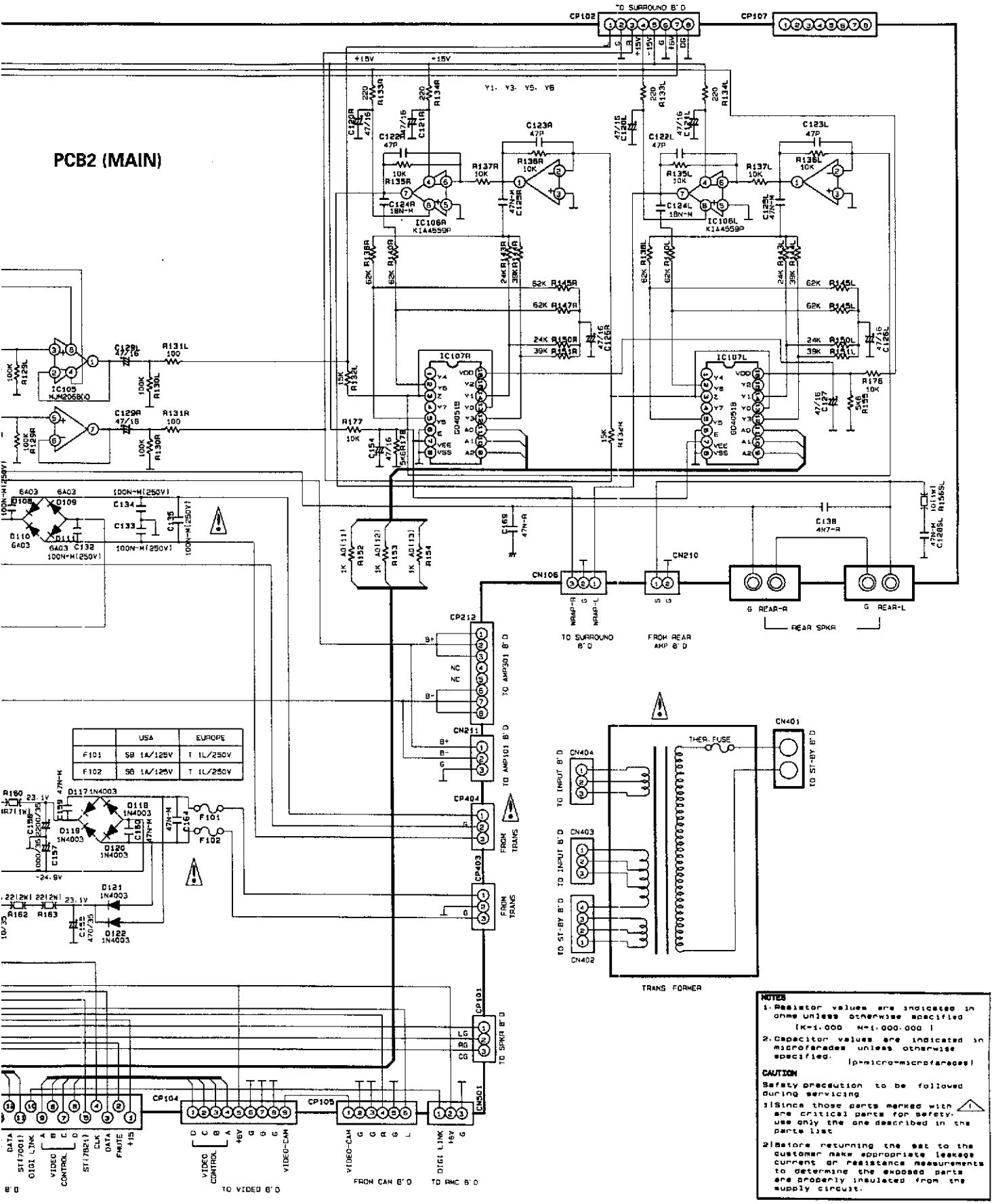
WIRING DIAGRAM




VIDEO B' D
CN104
RMC B' D
DIGI-LINK
+6
G
CP501
PRE-IN/OUT B' D
CN209
CN201
CP502
AVR40/50
CP104
VIDEO-D
VIDEO-C
VIDEO-B
VIDEO-A
+6V
G
G
G
VIDEO-CAM
CP105
CN501
INPUT B' D
LG
RG
CG
CP404
CP301
CP403
TUNER B' D
CP100
CN100
CE
CLK
DATA
STEREO
MUTE
TUNED/SM
+15
L
G
R
RDS START
RDS DATA
RDS CLK
RDS CHECK
RDS RESET
B' D TO B' D CNT
SURROUND B' D
CP102
CN102
L
G
R
+15
-15
G
+6
G
F/M
C/M
S/M
+15
-15
F-R
G
F-L
G
C
G
S
AVR40/50
CN502
CP 107
B' D TO B' D CNT
CP106
CN106
WRAP-L
G
WRAP-R
CN503
LOUDNESS B' D
R-1
R-2
G
CP503
L-2
L-1
CP303
F/M
C/M
S/M
VOL-LED
VOL-DOWN
VOL-UP
DATA
CLK
1102-CE
BYPASS
CP504
CN301
+15V
TUNED MUTE
DATA
CLK
7821-CE
VIDEO-D
VIDEO-C
VIDEO-B
VIDEO-A
DIGI-LINK
7001-CE
7001-DATA
7001-CLK
STEREO
TUNED/SM
WRAP-A0
WRAP-A1
WRAP-A2
POWER-MUTE
PROTECTION
RDS START
RDS CHECK
RDS CLK
RDS DATA
TV-DETECTOR
FRONT B' D
CN303
TONE B' D
+15
-15
L
G
R
G
R
G
L
CN504
CAM B' D
VIDEO -CAM
G
G
R
G
L
CN105

SCHEMATIC DIGRAM (VIII)





