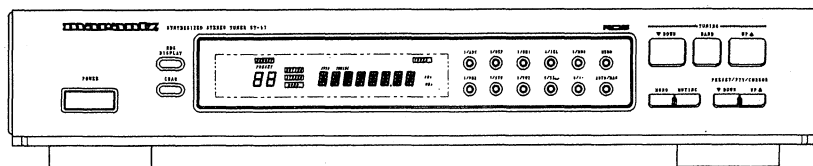


# Service Manual

74ST57/01B/02B/05B

## Synthesized Stereo Tuner



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

# marantz®

PCS 88 311

## model ST-57

Printed in Japan

4822 725 51129  
First Issue 1997.02  
193W855020 ACT

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東京都渋谷区恵比寿南 1-11-9

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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 NO. 813.

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

## 1. TECHNICAL SPECIFICATIONS

### FM Stage

|                                                           |               |
|-----------------------------------------------------------|---------------|
| Frequency range .....                                     | 87.5 – 108MHz |
| Sensitivity                                               |               |
| DIN mono (S/N 26dB, 98MHz, 75Ω) .....                     | < 1.1μV       |
| DIN stereo (S/N 46dB, 98MHz, 75Ω) .....                   | < 35μV        |
| Adjacent selectivity channel (98MHz, ±300kHz) .....       | > 60dB        |
| Tuner output (1kHz, 75kHz deviation) .....                | 1200mV        |
| Signal to noise ratio                                     |               |
| S/N DIN weighted mono .....                               | 75dB          |
| 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 Stage

|                                                |               |
|------------------------------------------------|---------------|
| Frequency range .....                          | 531 – 1602kHz |
| Sensitivity (S/N 20dB, 30% mod., 999kHz) ..... | < 2500μV/m    |
| Selectivity (999kHz, 9kHz) .....               | > 28dB        |

### LW Stage

|                                                |              |
|------------------------------------------------|--------------|
| Frequency range .....                          | 153 – 281kHz |
| Sensitivity (S/N 20dB, 30% mod., 207kHz) ..... | < 4000μV/m   |

### POWER REQUIREMENTS

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

## 2. TEST MODE

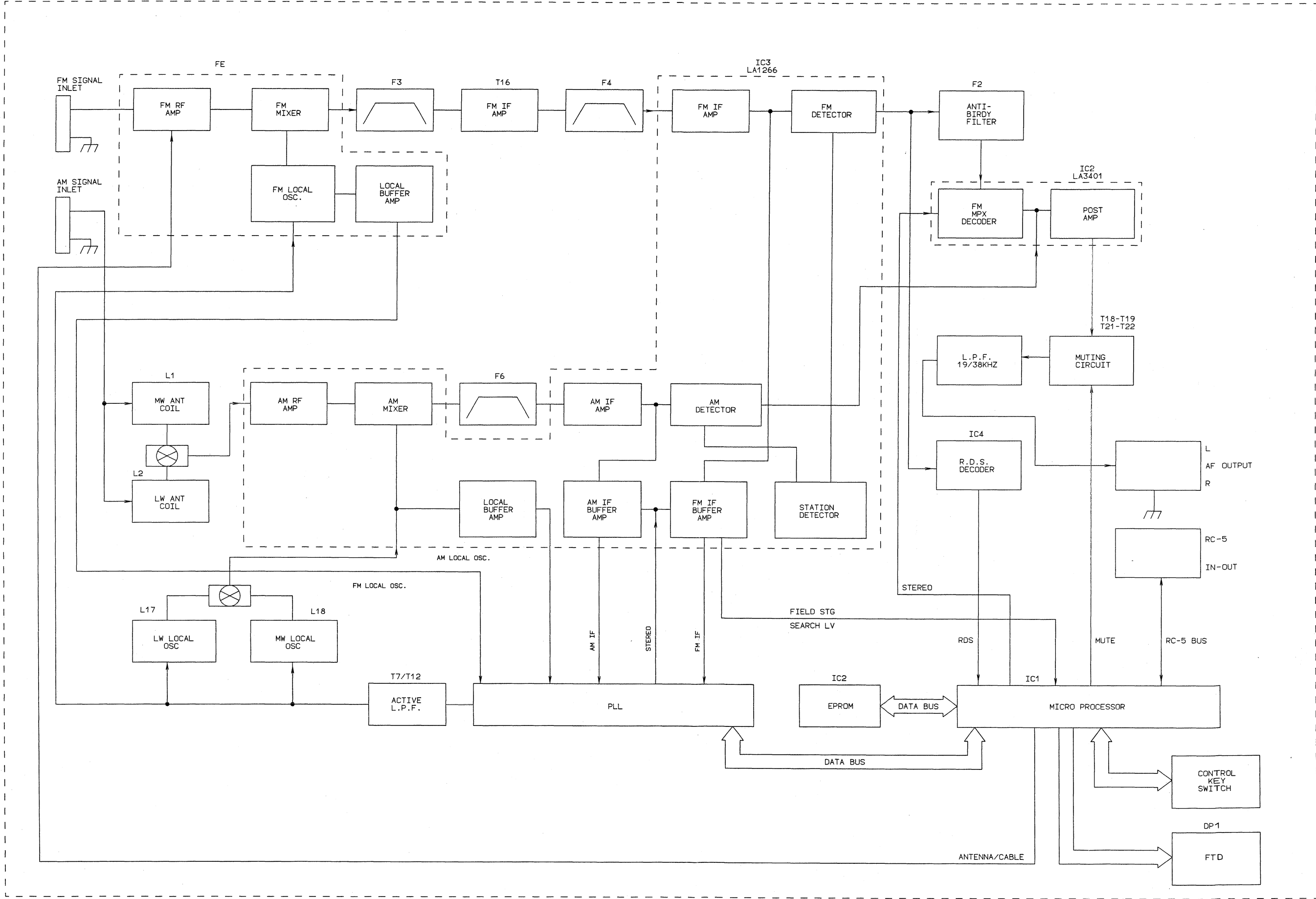
To start the Test press and hold the buttons "MEMO" and "BAND" simultaneously while switching on with the "POWER" button.

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



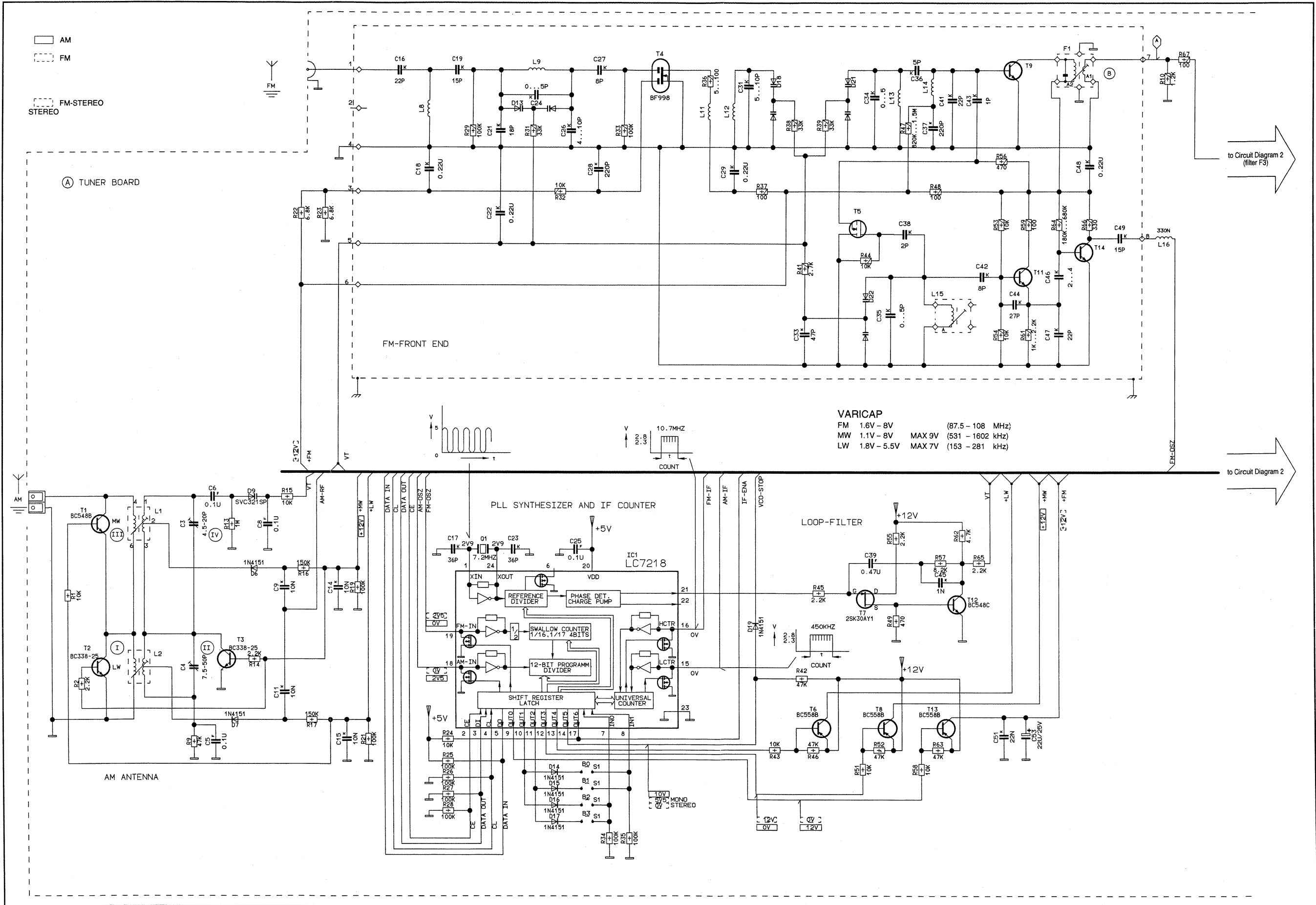
To end the test mode switch off the unit.

