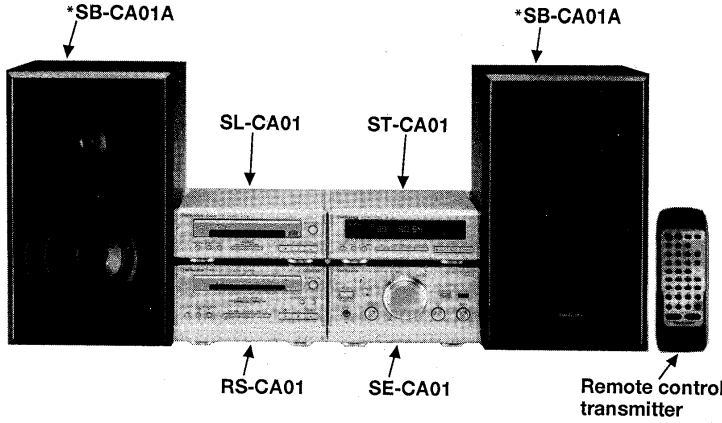
ORDER NO. AD9603076C2

Service Manual

Tuner

ST-CA01

Tuner



Colour

(N)...Gold Type

Areas

Suffix for Model No.	Area	Colour
(E)	Europe.	(N)
(EG)	Germany and Italy.	

System: SC-CA01

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

■SPECIFICATIONS

■Pre-amplifier section

Input sensitivity/impedance
EXTERNAL 250 mV/15 kΩ
Output level
EXTERNAL 150 mV/1.5 kΩ
Frequency response
EXTERNAL 50 Hz—25 kHz
S/N
EXTERNAL DIN 82 dB (83 dB, IHF)

■FM tuner section

Frequency range 87.50—108.00 MHz (0.05 MHz steps)
Sensitivity 1.8 µV (IHF usable)
S/N 26 dB 1.5 µV
S/N
MONO 70 dB (75 dB, IHF)
Stereo separation
1kHz 35 dB
Antenna terminal(s) 75Ω (unbalance)

■AM tuner section

Frequency range 522—1611 kHz (9 kHz steps)
530—1620 kHz (10 kHz steps)
Sensitivity (S/N 20 dB) 500 µV/m

■Timer section

Clock Quartz-lock type
Function 24-hour programmable;
Play timer (1 time), Rec timer (1 time)
Sleep (120 min., 30 min. intervals)
Setting 1 minute—23 hours 59 minutes (1 min. intervals)

■General

Dimensions (W×H×D) 186×67×235 mm
Weight 1.2 kg

Note:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

System	Tuner	CD Player	Amplifier	Cassette deck	Speakers
SC-CA01	**ST-CA01**	SL-CA01	SE-CA01	RS-CA01	* SB-CA01A

* Made in PAES

⚠ WARNING

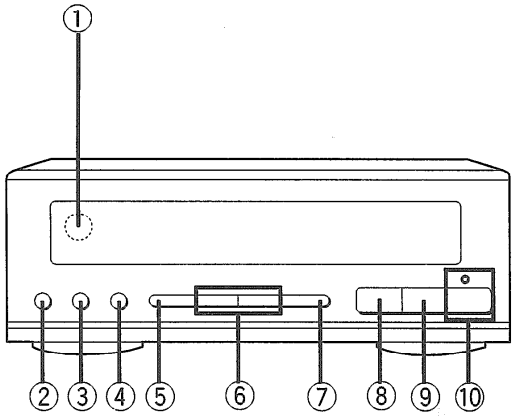
This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

CONTENTS

NOTE:
Refer to the service manual for Model No. SE-CA01 (ORDER No. AD9603074C2) for information on "ACCESSORIES", "INSTALLATION ", "CONNECTIONS" and "PACKAGING".

LOCATION OF CONTROLS



① Remote control signal sensor (SENSOR)
② Record timer button (◴ REC)
③ Play timer button (◴ PLAY)
④ Clock/timer button (CLOCK/TIMER)
⑤ Set button (SET)
⑥ Tuning/time adjust buttons (∨, ∧ TUNING/TIME ADJUST)
⑦ Tuning mode select button (TUNING MODE)
⑧ Source input select button (INPUT SELECTOR)
⑨ RDS display mode select button (RDS DISPLAY MODE)
⑩ Band select button and indicator (TUNER FM/AM)

SETTING THE TIME

The tuner displays the time, frequency and other information on CDs and tapes.

This is a 24-hours display clock.
These instructions explain how to set the timer for 16:25 (4:25 p.m.) on Wednesday.

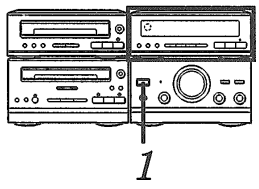
1 **Switch on the power.**

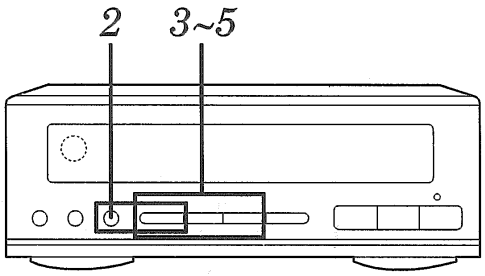
2 **① Press CLOCK/TIMER to show "CLOCK".**
Within 8 seconds:
Every time you press the button, the indication changes in the order of CLOCK → ◴ REC → ◴ PLAY →Original display.
② Press SET.

3 **① Press ∨ or ∧ to select the day.**
Every time you press one of the buttons, the indication changes in the order of SUN ⇄ MON ⇄ TUE ⇄ WED ⇄ THU ⇄ FRI ⇄ SAT.
② Press SET.

4 **① Press ∨ or ∧ to select the hour.**
② Press SET.

5 **① Press ∨ or ∧ to select the minutes.**
② Press SET to finish setting the time.
The display will return to the previous display after about 4 seconds.





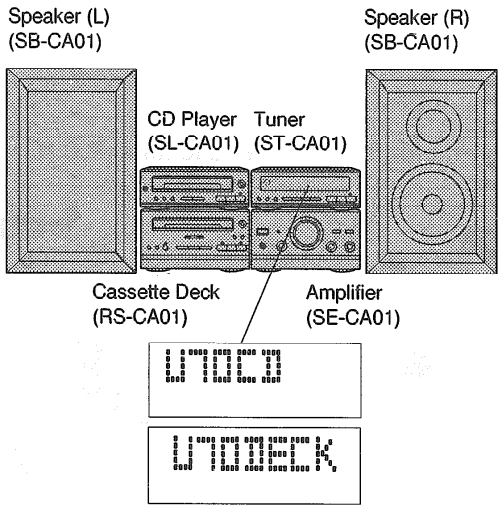
When "SUN 0:00" flashes:
If flashes when you connect the AC power supply cord for the first time or if there has been a power failure.
If this happens, reset the time.

If the minutes setting has gone wrong:
1. Press CLOCK/TIMER.
2. Press SET 3 times.
3. Press ∨ or ∧ to set the minutes, and then press SET.

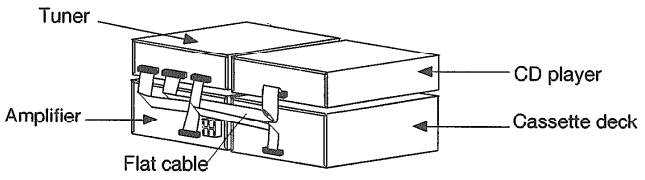
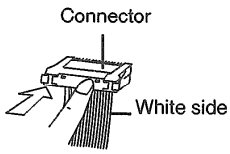
To display the clock again:
Press CLOCK/TIMER.
The clock display will appear for about 10 seconds.

■ABOUT THE SELF-DIAGNOSTIC MODE

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically displays a code indicating the nature of the malfunctions. Use this self-diagnostic function when servicing the unit.

Display method	Display location
To display the malfunction code U70 CD: U70 DECK:.... Automatically displays on the tuner when a malfunction occurs. F61 ..... Automatically displays on the tuner when a malfunction occurs. **To return to the normal display** **1. For U70 CD/U70 DECK:** • Press an any operation button on the tuner. • To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again. **2. For F61:** • If "F61" is displayed, the power will automatically be switched off and the standby indicator will light up. • "F61" will be displayed for 3 seconds, and then the clock will be displayed. • To re-display the code, switch the power on. "F61" will be redisplayed, and then after 3 seconds the clock will be displayed and the power will automatically switch off.	

Display contents

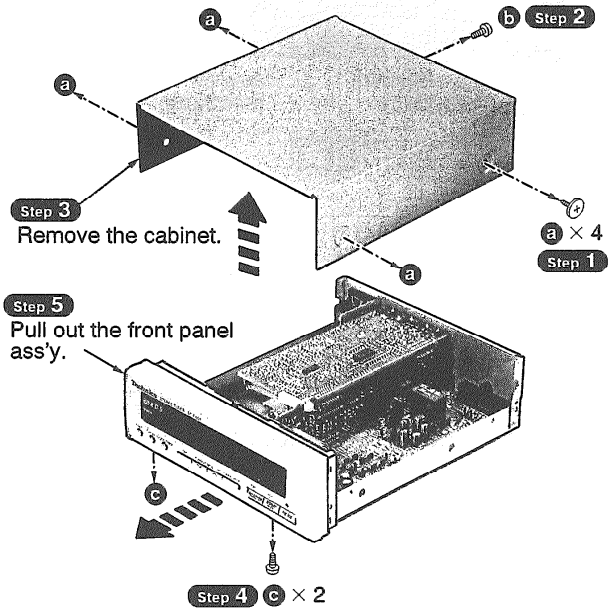
Display code	Problem or condition	Correction procedure
U70 CD **U70 DECK** (displayed automatically)	A bus-line communications error has occurred as a result of the flat cables being inserted incorrectly, thus preventing the system from operating. 1. If "U70" is displayed on the tuner, the Cassette deck or CD changer cannot be operated by remote control.	 1. To check for correct insertion of the flat cables ①Match each connector with the color (black/ white) of the connection port and insert until you hear a click. ②Insert the flat cables at the back of the unit in the order indicated. Make sure the white side of the cable is on your right side.  2. Breakage of flat cable (Check and replace as necessary.) 3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC. **ST-CA01:** IC901 (M38197MA119F) **SL-CA01:** IC403 (LC66356B4H02) **RS-CA01:** IC701 (M37471M4264F) Check these IC's and replace as necessary.
F61	When the power switch is switched on, it automatically switches back off, making it impossible to switch power on.	• Faulty amplifier (SE-CA01) output IC (IC505, 506). (When a DC voltage is applied to the speaker terminals.)

■ Operation Check and Main Component Replacement Procedures

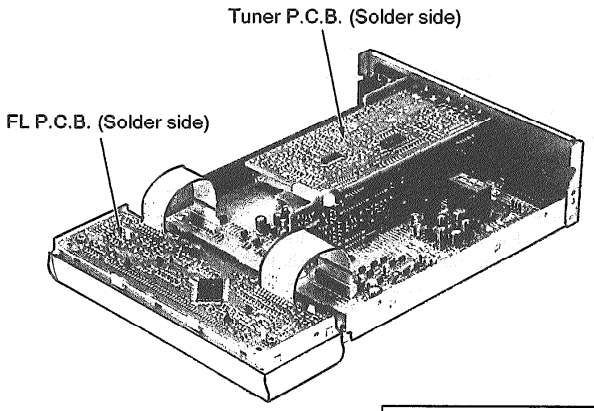
NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Illustrated screws are equivalent to actual size.

1. Checking for the FL P.C.B. and tuner P.C.B.



• Check the FL P.C.B. and tuner P.C.B. as shown below.

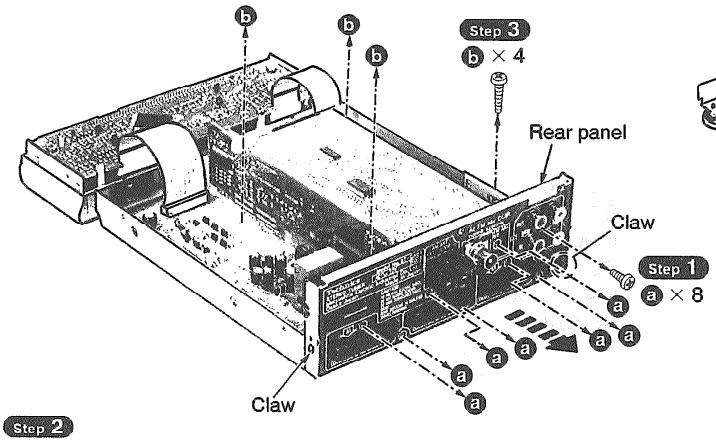


(Silver) [RHD30007–S]

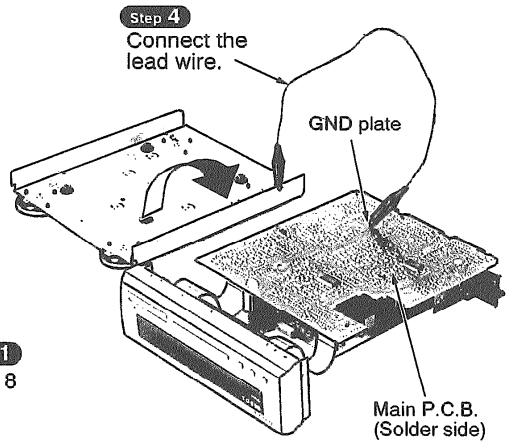
(Black) [XTB3+8JFZ]

(Black) [XTBS3+8JFZ1]

2. Checking for the main P.C.B.



• Check the main P.C.B. as shown below.



(Black) [XTBS3+8JFZ1]

(Black) [XTB3+12JFZ]

■TO SUPPLY POWER SOURCE

This unit ST-CA01 is designed to operate on power supplied from the Amplifier SE-CA01. When operating the unit ST-CA01 alone for testing and servicing, without having power supplied from the Amplifier SE-CA01, use the following method.

Power Supply to Main Circuit

1. Short the section between the test points TP602 ([CT]) and TP610 ([D.GND]), and as well as the section between the test points [A.GND] and TP610 ([D.GND]).
2. Connect the 10V AC power to pin ① of the indicator module FL901 and the GND terminal to pin ⑭ of the same FL901 module.
3. Apply 10V AC power to the section between the point TP601 ([AC]) and the point TP602 ([CT]) as well as the section between the point TP603 ([AC]) and the point TP602 ([CT]). This unit comes to stand-by mode.
4. Short the section between the test points TP611 and TP610 ([D.GND]) for a moment. The main circuit comes to power ON mode. (Whenever this operation is performed, power, ON/OFF mode is repeated.)

To Check Signals

Connect the oscilloscope to the section between the point LINE OUT (Rch) of jumper J610 and the point TP610 ([D.GND]) as well as the section between the point LINE OUT (Lch) of jumper J611 and the TP610 ([D.GND]), or the speaker with the built-in amplifier to the EXTERNAL (OUT) terminals and check if the signals are outputting from this unit.

