

ST-SA5ES

SERVICE MANUAL

Ver. 1.1 2007.04

*US Model
Australian Model
Chinese Model*

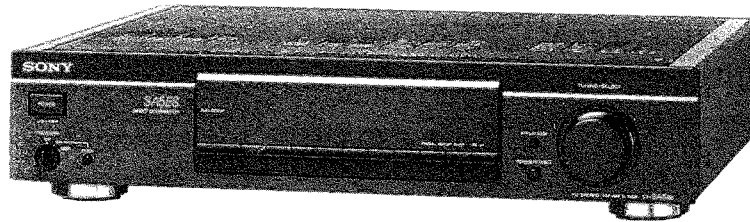


Photo : US Model

SPECIFICATIONS

System			AM tuner section		
Circuit system	PLL digital frequency synthesizer tuner, quartz lock system		Tuning range		
FM tuner section			U.S.A. model	530 - 1,710 kHz	10 kHz step
Tuning range	87.5 - 108 MHz			531 - 1,710 kHz	9 kHz step
	100 kHz (US MODEL)		Chinese model	530 - 1,710 kHz	10 kHz step
	50kHz (Chinese MODEL)			531 - 1,602 kHz	9 kHz step
Intermediate frequency	10.7 MHz		Intermediate frequency	450 kHz	
S/N	100 dB (mono), 92 dB (stereo)		Sensitivity	250 μ V/m (with an AM loop antenna).	
Sensitivity to 30 dB S/N (mono):			S/N	54 dB (50 mV/m, 999 kHz)	
	10.3 dBf	1.8 μ V	Harmonic distortion	0.3% (50 mV/m, 999 kHz)	
Sensitivity at 50 dB S/N (stereo):			Selectivity	50 dB (WIDE) 35 dB (NARROW)	
	38.5 dBf	46 μ V	General		
Usable sensitivity:			Power requirements	120 V AC, 60 Hz (US MODEL) 230 V AC, 50/60 Hz (Chinese MODEL)	
	10.3 dBf	1.8 μ V	Power consumption	20 W	
Harmonic distortion	WIDE: 0.004% (mono), 0.0075% (stereo) NARROW: 0.04% (mono) 0.07% (stereo)		Dimensions	430 x 100 x 360 mm (16 ¹⁵ / ₁₆ x 3 ¹⁵ / ₁₆ x 14 ² / ₁₆ inches)	
Stereo separation (1 kHz)	70 dB (WIDE), 50 dB (NARROW)		Mass (Approx.)	6 kg (13 lb 4 oz)	
Frequency response	15 Hz - 15 kHz, \pm 0.2 dB		Supplies accessories	AM loop antenna (1) FM wire antenna (1) Antenna adaptor (1) Connecting cord (1)	
Selectivity	65 dB (300 kHz, NARROW), 70 dB (400 kHz, WIDE)				
Image interference ratio	100 dB				
Output level	750 mV, 600 ohms (75 kHz dev.)				

Design and specifications are subject to change without notice.

FM STEREO FM/AM TUNER

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

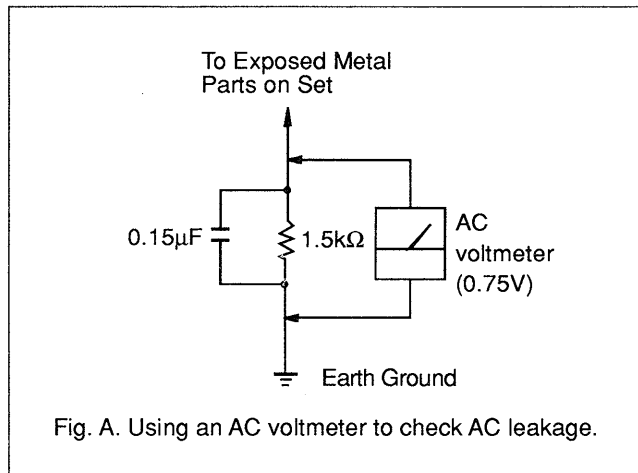
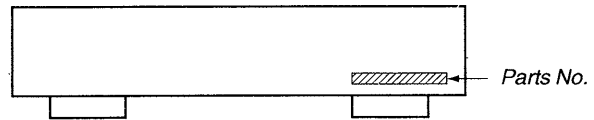


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MODEL IDENTIFICATION

— BACK PANEL —



MODEL	PARTS No.
US model	4-970-688-1□
Chinese model	4-970-688-2□

- For detailed Australian model, refer to Chinese model.

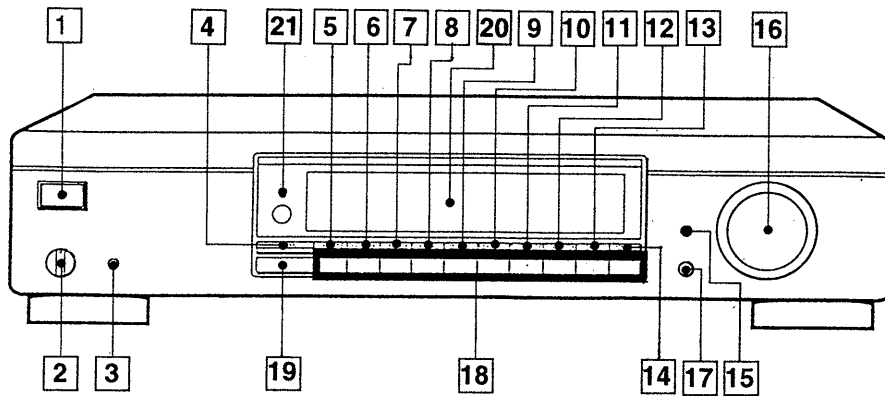
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1

GENERAL

Front Panel

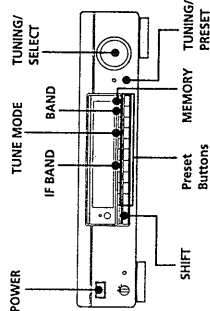


- 1 POWER switch
- 2 PROGRAM knob
- 3 CHECK button
- 4 DISPLAY button
- 5 CAL TONE button
- 6 ANTENNA button
- 7 ANT ATT button
- 8 IF BAND button
- 9 MUTING button
- 10 FM MODE button
- 11 TUNE MODE button

- 12 CHARACTER button
- 13 BAND button
- 14 MEMORY button
- 15 DISPLAY MODE button
- 16 TUNING/SELECT knob
- 17 TUNING/PRESET button
- 18 Preset buttons
- 19 SHIFT button
- 20 Display window
- 21 PURE CIRCUIT indicator

Presetting Radio Stations

You will most likely want to preset the radio stations you listen to often so that you don't have to tune in the station every time. This tuner can store a total of 40 FM or AM stations. You can store the stations on preset numbers combining 4 characters (A, B, C, D) and numbers (0-9). For example, you can store a station as preset number A1, B6 or C9, etc. The station will remain stored for about a month even if you disconnect the power cord.



Tuning stations (automatic tuning)

To locate the station you want, you can have the tuner scan all receivable stations with strong signals. First check the following:
 "WIDE" and "AUTO" are lit up in the display.
 If not, press IF BAND and TUNE MODE respectively to make them light up.

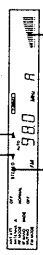
- 1 Press BAND to select FM or AM.
- 2 Press TUNING/PRESET until "TUNING" appears.
- 3 Turn TUNING/SELECT to tune in the station you want.
 Turn clockwise for a higher station number; turn counterclockwise for a lower one.
 Release TUNING/SELECT when the displayed frequency starts to change. Every time a station is received, the tuner stops scanning. To continue scanning, turn TUNING/SELECT again.

If you cannot tune in the station you want (manual tuning)

- 1 Press BAND to select FM or AM.
- 2 Set MUTING to OFF when receiving the FM broadcast.
- 3 Press TUNE MODE until "AUTO" disappears.
- 4 Press TUNING/PRESET until "TUNING" appears.
- 5 Turn TUNING/SELECT to tune in the station you want.

The following information appears while you are presetting stations

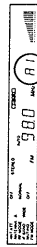
Lights when TUNING/SELECT is turned counterclockwise (when frequencies are decreasing).



Lights when a station is received in stereo. Signal indicator showing the strength of received signal.

Presetting Stations

- 1 Tune in the station you want. Refer to "Tuning stations (automatic tuning)" in the left column.
- 2 Press SHIFT to select a character (A, B, C or D). Each time you press SHIFT, A, B, C or D appears in the display.
- 3 Press MEMORY. "MEMORY" lights up for about 4 seconds. While the preset number flashes, perform Step 4.
 If "MEMORY" disappears Press MEMORY again.
- 4 Press the number button (0 to 9) you want.
- 5 Repeat Steps 1 to 4 to preset other stations.

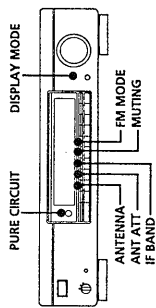


Where do I go next?

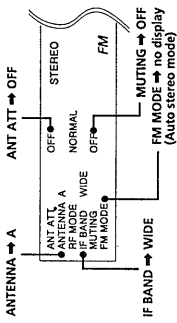
For the basic operation, refer to "Receiving Broadcasts" on page 4.

Tips for Better Reception

This tuner has various functions designed for better reception. First, try to receive stations with the standard settings. If the reception is not good, change the settings by referring to the table below.



Standard settings
 ANTENNA → A



Use this button To select

ANTENNA FM ANTENNA terminal A or B.
 Refer to "You can use two FM antennas" on page 6.

ANT ATT ON: Receives stations with a strong signal.
 OFF: Select this mode normally.

IF BAND WIDE: Receives stations with low distortion and high sound quality.
 NARROW: Improves selectivity and reduces interference to make AM broadcasts with weak signals easier to listen to.

MUTING (FM mode only)
 ON: Select this mode when receiving stations with a strong signal. It reduces FM broadcast intermediate noise.
 OFF: Improves reception when the signal is weak. Turn VOLUME down when tuning manually. Otherwise, speakers may be damaged by intermediate noise.

Use this button To select

FM MODE Auto stereo: Receives stereo broadcasts with a strong signal. Press FM MODE until both "HI-BLEND" and "MONO" disappear.
 HI-BLEND: Improves reception when the reception is noisy in high frequency. You can receive stereo broadcast with less noise though the stereo sound quality will be slightly diminished.
 MONO: Receives stations with a weak signal. Stations will be received in monaural but with even less noise.

If "PURE CIRCUIT" lights up This means that the digital circuitry has stopped working and only the analog circuitry is working to make the sound quality purer with less interference. The indicator lights up for about 2 seconds after you turn on the power or start any operation.

You can also store the following settings with the frequency of each station when you preset the stations
 FM mode only: ANTENNA (A/B), ANT ATT (ON/OFF), MUTING (ON/OFF), FM MODE (Auto stereo/HI-BLEND/MONO)
 AM or FM mode: IF BAND (WIDE/NARROW)

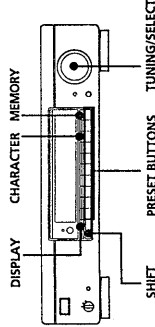
You can obtain better sound quality by turning off the display
 Hold down DISPLAY MODE until the display turns off. To see the current settings (only when a preset station is received), press the preset button of the station being tuned in. The whole display will turn on for 2 seconds.

Note
 The RF MODE is set to NORMAL and cannot be changed.

Note
 If the PURE CIRCUIT indicator flashes, keep the tuner away from fluorescent lights using the inverter system.

Displaying the Station Names

You can assign names (up to 4 characters) to each preset station. When the station is tuned in, the station name will appear instead of its frequency.



- 1 Press **SHIFT** and one of the preset buttons to receive the station you want to assign a station name. Refer to "Receiving Broadcasts" on page 4.
- 2 Press **CHARACTER**. The frequency display disappears and the cursor flashes.

- 3 Turn **TUNING/SELECT** to select a character. You can use the 57 characters (including a space) listed below. Turn **TUNING/SELECT** clockwise to display them starting with the space, or turn it counterclockwise to display them in the opposite order:
(space) A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, *, +, -, /, \, ^, ~, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ;, <, >, <, >, ~

- 4 When the character you want appears, press **CHARACTER**.

If you make a mistake

Press **CHARACTER** repeatedly until the character you want to change flashes (every time you press **CHARACTER**, the next character flashes). Then turn **TUNING/SELECT** to select a new character.

- 5 Repeat Steps 3 and 4 for other preset stations you want to assign a station name.
- 6 Press **MEMORY**. "FILE" appears, and the station name is stored.

To see the frequency of a displayed station name

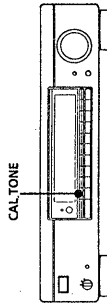
Press **DISPLAY**. Each time you press **DISPLAY**, the station name and frequency switch alternately. If no station name is stored, the frequency display will not change even if you press **DISPLAY**.

Note

The display returns to normal display mode if you stop assigning names for more than 8 seconds. If this happens, start again from Step 2.

Adjusting the Recording Level (Calibration Tone)

The calibration tone function sends a 400 Hz signal corresponding to 50% modulation. The calibration tone is a convenient way to adjust the recording level on a tape deck or MD recorder.



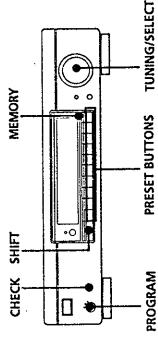
- 1 Set the tape deck or MD recorder to the recording pause mode.
- 2 Press **CAL TONE** until the **CAL** indicator lights up. The tuner sends the calibration tone.
- 3 Adjust the recording level on the tape deck or MD recorder. Normally, adjust the level meter so that it points to a value about 6 dB below the maximum recording level.

To cancel the calibration tone function

Press **CAL TONE** until the **CAL** indicator turns off.

Receiving Broadcasts Using a Timer

You can start the tuner at any time you want (up to 4 times) by connecting a timer (not supplied). First, preset the radio stations you want to program, then set the timer. (Refer to "Presetting Radio Stations" on page 7.) This function has a variety of uses, like recording radio stations while you are out. Refer to the instructions for the timer; if necessary.



- 1 Set the timer to the time you want to turn the power on and off.
- 2 Set **PROGRAM** to **SET**. "PROGRAM 1" appears.
- 3 Press **MEMORY**. "MEMORY" appears for about four seconds and the preset number blinks in the display.
- 4 Use the **SHIFT** and preset buttons to select the stations you want to program while "MEMORY" appears in the display. You can program up to 4 different stations in sequence from 1 to 4 starting with the earliest broadcast time. Each time you enter a station, the **PROGRAM** number advances and "MEMORY" appears for 4 more seconds. If "MEMORY" disappears before you enter a station Press **MEMORY** and start programming again.
- 5 Set **PROGRAM** to **LOCK**. Every time the power is turned on by the timer, the stations are received in order starting with the station set in program 1.