3. BLOCK DIAGRAM



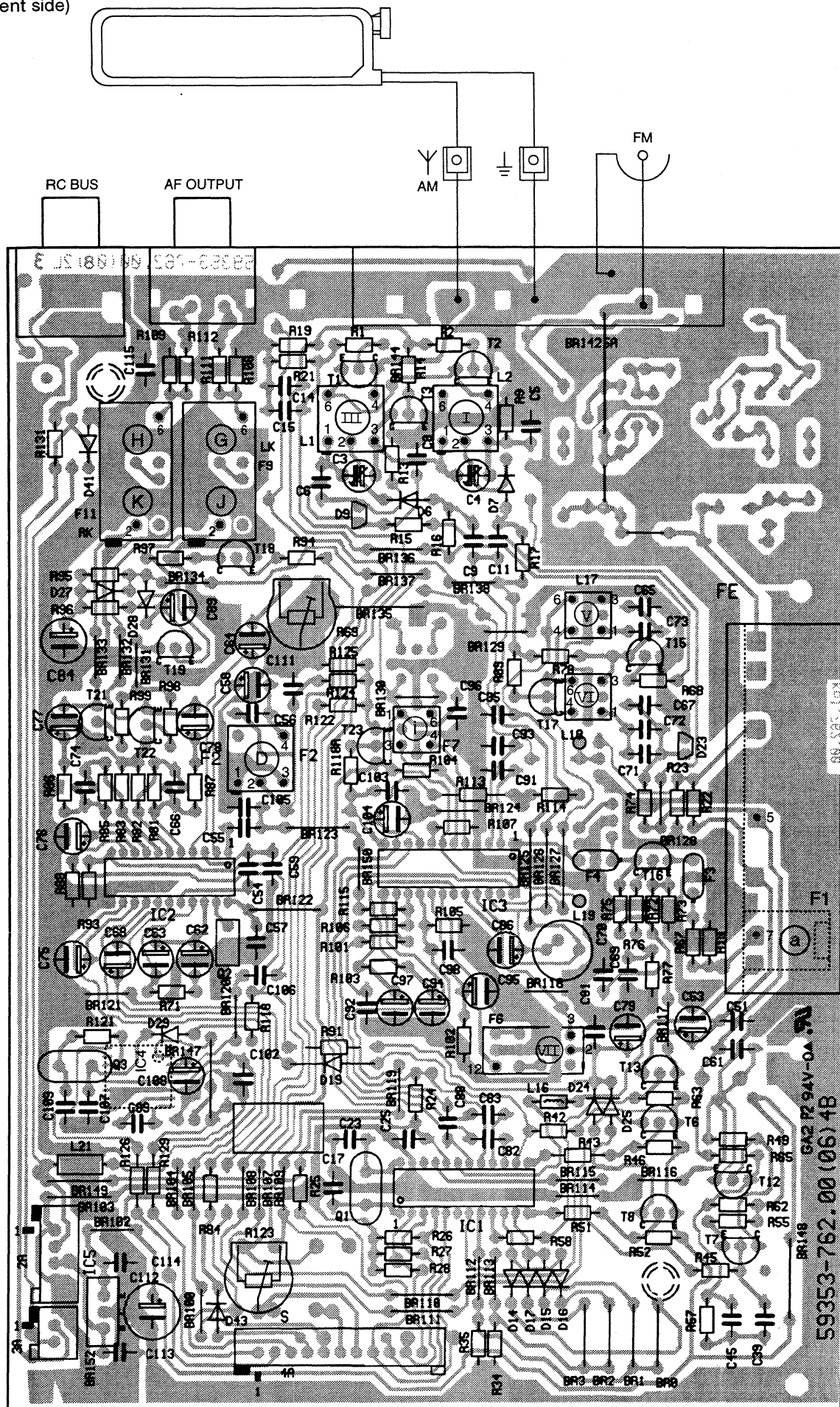
4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

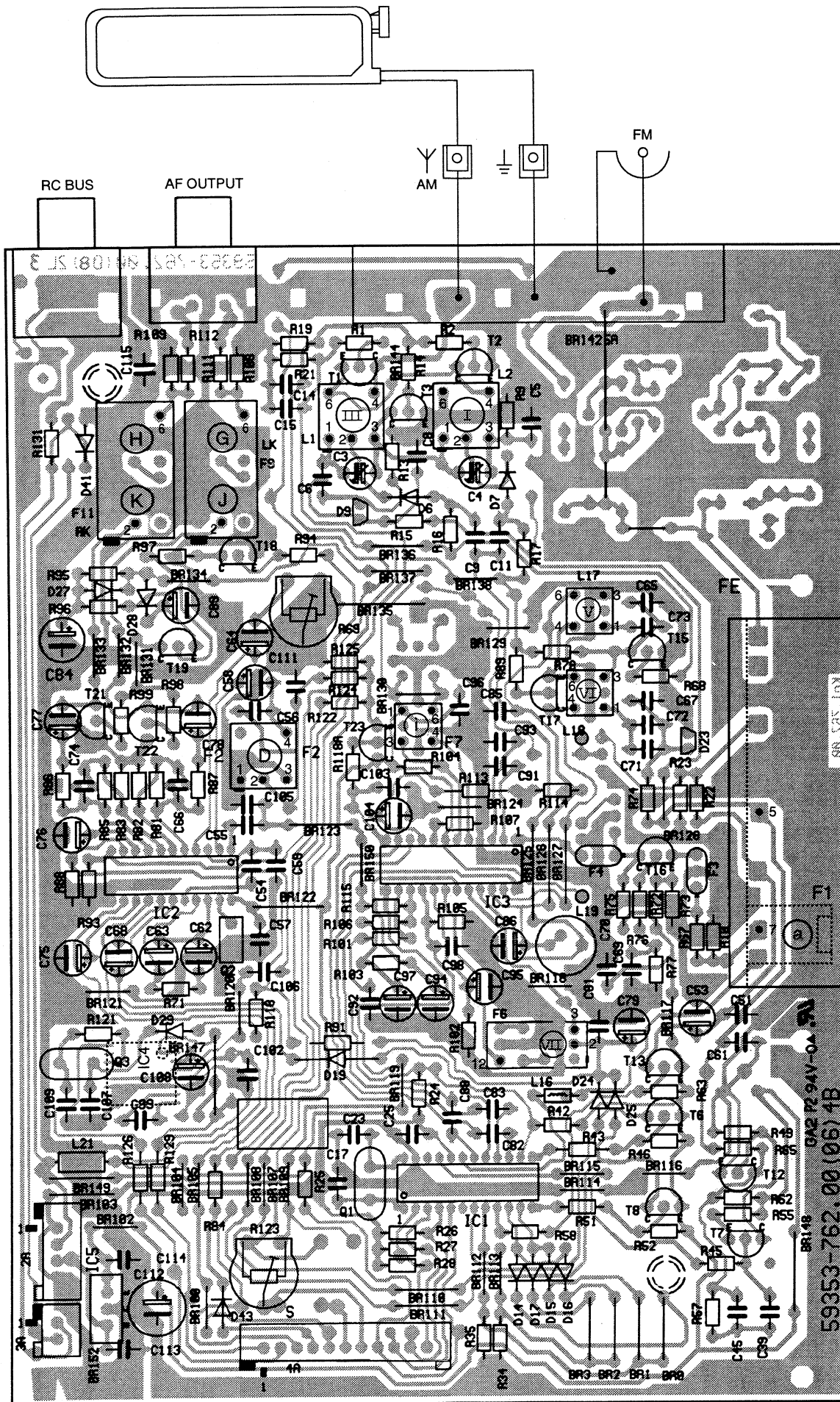
4.1 SCHEMATIC DIAGRAM TUNER BOARD - PART 1



