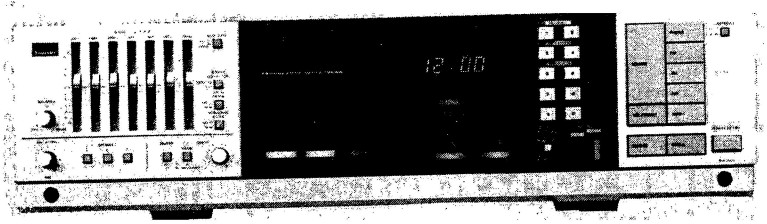
SERVICE MANUAL

QUARTZ SYNTHESIZER COMPU-RECEIVER

SANSUI Z-9000/7000



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 0.005 % total harmonic distortion.
<Z-9000> . . . . . 120 watts per channel into 8 ohms
<Z-7000> . . . . . 90 watts per channel into 8 ohms
Load impedance . . . . 8 ohms
Total harmonic distortion
from POWER AMP IN
. . . . . less than 0.005 % at or below rated min. RMS power output
Intermodulation distortion (60 Hz : 7 kHz = 4:1 SMPTE method)
from POWER AMP IN
. . . . . less than 0.005 % at rated power output
Frequency response (at 1 watt)
from POWER AMP IN
. . . . . 5 to 200,000 Hz, +0 dB, –3.0 dB
RIAA curve deviation (PHONO, 20 Hz to 20 kHz)
. . . . . +0.2 dB, –0.2 dB
Input sensitivity and impedance (at 1 kHz)
PHONO-MM . . . . 2.5 mV/47 kilohms
PHONO-MC . . . . . 250 μV/100 ohms
TAPE PLAY, AUX . 150 mV/47 kilohms
MIC . . . . . 1.0 mV/10 kilohms
Output level (at 1 kHz)
TAPE REC . . . . . 150 mV/47 kilohms
PREAMP OUT
<Z-9000> . . . . . 1000 mV/47 kilohms
<Z-7000> . . . . . 800 mV/47 kilohms
Signal to noise ratio (short-circuit, A-network)
PHONO-MM . . . . 82 dB
PHONO-MC . . . . . 68 dB
Channel separation (at 1 kHz)
PHONO-MM . . . . 55 dB
TAPE PLAY, AUX . 60 dB
Controls <Z-9000>
GRAPHIC EQUALIZER
. . . . . ±10 dB at 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6 kHz, 15 kHz
SUBSONIC . . . . . –3 dB at 16 Hz (6 dB/oct)
HIGH . . . . . –3 dB at 5 kHz (6 dB/oct)
Controls <Z-7000>
SUPER BASS . . . . . ±10 dB at 30 Hz
BASS . . . . . ±10 dB at 150 Hz
MIDRANGE . . . . . ±10 dB at 1 kHz
TREBLE . . . . . ±10 dB at 10 kHz
SUBSONIC . . . . . –3 dB at 16 Hz (6 dB/oct)
HIGH . . . . . –3 dB at 5 kHz (6 dB/oct)

FM section

Tuning range . . . . . 88 to 107.9 MHz
Usable sensitivity
Mono IHF . . . . . 10.3 dBf (1.8 μV)
Stereo IHF . . . . . 19 dBf
50 dB quieting sensitivity
Mono . . . . . 14 dBf
Stereo . . . . . 37 dBf
Signal to noise ratio (at 65 dBf)
Mono . . . . . 80 dB
Stereo . . . . . 76 dB
Distortion (at 65 dBf) <Z-9000>
Mono . . . . . less than 0.08 % at 100 Hz
less than 0.05 % at 1,000 Hz
less than 0.08 % at 6,000 Hz
Stereo . . . . . less than 0.1 % at 100 Hz
less than 0.07 % at 1,000 Hz
less than 0.1 % at 6,000 Hz
Distortion (at 65 dBf) <Z-7000>
Mono . . . . . less than 0.15 % at 100 Hz
less than 0.1 % at 1,000 Hz
less than 0.15 % at 6,000 Hz
Stereo . . . . . less than 0.25 % at 100 Hz
less than 0.15 % at 1,000 Hz
less than 0.25 % at 6,000 Hz
Alternate channel selectivity (at 400 kHz) <Z-9000>
WIDE . . . . . 50 dB
Alternate channel selectivity (at 400 kHz) <Z-7000>
. . . . . 60 dB
Capture ratio . . . . . 1.0 dB
Image response ratio . . 85 dB
Spurious response ratio
. . . . . 90 dB
IF response ratio . . . . 90 dB
Stereo separation . . . . 35 dB at 100 Hz
45 dB at 1,000 Hz
30 dB at 10,000 Hz
Frequency response . . 30 to 15,000 Hz, +0.3 dB, –0.5 dB
Hum and noise (at 65 dBf)
. . . . . 70 dB
Antenna input impedance
. . . . . 300 ohms balanced
75 ohms unbalanced

to be continued▶

AM section

Tuning range . . . . . 530 to 1,600 kHz
Usable sensitivity . . . . . 49 dB/m
Selectivity . . . . . 30 dB
Signal to noise ratio . . 50 dB
Distortion (at 30 % Modulation, 80 dB/m)
. . . . . less than 0.5 %
Image response ratio . . 40 dB at 1,000 kHz
IF response ratio . . . . 50 dB at 1,000 kHz

Others

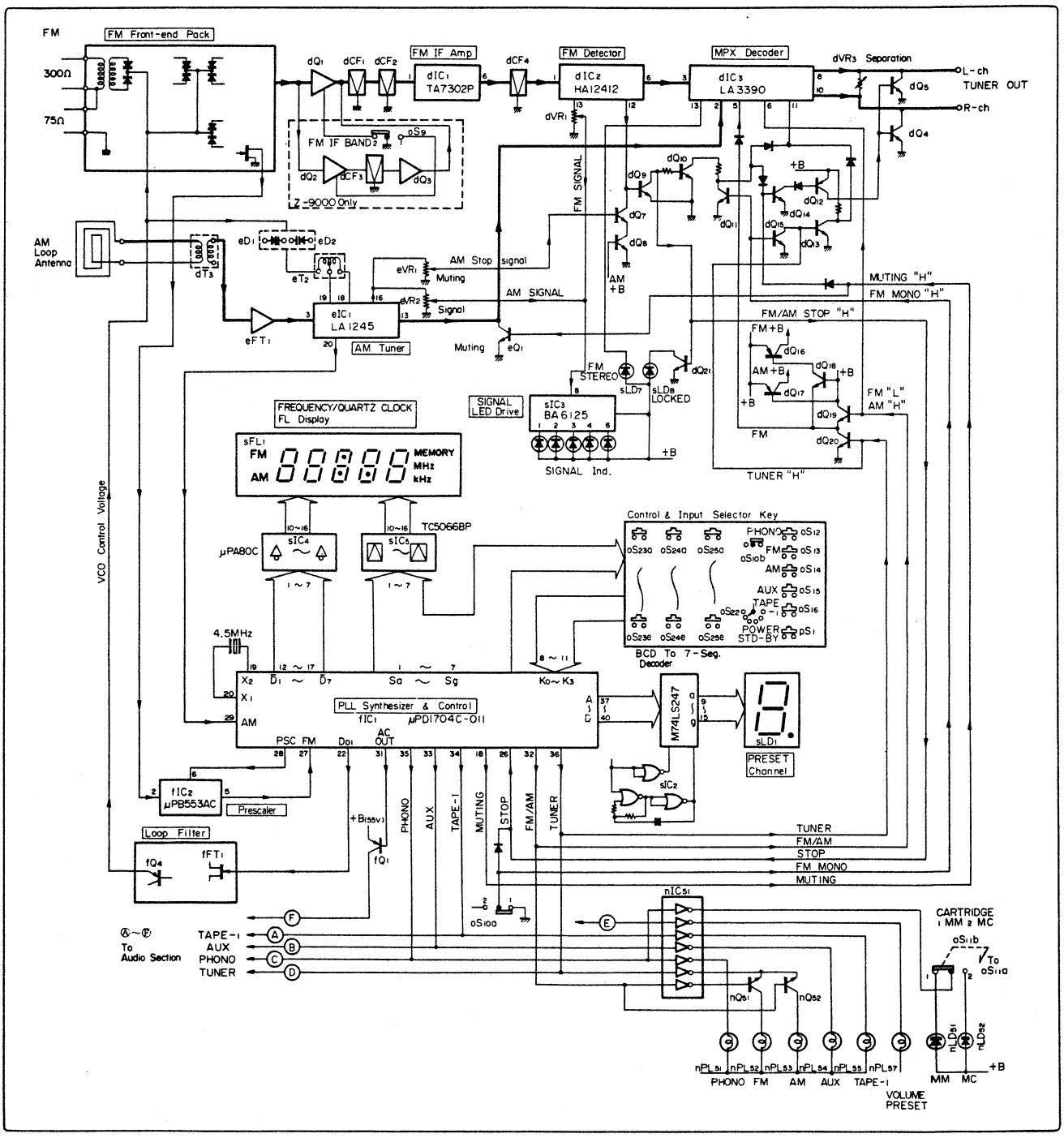
Power requirements <Z-9000>
Power voltage . . . . . 120, 220, 240 V (50/60 Hz)
For U.S.A. and Canada
. . . . . 120 V (60 Hz)
Power consumption
Rated consumption
. . . . . 500 watts 630 VA
Power requirements <Z-7000>
Power voltage . . . . . 120, 220, 240 V (50/60 Hz)
For U.S.A. and Canada
. . . . . 120 V (60 Hz)
Power consumption
Rated consumption
. . . . . 450 watts 520 VA

Dimensions . . . . . 550 mm (21-11/16") W
150 mm (5-15/16") H
386 mm (15-1/4") D
Weight <Z-9000> . . . 15.2 kg (33.5 lbs.) net
17.0 kg (37.5 lbs.) packed
Weight <Z-7000> . . . 14.3 kg (31.5 lbs.) net
16.1 kg (35.3 lbs.) packed

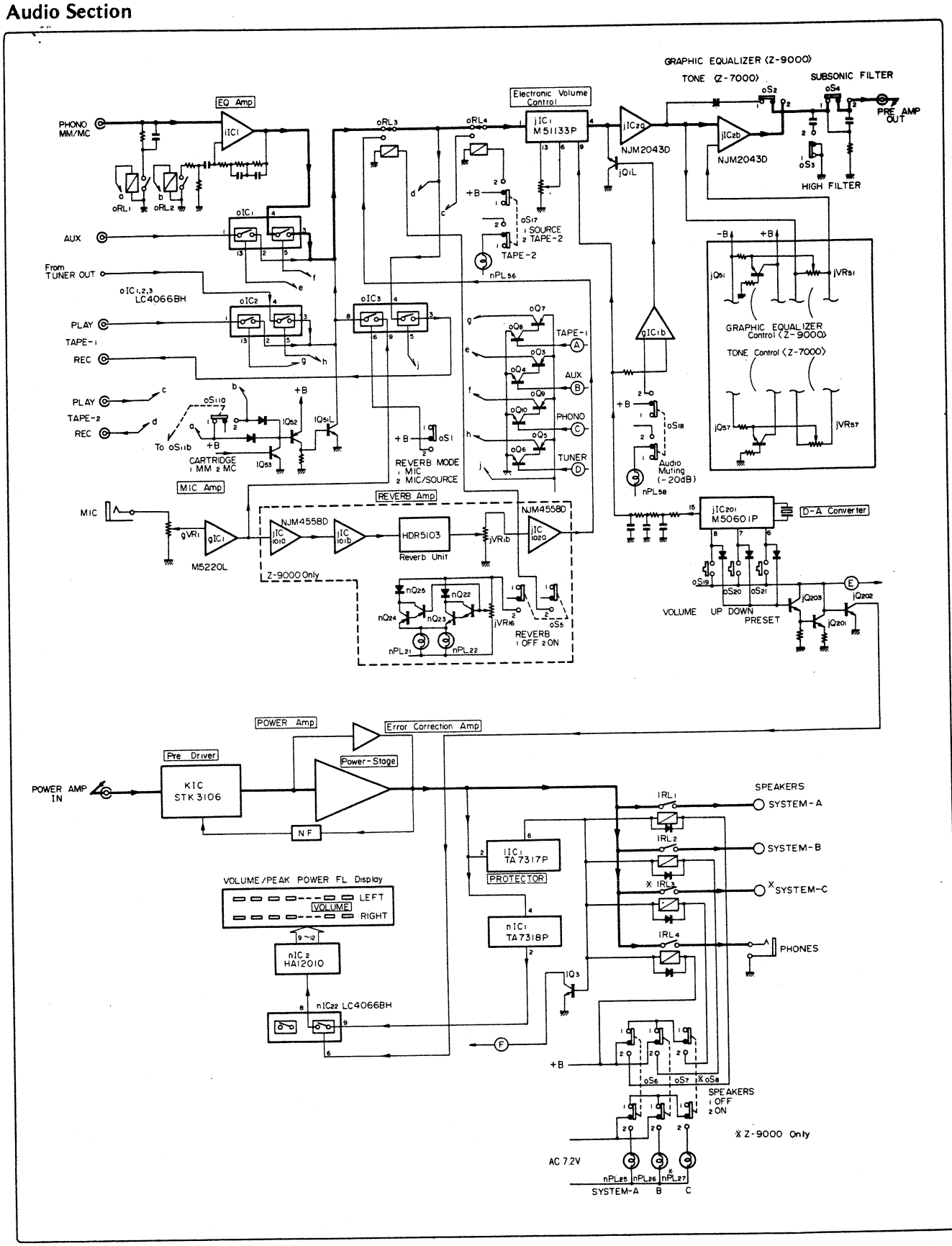
* Design and specifications subject to changes without notice for improvements.

1. BLOCK DIAGRAM

1-1. Tuner & Control Section



1-2. Audio Section



2. DESCRIPTION OF μPD1704C-011/PLL SYNTHESIZER & THE CONTROL IC

2-1. Function Outline

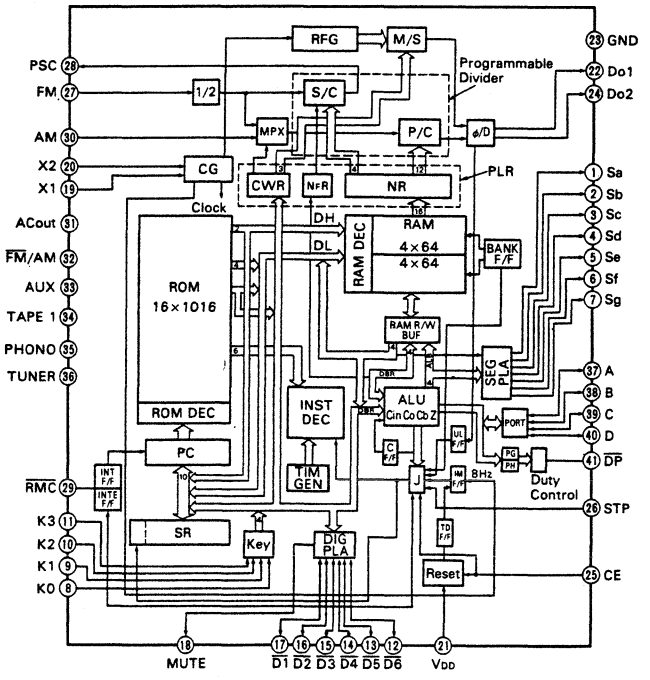
A. Functions of automatic station selection

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 functions of μPD1704C-011



● Terminal Function of μPD1704C-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. (See 2-3. Description of key Matrix, for further detail)
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. (See 2-3. Description of Key Matrix, for further detail).
12~17	D_1~D_6	Digit Outputs	Terminals for outputting indicator digit signals. Low level when active.
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: * 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. (1) When NONCLOCK is preset by an initializing diode matrix: 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: 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 μPB553AC.
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 μPB553AC. Selectable division ratios are 1/16 and 1/17 in μPB553AC.
29	$\overline{RMC}$	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	$\overline{FM}$/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:
41	$\overline{DP}$	DECIMAL POINT	Terminal for outputting a decimal point indication signal in FM frequency indication. Low level when active.
42	$\overline{COLON}$	COLON	Terminal for outputting a COLON indication signal in CLOCK indication. Low level when active.

