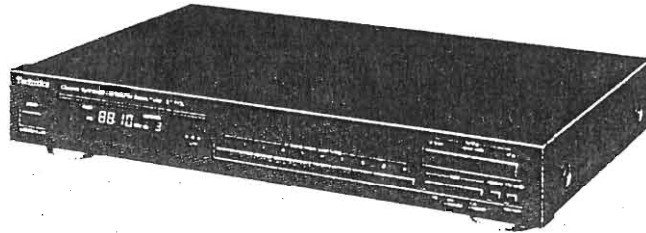


Service Manual

Tuner

QUARTZ Synthesizer
LW/MW/FM Stereo Tuner

ST-610L



Color

(K) Black Type
(S) Silver Type

Area

Country Code	Area	Color
(E)	Continental Europe	(K) (S)
(EB)	Great Britain	(K) (S)
(EF)	France	(K)

SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz (50 kHz-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	0.15%
STEREO	0.3%
S/N MONO	70 dB (78 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~-1.5 dB
Alternate channel selectivity normal \pm 400 kHz	65 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	45 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	75 dB
AM suppression	55 dB
Stereo separation 1 kHz	40 dB
10 kHz	30 dB
Carrier leak 19 kHz	-30 dB (-35 dB, IHF)
38 kHz	-45 dB (-50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	\pm 1.5 dB
Limiting point	1.2 μ V
Bandwidth IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	522 kHz~1611 kHz (9 kHz-steps)
MW	530 kHz~1620 kHz (10 kHz-steps)
LW	155 kHz~353 kHz (9 kHz-steps)
	153 kHz~351 kHz (-2 kHz shift)
Sensitivity (S/N 20 dB) MW	20 μ V, 300 μ V/m
LW	50 μ V
Selectivity (\pm 9 kHz) MW (at 999 kHz)	50 dB
LW (at 254 kHz)	50 dB
Image rejection MW (at 999 kHz)	40 dB
LW (at 254 kHz)	40 dB
IF rejection MW (at 999 kHz)	60 dB
LW (at 254 kHz)	60 dB

■ GENERAL

Output voltage	0.3 V (0.6 V IHF)
Power consumption	9 W
Power supply	
For Great Britain:	AC 50 Hz/60 Hz, 240 V
For others:	AC 50 Hz/60 Hz, 220 V
Dimensions (W×H×D):	430×69×290 mm (16 ¹⁵ / ₁₆ "×2 ²³ / ₃₂ "×11 ⁷ / ₁₆ "
Weight:	2.4 kg (5.3 lb.)

Notes:

1. Specifications are subject to change without notice.
2. Weight and dimensions are approximate.
3. Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Technics

Matsushita Electric Industrial Co., Ltd
Central P.O. Box 288, Osaka 530-91, Ja

CONTENTS

	Page
ACCESSORIES	2
CONNECTIONS	2
LOCATIONS OF CONTROLS	3
DISASSEMBLY INSTRUCTIONS	4
MEASUREMENTS AND ADJUSTMENTS	5, 6
DESCRIPTION OF FL PANEL	6
FUNCTIONS OF IC TERMINALS	7
SCHEMATIC DIAGRAM	8~11

	Page
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES	11
CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM	12, 13
BLOCK DIAGRAM	14, 15
REPLACEMENT PARTS LIST	16~19
EXPLODED VIEW	20

ACCESSORIES

- AC power supply cord 1
For [EB] area only (SJA193)
For others areas (SFDAC05E03)
- Stereo pin cord 1
(SJP2276)
- FM indoor antenna 1
(SSA270M)

- Attachment plug 1
For [EB], [EF] areas (SJP9009)
- AM loop antenna Ass'y 1
(SPB1163T)
- AM antenna holder 1
(SMA233-1M)
- Screws 2
(XTN3+10AFZ)

CONNECTIONS

The indication AM used here includes both MW and LW.

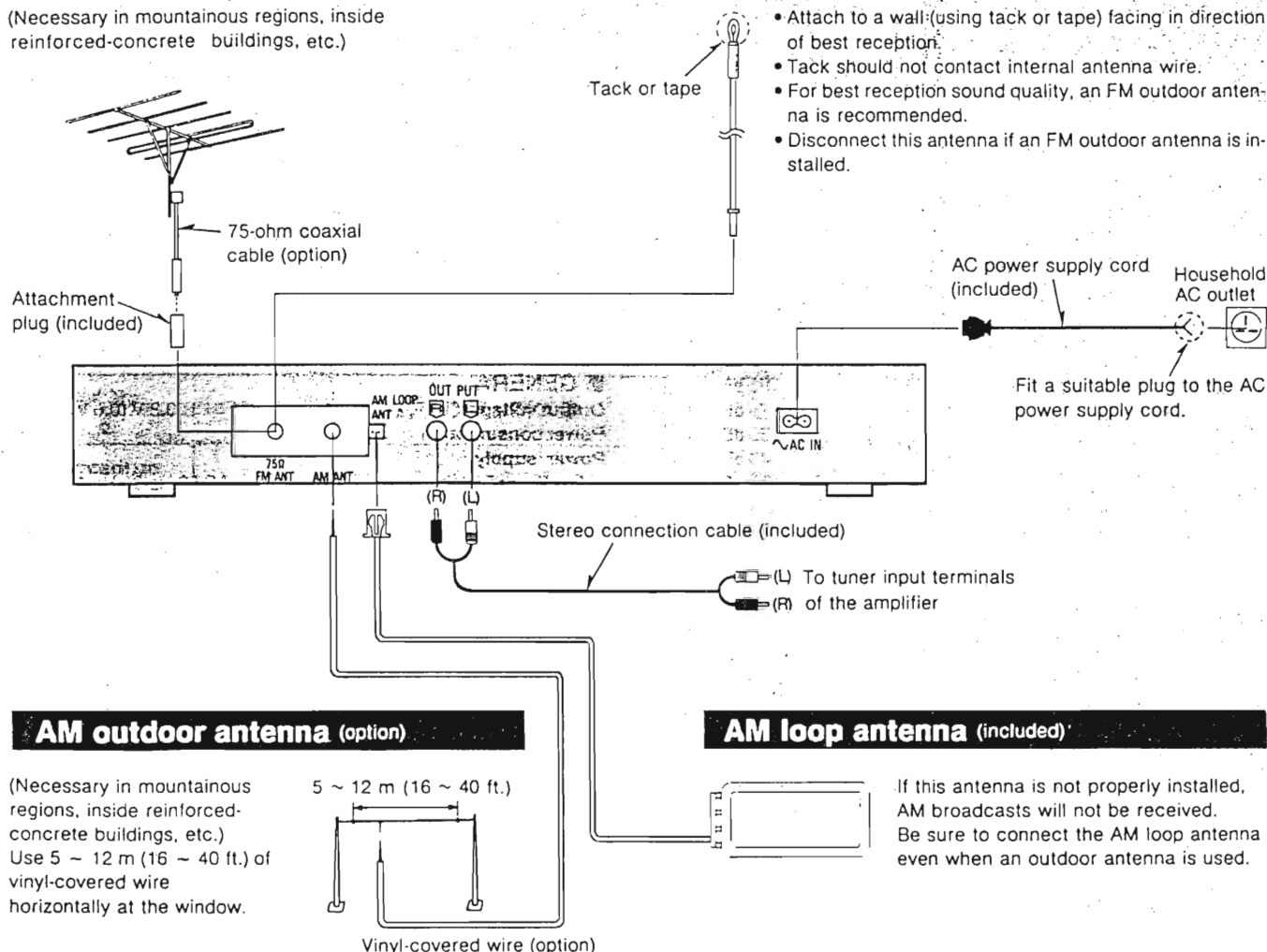
Note: An outdoor antenna should be installed by a competent technician only.

FM outdoor antenna (option)

(Necessary in mountainous regions, inside reinforced-concrete buildings, etc.)

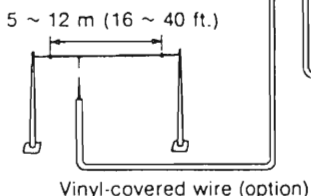
FM indoor antenna (included)

- Attach to a wall-(using tack or tape) facing in direction of best reception.
- Tack should not contact internal antenna wire.
- For best reception sound quality, an FM outdoor antenna is recommended.
- Disconnect this antenna if an FM outdoor antenna is installed.



AM outdoor antenna (option)

(Necessary in mountainous regions, inside reinforced-concrete buildings, etc.)
Use 5 ~ 12 m (16 ~ 40 ft.) of vinyl-covered wire horizontally at the window.



AM loop antenna (included)

If this antenna is not properly installed, AM broadcasts will not be received.
Be sure to connect the AM loop antenna even when an outdoor antenna is used.

LOCATIONS OF CONTROLS

The indication AM used here includes both MW and LW.

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.

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.

Digital frequency display

The reception frequency of the FM or AM broadcast selected by using the tuning buttons or the preset-tuning buttons is indicated by a digital-type display.

Quartz-lock indicator (quartz lock)

This indicator illuminates when tuned precisely to an FM or AM station.

Band selectors (band)

FM:

Press this button to listen to an FM broadcast.

MW:

Press this button to listen to an MW broadcast.

allocation:

This button is also used to select a frequency step of either 9 kHz or 10 kHz.

When the MW button is pressed for about 4 seconds, the MW frequency step will change to 10 kHz per step.

(This step is set to 9 kHz before shipment.)

Set to the appropriate position for your locality.

In order to return to the original frequency indication, press this button for about 4 seconds again.

LW:

Press this button to listen to an LW broadcast.

freq shift:

When the LW button is pressed for about 4 seconds during reception of an LW broadcast, the LW frequency will decrease by 2 kHz.

So, for example, to receive 153 kHz, tune to 155 kHz, and then press this button.

In order to return to the original frequency indication, press this button for about 4 seconds again.



Memory indicator (M)

This indicator illuminates when the memory button is pressed.

Channel display

The channel number selected by the preset-tuning buttons is displayed.

Signal-strength indicators (signal)

These indicators show the relative strength of broadcast signals being received by the antenna. The best condition for reception, for FM and AM, is when the indicators illuminate completely to the right.

Tuning buttons (tuning)

These buttons are used for tuning to the desired broadcast station.

Memory button (memory)

This button is used when preset memory setting of the preset-tuning buttons is made.

FM mode selector (FM mode)

This unit automatically switches into the stereo mode when a stereo broadcast is received. Press this button to listen in the monaural mode. The stereo indicator will not illuminate in the monaural mode.

Preset-tuning buttons (1~0) (24 channel random preset tuning)

These buttons are used to preset FM and AM broadcast frequencies into the memory of this unit, and are also pressed to select the desired preset frequencies.