## 4.2 TUNER PCB

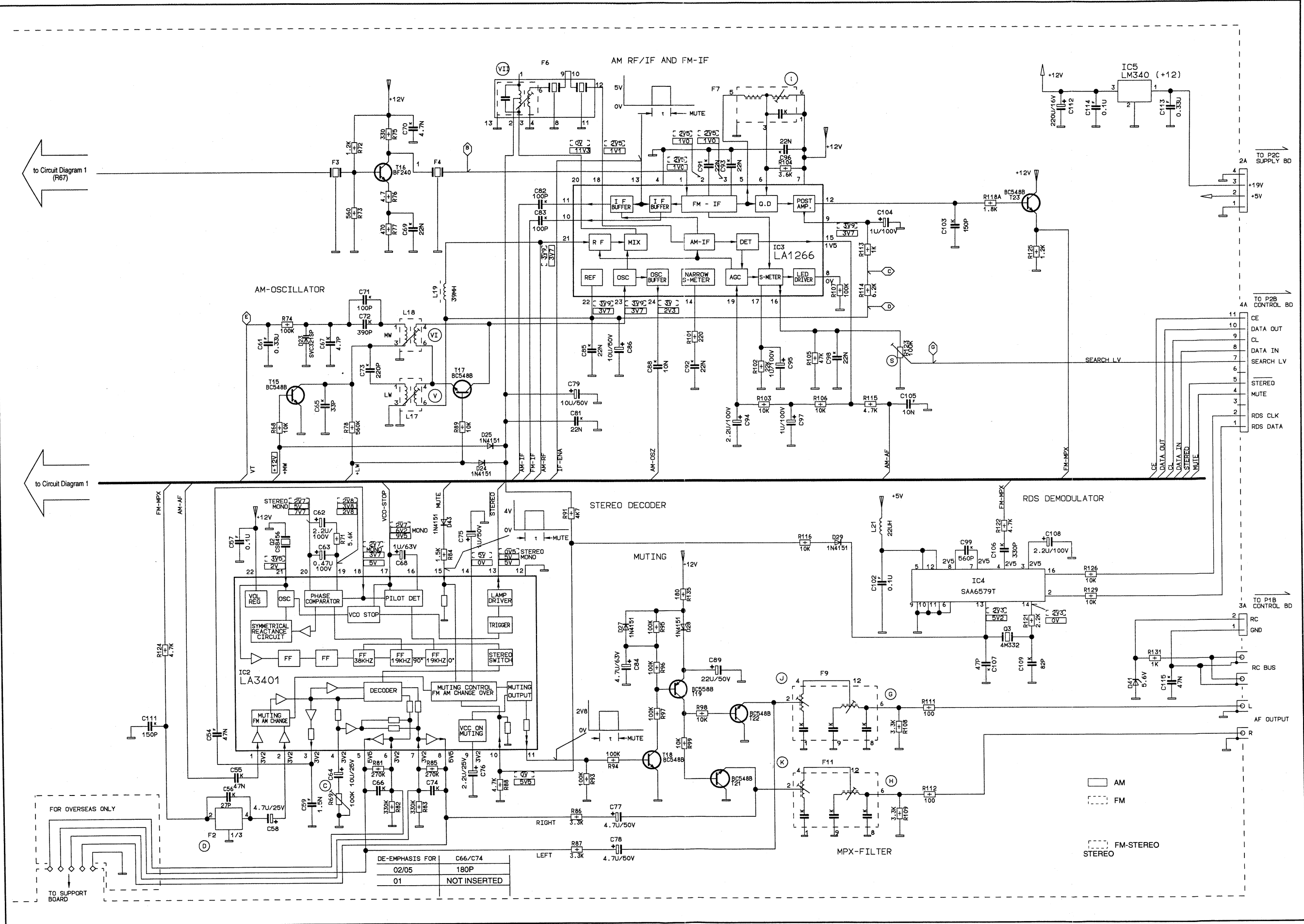
(component side)







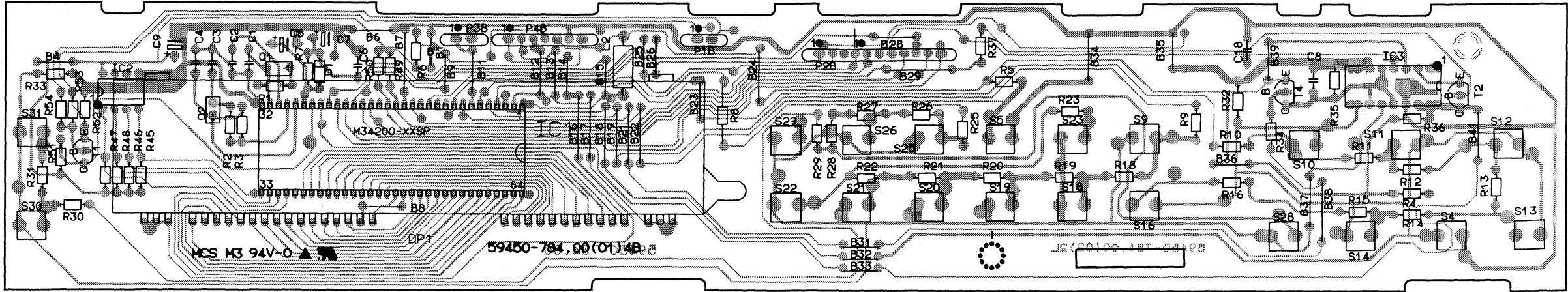
4.3 SCHEMATIC DIAGRAM TUNER BOARD - PART 2



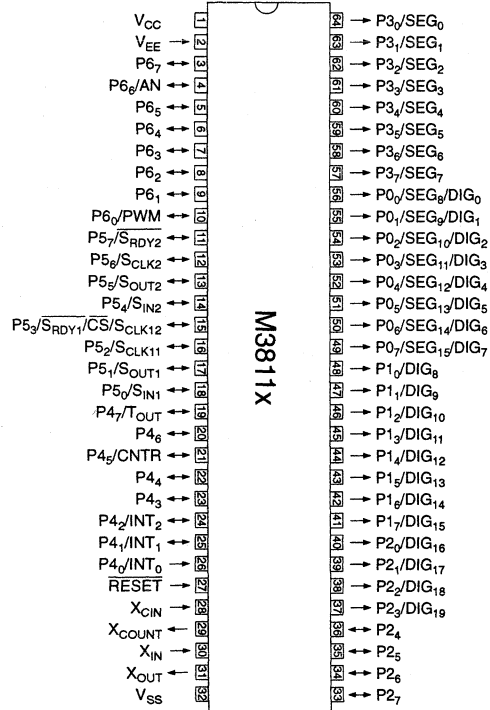
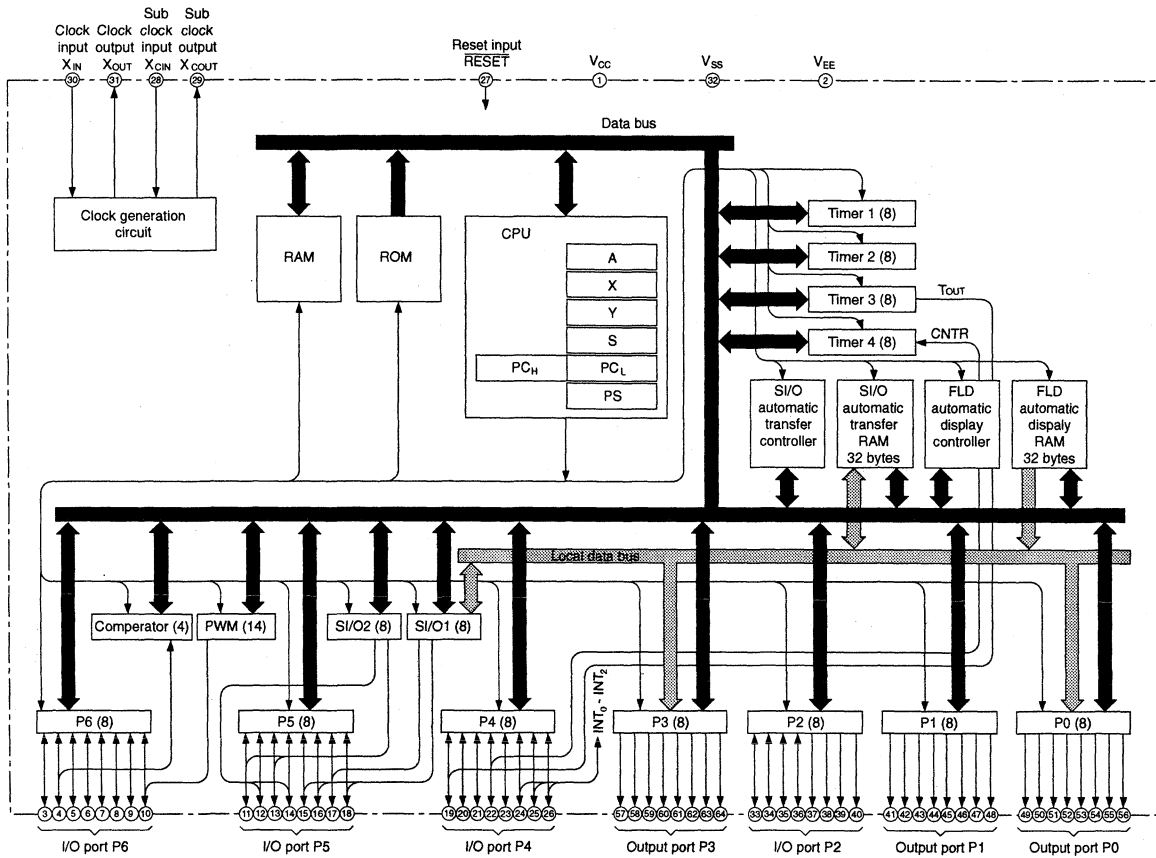


