# AM/FM STEREO TUNER
# TX-1000/U/TX-2000
## SERVICE MANUAL

15215

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
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## ■ CONTENTS



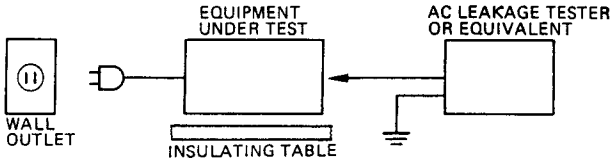
100194

YAMAHA
YAMAHA CORPORATION
P.O Box 1, Hamamatsu, Japan
3.7k-062 Printed in Japan '88.7

## TO SERVICE PERSONNEL

1. Critical Components Information.
   Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Model Only).
   When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 $\mu$F.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

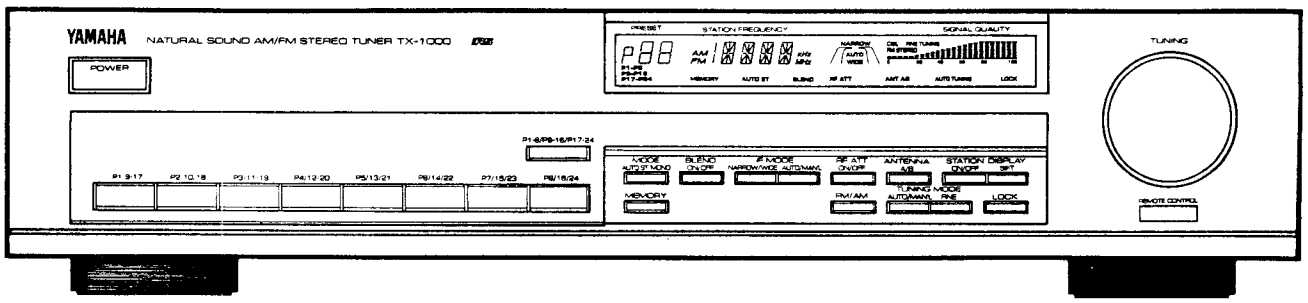



### • POLARIZATION

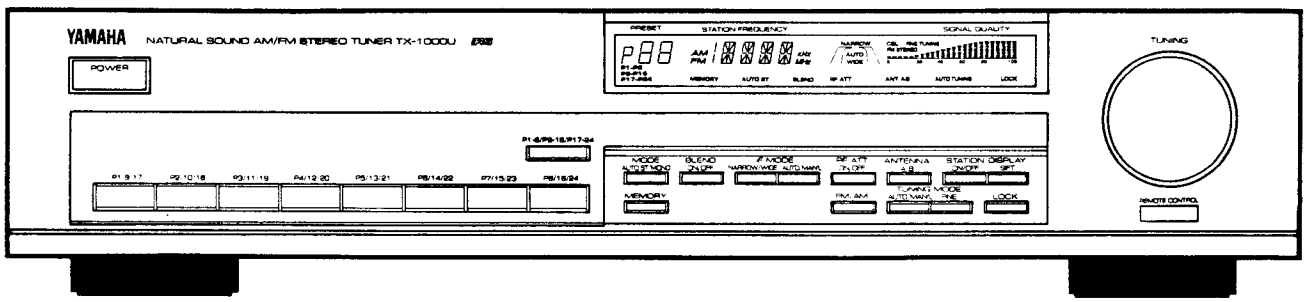
This tuner product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. (U, C Model only)

