

SERVICE MANUAL

QUARTZ SYNTHESIZER COMPU-RECEIVER

SANSUI Z-5000X/3000X



CAUTION

1. Use only replacement parts recommended by the manufacturer.
2. Measure insulation resistance before returning the appliance to the customer to prevent electrical shock.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Audio section

Power output

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.007% (Z-5000X)/0.008% (Z-3000X) total harmonic distortion.

<Z-5000X> 70 watts per channel into 8 ohms
<Z-3000X> 55 watts per channel into 8 ohms

Load impedance 4 and 8 ohms

Total harmonic distortion

from AUX/DA

<Z-5000X> less than 0.007% at or below
rated min. RMS power output
<Z-3000X> less than 0.008% at or below
rated min. RMS power output

Frequency response (at 1 watt)

from AUX/DA 10 to 100,000 Hz,
+1.0 dB, -3.0 dB

RIAA curve deviation (PHONO, 20 Hz to 20 kHz)

..... +0.5 dB, -0.5 dB

Input sensitivity and impedance (at 1 kHz)

PHONO 2.5 mV/47 kilohms
TAPE PLAY, AUX/DA 150 mV/47 kilohms

Output level (at 1 kHz)

TAPE REC 150 mV

Signal to noise ratio (short-circuit, A-network)

PHONO 82 dB
TAPE PLAY, AUX/DA 95 dB

FM section

Tuning range 88 to 107.9 MHz

Usable sensitivity

Mono 10.8 dBf
Stereo 20 dBf

50 dB quieting sensitivity

Mono 16.5 dBf
Stereo 37.0 dBf

Signal to noise ratio (at 65 dBf)

Mono 76 dB
Stereo 70 dB

Distortion (at 65 dBf)

Mono less than 0.15% at 1,000 Hz
Stereo less than 0.2% at 1,000 Hz

Alternate channel selectivity (at 400 kHz)

..... 55 dB

Capture ratio 1.0 dB

Spurious response ratio 80 dB

IF response ratio 90 dB

Stereo separation 40 dB at 1,000 Hz

Frequency response 30 to 15,000 Hz +1.0 dB, -1.5 dB

Antenna input impedance 300 ohms balanced 75 ohms unbalanced

AM section

Tuning range 530 to 1,600 kHz

Usable sensitivity 50 dB/m

Selectivity 30 dB

Signal to noise ratio 45 dB

Distortion (at 30% Modulation, 80 dB/m)

..... less than 0.5%

Others

Power requirements

Power voltage 120, 220, 240V (50/60 Hz)
For U.S.A. and Canada
..... 120V (60 Hz)

Power consumption
Rated consumption

<Z-5000X> 290 watts 350 VA
<Z-3000X> 250 watts 300 VA

Dimensions 430 mm (16-15/16") W
133 mm (5-1/4") H
360 mm (14-3/16") D

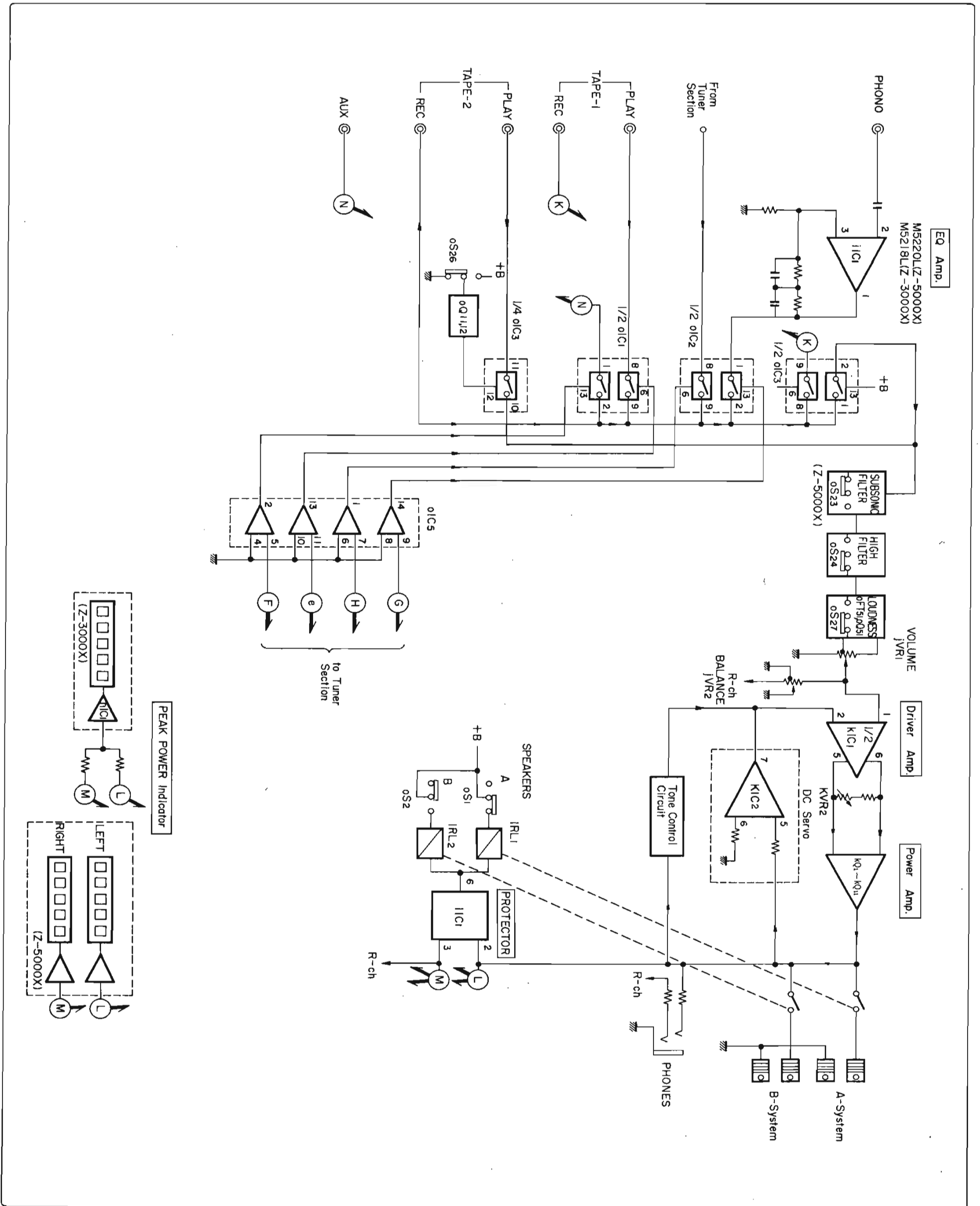
Weight

<Z-5000X> 8.6 kg (19 lbs.) net
9.9 kg (21.8 lbs.) packed
<Z-3000X> 7.7 kg (17 lbs.) net
9.0 kg (19.8 lbs.) packed

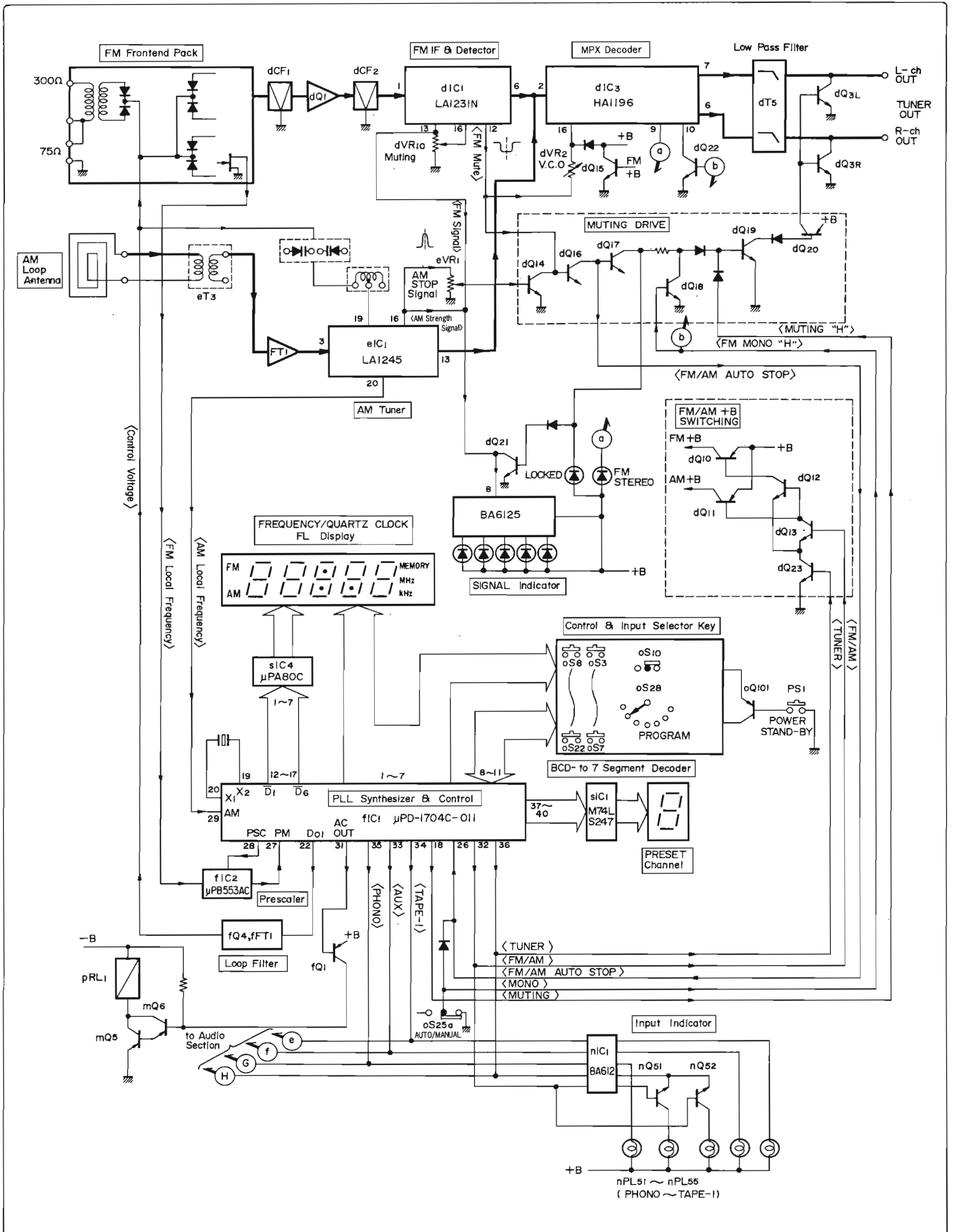
* Design and specifications subject to changes without notice for improvements.

1. BLOCK DIAGRAM

1-1. Audio Section



1-2. Tuner & Control Section



2. DESCRIPTION OF μ PD1704C-011, PLL SYNTHESIZER & THE CONTROL IC

2-1. Function Outline

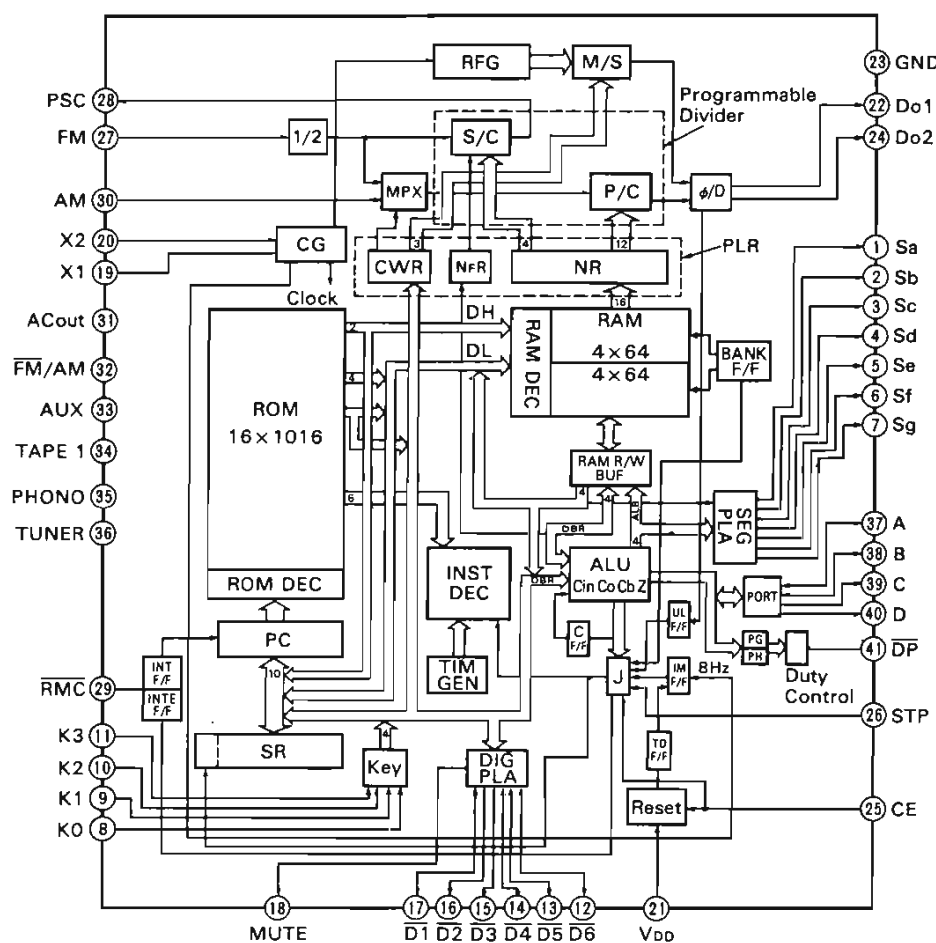
A. Functions of automatic station selection

- 1) Automatic tuning
- 2) Manual tuning
- 3) Preset scanning: Scanning operation is repeated from 1st channel to 8th channel with holding each channel for about five seconds.
- 4) Preset memory access: Accessible to eight stations for AM/FM each, independently, by depressing eight buttons.

B. Functions of programmable timers

- 1) PROGRAMS 1 and 2: Once ON/OFF times are preset, the designated source is turned on and the entire system is turned off repeatedly at the preset times every day.
- 2) PROGRAM 3: Once ON/OFF times are preset, the designated source is turned on and the entire system is turned off only once at the preset times.