[illegible]

#### 4.5 CONTROL PCB (component side)



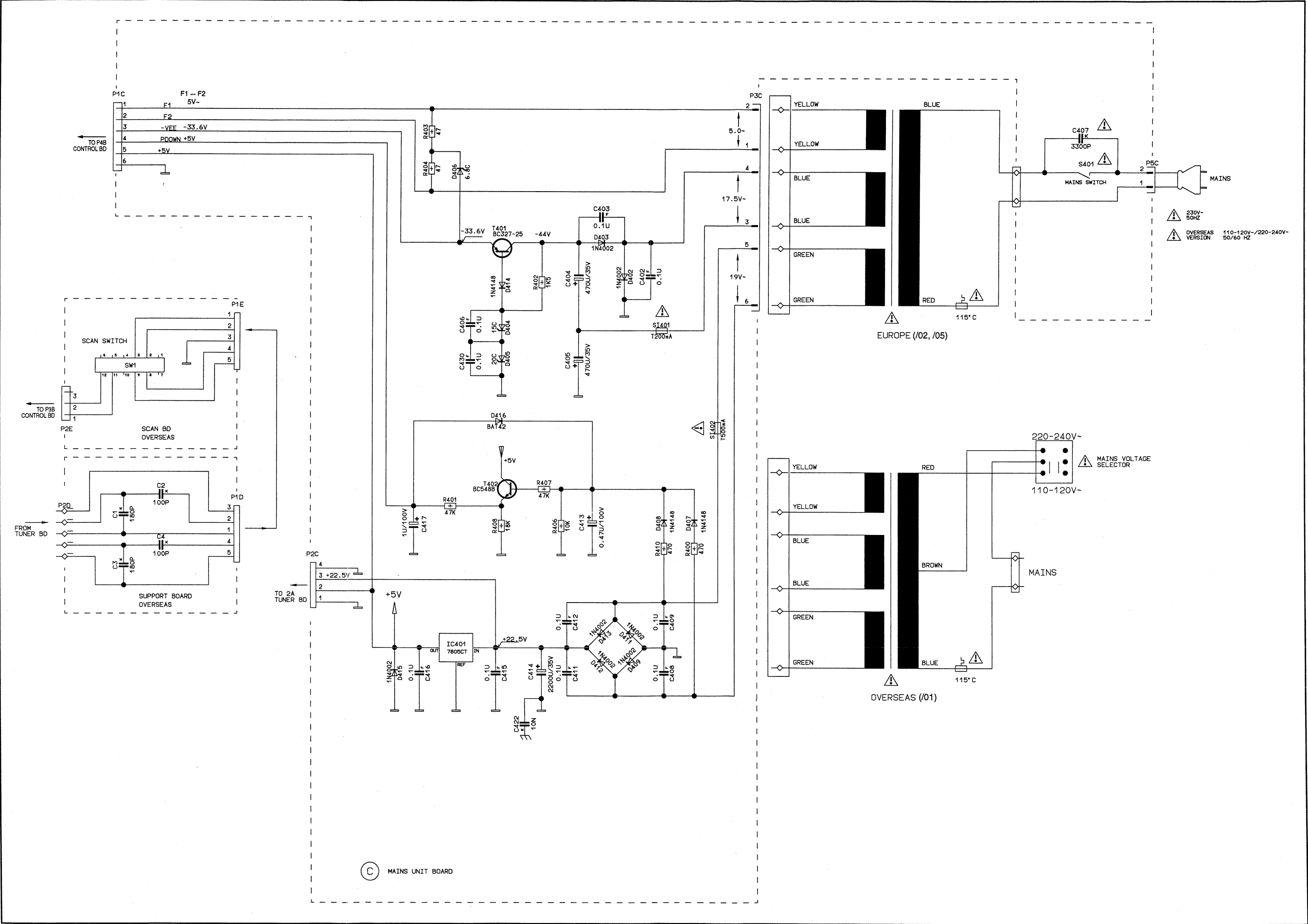
## M3811x



## PIN DESCRIPTION M3811x

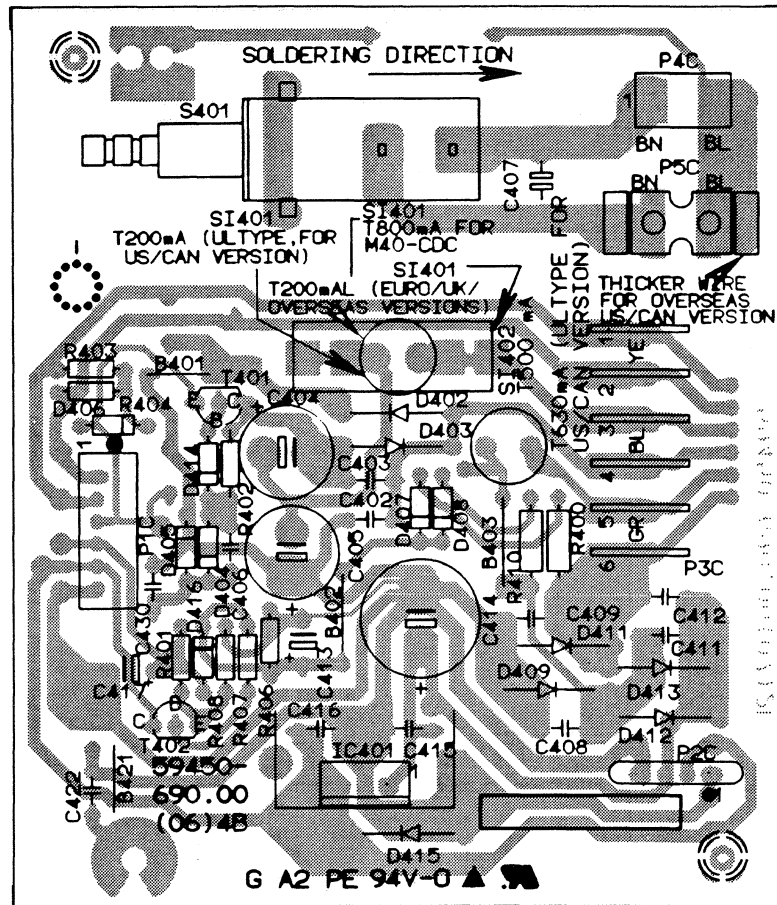
| Pin                                                                                                                                                                                   | Name                       | Function                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alternate Function            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                                                                                                                                                                       |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |
| 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> .                                                                                                                                                                                                                                                                                                                                                                 |                               |
| V <sub>EE</sub>                                                                                                                                                                       | Pull-down power input      | Applies voltage supplied to pull-down resistors of ports P0, P1, P2 <sub>0</sub> - P2 <sub>3</sub> and P3.                                                                                                                                                                                                                                                                                                                                       |                               |
| 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>COOUT</sub> clock has had time to stabilize.                                                                                                                                                                  |                               |
| 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.                              |                               |
| X <sub>OUT</sub>                                                                                                                                                                      | Clock output               |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |
| 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 and external feedback resistor between the X <sub>CIN</sub> and X <sub>COOUT</sub> pins. If an external clock is used, connect the clock source to the X <sub>CIN</sub> pin and leave the X <sub>COOUT</sub> pin open. This clock can also be used as the system clock. |                               |
| X <sub>COOUT</sub>                                                                                                                                                                    | Sub clock output           |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |
| P0 <sub>7</sub> /SEG <sub>6</sub> /<br>DIG <sub>6</sub><br>P0 <sub>7</sub> /SEG <sub>1</sub> /<br>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    |
| P1 <sub>0</sub> /DIG <sub>8</sub> -<br>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    |
| P2 <sub>2</sub> /DIG <sub>16</sub> -<br>P2 <sub>3</sub> /DIG <sub>19</sub>                                                                                                            | Output port                | An 4-bit output port with the same function as port P0.                                                                                                                                                                                                                                                                                                                                                                                          | FLD automatic display pins    |
| P2 <sub>4</sub> - P2 <sub>7</sub>                                                                                                                                                     | I/O port P2                | An 4-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.                                                                                                                                                                                                                                         |                               |
| P3 <sub>0</sub> /SEG <sub>0</sub> -<br>P3 <sub>7</sub> /SEG <sub>7</sub>                                                                                                              | Output port P3             | An 8-bit output port with the same function as port P0.                                                                                                                                                                                                                                                                                                                                                                                          | FLD automatic display pins    |
