

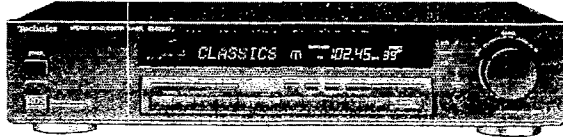
Service Manual

Stereo Synthesizer Tuner

Tuner ST-GT630

Colour

(K) Black Type



Areas

Suffix for Model No.	Area	Colour
(E)	Europe	(K)
(EB)	Great Britain	
(EG)	Germany	

SPECIFICATIONS (DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz (0.05-MHz steps)
Sensitivity	1.5 μ V (IHF, usable)
S/N 30 dB	1.3 μ V (75 Ω)
S/N 26 dB	1.2 μ V (75 Ω)
S/N 20 dB	0.9 μ V (75 Ω)
IHF 46 dB stereo quieting sensitivity	28 μ V (75 Ω)
Total harmonic distortion	
MONO (NORMAL)	0.05%
STEREO (NORMAL)	0.1%
S/N	
MONO	75 dB (80 dB, IHF)
STEREO	66 dB (72 dB, IHF)
Frequency response	10 Hz~15 kHz, +0.5 dB~-1.0 dB
Alternate channel selectivity	
NORMAL \pm 400 kHz	70 dB
SUPER NARROW \pm 200 kHz	25 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	100 dB
IF rejection at 98 MHz	95 dB
Spurious response rejection at 98 MHz	100 dB
AM suppression	55 dB
Stereo separation	
1 kHz	45 dB
Carrier leak	
19 kHz	-66 dB (-72 dB, IHF)
38 kHz	-72 dB (-78 dB, IHF)
Channel balance (250 Hz~6.3 kHz)	\pm 1.0 dB
Limiting point	0.85 μ V
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 Ω (unbalanced)

■ GENERAL

Output voltage	
for (E) (EB) areas	0.3 V (0.6 V, IHF)
for (EG) area	0.6 V (1.2 V, IHF)
Power consumption	9 W
Power supply	AC 50 Hz/60 Hz, 230 V~240 V
Dimensions (W×H×D)	430×91.5×304.5 mm
Weight	2.9 kg

■ AM TUNER SECTION

Frequency range	
for (E) (EB) areas	522 kHz~1611 kHz (9-kHz steps)
MW	530 kHz~1620 kHz (10-kHz steps)
LW	144 kHz~288 kHz
for (EG) area	
AM	522 kHz~1611 kHz (9-kHz steps)
	530 kHz~1620 kHz (10-kHz steps)
Sensitivity (S/N 20 dB)	
for (E) (EB) areas	
MW (at 999 kHz)	20 μ V, 600 μ V/m
LW (at 216 kHz)	150 μ V
for (EG) area	
AM (at 999 kHz)	20 μ V, 600 μ V/m
Selectivity (\pm 9 kHz)	
for (E) (EB) areas	
MW (at 999 kHz)	40 dB
LW (at 216 kHz)	40 dB
for (EG) area	
AM (at 999 kHz)	40 dB
Image rejection	
for (E) (EB) areas	
MW (at 999 kHz)	40 dB
LW (at 216 kHz)	40 dB
for (EG) area	
AM (at 999 kHz)	40 dB
IF rejection	
for (E) (EB) areas	
MW (at 999 kHz)	50 dB
LW (at 216 kHz)	50 dB
for (EG) area	
AM (at 999 kHz)	50 dB

Notes:

- Specifications are subject to change without notice. Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

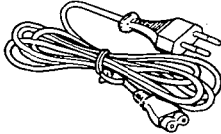
Technics

■ CONTENTS

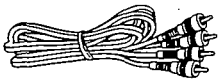
	Page		Page
• ACCESSORIES	2	• PRINTED CIRCUIT BOARD DIAGRAM	23~26
• LOCATION OF CONTROLS	2~5	• WIRING CONNECTION DIAGRAM	27
• ABOUT RDS	6	• MEASUREMENTS AND ADJUSTMENTS	28~31
• ENJOYING RDS BROADCASTS	7~10	• FUNCTIONS OF IC TERMINALS	31, 32
• DISASSEMBLY INSTRUCTIONS	10~12	• BLOCK DIAGRAM	33, 34
• SCHEMATIC DIAGRAM	13~21	• REPLACEMENT PARTS LIST	35~38, 40
• DESCRIPTION OF FL PANEL	22	• CABINET PARTS LOCATION	39
		• PACKAGING	40

■ ACCESSORIES

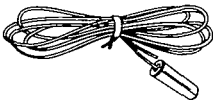
- AC power supply cord 1
 <RJA0019-1K> (E) (EG) areas
 <SJA193> (EB) areas



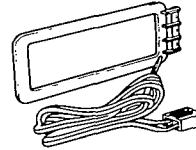
- Stereo connection cable 1
 <SJP2276>



- FM indoor antenna 1
 <RSA0007>



- AM loop antenna 1
 <SPB1163T>



- AM antenna holder 1
 <SMA233-1M>



- Screws 2
 <XTN3+10AFZ>



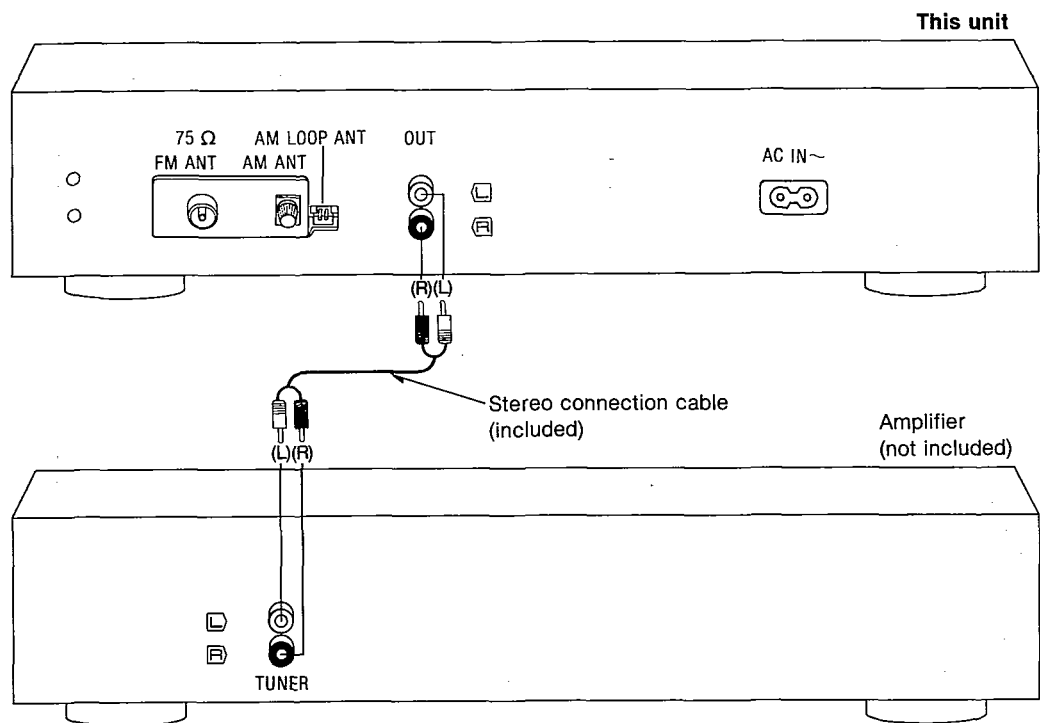
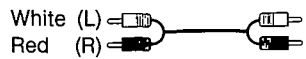
- Attachment plug 1
 <SJP9009> (EB) area only



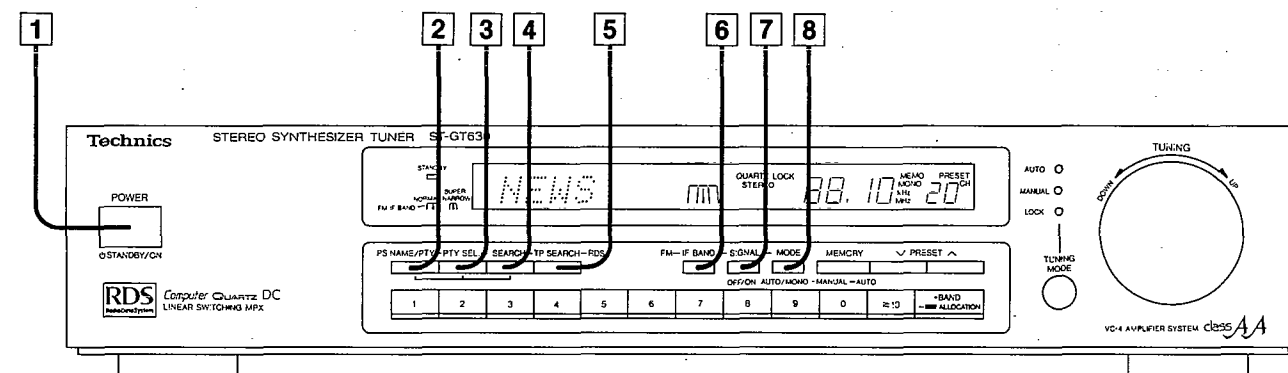
■ CONNECTIONS

To connect with an amplifier

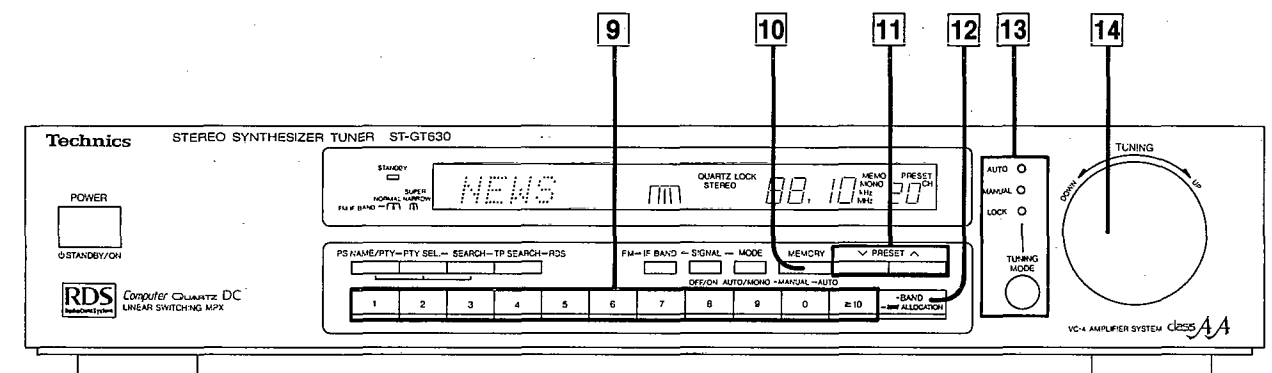
Stereo connection cable
(included)



LOCATION OF CONTROLS



CONNECTIONS



Control section

1 Power "STANDBY/ON" switch (POWER, STANDBY/ON)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

2 PS/PTY-mode selector (PS NAME/PTY)

This selector is used to switch between PS mode, in which the broadcast station is displayed, and PTY mode, in which the program type is displayed.

3 PTY selector (PTY SEL.)

This selector is used to select the desired program type to search for.

4 AF/PTY search button (SEARCH)

This button is used to perform an "AF search" to search for a station which is broadcasting the same program but with a better signal, or to perform a "PTY search" to search for a station of the desired type, such as news or sport.

5 TP search button (TP SEARCH)

This button is used to search for a station which will broadcast traffic information.

6 FM IF band selector (IF BAND)

This unit detects interference to the FM station received caused by neighboring broadcast frequencies, and automatically selects NORMAL or SUPER NARROW of FM IF (intermediate frequency) band depending on the amount of interference.

This selector is used to make this selection manually.

7 FM signal-strength indication button (SIGNAL)

If this button is pressed during reception of an FM broadcast, the signal strength (the strength of the signal of the broadcast being received) will be displayed within a 2 dB accuracy.

8 FM mode selector (MODE)

This unit automatically switches to the stereo mode when an FM stereo broadcast is received. This selector is used to select the mode (stereo or monaural) of FM broadcast signals manually. For instance, if the signal strength is weak and the amount of noise is great, if this selector is pressed to select monaural mode, the sound will be clearer than it was in stereo mode.

9 Preset-tuning buttons (1-0, ≥ 10)

These buttons are used to preset broadcast frequencies into the memory of this unit and to recall the desired preset stations.

10 Memory button (MEMORY)

This button is used when presetting broadcast station frequencies into the memory.

11 Preset channel buttons (PRESET)

These buttons are used to check the broadcasting stations entered into the memory.

Each time the button is pressed, a digital frequency and channel number are displayed; if the button is pressed and held, the digital frequency and channel number will continue to be shown.

Note:

If these buttons are used after the tuning control is used, the display will begin from channel 1 (for "UP") or channel 39 (for "DOWN").

12 Band selector (-BAND, -MW ALLOCATION)...(E) (EG) areas

This selector is used to select the band (FM, MW or LW). This selector is also used to change the MW frequency step from 9 kHz to 10 kHz and vice versa.

(-BAND, -AM ALLOCATION)...(EG) area

This selector is used to select the band (FM or AM). This selector is also used to change the AM frequency step from 9 kHz to 10 kHz and vice versa.

13 Tuning-mode selector/indicator (TUNING MODE)

Each time this selector is pressed, the selection changes in sequence to "AUTO", "MANUAL" and "LOCK".

AUTO:

At this position, the broadcast station is automatically found when the tuning control is turned to the left or right until the frequency changes.

