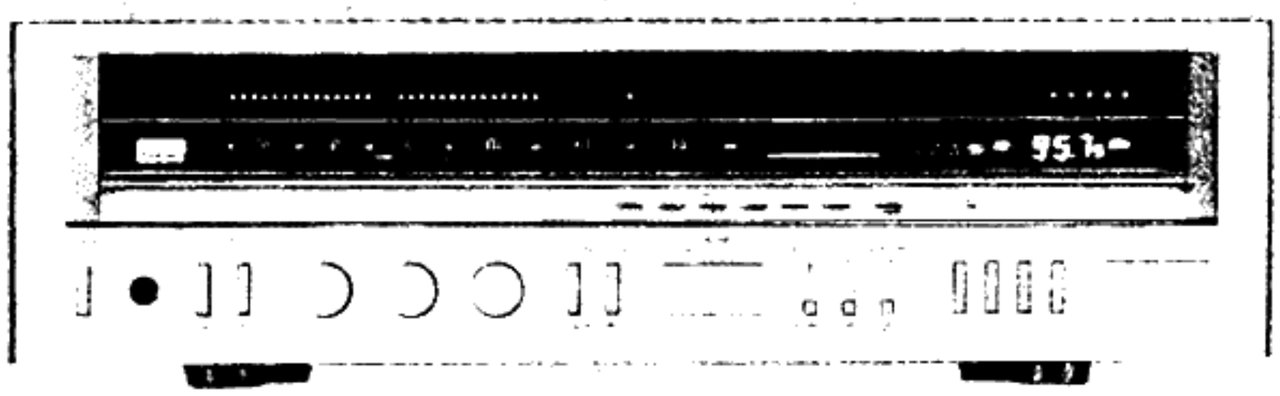
# SERVICE MANUAL

## DIGITAL SYNTHESIZER DC STEREO RECEIVER

# SANSUI 5900Z
# 4900Z
# 3900Z



Sansui

SANSUI ELECTRIC CO., LTD.

## SPECIFICATIONS

<5900Z>

**Audio section**

**Power output**
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.03 % total harmonic distortion.
75 watts per channel into 8 ohms

| | |
|---|---|
| **Load impedance** | 8 ohms |
| **Total harmonic distortion** | less than 0.03 % at or below rated min. RMS power output |
| **Intermodulation distortion** (60 Hz : 7 kHz = 4:1 SMPTE method) | less than 0.03 % at rated power output |
| **Frequency response** (at 1 watt) | |
| Overall (from AUX) | 5 to 100,000 Hz, +0 dB, −3.0 dB |
| **RIAA curve deviation** (PHONO, 20 Hz to 20 kHz) | +0.3 dB, −0.3 dB |
| **Damping factor** (20 Hz to 20 kHz, both channels driven) | 40 into 8 ohms |
| **Input sensitivity and impedance** (at 1 kHz) | |
| PHONO | 2.5 mV/47 kilohms |
| (Max. input capability: 180 mV at 1 kHz, less than 0.1 % total harmonic distortion) | |
| TAPE-1, 2 PLAY, AUX | 150 mV/47 kilohms |
| **Output level** (at 1 kHz) | |
| TAPE-1, 2 REC | 150 mV into 47 kilohms |
| **Signal to noise ratio** (short-circuit, A-network) | |
| PHONO | 80 dB |
| AUX | 95 dB |
| **Channel separation** (at 1 kHz) | |
| PHONO | 50 dB |
| AUX | 60 dB |
| **Controls** | |
| BASS | ± 10 dB at 50 Hz |
| TREBLE | ± 10 dB at 10 kHz |
| HIGH FILTER | −3 dB at 5 kHz (6 dB/oct) |
| LOUDNESS (VOLUME −30 dB position) | +8 dB at 50 Hz<br>+6 dB at 10 kHz |
| AUDIO MUTING | −20 dB |

**FM section**

| | |
|---|---|
| **Tuning range** | 88 to 108 MHz |
| **Usable sensitivity** | |
| Mono IHF | 10.8 dBf (1.9 μV) |
| Stereo IHF | 21 dBf |
| **50 dB quieting sensitivity** | |
| Mono | 15 dBf |
| Stereo | 37 dBf |
| **Signal to noise ratio** (at 65 dBf) | |
| Mono | 76 dB |
| Stereo | 70 dB |
| **Distortion** (at 65 dBf) | |
| Mono | less than 0.3 % at 100 Hz<br>less than 0.15 % at 1,000 Hz<br>less than 0.4 % at 6,000 Hz |
| Stereo | less than 0.3 % at 100 Hz<br>less than 0.18 % at 1,000 Hz<br>less than 0.4 % at 6,000 Hz |
| **Alternate channel selectivity** (at 400 kHz) | 60 dB |
| **Capture ratio** | 1.0 dB |
| **Image response ratio** | 50 dB |
| **Spurious response ratio** | 70 dB |
| **IF response ratio** | 90 dB |
| **Stereo seperation** | 30 dB at 100 Hz<br>40 dB at 1,000 Hz<br>28 dB at 10,000 Hz |
| **Frequency response** | 30 to 15,000 Hz<br>+0.5 dB, −1.0 dB |
| **Hum and noise** (at 65 dBf) | 70 dB |
| **Antenna input impedance** | 300 ohms balanced<br>75 ohms unbalanced |

**AM section**

| | |
|---|---|
| **Tuning range** | 530 to 1,600 kHz |
| **Usable sensitivity** (bar antenna) | 53 dB/m |
| **Selectivity** (± 10 kHz) | 30 dB |
| **Signal to noise ratio** | 43 dB |
| **Distortion** (at 30 % Modulation, 80 dB/m) | less than 0.5 % |
| **Image response ratio** | 40 dB at 1,000 kHz |
| **IF response ratio** | 35 dB at 1,000 kHz |

**Others**

| | |
|---|---|
| **Power requirements** | |
| Power voltage | 120, 220, 240 V (50/60 Hz) |
| For U.S.A. & Canada | 120 V (60 Hz) |
| Power consumption | |
| Rated consumption | 280 watts 350 VA |
| Maximum consumption | 350 watts |
| **Dimensions** | 485 mm (19-1/8") W<br>139 mm (5-7/16") H<br>313 mm (12-3/8") D |
| **Weight** | 9.5 kg (20.9 lbs) net<br>10.7 kg (23.6 lbs) packed |

to be continued ▶

## SPECIFICATIONS

<4900Z>

### Audio section

**Power output**

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.03 % total harmonic distortion.

55 watts per channel into 8 ohms

**Load impedance** . . . . . 8 ohms

**Total harmonic distortion** . . . less than 0.03 % at or below rated min. RMS power output

**Intermodulation distortion** (60 Hz : 7 kHz = 4:1 SMPTE method) . . less than 0.03 % at rated power output

**Frequency response** (at 1 watt)

Overall (from AUX) . . . . 5 to 100,000 Hz, +0 dB, −3.0 dB

**RIAA curve deviation** (PHONO, 20 Hz to 20 kHz) . . . . . +0.3 dB, −0.3 dB

**Damping factor** (20 Hz to 20 kHz, both channels driven) . . . . . 40 into 8 ohms

**Input sensitivity and impedance** (at 1 kHz)

PHONO . . . . . 2.5 mV/47 kilohms (Max. input capability: 180 mV at 1 kHz, less than 0.1 % total harmonic distortion)

TAPE, AUX . . . . . 150 mV/47 kilohms

**Output level** (at 1 kHz)

TAPE REC . . . . . 150 mV into 47 kilohms

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

PHONO . . . . . 80 dB

AUX . . . . . 95 dB

**Channel separation** (at 1 kHz)

PHONO . . . . . 50 dB

AUX . . . . . 60 dB

**Controls**

BASS . . . . . ±10 dB at 50 Hz

TREBLE . . . . . ±10 dB at 10 kHz

HIGH FILTER . . . . . −3 dB at 5 kHz (6 dB/oct)

LOUDNESS (VOLUME −30 dB position) . . . . . +8 dB at 50 Hz, +6 dB at 10 kHz

### FM section

**Tuning range** . . . . . 88 to 108 MHz

**Usable sensitivity**

Mono IHF . . . . . 10.8 dBf (1.9 μV)

Stereo IHF . . . . . 21 dBf

**50 dB quieting sensitivity**

Mono . . . . . 15 dBf

Stereo . . . . . 37 dBf

**Signal to noise ratio** (at 65 dBf)

Mono . . . . . 76 dB

Stereo . . . . . 70 dB

**Distortion** (at 65 dBf)

Mono . . . . . less than 0.3 % at 100 Hz, less than 0.15 % at 1,000 Hz, less than 0.4 % at 6,000 Hz

Stereo . . . . . less than 0.3 % at 100 Hz, less than 0.18 % at 1,000 Hz, less than 0.4 % at 6,000 Hz

**Alternate channel selectivity** (at 400 kHz) . . . . . 60 dB

**Capture ratio** . . . . . 1.0 dB

**Image response ratio** . . . . . 50 dB

**Spurious response ratio** . . . . 70 dB

**IF response ratio** . . . . . 90 dB

**Stereo separation** . . . . . 30 dB at 100 Hz, 40 dB at 1,000 Hz, 28 dB at 10,000 Hz

**Frequency response** . . . . . 30 to 15,000 Hz, +0.5 dB, −1.0 dB

**Hum and noise** (at 65 dBf) . . 70 dB

**Antenna input impedance** . . . 300 ohms balanced, 75 ohms unbalanced

### AM section

**Tuning range** . . . . . 530 to 1,600 kHz

**Usable sensitivity** (bar antenna) 53 dB/m

**Selectivity** (± 10 kHz) . . . . . 30 dB

**Signal to noise ratio** . . . . . 43 dB

**Distortion** (at 30 % Modulation, 80 dB/m) . . . . . less than 0.5 %

**Image response ratio** . . . . . 40 dB at 1,000 kHz

**IF response ratio** . . . . . 35 dB at 1,000 kHz

### Others

**Power requirements**

Power voltage . . . . . 120, 220, 240 V (50/60 Hz)

For U.S.A. & Canada . . 120 V (60 Hz)

Power consumption

Rated consumption . . . 200 watts 240 VA

Maximum consumption . 250 watts

**Dimensions** . . . . . 485 mm (19-1/8") W, 138 mm (5-7/16") H, 318 mm (12-9/16") D

**Weight** . . . . . 8.5 kg (18.7 lbs) net, 9.7 kg (21.4 lbs) packed

<3900Z>

### Audio section

**Power output**

Min. RMS, both channels driven, from 30 to 20,000 Hz, with no more than 0.03 % total harmonic distortion.

40 watts per channel into 8 ohms

**Load impedance** . . . . . 8 ohms

**Total harmonic distortion** . . . less than 0.03 % at or below rated min. RMS power output

**Intermodulation distortion** (60 Hz : 7 kHz = 4:1 SMPTE method) . . less than 0.03 % at rated power output

**Frequency response** (at 1 watt)

Overall (from AUX) . . . . 5 to 100,000 Hz, +0 dB, −3.0 dB

**RIAA curve deviation** (PHONO, 20 Hz to 20 kHz) . . . . . +0.3 dB, −0.3 dB

**Damping factor** (30 Hz to 20 kHz, both channels driven) . . . . . 40 into 8 ohms

**Input sensitivity and impedance** (at 1 kHz)

PHONO . . . . . 2.5 mV/47 kilohms (Max. input capability: 180 mV at 1 kHz, less than 0.1 % total harmonic distortion)

TAPE, AUX . . . . . 150 mV/47 kilohms

**Output level** (at 1 kHz)

TAPE REC . . . . . 150 mV into 47 kilohms

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

PHONO . . . . . 73 dB

AUX . . . . . 92 dB

**Channel separation** (at 1 kHz)

PHONO . . . . . 50 dB

AUX . . . . . 60 dB

**Controls**

BASS . . . . . ±10 dB at 50 Hz

TREBLE . . . . . ±10 dB at 10 kHz

HIGH FILTER . . . . . −3 dB at 5 kHz (6 dB/oct)

LOUDNESS (VOLUME −30 dB position) . . . . . +8 dB at 50 Hz, +6 dB at 10 kHz

### FM section

**Tuning range** . . . . . 88 to 108 MHz

**Usable sensitivity**

Mono IHF . . . . . 10.8 dBf (1.9 μV)

Stereo IHF . . . . . 21 dBf

**50 dB quieting sensitivity**

Mono . . . . . 15 dBf

Stereo . . . . . 37 dBf

**Signal to noise ratio** (at 65 dBf)

Mono . . . . . 76 dB

Stereo . . . . . 70 dB

**Distortion** (at 65 dBf)

Mono . . . . . less than 0.3 % at 100 Hz, less than 0.15 % at 1,000 Hz, less than 0.4 % at 6,000 Hz

Stereo . . . . . less than 0.3 % at 100 Hz, less than 0.18 % at 1,000 Hz, less than 0.4 % at 6,000 Hz

**Alternate channel selectivity** (at 400 kHz) . . . . . 60 dB

**Capture ratio** . . . . . 1.0 dB

**Image response ratio** . . . . . 50 dB

**Spurious response ratio** . . . . 70 dB

**IF response ratio** . . . . . 90 dB

**Stereo separation** . . . . . 30 dB at 100 Hz, 40 dB at 1,000 Hz, 28 dB at 10,000 Hz

**Frequency response** . . . . . 30 to 15,000 Hz, +0.5 dB, −1.0 dB

**Hum and noise** (at 65 dBf) . . 70 dB

**Antenna input impedance** . . . 300 ohms balanced, 75 ohms unbalanced

### AM section

**Tuning range** . . . . . 530 to 1,600 kHz

**Usable sensitivity** (bar antenna) 53 dB/m

**Selectivity** (± 10 kHz) . . . . . 30 dB

**Signal to noise ratio** . . . . . 43 dB

**Distortion** (at 30 % Modulation, 80 dB/m) . . . . . less than 0.5 %

**Image response ratio** . . . . . 40 dB at 1000 kHz

**IF response ratio** . . . . . 35 dB at 1000 kHz

### Others

**Power requirements**

Power voltage . . . . . 120, 220, 240 V (50/60 Hz)

For U.S.A. & Canada . . 120 V (60 Hz)

Power consumption

Rated consumption . . . 150 watts 190 VA

Maximum consumption . 200 watts

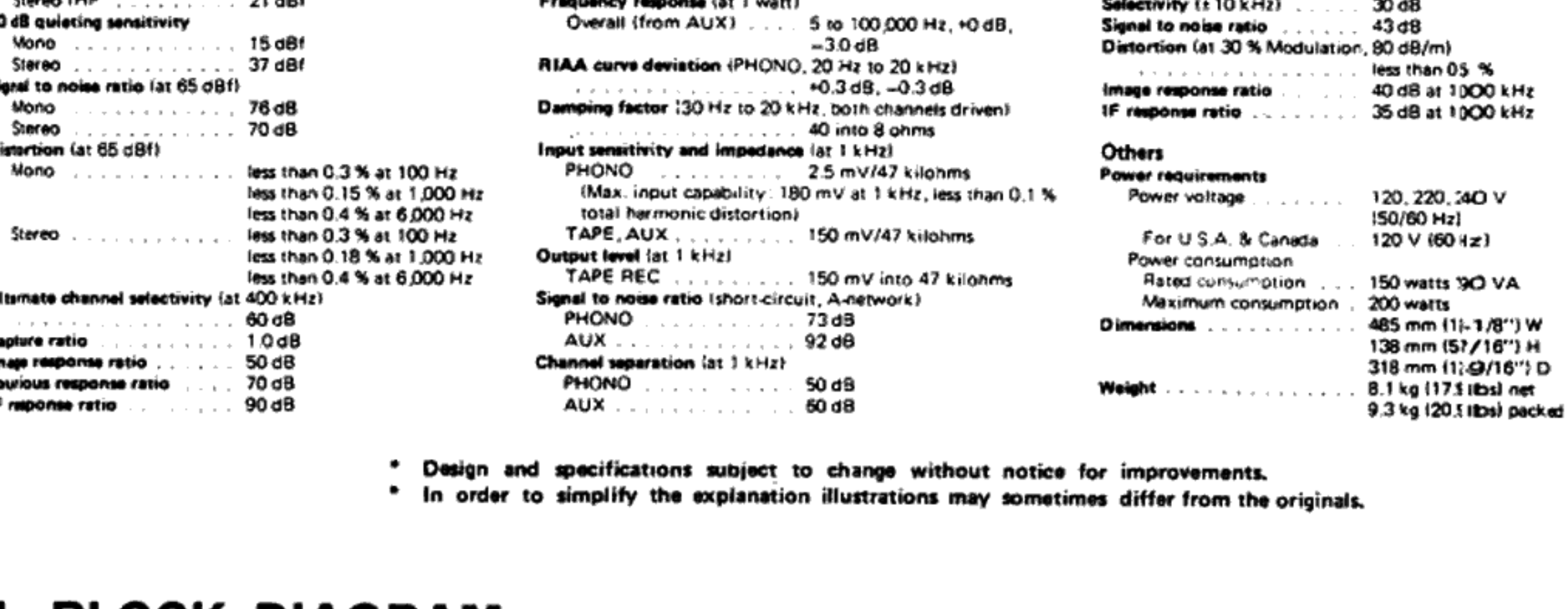
**Dimensions** . . . . . 485 mm (19-1/8") W, 138 mm (5-7/16") H, 318 mm (12-9/16") D

**Weight** . . . . . 8.1 kg (17.8 lbs) net, 9.3 kg (20.5 lbs) packed

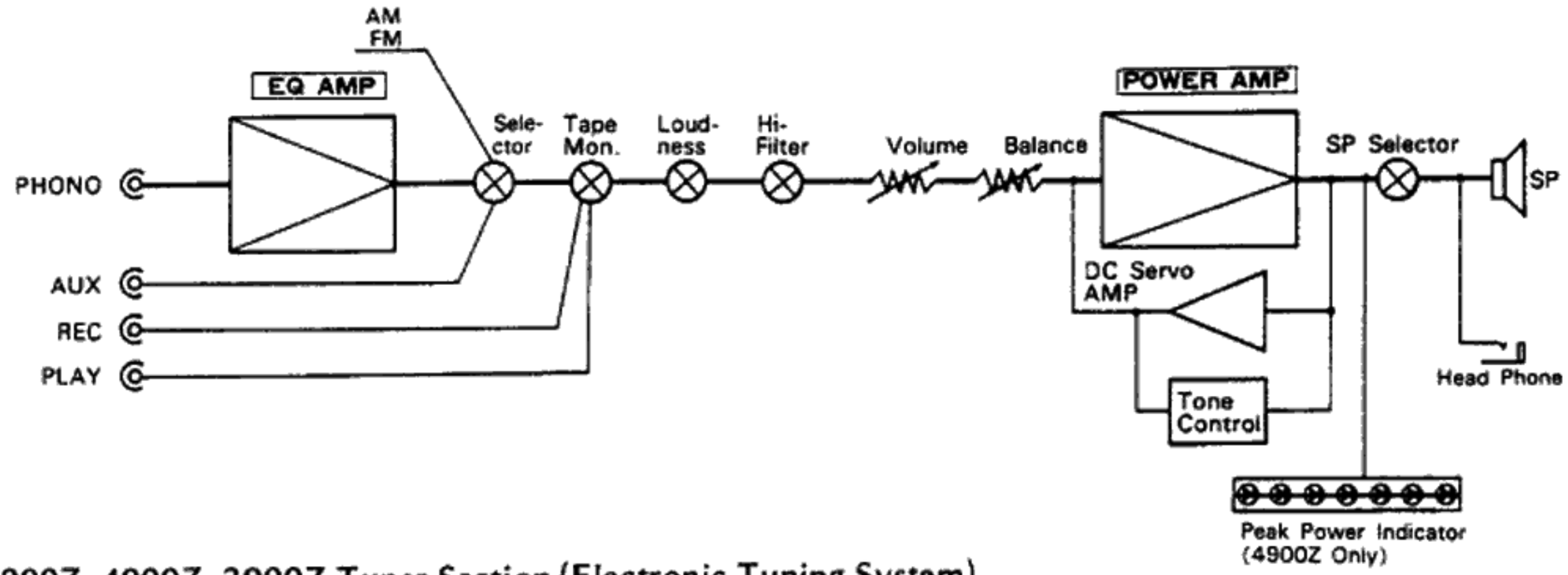
- **Design and specifications subject to change without notice for improvements.**
- **In order to simplify the explanation illustrations may sometimes differ from the originals.**

