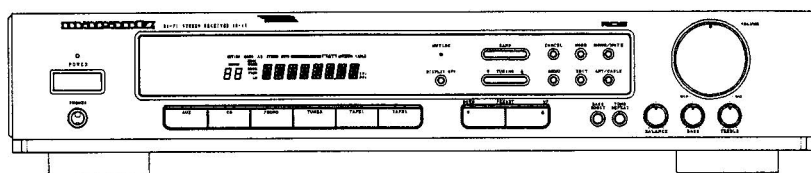


# Service Manual

74SR47/01B/02B/05B

Hi-Fi Stereo Receiver



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Please use this service manual with referring to the user guide (D.F.U) without fail.

# marantz®

## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

### ORDERING PARTS :

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

#### USA

MARANTZ AMERICA, INC.  
440 MEDINAH ROAD  
ROSELLE, ILLINOIS 60172- 2330  
USA  
PHONE : 630 - 307 - 3100  
FAX : 630 - 307 - 2687

#### CANADA

LENBROOK INDUSTRIES LIMITED  
633 GRANITE COURT,  
PICKERING, ONTARIO L1W 3K1  
CANADA  
PHONE : 416-831-6333  
FAX : 416-831-6936

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BUILDING SFF2  
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THE NETHERLANDS  
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#### PROFESSIONAL USA

SUPERSCOPE TECHNOLOGIES, INC.  
MARANTZ PROFESSIONAL PRODUCTS  
1000 CORPORATE BLVD., SUITE D  
AURORA, ILLINOIS 60504 USA  
PHONE : 630 - 820 - 4800  
FAX : 630 - 820 - 8103

#### PROFESSIONAL CANADA

T C ELECTRONICS CANADA LTD  
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BAIE D'URFÉ, QUEBEC H9X 3T2  
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FAX : 514 - 457 - 5524

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FAX : +61 2 764 3074

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MARANTZ BRAZIL  
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CEP 04698-970  
Sao Paulo, SP, BRAZIL  
PHONE: 0800 - 123123 (Discagem Direta Gratuita)  
FAX : +55 11 534. 8988

#### HONG KONG

FORWARD INTERNATIONAL CORP. LTD.  
15 TH FLOOR, REGENT CENTRE,  
88 QUEEN'S ROAD, CENTRAL, H. K.  
PHONE : +852 521 - 0883  
FAX : +852 521 - 7835

#### TAIWAN

PAI-YUING CO., LTD.  
6 TH FL NO, 148 SUNG KIANG ROAD,  
TAIPEI, 10429, TAIWAN R.O.C.  
PHONE : +886 (2) 5221304 - 8  
FAX : +886 (2) 5630415

#### THAILAND

MRZ STANDARD CO., LTD.  
746 - 750 WANGBURAPA BANGKOK  
10200 THAILAND  
PHONE : +66 2222 9181  
FAX : +66 2225 8871

#### MALAYSIA

WO KEE HONG ELECTRONICS SDN. BHD.  
NO. 1 02 JALAN SS 21/35, DAMANSARA  
UTAMA, 47400 PETALING JAYA  
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MALAYSIA  
PHONE : +60 3 - 7184666  
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35-1, 7- chome, Sagamiono  
Sagamihara - shi, Kanagawa  
Japan  
PHONE : +81 427 44 7950  
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東京都渋谷区恵比寿南 1-11-9

#### SINGAPORE

FORWARD MARKETING (SINGAPORE) PTE. LTD.  
29, LENG KEE ROAD  
SINGAPORE 159099,  
PHONE : +65 475 - 4555  
FAX : +65 475 - 8623

### SHOCK, FIRE HAZARD SERVICE TEST :

**CAUTION :** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins ( with unit NOT connected to AC mains and its Power switch ON ), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard N0. 813.

In case of difficulties, do not hesitate to contact the Technical  
Department at above mentioned address.

# 1. TECHNICAL SPECIFICATIONS

## FM TUNER SECTION

Frequency range .....	87.5 – 108MHz
Sensitivity	
DIN mono (S/N 26dB, 98MHz, 75Ω) .....	1μV
DIN stereo (S/N 46dB, 98MHz, 75Ω) .....	30μV
Selectivity adjacent channel 98MHz .....	60dB
Tuner output (1kHz, 75kHz deviation) .....	1200mV
Signal to noise ratio	
S/N DIN weighted mono .....	74dB
S/N DIN weighted stereo .....	69dB
Total harmonic distortion mono (1kHz, 40kHz dev.) .....	< 0.2%
Total harmonic distortion stereo (1kHz, 40kHz dev.) .....	< 0.4%
Accuracy of frequency response across 30Hz – 15kHz bandwidth .....	+0.5 / -1.5dB

## MW TUNER SECTION

Frequency range .....	/01 version: 520 – 1710kHz
.....	...../02 and /05 version: 531 – 1602kHz
Sensitivity (S/N 20dB, 30% mod., 999kHz) .....	500μV/m
Selectivity (999kHz, 9kHz) .....	35dB
Signal to noise ratio at 999kHz .....	52dB

## LW TUNER SECTION

Frequency range .....	153 – 281kHz
Sensitivity (S/N 20dB 30% mod. 207kHz) .....	1800μV/m
Signal to noise ratio at 207kHz .....	52dB

## AMPLIFIER SECTION

Power output	DIN 4Ω .....	53W
	DIN 8Ω .....	42W
	RMS 8Ω .....	40W
Dynamic power 8Ω/ 4Ω .....		60 / 95W
T.H.D. at 8Ω rated RMS output at 1kHz .....		0.01% / 0.015%
Damping factor .....		58
Input sensitivity	: PHONO .....	2mV / 47kΩ
	: CD / AUX / TAPE1 / TAPE2 .....	175mV / 47kΩ
S/N	: PHONO .....	74dB
	: CD / AUX / TAPE1 / TAPE2 .....	93dB

## POWER REQUIREMENTS

/ 02 version .....	230V AC, 50 / 60Hz
/ 05 version .....	240V AC, 50 / 60Hz
/ 01 version .....	110 – 120 / 220 – 240V AC, 50 / 60Hz

## DIMENSIONS

Width .....	439mm
Height .....	(W/out Leg.) 75mm
Depth .....	300mm

WEIGHT .....	6.5kg
--------------	-------

## 2. TEST MODE

To start the Test press and hold the buttons "AUX" and "MONO/MUTE" simultaneously while switching on with the "POWER" button.

- After switching on the display shows whether the EEPROM is in order.



- After the EEPROM check, the country versions is shown in the display.



Europe version



USA version

- Now all segments in the display will be illuminated on after another.



- After a few seconds the display changes to:

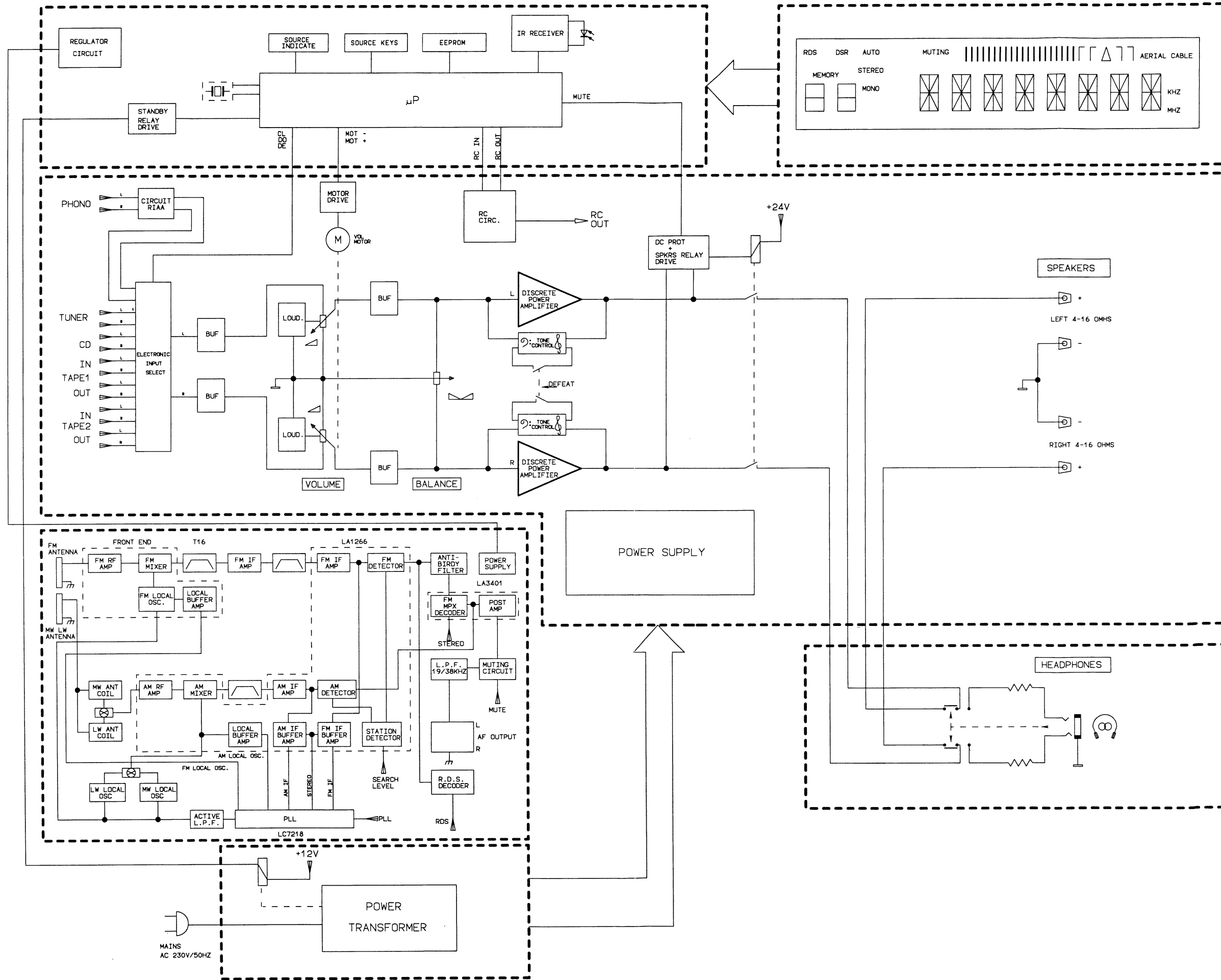


- When pressing one of the buttons, the respective button is shown in the display:



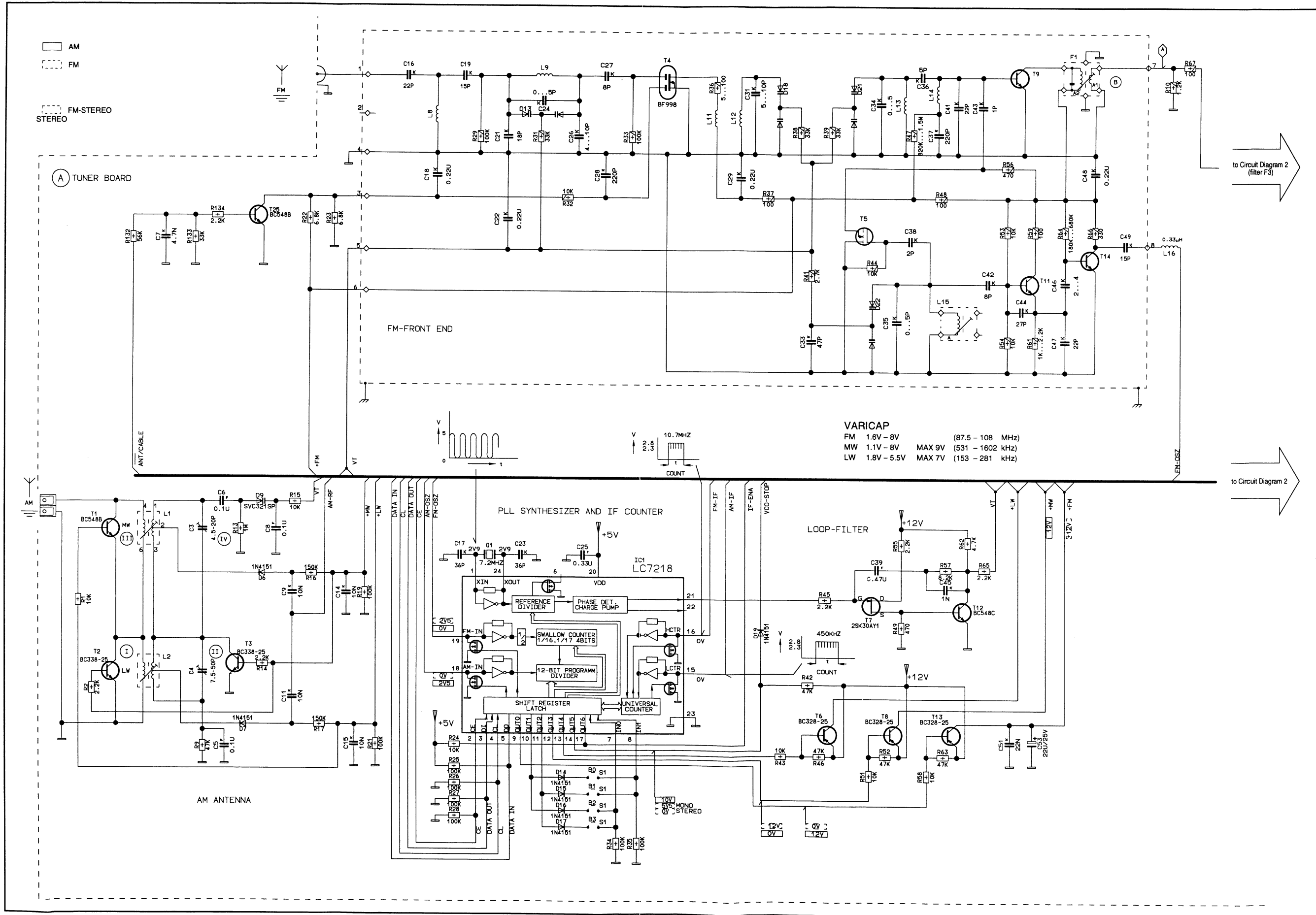
The Test Mode can be stopped only by switching the receiver off.