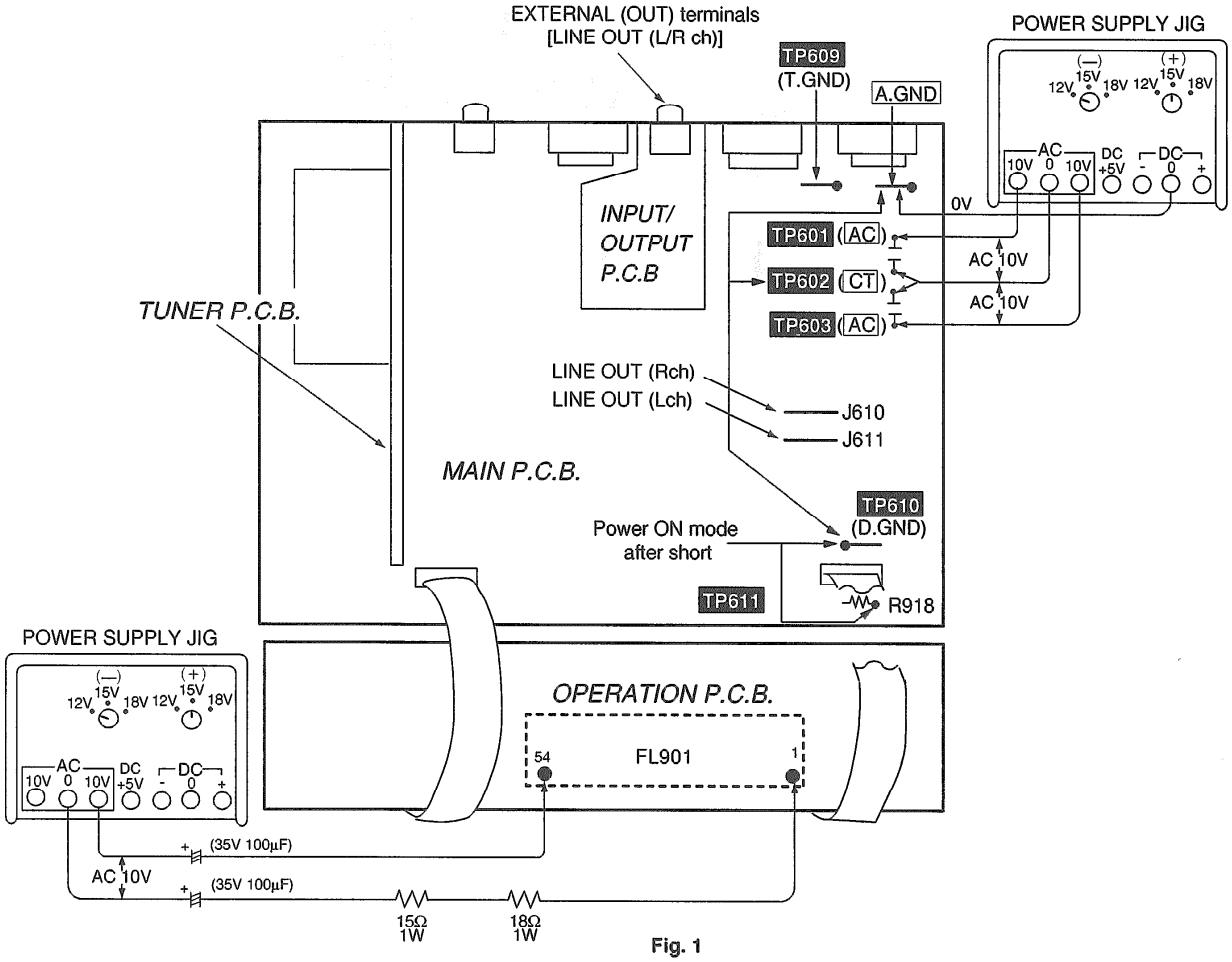
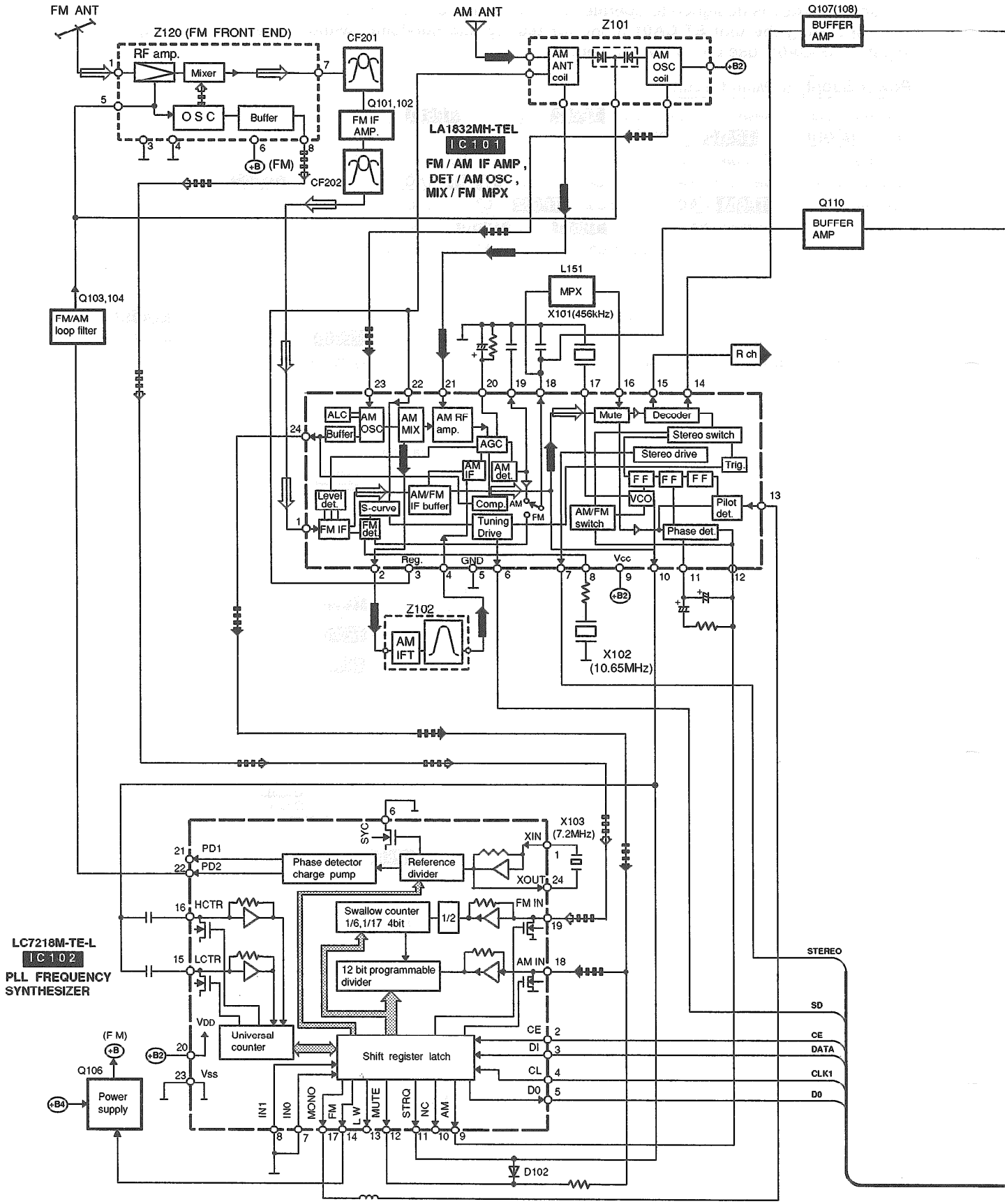
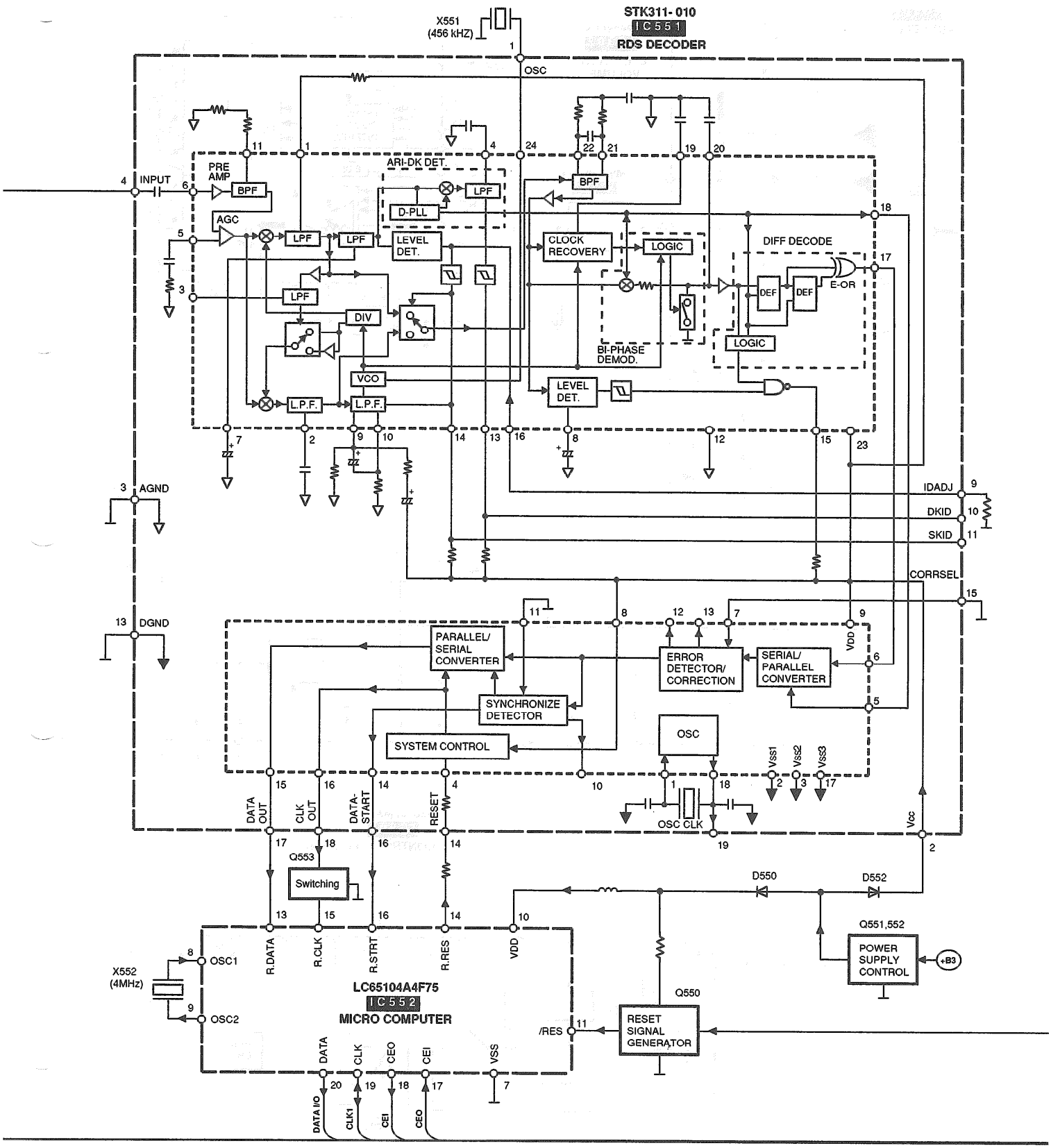