# 1. BLOCK DIAGRAM

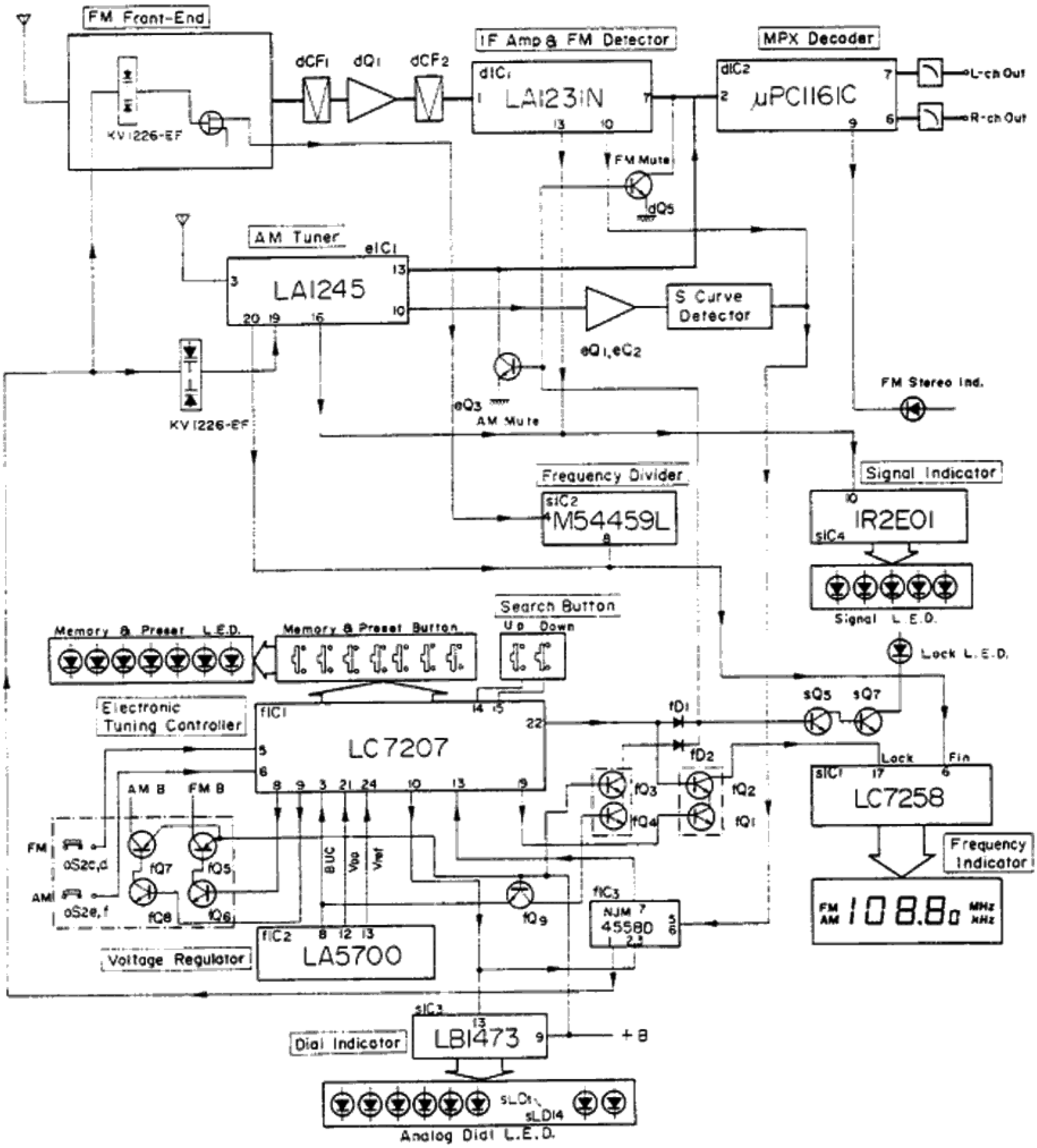
## 1-1. 5900Z Audio Section



## 1-2. 4900Z, 3900Z Audio Section




## 1-3. 5900Z, 4900Z, 3900Z Tuner Section (Electronic Tuning System)



# 2. OPERATION

## 2-1. General

### 1) Band Select Operation

By depressing the AM ($oS_2e$, f) or FM ($oS_2c$, d) mode selector switch, +B is supplied to $fIC_2$ voltage regulator and Pin No. 6 ($fIC_1$) for AM or Pin No. 5 for FM, and regulated power supply is fed to $fIC_1$ electronic tuning controller.

### 2) Search Tuning Operation

When UP ($fS_9$) or DOWN ($fS_8$) search button is depressed, Pin No. 14 ($fIC_1$) or Pin No. 15 ($fIC_1$) is grounded. Then automatic search circuit starts for Upper or Lower frequency, and tuning voltage (voltage of variable capacitance diode) from Pin No. 10 ($fIC_1$) increases for UP or decreases for DOWN.

When a radio station signal came into the receiver and S-curve voltage from Pin No. 10 ($dIC_1$) on FM or AM S-curve detector on AM is fed to Pin No. 13 ($fIC_1$) via $fIC_3$), the radio station is tuned as procedure of Fig. 2-1.

In case of UP or DOWN button is kept depressed, the automatic search circuit continues its operation even when any radio station signal came into the receiver.

### 3) Preset Tuning Operation

One of the preset channel buttons, i.e. channel (1) is depressed. Pin No. 41 ($fIC_1$) and $sLD_{23}$ are grounded and kept shorting to ground by $fIC_1$.

Digital signal of the radio station memorized on channel (1) comes out from 10 pins from Pin No. 25 to Pin No. 34, and converted to analog voltage and fed to Pin No. 11 ($fIC_1$). $fIC_1$ starts Fetch action and tunes the radio station memorized on channel (1) as procedure of Fig. 2-2.

### 4) Preset Memory Operation

During the unit is receiving a radio station either AM or FM, the digital signal converted from the tuning voltage appears on 10 pins from Pin No. 25 to Pin No. 34 ($fIC_1$). On this position, one of the preset channel buttons is depressed when the memory button is kept depressed, the digital signal is memorized with tuning band mode on the depressed preset channel. (Previous preset station is erased when this preset memory is operated.)

## 2-2. Priority of Functions

### 1) Tuning Function

1st . . . . . UP search tuning
2nd . . . . . DOWN search tuning
3rd . . . . . Preset tuning

### 2) Band Selector

1st . . . . . FM
2nd . . . . . AM

### 3) Preset Channel

First depressed channel has priority.

## 2-3. Automatic Tuning Compensation Operation

### 1) Fetch Action (Refer to Fig. 2-2)

On the preset tuning, when the S-curve is out of detection by tuner drift, the tuning voltage swings up to ±8 steps (about ±56 mV) as preset voltage center. But in case of no S-curve detection caused weak station signal, the tuning voltage returns to first preset voltage after Fetch action.

### 2) AFC Operation (Refer to Fig. 2-1 and Fig. 2-2)

On the automatic search and the preset tuning, the S-curve voltage fed to Pin No. 13 ($fIC_1$) to control 10 bit up/down counter through window comparator. The output of the counter is converted to analog voltage by external ladder resistor and fed to Pin No. 11 ($fIC_1$) and controls the tuning voltage for optimum reception.

On the other hand, PWM (Pulse Width Modulation) signal from Pin No. 23 ($fIC_1$) is also converted to analog voltage and added to above analog voltage for exact tuning.

## 2-4. Other Operations

### 1) Muting Operation

Pin No. 22 ($fIC_1$) holds H level (about +8 V) during the automatic search tuning, the preset tuning and the band select operations. This H level is fed to Base termianls of $dQ_5$ and $eQ_3$ (F-3318), and both AM and FM audio signals are grounded through transistors.

### 2) Back Up Control Operation

When the mode selector is not AM or FM mode, or Power switch is OFF, privious tuner reception frequency must be memorized. For this memorization, Back Up Control Circuit applies to BUC terminal Pin No. 3 ($fIC_1$).

The back up control circuit is controlled by output voltage of Pin No. 8 ($fIC_2$) which is connected to Emitter terminal of $fQ_9$ (F-3326).

The output voltage of Pin No. 8 turns off faster than tuner B voltage which is connected to Base terminal of $fQ_9$ when the mode selector is switched from AM or FM mode to another mode, or the Power is switched off. This means Collector terminal of $fQ_9$ turns to L level before the tuner B turns off. Then the back up circuit is actuated, and the tuner reception frequency is memorized in the $fIC_1$.

**Fig.2-1 Search Tuning**

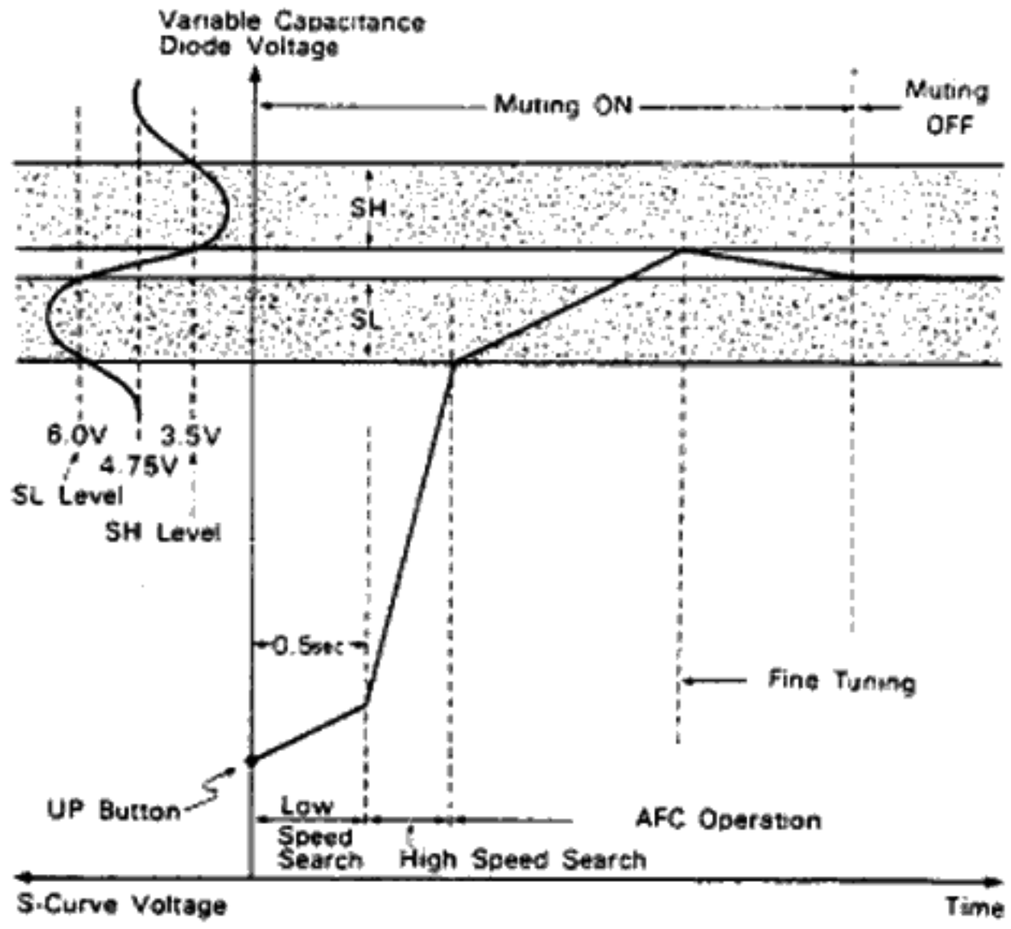
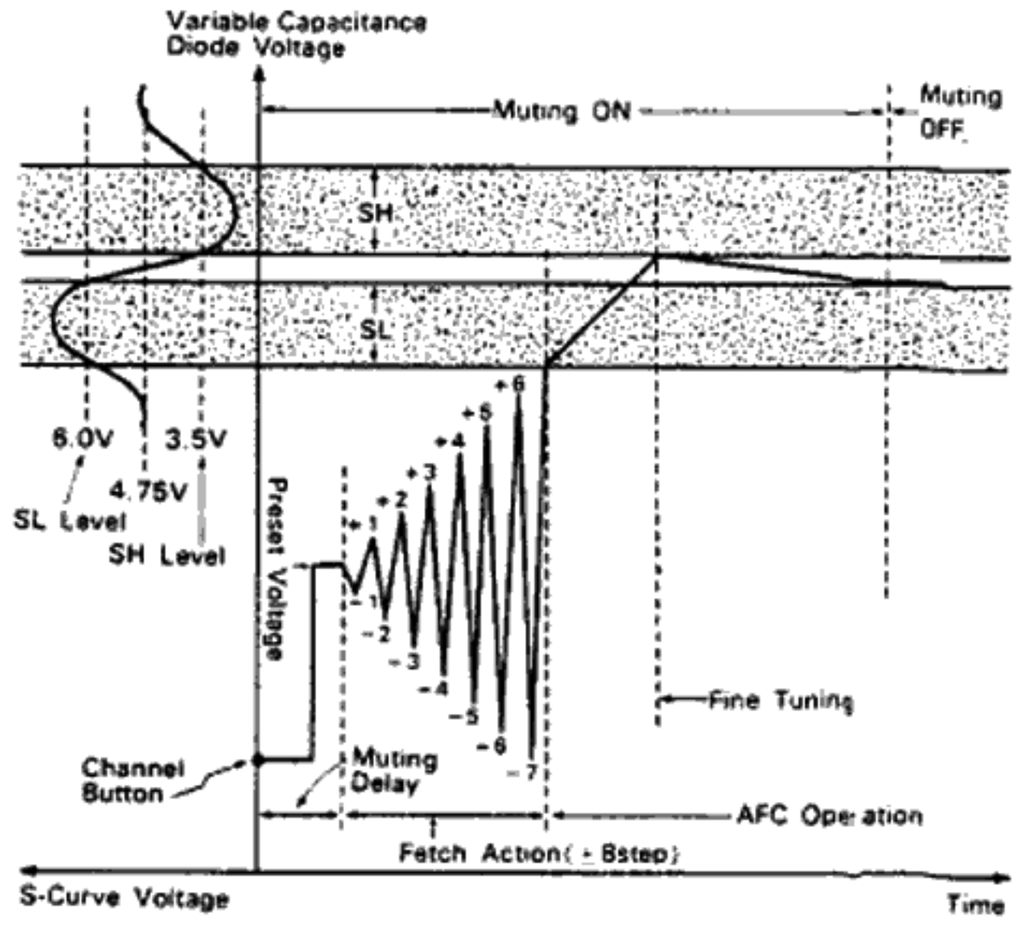
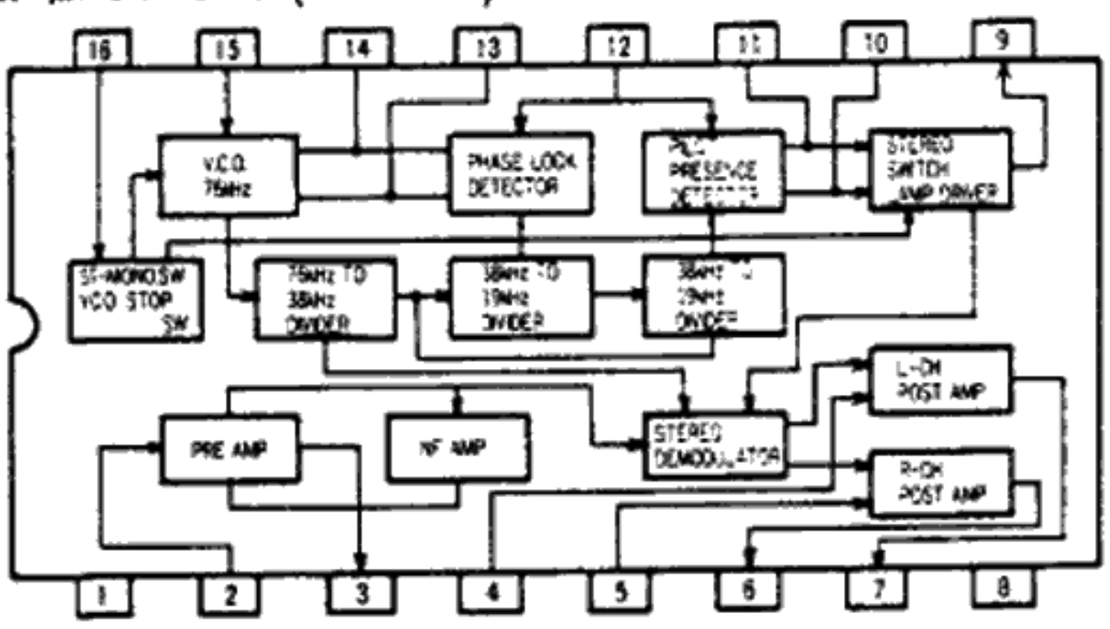