### 3. BLOCK DIAGRAM

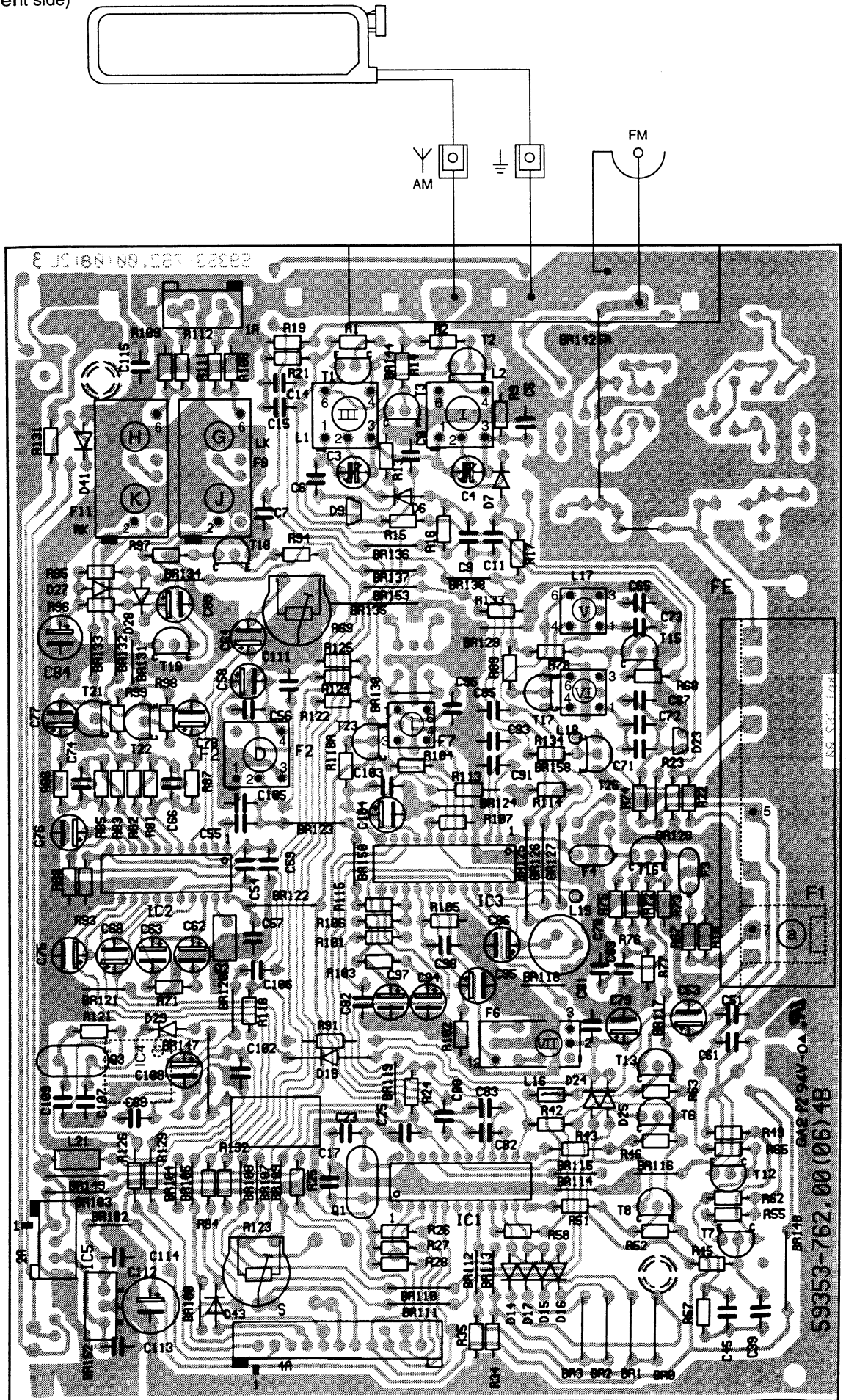


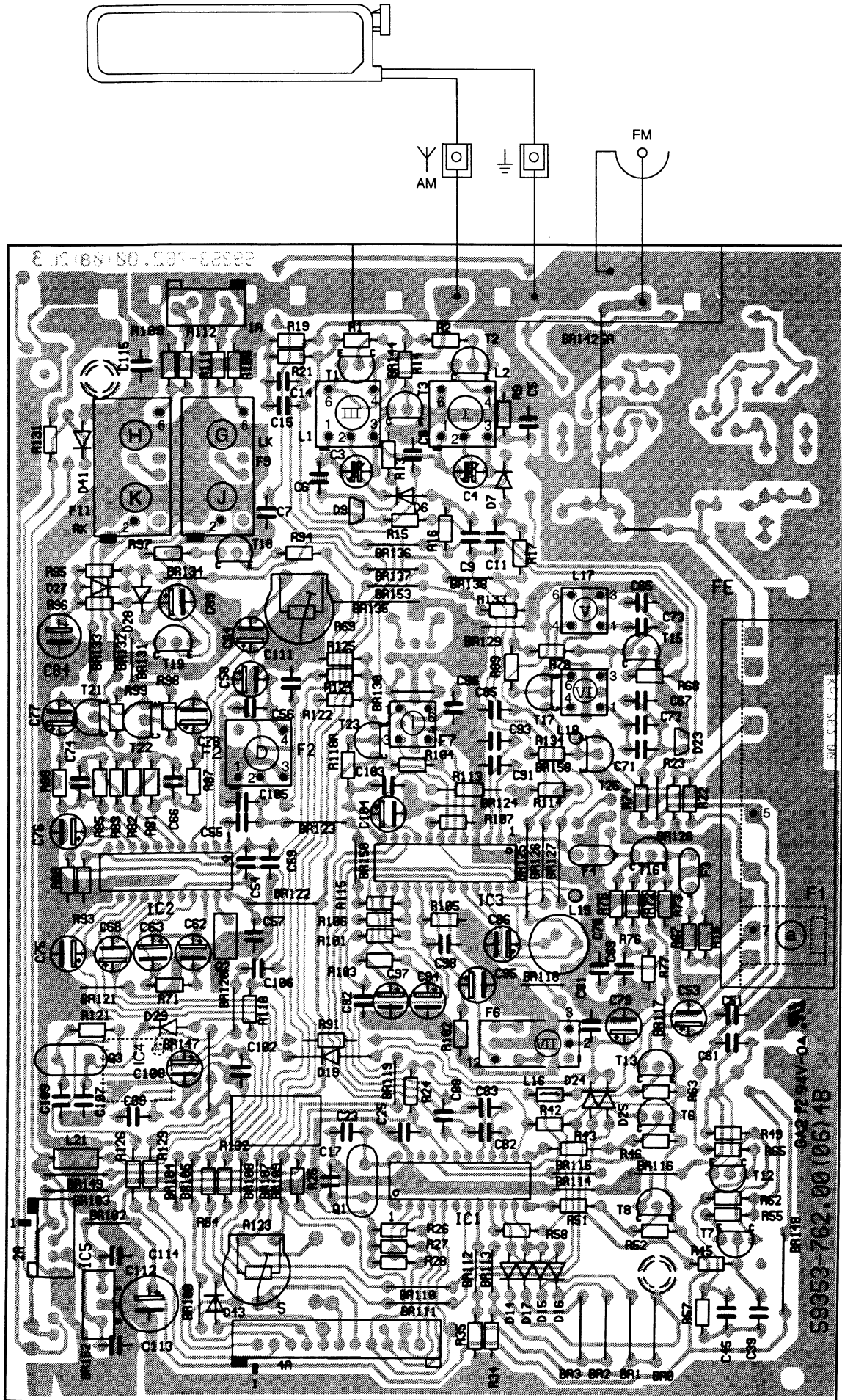
## 4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

### 4.1 SCHEMATIC DIAGRAM TUNER BOARD - PART 1



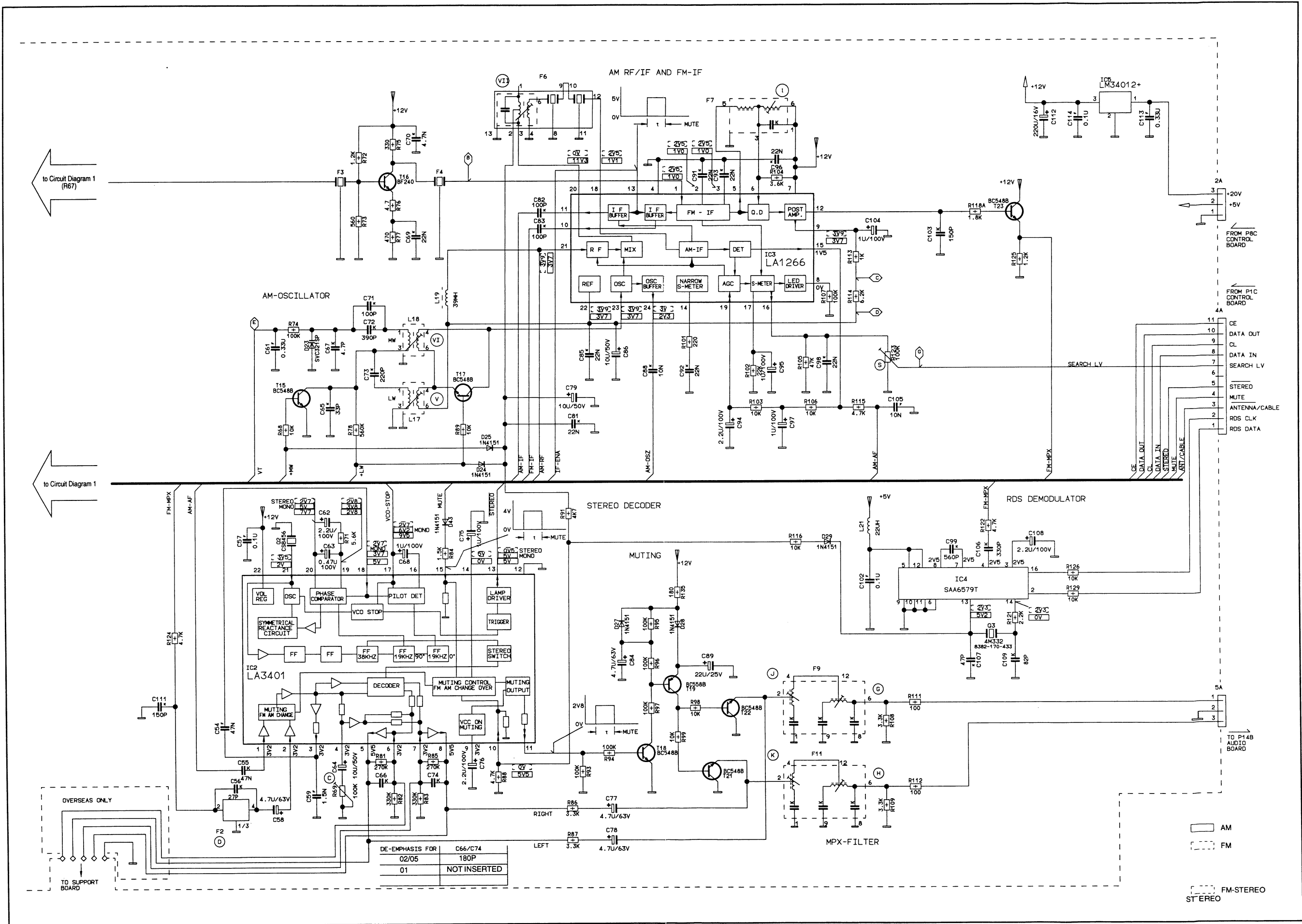
**4.2 TUNER PCB**  
(component side)