| P4 <sub>0</sub> /INT <sub>0</sub>                                                                                                                                                     | Input port P4 <sub>0</sub> | A 1-bit CMOS input pin.                                                                                                                                                                                                                                                                                                                                                                                                                          | External interrupt input pin  |
| P4 <sub>1</sub> /INT <sub>1</sub> -<br>P4 <sub>2</sub> /INT <sub>2</sub>                                                                                                              | I/O port P4                | A 7-bit CMOS I/O port with the same function as port P2 <sub>4</sub> - P2 <sub>7</sub> , with CMOS compatible input levels.                                                                                                                                                                                                                                                                                                                      | External interrupt input pins |
| P4 <sub>3</sub> , P4 <sub>4</sub> ,<br>P4 <sub>6</sub>                                                                                                                                |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |
| P4 <sub>5</sub> /CNTR                                                                                                                                                                 |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Event count input pin         |
| P4 <sub>7</sub> /TOUT                                                                                                                                                                 |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Timer output pin              |
| P5 <sub>0</sub> /SIN <sub>1</sub> ,<br>P5 <sub>1</sub> /SOUT <sub>1</sub> ,<br>P5 <sub>2</sub> /SCLK <sub>1</sub> ,<br>P5 <sub>3</sub> /SRDY <sub>1</sub> /<br>CS/SCLK <sub>1</sub> 2 | I/O port P5                | An 8-bit I/O port with the same function as port P2 <sub>4</sub> - P2 <sub>7</sub> . 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          |
| P5 <sub>4</sub> /SIN <sub>2</sub> ,<br>P5 <sub>5</sub> /SOUT <sub>2</sub> ,<br>P5 <sub>6</sub> /SCLK <sub>2</sub> ,<br>P5 <sub>7</sub> /SRDY <sub>2</sub>                             |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Serial I/O2 I/O pins          |
| P6 <sub>0</sub> /PWM                                                                                                                                                                  | I/O port P6                | A 8-bit CMOS I/O port with the same function as port P2 <sub>4</sub> - P2 <sub>7</sub> , with CMOS compatible input levels.                                                                                                                                                                                                                                                                                                                      | 14-bit PWM output pin         |
| P6 <sub>1</sub> - P6 <sub>5</sub> ,<br>P6 <sub>7</sub>                                                                                                                                |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |
| P6 <sub>6</sub> /AN                                                                                                                                                                   |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Comparator input pin          |

4.6 SCHEMATIC DIAGRAM : MAINS UNIT BOARD, SCAN BOARD, SUPPORT BOARD



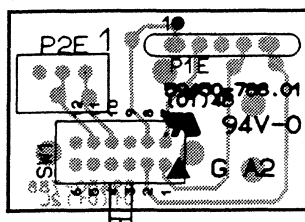
#### 4.7.1 MAINS UNIT PCB

(component side)



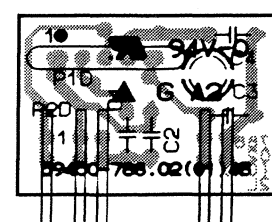
#### 4.7.2 SCAN PCB

(component side)

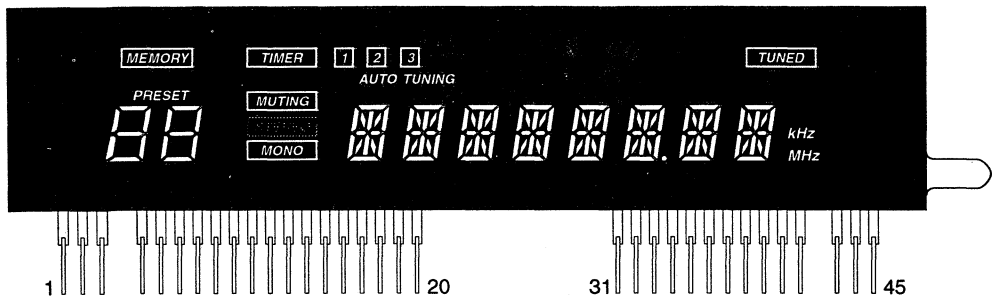


#### 4.7.3 SUPPORT PCB

(component side)

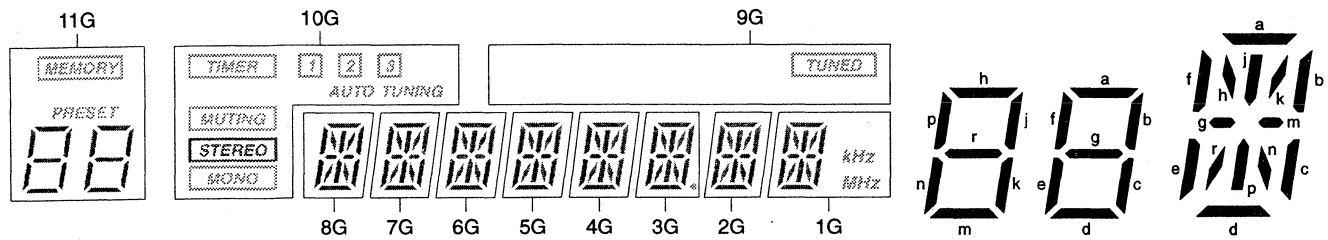


4.8 DISPLAY



PIN CONNECTION

| TERMINAL NO.                                                                                           | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19  | 20  | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
|--------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| ELECTRODE                                                                                              | F | F | F | N | P | P | P | P | P | P  | P  | P  | P  | P  | P  | P  | P  | P  | P   | P   | N  | N  | N  | N  | N  | N  | N  | N  | N  | 0  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 5  |
|                                                                                                        | 1 | 1 | 1 | P | a | b | f | g | e | c  | d  | h  | j  | k  | m  | n  | p  | r  | S15 | S16 | P  | P  | P  | P  | P  | P  | P  | P  | P  | P  | 1  | 1  | 0  | 9  | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  | N  | F  | F  |
| F --- Filament                  NP --- No Pin                  P --- Anode                  G --- Grid |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