## FRONT PANELS

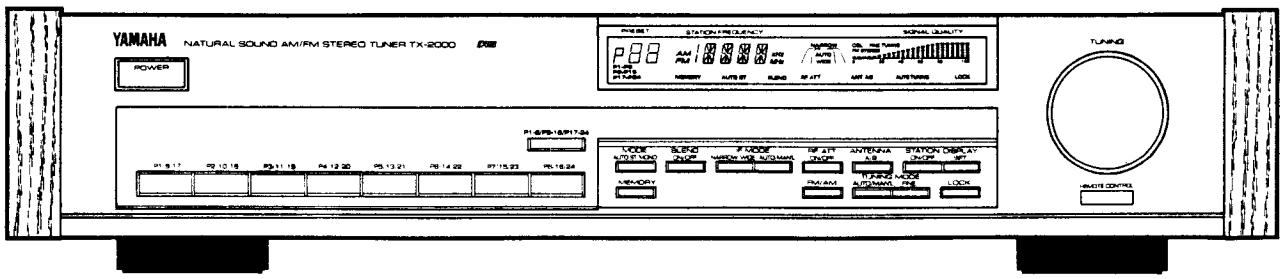
● TX-1000




● TX-1000U



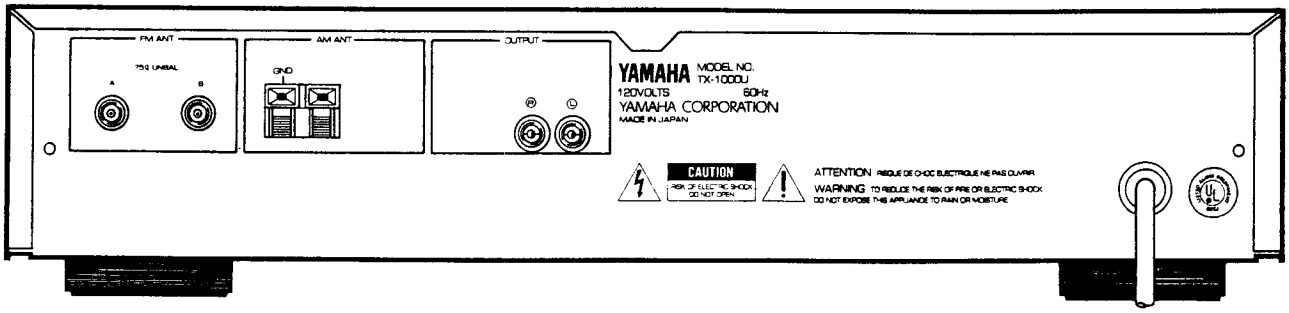

● TX-2000



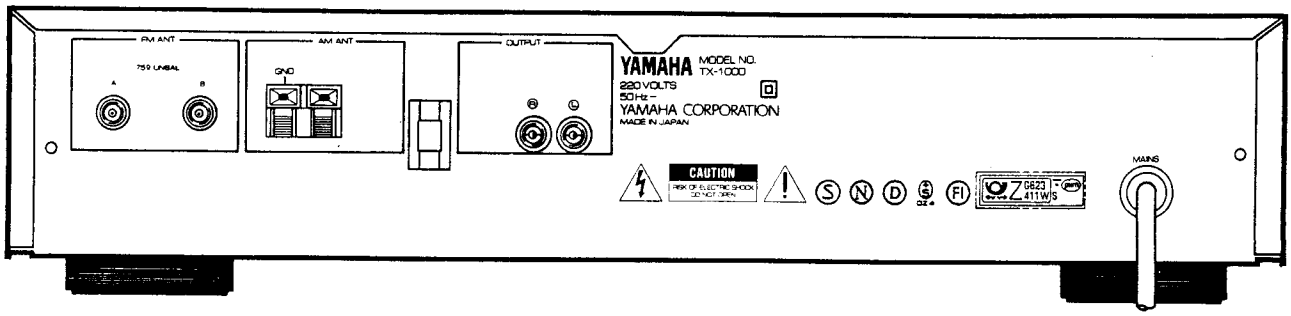
# ■ REAR PANELS

## TX-1000/1000U

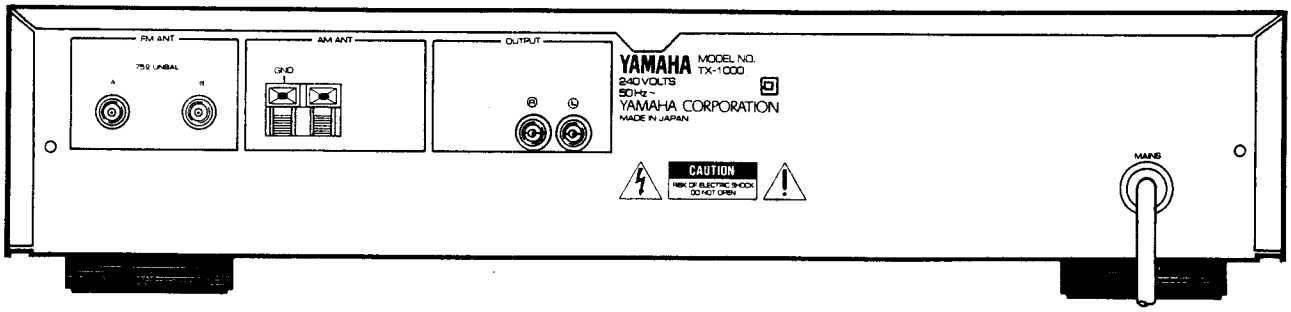
### ● U.S.A. & Canadian Model



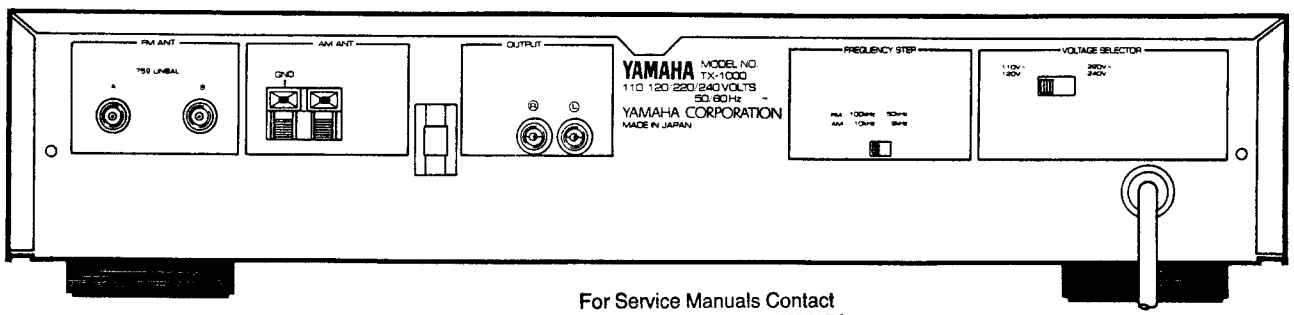

### ● European Model




### ● Australian & British Model




### ● General Model

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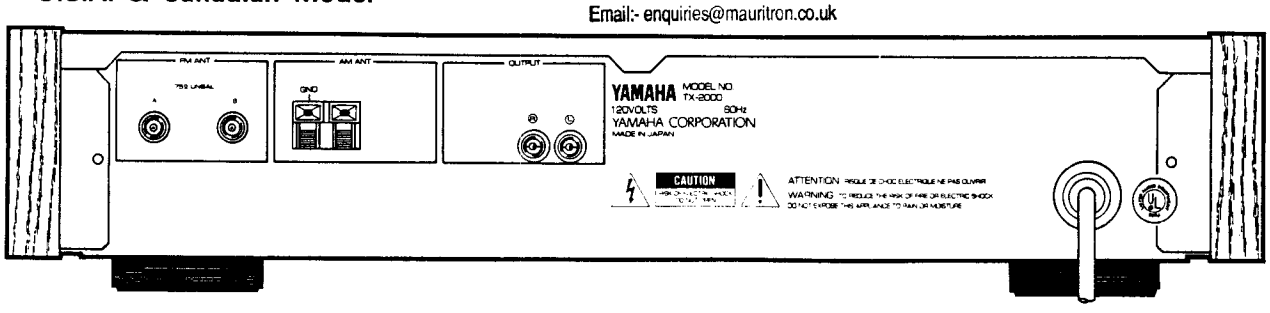
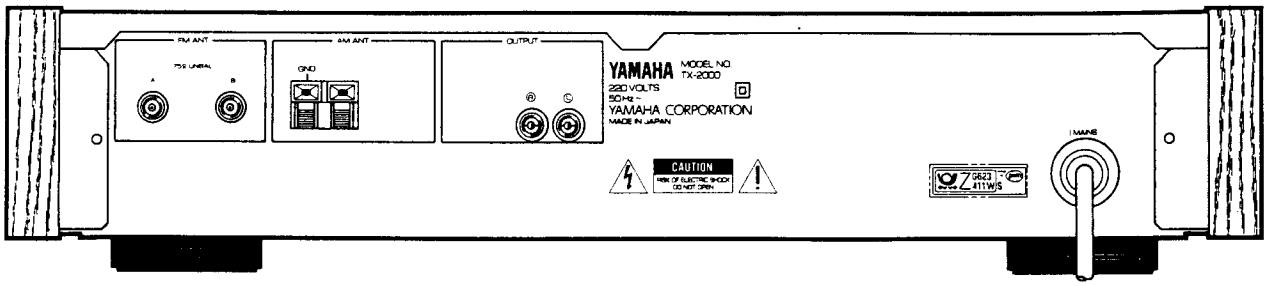
## TX-2000

### ● U.S.A. & Canadian Model

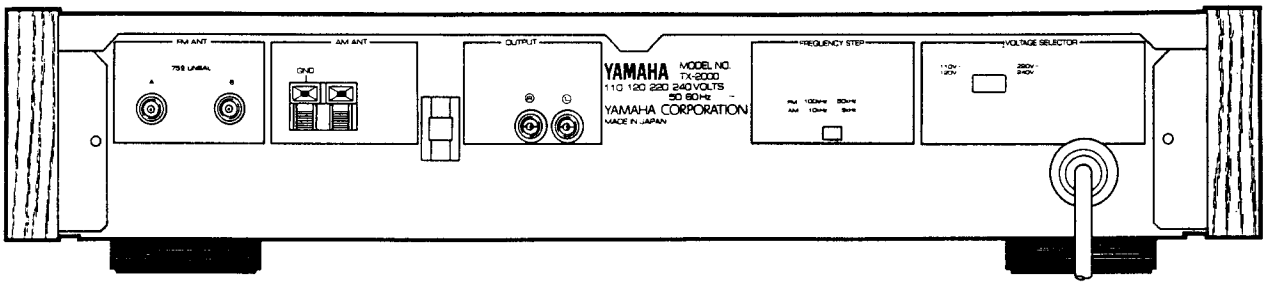


TX-2000

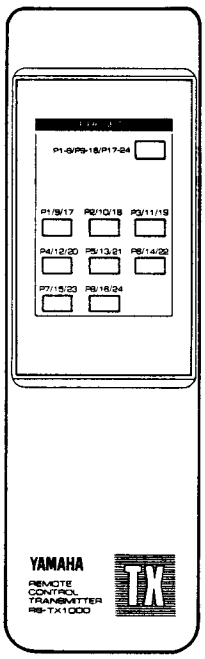
● West Germany Model



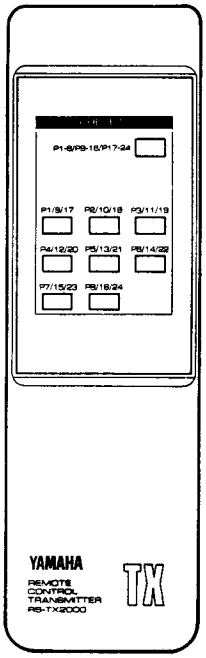

● General Model




● RS-TX1000




● RS-TX2000

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# *SPECIFICATIONS*

## ● FM Section

**Tuning Range** ····· 87.6 ~ 108 MHz
**50 dB Quieting Sensitivity (IHF)**
**75Ω Mono** ····· 1.6 μV (15.3 dBf)
**Stereo** ····· 20 μV (37.2 dBf)
**Usable Sensitivity**
**30 dB S/N Quieting** ····· 0.9 μV (10.3 dBf)
**Usable Sensitivity (DIN)**
**75Ω Mono (S/N 26 dB)** ····· 0.8 μV [W, G model]
**Stereo (S/N 46 dB)** ····· 22 μV [W, G model]
**Image Response Ratio** ····· 95 dB
**IF Response Ratio** ····· 115 dB
**Spurious Response Ratio** ····· 110 dB
**AM Suppression Ratio** ····· 70 dB
**Capture Ratio (WIDE)** ····· 1.2 dB
**Alternate Channel**
**Selectivity (NARROW)** ····· 90 dB [U, C, R, A, B model]
**Selectivity (two Signals)**
**40 kHz Dev. ± 300 kHz** ····· 80 dB
**Signal to Noise Ratio (IHF)**
**Mono** ····· 98 dB
**Stereo** ····· 90 dB
**Signal to Noise Ratio**
**DIN NOISE RMS 40 kHz Dev.**
**Mono** ····· 86 dB [W, G model]
**Stereo** ····· 79 dB [W, G model]
**Harmonic Distortion**
**WIDE 1 kHz** ····· 0.02% [U, C, R, A, B model]
**WIDE 1 kHz** ····· 0.03% [U, C, R, A, B model]
**Harmonic Distortion (40 kHz DEV.)**
**WIDE 1 kHz** ····· 0.03% [W, G model]
**Stereo Separation**
**WIDE 1 kHz** ····· 68 dB
**Frequency Response**
**50 Hz to 10 kHz** ····· $0\ ^{+0.2}_{-0.3}$ dB
**20 Hz to 15 kHz** ····· $0\ ^{+0.2}_{-0.5}$ dB
**Sub-Carrier Product Ratio** ····· 65 dB

## ● AM Section

| | |
|---|---|
| Tuning Range | 520 ~ 1,620 kHz [U, C, R model] |
| | 522 ~ 16, 20 kHz [A,B,W,G model] |
| Unable Sensitivity | 100 μVm [U, C, A, B model] |
| | 250 μVm [R, W, G model] |
| Selectivity | 32 dB |
| Signal to Noise Ratio | 52 dB |
| Image Response Ratio | 40 dB |
| Spurious Response Ratio | 50 dB |
| Harmonic Distortion | 0.3% |

## ● AUDIO Section

Output Level/Impedance (Fixed)

| | |
|---|---|
| FM 100% MOD, 1 kHz | 500mV/1kΩ [U, C, R, A, B model] |
| | 400mV/1kΩ [W, G model] |
| AM 100% MOD, 400 Hz | 150mV/1kΩ |

## ● GENERAL

| | |
|---|---|
| Power Supply | AC120V, 60 Hz [U, C model] |
| | AC110 ~ 120/220 ~ 240V |
| | 50/60 Hz [R model] |
| | AC220V, 50 Hz [W, G model] |
| | AC240V, 50 Hz [A, B model] |
| Power Consumption | 15W |
| Dimensions (W x H x D) | |
| TX-1000 | 435 x 95 x 366.5 mm |
| | (17-1/8" x 3-47/64" x 14-27/64") |
| TX-2000 | 473 x 95.5 x 366.5 mm |
| | (18-5/8" x 3-48/64" x 14-27/64") |
| Weight | |
| TX-1000 | 6.1 kg (13 lbs. 7.17 oz) |
| TX-2000 | 7.2 kg (15 lbs. 13.97 oz) |

(U) ··· U.S.A. model
(C) ···· Canadian model
(A) ···· Australian model
(B) ···· British model
(W) ··· West Germany model
(G) ··· European model
(R) ···· General model

**Specifications subject to change without notice.**

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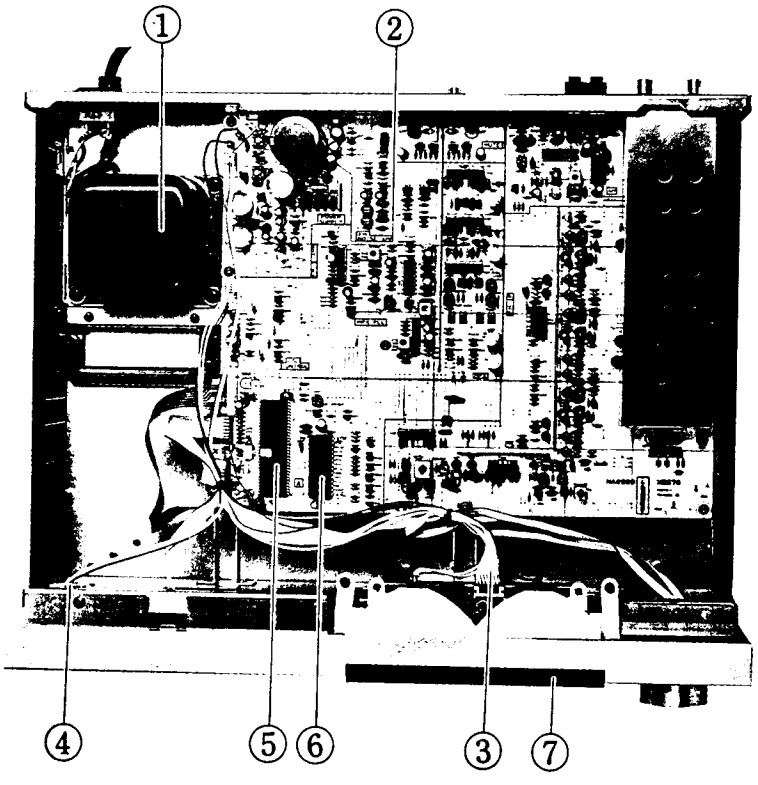
## ■ *INTERNAL VIEW*

