

# Service Manual

## AUTOMOTIVE MULTIMEDIA



### MITSUBISHI CQ-JB3160AA

AM/FM MPX ELECTRONIC TUNING  
RADIO with CD Player

MITSUBISHI PART No. :MN141489

ID CODE :P0301

VEHICLE : LANCER/DIAMANTE

DESTINATION :North America

PRODUCED AFTER : June, 2003

## Specifications\*

### General

Power Supply	DC 12V (11V - 16V), Test Voltage 13.2V, Negative Ground
Current Consumption	Less than 3.0A at 0.5W
Maximum Power Output	35W×4ch (at 4Ω)
Output Impedance	4Ω

### AM Radio

Frequency Range	530 - 1,710kHz
Usable Sensitivity	24dB/μV (S/N 20dB)

### FM Stereo Radio

Frequency Range	87.7 - 107.9MHz
Usable Sensitivity	7dB/μV (S/N 30dB)

### CD Player (NCD-8KAI)

Signal to Noise Ratio	More than 66dB
Total Harmonic Distortion	Less than 0.4%
Channel Separation	More than 55dB

**Dimension\*\* (W×H×D)** 178 × 50 × 169mm

**Weight\*\*** 1.55kg

\* Specifications and the design are subject to possible modification without notice due to improvements.

\*\* Dimensions and Weight shown are approximate.

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## 1 FEATUERS

- PLL (Phase Locked Loop) synthesized tuning.
- 18-station preset (12-FM, 6-AM)
- FM One-tuner diversity.
- Electronic control of power and sound.
- 4ch x 3 points Fix-Equalizer.
- NCD-8KAI CD Deck
- Apply for CD-R/CD-RW
- CD random, repeat function.

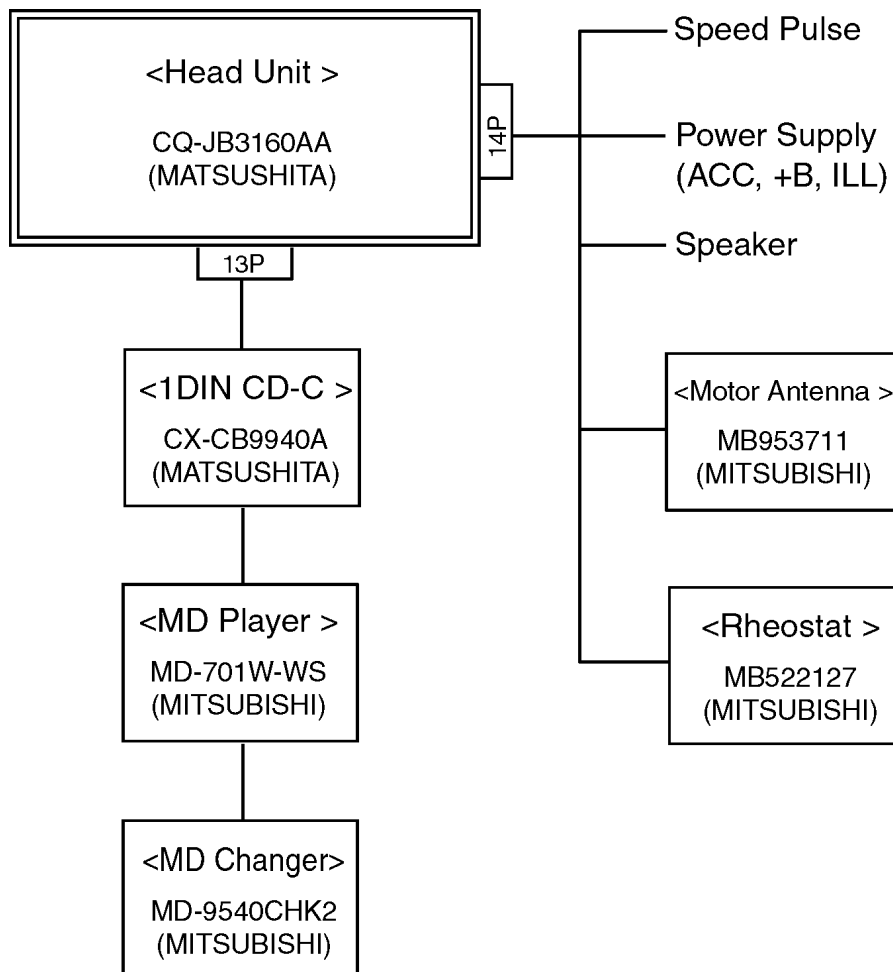
- CD-CH, MD-CH control.

## 2 NOTEs

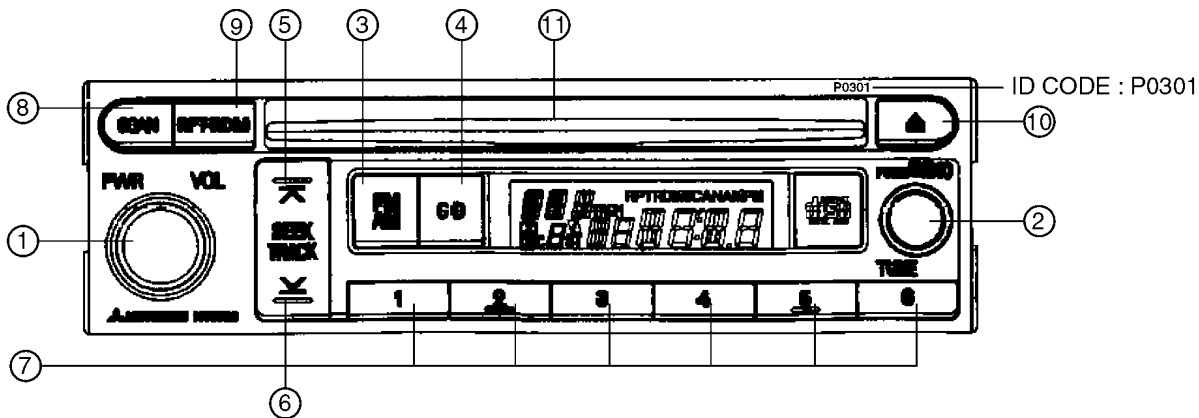
Difference between CQ-JB3160A and CQ-JB3160AA.

	CQ-JB3160A	CQ-JB3160AA
AM-NK function	-	Added

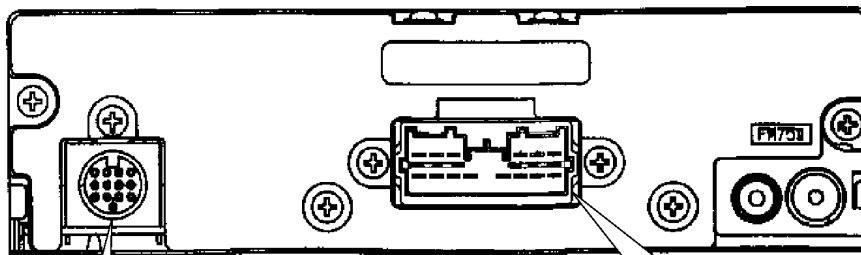
## 3 SYSTEM DIAGRAM



# 4 NAME AND FUNCTION OF EACH PARTS



- |   |         |                                    |   |         |                                |
|---|---------|------------------------------------|---|---------|--------------------------------|
| ① | POW     | : Power ON/OFF.                    | ⑦ | 1-6     | : Radio frequency preset/call. |
|   | VOL     | : Increase/Decrease/ of volume.    |   |         | : CD.CH disc selection.        |
| ② | TUNE    | : Radio manual tuning.             | ⑧ | SCAN    | : Radio scan tuning.           |
|   | AUDIO   | : Audio adjustment mode selection. | ⑨ | RPT     | : CD repeat play.              |
| ③ | FM/AM   | : Radio band selection.            |   | RDM     | : CD random play.              |
| ④ | CD      | : CD mode selection.               | ⑩ | ▲       | : CD eject.                    |
| ⑤ | SEEK ▲  | : Upward seeking.                  | ⑪ | CD slot |                                |
|   | TRACK ▲ | : CD mode selection.               |   |         |                                |
| ⑥ | SEEK ▼  | : Upward seeking.                  |   |         |                                |
|   | TRACK ▼ | : CD mode selection.               |   |         |                                |