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

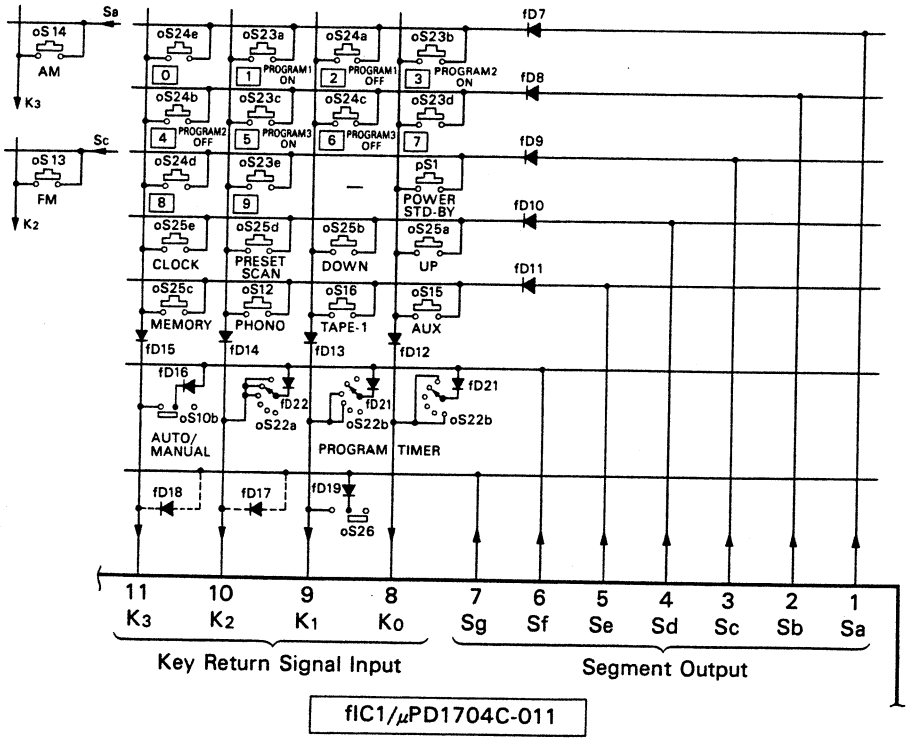
2-3. Description of Key Matrix

A. Key matrix configuration

- Key matrix arrangement (Refer to key matrix connection and type of switch on next page)

Input Terminal / Output Terminal	K3 (11)	K2 (10)	K1 (9)	K0 (8)	Type of Key
Sa (1)	0 (AM)	1 (PROGRAM 1 ON)	2 (PROGRAM 1 OFF)	3 (PROGRAM 2 ON)	Momentary Switch
Sb (2)	4 (PROGRAM 2 OFF)	5 (PROGRAM 3 ON)	6 (PROGRAM 3 OFF)	7	
Sc (3)	8	9 (FM)	–	POWER STD-BY	
Sd (4)	CLOCK	PRESET SCAN	DOWN	UP	
Se (5)	MEMORY	PHONO	TAPE-1	AUX	
Sf (6)	AUTO/MANUAL	MOD SW 2	MOD SW1	MOD SW0	MOD SW: Rotary Switch AUTO/MANUAL : Alternate Switch
Sg (7)	IF0	IF1	BAND 1	BAND 0	Initialize Diode

- **Key matrix connection and type of switch**

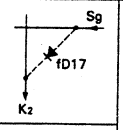
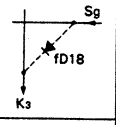
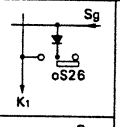
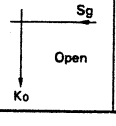


flC1/μPD1704C-011

B. Initialize diode matrixes: IF1, IF0, BAND1 and BAND2

These are initializing diode matrixes. These values are read when a power supply is applied to V_{DD} at the first time (that is, when initialized) and when CE terminal changes from low level to high level.

When setting, short a point of intersection on the key matrix by a diode or open the key matrix.

Key Switch		Description of functions
IF 1		These switches are used for presetting an offset value of IF in FM. Without changing the indicated frequencies, it is possible to set four intermediate frequencies at intervals of 25 kHz as listed below;
IF 0		
BAND 1		These switches are used for presetting a receive band. It is possible to select any one of USA, Europe and Japan bands.
BAND 0		

IF1	IF0	USA Band	Europe Band	Japan Band
OFF	OFF	10.700MHz	10.700MHz	10.700MHz
OFF	ON	10.725	10.725	10.675
ON	OFF	10.650	10.650	10.750
ON	ON	10.675	10.675	10.725

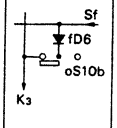
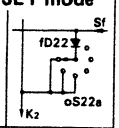
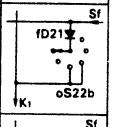
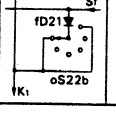
* In the table, ON means "short" with a diode and OFF means "open".

BAND1	BAND0	
OFF	OFF	USA Band
OFF	ON	Japan Band
ON	OFF	Europe Band
ON	ON	*Prohibition

* In the table left, ON means "short" with a diode and OFF means "open".

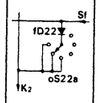
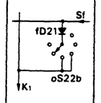
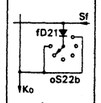
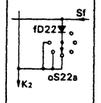
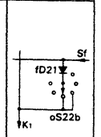
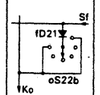
* Do not turned on BAND 1 and BAND 0 simultaneously, because the receive band is not set correctly.

C. Alternate Switch: AUTO/MANUAL Switch and PROGRAM TIMER Switch <Programmable Mode Switch (MODSW2/MODSW1/MODSW0)>

Key Switch		Description of Functions
AUTO MANUAL		This switch is used for selecting automatic tuning and manual tuning. ON . . . . AUTO TUNE OFF . . . MANUAL TUNE Automatic or manual tuning starts operating when UP or DOWN momentary switch is depressed after this switch has been set.
		These switches are used for designating programmable modes of PROGRAM TIMER switch such as SET mode, CLEAR mode, etc.
1. CLOCK SET mode		**1. CLOCK SET mode** In this mode, the present time is set.
MODSW2		① Set the present time by inputting four digits with ten keys 0 to 9 of momentary switch. (Example) When set to 8:15 a.m.:
MODSW1		**Note:** In case a wrong key is depressed by mistake, input four digits once before depressing ten keys again beginning from the first digit.
MODSW0		② Set programmable mode switches to OFF in accordance with a time signal. The clock function starts operating the instant the programmable mode switches are set to OFF.

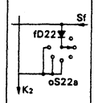
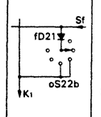
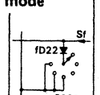
MODSW2	MODSW1	MODSW0	
1	0	1	CLOCK SET
1	0	0	OFF
1	1	0	ON
0	1	0	CHECK
0	0	0	SET
0	0	1	CLEAR

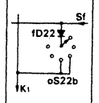
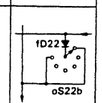
Note: "1" indicates ON (short); "0" indicates OFF (open) in table above.

Key Switch	Description of Functions
2. OFF mode MODSW2  MODSW1  MODSW0 	*1) In the case where OFF mode is switched to CLOCK mode in receiving broadcasting in AM or FM and the time is set in receiving broadcasting, the frequency of received broadcasting is indicated when CLOCK mode is returned to OFF mode. Further, in PHONO, TAPE-1, and AUX the time is indicated. In the example above, "0" which is first set is suppressed into blank as shown below. 8:15 *2) When V_{DD} (5V ± 10%) is first applied, "E" is indicated. E : *3) When set to CLOCK SET mode, the internal clock stops operating. Further, when switched from CLOCK SET mode to other modes, the clock begins to operate; however, in this case the "second" value of the clock is set to "00". **2. OFF mode** In this mode, tuner functions (preset memory writing and reading in AM/FM, UP/DOWN tuning in AUTO/MANUAL, preset memory scanning) and source selection function (PHONO, TAPE-1, and AUX) are enabled.
3. ON mode MODSW2  MODSW1  MODSW0 	**3. ON mode** In this mode, programmed times and sources (AM, FM, PHONO, TAPE-1 and AUX) can be executed. Three-system timers of PROGRAM-1, PROGRAM-2 and PROGRAM-3 are executed (ON/OFF) at each programmed time. PROGRAM-1 and PROGRAM-2 repeat source's ON/OFF at the programmed times every day, once ON/OFF times and sources are programmed. PROGRAM-3 is released automatically after having executed source's ON/OFF only once, without executing the program on the succeeding day. For these programs, there is a priority order of PROGRAM-3, PROGRAM-2, and PROGRAM-1, respectively. (See 2-5. Description of programmable timer operations, for further detail) Further, when the timers are executed, μPD1704C-011 makes the selection terminals active according to the programmed sources, as listed below:

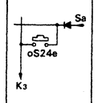
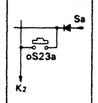
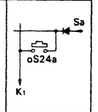
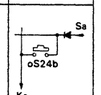
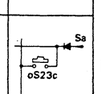
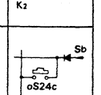
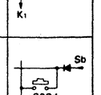
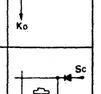
Programmed Source	
FM	FM/AM = Low, TUNER = High, AC-OUT = High
AM	FM/AM = High, TUNER = High, AC-OUT = High
PHONO	PHONO = High, AC-OUT = High
TAPE-1	TAPE-1 = High, AC-OUT = High
AUX	AUX = High, AC-OUT = High

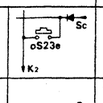
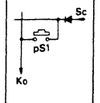
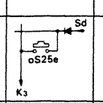
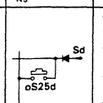
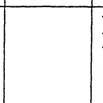
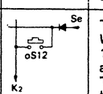
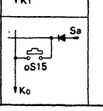
	In the case where any timer of the system is on, all the keys and remote control input signals are disabled in this mode, in order to prevent erroneous operations. Therefore, if key signals are required to input, set the mode to OFF mode once before inputting them.
4. CHECK mode MODSW2  MODSW1  MODSW0 	**4. CHECK mode** In this mode, ON/OFF times and sources programmed in SET mode can be checked. Use the following procedures for checking them. ① Set program mode swithces to CHECK mode. In this mode, selection terminals (TUNER, PHONO, TAPE-1 and AUX) and AC OUT terminal change all to a Low level. The present time is indicated on indicator. ② Depress any one of ON keys of PROGRAM-1, PROGRAM-2 and PROGRAM-3. Then, a programmed ON time, a selection terminal corresponding to source and a preset station are indicated for about five seconds. After five seconds, the present time is indicated again. ③ Depress any one of OFF keys of PROGRAM-1, PROGRAM-2 and PROGRAM-3. Then, a programmed OFF time is indicated for about five seconds. After five seconds, the present time is indicated again. **Note:** When ON/OFF time is not programmed, only a colon is indicated for about five seconds.

Key Switch	Description of Functions
5. SET mode MODSW2  MODSW1  MODSW0 	**5. SET mode** In this mode, ON/OFF times of timer and sources can be programmed. In programming times, be sure to program ON and OFF times both. When only one ON time is programmed, timer does not operate. When only one OFF time is programmed, only the OFF operation is executed. Programmable sources are of five kinds: AM, FM, PHONO, TAPE-1 and AUX. Use the following procedures for programming them. ① Set programmable mode switches to SET mode. In this state, the present time is indicated. ② Depress one desired ON key of PROGRAM-1, PROGRAM-2 and PROGRAM-3. In this state, only a colon is indicated. Additionally, a LED for indicating a preset station corresponding to the depressed ON key comes on for about 60 ms. ③ Set a time by inputting four digits with ten keys 0 to 9 of momentary switch. (Example) When set to 6:00 p.m.: '1, 1 : → '0, 18: → '0, 18:0 → '0, 18:00 ④ Depress a key corresponding to a desired source (FM, AM, PHONO, TAPE-1 and AUX). When PHONO, TAPE-1 or AUX key is depressed, a selection terminal corresponding to the key becomes a High level for about 500 ms. When FM or AM key is depressed, TUNER terminal is kept at a High-level and FM/AM terminal becomes active until a preset station key (1 to 8) is depressed. Further, when PHONO, TAPE-1 or AUX key is depressed, the present time is indicated on indicator after about 500 ms (the time during which selection terminal is at a High level). When FM or AM key is depressed, a programmed ON time is indicated on indicator until a preset station key is depressed. ⑤ When FM or AM is selected as a source in procedure 4 above, next depress a desired preset station key (1 to 8). In this case, a LED for indicating a preset station corresponding to the depressed key comes on for about 60 ms. After that, the indication is changed from programmed ON time to present time. **Note:** When a wrong time or a wrong source is set by mistake, set programmable mode switches once to another mode, and then program it again beginning from procedure ① or beginning from procedure ② after compieting procedure ⑤. ⑥ Depress the OFF key corresponding to the ON key depressed in procedure ② above. In this state, only a colon is indicated. Additionally, a LED for indicating a preset station corresponding to the depressed key comes on for about 60 ms. ⑦ Set a time by inputting four digits with ten keys 0 to 9 of momentary switch. (Example) When set to 8:30 p.m.: '2, 2 : → '0, 20: → '3, 20:3 → '0, 20:30 After four digits have been inputted, the present time is indicated again. **Note:** When a wrong key is depressed by mistake, input four digits once before restarting procedure ⑥. ⑧ Set programmable mode switches to ON mode. In this state, the present time is indicated on the indicator. **Note:** In operating timers, be sure to set programmable mode switches to ON mode. Timers do not start operating in other modes.
6. CLEAR mode MODSW2 	**6. CLEAR mode** In this mode, programmed timer ON/OFF times and sources can be cancelled. Use the following procedures for cancelling them. ① Set programmable mode switches to CLEAR mode. In this state, the present time is indicated.

Key Switch	Description of Functions
MODSW1  MODSW0 	② Depress the ON key of timer (PROGRAM-1, PROGRAM-2, or PROGRAM-3) required to cancel. In this state, only a colon is indicated for a moment and the programmed ON times and source are cancelled. After that, the present time is indicated immediately. ③ Depress the OFF key corresponding to the ON key depressed in procedure ② above. In the same way as in procedure ②, only a colon is indicated for a moment and the programmed OFF time is cancelled. After that, the present time is indicated immediately.

D. Momentary Switch: 0 ~ 9, POWER STD-BY, CLOCK, PRESET SCAN, UP, DOWN, MEMORY, PHONO, TAPE-1 and AUX

Key Switch	Description of Functions
0 	Since this is a multi-functional key, its functions change according to the set positions of programmable mode switches (MODSW 0, 1, 2). (1) When programmable mode switches are set to CLOCK SET mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) 0 1 2 3 4 5 6 7 8 9 (FM) 7 8 9 When set to CLOCK SET mode, this key is used only for ten keys for setting a time.
1 	(2) When programmable mode switches are set to OFF mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) AM 1 2 3 4 5 6 7 8 9 (FM) 7 8 FM When set to OFF mode, this key is used for selecting AM or FM band and for a preset station key.
2 	(3) When programmable mode switches are set to ON mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) AM 1 2 3 4 5 6 7 8 9 (FM) 7 8 FM When the timer programmed in ON mode is on, all the keys and remote control input signals are disabled.
3 	(4) When programmable mode switches are set to CHECK mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) — — — — — — — 7 8 9 (FM) — — — "—" means that keys are disabled. When set to CHECK mode, ON/OFF keys of PROGRAM-1, PROGRAM-2, and PROGRAM-3 are enabled. Therefore, it is possible to confirm the programmed timer time and source.
4 	(5) When programmable mode switches are set to SET mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) 0 (AM) 1 2 3 4 5 6 7 8 9 (FM) 7 8 9 (FM) When set to SET mode, the functions vary according to the operation procedures.
5 	(6) When programmable mode switches are set to CLEAR mode: 0 (AM) 1 (PROGRAM-1 ON) 2 (PROGRAM-1 OFF) 3 (PROGRAM-2 ON) 4 (PROGRAM-2 OFF) 5 (PROGRAM-3 ON) 6 (PROGRAM-3 OFF) — — — — — — — 7 8 9 (AM) — — "—" means that keys are disabled.
6 	
7 	
8 	

Key Switch	Description of Functions
9 	When CLEAR mode is required to set, depress ON/OFF key (PROGRAM-0, 1, 2) to cancel the programmed timer time and source.
POWER STD-BY 	This key is used for energizing a relay to break the power supply. When this key is depressed, AC OUT terminal and selection terminals (AUX, TAPE-1, PHONO and TUNER) become a Low level and the time is indicated. To turn on the power supply again, depress any one of AM/FM key, preset station keys (1 to 8), and PHONO, TAPE-1 and AUX keys.
CLOCK CALL 	This key is used for indicating the present time when a frequency is being indicated. When this key is depressed, the present time is indicated for five seconds. After five minutes, however, frequency is indicated again.
PRESET SCAN 	This key is used for scanning the preset stations. When this key is depressed, the scanning operation is repeated while receiving each of the stations stored in preset station memories (1 to 8) for about five seconds one after another beginning from the first station. When this key is depressed again during preset scanning, the preset scanning operation stops, holding a station which receives broadcasting before this key is depressed.
UP 	These keys are used for automatic or manual tuning. When these keys are depressed, the following operations take place. (1) When AUTO/MANUAL switch is set to AUTO: * When UP key is depressed, the frequency continues increasing in sawtooth wave mode. In this case, if SD terminal is at a High level, the automatic upward operation stops. Further, when DOWN key is depressed, automatic downward operation starts. * When DOWN key is depressed, the frequency continues decreasing in sawtooth wave mode. In this case, if SD terminal is at a High level, the automatic downward operation stops. Further, when UP key is depressed, automatic upward operation starts.
DOWN 	*1 The speed of the automatic upward or downward operation is 60 ms/step in frequency channel space. *2 If UP key is depressed during automatic upward operation or DOWN key is depressed during automatic downward operation, the automatic upward or downward operation continues. (2) When AUTO/MANUAL switch is set to MANUAL: * Whenever UP or DOWN key is depressed once, the frequency is increased or decreased one step by one step (one step means a channel space). * When UP or DOWN key is kept depressed for 0.5 seconds or more, the frequency is increased or decreased at a speed of 60 ms/step until the key is released.
MEMORY 	This key is used for writing a new frequency in preset memory. When any one of preset station keys (1 to 8) is depressed within five seconds after this key has been depressed, the indicated frequency is written in a preset memory corresponding to the depressed key. When the writable state is required to release, depress UP/DOWN keys or change AM/FM band.
PHONO 	These keys are used for selecting sources. When programmable mode switches (MODSW-0, 1, 2) are set to OFF mode, AC OUT terminal and selection terminals (TUNER, PHONO, TAPE-1, AUX) corresponding to these keys becomes a High level by depressing these switches. When programmable mode switches are set to SET mode, selection terminal becomes a High level for about 500 ms by depressing these keys.
TAPE-1 	
AUX 	

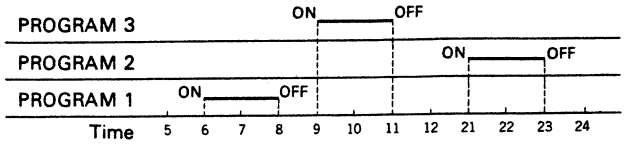
2-4. Description of programmable timer operations

There are three kinds of programmable timers:
PROGRAM 1, PROGRAM 2 and PROGRAM 3.
In PROGRAM 1 and PROGRAM 2, once ON/OFF times and the source are programmed, the source is turned on or off at the programmed times every day.