	USA	EUROPE
F101	SB 1A/125V	T 1L/250V
F102	SB 1A/125V	T 1L/250V

NOTES

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

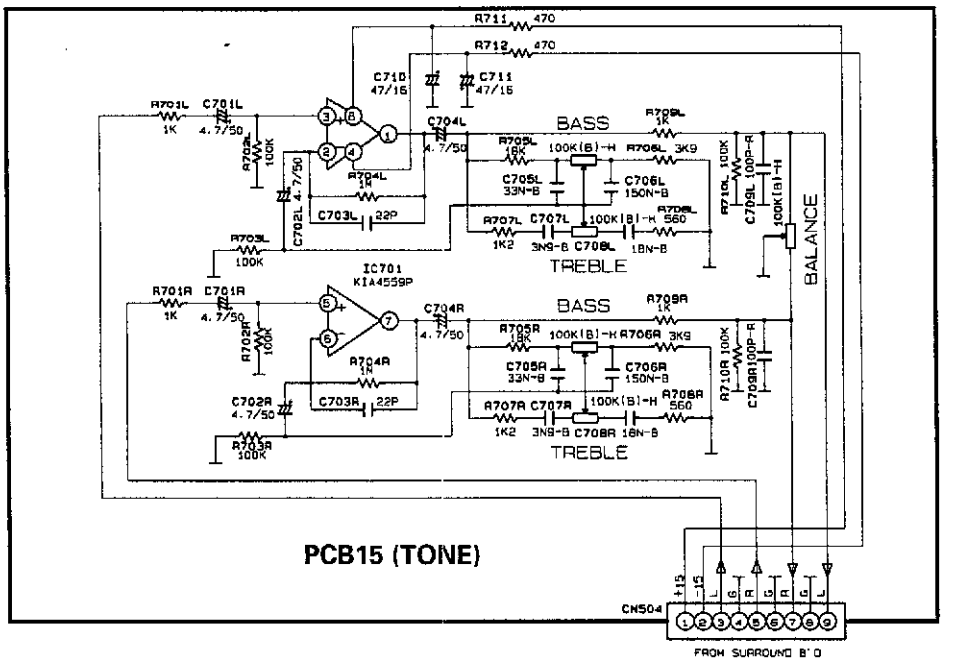
CAUTION

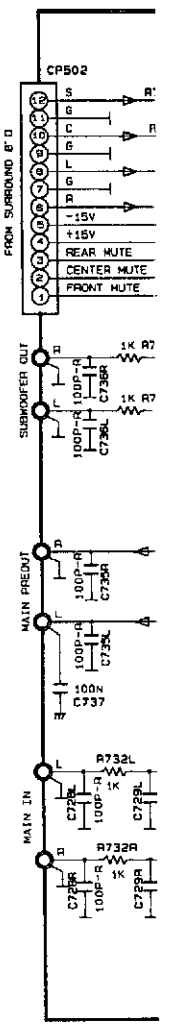