Fig. 1

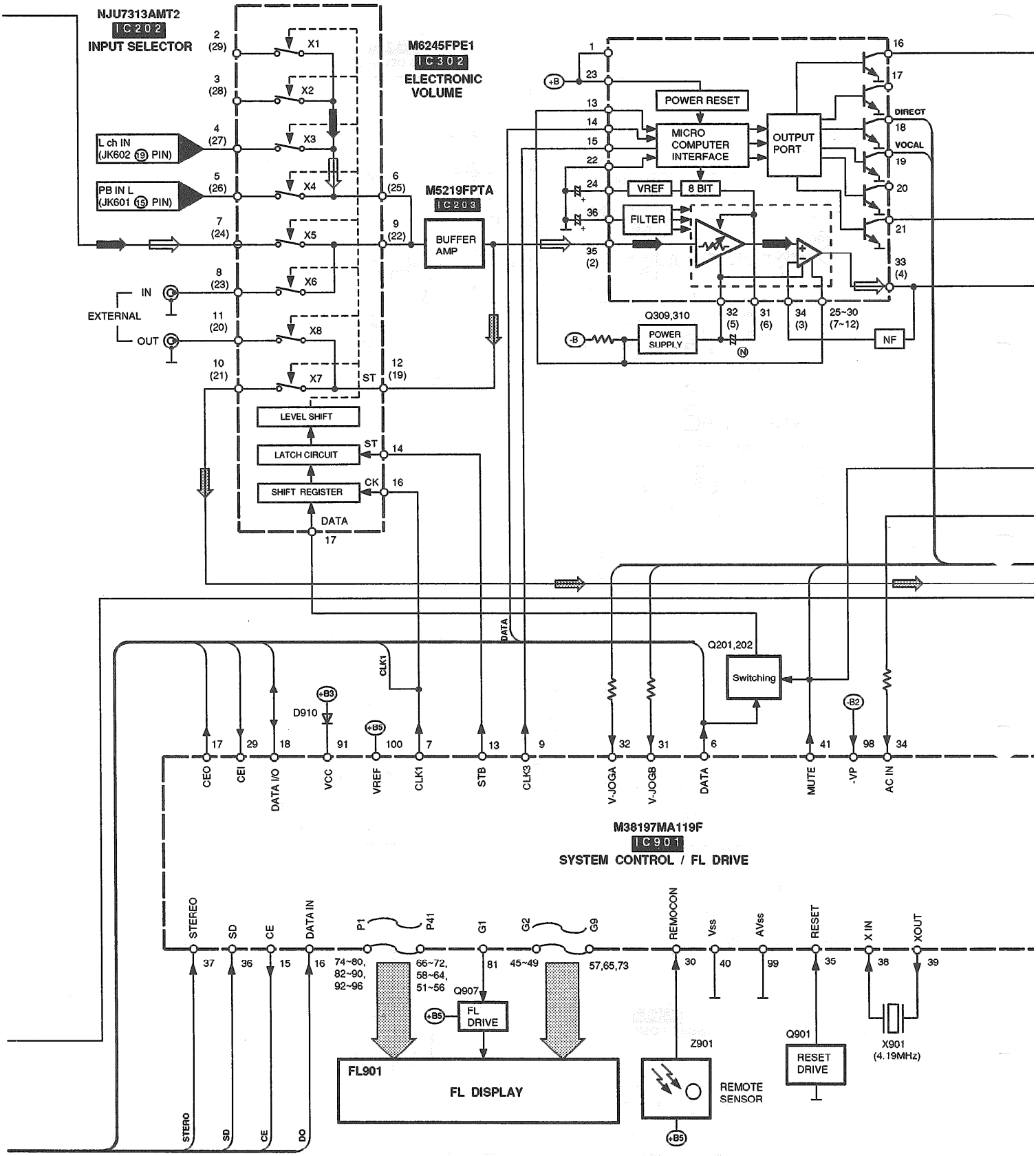
BLOCK DIAGRAM

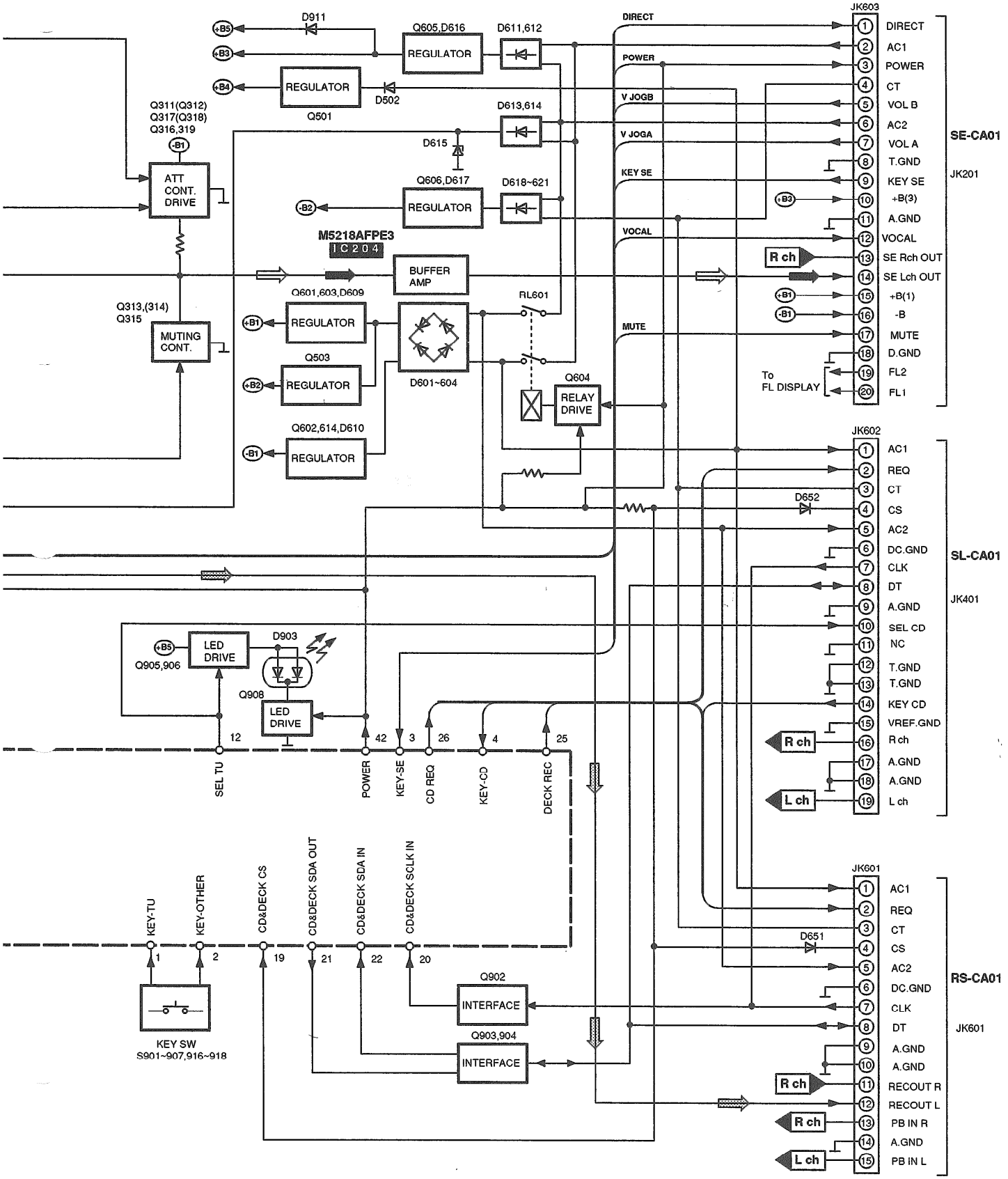


● Signal line : FM signal : FM OSC signal : AM signal : AM OSC signal
: Rec out signal ※ ( ) indicates pin No. of right channel.

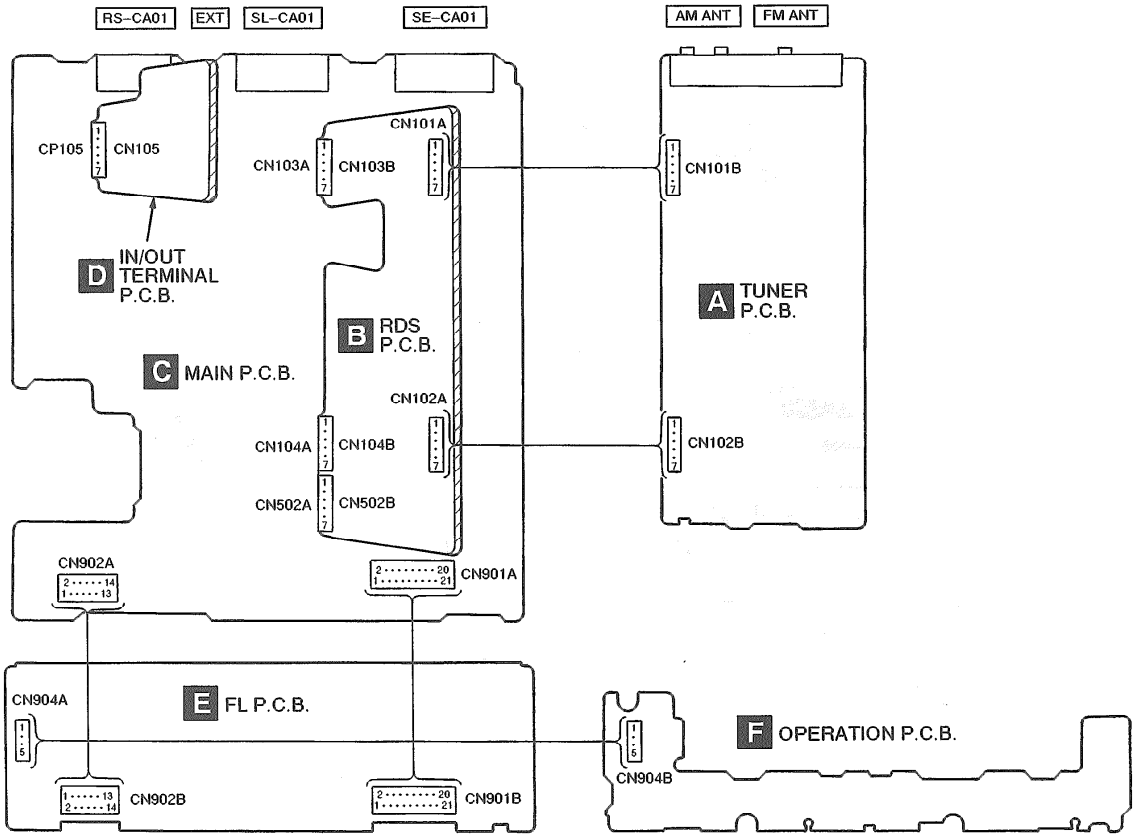


● Signal line : FM signal : FM OSC signal : AM signal : AM OSC signal
: Rec out signal ※ ( ) indicates pin No. of right channel.

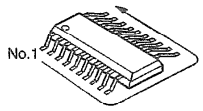



+B5
+B3
+B4
D911
Q605,D616
REGULATOR
D611,612
REGULATOR
D502
Q501
Q311(Q312)
Q317(Q318)
Q316,319
-B1
ATT CONT. DRIVE
D613,614
D615
Q606,D617
-B2
REGULATOR
D618~621
M5218AFPE3
IC204
BUFFER AMP
Q313,(314)
Q315
MUTING CONT.
Q601,603,D609
+B1
REGULATOR
RL601
D601~604
Q503
+B2
REGULATOR
Q604
RELAY DRIVE
Q602,614,D610
+B1
REGULATOR
DIRECT
POWER
V JOGB
V JOGA
KEY SE
VOCAL
MUTE
JK603
1 DIRECT
2 AC1
3 POWER
4 CT
5 VOL B
6 AC2
7 VOL A
8 T.GND
9 KEY SE
10 +B(3)
11 A.GND
12 VOCAL
13 R ch SE Rch OUT
14 SE Lch OUT
15 +B(1)
16 -B
17 MUTE
18 D.GND
19 FL2
20 FL1
To FL DISPLAY
SE-CA01
JK201
JK602
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 A.GND
10 SEL CD
11 NC
12 T.GND
13 T.GND
14 KEY CD
15 VREF.GND
16 R ch
17 A.GND
18 A.GND
19 L ch
D652
SL-CA01
JK401
+B5
LED DRIVE
Q905,906
D903
Q908
LED DRIVE
12
42
3
26
4
25
SEL TU
POWER
KEY-SE
CD REQ
KEY-CD
DECK REC
KEY-TU
KEY-OTHER
CD&DECK CS
CD&DECK SDA OUT
CD&DECK SDA IN
CD&DECK SCLK IN
1
2
19
21
22
20
KEY SW
S901~907,916~918
Q902
INTERFACE
Q903,904
INTERFACE
JK601
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 A.GND
10 A.GND
11 R ch RECOUT R
12 RECOUT L
13 R ch PB IN R
14 A.GND
15 L ch PB IN L
D651
RS-CA01
JK601

WIRING CONNECTION DIAGRAM

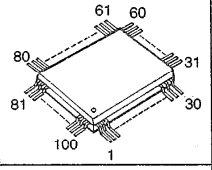


● Terminal guide of IC's transistors and diodes

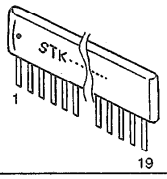


M5218AFPE3	8PIN
M5219FPTA	8PIN
LA1832MH-TEL	24PIN
LC7218M-TE-L	24PIN
NJU7313AMT2	30PIN
LC65104A4F75	30PIN
M62425FPE1	36PIN

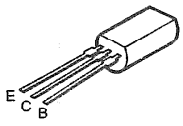
M38197MA119F



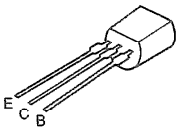
STK311-010

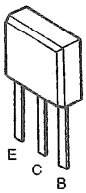


2SC3940AQSTA



2SB621AQRSTA

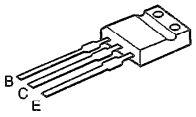




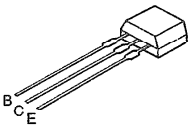
2SA1309AQSTA
2SC2785FETA
2SC2787LTA
2SC3311AQSTA
2SC3311ARSTA
UN411FTA
UN4111AITA
UN4115TA
UN4119TA

UN4211AITA
UN4214AITA

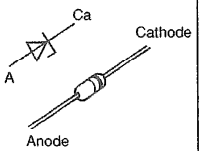
2SB1417PQTA
2SD2137PQTA



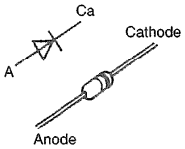
2SD2144STA
DTC143ESTP
DTC143XSTP

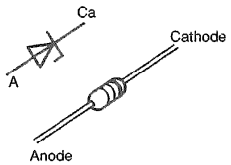


MA4150MTA
MA4300MTA

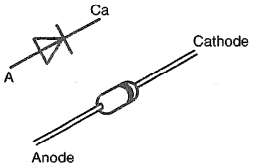


MA185TA



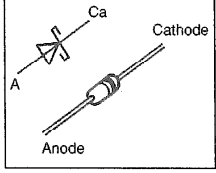


MA4039MTA
MA4051MTA
MA4062HTA
MA4082LTA

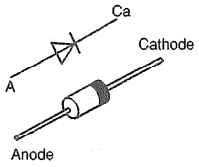


1SS291TA
MA165TA
MA723TA

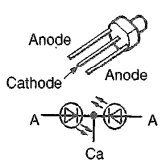
MA719TA



RL1N4003N02



SPR-305MDTF



SCHEMATIC DIAGRAM (Parts list on pages 25~28.)

- This schematic diagram may be modified at any time with development of new technology.

Notes:

- **S901**: RDS display mode switch (RDS DISPLAY MODE)
- **S902**: FM/AM switch (FM/AM)
- **S903**: Tuning mode select switch (TUNING MODE)
- **S904**: Clock/timer switch (CLOCK/TIMER)
- **S905**: Set switch (SET)
- **S906, 907**: Tuning/Time adjust switch (TUNING/TIME ADJUST)
  (S906: DOWN, S907: UP)
- **S916**: Play timer switch (◴ PLAY)
- **S917**: Record timer switch (◴ REC)
- **S918**: Source input select switch (INPUT SELECTOR)
- 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.

- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between TP602 and TP610, and between TP610 and A. GND, and between TP609 and A. GND are shorted.

  No mark: FM mode ( ): AM mode

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

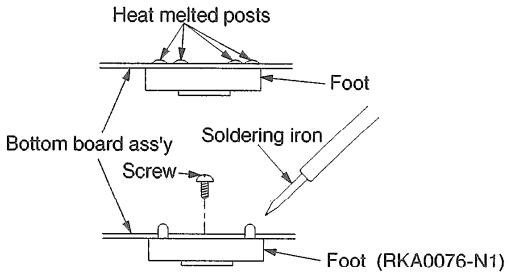
- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI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

- Voltage and signal line

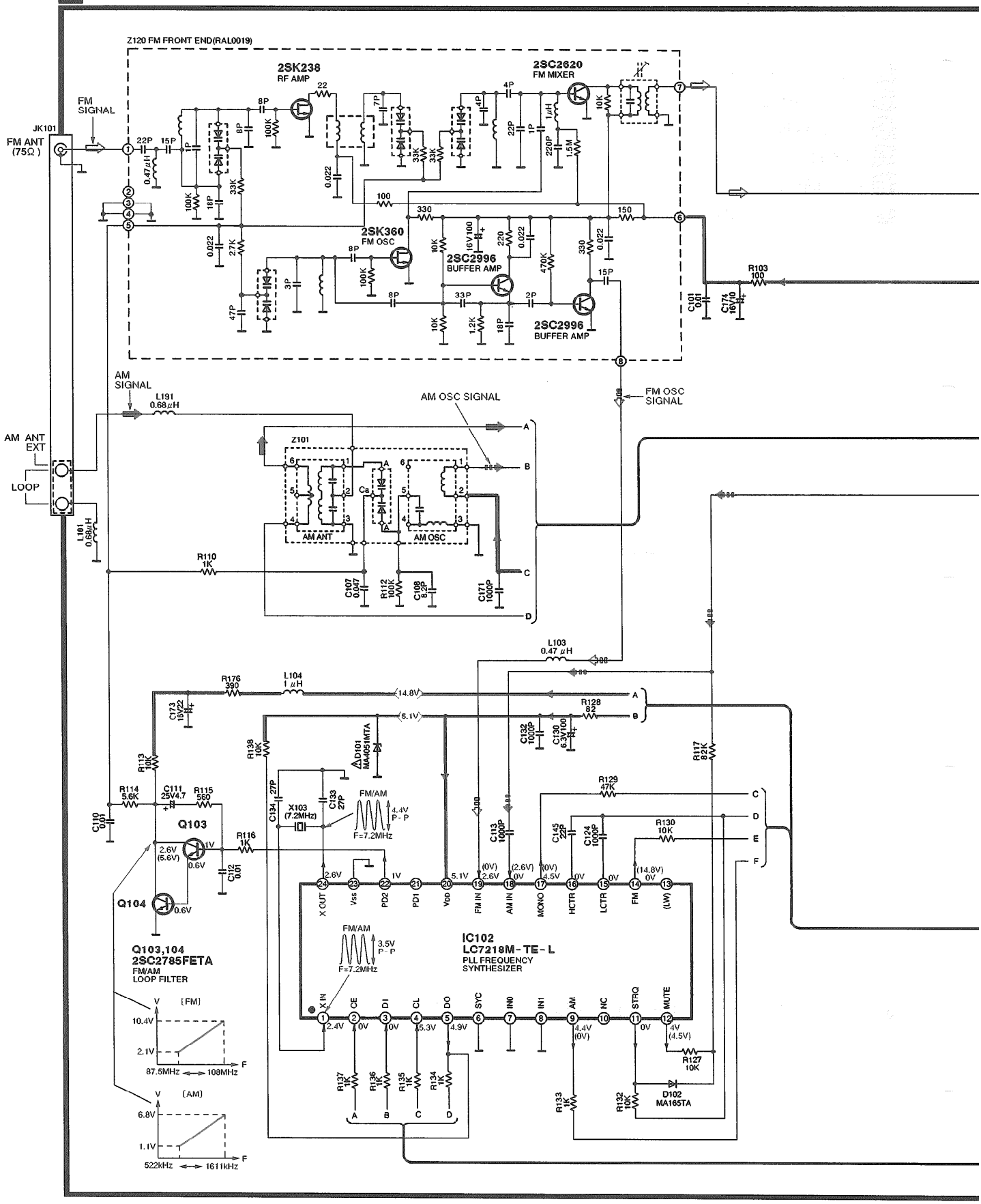
: Positive voltage line
: Negative voltage line
: FM signal line
: FM OSC signal line
: AM signal line
: AM OSC signal line
: REC OUT line