In PROGRAM 3, once ON/OFF times and the source are programmed, the source is turned on or off at the programmed times only once, cancelling the programmed contents at the times. The priority order is PROGRAM 3, PROGRAM 2 and PROGRAM 1. In each system, since OFF has priority over ON. The following operations take place according to the preset times:

① When ON and OFF times are not overlapped:

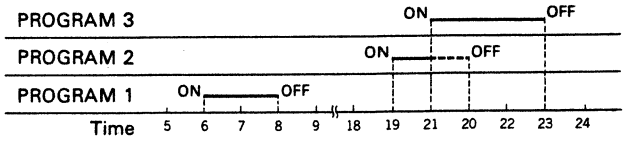
	ON Time	OFF Time
PROGRAM 3	9:00	11:00
PROGRAM 2	21:00	23:00
PROGRAM 1	6:00	8:00



Note: "——" indicates the state where timer is operative.

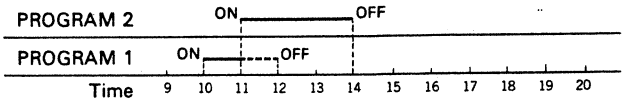
② When PROGRAM 3 is ON while PROGRAM 2 is operative:

	ON Time	OFF Time
PROGRAM 3	20:00	23:00
PROGRAM 2	19:00	21:00
PROGRAM 1	6:00	8:00



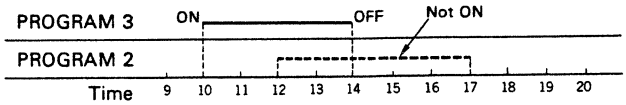
③ When PROGRAM 2 is ON while PROGRAM 1 is operative:

	ON Time	OFF Time
PROGRAM 2	11:00	14:00
PROGRAM 1	10:00	12:00



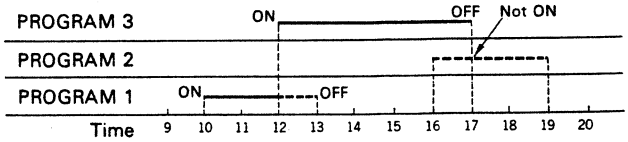
④ When PROGRAM 2 is ON while PROGRAM 3 is operative:

	ON Time	OFF Time
PROGRAM 3	10:00	14:00
PROGRAM 2	12:00	17:00



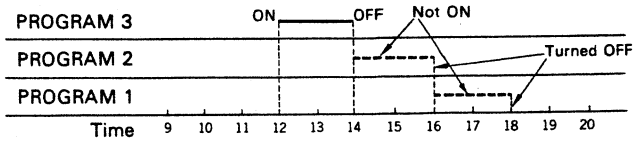
⑤ When PROGRAM 3 is ON while PROGRAM 1 is operative: and when PROGRAM 2 is ON while PROGRAM 3 is operative:

	ON Time	OFF Time
PROGRAM 3	12:00	17:00
PROGRAM 2	16:00	19:00
PROGRAM 1	10:00	13:00



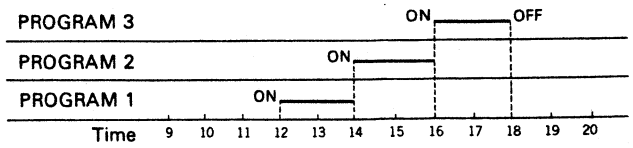
⑥ When programmed in the order of PROGRAM 3, PROGRAM 2 and PROGRAM 1:

	ON Time	OFF Time
PROGRAM 3	12:00	14:00
PROGRAM 2	14:00	16:00
PROGRAM 1	16:00	18:00



⑦ When programmed in the reverse order of item 6 above.

	ON Time	OFF Time
PROGRAM 3	16:00	18:00
PROGRAM 2	14:00	16:00
PROGRAM 1	12:00	14:00



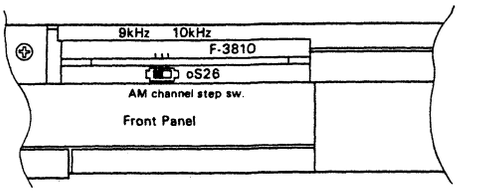
3. ADJUSTMENTS

3-1. Reference Frequency Adjustment of Synthesizer Control Circuit

(See F-3810 Parts Location on Page 15)

Note: 1. Input Selector . . . . . AM
2. TUNING/FM MODE . . . . . MANUAL/MONO
3. Remove the Front Panel Ass'y and Sub Panel Ass'y.
4. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS26, See Fig. 3-1) is set to 9 kHz and "**" is for the 10 kHz.
5. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 3-1



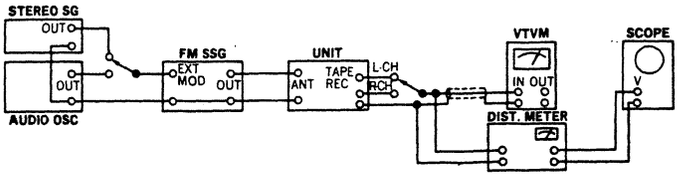
SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
X'tal Frequency Adj.	Set frequency display to *999kHz <**1000kHz>	Between eTP2 (eC29) and GND, F-3806, Frequency Counter	fTC1 (F-3810)	* 1449kHz ±10Hz <**1450kHz ±10Hz>	

3-2. FM Adjustments

(See Figs. 3-2, 3-4 and Top View on Page 21 and 22)

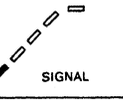
Note: 1. Input Selector . . . . . FM
2. FM IF BAND . . . . . WIDE
3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS26, See Fig. 3-1) is set to 9 kHz and "**" is for the 10 kHz.
4. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 3-2



(1) FM IF

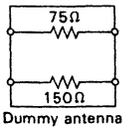
Note: 1. TUNING/FM MODE . . . . . MANUAL/MONO

STEP	SUBJECT	FEED SIGNAL FROM		FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	FM IF Coil Adj.	*98MHz <**98.1MHz> ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG		ANT terminal 300Ω	Between Point Ⓐ (dD1) and GND, DC Volt Meter	T1 (Front-end)	MAX. DC Volt	
2.	Discriminator Coil Adj.	1	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Between dTP1 and dTP2, Across dR30 (F-3806), DC Volt Meter	dT2 (F-3806)	0 ±20mV	
		2	Same as above	Same as above	REC OUT L-CH or R-CH, VTVM & SCOPE, Dist Meter	dT3 (F-3806)	Min. THD	
3.	Signal Level Adj.	*98MHz <**98.1MHz> ANT Input 15dBf (9.8dB), 1kHz (100% MOD.), FM SSG		Same as above	SIGNAL Indicator	dVR1 (F-3806)	Make only one LED lighting	

♦ 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. 3-3 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 3-3



Dummy antenna

- 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.

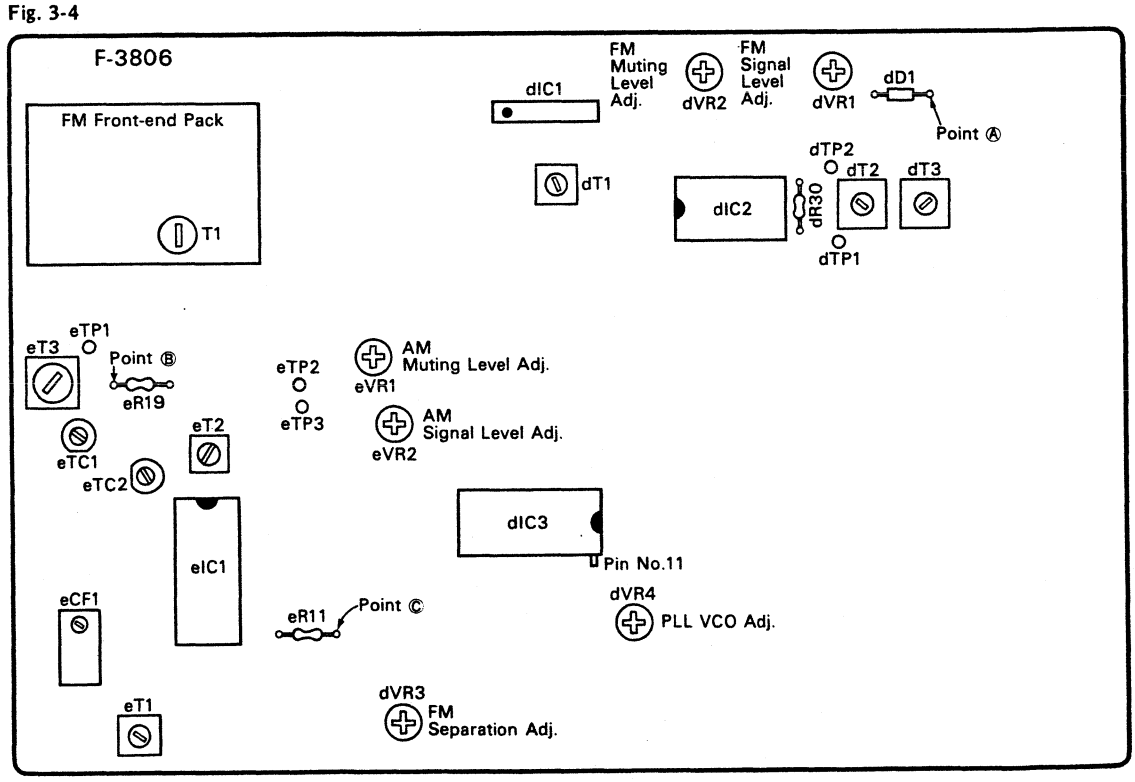
	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	−6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

(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	dVR4 (F-3806)	Light Indicator	Adjust the dVR4 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	Pin No. 11 of dIC3 (LA3390) and GND, F-3806, Frequency counter	dVR4 (F-3806)	19kHz ±30Hz	Before performance this adjustment, turn dVR3 fully counter-clockwise.
2.	Separation Adj.	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	REC OUT L-CH, VTVM & SCOPE	–	Read the indication on VTVM	Confirm R → L-CH
				REC OUT R-CH, VTVM & SCOPE	dVR3 (F-3806)	–40dB from the indication above.	
3.	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	REC OUT L-CH or R-CH, VTVM & SCOPE	dVR2 (F-3806)	Output Signal comes out.	

Fig. 3-4



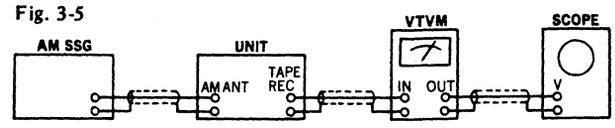
3-3. AM Adjustments

(See Figs. 3-4, 3-5, 3-6 and Top View on Page 21 and 22)

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 (oS26, See Fig. 3-1) 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 (oS26) is fixed to 10 kHz, and it is applicable to the USA (UL) and Canada (CSA) under industrial standards.
5. Preset the following frequencies to the memories.

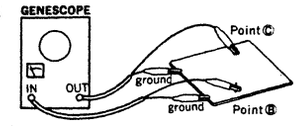
PRESET KEY	AM	
	9 kHz step	10 kHz step
1	522kHz	530kHz
2	1611kHz	1620kHz
3	603kHz	600kHz
4	1404kHz	1400kHz

Fig. 3-5



(1) AM IF

Fig. 3-6



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 50dB	Point Ⓑ (eR19), F-3806	Between Point Ⓒ (eR11) and GND, F-3806	eCF1, eT1, (F-3806)	MAX. Waveform	450kHz

(2) AM Tuning Voltage

Note: Feed Signal is no input

STEP	SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	*522kHz <**530kHz> Tuning Voltage	Depress PRESET Key 1 to readout *522kHz <**530kHz>	Between eTP1 (eR20) and GND, F-3806, DC Volt Meter	eT2 (F-3806)	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-3806)	9V ±0.1V	

(3) AM RF, Signal Level and Muting Level

Note: 1. Connect AM loop antenna to the AM antenna terminal and GND terminal.
2. Repeat procedures as state is 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-3806)	MAX. Output	• Depress PRESET Key 3 to readout *603kHz <**600kHz>
2.	*1404kHz <**1400kHz> RF Adj.	*1404kHz <**1400kHz> ANT Input 50dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-3806)	MAX. Output	• Depress PRESET Key 4 to readout *1404kHz <**1400kHz>
3.	Signal Level Adj.	*999kHz <**1000kHz> ANT Input 55dB, No MOD., AM SSG	Same as above	SIGNAL Indicator	eVR2 (F-3806)	Make only 1 lamp, lighting	SIGNAL
4.	Muting Level Adj.	*999kHz <**1000kHz> ANT Input 55dB, 400Hz (30% MOD.), AM SSG	Same as above	REC OUT L-CH or R-CH, VTVM & SCOPE	eVR1 (F-3806)	Output signal comes out.	• TUNING/FM MODE switch . . . AUTO

3-4. Driver Circuit Adjustment

(See Top View on Page 21 and 22)

Note: 1. Room Temperature . . . . . 18°C ~ 28°C
2. Master Volume . . . . . Minimum
3. Input Selector . . . . . AUX

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	DC Offset Voltage Adj.	Pin No. 10 of kIC1 (STK3106), F-3804, DC Volt Meter	kVR1 (F-3804)	DC −25V ±250mV	• Connect dummy load (8Ω) to speaker terminal.
*2.	DC Offset Voltage Adj.	Pin No. 9 of kIC1 (STK3106), F-3804, DC Volt Meter	*kVR3 (F-3804)	DC 25V ±250mV	
3.	Bias Current Adj. L-CH	Between emitter terminals of kQ10L and kQ11L, F-3804, DC Volt Meter	kVR2L (F-3804)	DC 2mV ±0.5mV	• Before turning ON power switch, turn kVR2L, R fully counter-clockwise. • This bias current value into voltage by ohms law.
4.	Bias Current Adj. R-CH	Between emitter terminals of kQ10R and kQ11R, F-3804, DC Volt Meter	kVR2R (F-3804)		

* If the semi-VR (kVR3) is mounted on the board F-3804, perform this adjustment (STEP 2).
* After adjustments STEP 1 and 2, confirm following voltage
Speaker terminal voltage . . . . . ±200mV

♦ Selection of Intermediate Frequencies (FM)

* When the center frequency (shown by a color) of the ceramic filter is changed, the following connection must be made by using diodes. (See Parts Location on Page 15 <F-3810>)
* Unity the color marks of the FM ceramic filters (dCF1, dCF2, dCF3 and dCF4 <Z-9000 Only>) on the F-3806 with the same color.