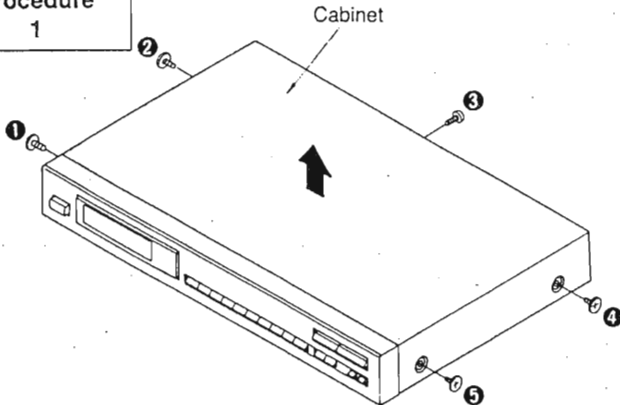
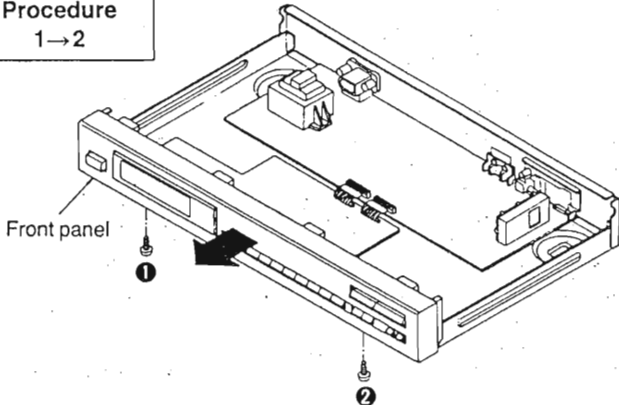
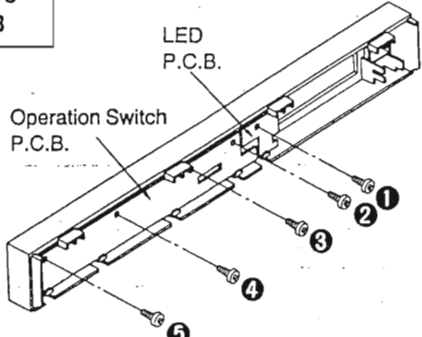
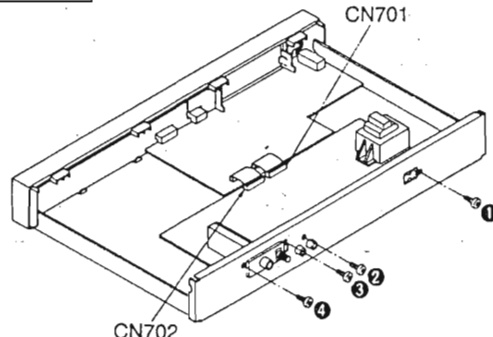

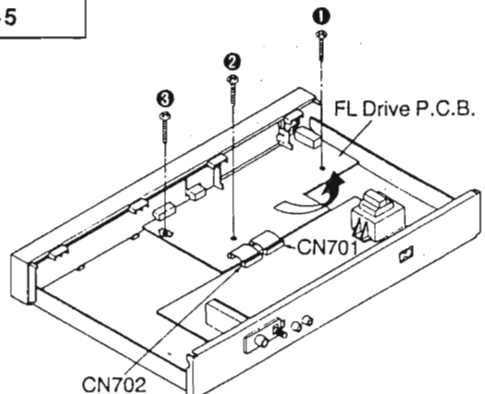
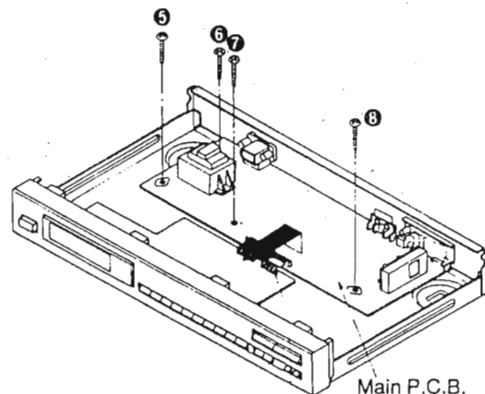
Note:

Refer to page 6 for information concerning preset memory.

DISASSEMBLY INSTRUCTIONS

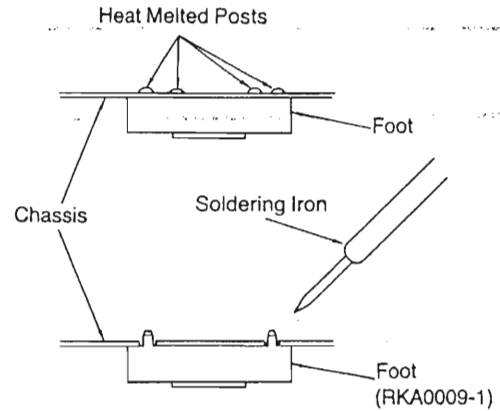
"ATTENTION SERVICER"

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

<p>Ref. No. 1</p>	<p>Removal of the Cabinet</p>	<p>Ref. No. 2</p>	<p>Removal of the Front Panel</p>
<p>Procedure 1</p>	 <p>● Remove the 5 screws (1~5).</p>	<p>Procedure 1→2</p>	 <p>1. Remove the 2 screws (1, 2). 2. Remove the front panel in the direction of the arrow.</p>
<p>Ref. No. 3</p>	<p>Removal of the Operation Switch P.C.B. and LED P.C.B.</p>	<p>Ref. No. 4</p>	<p>Removal of the Main P.C.B.</p>
<p>Procedure 1→2→3</p>	 <p>■ LED P.C.B. ● Remove the 1 screw (1).</p> <p>■ Operation Switch P.C.B. ● Remove the 4 screws (2~5).</p>	<p>Procedure 1→4</p>	<p>1. Remove the 2 connector (CN701, CN702). 2. Remove the 4 screws (1~4).</p>  <p>Removal of the connector</p>  <p>● Release the 2 claws</p>
<p>Ref. No. 5</p>	<p>Removal of the FL Drive P.C.B.</p>		
<p>Procedure 1→5</p>	 <p>1. Remove the 2 connector (CN701, CN702). 2. Remove the 3 screws (1~3). 3. Remove the FL drive P.C.B. in the direction of the arrow.</p>	 <p>3. Remove the 4 screws (5~8). 4. Remove the main P.C.B. in the direction of the arrow.</p>	

● Replacement of the Foot.

1. Remove the 4 heat melted posts on the chassis with a pair of nippers or similar tool.
2. To replace the foot (RKA0009-1) on the chassis, melt the 4 posts with a soldering iron.



■ MEASUREMENTS AND ADJUSTMENTS

■ FM ADJUSTMENT

Control positions and equipment used

- FM signal generator (FM-SG)
- Stereo modulator
- Distortion analyser
- Oscilloscope
- Choke coil (100 μ H)
- Resistor(100k Ω)
- Frequency counter
- DC electronic voltmeter(EVM)

Note: For Z201 and Z202, they are supplied as adjusted parts. So, do not turn the cores of the parts.

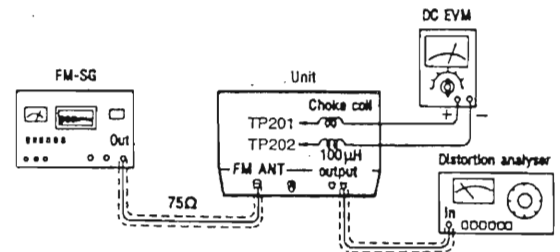
FM MONO DISTORTION ADJUSTMENT

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 100.10MHz.
4. Adjust the core of T201 so that the voltage measured in signal mode is 0mV (0 \pm 20 mV) in 300 mV range.
5. Adjust T202 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

Modulation100%
Modulation frequency1kHz
Output level66dB



MPX VCO ADJUSTMENT

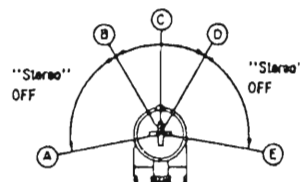
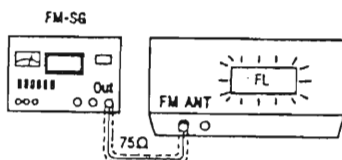
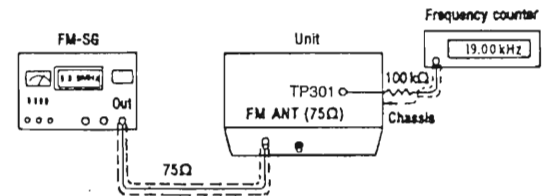
1. Test equipment connection is shown in figure.
2. Set the unit to "auto" position.
3. Set the radio frequency display and signal generator to 100.10MHz.
4. Adjust VR301 for 19kHz \pm 30Hz on frequency counter reading.

● USING ALTERNATE SYSTEM

1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust VR301 until stereo indicator lights up. Fix the arm of VR301 as shown in figure.

FM SIGNAL GENERATOR CONDITION

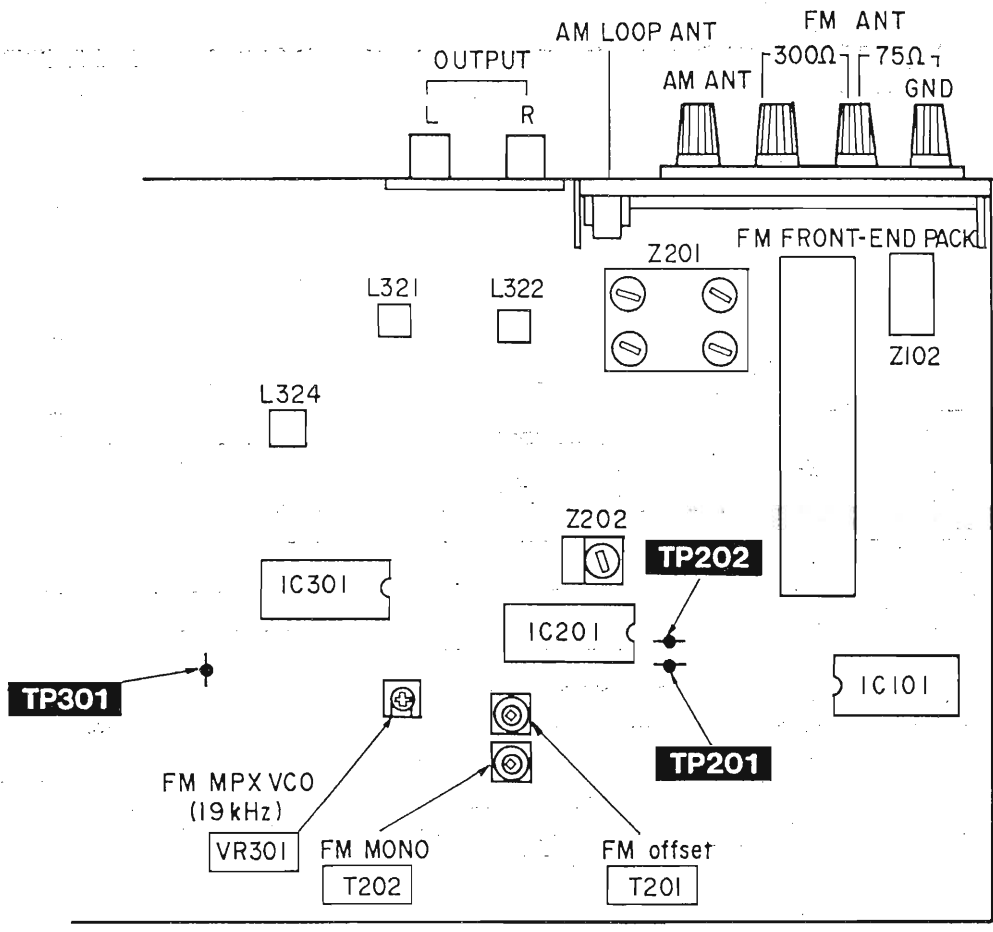
Modulation0%
Modulation frequency0 kHz
Output level66dB