2-2. Description of terminal function of μ PD1704C-011



● Terminal function of μ PD1704C-011

| Terminal Nos. | Terminal Symbols | Terminal Name | Function |
|---------------|--------------------------------|-------------------|--|
| 1~7 | Sa~Sg | Segment Output | Terminals for outputting indicator digit segment signals and a key return signal source. High level when active. |
| 8~11 | K ₀ ~K ₃ | Key Return Signal | Terminals for inputting a key return signal from externally connected key matrix. The key return signal source is an ANDed signal of segment terminals Sa to Sg and tuner and phono terminals. |
| 12~17 | D ₁ ~D ₆ | Digit Outputs | Terminals for outputting indicator digit signals. Low level when active. |

| Terminal Nos. | Terminal Symbols | Terminal Name | Function |
|---------------|-----------------------------------|---------------|--|
| 18 | MUTE | Mute | Terminal for outputting a muting signal to eliminate shock noise generated when PLL is unlocked. High level when active. This muting signal is kept outputted for 55 ms before and after PLL data (contents in the programmable counter) change. The muting signal is outputted in the following modes: <ul style="list-style-type: none"> * In AM/FM and selector switching * In MANUAL UP/DOWN * In AUTO UP/DOWN * In preset memory access (including preset scanning) * In switching from CLOCK set to OFF mode |
| 19, 20 | X ₁ , X ₂ | X'tal | Terminals for connecting a 4.5 MHz quartz oscillator. |
| 21 | VDD | VDD | Terminal for a power supply for a device. |
| 22, 24 | DO ₁ , DO ₂ | Error Out | Terminals for outputting signals from a phase detector which configures PLL. High level when the divided oscillator frequency is higher than the reference frequency. Low level when the divided one is lower than the reference one. |
| 23 | GND | Ground | Terminal connected to ground. |
| 25 | CE | Chip Enable | Terminal for inputting a device is used for the ordinary operations. Low level when no device is used. <ol style="list-style-type: none"> (1) When NONCLOCK is preset by an initializing diode matrix: <ul style="list-style-type: none"> CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative. Internal clock generator is inoperative. (2) When NONCLOCK is not preset by an initializing diode matrix: <ul style="list-style-type: none"> CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative. |

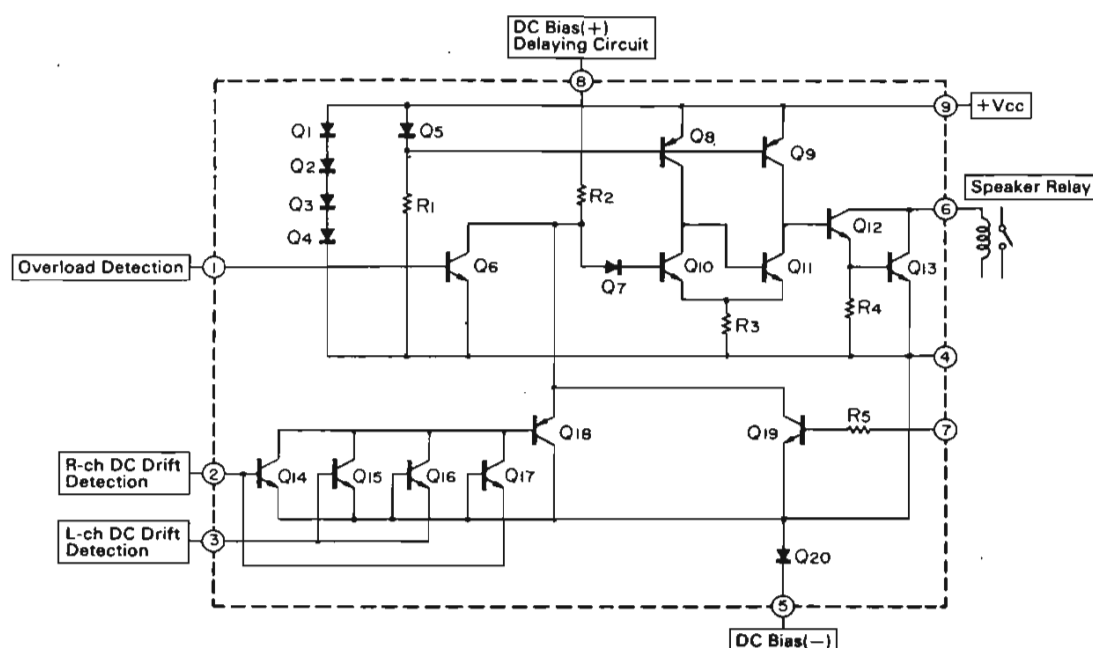
| Terminal Nos. | Terminal Symbols | Terminal Name | Function |
|---------------|------------------|-----------------------------------|---|
| 26 | SD | Station Detector | Terminal for inputting a signal to detect whether or not a station is received in automatic tuning (AUTO UP/DOWN). Automatic tuning stops when at high-level. However, it is necessary to input a High level signal within 50 ms after PLL has been locked. |
| 27 | FM | FM Local Oscillator Signal Inputs | Terminal for input a signal from FM programmable counter. The inputted signal is obtained by dividing an output signal from FM local oscillator (VCO) into 1/16 or 1/17 through prescaler μ PB553AC. |
| 28 | PSC | Prescaler Control | Terminal for outputting a signal to change the division ratio of prescaler in FM. This terminal is connected to PSC terminal of prescaler μ PB553AC. Selectable division ratios are 1/16 and 1/17 in μ PB553AC. |
| 29 | RMC | Remote Control Inputs | Terminal for inputting a remote control signal. Not now in use. |
| 30 | AM | AM Local Oscillator Signal Inputs | Terminal for inputting a signal from AM programmable counter. The inputted signal is one outputted from AM local oscillator (VCO). |
| 31 | AC OUT | AC Outlet Control | Terminal for AC outlet. The AC outlet is used for energizing a relay to break the main power supply for the set. High level when any of selection terminals (TUNER, PHONO, TAPE-1, and AUX) is on. Low level when STD-BY key is depressed. |

| Terminal Nos. | Terminal Symbols | Terminal Name | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---------------------------------|----------------------------------|--|----------------|---|---|---|---|------------------------|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|
| 32 | $\overline{\text{FM/AM}}$ | FM/AM Power Supply Control | Terminal for switching the power supply for FM section to that for AM section or vice versa in tuner. Low level in FM. High level in AM. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 34 35 36 | AUX TAPE-1 PHONO TUNER | AUX TAPE-1 PHONO TUNER | Terminals for selecting TUNER, PHONO, TAPE-1 and AUX. TUNER terminal is at a High level when FM/AM key or preset key is depressed; PHONO, TAPE-1, AUX terminals are at a High level when PHONO key, TAPE-1 key or AUX key is depressed respectively. Further, all terminals change to a Low level when STD-BY key is depressed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37~40 | A~D | Preset Station Indicator Outputs | Terminals for outputting preset station indicator BCD signals. The output BCD signals corresponding to the preset stations are listed below: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>PRESET STATION</th> <th>D</th> <th>C</th> <th>B</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>No channel designation</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>P1</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>P2</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>P3</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>P4</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>P5</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>P6</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>P7</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>P8</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> | PRESET STATION | D | C | B | A | No channel designation | 0 | 0 | 0 | 0 | P1 | 0 | 0 | 0 | 1 | P2 | 0 | 0 | 1 | 0 | P3 | 0 | 0 | 1 | 1 | P4 | 0 | 1 | 0 | 0 | P5 | 0 | 1 | 0 | 1 | P6 | 0 | 1 | 1 | 0 | P7 | 0 | 1 | 1 | 1 | P8 | 1 | 0 | 0 | 0 |
| PRESET STATION | D | C | B | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No channel designation | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P1 | 0 | 0 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P2 | 0 | 0 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P3 | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P4 | 0 | 1 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P5 | 0 | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P6 | 0 | 1 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P7 | 0 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P8 | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | $\overline{\text{DP}}$ | DECIMAL POINT | Terminal for outputting a decimal point indication signal in FM frequency indication. Low level when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | $\overline{\text{COLON}}$ | COLON | Terminal for outputting a COLON indication signal in CLOCK indication. Low level when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

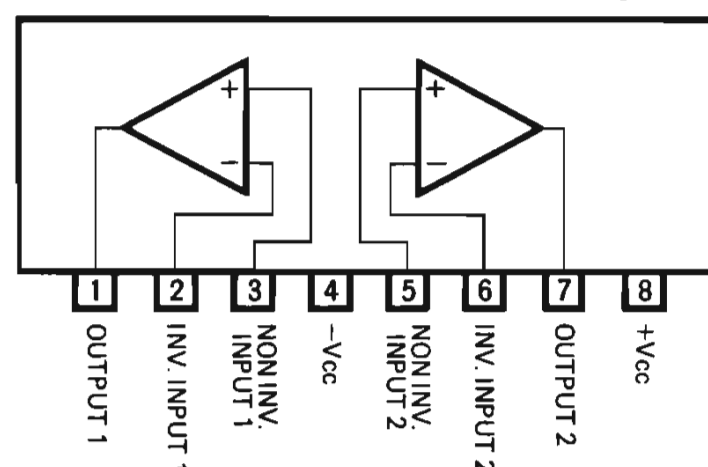
- Since the description key matrix and the description of programmable timer operations employed in Z-5000X & 3000X are similar to those of Z-9000 & 7000, the explanation of those circuits are omitted from this manual, therefore please refer to the service manual of Z-9000/7000.

3. INTERIOR BLOCK DIAGRAM OF IC

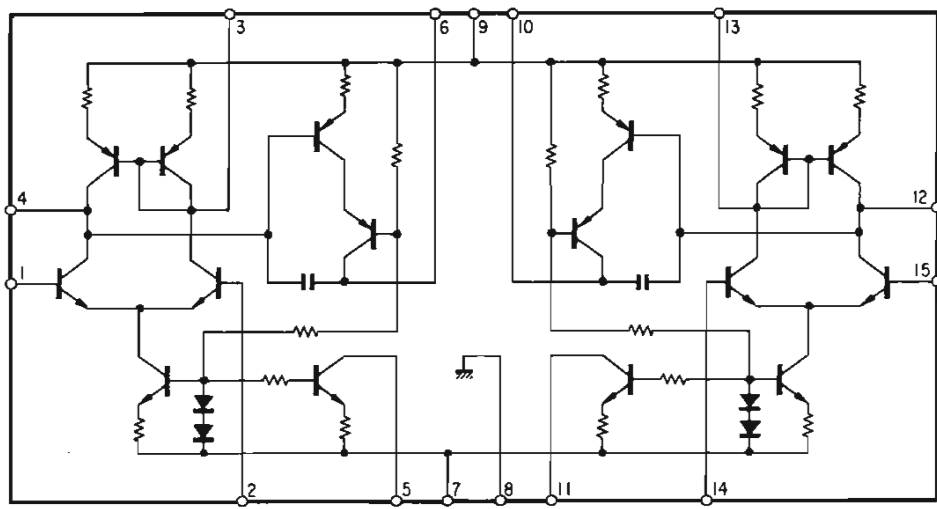
•TA7317P (Speaker Protector IC)



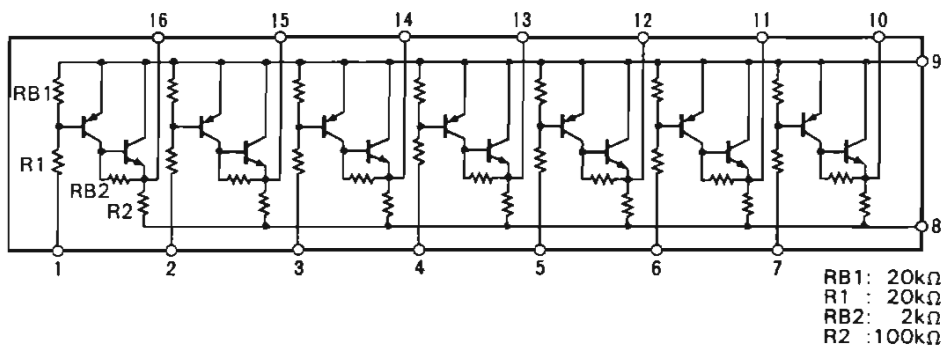
•M5220L, M5218L (Audio Pre Amp. IC)



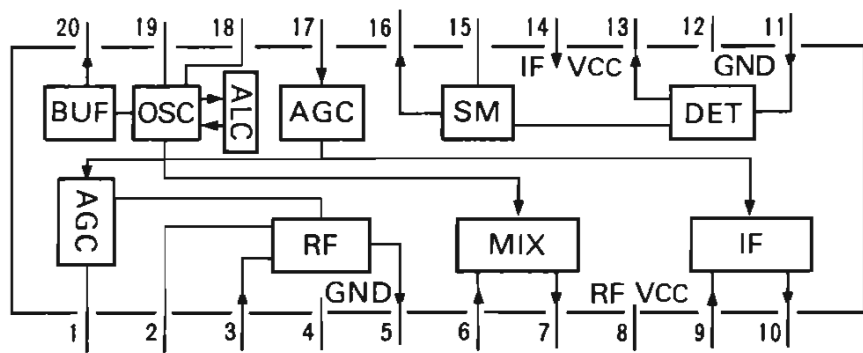
•STK3062 (Differential Amp. IC)



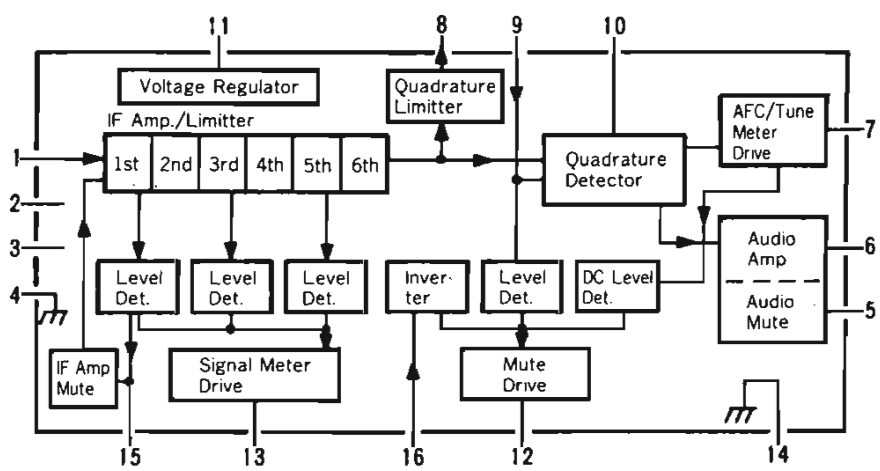
•μPA80C (FL Display Tube Drive IC)



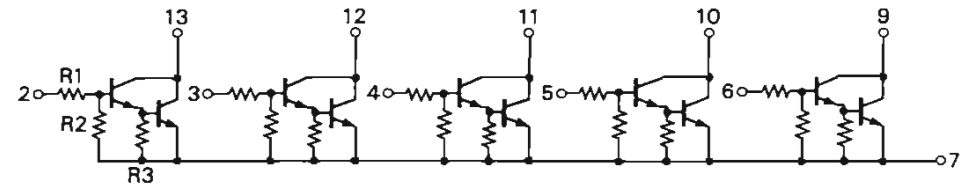
•LA1245 (AM Tuner IC)



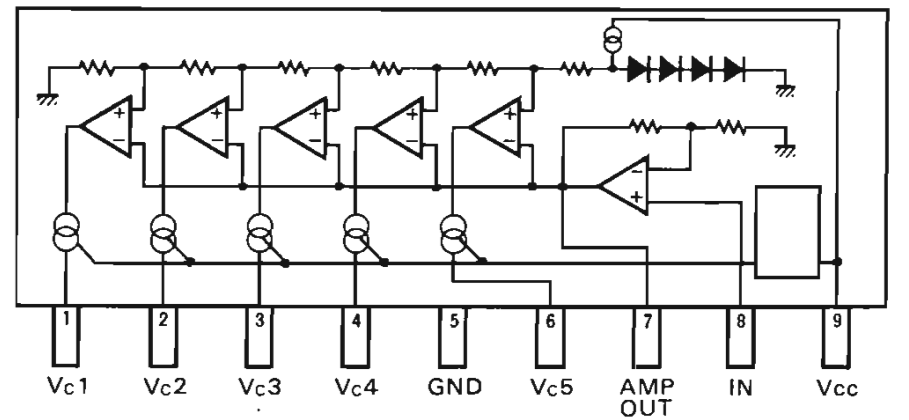
•LA1231N (IF & Quadrature Detector IC)