Colouring	Intermediate frequency	Connecting Position of Diode on F-3810	
		fD17	fD18
RED	10.700MHz	–	–
ORANGE	10.725MHz	O	–
BLACK	10.650MHz	–	O
BLUE	10.675MHz	O	O

O : Connect diode – : Remove diode

•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

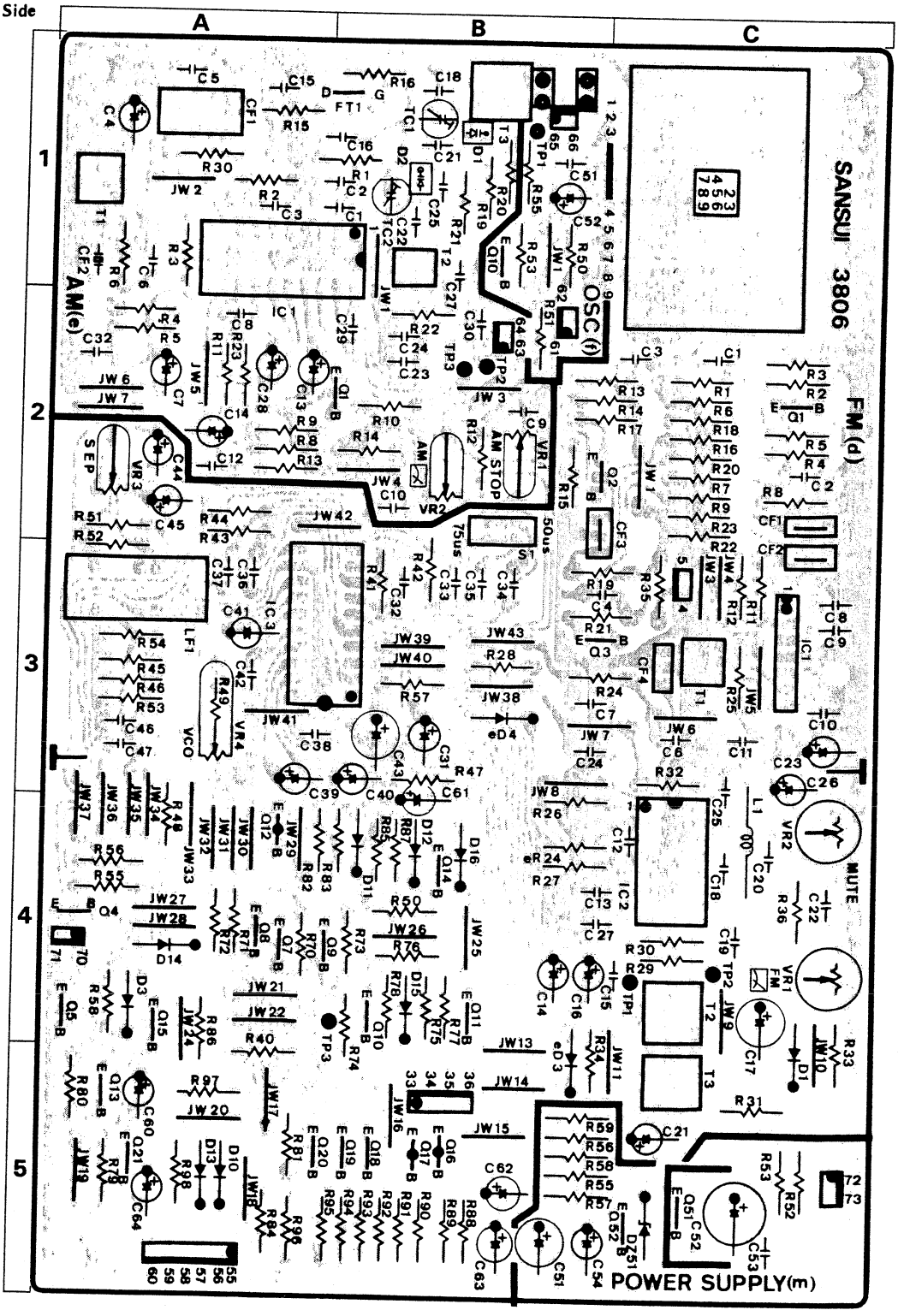
Others
Antenna . . . . . ANT.
Modulation . . . . . MOD.
Total Harmonic Distortion . . . . . T.H.D.

4. 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 Sansui Manual.

4-1. F-3806 Tuner Circuit Board (Stock No. 00697301 = Z-9000/00702301 = Z-7000)

Component Side



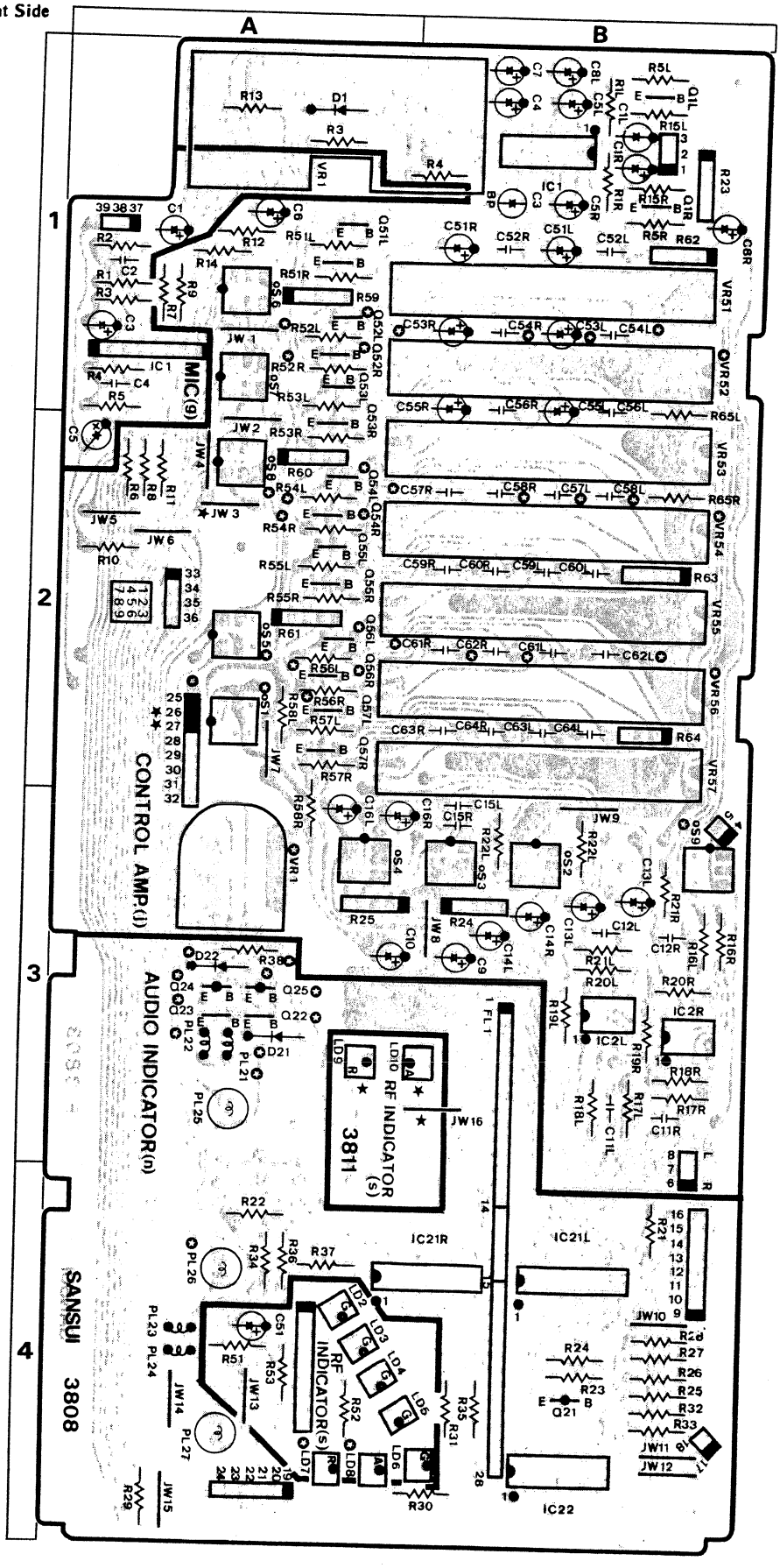
Parts List <F-3806>

Parts No.	Stock No.	Description
	46392700	FM Frontend Pack FE446U
•Transistor		
dQ1	03069501	2SC668
	or 03063401	2SC1674
	or 46027300	2SC2786
dQ2	03069501	2SC668 <Z-9000 Only>
	or 03063401	2SC1674
	or 46027300	2SC2786
dQ3	03069501	2SC668 <Z-9000 Only>
	or 03063401	2SC1674
	or 46027300	2SC2786
dQ4	46367101	2SC2603
dQ5	46367101	2SC2603
dQ7	46367101	2SC2603
dQ8	46367101	2SC2603
dQ9	46367101	2SC2603
dQ10	46367101	2SC2603
dQ11	46367101	2SC2603
dQ12	46367001	2SA1115
dQ13	46367101	2SC2603
dQ14	46367101	2SC2603
dQ15	46367101	2SC2603
dQ16	46367001	2SA1115
dQ17	46367001	2SA1115
dQ18	46367101	2SC2603
dQ19	46367101	2SC2603
dQ20	46367101	2SC2603
dQ21	46367101	2SC2603
•IC		
dIC1	03605900	TA7302P
dIC2	07196000	HA12412
dIC3	46267100	LA3390
•Diode		
dD1	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD3	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD10	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD11	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD12	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD13	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD14	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD15	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD16	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
dD17	03117600	1S2473D <Z-9000 Only>
	or 46086000	1S1588
	or 46092700	US1035
dD18	03111600	1S2473D <Z-9000 Only>
dC39	46034800	2.2μF 50V E.L.
dC40	46034900	3.3μF 50V E.L.
dC41	46034600	1μF 50V E.L.

Parts No.	Stock No.	Description
dCF1	46393500	Ceramic Filter <Z-9000>
	46393600	Ceramic Filter <Z-7000>
dLF1	46266900	Low Pass Filter
dL1	07250300	Peaking Coil 2.2μH
dT1	46369500	FM IF Coil
dT2	46422500	FM RF Coil
dT3	46422600	FM RF Coil
dVR1	10351300	10kΩ (B) S.V.R., FM Signal Level Adj.
dVR2	10351500	22kΩ (B) S.V.R., FM Muting Level & Stop Level Adj.
dVR3	07241500	50kΩ (B) S.V.R., FM Separation Adj.
dVR4	07241300	10kΩ (B) S.V.R., V.C.O. Adj.
dS1	07251100	Slide SW., de-emphasis
•Transistor		
eQ1	46367101	2SC2603
•FET		
eFT1	46369901	2SK192A
•IC		
eIC1	07237200	LA1245
•Diode		
eD1	46254600	1SV100 (Varactor)
eD2	46254600	1SV100 (Varactor)
eD3	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
eD4	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
eTC1	46095600	Trimmer Capacitor 20pF
eTC2	46095600	Trimmer Capacitor 20pF
eCF1	07254000	Ceramic Filter
eCF2	07265100	Ceramic Filter
eT1	46369600	AM IF Coil
eT2	46394700	AM RF Coil
eT3	46394600	AM RF Coil
eVR1	07241500	50kΩ (B) S.V.R., AM Muting Level Adj.
eVR2	07241300	10kΩ (B) S.V.R., AM Signal Level Adj.
•Transistor		
fQ10	46367101	2SC2603
mQ51	07287101	2SD1147
mQ52	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•Zener Diode		
mD51	03177600	RD6.8E

4-2. F-3808 Control & Selector Switch Circuit Board (Stock No. 00697501 = Z-9000/00702501 = Z-7000)

Component Side



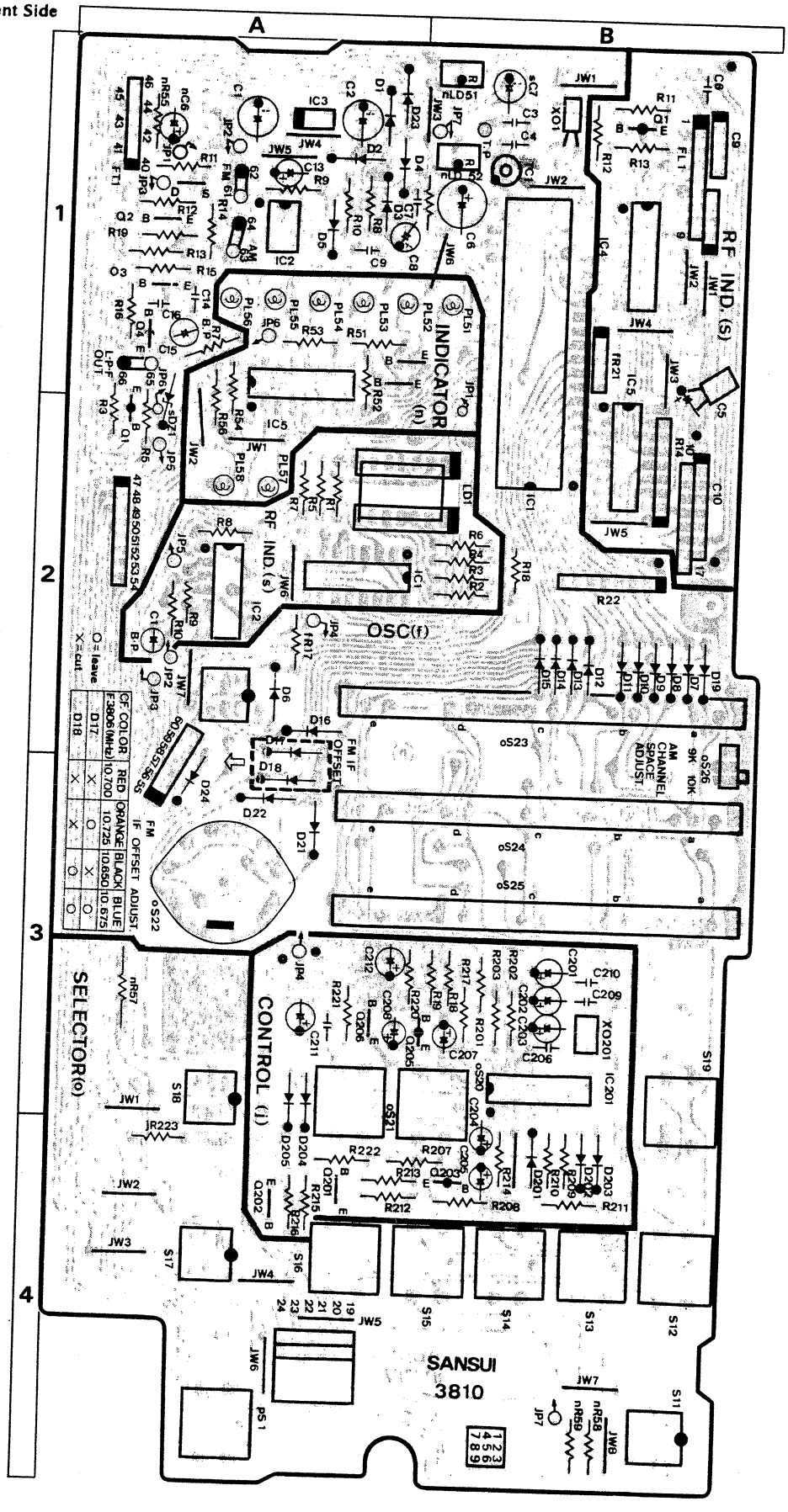
Parts List <F-3808>

Parts No.	Stock No.	Description
•IC		
gIC1	46288800	M5220L
gVR1	46362600	20kΩ (A) and 50kΩ (B) V.R., MIC MIXING, BALANCE
•Transistor		
jQ1	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ51	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ52	07194801	2SC1815 <Z-9000 Only>
	or 03059501	2SC945
	or 03068301	2SC2320
jQ53	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ54	07194801	2SC1815 <Z-9000 Only>
	or 03059501	2SC945
	or 03068301	2SC2320
jQ55	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ56	07194801	2SC1815 <Z-9000 Only>
	or 03059501	2SC945
	or 03068301	2SC2320
jQ57	07194801	2SC1815
	or 03068301	2SC2320
•FET		
jFT1	46421200	2SJ103
•IC		
jIC1	46362000	M51133P
jIC2	46151400	NJM2043D
•Diode		
jD1	03111600	1S2473
•Resistor Array		
jR23	46343100	100kΩ x 4
jR24	46343100	100kΩ x 4
jR25	46343100	100kΩ x 4
jR59	46341900	10kΩ x 4
jR60	46341900	10kΩ x 4
jR61	46341900	10kΩ x 4
jR62	46343100	100kΩ x 4
jR63	46343100	100kΩ x 4
jR64	46343100	100kΩ x 4
jC3	07129100	4.7μF 16V E.C.
jC51	46425100	1.5μF 50V E.C. <Z-9000>
	46425200	2.2μF 50V E.C. <Z-7000>
jC53	46424800	0.47μF 50V E.C. <Z-9000>
	46424900	0.68μF 50V E.C. <Z-7000>
jC55	46424600	0.22μF 50V E.C. <Z-9000>
	46424900	0.68μF 50V E.C. <Z-7000>
jVR1	46362700	10kΩ (B) x 2 V.R., REVERB DEPTH <Z-9000 Only>
jVR51	46360500	50kΩ x 2 Slide V.R., 60 Hz/GRAPHIC EQUALIZER <Z-9000 Only>
jVR52	46360500	50kΩ x 2 Slide V.R., 150 Hz/GRAPHIC EQUALIZER <Z-9000 Only>
jVR53	46360500	50kΩ x 2 Slide V.R., 400 Hz/ GRAPHIC EQUALIZER <Z-9000>
	46360500	50kΩ x 2 Slide V.R., BASS <Z-7000>
jVR54	46360500	50kΩ x 2 Slide V.R., 1 kHz/GRAPHIC EQUALIZER <Z-9000 Only>
jVR55	46360500	50kΩ x 2 Slide V.R., 2.5 kHz/ GRAPHIC EQUALIZER <Z-9000>
	46360500	50kΩ x 2 Slide V.R., MIDRANGE <Z-7000>
jVR56	46360500	50kΩ x 2 Slide V.R., 6 kHz/GRAPHIC EQUALIZER <Z-9000 Only>
jVR57	46360500	50kΩ x 2 Slide V.R., 15 kHz/ GRAPHIC EQUALIZER <Z-9000>
	46360500	50kΩ x 2 Slide V.R., TREBLE <Z-7000>