MANUAL:

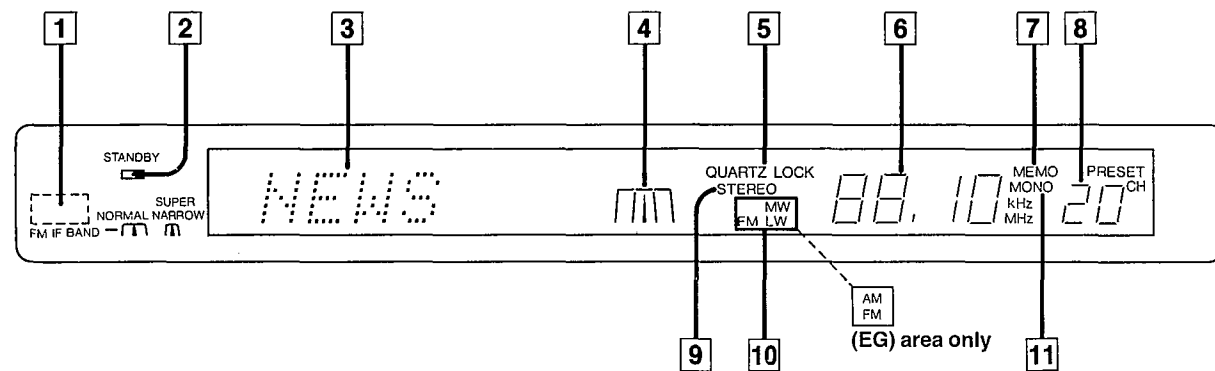
At this position, the tuning control can be used to locate the desired station.

LOCK:

At this position, the broadcast station now being heard is locked in, and other broadcast stations cannot be tuned to, even if the tuning control is turned.

14 Tuning control (TUNING)

This control is used to select an FM, MW or LW broadcast. When turning the control to the left, the frequency changes downward. When turning the control to the right, the frequency changes upward.



Display section

1 Remote control signal sensor

When connecting a Technics amplifier with the remote control transmitter to this unit, you can operate this unit using a remote control transmitter of the amplifier. (See the operating instructions of the amplifier.)

2 "STANDBY" indicator (STANDBY)

This indicator illuminates when the power "⊕ STANDBY/ON" switch is set to the "STANDBY" mode.


3 RDS display

This display displays the name of the broadcast station and the type of program during a RDS broadcast. (Refer to pages 6~10.)

4 FM IF band indicator

NORMAL  :

This indicator illuminates if the signal is strong and there is little effect from interference.

SUPER NARROW  :

This indicator illuminates if the signal is weak and/or there is interference.

5 Quartz-lock indicator (QUARTZ LOCK)

This indicator illuminates when the unit is tuned precisely to a broadcast station.

6 Digital frequency/signal-strength display

7 Memory indicator (MEMO)

This indicator illuminates when the memory button is pressed.

8 Channel display

This display shows the channel number selected by the preset-tuning button(s) or the preset channel button.

9 FM stereo indicator (STEREO)

This indicator automatically illuminates when an FM stereo broadcast is being received.

Note:

It will not illuminate if the FM mode selector is set to the monaural mode.

10 Band indicators (FM, MW, LW)...(E) (EB) areas (FM, AM)...(EG) area

These indicators show the band selected by the band selector.

11 FM mode indicator (MONO)

This indicator illuminates when the FM mode selector is used to select monaural reception.

■ ABOUT RDS

What is RDS (Radio Data System)?

RDS is a multiplex broadcasting system which adds a variety of message signals to the audio signals of FM broadcasts. When a number of broadcast stations are broadcasting identical programs, receiving this signal enables automatic selection of the broadcast that has the strongest signal. Another feature of this system is that it is possible to automatically search for traffic information services, etc. This unit can utilize the following signals among the various RDS signals.

■ RDS message signals

- **PS** (Program service name) Name of the broadcast station
- **PI** (Program identification) Program identification signal consisting of a program code
- **AF** (Alternative frequency) List of frequencies of broadcast stations that are currently broadcasting the same programs
- **TP** (Traffic program identification) Identification signal for traffic information broadcast stations
- **PTY** (Program type) Identification signal for program types such as news and sport

Note:

"PTY" may not be available in some areas. (Future function)

Functions of this unit which use RDS

■ To display the name of the broadcast station (PS function)

When this unit receives a PS signal in an RDS broadcast, the name of the broadcast station is automatically shown on the RDS display.

■ To listen to the broadcast station with the best signal from among different stations broadcasting the same program (PI and AF functions)

At times when a sufficiently strong FM broadcast signal is not received, a broadcast station that is broadcasting the same program but with a better signal can be searched for by carrying out an "AF search."

Notes:

1. Even if an FM broadcast station is broadcasting RDS signals, the functions of this unit may not be able to utilize these signals if the signal quality is too poor.
2. For cable-TV and radio, the frequency for the station in the antenna outlet is not the same as that of the signals in the air. Accordingly, the AF search function will not operate correctly.

■ To listen to traffic information

(TP function)

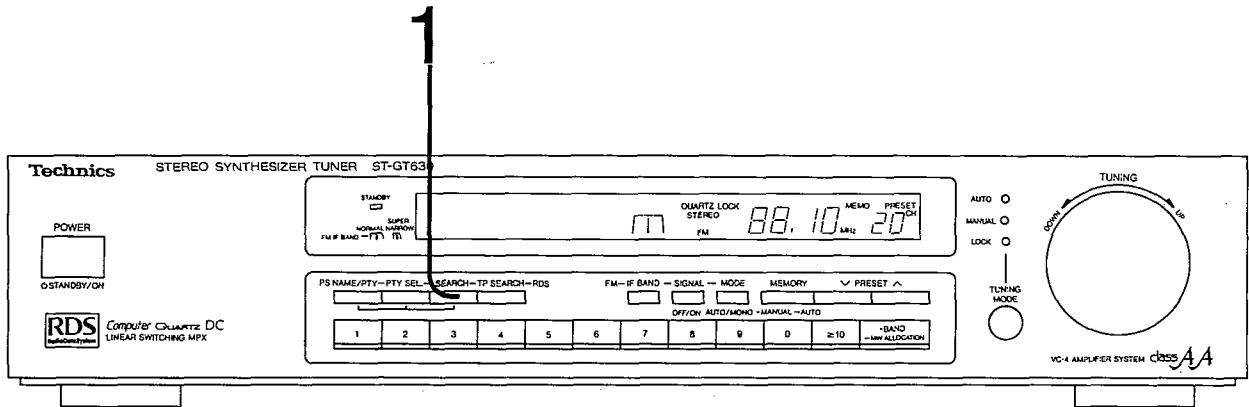
When you wish to listen to traffic information, a traffic information broadcast can be searched for by carrying out a "TP search."

■ To search for a program of a particular type, such as news or sport

(PTY function)

When you wish to listen to a particular type of program, a program of that type can be searched for by carrying out a "PTY search." Furthermore, while the PTY signal is being received, the name of the type of program currently being broadcast can be shown on the RDS display.

ENJOYING RDS BROADCASTS



Broadcast station name display—(PS display)

If the FM broadcast being received provides the RDS service, the name of the broadcast station (PS) will be automatically shown on the display of this unit.

BBC R1

RDS display (example of PS display)

To listen to the same program from a broadcast station with a better signal—(AF search)

Carry out this operation while an RDS broadcast is being received (when the name of the broadcast station is shown on the RDS display).

1 Press the AF/PTY search button.

The AF search will begin. ("—AF—" will flash on the RDS display.)

—AF—

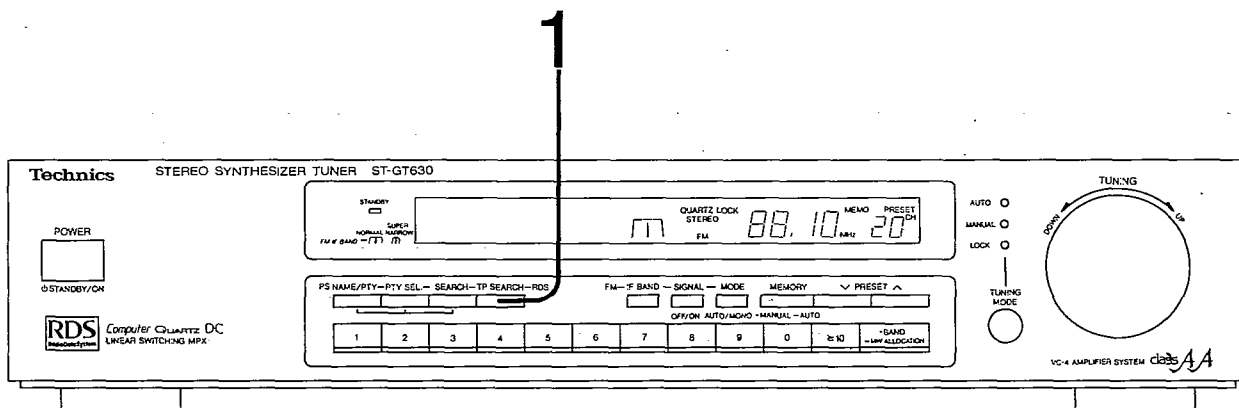
When the search is completed, the broadcast station being received will be automatically changed to the station with the best signal quality.

If a broadcast station with a better signal quality is not found

"NO AF" will be displayed for approximately 5 seconds, and the program will return to the previous broadcast station.

Note:

If the broadcast is an RDS broadcast but no AF signal is being received, the search function will not work. (When the AF/PTY search button is pressed, "NO AF" will be displayed for approximately 5 seconds, and the program will return to the previous broadcast station.)

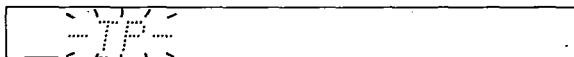


To listen to traffic information—(TP search)

- The TP search is carried out with respect to FM broadcast stations that have been preset into the memory.
- Carry out this operation while listening to an FM broadcast.

1 Press the TP SEARCH button.

The TP search will begin. (“-TP-” will flash on the RDS display.)



When a TP service is located

“TP ON” will be displayed for approximately 5 seconds, and the broadcast station being received will be automatically changed to the station located.

To search for a different broadcast station, press the TP search button once more while “TP ON” is still displayed.

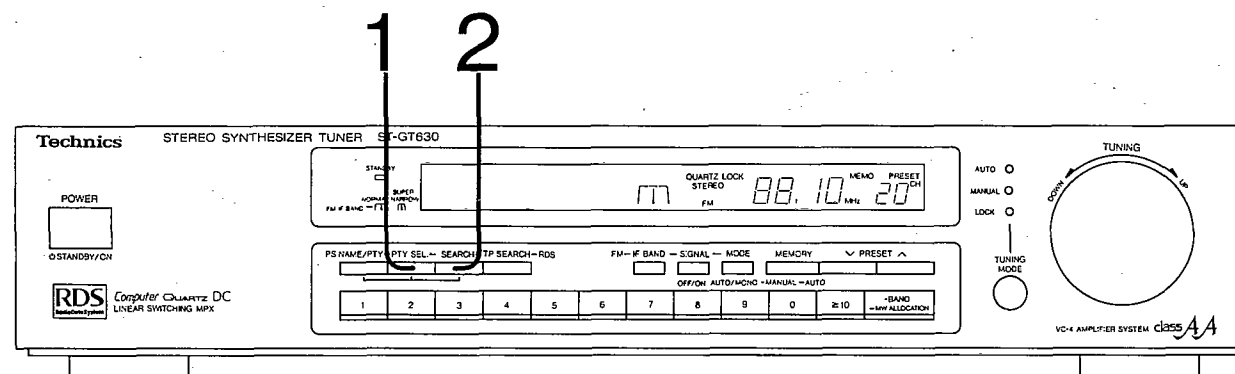
If a TP service is not found

“NO TP” will be displayed for approximately 5 seconds, and the program will return to the previous broadcast station.

Note:

Depending on the time, some broadcast stations which output a TP signal may not be broadcasting traffic information. To search for another broadcast station, repeat the procedure step 1 above.

Note: "PTY" may not be available in some areas. (Future function)



To listen to a program of a particular type, such as news or sport—(PTY search)

- The PTY search is carried out with respect to FM broadcast stations that have been preset into the memory.
- Carry out this operation while listening to an FM broadcast.

1 Press the PTY selector to select the desired program type.

(The PTY display will flash on the RDS display.)



Each time the selector is pressed, the PTY display will change in sequence.

Note:

Approximately 8 seconds after the PTY display starts flashing, the display will disappear. To select a different PTY, or when proceeding to the following step 2, be sure to perform all operations while the PTY display is flashing.

2 (While PTY display is flashing) Press the AF/PTY search button.

The PTY search will begin. ("PTY") will flash on the RDS display.)



Note:

The name of the program type last selected will still be recorded even if this unit is switched to standby mode. If, for instance, "SPORT" was selected in step 1 above, when the PTY selector is pressed again at step 1, the initial display will be "SPORT".

When the desired type of program is located

The program will automatically change to the broadcast station that has just been located. After "PTY" displays for approximately 5 seconds, the display will change to the broadcast station name.

To search for a different broadcast station, press the AF/PTY search button once more while "PTY" is still displayed.

If the desired type of program is not found

"NO PTY" will be displayed for approximately 5 seconds, and the program will return to the previous broadcast station.

About the PTY display

There are a total of 15 PTY displays on this unit. The display changes in order each time the PTY selector is pressed. The table below shows the order in which the display changes, and also gives an explanation of each display.

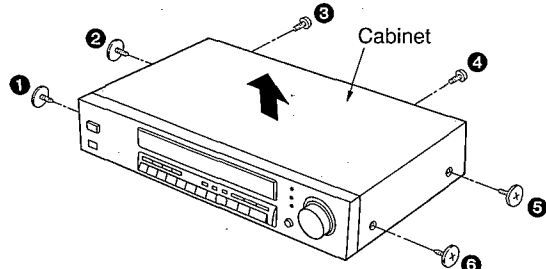
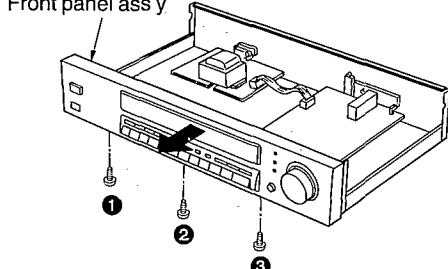
Display	Explanation
NEWS	Short accounts of facts, events and publicly expressed views, reportage and actuality.
AFFAIRS	Topical program expanding or enlarging upon the news, generally in different presentation style or concept, including documentary debate, or analysis.
INFO	Program whose purpose is to impart advice in the widest sense, including meteorological reports and forecasts, consumer affairs, medical help, etc.
SPORT	Program concerned with any aspect of sport.
EDUCATE	Program intended primarily to educate, of which the formal element is fundamental.
DRAMA	All radio plays and serials.
CULTURE	Programs concerned with any aspect of national or regional culture, including religious affairs, philosophy, social science, language, theatre, etc.
SCIENCE	Programs about the natural sciences and technology.
VARIED	Used for mainly speech-based programs, usually of a light-entertainment nature not covered by above categories. Examples are: quizzes, panel games, personality interviews, comedy and satire.
POP M	Commercial music which would generally be considered to be of current popular appeal, often featuring in current or recent record sales charts.
ROCK M	Contemporary modern music, usually written and performed by young musicians.
M.O.R. M	(Middle of the Road Music). Common term to describe music considered to be "easy-listening", as opposed to Pop, Rock or Classical. Music in this category is often, but not always, vocal, and usually of short duration (<5 min.).
LIGHT M	Classical Musical for general, rather than specialist, appreciation. Examples of music in this category are instrumental music and vocal or choral works.
CLASSICS	Performances of major orchestral works, symphonies, chamber music etc., and including Grand Opera.
OTHER M	Musical styles not fitting into any of the above categories. Particularly used for specialist music, of which Jazz, Rhythm & Blues, Folk, Country, and Reggae are examples.