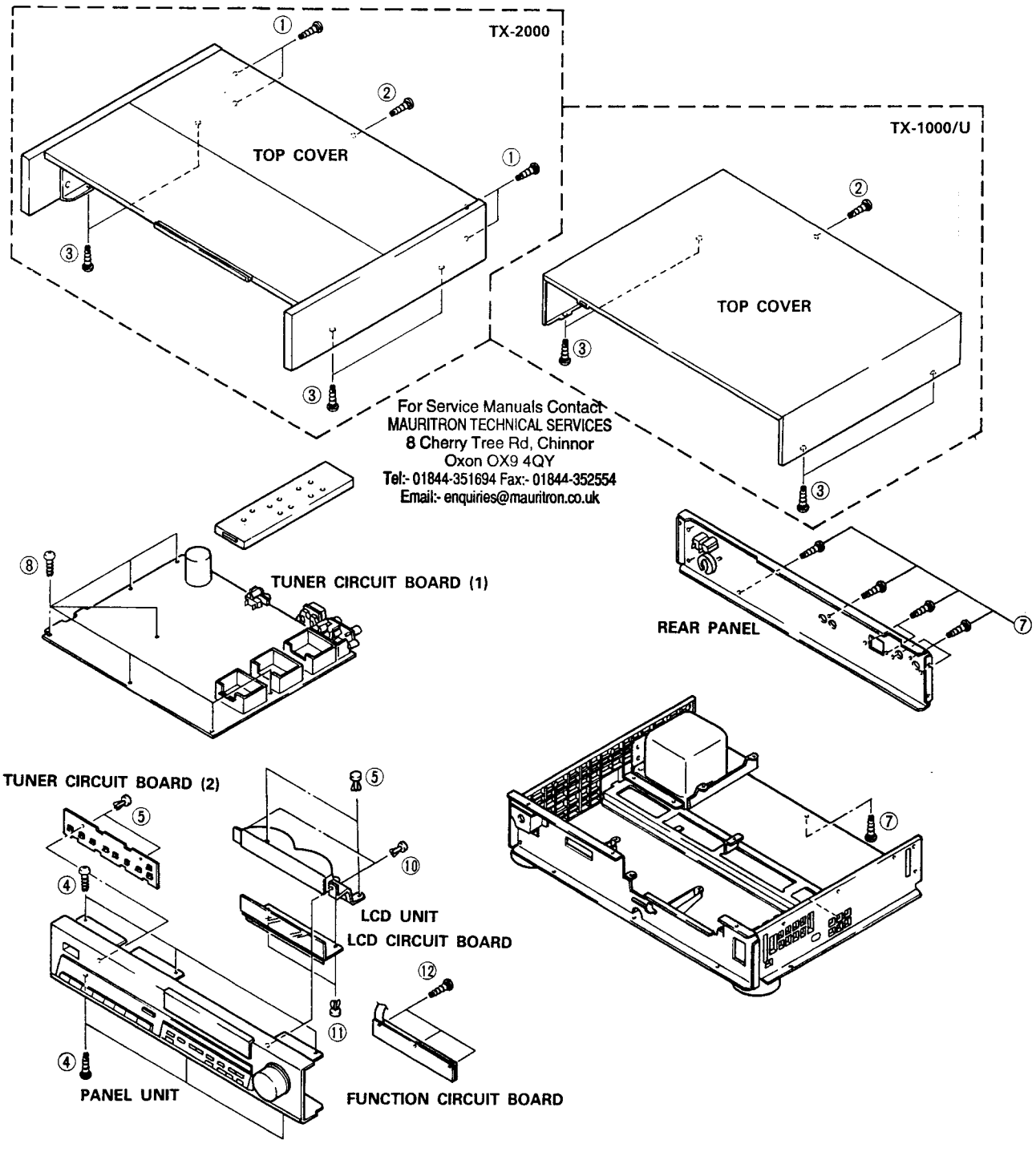



① POWER TRANSFORMER
U, C Models: XE247001
R Model: XE249001
W, G Model: XE679001
② TUNER CIRCUIT BOARD
③ LCD CIRCUIT BOARD
④ POWER SWITCH=SW2
⑤ IC11: LC66506B-3910
⑥ IC12: LC7210
⑦ LCD UNIT

## ■DISASSEMBLY PROCEDURES

| Step | Item | Operation |
|---|---|---|
| 1 | Top panel | Remove 4 screws ①, remove 1 screw ②, and remove 4 screws ③. |
| 2 | Panel unit | Remove 6 screws ④ and 2 rivets ⑤. |
| 3 | Rear panel | Remove 8 screws ⑦. |
| 4 | TUNER CIRCUIT BOARD (1) | Remove 7 screws ⑧. |
| 5 | TUNER CIRCUIT BOARD (2) | Remove 2 rivets ⑨. |
| 6 | LCD CIRCUIT BOARD | After removing 2 rivets ⑩, remove 2 more rivets ⑪. |
| 7 | FUNCTION CIRCUIT BOARD | Remove 3 screws ⑫. |

*Disconnect connectors and remove soldering on wiring as necessary.

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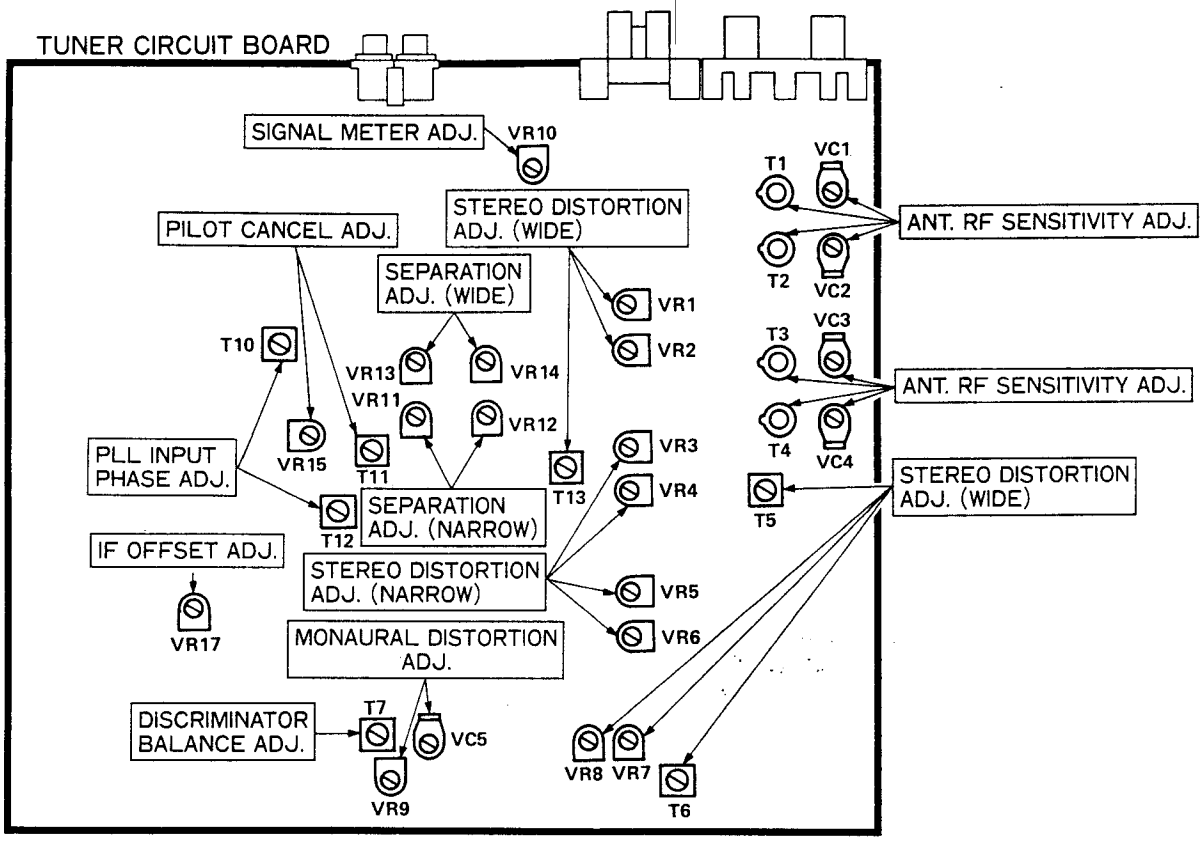
# ■ADJUSTMENTS

● **Adjustment points**




## 1. Before Adjustment

1) Start adjustment approximately 5 minutes after the power has been turned on in order to stabilize circuit operation.
2) Adjust the OSC coil and IFT using a high-frequency or nonferrous screwdriver.
3) Adjust the FM section first, then adjust the AM section.
4) Set the switches to the following positions unless otherwise specified.
   MODE ..... AUTO ST
   BLEND ..... OFF
   IF MODE ..... AUTO WIDE
   RF ATT ..... OFF
   ANTENNA ..... A
5) Be sure to carry out adjustments after installing the bottom cover.

## 2. POWER SUPPLY Check

Confirm that the voltages specified below appear across each terminal and E of the TUNER CIRCUIT BOARD.

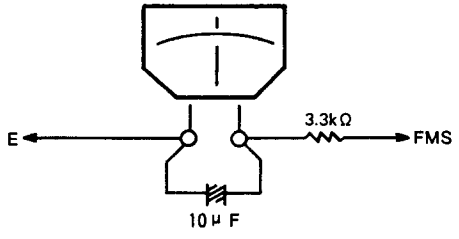
| Terminal | Voltage | Measuring instrument |
|---|---|---|
| +30 | +29 ±1V | DCVM |
| +12 | +12.5 ±0.5V | |
| −12 | −12.5 ±0.5V | |
| +6 | +6V ±0.5V | |

## 3. Measuring Instruments

FM SG ..... FM Signal Generator
ST SG ..... Stereo Signal Generator
AM SG ..... AM Signal Generator
OSC ..... Oscillator
DIST M ..... Distortion Meter
FC ..... Frequency Counter
AC VM ..... AC Voltmeter
Center Meter ..... Ji00036 or equivalent
DC VM ..... DC Voltmeter

## 4. FM Tuner Section

- Use 19kHz LPF for output terminals and carry out auditory compensation. Then connect the oscilloscope, AC voltmeter and distortion meter.
- To check the optimum tuning point during adjustment, connect the tuning meter (Ji00036 or equivalent; current sensitivity: 250uA) as shown in the figure.
- The accuracy of FM SG should be within ±1kHz.



| Step | Adjustment item | Test point | Instrument (signal) | Adjustment location | Adjustment method | Rating or standard | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | ANT, RF sensitivity adjustment | ●ANT A<br>●Output terminals | ●FM SG<br>●ST SG<br>●DIST. M<br>●OSC | VC1~VC4<br>T1~T4 | ●Adjust VC1~VC4 for maximum sensitivity at 106MHz.<br>●Adjust T1~T4 for maximum sensitivity at 88MHz. | less than 4dBμ [U, C, R, A, B, model]<br>less than 6dBμ [W, G model] | |
| 2 | Discriminator balance adjustment | ●FMS<br>●E | ●TUNING METER | T7 | ●In autotuning mode, adjust T7 so that the needle of the tuning meter does not move from zero (center). | | |
| 3 | Monaural distortion adjustment | 300Ω FM ANT Output terminals | FM SG<br>98.1MHz ± 1kHz<br>70dBμ<br>MONO 100Hz<br>100% Mod.<br>DIST. M, OSC<br>L.P.F | VC5<br>VR9 | Reduce distortion to minimum. | −66dB or less | Reception should be made in WIDE mode. |
| 4 | PLL input phase adjustment | 300Ω FM ANT Output terminals L, R | FM SG<br>98.1MHz ± 1kHz<br>70dBμ<br>STEREO (L-R)<br>1kHz 100%<br>Mod.<br>OSC | T10<br>T12 | Increase output to maximum. | | Reception should be made in WIDE mode. |
| 5 | Stereo distortion adjustment (WIDE) | 300Ω FM ANT Output terminals L, R | FM SG, ST SG<br>98.1MHz ± 1kHz<br>70dBμ<br>STEREO (L-R)<br>1kHz 100%<br>Mod.<br>OSC | T5, 6, 13<br>VR1, 2, 7, 8 | Reduce distortion to minimum. | −56dB or less | Reception should be made in WIDE mode.<br>After adjustment, reconfirm sensitivity and disk rebalance.<br>If they are not within the specifications, go back to the step before adjustment and reconfirm again. |
| | Stereo distortion adjustment (NARROW) | 300Ω FM ANT Output terminals L, R | FM SG, ST SG<br>98.1MHz ± 1kHz<br>70dBμ<br>STEREO L, R<br>1kHz 100%<br>Mod.<br>DISTM, OSC,<br>LPF | VR3, 4, 5, 6 | Reduce distortion to minimum. | −33dB or less | Reception should be made in NARROW mode.<br>After adjustment, reconfirm sensitivity and disk rebalance.<br>If they are not within the specifications, go back to the step before adjustment and reconfirm again. |
| 6 | Monaural distortion check | 300Ω FM ANT Output terminals | FM SG<br>98.1MHz ± 1kHz<br>70dBμ<br>MONO 1kHz<br>100% Mod. | | Confirm that monaural distortion is within the specification. | −56dB or less | Reception should be made in WIDE mode. |
| 7 | Separation adjustment (WIDE) | 300Ω FM ANT Output terminals L, R | FM SG, ST SG<br>98.1MHz ± 1kHz<br>70dBμ<br>STEREO L, R<br>1kHz 100%<br>Mod.<br>OSC, AC VM<br>LPF | VR13, 14 | Increase L→R, R→L channel separation to maximum. | Separation 40dB or more | Reception should be made in NARROW mode. |
| | Separation adjustment (NARROW) | 300Ω FM ANT Output terminals L, R | | VR11, 12 | | | |