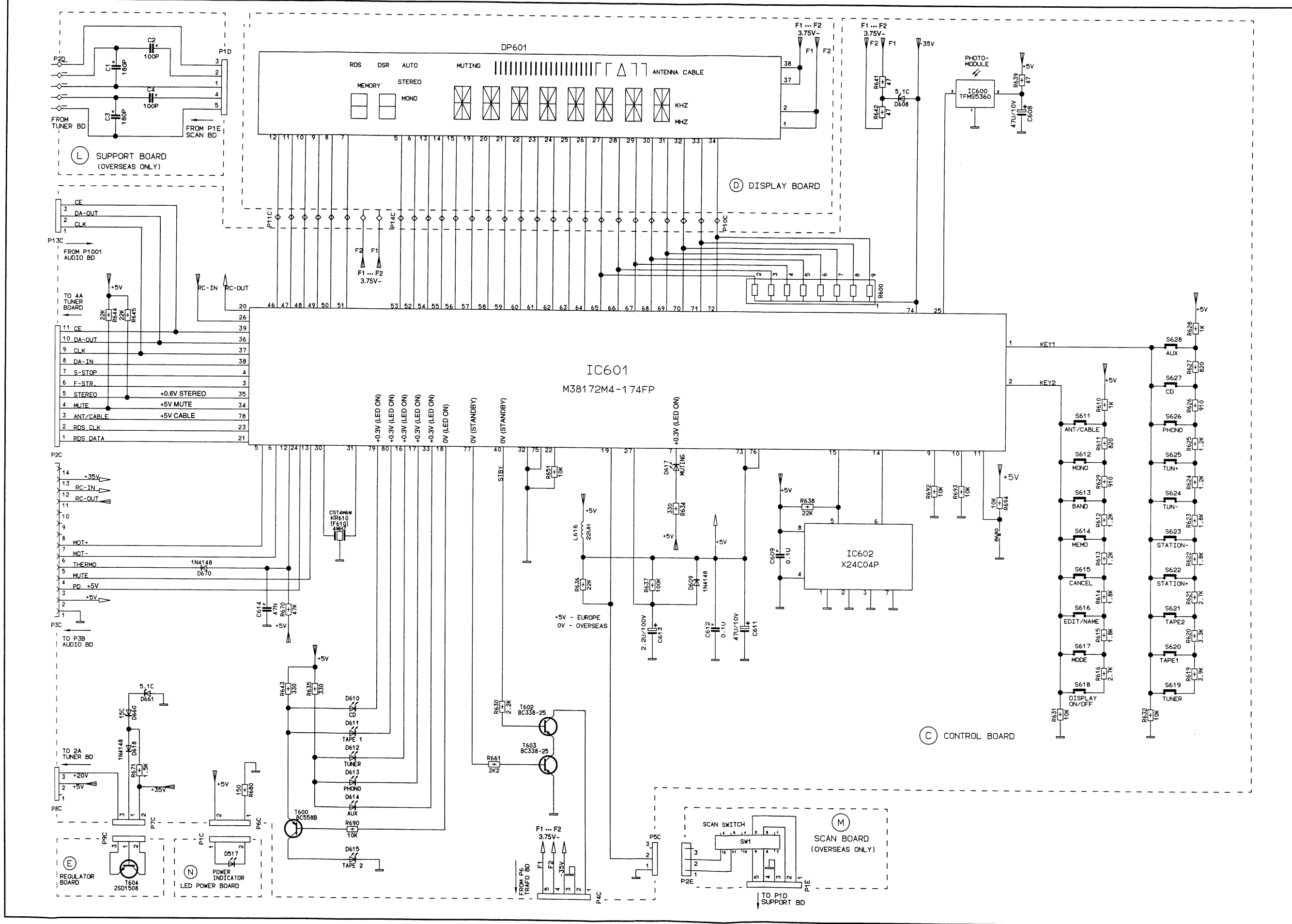




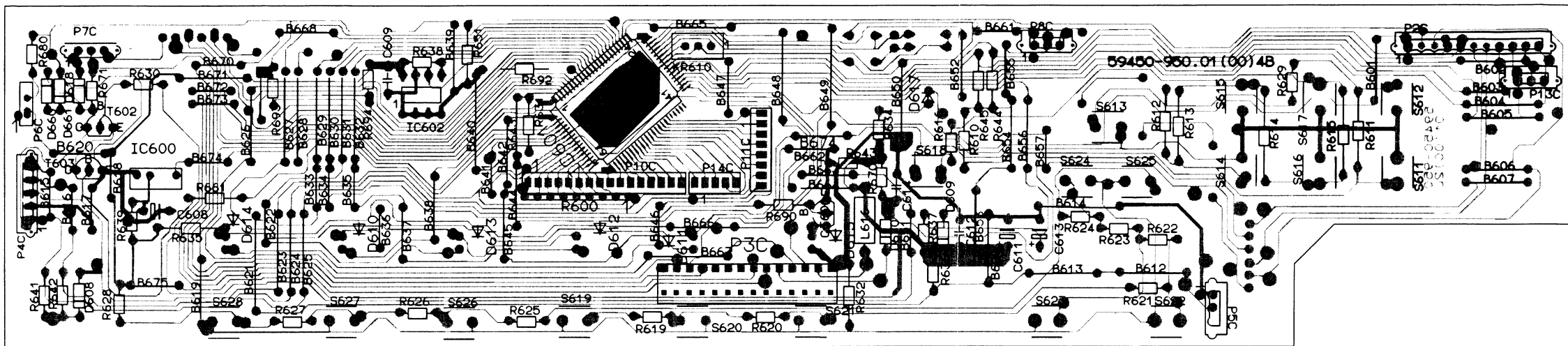
4.3 SCHEMATIC DIAGRAM TUNER BOARD - PART 2



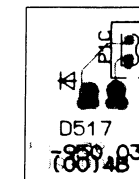
4.4 SCHEMATIC DIAGRAM : CONTROL BOARD, DISPLAY BOARD, SUPPORT BOARD, SCAN BOARD, REGULATOR BOARD, LED POWER BOARD



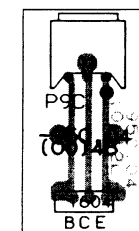
### 4.5.1 CONTROL PCB (component side)



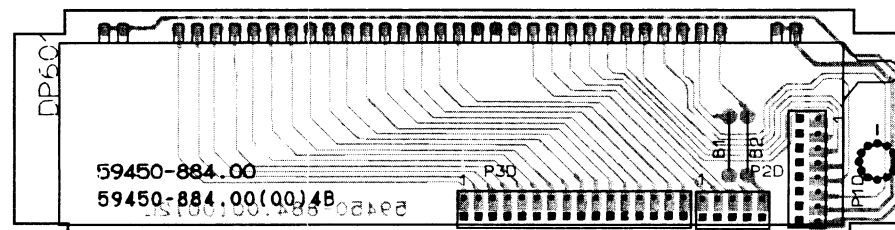
### 4.5.2 LED POWER PCB (component side)



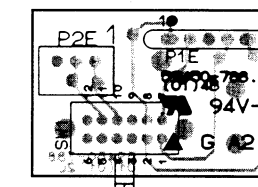
### 4.5.3 REGULATOR PCB (component side)



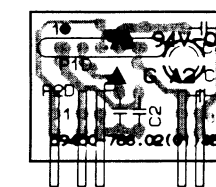
### 4.5.4 DISPLAY PCB (component side)



### 4.5.5 SCAN PCB (component side)

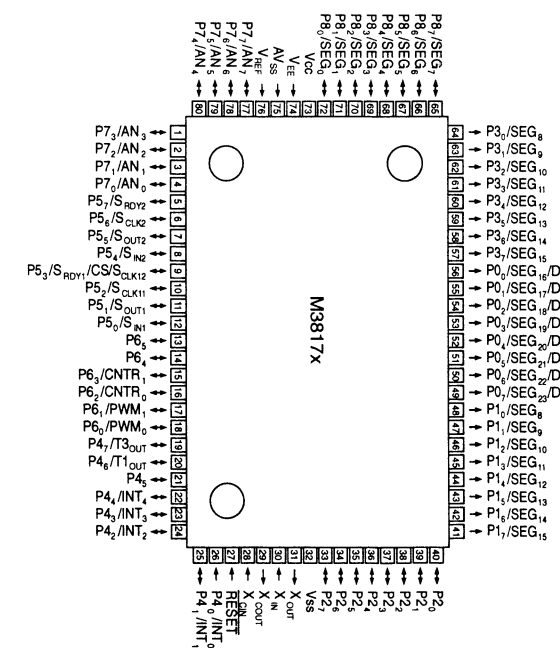
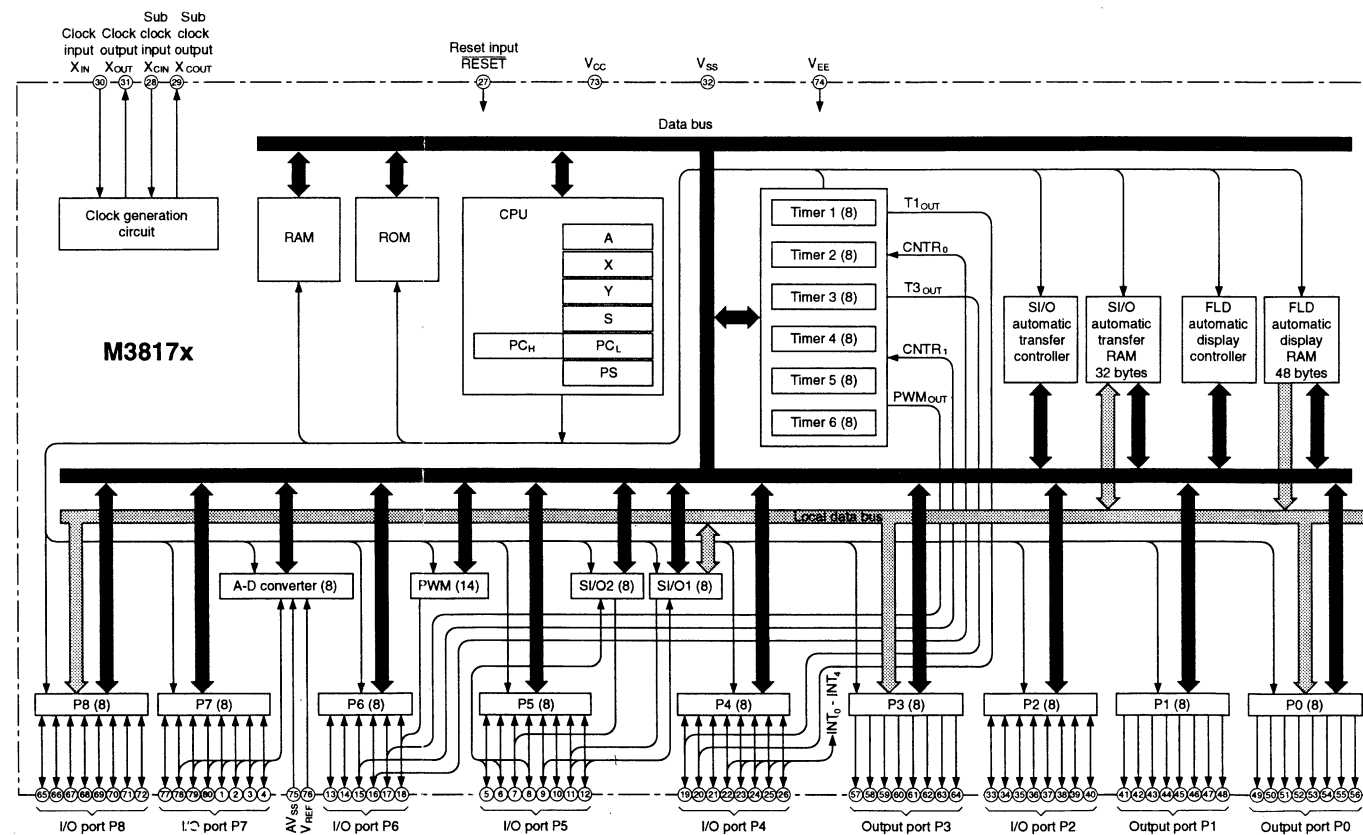


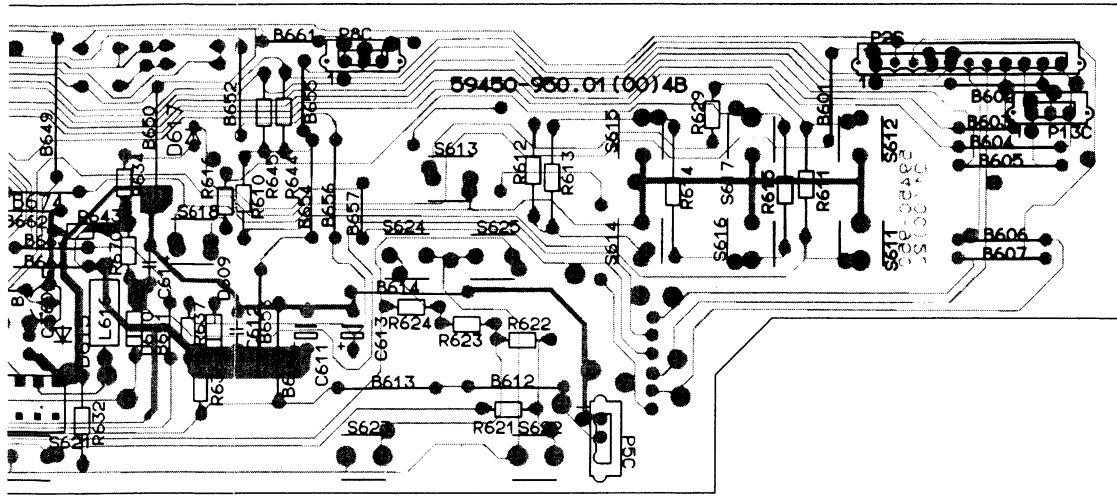
### 4.5.6 SUPPORT PCB (component side)