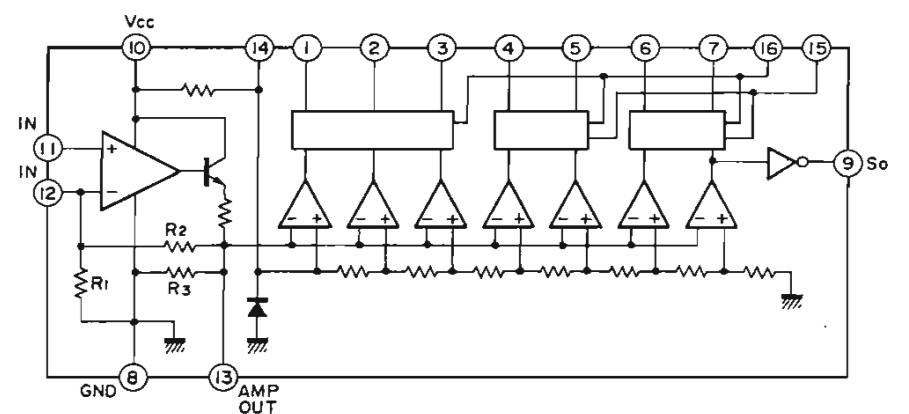
•BA-612 (L.E.D. Drive IC)



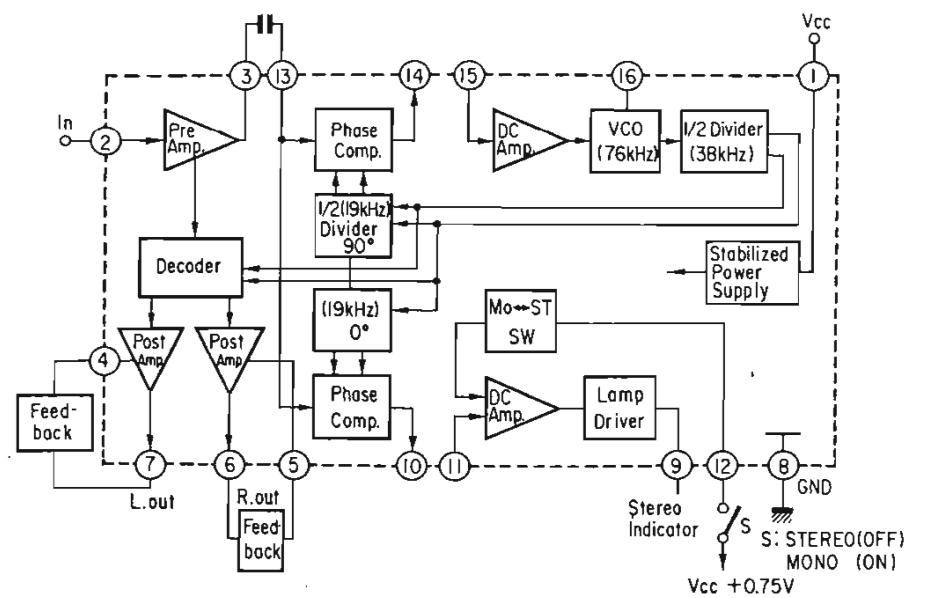
•BA6125 (L.E.D. Drive IC)



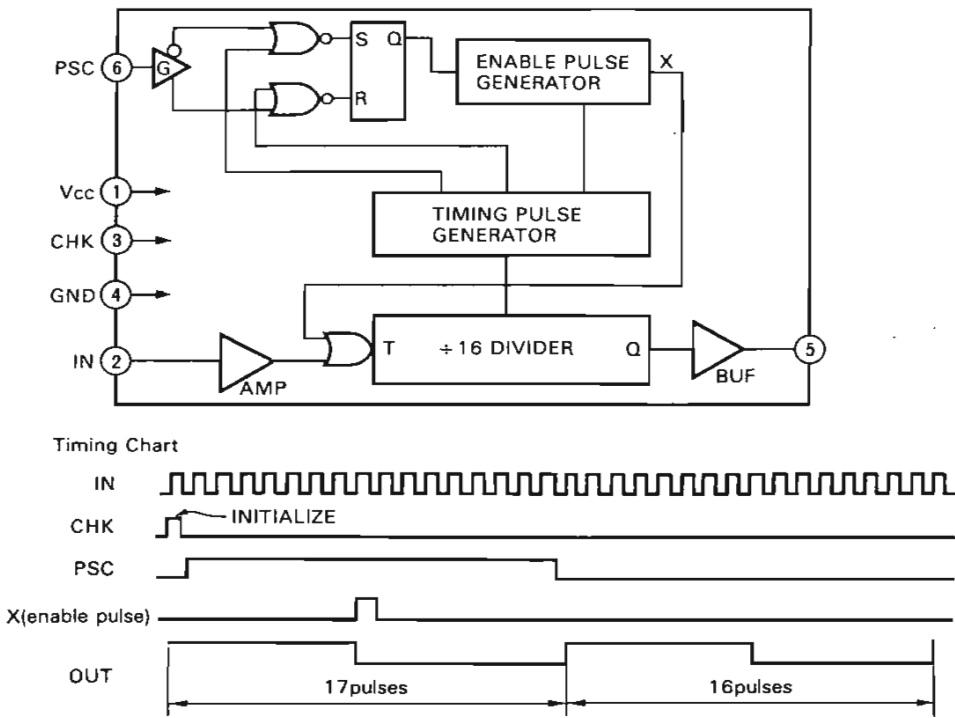
•IR2E29 (L.E.D. Drive IC)



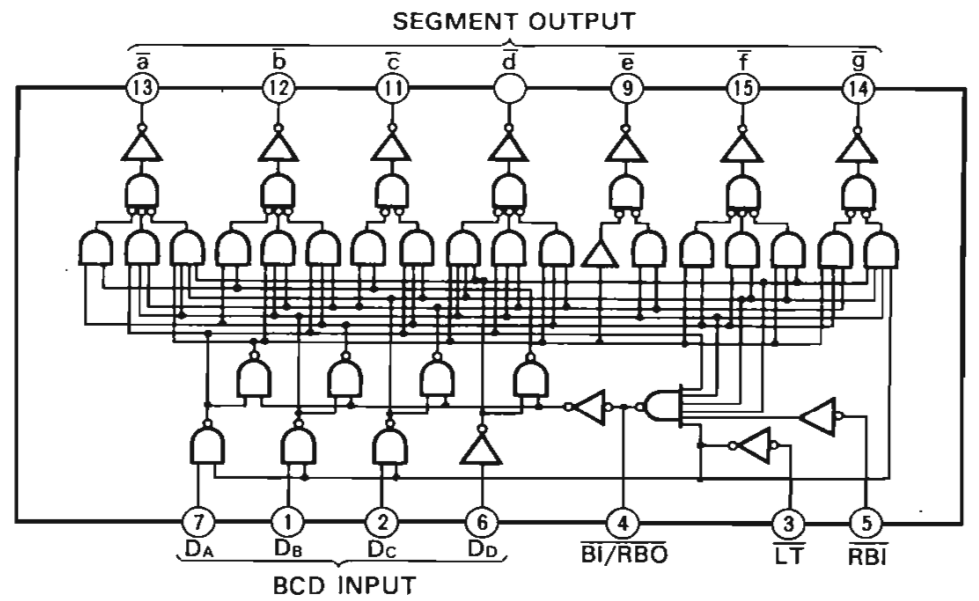
•HA1196 (MPX IC)



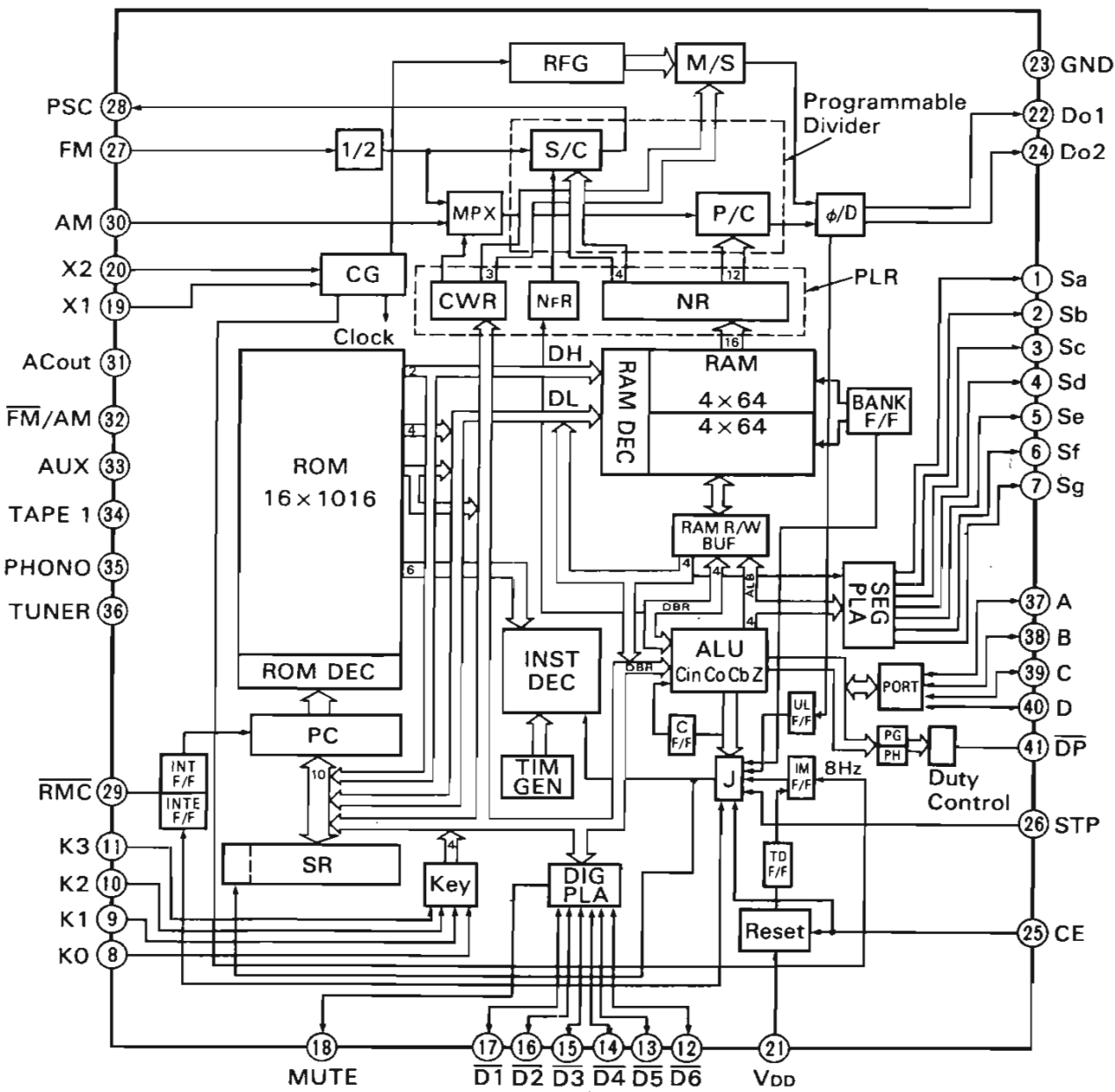
• μ PB553AC (Prescaler IC)



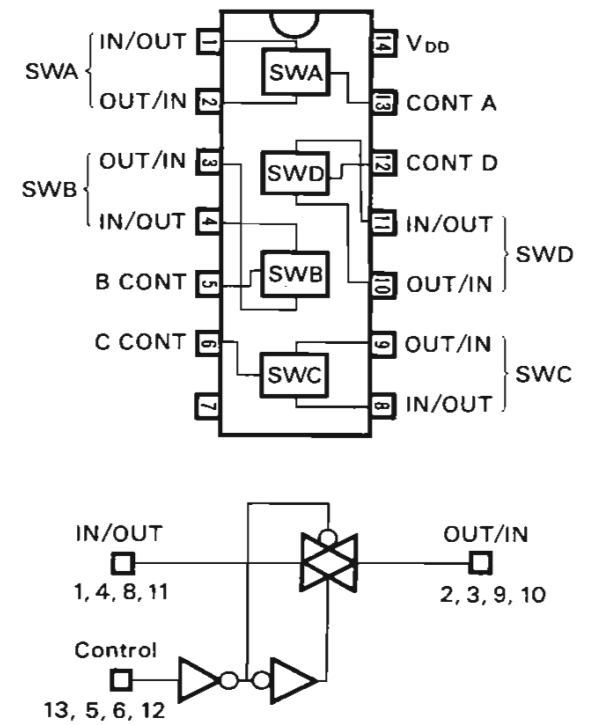
•M74LS247/MB74LS247 (BCD-TO-SEVEN-SEGMENT DECODER/DRIVER IC)



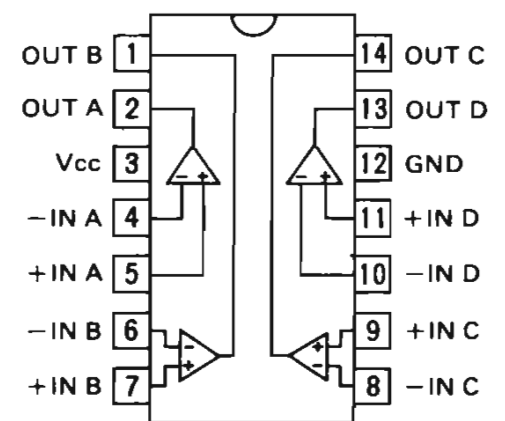
• μ PD1704C-011 (FM/AM PLL Synthesizer & Control IC)



•LC4066BH (Quad Bi-lateral Switch IC)



•MB4204M (Operational Amp. IC)

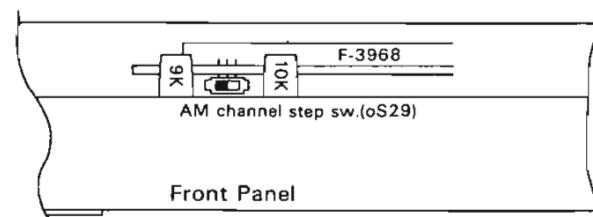


4. ADJUSTMENTS

4-1. Reference Frequency Adjustment of Synthesizer Control Circuit

- Note:**
1. Input Selector..... AM
 2. TUNING/FM MODE..... MANUAL/MONO
 3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS29, See Fig. 4-1) is set to 9 kHz and "**" is for the 10 kHz.
 4. The unit without the AM 9/10 kHz channel step switch is "*" mark frequency.

Fig. 4-1

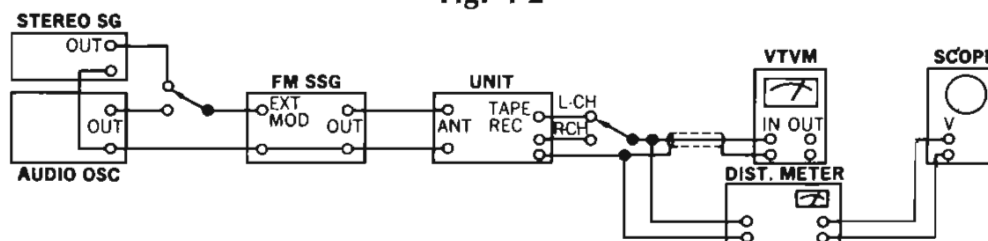


| SUBJECT | SETTING | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|----------------------|--|--|--|-------------------------------------|---------|
| X'tal Frequency Adj. | Set frequency display to *999kHz <**1000kHz> | Between Point (A) and Earth, F-3900, Frequency Counter •See Parts Location F-3900 on page 11. | fTC1 (F-3968) (See Top View on page 15 & Parts Location F-3968 on page 11) | *1449kHz ± 10kHz <**1450kHz ± 10Hz> | |

4-2. FM Adjustments (See Fig.4-2 and Top View on Page 15)

- Note:**
1. Input Selector FM
 2. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS18, See Fig. 4-1) is set to 9 kHz and "**" is for the 10 kHz.
 3. The unit without the AM 9/10 kHz channel step switch is "*" mark frequency.