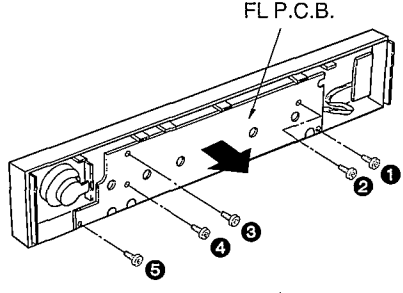
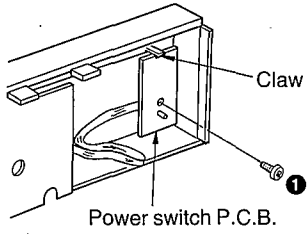
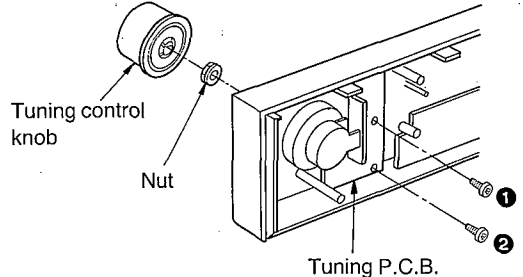
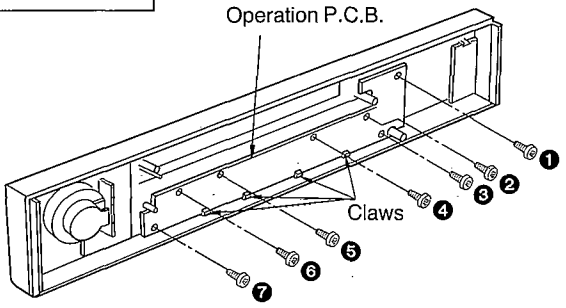
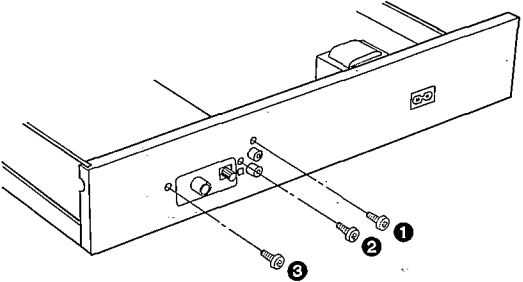
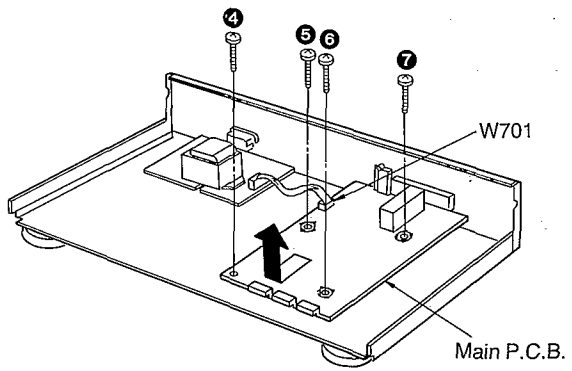
After "OTHER M" is displayed, the display returns to "NEWS".

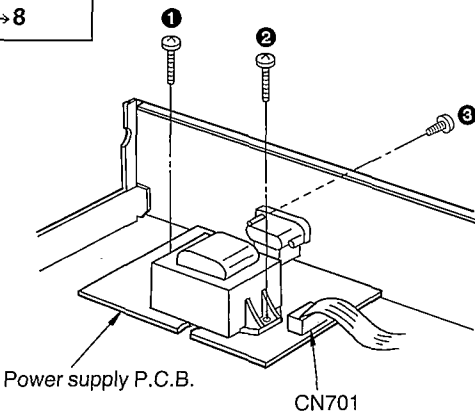
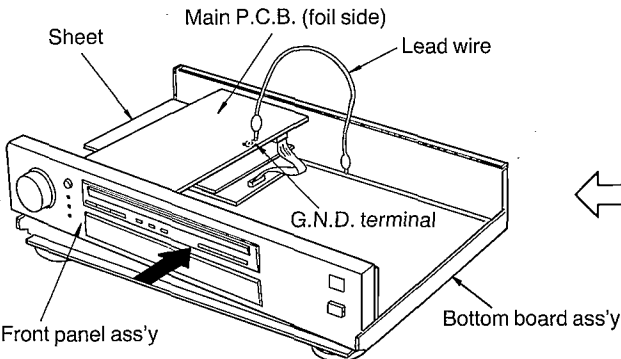
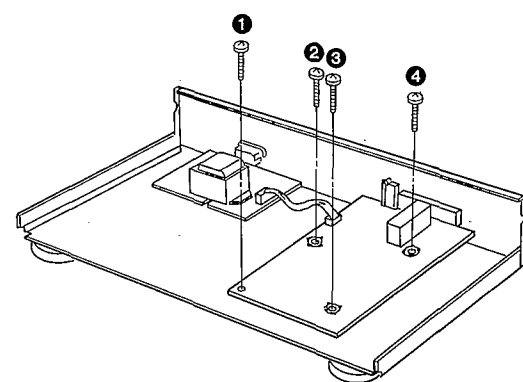
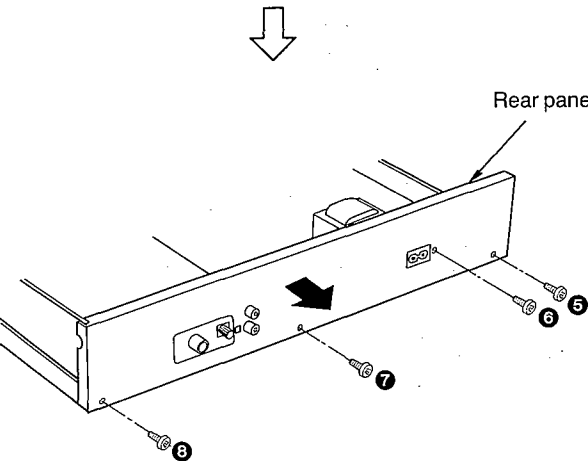
DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

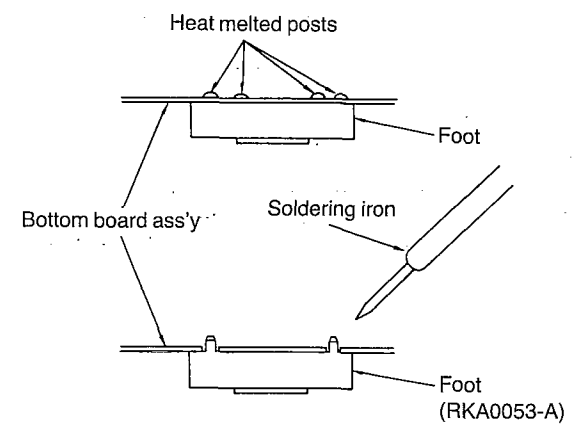
Ref. No. 1	Removal of the cabinet	Ref. No. 2	Removal of the Front Panel Ass'y
Procedure 1		Procedure 1→2	
	• Remove the 6 screws (1-6).		1. Remove the 3 screws (1-3). 2. Remove the front panel ass'y in the direction of arrow.

Ref. No. 3	Removal of the FL P.C.B.	Ref. No. 4	Removal of the power switch P.C.B.
Procedure 1→2→3		Procedure 1→2→4	
 <p>1. Remove the 5 screws (1~5). 2. Remove the FL P.C.B.</p>		 <p>1. Remove the 1 screw (1). 2. Release the 1 claw.</p>	
Ref. No. 5	Removal of the tuning P.C.B.	Ref. No. 6	Removal of the operation P.C.B.
Procedure 1→2→3→5		Procedure 1→2→3→6	
 <p>1. Pull out the tuning control knob. 2. Remove the nut. 3. Remove the 2 screws (1, 2).</p>		 <p>1. Remove the 7 screws (1~7). 2. Release the 4 claws.</p>	
Ref. No. 7	Removal of the main P.C.B.		
Procedure 1→2→7			
 <p>1. Remove the 3 screws (1~3).</p>		 <p>2. Remove the 1 flat cable (W701). 3. Remove the 4 screws (4~7). 4. Remove the main P.C.B. in the direction of arrow.</p>	

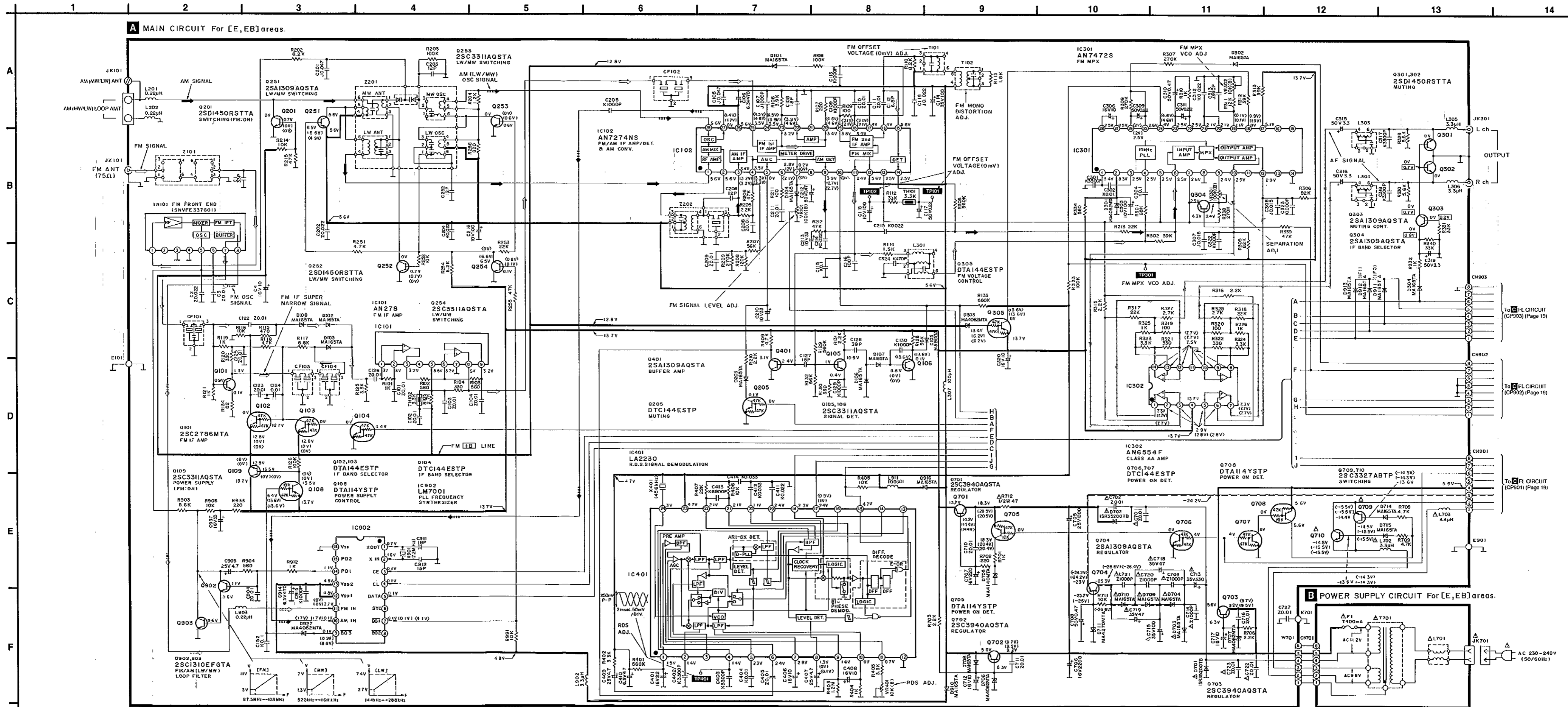
Ref. No. 8	Removal of the Power Supply P.C.B.	Ref. No. 9	How to check the main P.C.B.
Procedure 1→8		Procedure 1→2→9	
 <p>1. Remove the 1 flat cable (CN701). 2. Remove the 3 screws (1~3).</p>  <p>4. As shown below, turn the Main P.C.B. over to face the foil pattern toward you. 5. Connect the G.N.D. terminal to the bottom board ass'y by the lead wire. 6. Reinstall the front panel ass'y to the main P.C.B.</p>		<p>•When checking the soldered surfaces of main P.C.B. and replacing the parts, do as show.</p>  <p>1. Remove the 4 screws (1~4).</p>  <p>2. Remove the 4 screws (5~8). 3. Remove the rear panel in the direction of arrow.</p>	