Parts No.	Stock No.	Description
•Transistor		
nQ21	46086601	2SA937
nQ22	07194801	2SC1815 <Z-9000 Only>
	or 03059501	2SC945
	or 03068301	2SC2320
nQ23	07194801	2SC1815 <Z-9000 Only>
	or 03059501	2SC945
	or 03068301	2SC2320
nQ24	07194701	2SA1015 <Z-9000 Only>
	or 07197001	2SA733
	or 03012701	2SA999L
nQ25	07194701	2SA1015 <Z-9000 Only>
	or 07197001	2SA733
	or 03012701	2SA999L
•IC		
nIC21	46254700	HA12010
nIC22	46255000	LC4066BH
•Diode		
nD21	03103400	10D-1 <Z-9000>
nD22	03103400	10D-1 <Z-9000>
nFL1	46254100	FL. Display Tube FG24SJ1GR
nR36	46228300	270Ω 1/2W N.I.R.
nR37	46228300	270Ω 1/2W N.I.R.
nPL21	46422200	Pilot Lamp 6V 0.15A <Z-9000 Only>
nPL22	46422200	Pilot Lamp 6V 0.15A <Z-9000 Only>
nPL23	04006600	Pilot Lamp 8V 0.15A
nPL24	04006600	Pilot Lamp 8V 0.15A
nPL25	46359900	Pilot Lamp 8V 0.1A
nPL26	46359900	Pilot Lamp 8V 0.1A <Z-9000 Only>
nPL27	46359900	Pilot Lmap 8V 0.1A
oS1	46360000	Push SW., REVERB MODE <Z-9000 Only>
oS2	46360000	Push SW., GRAPHIC EQUALIZER <Z-9000>, TONE <Z-7000>
oS3	46360000	Push SW., HIGH FILTER
oS4	46360000	Push SW., SUBSONIC FILTER
oS5	46360000	Push SW., REVERB ON/OFF <Z-9000 Only>
oS6	46360000	Push SW., SPEAKERS A
oS7	46360000	Push SW., SPEAKERS B
oS8	46360000	Push SW., SPEAKERS C <Z-9000 Only>
oS9	46360000	Push SW., FM IF BAND <Z-9000 Only>
•IC		
sIC3	46392500	BA6125
•Light Emitting Diode		
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	46176900	TLS-123 <Z-9000 Only>
sLD8	07250900	TLG-123A <Z-9000 Only>
sLD9	46176900	TLS-123 <Z-7000 Only>
sLD10	07250900	TLG-123A <Z-7000 Only>
sC51	46275600	10μF 16V E.C.

4-3. F-3810 Tone Control & Audio Indicator Circuit Board (Stock No. 00697701 = Z-9000/00702701 = Z-7000)

Component Side



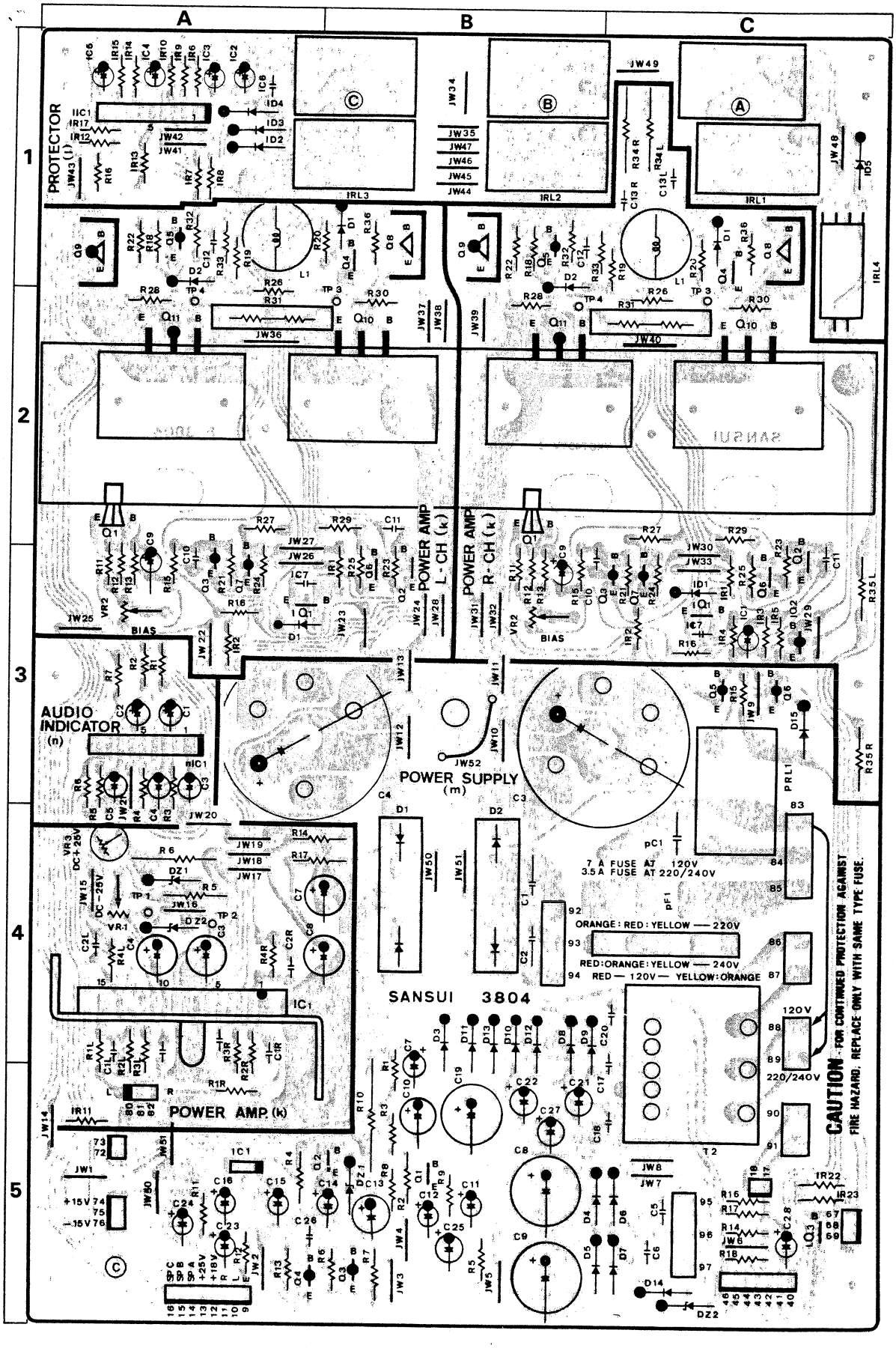
Parts List <F-3810>

Parts No.	Stock No.	Description
•Transistor		
fQ1	07197001	2SA733
	or 07194701	2SA1015
	or 03012701	2SA999L
fQ2	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
fQ3	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
fQ4	07197001	2SA733
	or 03012701	2SA999L
	or 07194701	2SA1015
•FET		
fFT1	03703401	2SK163
•IC		
fIC1	46253300	μPD1704C-011
fIC2	46253400	μPB553AC
fIC3	46361200	L78N06
fXO1	46253600	Quartz Element 4.5 MHz
•Diode		
fD1	03111600	1S2473D
fD2	03111600	1S2473D
fD3	03111600	1S2473D
fD4	03111600	1S2473D
fD5	03111600	1S2473D
fD6	03111600	1S2473D
fD7	03111600	1S2473D
fD8	03111600	1S2473D
fD9	03111600	1S2473D
fD10	03111600	1S2473D
fD11	03111600	1S2473D
fD12	03111600	1S2473D
fD13	03111600	1S2473D
fD14	03111600	1S2473D
fD15	03111600	1S2473D
fD16	03111600	1S2473D
fD17	03111600	1S2473D
fD18	03111600	1S2473D
fD19	03111600	1S2473D
fD21	03111600	1S2473D
fD22	03111600	1S2473D
fD23	07176400	1S2473HS
fD24	07176400	1S2473HS
fR21	46343100	Resistor Array 100kΩ x 4
fR22	46392900	Resistor Array 100kΩ x 7
fC1	46316400	100μF 16V E.C.
fC2	46275900	47μF 16V E.C.
fC6	46422800	470μF 6.3V E.C.
fC8	46276800	4.7μF 50V E.C.
fC13	46275700	22μF 16V E.C.
fC15	00305800	2.2μF 25V E.B.
fTC1	46095700	Trimmer Capacitor 30pF
•Transistor		
jQ201	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ202	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
jQ203	07194701	2SA1015
	or 07197001	2SA733
	or 03012701	2SA999L
jQ205	07194701	2SA1015
	or 07197001	2SA733
	or 03012701	2SA999L
jQ206	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•IC		
jIC201	46361900	M50601P

Parts No.	Stock No.	Description
•Diode		
jD201	03111600	1S2473D
jD202	03111600	1S2473D
jD203	03111600	1S2473D
jD204	03111600	1S2473D
jD205	03111600	1S2473D
jXO201	07274000	Ceramic Filter CSB550A
•Transistor		
nQ51	46134200	2SD1111
nQ52	46134200	2SD1111
•IC		
nIC51	46269600	μPA81C
nLD51	46176900	Light Emitting Diode TLS-123
nLD52	46176900	Light Emitting Diode TLS-123
nR55	46227800	10Ω 1/2W N.I.R.
nR56	46228700	56Ω 1/2W N.I.R.
nR57	46249400	120Ω 1/2W N.I.R.
nR60	46228300	270Ω 1/2W N.I.R.
nPL51	46359900	Pilot Lamp 8V 0.1A
nPL52	46359900	Pilot Lamp 8V 0.1A
nPL53	46359900	Pilot Lamp 8V 0.1A
nPL54	46359900	Pilot Lamp 8V 0.1A
nPL55	46359900	Pilot Lamp 8V 0.1A
nPL56	46359900	Pilot Lamp 8V 0.1A
nPL57	46359900	Pilot Lamp 8V 0.1A
nPL58	46359900	Pilot Lamp 8V 0.1A
oS10	46360000	Push SW., TUNING/FM MODE
oS11	46360000	Push SW., CARTRIDGE
oS12	11907000	Push SW., PHONO
oS13	11907000	Push SW., FM
oS14	11907000	Push SW., AM
oS15	11907000	Push SW., AUX
oS16	11907000	Push SW., TAPE-1
oS17	46360000	Push SW., TAPE-2
oS18	46360000	Push SW., MUTING
oS19	11907000	Push SW., VOLUME UP
oS20	11907000	Push SW., VOLUME DOWN
oS21	11907000	Push SW., VOL. PRESET
oS22	46364600	Rotary SW., PROGRAM TIMER
oS23	46365200	Push SW., control keyboard, 1/3/5/7/9
oS24	46365200	Push SW., control keyboard, 2/4/6/8/0
oS25	46365200	Push SW., TUNING/MEMORY/ PRESET SCAN/CLOCK CALL
oS26	46394000	Slide SW., AM channel step
pS1	11907000	Push SW., POWER STD-BY
•Transistor		
sQ1	46086601	2SA937
•IC		
sIC1	46257100	M74LS247
	or 46257200	MB74LS247
sIC2	03610500	TC4001BP
sIC4	46253500	μPA80C
sIC5	07197300	TC5066BP
sFL1	46253900	FL. Display Tube FG712B1GR
sLD1	46166200	Light Emitting Diode SEL-510
sR14	46392900	Resistor Array 100kΩ x 7
sC1	00306800	1μF 50V E.B.
sC5	46275900	47μF 16V E.C.
sC7	46422700	47μF 35V E.C.
sC9	46261400	Capacitor Array 330pF x 4 50V C.C.
sC10	46261400	Capacitor Array 330pF x 4 50V C.C.
sC11	46263000	Capacitor Array 330pF x 7 50V C.C.
	46364700	IC Socket

4-4. F-3804 Power Amp. & Power Supply Circuit Board (Stock No. 00697101 = Z-9000/00702101 = Z-7000)

Component Side



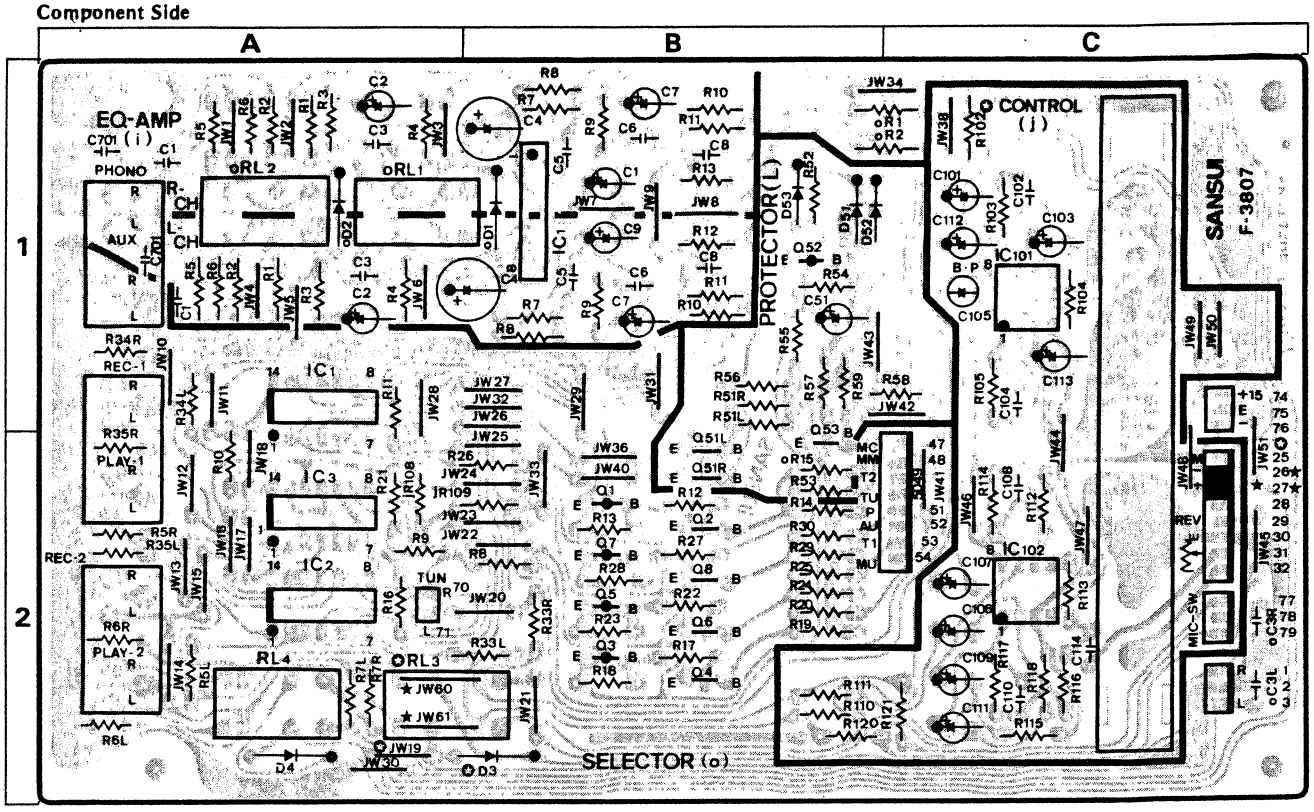
Parts List <F-3804>

Parts No.	Stock No.	Description
•Transistor		
kQ1	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
kQ2	03066801	2SC2071
kQ3	03010301	2SA939
kQ4	03066801	2SC2071
kQ5	03010301	2SA939
kQ6	46127701	2SC2909
kQ7	46127601	2SA1207
kQ8	03067201	2SC2238B
kQ9	03010701	2SA968B
kQ10	07156601	2SC2774 <Z-9000>
	07260201	2SC2773 <Z-7000>
kQ11	07156501	2SA1170 <Z-9000>
	07260101	2SA1169 <Z-7000>
•IC		
kIC1	46258300	STK3106
•Diode		
kD1	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
kD2	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
kD3	03111600	1S2473D
•Zener Diode		
kDZ1	03180400	RD27E-B
kDZ2	03180400	RD27E-B
kR5	46251300	4.7kΩ 1W N.I.R.
kR6	00187900	2.2kΩ 2W N.I.R.
kR14	46228600	47Ω 1/2W N.I.R.
kR17	46228600	47Ω 1/2W N.I.R.
kR18	46229400	220Ω 1/2W N.I.R.
kR20	46229400	220Ω 1/2W N.I.R.
kR22	46228400	33Ω 1/2W N.I.R.
kR26	46229100	120Ω 1/2W N.I.R.
kR28	46227400	4.7kΩ 1/2W N.I.R.
kR30	46227400	4.7kΩ 1/2W N.I.R.
kR31	00091700	0.33Ω x 2 5W Ce.R.
kR32	46227800	10Ω 1/2W N.I.R.
kR33	46229500	270Ω 1/2W N.I.R.
kR34	00185500	100Ω 2W N.I.R.
kR35	46249700	220Ω 1W N.I.R.
kR36	46228400	33Ω 1/2W N.I.R.
kC12	00406400	0.012μF 100V F.C.
kC13	00407800	0.047μF 100V F.C.
kL1	46027200	Inductor 1μH
kVR1	07241000	1kΩ (B) S.V.R., DC 0V Adj.
kVR2	07241000	1kΩ (B) S.V.R., Bias Adj.
kVR3	10350500	470Ω (B) S.V.R., DC 0V Adj.
•Transistor		
IQ1	46127701	2SC2909
IQ2	03010901	2SA992
IQ3	46367101	2SC2603
•IC		
IIC1	46207600	TA7317P
•Diode		
ID1	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
ID2	03117700	10E-2
ID3	03117700	10E-2
ID4	03117700	10E-2
ID5	03117700	10E-2
IRL1	07198400	Relay (RL3 2M)
IRL2	07198400	Relay (RL3 2M)
IRL3	07198400	Relay (RL3 2M)
IRL4	11504300	Relay (RL5 2M)