- Ⓐ-Ⓑ, Ⓓ-Ⓔ "Stereo" OFF position
- Ⓑ-Ⓓ "Stereo" ON position (Indicator lighting)
- Ⓒ Adjust point of pilot circuit

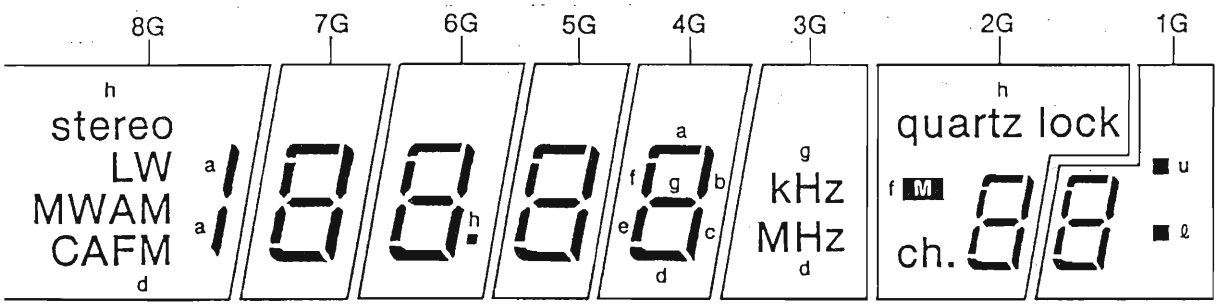
VR301

ADJUSTMENT POINTS



DESCRIPTION OF FL PANEL [FL901 (SAD8MT10ZYK)]

GRID ASSIGNMENT

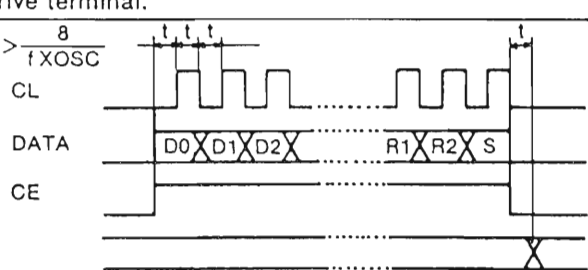


Note: The grid of 3G and 8G are used for external connection.

PIN CONNECTION

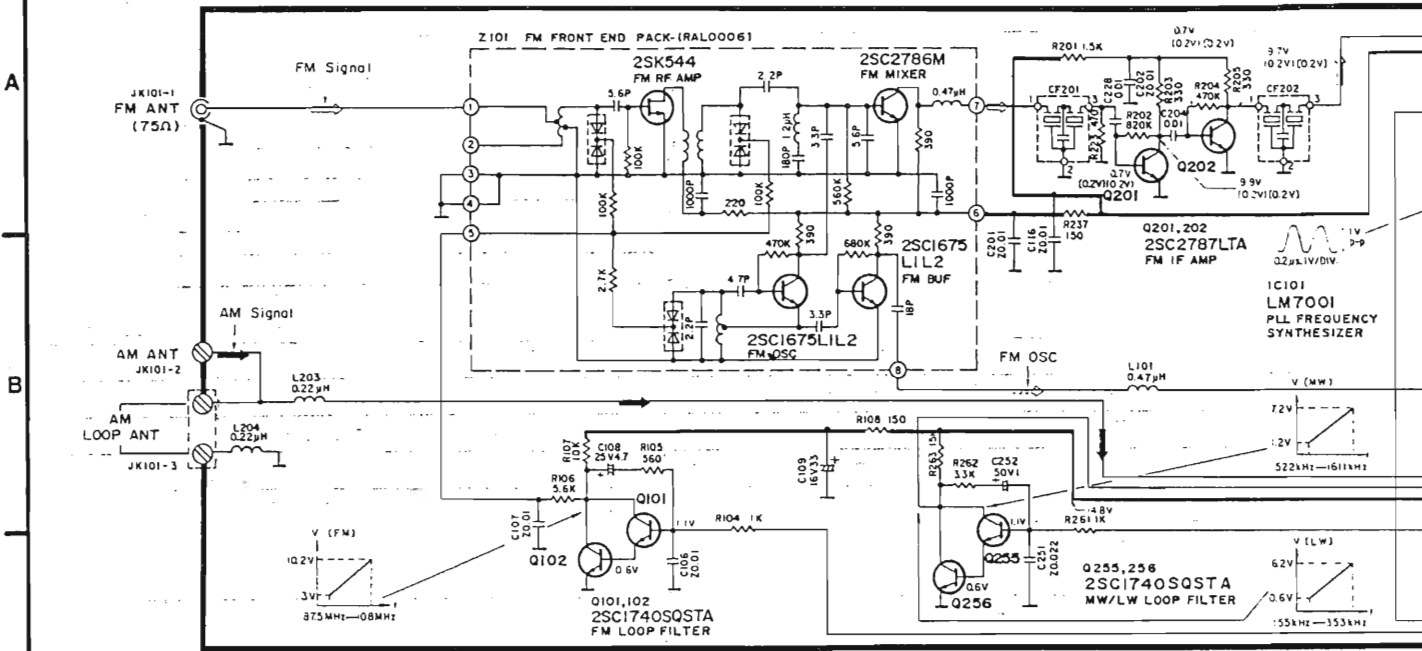
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CONNECTION	F1	F1	NP	h	f	8G	AM	MW	CA	LW	7G	c	a	6G	e	d	g	5G
PIN NO.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
CONNECTION	b	NP	4G	NP	NP	3G	NP	NP	ch	2G	NP	u	1G	l	NP	F2	F2	

FUNCTIONS OF IC TERMINALS (IC901: LC6512A3997)

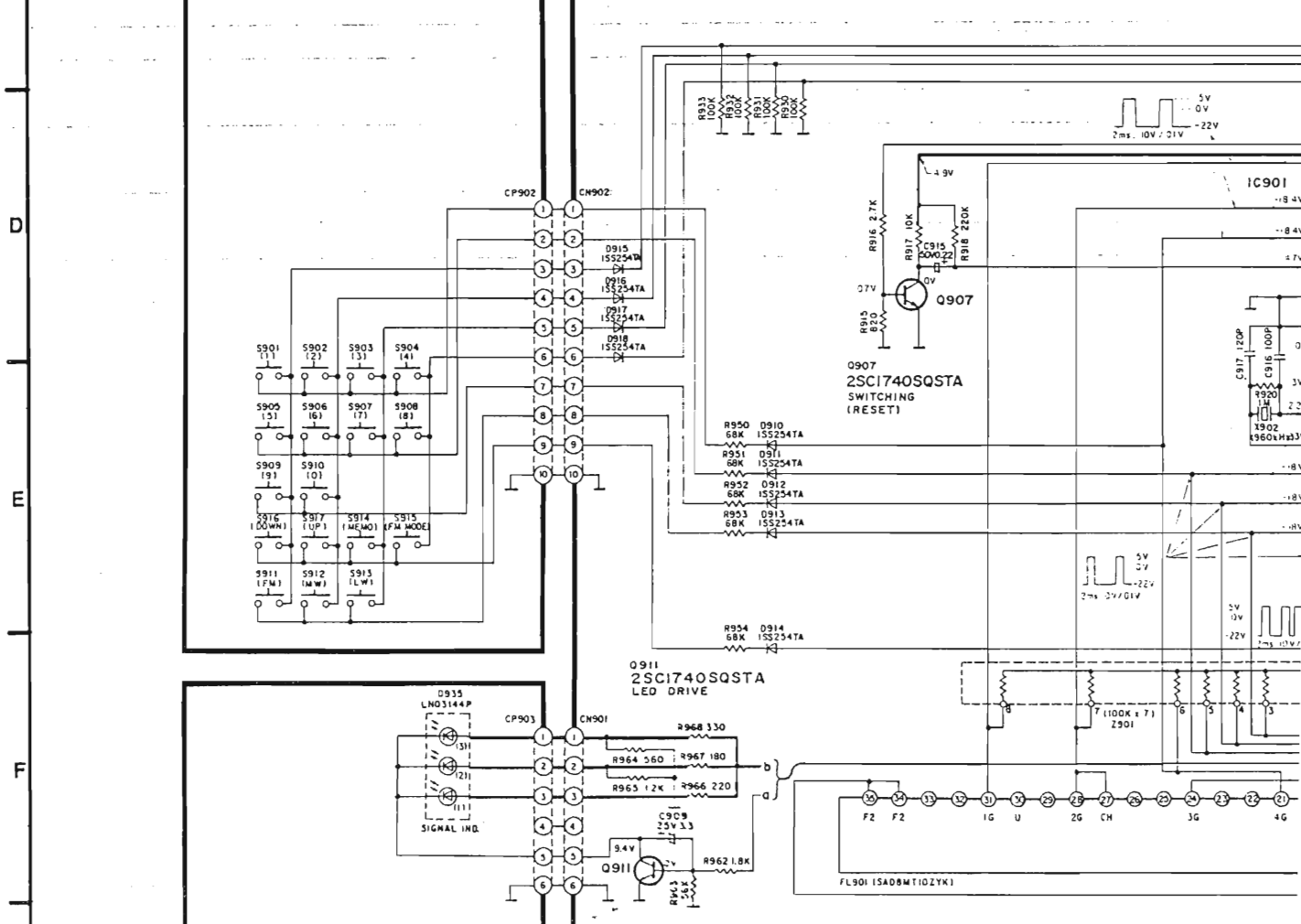
PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL					
1	INPUT	PB3	Computer drive terminal.					
2	OUTPUT	DATA	Data output $t > \frac{8}{f_{XOSC}}$ 					
3		CL						
4		CE						
			f_{XOSC} : Crystal OSC D0~D13: Divided frequency data R0~R2: Reference frequency data					
5	—	PC3	Not used in this unit.					
6	—	NC	Not used in this unit.					
7	OUTPUT	PD0	Auto/mono changeover terminal. (auto → 0V, mono → 5V)					
8	OUTPUT	PD1	Computer drive terminal.					
9	—	PD2	Not used in this unit.					
10		PD3						
11		PE0						
12 14 22 25	OUTPUT	PE1 PE3 PF0 PF3	Digital signal terminal for display. Terminal for key return signal to external key matrix.					
15	INPUT	RES	Reset terminal.					
16	—	TEST	Ground terminal.					
17		V _{SS}						
18	—	NC	Not used in this unit.					
19								
20	INPUT	OSC1	Connecting terminal for crystal oscillator.					
21	OUTPUT	OSC2						
26 29 31 34	OUTPUT	PG0 PG3 PH0 PH3	Segment signal terminal for display.					
30	—	NC	Not used in this unit.					
35	—	NC	Not used in this unit.					
36	OUTPUT	P11	Muting signal terminal. (Muting → High level)					
37	INPUT	HOLD	Terminal for power failure detection.					
38	INPUT	INT	Terminal for remote control cord.					
39	INPUT	V _{DD}	Power supply terminal of device. Voltage of 5V is supplied during operation of device.					
40	INPUT	PA0 PA3	Terminal for key return signal to external key matrix.	[KEY MATRIX]				
41								
44								
45								
42 43				—	NC	Not used in this unit.		
46	INPUT	PB0	Stereo signal terminal.					
47		PB2	SD signal terminal.					
48			Tuner select terminal. (Ground connection)					