Fig. 4-2



(1) FM IF, RF

Note: TUNING/FM MODE MANUAL/MONO

| STEP | SUBJECT | FEED SIGNAL | | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|------|-------------------------|--|---|--|---|--------------|--|
| | | FROM | TO | | | | |
| 1. | FM IF Coil Adj. | *98MHz <**98.1MHz> ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG | ANT terminal 300Ω | Between Point (B) and Earth, (dVR10) and Earth, DC Volt Meter •See Parts Location F3900 on page 11. | T1 (Front-end) (See Top View on page 15) | MAX. DC Volt | |
| 2. | Discriminator Coil Adj. | 1 | *98MHz <**98.1MHz> ANT Input 65 dBf (59.8dB), 1kHz (100% MOD.), FM SSG | Same as above | Between (C) and (D), (Across dR41), DC Volt Meter •See Parts Location F3767 on page 12). | 0 ± 30mV | •Repeat procedures as stated in subject 1 & 2. |
| | | 2 | Same as above | Same as above | REC OUT L-CH or R-CH, VTVM & SCOPE, | dT3 (F-3767) | |

2) FM STEREO

Note: 1. TUNING/FM MODE AUTO/STEREO

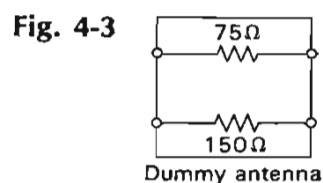
| STEP | SUBJECT | FEED SIGNAL | | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|------|--|--|-------------------|--|----------------|---|--|
| | | FROM | TO | | | | |
| 1. | PLL V.C.O. Adj. | *98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG | ANT terminal 300Ω | STEREO Indicator | dVR2 (F-3767) | Light Indicator | Adjust the dVR2 within center of lighting level. |
| | PLL V.C.O. Adj. In case of using Frequency counter | *98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, No MOD. | Same as above | Between Point (E) and Earth, (dR46) and Earth, Frequency Counter •See Parts Location F-3767 on page 12. | dVR2 (F-3767) | 76kHz ± 150Hz | |
| 2. | Muting Level Adj. | *98MHz <**98.1MHz> 20dBf (14.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz + Pilot (100% MOD.), STEREO SG. | Same as above | STEREO Indicator or REC OUT L-CH or R-CH. VTVM & SCOPE | dVR10 (F-3900) | STEREO Indicator turns ON or Output Signal comes out. | |

◆ **Technical Hint for FM adjustment**

- There are two kind in indication of FM SG output attenuator.
 1. Attenuator with marking of 75Ω open open indication type.
 2. Attenuator with marking of 75Ω load or close load or close indication type.
- FM SG output level in this FM adjustment are described as open indication type.
- To feed FM signal, a dummy antenna circuit as Fig. 4-3 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

| | FM SG Attenuator Indication | Available Power Ratio | Antenna Terminal Voltage |
|-------------------------------|-----------------------------|-----------------------|--------------------------|
| Open indication type | 0 dB 66 dB | -0.8 dBf 65.2 dBf | -6 dB/μV 60 dB/μV |
| Load or close indication type | 0 dB 60 dB | 5.2 dBf 65.2 dBf | 0 dB/μV 60 dB/μV |



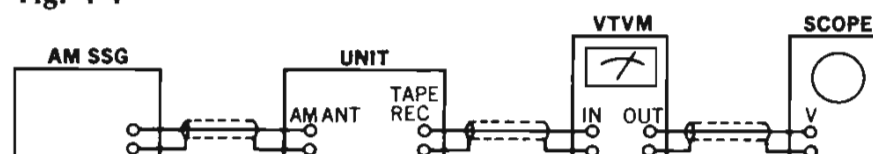
4-3. AM Adjustments

(See Figs. 4-4, 4-5, Parts Location F-3900 on page 11 and Top View on Page 15)

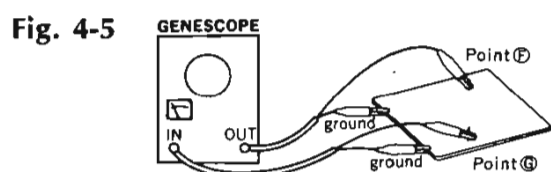
- Note:**
1. Input Selector AM
 2. TUNING/FM MODE MANUAL/MONO
 3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS29, See Fig. 4-1) is set to 9 kHz and "**" is for the 10 kHz.
 4. AM channel step frequency of the unit without the AM channel step switch (oS29) is fixed to 10kHz, and it is applicable to the USA (UL) and Canada (CSA) under industrial standards.
 5. Preset the listed frequencies to the memories.

| PRESET KEY | AM | |
|------------|-------------|---------------|
| | *9 kHz step | **10 kHz step |
| 1 | 522 kHz | 530 kHz |
| 2 | 1611 kHz | 1620 kHz |
| 3 | 603 kHz | 600 kHz |
| 4 | 1404 kHz | 1400 kHz |

Fig. 4-4



(1) AM IF




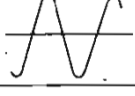
| STEP | SUBJECT | FEED SIGNAL | | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|------|--------------|-----------------------|-----------------------|--|----------------|---------------|---------|
| | | FROM | TO | | | | |
| 1. | IF Coil Adj. | Genescope Output 50dB | Point ① (eR1), F-3900 | Between Point ② (eR11) and Earth, F-3900 | eCF1, (F-3900) | MAX. Waveform | |

2) AM Tuning Voltage

| STEP | SUBJECT | SETTING | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|------|---|---|--|---------------|------------|--|
| 1. | *522kHz <**530kHz> Tuning Voltage | Depress PRESET Key 1 to readout 522kHz <**530kHz> | Between ① and Earth, F-3900, DC Volt Meter | eT2 (F-3900) | 1V ± 0.1V | •Repeat procedures as state in STEP 1 & 2. |
| 2. | *1611kHz <**1620kHz> Tuning Voltage | Depress PRESET Key 2 to readout *1611kHz <**1620kHz> | Same as above | eTC2 (F-3900) | 9V ± 0.1V | |

(3) AM RF and Muting Level

- Note:** 1. Connect AM loop antenna to the AM antenna terminal and GND terminal.
2. Repeat procedures as stated in STEP 1 and 2.

| STEP | SUBJECT | FEED SIGNAL | | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|------|------------------------------------|---|------------------|--|------------------|--|--|
| | | FROM | TO | | | | |
| 1. | *603kHz <**600kHz> RF Adj. | 603kHz <**600kHz> ANT Input 50dB, 400Hz (30% MOD.), AM SSG | ANT terminal | REC OUT L-CH or R-CH, VTVM & SCOPE | eT3 (F-3900) | MAX. Output  | •Depress PRESET Key 3 to readout *603kHz <**600kHz> |
| 2. | *1404kHz <**1400kHz> RF Adj. | 1404kHz <**1400kHz> ANT Input 50 dB, 400 Hz (30% MOD.), AM SSG | Same as above | Same as above | eTC1 (F-3900) | MAX. Output  | •Depress PRESET Key 4 to readout *1404kHz <**1400kHz> |
| 3. | Muting Level Adj. | 999kHz <**1000kHz> ANT Input 55 dB, 400 Hz (30% MOD.), AM SSG | Same as above | Same as above | eVR1 (F-3900) | Output signal comes out. | •TUNING/FM MODE switch ... AUTO |

4-4. Driver Circuit Adjustment

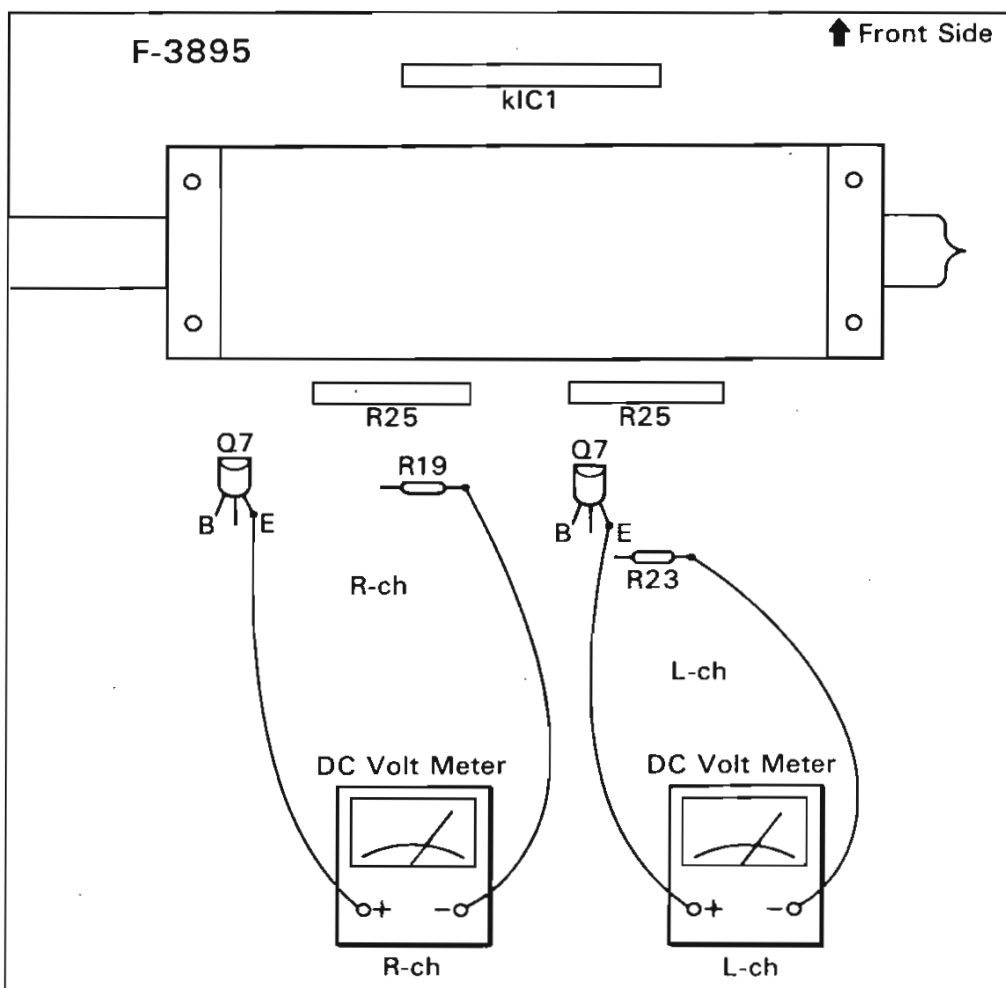
(See Top View on Page 15)

- Note:** 1. Room Temperature..... 18°C~28°C
2. VOLUME..... Minimum
3. Input Selector..... AUX.

4. For adjustment, run the unit for more than 3 minutes after the power is switched on.

| SUBJECT | SETTING | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---------|---------------------------|---|-------------------|-----------------|---|
| 1. | Bias Current Adj. L-CH | Between emitter terminals of kQ7L and R23L, F-3895, DC Volt Meter (See Fig. 4-6) | kVR2L (F-3895) | DC 3mV ± 1mV | •Before turning ON power switch, turn kVR2L, R fully counterclockwise. •This bias current value into voltage by ohms law. |
| 2. | Bias Current Adj. R-CH | Between emitter terminals of kQ7R and R19R, F-3895, DC Volt Meter (See Fig. 4-6) | kVR2R (F-3895) | | |

Fig. 4-6



•Abbreviations

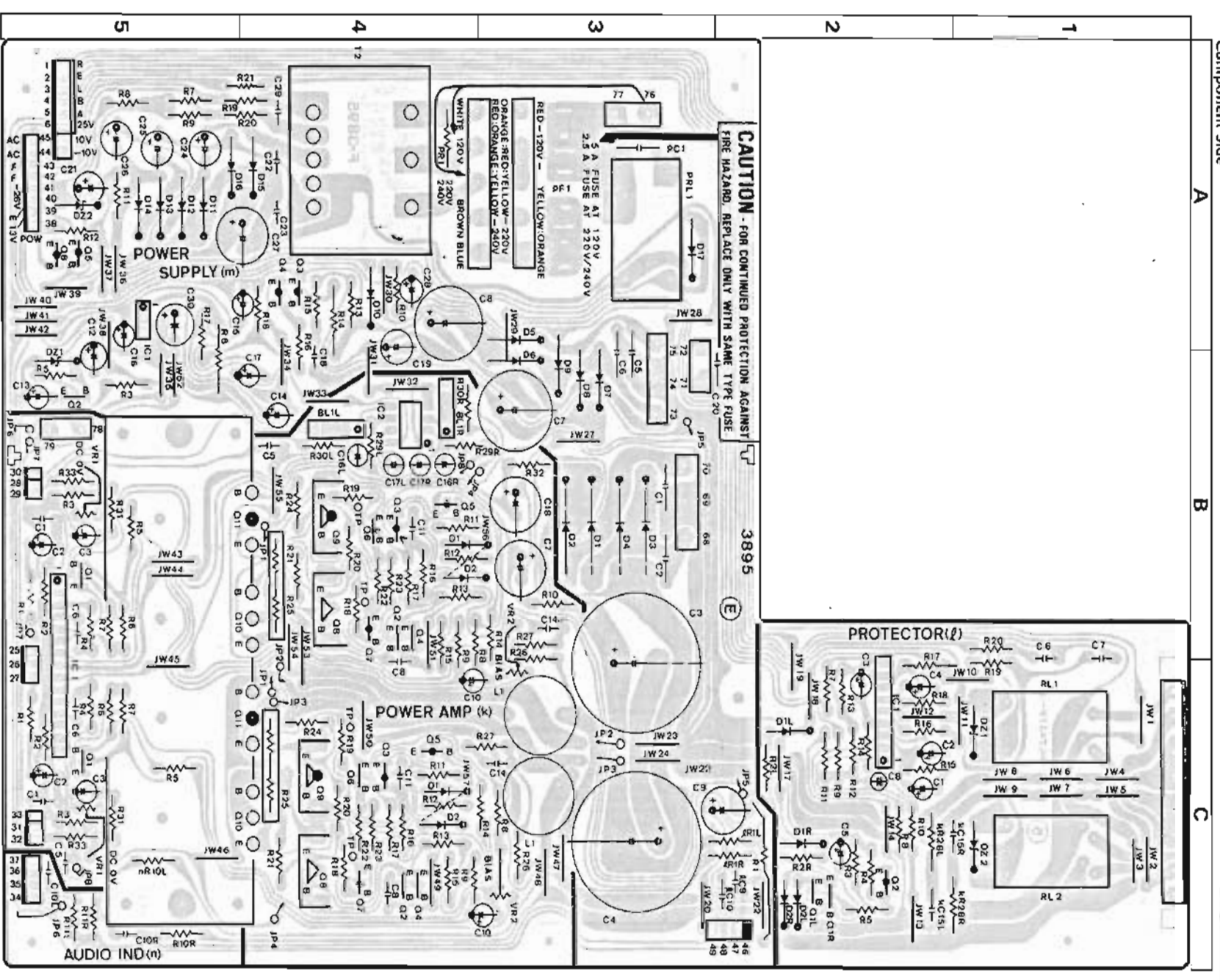
| Equipment | |
|------------------------------------|-------------|
| AM FM Generator Oscilloscope | Genescope |
| AM Standard Signal Generator | AM SSG |
| FM Standard Signal Generator..... | FM SSG |
| FM Stereo Generator | Stereo SG |
| Oscilloscope | Scope |
| Audio Oscillator | Audio Osc. |
| Distortion Meter..... | Dist. Meter |
| Others | |
| Antenna | ANT. |
| Modulation | MOD. |
| Total Harmonic Distortion..... | T.H.D. |