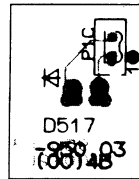
#### PIN DESCRIPTION M3817x

Pin	Name	Function	Alternate Function	
73-32	V <sub>CC</sub> , V <sub>SS</sub>	Power supply	Power supply inputs 4.0 to 5.5V to V <sub>CC</sub> , and 0V to V <sub>SS</sub> .	
74	V <sub>EE</sub>	Pull-down power input	Applies voltage supplied to pull-down resistors of ports P0, P1, P2 and P3.	
76	V <sub>REF</sub>	Analog reference voltage	Reference voltage input pin for A-D converter.	
75	AV <sub>SS</sub>	Analog power voltage	GND input pin for A-D converter. Keep at the same potential as V <sub>SS</sub> .	
27	RESET	Reset input	To reset the microcomputer, this pin should be kept at an "L" level for more than 2μs under high-speed operating conditions. In low-speed operation start mode, internal reset is not released until the X <sub>CIN</sub> - X <sub>COUT</sub> clock has had time to stabilize.	
30	X <sub>IN</sub>	Clock input	Input and output signals for the internal clock generation circuit. It consist of internal feedback amplifier. Connect a ceramic resonator or quartz crystal between the X <sub>IN</sub> and X <sub>OUT</sub> pins to set the oscillation frequency. If an external clock is used, connect the clock source to the X <sub>IN</sub> pin and leave the X <sub>OUT</sub> pin open. This clock is used as system clock.	
31	X <sub>OUT</sub>	Clock output		
28	X <sub>CIN</sub>	Sub clock input	Input and output signals for the internal sub clock generation circuit. It consist of internal amplifier without feedback. Connect a ceramic resonator or quartz crystal between the X <sub>CIN</sub> and X <sub>COUT</sub> pins. If an external clock is used, connect the clock source to the X <sub>CIN</sub> pin and leave the X <sub>COUT</sub> pin open. This clock can also be used as the system clock.	
29	X <sub>COUT</sub>	Sub clock output		
56-49	P0 <sub>7</sub> /SEG <sub>16</sub> /DIG <sub>0</sub> -P0 <sub>7</sub> /SEG <sub>23</sub> /DIG <sub>7</sub>	Output port P0	An 8-bit output port. The output structure is high-breakdown-voltage P-channel open drain with internal pull-down resistors connected between the output and the V <sub>EE</sub> pin. Are "L" at reset.	FLD automatic display pins
48-41	P1 <sub>0</sub> /DIG <sub>8</sub> -P1 <sub>7</sub> /DIG <sub>15</sub>	Output port P1	An 8-bit output port with the same function as port P0.	FLD automatic display pins
40-33	P2 <sub>0</sub> - P2 <sub>7</sub>	I/O port P2	An 8-bit CMOS I/O port. An I/O direction register allows each pin to be individually programmed as either input or output. At reset this port is set to input mode. The input levels are TTL compatible.	
64-57	P3 <sub>0</sub> /SEG <sub>9</sub> -P3 <sub>7</sub> /SEG <sub>15</sub>	Output port P3	An 8-bit output port with the same function as port P0.	FLD automatic display pins
26	P4 <sub>0</sub> /INT <sub>0</sub>	Input port P4 <sub>0</sub>	A 1-bit CMOS input pin.	External interrupt input pin
25-22	P4 <sub>1</sub> /INT <sub>1</sub> -P4 <sub>4</sub> /INT <sub>4</sub>	I/O port P4	A 7-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	External interrupt input pins
21	P4 <sub>5</sub>			
20-19	P4 <sub>6</sub> /T1 <sub>OUT</sub> -P4 <sub>7</sub> /T3 <sub>OUT</sub>			Timer output pins
12-9	P5 <sub>0</sub> /S <sub>IN1</sub> -P5 <sub>1</sub> /S <sub>OUT1</sub> -P5 <sub>2</sub> /S <sub>CLK1</sub> -P5 <sub>3</sub> /S <sub>RDY1</sub> /CS/S <sub>CLK12</sub>	I/O port P5	An 8-bit I/O port with the same function as port P2. The output structure of this port is N-channel open drain, and the input levels are CMOS compatible. Keep the input voltage of this port between 0V and V <sub>CC</sub> .	Serial I/O1 I/O pins
8-5	P5 <sub>4</sub> /S <sub>IN2</sub> -P5 <sub>5</sub> /S <sub>OUT2</sub> -P5 <sub>6</sub> /S <sub>CLK2</sub> -P5 <sub>7</sub> /S <sub>RDY2</sub>			Serial I/O2 I/O pins
18	P6 <sub>0</sub> /PWM <sub>0</sub>	I/O port P6	A 6-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	14-bit PWM output pin
17	P6 <sub>1</sub> /PWM <sub>1</sub>			8-bit PWM output pin
16-15	P6 <sub>2</sub> /CNTR <sub>0</sub> -P6 <sub>3</sub> /CNTR <sub>1</sub>			Event counter input pins
14-13	P6 <sub>4</sub> , P6 <sub>5</sub>			
4-1, 80-77	P7 <sub>0</sub> /AN <sub>0</sub> -P7 <sub>7</sub> /AN <sub>7</sub>	I/O port P7	An 8-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	A-D converter input pins
72-65	P8 <sub>0</sub> /SEG <sub>0</sub> -P8 <sub>7</sub> /SEG <sub>7</sub>	I/O port P8	An 8-bit I/O port with the same function as port P2. The output structure of this port is P-channel open drain, and the input levels are CMOS compatible. Please note that this port does not have internal pull-down resistors.	FLD automatic display pins

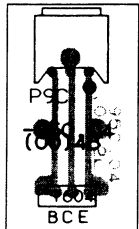




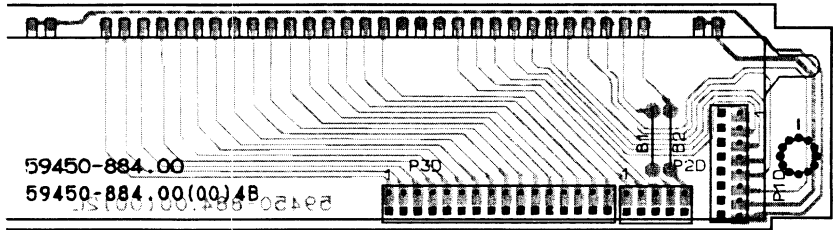
4.5.2 LED POWER PCB (component side)



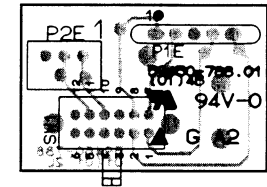
4.5.3 REGULATOR PCB (component side)



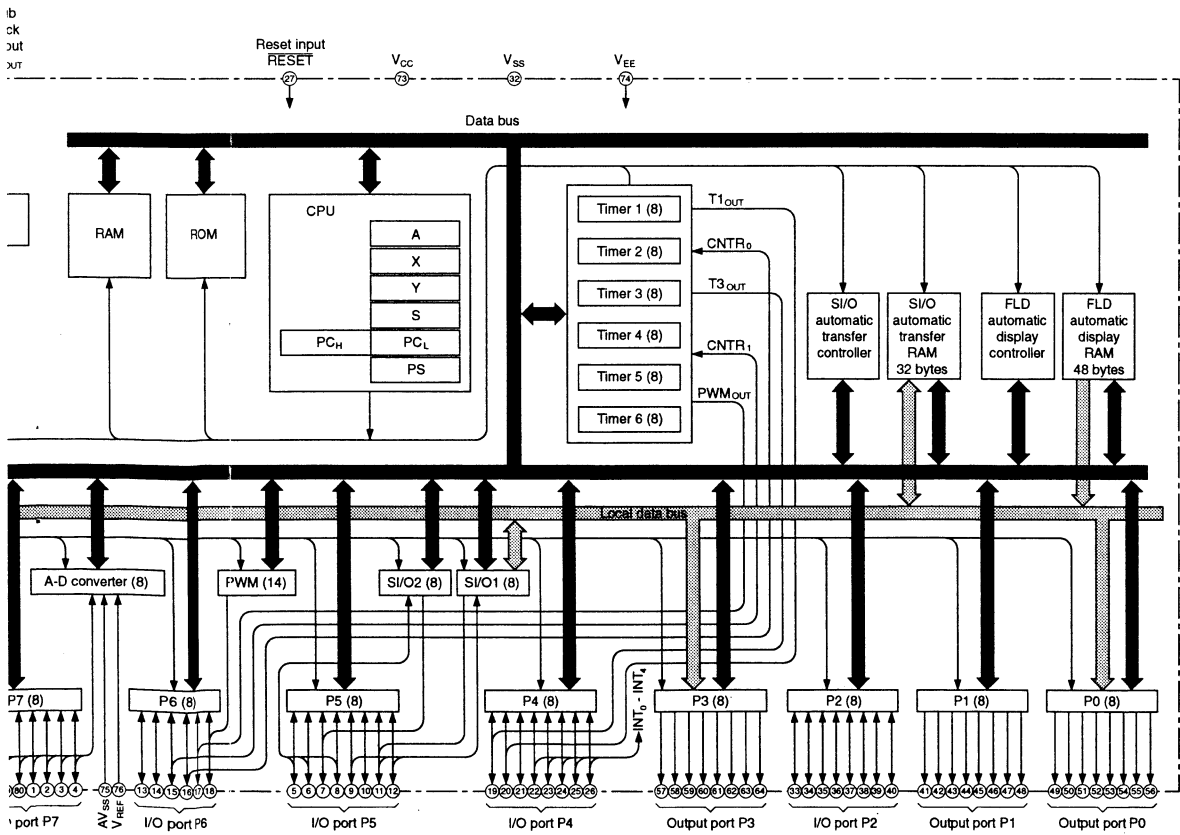
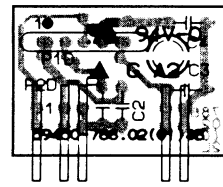
DISPLAY PCB (component side)



4.5.5 SCAN PCB (component side)



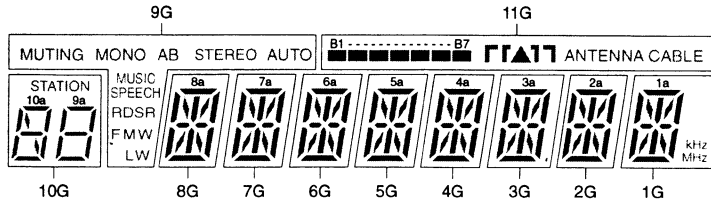
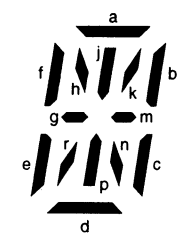
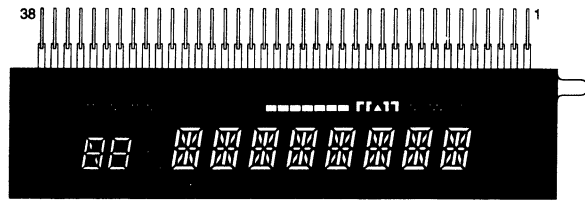
4.5.6 SUPPORT PCB (component side)



4.6 DISPLAY

PIN CONNECTION

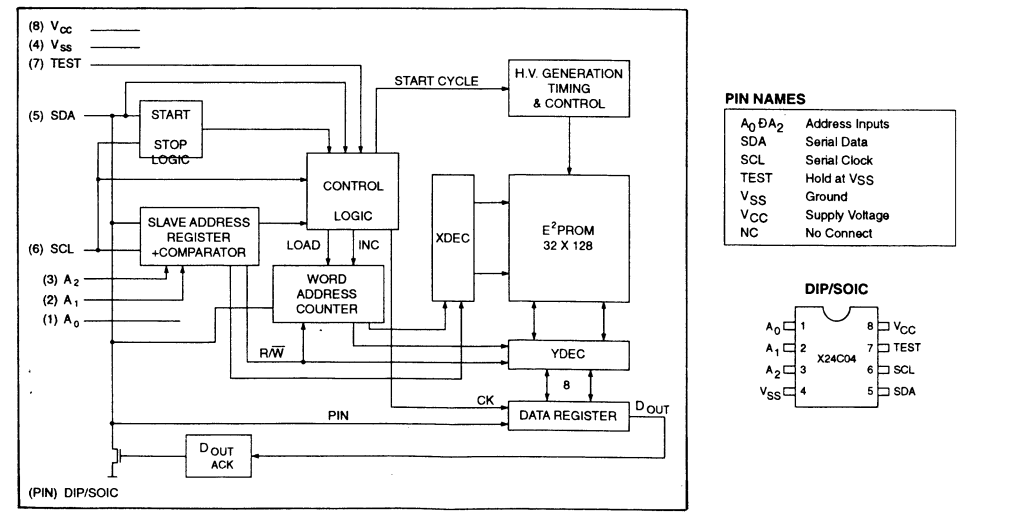
PIN NO.	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
CONNECTION	F	F	N	N	P	P	P	P	P	P	P	P	P	N	N	N	1	1	1	1	1	1	1	1
	2	2	P	P	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7
	F1, F2	---	Filament											NP	---	No pin								



ANODE CONNECTION

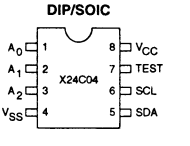
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	CABLE	9a	MUSIC	8a	7a	6a	5a	4a	3a	2a	1a
P2	ANTENNA	9b	SPEECH	8b	7b	6b	5b	4b	3b	2b	1b
P3	(Right)	9f	F	8f	7f	6f	5f	4f	3f	2f	1f
P4	(Right)	9g	M	8k	7k	6k	5k	4k	3k	2k	1k
P5	(Right)	9c	W	8j	7j	6j	5j	4j	3j	2j	1j
P6	(Left)	9e	LW	8h	7h	6h	5h	4h	3h	2h	1h
P7	(Left)	9d	R (Left)	8m	7m	6m	5m	4m	3m	2m	1m
P8	B7	10a	DS	8g	7g	6g	5g	4g	3g	2g	1g
P9	B6	10b	R (Right)	8n	7n	6n	5n	4n	3n	2n	1n
P10	B5	10f	-	8p	7p	6p	5p	4p	3p	2p	1p
P11	B4	10g	MUTING	8r	7r	6r	5r	4r	3r	2r	1r
P12	B3	10c	MONO	8c	7c	6c	5c	4c	3c	2c	1c
P13	B2	10e	STEREO	8e	7e	6e	5e	4e	3e	2e	1e
P14	B1	10d	AUTO	8d	7d	6d	5d	4d	3d	2d	1d
P15	-	STATION	A	-	-	-	-	-	-	-	1kHz
P16	-	-	B	-	-	-	-	-	-	-	1MHz