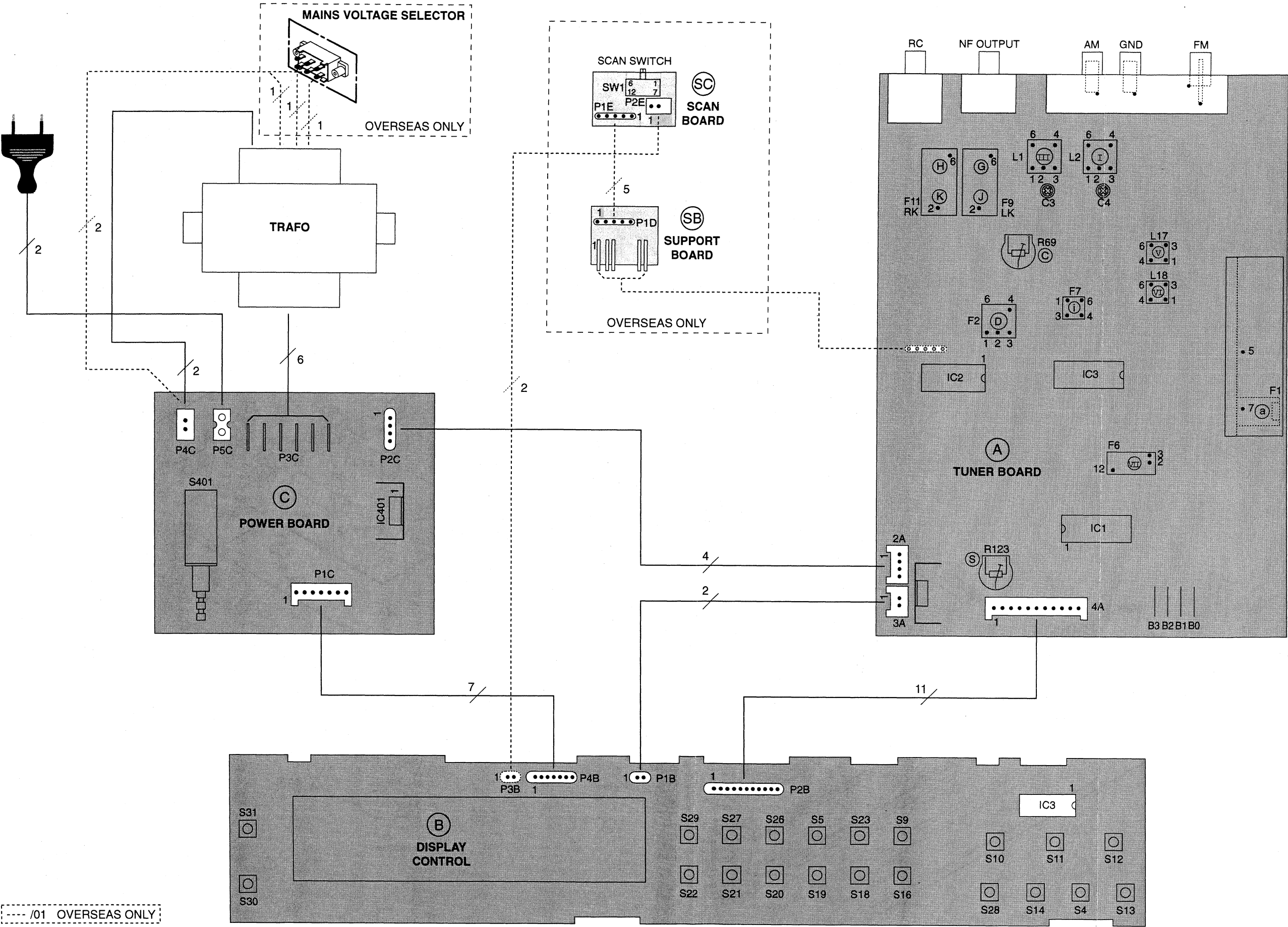


ANODE CONNECTION

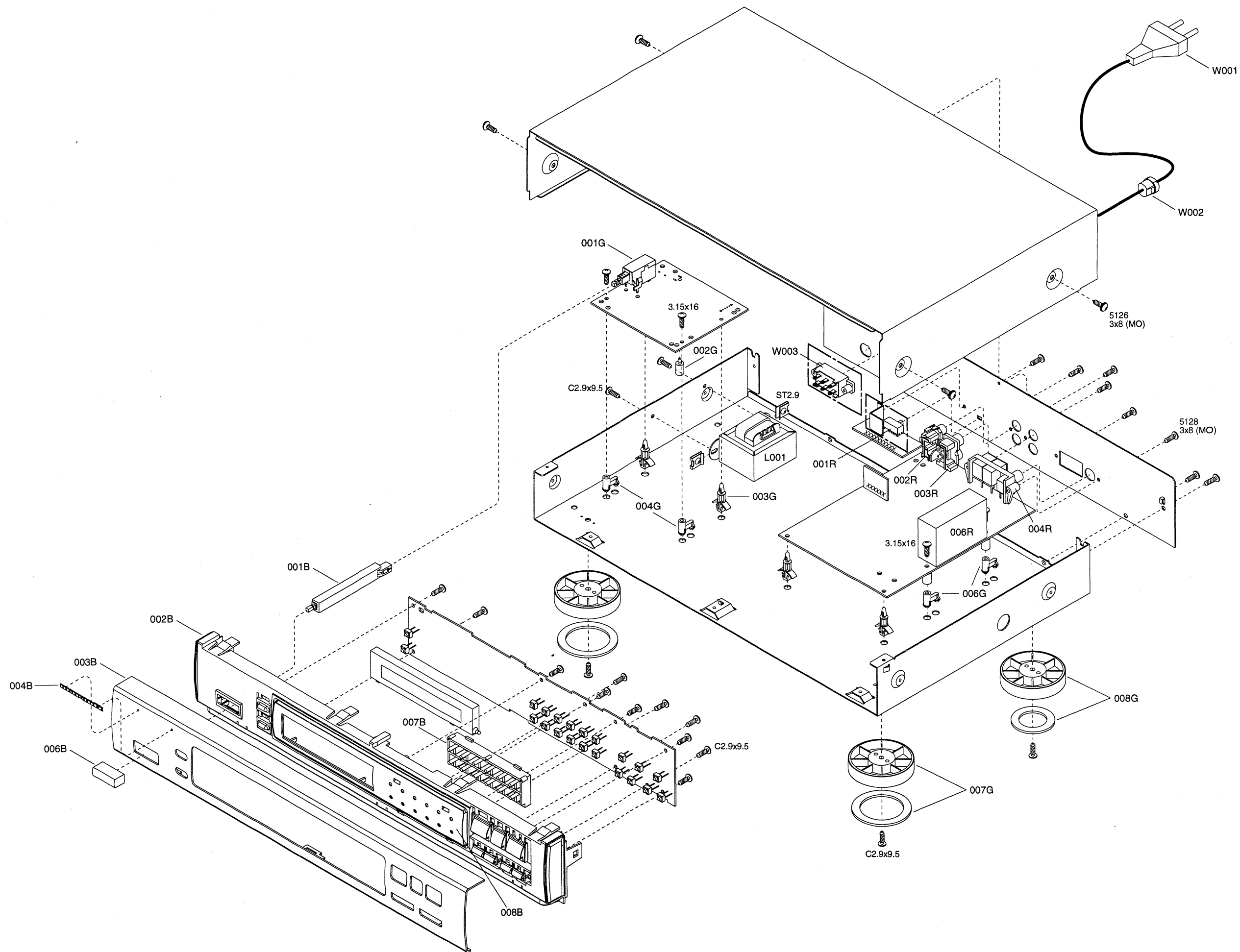
|      | 11G    | 10G    | 9G    | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G  |
|------|--------|--------|-------|----|----|----|----|----|----|----|-----|
| Pa   | 88     | 3      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pb   | 88     | 2      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pf   | 88     | 1      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pg   | 88     | TIMER  | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pe   | 88     | MUTING | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pc   | 88     | STEREO | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pd   | 88     | MONO   | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Ph   | 88     | TUNING | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pj   | 88     | AUTO   | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pk   | 88     | -      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pm   | 88     | -      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pn   | 88     | -      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pp   | 88     | -      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| Pr   | 88     | -      | -     | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88  |
| PS15 | PRESET | -      | TUNED | -  | -  | -  | -  | -  | *  | -  | MHz |
| PS16 | MEMORY | -      | -     | -  | -  | -  | -  | -  | -  | -  | kHz |