**CN401 13P DIN CONNECTOR**

4	3	2	1
8	7	6	5
12	11	10	9
13			

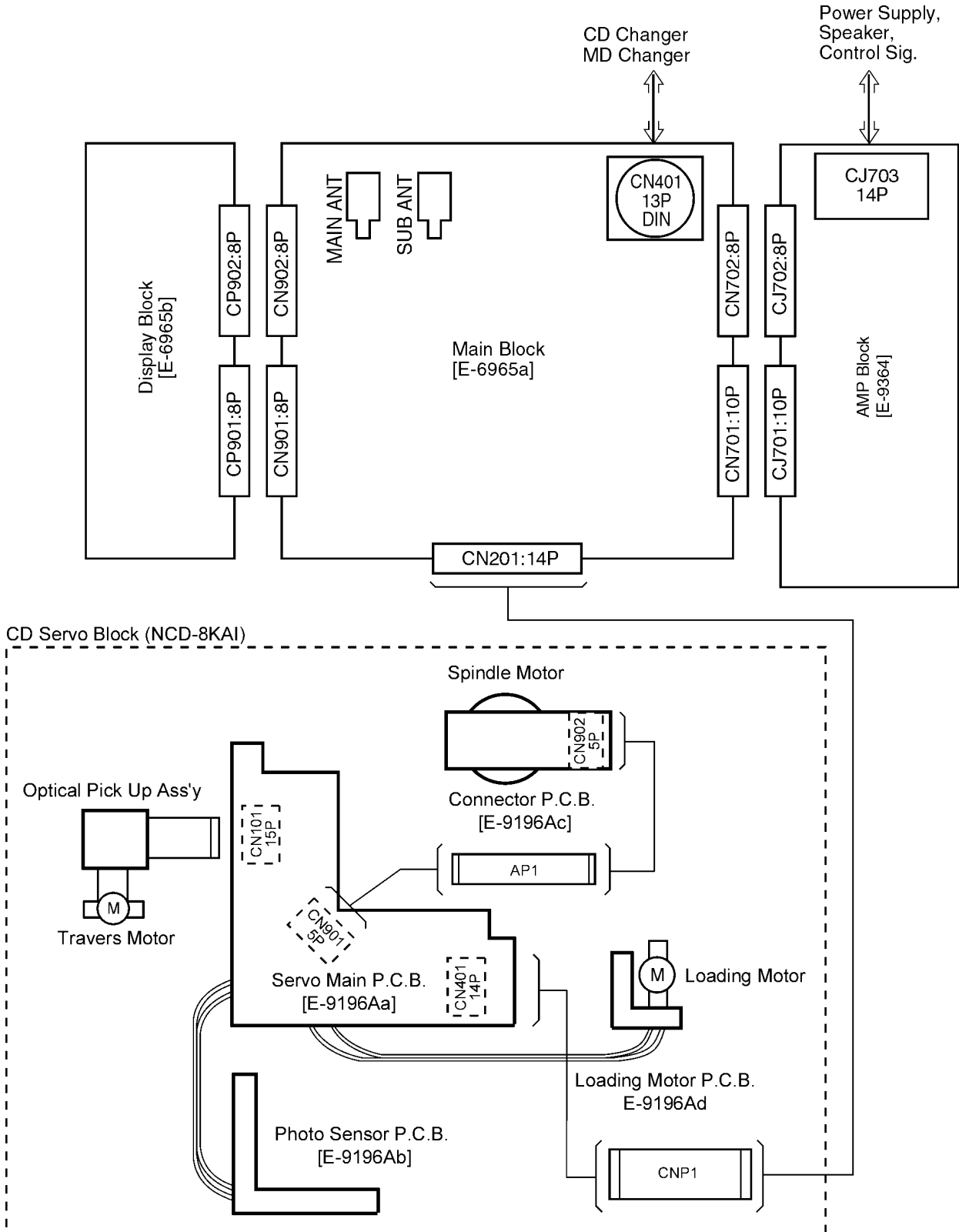
1. Signal Ground	8. No Connection
2. CD-CH Lch	9. Power Supply, +B
3. No Connection	10. Illumi. 10.5V
4. CD-CH Rch	11. M-Busy
5. No Connection	12. M-SCK
6. No Connection	13. M-Data
7. Accessory	

**CJ703 14P CONNECTOR**

6	5	4	3	2	1
14	13	12	11	10	9
8	7				

1. Front Speaker, Right (+)
2. Front Speaker, Left (+)
3. Illumi. (+)
4. Motor Antenna
5. Rear Speaker, Left (+)
6. Rear Speaker, Right (+)
7. Front Speaker, Right (-)
8. Front Speaker, Left (-)
9. Illumi. (-)
10. Power Supply, +B
11. Power Supply, ACC
12. No Connection
13. Rear Speaker, Left (-)
14. Rear Speaker, Right (-)

# 5 WIRING CONNECTION





# 7 TERMINALS DESCRIPTION

## 7.1. Main Block

IC601 : C2BBGF000289

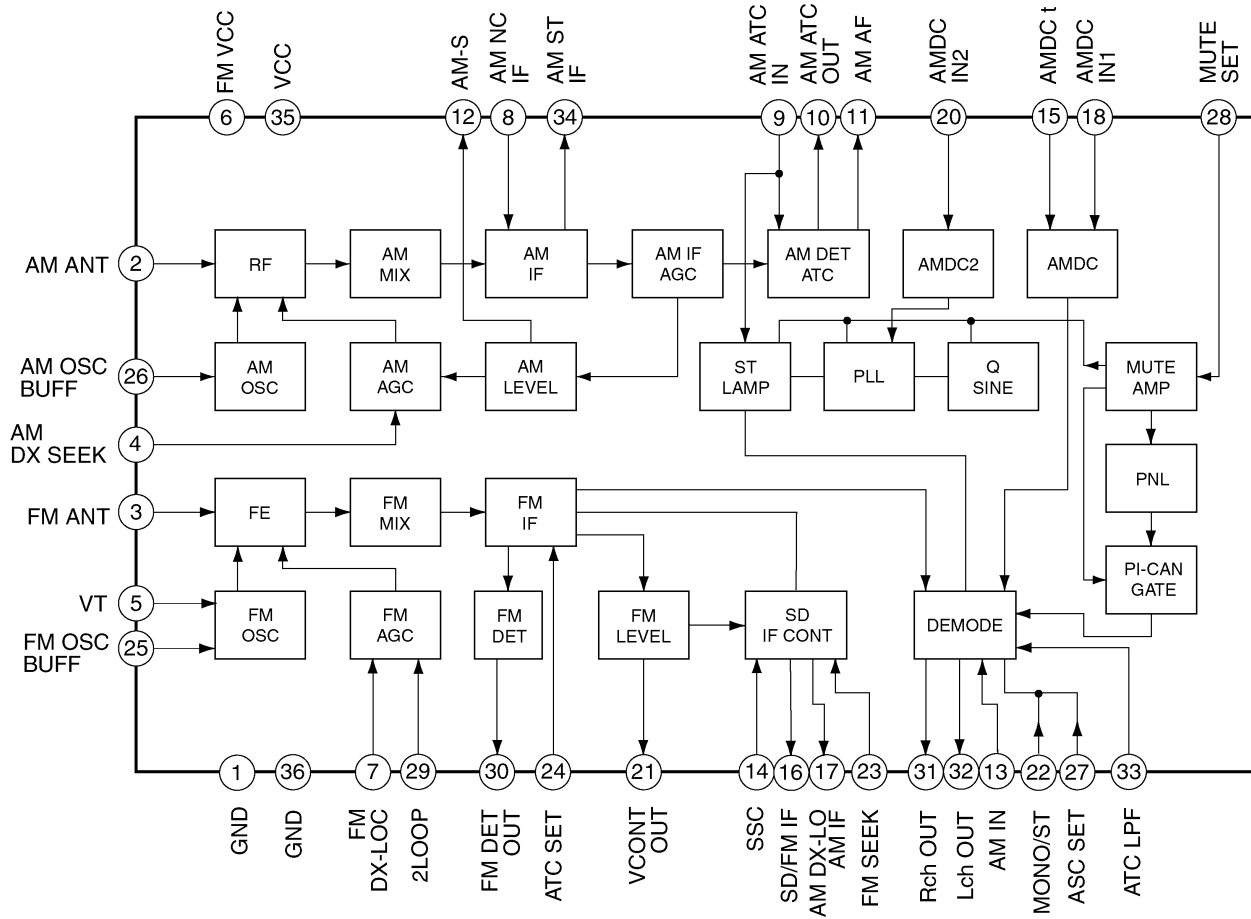
Pin No.	Port	Descriptions	I/O	Vol. (V)
1	SUBVOLCLK	(Ground pull-down)	-	0
2	DIV SW	Diversity switch	I	5.1
3	-	-	-	-
4	AVSS	Ground	-	0
5	SET S0	System function setting	O	0
6	SET S1	System function setting	O	0
7	AVREF	+5V power supply	-	5.1
8	SET R0	System function setting	I	0
9	SET R1	System function setting	I	0
10	SET R2	System function setting	I	0
11	CD DI	CD data output	O	2.4
12	CD DO	CD data input	I	1.4
13	CD CLK	Shift clock for CD data	O	4.9
14	PLL DI	PLL data input	I	5.0
15	MBUSY OUT	M-BUS busy	O	0
16	MBUSY IN	M-BUS busy	I	0
17	MDATA	M-BUS data	I/O	4.9
18	MCLK	M-BUS clock	O	4.9
19	PLLDO	PLL data output	O	0
20	PLLSTB	PLL strobe	O	0
21	PLLCLK	PLL clock	O	0
22	MUTE A	Mute signal	O	0
23	VOL STB	Electric volume strobe	O	0
24	VOL CLK	Electric volume clock	O	0
25	VOL DATA	Electric volume data	O	0
26	AMP CONT	Power amp. stand-by	O	4.9
27	CD PON	CD power control	O	4.9
28	CD ON	CD control LSI enable	O	4.9
29	SW1	CD disc-in SW	I	0
30	SW3	CD disc-out SW	I	4.8
31	TUNEA	Tuner switch signal	I	4.7
32	TUNEB	Tuner switch signal	I	0.5
33	GND	Ground	-	0
34	VOLINA	Volume switch signal	I	0
35	VOLINB	Volume switch signal	I	0
36	CD RESET	CD controller reset	O	0
37	MAIN	Main antenna selection	O	4.9
38	SUB	Sub. antenna selection	O	8.3
39	BIBIRI CNT	Rattle noise check control	O	5.0
40	SECDI	Security data input	I	0
41	SECDO	Security data output	O	0
42	SECCLK	Security data read / write clock	O	0
43	SECCS	Security ROM select	O	0
44	FreqOUT	Tone/Burst frequency	O	0
45	TONE/TRG	Tone/Triger control	O	0
46	S.PULSE	Speed pulse input	I	0
47	Ga INPUT	GALA signal input	I	5.0
48	ST	FM stereo detection	I	0.3
49	LCD CONT	LCD back lighth on/off	O	4.8
50	BUZZER	Buzzer output	O	0
51	NC	No connection	-	-
52	KS0	Key strobe	O	0
53	KS1	Key strobe	O	0
54	KS2	Key strobe	O	0
55	KS3	Not used	-	-
56	KR0	Key data	I	0
57	KR1	Key data	I	1.6
58	KR2	(Groung pull-down)	-	0
59	KR3	(Groung pull-down)	-	0
60	RESET	Reset input	I	4.8
61	M-DATA IN	M-BUS data	I	4.9
62	CD EJECT	CD eject SW	I	4.8
63	BATDET	Battery level detection	I	5.0
64	ACCDDET	ACC level detection	I	0
65	MUTE P	Power amp. mute	O	0
66	ANT	Motor antenna power on/off	O	0