To cancel the timer operation

Set **PROGRAM** to **OFF**.

To check the programmed stations

- 1 Press **PROGRAM** to **SET**.
- 2 Press **CHECK**. The programmed stations are listed in sequence for about 2 seconds each and the program numbers (1 to 4) appear in the display. Scanning stops at the last programmed station.
- 3 Set **PROGRAM** to **LOCK** again when you have checked the stations.

To use the tuner after you have programmed stations

Set **PROGRAM** to **OFF** and select a station you want to receive. To restore the timer, set **PROGRAM** to **LOCK**.

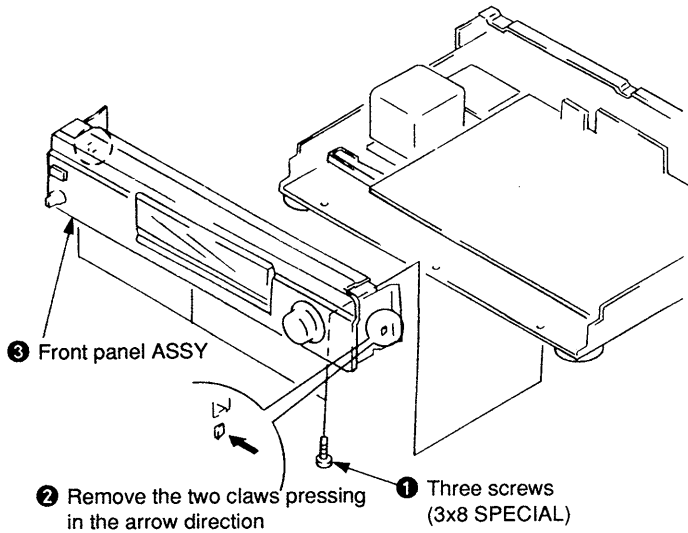
Notes

- The tuner does not switch the stations while the power is on. If you want to switch from receiving preset station A1 to A6 at 8:00, set the timer to turn the power off at 7:59 and turn on at 8:00.
- Once stations are programmed, you cannot clear or change them. Program again from the beginning.

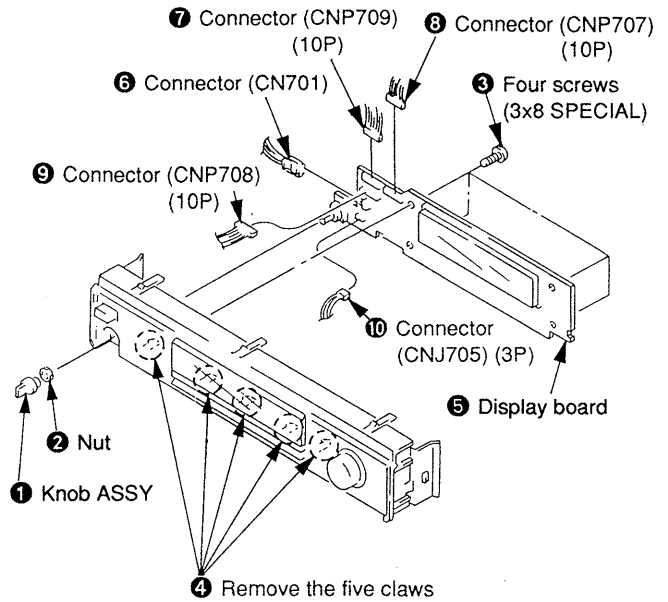
SECTION 2 DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

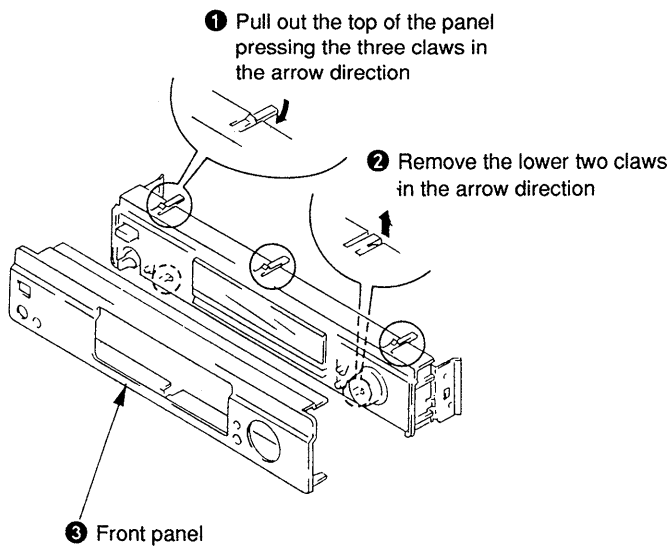
2-1. FRONT PANEL ASSY



2-2. DISPLAY BOARD



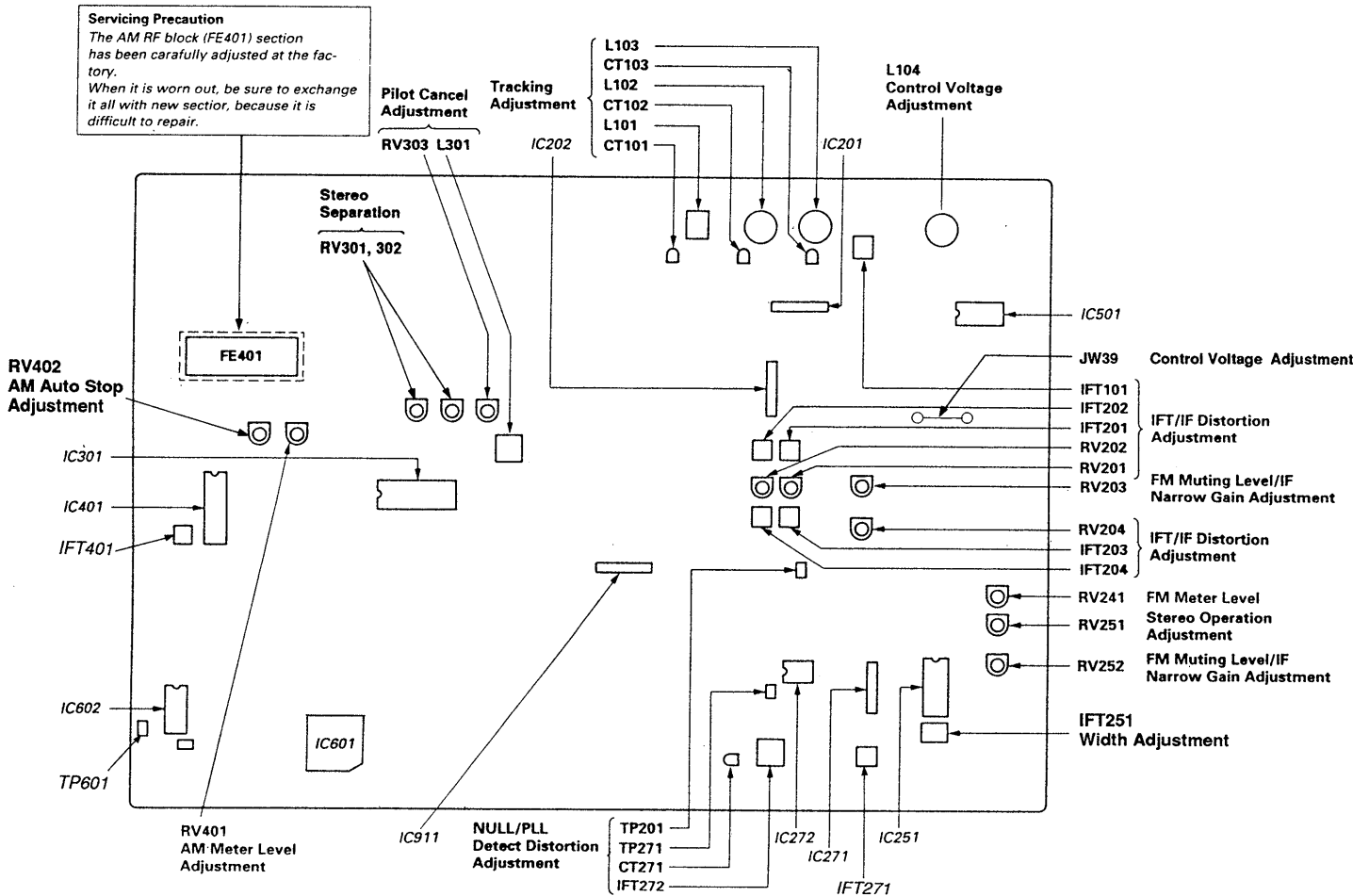
2-3. FRONT PANEL



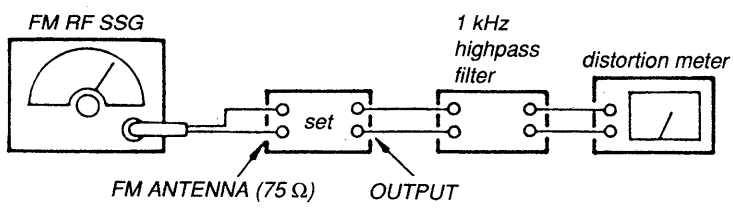
SECTION 3 ELECTRICAL ADJUSTMENTS

Notes : Perform adjustment in the order given.

- Part location diagram relevant to the adjustment.



FM SECTION



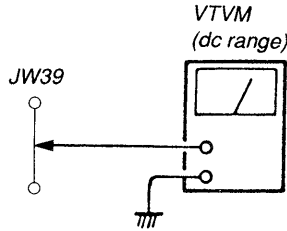
- Standard signals for adjustment.

Stereo Standard signal	Monaural Standard signal
Carrier frequency : 98 MHz	Carrier frequency : 98 MHz
Modulation : Audio 1 kHz, 33.75 kHz deviation (45%)	Modulation : Audio 1 kHz, 75 kHz deviation (100%)
Subchannel 33.75 kHz deviation (45%)	
Pilot 19 kHz, 7.5 kHz deviation (10%)	

Control Voltage Adjustment

Procedure :

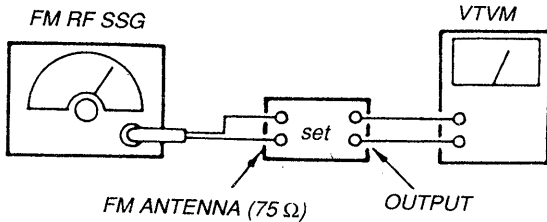
1. Turn the set to 108 MHz.
2. Adjust L104 for 21.0 ± 0.2 V reading on the VTVM.
3. Tune the set to 87.5 MHz.
4. Confirm that the voltage reading on the VTVM is within 8.0 ± 1.0 V.



Tracking Adjustment

Setting:

IF BAND : NARROW



Carrier frequency : 108 MHz, 87.5 MHz
 Modulation : Monaural Standard signal
 Output level : as low as possible

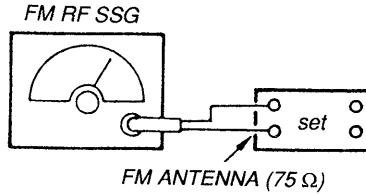
Procedure:

1. Tune the set to 108 MHz.
2. Adjust CT101, CT102 and CT103 for maximum reading on the VTVM.
3. Tune the set to 87.5 MHz.
4. Adjust L101, 102 and L103 for maximum reading on the VTVM.
5. Repeat the step 2 – 4 several times.

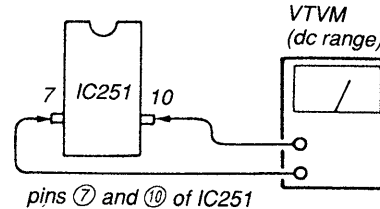
Width Adjustment

Setting:

IF BAND : WIDE
 MUTING switch : ON



Carrier frequency : 98 MHz
 Modulation : Monaural Standard signal
 Output level : 10 mV (80 dBμ)



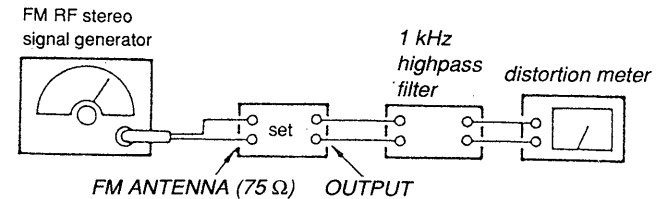
Procedure :

1. Tune the set to 98 MHz.
2. Adjust IFT251 for 0V reading on the VTVM.

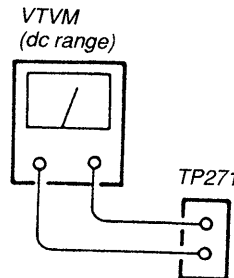
NULL/PLL Detect Distortion Adjustment

Setting:

IF BAND : WIDE
 MUTING switch : ON



Carrier frequency : 98 MHz
 Modulation : Monaural Standard signal
 Output level : 10 mV (80 dBμ)



Procedure :

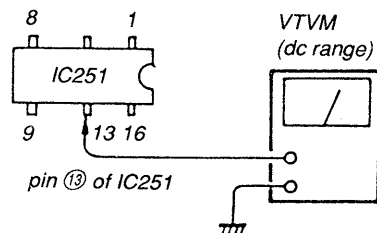
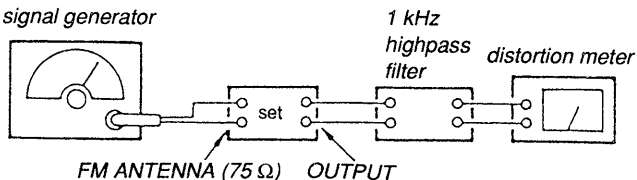
1. Tune the set to 98 MHz.
2. Short-circuit TP201 to the ground (The set turns into IF through state.)
3. Set the SSG output to 80 dBμ (10 mV).
4. Adjust IFT272 for 0V reading on the VTVM (TP271). (Null adj.)
5. Adjust CT271 for minimum distortion reading on the distortion meter. (PLL Detect Distortion adj.)
6. Repeat the step 4 and 5 several times.
7. Remove the short circuit of TP201.