Z-5000X/3000X Z-5000X/3000X

5. PARTS LOCATION & PARTS LIST

5-1. F-3895 Power Amp. & Power Supply Circuit Board (Stock No. 00753101 = Z-5000X/00754101 = Z-3000X)

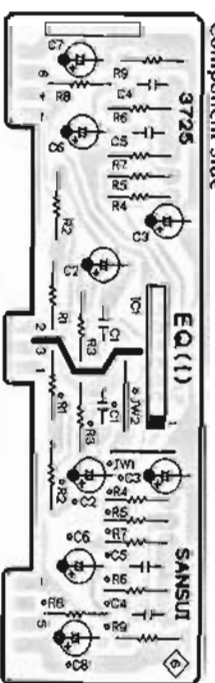
*Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.



| Parts No. | Stock No. | Description | Parts No. | Stock No. | Description |
|--------------|-------------|------------------------|--------------|-----------|-------------------|
| *Transistor | | | *Diode | | |
| KQ1 | 03067401 | 2SC1845 | MD1 | 03115300 | 3002 |
| KQ2 | 03066801 | 2SC2071V | MD2 | 03115300 | 3002 |
| KQ3 | 03010301 | 2SA939 | MD3 | 03115300 | 3002 |
| KQ4 | 03066801 | 2SC2071V | MD4 | 03115300 | 3002 |
| KQ5 | 03010301 | 2SA939 | MD5 | 03117700 | 10E-2 |
| KQ6 | 46127701 | 2SC2908 | MD6 | 03117700 | 10E-2 |
| KQ7 | 46127701 | 2SA1207R1 | MD7 | 03117700 | 10E-2 |
| KQ8 | 03069301 | 2SC2238 | MD8 | 03117700 | 10E-2 |
| KQ9 | 03012401 | 2SA968 | MD9 | 03117700 | 10E-2 |
| KQ10 | 07258101 | 2SC2579LB | MD10 | 03117700 | 10E-2 |
| KQ11 | 07258901 | 2SA1104LB | MD11 | 03117700 | 10E-2 |
| *IC | | | MD12 | 03117700 | 10E-2 |
| KIC1 | 46435600 | STK3062-2 | MD13 | 03117700 | 10E-2 |
| KIC2 | 03607700 | NJM4658D | MD14 | 03117700 | 10E-2 |
| *Diode | | | MD15 | 03117700 | 10E-2 |
| KD1 | 03117600 | 1S2473T77 | MD16 | 03117700 | 10E-2 |
| | or 46086000 | 1S1588TP-3 | MD17 | 03117700 | 10E-2 |
| KD2 | 03117600 | 1S2473T77 | | | |
| | or 46086000 | 1S1588TP-3 | | | |
| KR25 | 00091700 | 0.338 x 2.5W C.e.R. | *Zener Diode | | |
| KC16 | 46445800 | 10µF 16V E.B. | MD21 | 03178600 | RD11E-B |
| KC17 | 46445800 | 10µF 16V E.B. | MD22 | 03171900 | RD27F-B |
| K8L1 | 46426800 | Composition Parts | mR1 | 00195400 | 270 3W N.I.R. |
| KL1 | 46027200 | Peaking Coil (Z-5000X) | mC1 | 08680400 | 0.01µF 500V C.C. |
| | 42903700 | Peaking Coil (Z-3000X) | mC2 | 08680400 | 0.01µF 500V C.C. |
| KVR2 | 07241000 | 1KΩ (B) S.V.R., Bias | mC3 | 08300300 | 6800µF 56V E.L. |
| *Transistor | | | mC4 | 08300300 | 6800µF 56V E.L. |
| IO1 | 46127701 | 2SC2909 | mC5 | 08680400 | 0.01µF 500V C.C. |
| IO2 | 46581601 | 2SA932 | mC6 | 08680400 | 0.01µF 500V C.C. |
| *IC | | | mT2 | 15008511 | Power Transformer |
| IC1 | 46207800 | TA7317P | | | |
| *Diode | | | | | |
| ID1 | 03117600 | 1S2473T77 | | | |
| | or 46086000 | 1S1588TP-3 | | | |
| ID2 | 03117600 | 1S2473T77 | | | |
| | or 46086000 | 1S1588TP-3 | | | |
| *Zener Diode | | | | | |
| IDZ1 | 03180200 | RD24E-B | | | |
| IDZ2 | 03180200 | RD24E-B | | | |
| IC8 | 07129900 | 1µF 50V E.B. | | | |
| IRL1 | 46254900 | RELAY | | | |
| IRL2 | 46254900 | RELAY | | | |
| *Transistor | | | | | |
| MO2 | 03085201 | 2SD438 | | | |
| MO3 | 03033101 | 2SB528 | | | |
| MO4 | 03012701 | 2SA939 | | | |
| | or 07194701 | 2SA1015 | | | |
| MO5 | 03012701 | 2SA733A | | | |
| | or 07194701 | 2SA1015 | | | |
| | or 07197001 | 2SA733A | | | |
| MO6 | 46188601 | 2SA1015 | | | |
| *IC | | | | | |
| IC1 | 46381400 | L78N10 | | | |

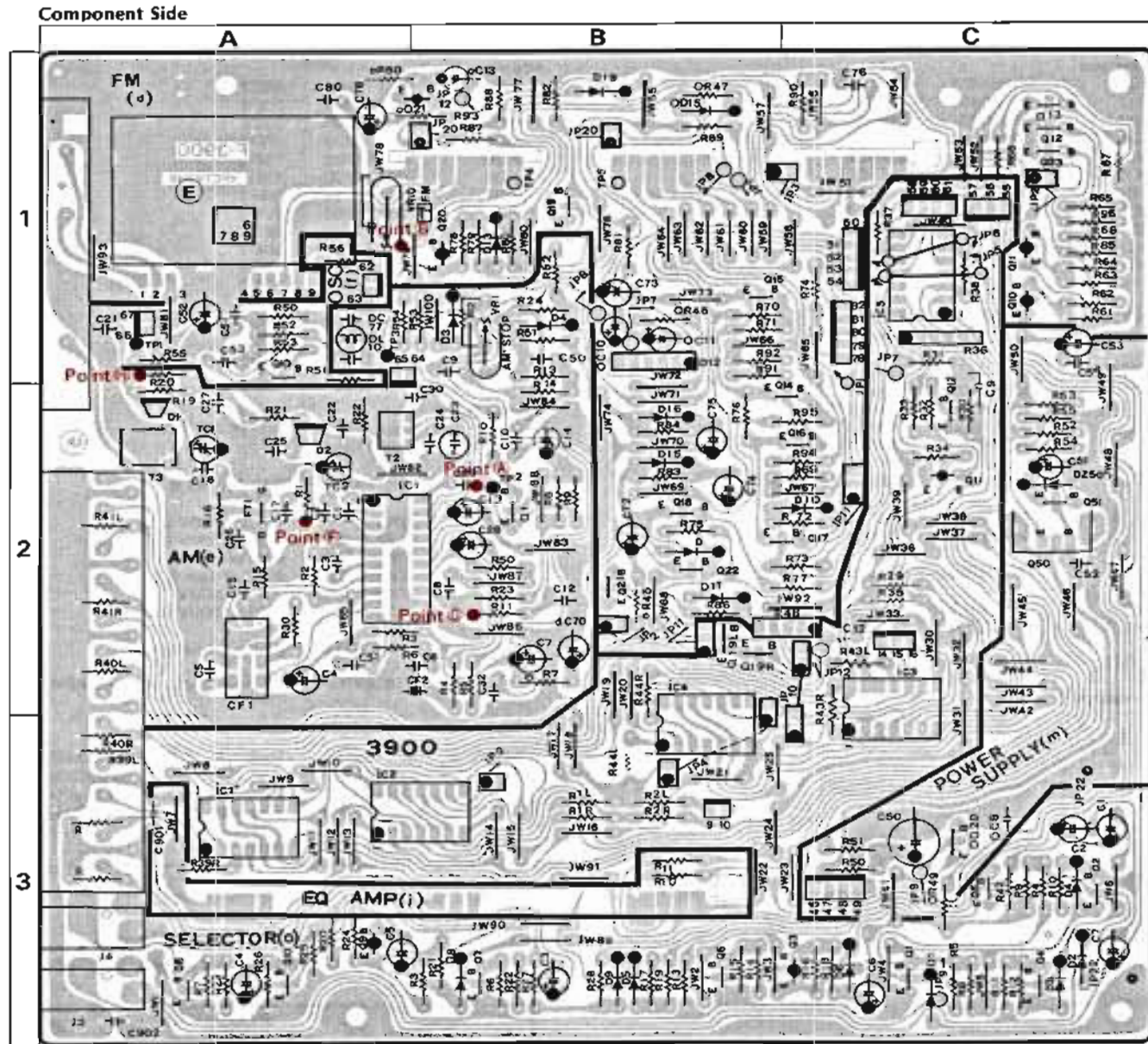
5-2. F-3725 EQ. Amp. Circuit Board

(Stock No. 00719901 = Z-5000X/00695501 = Z-3000X)



| Parts No. | Stock No. | Description |
|-----------|-----------|------------------|
| *IC | | |
| IC1 | 46288800 | MS220L <Z-5000X> |
| | 46078900 | MS218L <Z-3000X> |

5-3. F-3900 FM, AM RF & COMPU Selector Circuit Board (Stock No. 00753201 = Z-5000X/00754201 = Z-3000X)

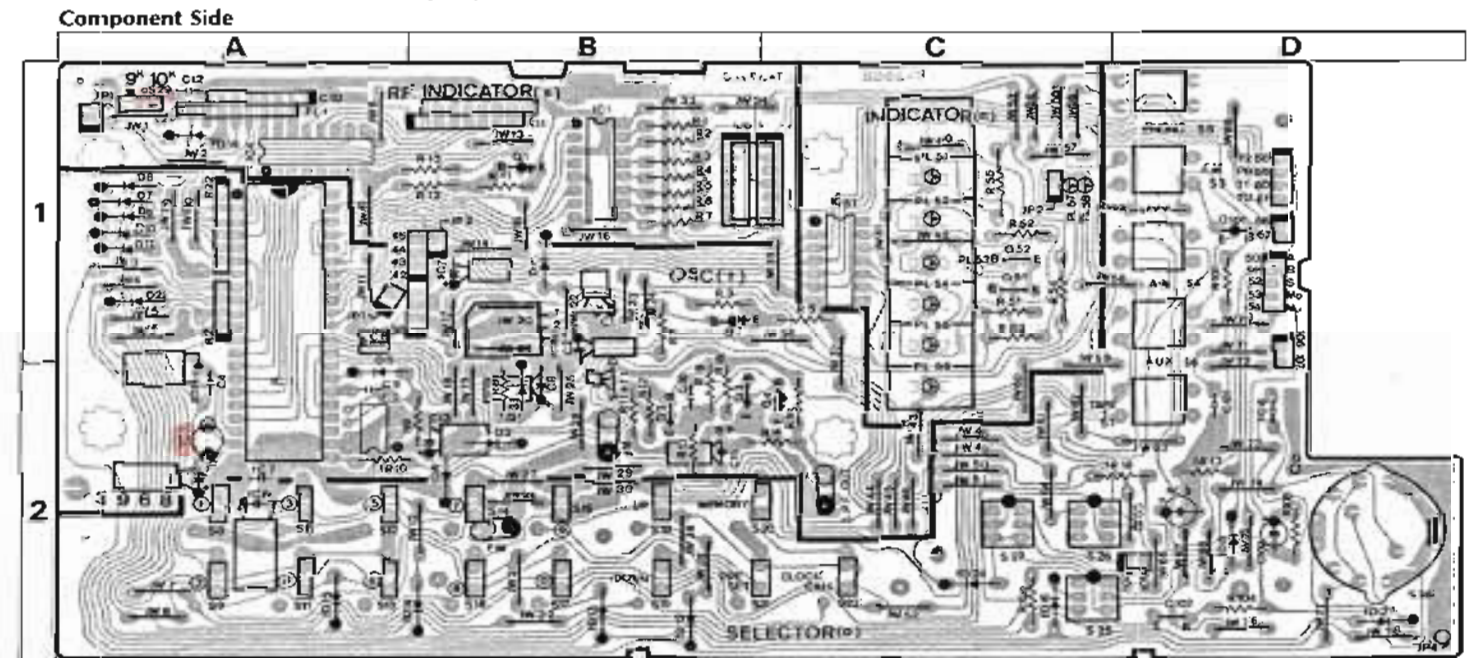


| Parts No. | Stock No. | Description | Parts No. | Stock No. | Description |
|-------------|-------------------------|-------------------------|-------------|-------------------------|------------------------------|
| | 46392600 | FM Frontend Pack | dD13 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| •Transistor | | | dD15 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| dQ10 | 46367001 | 2SA1115 | dD16 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| dQ11 | 46367001 | 2SA1115 | dD19 | 03117600 | 1S2473T77 |
| dQ12 | 46367101 | 2SC2603 | or 46086000 | 1S1588TP-3 | |
| dQ13 | 46367101 | 2SC2603 | dD12 | 46501600 | Composition Parts |
| dQ14 | 46367101 | 2SC2603 | dL10 | 46204100 | 2 2μH Inductor |
| dQ15 | 46367101 | 2SC2603 | dVR10 | 07241300 | 10kΩ (B) S.V.R., Muting Adj. |
| dQ16 | 46367101 | 2SC2603 | •Transistor | | |
| dQ17 | 46367101 | 2SC2603 | eQ1 | 46367101 | 2SC2603 |
| dQ18 | 46367101 | 2SC2603 | •FET | | |
| dQ19 | 46367101 | 2SC2603 | eFT1 | 46393000 or 46393001 | 2SK192A-Y 2SK192A-GR |
| dQ20 | 46367001 | 2SA1115 | •IC | | |
| dQ21 | 46367101 | 2SC2603 | eIC1 | 07237200 | LA1245 |
| dQ22 | 46367101 | 2SC2603 | | | |
| dQ23 | 46367101 | 2SC2603 | | | |
| •Diode | | | | | |
| dD10 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 | | | |
| dD11 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 | | | |

Parts List <F-3900>

| Parts No. | Stock No. | Description | Parts No. | Stock No. | Description |
|-------------|-------------------------|-------------------------------------|--------------|-------------------------|--|
| •Diode | | | •Zener Diode | | |
| eD1 | 46254600 | Varactor Diode 1SV100 | mDZ50 | 03177600 | RD6.8E-8 |
| eD2 | 46254600 | Varactor Diode 1SV100 | •Transistor | | |
| eD3 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 | oQ11 | 46367001 | 2SA1115 |
| eD4 | 03117600 or 46086000 | 1S2573T77 1S1588TP-3 | oQ12 | 46367101 | 2SC2603 |
| eTC1 | 46437500 | Trimmer Capacitor | oQ19 | 07225401 | 2SC2320L |
| eTC2 | 46437500 | Trimmer Capacitor | oQ21 | 46367001 | 2SA1115 |
| eCF1 | 07254000 | Ceramic Filter SFL450G3 | •IC | | |
| eCF2 | 07265100 | Ceramic Filter 8FU450C4N | oIC1 | 46255000 | LC4066BH |
| eT2 | 46394700 | AM RF Coil | oIC2 | 46255000 | LC4066BH |
| eT3 | 46394800 | AM ANT Coil | oIC3 | 46255000 | LC4066BH |
| eVR1 | 07241500 | 50kΩ (B) S.V.R., AM Stop level Adj. | oIC4 | 46255000 | LC4066BH |
| •Transistor | | | oIC5 | 07246300 | MB4204M |
| IQ10 | 46367101 | 2SC2603 | •Diode | | |
| mQ50 | 07287101 | 2SD1147 | oD15 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| mQ51 | 46367101 | 2SC2603 | oR36 | 46448100 | Composition Parts |
| | | | oR48 | 46503400 | Composition Parts |
| | | | | 46363800 | 4P Input Terminal, TAPE-1, TAPE-2, AUX, PHONO |