1 2 3 4 5

A MAIN CIRCUIT

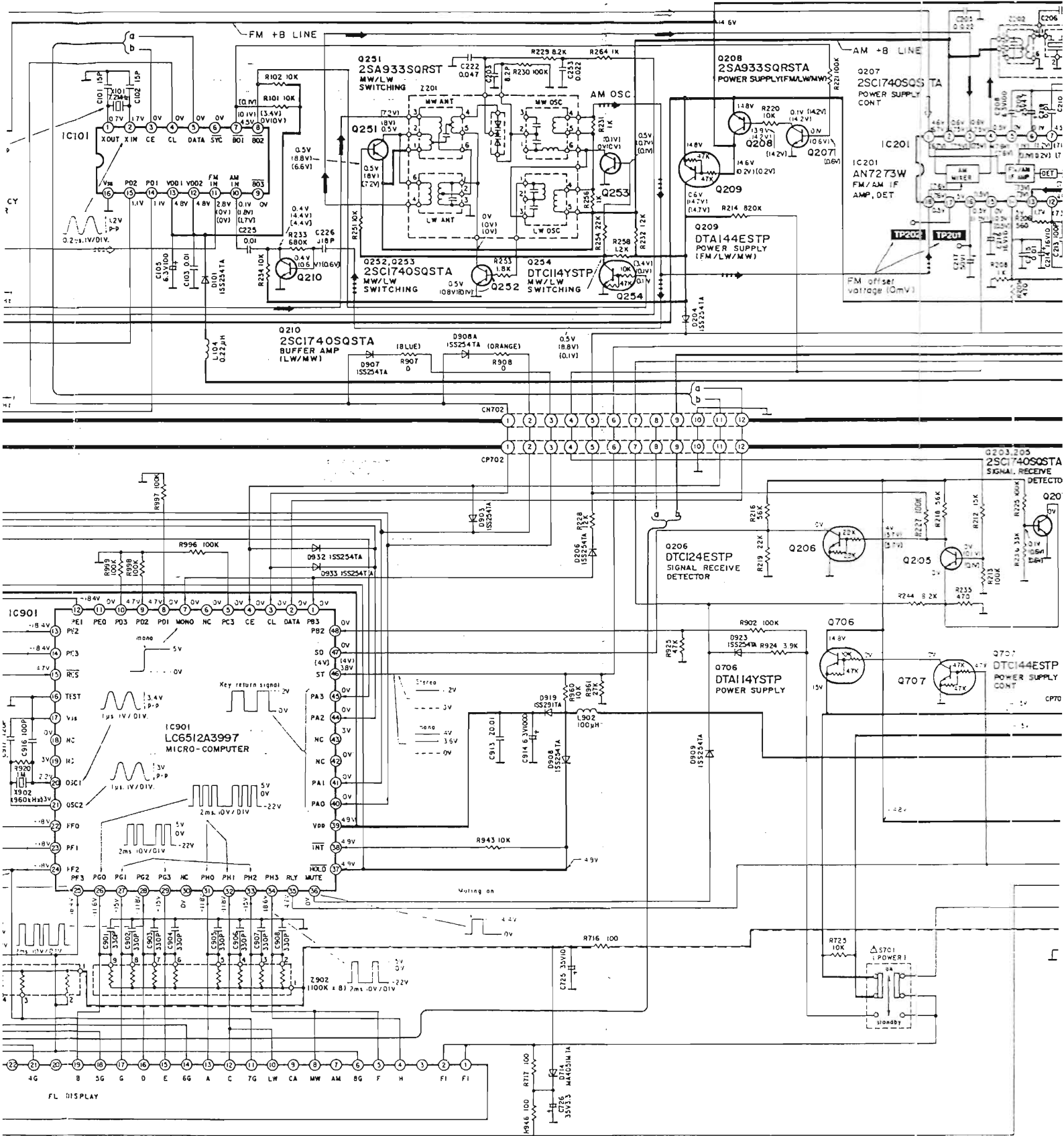


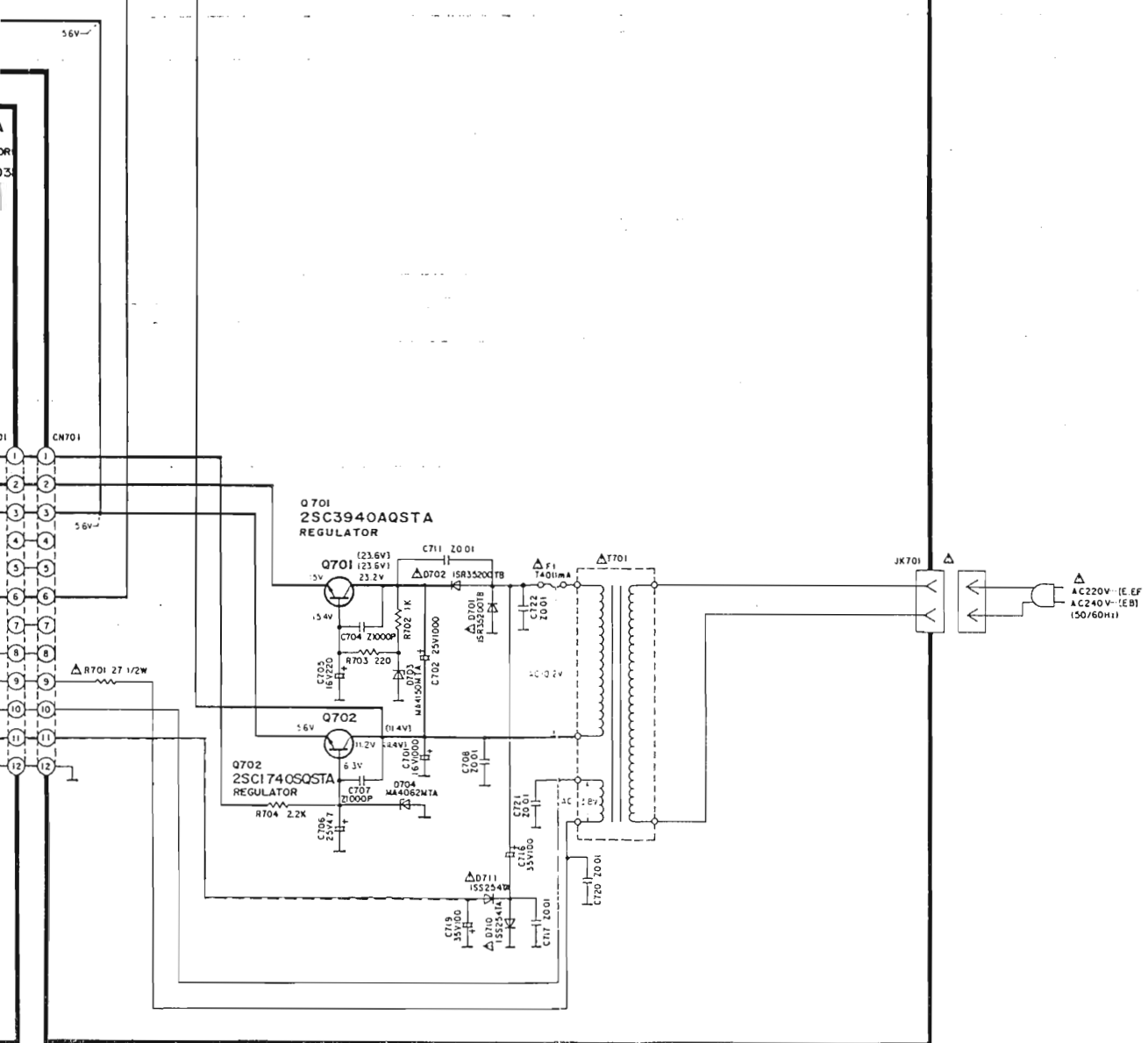
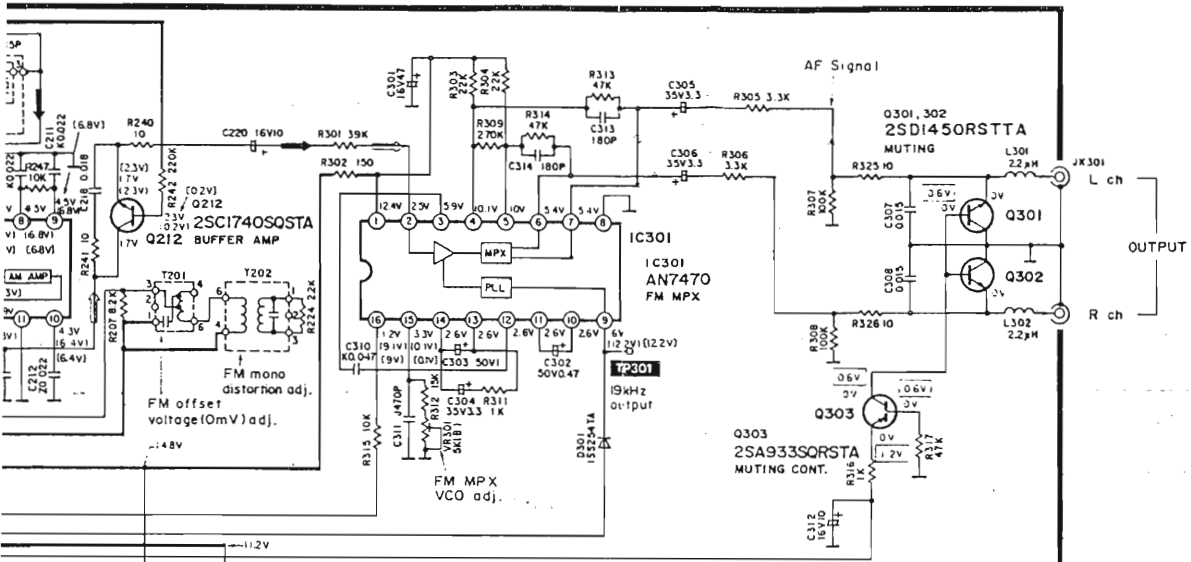
B OPERATION SWITCH CIRCUIT