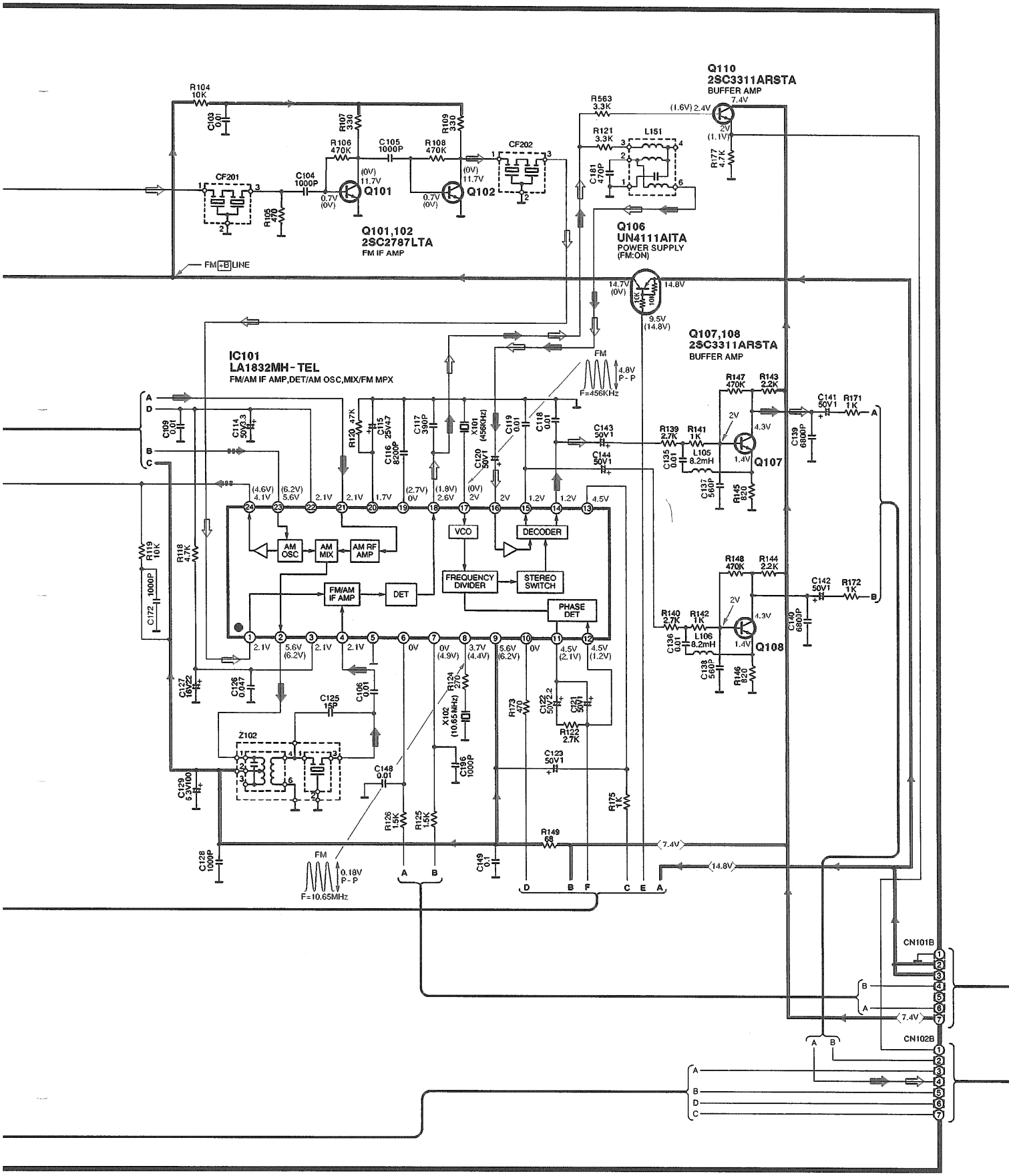
REPLACEMENT OF THE FOOT

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 (RKA0076-N1) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).

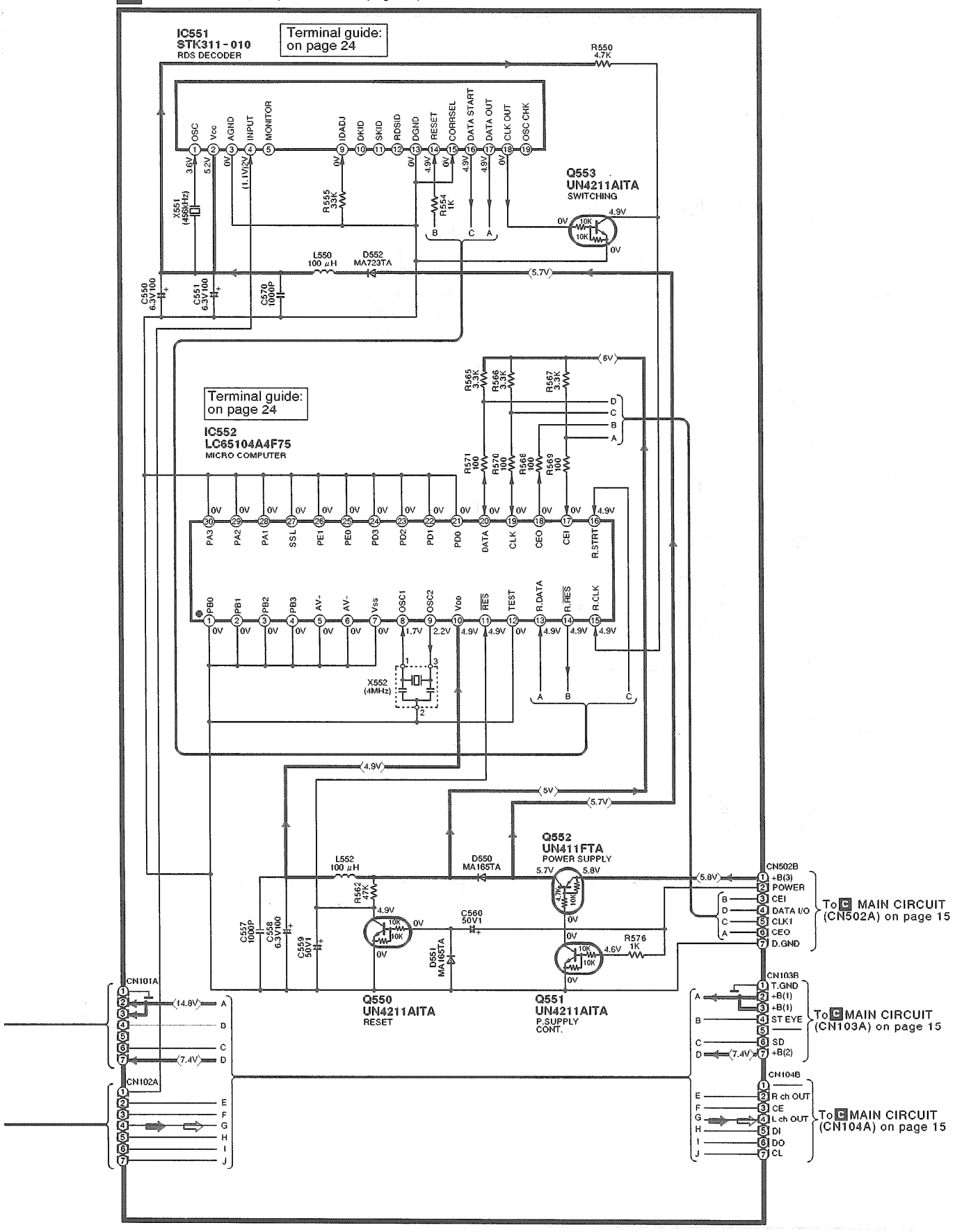


A TUNER CIRCUIT (P.C.Board:on page 20)

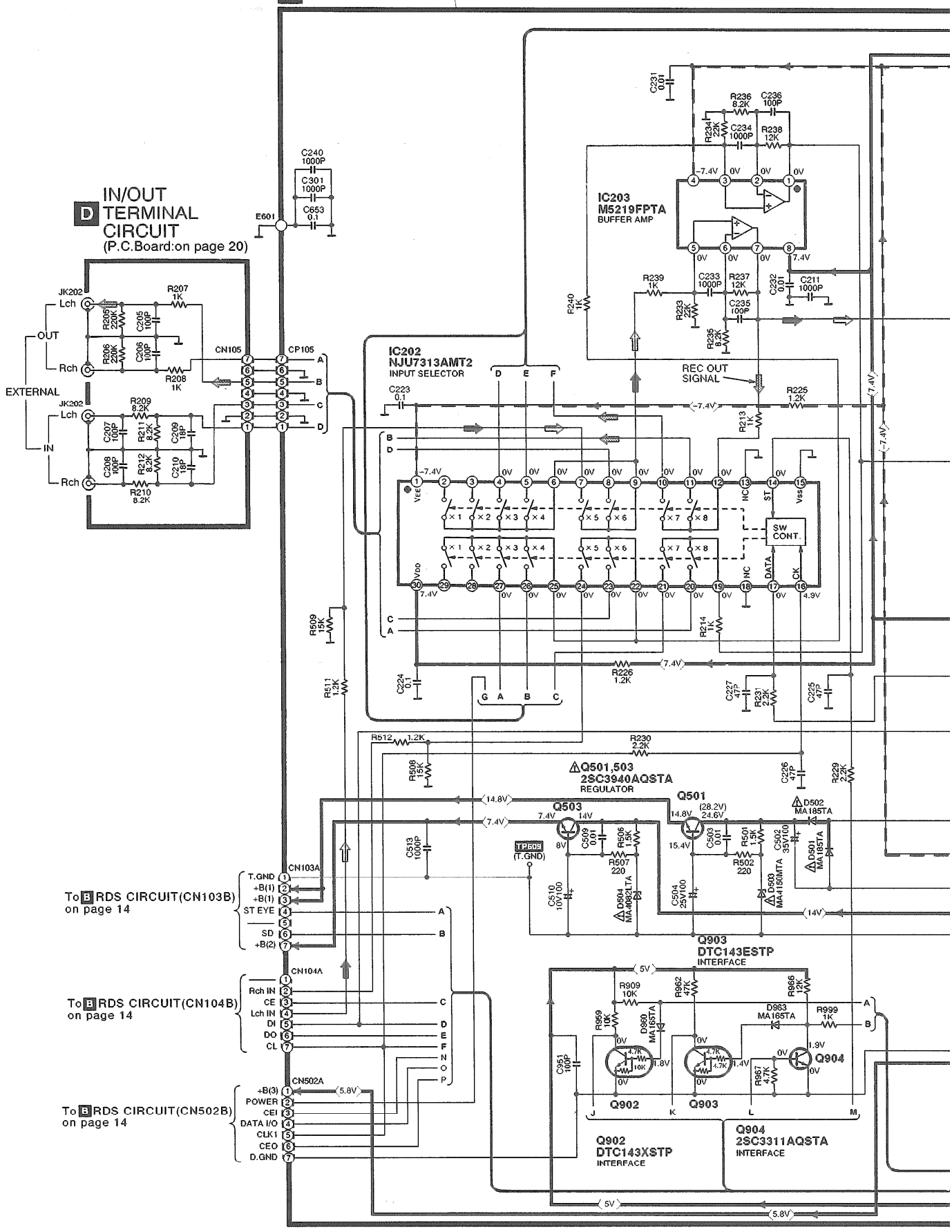


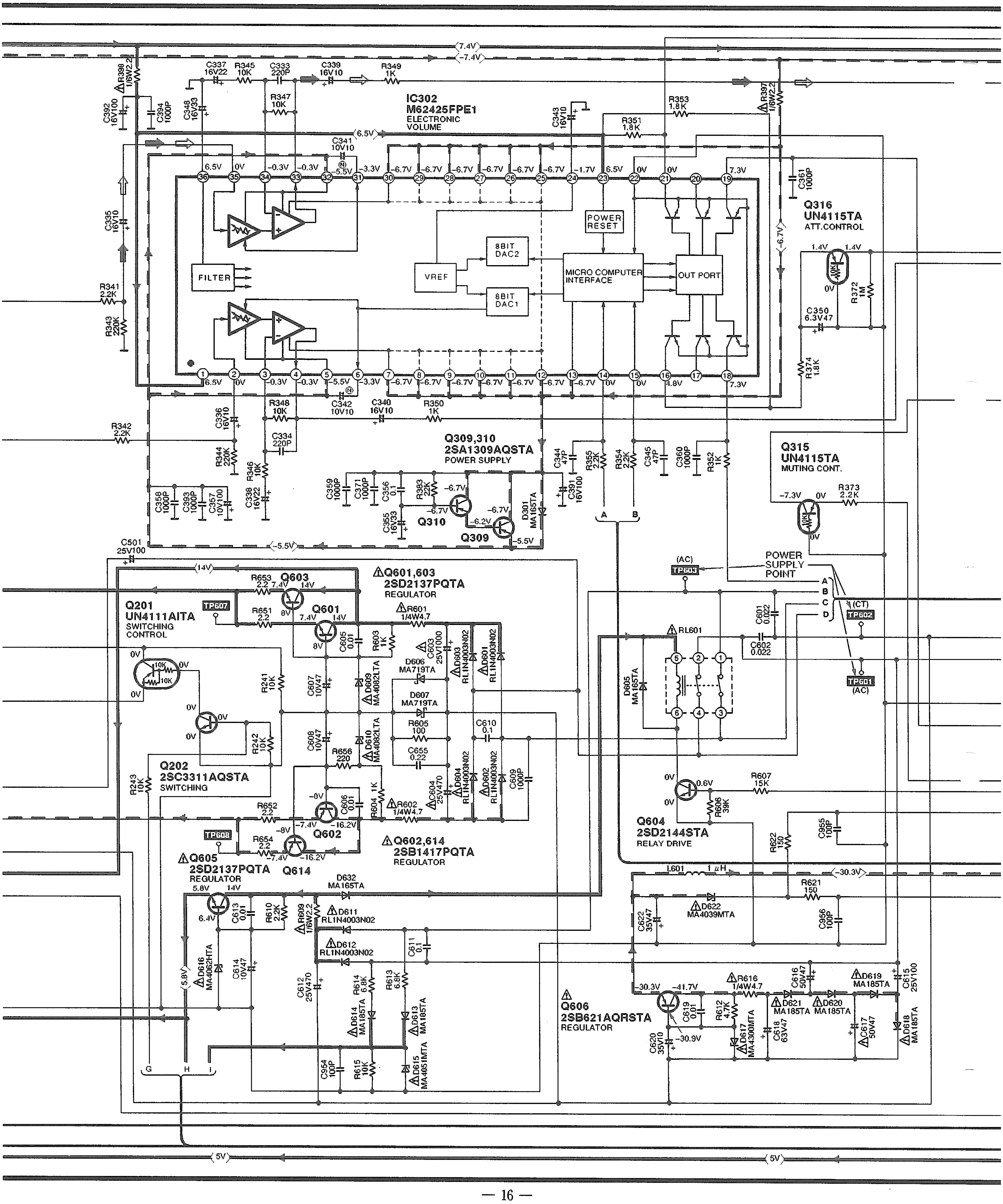

Q110
2SC3311ARSTA
BUFFER AMP
Q101,102
2SC2787LTA
FM IF AMP
Q106
UN4111AITA
POWER SUPPLY
(FM:ON)
Q107,108
2SC3311ARSTA
BUFFER AMP
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
Q101
Q102
Q107
Q108
AM OSC
AM MIX
AM RF AMP
FM/AM IF AMP
DET
VCO
DECODER
FREQUENCY DIVIDER
STEREO SWITCH
PHASE DET
FM
F=456KHz
F=10.65MHz
CF201
CF202
Z102
X101 (456KHz)
X102 (10.65MHz)
L105 8.2mH
L106 8.2mH
L151
FM-B LINE
CN101B
CN102B