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| Step | Adjustment item | Test point | Instrument (signal) | Adjustment location | Adjustment method | Rating or standard | Remarks |
|---|---|---|---|---|---|---|---|
| 8 | Pilot cancel adjustment (WIDE) | 300Ω FM ANT Output terminals L, R | FM SG, ST SG 98.1MHz ± 1kHz 70dBμ Pilot signal 9% modulation only Remove LPF OSC, AC VM | VR15, T11 | Measure with an oscilloscope; reduce 19kHz carrier leakage level to minimum. | −50dB or less | |
| 9 | Discriminator balance check | 300Ω FM ANT | FM SG, ST SG 98.1MHz ± 1kHz Antenna input −10dBμ STEREO L, R 1kHz 30% Mod. | | In autotuning mode, confirm that the needle of the tuning meter does not move from zero. | | If unsatisfactory, return to Step 1 and readjust. |
| 10 | Signal meter adjustment | 300Ω FM ANT | FM SG, ST SG 98.1MHz ± 1kHz Antenna input 80dBμ STEREO L, R 1kHz 30% Mod. | VR10 | Adjust VR10 so that the needle of the tuning meter moves to 100. | | Reception should be made in WIDE mode |
| 11 | Blend check | 300Ω FM ANT | FM SG, ST SG 98.1MHz ± 1kHz 70dBμ STEREO L, R 1kHz 100% Mod. | | With the BLEND switch on, confirm that separation deteriorates. | | Reception should be made in WIDE mode. |
| 12 | IF OFFSET adjust | 300Ω FM ANT D4-K3 short-circuited | FM SG, ST SG 98.1MHz ± 1kHz Antenna input 70dBμ No Mod. | VR17 | Adjust VR17 so that 10kHz shifts 1 digit to 0 or 1. | | CSL reception. |
| 13 | Autotuning check | 300Ω FM ANT D4-K3 left open | FM SG, ST SG 98.1MHz ± 1kHz Antenna input 15dBμ [W model: 18dBμ] 1kHz, 30% Mod. | TUNING knob | Turn the TUNING knob and confirm that autotuning is available. | | Audio muting occurs during switching from IF MODE to AUTO TUNING. |
| 14 | RF ATT check | 300Ω FM ANT | FM SG, ST SG 98.1MHz ± 1kHz Antenna input 20dBμ Mono 1kHz 100% Mod. | RF ATT Switch | Confirm that reception sensitivity deteriorates when the RF ATT switch is on by visual monitoring of the output wave form. | | |
| 15 | ANTENNA check | ANT A | FM SG, ST SG 98.1MHz ± 1kHz Antenna input 20dBμ Mono 1kHz 100% Mod. | ANTENNA Switch | Confirm that the unit enters the detuning mode when the ANTENNA switch is switched to B. Confirm that the unit enters the detuning mode when the ANTENNA switch is switched to A. | | ANT B indicator lights up. |
| | | ANT B | | | Confirm that the unit enters the detuning mode when the ANTENNA switch is switched to B. Confirm that the unit enters the detuning mode when the ANTENNA switch is switched to A. | | ANT A indicator lights up |

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## 1. 〈AM Tuner Section Adjustment〉

- Connect the AM loop antenna to the AM ANT terminals.
- Connect the AM dummy used for adjustment to AM SG.
- The accuracy of AM SG should be within ±0.1kHz.

| Step | Adjustment item | Test point | Instrument (signal) | Adjustment location | Adjustment method | Rating or standard | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | Sensitivity check<br>IFT adjustment | ●AM ANT<br>●GND<br>●Output terminals L, R | AM SG, dummy ANT. OSC, DIST M<br>630kHz ± 0.1kHz<br>1080kHz ± 0.1kHz<br>1440kHz ± 0.1kHz<br>400Hz, 30% Mod. | P9<br>P10<br>P11 | Adjust T9 and increase output to maximum. | 58dBμ or less<br>58dBμ or less<br>58dBμ or less | |
| 2 | Signal meter check | ●AM ANT<br>●GND<br>●Output terminals L or R | ●AM SG<br>●OSC. DIST M<br>1080kHz ± 0.1kHz<br>Antenna 100dBμ<br>400Hz, 30% Mod. | | Confirm that all indicators light up (and go out when detuned). | | |
| 3 | Autotuning check | ●AM ANT<br>●GND<br>●Output terminals L, R | ●AM SG<br>●OSC, DIST M<br>1080kHz ± 0.1kHz<br>Antenna 100dBμ<br>400Hz, 30% Mod. | | Turn the TUNING knob and confirm that autotuning is available. | | |

## 〈Digital Control Section Check〉

| Step | Item | Method | Rating or Standard |
|---|---|---|---|
| 1. | Preset memory check | Tune in to FM98.1 MHz and store the following settings in Preset Memory 1 (P1):<br>MODE ····· AUTO ST<br>BLEND ····· OFF<br>IF MODE ····· AUTO<br>RF ATT ····· OFF<br>ANTENNA ····· A<br>STATION DIS ····· OFF<br>TUNING MODE ····· AUTO | The MEMORY IND should flash when the MEMORY switch is on; when preset memories 1-8 are on, P1-8 indicators should flash. When P1 is on, the MEMORY IND and P1-8 indicators should go out and the P1 indicator light up. |
| | | 2. Tune to AM1080kHz and store in P2. | The MEMORY IND should flash when the MEMORY switch is pressed. When P2 is pressed the MEMORY IND should go out and the P2 indicator light up. |
| | | 3. Confirm that the settings stored in P1 and P2 appear when P1 and P2 buttons are pressed. | Both P1 and P2 should light up. |
| | | 4. Store the settings in 2 in P9. | P9-16 indicators should flash when the P9-16 memory switches are pressed. The MEMORY IND should flash when the MEMORY switch is pressed. When P9 is on P9-16 indicators should light up, the MEMORY indicator go out, and the P9 indicator light up. |
| | | 5. After pressing all the other preset memory buttons except P9, press P9 and confirm that stored settings appear. | |
| 2. | MODE check | Confirm that the unit selects forced monaural reception when the unit is set to FM stereo reception and MONO is selected. | Stereo IND goes out. |
| 3. | LOCK check | Confirm that the frequency does not change when the TUNING knob is turned when the STATION DISPLAY is off and the LOCK switch is pressed. | LOCK IND lights up. |

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| Step | Item | Method | Rating or Standard |
|---|---|---|---|
| 4. | IF MODE check | Confirm that the unit automatically switches to MAN'L when the setting stored in P1 are recalled, the AUTO/MAN'L switch is set to AUTO, and the NARROW/WIDE switch is pressed. Also, confirm that the display changes as these modes are changed.<br>Finally, confirm that the unit switches to NARROW from AUTO WIDE reception as antenna input is gradually reduced. | |
| 5. | FINE TUNING check | Confirm that the FINE TUNING IND lights up (*) when the FINE switch is pressed after recalling the settings stored in P1 and P2, and confirm that the display changes to FM 10kHz and AM 1kHz when the TUNING knob is turned. | *At this time, a zero is displayed in the area where "10kHz" should be, with FM reception (except for A, B and W, G). |
| 6. | STATION DISPLAY check | ····· is displayed when the STATION DISPLAY switch is turned on. When tuning with the unit in either the AUTO or MAN'L modes, the first digit will flash and the letter "A" is displayed when the SIFT button is pressed next. When the TUNING knob is turned to the right the display will change to A, B, C ····· when the TUNING knob is turned to the left the display will change to A, O, 9, 8 ·····. The second digit will flash and the letter "A" will be displayed when the SIFT button is pressed after selecting the desired letter. Confirm that the letter stored in the memory is displayed when the desired letters for all 4 digits have been selected and recalled from the memories in which they have been stored. | |
| 7. | Last station function check | 1. Display preset memory settings. | |
| | | 2. Turn the power off. | |
| | | 3. Turn the power off for 5 seconds; then turn the power on again. | |
| | | 4. Confirm that the settings stored in the preset memory are displayed. | P1 indicator lights up. |
| 8. | Remote control function check | Confirm that the special remote control device that comes with the unit can switch between preset memories 1-8/9-16/17-21 and can directly select the station settings stored in preset memories P1/9/17-P8/16/24 Confirm that the RS remote control device (custom code 7A, 7E) can switch between P1-8/9-16/17-24 and can directly up-/down-select the station settings stored in P1/9/17-P9/16/24. | Distance should be 7minch or more (conduct test in an area free of obstacles). |

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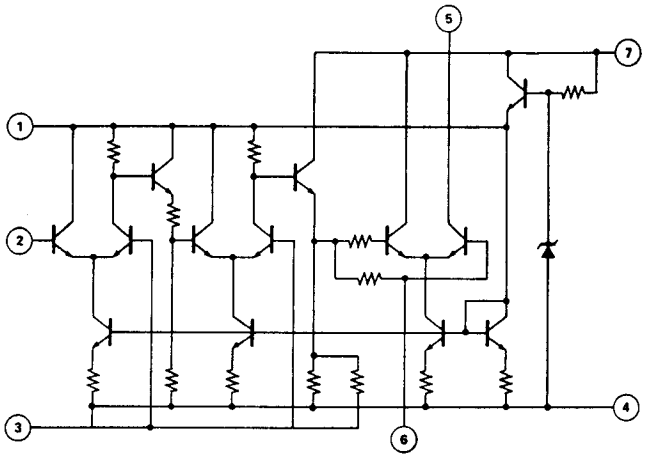
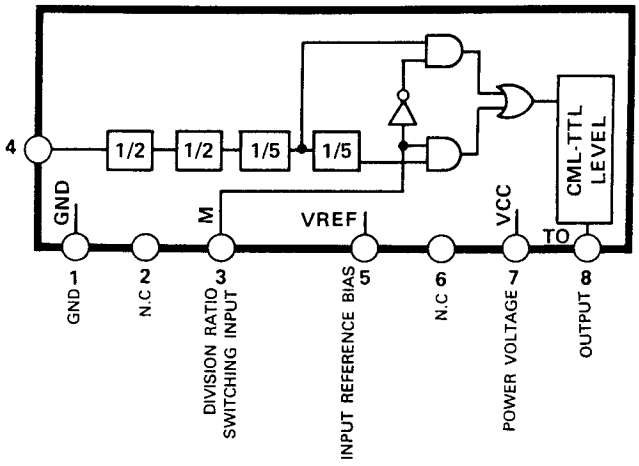
## ■ IC BLOCK/CIRCUIT DATA