Pin No.	Port	Descriptions	I/O	Vol. (V)
67	GND	Ground	-	0
68	VDD	+5V power supply	-	4.9
69	X2	Crystal oscillator	-	0
70	X1	Crystal oscillator	-	2.6
71	GND	Ground	-	0
72	XT2	Crystal oscillator	-	2.7
73	XT1	Crystal oscillator	-	2.5
74	AVDD	+5V power supply	-	4.9
75	AV REF0	+5V power supply	-	5.0
76	VAM/FM	AM/FM vcont	I	0
77	REMOTE A	(+5V pull-up)	-	5.0
78	BIBIRI.A	(Ground pull-down)	-	0
79	CLIPCONT	Not used	-	-
80	REMOTE D	(Ground pull-down)	-	0

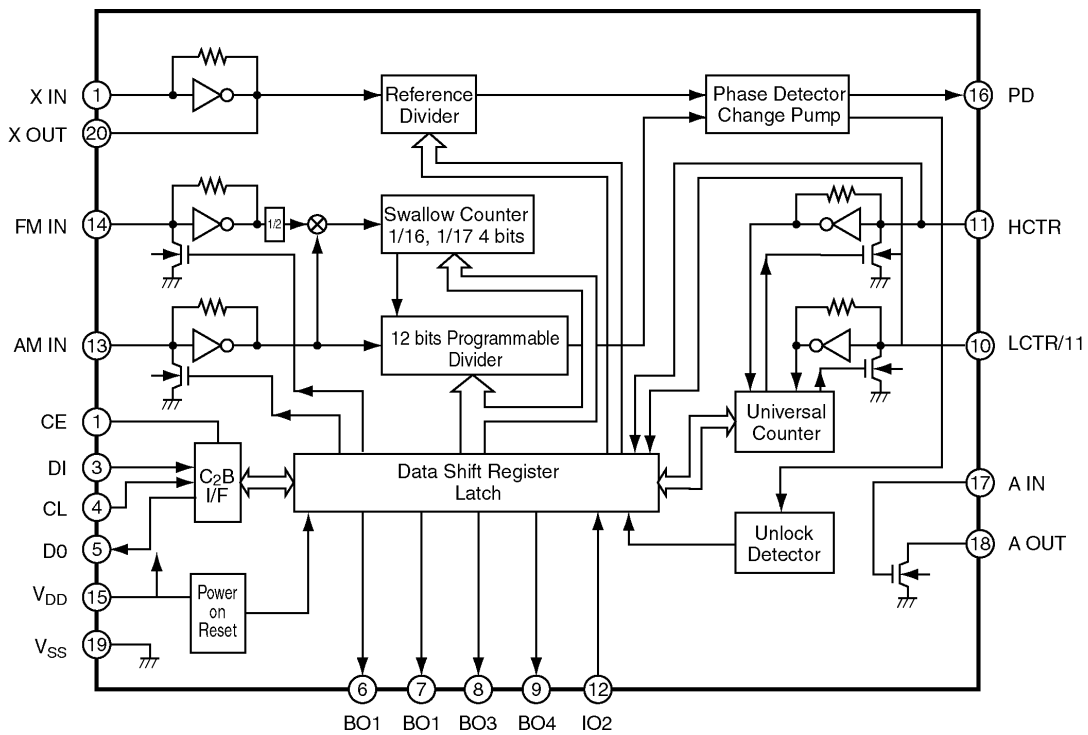
Note 1 : Voltage measuerments are with respect to ground, with a voltmeter (internal resistance : 10M ohms).

# 8 PACKAGE AND IC BLOCK DIAGRAM

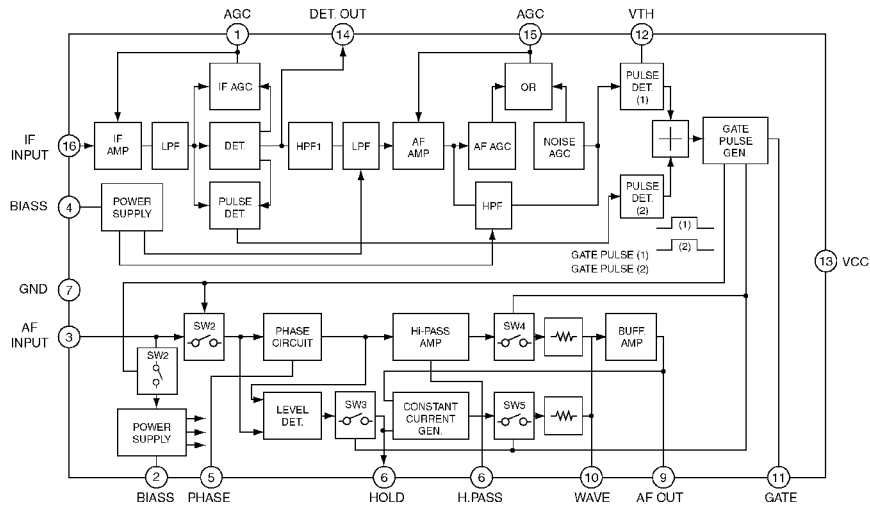
## 8.1. Main Block



PA51 : YEP0PTA514B0

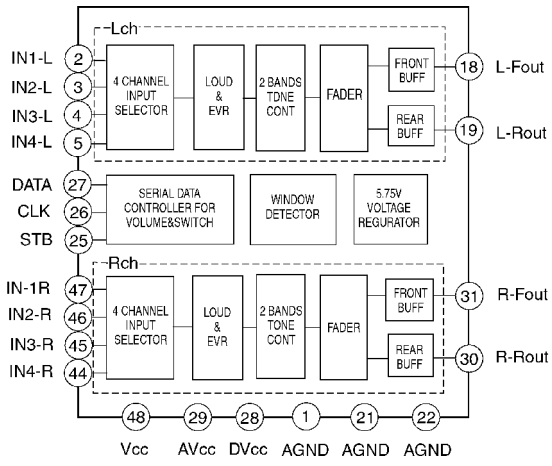


IC20 : YEAMLC72135C

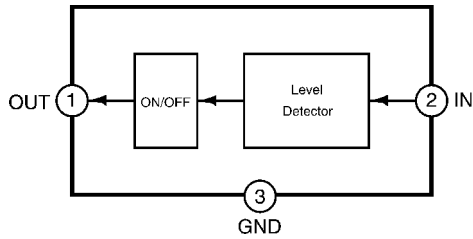


IC801 : YEAMHA12181F

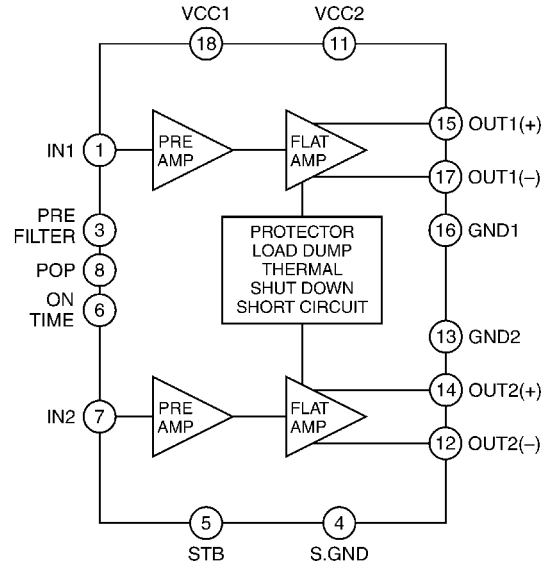
## 8.2. AMP Block



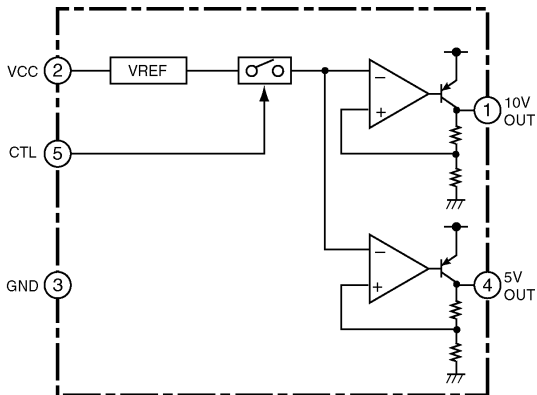
IC201 : YEAMSN761026



IC602 : MN1382KTX / IC703: MN1382QTX



IC251 : C1BA00000326



IC704 : YEAMA61W12ST



# 9 REPLACEMENT PARTS LIST

Notes :

1. Be sure to make your orders of replacement parts according to this list.
2. 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.
3. Location keys in the remarks column indicates the general location of the parts shown in the exploded drawing, as in a road map.
4. The marking (RTL) indicates that Retention Time is limited for this item. After the discontinuation of assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Ref. No.	Part No.	Part Name & Description	Remarks
[E6965] Main/Display Block			
IC's and TRANSISTORS			
IC20	YEAMLC72135C	IC	
IC201	YEAMSN761026	IC	
IC203	C0ABBB000179	IC	
IC204	YEAMM5243FT1	IC	
IC205	C0ABBB000179	IC	
IC206	YEAMM5243FT1	IC	
IC210	C0ABBB000179	IC	
IC601	C2BBGF000287	IC	
IC602	MN1382KTX	IC	
IC603	C0JBAM000048	IC	
IC604	C3EBCG000037	IC	
IC703	MN1382QTX	IC	
IC704	YEAMA61W12ST	IC	
IC801	YEAMHA12181F	IC	
IC901	YEAMSM6786	IC	
PA51	YEP0PTA514B0	Electronic Tuner	
Q221	B1GBHBEA0004	Transistor	
Q222	B1ABCF000042	Transistor	
Q223	B1GDCFL0010	Transistor	
Q321	B1GBHBEA0004	Transistor	
Q401	B1GDCFJN0004	Transistor	
Q402	B1GBCFGG0001	Transistor	
Q403	B1ABCF000044	Transistor	
Q404	B1ABCF000042	Transistor	
Q405	B1ABCF000044	Transistor	
Q406	B1ABCF000044	Transistor	
Q407	B1ABCF000042	Transistor	
Q408	B1ABCF000044	Transistor	
Q711	B1GDCFL0010	Transistor	
Q712	YEANCL14YKX	Transistor	
Q713	B1ABCF000042	Transistor	
Q720	YEANBP1F3PT	Transistor	
Q721	2SD245300L	Transistor	
Q722	2SB1398QTA	Transistor	
Q723	2SB1398QTA	Transistor	
Q724	B1GDJEGJ0002	Transistor	
Q725	YEANBP1F3PT	Transistor	
Q731	B1ABCF000044	Transistor	
Q732	YEANCL14YKX	Transistor	
Q741	B1BBAC000007	Transistor	
Q771	2SD245300L	Transistor	
Q772	2SD0601AHR	Transistor	
Q773	YEAN2SD1856	Transistor	
Q774	2SB1398QTA	Transistor	