**Fig.2-2 Preset Tuning**

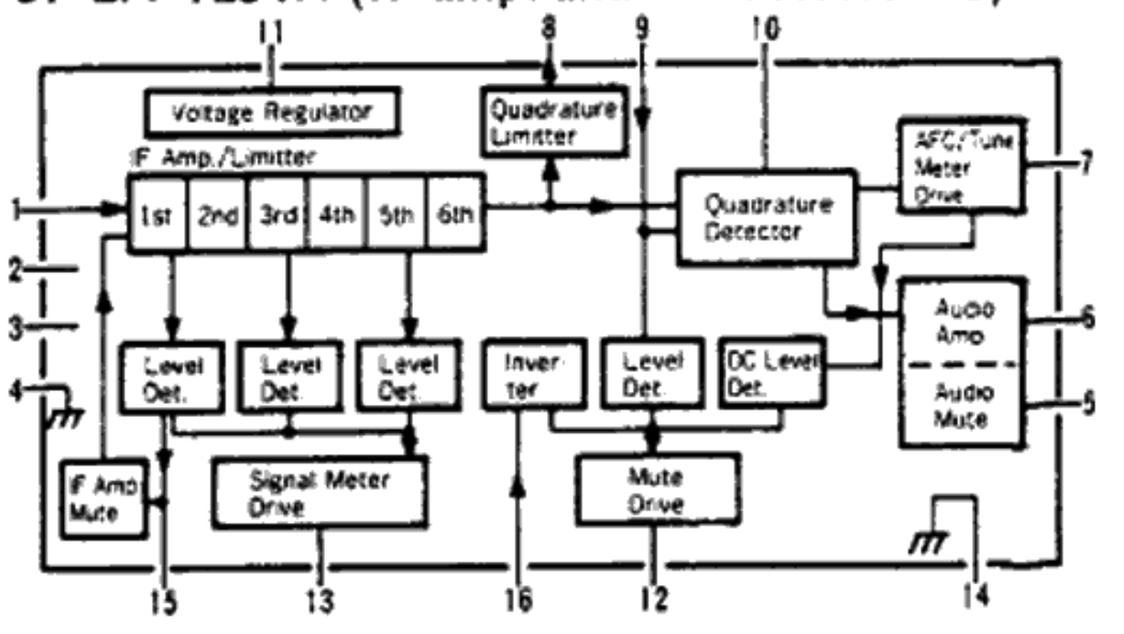


| Pin No. | Pin Name | Input/ Output | Description of Function and Operation |
|---|---|---|---|
| 14 | UP | Input | Automatic search input pin<br>At L level, UP search starts and continues its operation until S-curve voltage is fed to S-Curve input pin and AFC operation is completed. |
| 15 | DOWN | Input | Automatic search input pin<br>At L level, DOWN search starts and continues its operation until S-curve voltage is fed to S-Curve input pin and AFC operation is completed. |
| 16 | MANU | Input | Manual tuning select pin<br>At L level, manual tuning function is selected. When UP or DOWN input pin is turned to L level, manual tuning function is released. |
| 17 | MEMO | Input | Preset memory function input pin<br>During L level is held, memory operation is available. |
| 18 | M-U/D | Input | Output voltage of external comparator which composes analog/ digital converter is fed to this input pin.<br>At H level, 10 bit data counts up and output voltage of external ladder resistor increases.<br>At L level, 10 bit data counts down and output voltage of external ladder resistor decreases. |
| 19 | DX-LO | Output | Tuner sensitivity control pin<br>When automatic search tuning is in operation, pin voltage holds L level. Normally H level. |
| 20 | M-IND | Output | Indicator signal output pin of manual tuning<br>When manual tuning function is selected, output turns to L level. |
| 21 | $V_{DD}$ | | Power supply is connected to this pin.<br>+9 V typ: Normal operation<br>+5 V typ: Back up operation |
| 22 | MUTE | Output | Muting control signal output pin<br>H level is held when automatic search tuning, preset tuning or band selection is in operation. |
| 23 | F-Tune | Output | Output pin for fine tuning<br>AFC voltage is generated by connecting external low-pass filter. |
| 24 | Vref | | Reference voltage (+8 V typ) is supplied for internal digital/analog converter and reference comparator level window comparator. |
| 25 ~ 34 | B1 ~ B10 | Output | Output pins of 10 bit UP/DOWN counter (incl. buffer for ladder resistor)<br>The outputs are converted from digital to analog voltage by external ladder resistor (R = more than 10 kΩ) |
| 35 | $V_{SS}$ | | Ground pin of LSI |
| 36 ~ 42 | CH1 ~ CH7 | Input/ Output | Memory channel input and selected channel indicator output pins<br>At L level, memorized station is tuned, and when MEMO pin is L level, a tuned station is memorized. |

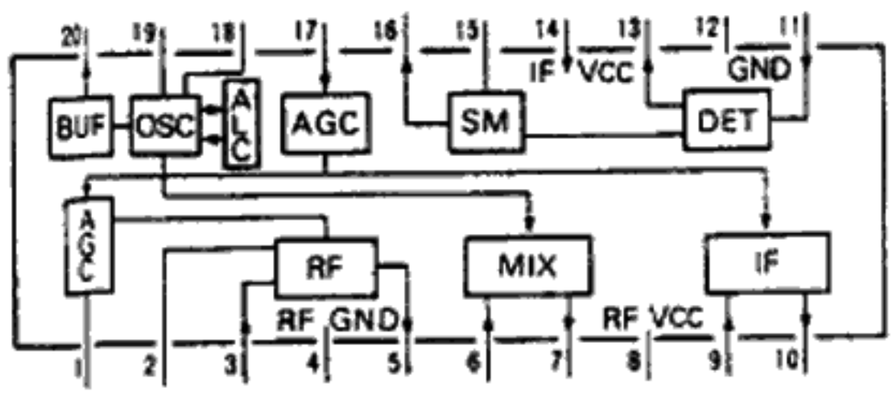
## 3-2. μPC1161C (MPX IC)



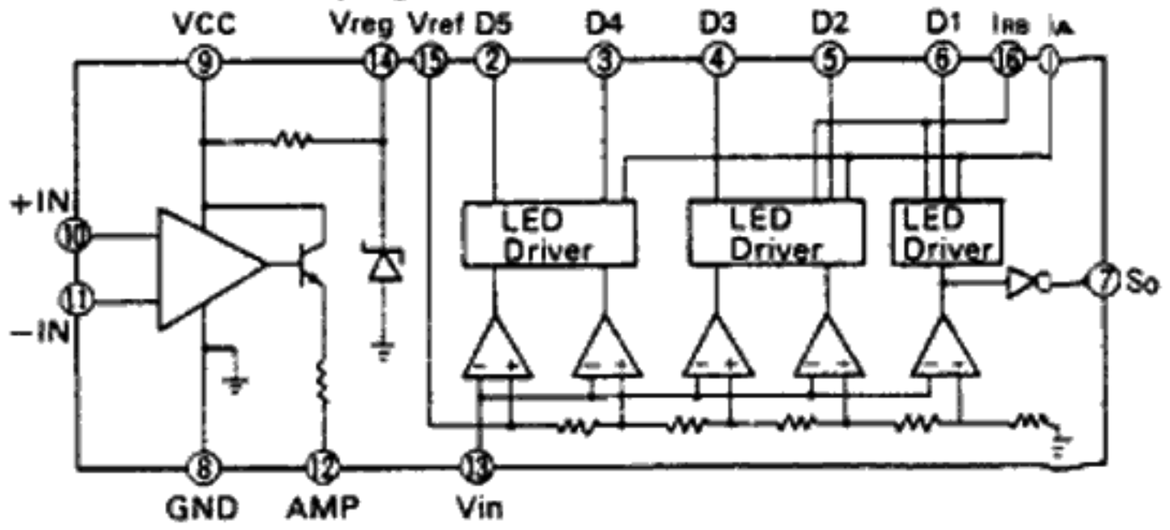

## 3-3. LA-1231N (IF amp. and FM detector IC)




## 3-4. LA-1245 (AM Tuner IC)




## 3-5. 1R2E01 (Signal Indicator IC)



# 3. INTERIOR BLOCK DIAGRAM OF IC

## 3-1. LC7207 (FM AM Electronic Tuning Controller IC)

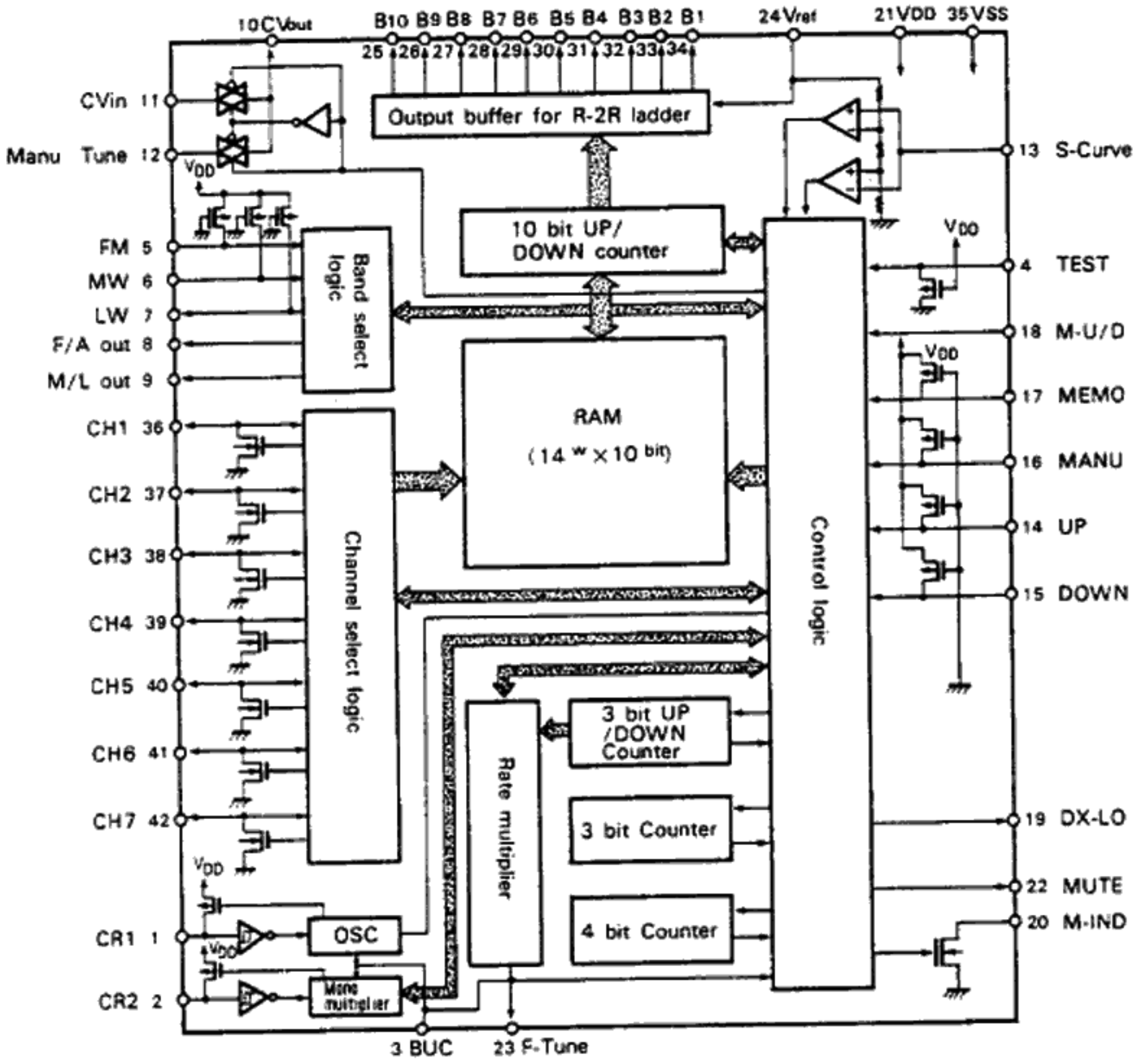



Table. 3-1 Function and Operation of Each Pin

| Pin No. | Pin Name | Input/ Output | Description of Function and Operation |
|---|---|---|---|
| 1 | CR1 | Input/ Output | To this pin, C and R are connected for a clock pulse generator. |
| 2 | CR2 | Input/ Output | To this pin, C and R are connected for a timer to control a pulse width of MUTE pin output signal when the band selector is tuned. |
| 3 | BUC | Input | Memory back up function is operated by this input pin.<br>At H level, the function is not actuated.<br>At L level, the function is actuated. |
| 4 | TEST | Input | Test mode control pin for internal LSI circuit.<br>At H level, LSI is normal operation mode.<br>At L level, LSI is fixed to test mode. |
| 5 | FM | Input | FM band select pin<br>At H level, no band selection is mode.<br>At L level, FM band is selected. |
| 6 | MW | Input | MW band select pin<br>At H level, no band selection is made.<br>At L level, MW band is selected. |
| 7 | LW | Input | LW band select pin<br>At H level, no band selection is made.<br>At L level, LW band is selected. |
| 8 | F/A OUT | Output | Indicator control signal output pin<br>H level: FM band<br>L level: AM band |
| 9 | M/L OUT | Output | Indicator control signal output pin<br>H level: MW band<br>L level: LW band |
| 10 | CV OUT | Output | Voltage for variable capacitance diode from internal analog signal transfer gate comes out to this output pin. |
| 11 | CV IN | Input | This pin is an input of analog signal transfer gate, and obtains output voltage of external ladder resistor. |
| 12 | Manu Tune | Input | This pin is an input of analog signal transfer gate, and obtains output tuning voltage from manual tuning volume. |
| 13 | S-Curve | Input | S-curve voltage from AM or FM is fed to this input pin, and internal window comparator generates voltage required from AFC circuit. |

| STEP | SUBJECT | FEED SIGNAL FROM | FEED SIGNAL TO | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|---|
| 2. | Analog Dial Adj. | DC 1.20 V | Terminal No. 9 (F-3324) | Frequency Dial LED | sVR3 (F-3324) | Lighting point of 1st LED | Before adjustment, make 2nd LED from left end turn on |
| 3. | AFC Center Voltage Adj. | No Input | | Terminal No. 74 (F-3326) DC Volt Meter | dVR5 (F-3318) | 4.75 V ±0.3 V | |
| 4. | Discrimina- 1 tor Coil Adj. | No Input | | Between TP2 & TP5 (F-3318) DC Volt Meter | Primary Coil of dT1 (F-3318) | DC 0 V | During adjustment, TP3 must be grounded (F-3318) |
| 5. | Discriminator Adj. | No Input | | Between TP1 & TP5 (F-3318) DC Volt Meter | dVR4 (F-3318) | DC 0 V | Same as above |
| 6. | Discrimina- 2 tor Coil Adj. | 98 MHz ANT Input 65 dBf (59.8 dB) 1 kHz (100% MOD.) FM SSG | ANT Terminal 300Ω | REC OUT L-CH or R-CH Dist. Meter | Secondary Coil of dT1 (F-3318) | Min. THD | |
| 7. | IF Coil Adj. | Same as above | Same as above | REC OUT L-CH or R-CH Dist. Meter | T2 (Front-end) | Min. THD | |
| 8. | Muting Level Adj. | 98 MHz ANT Input 11 dBf (5.8 dB) 1 kHz (100% MOD.) FM SSG | ANT Terminal 300Ω | Pin No. 12 of dIC1 (F-3318) DC Volt Meter | dVR1 (F-3318) | 0.7 V | |

## (2) FM STEREO Adjustment

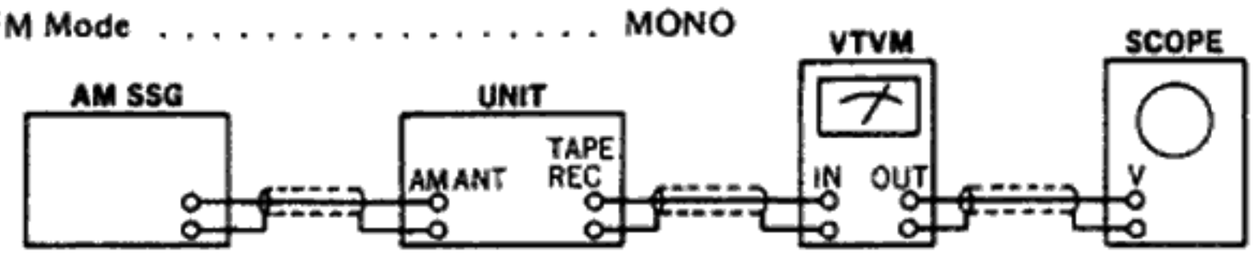
Note: FM Mode . . . . . AUTO

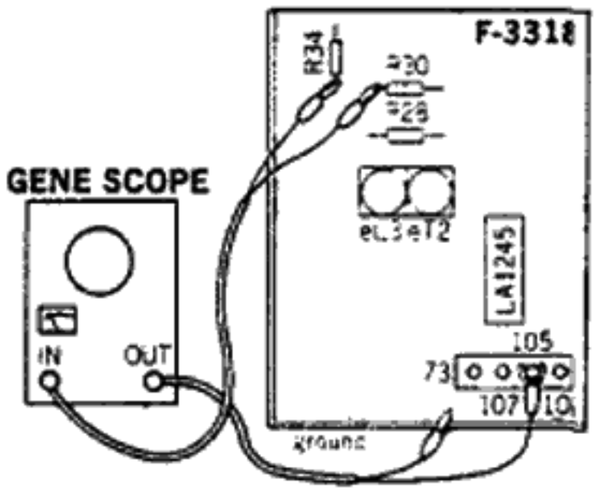
| STEP | SUBJECT | FEED SIGNAL FROM | FEED SIGNAL TO | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | PLL VCO Adj. | 98 MHz ANT Input 65 dBf (59.8 dB) FM SSG Pilot 19 kHz (9% MOD.) SUB 1 kHz + Pilot (100% MOD) STEREO SG | ANT terminal 300Ω | Stereo indicator | dVR2 F-3318 | Light indicator | Adjust the dVR2 within centerof lighting level. |
| | PLL VCO Adj. In case of using Freq. counter. | 98 MHz ANT Input 65 dBf (59.8 dB) FM SSG (No MOD.) | Same as above | TP6 F-3318 Use Freq. counter | dVR2 F-3318 | 19 kHz ±40 Hz | |
| 2. | FM STEREO Separation Adj. | 98 MHz ANT Input 65 dBf (59.8 dB) FM SSG Pilot 19 kHz (9% MOD.) L MODE 1 kHz + Pilot (100% MOD.) Stereo SG | ANT Terminal 300Ω | REC OUT R-CH VTVM & Scope | dVR3 (F-3318) | Min. Output | Confirm R →L-CH |

## 4-2. AM Adjustment

## (1) AM RF, VOLTAGE SYNTHESIZER Adjustment

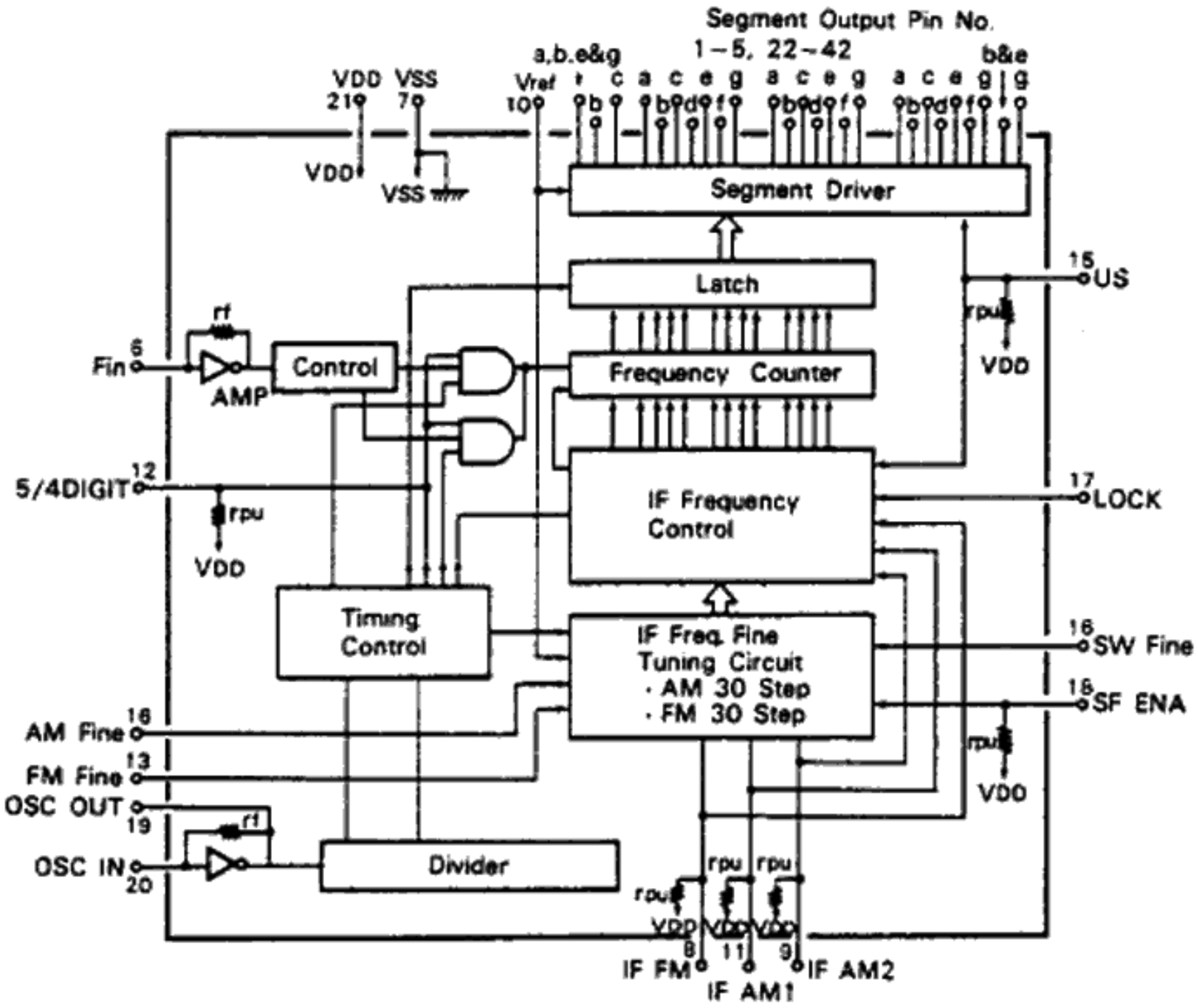
Note: 1. Selector . . . . . AM
2. FM Mode . . . . . MONO