•Replacement of the Foot

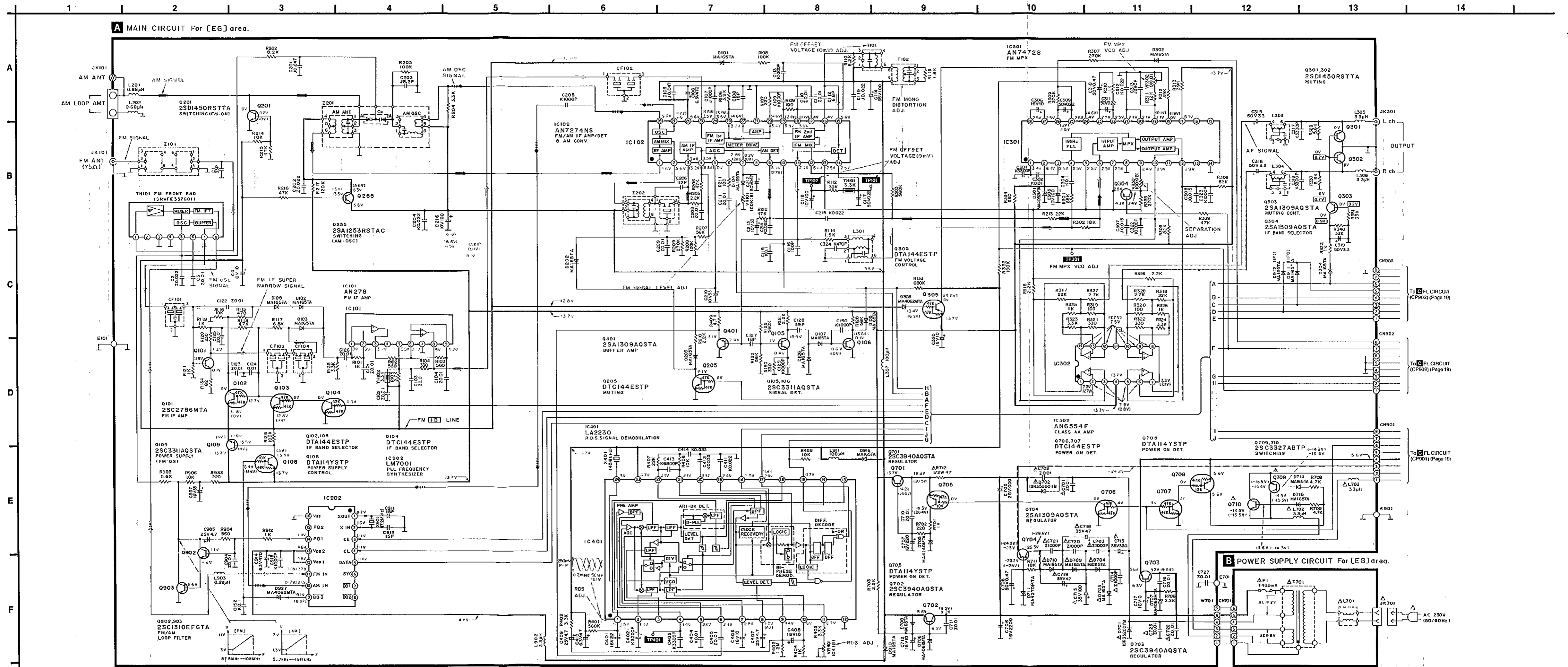
1. Remove the 4 heat melted posts on the bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0053-A) on the bottom board ass'y, melt the 4 posts with a soldering iron.



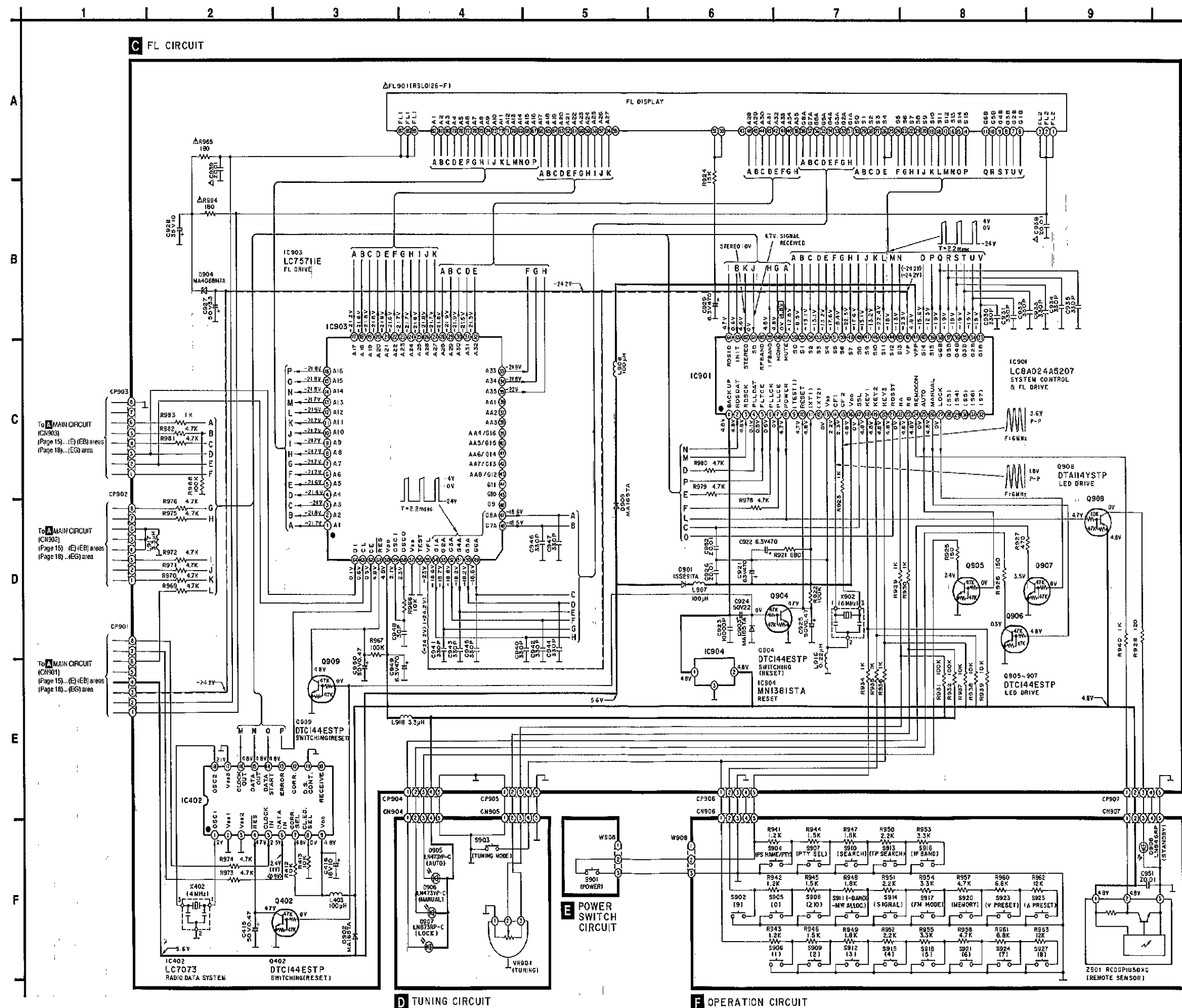
SCHEMATIC DIAGRAM • Main circuit for (E) (EB) areas (Parts list on pages 35~38.)



SCHEMATIC DIAGRAM • Main circuit for (EG) area (Parts list on pages 35-38.)



SCHEMATIC DIAGRAM FL circuit (Parts list on pages 35-38.)



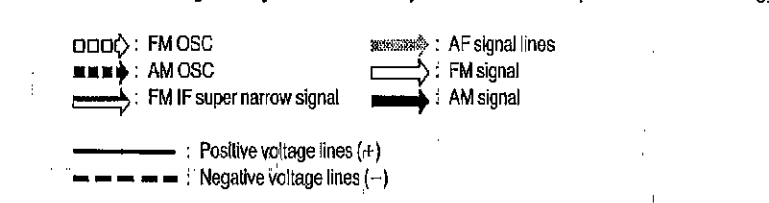
- Notes:**
- S901: Power (STANDBY/ON) switch. (POWER, STANDBY/ON)
 - S902: Preset-tuning switch. (9)
 - S903: Tuning mode select switch. (TUNING MODE)
 - S904: PS/PTY mode select switch. (PS NAME/PTY)
 - S905: Preset-tuning switch. (0)
 - S906: Preset-tuning switch. (1)
 - S907: PTY select switch. (PTY SEL)
 - S908: Preset-tuning switch. (≥ 10)
 - S909: Preset-tuning switch. (2)
 - S910: AF/PTY search switch. (SEARCH)
 - S911: Band select switch. (-BAND, -MW ALLOCATION)...(E) (EB) areas. (-BAND, -AM ALLOCATION)...(EG) area.
 - S912: Preset-tuning switch. (3)
 - S913: TP search switch. (TP SEARCH)
 - S914: FM signal-strength indication switch. (SIGNAL)
 - S915: Preset-tuning switch. (4)
 - S916: FM IF band select switch. (IF BAND)
 - S917: FM mode select switch. (MODE)
 - S918: Preset-tuning switch. (5)
 - S920: Memory switch. (MEMORY)
 - S921: Preset-tuning switch. (6)
 - S923: Preset channel switch. (PRESET)
 - S924: Preset-tuning switch. (7)
 - S925: Preset channel switch. (PRESET)
 - S927: Preset-tuning switch. (8)
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
 No mark: FM () : AM (MW) : < > LW () : Muting
 Important safety notice
 Components identified by Δ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

Use of ceramic filters in pairs
 The ceramic filters (CF101-CF104) for FM-IF circuit are available in three ranks. For this circuit, be sure to use the ceramics of the same rank in a pair.
 At repairing and replacement, pay close attention to the diodes (D911, D912) for use as different diodes must be used depending on each rank of the ceramic filters.

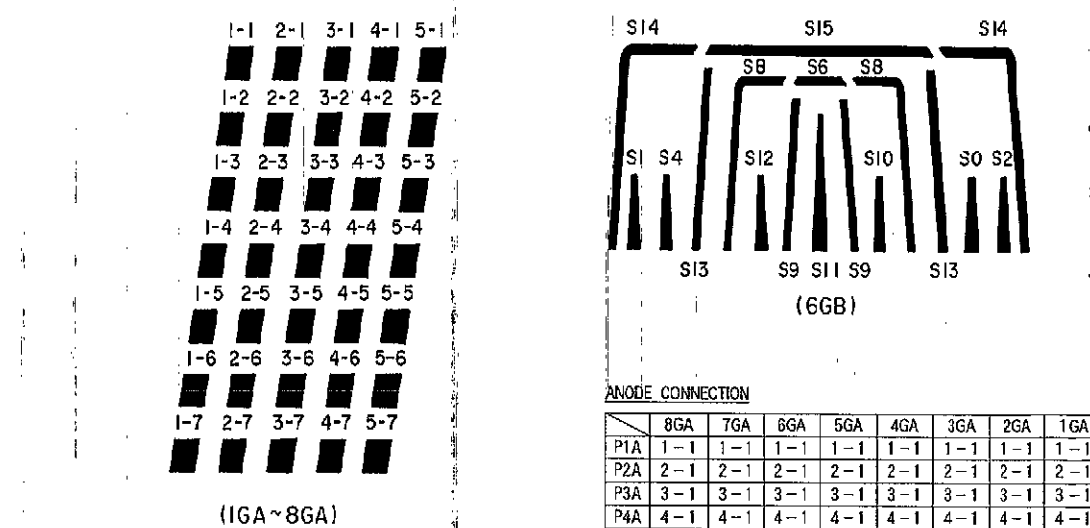
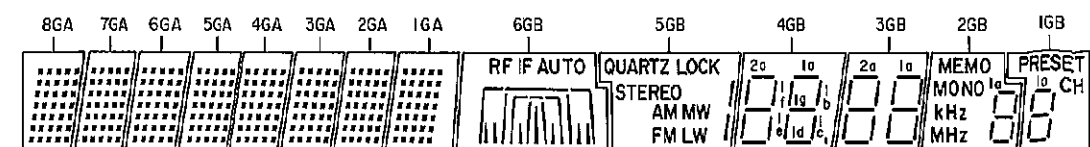
RANK (Color)	D911	D912	CENTER FREQUENCY
Orange	x	o	10.72 MHz
Red	o	o	10.70 MHz
Blue	o	x	10.67 MHz

Note: o mark: Diode is used.
 x mark: Diode is not used.

- Caution!**
 IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
 -Cover the parts boxes made of plastics with aluminum foil.
 -Ground the soldering iron.
 -Put a conductive mat on the work table.
 -Do not touch the legs of IC or LSI with the fingers directly.
- This schematic diagram may be modified at any time with the development of new technology.



DESCRIPTION OF FL PANEL [FL901 (RSL0126-F)]



ANODE CONNECTION

	8GA	7GA	6GA	5GA	4GA	3GA	2GA	1GA
P1A	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1
P2A	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1
P3A	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1
P4A	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1
P5A	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1
P6A	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
P7A	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2
P8A	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2
P9A	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2
P10A	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2
P11A	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
P12A	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
P13A	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3
P14A	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3
P15A	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3
P16A	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
P17A	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
P18A	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
P19A	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4
P20A	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4
P21A	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
P22A	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5
P23A	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5
P24A	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
P25A	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5
P26A	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
P27A	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6
P28A	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6
P29A	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
P30A	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6
P31A	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7
P32A	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7
P33A	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7
P34A	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7
P35A	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7