C LED CIRCUIT

D FL DRIVE CIRCUIT





■ SCHEMATIC DIAGRAM (Parts list on pages 16~18)

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

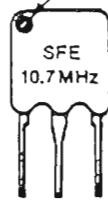
- S701: Power source switch in "on" position.
- S901~910: Preset tuning switches.
 (S901: CH1, S902: CH2, S903: CH3, S904: CH4, S905: CH5, S906: CH6, S907: CH7, S908: CH8, S909: CH9, S910: CH0)
- S911~S913: Band selector switches.
 (S911: FM, S912: MW, S913: LW)
- S914: Memory set switch.
- S915: FM mode selector switch.
- S916, S917: Tuning switches.
 (S916: down, S917: UP)
- 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.
 () : AM voltage, □ : MUTING voltage
- ——— Positive voltage lines ——— Negative voltage line
 □□□□ FM OSC □□□□ FM signal
 ■■■■ AM OSC ■■■■ AM signal
 ~~~~~ AF signal lines
- Important safety notice  
 Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

### ●Use of ceramic filters in pairs

The ceramic filters (CF201, CF202) 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 resistors (R907, R908) for use as different resistors must be used depending on each rank of the ceramic filters.

Color making  
 (Red, Blue or Orange)



| RANK (Color) | R908 | R907 | CENTER FREQUENCY |
|--------------|------|------|------------------|
| Orange       | ○    | ×    | 10.72 MHz        |
| Red          | ×    | ×    | 10.70 MHz        |
| Blue         | ×    | ○    | 10.67 MHz        |

Note: ○ mark: Resistor is used.  
 × mark: Resistor 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 coil.
- 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.

## ■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

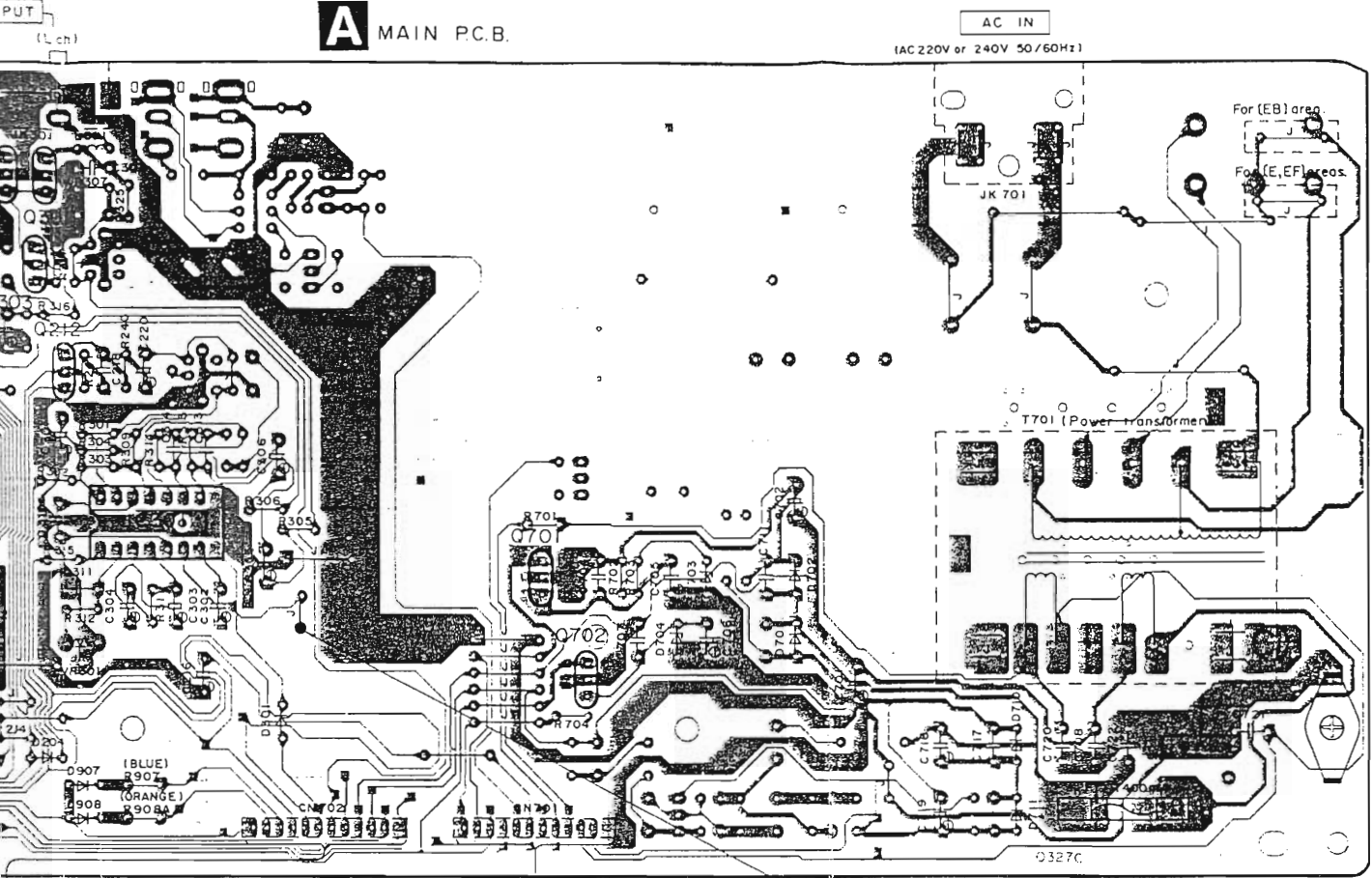
|                                |                  |                                        |                 |                            |                                                                                                   |
|--------------------------------|------------------|----------------------------------------|-----------------|----------------------------|---------------------------------------------------------------------------------------------------|
| LM7001<br>                     | AN7470<br>       | AN7273W<br>                            | LC6512A3997<br> |                            | 2SA933SQSTA<br>2SC1740SQSTA<br>DTA114YSTP<br>DTC114YSTP<br>DTA144ESTP<br>DTC124ESTP<br>DTC144ESTP |
| 2SC2787LTA<br>2SD1450RSTTA<br> | 2SC3940AQSTA<br> | 1SS254TA<br>1SS291TA<br>1SR35200TB<br> | MA4150MTA<br>   | MA4051MTA<br>MA4062MTA<br> | LN031441P<br>                                                                                     |



5 | 6 | 7 | 8 | 9

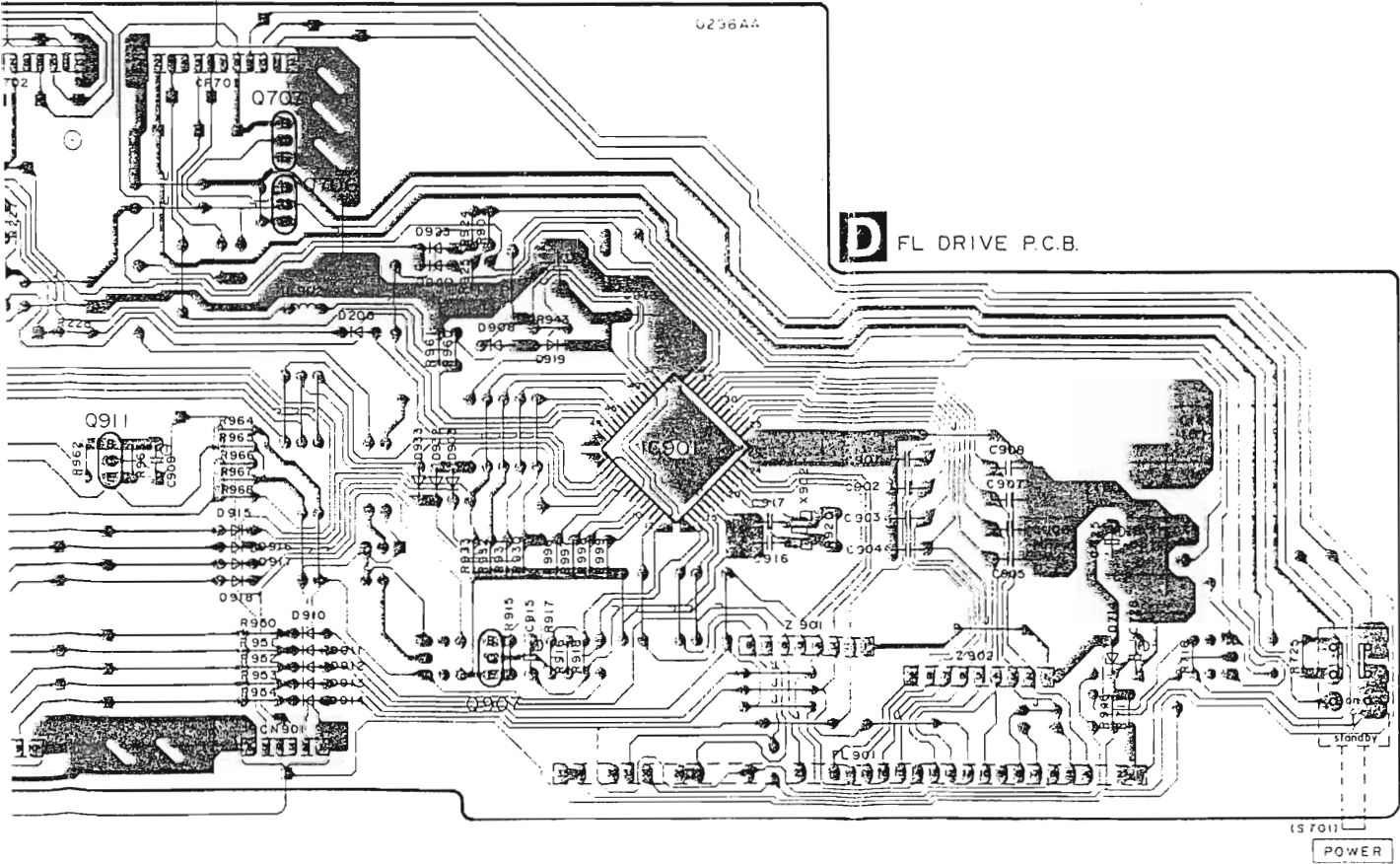
M (Parts list on pages 16~18)

**A** MAIN P.C.B.



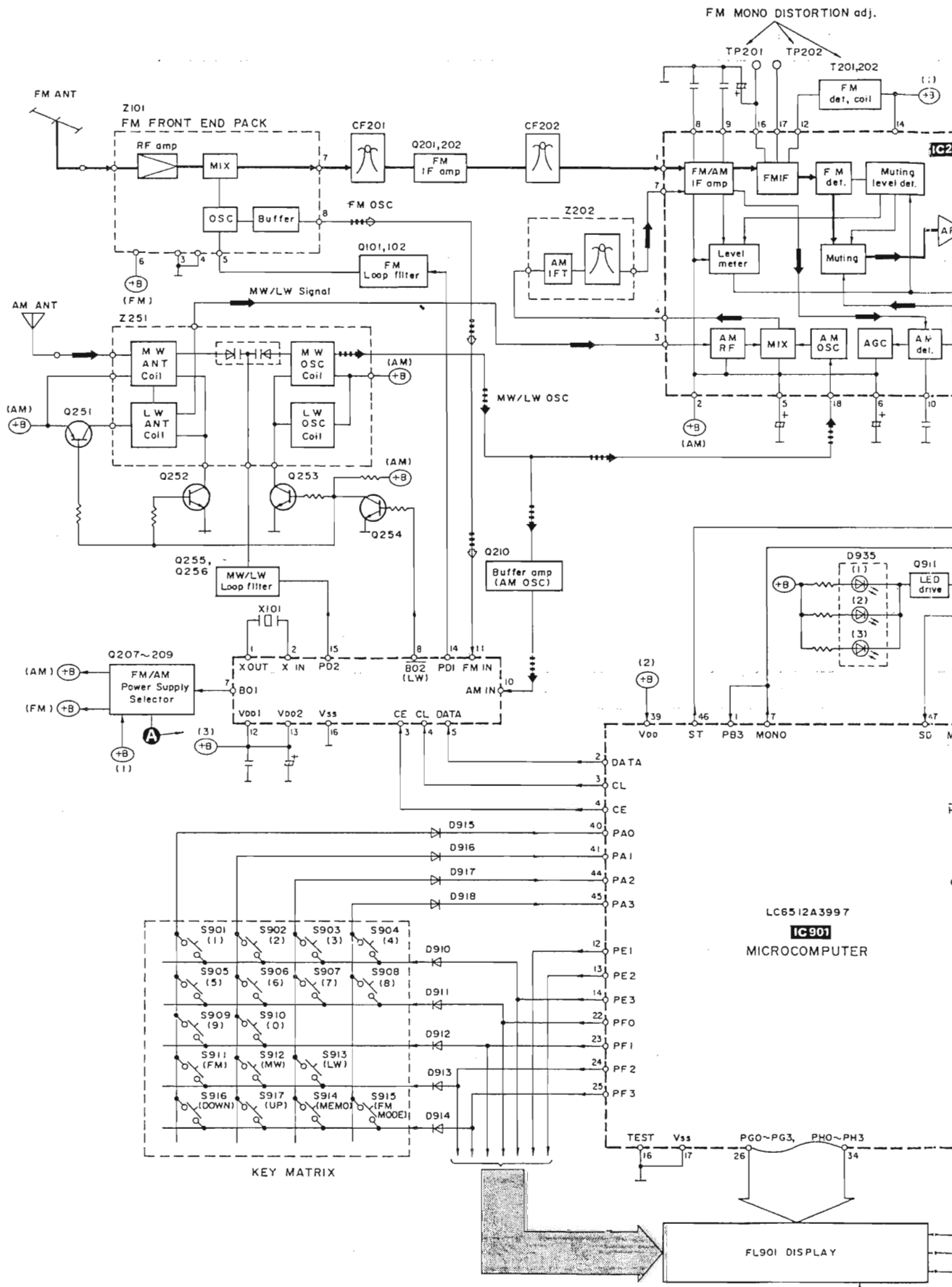
TP301  
19kHz output

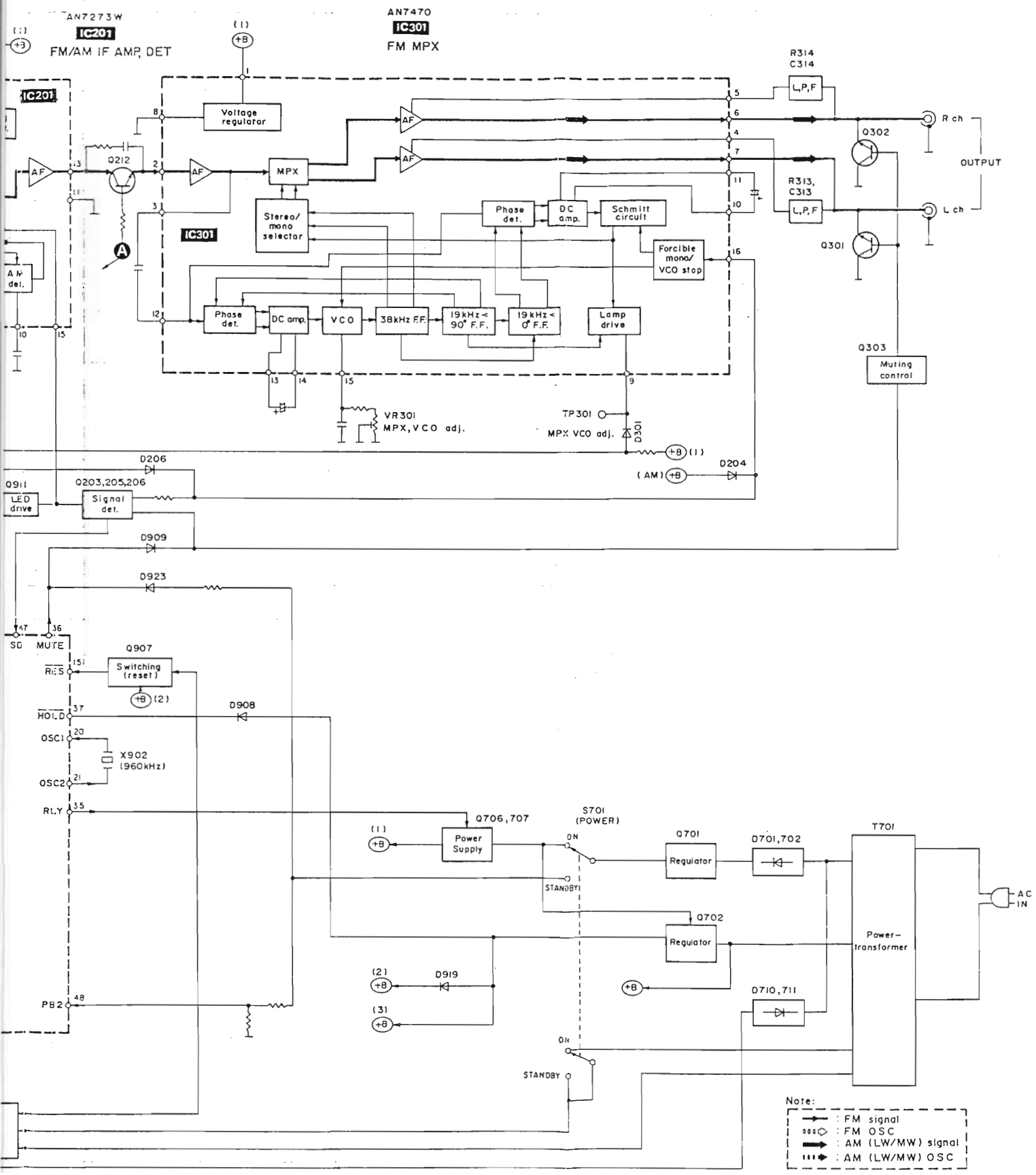
**D** FL DRIVE P.C.B.



# ST-610L

## ■ BLOCK DIAGRAM





## REPLACEMENT PARTS LIST

## Notes: \*Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

\*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.

\*\*"K" mark parts are used for black type only.

\*\*"S" mark parts are used for silver type only.

Parts other than "K" and "S" marked are used for all color types.

[E]: Indicates parts that are supplied by PFS. (Panasonic France S.A. Longwy division).

| Ref. No.   | Part No.     | Part Name & Description | Remarks  | Ref. No.  | Part No.     | Part Name & Description  | Remarks  |
|------------|--------------|-------------------------|----------|-----------|--------------|--------------------------|----------|
|            |              | INTEGRATED CIRCUIT(S)   |          | D908-918  | 1SS254TA     | DIODE                    |          |
|            |              |                         |          | D919      | 1SS291TA     | DIODE                    |          |
|            |              |                         |          | D923      | 1SS254TA     | DIODE                    |          |
| IC101      | LM7001       | IC, PLL FREQUENCY       |          | D932, 933 | 1SS254TA     | DIODE                    |          |
| IC201      | AN7273W      | IC, FM/AM IF AMP. DET   |          | D935      | LN031441P    | L. E. D.                 |          |
| IC301      | AN7470       | IC, FM MPX              |          |           |              | VARIABLE RESISTOR(S)     |          |
| IC901      | LC6512A3997  | IC, MICROCOMPUTER       |          |           |              |                          |          |
|            |              | TRANSISTOR(S)           |          | VR301     | EVNDXAA00B53 | V. R. FM MPX VCO ADJ.    |          |
|            |              |                         |          |           |              | COMPONENT COMBINATION(S) |          |
| Q101, 102  | 2SC1740SQSTA | TRANSISTOR              |          | Z101      | RAL0006      | COMPONENT COMBINATION    |          |
| Q201, 202  | 2SC2787LTA   | TRANSISTOR              |          | Z201      | RLA6Z001-T   | COMPONENT COMBINATION    |          |
| Q203       | 2SC1740SQSTA | TRANSISTOR              |          | Z202      | RLI2Z003M-T  | COMPONENT COMBINATION    |          |
| Q205       | 2SC1740SQSTA | TRANSISTOR              |          | Z901      | EXBF8E104J   | COMPONENT COMBINATION    |          |
| Q206       | DTC124ESTP   | TRANSISTOR              |          | Z902      | EXBF9E104J   | COMPONENT COMBINATION    |          |
| Q207       | 2SC1740SQSTA | TRANSISTOR              |          |           |              |                          |          |
| Q208       | 2SA933SQRSTA | TRANSISTOR              |          |           |              | FILTER(S)                |          |
| Q209       | DTA144ESTP   | TRANSISTOR              |          | CF201     | RLFKTF2M02LA | CERAMIC FILTER           | (RED)    |
| Q210, 212  | 2SC1740SQSTA | TRANSISTOR              |          | CF201     | RLFKTF2M02LB | CERAMIC FILTER           | (BLUE)   |
| Q251       | 2SA933SQRSTA | TRANSISTOR              |          | CF201     | RLFKTF2M02LC | CERAMIC FILTER           | (ORANGE) |