Ref. No.	Part No.	Part Name & Description	Remarks
Q775	2SD0601AHR	Transistor	
Q911	YEANHQ1F3PT1	Transistor	
Q912	B1GDJEGJ0002	Transistor	
Q913	2SB1398QTA	Transistor	
Q914	2SD0601AHR	Transistor	
DIODES			
D51	MA3X55500L	Diode	
D71	MA551TX	Diode	
D401	MA152WKTX	Diode	
D402	MAZ32700ML	Diode	
D403	MAZ32700ML	Diode	
D404	MAZ32700ML	Diode	
D603	MA3X152K0L	Diode	
D610	MA152WKTX	Diode	
D621	MA741TX	Diode	
D710	B0BA03300012	Diode	
D711	YEADRD91M1T2	Diode	
D712	MA152WKTX	Diode	
D731	YEADRD75M2T1	Diode	
D732	MA741TX	Diode	
D733	YEADRD56M3T1	Diode	
D773	YEADRD12M1T1	Diode	
D774	B0BC5R100014	Diode	
D775	B0EAKP000011	Diode	
D776	B0EAKP000011	Diode	
D779	B0EAKP000011	Diode	
D901	MA3X152K0L	Diode	
CAPACITORS			
C25	YECUS1H220JM	Ceramic, 22PF 50WV	
C26	YECUS1H150JM	Ceramic, 15PF 50WV	
C51	FLJ1H221A672	Ceramic, 220PF 50WV	
C53	ECEALAKS221I	Electrolytic, 220 $\mu$ F 10WV	
C55	YECUS1E223KX	Ceramic, 0.022 $\mu$ F 25WV	
C56	YECUS1E223KX	Ceramic, 0.022 $\mu$ F 25WV	
C58	FLJ1H1020024	Ceramic, 1000PF 50WV	
C59	FLJ1H1020024	Ceramic, 1000PF 50WV	
C60	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C71	FLJ1H221A672	Ceramic, 220PF 50WV	
C101	YECUS1C154KX	Ceramic, 0.15 $\mu$ F 16WV	
C102	YECUS1H153KX	Ceramic, 0.015 $\mu$ F 50WV	
C103	YECUS1C563KX	Ceramic, 0.056 $\mu$ F 16WV	
C105	FLJ1H2R0A007	Ceramic, 2.0PF 50WV	
C106	FLJ1H101A672	Ceramic, 100PF 50WV	
C162	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C163	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C166	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C201	ECEALAKA221I	Electrolytic, 220 $\mu$ F 10WV	
C202	ECEALHKS2R2I	Electrolytic, 2.2 $\mu$ F 50WV	
C203	ECEALHKA2R2I	Electrolytic, 2.2 $\mu$ F 50WV	
C204	YECUS1H390JM	Ceramic, 39PF 50WV	
C205	ECEALEKA4R7I	Electrolytic, 4.7 $\mu$ F 25WV	
C206	YECUS1H390JM	Ceramic, 39PF 50WV	
C207	FLJ1H681A672	Ceramic, 680PF 50WV	
C208	FLJ1H681A672	Ceramic, 680PF 50WV	
C210	ECEALHKA010I	Electrolytic, 1 $\mu$ F 50WV	
C211	ECEALHKS2R2I	Electrolytic, 0.22 $\mu$ F 50WV	
C212	ECEALHKA010I	Electrolytic, 1 $\mu$ F 50WV	
C213	ECEALASN100I	Electrolytic, 10 $\mu$ F 10WV	
C214	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C217	FLJ1H682A675	Ceramic, 6800PF 50WV	
C218	FLJ1H821A672	Ceramic, 820PF 50WV	
C220	ECEALVSN2R2I	Electrolytic, 2.2 $\mu$ F 35WV	
C221	YECUS1C683KX	Ceramic, 0.068 $\mu$ F 16WV	
C222	ECEALASN100I	Electrolytic, 10 $\mu$ F 10WV	
C224	ECEALHKS2R2I	Electrolytic, 2.2 $\mu$ F 50WV	
C225	ECEALCKA100I	Electrolytic, 10 $\mu$ F 16WV	
C230	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C231	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C232	YECUS1E223KX	Ceramic, 0.022 $\mu$ F 25WV	



Ref. No.	Part No.	Part Name & Description	Remarks
J602	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
J701	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
J702	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R34	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R35	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R51	ERJ6GEYJ564	Chip, 560kΩ 1/10W	
R52	ERJ6GEYJ564	Chip, 560kΩ 1/10W	
R55	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R56	ERJ6GEYJ563	Chip, 56kΩ 1/10W	
R57	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R58	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R59	ERJ6GEYJ562	Chip, 5.6kΩ 1/10W	
R101	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R102	ERJ6GEYJ153	Chip, 15kΩ 1/10W	
R105	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R161	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R162	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R164	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R165	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R167	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R201	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R202	ERJ6GEYJ273	Chip, 27kΩ 1/10W	
R203	ERJ6GEYJ122	Chip, 1.2kΩ 1/10W	
R204	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R205	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R207	ERJ8GEYJ273V	Chip, 27kΩ 1/8W	
R210	ERJ6GEYJ181	Chip, 180Ω 1/10W	
R212	ERJ6GEYJ182	Chip, 1.8kΩ 1/10W	
R215	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R216	ERJ6GEYJ682	Chip, 6.8kΩ 1/10W	
R217	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R221	ERJ6GEYJ153	Chip, 15kΩ 1/10W	
R222	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R223	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R224	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R230	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R231	ERJ6GEYJ183	Chip, 18kΩ 1/10W	
R232	ERJ6GEYJ823	Chip, 82kΩ 1/10W	
R233	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R234	ERJ6GEYJ122	Chip, 1.2kΩ 1/10W	
R235	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R237	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R238	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R240	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R245	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R246	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R247	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R248	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R260	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R261	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R262	ERJ6GEYJ104	Chip, 100kΩ 1/10W	
R263	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R264	ERJ6GEYJ152	Chip, 1.5kΩ 1/10W	
R266	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R267	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R270	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R301	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R302	ERJ6GEYJ273	Chip, 27kΩ 1/10W	
R303	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R304	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R305	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R307	ERJ8GEYJ273V	Chip, 27kΩ 1/8W	
R310	ERJ6GEYJ181	Chip, 180Ω 1/10W	
R312	ERJ6GEYJ182	Chip, 1.8kΩ 1/10W	
R315	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R316	ERJ6GEYJ682	Chip, 6.8kΩ 1/10W	
R317	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R321	ERJ6GEYJ153	Chip, 15kΩ 1/10W	
R330	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R331	ERJ6GEYJ183	Chip, 18kΩ 1/10W	
R332	ERJ6GEYJ823	Chip, 82kΩ 1/10W	
R333	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R334	ERJ6GEYJ122	Chip, 1.2kΩ 1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R335	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R337	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R338	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R340	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R345	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R346	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R347	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R348	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R360	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R361	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R362	ERJ6GEYJ104	Chip, 100kΩ 1/10W	
R363	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R364	ERJ6GEYJ152	Chip, 1.5kΩ 1/10W	
R366	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R367	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R370	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R401	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R402	ERJ6GEYJ562	Chip, 5.6kΩ 1/10W	
R403	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R404	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R405	ERJ6GEYJ392	Chip, 3.9kΩ 1/10W	
R406	ERJ6GEYJ122	Chip, 1.2kΩ 1/10W	
R407	ERJ6GEYJ561	Chip, 560Ω 1/10W	
R409	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R410	ERJ6GEYJ272	Chip, 2.7kΩ 1/10W	
R411	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R412	ERJ6GEYJ392	Chip, 3.9kΩ 1/10W	
R413	ERJ6GEYJ122	Chip, 1.2kΩ 1/10W	
R414	ERJ6GEYJ561	Chip, 560Ω 1/10W	
R501	ERJ6GEYJ822	Chip, 8.2kΩ 1/10W	
R502	ERJ6GEYJ823	Chip, 82kΩ 1/10W	
R503	ERJ6GEYJ104	Chip, 100kΩ 1/10W	
R504	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R505	ERJ6GEYJ184	Chip, 180kΩ 1/10W	
R506	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R507	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R508	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R509	ERJ6GEYJ101	Chip, 100Ω 1/10W	
R601	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R602	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R603	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R604	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R605	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R606	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R607	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R608	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R609	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R610	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R611	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R612	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R614	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R615	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R616	ERJ6GEYJ104	Chip, 100kΩ 1/10W	
R617	ERJ6GEYJ564	Chip, 560kΩ 1/10W	
R619	ERJ6GEYJ221V	Chip, 220Ω 1/10W	
R620	ERJ6GEYJ220	Chip, 22Ω 1/10W	
R621	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R622	ERJ6GEYJ105	Chip, 1MΩ 1/10W	
R623	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R624	ERJ6GEYJ105	Chip, 1MΩ 1/10W	
R625	ERJ6GEYJ273	Chip, 27kΩ 1/10W	
R626	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R627	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R628	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R631	ERJ6GEYJ153	Chip, 15kΩ 1/10W	
R632	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R633	ERJ6GEYJ152	Chip, 1.5kΩ 1/10W	
R634	ERJ6GEYJ151	Chip, 150Ω 1/10W	
R635	ERJ6GEYJ152	Chip, 1.5kΩ 1/10W	
R636	ERJ6GEYJ152	Chip, 1.5kΩ 1/10W	
R637	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R649	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R650	ERJ6GEY0R00V	Chip, 0Ω 1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R651	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R653	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R654	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R655	ERJ6GEY0R00V	Chip, 0Ω 1/10W	
R656	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R657	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R663	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R664	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R665	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R666	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R668	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R669	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R670	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R715	ERX12SJR22V	Metal Film, 0.22Ω 1/2W	
R716	ERJ6GEYJ183	Chip, 18kΩ 1/10W	
R717	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R718	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R719	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R721	ERJ8GEYJ391V	Chip, 390Ω 1/8W	
R722	ERJ8GEYJ1R0V	Chip, 1.0Ω 1/8W	
R723	ERJ8GEYJ102V	Chip, 1kΩ 1/8W	
R724	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R728	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R729	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R730	ERJ8GEYJ102V	Chip, 1kΩ 1/8W	
R731	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R732	ERX1SJR2R2P	Metal Film, 2.2Ω 1W	
R733	ERX1SJR2R2P	Metal Film, 2.2Ω 1W	
R734	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R735	ERJ6GEYJ334	Chip, 330kΩ 1/10W	
R736	ERJ6GEYJ683	Chip, 68kΩ 1/10W	
R737	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R738	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R740	ERJ6GEYJ273	Chip, 27kΩ 1/10W	
R741	ERJ8GEYJ2R2V	Chip, 2.2Ω 1/8W	
R742	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R743	ERJ6GEYJ333	Chip, 33kΩ 1/10W	
R744	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R747	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R748	ERJ6GEYJ123	Chip, 12kΩ 1/10W	
R749	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R750	ERJ6GEYJ123	Chip, 12kΩ 1/10W	
R751	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R752	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R753	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R754	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R755	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R756	ERJ6GEYJ222	Chip, 2.2kΩ 1/10W	
R771	ERJ8GEYJ391V	Chip, 390Ω 1/8W	
R772	ERJ8GEYJ122V	Chip, 1.2kΩ 1/8W	
R773	ERJ6GEYJ182	Chip, 1.8kΩ 1/10W	
R774	ERJ6GEYJ102	Chip, 1kΩ 1/10W	
R775	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R779	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R780	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R781	ERJ8GEYJ102V	Chip, 1kΩ 1/8W	
R782	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R783	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R801	ERJ6GEYJ104	Chip, 100kΩ 1/10W	
R802	ERJ6GEYJ123	Chip, 12kΩ 1/10W	
R803	ERJ6GEYJ183	Chip, 18kΩ 1/10W	
R804	ERJ6GEYJ184	Chip, 180kΩ 1/10W	
R805	ERJ6GEYJ273	Chip, 27kΩ 1/10W	
R806	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R808	ERJ6GEYJ332	Chip, 3.3kΩ 1/10W	
R809	ERJ6GEYJ100	Chip, 10Ω 1/10W	
R901	ERJ6GEYJ220	Chip, 22Ω 1/10W	
R902	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R903	ERJ6GEYJ473	Chip, 47kΩ 1/10W	
R904	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R905	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R906	ERJ6GEYJ471	Chip, 470Ω 1/10W	
R907	ERJ6GEYJ471	Chip, 470Ω 1/10W	