FUNCTIONAL DIAGRAM

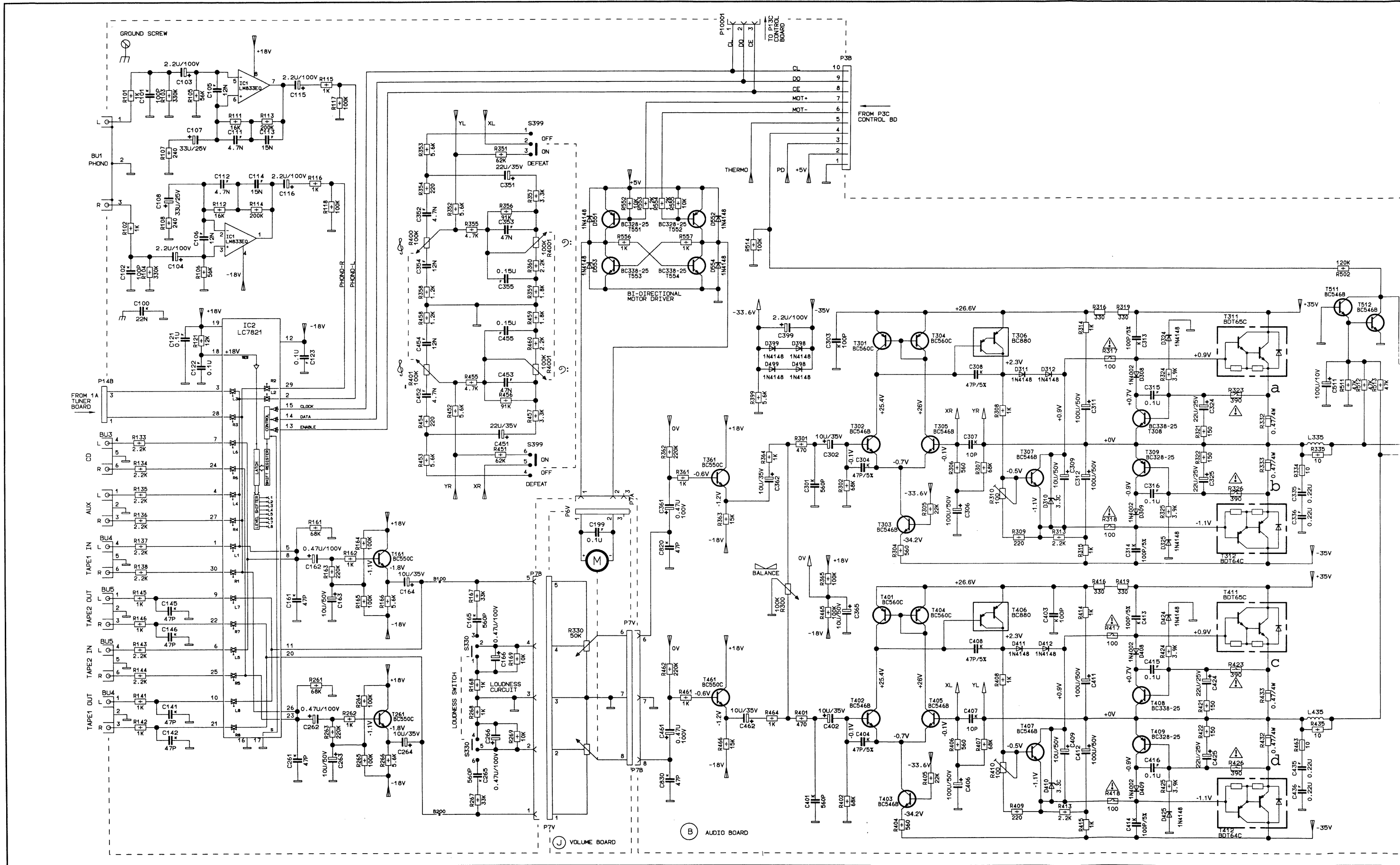


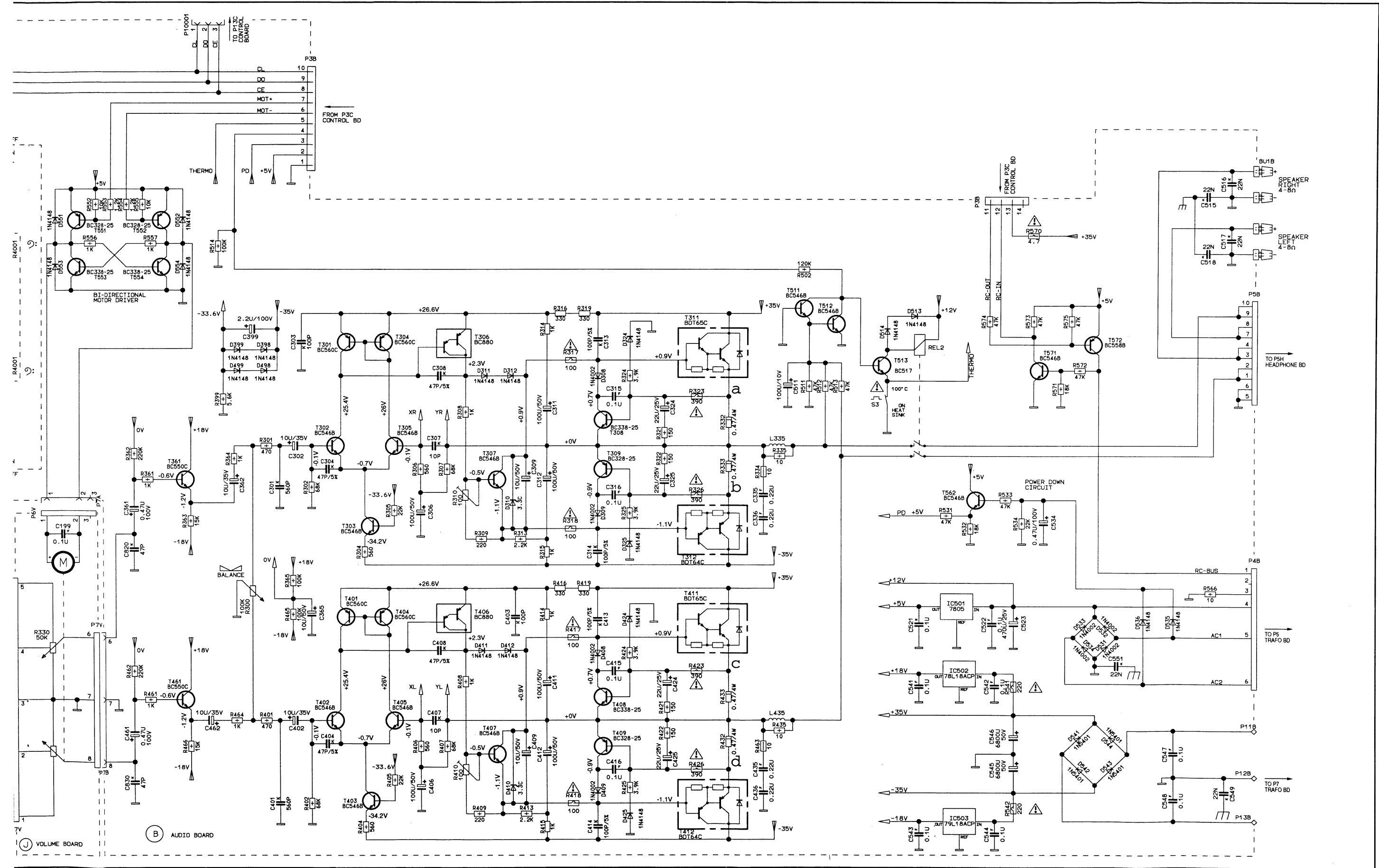
PIN NAMES

A <sub>0</sub> DA <sub>2</sub>	Address Inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Hold at VSS
VSS	Ground
VCC	Supply Voltage
NC	No Connect



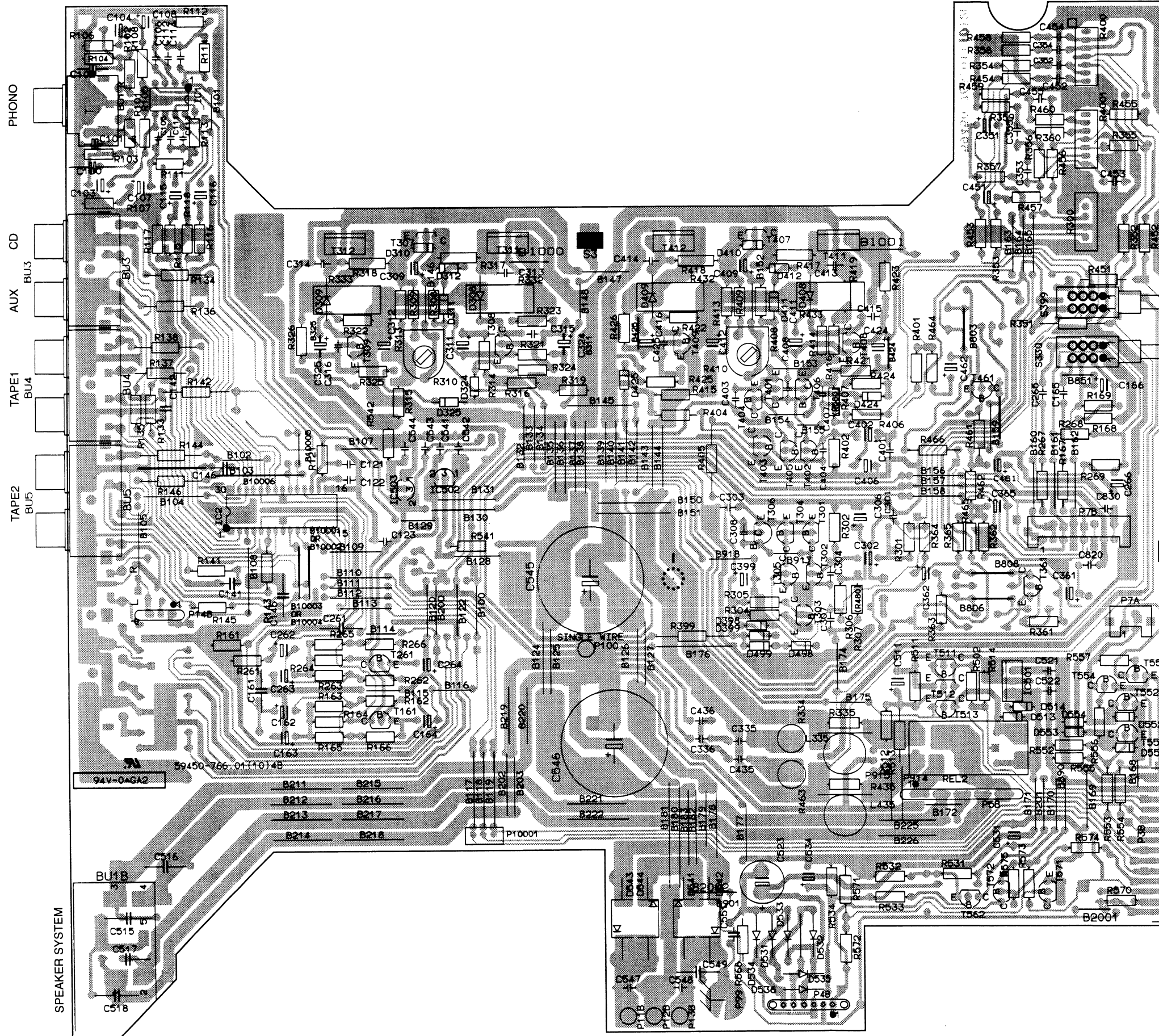
4.7 SCHEMATIC DIAGRAM : AUDIO BOARD, VOLUME BOARD



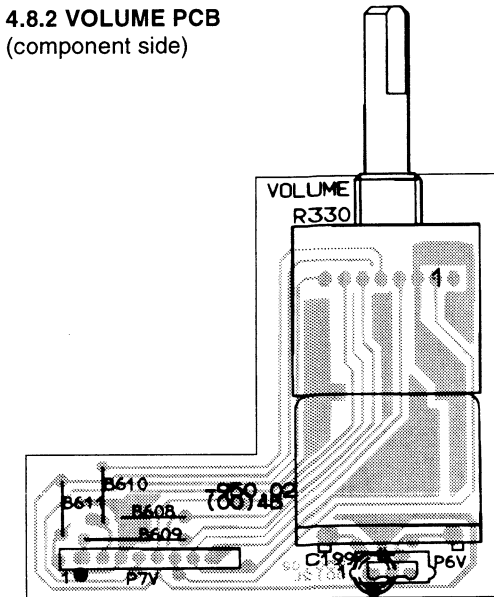




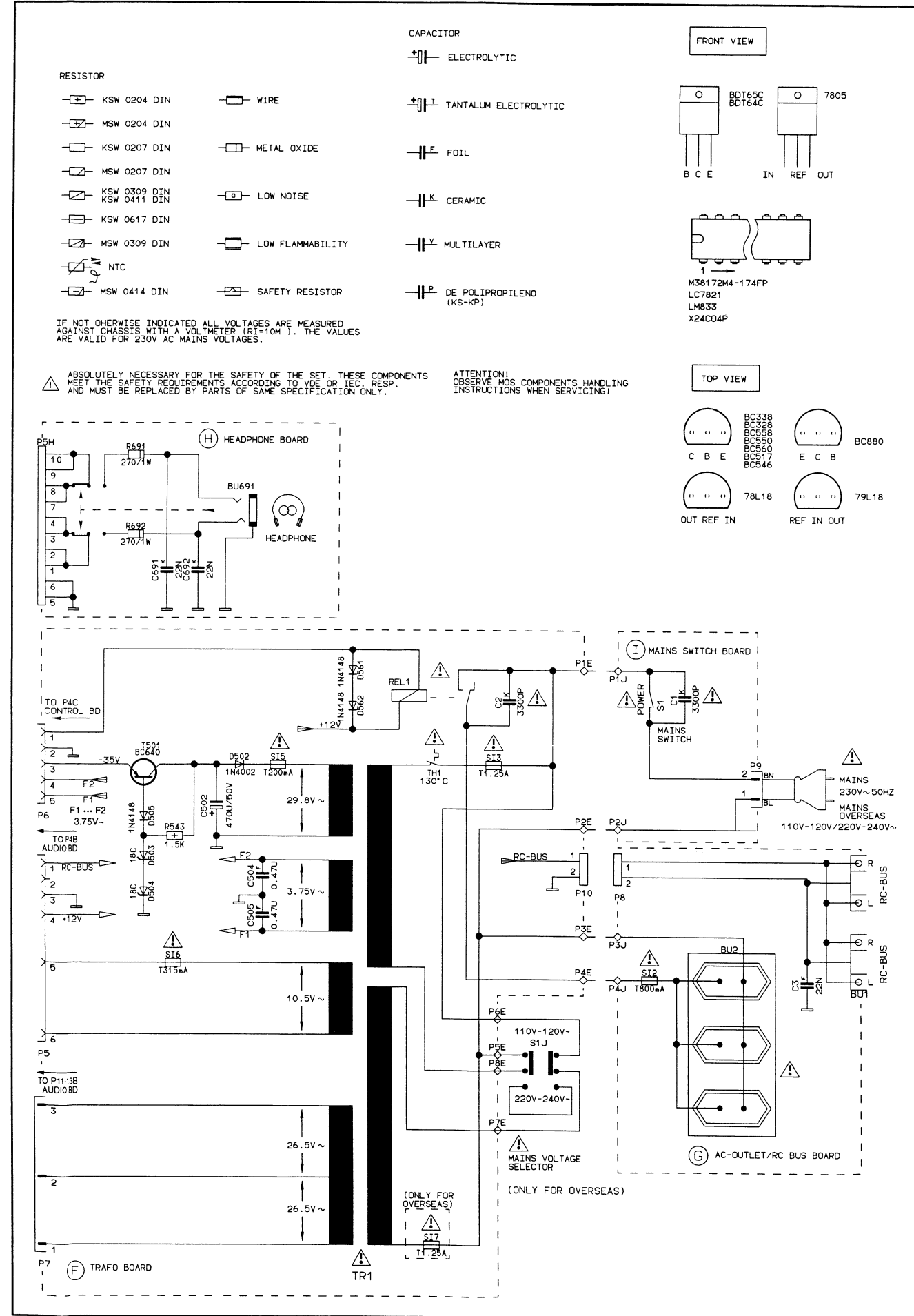
4.8.1 AUDIO PCB  
(component side)