| Q252, 253  | 2SC1740SQSTA | TRANSISTOR              |          | CF202     | RLFKTF2M02LA | CERAMIC FILTER           | (RED)    |
| Q254       | DTC114YSTP   | TRANSISTOR              |          | CF202     | RLFKTF2M02LB | CERAMIC FILTER           | (BLUE)   |
| Q255, 256  | 2SC1740SQSTA | TRANSISTOR              |          | CF202     | RLFKTF2M02LC | CERAMIC FILTER           | (ORANGE) |
| Q301, 302  | 2SD1450RSTTA | TRANSISTOR              |          |           |              | COIL(S)                  |          |
| Q303       | 2SA933SQRSTA | TRANSISTOR              |          | L101      | RLQZPR47KT-Y | COIL                     |          |
| Q701       | 2SC3940AQSTA | TRANSISTOR              |          | L104      | RLQZPR22KT-Y | COIL                     |          |
| Q702       | 2SC1740SQSTA | TRANSISTOR              |          | L203, 204 | ELEPKR22MA   | COIL                     |          |
| Q706       | DTA114YSTP   | TRANSISTOR              |          | L301, 302 | RLQZP2R2KT-Y | COIL                     |          |
| Q707       | DTC144ESTP   | TRANSISTOR              |          | L902      | RLQZP101KT-Y | COIL                     |          |
| Q907       | 2SC1740SQSTA | TRANSISTOR              |          |           |              | TRANSFORMER(S)           |          |
| Q911       | 2SC1740SQSTA | TRANSISTOR              |          | T201      | RLI4B002-Z   | TRANSFORMER              |          |
|            |              | DIODE(S)                |          | T202      | RLI4B003-Z   | TRANSFORMER              |          |
| D101       | 1SS254TA     | DIODE                   |          | T701      | RTP1K4E011   | POWER TRANSFORMER        | $\Delta$ |
| D204       | 1SS254TA     | DIODE                   |          |           |              | OSCILLATOR(S)            |          |
| D206       | 1SS254TA     | DIODE                   |          | X101      | SVQ49U722T-S | OSCILLATOR               |          |
| D301       | 1SS254TA     | DIODE                   |          | X902      | EFOA960KM4A  | OSCILLATOR               |          |
| D701, 702  | 1SR35200TB   | DIODE                   | $\Delta$ |           |              |                          |          |
| D703       | MA4150MTA    | DIODE                   |          |           |              |                          |          |
| D704       | MA4062MTA    | DIODE                   |          |           |              |                          |          |
| D710, 711  | 1SS254TA     | DIODE                   | $\Delta$ |           |              |                          |          |
| D714       | MA4051MTA    | DIODE                   |          |           |              |                          |          |
| D903       | 1SS254TA     | DIODE                   |          |           |              |                          |          |
| D907, 908A | 1SS254TA     | DIODE                   |          |           |              |                          |          |



| Ref. No. | Part No.    | Part Name & Description | Remarks | Ref. No.   | Part No.     | Part Name & Description | Remarks |
|----------|-------------|-------------------------|---------|------------|--------------|-------------------------|---------|
|          |             | DISPLAY TUBE            |         | S915       | EVQ21405R    | SW, FM MODE             |         |
|          |             |                         |         | S916       | EVQ21405R    | SW, TUNING DOWN         |         |
|          |             |                         |         | S917       | EVQ21405R    | SW, TUNING UP           |         |
| FL901    | SAD8MT10ZYK | DISPLAY TUBE            |         |            |              | JACK(S)                 |         |
|          |             | SWITCH(ES)              |         |            |              |                         |         |
| S701     | RSP3B001-J  | SW, POWER               | △       | JK101      | RJH4202      | ANTENNA TERMINAL        |         |
| S901     | EVQ21405R   | SW, CH1                 |         | JK301      | RJH3201N     | OUTPUT TERMINAL         |         |
| S902     | EVQ21405R   | SW, CH2                 |         | JK701      | SJS9236      | AC OUTLET               | △       |
| S903     | EVQ21405R   | SW, CH3                 |         | JK704      | EYF52BC      | FUSE HOLDER             | △       |
| S904     | EVQ21405R   | SW, CH4                 |         | JK705      | EYF52BC      | FUSE HOLDER             | △       |
| S905     | EVQ21405R   | SW, CH5                 |         | CN701, 702 | RJU005W012   | SOCKET (12P)            |         |
| S906     | EVQ21405R   | SW, CH6                 |         | CN901      | RJU003K006M1 | SOCKET (6P)             |         |
| S907     | EVQ21405R   | SW, CH7                 |         | CN902      | RJU003K010M1 | SOCKET (10P)            |         |
| S908     | EVQ21405R   | SW, CH8                 |         | CP701, 702 | RJT005W012   | CONNECTOR (12P)         |         |
| S909     | EVQ21405R   | SW, CH9                 |         | CP902      | RJT003K010M1 | CONNECTOR (10P)         |         |
| S910     | EVQ21405R   | SW, CH0                 |         | CP903      | RJT003K006M1 | CONNECTOR (6P)          |         |
| S911     | EVQ21405R   | SW, BAND FM             |         |            |              | FUSE (S)                |         |
| S912     | EVQ21405R   | SW, BAND MW             |         |            |              |                         |         |
| S913     | EVQ21405R   | SW, BAND LW             |         | F1         | XBA2C04TBO   | FUSE 250V 0.4A          | △       |
| S914     | EVQ21405R   | SW, MEMORY              |         |            |              |                         |         |

Notes : \* Capacity value are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)  
 \* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000k (OHM)

| Ref. No.  | Part No.    | Values & Remarks | Ref. No.  | Part No.    | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks |
|-----------|-------------|------------------|-----------|-------------|------------------|-----------|--------------|------------------|