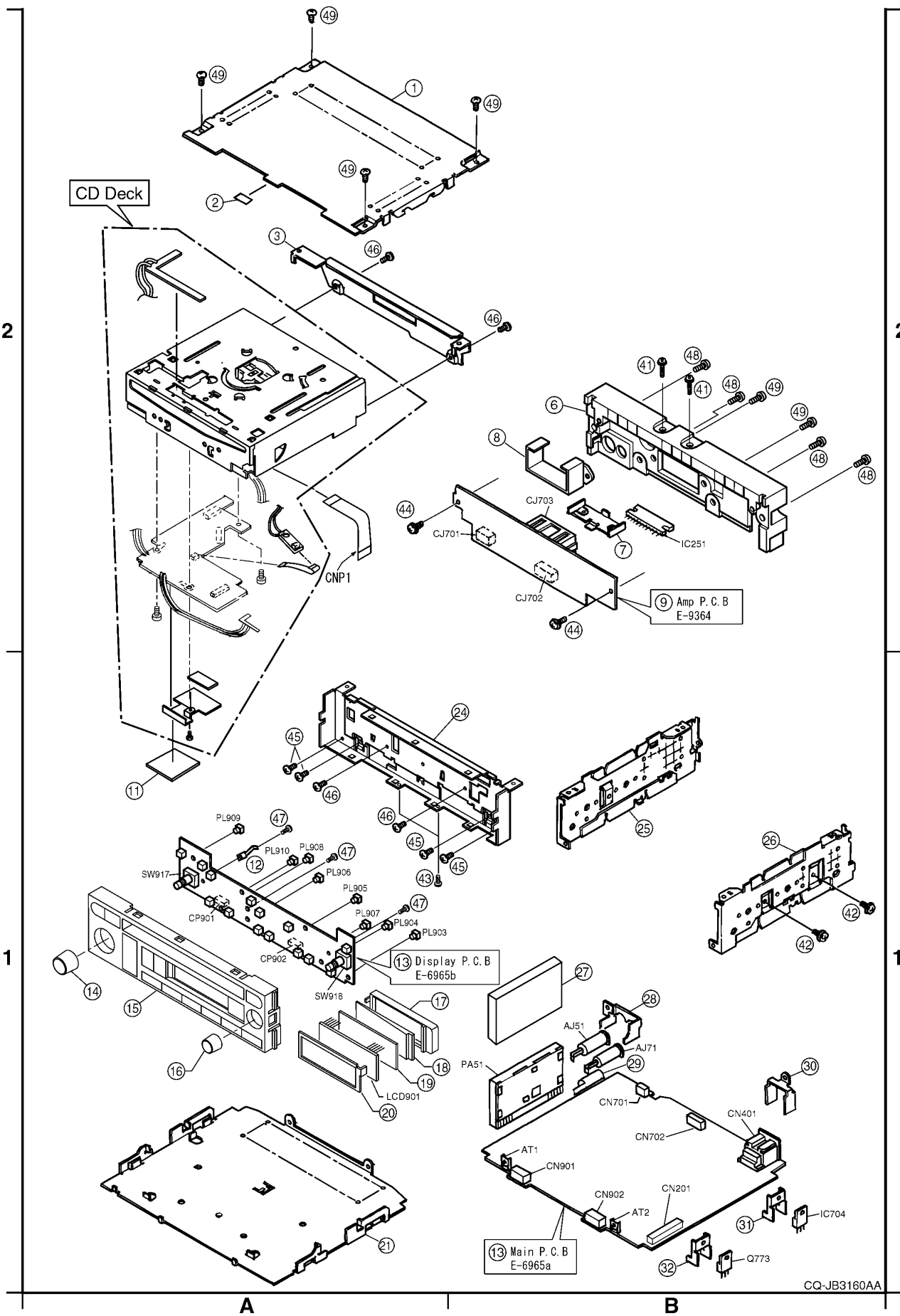
Ref. No.	Part No.	Part Name & Description	Remarks
R943	ERJ8GEYJ102V	Chip, 1kΩ 1/8W	
R944	ERJ8GEYJ102V	Chip, 1kΩ 1/8W	
R945	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R946	ERJ6GEYJ472	Chip, 4.7kΩ 1/10W	
R947	ERJ6GEYJ103	Chip, 10kΩ 1/10W	
R948	ERX1SJR0	Metal Film, 1.0Ω 1W	
R950	ERJ8GEYJ1R2V	Chip, 1.2Ω 1/8W	
R951	ERJ8GEYJ1R2V	Chip, 1.2Ω 1/8W	
R952	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R953	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R954	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R955	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R956	ERJ8GEYJ3R3V	Chip, 3.3Ω 1/8W	
R957	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R958	ERJ8GEYJ3R3V	Chip, 3.3Ω 1/8W	
R959	ERJ8GEYJ4R7V	Chip, 4.7Ω 1/8W	
R960	ERDS1FJ270	Carbon, 27Ω 1/2W	
R961	ERDS1FJ470	Carbon, 47Ω 1/2W	
R962	ERGLS1J150P	Metal Oxid, 15Ω 1W	
R963	ERGLS1J150P	Metal Oxid, 15Ω 1W	
R964	ERGLS1J120P	Metal Oxid, 12Ω 1W	
R965	ERGLS1J120P	Metal Oxid, 12Ω 1W	
CONNECTORS			
CN201	YEAEK623214S	Connector, 14P	
CN401	YEAEO12081A	Connector, 13P DIN	
CN701	YEAETKCF10QS	Connector, 10P	
CN702	YEAETKCF08QS	Connector, 8P	
CN901	K1KA08B00189	Connector, 8P	
CN902	K1KB08B00189	Connector, 8P	
CP901	K1KB08A00087	Connector, 8P	
CP902	K1KB08A00087	Connector, 8P	
SWITCHES			
SW1	YEAS08042	Switch	
SW901	K0F111A00336	Switch	
SW902	K0F111A00336	Switch	
SW905	K0F111A00336	Switch	
SW906	K0F111A00336	Switch	
SW907	K0F111A00336	Switch	
SW908	K0F111A00336	Switch	
SW909	K0F111A00336	Switch	
SW910	K0F111A00336	Switch	
SW911	K0F111A00336	Switch	
SW913	K0F111A00336	Switch	
SW914	K0F111A00336	Switch	
SW915	K0F111A00336	Switch	
SW916	K0F111A00336	Switch	
SW917	EVQBSW00415B	Switch	
SW918	EVQBSW06309B	Switch	
LCD			
LCD901	L5AAAGC00033	LCD	
COILS			
L51	YELT02M1R8KT	Coil	
L52	G1C3R3K00003	Coil	
L71	G1C3R3R00003	Coil	
L101	YELT02MR82KT	Coil	
L163	G1C3R3K00003	Coil	
L501	G1C3R3K00003	Coil	
L502	G1C3R3K00003	Coil	
L601	YELT03N5R6KT	Coil	
L602	G1C3R3K00003	Coil	
L603	G1C3R3K00003	Coil	
L604	G1C3R3R00003	Coil	
L605	G1C3R3K00003	Coil	
L751	J0JCC0000012	Coil	
L752	J0JCC0000012	Coil	