5-4. F-3968 Control & FL. Display Circuit Board (Stock No. 00753301 = Z-5000X/00754301 = Z-3000X)



Parts List

| Parts No. | Stock No. | Description | Parts No. | Stock No. | Description |
|-------------|-----------|-----------------------|-------------|------------|-------------|
| •Transistor | | | •Diode | | |
| IQ1 | 46086601 | 2SA937 | ID1 | 03117600 | 1S2473T77 |
| IQ2 | 03069401 | 2SC2021 | or 46086000 | 1S1588TP-3 | |
| IQ3 | 03069401 | 2SC2021 | ID2 | 03117600 | 1S2473T77 |
| IQ4 | 46086601 | 2SA937 | or 46086000 | 1S1588TP-3 | |
| •FET | | | ID3 | 03117600 | 1S2473T77 |
| IFT1 | 03703401 | 2SK163-K2 | or 46086000 | 1S1588TP-3 | |
| or 03703402 | 2SK163-L1 | | ID4 | 03117600 | 1S2473T77 |
| •IC | | | or 46086000 | 1S1588TP-3 | |
| IC1 | 46253300 | μPD1704C-011 | ID5 | 03117600 | 1S2473T77 |
| IC2 | 46253400 | μPB553AC | or 46086000 | 1S1588TP-3 | |
| IC3 | 46361200 | L78N06 | ID6 | 03117600 | 1S2473T77 |
| ID01 | 46443900 | Quartz Element 4.5MHz | or 46086000 | 1S1588TP-3 | |
| | | | ID7 | 03117600 | 1S2473T77 |
| | | | or 46086000 | 1S1588TP-3 | |
| | | | ID8 | 03117600 | 1S2473T77 |
| | | | or 46086000 | 1S1588TP-3 | |

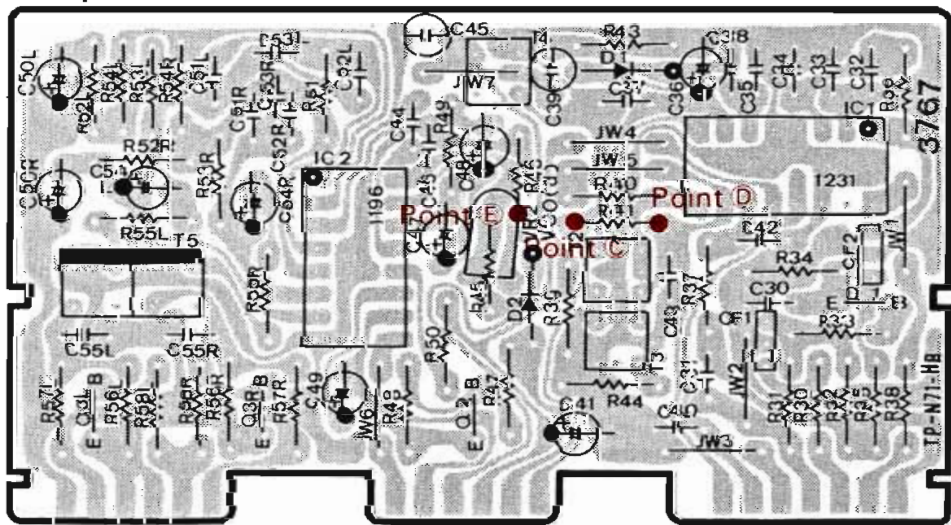
Parts List < F-3968 >

| Parts No. | Stock No. | Description |
|--------------------|-------------------------|----------------------------|
| fD9 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD10 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD11 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD12 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD13 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD14 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD15 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD16 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD19 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD21 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD22 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fD24 | 03117600 or 46086000 | 1S2473T77 1S1588TP-3 |
| fR21 | 46343100 | 100kΩ × 4 A.R. |
| fR22 | 46392900 | 100kΩ × 7 A.R. |
| fC1 | 46276000 | 100μF 16V E.C. |
| fC6 | 46643300 | 100μF 6.3V E.L. |
| fC15 | 00305800 | 2.2μF 25V E.B. |
| fC17 | 46643300 | 1000μF 6.3V E.L. |
| fTC1 | 46444600 | Trimmer Capacitor 30pF |
| •Transistor | | |
| nQ51 | 46134201 | 2SD1111 |
| nQ52 | 46526901 | 2SD1111 |
| •IC | | |
| nIC51 | 46397500 | BA612 |
| nPL51 | 46359900 | Pilot Lamp 8V 0.1A, PHONO |
| nPL52 | 46359900 | Pilot Lamp 8V 0.1A, FM |
| nPL53 | 46359900 | Pilot Lamp 8V 0.1A, AM |
| nPL54 | 46359900 | Pilot Lamp 8V 0.1A, AUX |
| nPL55 | 46359900 | Pilot Lamp 8V 0.1A, TAPE-1 |
| nPL56 | 46707900 | Pilot Lamp 8V 0.1A, TAPE-2 |
| nPL57 | 07261100 | Pilot Lamp 8V 150mA |
| nPL58 | 07261100 | Pilot Lamp 8V 150mA |

| Parts No. | Stock No. | Description |
|--------------------|-------------------------|---------------------------------------|
| •Transistor | | |
| oQ101 | 46367001 | 2SA1115 |
| oQ102 | 46367101 | 2SC2603 |
| oS3 | 11907000 | Push SW., FM |
| oS4 | 11907000 | Push SW., AM |
| oS5 | 11907000 | Push SW., PHONO |
| oS6 | 11907000 | Push SW., AUX |
| oS7 | 11907000 | Push SW., TAPE |
| oS8 | 46396700 | Push SW., 1 |
| oS9 | 46396700 | Push SW., 2 |
| oS10 | 46396700 | Push SW., 3 |
| oS11 | 46396700 | Push SW., 4 |
| oS12 | 46396700 | Push SW., 5 |
| oS13 | 46396700 | Push SW., 6 |
| oS14 | 46396700 | Push SW., 7 |
| oS15 | 46396700 | Push SW., 8 |
| oS16 | 46396700 | Push SW., 9 |
| oS17 | 46396700 | Push SW., 0 |
| oS18 | 46396700 | Push SW., Λ |
| oS19 | 46396700 | Push SW., V |
| oS20 | 46396700 | Push SW., M |
| oS21 | 46396700 | Push SW., S |
| oS22 | 46396700 | Push SW., C |
| oS25 | 46563500 | Push SW., AUTO/MANUAL, STEREO/MONO |
| oS26 | 46563500 | Push SW., TAPE-2 |
| oS27 | 46563500 | Push SW., LOUDNESS |
| oS28 | 46396300 | Rotary SW., PROGRAM TIMER |
| oS29 | 46394000 | Slide SW., AM channel step |
| •Transistor | | |
| sQ1 | 46086601 | 2SA937 |
| •IC | | |
| sIC1 | 46257100 or 46257200 | M74LS247 MB74LS247 |
| sIC4 | 46253500 | μPA-80C |
| sFL1 | 46636400 | FL. Display Tube FG78J1GR |
| •LED | | |
| sLD1 | 46563300 | LA301VA, PRESET STATION |
| sC10 | 46263000 | 330pF × 7 50V A.C. |
| sC11 | 46263000 | 330pF × 7 50V A.C. |

5-5. F-3767 FM IF Circuit Board (Stock No. 00744601)

Component Side

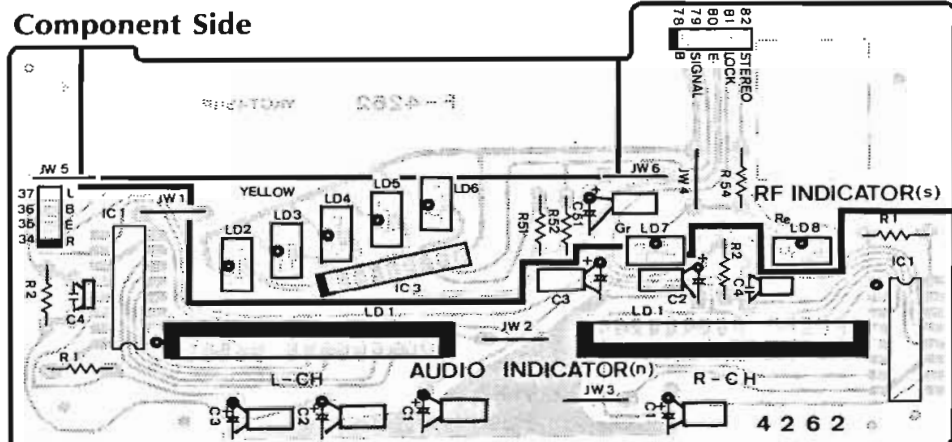


Parts List

| Parts No. | Stock No. | Description |
|--------------------|-----------|---------------------------|
| •Transistor | | |
| dQ1 | 46393201 | 2SC2786 |
| dQ2 | 46391901 | 2SC2785 |
| dQ3 | 46391901 | 2SC2785 |
| •IC | | |
| dIC1 | 07191200 | LA1231N |
| dIC2 | 03603200 | HA1196 |
| •Diode | | |
| dD1 | 03117600 | 1S2473T77 |
| dD2 | 03117600 | 1S2473T77 |
| dC39 | 08450900 | 4.7μF 16V E.B. |
| dC45 | 08451200 | 2.2μF 25V E.B. |
| dCF1 | 46202500 | Ceramic Filter SFE10.7MS2 |
| dCF2 | 46202500 | Ceramic Filter SFE10.7MS2 |
| dT5 | 46151300 | Low Pass Filter (38kHz) |
| dT2 | 46369100 | FM IF Coil |
| dT3 | 46369200 | FM IF Coil |
| dVR2 | 07241300 | 10kΩ S.V.R., VCO Adj. |

•The following circuit boards are not supplied as the assembled. However, the individual parts on the circuit boards are provided for orders.

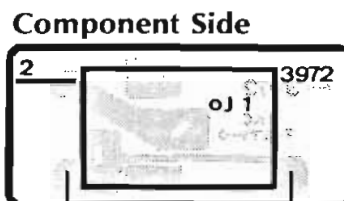
5-6. F-4262 RF Signal & Peak Power Indicator Circuit Board <Z-5000X>



Parts List

| Parts No. | Stock No. | Description |
|-----------|-------------|----------------------------|
| •IC | | |
| nIC1 | 46398400 | IR2E29 |
| nLD1 | 46398500 | GL107R12, REAK POWER LEVEL |
| •IC | | |
| sIC3 | 46392500 | BA6125 |
| •LED | | |
| sLD2 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD3 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD4 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD5 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD6 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD7 | 07250900 | TLG-123A |
| | or 46470300 | SEL2410E |
| sLD8 | 46176900 | TLS-123 |
| | or 46470200 | SEL2210S |

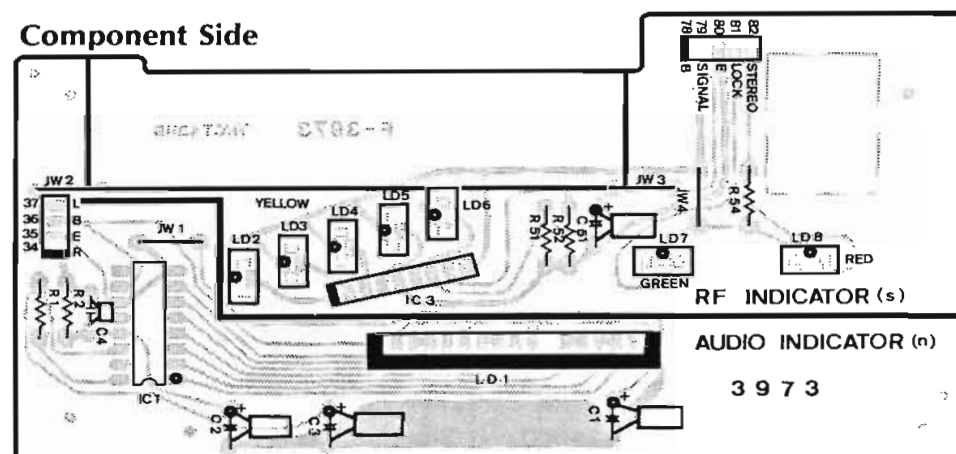
5-8. F-3972 Phones Jack Circuit Board



Parts List

| Parts No. | Stock No. | Description |
|-----------|-----------|--------------|
| oJ1 | 46638200 | Jack, PHONES |

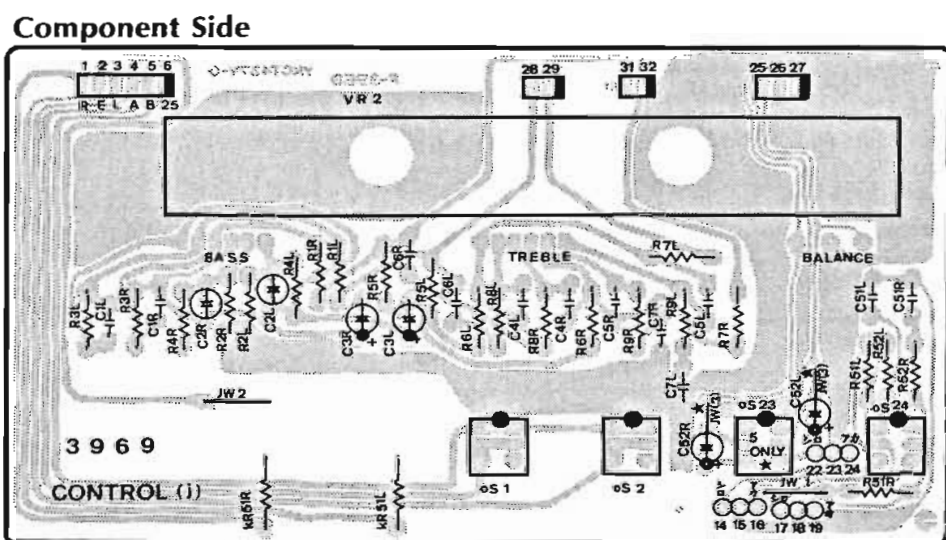
5-9. F-3973 RF Signal & Peak Power Indicator Circuit Board <Z-3000X>



Parts List

| Parts No. | Stock No. | Description |
|-----------|-------------|----------------------------|
| •IC | | |
| nIC1 | 46398400 | IR2E29 |
| •LED | | |
| nLD1 | 46398500 | GL107R12, PEAK POWER LEVEL |
| •IC | | |
| sIC3 | 46392500 | BA6125 |
| •LED | | |
| sLD2 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD3 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD4 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD5 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD6 | 07251000 | TLY-123 |
| | or 46470400 | SEL2910A |
| sLD7 | 07250900 | TLG-123A |
| | or 46470300 | SEL2410E |
| sLD8 | 46176900 | TLS-123 |
| | or 46470200 | SEL2210S |

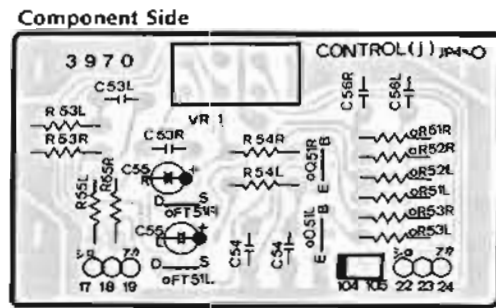
5-7. F-3969 Tone & Balance VR. Circuit Board