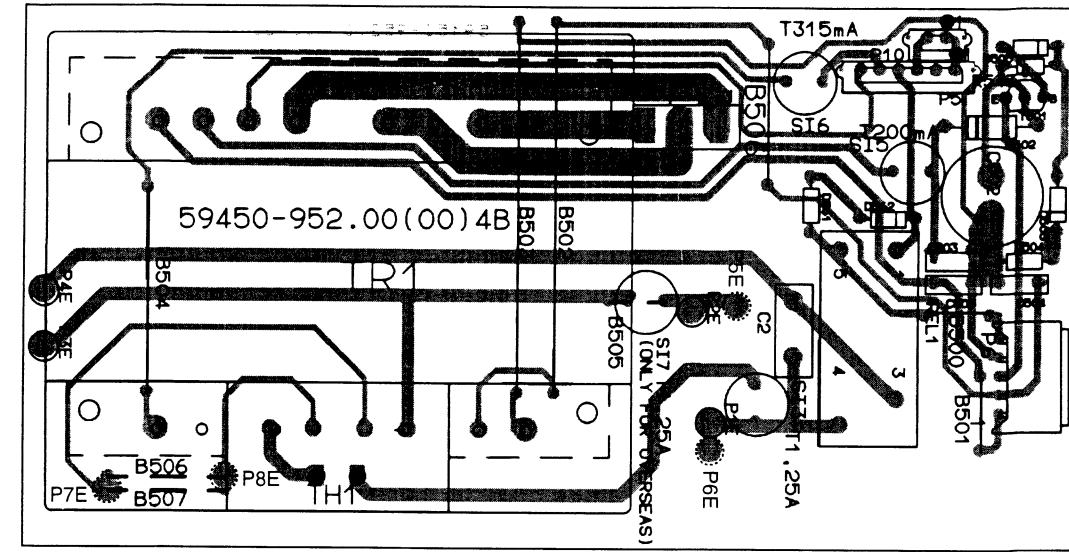
4.8.2 VOLUME PCB  
(component side)



4.9 SCHEMATIC DIAGRAM : HEADPHONE BOARD, TRAF0 BOARD, MAINS SWITCH BOARD, AC-OUTLET / RC BUS BOARD, MAINS VOLTAGE SELECTOR

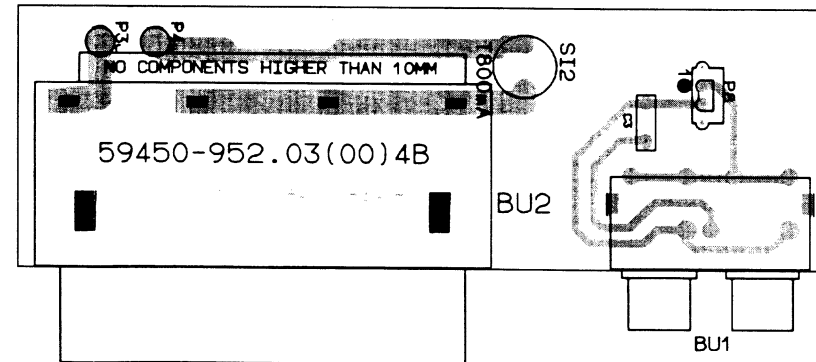


4.10.1 TRAF0 PCB  
(component side)

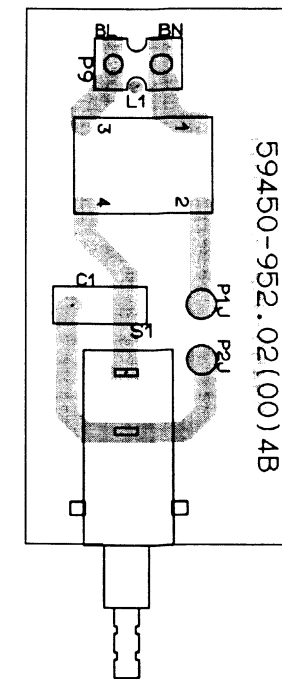


(.....) /01 OVERSEAS ONLY

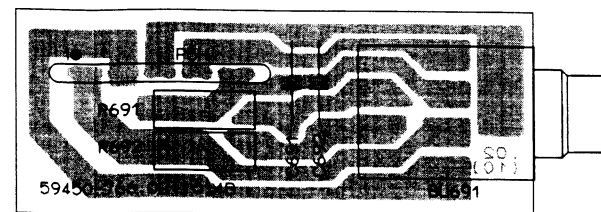
4.10.2 AC OUTLET / RC BUS PCB  
(component side)



4.10.3 MAINS SWITCH PCB  
(component side)

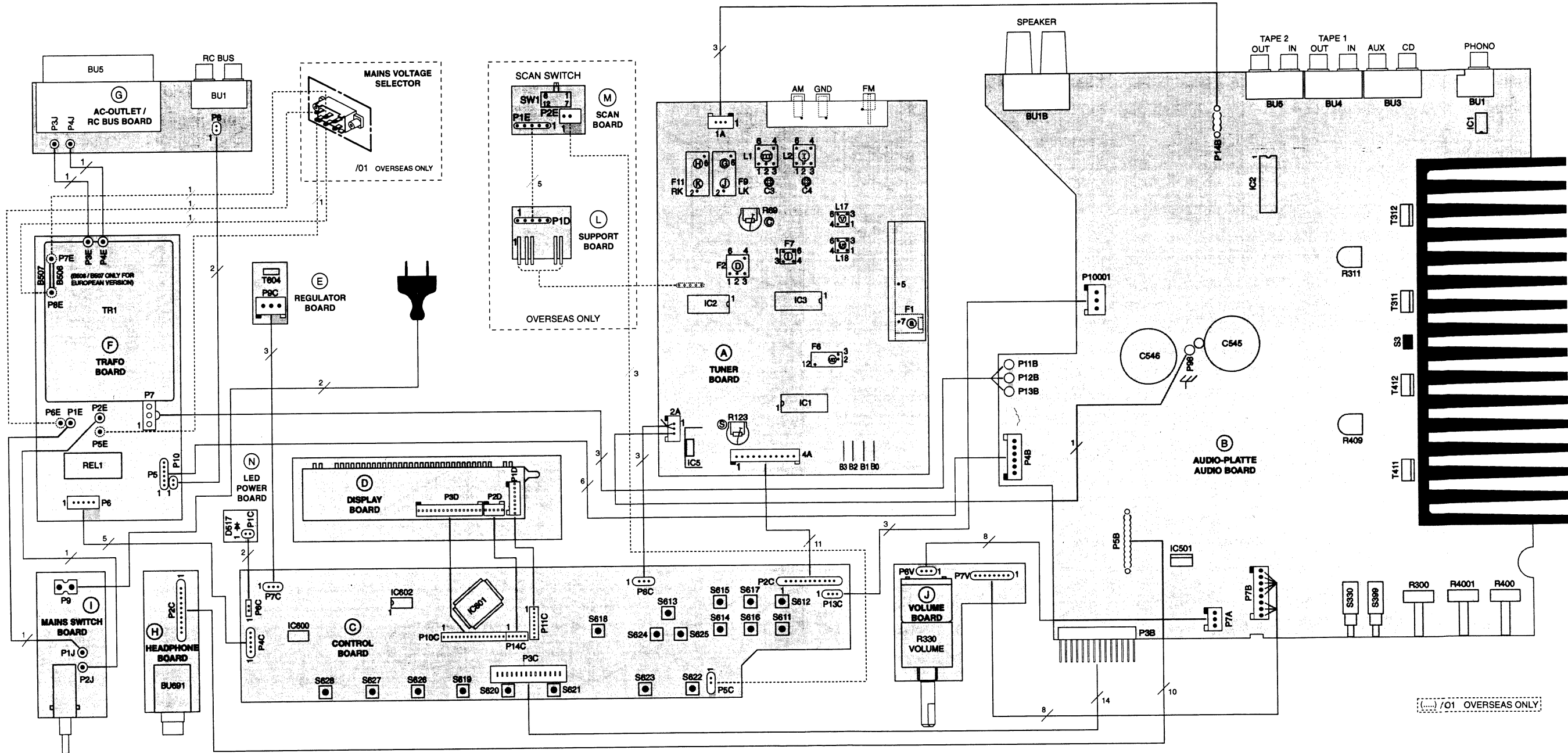


4.10.4 HEADPHONE PCB  
(component side)

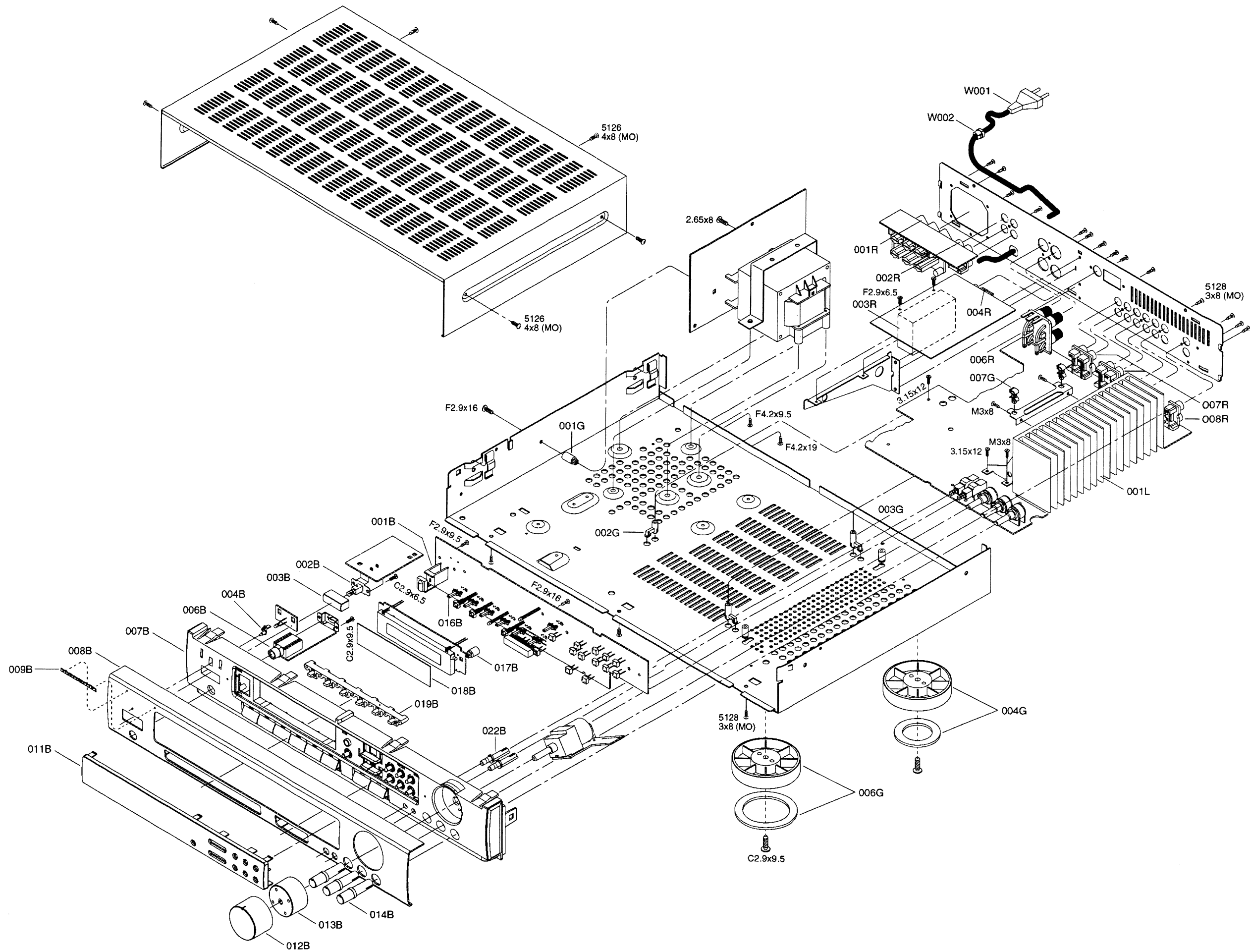




# 5. WIRING DIAGRAM



6. EXPLODED VIEW AND PARTS LIST



(VERS.:VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, \*\*:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
▲ 002B		4822 276 13835	MAINS SWITCH	QP27613835
003B		4822 410 63889	MAINS BUTTON	QP41063889
006B		4822 267 31835	HEADPHONE SOCKET	QP26731835
007B		4822 459 04452	FRONT PANEL (PLASTIC)	QP45904452
008B		4822 459 04453	FRONT (ALU)	QP45904453
009B		4822 454 11825	MARANZ BADGE	274H251020
011B		4822 381 11833	LENS DISPLAY	QP38111833
012B		4822 410 10967	VOLUME KNOB (ALU)	QP41010967
013B		4822 410 10968	VOLUME KNOB (PLASTIC)	QP41010968
014B		4822 410 10969	KNOB (TONE CONTROL)	QP41010969
022B		4822 410 10971	BUTTON	QP41010971
004G		4822 462 42048	FOOT (REAR SIDE)	183J057110
006G		4822 462 42045	FOOT (FRONT SIDE)	183J057010
▲ 001R		4822 267 41233	AC SOCKET	QP26741233
002R		4822 265 10767	CINCH SOCKET (QUAD)	QP26510767
003R		4822 210 10531	FRONTEND MODEL FE415-G11	QP21010531
004R		4822 267 10296	ANTENNA SOCKET	QP26710296
006R		4822 267 41185	SPEAKER TERMINAL	QP26741185
007R		4822 267 41153	CINCH SOCKET (QUAD)	QP26741153
008R		4822 267 31834	CINCH SOCKET (TWIN)	QP26731834
▲ W001		4822 321 22917	MAINS CABLE GWN9.17 WF	QP32122917
▲ XX01		4822 265 10777	MAINS CABLE BASE	QP26510777
▲ XX02		4822 282 40297	THERMAL SWITCH TRANSFORMER	QP28240297
▲ XX03		4822 282 40298	THERMAL SWITCH 100 DEGREE C	QP28240298
SX01	/01	4822 276 13635	SWITCH (SCAN) ALPS /01	QP27613635
▲ SX02	/01	4822 277 21807	SLIDE SWITCH /01	QP27721807
▲ TR1		4822 146 10721	MAINS TRANSFORMER	QP14610721
Z001		4822 218 10595	REMOTE CONTROL	QP21810595
T001		4822 736 14938	OPERATING INSTRUCTIONS	QP73614938