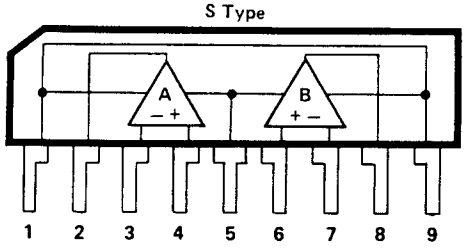
● IC1: μPC577HEF
(3-STAGE, IF AMP & LIMITER)



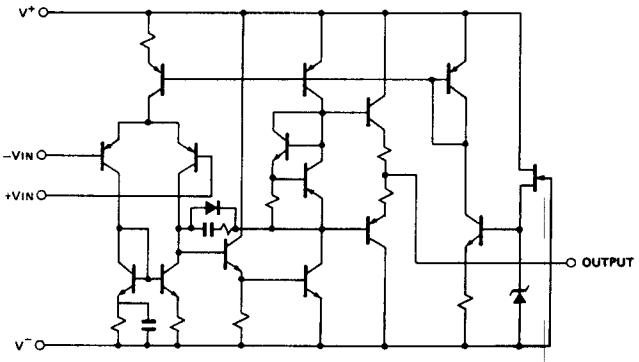

● IC2: M54459L
(1/20, 1/100 DIVISION)




● IC3 ~ 6, 10: NJM2068S
(DUAL OPE-AMP.)




1. $V^+$
2. A OUTPUT
3. A–INPUT
4. A+INPUT
5. $V^-$
6. B+INPUT
7. B–INPUT
8. B OUTPUT
9. $V^+$

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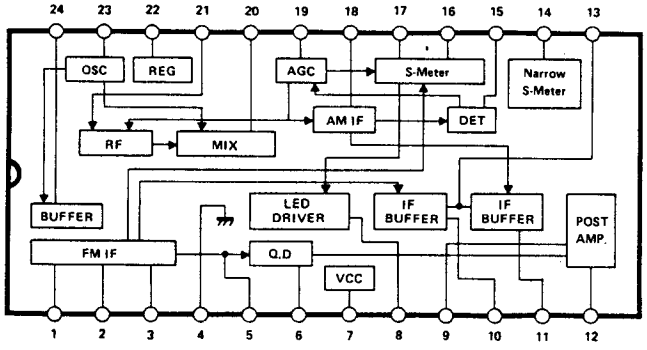
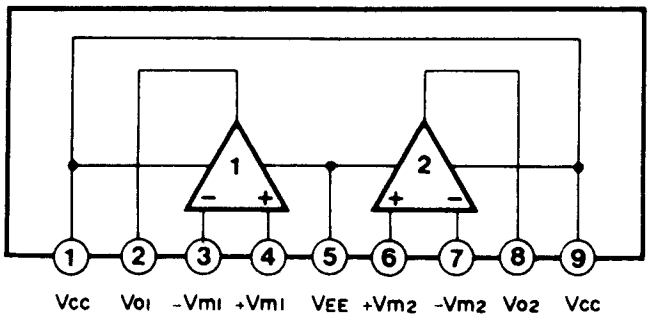
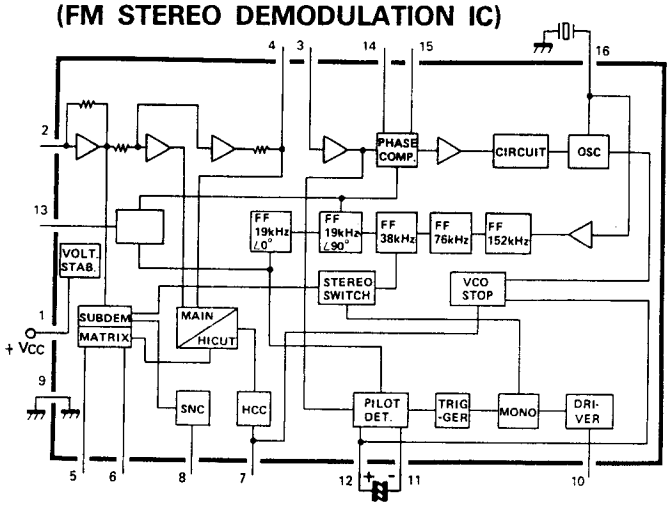
● IC7: LA1266
(AM/FM RF, IF AMP.)



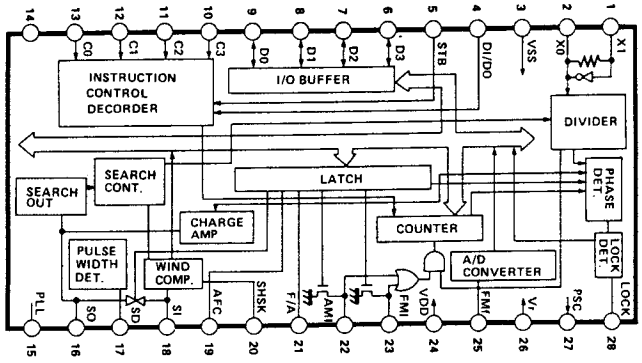

● IC8: NJM4558S
(DUAL OPE-AMP.)



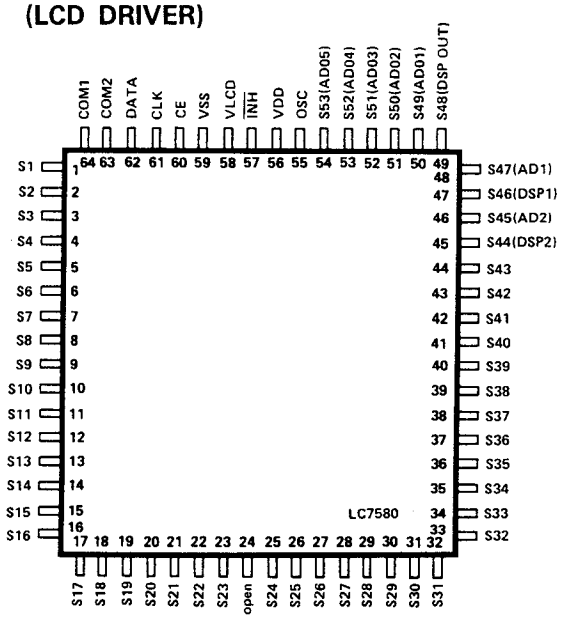
## ●IC9: LA3433 (FM STEREO DEMODULATION IC)

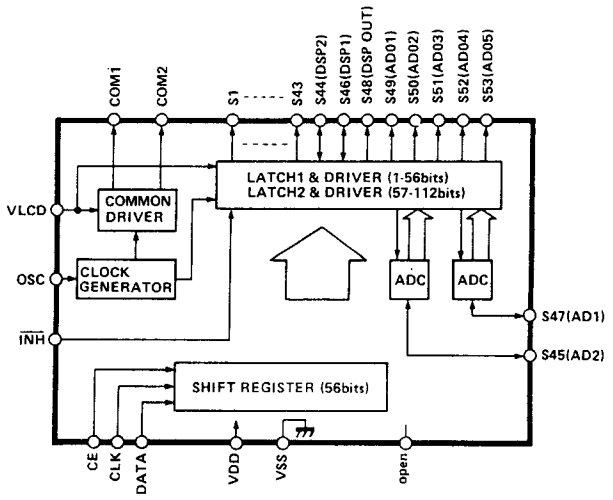



## ●IC12: LC7210 (C-MOS TUNING CONTROL LSI)

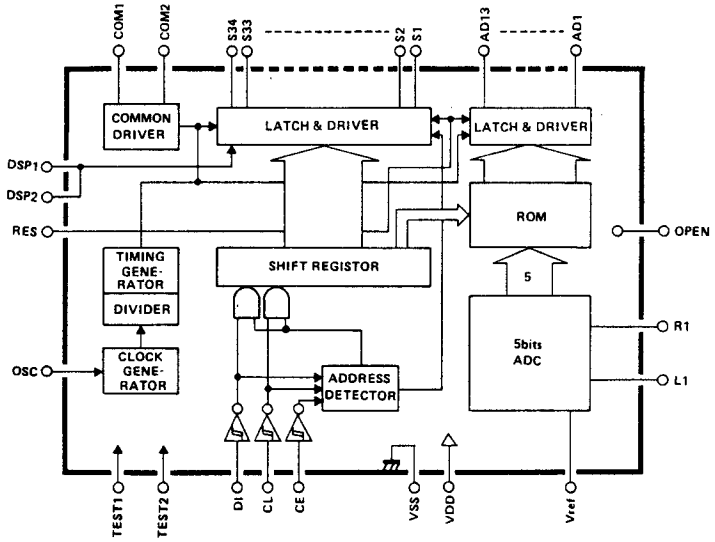



## ●IC501: LC7582 (LCD DRIVER)




## ●IC502: LC7583 (LCD DRIVER)

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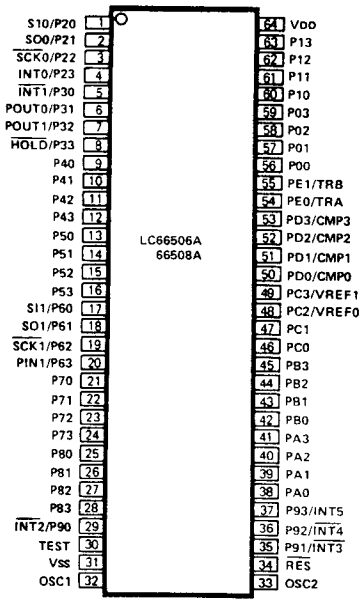
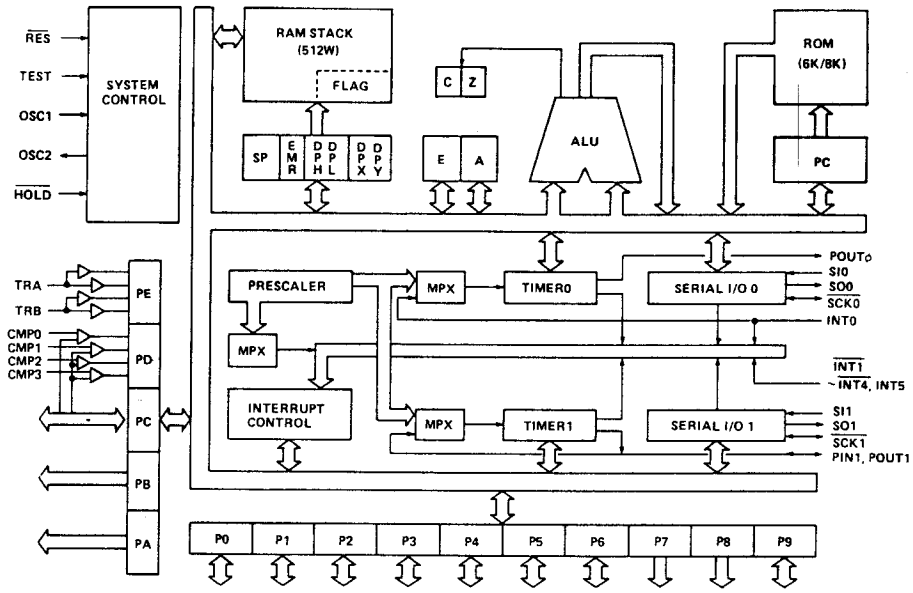
# TX-1000/U/TX-2000