5. WIRING DIAGRAM



6. EXPLODED VIEW AND PARTS LIST





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

| POS.<br>NO | VERS.<br>COLOR | PART NO.<br>(PCS) | DESCRIPTION              | PART NO.<br>(MJI) |
|------------|----------------|-------------------|--------------------------|-------------------|
| 001B       |                | 4822 404 21348    | POWER LINK               | QP40421348        |
| 002B       |                | 4822 459 04439    | FRONT PANEL (PLASTIC)    | QP45904439        |
| 003B       |                | 4822 459 04441    | FRONT (ALU)              | QP45904441        |
| 004B       |                | 4822 454 11825    | MARANTZ BADGE            | 274H251020        |
| 006B       |                | 4822 410 63889    | MAINS BUTTON             | QP41063889        |
| 007B       |                | 4822 410 63891    | 12 KEY BUTTON            | QP41063891        |
| 008B       |                | 4822 450 62513    | WINDOW                   | QP45062513        |
| ▲ 001G     |                | 4822 410 63953    | MAINS SWITCH             | QP41063953        |
| 007G       |                | 4822 462 42045    | FOOT (FRONT SIDE)        | 183J057010        |
| 008G       |                | 4822 462 42048    | FOOT (REAR SIDE)         | 183J057110        |
| ▲ L001     | /01            | 4822 146 21835    | TRANSFORMER /01          | QP14621835        |
| ▲ L001     | /02/05         | 4822 146 21834    | TRANSFORMER /02/05       | QP14621834        |
| 001R       | /01            | 4822 276 13635    | SWITCH (SCAN) ALPS /01   | QP27613635        |
| 002R       |                | 4822 265 20399    | CINCH SOCKET (TWIN) RC-5 | QP26520399        |
| 003R       |                | 4822 265 31305    | CINCH SOCKET (TWIN)      | QP26531305        |
| 004R       |                | 4822 267 10296    | ANTENNA SOCKET           | QP26710296        |
| 006R       |                | 4822 210 10531    | FRONTEND MODEL FE415-G11 | QP21010531        |
| ▲ W001     |                | 4822 321 22917    | MAINS CABLE GWN9.17 WF   | QP32122917        |
| ▲ W003     | /01            | 4822 277 21807    | SLIDE SWITCH /01         | QP27721807        |
| ▲ XX01     |                | 4822 265 10777    | MAINS CABLE BASE         | QP26510777        |
| T001       |                | 4822 736 14919    | OPERATING INSTRUCTIONS   | QP73614919        |

## 7. ALIGNMENT PROCEDURES

### 7.1 FM Alignment Procedures

(Function switch at "FM" position)

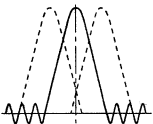
**Note:** The frontend is a completely preadjusted module. Only the IF-filter must be adjusted to the IF amplifier.

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.<br>$U_{RF}$ = approx. 100 $\mu$ V / 75 $\Omega$ | 98MHz            | Connect an oscilloscope to measuring point  | 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.<br>$U_{RF}$ = 1mV / 75 $\Omega$<br>$f_{mod.}$ = 1kHz, $\Delta f$ = $\pm 40$ kHz | 98MHz            | Connect a Distortion Analyzer to AF output | With filter F7 i adjust for minimum distortion. (typ. $\leq 0.2\%$ ) |

#### • FM Search Stop Alignment

| Step | Signal Source Connection                                                            | Signal Frequency | Indicator Connection                                                                                         | Adjust                          |
|------|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1    | Connect an FM generator to FM aerial socket.<br>$U_{RF}$ = 15 $\mu$ V / 75 $\Omega$ | 98MHz            | DC-VM to measuring point  | With R123 S set to 0.7V +0.05V. |

#### • Multiplex Alignment

| Step | Signal Source Connection                      | Signal Frequency            | Indicator Connection           | Adjust                                                               |
|------|-----------------------------------------------|-----------------------------|--------------------------------|----------------------------------------------------------------------|
| 1    | Connect a stereo encoder to FM aerial socket. | 106MHz<br>$L_{mod.}$ = 1kHz | Connect AC-VM to AF-output "R" | With R69 C adjust for maximum and symmetrical crosstalk attenuation. |
| 2    |                                               | 106MHz<br>$R_{mod.}$ = 1kHz | Connect AC-VM to AF-output "L" |                                                                      |
| 3    | Connect an FM generator to FM aerial socket.  | 98MHz<br>$f_{mod.}$ = 38kHz | Connect AC-VM to AF-output     | With F9 J, F11 K adjust for minimum level.                           |
| 4    |                                               | 98MHz<br>$f_{mod.}$ = 19kHz |                                | 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).<br>$U_{AF}$ = approx. 100mV | 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. |

### • AM RF IF Alignment

| Step | Signal Source Connection                                                                                                   | Signal Frequency | Indicator Connection       | Adjust                                                          |
|------|----------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|-----------------------------------------------------------------|
| 1    | Feed in an AM generator signal via a frame aerial.<br>$U_{RF}$ as low as possible<br>$m = 30\%$ , $f_{mod.} = 1\text{kHz}$ | 1449kHz          | Connect AC-VM to AF-output | With C3 ④ and the IF Filter F6 ⑦ set $U_{AF}$ to maximum level. |
| 2    |                                                                                                                            | 558kHz           |                            | With L1 ③ set $U_{AF}$ to maximum level.                        |
| 3    | Repeat the adjustment of C3 and L1 until sensitivity is maximized, end with C3.                                            |                  |                            |                                                                 |

### • LW RF IF Alignment

| Step | Signal Source Connection                                                                                                   | Signal Frequency | Indicator Connection       | Adjust                                   |
|------|----------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|------------------------------------------|
| 1    | Feed in an AM generator signal via a frame aerial.<br>$U_{RF}$ as low as possible<br>$m = 30\%$ , $f_{mod.} = 1\text{kHz}$ | 261kHz           | Connect AC-VM to AF-output | With C4 ② set $U_{AF}$ to maximum level. |
| 2    |                                                                                                                            | 162kHz           |                            | With L2 ① set $U_{AF}$ to maximum level. |
| 3    | Repeat steps 1 and 2 until sensitivity is maximized, end with C4.                                                          |                  |                            |                                          |