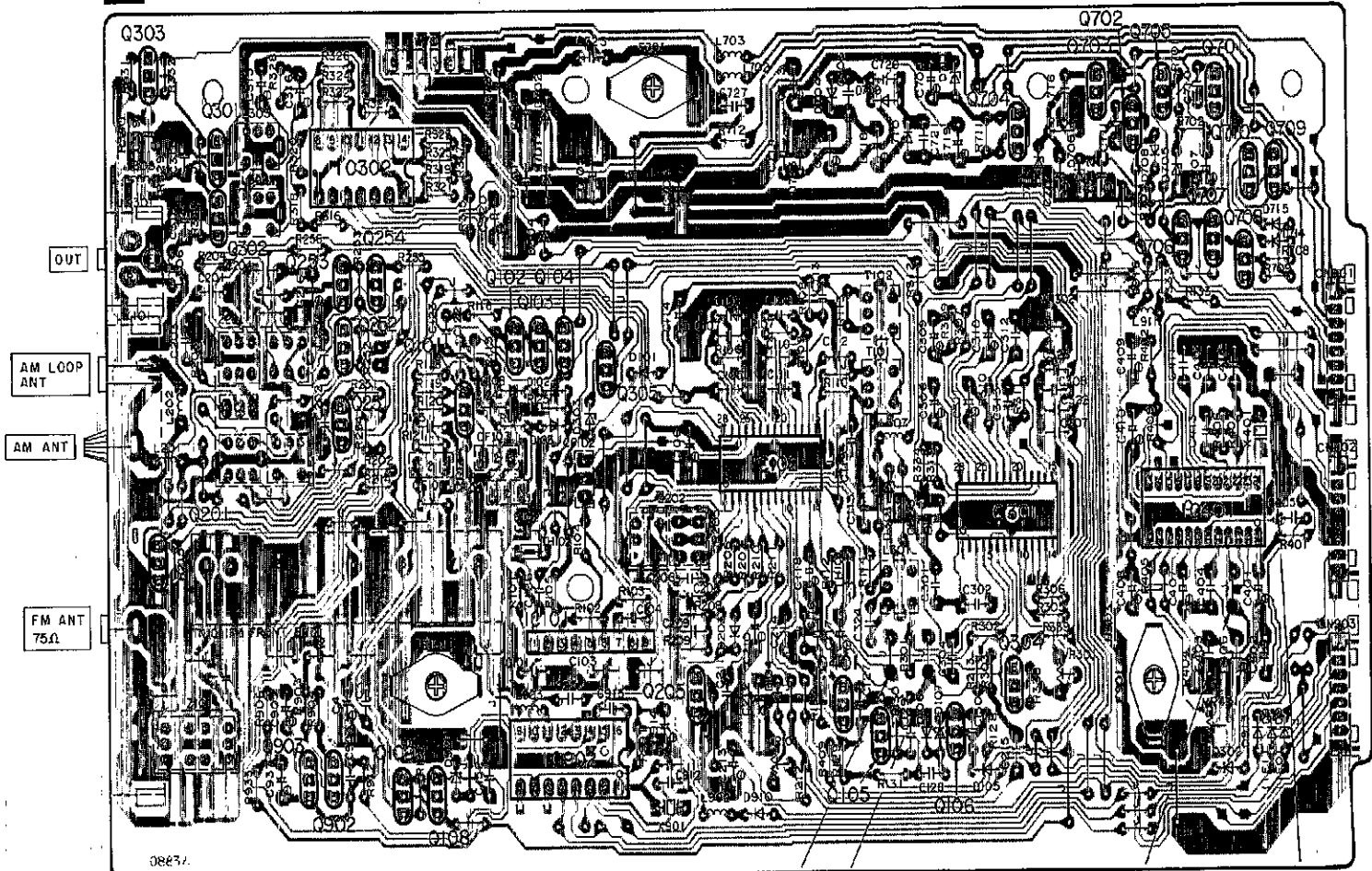
PIN CONNECTION

PIN NO.	8GA	7GA	6GA	5GA	4GA	3GA	2GA	1GA
CONNECTION	F F F F	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P	P P P P
PIN NO.	6GB	5GB	4GB	3GB	2GB	1GB		
CONNECTION	F F F F	P P P P	P P P P	P P P P	P P P P	P P P P		

PRINTED CIRCUIT BOARD DIAGRAM

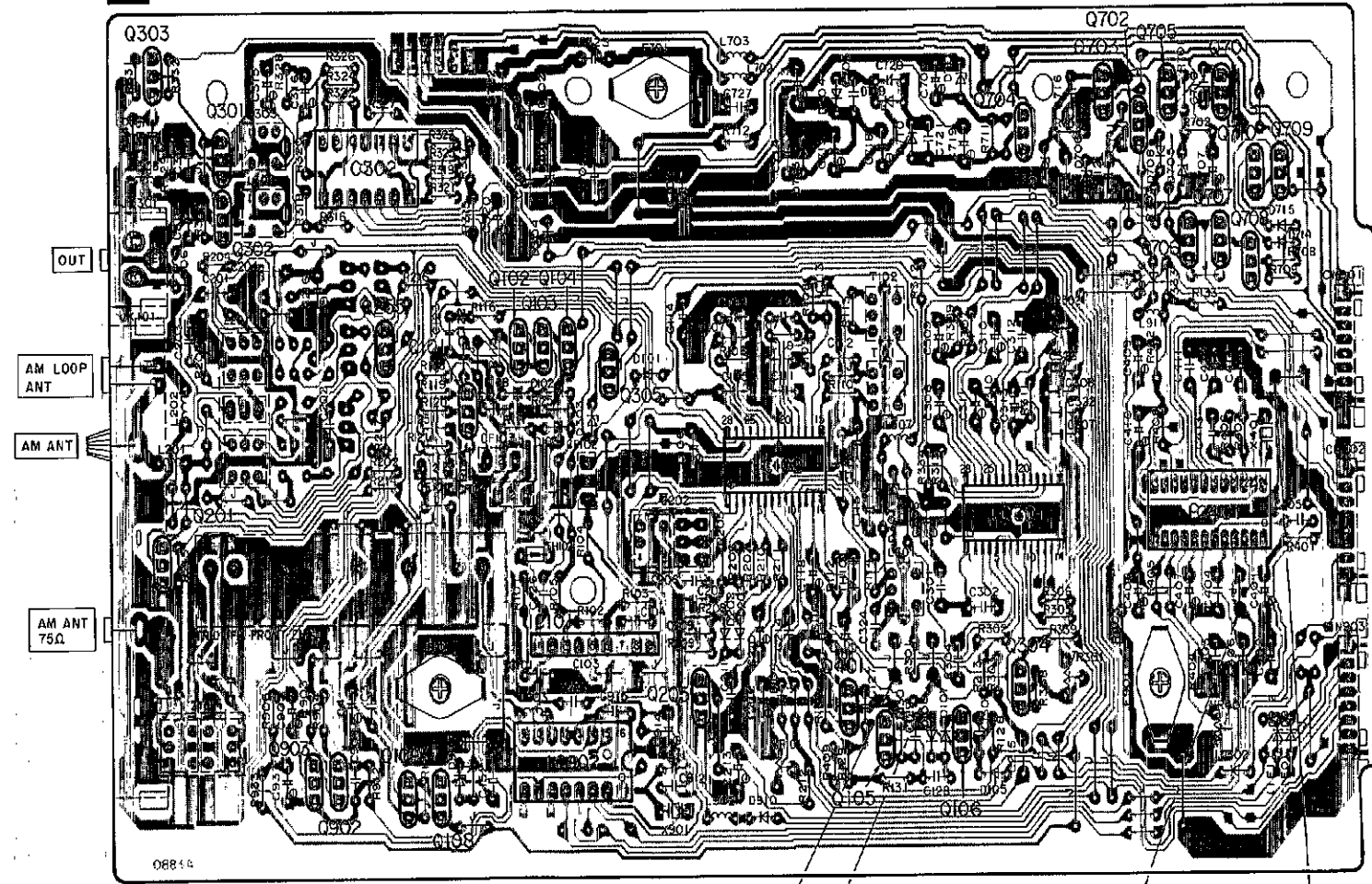


A MAIN P.C.B. For (E, EB) areas. (REP1443B-M)



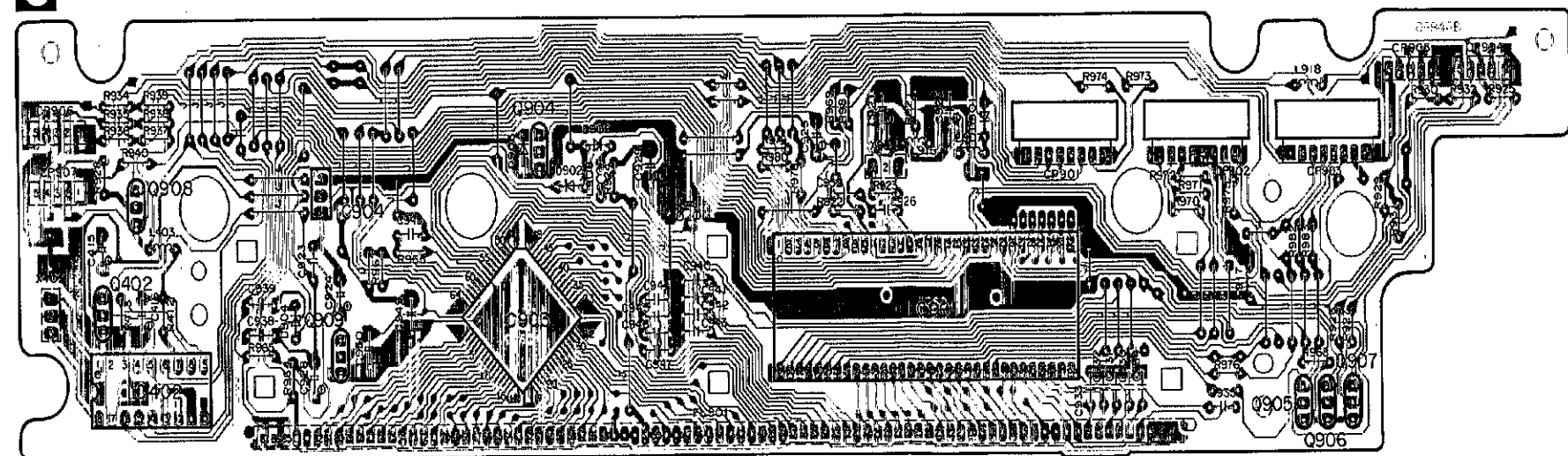
TP101 TP102 FM OFFSET VOLTAGE(0mV)ADJ.
TP401 FILTER ADJ.
TP301 FM MPX VCO ADJ.

A MAIN P.C.B. For (EG) area. (REP1443A-M)

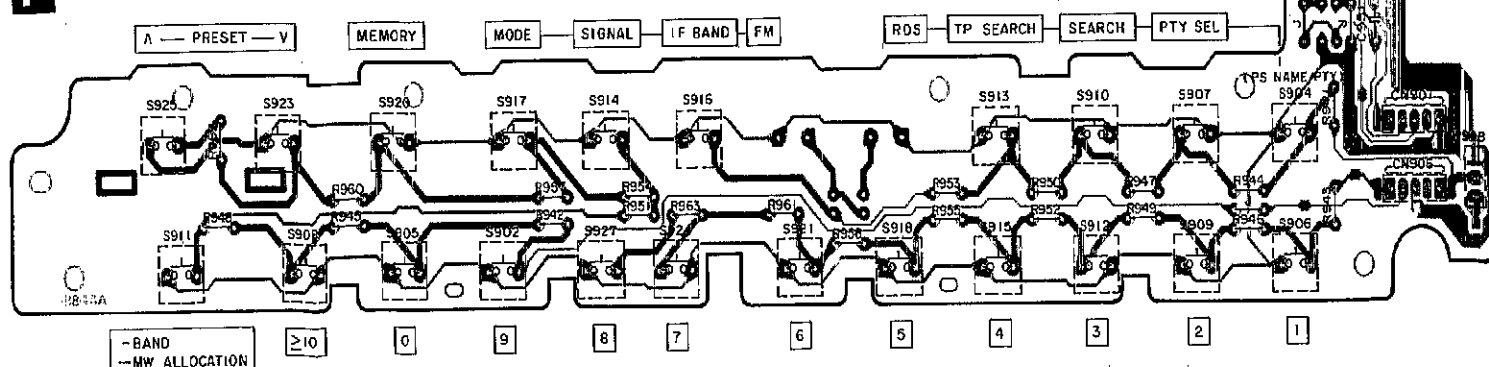


TP201 TP202 FM OFFSET VOLTAGE(0mV)ADJ.
TP401 FILTER ADJ.
TP301 FM MPX VCO ADJ.

C FL P.C.B. (REP1444A-S1)

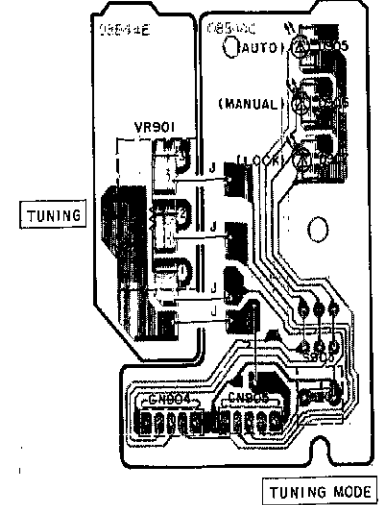


F OPERATION P.C.B. (REP1444A-S1)

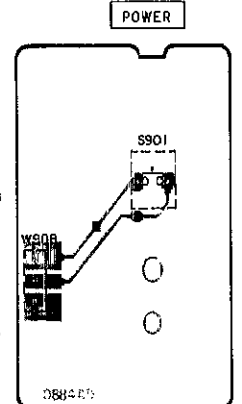


- BAND -
- MW ALLOCATION -

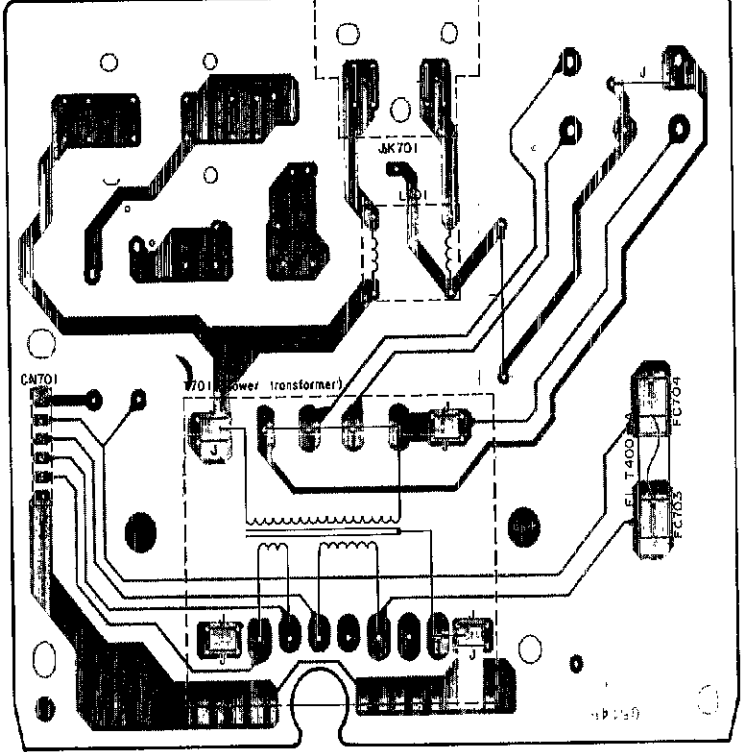
D TUNING P.C.B. (REP1444A-S)