## ●IC11: LC66506B-3910 (C-MOS 4 bit MICRO COMPUTER)




| Pin. No. | Description | Data | I/O | Option PU/OD (PD/OD) | Option RESET H/L | Pin No. | Description | Data | I/O | Option PU/OD (PD/OD) | Option RESET H/L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | P20/SI0 | $C_0$ | O | OD | | 33 | OSC2 | | | | |
| 2 | P21/SO0 | $C_1$ To | O | OD | | 34 | RES | RESET | I | — | |
| 3 | P22/SCK0 | $C_2$ LC7210 | O | OD | | 35 | P91/INT3 | | | | |
| 4 | P23/INT0 | $C_3$ | O | OD | | 36 | P92/INT4 | | | | |
| 5 | P30/INT1 | | | | | 37 | P93/INT5 | | | | |
| 6 | P32/POUT0 | | | | | 38 | PA0 | D1 | O | OD | |
| 7 | P32/POUT1 | STEREO IN | I | OD | | 39 | PA1 | D2 | O | OD | |
| 8 | P33/HOLD | HOLD | I | — | | 40 | PA2 | D3 KEY matrix | O | OD | |
| 9 | P40 | $D_0$ | I/O | PU | | 41 | PA3 | D4 OUT | O | OD | |
| 10 | P41 | $D_1$ | I/O | PU | | 42 | PB0 | D5 | O | OD | |
| 11 | P42 | $D_2$ To | I/O | PU | | 43 | PB1 | D6 | O | OD | |
| 12 | P43 | $D_3$ LC7210 | I/O | PU | | 44 | PB2 | | | | |
| 13 | P50 | STB | O | OD | | 45 | PB3 | | | | |
| 14 | P51 | I/O | O | OD | | 46 | PC0 | K1 | I | OD | |
| 15 | P52 | | | | | 47 | PC1 | K2 KEY matrix | I | OD | |
| 16 | P53 | | | | | 48 | PC2/VREF0 | K3 IN | I | OD | |
| 17 | P60/SI1 | BLEND | O | OD | | 49 | PC3/VREF1 | K4 | I | OD | |
| 18 | P61/SO1 | WIDE/NARROW | O | OD | | 50 | PD0/CMP0 | | | | |
| 19 | P62/SCK1 | RF | O | OD | | 51 | PD1/CMP1 | | | | |
| 20 | P63/PIN1 | ANT A/B | O | OD | | 52 | PD2/CMP2 | REM0 | I | OD | |
| 21 | P70 | A/D | O | PU | | 53 | PD3/CMP3 | REM1 | I | OD | |
| 22 | P71 | MUTE | O | OD | | 54 | PE0/TRA | UP Rotary | I | OD | |
| 23 | P72 | METER MUTE | O | OD | | 55 | PE1/TRB | DOWN encorder | I | OD | |
| 24 | P73 | MONO | O | OD | | 56 | P00 | A0 | I | PU | |
| 25 | P80 | | | | | 57 | P01 | A1 | I | PU | "L" |
| 26 | P81 | | | | "H" | 58 | P02 | CE(LC7582) | O | PU | |
| 27 | P82 | | | | | 59 | P03 | CE(LC7583) | O | PU | |
| 28 | P83 | | | | | 60 | P10 | CLK | O | PU | |
| 29 | P90/INT2 | | | | | 61 | P11 | DATA | O | PU | "L" |
| 30 | TEST | | | | | 62 | P12 | INH | O | PU | |
| 31 | Vss | | | | | 63 | P13 | | | | |
| 32 | OSC1 | | | | | 64 | | | | | |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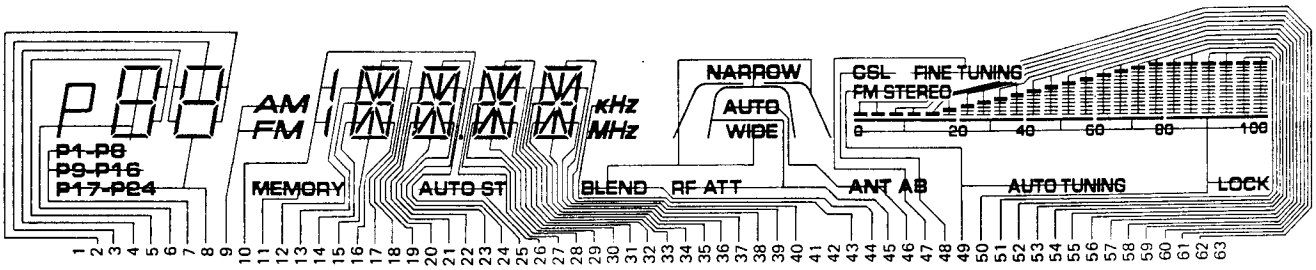
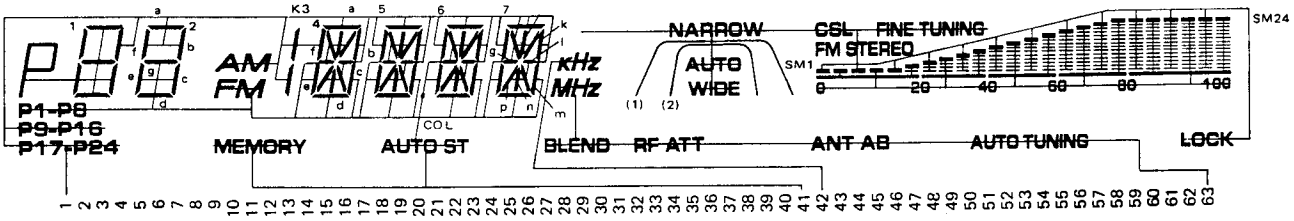
## ● LCD: LCD8003MOJP

### ● SEGMENT




### ● COMMON




| NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COM1 | COM | 2b | 2a | 2f | 1b | P | P9-P16 | P17-P24 | AM | K3 | — | 4f | 4l | 4p | 4n | 4m | 4b | 4a | 5f | 5i | 5p |
| COM2 | — | 2c | 2g | 2e | 1c | 1adeg | P1-P8 | 2d | FM | COL | MEMORY | 4h | 4g | 4e | 4d | 4c | 4k | 4j | 5h | 5g | 5e |

| No. | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COM1 | 5n | 5m | 5b | 5a | — | 6f | 6l | 6p | 6n | 6m | 6b | 6a | 7f | 7l | 7p | 7n | 7m | 7b | 7a | — |
| COM2 | 5d | 5c | 5k | 5j | AUTO ST | 6h | 6g | 6e | 6d | 6c | 6k | 6j | 7h | 7g | 7e | 7d | 7c | 7k | 7j | COM |

| NO. | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COM3 | COM | kHz | WIDE (1) | NARROW (2) | AUTO | FINE TUNING | CSL | FM STEREO | LOCK | SM23 | SM21 | SM19 | SM17 | SM15 | SM13 | SM11 | SM9 | SM7 | SM5 | SM3 | SM1 | — |
| COM4 | — | MHz | BLEND | RF ATT | ANT | A | B | AUTO TUNING | 0-100 | SM24 | SM22 | SM20 | SM18 | SM16 | SM14 | SM12 | SM10 | SM8 | SM6 | SM4 | SM2 | COM |

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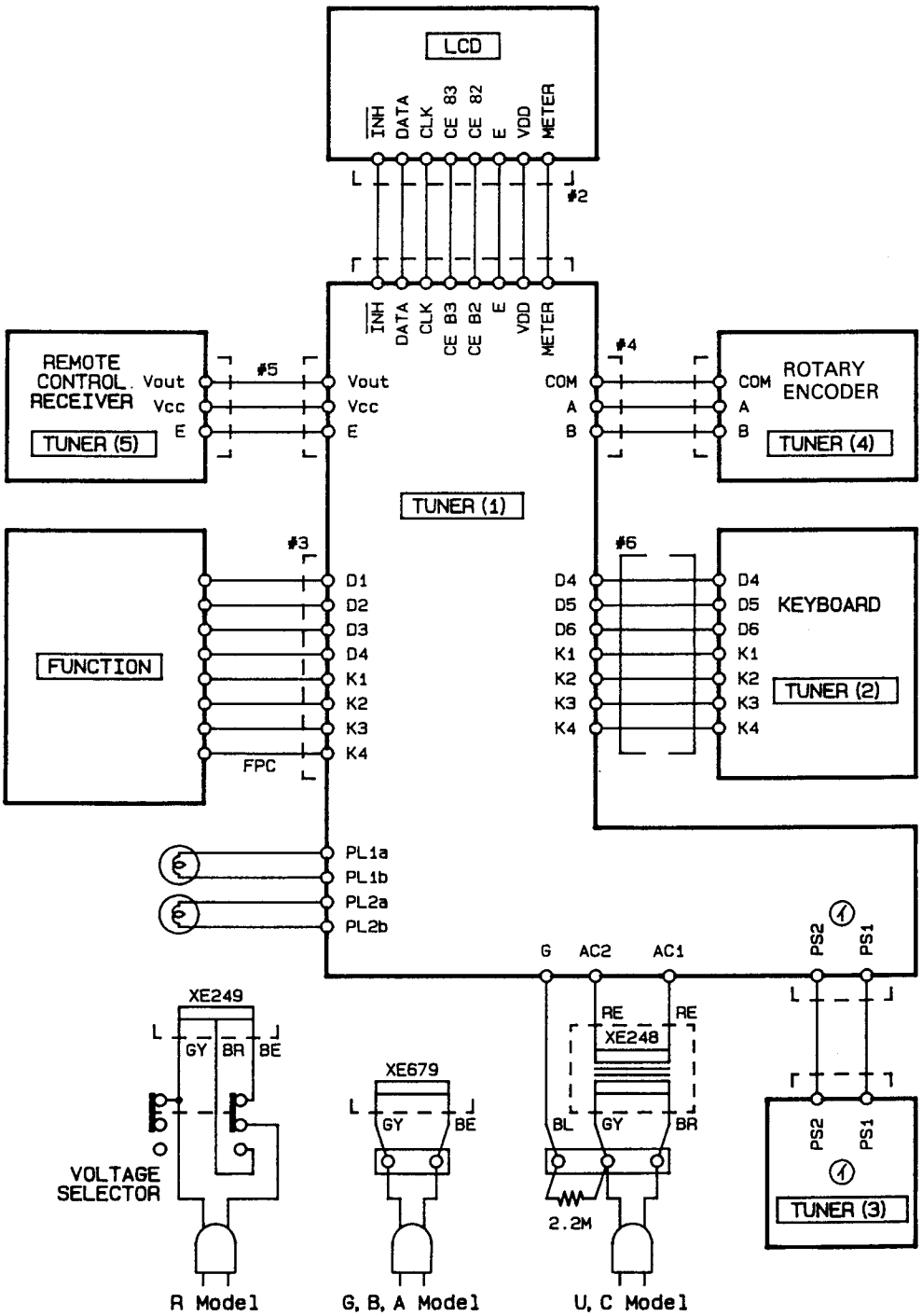
## ■ *WIRING*