|           |             | RESISTORS        | R219      | ERDS2TJ223T | 1/4W 22K         | R254      | ERDS2TJ223T  | 1/4W 22K         |
|           |             |                  | R220      | ERDS2TJ103T | 1/4W 10K         | R256      | ERDS2TJ102T  | 1/4W 1K          |
|           |             |                  | R221      | ERDS2TJ104T | 1/4W 100K        | R258      | ERDS2TJ122T  | 1/4W 1.2K        |
| R101, 102 | ERDS2TJ103T | 1/4W 10K         | R223      | ERDS2TJ471T | 1/4W 470         | R261      | ERDS2TJ102T  | 1/4W 1K          |
| R104      | ERDS2TJ102T | 1/4W 1K          | R224      | ERDS2TJ222T | 1/4W 2.2K        | R262      | ERDS2TJ332T  | 1/4W 3.3K        |
| R105      | ERDS2TJ561T | 1/4W 560         | R225      | ERDS2TJ104T | 1/4W 100K        | R263      | ERDS2TJ153T  | 1/4W 15K         |
| R106      | ERDS2TJ562T | 1/4W 5.6K        | R227      | ERDS2TJ104T | 1/4W 100K        | R264      | ERDS2TJ102T  | 1/4W 1K          |
| R107      | ERDS2TJ103T | 1/4W 10K         | R228      | ERDS2TJ123T | 1/4W 12K         | R301      | ERDS2TJ393T  | 1/4W 39K         |
| R108      | ERDS2TJ151T | 1/4W 150         | R229      | ERDS2TJ822T | 1/4W 8.2K        | R302      | ERDS2TJ151T  | 1/4W 150         |
| R201      | ERDS2TJ152T | 1/4W 1.5K        | R230      | ERDS2TJ104T | 1/4W 100K        | R303, 304 | ERDS2TJ223T  | 1/4W 22K         |
| R202      | ERDS2TJ824T | 1/4W 820K        | R231      | ERDS2TJ102T | 1/4W 1K          | R305, 306 | ERDS2TJ332T  | 1/4W 3.3K        |
| R203      | ERDS2TJ331T | 1/4W 330         | R232      | ERDS2TJ122T | 1/4W 1.2K        | R307, 308 | ERDS2TJ104T  | 1/4W 100K        |
| R204      | ERDS2TJ474T | 1/4W 470K        | R233      | ERDS2TJ684T | 1/4W 680K        | R309      | ERDS2TJ274T  | 1/4W 270K        |
| R205      | ERDS2TJ331T | 1/4W 330         | R234      | ERDS2TJ103T | 1/4W 10K         | R311      | ERDS2TJ102T  | 1/4W 1K          |
| R206      | ERDS2TJ561T | 1/4W 560         | R235      | ERDS2TJ471T | 1/4W 470         | R312      | ERDS2TJ153T  | 1/4W 15K         |
| R207      | ERDS2TJ822T | 1/4W 8.2K        | R236      | ERDS2TJ333T | 1/4W 33K         | R313, 314 | ERDS2TJ473T  | 1/4W 47K         |
| R208      | ERDS2TJ102T | 1/4W 1K          | R237      | ERDS2TJ151T | 1/4W 150         | R315      | ERDS2TJ103T  | 1/4W 10K         |
| R209      | ERDS2TJ471T | 1/4W 470         | R240, 241 | ERDS2TJ100T | 1/4W 10          | R316      | ERDS2TJ102T  | 1/4W 1K          |
| R212      | ERDS2TJ153T | 1/4W 15K         | R242      | ERDS2TJ224T | 1/4W 220K        | R317      | ERDS2TJ473T  | 1/4W 47K         |
| R213      | ERDS2TJ104T | 1/4W 100K        | R244      | ERDS2TJ822T | 1/4W 8.2K        | R325, 326 | ERDS2TJ100T  | 1/4W 10          |
| R214      | ERDS2TJ824T | 1/4W 820K        | R247      | ERDS2TJ103T | 1/4W 10K         | R701      | ERDS1FVJ270T | 1/4W 27          |
| R216      | ERDS2TJ563T | 1/4W 56K         | R251      | ERDS2TJ103T | 1/4W 10K         | R702      | ERDS2TJ102T  | 1/4W 1K          |
| R218      | ERDS2TJ563T | 1/4W 56K         | R253      | ERDS2TJ182T | 1/4W 1.8K        | R703      | ERDS2TJ221T  | 1/4W 220         |

| Ref. No. | Part No.     | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks |  |  |  |
|----------|--------------|------------------|-----------|--------------|------------------|--|--|--|
| 704      | ERDS2TJ222T  | 1/4W 2.2K        | C220      | ECEA1CK100B  | 16V 10U          |  |  |  |
| 716, 717 | ERDS2TJ101T  | 1/4W 100         | C222      | ECFR1E473KR  | 25V 0.047U       |  |  |  |
| 725      | ERDS2TJ103T  | 1/4W 10K         | C225      | ECBT1C103NS5 | 16V 0.01U        |  |  |  |
| 902      | ERDS2TJ104T  | 1/4W 100K        | C226      | ECBT1H180JCS | 50V 18P          |  |  |  |
| 907, 908 | ERD25V0R00T  | 1/4W 0           | C228      | ECBT1C103NS5 | 16V 0.01U        |  |  |  |
| 915      | ERDS2TJ821T  | 1/4W 820         | C251      | ECKR1H223ZF5 | 50V 0.022U       |  |  |  |
| 916      | ERDS2TJ272T  | 1/4W 2.7K        | C252      | ECEA1HK010B  | 50V 1U           |  |  |  |
| 917      | ERDS2TJ103T  | 1/4W 10K         | C253      | ECKR1H223ZF5 | 50V 0.022U       |  |  |  |
| 918      | ERDS2TJ224T  | 1/4W 220K        | C301      | ECEA1CU470B  | 16V 47U          |  |  |  |
| 920      | ERDS2TJ105T  | 1/4W 1M          | C302      | ECEA1HKR47B  | 50V 0.47U        |  |  |  |
| 924      | ERDS2TJ392T  | 1/4W 3.9K        | C303      | ECEA1HK010B  | 50V 1U           |  |  |  |
| 925      | ERDS2TJ473T  | 1/4W 47K         | C304-306  | ECEA1VK3R3B  | 35V 3.3U         |  |  |  |
| 930-933  | ERDS2TJ104T  | 1/4W 100K        | C307, 308 | ECFR1E153KR  | 25V 0.015U       |  |  |  |
| 943      | ERDS2TJ103T  | 1/4W 10K         | C310      | ECFR1E473KR  | 25V 0.047U       |  |  |  |
| 946      | ERDS2TJ101T  | 1/4W 100         | C311      | ECQP1471JZ3  | 50V 470P         |  |  |  |
| 950-954  | ERDS2TJ683T  | 1/4W 68K         | C312      | ECEA1CK100B  | 16V 10U          |  |  |  |
| 960      | ERDS2TJ103T  | 1/4W 10K         | C313, 314 | ECBT1H181KB5 | 50V 180P         |  |  |  |
| 961      | ERDS2TJ273T  | 1/4W 27K         | C701      | ECEA1CU222YB | 16V 2200U        |  |  |  |
| 962      | ERDS2TJ182T  | 1/4W 1.8K        | C702      | ECEA1EU102B  | 25V 1000U        |  |  |  |
| 963      | ERDS2TJ563T  | 1/4W 56K         | C704      | ECKR1H102ZF5 | 50V 1000P        |  |  |  |
| 964      | ERDS2TJ561T  | 1/4W 560         | C705      | ECEA1CU221B  | 16V 220U         |  |  |  |
| 965      | ERDS2TJ122T  | 1/4W 1.2K        | C706      | ECEA1EK4R7B  | 25V 4.7U         |  |  |  |
| 966      | ERDS2TJ221T  | 1/4W 220         | C707      | ECKR1H102ZF5 | 50V 1000P        |  |  |  |
| 967      | ERDS2TJ181T  | 1/4W 180         | C708      | ECKR1H103ZF5 | 50V 0.01U        |  |  |  |
| 968      | ERDS2TJ331T  | 1/4W 330         | C711      | ECKR1H103ZF5 | 50V 0.01U        |  |  |  |
| 996-999  | ERDS2TJ104T  | 1/4W 100K        | C716      | ECEA1VU101B  | 35V 100U         |  |  |  |
|          |              |                  | C717      | ECKR1H103ZF5 | 50V 0.01U        |  |  |  |