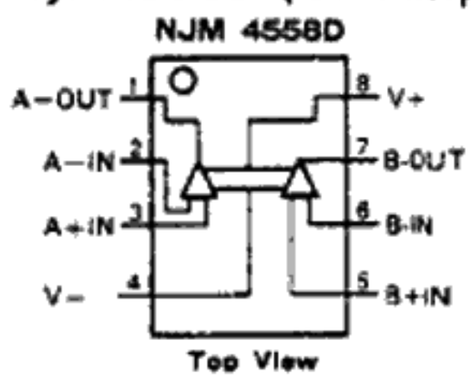




| STEP | SUBJECT | FEED SIGNAL FROM | FEED SIGNAL TO | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | Counter OFF-SET Adj. | 1455 kHz No MOD. AM SSG | Input Terminal No. 59 (F-3321) | Frequency Display Indication | sVR1 (F-3321) | 1000 kHz | |

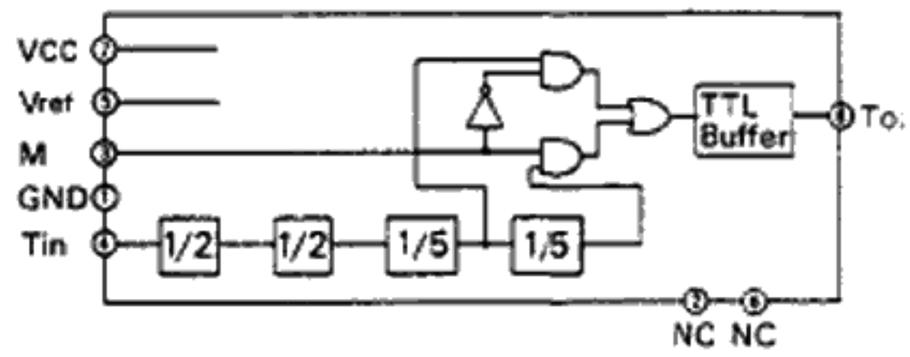
## 3-6. LC7258 (5 Digit Frequency Indicator IC)



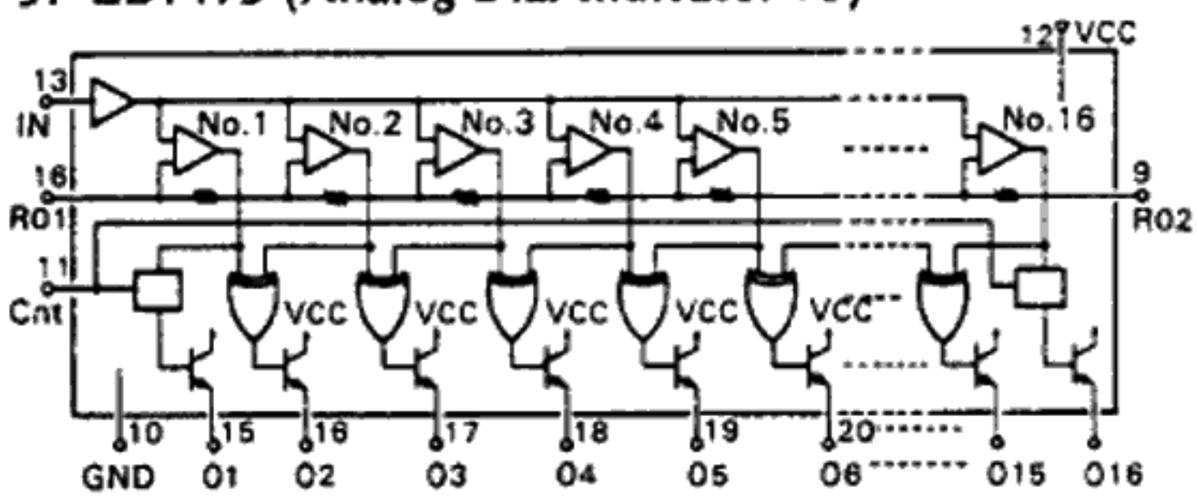

## 3-7. NJM4558D (OP Amp. IC)



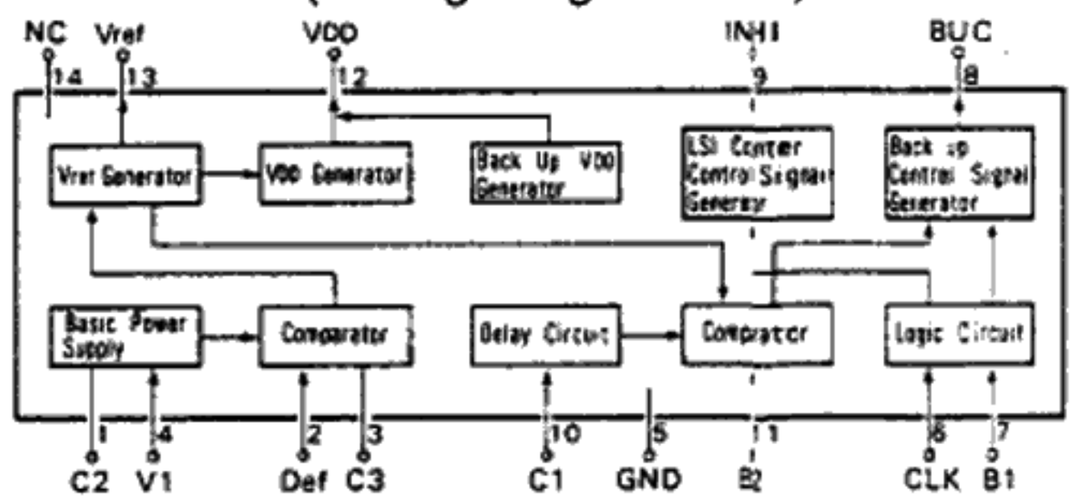

## 3-8. M54459L (Frequency Divider IC)




## 3-9. LB1473 (Analog Dial Indicator IC)




## 3-10. LA5700 (Voltage Regulator IC)

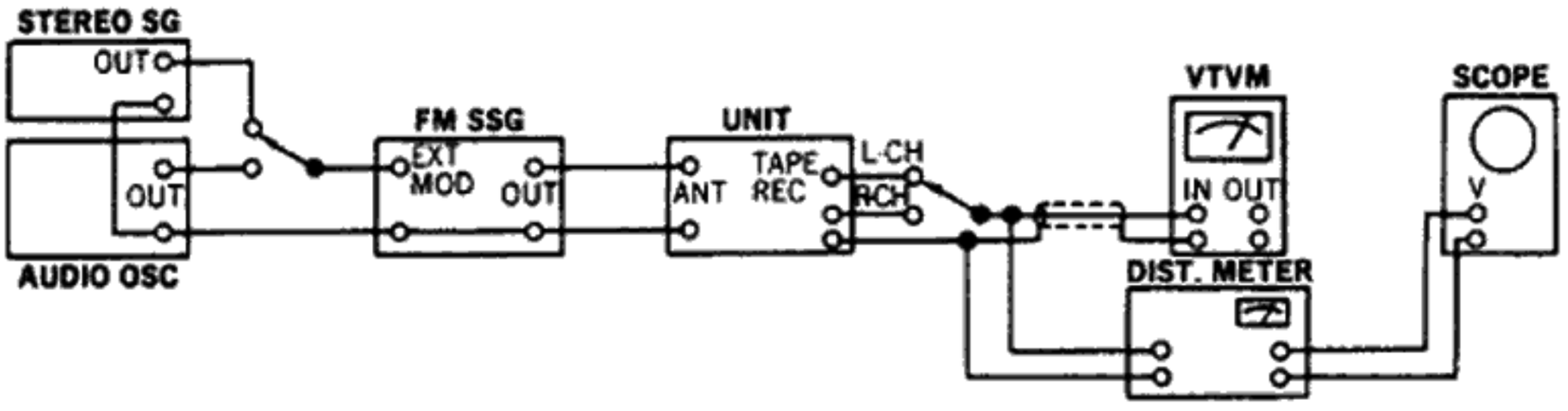



# 4. ADJUSTMENT

## 4-1. FM Adjustment

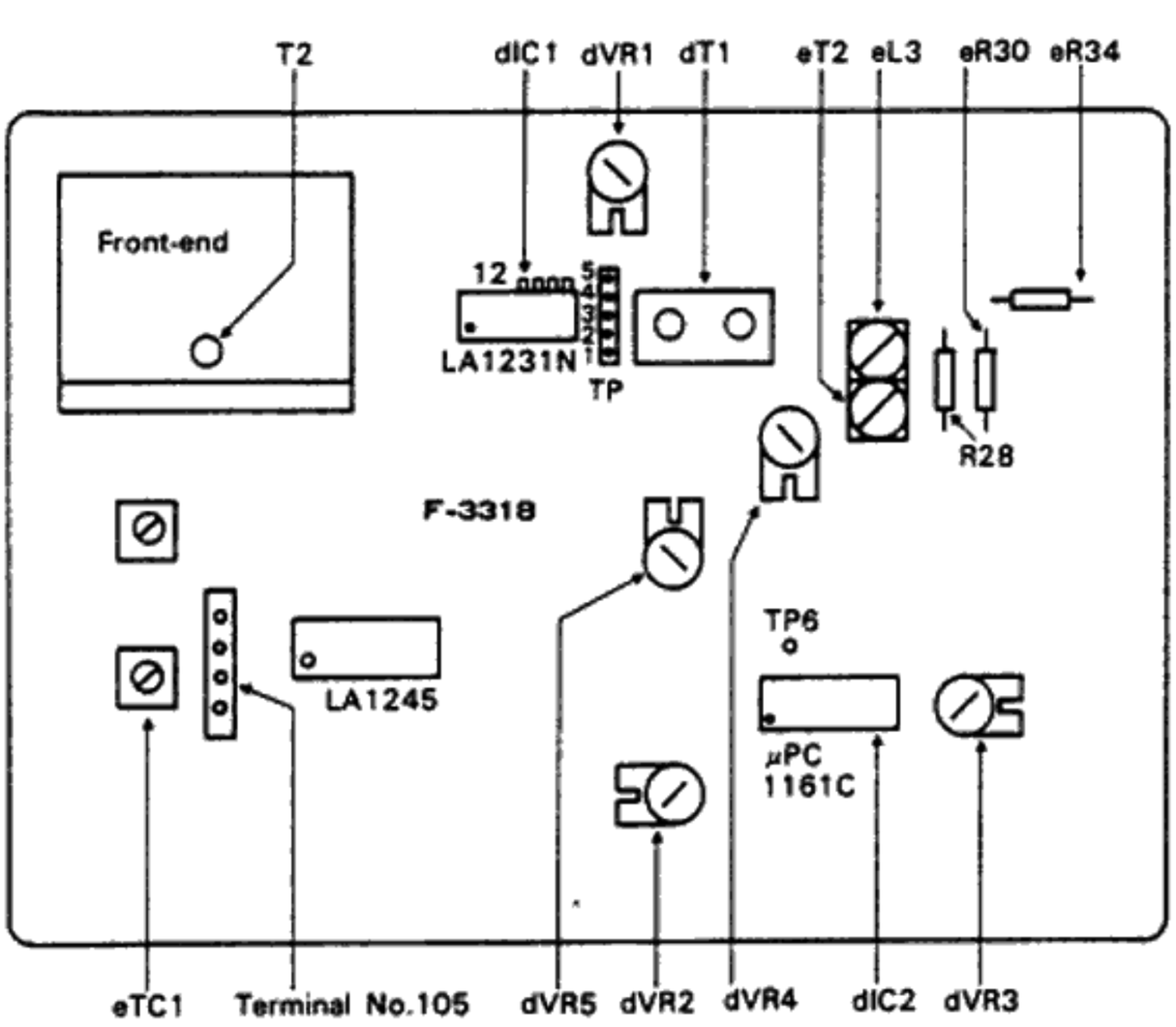
### (1) FM IF, VOLTAGE SYNTHESIZER Adjustment and Dial Calibration

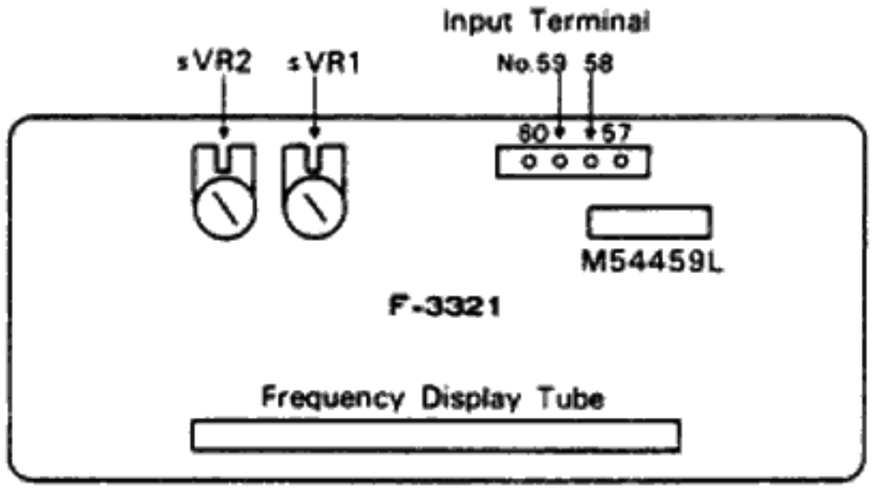
Note: 1. Selector . . . . . FM
2. FM Mode . . . . . MONO

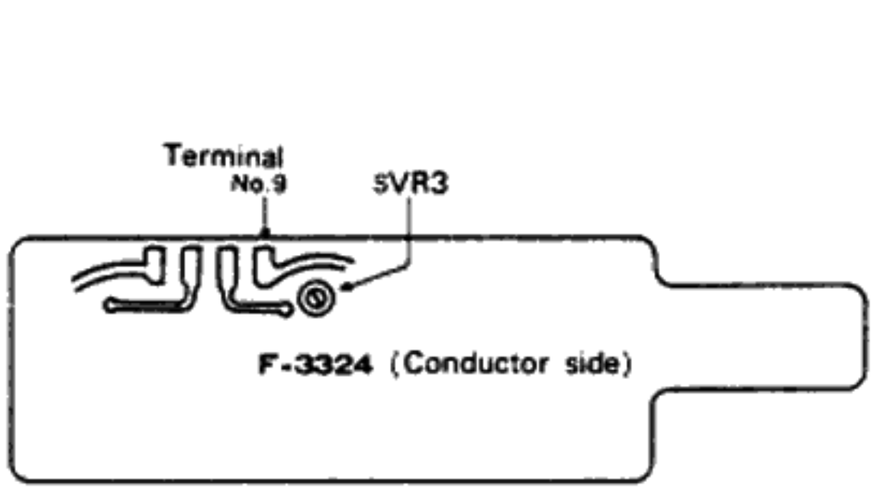



| STEP | SUBJECT | FEED SIGNAL | | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|---|
| | | FROM | TO | | | | |
| 1. | Counter OFF-SET Adj. | 110.750 MHz (White)<br>110.725 MHz (Orange)<br>110.700 MHz (Red)<br>110.675 MHz (Blue)<br>110.650 MHz (Black)<br>No. MOD. FM SSG | Input Terminal No. 58 (F-3321) | Frequency Display | sVR2 (F-3321) | 100 MHz | Feedsignal for the frequency rank of the ceramic filter used |

| STEP | SUBJECT | FEED SIGNAL FROM | FEED SIGNAL TO | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|---|
| 2. | AM S-curve Adj. | Output 80 dB Genescope | Terminal No. 105 (F-3318) | Lead Wire of eR30 for +, eR34 for − | eT2, eL3 (F-3318) | Steep Linearity of S-curve Make Symmetrical S-curve | |
| 3. | 600 kHz RF Adj. | 600 kHz ANT Input 30 dB 400 Hz (30% MOD.) AM SSG | ANT Terminal | REC OUT L-CH or R-CH VTVM & Scope | Bar Antenna | Max. Output | |
| 4. | 1400 kHz RF Adj. | 1400 kHz ANT Input 30 dB 400 Hz (30% MOD.) AM SSG | ANT Terminal | Same as above | eTC1 (F-3318) | Max. Output | |




### ◇ After Adjustment, confirm following Voltages.

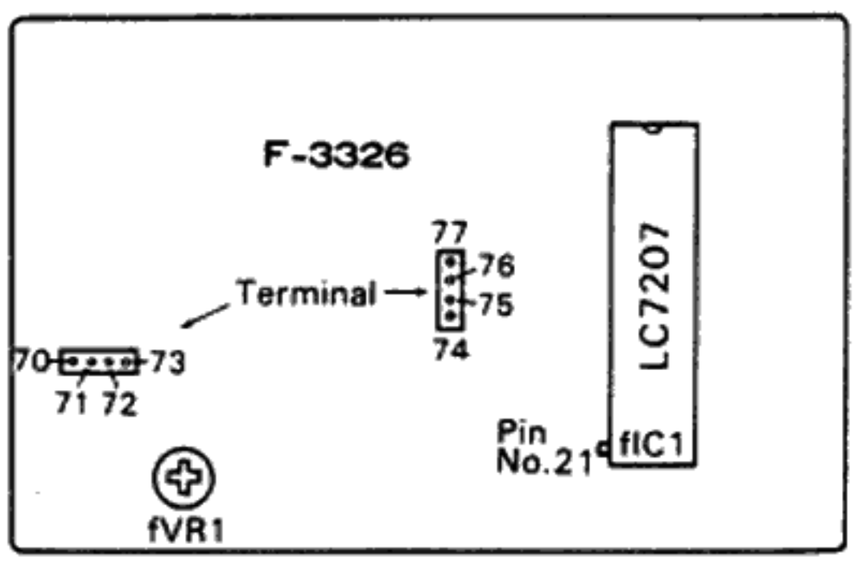
(1) V ref
Terminal No. 75 on F-3326 . . . . . 8.1 V ±0.5 V

(2) $V_{DD}$
Pin No. 21 of $fIC_1$ on F-3326 . . . . . 9.2 V ±0.3 V

(3) V tune
Receive 535 kHz No MOD. Signal from AM SSG.

Terminal No. 73 on F-3326 . . . . . 1.7 V
Terminal No. 76 on F-3326 . . . . . 1.2 V

* In case of Vref is not within 8.1 V ±0.5 V, adjust fVR1 on F-3326.




## 4-3. BIAS CURRENT Adjustment (See Top View on page 14, 15)

Note: 1. Room Temperature . . . . . 18°C ~ 38°C
2. Before turning on power switch, turn kVR1 on F-3327 fully counterclockwise.
3. For adjustment, run the unit for more than 3 minutes after the power is switched on.