IFT/IF Distortion Adjustment

Setting :

MUTING switch : OFF

FM RF stereo
signal generator



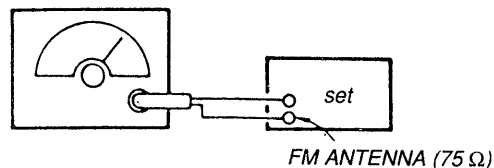
Procedure :

1. IF BAND : WIDE
2. Tune the set to 98 MHz.
3. Turn RV201 and RV202 to fully clockwise.
4. Set the SSG output to 40 dB μ (100 μ V) at Monaural Standard signal.
5. Adjust IFT201 for maximum reading on the VTVM. (IF Distortion Pre adj. • MONO)
6. Set the SSG output to 40 dB μ (100 μ V) at Stereo Standard signal.
7. Adjust IFT202 for maximum reading on the VTVM. (IF Distortion Pre adj. • STEREO)
8. Adjust IFT101 for maximum reading on the VTVM. (IFT adj.)
9. Set the SSG output to 80 dB μ (10 mV) at Monaural Standard signal.
10. Turn RV201 and RV202 to mechanical center position.
11. Adjust IFT203 for the minimum distortion. (IF Distortion adj. • MONO)
12. Set the SSG output to 80 dB μ (10 mV) at Stereo Standard signal. (Lch only)
13. Adjust IFT204 for the minimum distortion. (IF Distortion adj. • STEREO)
14. IF BAND : NARROW
15. Adjust RV204 for the minimum distortion. (IF Narrow Distortion adj.)

Stereo Operation Adjustment

Setting:

IF BAND : WIDE
MUTING switch : OFF
FM RF stereo
signal generator



Carrier frequency : 98 MHz
Modulation : Stereo Standard signal
Output level : 10 μ V (20 dB)

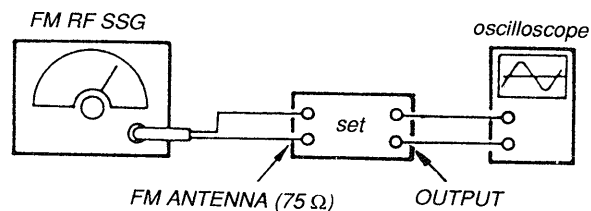
Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV251 so that the STEREO indicator goes on.

FM Muting Level/IF Narrow Gain Adjustment

Setting :

MUTING switch : ON



Carrier frequency : 98 MHz
Modulation : Monaural Standard signal
Output level : 17.8 μ V (25 dB)

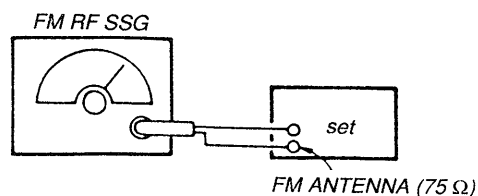
Procedure:

1. IF BAND : WIDE
2. Tune the set to 98 MHz and adjust output level of signal generator at 25 dB μ (17.8 μ V).
3. Turn RV252 at the position where the waveform suddenly appears on the oscilloscope (FM Muting level adj.)
4. IF BAND : NARROW
5. Turn RV203 at the position where the waveform suddenly appears on the oscilloscope (IF Narrow Gain adj.)

FM Meter Level Adjustment

Setting :

IF BAND : WIDE



Carrier frequency : 98 MHz
Modulation : Monaural Standard signal
Output level : 3 mV (70 dB μ)

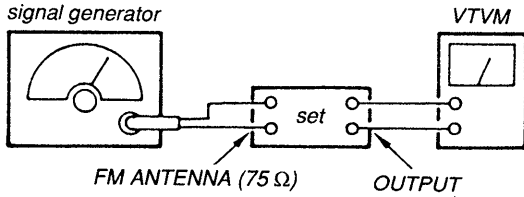
Procedure:

1. Tune the set to 98 MHz.
2. Adjust RV241 so that 1 – 10 indication bars light up on the signal meter.

Pilot Cancel Adjustment

Setting :

IF BAND : WIDE
FM RF stereo
signal generator



Carrier frequency : 98 MHz
Modulation : pilot only
Output level : 10 mV (80 dBμ)

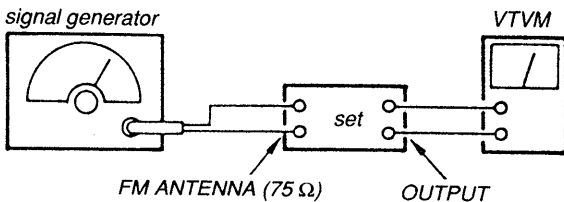
Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV303 and L301 alternately for minimum reading on the VTVM and also tune the both channel of L-CH and R-CH balanced at this time.
3. Repeat the step 2 several times.

Stereo Separation Adjustment

Setting :

IF BAND : WIDE
FM RF stereo
signal generator



Carrier frequency : 98 MHz
Modulation : Stereo Standard signal
Output level : 10 mV (80 dBμ)

Procedure :

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-GH	Ⓑ Adjust RV301 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV302 for minimum reading.

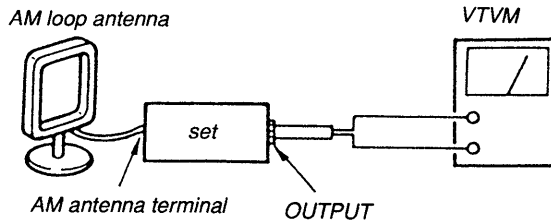
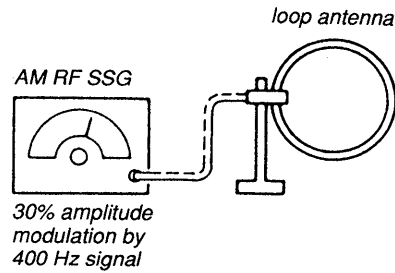
L-CH Stereo separation : Ⓐ - Ⓑ

R-CH Stereo separation : Ⓒ - Ⓓ

The separations of both channels should be equal.

AM SECTION

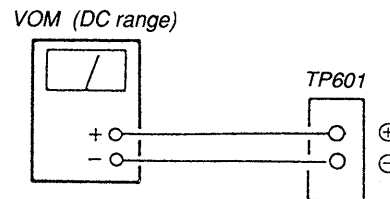
Setting :



AM meter level/AM auto stop level adjustment

Setting :

Carrier frequency : 999 kHz
Modulation : 400 Hz, 30% modulation

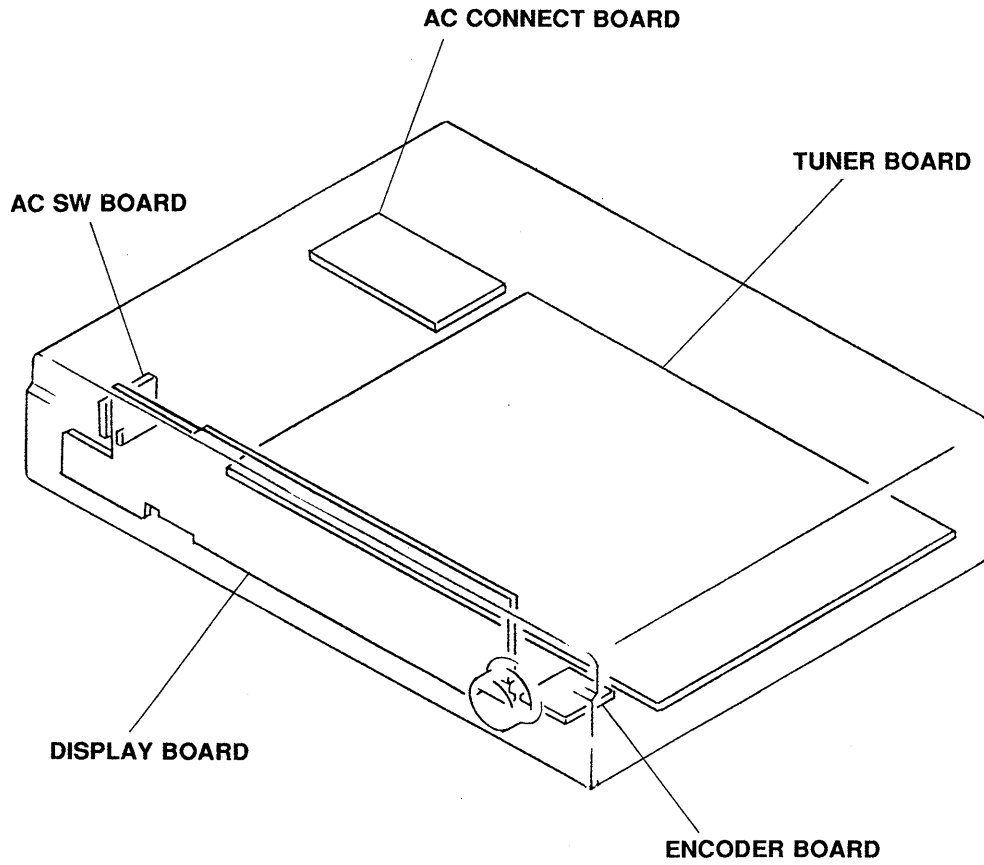


Procedure :

1. Set AM RF SSG so that the AM antenna input level of the unit becomes 74 dBμ/m.
2. Adjust RV401 so that 1 - 10 indication bars light up on the signal meter.
3. Set AM RF SSG so that the AM antenna input level of the unit becomes 58 dBμ/m.
4. Adjust RV402 so that the VOM (TP601) becomes 2.5V.
5. Repeat steps 1 to 4 several times.

SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

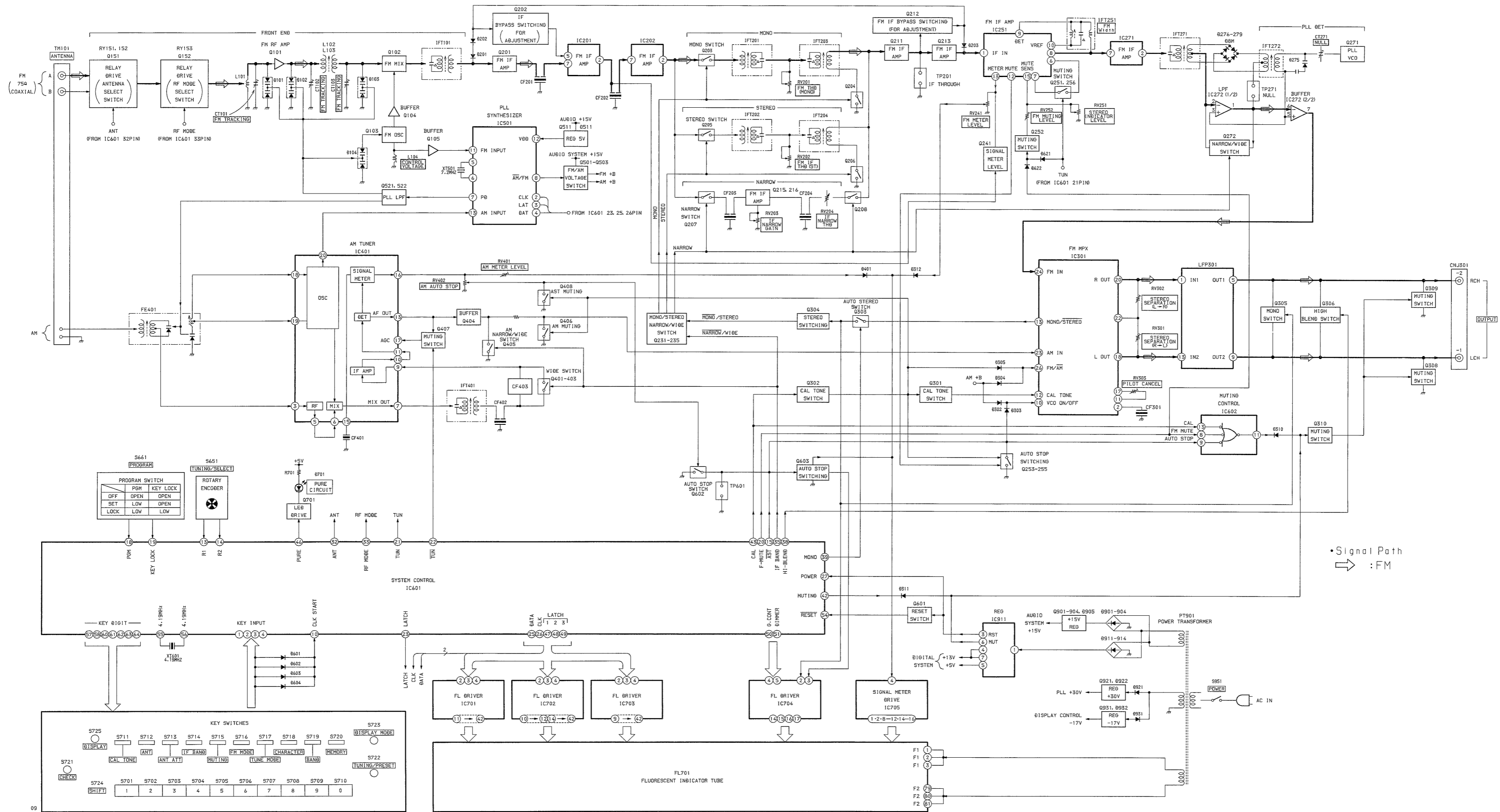


4-2. IC PIN FUNCTION

• IC601 (μ PD75116-HGC-019-AB8)