Parts No.	Stock No.	Description
•Transistor		
mQ1	03085201	2SD438
mQ2	03084801	2SD358
mQ3	03033101	2SB528
mQ4	46367001	2SA1115
mQ5	46367001	2SA1115
mQ6	46367001	2SA1115
•IC		
mIC1	46361600	L78N15
•Diode		
mD1	03113200	SS-5R
mD2	03113100	SS-5
mD3	03117700	10E-2
mD4	03117700	10E-2
mD5	03117700	10E-2
mD6	03117700	10E-2
mD7	03117700	10E-2
mD8	03117700	10E-2
mD9	03117700	10E-2
mD10	03117700	10E-2
mD11	03117700	10E-2
mD12	03117700	10E-2
mD13	03117700	10E-2
mD14	03117700	10E-2
mD15	03117700	10E-2
•Zener Diode		
mDZ1	03180200	RD24E-B
mDZ2	03171900	RD27F-B
mR2	46229200	150Ω 1/2W N.I.R.
mR3	46229800	470Ω 1/2W N.I.R.
mR4	46249100	68Ω 1W N.I.R.
mR5	46230200	1kΩ 1/2W N.I.R.
mR7	46249100	68Ω 1W N.I.R.
mR10	00053800	33Ω 3W Ce.R.
mR14	46228600	47Ω 1/2W N.I.R.
mC1	08680400	10000pF 500V C.C.
mC2	08680400	10000pF 500V C.C.
mC3	46223000	10000μF 80V E.C. <Z-9000>
	46223200	10000μF 71V E.C. <Z-7000>
mC4	46223000	10000μF 80V E.C. <Z-9000>
	46223200	10000μF 71V E.C. <Z-7000>
mC5	08680400	10000pF 500V C.C.
mC6	08680400	10000pF 500V C.C.
mC17	08680400	10000pF 500V C.C.
mC18	08680400	10000pF 500V C.C.
mC20	08680400	10000pF 500V C.C.
mT2	15008511	Power Transformer
•IC		
nIC1	03610000	TA7318P
nR7	46229700	390Ω 1/2W N.I.R.
	22902400	Terminal Board 4P, SPEAKERS
pC1	46425800	0.01μF 400V C.C.
•AC Fuse		
<Z-9000>		
pF1	07189500	10A 250V (120V)
	07189100	5A 250V (220/240V)
<Z-7000>		
pF1	07189300	7A 250V (120V)
	07188900	3.5A 250V (220/240V)
pRL1	46222200	Relay (RL1 1M)

4-5. F-3807 EQ. Amp. Circuit Board (Stock No. 00697401 = Z-9000/00702401 = Z-7000)

Component Side



Parts List

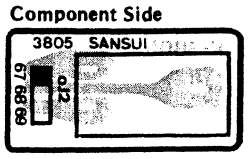
Parts No.	Stock No.	Description
•IC		
iIC1	46288800	M5220L
iC2	46035000	4.7μF 50V E.C.
•IC		
jIC101	07208900	NJM4558D <Z-9000 Only>
jIC102	07208900	NJM4558D <Z-9000 Only>
	46222100	Reverberation Unit HDR5103 <Z-9000 Only>
•Transistor		
IQ51	46367101	2SC2603
IQ52	46367001	2SA1115
IQ53	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
•Diode		
ID51	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
ID52	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
ID53	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035

Parts No.	Stock No.	Description
•Transistor		
oQ3	46367001	2SA1115
oQ4	46367101	2SC2603
oQ5	46367001	2SA1115
oQ6	46367101	2SC2603
oQ7	46367001	2SA1115
oQ8	46367101	2SC2603
oQ9	46367001	2SA1115
oQ10	46367101	2SC2603
•IC		
oIC1	46255000	LC4066BH
oIC2	46255000	LC4066BH
oIC3	46255000	LC4066BH
•Diode		
oD1	03117700	10E-2
oD2	03117700	10E-2
oD3	03117700	10E-2
oD4	03117700	10E-2
oRL1	11506200	Relay
oRL2	11506200	Relay
oRL3	11506200	Relay <Z-9000 Only>
oRL4	11506200	Relay
	46363800	4P Input Terminal Board, PHONO/AUX/TAPE-1/TAPE-2

• Note: The circuit boards, F-3805, F-3809 & F-3894 are not supplied as the assembled. However, the individual parts on the circuit boards are provided by orders.

4-6. F-3805 PHONES Jack Circuit Board <Z-9000/Z-7000>

Component Side



Parts List

Parts No.	Stock No.	Description
oJ2	46289200	Jack

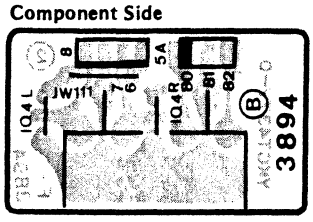
4-7. F-3809 MIC Jack Circuit Board <Z-9000/Z-7000>

Parts List

Parts No.	Stock No.	Description
oJ1	46133900	Jack

4-8. F-3894 PRE AMP OUT/POWER AMP IN Terminal Circuit Board <Z-9000/Z-7000>

Component Side



Parts List

Parts No.	Stock No.	Description
	46363800	4P Input Terminal
•Transistor		
IQ4	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320

• Note: Concerning Printed Resistor and Printed Silver Pattern

In this model, printed circuit board is used on which carbon resine 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".

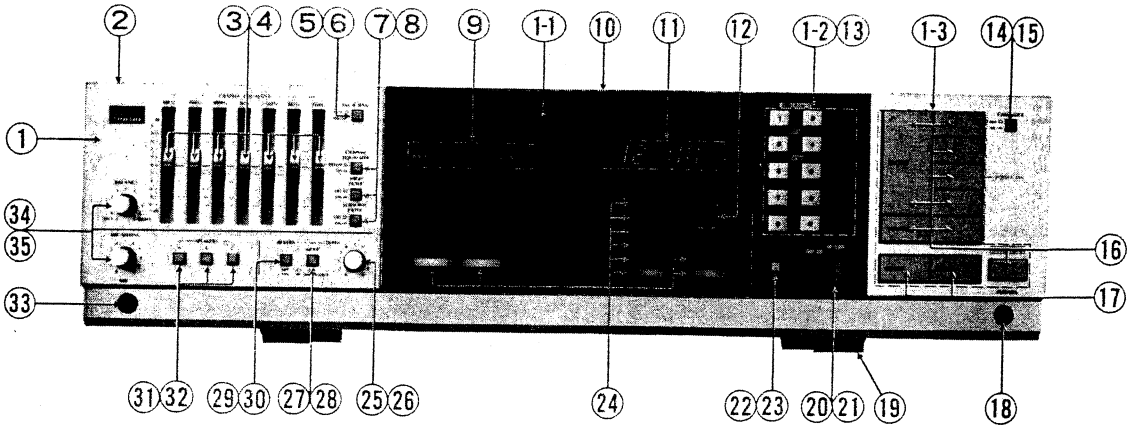
• Abbreviations

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

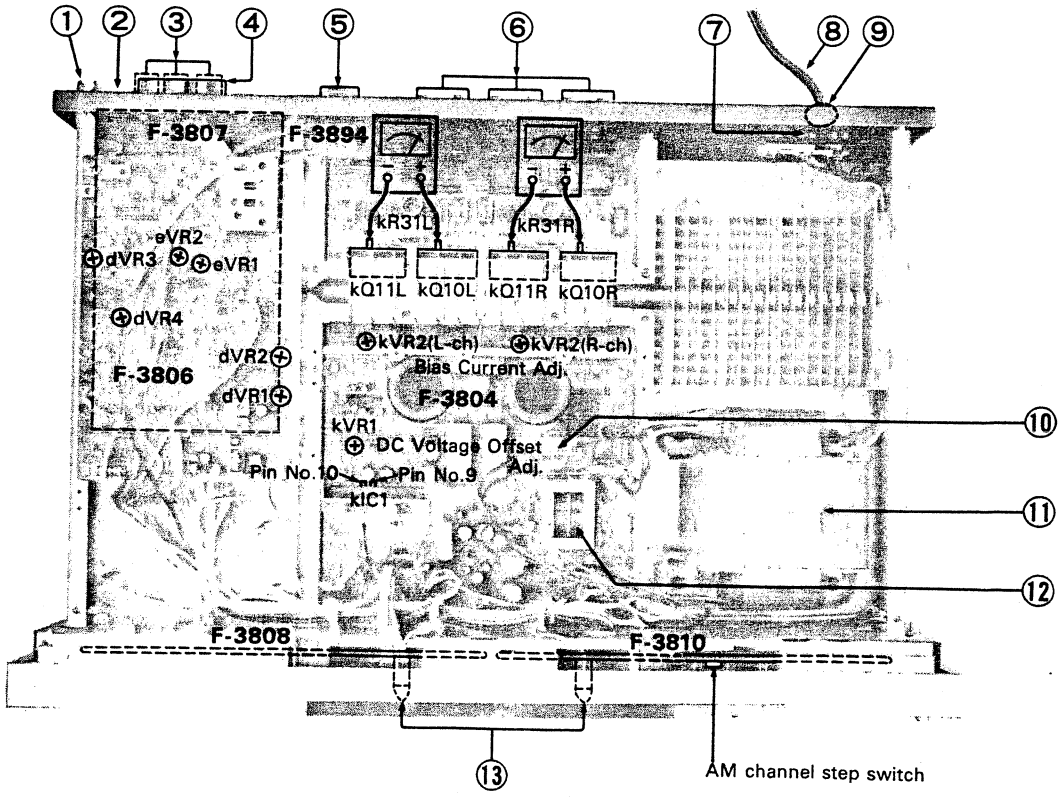
5. OTHER PARTS

5-1. Z-9000

A) Front View

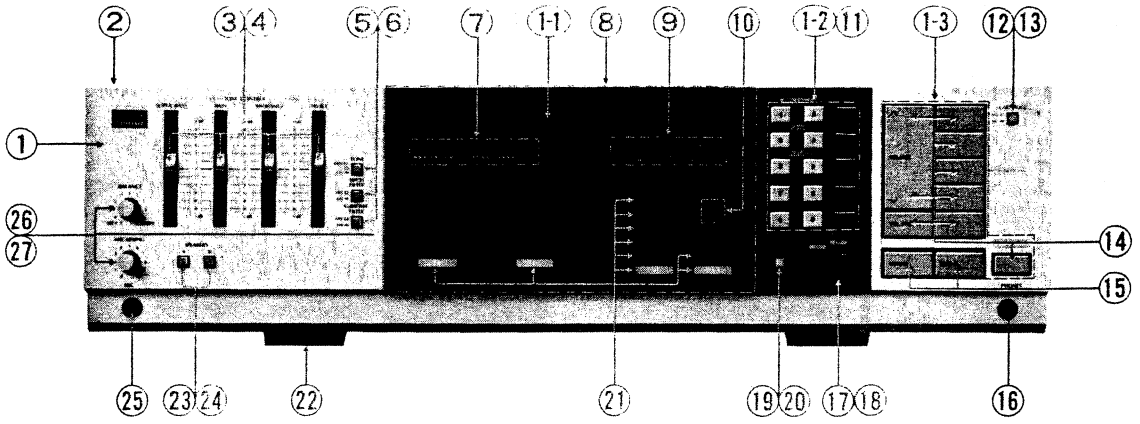


B) Top View

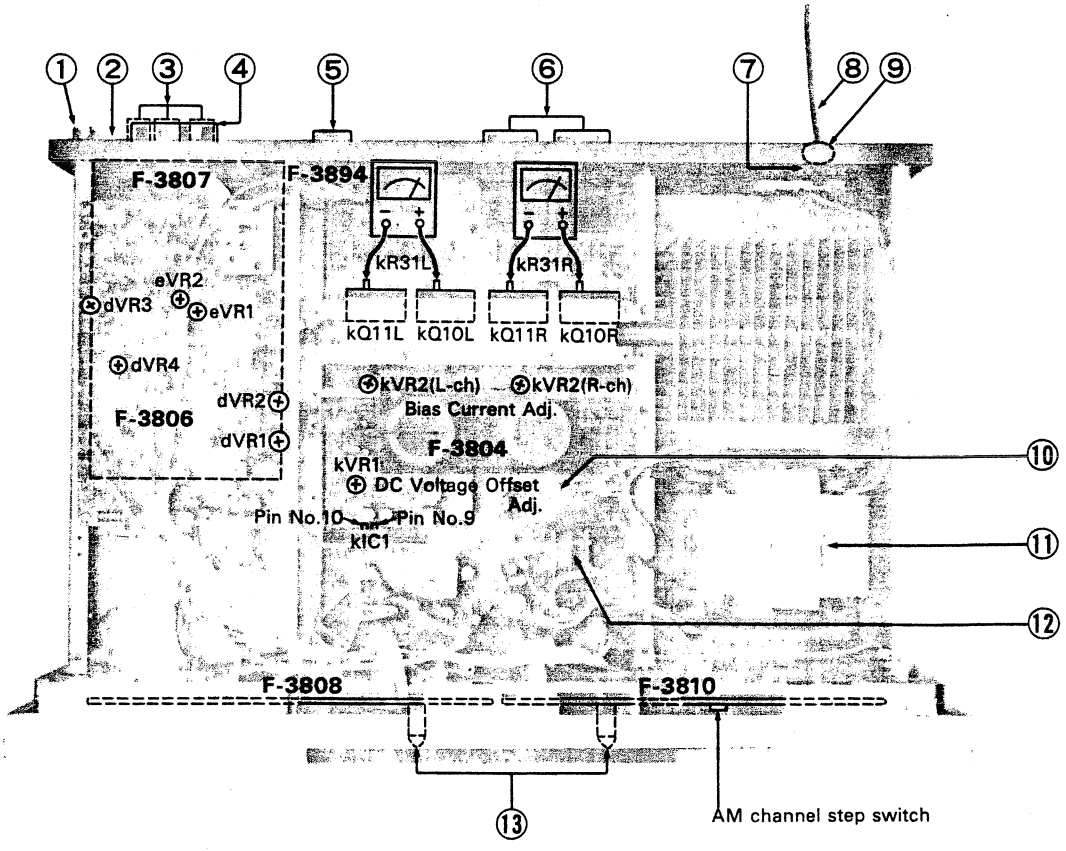


5-2. Z-7000

A) Front View



B) Top View



• Parts List <Z-9000>

<Front View>

Parts No.	Stock No.	Description
1	07976800	Front Panel Ass'y
1-1	07972500	Smoked Plate
1-2	07977300	15-Key Push Knob Ass'y
1-3	07977400	Selector Push Knob Ass'y
2	07977200	Bonnet Ass'y
3	07930100	Slide Knob, GRAPHIC EQUALIZER
4	46360500	50kΩ x 2 Slide VR, GRAPHIC EQUALIZER
5	07977500	Push Knob Ass'y, FM IF BAND
6	46360000	Push SW., FM IF BAND
7	07977500	Push Knob Ass'y, GRAPHIC EQUALIZER, HIGH FILTER, SUBSONIC FILTER
8	46360000	Push SW., GRAPHIC EQUALIZER, HIGH FILTER, SUBSONIC FILTER
9	46254100	FL Display Tube, VOLUME/PEAK POWER
10	07977000	Sub Panel Ass'y
11	46253900	FL Display Tube, FREQUENCY/ QUARTZ CLOCK
12	46166200	7-seg. LED, CHANNEL
13	46365200	Push SW., keyboard
14	07977500	Push Knob, Ass'y, CARTRIDGE
15	46360000	Push SW., CARTRIDGE
16	11907000	Push SW., VOLUME, PHONO, POWER STD-BY etc.
17	46360000	Push SW., MUTING/TAPE-2
18	46289200	Jack, PHONES
19	55073500	Leg
20	07964100	Knob, PROGRAM TIMER
21	46364600	Rotary SW., PROGRAM TIMER
22	07977500	Push Knob Ass'y, TUNING/FM MODE
23	46360000	Push SW., TUNING/FM MODE
24	46359900	8V 0.1A Pilot Lamp
25	07964000	Knob, DEPTH
26	46362700	10kΩ (B) x 2 V.R., DEPTH
27	07977500	Push Knob Ass'y, MODE MIC/SOURCE
28	46360000	Push SW., MODE MIC/SOURCE
29	07977500	Push Knob Ass'y, MIC/SOURCE
30	46360000	Push SW., REVERB ON/OFF
31	07977500	Push Knob Ass'y, SPEAKERS
32	46360000	Push SW., SPEAKERS
33	46133900	Jack, MIC
34	07964000	Knob, MIC MIXING, BALANCE
35	46362600	20kΩ and 50kΩ VR, MIC MIXING, BALANCE