E POWER SWITCH P.C.B. (REP1444A-S)



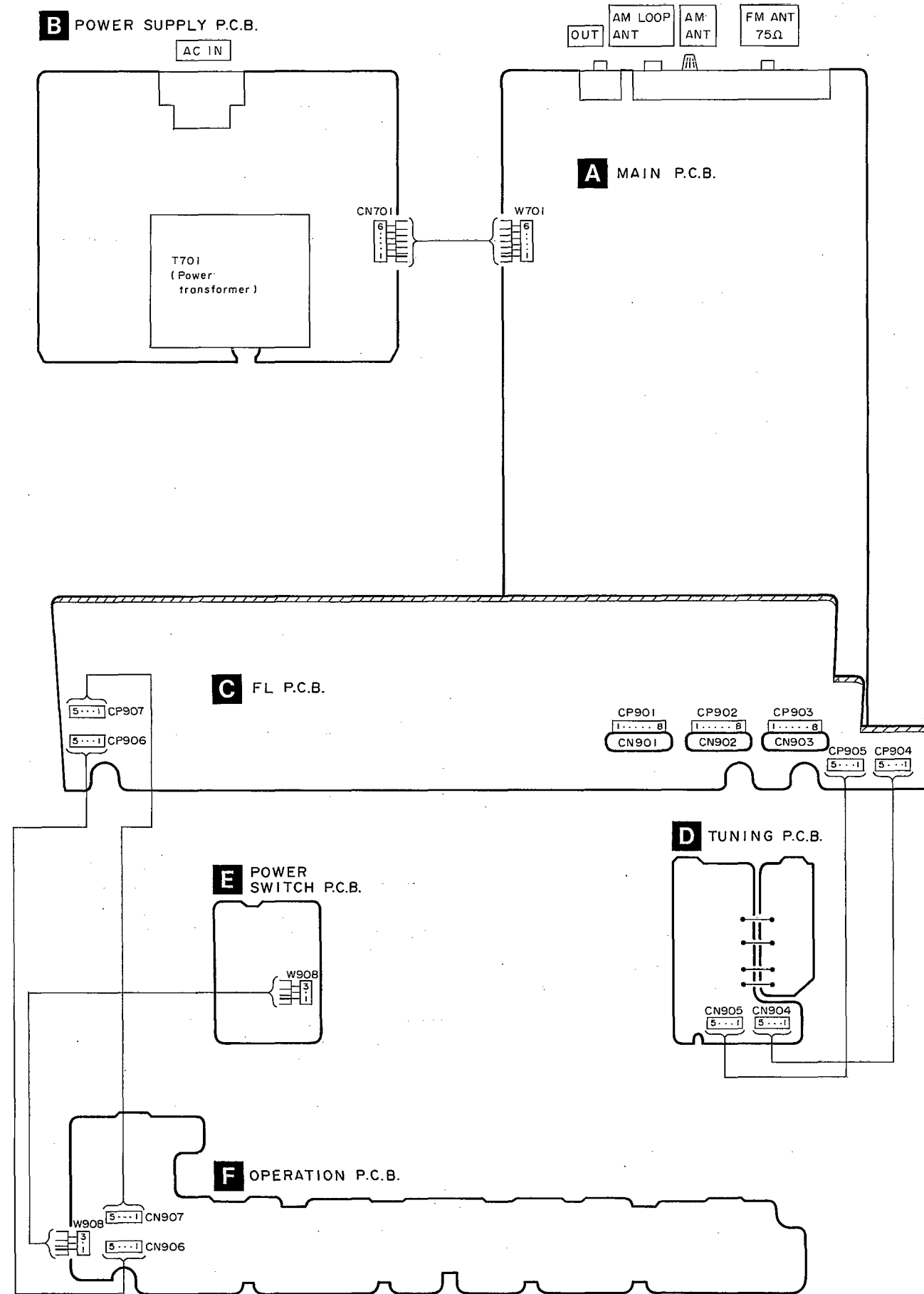
B POWER SUPPLY P.C.B. (REP1442A-P)



	AN6554F	14 Pin		LA2230	24 Pin
	LW7001	16 Pin		LC8AC24A5207	64 Pin

	AN7274NS AN7472S		LC7073		LC75711E		AN278		MN1381STA		2SC3940AQSTA				
	2SC1310EFGTA 2SC3327ABTP		DTA114YSTP DTA144ESTP DTC144ESTP		2SA1309AQSTA 2SC2786MTA 2SC3311AQSTA 2SD1450RSTTA 2SA1253RSTAC		MA4140MTA MA4270MTA		MA165TA 1SS291TA 1SR35200TB		MA4062MTA MA4068MTA MA4082MTA		LN946RP		LN473YP-C LN873RP-C

■ WIRING CONNECTION DIAGRAM



■ MEASUREMENTS AND ADJUSTMENTS

Control positions and equipment used

- FM signal generator (FM-SG)
- AM signal generator (AM-SG)
- Stereo modulator
- Distortion analyser
- RDS modulator

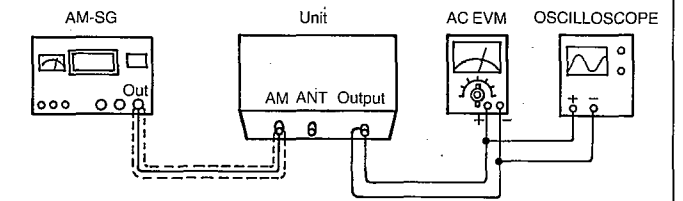
- Resistor (100 kΩ)
- Oscilloscope
- Choke coil (100 μH)
- Frequency counter
- AC and DC electronic voltmeter (EVM)

Note: for Z101, Z202, L301, L303 and L304, they are supplied as adjusted parts, So, do not turn the cores of the parts.

MW RF ADJUSTMENT [for (E) (EB) areas]

1. Test equipment connection is shown in figure.
2. Set the unit to "MW" mode.
3. Set the radio frequency display and signal generator to 612 kHz.
4. Adjust Z201-1 so that the output terminal is maximized.

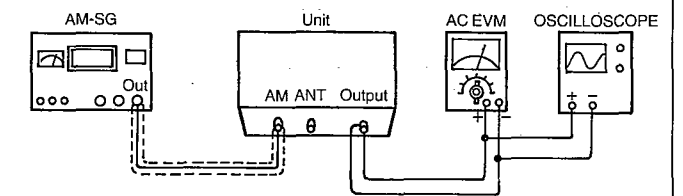
AM SIGNAL GENERATOR CONDITION
 Modulation 30%
 Modulation frequency 400 Hz



LW RF ADJUSTMENT [for (E) (EB) areas]

1. Test equipment connection is shown in figure.
2. Set the unit to "LW" mode.
3. Set the radio frequency display and signal generator to 144 kHz.
4. Adjust Z201-2 so that the output terminal is maximized.

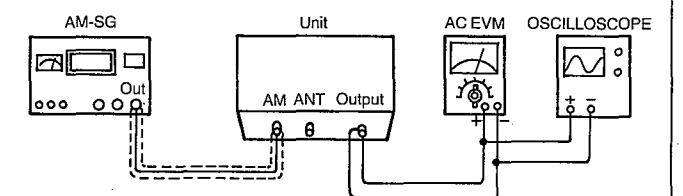
AM SIGNAL GENERATOR CONDITION
 Modulation 30%
 Modulation frequency 400 Hz



AM RF ADJUSTMENT [for (EG) area]

1. Test equipment connection is shown in figure.
2. Set the unit to "AM" mode.
3. Set the radio frequency display and signal generator to 612 kHz.
4. Adjust Z201 so that the output terminal is maximized.

AM SIGNAL GENERATOR CONDITION
 Modulation 30%
 Modulation frequency 400 Hz

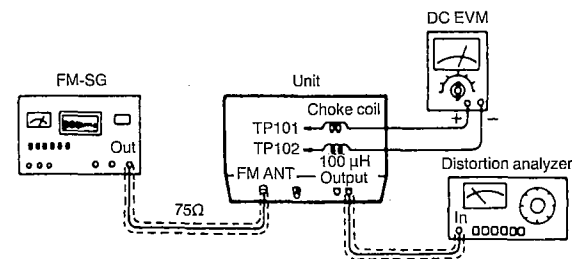


FM MONO DISTORTION/FM OFFSET VOLTAGE ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to **100.10 MHz**.
4. Adjust the core of **T101** so that the voltage measured in signal mode is **0 mV** (0 ± 20 mV) in 300 mV range.
5. Adjust **T102** so that the distortion factor of L-CH is minimized.
6. Repeat steps 4 and 5.
7. Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

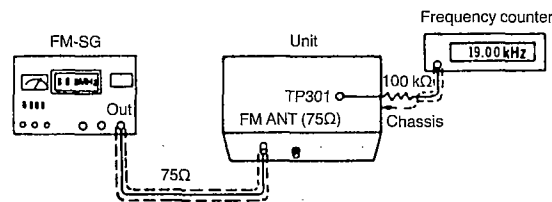
FM SIGNAL GENERATOR CONDITION
 Modulation 100%
 Modulation frequency 1 kHz
 Output level 66 dB



FM MPX VCO ADJUSTMENT

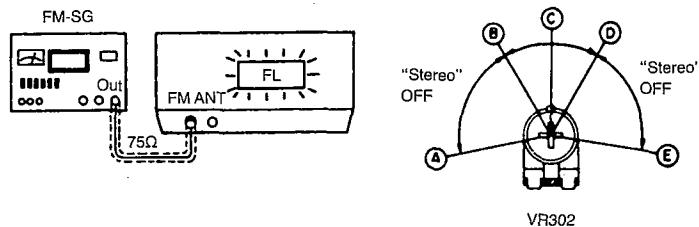
1. Test equipment connection is shown in figure.
2. Set the unit to "FM" and "IF normal" mode.
3. Set the radio frequency display and signal generator to **100.50 MHz**.
4. Adjust **VR302** for **19 kHz ± 30 Hz** on frequency counter reading.

FM SIGNAL GENERATOR CONDITION
 Modulation 0%
 Modulation frequency 0 kHz
 Output level 66 dB



•USING ALTERNATE SYSTEM

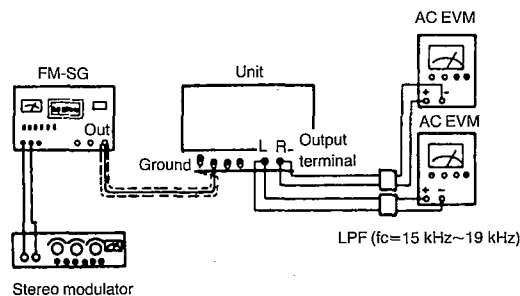
1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust **VR302** until stereo indicator lights up. Fix the arm of **VR302** as shown in figure.



FM STEREO SEPARATION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to **100.20 MHz**.
4. Adjust **VR301** so that the R-CH output is minimized when stereo modulator is in "L" (L-CH modulation) mode.

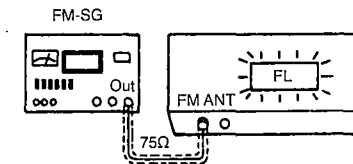
FM SIGNAL GENERATOR CONDITION
 Modulation Stereo "L" mode or "R" mode 90%, Pilot 10%
 Modulation frequency 1 kHz (Pilot 19 kHz)
 Output level 66 dB



FM SIGNAL STRENGTH LEVEL ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" and "IF normal" mode.
3. Set the radio frequency display and signal generator to **100.50 MHz**.
4. Change FL display from "frequency" to "dB" by pressing the FM signal button.
5. Adjust **VR101** so that **54 dB** is indicated. "54 dB" is indicated on the FL display.
6. Repeat steps 4, 5.

FM SIGNAL GENERATOR CONDITION
 Modulation 30%
 Modulation frequency 1 kHz
 Output level 66 dB

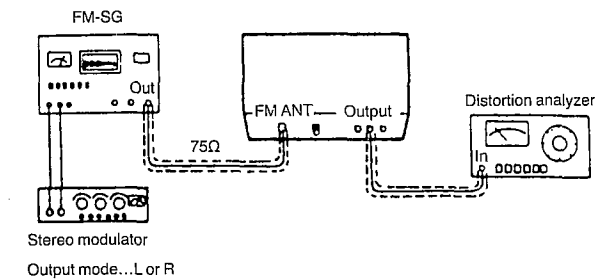


FM STEREO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to **100.10 MHz**.
4. Adjust **TN101** so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
 Modulation "L" mode or "R" mode 90%, Pilot 10%
 Modulation frequency 1 kHz (Pilot 19 kHz)
 Output level 66 dB



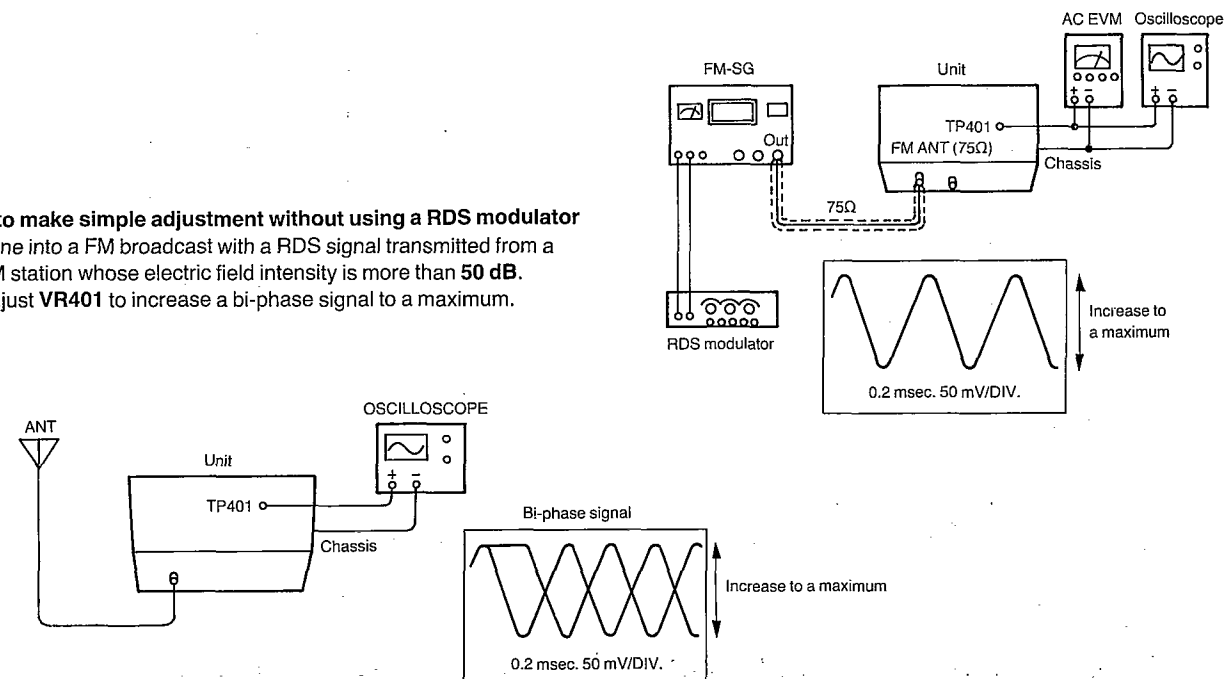
RDS (Radio data system) BPF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to **100.10 MHz**.
4. Adjust **VR401** so that the **TP401** output is maximized.