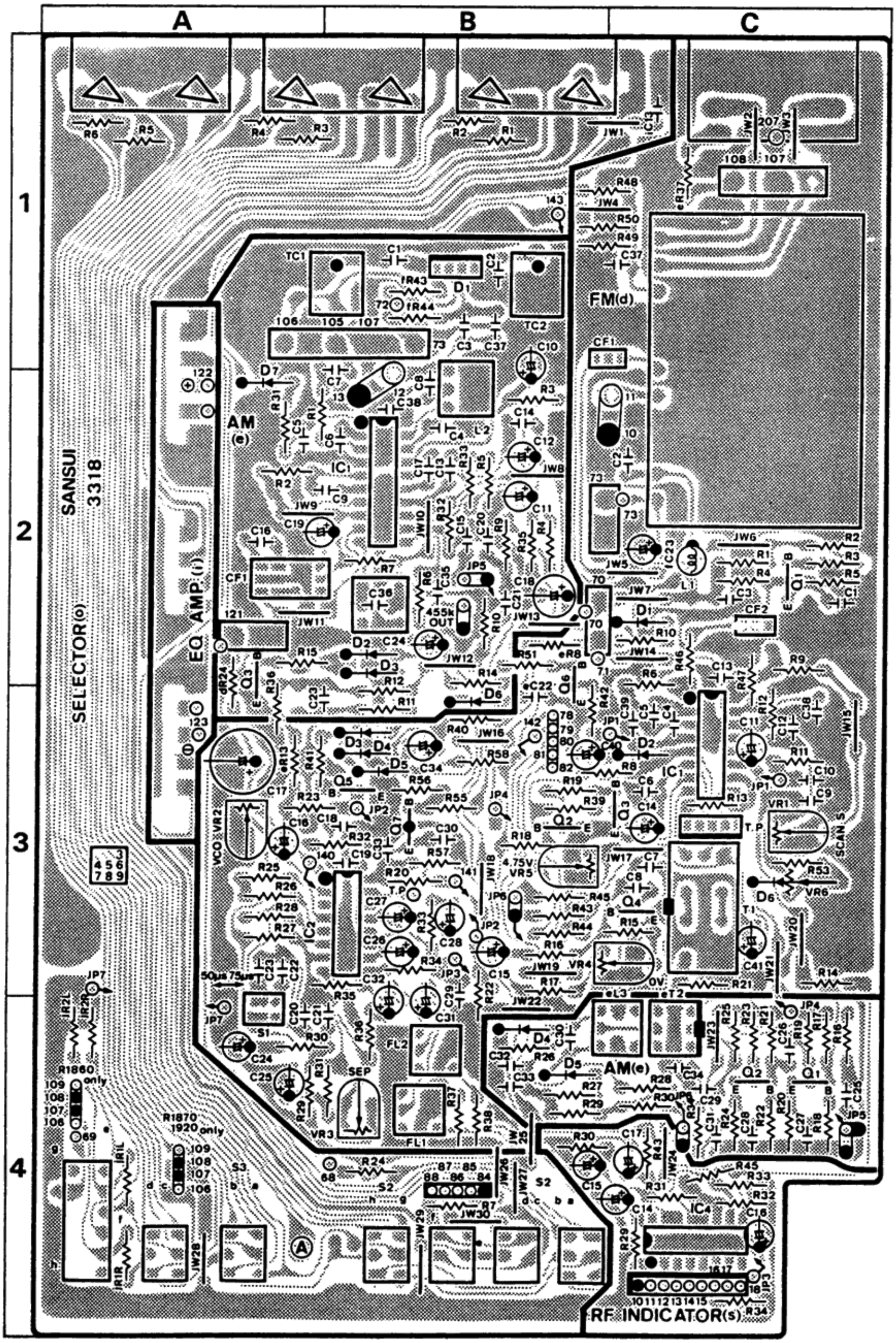
| STEP | SUBJECT | MEASURE OUTPUT | ADJUST | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|
| 1. | L-CH | Connect DC Volt Meter between emitters of kQ13 & kQ14 on F-3327 | kVR1 L-CH (F-3327) | DC 10 mV | This bias current adjustment converts current value into voltage by Ohms Law. |
| 2. | R-CH | Same as above | kVR1 R-CH (F-3327) | DC 10 mV | |

# 5. PARTS LOCATION & PARTS LIST

•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 appended previously to each Sansui Manual.

## 5-1. F-3318 Tuner Circuit Board (Stock No. 07094101 = 5900Z/07095701 = 4900Z/00610401 = 3900Z)

**Component Side**



Parts List

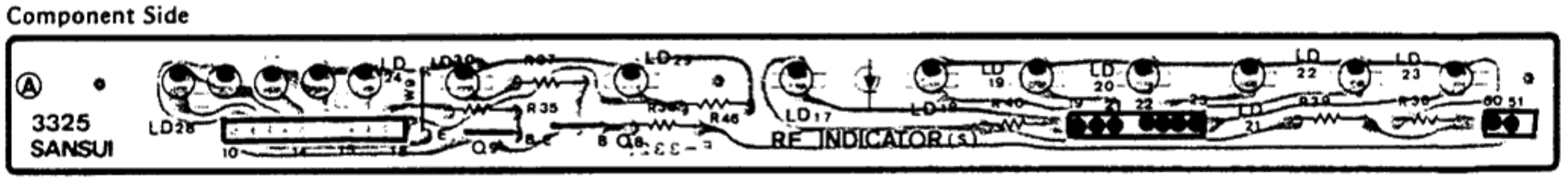
| Parts No. | Stock No. | Description |
|---|---|---|
| <FM Section> | | |
| | 07249400 | FM Frontend Pack FD256UX |
| •Transistor | | |
| dQ1 | 03063401, 2 | 2SC1674 L, K |
| dQ2 ~ 5 | 07194800, 1 | 2SC1815 Y, GR |
| dQ7 | 07194700, 1 | 2SA1015 Y, GR |
| •IC | | |
| dIC1 | 03612300 | LA1231N |
| dIC2 | 03609900 | μPC1161C |
| •Diode | | |
| dD1 ~ 6 | 03117600 | 1S2473D |
| dCF1 | 07102210 | Ceramic Filter 10.7 MHz |
| dCF2 | 07102210 | Ceramic Filter 10.7 MHz |
| dFL1 | 07248400 | Low Pass Filter |
| dFL2 | 07248400 | Low Pass Filter |
| dL1 | 49002800 | Inductor 1μH |
| dT1 | 07237600 | FM IF Coil |
| dVR1 | 10370900 | Semi Variable Resistor 50 kΩ (B) |
| dVR2 | 07218000 | Semi Variable Resistor 6.8 kΩ (B), V.C.O. Adj. |
| dVR3 | 10371100 | Semi Variable Resistor 200 kΩ (B), S.E.P. Adj. |
| dVR4 | 07238900 | Semi Variable Resistor 50 kΩ (B), |

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| dVR5 | 07239300 | Semi Variable Resistor 1MΩ (B) |
| dS1 | 07251100 | Slide Switch |
| <AM Section> | | |
| •Transistor | | |
| eQ1, 2 | 03057900, 1 | 2SC930 C, D |
| eQ3 | 07194800, 1 | 2SC1815 Y, GR |
| •IC | | |
| eIC1 | 07237200 | LA1245 |
| •Variable Capacitance Diode | | |
| eD1 | 07237300 | KV1226-EF |
| •Diode | | |
| eD2 ~ 7 | 03117600 | 1S2473D |
| eTC1, 2 | 12301000 | Trimmer Capacitor 15 pF |
| eCF1 | 07250500 | Ceramic Filter 455 kHz |
| eL2 | 46027100 | AM OSC Coil |
| eL3 | 07250200 | AM IF Coil 455 kHz |
| eT2 | 07250100 | AM IF Coil 455 kHz |
| oS2 | 07247900, 1 | Push Switch, input selector |
| oS3 | 07242500, 1 | Push Switch, tape monitor |
| •IC | | |
| sIC4 | 07208100 | IR2E01 |

## 5-2. F-3325 RF Indicator Circuit Board (Stock No. 07094801 = 5900Z/07096401 = 4900Z/00611001 = 3900Z)

Component Side




Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| | 07581800 | 5P L.E.D. Holder |
| | 07581900 | 1P L.E.D. Holder |
| •Transistor | | |
| sQ7, 8 | 07194800, 1 | 2SC1815 Y, GR |

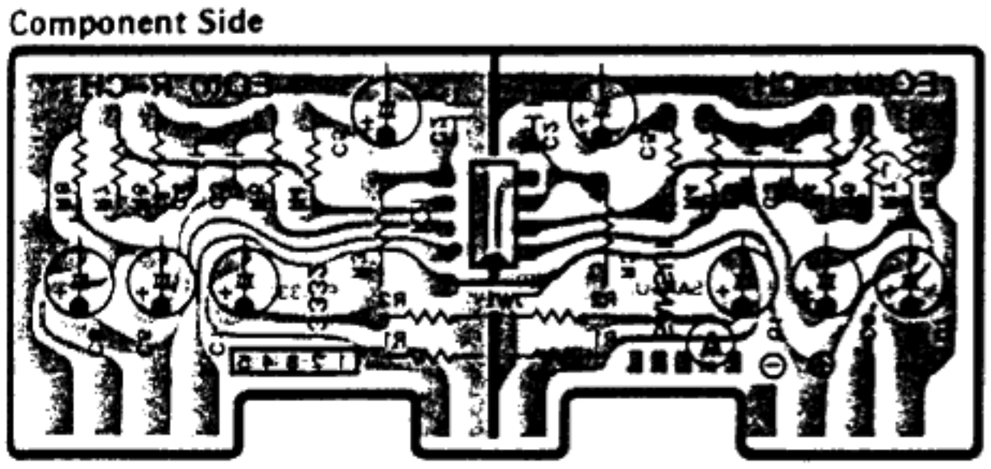
Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| sLD17 | 03193700 | Light Emitting Diode SEL'11OS |
| sLD18~28 | 07246200 | Light Emitting Diode SEL'71OK |
| sLD29, 30 | 03193700 | Light Emitting Diode SEL'11OS |

## 5-3. F-3332 Equalizer Circuit Board

(Stock No. 00611401 = 3900Z Only)

Component Side



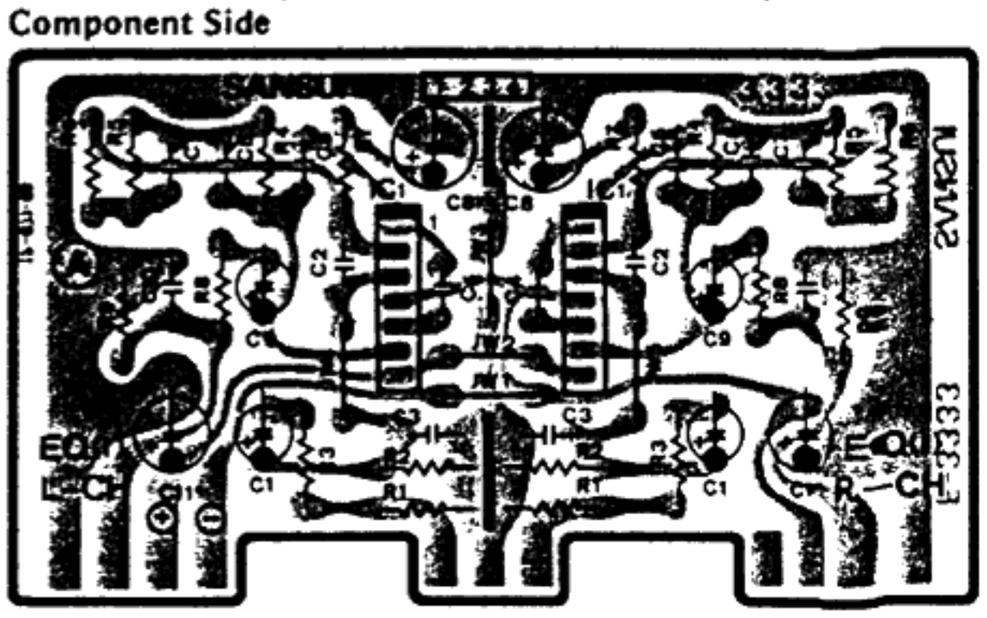
Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| •IC | | |
| iIC1 | 07208900 | NJM4558D |

## 5-4. F-3333 Equalizer Circuit Board

(Stock No. 00610001 = 5900Z, 4900Z Only)

Component Side

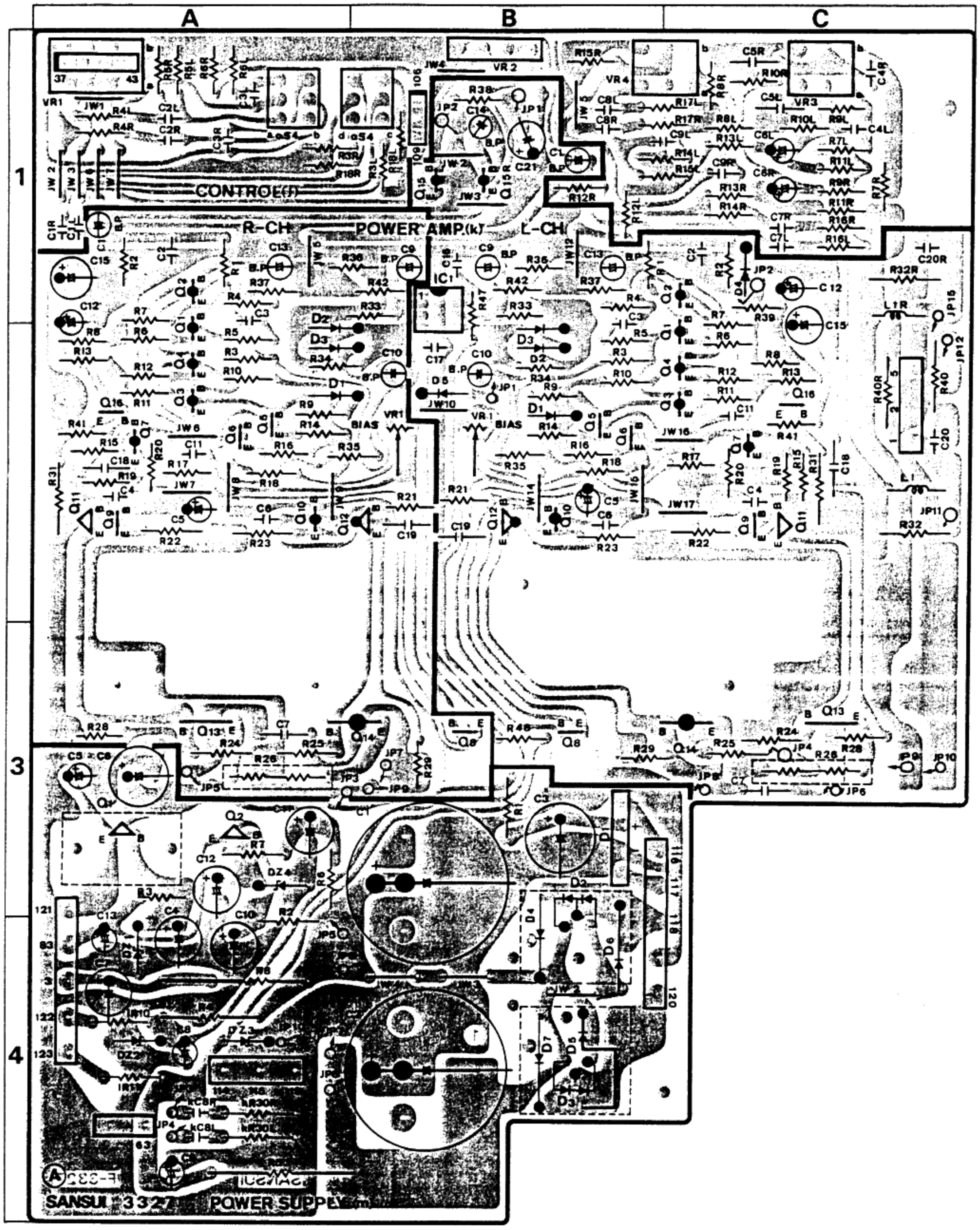



Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| •IC | | |
| iIC1 | 07197400 | M5214L |

## 5-5. F-3327 Audio & Power Supply Circuit Board (Stock No. 07094901 = 5900Z/07096701 = 4900Z/ 00611101 = 3900Z)

**Component Side**



## Parts List

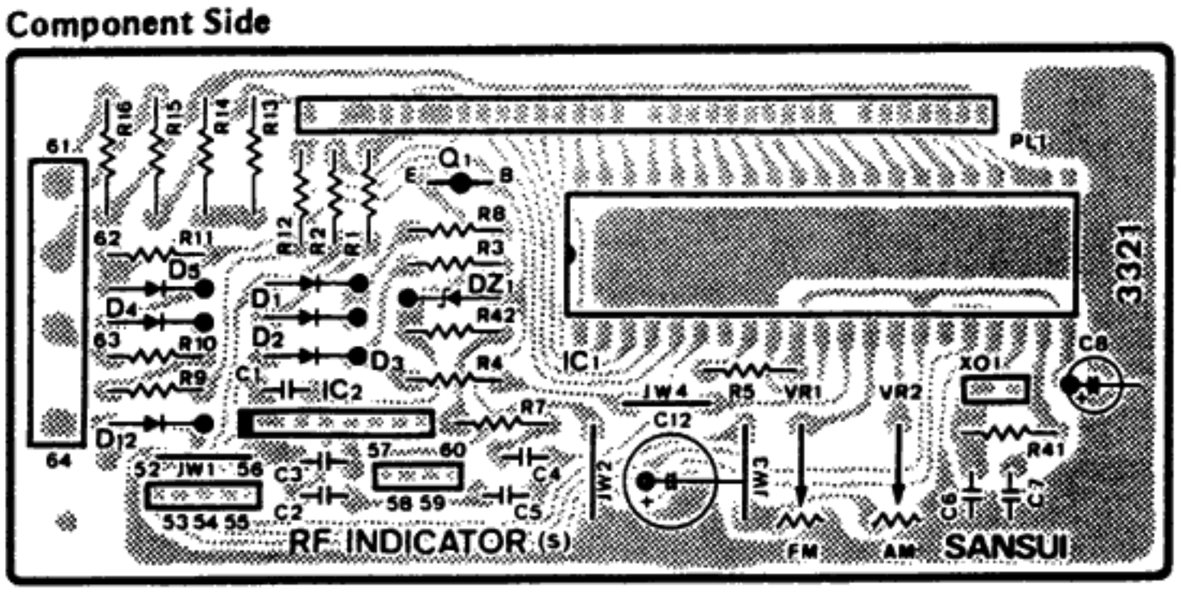
| Parts No. | Stock No. | Description |
|---|---|---|
| jVR1 | 07247500 | Variable Resistor 150 kΩ (B), volume (4900Z/3900Z Only) |
| jVR2 | 07247600 | Variable Resistor 250 kΩ, balance |
| jVR3 | 07247700 | Variable Resistor 50 kΩ (B), bass |
| jVR4 | 07247700 | Variable Resistor 50 kΩ (B), treble |
| •Transistor | | |
| kQ1 ~ 4 | 03010900, 1 | 2SA992 F, E |
| kQ5, 6 | 07208700, 1 | 2SC2705 O, Y |
| kQ7 | 07208800, 1 | 2SA1145 O, Y |
| kQ8 | 07194800, 1 | 2SC1815 Y, GR |
| kQ9 | 07208700, 1 | 2SC2705 O, Y |
| kQ10 | 07208800, 1 | 2SA1145 O, Y |
| kQ11 | 07206400, 1 | 2SD600K E, F |
| kQ12 | 07206300, 1 | 2SB631K E, F |
| kQ13 | 07235600, 1 | 2SC2581LB2 O, Y (5900Z) |
| | 03069800, 1 | 2SC2579LB2 O, Y (4900Z) |
| | 03070000, 1 | 2SC2577LB2 O, Y (3900Z) |
| kQ14 | 07235500, 1 | 2SA1106LB2 O, Y (5900Z) |
| | 03012900, 1 | 2SA1104LB2 O, Y (4900Z) |
| | 03013100, 1 | 2SA1102LB2 O, Y (3900Z) |
| kQ15 | 03010900, 1 | 2SA992 F, E |
| kQ16 | 07194800, 1 | 2SC1815 Y, GR |
| •IC | | |
| kIC1 | 03607700 | NJM4558D |
| •Diode | | |
| kD1 ~ 4 | 03111600 | 1S2473D |
| kR26 | 00091700 | 0.33Ω x 2 5W Ce.R. |
| kR30 | 00179000 | 100Ω 1W N.I.R. |
| kR40 | 00179000 | 100Ω 1W N.I.R. |
| kC1 | 00306800 | 1μF 50V E.B. |
| kC7 | 00380700 | 22000pF 500V C.C. |
| kC9 | 00307500 | 4.7μF 50V E.B. |
| kC10 | 00306600 | 10μF 50V E.B. |
| kC13 | 00305800 | 2.2μF 25V E.B. |
| kC14 | 00306800 | 1μF 50V E.B. |
| kC18 | 00380700 | 22000pF 500V C.C. |
| kC19 | 00380700 | 22000pF 500V C.C. |
| kL1 | 42102900 | Inductor 1.5μH |
| kVR1 | 10370400 | Semi Variable Resistor 1 kΩ (B), Bias Adj. |
| •Transistor | | |
| mQ1 | 03083901, 2 | 2SD313AL D, E |
| mQ2 | 03085201, 2 | 2SD438 E, F |

## Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| •Diode | | |
| mD1 | 03117000 | RB-152 |
| mD2 | 07263700 | CTU-22U (5900Z Only) |
| mD3 | 07263700 | CTU-22U (5900Z Only) |
| mD4 ~ 7 | 07224400 | UF-21 (4900Z/3900Z Only) |
| •Zener Diode | | |
| mDZ1 | 03163200 | RD13E C |
| mDZ2 | 03164500 | RD18E B |
| | 03164600 | RD18E C |
| mDZ3 | 03171100 | RD18F B |
| | 03171200 | RD18F C |
| mDZ4 | 03165700 | RD33E B |
| mR4 | 00187400 | 1.8 kΩ 2W N.I.R. (5900Z Only) |
| | 00186900 | 1.5 kΩ 2W N.I.R. (4900Z Only) |
| | 00185700 | 1 kΩ 2W N.I.R. (3900Z Only) |
| mR5 | 00103000 | 1 kΩ 3W Ce.R. (5900Z Only) |
| | 00105700 | 820Ω 3W Ce.R. (4900Z Only) |
| | 00105500 | 680Ω 3W Ce.R. (3900Z Only) |
| mR8 | 00105500 | 680Ω 3W Ce.R. (5900Z Only) |
| | 00190200 | 470Ω 3W N.I.R. (4900Z Only) |
| mC1 | 07272300 | 10000μF 71V E.C. (5900Z Only) |
| | 07208300 | 8200μF 63V E.C. (4900Z Only) |
| | 00316100 | 6300μF 50V E.C. (3900Z Only) |
| mC2 | 07272300 | 10000μF 71V E.C. (5900Z Only) |
| | 07208300 | 8200μF 63V E.C. (4900Z Only) |
| | 00316100 | 6300μF 50V E.C. (3900Z Only) |
| dS4 | 07248200, 1 | Push Switch, hi-filter |

## 5-6. F-3321 Frequency Indicator Circuit Board (Stock No. 07094301 = 5900Z/07095901 = 4900Z/00610601 = 3900Z)

### Component Side

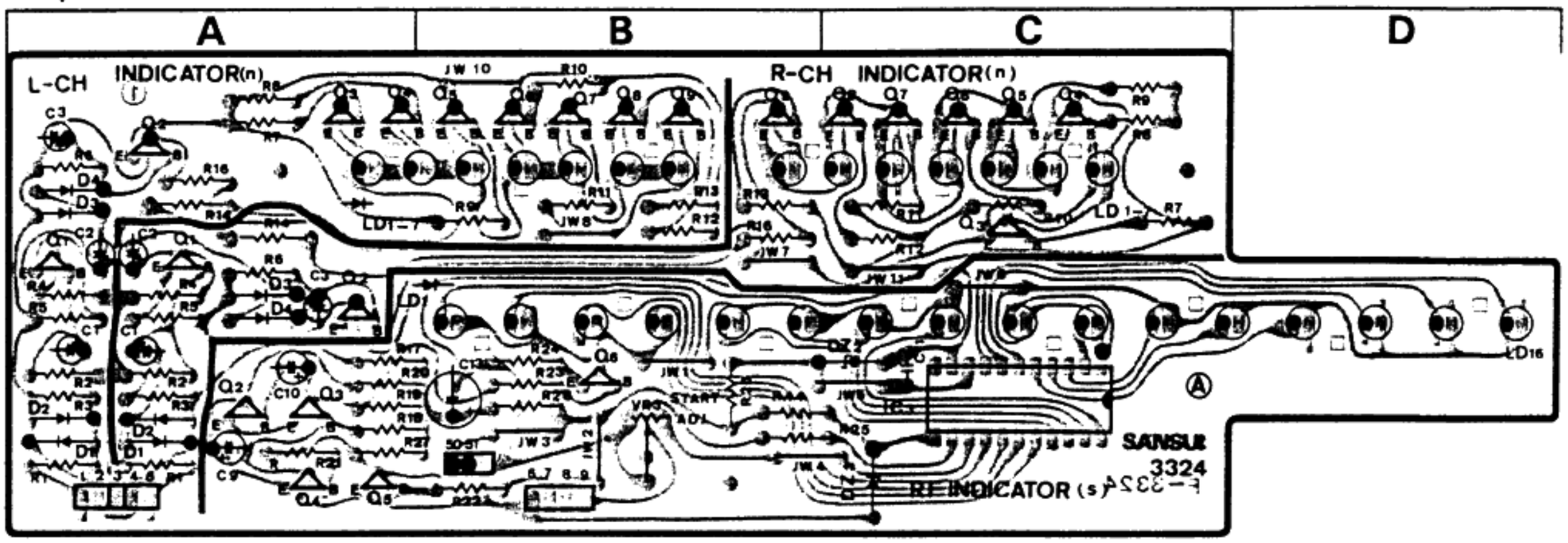



## Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| •Transistor | | |
| sQ1 | 07194700, 1 | 2SA1015 Y, GR |
| •IC | | |
| sIC1 | 07205100 | LC7258 |
| sIC2 | 07233200 | M54459L |
| sXO1 | 07225300 | Quartz Element LN-X-0406 |
| sD1 ~ 5 | 03117600 | 1S2473D |
| sD12 | 07225500 | 1N60 |
| sDZ1 | 07178500 | RD5.1E-B (Zener) |
| sPL1 | 07235300 | FL Indicator FIP7B8S |
| sVR1 | 07238700 | Semi Variable Resistor 10 kΩ (B) |
| sVR2 | 07238700 | Semi Variable Resistor 10 kΩ (B) |

## 5-7. F-3324 Dial Indicator Circuit Board (Stock No. 07094701 = 5900Z/07096301 = 4900Z/00610901 = 3900Z)

**Component Side**




**Parts List**

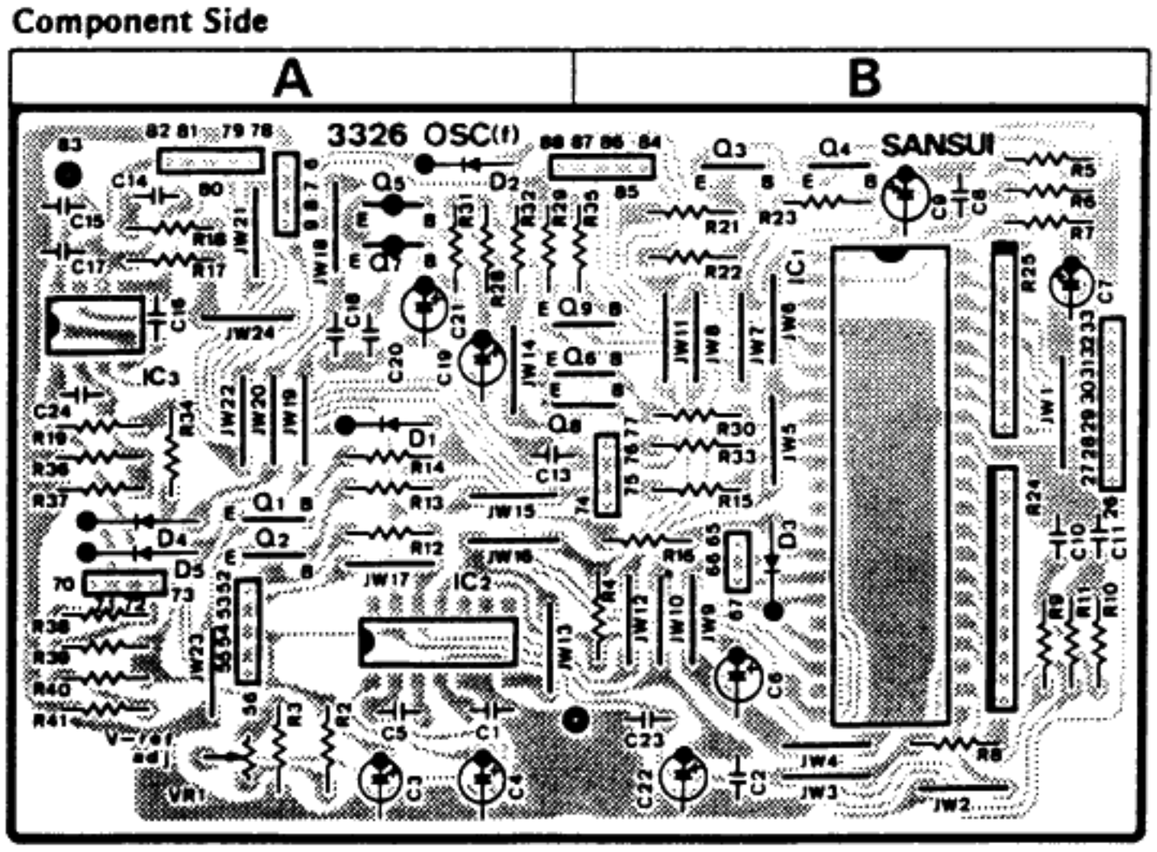
| Parts No. | Stock No. | Description |
|---|---|---|
| <5900Z/4900Z/3900Z> | | |
| •Transistor | | |
| sQ2 ~ 6 | 07194800, 1 | 2SC1815 Y, GR |
| •IC | | |
| sIC3 | 07204900 | LB1473 |
| •Zener Diode | | |
| sDZ2 | 03158300 | EQA01-08R |
| sDZ3 | 03158700 | EQA01-09S |
| sLD1 | 03193700 | Light Emitting Diode SEL1110S |
| sVR3 | 10370700 | Semi Variable Resistor 10 kΩ (B) |

**Parts List**

| Parts No. | Stock No. | Description |
|---|---|---|
| <5900Z/4900Z Only> | | |
| | 07615700 | L.E.D. Holder (8-point) |
| | 07594900 | L.E.D. Holder (7-point) |
| •Transistor | | |
| nQ1 | 07194800, 1 | 2SC1815 Y, GR |
| nQ2 ~ 9 | 07194700, 1 | 2SA1015 Y, GR |
| •Diode | | |
| nD1 | 07225500 | 1N60 |
| nD2 ~ 4 | 03111600 | 1S2473D |
| nLD1 ~ 7 | 07243200 | Light Emitting Diode GL-5HD5 (Red) |

## 5-8. F-3326 Electronic Tuning Controller Circuit Board (Stock No. 07094601 = 5900Z/07096101 = 4900Z/00610801 = 3900Z)

**Component Side**



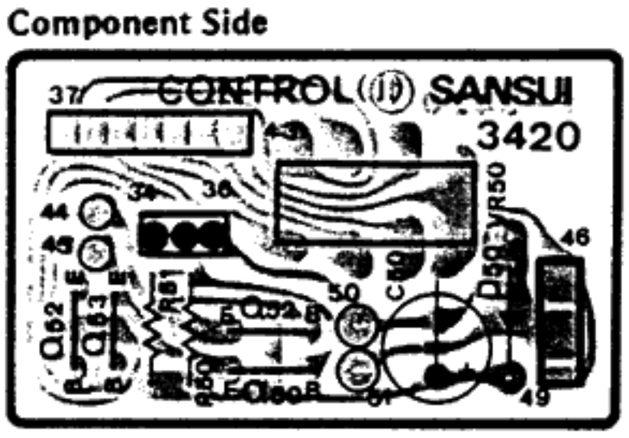

**Parts List**

| Parts No. | Stock No. | Description |
|---|---|---|
| •Transistor | | |
| fQ1 ~ 4 | 07194800, 1 | 2SC1815 Y, GR |
| fQ5 | 03033601, 2 | 2SB560MP E, F |
| fQ6 | 07194800, 1 | 2SC1815 Y, GR |
| fQ7 | 03033601, 2 | 2SB560MP E, F |
| fQ8, 9 | 07194800, 1 | 2SC1815 Y, GR |
| •IC | | |
| fIC1 | 07205000 | LC7207 |
| fIC2 | 07234500 | LA5700 |
| fIC3 | 03607700 | NJM4558D |
| •Diode | | |
| fD1 ~ 7 | 03117600 | 1S2473D |
| fR24 | 07233900 | Ladder Resistor |
| fR25 | 07234900 | Ladder Resistor |
| fVR1 | 10342300 | Semi Variable Resistor 2.2 kΩ (B) |

## 5-9. F-3420 Motor Volume Control Circuit Board

(Stock No. 07095201 = 5900Z Only)

Component Side




Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| •Transistor | | |
| jQ50 | 07206900, 1 | 2SC2001 M, L |
| | 07254900, 1 | 2SC1741 Q, R |
| | 03085201, 2 | 2SD438 E, F |
| jQ51 | 07206800, 1 | 2SA952 M, L |
| | 07254800, 1 | 2SA854 Q, R |
| | 03033601, 2 | 2SB450MP E, F |
| jQ52 | 07206900, 1 | 2SC2001 M, L |
| | 07254900, 1 | 2SC1741 Q, R |
| | 03085201, 2 | 2SD438 E, F |
| jQ53 | 07206800, 1 | 2SA952 M, L |
| | 07254800, 1 | 2SA854 Q, R |
| | 03033601, 2 | 2SB560MP E, F |
| •Diode | | |
| jD50 | 03117700 | 10E-2 |
| jVR1 | 07242100 | Variable Resistor 150 kΩ (B) x 2 |

• Note:
The circuit board, F-3319, F-3320, F-3423, F-3419, F-3322 & F-3323 are not supplied as the assembled. However, the individual parts on the circuit board are provided by orders.

## 5-10. F-3319 FM Mode/Tuning Level Switch Circuit Board

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| oS1 | 07248100, 1 | Push Switch |

## 5-11. F-3320 Speaker Selector Sw. Circuit Board

(5900Z/4900Z/3900Z)

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| oS5 | 07257700 | Push Switch |
| | 24306000 | Head Phone Jack |
| pS1 | 11319000 | Push Switch, power |

## 5-12. F-3322 Memory & Preset Switch Circuit Board (5900Z/4900Z/3900Z)

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| fS1 ~ 7 | 11320900 | Push Switch |

## 5-13. F-3323 Auto Tuning Switch Circuit Board

(5900Z/4900Z/3900Z)

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| fS8 | 07246100 | Push Switch |
| fS9 | 07246100 | Push Switch |

## 5-14. F-3419 Audio Muting Indicator Circuit Board (5900Z Only)

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| | 07581900 | 1P L.E.D. Holder |
| nLD8 | 03193700 | Light Emitting Diode SEL1110S |

## 5-15. F-3422 Voltage Selector Circuit Board

(5900Z/4900Z/3900Z)

Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| <5900Z> | | |
| pF1 | 07189200 | Fuse 6A 250V (100V ~ 120V) |
| | 07188800 | Fuse 3A 250V (220V ~ 240V) |
| <4900Z> | | |
| pF1 | 07189100 | Fuse 5A 250V (100V ~ 120V) |
| | 07188700 | Fuse 2.5A 250V (220V~ 240V) |
| <3900Z> | | |
| pF1 | 07189000 | Fuse 4A 250V (100V ~ 120V) |
| | 07188600 | Fuse 2A 250V (220V ~ 240V) |

## 5-16. F-3423 Volume Sw. Circuit Board (5900Z Only)

Parts List

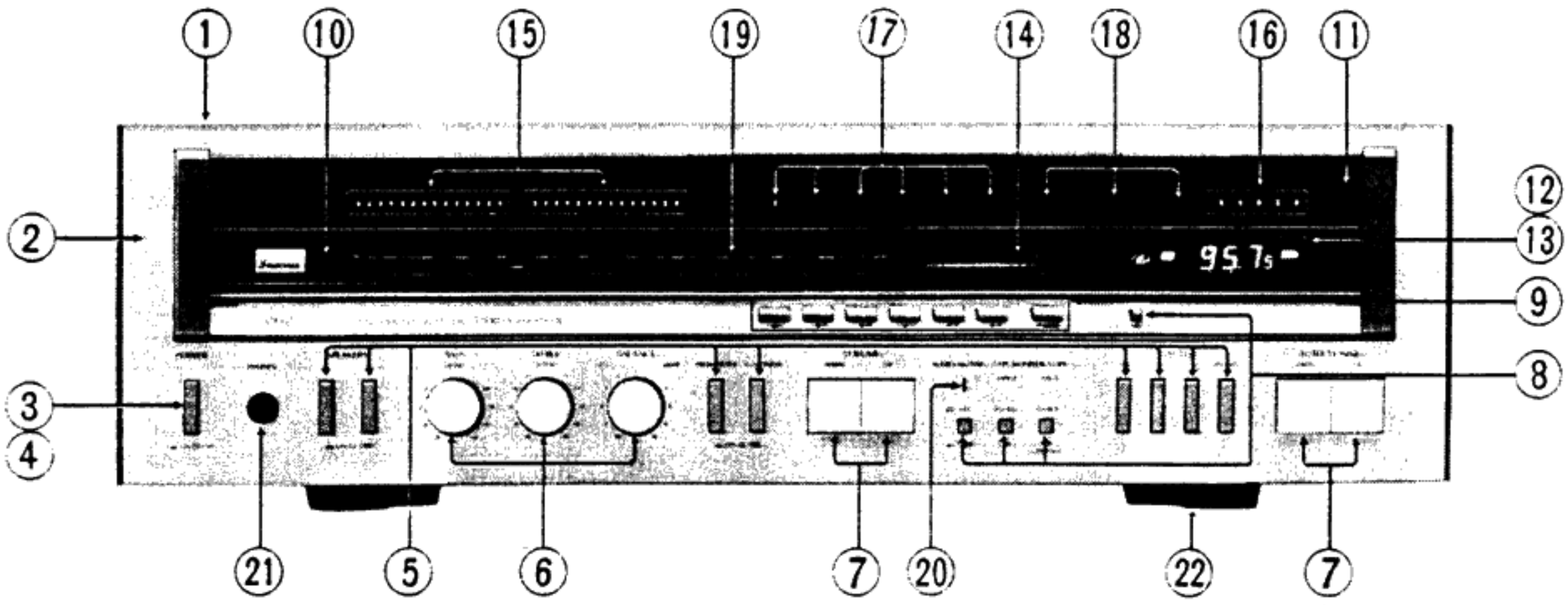
| Parts No. | Stock No. | Description |
|---|---|---|
| jS50 | 07246100 | Push Switch |
| jS51 | 07246100 | Push Switch |