Pin	Pin Name	I/O	ACT	Function	Pin	Pin Name	I/O	ACT	Function
1	KEY INPUT	I	H	KEY INPUT	35	IF BAND	O	H	IF BAND 1 $\overline{\text{WIDE}}/\text{NARROW}$
2	KEY INPUT	I	H	KEY INPUT	36	FILTER	O	—	FILTER (N. C)
3	KEY INPUT	I	H	KEY INPUT	37	BLEND	O	—	MODE 3 (N. C)
4	KEY INPUT	I	H	KEY INPUT	38	Hi-BAND	O	L	MODE 2 $\overline{\text{Hi-BLEND}}$
5	PST CH No. A	O	—	LED DATA A (N. C)	39	MONO	O	H	MODE 1 $\overline{\text{MONO}}/\text{AUTO}$
6	PST CH No. B	O	—	LED DATA B (N. C)	40	—	—	—	N. C
7	PST CH No. C	O	—	LED DATA C (N. C)	41	VDD	—	—	+5V
8	PST CH No. D	O	—	LED DATA D (N. C)	42	MUTING	O	H	MUTING $\overline{\text{OFF}}/\text{ON}$
9	GND	—	—	GND	43	CAL	O	L	CALTONE OFF/ON
10	CLK START	I	H	CLOCK START	44	FM/AM	O	—	N. C
11		—	—	N. C (GND)	45	MW/LW	O	—	N. C
12	R-IN	I	H/L	REMOTE CONTROL (N. C)	46	PURE	O	H	PURE CIRCUIT
13	R1	I	H/L	ENCODER R1	47	LC7570 LATCH 1	O	H	LATCH LC7570 1 (IC701)
14	R2	I	H	ENCODER R2					
15	$\overline{\text{AST}}$	I	L	$\overline{\text{AUTO/STOP OFF/ON}}$	48	LC7570 LATCH 2	O	H	LATCH LC7570 2 (IC702)
16		I	—	N. C (GND)					
17		I	—	N. C (GND)	49	LC7570 LATCH 3	O	H	LATCH LC7570 3 (IC703)
18	PGM	I	L	$\overline{\text{PGM OFF/ON}}$					
19	KEY LOCK	I	L	$\overline{\text{KEY LOCK OFF/ON}}$	50	G. CONT	O	L	GRID CONTROL
20	F-MUTE	O	H	FM MUTE OUTPUT $\overline{\text{OFF}}/\text{ON}$	51	DIMMER	O	L	DIMMER
21	TUN	O	H	TUNING $\overline{\text{STOP}}/\text{TUN}$	52	DIODE	O	H	DIODE SW
22	$\overline{\text{TUN}}$	O	L	$\overline{\text{TUNING STOP/TUN}}$	53	DIODE	O	H	DIODE SW
23	PLL LATCH	O	H	LATCH CX7925 (IC501)	54	$\overline{\text{RESET}}$	I	L	RESET IN
24		—	—	N. C	55	4.19 MHz	O	—	X'tal ceramic 4.19 MHz
25	PLL DATA	O	H	DATA	56	4.19 MHz	I	—	X'tal ceramic 4.19 MHz
26	PLL CLK	O	L	$\overline{\text{CLK}}$	57	KEY DIGIT	O	H	KEY DIGIT
27	POWER	I	H	POWER	58	KEY DIGIT	O	H	KEY DIGIT
28	SST DATA 4	O	H	SST4	59	KEY DIGIT	O	—	KEY DIGIT (N. C)
29	SST DATA 3	O	H	SST3	60	KEY DIGIT	O	H	KEY DIGIT
30	SST DATA 2	O	H	SST2	61	KEY DIGIT	O	H	KEY DIGIT
31	SST DATA 1	O	H	SST1	62	KEY DIGIT	O	H	KEY DIGIT
32	ANT	O	L	$\overline{\text{ANT A/B}}$	63	KEY DIGIT	O	H	KEY DIGIT
33	RF MODE	O	H	RF MODE $\overline{\text{NORMAL}}/\text{DIRECT}$	64	KEY DIGIT	O	H	KEY DIGIT
34	S. NARROW	O	—	IF BAND 2 (N. C)					

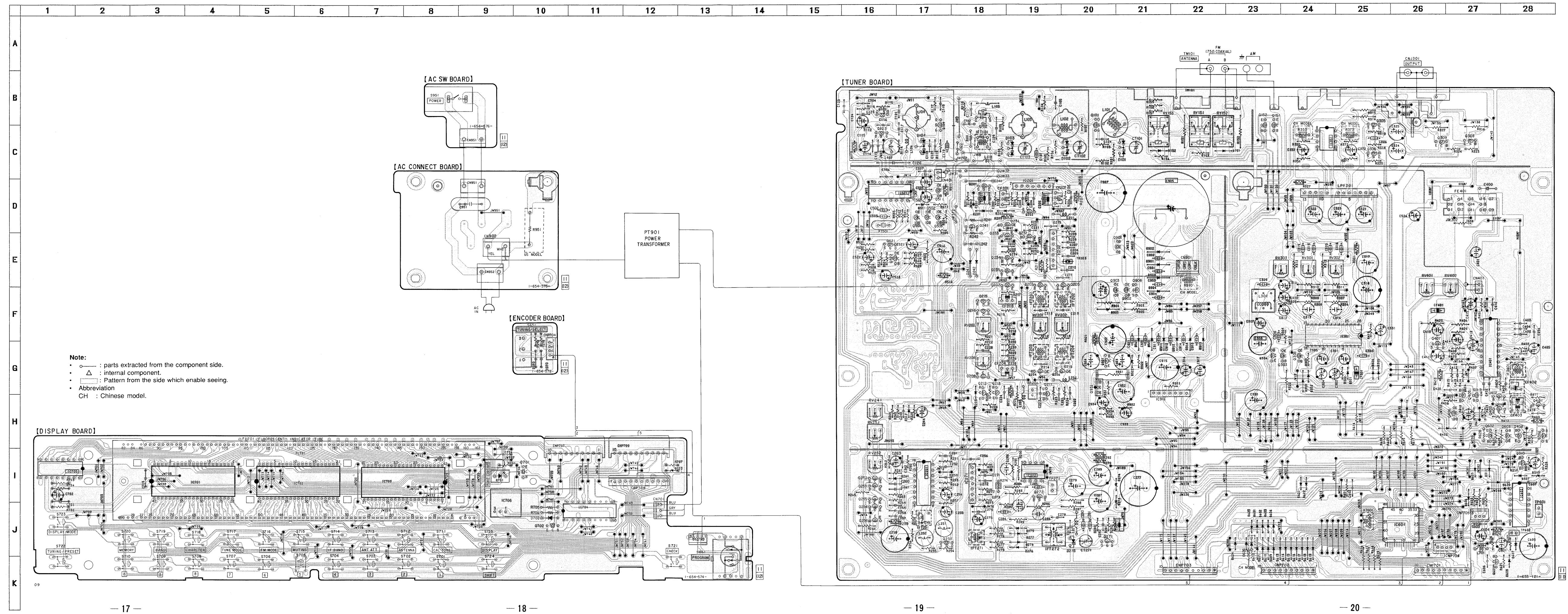
4-3. BLOCK DIAGRAM



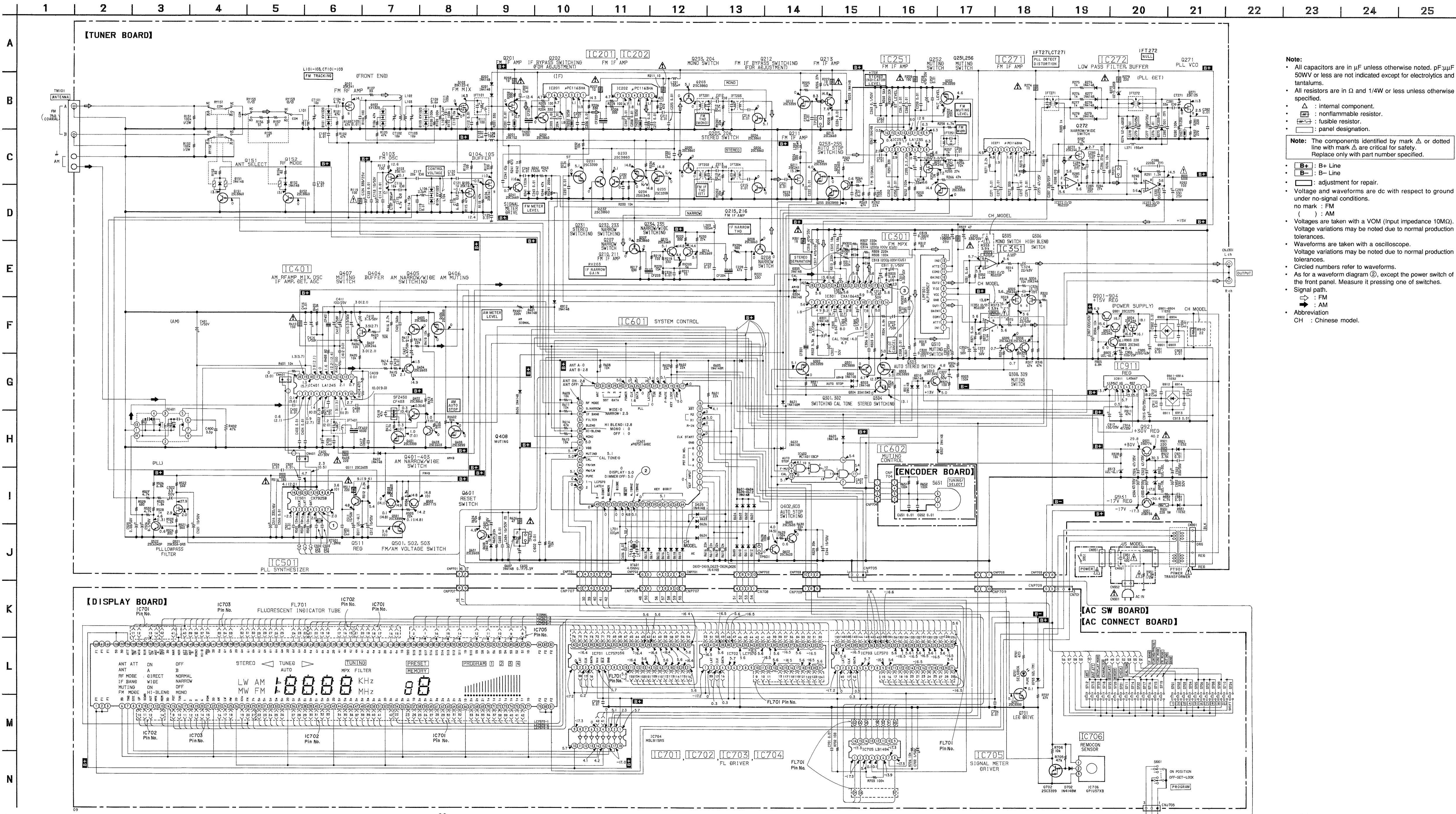
4-4. PRINTED WIRING BOARDS
 • See page 11 for Circuit Boards Location.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D101	C-20	D624	J-23	Q212	G-18
D102	C-20	D625	J-23	Q213	G-18
D103	C-19	D626	J-23	Q215	F-18
D104	C-17	D701	I-9	Q216	F-18
D151	C-23	D702	J-10	Q231	D-18
D152	C-21	D703	I-12	Q232	E-19
D201	D-18	D901	E-21	Q233	E-18
D202	D-18	D902	E-21	Q234	E-19
D203	H-18	D903	E-21	Q235	E-18
D241	E-18	D904	F-21	Q241	E-18
D242	E-18	D905	F-20	Q251	J-17
D261	I-17	D911	G-21	Q252	I-16
D273	J-21	D912	G-22	Q253	I-16
D274	I-21	D913	G-22	Q254	J-16
D275	J-20	D914	G-22	Q255	J-16
D276	J-19	D921	G-21	Q256	J-16
D277	J-19	D922	G-21	Q271	J-20
D278	J-19	D931	G-21	Q272	I-19
D279	J-19	D932	H-21	Q301	G-24
D301	G-25			Q302	H-28
D302	G-24	IC201	D-19	Q303	G-24
D303	G-24	IC202	E-19	Q304	G-23
D304	G-25	IC251	I-17	Q305	C-25
D305	G-25	IC271	I-18	Q306	C-25
D307	I-28	IC272	I-19	Q308	C-27
D310	I-28	IC301	F-25	Q309	C-26
D311	I-27	IC351	C-24	Q310	I-28
D312	H-17	IC401	G-27	Q401	H-28
D313	I-28	IC501	D-17	Q402	H-27
D401	H-26	IC601	J-26	Q403	H-27
D402	H-27	IC602	I-28	Q404	H-27
D511	D-17	IC701	I-4	Q405	H-27
D601	J-23	IC702	I-6	Q406	H-27
D602	J-23	IC703	I-7	Q407	G-26
D603	J-23	IC704	J-11	Q408	H-28
D604	J-23	IC705	I-1	Q501	D-17
D605	I-27	IC706	J-9	Q502	D-17
D606	J-27	IC911	H-21	Q503	D-17
D607	J-28			Q511	D-17
D608	K-28	Q101	C-20	Q521	E-16
D609	K-23	Q102	B-18	Q522	E-16
D610	K-23	Q103	C-16	Q601	K-27
D611	K-23	Q104	C-17	Q602	H-27
D612	K-23	Q105	B-16	Q603	H-28
D613	K-23	Q151	C-23	Q701	I-10
D614	K-24	Q152	C-23	Q702	J-10
D615	K-24	Q201	D-18	Q706	J-9
D616	K-24	Q202	D-19	Q901	E-21
D617	K-24	Q203	E-19	Q902	F-21
D618	K-24	Q204	G-19	Q903	F-21
D619	K-24	Q205	F-20	Q904	F-21
D620	I-28	Q206	G-19	Q921	G-20
D621	I-24	Q207	E-19	Q931	G-20
D622	I-24	Q208	G-18		
D623	J-23	Q211	H-19		



4-5. SCHEMATIC DIAGRAM
 • See page 12 for IC Pin Functions. (IC601)
 • See page 26 for IC Block Diagrams.



- Note:**
- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and 1/4W or less unless otherwise specified.
 - Δ : internal component.
 - \square : nonflammable resistor.
 - \square : fusible resistor.
 - \square : panel designation.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- \square : B+ : B+ Line
- \square : B- : B- Line
- \square : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : FM
- () : AM
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- As for a waveform diagram $\text{\textcircled{2}}$, except the power switch of the front panel. Measure it pressing one of switches.
- Signal path.
- \rightarrow : FM
- \rightarrow : AM
- CH : Chinese model.