Parts List

| Parts No. | Stock No. | Description |
|-----------|-----------|---|
| jC2 | 46561700 | 0.22μF 50V E.B. |
| jVR2 | 46638400 | 50kΩ × 2 & 250kΩ VR., BASS, TREBLE, BALANCE |
| oS1 | 46563500 | Push SW., SPEAKERS A |
| oS2 | 46563500 | Push SW., SPEAKERS B |
| oS23 | 46563500 | Push SW., SUBSONIC FILTER (Z-5000X) |
| oS24 | 46563500 | Push SW., HIGH FILTER |

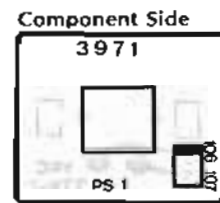
5-10. F-3970 Volume Circuit Board



Parts List

| Parts No. | Stock No. | Description |
|--------------|-------------------------|------------------------|
| VR1 | 46638300 | 150kΩ × 2 VR., VOLUME |
| • Transistor | | |
| Q51 | 46367101 | 2SC2603 |
| • FET | | |
| FT51 | 46421201 or 46421202 | 2SJ103-GR 2SJ103-BL |

5-11. F-3971 Power Stand-By SW. Circuit Board



Parts List

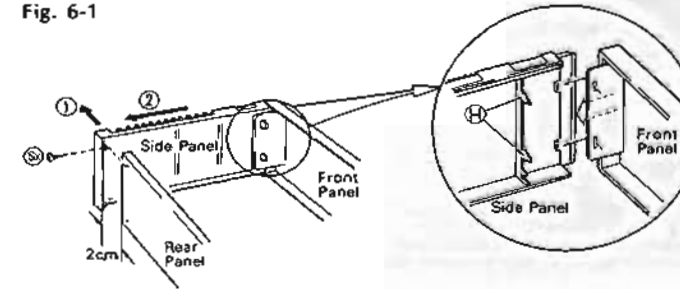
| Parts No. | Stock No. | Description |
|-----------|-----------|--------------------------|
| PS1 | 11907000 | Push SW., POWER STAND-BY |

6. MAIN PARTS REPLACEMENT

A. Side Panel L (R) (See Fig. 6-1)

- 1) Remove bonnet and bottom plate.
- 2) Undo ① hooks from the F-3874 circuit board.
- 3) Remove the screw ② fixing side panel L (R) from rear panel side.
- 4) Shift the position of the side panel L (R) 2 cm in to the arrow direction ③ and then pull it to the arrow direction ④ to remove the side panel L (R).

Fig. 6-1



B. Front Panel Ass'y

- 1) Remove the side panel L and the side panel R.
- 2) Loosen two screws fixing rag-terminals with wire from F-3968 circuit board.
- 3) Pluck out six connectors ① on the F-3895 circuit board.
- 4) Pull out five knobs-TONE, BALANCE, VOLUME and PROGRAM TIMER.
- 5) Remove the VOLUME with F-3970 circuit board.
- 6) Loosen two screws to remove the F-3972 circuit board.
- 7) Remove the F-3969 circuit board.
- 8) Remove the F-3971 circuit board.
- 9) Take off two pilot lamps from front panel.
- 10) Loosen six screws to remove the F-3968 circuit board.

7. NOTES

7-1. Notice when the user moves from 9 kHz to 10 kHz step area, or vice versa, in AM broadcasting frequency

- AM programs are being broadcast under channel plans which, depending on the broadcasting area in the world, are characterized by different channels (frequency intervals) between broadcasting stations. In North, South, and Central America, this channel is 10 kHz whereas in the rest of these areas, it is 9 kHz. This unit is a synthesizer tuner which varies the reception frequency at each 9 kHz or 10 kHz channel (frequency interval) during auto search reception. If the client uses the unit in an area with a different channel plan, he may not be able to receive AM stations. The unit he has purchased has been originally adjusted to the channel in his area. It is therefore necessary to change over the channel setting if he moves to an area with a different channel plan. It is impossible to receive AM broadcasting in Automatic Tuning operation. In this case, use the AM 9/10 kHz channel step switch (oS29, see Fig. 4-1 on page 7) installed on the circuit board F-3968.

7-2. Notice when the user moves from 200 kHz to 50 kHz step area, or vice versa, in FM broadcasting frequency.

- When the frequency-step of AM broadcasting is set to 10 kHz or 9 kHz (in EUROPE) by sliding the AM 9/10 kHz channel step switch (oS29) installed on the circuit board F-3968, the frequency-step of FM broadcasting is also switched automatically to 200 kHz or 50 kHz (in EUROPE).

| Switch (oS29) | AM | FM |
|---------------|-----------------------|------------------------|
| Set 10 kHz | 10 kHz Frequency Step | 200 kHz Frequency Step |
| Set 9 kHz | 9 kHz Frequency Step | 50 kHz Frequency Step |

- Disconnect the AC power plug from the AC outlet, when AM 9/10 kHz channel step switch (oS29) is set to 9 kHz or 10 kHz.

* Concerning Printed Resistor and Printed Silver Pattern

In this model, printed circuit board is used on which carbon resin resistance and silver foil pattern are coated. And it is impossible to replace those parts. Therefore, please keep following procedures when repairing or ordering the parts.

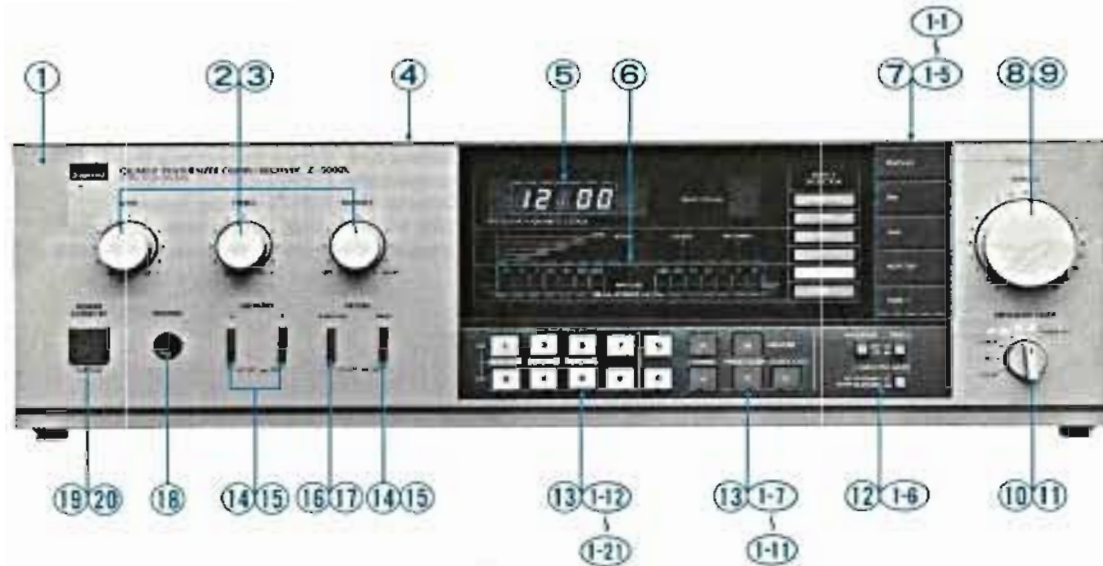
1. When repairing the printed resistor, cut off center portion of the resistor to make complete open circuit. Then solder 1/3 W type carbon resistor to conductor side of the PCB.
2. When repairing the printed silver pattern, solder lead wire to conductor side of the PCB.
3. When ordering the 1/3 W type carbon resistor, read the resistance value from the schematic diagram, and refer to "Common Parts List for Resistors and Capacitors"

• Abbreviations

| | |
|--|---|
| C.R. : Carbon Resistor | E.B. : Bi-Polar Electrolytic Capacitor |
| S.R. : Solid Resistor | E.B.L. : Low Leak Bi-Polar Electrolytic Capacitor |
| Ce.R. : Cement Resistor | Ta.C. : Tantalum Capacitor |
| M.R. : Metal Film Resistor | F.C. : Film Capacitor |
| F.R. : Fusing Resistor | M.P. : Metallized Paper Capacitor |
| N.I.R. : Non-Inflammable Resistor | P.C. : Polystyrene Capacitor |
| A.R. : Array Resistor | G.C. : Gimmic Capacitor |
| C.C. : Ceramic Capacitor | A.C. : Array Capacitor |
| C.T. : Ceramic Capacitor, Temperature Compensation | V.R. : Variable Resistor |
| E.C. : Electrolytic Capacitor | S.V.R. : Semi Variable Resistor |
| E.L. : Low Leak Electrolytic Capacitor | SW. : Switch |

8. OTHER PARTS

8-1. Front View



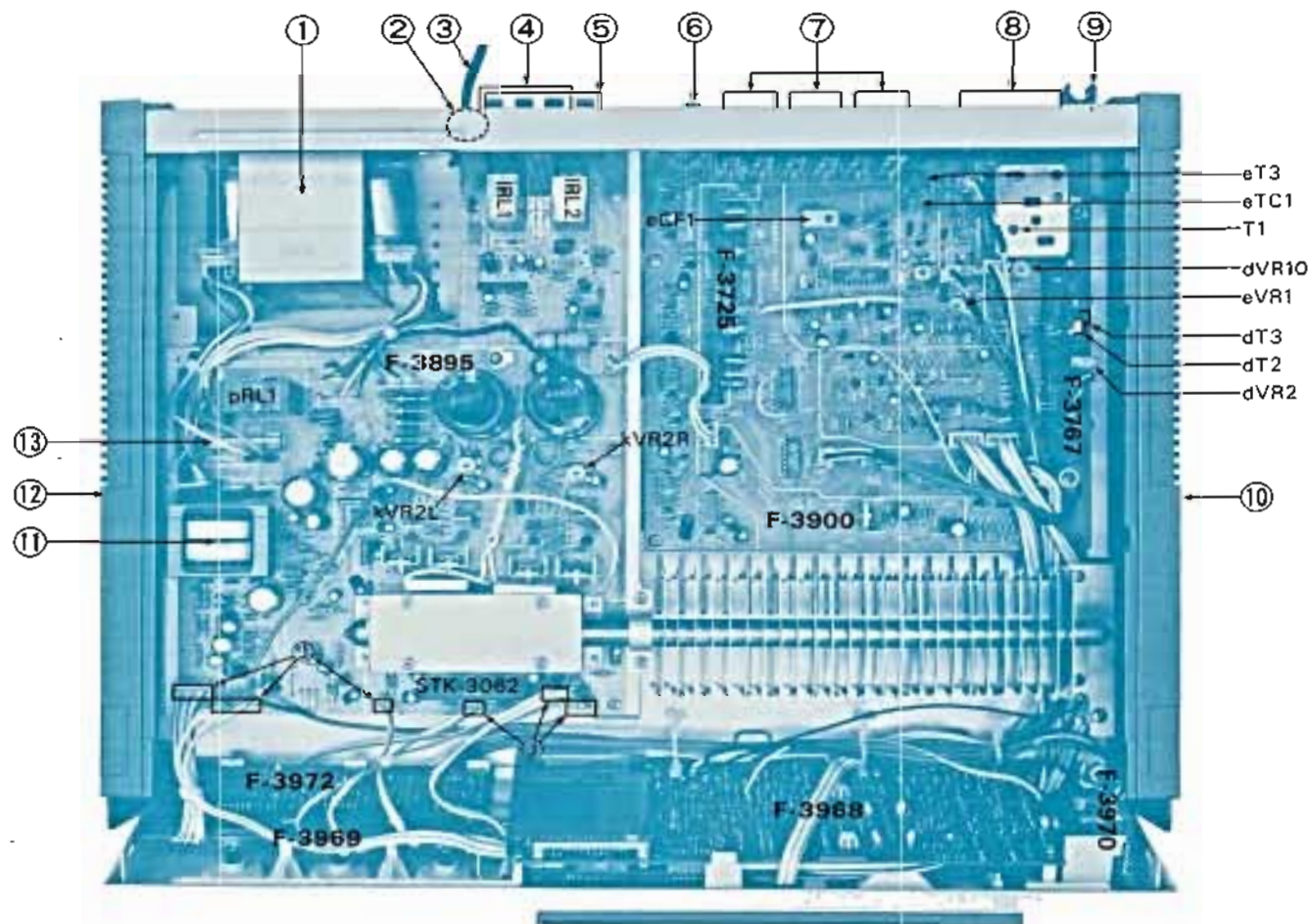
Parts List < Front View >

| Parts No. | Stock No. | Description |
|-----------|-----------|---|
| 1 | 47248500 | Front Panel Ass'y (Z-5000X) |
| | 47248600 | Front Panel Ass'y (Z-3000X) |
| 1-1 | 47185400 | Push Knob, PHONO |
| 1-2 | 47185200 | Push Knob, FM |
| 1-3 | 47185300 | Push Knob, AM |
| 1-4 | 47185500 | Push Knob, AUX/DA |
| 1-5 | 47185600 | Push Knob, TAPE-1 |
| 1-6 | 47265500 | Push Knob, LOUDNESS, TAPE-2, TUNING/FM MODE |
| 1-7 | 47265400 | Push Knob (A), TUNING |
| 1-8 | 47265300 | Push Knob (V), TUNING |
| 1-9 | 47265200 | Push Knob (M), MEMORY |
| 1-10 | 47265100 | Push Knob (S), PRESET SCAN |
| 1-11 | 47265000 | Push Knob (C), CLOCK CALL |
| 1-12 | 07928600 | Push Knob (1), PGM |
| 1-13 | 07928700 | Push Knob (2), PGM |
| 1-14 | 07928800 | Push Knob (3), PGM |
| 1-15 | 07928900 | Push Knob (4), PGM |
| 1-16 | 07929000 | Push Knob (5), PGM |
| 1-17 | 07929100 | Push Knob (6), PGM |
| 1-18 | 07929200 | Push Knob (7), PGM |
| 1-19 | 07929300 | Push Knob (8), PGM |
| 1-20 | 07929400 | Push Knob (9), PGM |
| 1-21 | 07929500 | Push Knob (0), PGM |
| 2 | 47251600 | Knob, BASS, TREBLE, BALANCE |
| 3 | 46638400 | 50kΩ x 2 & 250kΩ VR., BASS, TREBLE, BALANCE |
| 4 | 47250700 | Bonnet |
| 5 | 46638400 | FG78J1GR FL. Display Tube |
| 6 | 46398500 | GL107R12 PEAK POWER LEVEL Indicator x 2 (Z-5000X) |
| | 46398500 | GL107R12 PEAK POWER LEVEL Indicator (Z-3000X) |
| 7 | 11907000 | Push SW., FM, PHONO, AUX/DA, TAPE-1 |
| 8 | 47251700 | Knob, VOLUME |
| 9 | 46638300 | 150kΩ x 2 VR., VOLUME |
| 10 | 47251500 | Knob, PROGRAM TIMER |
| 11 | 46396300 | Rotary SW., PROGRAM TIMER |
| 12 | 46563500 | Push SW., LOUDNESS, TAPE-2, AUTO/MANUAL |
| 13 | 46396700 | Push SW., A, V, M, S, C, 0~9 |
| 14 | 47252100 | Push Knob, HIGH FILTER, SPEAKERS A/B |
| 15 | 46563500 | Push SW., HIGH FILTER, SPEAKERS A/B |
| 16 | 47252100 | Push Knob, SUBSONIC FILTER (Z-5000X Only) |
| 17 | 46563500 | Push SW., SUBSONIC FILTER (Z-5000X Only) |
| 18 | 46638200 | Jack, PHONES |
| 19 | 47252200 | Push Knob, POWER STAND-BY |
| 20 | 11907000 | Push SW., POWER STAND-BY |