Ref. No.	Part No.	Part Name & Description	Remarks
L753	YELTBMHS800T	Coil	
<b>CRYSTALS</b>			
XL20	H0D720400003	Crystal	
XL601	YEXL49U0419S	Crystal	
XL602	YEXLMC60327	Crystal	
<b>LAMPS</b>			
PL901	YEALHSIB045	Pilot Lamp	
PL902	YEALHSIB045	Pilot Lamp	
PL903	YEALHSIB024	Pilot Lamp	
PL904	YEALHSIB024	Pilot Lamp	
PL905	YEALHSIB024	Pilot Lamp	
PL906	YEALHSIB024	Pilot Lamp	
PL907	YEALHSLB010	Pilot Lamp	
PL908	YEALHSIB024	Pilot Lamp	
PL909	YEALHSLB010	Pilot Lamp	
PL910	YEALSRMB011	Pilot Lamp	
<b>NEON TUBES</b>			
Z51	J0LM00000001	Neon Tube	
Z71	J0LM00000001	Neon Tube	
<b>NETWORK RESISTORS</b>			
RA600	EXBV8V471JV	Network Resistor	
RA601	EXBV8V222JV	Network Resistor	
RA602	EXBV8V222JV	Network Resistor	
RA603	EXBV8V222JV	Network Resistor	
RA604	EXBV8V222JV	Network Resistor	
RA605	EXBV8V222JV	Network Resistor	
RA606	EXBV8V222JV	Network Resistor	
RA607	EXBV8V222JV	Network Resistor	
RA608	EXBV8V222JV	Network Resistor	
RA609	EXBV8V222JV	Network Resistor	
RA610	EXBV8V222JV	Network Resistor	
RA611	EXBV8V473JV	Network Resistor	
RA612	EXBV8V222JV	Network Resistor	
RA613	EXBV8V222JV	Network Resistor	
<b>THERMISTERS</b>			
R415	D4ZZ00000015	Thermister	
R739	D4ZZ00000015	Thermister	
[E9364] Amp Block			
<b>IC's and TRANSISTORS</b>			
IC251	CLBA00000326	IC	
Q251	B1GBHBEA0004	Transistor	
Q252	YEANA114TK	Transistor	
Q281	B1GBHBEA0004	Transistor	
Q351	B1GBHBEA0004	Transistor	
Q352	YEANC114YKX	Transistor	
Q381	B1GBHBEA0004	Transistor	
<b>DIODES</b>			
D771	B0ECMP000002	Diode	
D772	B0EAKP000011	Diode	
<b>CAPACITORS</b>			
C251	ECEALHKAR22B	Electrolytic, 0.22 $\mu$ F 50WV	
C252	FLJ1H471A672	Ceramic, 470PF 50WV	
C253	ECA1CM470I	Electrolytic, 47 $\mu$ F 16WV	
C254	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C255	YECUS1C224KX	Ceramic, 0.22 $\mu$ F 16WV	
C256	ECEALHKA3R3I	Electrolytic, 3.3 $\mu$ F 50WV	

Ref. No.	Part No.	Part Name & Description	Remarks
C281	ECEALHKAR22B	Electrolytic, 0.22 $\mu$ F 50WV	
C282	FLJ1H471A672	Ceramic, 470PF 50WV	
C291	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C292	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C293	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C294	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C351	ECEALHKAR22B	Electrolytic, 0.22 $\mu$ F 50WV	
C352	FLJ1H471A672	Ceramic, 470PF 50WV	
C381	ECEALHKAR22B	Electrolytic, 0.22 $\mu$ F 50WV	
C382	FLJ1H471A672	Ceramic, 470PF 50WV	
C384	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C391	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C392	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C393	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C394	YECUS1C124KX	Ceramic, 0.12 $\mu$ F 16WV	
C701	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C702	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C703	ECA1HM100I	Electrolytic, 10 $\mu$ F 50WV	
C704	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C706	FLJ1H103A513	Ceramic, 0.01 $\mu$ F 50WV	
C720	ECA1CM102B	Electrolytic, 1000 $\mu$ F 16WV	
C721	ECA1CM102B	Electrolytic, 1000 $\mu$ F 16WV	
C722	ECA1CM102B	Electrolytic, 1000 $\mu$ F 16WV	
C723	ECA1HM100I	Electrolytic, 10 $\mu$ F 50WV	
C724	ECQV1H104B46	Plastic Film, 0.1 $\mu$ F 50WV	
<b>RESISTORS</b>			
R250	ERJ6GEYJ222	Chip, 2.2k $\Omega$ 1/10W	
R251	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R252	ERJ6GEYJ103	Chip, 10k $\Omega$ 1/10W	
R253	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R280	ERJ6GEYJ222	Chip, 2.2k $\Omega$ 1/10W	
R281	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R282	ERJ6GEYJ103	Chip, 10k $\Omega$ 1/10W	
R283	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R291	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R292	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R293	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R294	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R350	ERJ6GEYJ222	Chip, 2.2k $\Omega$ 1/10W	
R351	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R352	ERJ6GEYJ103	Chip, 10k $\Omega$ 1/10W	
R353	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R354	ERJ6GEYJ103	Chip, 10k $\Omega$ 1/10W	
R355	ERJ6GEYJ472	Chip, 4.7k $\Omega$ 1/10W	
R356	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R380	ERJ6GEYJ222	Chip, 2.2k $\Omega$ 1/10W	
R381	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R382	ERJ6GEYJ103	Chip, 10k $\Omega$ 1/10W	
R383	ERJ6GEYJ102	Chip, 1k $\Omega$ 1/10W	
R391	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R392	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R393	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R394	ERJ6GEYJ2R2	Chip, 2.2 $\Omega$ 1/10W	
R702	ERX12SJR22V	Metal Film, 0.22 $\Omega$ 1/2W	
R704	ERJ6GEYJ472	Chip, 4.7k $\Omega$ 1/10W	
R705	ERJ6GEYJ223	Chip, 22k $\Omega$ 1/10W	
R724	ERJ8GEYJ561V	Chip, 560 $\Omega$ 1/8W	
R725	ERJ8GEYJ561V	Chip, 560 $\Omega$ 1/8W	
R726	ERJ8GEYJ561V	Chip, 560 $\Omega$ 1/8W	
R727	ERJ8GEYJ561V	Chip, 560 $\Omega$ 1/8W	
<b>CONNECTORS</b>			
CJ701	K1KA10B00162	Connector, 10P	
CJ702	K1KA08B00189	Connector, 8P	
CJ703	YEAE14SDLYS	Connector, 14P	
<b>COILS</b>			
L701	YETQ016F160	Coil	
L702	YETQ012G157	Coil	

Ref. No.	Part No.	Part Name & Description	Remarks
<b>Mechanical Parts</b>			
<b>MISCELLANEOUS</b>			
AJ51	YEAA10066	Antenna Receptacle	
AJ71	YEAA10074A	Antenna Receptacle	
AT1	YEFX0213797	Bracket, GND	
AT2	YEFX0213797	Bracket, GND	
CNP1	K9ZZ00000039	Connector, 14P	
1	YEFA031524	Upper Cover	
2	YEFS02307	Felt	
3	YEFX0215221	Bracket, Deck	
6	YEFF011058	Heat Sink	
7	YEFX0215178	Bracket, IC251	
8	YEFX0215179	Bracket, CJ703	
9	YEP0PT9364A0	PCB w/Component	RTL
11	JOKZ00000008	EMI/EMC Filter	
12	YEFX9991346	Bracket, GND	
13	YEP0PT6965A0	PCB w/Component	RTL
14	YEF07497	Knob, VOL	
15	YEF028163	Escucheon Ass'y	
16	YEF07498	Knob, AUDIO	
17	YEF06971	Holder	
18	YEFX0012129A	Transparent Plate	
19	YEFV021785	Optical Shade	
20	YEFAL31568	Case	
21	YEFA05810	Bottom Cover	
24	YEFA07559B	Front Plate	
25	YEFA09551	Side Plate(L)	
26	YEFA09663	Side Plate(R)	
27	YEFV03508	Magnetic Shield	
28	YEFX0214200	Bracket, ANT	
29	YEFX0213232B	Bracket, ANT	
30	YEFX0213488	Bracket, CN401	
31	YEFX0214202	Bracket, IC704	
32	YEFX0212830	Bracket, Q773	
41	YEJS05016	Screw, 3 * 15	
42	YEJS06093	Screw, 3 * 6	
43	YEJS06278	Screw	
44	YEJT03120	Tapping Screw, 3 * 8	
45	YEJT03131	Tapping Screw, 2.6 * 5	
46	YEJT03324	Tapping Screw, 2.8 * 5	
47	XTB2+8GFX	Tapping Screw, 2 * 5	
48	XTB3+8FFX	Tapping Screw, 3 * 8	
49	XTB3+6FFX	Tapping Screw, 3 * 6	