TUNER BOARD

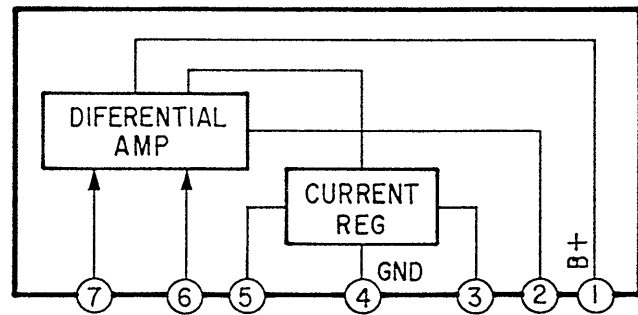
① IC501 ⑤ 2.7Vp-p 7.2MHz

② IC601 ⑤ 5.5Vp-p 4.19MHz

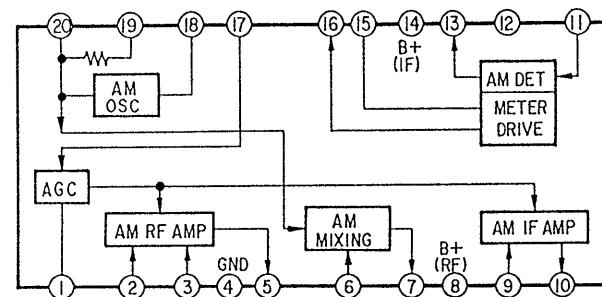
③ IC301 ⑤ CALTONE MODE 1.7Vp-p 2.5mSEC

4-6. IC BLOCK DIAGRAMS

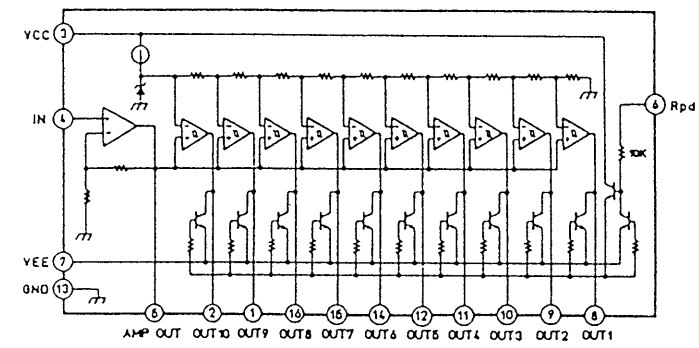
IC201, IC202, IC271 μ PC1163HA



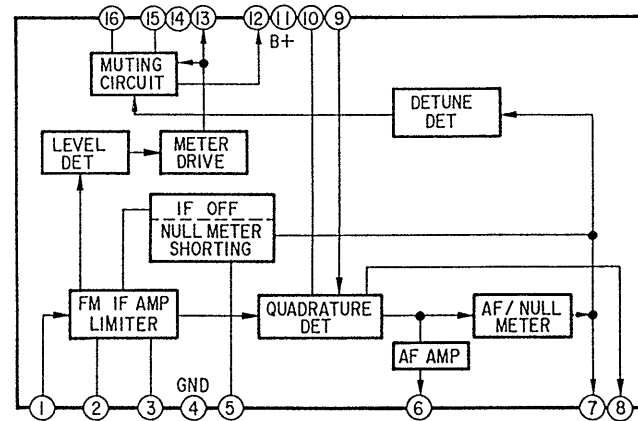
IC401 LA1245



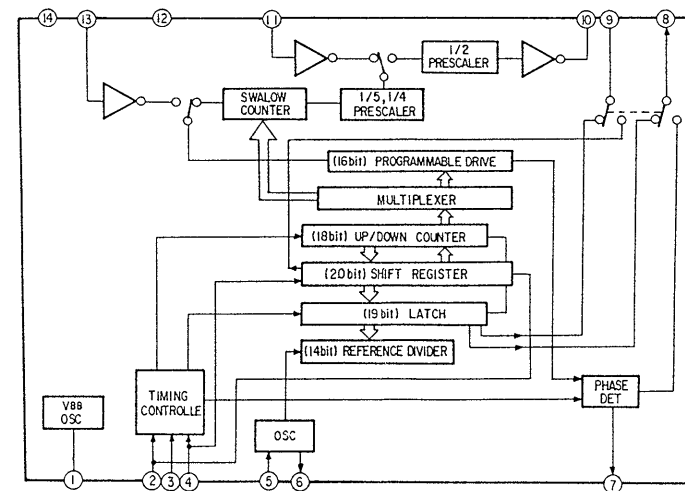
IC705 LB1494



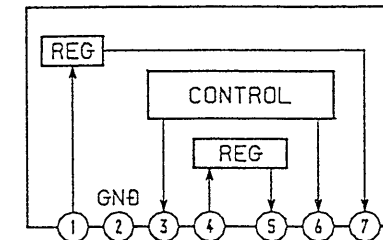
IC251 LA1235



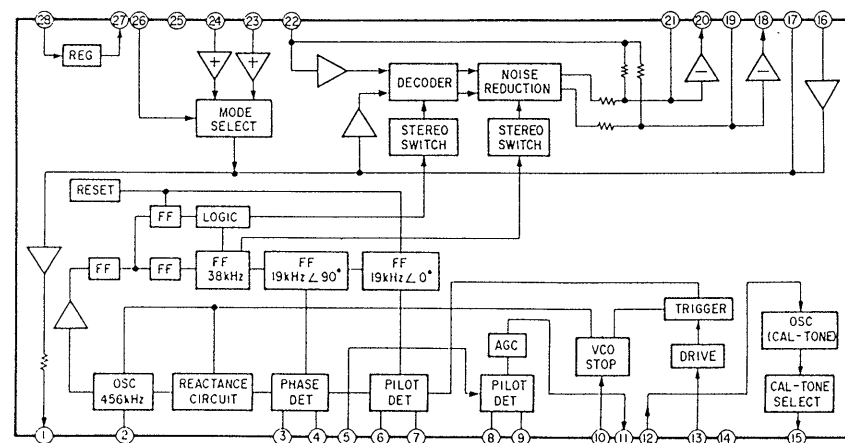
IC501 CX7925B



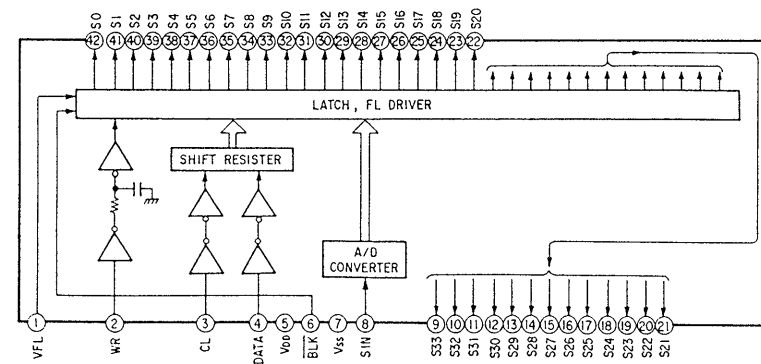
IC911 LA5667



IC301 CXA1064S



IC701, IC702, IC703 LC7570



SECTION 5

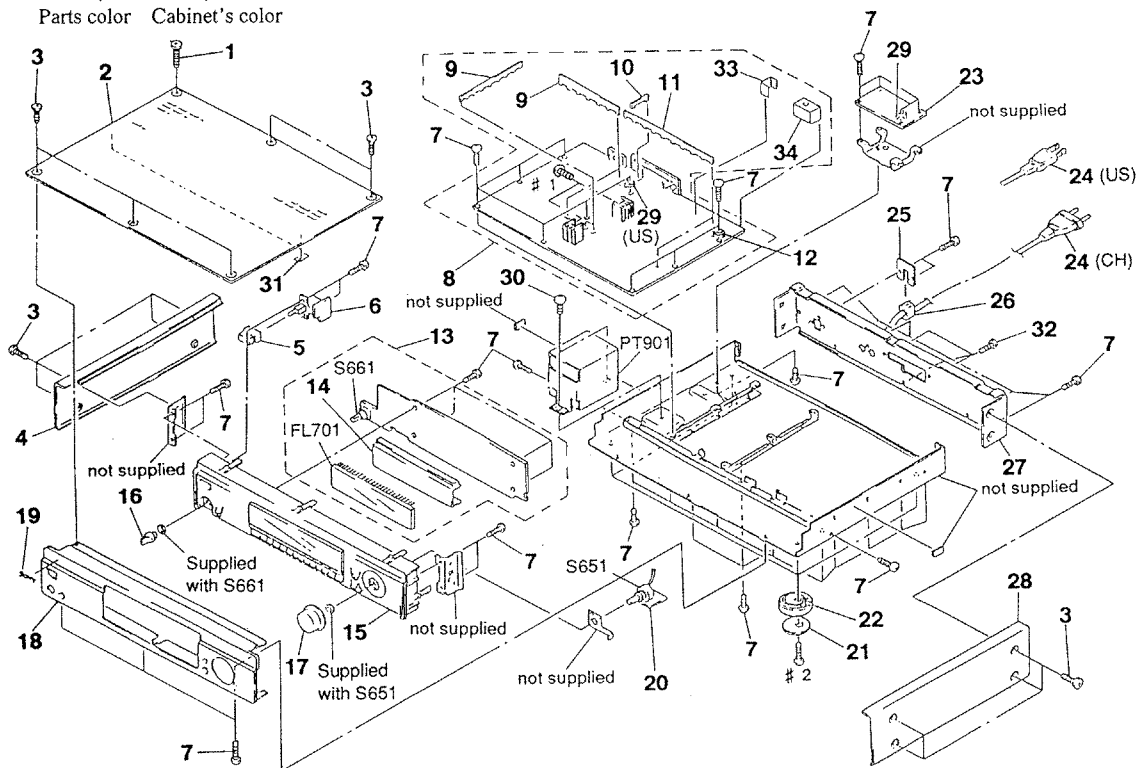
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example: KNOB, BALANCE (WHITE) . . . (RED)

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
CH : Chinese model

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-921-439-11	SCREW (M3X8), FLAT HEAD (SILVER).. (GOLD)		18	4-970-683-21	PANEL, FRONT (BLACK)	
1	4-921-439-21	SCREW (M3X8), FLAT HEAD (BLACK).. (BLACK)		18	4-970-683-61	PANEL, FRONT (GOLD)	
2	4-970-687-01	PLATE, TOP (BLACK)		19	4-942-568-01	EMBLEM (NO. 5), SONY (SILVER).. (BLACK)	
2	4-970-687-11	PLATE, TOP (GOLD)		19	4-942-568-21	EMBLEM (NO. 5), SONY (GOLD).. (GOLD)	
3	4-924-242-11	SCREW (M3X6), FLAT HEAD (BLACK).. (BLACK)		* 20	1-654-578-11	ENCODER BOARD	
3	4-924-242-61	SCREW (M3X6), FLAT HEAD (SILVER).. (GOLD)		21	4-970-124-01	CUSHION (F50180S)	
4	4-970-686-01	PANEL (R), SIDE (for L side) (BLACK)		22	4-970-123-01	FOOT (F50180S)	
4	4-970-686-11	PANEL (R), SIDE (for L side) (GOLD)		* 23	1-654-575-11	AC CONNECT BOARD	
5	4-917-460-01	KNOB, POWER (BLACK)		24	1-574-383-11	CORD, POWER (CH)	
5	4-917-460-51	KNOB, POWER (GOLD)		24	1-575-975-11	CORD, POWER (US)	
* 6	1-654-576-11	AC SW BOARD		* 25	4-923-873-01	BRACKET, CORD STOPPER	
7	4-967-961-01	SCREW (3X8) (SPECIAL)		* 26	3-703-244-00	BUSHING (2104), CORD	
* 8	A-4371-883-A	TUNER BOARD, COMPLETE (US)		* 27	4-970-688-11	PANEL, BACK (US)	
* 8	A-4378-670-A	TUNER BOARD, COMPLETE (CH)		* 27	4-970-688-21	PANEL, BACK (CH)	
* 9	1-560-242-51	BUS BAR 7P		28	4-970-685-01	PANEL (L), SIDE (for R side) (BLACK)	
* 10	1-560-242-61	BUS BAR 2P		28	4-970-685-11	PANEL (L), SIDE (for R side) (GOLD)	
* 11	1-560-242-91	BUS BAR 10P		* 29	3-346-266-21	PLATE, GROUND	
* 12	4-870-539-00	PLATE, GROUND		30	4-967-960-01	SCREW (4X8)	
* 13	A-4371-880-A	DISPLAY BOARD, COMPLETE (US)		31	3-849-226-01	CLOTH, UNWEAVED (25X6X0.5)	
* 13	A-4378-669-A	DISPLAY BOARD, COMPLETE (CH)		32	3-704-242-01	SCREW, TERMINAL, + BVTP CLAW	
* 14	4-923-499-01	HOLDER (FL)		* 33	4-911-325-01	PLATE (A), SHIELD	
15	X-4945-640-1	BASE ASSY, PANEL (BLACK)		* 34	2-287-441-01	PLATE, SHIELD	
15	X-4946-231-1	BASE ASSY, PANEL (GOLD)		FL701	1-519-558-11	INDICATOR TUBE, FLUORESCENT	
16	X-4943-846-1	KNOB ASSY (B) (BLACK)		PT901	1-423-857-11	TRANSFORMER, POWER (US)	
16	X-4943-847-1	KNOB ASSY (N) (GOLD)		PT901	1-450-409-11	TRANSFORMER, POWER (CH)	
17	4-970-684-01	KNOB (T) (BLACK)		S651	1-467-927-11	ENCODER, ROTARY (TUNING/SELECT)	
17	4-970-684-11	KNOB (T) (GOLD)		S661	1-762-199-11	SWITCH, ROTARY (PROGRAM)	

AC CONNECT

AC SW DISPLAY

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H
- Abbreviation
CH : Chinese model

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	1-654-575-11	AC CONNECT BOARD *****				< CONNECTOR >	
*	3-346-266-21	PLATE, GROUND < CAPACITOR >		* CN701	1-560-072-00	PIN, CONNECTOR (U TYPE)	
Δ C951	1-161-744-00	CERAMIC 0.01uF 400V < CONNECTOR >		* CNJ705	1-564-337-00	PIN, CONNECTOR 3P	
CN902	1-564-321-00	PIN, CONNECTOR 2P		* CNP707	1-564-525-11	PLUG, CONNECTOR 10P	
CN952	1-564-321-00	PIN, CONNECTOR 2P < RESISTOR >		* CNP708	1-564-513-11	PLUG, CONNECTOR 10P	
Δ R951	1-202-725-00	SOLID 3.3M 10% 1/2W (US) *****		* CNP709	1-564-525-11	PLUG, CONNECTOR 10P	
*	1-654-576-11	AC SW BOARD ***** < CONNECTOR >				< DIODE >	
CN951	1-564-321-00	PIN, CONNECTOR 2P < SWITCH >		D701	8-719-313-72	DIODE SEL3810A-CD	
Δ S951	1-572-267-21	SWITCH, PUSH(AC POWER) (1 KEY) (POWER) (CH)		D702	8-719-987-63	DIODE 1N4148M	
Δ S951	1-572-267-51	SWITCH, PUSH(AC POWER) (1 KEY) (POWER) (US) *****		D703	8-719-000-84	DIODE UZL-7M1	
*	A-4371-880-A	DISPLAY BOARD, COMPLETE (US) *****				< FLUORESCENT INDICATOR >	
*	A-4378-669-A	DISPLAY BOARD, COMPLETE (CH) *****		FL701	1-519-558-11	INDICATOR TUBE, FLUORESCENT	
*	4-923-499-01	HOLDER (FL) < CAPACITOR >				< IC >	
C701	1-162-306-11	CERAMIC 0.01uF 30% 16V		IC701	8-759-820-08	IC LC7570	
C702	1-124-903-11	ELECT 1uF 20% 50V		IC702	8-759-820-08	IC LC7570	
C703	1-162-306-11	CERAMIC 0.01uF 30% 16V		IC703	8-759-820-08	IC LC7570	
C704	1-162-306-11	CERAMIC 0.01uF 30% 16V		IC704	8-759-909-15	IC MSL915RS	
				IC705	8-759-801-57	IC LB1494	
				IC706	8-749-923-43	IC GP1U57XB	
						< TRANSISTOR >	
				Q701	8-729-900-89	TRANSISTOR DTC144ES	
				Q702	8-729-900-89	TRANSISTOR DTC144ES	
						< RESISTOR >	
				R701	1-249-413-11	CARBON 470 5% 1/4W F	
				R702	1-247-807-31	CARBON 100 5% 1/4W	
				R703	1-249-441-11	CARBON 100K 5% 1/4W	
				R704	1-249-429-11	CARBON 10K 5% 1/4W	
				R705	1-249-437-11	CARBON 47K 5% 1/4W	
				R706	1-249-429-11	CARBON 10K 5% 1/4W	
				R707	1-249-437-11	CARBON 47K 5% 1/4W	
						< SWITCH >	
				S661	1-762-199-11	SWITCH, ROTARY (PROGRAM)	
				S701	1-554-303-21	SWITCH, TACTILE (1)	
				S702	1-554-303-21	SWITCH, TACTILE (2)	
				S703	1-554-303-21	SWITCH, TACTILE (3)	
				S704	1-554-303-21	SWITCH, TACTILE (4)	