Safety precaution to be followed during servicing.

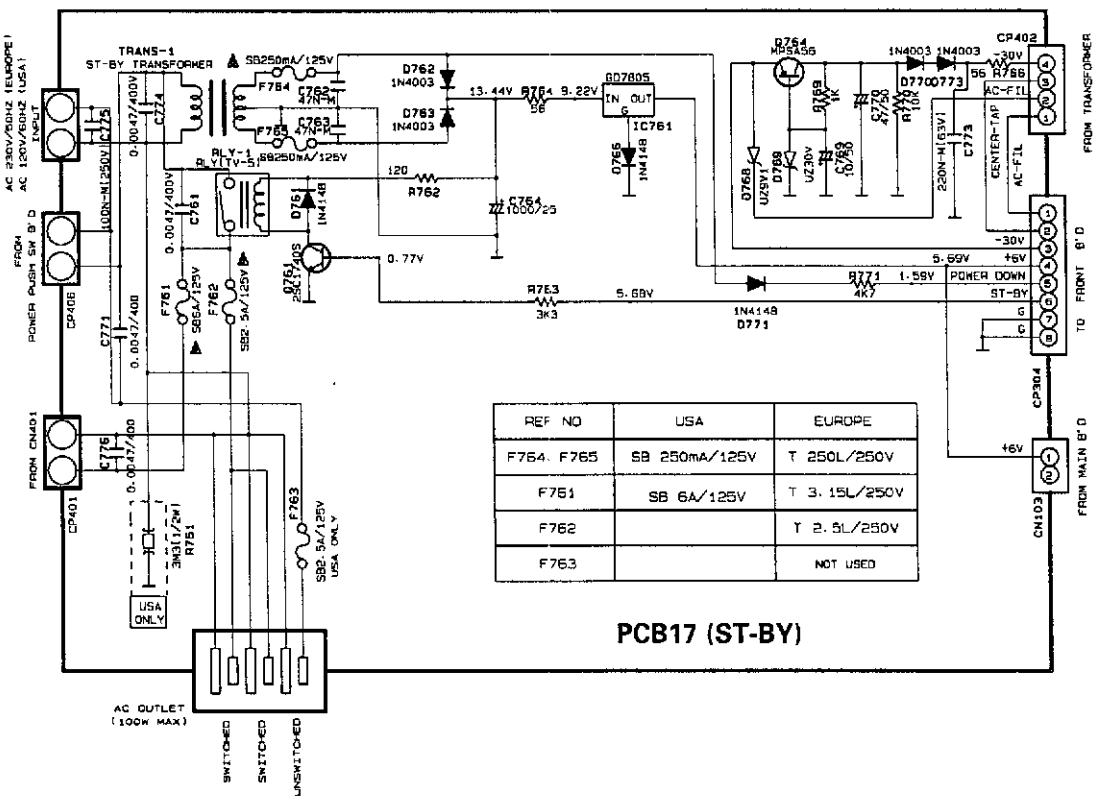
1) Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list.

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.