## 7. ALIGNMENT PROCEDURES

### 7.1 FM Alignment Procedures

(Function switch at "FM" position)

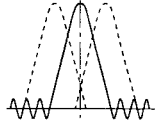
**Note:** The frontend is a completely preadjusted module. Only the IF-filter must be adjusted to the IF amplifier.

The values of the tuning voltages are:

87.5MHz = typ. 1.6V min 1.3V

108MHz = typ. 8.0V max 9V

#### • FM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM sweep generator to FM aerial socket. $U_{RF} = \text{approx. } 100\mu\text{V} / 75\Omega$	98MHz	Connect an oscilloscope to measuring point $\textcircled{B}$	With IF filter F1 a adjust for maximum level and symmetrical position. 

#### • FM Demodulator Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM generator to FM aerial socket. $U_{RF} = 100\mu\text{V} / 75\Omega$ $f_{\text{mod.}} = 1\text{kHz}, \Delta f = \pm 40\text{kHz}$	98MHz	Connect a distortion analyzer to measuring point $\textcircled{R}$ and $\textcircled{L}$	With filter F7 i adjust for minimum distortion. (typ. 0.12%, max. 0.2%)

#### • FM Field Strength IND - Search Stop Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM generator to FM aerial socket. $U_{RF} = 100\mu\text{V} / 75\Omega$	98MHz	DC-VM to measuring point $\textcircled{G}$	With R123 S set to 1.2V +0.05V.

#### • Multiplex Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect a stereo encoder to FM aerial socket.	106MHz $L_{\text{mod.}} = 1\text{kHz}$	Connect AC-VM to measuring point $\textcircled{R}$	With R69 C adjust for maximum and symmetrical crosstalk attenuation.
2		106MHz $R_{\text{mod.}} = 1\text{kHz}$	Connect AC-VM to measuring point $\textcircled{L}$	
3	Connect an FM generator to FM aerial socket.	98MHz $f_{\text{mod.}} = 38\text{kHz}$	Connect AC-VM to measuring point $\textcircled{R}$ and $\textcircled{L}$	With F9 J, F11 K adjust for minimum level.
4		98MHz $f_{\text{mod.}} = 19\text{kHz}$		With F9 G, F11 H adjust for minimum level.




#### • Adjacent Channel Filter Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an AF generator to the input of F2 (Pin 2). $U_{AF} = \text{approx. } 100\text{mV}$	114 kHz	Connect AC-VM to the output of F2 (Pin 4).	With F2 D adjust for minimum level.






## 7.2 AM Alignment Procedures

(Function switch at "AM" position)





### • MW/LW Oscillator Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1		531kHz (MW)	Connect DC-VM to measuring point 	With L18  set the tuning voltage to 1.1V.
2		153kHz (LW)		With L17  set the tuning voltage to 1.8V.

### • MW RF IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Feed in an AM generator signal via a frame aerial. $U_{RF}$ as low as possible $m = 30\%$ , $f_{mod.} = 1\text{kHz}$	1449kHz	Connect AC-VM to measuring point  and 	With C3  and the IF Filter F6  set $U_{AF}$ to maximum level.
2		558kHz		With L1  set $U_{AF}$ to maximum level.
3	Repeat the adjustment reciprocally, end with 1449kHz.			

### • LW RF IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Feed in an AM generator signal via a frame aerial. $U_{RF}$ as low as possible $m = 30\%$ , $f_{mod.} = 1\text{kHz}$	261kHz	Connect AC-VM to measuring point  and 	With C4  set $U_{AF}$ to maximum level.
2		162kHz		With L2  set $U_{AF}$ to maximum level.
3	Repeat the adjustment reciprocally, end with 261kHz.			

## 7.3 Amplifier Alignment Procedures

### • Quiescent Current Alignment



Step	Signal Source Connection	Volume	Indicator Connection	Adjust
1	No input signal. Turn on the set for at least 2 minutes.	min.	Connect DC-VM to measuring point left channel a...b	With R310 set the voltage to $6\text{mV} \pm 0.3\text{mV}$ .
2			Connect DC-VM to measuring point right channel c...d	With R410 set the voltage to $6\text{mV} \pm 0.3\text{mV}$ .

### • FM IF offset

The ceramic resonators have different intermediate frequencies as a result of tolerances. Dependent on the IF, a jumper has to be closed or a jumper has to be opened. B0 – B3 (see table).

The resonators have been provided with a colour code.

When replacing one of the ceramic resonators, take care that the colours codes of all resonators are the same.

  Measuring points

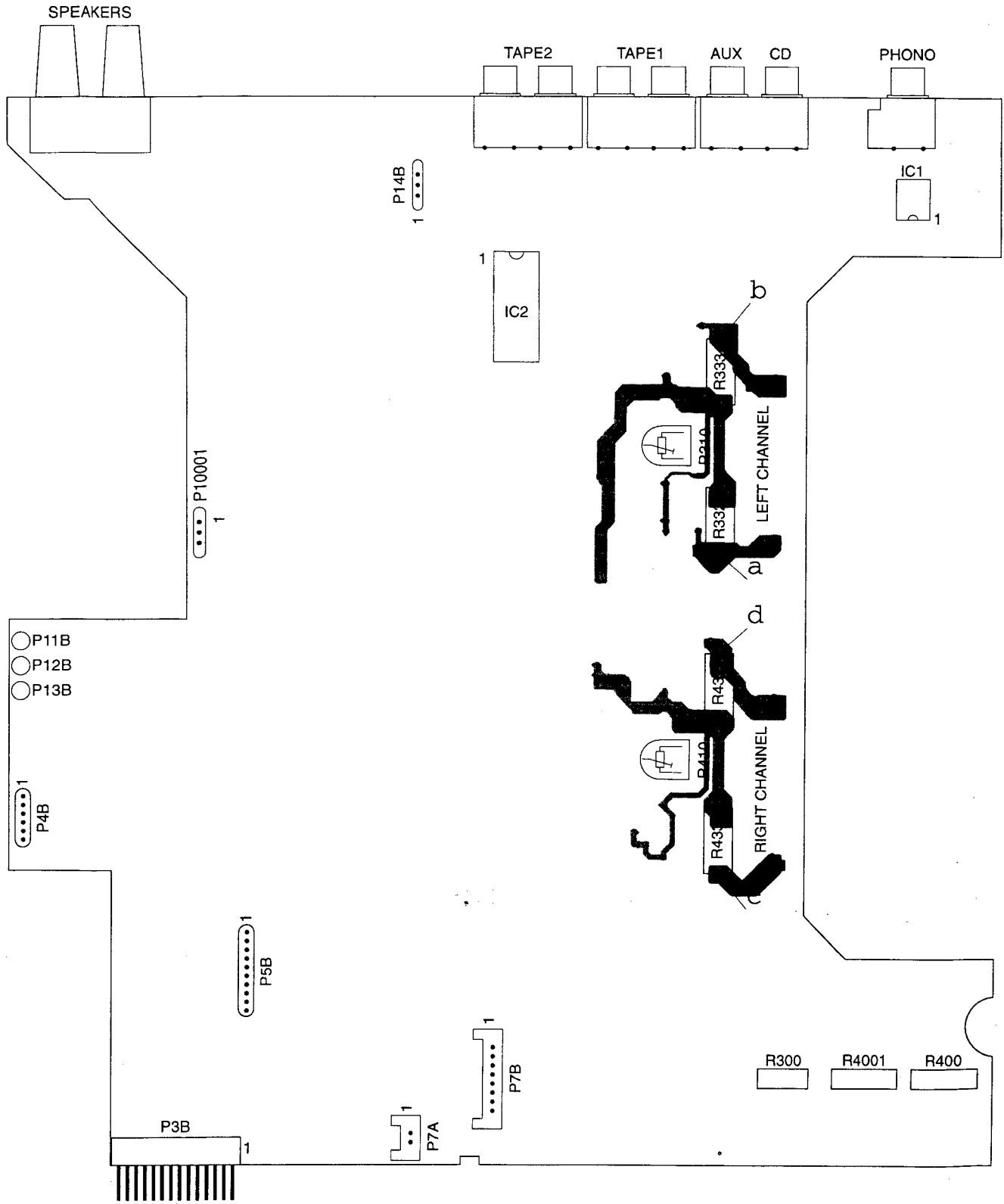
 Trimming point

IF (MHz)	Jumper				Filter color
	B 3	B 2	B 1	B 0	
10.6500	0	1	0	0	Black
10.6750	0	1	1	0	Blue
10.7000	1	0	0	0	Red
10.7250	1	0	1	0	Orange
10.7500	1	1	0	0	White