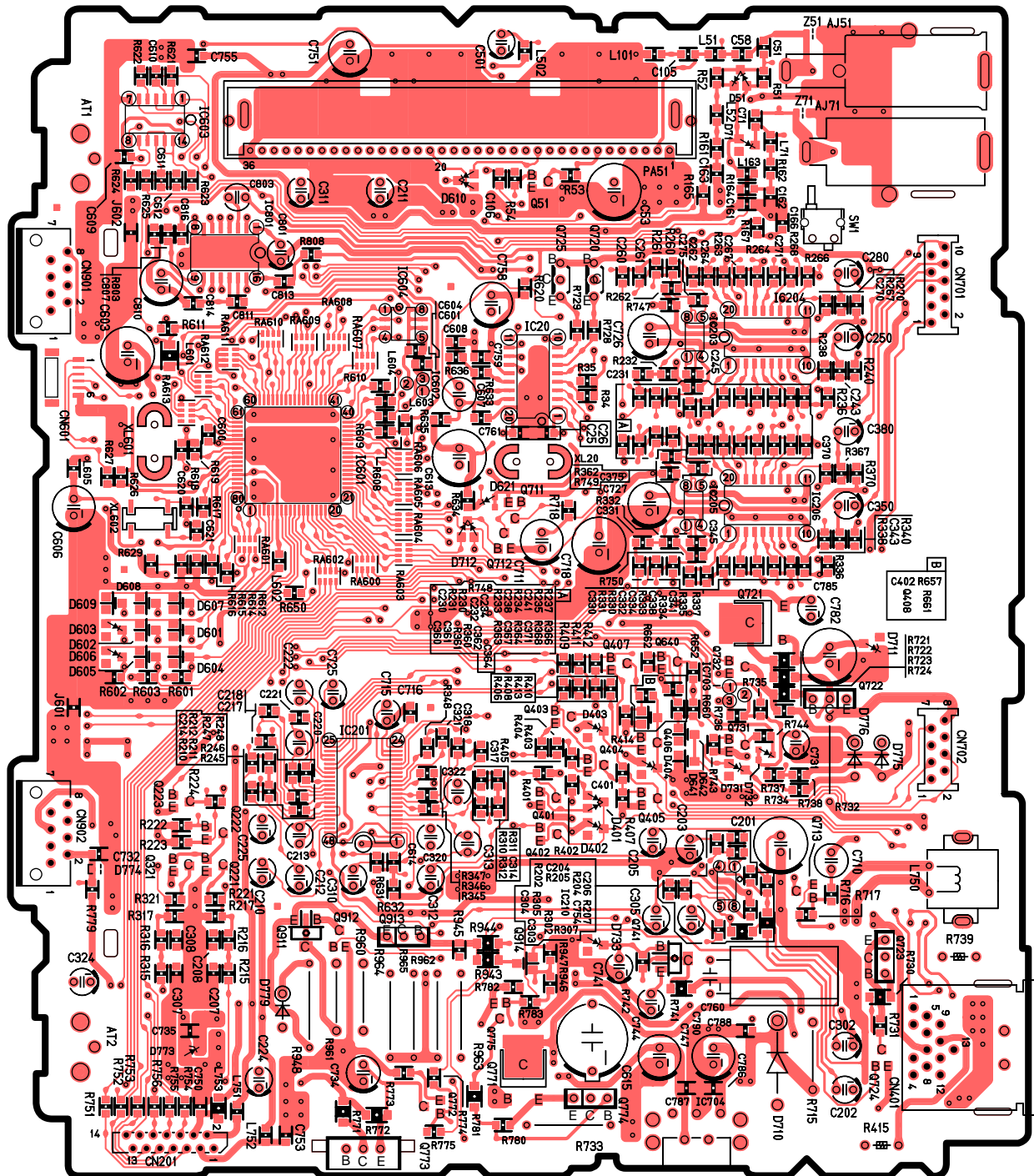
# 10 EXPLODED VIEW (Unit)



CQ-JB3160AA

# 11 WIRING DIAGRAM

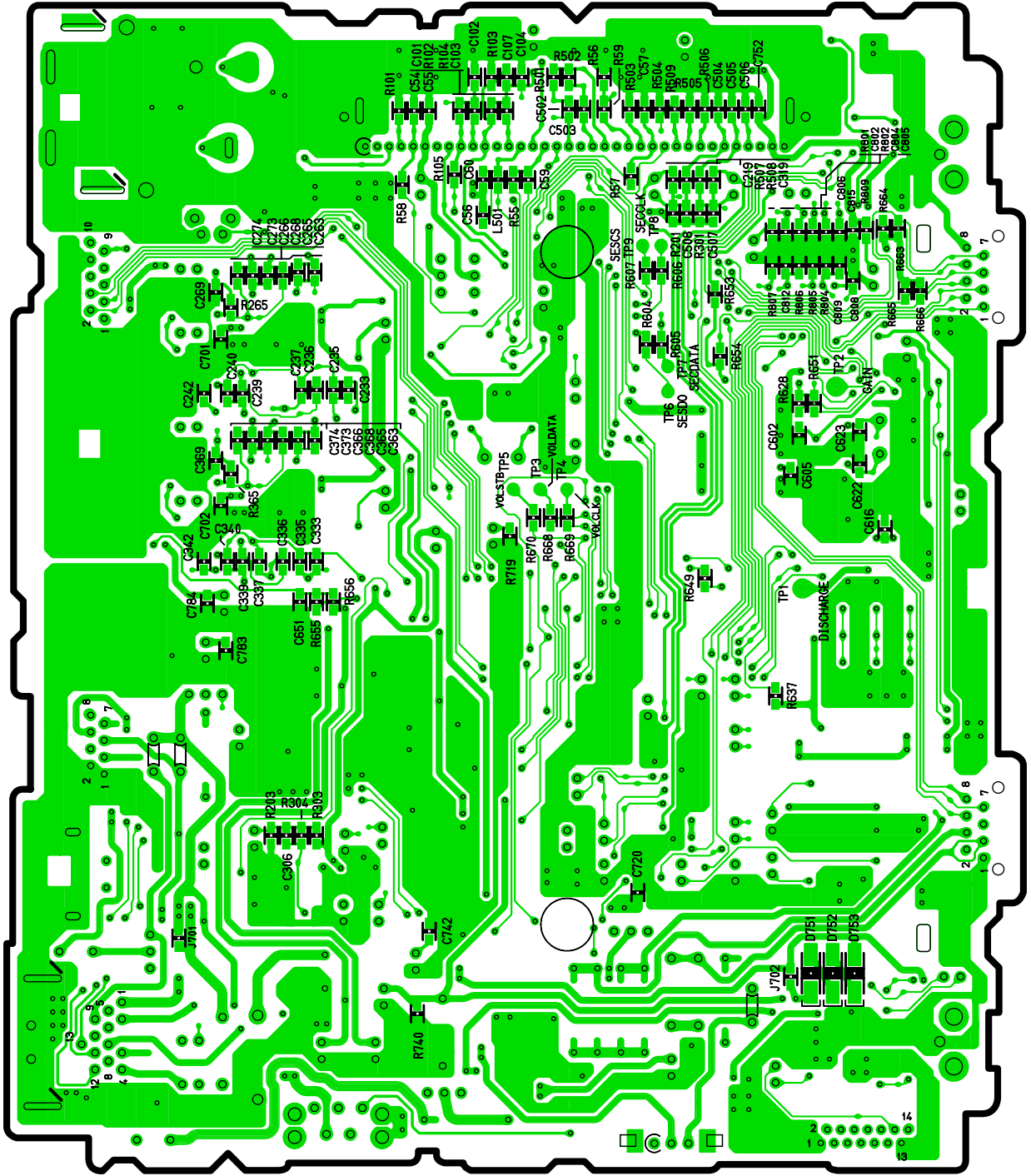
## 11.1. Main Block (Top View)



[E-695a][Top View]

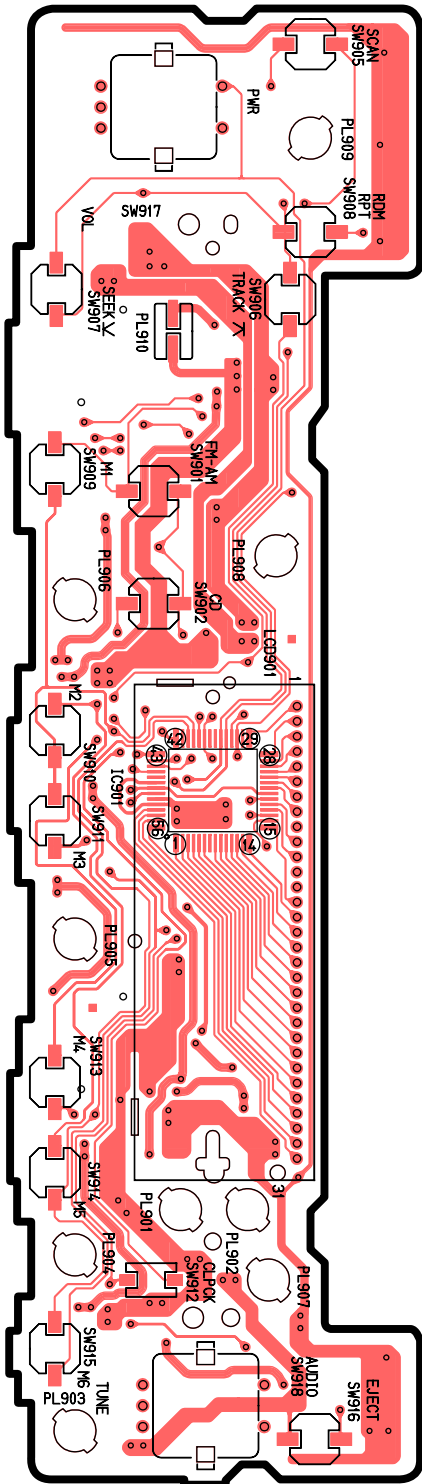


### 11.2. Main Block (Bottom View)

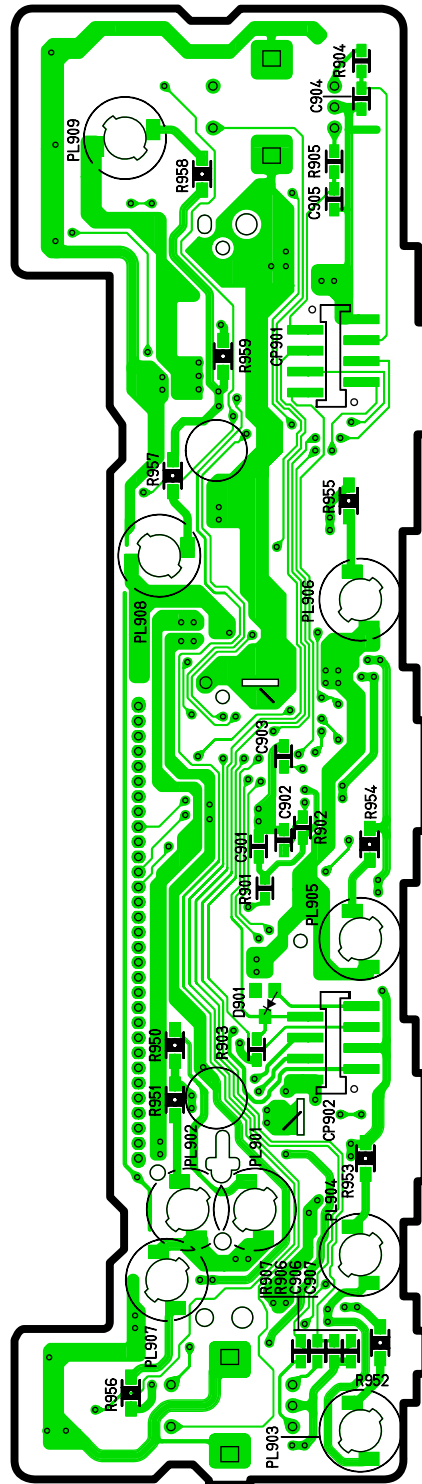


[E-6965a][Bottom View]