DISPLAY

ENCODER

TUNER

Ref.No.	Part No.	Description	Remark
S705	1-554-303-21	SWITCH, TACTILE (5)	
S706	1-554-303-21	SWITCH, TACTILE (6)	
S707	1-554-303-21	SWITCH, TACTILE (7)	
S708	1-554-303-21	SWITCH, TACTILE (8)	
S709	1-554-303-21	SWITCH, TACTILE (9)	
S710	1-554-303-21	SWITCH, TACTILE (0)	
S711	1-554-303-21	SWITCH, TACTILE (CAL TONE)	
S712	1-554-303-21	SWITCH, TACTILE (ANTENNA)	
S713	1-554-303-21	SWITCH, TACTILE (ANT ATT)	
S714	1-554-303-21	SWITCH, TACTILE (IF BAND)	
S715	1-554-303-21	SWITCH, TACTILE (MUTING)	
S716	1-554-303-21	SWITCH, TACTILE (FM MODE)	
S717	1-554-303-21	SWITCH, TACTILE (TUNE MODE)	
S718	1-554-303-21	SWITCH, TACTILE (CHARACTOR)	
S719	1-554-303-21	SWITCH, TACTILE (BAND)	
S720	1-554-303-21	SWITCH, TACTILE (MEMORY)	
S721	1-554-303-21	SWITCH, TACTILE (CHECK)	
S722	1-554-303-21	SWITCH, TACTILE (TUNING/PRESET)	
S723	1-554-303-21	SWITCH, TACTILE (DISPLAY MODE)	
S724	1-554-303-21	SWITCH, TACTILE (SHIFT)	
S725	1-554-303-21	SWITCH, TACTILE (DISPLAY)	

*	1-654-578-11	ENCODER BOARD	

		< CAPACITOR >	
C651	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C652	1-162-306-11	CERAMIC 0.01uF 30% 16V	
		< CONNECTOR >	
* CNP704	1-564-338-00	PIN, CONNECTOR 4P	
		< RESISTOR >	
R651	1-259-476-11	CARBON 100K 5% 1/6W	
R652	1-259-476-11	CARBON 100K 5% 1/6W	
		< SWITCH >	
S651	1-467-927-11	ENCODER, ROTARY (TUNING/SELECT)	

*	A-4371-883-A	TUNER BOARD, COMPLETE (US)	

*	A-4378-670-A	TUNER BOARD, COMPLETE (CH)	

*	1-560-242-51	BUS BAR 7P	
*	1-560-242-61	BUS BAR 2P	
*	1-560-242-91	BUS BAR 10P	

Ref.No.	Part No.	Description	Remark
*	2-287-441-01	PLATE, SHIELD	
*	3-346-266-21	PLATE, GROUND (US)	
		7-682-548-09 SCREW (3X8)	
*	4-870-539-00	PLATE, GROUND	
*	4-911-325-01	PLATE (A), SHIELD	
		< CAPACITOR >	
C104	1-162-195-31	CERAMIC 4.7PF 10% 50V	
C105	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C107	1-164-096-11	CERAMIC 0.01uF 50V	
C109	1-162-196-31	CERAMIC 5.6PF 10% 50V	
C110	1-162-199-31	CERAMIC 10PF 5% 50V	
C111	1-162-282-31	CERAMIC 100PF 10% 50V	
C112	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C113	1-126-059-11	ELECT 10uF 20% 50V	
C114	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C115	1-162-195-31	CERAMIC 4.7PF 10% 50V	
C116	1-162-199-31	CERAMIC 10PF 5% 50V	
C117	1-162-206-31	CERAMIC 20PF 5% 50V	
C118	1-162-197-31	CERAMIC 6.8PF 10% 50V	
C119	1-164-096-11	CERAMIC 0.01uF 50V	
C120	1-162-191-31	CERAMIC 2.2PF 10% 50V	
C121	1-162-187-31	CERAMIC 1PF 20% 50V	
C122	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C123	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C124	1-126-025-11	ELECT 330uF 20% 25V	
C125	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C126	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C201	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C202	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C203	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C204	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C205	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C206	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C207	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C208	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C209	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C210	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C211	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C212	1-162-195-31	CERAMIC 4.7PF 10% 50V	
C213	1-162-195-31	CERAMIC 4.7PF 10% 50V	
C214	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C215	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C220	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C221	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C222	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C223	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C224	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C225	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C226	1-162-306-11	CERAMIC 0.01uF 30% 16V	

TUNER

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C228	1-162-215-31	CERAMIC	47PF	5%	50V	C310	1-124-252-00	ELECT	0.33uF	20%	50V
C231	1-162-306-11	CERAMIC	0.01uF	30%	16V	C311	1-124-463-00	ELECT	0.1uF	20%	50V
C232	1-162-306-11	CERAMIC	0.01uF	30%	16V	C312	1-124-902-00	ELECT	0.47uF	20%	50V
C233	1-162-306-11	CERAMIC	0.01uF	30%	16V	C313	1-136-228-11	FILM	0.0012uF	5%	100V (US)
C241	1-162-199-31	CERAMIC	10PF	5%	50V	C313	1-137-273-11	FILM	750PF	5%	100V (CH)
C242	1-162-306-11	CERAMIC	0.01uF	30%	16V	C314	1-136-228-11	FILM	0.0012uF	5%	100V (US)
C243	1-162-306-11	CERAMIC	0.01uF	30%	16V	C314	1-137-273-11	FILM	750PF	5%	100V (CH)
C244	1-126-059-11	ELECT	10uF	20%	50V	C315	1-102-953-00	CERAMIC	18PF	5%	50V
C251	1-162-306-11	CERAMIC	0.01uF	30%	16V	C316	1-102-953-00	CERAMIC	18PF	5%	50V
C252	1-162-306-11	CERAMIC	0.01uF	30%	16V	C317	1-124-997-11	ELECT	470uF	20%	10V
C253	1-162-306-11	CERAMIC	0.01uF	30%	16V	C318	1-126-104-11	ELECT	470uF	20%	35V
C254	1-124-925-11	ELECT	2.2uF	20%	100V	C319	1-130-475-00	MYLAR	0.0022uF	5%	50V
C255	1-124-925-11	ELECT	2.2uF	20%	100V	C320	1-130-475-00	MYLAR	0.0022uF	5%	50V
C256	1-162-306-11	CERAMIC	0.01uF	30%	16V	C321	1-126-023-11	ELECT	100uF	20%	25V
C257	1-162-306-11	CERAMIC	0.01uF	30%	16V	C322	1-126-023-11	ELECT	100uF	20%	25V
C258	1-126-104-11	ELECT	470uF	20%	35V	C323	1-126-025-11	ELECT	330uF	20%	25V
C259	1-162-306-11	CERAMIC	0.01uF	30%	16V	C324	1-124-929-11	ELECT	22uF	20%	100V
C260	1-162-306-11	CERAMIC	0.01uF	30%	16V	C325	1-124-929-11	ELECT	22uF	20%	100V
C261	1-162-306-11	CERAMIC	0.01uF	30%	16V	C326	1-136-166-00	FILM	0.12uF	5%	50V
C262	1-162-306-11	CERAMIC	0.01uF	30%	16V	C327	1-126-059-11	ELECT	10uF	20%	50V
C263	1-124-463-00	ELECT	0.1uF	20%	50V	C330	1-126-023-11	ELECT	100uF	20%	25V
C264	1-162-306-11	CERAMIC	0.01uF	30%	16V	C331	1-124-903-11	ELECT	1uF	20%	50V
C271	1-162-306-11	CERAMIC	0.01uF	30%	16V	C352	1-126-059-11	ELECT	10uF	20%	50V
C272	1-162-306-11	CERAMIC	0.01uF	30%	16V	C372	1-126-059-11	ELECT	10uF	20%	50V
C273	1-162-306-11	CERAMIC	0.01uF	30%	16V	C400	1-162-193-31	CERAMIC	3.3PF	10%	50V
C274	1-162-306-11	CERAMIC	0.01uF	30%	16V	C401	1-124-903-11	ELECT	1uF	20%	50V
C275	1-126-051-11	ELECT	47uF	20%	35V	C402	1-162-306-11	CERAMIC	0.01uF	30%	16V
C276	1-162-306-11	CERAMIC	0.01uF	30%	16V	C403	1-162-306-11	CERAMIC	0.01uF	30%	16V
C277	1-124-557-11	ELECT	1000uF	20%	25V	C404	1-162-306-11	CERAMIC	0.01uF	30%	16V
C278	1-162-306-11	CERAMIC	0.01uF	30%	16V	C405	1-126-051-11	ELECT	47uF	20%	35V
C279	1-126-025-11	ELECT	330uF	20%	25V	C406	1-162-306-11	CERAMIC	0.01uF	30%	16V
C280	1-130-471-00	MYLAR	0.001uF	5%	50V	C407	1-162-306-11	CERAMIC	0.01uF	30%	16V
C281	1-102-518-11	CERAMIC	33PF	5%	50V	C408	1-162-306-11	CERAMIC	0.01uF	30%	16V
C282	1-162-306-11	CERAMIC	0.01uF	30%	16V	C409	1-162-306-11	CERAMIC	0.01uF	30%	16V
C283	1-110-335-11	MYLAR	100PF	5%	50V	C410	1-126-962-11	ELECT	3.3uF	20%	50V
C284	1-130-467-00	MYLAR	470PF	5%	50V	C411	1-126-023-11	ELECT	100uF	20%	25V
C285	1-110-340-11	MYLAR	270PF	5%	50V	C412	1-162-306-11	CERAMIC	0.01uF	30%	16V
C286	1-110-340-11	MYLAR	270PF	5%	50V	C413	1-124-903-11	ELECT	1uF	20%	50V
C287	1-126-025-11	ELECT	330uF	20%	25V	C414	1-124-903-11	ELECT	1uF	20%	50V
C288	1-130-475-00	MYLAR	0.0022uF	5%	50V	C415	1-126-962-11	ELECT	3.3uF	20%	50V
C289	1-126-025-11	ELECT	330uF	20%	25V	C416	1-162-306-11	CERAMIC	0.01uF	30%	16V
C301	1-124-902-00	ELECT	0.47uF	20%	50V	C417	1-162-294-31	CERAMIC	0.001uF	10%	50V
C302	1-124-903-11	ELECT	1uF	20%	50V	C418	1-162-215-31	CERAMIC	47PF	5%	50V
C303	1-136-161-00	FILM	0.047uF	5%	50V	C419	1-162-306-11	CERAMIC	0.01uF	30%	16V
C304	1-124-903-11	ELECT	1uF	20%	50V	C420	1-162-291-31	CERAMIC	560PF	10%	50V
C305	1-124-903-11	ELECT	1uF	20%	50V	C421	1-124-902-00	ELECT	0.47uF	20%	50V
C306	1-130-483-00	MYLAR	0.01uF	5%	50V	C501	1-162-306-11	CERAMIC	0.01uF	30%	16V
C307	1-124-902-00	ELECT	0.47uF	20%	50V	C502	1-102-959-00	CERAMIC	22PF	5%	50V
C308	1-104-319-11	POLYSTYRENE	0.01uF	10%	50V	C503	1-102-959-00	CERAMIC	22PF	5%	50V
C309	1-130-483-00	MYLAR	0.01uF	5%	50V	C504	1-162-306-11	CERAMIC	0.01uF	30%	16V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C505	1-162-306-11	CERAMIC	0.01uF 30% 16V	CF402	1-527-826-00	FILTER, CERAMIC	
C506	1-162-306-11	CERAMIC	0.01uF 30% 16V	CF403	1-527-937-00	FILTER, CERAMIC	
C507	1-162-306-11	CERAMIC	0.01uF 30% 16V			< CONNECTOR >	
C511	1-126-059-11	ELECT	10uF 20% 50V				
C512	1-126-059-11	ELECT	10uF 20% 50V				
C516	1-126-025-11	ELECT	330uF 20% 25V	* CN901	1-560-062-00	PIN, CONNECTOR 4P	
C521	1-126-059-11	ELECT	10uF 20% 50V	CNJ301	1-563-560-11	JACK, PIN 2P	
C522	1-126-962-11	ELECT	3.3uF 20% 50V	* CNP701	1-564-513-11	PLUG, CONNECTOR 10P	
C523	1-124-254-00	ELECT	0.68uF 20% 50V	* CNP702	1-564-513-11	PLUG, CONNECTOR 10P	
C524	1-124-463-00	ELECT	0.1uF 20% 50V	* CNP703	1-564-513-11	PLUG, CONNECTOR 10P	
C601	1-126-962-11	ELECT	3.3uF 20% 50V	* CNP704	1-564-338-00	PIN, CONNECTOR 4P	
C602	1-162-306-11	CERAMIC	0.01uF 30% 16V	* CNP705	1-564-337-00	PIN, CONNECTOR 3P	
C603	1-162-306-11	CERAMIC	0.01uF 30% 16V			< TRIMMER >	
C604	1-126-059-11	ELECT	10uF 20% 50V	CT101	1-141-304-21	CAP, TRIMMER 10PF	
C605	1-125-548-11	DOUBLE LAYERS	0.1F 5.5V	CT102	1-141-304-21	CAP, TRIMMER 10PF	
C606	1-162-306-11	CERAMIC	0.01uF 30% 16V	CT103	1-141-304-21	CAP, TRIMMER 10PF	
C607	1-162-306-11	CERAMIC	0.01uF 30% 16V	CT271	1-141-232-00	CAP, TRIMMER	
C901	1-164-096-11	CERAMIC	0.01uF 50V			< DIODE >	
C902	1-164-096-11	CERAMIC	0.01uF 50V	D101	8-719-901-59	DIODE KV1320	
C903	1-164-096-11	CERAMIC	0.01uF 50V	D102	8-719-901-59	DIODE KV1320	
C904	1-164-096-11	CERAMIC	0.01uF 50V	D103	8-719-901-59	DIODE KV1320	
C905	1-125-714-11	ELECT	2200uF 20% 63V	D104	8-719-901-59	DIODE KV1320	
C906	1-126-023-11	ELECT	100uF 20% 25V	D151	8-719-987-63	DIODE 1N4148M	
C907	1-126-067-11	ELECT	1000uF 20% 63V	D152	8-719-987-63	DIODE 1N4148M	
C911	1-164-096-11	CERAMIC	0.01uF 50V	D201	8-719-987-63	DIODE 1N4148M	
C912	1-164-096-11	CERAMIC	0.01uF 50V	D202	8-719-987-63	DIODE 1N4148M	
C913	1-164-096-11	CERAMIC	0.01uF 50V	D203	8-719-987-63	DIODE 1N4148M	
C914	1-164-096-11	CERAMIC	0.01uF 50V	D241	8-719-022-21	DIODE 1T22A	
C915	1-126-104-11	ELECT	470uF 20% 35V	D242	8-719-022-21	DIODE 1T22A	
C916	1-126-051-11	ELECT	47uF 20% 35V	D261	8-719-987-63	DIODE 1N4148M	
C917	1-126-023-11	ELECT	100uF 20% 25V	D273	8-719-010-42	DIODE UZ-5.6BSB	
C921	1-164-096-11	CERAMIC	0.01uF 50V	D274	8-719-010-42	DIODE UZ-5.6BSB	
C922	1-124-920-11	ELECT	330uF 20% 50V	D275	8-719-936-88	DIODE SVC333	
C923	1-126-051-11	ELECT	47uF 20% 35V	D276	8-719-987-63	DIODE 1N4148M	
C924	1-126-051-11	ELECT	47uF 20% 35V	D277	8-719-987-63	DIODE 1N4148M	
C931	1-164-096-11	CERAMIC	0.01uF 50V	D278	8-719-987-63	DIODE 1N4148M	
C932	1-124-920-11	ELECT	330uF 20% 50V	D279	8-719-987-63	DIODE 1N4148M	
C933	1-126-051-11	ELECT	47uF 20% 35V	D301	8-719-987-63	DIODE 1N4148M	
C934	1-126-051-11	ELECT	47uF 20% 35V	D302	8-719-987-63	DIODE 1N4148M	
		< FILTER >		D303	8-719-987-63	DIODE 1N4148M	
CF201	1-567-389-11	FILTER, CERAMIC (CH)		D304	8-719-987-63	DIODE 1N4148M	
CF201	1-567-393-31	FILTER, CERAMIC (US)		D305	8-719-987-63	DIODE 1N4148M	
CF202	1-567-389-11	FILTER, CERAMIC (CH)		D307	8-719-987-63	DIODE 1N4148M	
CF202	1-567-393-31	FILTER, CERAMIC (US)		D310	8-719-987-63	DIODE 1N4148M	
CF203	1-567-389-11	FILTER, CERAMIC		D311	8-719-987-63	DIODE 1N4148M	
CF204	1-567-107-71	FILTER, CERAMIC (CH)		D312	8-719-987-63	DIODE 1N4148M	
CF204	1-567-389-11	FILTER, CERAMIC (US)		D313	8-719-933-33	DIODE HZS6A1L	
CF301	1-567-250-11	OSCILLATOR, CERAMIC		D401	8-719-987-63	DIODE 1N4148M	
CF401	1-527-981-00	FILTER, CERAMIC					