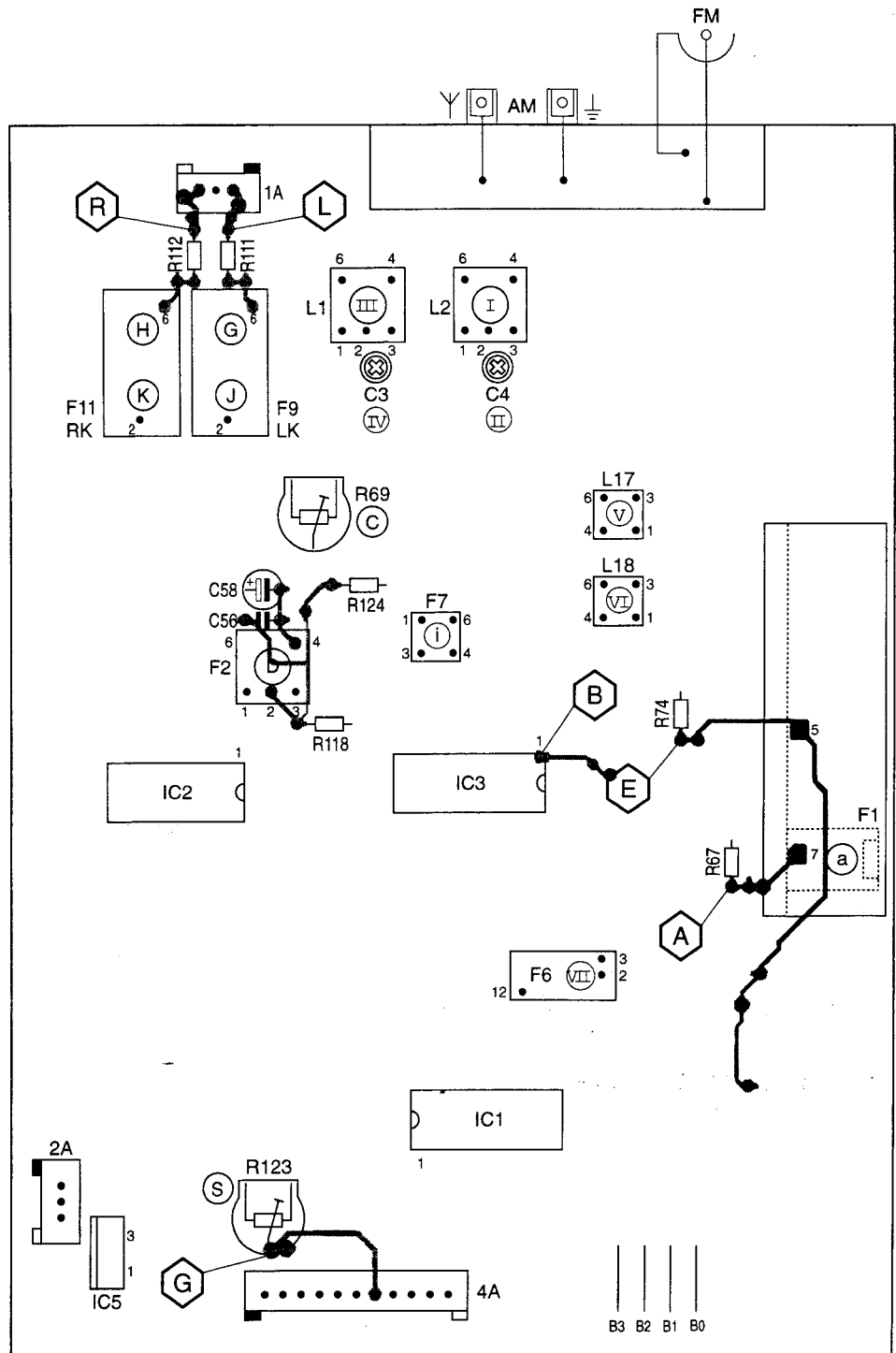
0 = jumper open

1 = jumper closed

### 7.4 Amplifier Alignment Points



### 7.5 Tuner Alignment Points



## 8. ELECTRICAL PARTS LIST

(VERS. :VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, \*\*:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			<b>CAPACITORS</b>						
▲ C1		4822 126 11805	SI-KERKO.A 3300pF 20%	QP12611805	D536		4822 130 30621	DIODE 1N4148	QP13030621
▲ C2		4822 126 11805	SI-KERKO.A 3300pF 20%	QP12611805	▲ D541		5322 130 34939	DIODE 1N5401 G GI/FAG	QQ13034939
C3		4822 125 60222	TR.53 4.5-20pF 5	QP12560222					
C4		4822 125 60223	TR.55 7.5-45pF 5	QP12560223	▲ D544				
C545		4822 124 42455	ELKO 6800μF 50V	QP12442455	D551		4822 130 30621	DIODE 1N4148	QP13030621
C546		4822 124 42455	ELKO 6800μF 50V	QP12442455	D554				
			<b>SEMICONDUCTORS</b>						
D6		5322 130 34052	DIODE 1N4151	QQ13034052	D561		4822 130 30621	DIODE 1N4148	QP13030621
D7		5322 130 34052	DIODE 1N4151	QQ13034052	D562		4822 130 30621	DIODE 1N4148	QP13030621
D9		4822 130 82789	DIODE SVC321 SP-A/B/C/D	QP13082789	D608		4822 130 80515	Z DIODE 5.1V C 0.5W	QP13080515
D14					D609		4822 130 30621	DIODE 1N4148	QP13030621
					D610				
D17		5322 130 34052	DIODE 1N4151	QQ13034052			4822 130 82743	LE DIODE TLHR4400TFK	QP13082743
					D615				
D19		5322 130 34052	DIODE 1N4151	QQ13034052	D617		4822 130 82743	LE DIODE TLHR4400TFK	QP13082743
D23		4822 130 82789	DIODE SVC321 SP-A/B/C/D	QP13082789	D618		4822 130 30621	DIODE 1N4148	QP13030621
D24		5322 130 34052	DIODE 1N4151	QQ13034052	D660		4822 130 83968	Z-DIODE 15V C 0.5W	QP13083968
D25		5322 130 34052	DIODE 1N4151	QQ13034052	D661		4822 130 80515	Z DIODE 5.1V C 0.5W	QP13080515
D27					D670		4822 130 30621	DIODE 1N4148	QP13030621
D29		5322 130 34052	DIODE 1N4151	QQ13034052	IC1		4822 209 30178	IC LC7218 SANYO	QP20930178
					IC2		4822 209 72748	IC LC7821 SANYO	QP20972748
D43		5322 130 34052	DIODE 1N4151	QQ13034052	IC3		4822 209 71785	IC LA1266 SANYO	HC10222030
D308		5322 130 30684	DIODE 1N4002-GA	QQ13030684	IC4		4822 209 31981	IC SAA6579T PHILIPS	QP20931981
D309		5322 130 30684	DIODE 1N4002-GA	QQ13030684	IC5		4822 209 33347	IC LM340AT-12 NSC	QP20933347
D310		4822 130 81781	Z DIODE 3.3V B 0.5W	QP13081781					
D311		4822 130 30621	DIODE 1N4148	QP13030621	▲ IC501		5322 209 86518	IC MC7805 CT	QQ20986518
					▲ IC502		4822 209 90579	IC MC78L18 ACP	QP20990579
D312		4822 130 30621	DIODE 1N4148	QP13030621	▲ IC503		4822 209 90581	IC MC79L18 ACP	QP20990581
D324		4822 130 30621	DIODE 1N4148	QP13030621	IC601		4822 209 15331	IC M38172-M4-131 FP MIT	QP20915331
D325		4822 130 30621	DIODE 1N4148	QP13030621	IC602		4822 209 90584	IC X24C04XICOR	QP20990584
D398		4822 130 30621	DIODE 1N4148	QP13030621					
D399		4822 130 30621	DIODE 1N4148	QP13030621	IC600		4822 212 30842	IR-RECEIVER TFMS5360	QP21230842
					IC603		4822 209 15334	IC M38174E8HFP PROG.KPL	QP20915334
D408		5322 130 30684	DIODE 1N4002-GA	QQ13030684	T1		4822 130 40937	TRANS BC548B	QP13040937
D409		5322 130 30684	DIODE 1N4002-GA	QQ13030684	T2		5322 130 44779	TRANS BC338-25	QQ13044779
D410		4822 130 81781	Z DIODE 3.3V B 0.5W	QP13081781	T3		5322 130 44779	TRANS BC338-25	QQ13044779
D411		4822 130 30621	DIODE 1N4148	QP13030621	T6		4822 130 40988	TRANS BC328-25	QP13040988
D412		4822 130 30621	DIODE 1N4148	QP13030621	T7		4822 130 42121	TRANS 2SK30A-TM-Y1	HF200300B0
D424		4822 130 30621	DIODE 1N4148	QP13030621	T8		4822 130 40988	TRANS BC328-25	QP13040988
D425		4822 130 30621	DIODE 1N4148	QP13030621	T12		4822 130 44196	TRANS BC548C	QP13044196
D498		4822 130 30621	DIODE 1N4148	QP13030621	T13		4822 130 40988	TRANS BC328-25	QP13040988
D499		4822 130 30621	DIODE 1N4148	QP13030621	T15		4822 130 40937	TRANS BC548B	QP13040937
D502		5322 130 30684	DIODE 1N4002-GA	QQ13030684	T16		4822 130 40902	TRANS BF240	QP13040902
D503		4822 130 83968	Z-DIODE 15V C 0.5W	QP13083968	T17		4822 130 40937	TRANS BC548B	QP13040937
D504		4822 130 31024	Z DIODE 18V C 0.5W	QP13031024	T18		4822 130 40937	TRANS BC548B	QP13040937
D505		4822 130 30621	DIODE 1N4148	QP13030621	T19		4822 130 44197	TRANS BC558B	QP13044197
D513		4822 130 30621	DIODE 1N4148	QP13030621	T21				
D514		4822 130 30621	DIODE 1N4148	QP13030621			4822 130 40937	TRANS BC548B	QP13040937
					T23				
D517		4822 130 82743	LED TLHR4400TFK	QP13082743					
▲ D531					T25		4822 130 40937	TRANS BC548B	QP13040937
					T161		4822 130 41096	TRANS BC550C	QP13041096
▲ D534		5322 130 30684	DIODE 1N4002-GA	QQ13030684	T261		4822 130 41096	TRANS BC550C	QP13041096
D535		4822 130 30621	DIODE 1N4148	QP13030621	T301		4822 130 61755	TRANS BC560C	QP13061755
					T302		4822 130 44461	TRANS BC546B	QP13044461
					T303		4822 130 44461	TRANS BC546B	QP13044461
					T304		4822 130 61755	TRANS BC560C	QP13061755
					T305		4822 130 44461	TRANS BC546B	QP13044461
					T306		4822 130 63852	TRANS BC880	QP13063852
					T307		4822 130 44461	TRANS BC546B	QP13044461



(VERS.:VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, \*\*:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)	POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
T308		5322 130 44779	TRANS BC338-25	QQ13044779	▲ R541		4822 052 10221	KSW SI A 220Ω 5%	QP05210221
T309		4822 130 40988	TRANS BC328-25	QP13040988	▲ R542		4822 052 10221	KSW SI A 220Ω 5%	QP05210221
T311		4822 130 62269	TRANS BDT65C	QP13062269	R600		4822 111 92219	R-NETZ 8X47kΩ	QP11192219
T312		5322 130 61575	TRANS BDT64C	QQ13061575				<b>MISCELLANEOUS</b>	
T361		4822 130 41096	TRANS BC550C	QP13041096				DISPLAY	QP13091334
T401		4822 130 61755	TRANS BC560C	QP13061755	DP		4822 130 91334		
T402		4822 130 44461	TRANS BC546B	QP13044461	F2		4822 214 51727	FILTER (ADJACENT CHANNEL)	QP21451727
T403		4822 130 44461	TRANS BC546B	QP13044461	F2		4822 242 72295	CER.RES.10 CSB456F11	QP24272295
T404		4822 130 61755	TRANS BC560C	QP13061755	F3		4822 157 62739	CERAMIK-FILTER 70	QP15762739
T405		4822 130 44461	TRANS BC546B	QP13044461	F4		4822 157 62739	CERAMIK-FILTER 70	QP15762739
					F6		4822 242 71509	AM-IF SFL450J3	FF10045330
T406		4822 130 63852	TRANS BC880	QP13063852	F7		4822 156 11092	FM-DEM.I	QP15611092
T407		4822 130 44461	TRANS BC546B	QP13044461	F9		4822 156 11104	FILTER (PILOT) LPF-V20	QP15611104
T408		5322 130 44779	TRANS BC338-25	QQ13044779	F11		4822 156 11104	FILTER (PILOT) LPF-V20	QP15611104
T409		4822 130 40988	TRANS BC328-25	QP13040988	F610		4822 242 72527	CER.RES.86/13 CST4.0MGW	QP24272527
T411		4822 130 62269	TRANS BDT65C	QP13062269					
T412		5322 130 61575	TRANS BDT64C	QQ13061575	L1		4822 156 11094	MW-RF CIRCUIT	QP15611094
T461		4822 130 41096	TRANS BC550C	QP13041096	L2		4822 156 11095	LW-RF CIRCUIT	QP15611095
T501		4822 148 81194	TRANS BC640	QP14881194	L16		4822 157 70423	DR AX 0207-GA 0.33μH	QP15770423
T511		4822 130 44461	TRANS BC546B	QP13044461	L17		4822 156 11091	COIL (LW-OSC.)	QP15611091
T512		4822 130 44461	TRANS BC546B	QP13044461	L18		4822 156 11089	COIL (MW-OSC.)	QP15611089
T513		5322 130 44864	TRANS BC517	QQ13044864	L19		4822 157 70425	DR 39mH	QP15770425
T551		4822 130 40988	TRANS BC328-25	QP13040988	L21		4822 157 11068	DR AX 0309-GA 22μH	QP15711068
T552		4822 130 40988	TRANS BC328-25	QP13040988	L335		4822 157 60207	RF INDUCTOR	QP15760207
T553		5322 130 44779	TRANS BC338-25	QQ13044779	L435		4822 157 60207	RF INDUCTOR	QP15760207
T554		5322 130 44779	TRANS BC338-25	QQ13044779	L616		4822 157 11068	DR AX 0309-GA 22μH	QP15711068
T562		4822 130 44461	TRANS BC546B	QP13044461	Q1		4822 242 72294	CRYSTAL 7.2MHz	QP24272294
T571		4822 130 44461	TRANS BC546B	QP13044461	Q3		4822 242 81319	CRYSTAL #170 A/C 4.332MHz	QP24281319
T572		4822 130 44197	TRANS BC558B	QP13044197					
T600		4822 130 44197	TRANS BC558B	QP13044197	▲ RL1		4822 280 60594	RELAY G2R-1A 12V DC	QP28060594
T602		5322 130 44779	TRANS BC338-25	QQ13044779	▲ RL2		4822 280 60592	RELAY V23037-A0002-A102	QP28060592
T603		5322 130 44779	TRANS BC338-25	QQ13044779	WW01		4822 280 10317	RELAY G5Z 12VDC OMR	QP28010317
T604		4822 130 61705	TRANS 2SD1508 TOSHIBA	QP13061705					
			<b>RESISTORS</b>		S300		4822 277 11646	SWITCH	QP27711646
R69		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694	S399		4822 277 11646	SWITCH	QP27711646
R119		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694	S611				
R123		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694	I		4822 276 13152	TACT SWITCH	QP27613152
R300		4822 101 11691	POT. METER/BALANCE	QP10111691	S628				
R310		4822 100 10075	ESTR.S 10 100Ω	QP10010075					
▲ R317		4822 111 41024	KSW SI B 100Ω 5%	QP11141024	▲ SI2		4822 071 58001	SOLDERING FUSE-GR 800mA/T	QP07158001
▲ R318		4822 111 41024	KSW SI B 100Ω 5%	QP11141024	▲ SI3		4822 071 51252	SOLDERING FUSE-GR 1.25A/T	QP07151252
▲ R323		4822 117 11898	KSW SI A 390Ω 5%	QP11711898	▲ SI5		4822 071 52001	SOLDERING FUSE-GR 200mA/T	QP07152001
▲ R326		4822 117 11898	KSW SI A 390Ω 5%	QP11711898	▲ SI6		4822 071 53151	SOLDERING FUSE-GR 315mA/T	QP07153151
R330		4822 101 21253	POT. METER/LOUDSPEAKER	QP10121253					
R333		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573					
R400		4822 101 11692	POT. METER ALPS (TREBLE)	QP10111692					
R4001		4822 101 11692	POT. METER ALPS (BASS)	QP10111692					
R410		4822 100 10075	ESTR.S 10 100Ω	QP10010075					
▲ R417		4822 111 41024	KSW SI B 100Ω 5%	QP11141024					
▲ R418		4822 111 41024	KSW SI B 100Ω 5%	QP11141024					
▲ R423		4822 117 11898	KSW SI A 390Ω 5%	QP11711898					
▲ R426		4822 117 11898	KSW SI A 390Ω 5%	QP11711898					
R432		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573					
R433		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573					

**NOTE ON SAFETY :**

Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.