Parts List < Top View >

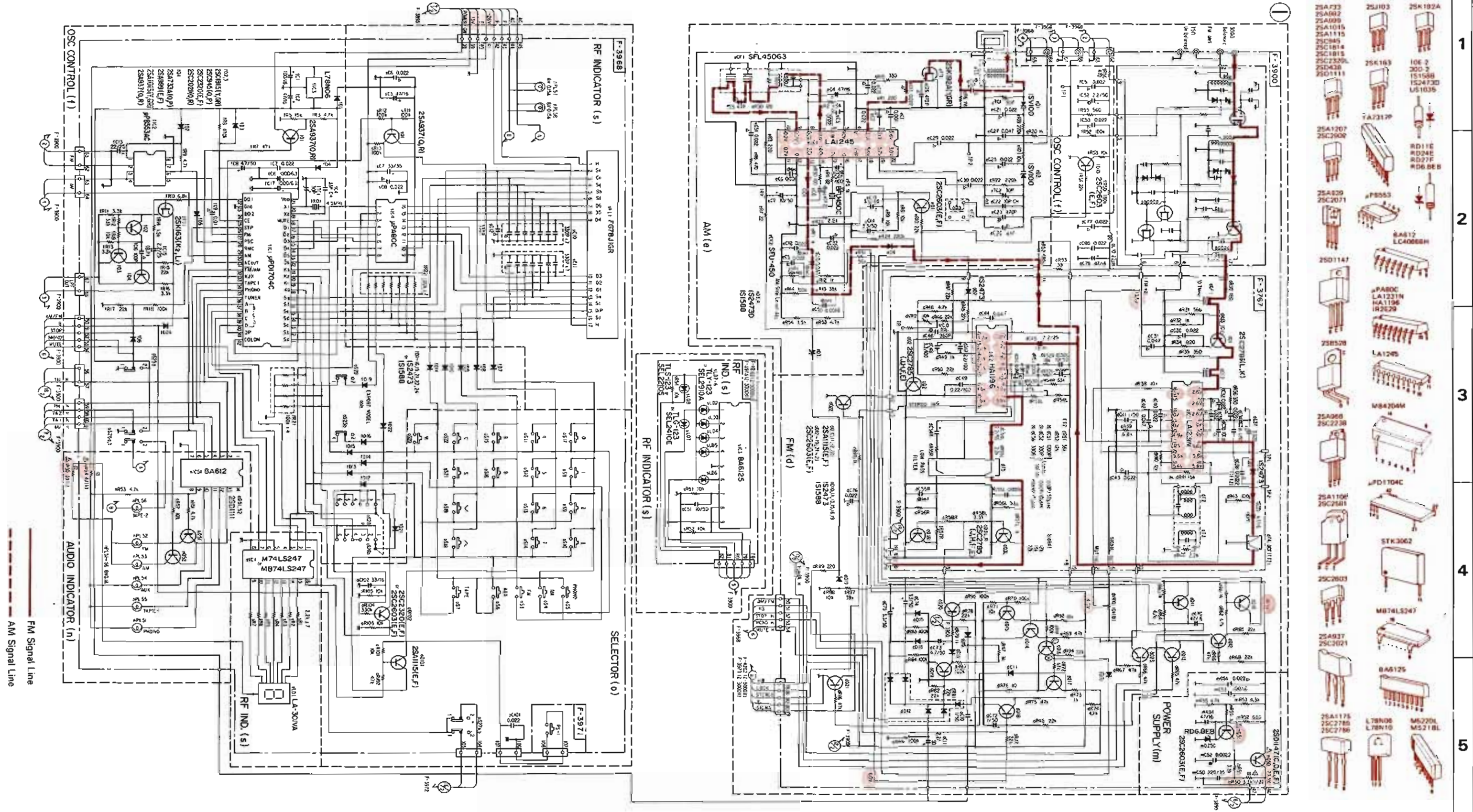
| Parts No. | Stock No. | Description |
|-----------|-----------|---|
| 1 | 15013201 | Power Transformer (Z-5000X) |
| | 15013301 | Power Transformer (Z-3000X) |
| 2 | 39106000 | Strain Relief |
| 3 | 38004700 | Power Supply Cord |
| 4 | 46360200 | AC Outlet |
| 5 | 46364100 | BP Push Terminal, SPEAKERS |
| 6 | 22301510 | GND Terminal |
| 7 | 46363800 | 4P Input Terminal, TAPE-1, TAPE-2, AUX, PHONO |
| 8 | 46364200 | Antenna Terminal |
| 9 | 07193200 | Antenna Holder |
| 10 | 47036400 | Side Panel (R) |
| 11 | 15008511 | Power Transformer |
| 12 | 47036300 | Side Panel (L) |
| 13 | 07188800 | Fuse 3A (220V) <Z-5000X> |
| | 07189200 | Fuse 6A (120V) <Z-5000X> |
| | 07188700 | Fuse 2.5A (220V) <Z-3000X> |
| | 07189100 | Fuse 5A (120V) <Z-3000X> |

8-2. Top View



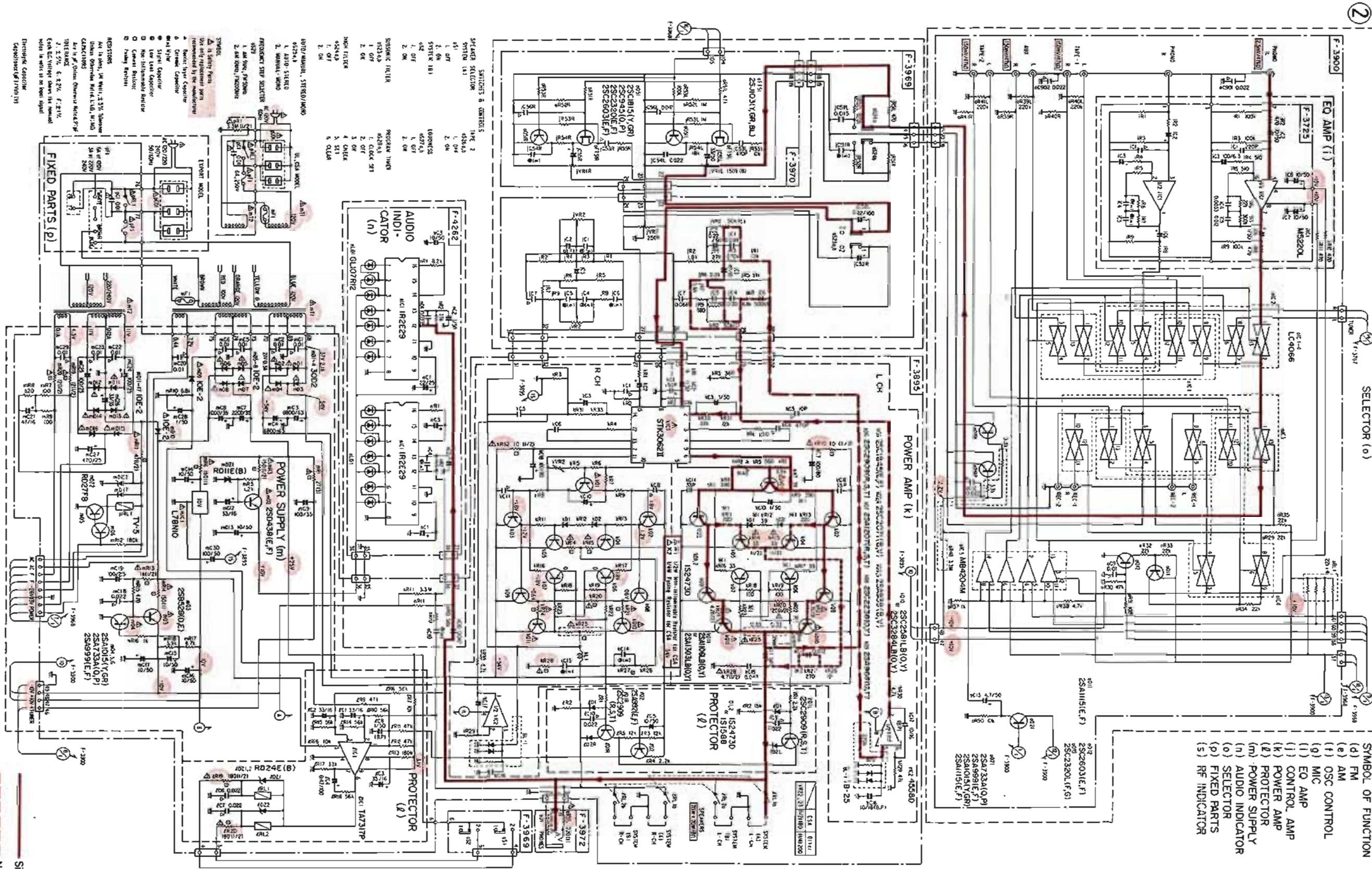
9. SCHEMATIC DIAGRAM 9-1. Tuner Section

*Design and specifications subject to change without notice for improvement.
 *La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
 *Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



9-2. Audio Section (Z-5000X)

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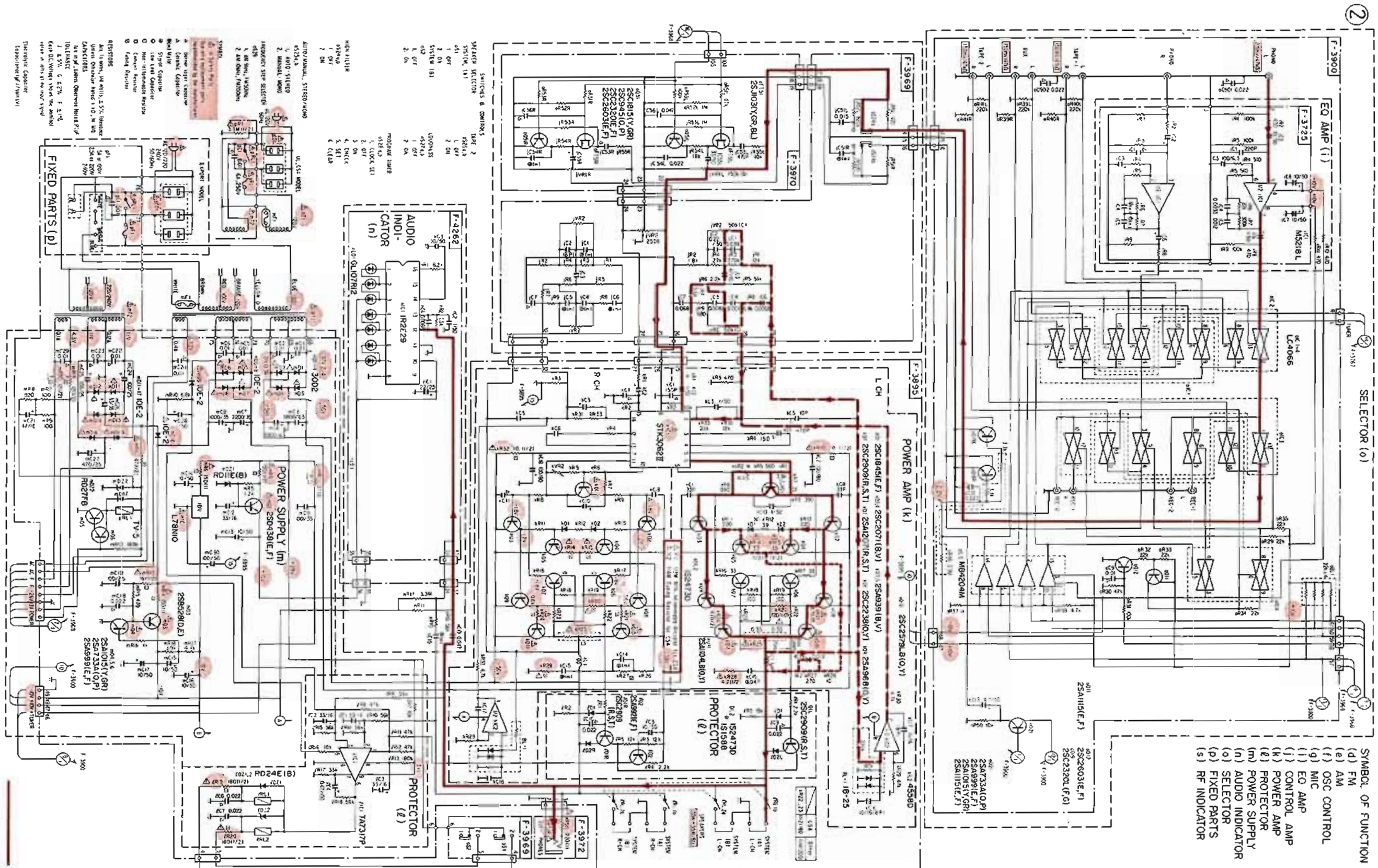
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|---------|---------|---------|
| 25A733 | 25J103 | 25K192A |
| 25A992 | | 10E 7 |
| 25A998 | 25K163 | 30J 3 |
| 25A1016 | TA1317P | 1524/30 |
| 25C1814 | | 1524/30 |
| 25C1814 | | 1524/30 |
| 25C1815 | | 1524/30 |
| 25C2306 | | 1524/30 |
| 25D438 | | 1524/30 |
| 25D1111 | | 1524/30 |
| | | 1011E |
| | | 1024E |
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| | | 1028E |
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| | | 1100E |

- SYMBOL OF FUNCTION
- (d) FM
 - (e) AM
 - (f) OSC CONTROL
 - (g) MIC
 - (h) EQ AMP
 - (i) CONTROL AMP
 - (j) POWER AMP
 - (k) PROTECTOR
 - (l) POWER SUPPLY
 - (m) AUDIO INDICATOR
 - (n) SELECTOR
 - (o) FIXED PARTS
 - (p) RF INDICATOR

Signal Line
 N.F.B. Line
 F.F. Line

9-3. Audio Section (Z-3000X)

*Design and specifications subject to change without notice for improvement.
 *La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
 *Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



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| | | |
|----------|----------|-----------|
| 25A733 | 25A903 | 25K192A |
| 25A992 | 25A999 | 100 2 |
| 25A1015 | 25A1116 | 151988 |
| 25C0945 | 25C1814 | 153473D |
| 25C7370L | 25C7370L | 151035 |
| 25D438 | 25D111 | |
| 25A1207 | 25C2908 | TA7317P |
| 25A908 | 25C2071 | RD11E |
| 25C1147 | | RD24E |
| | | RD6.8E8 |
| | | RD553 |
| | | RD17 |
| | | LC4068H |
| | | LA1245 |
| | | MB4204M |
| | | PD1794C |
| | | STK3082 |
| | | MB74LS247 |
| | | BA6125 |
| | | ME220L |
| | | MS21BL |
| | | L78N06 |
| | | L78N10 |
| | | 25C2186 |
| | | 25C2186 |

- SYMBOL OF FUNCTION
- (d) FM
 - (e) AM
 - (f) OSC CONTROL
 - (g) MIC
 - (h) EQ AMP
 - (i) CONTROL AMP
 - (j) POWER AMP
 - (k) PROTECTOR
 - (l) POWER SUPPLY
 - (m) AUDIO INDICATOR
 - (n) SELECTOR
 - (o) FIXED PARTS
 - (s) RF INDICATOR

Signal Line
 N.F.B. Line
 F.F. Line