### • 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 point

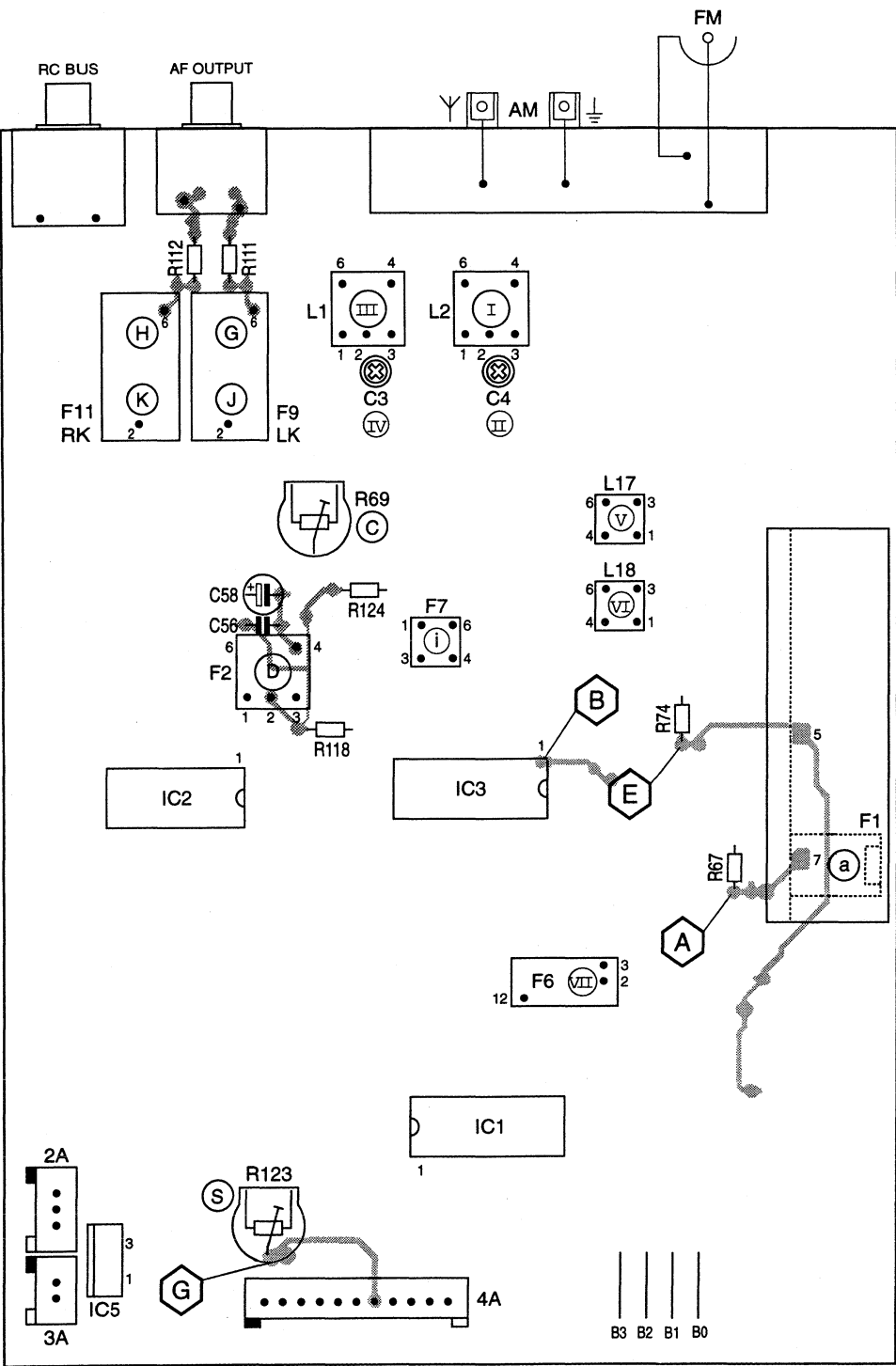
 Trimming point

| 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

7.3 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) |
|---------------------------------------------|-------------|----------------|---------------------------------------|----------------|---------|-------------|----------------|---------------------------|----------------|
| C3<br>C4<br>▲ C407<br>▲ C414                |             | 4822 125 60222 | <b>CAPACITORS</b><br>TR.53 4.5-20pF   | QP12560222     | T16     |             | 4822 130 40902 | TRANS BF240               | QP13040902     |
|                                             |             | 4822 125 60223 | TR.55 7.5-45pF                        | QP12560223     | T17     |             | 4822 130 40937 | TRANS BC548B              | QP13040937     |
|                                             |             | 4822 126 11805 | SI-KERKO.A 3300pF 20%                 | QP12611805     | T18     |             | 4822 130 40937 | TRANS BC548B              | QP13040937     |
|                                             |             | 4822 124 11861 | ELKO 2200μF 20% 35V                   | QP12411861     | T19     |             | 4822 130 44197 | TRANS BC558B              | QP13044197     |
|                                             |             |                |                                       |                | T21     |             |                |                           |                |
| D1<br>D6<br>D7<br>D9<br>D14<br>I<br>D17     |             | 5322 130 34052 | <b>SEMICONDUCTORS</b><br>DIODE 1N4151 | QQ13034052     | I       |             | 4822 130 40937 | TRANS BC548B              | QP13040937     |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | T23     |             |                |                           |                |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | T401    |             | 4822 130 41246 | TRANS BC327-25            | QP13041246     |
|                                             |             | 4822 130 82789 | DIODE SVC321SP-A/B/C/D                | QP13082789     | T402    |             | 4822 130 40937 | TRANS BC548B              | QP13040937     |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     |         |             |                | <b>RESISTORS</b>          |                |
| D19<br>D23<br>D24<br>D25<br>D27<br>I<br>D29 |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | R69     |             | 4822 100 20694 | ESTR.SK10-A 100kΩ LIN     | QP10020694     |
|                                             |             | 4822 130 82789 | DIODE SVC321SP-A/B/C/D                | QP13082789     | R123    |             | 4822 100 20694 | ESTR.SK10-A 100kΩ LIN     | QP10020694     |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     |         |             |                | <b>MISCELLANEOUS</b>      |                |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | DP1     |             | 4822 130 91507 | FL DISPLAY                | QP13091507     |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | F2      |             | 4822 214 51727 | FILTER (ADJACENT CHANNEL) | QP21451727     |
| D41<br>D43<br>D402<br>D403<br>D404          |             | 4822 130 34173 | Z DIODE 5.6V C 0.5W                   | QP13034173     | F3      |             | 4822 157 62739 | KERAMIK-FILTER 70         | QP15762739     |
|                                             |             | 5322 130 34052 | DIODE 1N4151                          | QQ13034052     | F4      |             | 4822 157 62739 | KERAMIK-FILTER 70         | QP15762739     |
|                                             |             | 5322 130 30684 | DIODE 1N4002-GA                       | QQ13030684     | F6      |             | 4822 242 71509 | AM-IF SFL 450 J3          | FF10045330     |
|                                             |             | 5322 130 30684 | DIODE 1N4002-GA                       | QQ13030684     | F7      |             | 4822 156 11092 | FM-DEM.I                  | QP15611092     |
|                                             |             | 4822 130 83968 | Z-DIODE 15V C 0.5W                    | QP13083968     | F9      |             | 4822 156 11104 | FILTER (PILOT) LPF-V20    | QP15611104     |
| D405<br>D406<br>▲ D407<br>▲ D408<br>▲ D409  |             | 4822 130 34499 | Z DIODE 20V C 0.5W                    | QP13034499     | F11     |             | 4822 156 11104 | FILTER (PILOT) LPF-V20    | QP15611104     |
|                                             |             | 4822 130 33783 | Z DIODE 6.8V C 0.5W                   | QP13033783     | L1      |             | 4822 156 11094 | MW-RF CIRCUIT.            | QP15611094     |
|                                             |             | 4822 130 30621 | DIODE 1N4148                          | QP13030621     | L2      |             | 4822 157 11068 | DR AX 0309-GA 22μH        | QP15711068     |
|                                             |             | 4822 130 30621 | DIODE 1N4148                          | QP13030621     | L17     |             | 4822 156 11091 | COIL (LW-OS)              | QP15611091     |
|                                             |             | 5322 130 30684 | DIODE 1N4002-GA                       | QQ13030684     | L18     |             | 4822 156 11089 | COIL (MW-OS)              | QP15611089     |
| ▲ D411<br>I<br>▲ D413<br>D414<br>▲ D415     |             | 5322 130 30684 | DIODE 1N4002-GA                       | QQ13030684     | L16     |             | 4822 157 70423 | DR AX 0207-GA 0.33μH      | QP15770423     |
|                                             |             | 4822 130 30621 | DIODE 1N4148                          | QP13030621     | L19     |             | 4822 157 53632 | INDUCTOR 39mH 5%          | QP15753632     |
|                                             |             | 5322 130 30684 | DIODE 1N4002-GA                       | QQ13030684     | L21     |             | 4822 157 11068 | DR AX 0309-GA 22μH        | QP15711068     |
|                                             |             | 4822 130 31353 | DIODE TYP5 BAT42                      | QP13031353     | Q1      |             | 4822 242 72294 | CRYSTAL 7.2MHz            | QP24272294     |
|                                             |             | 4822 209 30178 | IC LC7218 SANYO                       | QP20930178     | Q2      |             | 4822 242 72295 | CER.RES.10 CSB456F11      | QP24272295     |
| IC1<br>IC2<br>IC4<br>IC5<br>IC01            |             | 4822 209 73434 | IC LA3401 SANYO                       | QP20973434     | Q3      |             | 4822 242 81319 | CRYSTAL #170 A/C 4.332MHz | QP24281319     |
|                                             |             | 4822 209 31981 | IC LA1266 SANYO                       | QP20931981     | Q01     |             | 4822 242 72296 | CER.RES.87 4.19MHz        | QP24272296     |
|                                             |             | 4822 209 33347 | IC LM340AT-12 NSC                     | QP20933347     | S4      |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 209 15286 | IC M38112E4SP PROG.KPL                | QP20915286     | S5      |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 209 31819 | IC XLS93C66P                          | QP20931819     | S9      |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
| IC02<br>▲ IC401                             |             | 5322 209 86518 | IC MC7805 CT                          | QQ20986518     | S10     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 40937 | TRANS BC548B                          | QP13040937     | I       |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 40937 | TRANS BC548B                          | QP13040937     | S14     |             |                |                           |                |
|                                             |             | 5322 130 44779 | TRANS BC338-25                        | QQ13044779     | S16     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 44197 | TRANS BC558B                          | QP13044197     | S18     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
| T1<br>T2<br>T3<br>T4<br>T6                  |             | 4822 130 44197 | TRANS BC558B                          | QP13044197     | I       |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 42121 | TRANS 2SK30A-TM-Y1                    | HF200300B0     | S23     |             |                |                           |                |
|                                             |             | 4822 130 44197 | TRANS BC558B                          | QP13044197     | S25     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 44196 | TRANS BC548C                          | QP13044196     | S26     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             | 4822 130 44197 | TRANS BC558B                          | QP13044197     | S28     |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
| T7<br>T8<br>T12<br>T13<br>T15               |             | 4822 130 40937 | TRANS BC548B                          | QP13040937     | I       |             | 4822 410 62446 | TACT SWITCH               | QP41062446     |
|                                             |             |                |                                       |                | S31     |             |                |                           |                |
|                                             |             |                |                                       |                | ▲ SI401 |             | 4822 071 52001 | FUSE-GR 200mA/T           | QP07152001     |
|                                             |             |                |                                       |                | ▲ SI402 |             | 4822 071 55001 | FUSE-GR 500mA/T           | QP07155001     |
|                                             |             |                |                                       |                |         |             |                |                           |                |

### 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.