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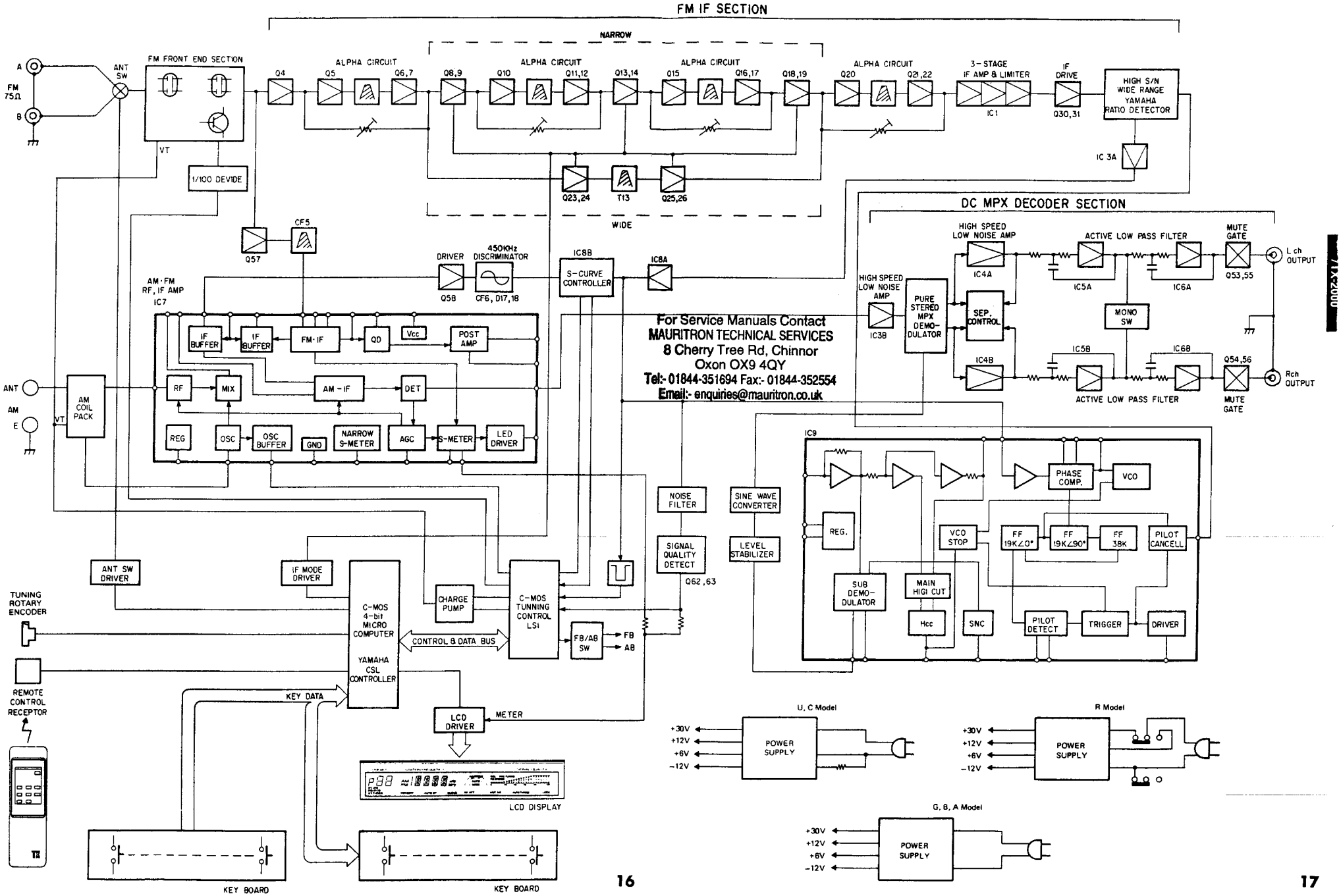
## BLOCK DIAGRAM

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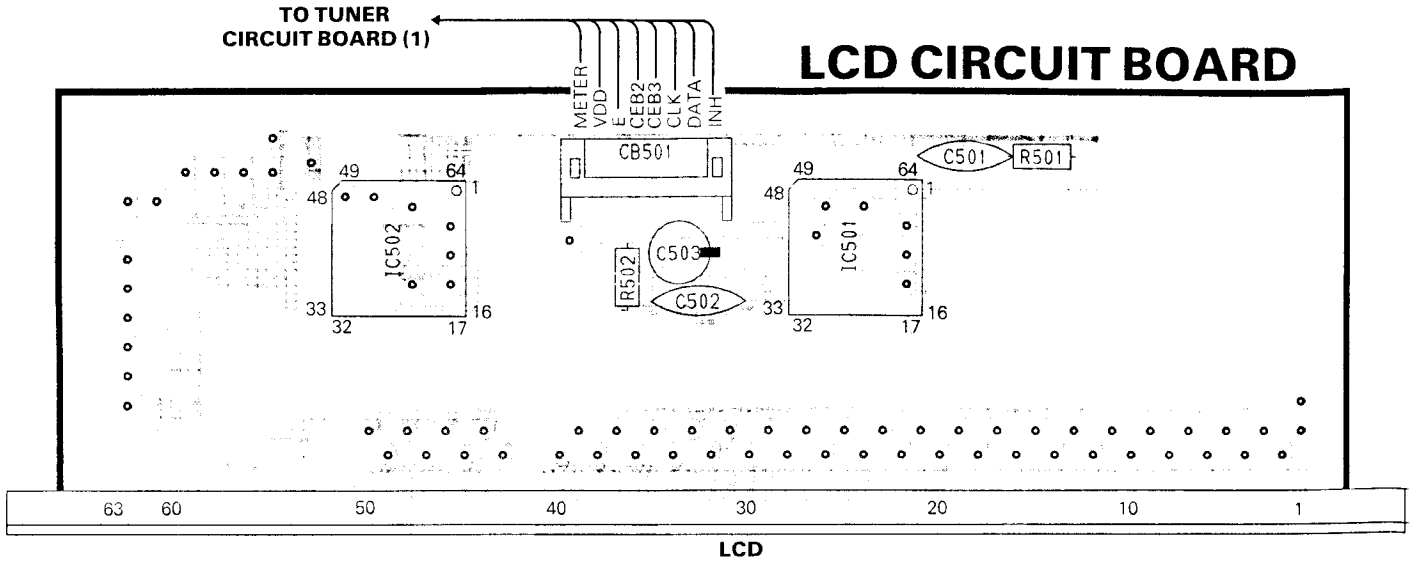
## ■ *PRINTED CIRCUIT BOARD (Pattern Side)*