### • Abbreviations

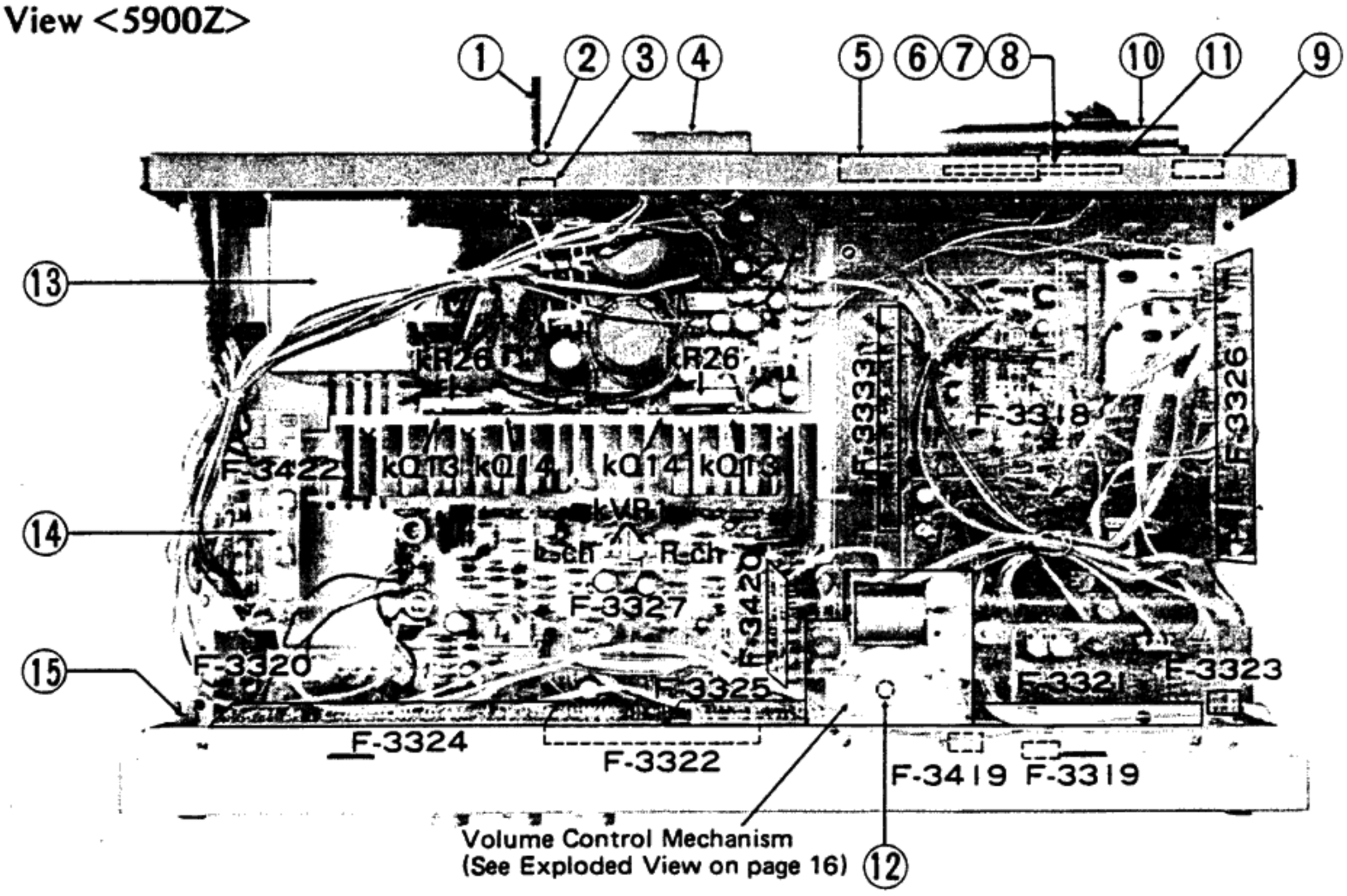
| | | | |
|---|---|---|---|
| C.R. | Carbon Resistor | E.L. | Low Leak Electrolytic Capacitor |
| S.R. | Solid Resistor | E.B. | Bi-Polar Electrolytic Capacitor |
| Ce.R. | Cement Resistor | E.BL. | Low Leak Bi-Polar Electrolytic Capacitor |
| M.R. | Metal Film Resistor | | |
| F.R. | Fusing Resistor | Ta.C. | Tantalum Capacitor |
| N.I.R. | Non-Inflammable Resistor | F.C. | Film Capacitor |
| C.C. | Ceramic Capacitor | M.P. | Metalized Paper Capacitor |
| C.T. | Ceramic Capacitor, Temperature Compensation | P.C. | Polystyrene Capacitor |
| | | G.C. | Gimmic Capacitor |
| E.C. | Electrolytic Capacitor | | |

# 6. OTHER PARTS

## 6-1. Front View <5900Z>




## 6-2. Top View <5900Z>



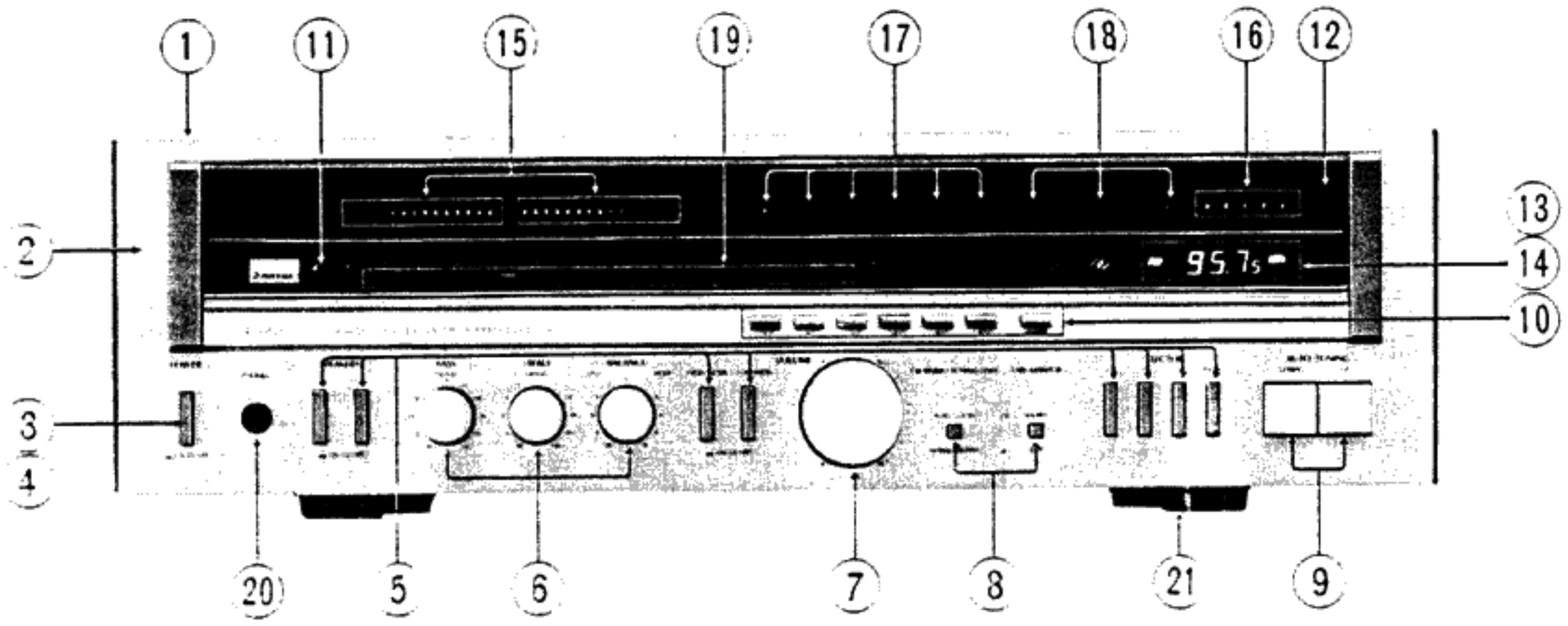

### Parts List <Front View>

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 07616600 | Bonnet |
| 2 | 07618310 | Front Panel Ass'y |
| | 07616900 | Front Glass |
| | 07615400 | Panel Side Frame (L) |
| | 07615500 | Panel Side Frame (R) |
| 3 | 07579800 | Push Knob, power |
| 4 | 11319000 | Push Switch |
| 5 | 07579800 | Push Knob, speakers, hi-filter loundness, selector |
| | 07581500 | Push Knob Guide |
| 6 | 07615600 | TY-Knob, bass, treble, balance |
| 7 | 07652100 | Push Knob Ass'y, volume, auto tuning |
| 8 | 07580100 | Push Knob, auto muting, tape mon./copy, FM mode/tuning level |
| | 07580900 | Push Knob Guide |
| 9 | 07649810 | Preset Knob Ass'y |
| 10 | 07617300 | Dial Scale |
| 11 | 07616800 | Dial Back Plate |
| 12 | 07616300 | Smoked Plate |
| 13 | 07235300 | FL Indicator FIP7B8S |
| 14 | 07600300 | Indicator Film |
| 15 | 07615800 | Indicator 14-Point |
| 16 | 07615900 | Indicator 5-Point |
| 17 | 07616000 | Indicator 1-Point |
| 18 | 07616100 | Indicator 1-Point (Red) |
| 19 | 07616200 | Indicator 8-Point |
| 20 | 07578000 | Indicator (Red) |
| 21 | 24306000 | Head Phone Jack |
| 22 | 55073500 | Leg |

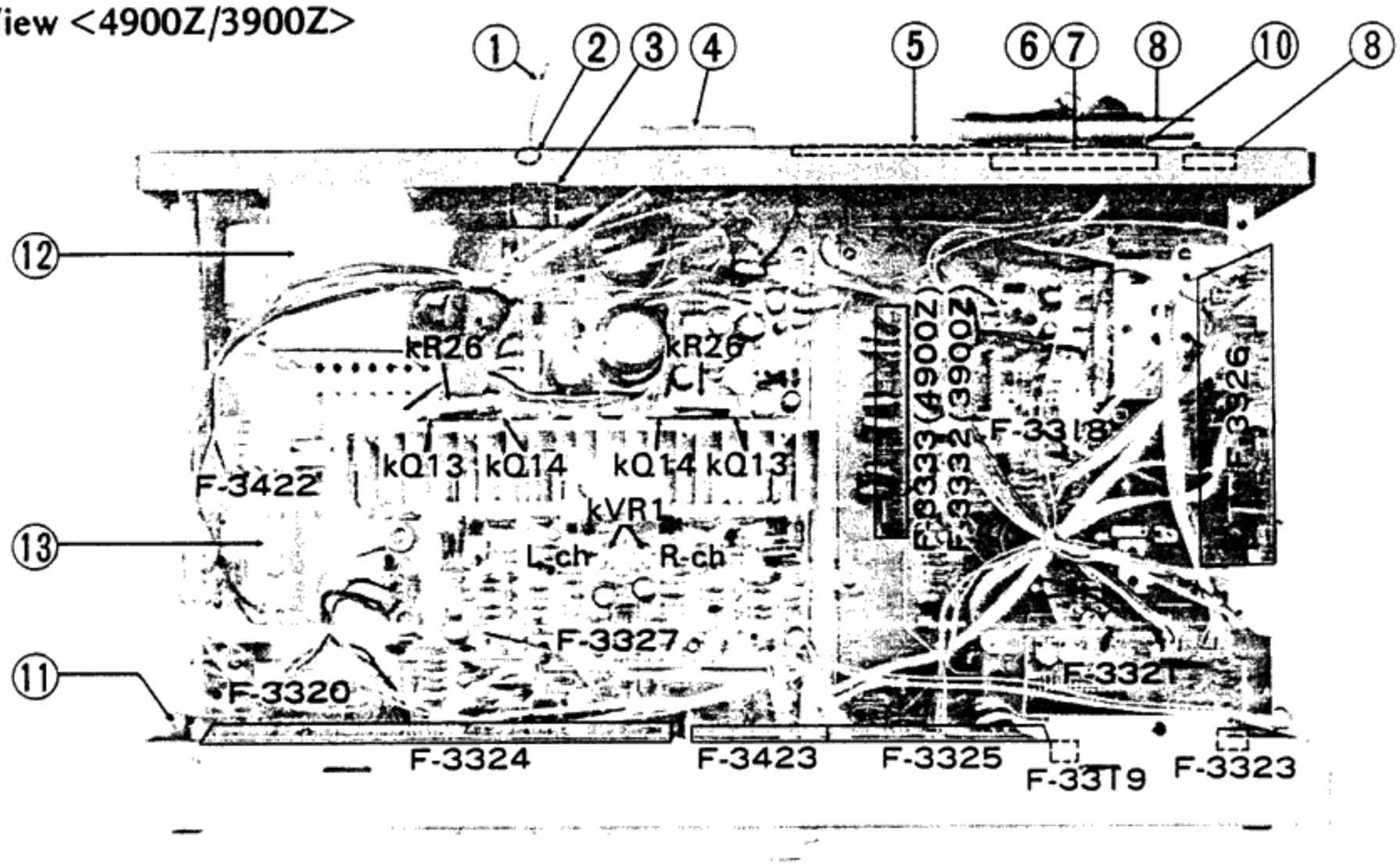
### Parts List <Top View>

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 38004700 | Power Cord |
| 2 | 39106000 | Strain Relief |
| 3 | 07189600 | AC Outlet |
| 4 | 07249300 | Speaker Terminal, system A, B |
| 5 | 07563310 | Battery Case Ass'y |
| 6 | 07249100 | 4P Input Terminal, tape 1 play/rec |
| 7 | 07249100 | 4P Input Terminal, tape 2 play/rec |
| 8 | 07249100 | 4P Input Terminal, phono, aux |
| 9 | 22902600 | 4P Antenna Terminal |
| 10 | 07236900 | AM Bar Antenna |
| 11 | 22301500 | Ground Terminal |
| 12 | 04006600 | Pilot Lamp 8V 150 mA |
| 13 | 15001301 | Power Transformer |
| 14 | 07189200 | Power Fuse 6A 250 V (100 V ~ 120 V) |
| | 07188800 | Power Fuse 3A 250 V (220 V ~ 240 V) |
| 15 | 04007600 | Pilot Lamp 8V 300 mA |

## 6-3. Front View <4900Z/3900Z>




## 6-4. Top View <4900Z/3900Z>




### Parts List <Front View>

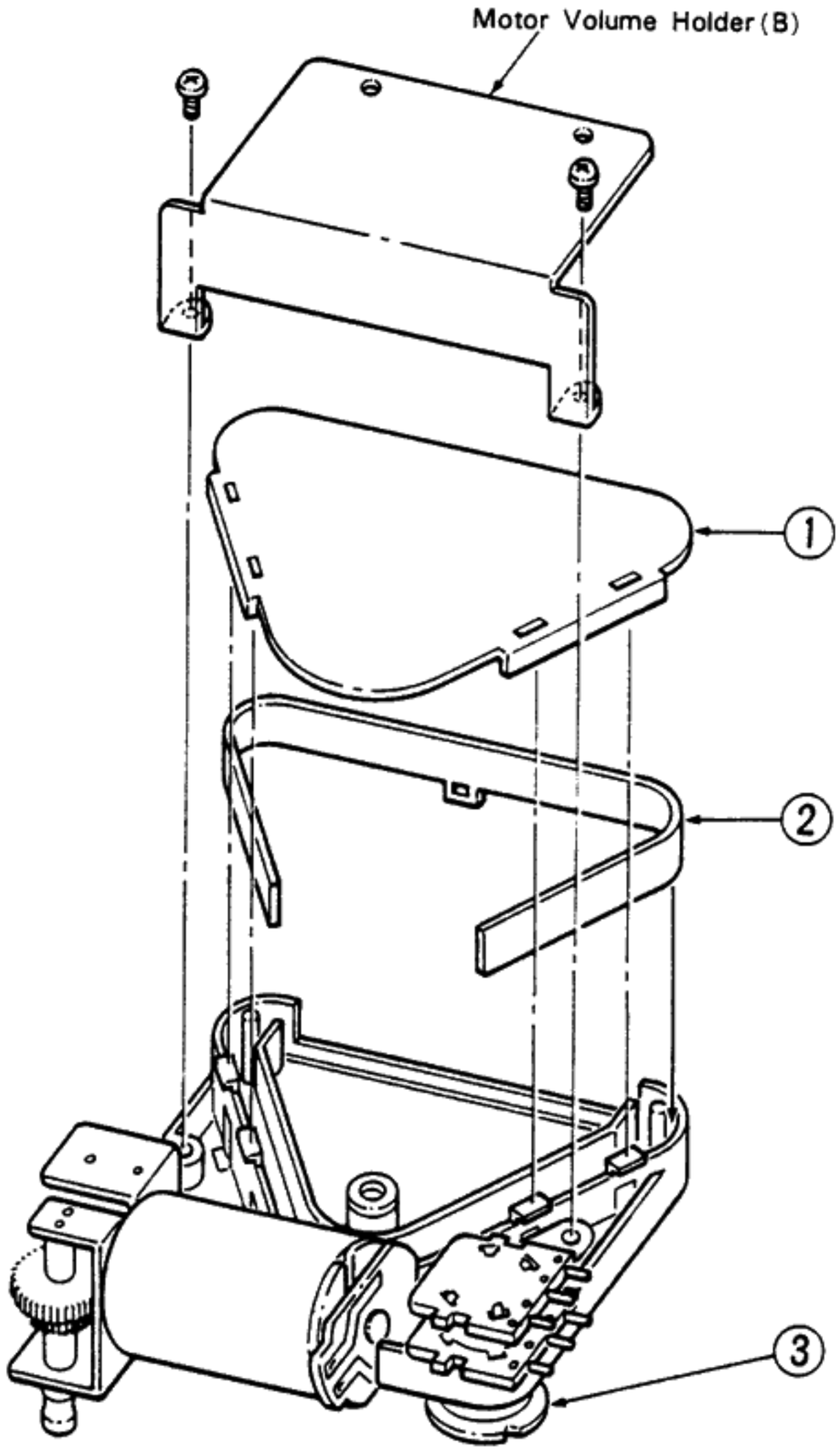
| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 07616600 | Bonnet |
| 2 | 07640210 | Front Panel Ass'y <4900Z> |
| | 07653010 | Front Panel Ass'y <3900Z> |
| | 07616900 | Front Glass |
| | 07615400 | Panel Side Frame (L) |
| | 07615500 | Panel Side Frame (R) |
| 3 | 07579800 | Push Knob, power |
| 4 | 11319000 | Push Switch |
| 5 | 07579800 | Push Knob, speakers, hi-filter, loudness selector |
| | 07581500 | Push Knob Guide |
| 6 | 07615600 | TY-Knob, bass, treble, balance |
| 7 | 07618700 | TY-Knob, volume |
| 8 | 07580100 | Push Knob, FM mode/tuning level tape mon. |
| | 07580900 | Push Knob Guide |
| 9 | 07652100 | Push Knob Ass'y, auto tuning |
| 10 | 07649810 | Preset Knob Ass'y |
| 11 | 07638100 | Dial Scale |
| 12 | 07638500 | Dial Back Plate <4900Z> |
| | 07639200 | Dial Back Plate <3900Z> |
| 13 | 07616300 | Smoked Plate |
| 14 | 07235300 | FL Indicator FIP7B8S |
| 15 | 07615800 | Indicator 14-Point <4900Z Only> |
| 16 | 07615900 | Indicator 5-Point |
| 17 | 07616000 | Indicator 1-Point |
| 18 | 07616100 | Indicator 1-Point (Red) |
| 19 | 07616200 | Indicator 8-Point |
| 20 | 24306000 | Head Phone Jack |
| 21 | 55073500 | Leg |