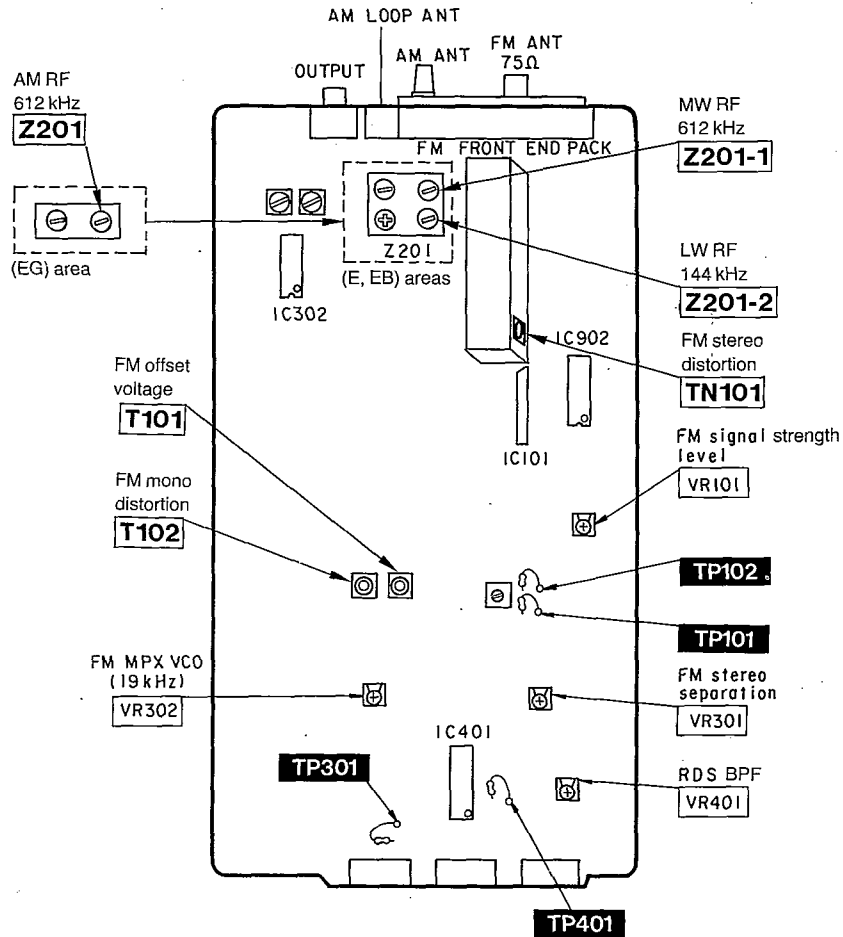
FM SIGNAL GENERATOR CONDITION
 Modulation 100%
 Modulation frequency 1 kHz
 RDS modulation 1.5%
 RDS modulation data "NULL"
 Output level 66 dB

How to make simple adjustment without using a RDS modulator

1. Tune into a FM broadcast with a RDS signal transmitted from a FM station whose electric field intensity is more than **50 dB**.
2. Adjust **VR401** to increase a bi-phase signal to a maximum.



● Adjustment points



■ FUNCTIONS OF IC TERMINALS

● IC903: LC75711E

Pin No.	Terminal Name	I/O	Function
1 }	A1	O	FL segment signal output
35	A35		
36 }	AA1	—	—
38	AA3		
39 }	AA4/G16	—	—
43	AA8/G12		
44 }	G11	—	—
46	G9		
47 }	G8A	O	FL glide signal output
54	G1A		

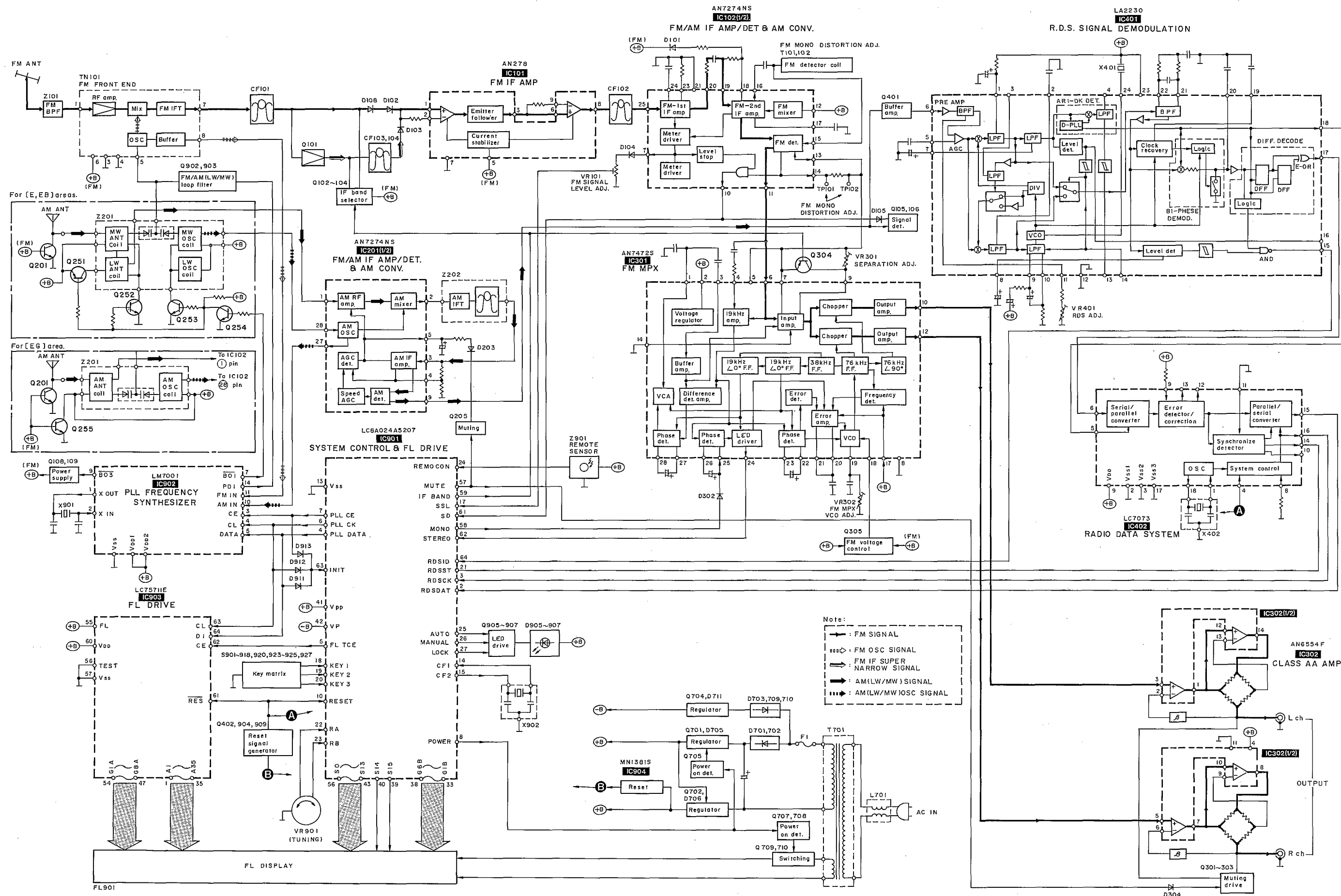
Pin No.	Terminal Name	I/O	Function
55	VFL	I	FL drive power input
56	TEST	—	GND
57	V _{ss}	—	
58	OSC O	O	Connecting terminal for resistor and capacitor
59	OSC I	I	
60	V _{DD}	I	Power supply
61	$\overline{\text{RES}}$	I	Reset signal input
62	CE	I	FLD control chip select signal input
63	CL	I	Serial clock input
64	Di	I	Serial data input

●IC901: LC8A024A5207

Pin No.	Terminal Name	I/O	Function
1	BACKUP	I	Power failure detect signal input
2	RDSDAT	I	RDS data input
3	RDSCK	I	RDS clock input
4	PLLDAT	O	Serial data output
5	FLTCE	O	FLTC chip enable signal output
6	PLLCK	O	Serial clock signal output
7	PLLCE	O	LM7001 chip enable signal output
8	POWER	O	Power control signal output
9	—	—	—
10	RESET	I	Reset signal input
11	(XT1)	I	Connected to V _{DD} .
12	—	—	—
13	V _{SS}	—	GND
14	CF1	I	Connecting terminal for ceramic filter
15	CF2	O	
16	V _{DD}	—	Power supply (+5 V)
17	SSL	I	Tuning level signal input
18 19 20	KEY1 KEY2 KEY3	I	Key matrix signal input
21	RDSST	I	RDS data start signal input
22	RA	I	Rotary encoda A signal input
23	RB	I	Rotary encoda B signal input

Pin No.	Terminal Name	I/O	Function
24	REMOCON	I	Remote control signal input
25	AUTO	O	Tuning mode select signal output
26	MANUAL	O	
27	LOCK	O	
28 29 30 31 32	—	—	—
33 34 35 36 37 38	G1B G2B G3B G4B G5B G6B	O	Grid signal output
39 40	S15 S14	O	Segment signal output
41	VPP	—	Power supply for FL (+5 V)
42	VP	—	Power supply for FL (-VP)
43 44 45 46 47 48 49 50 51 52 53 54 55 56	S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 S0	O	Segment signal output
57	MUTE	O	Muting signal output
58	MONO	O	Forcible monaural select signal output
59	IFBAND	O	IF BAND select signal output H: NARROW L: NORMAL
60	RFBAND	—	—
61	SD	I	Station detector signal input
62	STEREO	I	Stereo signal input
63	INIT	I	Initial setting signal input
64	RDSID	I	RDSID signal input