B RDS CIRCUIT (P.C.Board:on page 20)

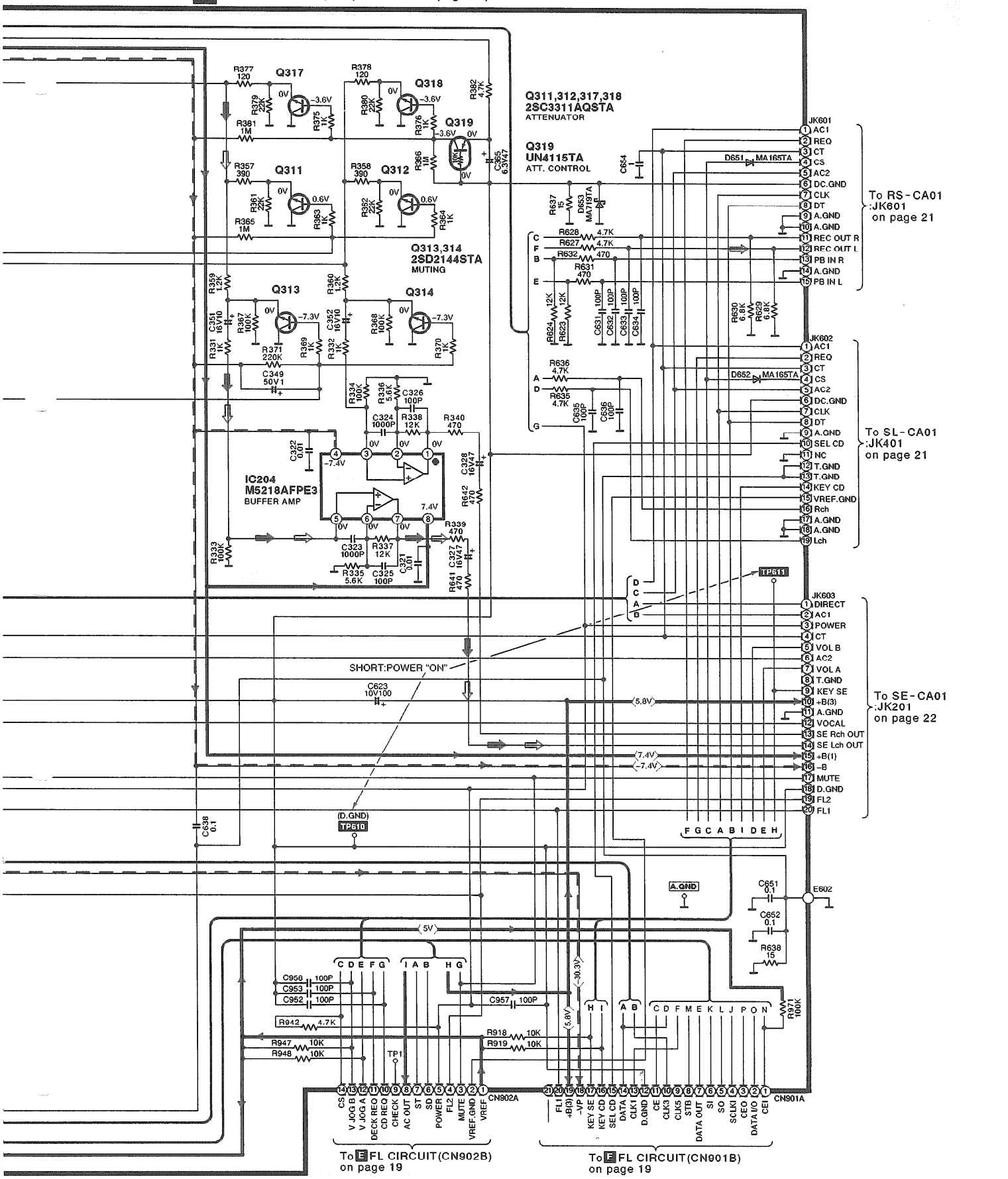


C MAIN CIRCUIT (P.C.Board:on page 21)

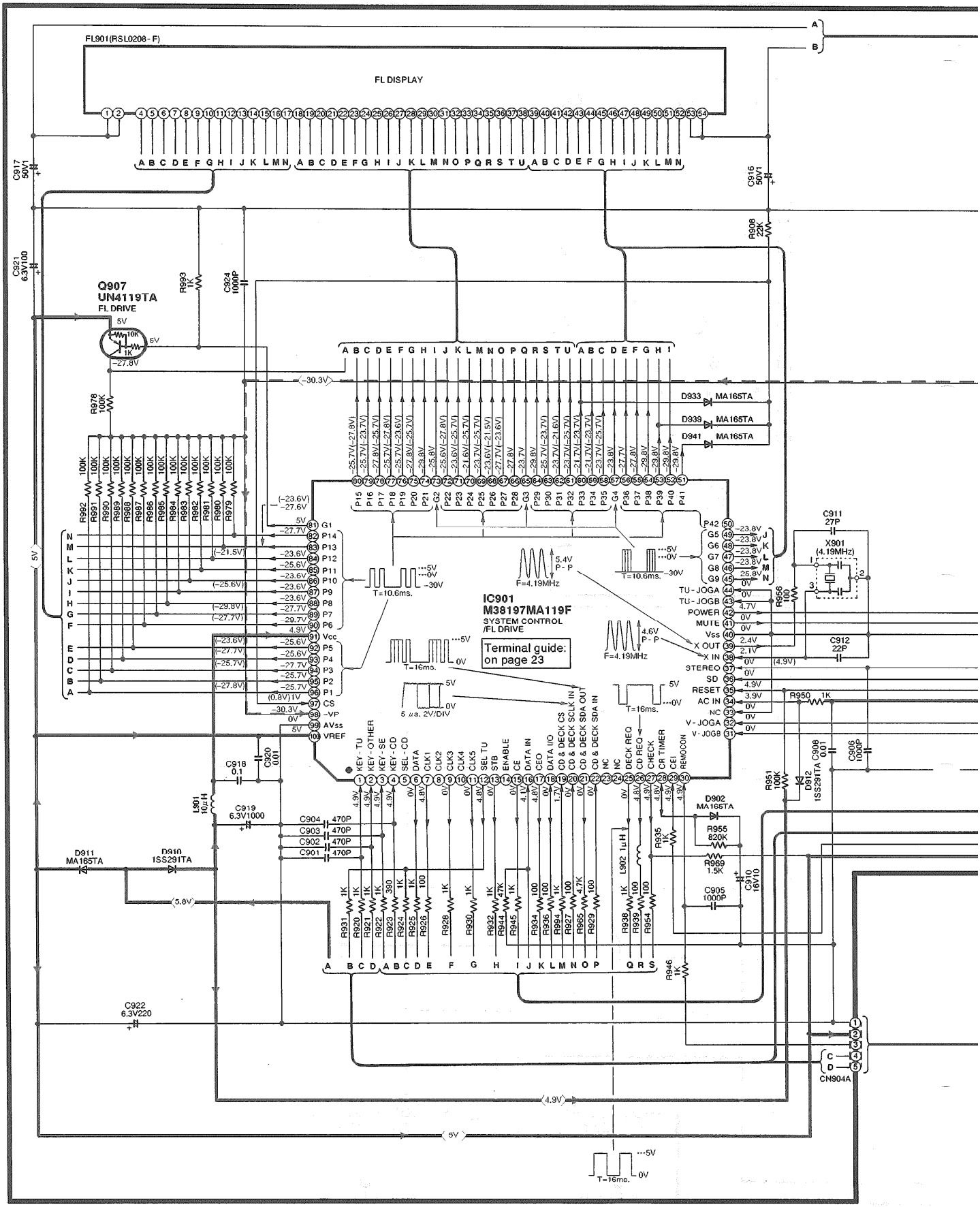


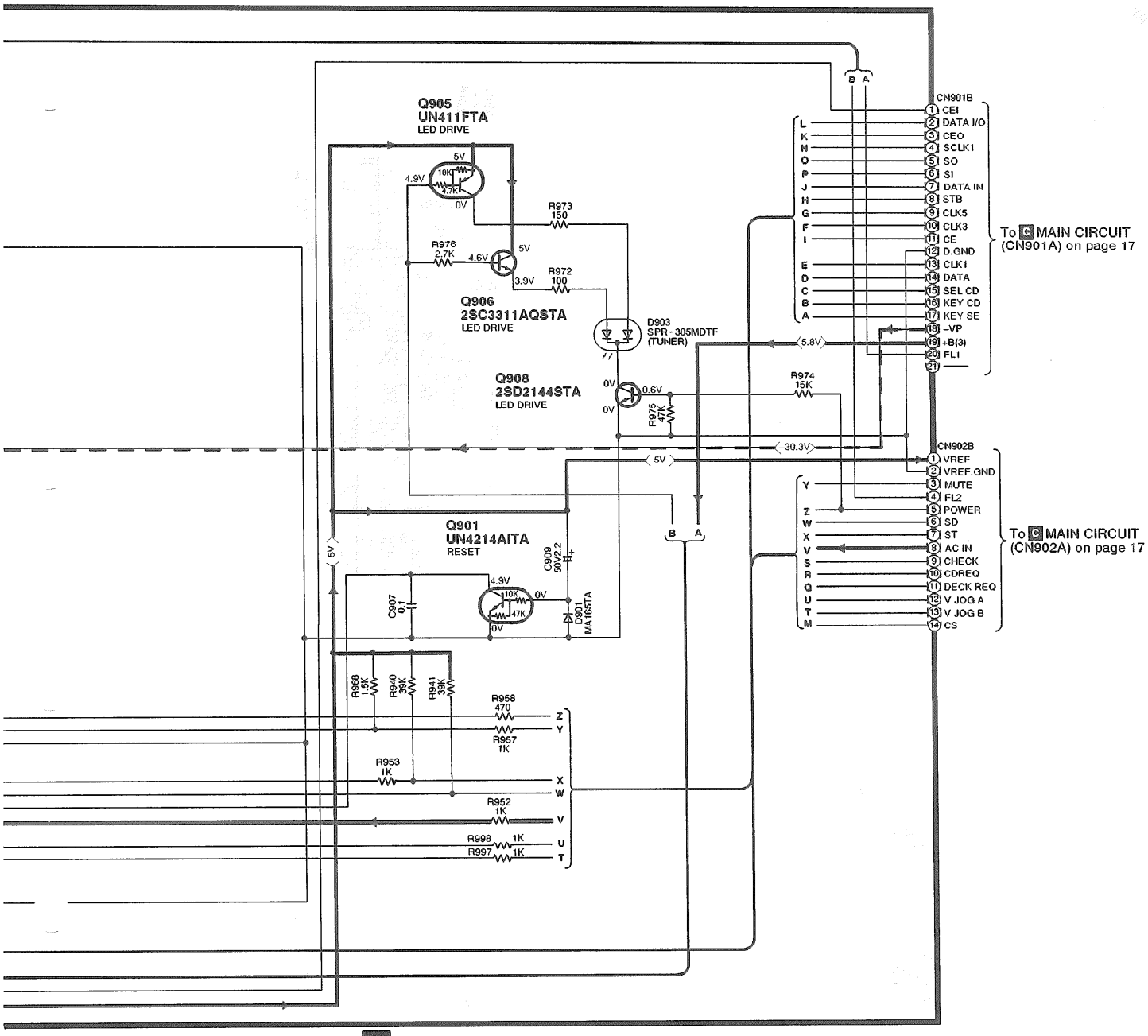

IC302
M62425FPE1
ELECTRONIC
VOLUME
FILTER
VREF
8BIT DAC2
8BIT DAC1
POWER RESET
MICRO COMPUTER INTERFACE
OUT PORT
Q316
UN4115TA
ATT.CONTROL
Q309,310
2SA1309AQSTA
POWER SUPPLY
Q315
UN4115TA
MUTING CONT.
POWER SUPPLY POINT
Q601,603
2SD2137PQTA
REGULATOR
Q201
UN4111AITA
SWITCHING CONTROL
Q202
2SC3311AQSTA
SWITCHING
Q602,614
2SB1417PQTA
REGULATOR
Q605
2SD2137PQTA
REGULATOR
Q604
2SD2144STA
RELAY DRIVE
Q606
2SB621AQRSTA
REGULATOR
RL601
TP601
TP602
TP603
TP607
TP608

C MAIN CIRCUIT (P.C.Board:on page 21)

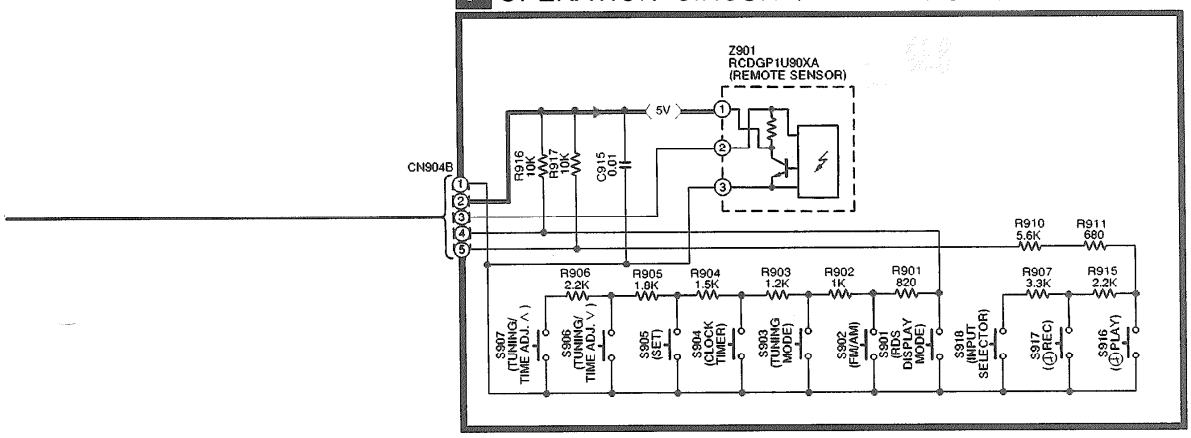


E FL CIRCUIT (P.C.Board:on page 22)