Top View>

arts No.	Stock No.	Description
1	07193200	Antenna Holder
2	22301500	Ground Terminal
3	46363800	4P Input Terminal, PHONO, AUX, TAPE-1/-2
4	46364500	Antenna Terminal
5	46363800	4P Input Terminal, PREAMP OUT/ POWER AMP IN
6	22902400	4P Speaker Terminal, SYSTEM-A, -B, -C
7	46360200	AC Outlet
8	38004900	Power Supply Cord
9	39104900	Strain Relief
10	07189500	10A 250V (120V) AC Fuse
	07189100	5A 250V (220/240V) AC Fuse
11	15008401	Power Transformer
12	15008511	Power Transformer
13	04006600	8V 150mA Pilot Lamp

• Parts List <Z-7000>

<Front View>

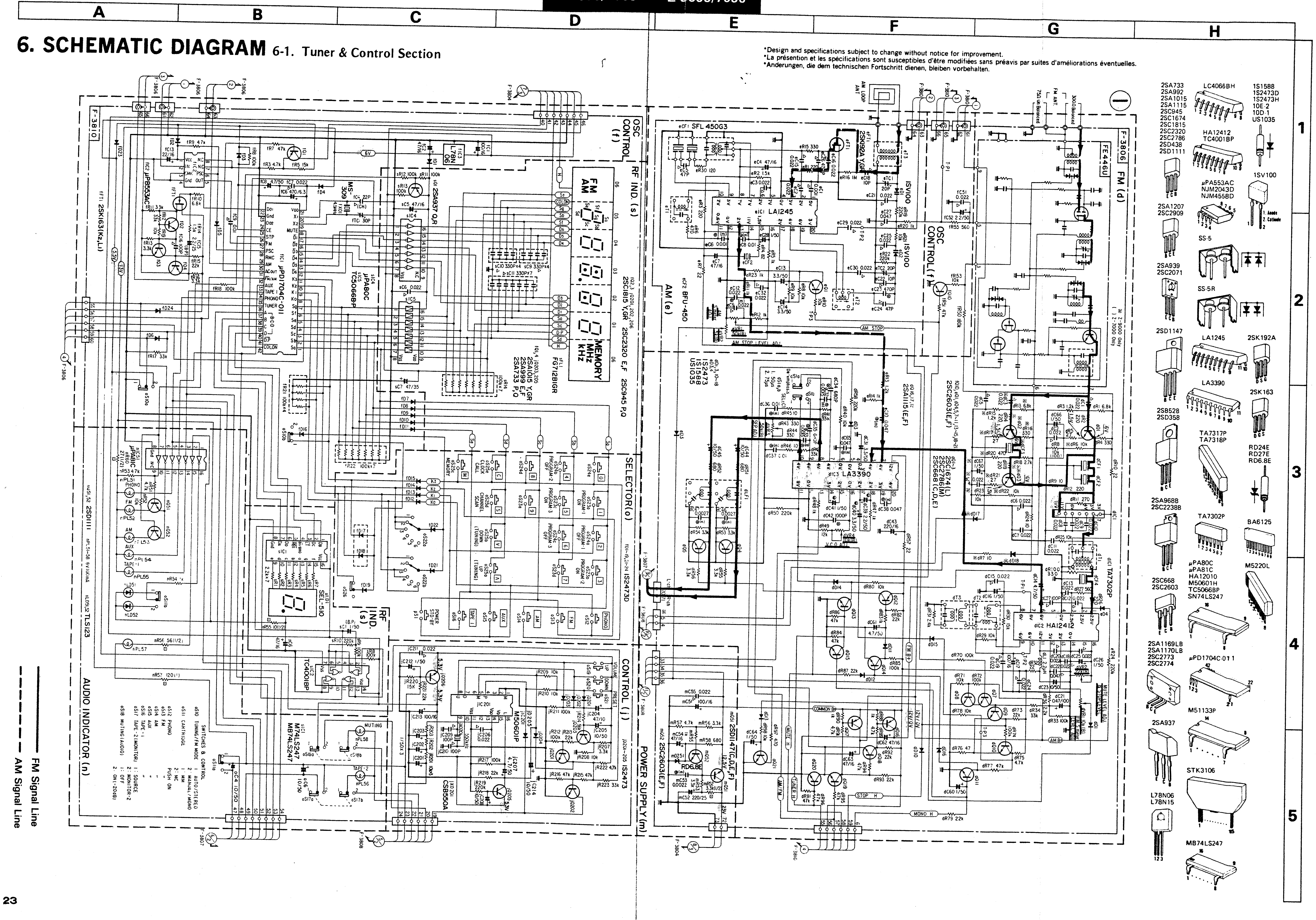
Parts No.	Stock No.	Description
1	07976900	Front Panel Ass'y
1-1	07972600	Smoked Plate
1-2	07977300	15-Key Push Knob Ass'y
1-3	07977400	Selector Push Knob Ass'y
2	07977200	Bonnet Ass'y
3	07930100	Slide Knob, TONE CONTROL
4	46360500	50kΩ x 2 Slide VR, TONE CONTROL
5	07977500	Push Knob Ass'y, TONE, HIGH FILTER, SUBSONIC FILTER
6	46360000	Push SW., TONE, HIGH FILTER, SUBSONIC FILTER
7	46254100	FL Display Tube, VOLUME/PEAK POWER
8	07977100	Sub Panel Ass'y
9	46253900	FL Display Tube, FREQUENCY/ QUARTZ CLOCK
10	46166200	7-seg. LED, CHANNEL
11	46365200	Push SW., Keyboard
12	07977500	Push Knob Ass'y, CARTRIDGE
13	46360000	Push SW., CARTRIDGE
14	11907000	Push SW., VOLUME, PHONO, POWER STD-BY etc.
15	46360000	Push SW., MUTING/TAPE-2
16	46289200	Jack, PHONES
17	07964100	Knob, PROGRAM TIMER
18	46364600	Rotary SW., PROGRAM TIMER
19	07977500	Push Knob Ass'y, TUNING/FM MODE
20	46360000	Push SW., TUNING/FM MODE
21	46359900	8V 0.1A Pilot Lamp
22	55073500	Leg
23	07977500	Push Knob Ass'y, SPEAKERS
24	46360000	Push SW., SPEAKERS
25	46133900	Jack, MIC
26	07964000	Knob, MIC MIXING/BALANCE
27	46362600	20kΩ and 50kΩ (B) VR, MIC MIXING/ BALANCE

<Top View>

Parts No.	Stock No.	Description
1	07193200	Antenna Holder
2	22301500	Ground Terminal
3	46363800	4P Input Terminal, PHONO, AUX, TAPE-1, -2
4	46364500	Antenna Terminal
5	46363800	4P Input Terminal, PREOUT/ POWER AMP IN
6	22902400	4P Speaker Terminal, SYSTEM-A, -B
7	46360200	AC Outlet
8	38004700	Power Supply Cord
9	39106000	Strain Relief
10	07189300	7A 250V (120V) AC Fuse
	07188900	3.5A 250V (220/240V) AC Fuse
11	15008601	Power Transformer
12	15008511	Power Transformer
13	04006600	8V 150mA Pilot Lamp

6. SCHEMATIC DIAGRAM 6-1. Tuner & Control Section

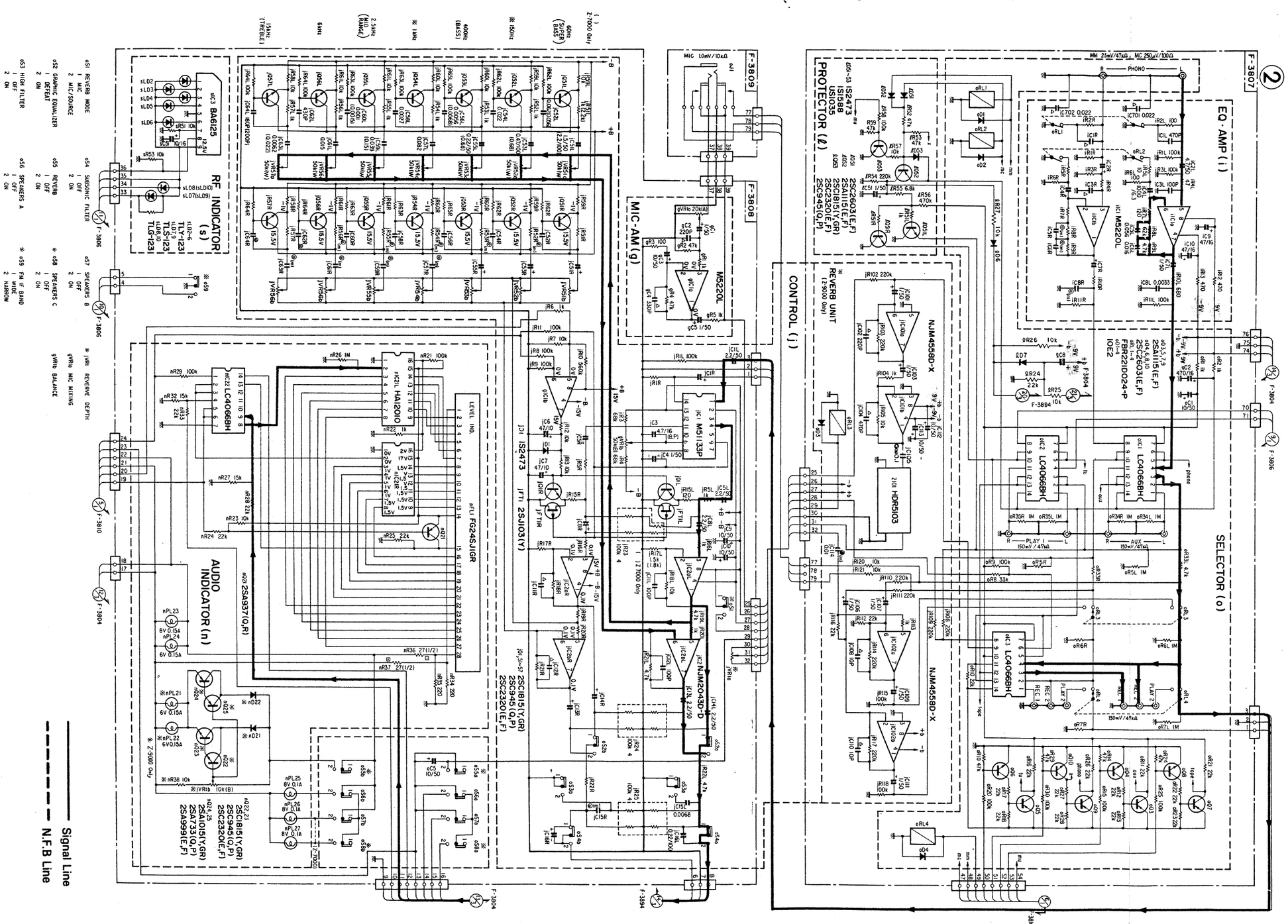
*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

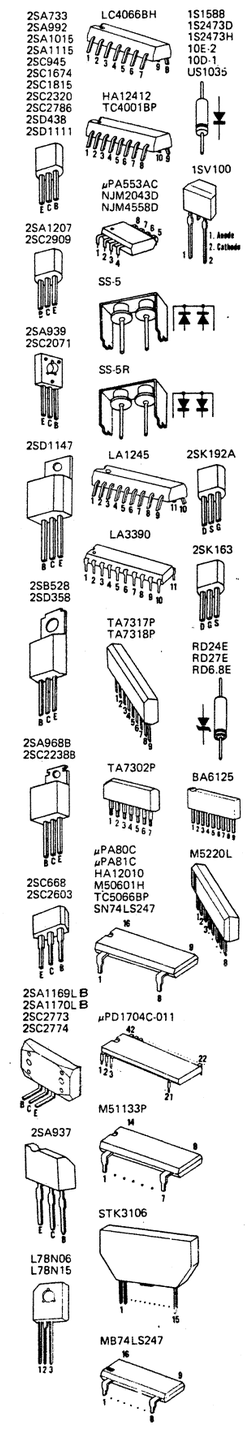


A	B	C	D	E	F	G	H

6-2. EQ. Amp. & Tone Control Section

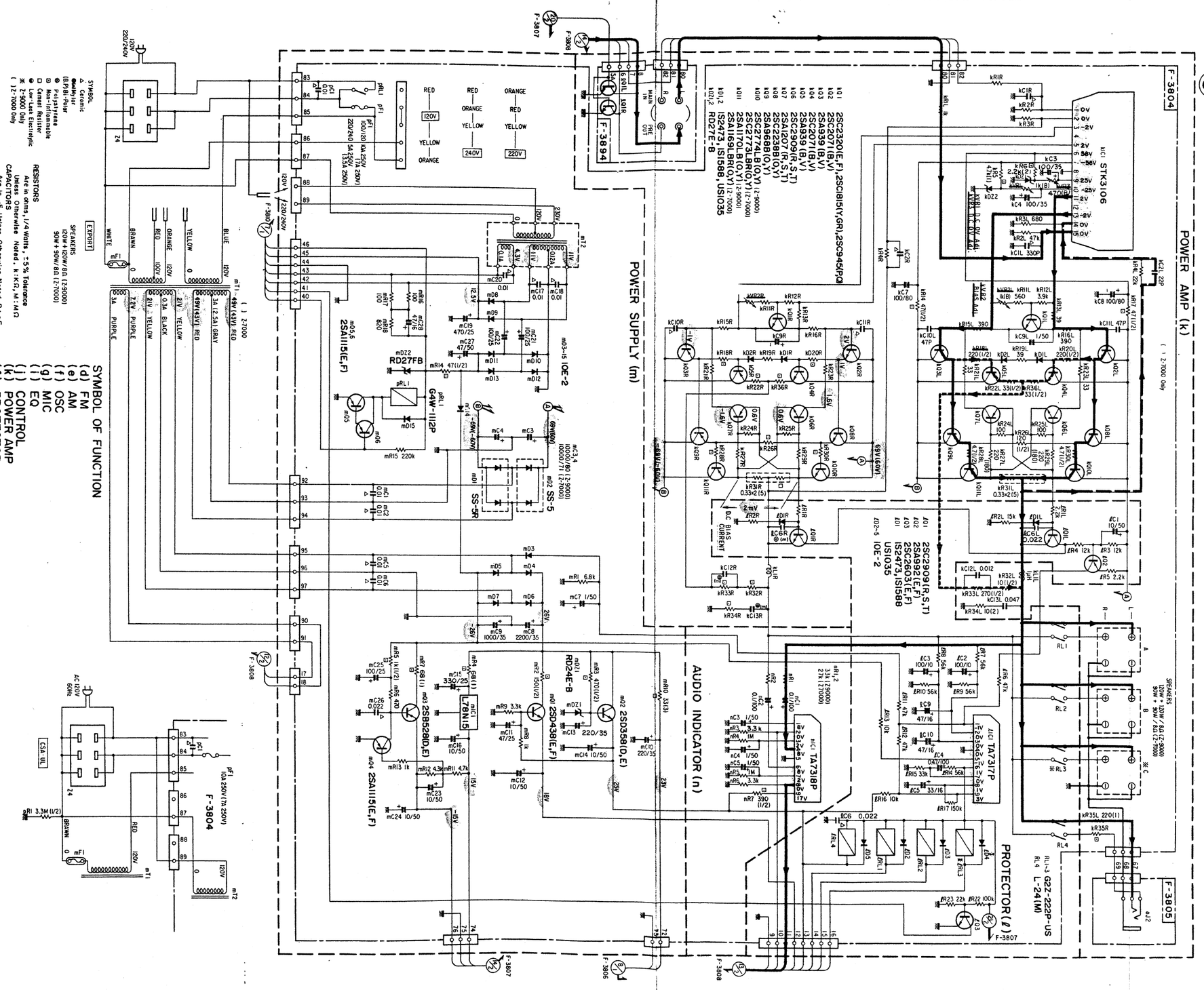
*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