TUNER

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D402	8-719-987-63	DIODE 1N4148M		IC272	8-759-602-01	IC M5220P	
D511	8-719-933-33	DIODE HZS6A1L		IC301	8-759-802-57	IC CXA1064S	
D601	8-719-987-63	DIODE 1N4148M		IC351	8-759-602-01	IC M5220P	
D602	8-719-987-63	DIODE 1N4148M		IC401	8-759-812-45	IC LA1245	
D603	8-719-987-63	DIODE 1N4148M		IC501	8-757-925-20	IC CX-7925B	
D604	8-719-987-63	DIODE 1N4148M		IC601	8-759-161-55	IC uPD75116HGC-011-AB8	
D605	8-719-987-63	DIODE 1N4148M		IC602	8-759-140-11	IC uPD4011BC	
D606	8-719-987-63	DIODE 1N4148M		IC911	8-759-820-09	IC LA5667	
D607	8-719-987-63	DIODE 1N4148M				< IFT >	
D608	8-719-987-63	DIODE 1N4148M					
D609	8-719-987-63	DIODE 1N4148M					
D610	8-719-987-63	DIODE 1N4148M		IFT101	1-404-666-11	COIL, FM IFT	
D611	8-719-987-63	DIODE 1N4148M		IFT201	1-404-665-11	COIL, FM IFT (2)	
D612	8-719-987-63	DIODE 1N4148M		IFT202	1-404-665-11	COIL, FM IFT (2)	
D613	8-719-987-63	DIODE 1N4148M		IFT203	1-404-665-11	COIL, FM IFT (2)	
D614	8-719-987-63	DIODE 1N4148M		IFT204	1-404-665-11	COIL, FM IFT (2)	
D615	8-719-987-63	DIODE 1N4148M		IFT251	1-404-669-11	COIL, DISCRIMINATOR	
D616	8-719-987-63	DIODE 1N4148M		IFT271	1-404-668-11	COIL, FM DET (1)	
D617	8-719-987-63	DIODE 1N4148M		IFT272	1-404-667-11	COIL, FM DET (2)	
D618	8-719-987-63	DIODE 1N4148M		IFT401	1-404-326-00	TRANSFORMER, IF	
D619	8-719-987-63	DIODE 1N4148M				< COIL >	
D620	8-719-987-63	DIODE 1N4148M		L101	1-402-240-11	COIL (ANT)	
D621	8-719-987-63	DIODE 1N4148M		L102	1-426-249-11	COIL (RF)	
D622	8-719-987-63	DIODE 1N4148M		L103	1-459-647-11	COIL (WITH CORE)	
D623	8-719-987-63	DIODE 1N4148M		L104	1-459-618-11	COIL	
D624	8-719-987-63	DIODE 1N4148M		L105	1-414-146-31	INDUCTOR 2.2uH	
D625	8-719-987-63	DIODE 1N4148M (CH)		L106	1-410-501-11	INDUCTOR 2.2uH	
D626	8-719-987-63	DIODE 1N4148M		L107	1-410-438-11	INDUCTOR 390uH	
D901	8-719-200-82	DIODE 11ES2		L108	1-410-521-11	INDUCTOR 100uH	
D902	8-719-200-82	DIODE 11ES2		L201	1-410-521-11	INDUCTOR 100uH	
D903	8-719-200-82	DIODE 11ES2		L202	1-410-521-11	INDUCTOR 100uH	
D904	8-719-200-82	DIODE 11ES2		L203	1-410-521-11	INDUCTOR 100uH	
D905	8-719-933-33	DIODE HZS6A1L		L251	1-410-781-11	INDUCTOR 33mH	
D911	8-719-200-82	DIODE 11ES2		L252	1-410-781-11	INDUCTOR 33mH	
D912	8-719-200-82	DIODE 11ES2		L271	1-410-335-11	INDUCTOR 150uH	
D913	8-719-200-82	DIODE 11ES2		L301	1-409-413-11	COIL (TUNING)	
D914	8-719-200-82	DIODE 11ES2		L701	1-410-521-11	INDUCTOR 100uH	
D921	8-719-200-82	DIODE 11ES2				< LPF >	
D922	8-719-934-22	DIODE HZS30-2L		LPF301	1-236-560-11	ENCAPSULATED COMPONENT (LPF)	
D931	8-719-200-82	DIODE 11ES2				< TRANSISTOR >	
D932	8-719-002-06	DIODE UZL-18L		Q101	8-729-200-55	TRANSISTOR 2SK241-Y	
		< FRONT END >		Q102	8-729-144-76	TRANSISTOR 3SK122K	
FE401	1-233-280-11	ENCAPSULATED COMPONENT		Q103	8-729-216-13	TRANSISTOR 2SK161-GR	
		< IC >		Q104	8-729-216-13	TRANSISTOR 2SK161-GR	
IC201	8-759-111-72	IC uPC1163HA		Q105	8-729-216-13	TRANSISTOR 2SK161-GR	
IC202	8-759-111-72	IC uPC1163HA		Q151	8-729-904-39	TRANSISTOR DTC114TS	
IC251	8-759-812-35	IC LA1235		Q152	8-729-904-39	TRANSISTOR DTC114TS	
IC271	8-759-111-72	IC uPC1163HA					

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q201	8-729-027-12	TRANSISTOR	2SK435D	Q601	8-729-620-05	TRANSISTOR	2SC2603-EF
Q202	8-729-904-39	TRANSISTOR	DTC114TS	Q602	8-729-141-30	TRANSISTOR	2SC3623A-LK
Q203	8-729-904-39	TRANSISTOR	DTC114TS	Q603	8-729-620-05	TRANSISTOR	2SC2603-EF
Q204	8-729-904-39	TRANSISTOR	DTC114TS	Q901	8-729-127-53	TRANSISTOR	2SC2275-P
Q205	8-729-904-39	TRANSISTOR	DTC114TS	Q902	8-729-281-53	TRANSISTOR	2SC1815-GR
Q206	8-729-904-39	TRANSISTOR	DTC114TS	Q903	8-729-281-53	TRANSISTOR	2SC1815-GR
Q207	8-729-904-39	TRANSISTOR	DTC114TS	Q904	8-729-201-56	TRANSISTOR	2SK246-GR2
Q208	8-729-904-39	TRANSISTOR	DTC114TS	Q921	8-729-140-96	TRANSISTOR	2SD774-34
Q211	8-729-200-55	TRANSISTOR	2SK241-Y	Q931	8-729-140-97	TRANSISTOR	2SB734-34
Q212	8-729-900-89	TRANSISTOR	DTC144ES			< RESISTOR >	
Q213	8-729-230-99	TRANSISTOR	2SC2669-OY	R101	1-249-437-11	CARBON	47K 5% 1/4W
Q215	8-729-230-99	TRANSISTOR	2SC2669-OY	R102	1-249-437-11	CARBON	47K 5% 1/4W
Q216	8-729-230-99	TRANSISTOR	2SC2669-OY	R103	1-249-437-11	CARBON	47K 5% 1/4W
Q231	8-729-900-89	TRANSISTOR	DTC144ES	R104	1-247-807-31	CARBON	100 5% 1/4W
Q232	8-729-904-39	TRANSISTOR	DTC114TS	R105	1-249-437-11	CARBON	47K 5% 1/4W
Q233	8-729-904-39	TRANSISTOR	DTC114TS	R106	1-249-437-11	CARBON	47K 5% 1/4W
Q234	8-729-900-65	TRANSISTOR	DTA144ES	R107	1-249-399-11	CARBON	33 5% 1/4W F
Q235	8-729-900-89	TRANSISTOR	DTC144ES	R108	1-249-441-11	CARBON	100K 5% 1/4W
Q241	8-729-230-99	TRANSISTOR	2SC2669-OY	R109	1-249-441-11	CARBON	100K 5% 1/4W
Q251	8-729-201-56	TRANSISTOR	2SK246-GR2	R110	1-249-441-11	CARBON	100K 5% 1/4W
Q252	8-729-900-89	TRANSISTOR	DTC144ES	R111	1-247-807-31	CARBON	100 5% 1/4W
Q253	8-729-620-05	TRANSISTOR	2SC2603-EF	R112	1-247-807-31	CARBON	100 5% 1/4W
Q254	8-729-900-89	TRANSISTOR	DTC144ES	R114	1-249-431-11	CARBON	15K 5% 1/4W
Q255	8-729-806-24	TRANSISTOR	2SC3899	R115	1-249-437-11	CARBON	47K 5% 1/4W
Q256	8-729-900-89	TRANSISTOR	DTC144ES	R116	1-247-807-31	CARBON	100 5% 1/4W
Q271	8-729-802-43	TRANSISTOR	2SK125-3	R117	1-249-411-11	CARBON	330 5% 1/4W
Q272	8-729-201-56	TRANSISTOR	2SK246-GR2	R118	1-249-437-11	CARBON	47K 5% 1/4W
Q301	8-729-806-24	TRANSISTOR	2SC3899	△R119	1-249-405-11	CARBON	100 5% 1/4W F
Q302	8-729-900-89	TRANSISTOR	DTC144ES	R151	1-249-721-11	CARBON	100K 5% 1/2W
Q303	8-729-900-89	TRANSISTOR	DTC144ES	R152	1-249-721-11	CARBON	100K 5% 1/2W
Q304	8-729-900-65	TRANSISTOR	DTA144ES	R153	1-249-404-00	CARBON	82 5% 1/4W F
Q305	8-729-201-56	TRANSISTOR	2SK246-GR2	R154	1-249-404-00	CARBON	82 5% 1/4W F
Q306	8-729-201-56	TRANSISTOR	2SK246-GR2	R155	1-249-398-11	CARBON	27 5% 1/4W F
Q308	8-729-141-30	TRANSISTOR	2SC3623A-LK	R156	1-247-800-11	CARBON	51 5% 1/4W
Q309	8-729-141-30	TRANSISTOR	2SC3623A-LK	R157	1-247-800-11	CARBON	51 5% 1/4W
Q310	8-729-900-65	TRANSISTOR	DTA144ES	R201	1-249-411-11	CARBON	330 5% 1/4W
Q401	8-729-900-89	TRANSISTOR	DTC144ES	R202	1-249-411-11	CARBON	330 5% 1/4W
Q402	8-729-904-39	TRANSISTOR	DTC114TS	△R203	1-249-393-11	CARBON	10 5% 1/4W F
Q403	8-729-620-05	TRANSISTOR	2SC2603-EF	R204	1-249-411-11	CARBON	330 5% 1/4W
Q404	8-729-620-05	TRANSISTOR	2SC2603-EF	R205	1-247-807-31	CARBON	100 5% 1/4W
Q405	8-729-904-39	TRANSISTOR	DTC114TS	R206	1-249-411-11	CARBON	330 5% 1/4W
Q406	8-729-806-24	TRANSISTOR	2SC3899	△R207	1-249-393-11	CARBON	10 5% 1/4W F
Q407	8-729-201-56	TRANSISTOR	2SK246-GR2	R208	1-249-411-11	CARBON	330 5% 1/4W
Q408	8-729-806-24	TRANSISTOR	2SC3899	R209	1-247-807-31	CARBON	100 5% 1/4W
Q501	8-729-900-89	TRANSISTOR	DTC144ES	R210	1-249-413-11	CARBON	470 5% 1/4W F
Q502	8-729-119-76	TRANSISTOR	2SA1175-HFE	△R211	1-249-393-11	CARBON	10 5% 1/4W F
Q503	8-729-620-05	TRANSISTOR	2SC2603-EF	R212	1-249-422-11	CARBON	2.7K 5% 1/4W F
Q511	8-729-620-05	TRANSISTOR	2SC2603-EF	R213	1-249-422-11	CARBON	2.7K 5% 1/4W F
Q521	8-729-203-05	TRANSISTOR	2SK30A-GR3	R217	1-249-411-11	CARBON	330 5% 1/4W
Q522	8-729-119-78	TRANSISTOR	2SC403SP-51				