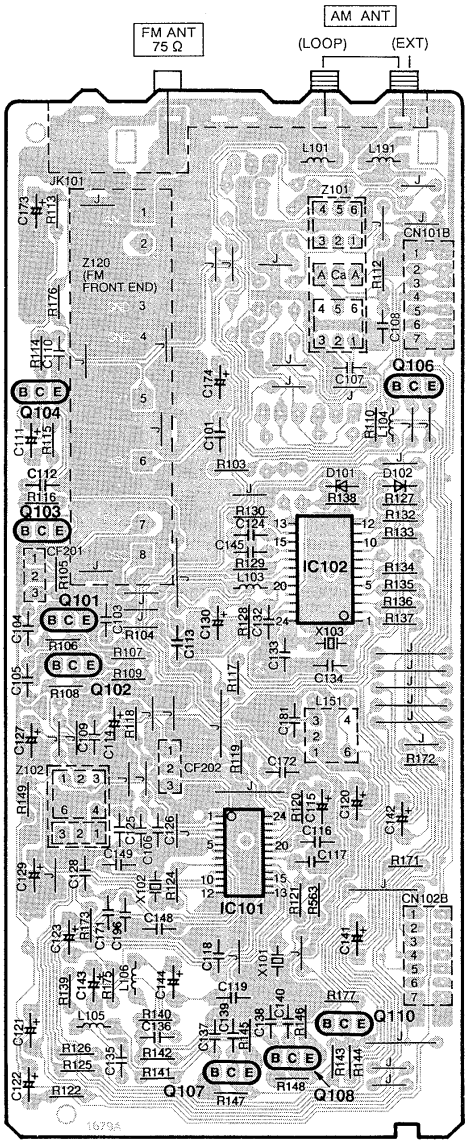
F OPERATION CIRCUIT (P.C.Board:on page 22)



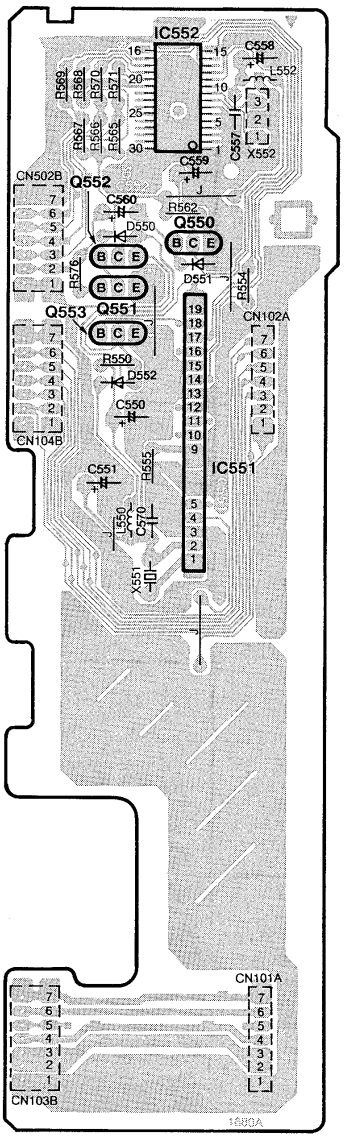
■ PRINTED CIRCUIT BOARD DIAGRAM

- This circuit board diagram may be modified at any time with the development of new technology.

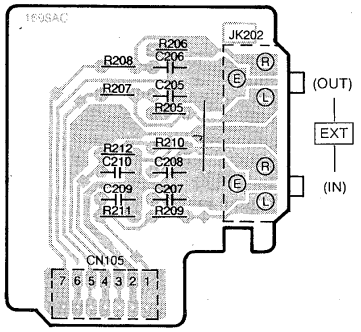
A TUNER P.C.B. (REP2374A–T)



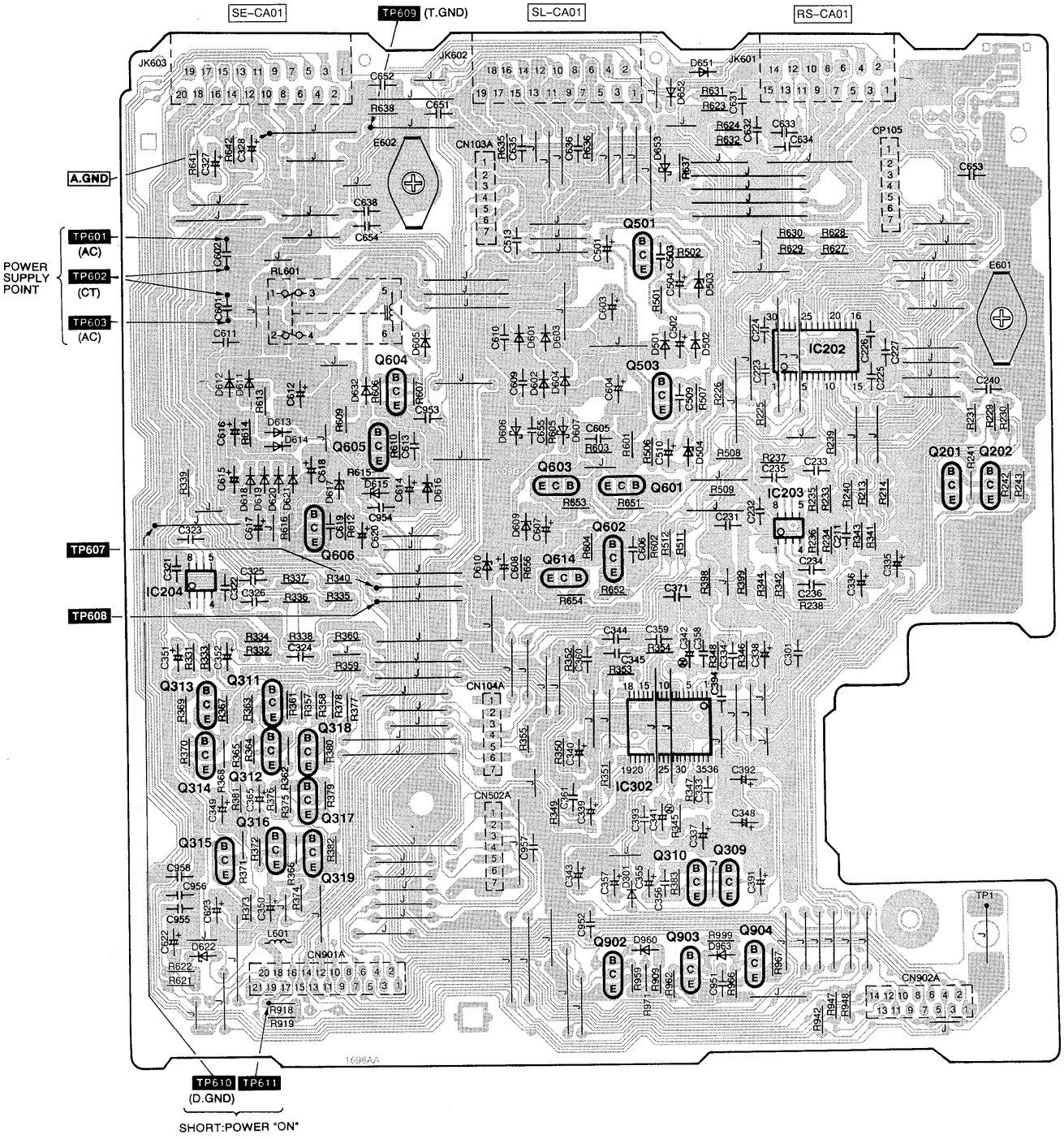
B RDS P.C.B. (REP2375A–T)



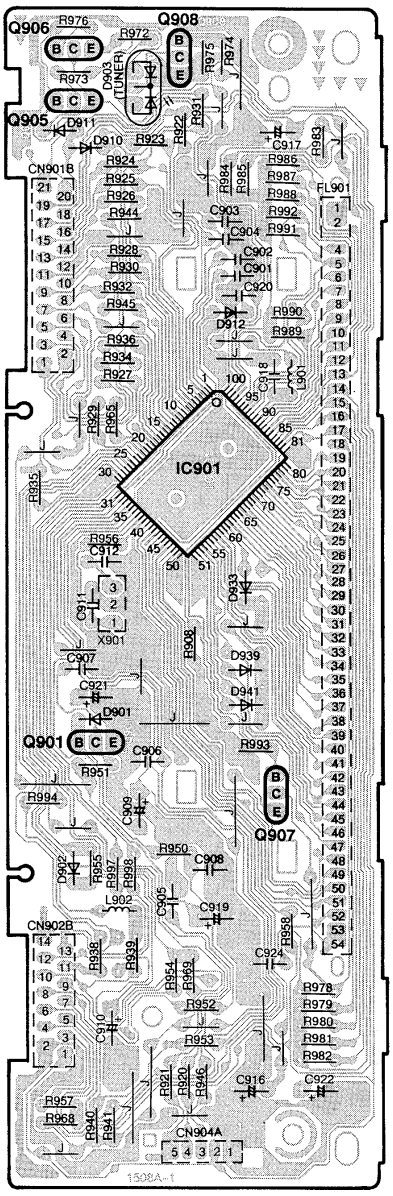
D IN/OUT TERMINAL P.C.B. (REP2299B–M)



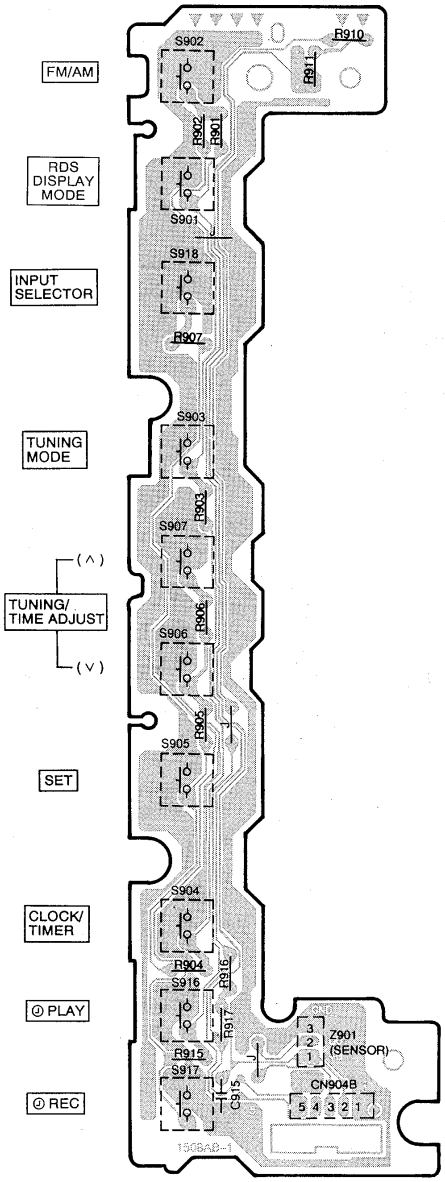
C MAIN P.C.B. (REP2299B–M)



E FL P.C.B. (REP2300B–S)



F OPERATION P.C.B. (REP2300B–S)



■ TERMINAL GUIDE

● IC901 (M38197MA119F): SYSTEM CONTROL/ FL DRIVE

Pin No.	Mark	I/O	Function
1	KEY-TU	I	Tuner operation switch signal input
2	KEY-OTHER	I	Other operation switch signal input
3	KEY-SE	I	SE-CA01 operation switch signal input
4	KEY-CD	I	SL-CA01 operation switch signal input
5	SELECTOR CD	—	Not used
6	DATA	O	Data output for NJU7313, M62425, LC7218, LA2785, and LV1010
7	CLK1	O	Clock output for NJU7313, LC7218, LA2785, LV1010 and LC65104
8	CLK2	O	Clock output (Not used, open)
9	CLK3	O	Clock output for M62425 (Main volume)
10	CLK4	—	Not used
11	CLK5	O	SE-CA01 LED drive (BU209F-E2) signal output
12	SEL_TU	O	LED (D903-TUNER ON) drive signal output
13	STB	O	STB signal output for NJU7313
14	ENABLE	—	Not used
15	CE	O	Chip enable signal output for LC7218
16	DATA IN	I	Data input from LC7218
17	CEO	O	Serial data output terminal for (E, EG) areas.
18	DATA I/O	I/O	Serial data input/output terminal for (E, EG) areas.
19	CE & DECK CS	I	Serial data communication starting signal input
20	CD & DECK SCLK IN	I	Serial clock input
21	CD & DECK SDA OUT	O	Serial data output
22	CD & DECK SDA IN	I	Serial data input
23	NC	—	Not used
24	NC	—	Not used
25	DECK REQ	O	RS-CA01 request signal output
26	CD REQ	O	SL-CA01 request signal output
27	DPL & CHECK	I/O	Clock check signal
28	CR TIMER	I/O	Capacitor and resistor oscillation terminal
29	CEI	I	Serial data input terminal for (EG) area only
30	REMOCON	I	Remove control signal input
31	V-JOGB	I	Volume control signal input
32	V-JOGA	I	

Pin No.	Mark	I/O	Function
33	MIC DET	I	Michrophone connecting detect signal input
34	AC IN	I	AC power source input terminal
35	RESET	I	Reset signal input
36	SD	I	SD signal input for tuner circuit
37	STEREO	I	STEREO signal input for tuner circuit
38	X IN	I	Connected to the ceramic oscillator (F=4.19MHz)
39	X OUT	O	
40	Vss	—	GND terminal
41	MUTE	O	Muting signal output
42	POWER	O	Power control signal output
43	TU-JOGB	I	JOG (TUNING) control terminal
44	TU-JOGA	I	
45 ∫ 49	G9 ∫ G5	O	Grid signal output
50 ∫ 56	P42 ∫ P36	O	Segment signal output
57	G4	O	Grid signal output
58 ∫ 64	P35 ∫ P29	O	Segment signal output
65	G3	O	Grid signal output
66 ∫ 72	P28 ∫ P22	O	Segment signal output
73	G2	O	Grid signal output
74 ∫ 80	P21 ∫ P15	O	Segment signal output
81	G1	O	Grid signal output
82 ∫ 90	P14 ∫ P6	O	Segment signal output
91	Vcc	—	Power supply (+5V)
92 ∫ 96	P5 ∫ P1	O	Segment signal output
97	CS	I	Scan signal input
98	-VP	—	Negative power supply
99	AVSS	—	Connect to GND
100	VREF	—	Reference voltage input

● IC551 (STK311-010): RDS DECODER

Pin No.	Mark	I/O	Function
1	OSC	I	Crystal OSC input terminal (f=456kHz)
2	VCC	I	Power supply terminal
3	AGND	—	GND terminal
4	INPUT	I	RDS signal input terminal
5	MONITOR	—	Not used, open
6	—	—	—
7	—	—	—
8	—	—	—
9	IDADJ	—	ID setting terminal
10	DKID	—	Not used, open