■ BLOCK DIAGRAM



REPLACEMENT PARTS LIST

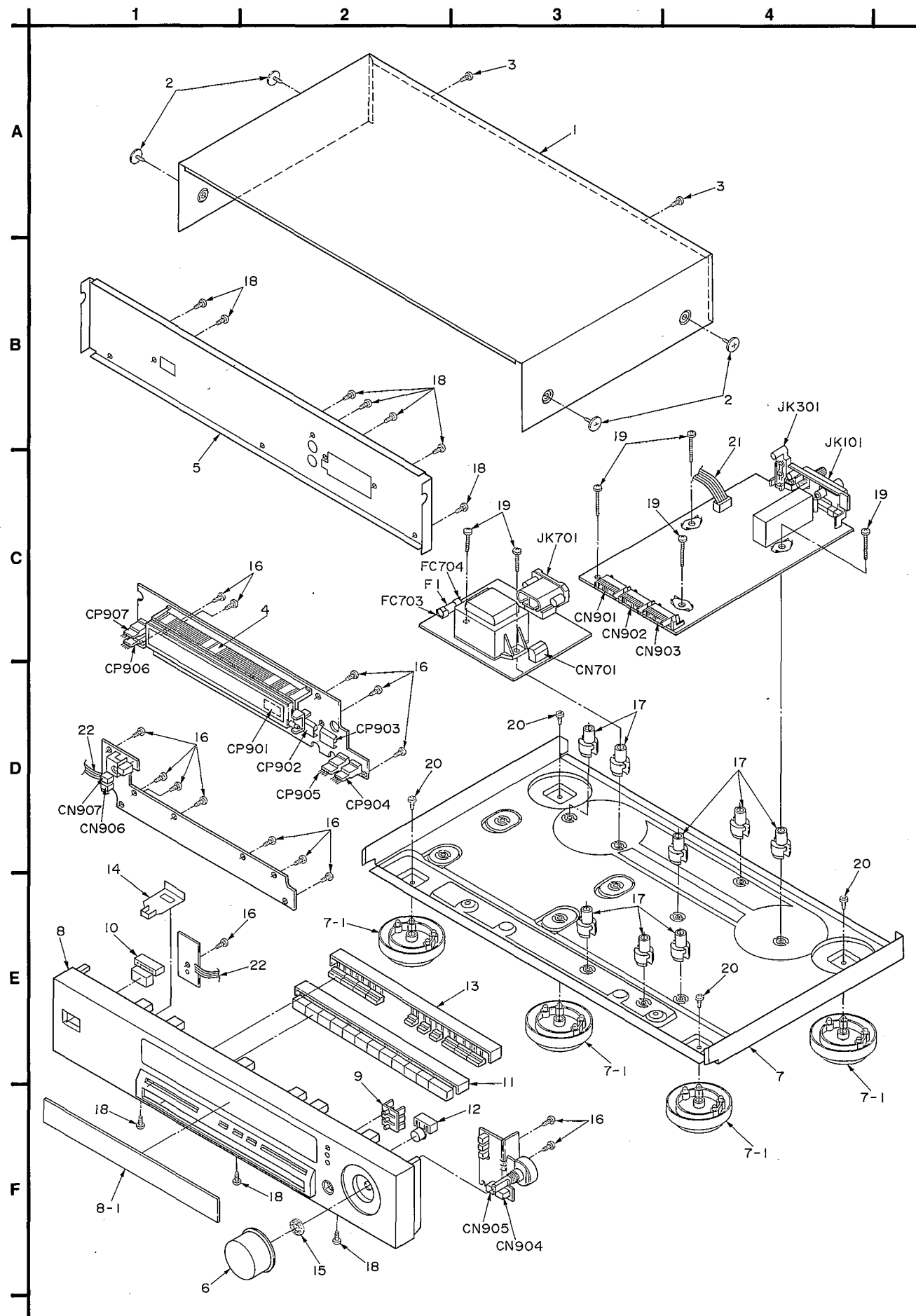
Notes: *Important safety notice:
 Components identified by Δ mark have special characteristics important for safety.
 Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
 When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
 *The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
 Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		D202	MA165	DIODE	(EG)
IC101	AN278	I. C. FM IF AMP.		D203	MA165	DIODE	
IC102	AN7274NS	I. C. FM/AM IF AMP. & DET.		D301	MA4082MTA	DIODE	
IC301	AN7472S	I. C. FM MPX		D302	MA165	DIODE	
IC302	AN6554F	I. C. CLASS AA AMP.		D303	MA4062MTA	DIODE	
IC401	LA2230	I. C. RDS SIGNAL DEMODULATION		D304	MA165	DIODE	
IC402	LC7073	I. C. RADIO DATA SYSTEM		D701, 702	1SR35200TB	DIODE	Δ
IC901	LC8A024A5207	I. C. SYSTEM CONTROL		D703, 704	MA165	DIODE	Δ
IC902	LM7001	I. C. PLL. FREQ. SYNTHESIZER		D705	MA4140M	DIODE	
IC903	LC75711E	I. C. FL. DRIVE		D706, 707	MA4062MTA	DIODE	
IC904	MN1381STA	I. C. RESET		D708	MA165	DIODE	
		TRANSISTOR(S)		D709, 710	MA165	DIODE	Δ
				D711	MA4270	DIODE	
Q101	2SC2786M	TRANSISTOR		D714, 715	MA165	DIODE	
Q102, 103	DTA144ESTP	TRANSISTOR		D901	1SS291TA	DIODE	
Q104	DTC144ESTP	TRANSISTOR		D902, 903	MA165	DIODE	
Q105, 106	2SC3311A-Q	TRANSISTOR		D904	MA4068M	DIODE	
Q108	DTA114YSTP	TRANSISTOR		D905, 906	LN473YP-C	L. E. D.	
Q109	2SC3311A-Q	TRANSISTOR		D907	LN873RP-C	L. E. D.	
Q201	2SD1450RTA	TRANSISTOR		D908	LN846RP	L. E. D.	
Q205	DTC144ESTP	TRANSISTOR		D909-912	MA165	DIODE	
Q251	2SA1309A-R	TRANSISTOR	(E, EB)	D913	MA165	DIODE	(E, EB)
Q252	2SD1450RTA	TRANSISTOR	(E, EB)	D916	MA165	DIODE	
Q253, 254	2SC3311A-Q	TRANSISTOR	(E, EB)	D927	MA4062MTA	DIODE	
Q255	2SA1253RSTAC	TRANSISTOR	(EG)			VARIABLE RESISTOR(S)	
Q301, 302	2SD1450RTA	TRANSISTOR		VR101	EVNDXAA00B15	V. R. FM SIGNAL LEVEL ADJ.	
Q303, 304	2SA1309A-R	TRANSISTOR		VR301	EVNDXAA00B15	V. R. FM STEREO SEPARATION AD	
Q305	DTA144ESTP	TRANSISTOR		VR302	EVNDXAA00B14	V. R. FM MPX VCO ADJ.	
Q401	2SA1309A-R	TRANSISTOR		VR401	EVNDXAA00B14	V. R. RDS ADJ.	
Q402	DTC144ESTP	TRANSISTOR		VR901	EVQMX902612B	V. R. TUNING CONTROL	
Q701-703	2SC3940AQSTA	TRANSISTOR				THERMISTOR(S)	
Q704	2SA1309A-R	TRANSISTOR		TH101, 102	ERTD2ZHL332T	THERMISTOR	
Q705	DTA114YSTP	TRANSISTOR				COMPONENT COMBINATION(S)	
Q706, 707	DTC144ESTP	TRANSISTOR		TN101	SNVFE337G01	FM FRONT END	
Q708	DTA114YSTP	TRANSISTOR		Z101	SLA4213-Z	COMPONENT COMBINATION	
Q709, 710	2SC3327-A	TRANSISTOR	Δ	Z201	RLA6Z002-T	COMPONENT COMBINATION	(E, EB)
Q902, 903	2SC1310EFGTA	TRANSISTOR		Z201	RLA2Z001-T	COMPONENT COMBINATION	(EG)
Q904-907	DTC144ESTP	TRANSISTOR		Z202	RL12Z002-W	COMPONENT COMBINATION	
Q908	DTA114YSTP	TRANSISTOR		Z901	RCDGP1U50XG	REMOTE SENSOR	
Q909	DTC144ESTP	TRANSISTOR				COIL(S)	
		DIODE(S)					
D101-108	MA165	DIODE					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
L201, 202	ELEPKR22MA	COIL	(E, EB)	S913	EVQ21405R	SW, TP SEARCH	
L201, 202	ELEPKR68MA	COIL	(EG)	S914	EVQ21405R	SW, SIGNAL	
L301	SLM1B10M-1M	COIL		S915	EVQ21405R	SW, PRESET(4)	
L303, 304	RLM2B004-K	COIL		S916	EVQ21405R	SW, IF BAND	
L305, 306	RLQZP3R3KT-Y	COIL		S917	EVQ21405R	SW, FM MODE	
L307	RLQZP101KT-Y	COIL		S918	EVQ21405R	SW, PRESET(5)	
L403	RLQZP101KT-Y	COIL		S920	EVQ21405R	SW, MEMORY	
L701	RLQZ600M-W	COIL	Δ	S921	EVQ21405R	SW, PRESET(6)	
L702, 703	RLQZP3R3KT-Y	COIL	Δ	S923	EVQ21405R	SW, PRESET DOWN	
L902	RLQZP3R3KT-Y	COIL		S924	EVQ21405R	SW, PRESET(7)	
L903	RLQZPR22KT-Y	COIL		S925	EVQ21405R	SW, PRESET UP	
L907, 908	RLQZP101KT-Y	COIL		S927	EVQ21405R	SW, PRESET(8)	
L911	RLQZP101KT-Y	COIL				CONNECTOR(S)	
L916	RLQZPR22KT-Y	COIL		CN701	SJT30643-V	CONNECTOR(6P)	
L917, 918	RLQZP3R3KT-Y	COIL		CN901-903	RJU003K008M1	SOCKET(8P)	
		TRANSFORMER(S)		CN904-907	SJS50581BB	SOCKET(5P)	
T101	RL14B005-Z	TRANSFORMER		CP901-903	RJT003K008-1	CONNECTOR(8P)	
T102	RL14B006-Z	TRANSFORMER		CP904, 905	SJT30548BB1	CONNECTOR(5P)	
T701	RTP1K4E022	POWER TRANSFORMER	Δ	CP906, 907	SJT30549BB1	CONNECTOR(5P)	
		OSCILLATOR(S)				EARTH TERMINAL(S)	
X401	RSX2456M07	OSCILLATOR		E101	SNE1004-1	GND PLATE	
X402	RVBCST4RO0MT	OSCILLATOR		E701	SNE1004-1	GND PLATE	
X901	SVQ49U722-S	OSCILLATOR		E901	SNE1004-1	GND PLATE	
X902	EF0GC6004T4	CERAMIC OSCILLATOR				FUSE HOLDER(S)	
		DISPLAY(S)		FC703, 704	EYF52BC	FUSE HOLDER	Δ
FL901	RSLO126-F	FL DISPLAY				JACK(S)	
		FUSE(S)		JK101	RJH4202M	ANTENNA JACK	
F1	XBA2C04TB0	FUSE	Δ	JK301	SJF3068-5N	OUTPUT JACK	
		SWITCH(ES)		JK701	SJS9236	AC INLET	Δ
S901	EVQ21405R	SW, POWER				TEST POINT(S)	
S902	EVQ21405R	SW, PRESET-TUNING(9)		TP101	ERD25V0R00T	TEST POINT	
S903	EVQ21405R	SW, TUNING MODE		TP102	ERD25V0R00T	TEST POINT	
S904	EVQ21405R	SW, PS NAME/PTY		TP301	ERD25V0R00T	TEST POINT	
S905	EVQ21405R	SW, PRESET-TUNING(0)		TP401	ERD25V0R00T	TEST POINT	
S906	EVQ21405R	SW, PRESET(1)				CERAMIC FILTER(S)	
S907	EVQ21405R	SW, PTY SELECTOR		CF101	RLFFETNGA01L	CERAMIC FILTER	
S908	EVQ21405R	SW, PRESET-TUNING(10)		CF102	RLFFETNGA02L	CERAMIC FILTER	
S909	EVQ21405R	SW, PRESET(2)		CF103	RLFFETNGA01L	CERAMIC FILTER	
S910	EVQ21405R	SW, SEARCH		CF104	RLFFETNGA01L	CERAMIC FILTER	
S911	EVQ21405R	SW, -BAND, -MW ALLOCATION					
S912	EVQ21405R	SW, PRESET(3)					

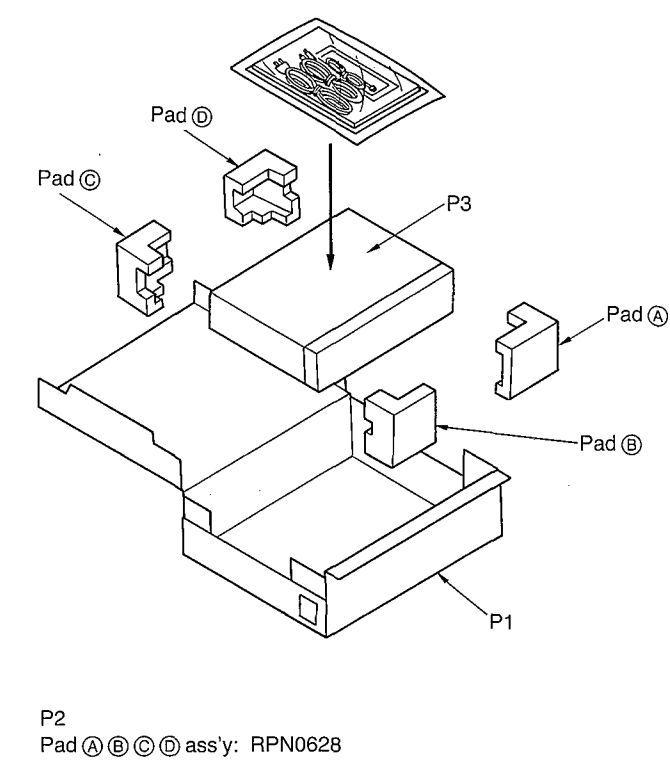
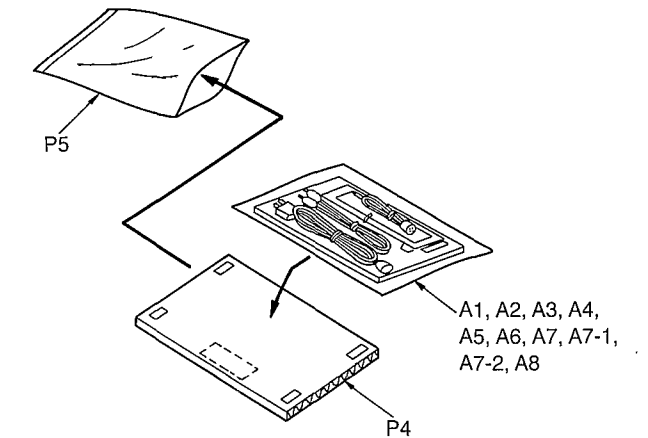
1484

■ CABINET PARTS LOCATION



Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKMO078-1K	CABINET	
2	SNE2129-1	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RMNO186	FL HOLDER	
5	RGRO148A-B1	REAR PANEL	(E)
5	RGRO148A-C1	REAR PANEL	(EB)
5	RGRO148A-A1	REAR PANEL	(EG)
6	RGWO153-T	TUNNING CONTROL KNOB	
7	RFKJHGE90E-K	BOTTOM BOARD ASS'Y	
7-1	RKA0053-A	FOOT	
8	RFKGTG630EK	FRONT PANEL ASS'Y	
8-1	RKWO227-K	FL PANEL	
9	RGL0167-C	ORNAMENT	
10	RGU0453-K	POWER BUTTON	
11	RGU0772B-K	PRESET BUTTON	(E, EB)
11	RGU0772A-K	PRESET BUTTON	(EG)
12	RGU0773-K	MODE BUTTON	
13	RGU0774-K	FUNCTION BUTTON	
14	RMCO087	EARTH SPRING	
15	SNE4021-1	NUT	
16	XTBS26+8J	SCREW	
17	SHE187-2	P. C. B. SPACER	
18	XTBS3+8JFZ1	SCREW	
19	XTB3+20JFZ	SCREW	
20	XTB3+6J	SCREW	
21	RWJ1806120KQ	FLAT CABLE (6P) (W701)	
22	RWJ1803150KK	FLAT CABLE (3P) (W908)	
		PACKING MATERIALS	
P1	RPG1328	PACKING CASE	
P2	RPN0628	PAD	
P3	XZB50X65A0Z	PROTECTION COVER	
P4	RPQ0164	ACCESSORY PAD	
P5	XZB24X34C04	PROTECTION COVER	
		ACCESSORIES	
A1	RFKSTG630EK	INSTRUCTIONS MANUAL	(E)
A1	RQT1609-B	INSTRUCTIONS MANUAL	(EB)
A1	RQT1608-D	INSTRUCTIONS MANUAL	(EG)
A2	RQA0013	WARRANTY CARD	
A3	RQCB0169	SERVICE CENTER LIST	
A4	RJA0019-1K	AC POWER SUPPLY CORD	△(E, EG)
A4	SJA193	AC POWER SUPPLY CORD	△(EB)
A5	RSA0007	FM INDOOR ANTENNA	
A6	SJP2276	STEREO CONNECTION CABLE	
A7	SPB1163T	AM LOOP ANTENNA	
A7-1	SMA233-1M	ANTENNA HOLDER	

■ PACKAGING



P2
Pad (A) (B) (C) (D) ass'y: RPN0628