|          |              | CAPACITORS       | C719      | ECEA1VU101B  | 35V 100U         |  |  |  |
|          |              |                  | C720-722  | ECKR1H103ZF5 | 50V 0.01U        |  |  |  |
| 101, 102 | ECBT1H150JCS | 50V 15P          | C725      | ECEA1VK100B  | 35V 10U          |  |  |  |
| 103      | ECBT1C103NS5 | 16V 0.01U        | C726      | ECEA1VK3R3B  | 35V 3.3U         |  |  |  |
| 105      | ECEA0JU101B  | 6.3V 100U        | C901-908  | ECKR1H331KB5 | 50V 330P         |  |  |  |
| 106, 107 | ECKR1H103ZF5 | 50V 0.01U        | C909      | ECEA1EK3R3B  | 25V 3.3U         |  |  |  |
| 108      | ECEA1EK4R7B  | 25V 4.7U         | C913      | ECKR1H103ZF5 | 50V 0.01U        |  |  |  |
| 109      | ECEA1CU330B  | 16V 33U          | C914      | ECEA0JU102B  | 6.3V 1000U       |  |  |  |
| 116      | ECKR1H103ZF5 | 50V 0.01U        | C915      | ECEA1HKR22B  | 50V 0.22U        |  |  |  |
| 201, 202 | ECKR1H103ZF5 | 50V 0.01U        | C916      | ECBT1H101KB5 | 50V 100P         |  |  |  |
| 203      | ECBT1H8R2KCS | 50V 8.2P         | C917      | ECBT1H121KB5 | 50V 120P         |  |  |  |
| 204      | ECBT1C103NS5 | 16V 0.01U        |           |              |                  |  |  |  |
| 205      | ECKR1H223ZF5 | 50V 0.022U       |           |              |                  |  |  |  |
| 206      | ECBT1H150JCS | 50V 15P          |           |              |                  |  |  |  |
| 208      | ECEA0JU101B  | 6.3V 100U        |           |              |                  |  |  |  |
| 209      | ECEA1EK4R7B  | 25V 4.7U         |           |              |                  |  |  |  |
| 210, 211 | ECFR1E223KR  | 25V 0.022U       |           |              |                  |  |  |  |
| 212      | ECBT1E223ZF5 | 25V 0.022U       |           |              |                  |  |  |  |
| 213      | ECBT1H101KB5 | 50V 100P         |           |              |                  |  |  |  |
| 214      | ECEA1CK100B  | 16V 10U          |           |              |                  |  |  |  |
| 215      | ECBT1C103NS5 | 16V 0.01U        |           |              |                  |  |  |  |
| 216      | ECEA1CK100B  | 16V 10U          |           |              |                  |  |  |  |
| 217      | ECEA1HK010B  | 50V 1U           |           |              |                  |  |  |  |
| 218      | ECFR1E183KR  | 25V 0.018U       |           |              |                  |  |  |  |
| 219      | ECBT1C103NS5 | 16V 0.01U        |           |              |                  |  |  |  |

| Ref. No. | Part No.     | Part Name & Description | Remarks  |
|----------|--------------|-------------------------|----------|
|          |              | CABINET PARTS           |          |
| 1        | RKM0032-K    | CABINET                 | K        |
| 1        | RKM0032-S    | CABINET                 | S        |
| 2        | SNE2129-1    | SCREW                   | K        |
| 2        | SNE2129      | SCREW                   | S        |
| 3        | XTBS3+8JFZ1  | SCREW                   |          |
| 4        | RGRO081D-C   | REAR PANEL              | (E)      |
| 4        | RGRO081D-A   | REAR PANEL              | (EB)     |
| 4        | RFKHT610LEF  | REAR PANEL              | (EF) [F] |
| 5        | RGU0030      | POWER BUTTON            | K        |
| 5        | RGU0030-S    | POWER BUTTON            | S        |
| 6        | RFKJT610LE-K | CHASSIS ASS'Y           |          |
| 6-1      | RKA0009-1    | FOOT                    |          |
| 7        | RMG0145      | RUBBER                  |          |
| 8        | RMR0277      | FL HOLDER               |          |
| 9        | RFKGT610LE-K | FRONT PANEL ASS'Y       | K        |
| 9        | RFKGT610LE-S | FRONT PANEL ASS'Y       | S        |
| 10       | RFKWT610LE-K | FRONT GRILL ASS'Y       | K        |
| 10       | RFKWT610LE-S | FRONT GRILL ASS'Y       | S        |
| 11       | RGU0357-K    | TUNING BUTTON           | K        |
| 11       | RGU0357-S    | TUNING BUTTON           | S        |
| 12       | RGU0358-K    | CHANNEL BUTTON          | K        |
| 12       | RGU0358-S    | CHANNEL BUTTON          | S        |
| 13       | RGU0360-K    | MODE BUTTON             | K        |
| 13       | RGU0360-S    | MODE BUTTON             | S        |
| 14       | SHE187-2     | HOLDER                  |          |
| 15       | XTBS26+8J    | SCREW                   |          |
| 16       | XTB3+20JFZ   | SCREW                   |          |

| Ref. No. | Part No.     | Part Name & Description | Remarks   |
|----------|--------------|-------------------------|-----------|
|          |              | PACKING MATERIAL        |           |
| P1       | RPG0493      | CARTON BOX              | K (E, EB) |
| P1       | RPG0494      | CARTON BOX              | S (E, EB) |
| P1       | RPG0498      | CARTON BOX              | (EF) [F]  |
| P2       | RPN0325      | PAD                     | (E, EB)   |
| P2       | RPN0124-1    | PAD                     | (EF) [F]  |
| P3       | SPSD152      | ACCESSORIES BOX         |           |
| P4       | XZB52X60A01Z | PROTECTION COVER        |           |
|          |              | ACCESSORIES             |           |
| A1       | RQA0013      | WARRANTY CARD           |           |
| A2       | RQC80169     | SERVICENTOR LIST        |           |
| A3       | RFKST610LE-K | INSTRUCTIONS MANUAL     | (E)       |
| A3       | RQT0518-B    | INSTRUCTIONS MANUAL     | (EB) [F]  |
| A3       | RQT0712-F    | INSTRUCTIONS MANUAL     | (EF)      |
| A4       | SFDAC05E03   | POWER CORD              | △ (E, EF) |
| A4       | SJA193       | POWER CORD              | △ (EB)    |
| A5       | SJP2276      | STEREO PIN CORD         |           |
| A6       | SPB1163T     | AM LOOP ANTENNA ASS'Y   |           |
| A6-1     | SMA233-1M    | HOLDER                  |           |
| A6-2     | XTN3+10AFZ   | SCREW                   |           |
| A7       | SSA270M      | FM ANTENNA              |           |
| A8       | SJP9009      | ATTACHMENT PLUG         | (EB, EF)  |

EXPLODED VIEW