Pin No.	Mark	I/O	Function
11	SKID	—	Not used, open
12	RDSID	—	Not used, open
13	DGND	—	GND terminal
14	RESET	I	RDS reset signal input terminal
15	CORRSEL	—	Not used, connected to GND
16	DATA START	O	RDS start signal output terminal
17	DATA OUT	O	RDS data signal output terminal
18	CLKOUT	O	RDS clock signal output terminal
19	OSCCLK	—	Not used, open

● IC552 (LC65104A4F75): MICROCOMPUTER

Pin No.	Mark	I/O	Function
1	PB0	—	Not used
2	PB1	—	Not used
3	PB2	—	Not used
4	PB3	—	Not used
5	AV+	—	Not used
6	AV–	—	Not used
7	VSS	—	GND terminal
8	OSC1	I	Oscillating terminal (f=4MHz)
9	OSC2	O	Oscillating terminal (f=4MHz)
10	VDD	I	+5V
11	$\overline{\text{RES}}$	I	Reset signal input
12	TEST	—	Not used
13	R. DATA	I	RDS data signal input
14	R. $\overline{\text{RES}}$	O	RDS reset signal output
15	R. CLK	I	RDS clock signal input

Pin No.	Mark	I/O	Function
16	R. STRT	I	RDS start signal input
17	CEI	I	Serial data input detection terminal
18	CEO	O	Serial data output detection terminal
19	CLK	I/O	Serial clock input/output terminal
20	DATA	I/O	Serial data input/output terminal
21	PD0	—	Not used
22	PD1	—	Not used
23	PD2	—	Not used
24	PD3	—	Not used
25	PE0	—	Not used
26	PE1	—	Not used
27	SSL	—	Not used
28	PA1	—	Not used
29	PA2	—	Not used
30	PA3	—	Not used

REPLACEMENT PARTS LIST

Notes: * Important safety notice:
Components identified by ⚠ 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.
* [M] indicates in Remarks columns parts that are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LA1832MH-TEL	FM/AM IF AMP/AM OSC	
IC102	LC7218M-TE-L	PLL FREQUENCY SYNTHESIZER	
IC202	NJU7313AMT2	INPUT SELECTOR	
IC203	M5219FPTA	BUFFER AMP	
IC204	M5218AFPE3	BUFFER AMP	
IC302	M62425FPE1	ELECTRONIC VOLUME	
IC551	STK311-010	RDS DECODER	[M]
IC552	LC65104A4F75	MICRO COMPUTER	
IC901	M38197MA119F	SYSTEM CONTROL/FL DRIVE	
		TRANSISTOR(S)	
Q101, 102	2SC2787L	TRANSISTOR	
Q103, 104	2SC2785FE	TRANSISTOR	
Q106	UN4111	TRANSISTOR	
Q107, 108	2SC3311ARSTA	TRANSISTOR	
Q110	2SC3311ARSTA	TRANSISTOR	
Q201	UN4111	TRANSISTOR	
Q202	2SC3311A-Q	TRANSISTOR	
Q309, 310	2SA1309A-R	TRANSISTOR	
Q311, 312	2SC3311A-Q	TRANSISTOR	
Q313, 314	2SD2144S	TRANSISTOR	
Q315, 316	UN4115	TRANSISTOR	
Q317, 318	2SC3311A-Q	TRANSISTOR	
Q319	UN4115	TRANSISTOR	
Q501	2SC3940AQSTA	TRANSISTOR	⚠
Q503	2SC3940AQSTA	TRANSISTOR	⚠
Q550, 551	UN4211	TRANSISTOR	
Q552	UN411FTA	TRANSISTOR	
Q553	UN4211	TRANSISTOR	
Q601	2SD2137PQTA	TRANSISTOR	⚠
Q602	2SB1417PQTA	TRANSISTOR	⚠
Q603	2SD2137PQTA	TRANSISTOR	⚠
Q604	2SD2144S	TRANSISTOR	
Q605	2SD2137PQTA	TRANSISTOR	⚠
Q606	2SB621A-R	TRANSISTOR	⚠
Q614	2SB1417PQTA	TRANSISTOR	⚠
Q901	UN4214TA	TRANSISTOR	
Q902	DTC143XSTP	TRANSISTOR	
Q903	DTC143ESTP	TRANSISTOR	
Q904	2SC3311A-Q	TRANSISTOR	
Q905	UN411FTA	TRANSISTOR	
Q906	2SC3311A-Q	TRANSISTOR	
Q907	UN4119	TRANSISTOR	
Q908	2SD2144S	TRANSISTOR	
		DIODE(S)	
D101	MA4051MTA	DIODE	⚠
D102	MA165	DIODE	
D301	MA165	DIODE	
D501, 502	MA185TA	DIODE	⚠
D503	MA4150M	DIODE	⚠
D504	MA4082LTA	DIODE	⚠
D550, 551	MA165	DIODE	
D552	MA723TA	DIODE	
D601-604	RL1N4003N02	DIODE	⚠
D605	MA165	DIODE	
D606, 607	MA719TA	DIODE	
D609, 610	MA4082LTA	DIODE	⚠
D611, 612	RL1N4003N02	DIODE	⚠
D613, 614	MA185TA	DIODE	⚠
D615	MA4051MTA	DIODE	⚠
D616	MA4062-H	DIODE	⚠
D617	MA4300M	DIODE	⚠
D618-621	MA185TA	DIODE	⚠
D622	MA4039MTA	DIODE	⚠
D632	MA165	DIODE	
D651, 652	MA165	DIODE	
D653	MA719TA	DIODE	
D901, 902	MA165	DIODE	
D903	SPR-305MDTF	L. E. D.	
D910	1SS291TA	DIODE	
D911	MA165	DIODE	
D912	1SS291TA	DIODE	
D933	MA165	DIODE	
D939	MA165	DIODE	
D941	MA165	DIODE	
D960	MA165	DIODE	
D963	MA165	DIODE	
		COMPONENT COMBINATION(S)	
Z101	RLA2Z002M-T	COMPONENT COMBINATION	
Z102	RLI2Z006M-T	COMPONENT COMBINATION	
Z901	RCDGP1U90XA	REMOTE SENSOR	
		COIL(S)	
L101	ELESNR68MA	COIL	
L103	ELEXTR47MA9	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L104	ELEXT1R0KA9	COIL	
L105, 106	ELELN822KL	COIL	
L151	SLM1B10M-1M	COIL	
L191	ELESNR68MA	COIL	
L550	ELEXT101KA9	COIL	
L552	ELEXT101KA9	COIL	
L601	ELEXT1R0KA9	COIL	
L901	RLQA100JT-Y	COIL	
L902	ELEXT1R0KA9	COIL	
		FILTER(S)	
CF201	RLFFETNGD01L	CERAMIC FILTER	
CF202	RLFFETMGD01L	CERAMIC FILTER	
		OSCILLATOR(S)	
X101	RSXZ456KM07M	OSCILLATOR(456KHz)	
X102	RLFDGT05DD	OSCILLATOR(10.65MHz)	
X103	RSXC7M20S05T	OSCILLATOR(7.2MHz)	
X551	RSXZ456KM07M	OSCILLATOR(456KHz)	
X552	RVBCST4R00MT	OSCILLATOR(4MHz)	
X901	RSXC4M19S02T	OSCILLATOR(4.19MHz)	
		DISPLAY TUBE(S)	
FL901	RSL0208-F	DISPLAY TUBE	
		FM FRONT END(S)	
Z120	RAL0019	FM FRONT END	
		SWITCH(ES)	
S901	EVQ21405R	RDS DISPLAY MODE	
S902	EVQ21405R	FM/AM	
S903	EVQ21405R	TUNING MODE	
S904	EVQ21405R	CLOCK/TIMER MODE	
S905	EVQ21405R	CLOCK/TIMER SET	
S906	EVQ21405R	TUNING /TIME ADJ. DOWN	
S907	EVQ21405R	TUNING /TIME ADJ. UP	
S916	EVQ21405R	TIMER PLAY	
S917	EVQ21405R	TIMER REC	
S918	EVQ21405R	INPUT SELECTOR	
		RELAY(S)	
RL601	RSY0017M-0	RELAY	⚠
		CONNECTOR(S) AND SOCKET(S)	
CN105	RJU057W007	CONNECTOR(7P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CN101A	RJT057W007-1	CONNECTOR(7P)	
CN101B	RJU057W007	SOCKET(7P)	
CN102A	RJT057W007-1	CONNECTOR(7P)	
CN102B	RJU057W007	SOCKET(7P)	
CN103A	RJT057W007-1	CONNECTOR(7P)	
CN103B	RJU057W007	SOCKET(7P)	
CN104A	RJT057W007-1	CONNECTOR(7P)	
CN104B	RJU057W007	SOCKET(7P)	
CN502A	RJT057W007-1	CONNECTOR(7P)	
CN502B	RJU057W007	SOCKET(7P)	
CN901A	RJS1A6821	CONNECTOR(21P)	
CN901B	RJS1A6221-1	CONNECTOR(21P)	
CN902A	RJS1A6814	CONNECTOR(14P)	
CN902B	RJS1A6214-1	CONNECTOR(14P)	
CN904A	RJT066H05A	CONNECTOR(5P)	
CN904B	RJU066H05	SOCKET(5P)	
CP105	RJT057W007-1	CONNECTOR(7P)	
JK601	RJT065K15	CONNECTOR(15P)	
JK602	RJT065K19	CONNECTOR(19P)	
JK603	RJT065K20	CONNECTOR(20P)	
		EARTH PLATE(S)	
E601, 602	SNE1004-2	EARTH PLATE	
		JACK(S)	
JK101	RJH5210M	FM/AM ANT	
JK202	SJF3069N	EXT IN/OUT	

RESISTORS AND CAPACITORS

Notes: * Capacity values 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)