SCHEMATIC DIGRAM (IX)

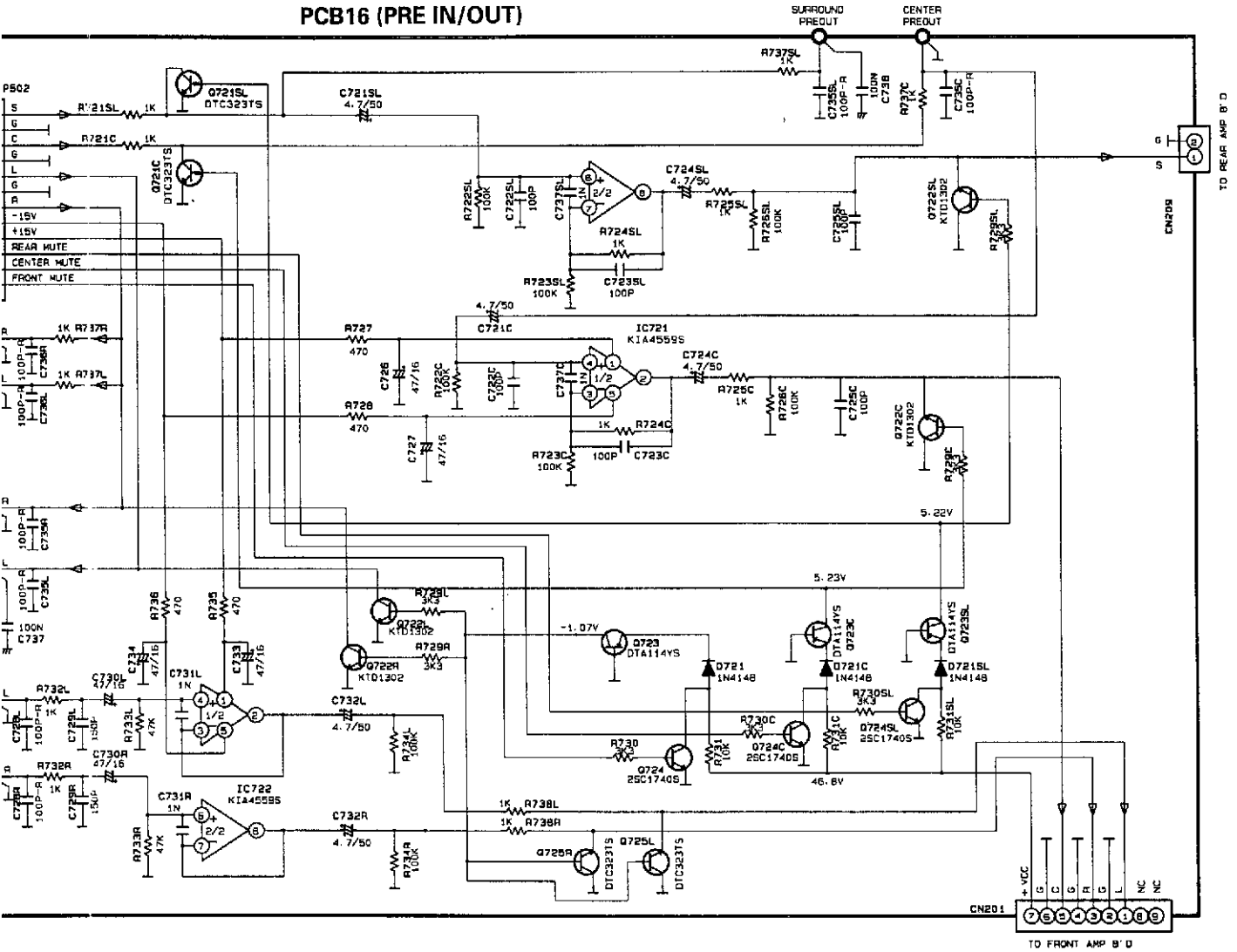






REF NO	USA	EUROPE
F764, F765	SB 250mA/125V	T 250L/250V
F761	SB 6A/125V	T 3.15L/250V
F762		T 2.5L/250V
F763		NOT USED

PCB16 (PRE IN/OUT)



NOTES

1. Resistor values are indicated in ohms unless otherwise specified
   [K=1,000 M=1,000,000]
2. Capacitor values are indicated in microfarades unless otherwise specified.
   [p=micro-microfarades]

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.