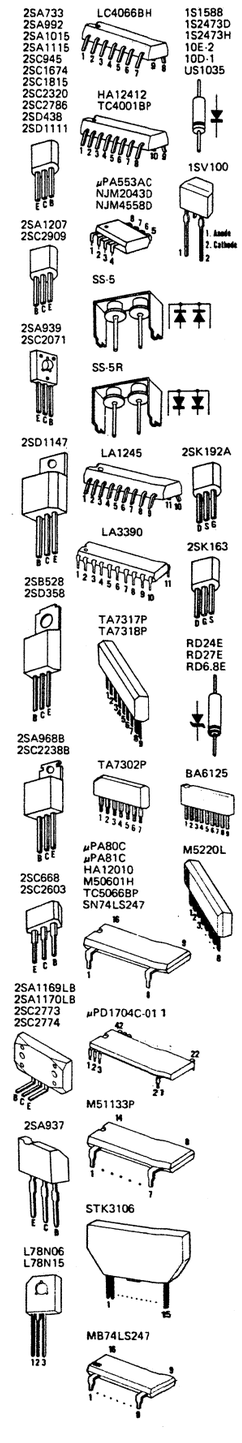




6-3. Power Amp. & Power Supply Section

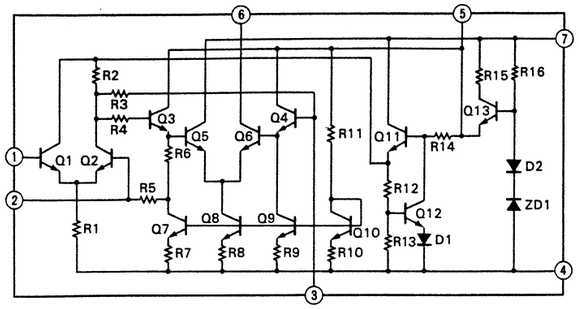
*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



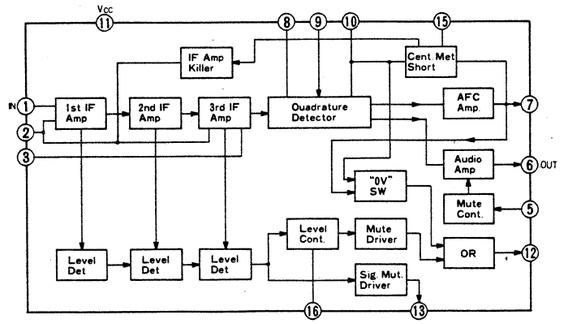


7. INTERIOR BLOCK DIAGRAM OF IC

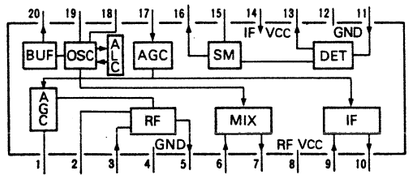
● TA7302P (FM IF Amp. IC)



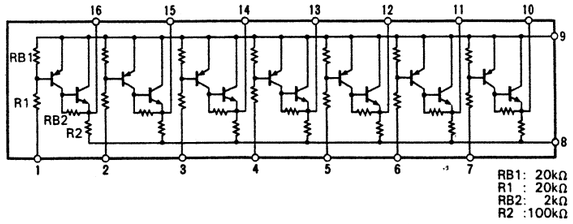
● HA12412 (FM Detector IC)



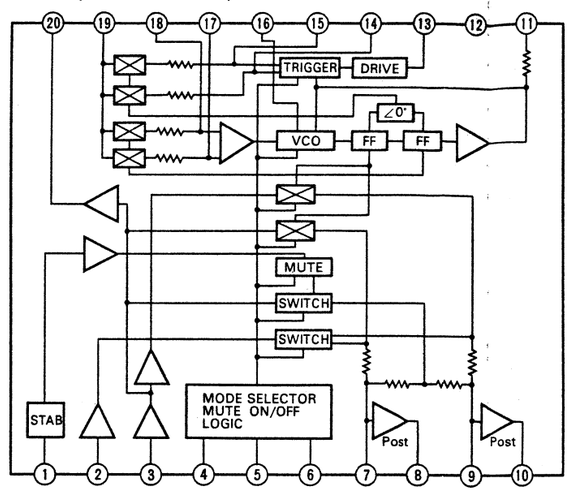
● LA1245 (AM Tuner IC)



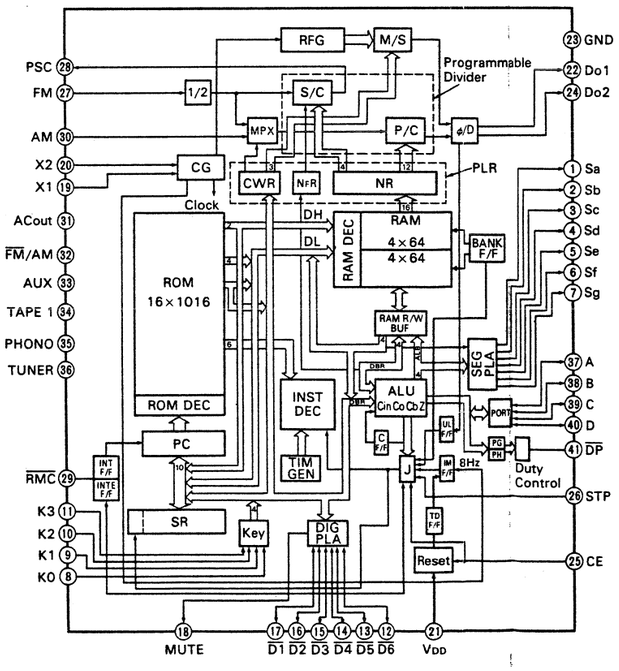
● μPA80C (FL Display Drive IC)



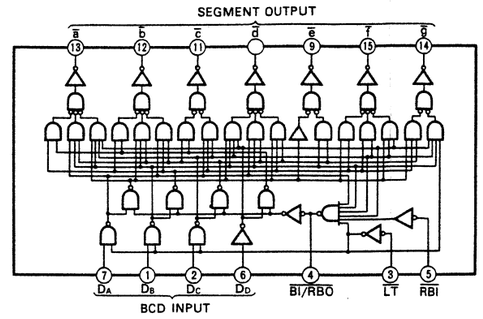
● LA3390 (MPX Decoder IC)



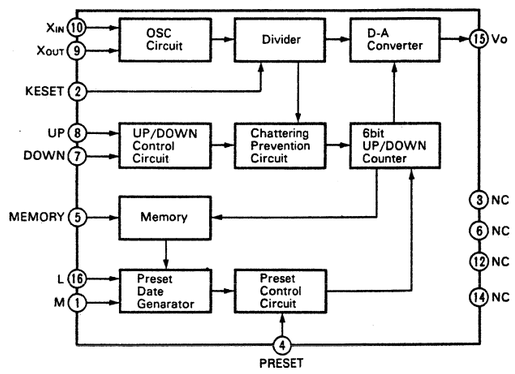
● μPD1704C-011 (FM/AM PLL Synthesizer & Control IC)



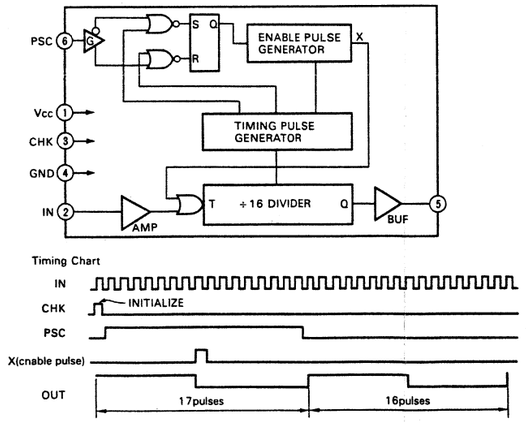
● M74LS247/MB74LS247
(BCD-TO-SEVEN-SEGMENT DECODER DRIVE IC)



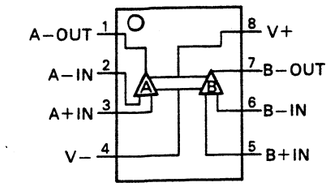
● M50601P (D-A Converter IC)



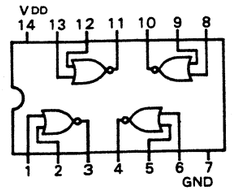
● μPB553AC (Prescaler IC)



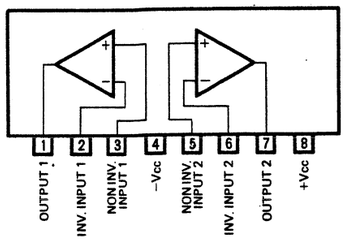
● NJM4558D/NJM2043D-D
(Operational Amp. IC)



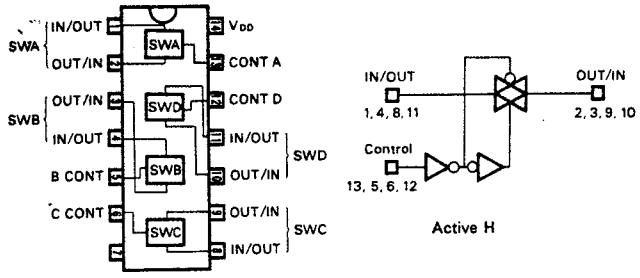
● TC4001BP (NOR1 ~ 4 IC)



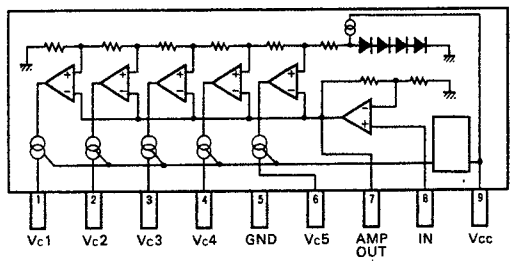
● M5220L (Audio Pre Amp. IC)



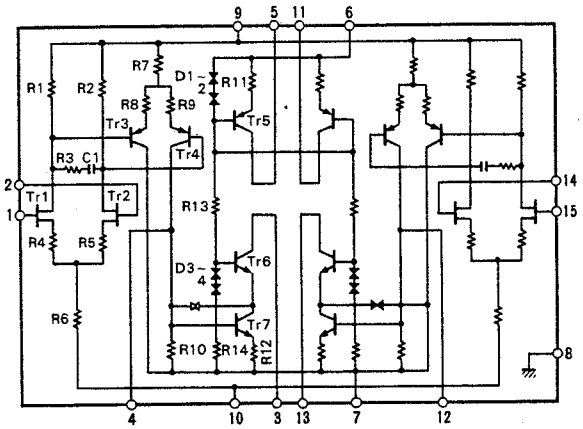
● LC4066BH (Quard Bilateral Switch IC)



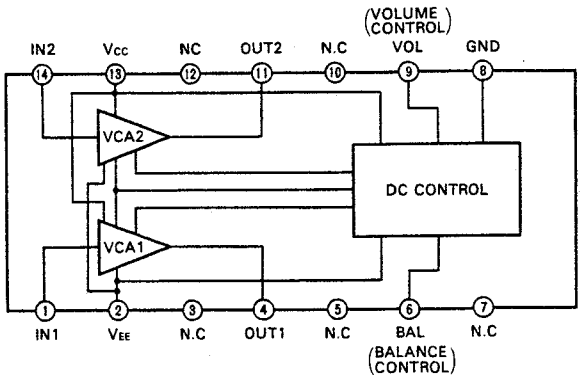
● BA6125 (L.E.D. Drive IC)



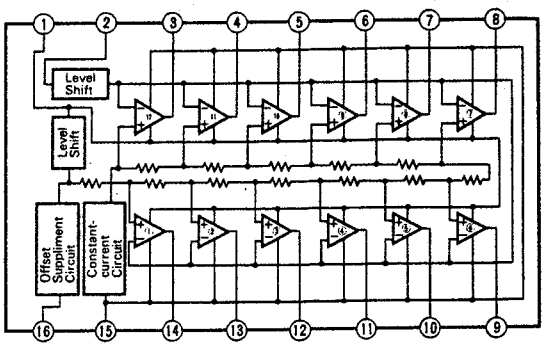
● STK3106 (Pre Drive IC)



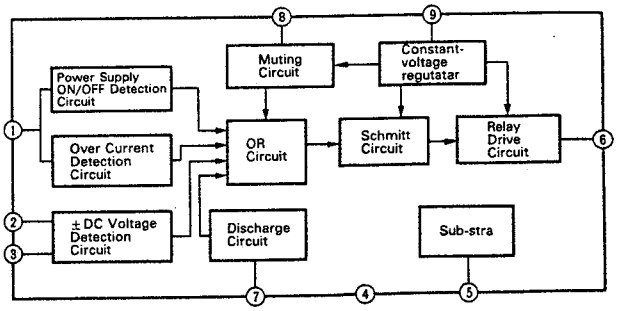
● M51133P (Electronic Volume IC)



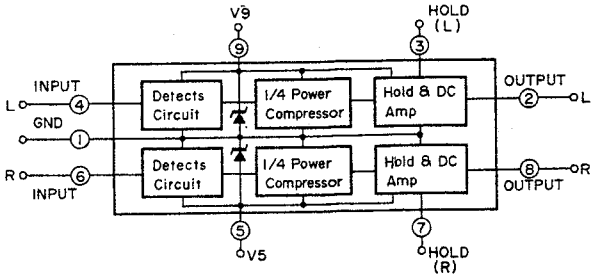
● HA12010 (FL Display Tube Drive IC)



● TA7317P (Speaker Protector IC)



● TA7318P (Meter Drive IC)



8. NOTES

8-1. 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 (oS26, see Fig. 3-1 on page 7) installed on the circuit board F-3810.

8-2. Notice when the user moves from 100 kHz to 50 kHz step area, or vice versa, in FM broadcasting frequency.

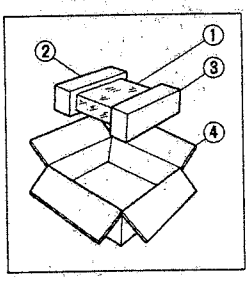
- When the frequency-step of AM broadcasting is set to 10 kHz or 9 kHz (in EUROPE) by sliding the AM 9/10 kHz channel step switch (oS26) installed on the circuit board F-3810, the frequency-step of FM broadcasting is also switched automatically to 200 kHz or 50 kHz (in EUROPE).

Switch (oS26)	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 (oS26) is set to 9 kHz or 10 kHz.

9. PACKING LIST

Parts No.	Stock No.	Description
1	91167420	Vinyl Cover
2	07973800	Styrofoam Packing (L)
3	07973900	Styrofoam Packing (R)
4	07904300	Carton Case <Z-9000>
	07974500	Carton Case <Z-7000>



10. ACCESSORY LIST

Stock No.	Description
46051700	FM Antenna
07272400	AM Loop Antenna
07563000	AM Antenna Holder
46425700	Operating Sheet
46256700	Operating Instruction <Z-9000>
46256800	Operating Instruction <Z-7000>

Sansui

SANSUI ELECTRIC CO., LTD.: 14-1, Izumi 2-chome, Suginami-ku, Tokyo 168 Japan
PHONE: (03) 324-8891/TELEX: 232-2076 (International Division)
SANSUI ELECTRONICS CORPORATION: 1250 Valley Brook Ave. Lyndhurst, N.J. 07071 U.S.A.
333 West Alondra Blvd. Gardena, California 90247 U.S.A.
3036 Koapaka St. Honolulu, Hawaii 96819 U.S.A.
SANSUI ELECTRONICS (U.K.) LTD.: Unit 10A, Lyon Industrial Estate, Rockware Avenue, Greenford, Middx UB6, OAA, England
SANSUI ELECTRONICS G.M.B.H.: Paul Ehrlich Strasse 8, 6074 Rödermark 2, West Germany

Printed in Japan (N20030M) <Stock No. 36471200>