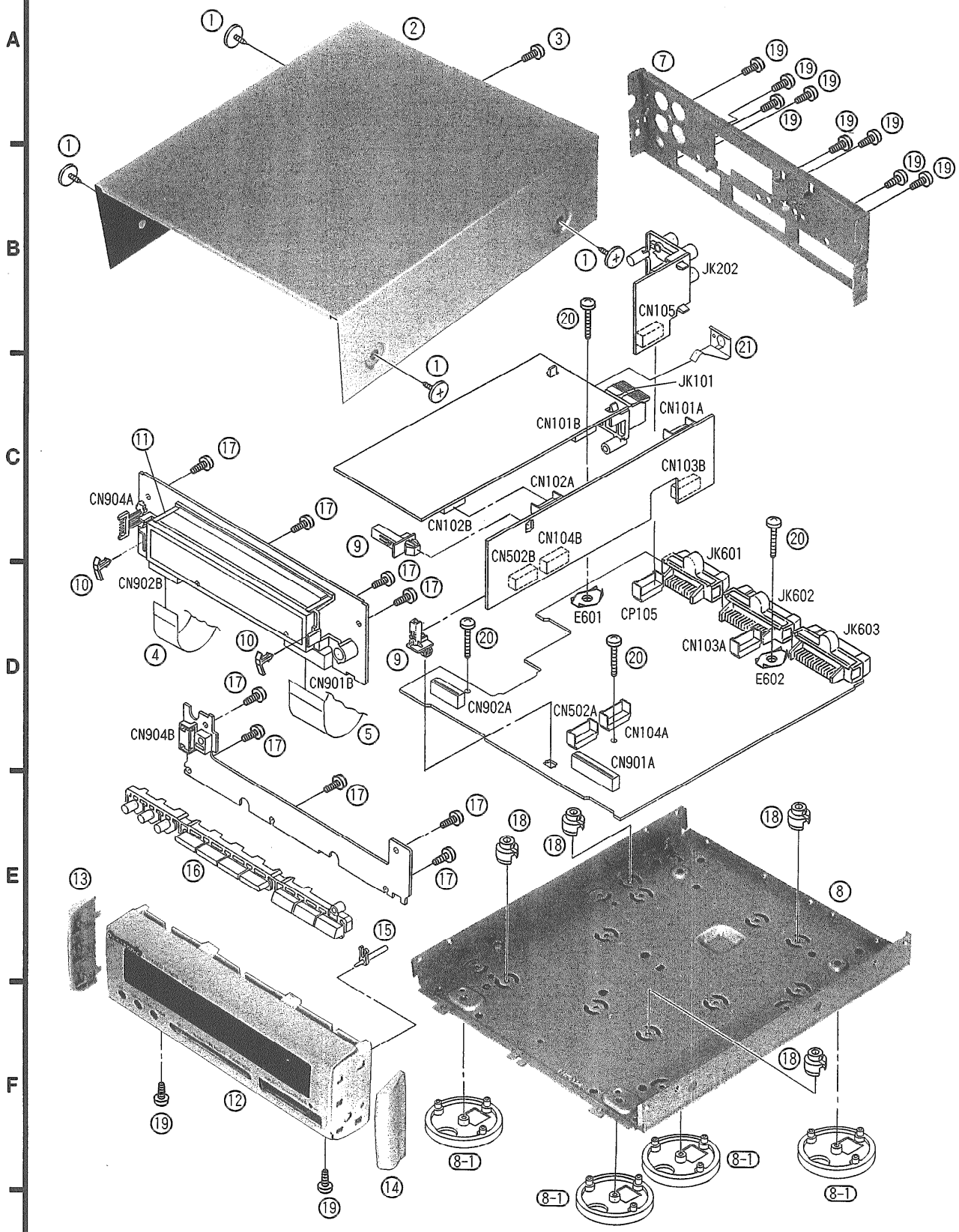
Ref. No.	Part No.	Values & Remarks
		RESISTORS
R103	ERDS2TJ101	1/4W 100
R104	ERDS2TJ103	1/4W 10K
R105	ERDS2TJ471	1/4W 470
R106	ERDS2TJ474	1/4W 470K
R107	ERDS2TJ331	1/4W 330
R108	ERDS2TJ474	1/4W 470K
R109	ERDS2TJ331	1/4W 330
R110	ERDS2TJ102	1/4W 1K
R112	ERDS2TJ104	1/4W 100K
R113	ERDS2TJ103	1/4W 10K
R114	ERDS2TJ562	1/4W 5.6K
R115	ERDS2TJ561	1/4W 560
R116	ERDS2TJ102	1/4W 1K
R117	ERDS2TJ823T	1/4W 82K
R118	ERDS2TJ472	1/4W 4.7K
R119	ERDS2TJ103	1/4W 10K
R120	ERDS2TJ473	1/4W 47K
R121	ERDS2TJ332	1/4W 3.3K
R122	ERDS2TJ272T	1/4W 2.7K
R124	ERDS2TJ271	1/4W 270
R125, 126	ERDS2TJ152	1/4W 1.5K
R127	ERDS2TJ103	1/4W 10K
R128	ERDS2TJ820	1/4W 82
R129	ERDS2TJ473	1/4W 47K
R130	ERDS2TJ103	1/4W 10K
R132	ERDS2TJ103	1/4W 10K
R133-137	ERDS2TJ102	1/4W 1K
R138	ERDS2TJ103	1/4W 10K
R139, 140	ERDS2TJ272T	1/4W 2.7K
R141, 142	ERDS2TJ102	1/4W 1K
R143, 144	ERDS2TJ222	1/4W 2.2K
R145, 146	ERDS2TJ821	1/4W 820
R147, 148	ERDS2TJ474	1/4W 470K
R149	ERDS2TJ680T	1/4W 68
R171, 172	ERDS2TJ102	1/4W 1K
R173	ERDS2TJ471	1/4W 470
R175	ERDS2TJ102	1/4W 1K
R176	ERDS2TJ391	1/4W 390
R177	ERDS2TJ472	1/4W 4.7K
R205, 206	ERDS2TJ224T	1/4W 220K
R207, 208	ERDS2TJ102	1/4W 1K
R209-212	ERDS2TJ822	1/4W 8.2K
R213, 214	ERDS2TJ102	1/4W 1K
R225, 226	ERDS2TJ122	1/4W 1.2K
R229-231	ERDS2TJ222	1/4W 2.2K
R233, 234	ERDS2TJ223	1/4W 22K
R235, 236	ERDS2TJ822	1/4W 8.2K
R237, 238	ERDS2TJ123	1/4W 12K
R239, 240	ERDS2TJ102	1/4W 1K
R241-243	ERDS2TJ103	1/4W 10K
R331, 332	ERDS2TJ102	1/4W 1K
R333, 334	ERDS2TJ104	1/4W 100K
R335, 336	ERDS2TJ562	1/4W 5.6K
R337, 338	ERDS2TJ123	1/4W 12K
R339, 340	ERDS2TJ471	1/4W 470
R341, 342	ERDS2TJ222	1/4W 2.2K
R343, 344	ERDS2TJ224T	1/4W 220K
R345-348	ERDS2TJ103	1/4W 10K
R349, 350	ERDS2TJ102	1/4W 1K
R351	ERDS2TJ182	1/4W 1.8K
R352	ERDS2TJ102	1/4W 1K
R353	ERDS2TJ182	1/4W 1.8K
R354, 355	ERDS2TJ222	1/4W 2.2K
R357, 358	ERDS2TJ391	1/4W 390
R359, 360	ERDS2TJ122	1/4W 1.2K
R361, 362	ERDS2TJ223	1/4W 22K
R363, 364	ERDS2TJ102	1/4W 1K
R365, 366	ERDS2TJ105T	1/4W 1M
R367, 368	ERDS2TJ104	1/4W 100K
R369, 370	ERDS2TJ102	1/4W 1K
R371	ERDS2TJ224T	1/4W 220K
R372	ERDS2TJ105T	1/4W 1M
R373	ERDS2TJ222	1/4W 2.2K
R374	ERDS2TJ182	1/4W 1.8K
R375, 376	ERDS2TJ102	1/4W 1K
R377, 378	ERDS2EJ121	1/4W 120
R379, 380	ERDS2TJ223	1/4W 22K
R381	ERDS2TJ105T	1/4W 1M
R382	ERDS2TJ472	1/4W 4.7K
R383	ERDS2TJ223	1/4W 22K
R397, 398	ERQ16NKW2R2E	1/6W 2.2 ⚠
R501	ERDS2TJ152	1/4W 1.5K
R502	ERDS2TJ221	1/4W 220
R506	ERDS2TJ152	1/4W 1.5K
R507	ERDS2TJ221	1/4W 220
R508, 509	ERDS2TJ153	1/4W 15K
R511, 512	ERDS2TJ122	1/4W 1.2K
R550	ERDS2TJ472	1/4W 4.7K
R554	ERDS2TJ102	1/4W 1K
R555	ERDS2TJ333	1/4W 33K
R562	ERDS2TJ473	1/4W 47K
R563	ERDS2TJ332	1/4W 3.3K
R565-567	ERDS2TJ332	1/4W 3.3K
R568-571	ERDS2TJ101	1/4W 100
R576	ERDS2TJ102	1/4W 1K
R601, 602	ERD2FCVJ4R7T	1/4W 4.7 ⚠
R603, 604	ERDS2TJ102	1/4W 1K
R605	ERDS2TJ101	1/4W 100
R606	ERDS2TJ393	1/4W 39K
R607	ERDS2TJ153	1/4W 15K
R609	ERQ16NKW2R2E	1/6W 2.2 ⚠
R610	ERDS2TJ222	1/4W 2.2K
R612	ERDS2TJ472	1/4W 4.7K
R613, 614	ERDS2TJ682T	1/4W 6.8K
R615	ERDS2TJ103	1/4W 10K
R616	ERD25FVJ4R7T	1/4W 4.7 ⚠
R621, 622	ERDS2TJ151	1/4W 150
R623, 624	ERDS2TJ123	1/4W 12K
R627, 628	ERDS2TJ472	1/4W 4.7K
R629, 630	ERDS2TJ682T	1/4W 6.8K
R631, 632	ERDS2TJ471	1/4W 470
R635, 636	ERDS2TJ472	1/4W 4.7K
R637, 638	ERDS2TJ150T	1/4W 15
R641, 642	ERDS2TJ471	1/4W 470
R651-654	ERDS2TJ2R2T	1/4W 2.2
R656	ERDS2TJ221	1/4W 220
R901	ERDS2TJ821	1/4W 820
R902	ERDS2TJ102	1/4W 1K
R903	ERDS2TJ122	1/4W 1.2K
R904	ERDS2TJ152	1/4W 1.5K
R905	ERDS2TJ182	1/4W 1.8K
R906	ERDS2TJ222	1/4W 2.2K
R907	ERDS2TJ332	1/4W 3.3K
R908	ERDS2TJ223	1/4W 22K
R909	ERDS2TJ103	1/4W 10K
R910	ERDS2TJ562	1/4W 5.6K
R911	ERDS2TJ681	1/4W 680
R915	ERDS2TJ222	1/4W 2.2K
R916-919	ERDS2TJ103	1/4W 10K
R920-922	ERDS2TJ102	1/4W 1K
R923	ERDS2TJ391	1/4W 390
R924, 925	ERDS2TJ102	1/4W 1K
R926, 927	ERDS2TJ101	1/4W 100
R928	ERDS2TJ102	1/4W 1K
R929	ERDS2TJ101	1/4W 100
R930-932	ERDS2TJ102	1/4W 1K
R934	ERDS2TJ101	1/4W 100
R935	ERDS2TJ102	1/4W 1K
R936	ERDS2TJ101	1/4W 100
R938	ERDS2TJ102	1/4W 1K
R939	ERDS2TJ101	1/4W 100
R940, 941	ERDS2TJ393	1/4W 39K
R942	ERDS2TJ472	1/4W 4.7K
R944	ERDS2TJ473	1/4W 47K

Ref. No.	Part No.	Values & Remarks
R945, 946	ERDS2TJ102	1/4W 1K
R947, 948	ERDS2TJ103	1/4W 10K
R950	ERDS2TJ102	1/4W 1K
R951	ERDS2TJ104	1/4W 100K
R952, 953	ERDS2TJ102	1/4W 1K
R954	ERDS2TJ101	1/4W 100
R955	ERDS2TJ824	1/4W 820K
R956	ERDS2TJ101	1/4W 100
R957	ERDS2TJ102	1/4W 1K
R958	ERDS2TJ471	1/4W 470
R959	ERDS2TJ103	1/4W 10K
R962	ERDS2TJ473	1/4W 47K
R965	ERDS2TJ472	1/4W 4.7K
R966	ERDS2TJ123	1/4W 12K
R967	ERDS2TJ472	1/4W 4.7K
R968, 969	ERDS2TJ152	1/4W 1.5K
R971	ERDS2TJ104	1/4W 100K
R972	ERDS2TJ101	1/4W 100
R973	ERDS2TJ151	1/4W 150
R974	ERDS2TJ153	1/4W 15K
R975	ERDS2TJ473	1/4W 47K
R976	ERDS2TJ272T	1/4W 2.7K
R978-992	ERDS2TJ104	1/4W 100K
R993, 994	ERDS2TJ102	1/4W 1K
R997-999	ERDS2TJ102	1/4W 1K
		CAPACITORS
C101	ECBT1C103NS5	16V 0.01U
C103	ECBT1C103NS5	16V 0.01U
C104, 105	ECBT1H102KB5	50V 1000P
C106	ECBT1C103NS5	16V 0.01U
C107	ECBT1H473ZF5	50V 0.047U
C108	ECBT1H8R2KC5	50V 8.2P
C109, 110	ECBT1C103NS5	16V 0.01U
C111	ECEA1EKA4R7B	25V 4.7U
C112	ECBT1C103NS5	16V 0.01U
C113	ECBT1H102KB5	50V 1000P
C114	RCE1HKA3R3BG	50V 3.3U
C115	ECEA1EKA4R7B	25V 4.7U
C116	ECBT1C822KS5	16V 8200P
C117	ECQP1391JZ	100V 390P
C118, 119	ECFR1C103KR	16V 0.01U
C120, 121	ECEA1HKA010B	50V 1U
C122	ECEA1HKA2R2B	50V 2.2U
C123	ECEA1HKA010B	50V 1U
C124	ECBT1H102KB5	50V 1000P
C125	ECBT1H150JC5	50V 15P
C126	ECBT1H473ZF5	50V 0.047U
C127	ECEA1CKA220B	16V 22U
C128	ECBT1H102KB5	50V 1000P
C129, 130	ECEA0JKA101B	6.3V 100U

Ref. No.	Part No.	Values & Remarks
C132	ECBT1H102KB5	50V 1000P
C133, 134	ECBT1H270JU5	50V 27P
C135, 136	ECBT1C103KS5	16V 0.01U
C137, 138	ECBT1H561KB5	50V 560P
C139, 140	ECBT1C682KR5	16V 6800P
C141-144	ECEA1HKA010B	50V 1U
C145	ECBT1H220JC5	50V 22P
C148	ECBT1C103NS5	16V 0.01U
C149	ECBT1H104ZF5	50V 0.1U
C171, 172	ECBT1H102KB5	50V 1000P
C173	ECEA1CKA220B	16V 22U
C174	RCE1CKA100BG	16V 10U
C181	ECBT1H471KB5	50V 470P
C196	ECBT1H102KB5	50V 1000P
C205-208	ECBT1H101KB5	50V 100P
C209, 210	ECBT1H180J5	50V 18P
C211	ECBT1H102KB5	50V 1000P
C223, 224	ECBT1H104ZF5	50V 0.1U
C225-227	ECBT1H470J5	50V 47P
C231, 232	ECBT1E103ZF	25V 0.01U
C233, 234	ECBT1H102KB5	50V 1000P
C235, 236	ECBT1H101KB5	50V 100P
C240	ECBT1H102KB5	50V 1000P
C301	ECBT1H102KB5	50V 1000P
C321, 322	ECBT1E103ZF	25V 0.01U
C323, 324	ECBT1H102KB5	50V 1000P
C325, 326	ECBT1H101KB5	50V 100P
C327, 328	RCE1CKA470BG	16V 47U
C333, 334	ECBT1H221KB5	50V 220P
C335, 336	RCE1CKA100BG	16V 10U
C337, 338	ECEA1CKA220B	16V 22U
C339, 340	RCE1CKA100BG	16V 10U
C341, 342	ECEA1AKN100B	10V 10U
C343	RCE1CKA100BG	16V 10U
C344, 345	ECBT1H470J5	50V 47P
C348	ECEA1CKA330B	16V 33U
C349	ECEA1HKA010B	50V 1U
C350	ECEA0JKA470B	6.3V 47U
C351, 352	RCE1CKA100BG	16V 10U
C355	ECEA1CKA330B	16V 33U
C356	ECBT1H104ZF5	50V 0.1U
C357	RCE1AKA101BG	10V 100U
C358-361	ECBT1H102KB5	50V 1000P
C365	ECEA0JKA470B	6.3V 47U
C371	ECBT1H102KB5	50V 1000P
C391, 392	ECEA1CKA101B	16V 100U
C393, 394	ECBT1H102KB5	50V 1000P
C501	ECEA1EKA101B	25V 100U
C502	ECA1VM101B	35V 100U
C503	ECBT1E103ZF	25V 0.01U
C504	ECEA1EKA101B	25V 100U
C509	ECBT1E103ZF	25V 0.01U

Ref. No.	Part No.	Values & Remarks
C510	RCE1AKA101BG	10V 100U
C513	ECBT1H102KB5	50V 1000P
C550, 551	ECA0JKF101B	6.3V 100U
C557	ECBT1H102KB5	50V 1000P
C558	ECEA0JKA101B	6.3V 100U
C559, 560	ECEA1HKA010B	50V 1U
C570	ECBT1H102KB5	50V 1000P
C601, 602	ECKT1H223ZF	50V 0.022U
C603	ECA1EM102B	25V 1000U ⚠
C604	RCE1EM471BV	25V 470U ⚠
C605, 606	ECBT1E103ZF	25V 0.01U
C607, 608	RCE1AKA470BG	10V 47U
C609	ECBT1H102KB5	50V 1000P
C610, 611	ECBT1H104ZF5	50V 0.1U
C612	RCE1EM471BV	25V 470U
C613	ECBT1E103ZF	25V 0.01U
C614	RCE1AKA470BG	10V 47U
C615	ECEA1EKA101B	25V 100U
C616	ECA1HM470B	50V 47U
C617	ECA1HM470B	50V 47U ⚠
C618	ECA1JM470B	63V 47U
C619	ECBT1E103ZF	25V 0.01U
C620	RCE1VKA100BG	35V 10U
C622	ECEA1VKA470B	35V 47U
C623	RCE1AKA101BG	10V 100U
C631-636	ECBT1H101KB5	50V 100P
C638	ECBT1H104ZF5	50V 0.1U
C651-653	ECBT1H104ZF5	50V 0.1U
C654	ECBT1C105ZF5	16V 1U
C655	ECQV1H224JM3	50V 0.22U
C901-904	ECBT1H471KB5	50V 470P
C905, 906	ECBT1H102KB5	50V 1000P
C907	ECBT1H104ZF5	50V 0.1U
C908	ECBT1E103ZF	25V 0.01U
C909	ECEA1HKA2R2B	50V 2.2U
C910	RCE1CKA100BG	16V 10U
C911	ECBT1H270JU5	50V 27P
C912	ECBT1H220GC5	50V 22P
C915	ECBT1E103ZF	25V 0.01U
C916, 917	ECEA1HKA010B	50V 1U
C918	ECBT1H104ZF5	50V 0.1U
C919	RCE0JU102BV	6.3V 1000U
C920	ECBT1E103ZF	25V 0.01U
C921	ECA0JKF101B	6.3V 100U
C922	ECEA0JKA221B	6.3V 220U
C924	ECBT1H102KB5	50V 1000P
C951-958	ECBT1H101KB5	50V 100P

■CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RHD30007-S	SCREW	
2	RKM0327A-S	CABINET	
3	XTB3+8JFZ	SCREW	
4	REZ0883	FFC(14P)	
5	REZ0884	FFC(21P)	
7	RGR0242B-A	REAR PANEL	
8	RFKJTHD7-N	BOTTOM CHASSIS ASS'Y	
8-1	RKA0076-N1	FOOT	
9	RMN0203	P. C. B. HOLDER	
10	RMN0195	FL HOLD PIECE	
11	RMN0381	FL HOLDER	
12	RFKGTCA01E-N	FRONT PANEL ASS'Y	
13	RGK0821-S	SIDE ORNAMENT(L)	
14	RGK0822-S	SIDE ORNAMENT(R)	
15	RGL0334-1Q	PANEL LIGHT	
16	RGU1394A-S	BUTTON	

Ref. No.	Part No.	Part Name & Description	Remarks
17	XTBS26+8J	SCREW	
18	SHE170-2	P. C. B. SUPPORT	
19	XTBS3+8JFZ1	SCREW	
20	XTB3+12JFZ	SCREW	
21	RMC0313	TUNER EARTH SPRING	

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