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R218	1-249-411-11	CARBON	330 5% 1/4W	R284	1-249-434-11	CARBON	27K 5% 1/4W
R219	1-247-807-31	CARBON	100 5% 1/4W	R285	1-249-429-11	CARBON	10K 5% 1/4W
R220	1-249-411-11	CARBON	330 5% 1/4W	R286	1-249-429-11	CARBON	10K 5% 1/4W
R221	1-249-395-11	CARBON	15 5% 1/4W F	R287	1-249-422-11	CARBON	2.7K 5% 1/4W F
R222	1-249-411-11	CARBON	330 5% 1/4W	R288	1-249-413-11	CARBON	470 5% 1/4W F
R223	1-249-441-11	CARBON	100K 5% 1/4W	R289	1-247-903-00	CARBON	1M 5% 1/4W
R224	1-249-411-11	CARBON	330 5% 1/4W	R290	1-249-417-11	CARBON	1K 5% 1/4W F
R225	1-249-429-11	CARBON	10K 5% 1/4W	R291	1-249-418-11	CARBON	1.2K 5% 1/4W F
R226	1-249-434-11	CARBON	27K 5% 1/4W	△R292	1-249-405-11	CARBON	100 5% 1/4W F
△R227	1-249-393-11	CARBON	10 5% 1/4W F	△R301	1-249-393-11	CARBON	10 5% 1/4W F
R228	1-249-417-11	CARBON	1K 5% 1/4W F	R302	1-249-423-11	CARBON	3.3K 5% 1/4W F
R229	1-249-431-11	CARBON	15K 5% 1/4W	R303	1-249-431-11	CARBON	15K 5% 1/4W
R230	1-249-434-11	CARBON	27K 5% 1/4W	R304	1-249-427-11	CARBON	6.8K 5% 1/4W F
R231	1-249-428-11	CARBON	8.2K 5% 1/4W F	R305	1-249-426-11	CARBON	5.6K 5% 1/4W (US)
R232	1-249-429-11	CARBON	10K 5% 1/4W	R305	1-249-428-11	CARBON	8.2K 5% 1/4W F (CH)
R233	1-249-429-11	CARBON	10K 5% 1/4W	R306	1-249-441-11	CARBON	100K 5% 1/4W
R234	1-249-429-11	CARBON	10K 5% 1/4W	R307	1-247-886-11	CARBON	200K 5% 1/4W (CH)
R241	1-247-895-00	CARBON	470K 5% 1/4W	R307	1-247-887-00	CARBON	220K 5% 1/4W (US)
R242	1-249-417-11	CARBON	1K 5% 1/4W F	R308	1-249-441-11	CARBON	100K 5% 1/4W
R243	1-249-437-11	CARBON	47K 5% 1/4W	R309	1-247-886-11	CARBON	200K 5% 1/4W (CH)
R244	1-249-437-11	CARBON	47K 5% 1/4W	R309	1-247-887-00	CARBON	220K 5% 1/4W (US)
R251	1-249-411-11	CARBON	330 5% 1/4W	R310	1-247-887-00	CARBON	220K 5% 1/4W
R252	1-249-441-11	CARBON	100K 5% 1/4W	R311	1-247-887-00	CARBON	220K 5% 1/4W
R253	1-249-432-11	CARBON	18K 5% 1/4W	R312	1-249-399-11	CARBON	33 5% 1/4W F
R254	1-247-903-00	CARBON	1M 5% 1/4W	R313	1-249-399-11	CARBON	33 5% 1/4W F
R255	1-249-434-11	CARBON	27K 5% 1/4W	R314	1-249-417-11	CARBON	1K 5% 1/4W F
R256	1-249-429-11	CARBON	10K 5% 1/4W	R315	1-249-417-11	CARBON	1K 5% 1/4W F
R257	1-249-417-11	CARBON	1K 5% 1/4W F	R316	1-249-437-11	CARBON	47K 5% 1/4W
R258	1-249-425-11	CARBON	4.7K 5% 1/4W F	R317	1-249-437-11	CARBON	47K 5% 1/4W
△R259	1-249-405-11	CARBON	100 5% 1/4W F	R318	1-249-429-11	CARBON	10K 5% 1/4W
R260	1-249-438-11	CARBON	56K 5% 1/4W	R319	1-247-903-00	CARBON	1M 5% 1/4W
R261	1-249-441-11	CARBON	100K 5% 1/4W	R320	1-247-903-00	CARBON	1M 5% 1/4W
R262	1-249-433-11	CARBON	22K 5% 1/4W	R321	1-249-429-11	CARBON	10K 5% 1/4W
R263	1-249-437-11	CARBON	47K 5% 1/4W	R322	1-249-429-11	CARBON	10K 5% 1/4W
R264	1-249-433-11	CARBON	22K 5% 1/4W	R323	1-249-417-11	CARBON	1K 5% 1/4W F
R265	1-249-437-11	CARBON	47K 5% 1/4W	R324	1-249-417-11	CARBON	1K 5% 1/4W F
R266	1-249-437-11	CARBON	47K 5% 1/4W	R325	1-247-807-31	CARBON	100 5% 1/4W
R271	1-249-421-11	CARBON	2.2K 5% 1/4W F	△R327	1-249-401-11	CARBON	47 5% 1/4W F
R272	1-249-411-11	CARBON	330 5% 1/4W	R328	1-249-429-11	CARBON	10K 5% 1/4W
R273	1-249-417-11	CARBON	1K 5% 1/4W F	R329	1-249-436-11	CARBON	39K 5% 1/4W
△R274	1-249-393-11	CARBON	10 5% 1/4W F	R351	1-249-426-11	CARBON	5.6K 5% 1/4W
R275	1-249-417-11	CARBON	1K 5% 1/4W F	R352	1-249-426-11	CARBON	5.6K 5% 1/4W
R276	1-249-417-11	CARBON	1K 5% 1/4W F	R353	1-249-424-11	CARBON	3.9K 5% 1/4W F (CH)
R277	1-249-417-11	CARBON	1K 5% 1/4W F	R371	1-249-426-11	CARBON	5.6K 5% 1/4W
R278	1-249-417-11	CARBON	1K 5% 1/4W F	R372	1-249-426-11	CARBON	5.6K 5% 1/4W
△R279	1-249-409-11	CARBON	220 5% 1/4W F	R373	1-249-424-11	CARBON	3.9K 5% 1/4W F (CH)
R280	1-249-441-11	CARBON	100K 5% 1/4W	R401	1-249-429-11	CARBON	10K 5% 1/4W
R281	1-249-409-11	CARBON	220 5% 1/4W F	R402	1-249-421-11	CARBON	2.2K 5% 1/4W F
R282	1-249-410-11	CARBON	270 5% 1/4W F	△R403	1-249-409-11	CARBON	220 5% 1/4W F
R283	1-249-417-11	CARBON	1K 5% 1/4W F	R404	1-249-413-11	CARBON	470 5% 1/4W F

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R405	1-249-429-11	CARBON	10K 5% 1/4W	R627	1-249-417-11	CARBON	1K 5% 1/4W F
R406	1-249-429-11	CARBON	10K 5% 1/4W	R628	1-249-441-11	CARBON	100K 5% 1/4W
R407	1-247-807-31	CARBON	100 5% 1/4W	R629	1-247-883-00	CARBON	150K 5% 1/4W
R408	1-249-404-00	CARBON	82 5% 1/4W F	R630	1-249-433-11	CARBON	22K 5% 1/4W
R409	1-249-424-11	CARBON	3.9K 5% 1/4W F	R631	1-249-429-11	CARBON	10K 5% 1/4W
△R410	1-249-407-11	CARBON	150 5% 1/4W F	R903	1-249-409-11	CARBON	220 5% 1/4W F
R411	1-249-422-11	CARBON	2.7K 5% 1/4W F	R904	1-249-429-11	CARBON	10K 5% 1/4W
R412	1-249-429-11	CARBON	10K 5% 1/4W	R905	1-249-427-11	CARBON	6.8K 5% 1/4W F
R413	1-249-441-11	CARBON	100K 5% 1/4W	R910	1-249-397-11	CARBON	22 5% 1/4W F (CH)
R414	1-249-430-11	CARBON	12K 5% 1/4W	R911	1-249-437-11	CARBON	47K 5% 1/4W
R415	1-249-430-11	CARBON	12K 5% 1/4W	△R921	1-249-409-11	CARBON	220 5% 1/4W F
R416	1-249-422-11	CARBON	2.7K 5% 1/4W F	R922	1-249-424-11	CARBON	3.9K 5% 1/4W F
R417	1-249-426-11	CARBON	5.6K 5% 1/4W	△R931	1-217-497-00	FUSIBLE	220 5% 1W F
R418	1-249-433-11	CARBON	22K 5% 1/4W	R932	1-249-425-11	CARBON	4.7K 5% 1/4W F
R419	1-249-429-11	CARBON	10K 5% 1/4W	R933	1-247-883-00	CARBON	150K 5% 1/4W
R420	1-247-903-00	CARBON	1M 5% 1/4W	R934	1-249-440-11	CARBON	82K 5% 1/4W
R492	1-249-437-11	CARBON	47K 5% 1/4W	< VARIABLE RESISTOR >			
R501	1-249-429-11	CARBON	10K 5% 1/4W	RV201	1-237-460-11	RES, ADJ, CARBON	20K
R502	1-249-429-11	CARBON	10K 5% 1/4W	RV202	1-237-460-11	RES, ADJ, CARBON	20K
R503	1-249-429-11	CARBON	10K 5% 1/4W	RV203	1-237-458-21	RES, ADJ, CARBON	5K
R504	1-249-423-11	CARBON	3.3K 5% 1/4W F	RV204	1-237-455-11	RES, ADJ, CARBON	500
R505	1-249-433-11	CARBON	22K 5% 1/4W	RV241	1-237-463-11	RES, ADJ, CARBON	200K
△R511	1-249-409-11	CARBON	220 5% 1/4W F	RV251	1-237-460-11	RES, ADJ, CARBON	20K
R512	1-249-421-11	CARBON	2.2K 5% 1/4W F	RV252	1-237-463-11	RES, ADJ, CARBON	200K
△R516	1-249-408-11	CARBON	180 5% 1/4W F	RV301	1-237-465-11	RES, ADJ, CARBON	1M
R521	1-249-414-11	CARBON	560 5% 1/4W F	RV302	1-237-465-11	RES, ADJ, CARBON	1M
R522	1-249-414-11	CARBON	560 5% 1/4W F	RV303	1-237-461-11	RES, ADJ, CARBON	50K
R523	1-249-418-11	CARBON	1.2K 5% 1/4W F	RV401	1-237-463-11	RES, ADJ, CARBON	200K
R524	1-249-411-11	CARBON	330 5% 1/4W	RV402	1-237-461-11	RES, ADJ, CARBON	50K
R525	1-249-420-11	CARBON	1.8K 5% 1/4W F	< RELAY >			
R526	1-249-427-11	CARBON	6.8K 5% 1/4W F	RY151	1-515-614-11	RELAY	
R527	1-249-425-11	CARBON	4.7K 5% 1/4W F	RY152	1-515-614-11	RELAY	
R528	1-249-417-11	CARBON	1K 5% 1/4W F	RY153	1-515-614-11	RELAY	
R529	1-249-415-11	CARBON	680 5% 1/4W F	< THERMISTOR >			
R530	1-249-425-11	CARBON	4.7K 5% 1/4W F	TH201	1-807-970-11	THERMISTOR	
R601	1-249-433-11	CARBON	22K 5% 1/4W	TH202	1-808-269-11	THERMISTOR	
R602	1-249-433-11	CARBON	22K 5% 1/4W	TH203	1-808-269-11	THERMISTOR	
R603	1-249-433-11	CARBON	22K 5% 1/4W	TH271	1-807-972-11	THERMISTOR	
R608	1-249-429-11	CARBON	10K 5% 1/4W	< TERMINAL >			
R609	1-249-429-11	CARBON	10K 5% 1/4W	TM101	1-537-247-11	TERMINAL BOARD (ANT) (ANTENNA)	
R611	1-249-429-11	CARBON	10K 5% 1/4W	< TEST PIN >			
R614	1-249-437-11	CARBON	47K 5% 1/4W	* TP201	1-565-513-11	PIN, CONNECTOR	2P
R615	1-249-429-11	CARBON	10K 5% 1/4W	* TP271	1-565-513-11	PIN, CONNECTOR	2P
R616	1-249-433-11	CARBON	22K 5% 1/4W	* TP601	1-565-513-11	PIN, CONNECTOR	2P
R617	1-249-433-11	CARBON	22K 5% 1/4W	* TP602	1-565-513-11	PIN, CONNECTOR	2P
R618	1-249-433-11	CARBON	22K 5% 1/4W				
R619	1-249-433-11	CARBON	22K 5% 1/4W				
R624	1-247-895-00	CARBON	470K 5% 1/4W				
R625	1-249-433-11	CARBON	22K 5% 1/4W				
△R626	1-249-401-11	CARBON	47 5% 1/4W F				

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Ref. No.	Part No.	Description	Remark
< VIBRATOR >			
XT501	1-567-826-21	VIBRATOR, CRYSTAL (7.2MHz)	
XT601	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)	

MISCELLANEOUS *****			
* 9	1-560-242-51	BUS BAR 7P	
* 10	1-560-242-61	BUS BAR 2P	
* 11	1-560-242-91	BUS BAR 10P	
△24	1-574-383-11	CORD, POWER (CH)	
△24	1-575-975-11	CORD, POWER (US)	
FL701	1-519-558-11	INDICATOR TUBE, FLUORESCENT	
△PT901	1-423-857-11	TRANSFORMER, POWER (US)	
△PT901	1-450-409-11	TRANSFORMER, POWER (CH)	
S651	1-467-927-11	ENCODER, ROTARY (TUNING/SELECT)	
S661	1-762-199-11	SWITCH, ROTARY (PROGRAM)	

ACCESSORIES & PACKING MATERIALS *****			
	1-417-141-11	MATCHING TRANSFORMER, ANTENNA (US)	
	1-501-224-00	ANTENNA, FEEDER (US)	
	1-501-754-11	ANTENNA, LOOP	
	1-558-271-11	CORD, CONNECTION (AUDIO 108cm)	
	3-798-043-21	MANUAL, INSTRUCTION (ENGLISH)	
*	4-972-249-01	CUSHION	
*	4-972-250-01	INDIVIDUAL CARTON	

***** HARDWARE LIST *****			
#1	7-682-548-09	SCREW (3X8)	
#2	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

MEMO