### Parts List <Top View>

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 38004700 | Power Supply Cord |
| 2 | 39106000 | Strain Relief |
| 3 | 07189600 | AC Outlet |
| 4 | 07249300 | Speaker Terminal, system A, B |
| 5 | 07563310 | Battery Case Ass'y |
| 6 | 07249100 | 4P Input Terminal, tape play/rec |
| 7 | 07249100 | 4P Input Terminal, phono, aux |
| 8 | 22902600 | 4P Antenna Terminal |
| 9 | 07236900 | AM Bar Antenna |
| 10 | 22301500 | Ground Terminal |
| 11 | 04007600 | Pilot Lamp 8 V 300 mA |
| 12 | 15001401 | Power Transformer <4900Z> |
| | 15001501 | Power Transformer <3900Z> |
| 13 | 07189100 | Fuse 5A 250V (100V ~ 120V) <4900Z> |
| | 07188700 | Fuse 2.5A 250V (220V ~ 240V) <4900Z> |
| | 07189000 | Fuse 4A 250V (100V ~ 120V) <3900Z> |
| | 07188600 | Fuse 2A 250V (220V ~ 240V) <3900Z> |

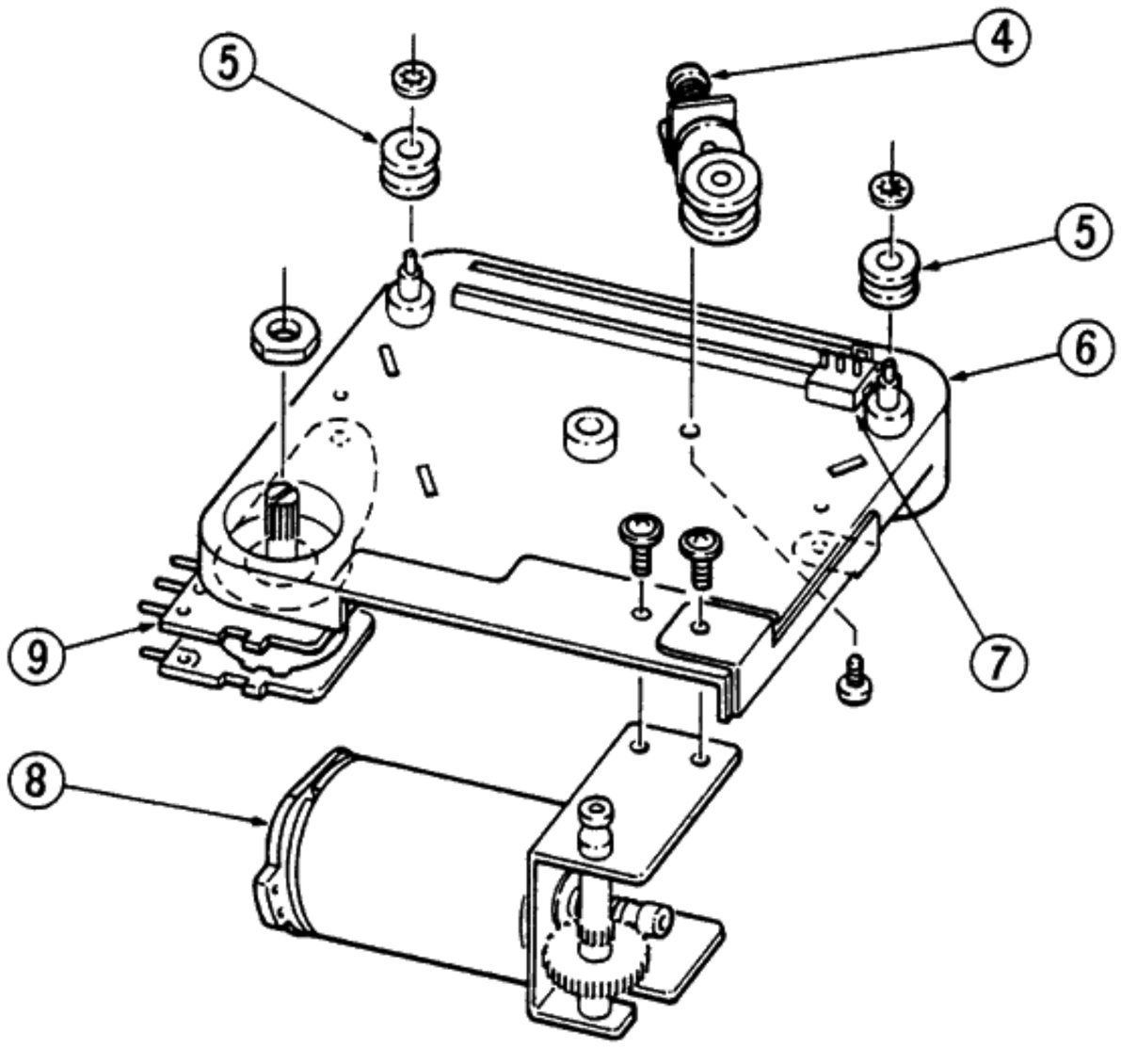
# 7. EXPLODED VIEW OF VOLUME CONTOROL MECHANISM

<5900Z Only>



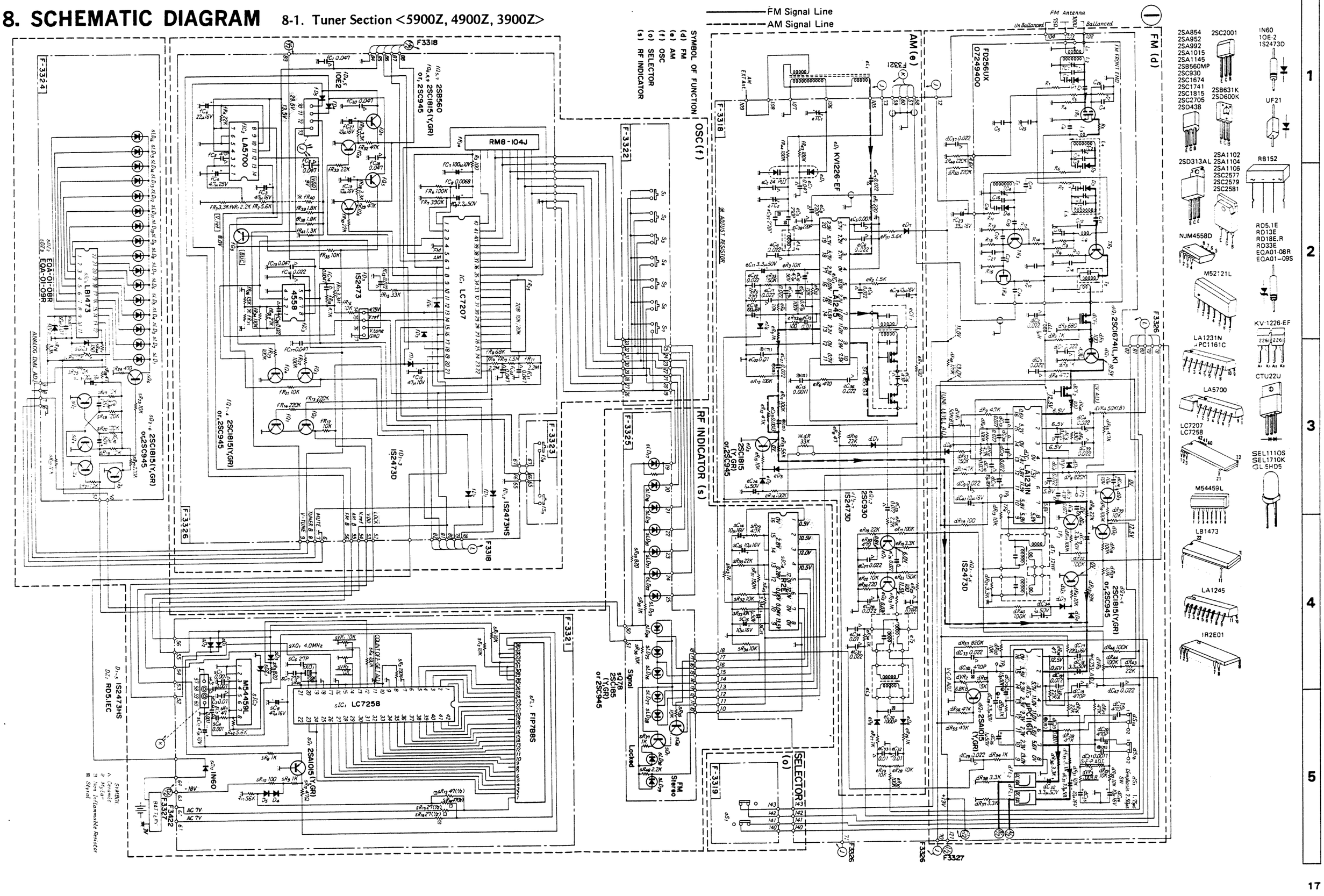

## Parts List

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 07600400 | Housing Cover |
| 2 | 07600300 | Indicator Film |
| 3 | 07600500 | Pulley D-17 |
| 4 | 07600910 | Tension Ass'y |
| 5 | 07233400 | Pulley (Small) |
| 6 | 07600210 | Housing |
| 7 | 07600600 | Film Guide |
| 8 | 07234000 | Motor Unit (B) |
| 9 | 07242100 | Variable Resistor 150kΩ (B) x 2 |

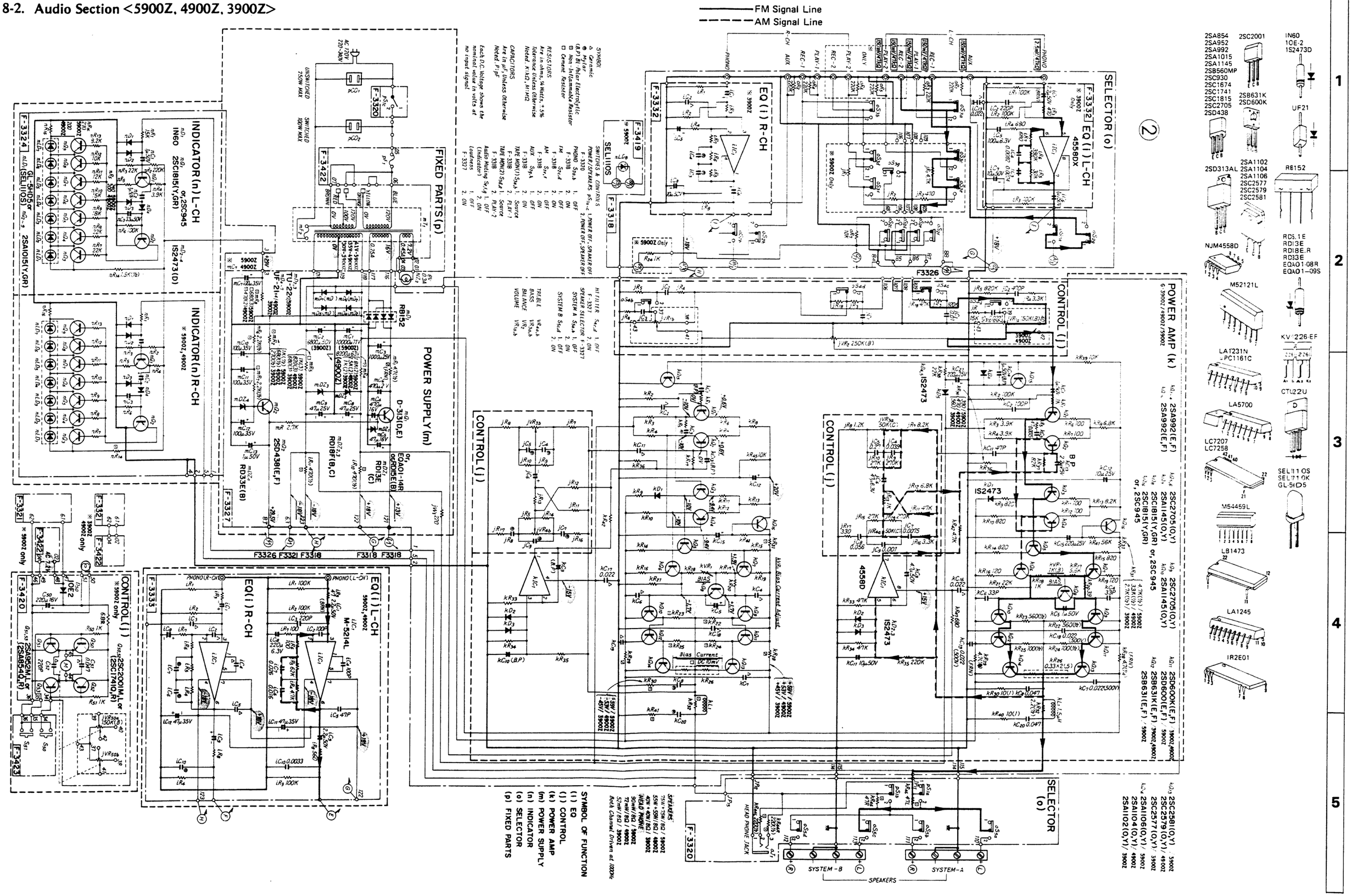


# 8. SCHEMATIC DIAGRAM

## 8-1. Tuner Section <5900Z, 4900Z, 3900Z>



## 8-2. Audio Section <5900Z, 4900Z, 3900Z>



# 9. THREADING OF VOLUME CONTOROL

1. Turn the volume control fully clockwise.
2. Thread the string in numerical order from 1 to 16 as Fig. 9-1.
3. Position the indicator film & the film guide at end of right side.
4. Lock the string to the film guide with locking paint. (See Fig. 9-2).

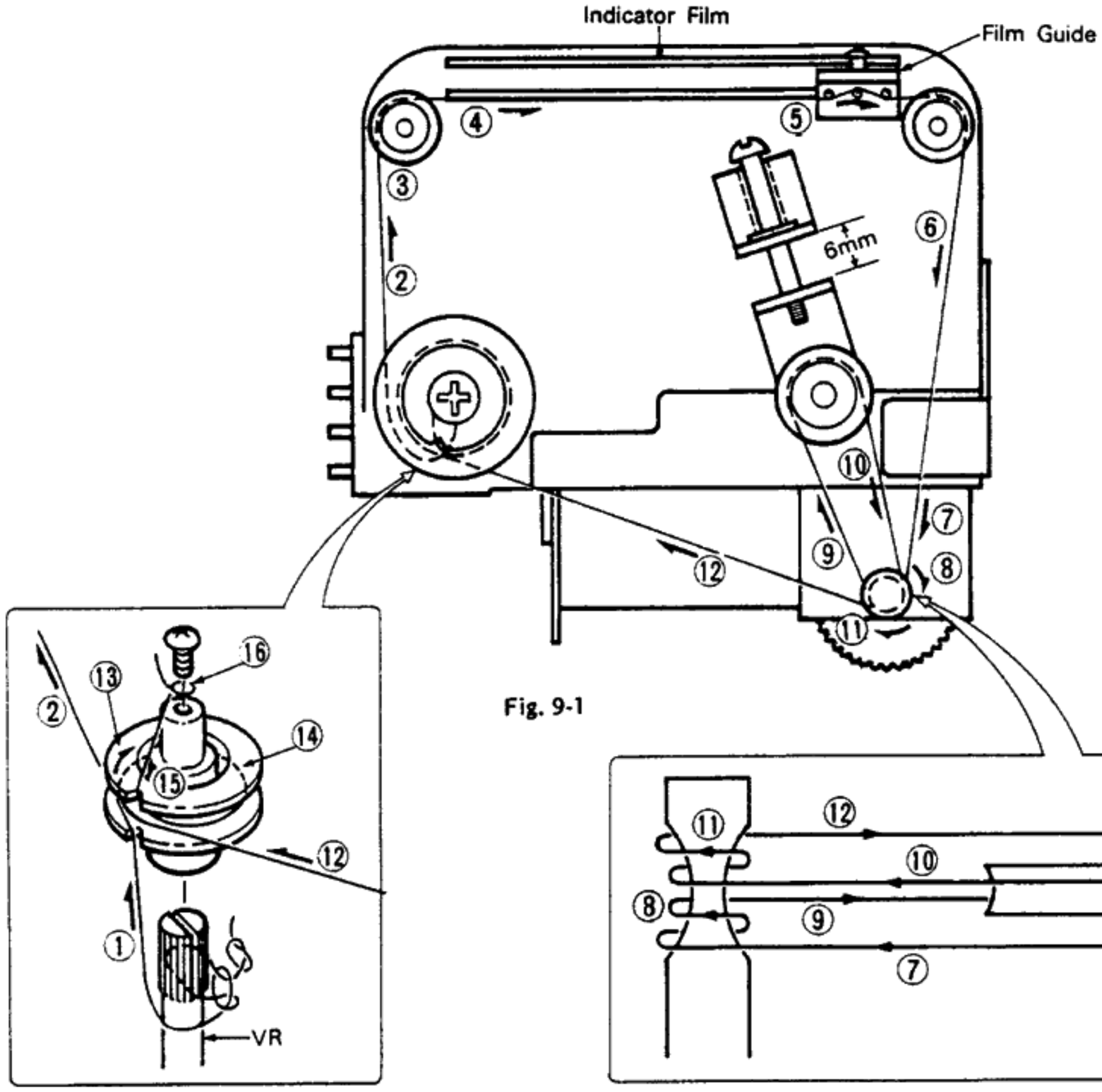



Fig. 9-1

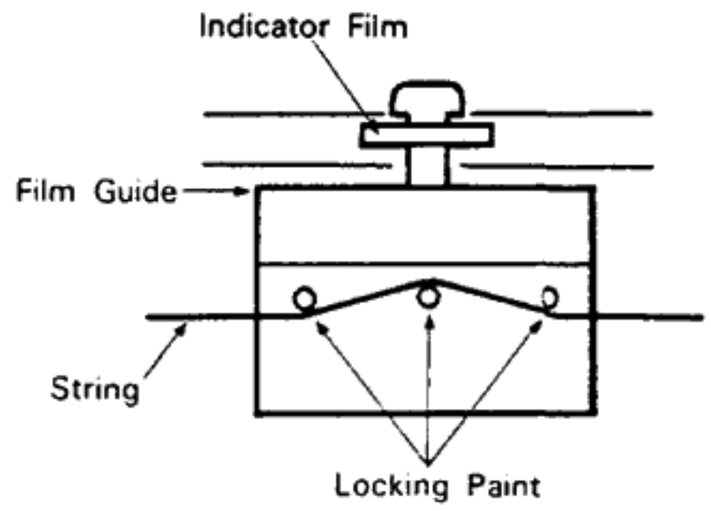
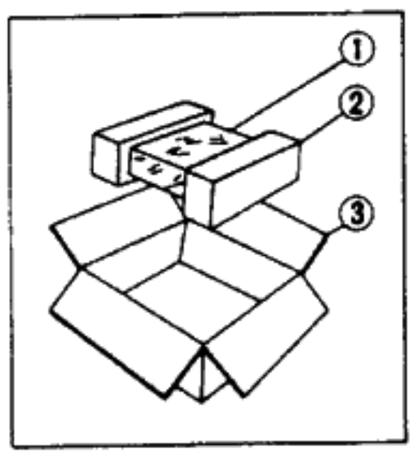



Fig. 9-2

# 10. PACKING LIST

| Parts No. | Stock No. | Description |
|---|---|---|
| | 91166920 | Vinyl Cover |
| | 07621000 | Stylofoam Packing |
| | 07620900 | Carton Case <5900Z> |
| | 07640300 | Carton Case <4900Z> |
| | 07656500 | Carton Case <3900Z> |



# 11. ACCESSORY PARTS LIST

| Stock No. | Description |
|---|---|
| 07577700 | Operating Instruction <5900Z> |
| 07577800 | Operating Instruction <4900Z> |
| 07642900 | Operating Instruction <3900Z> |
| 38201200 | FM Antenna |