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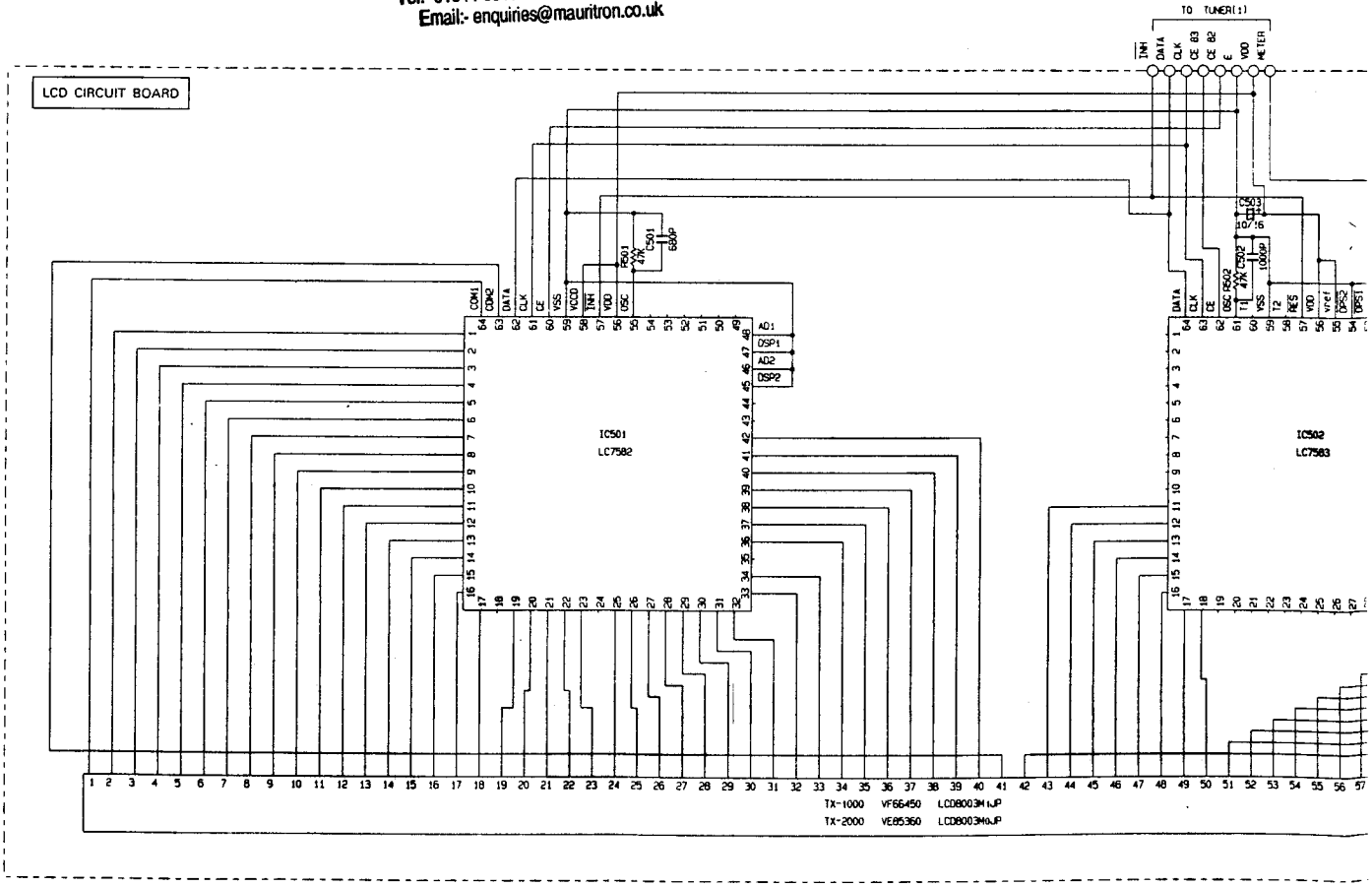
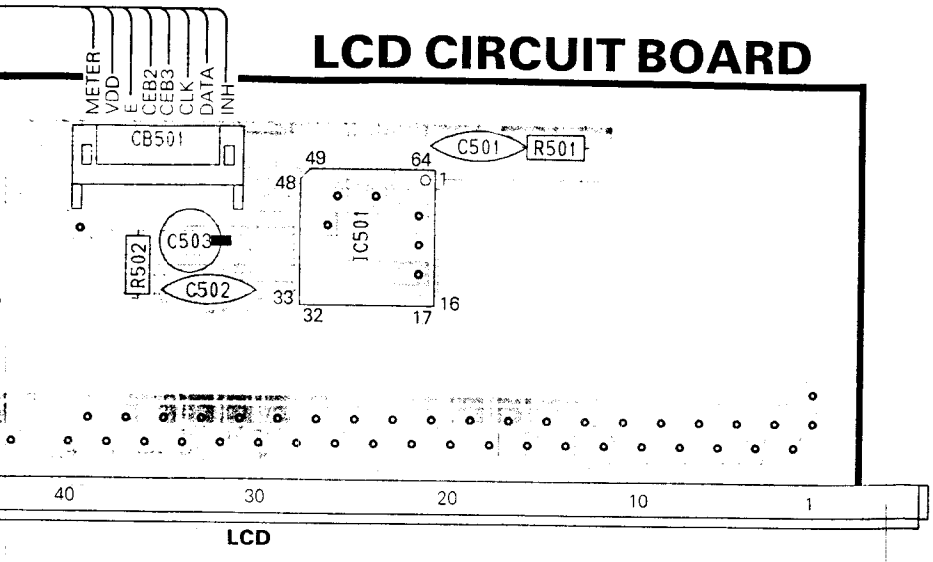
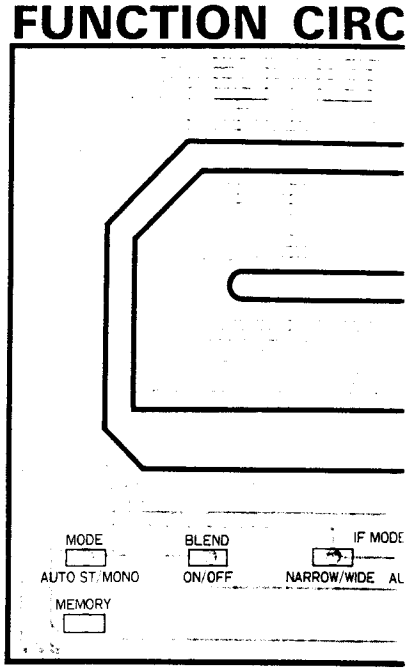
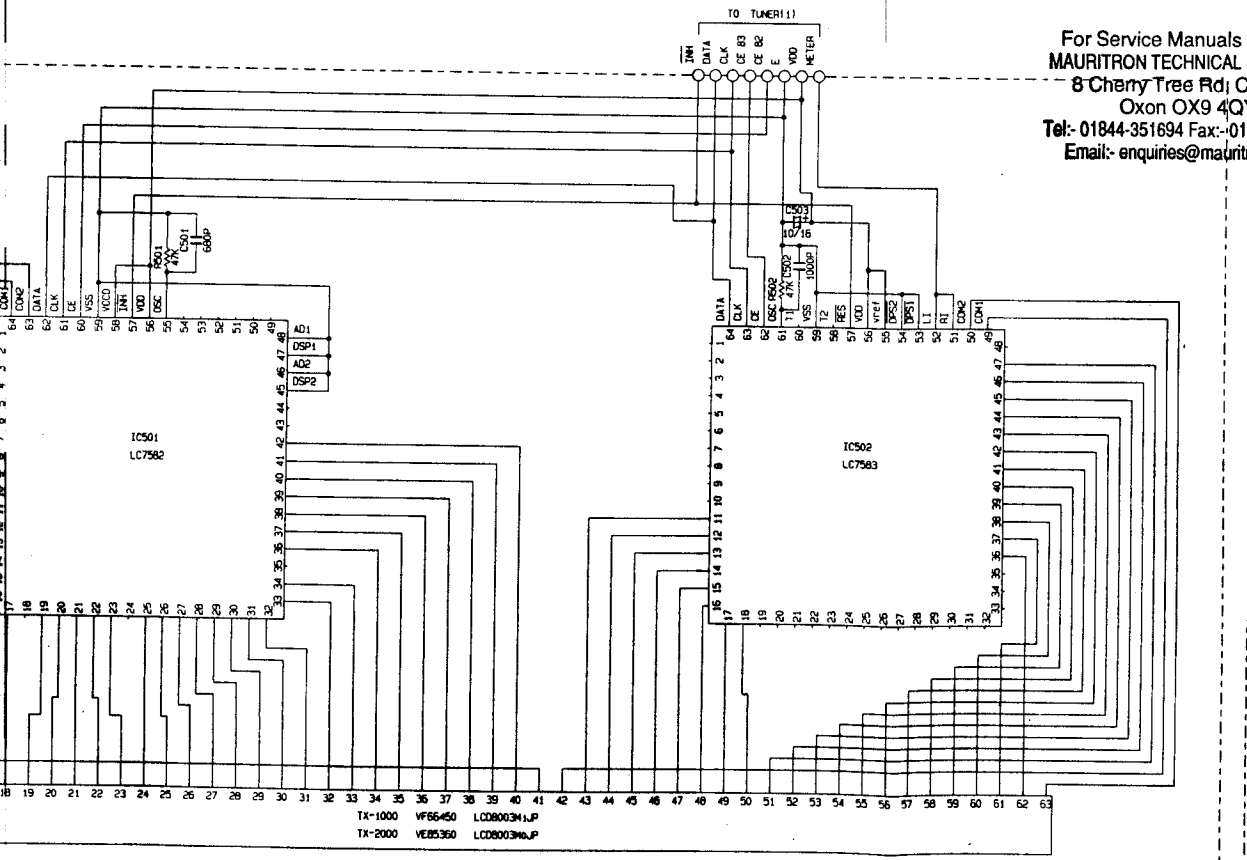


## ARD (Pattern Side)

※ 文字面：Component Side

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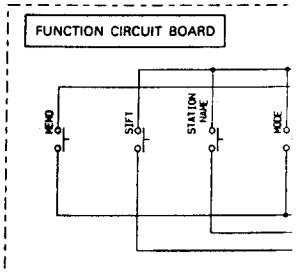
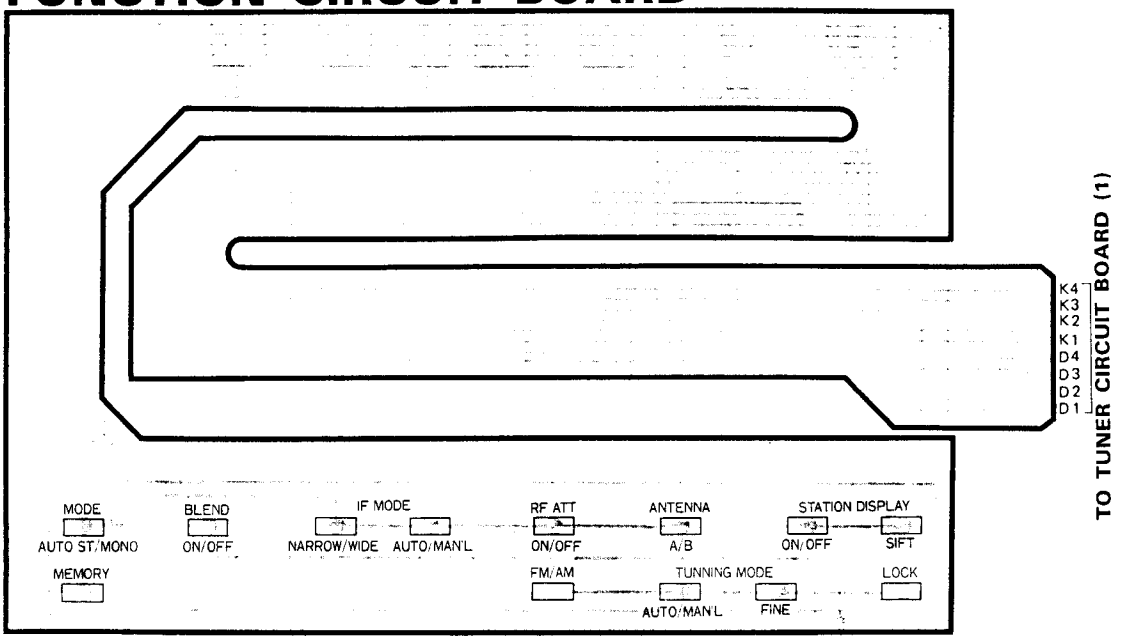
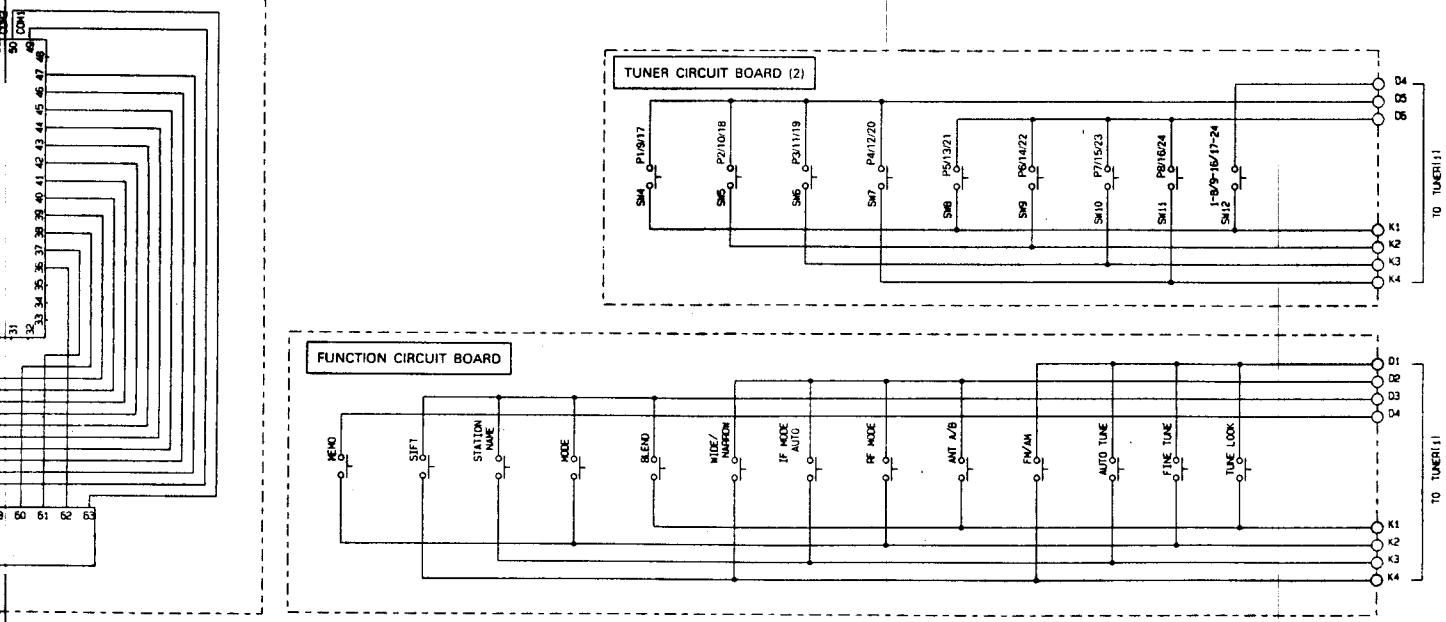


文字面：Component Side

# FUNCTION CIRCUIT BOARD

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