### 11.3. Display Block



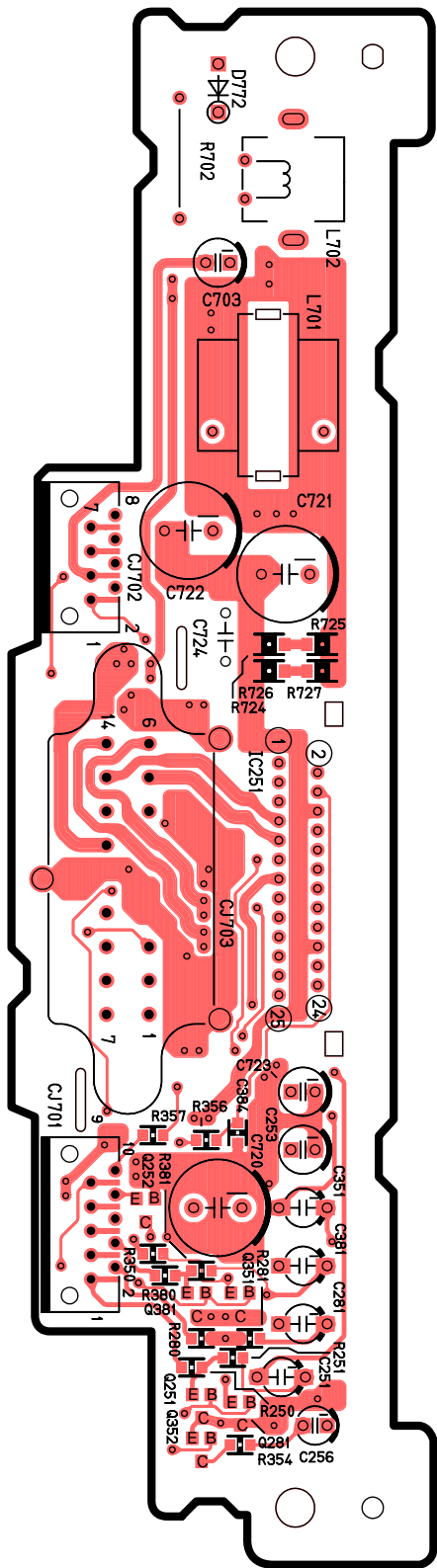
[E-6965b][Top View]



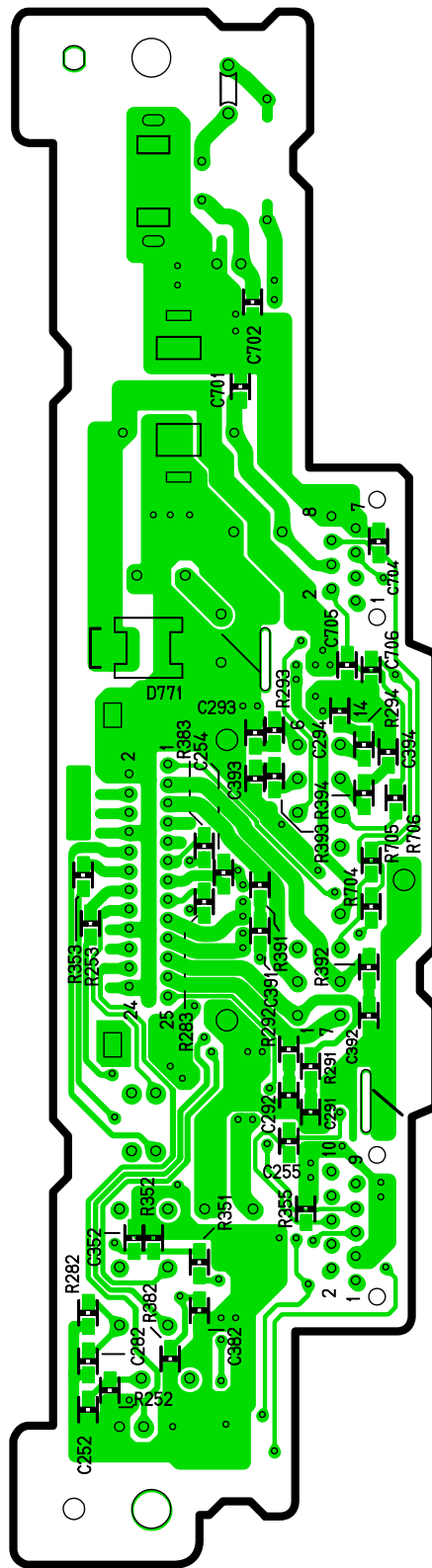
[E-6965b][Bottom View]

CQ-JB3160AA DISPLAY P.C.B.

# 11.4. Amp. Block



[E-9364][Top View]

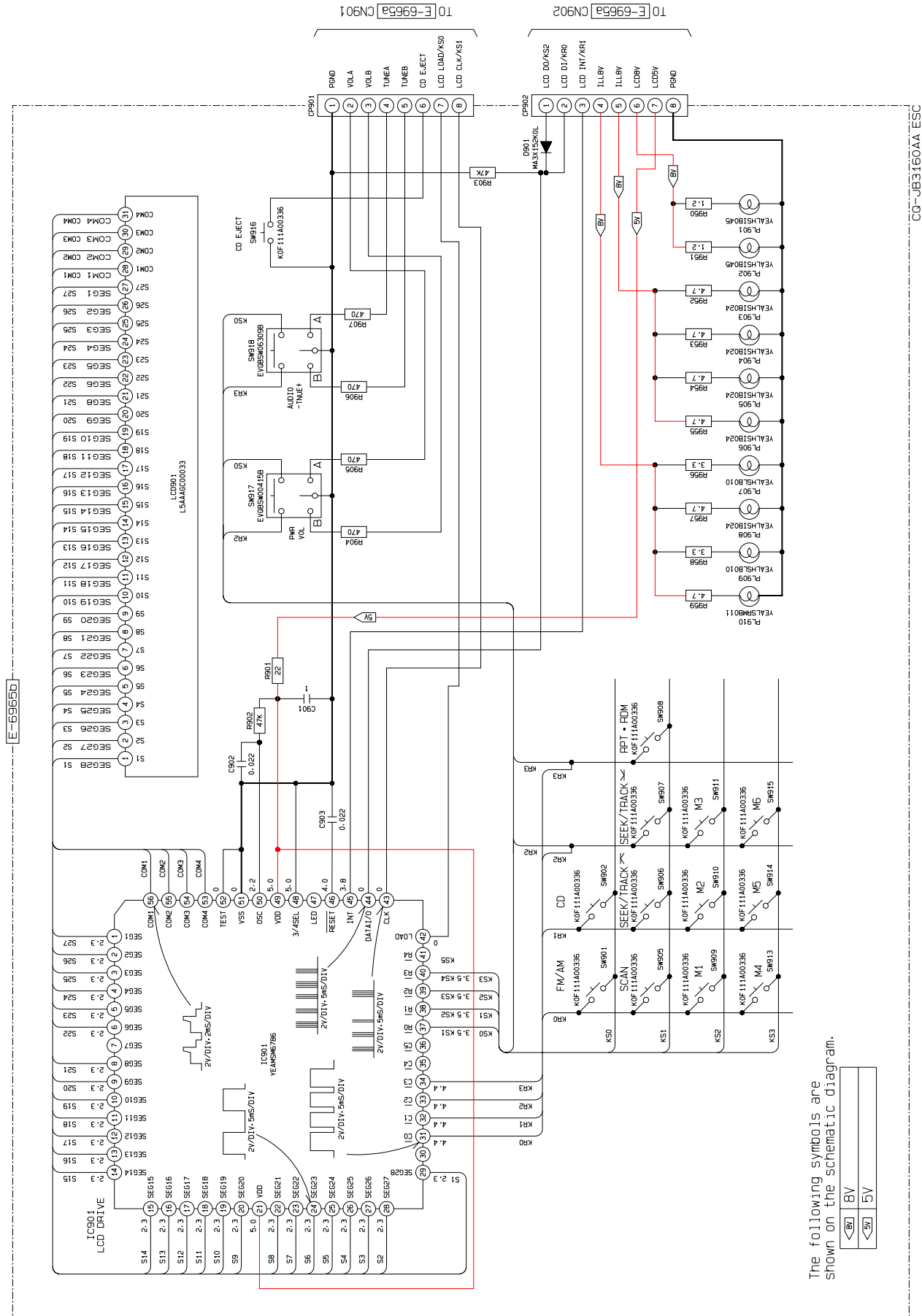


[E-9364][Bottom View]

CQ-JB3160AA AMP P.C.B.

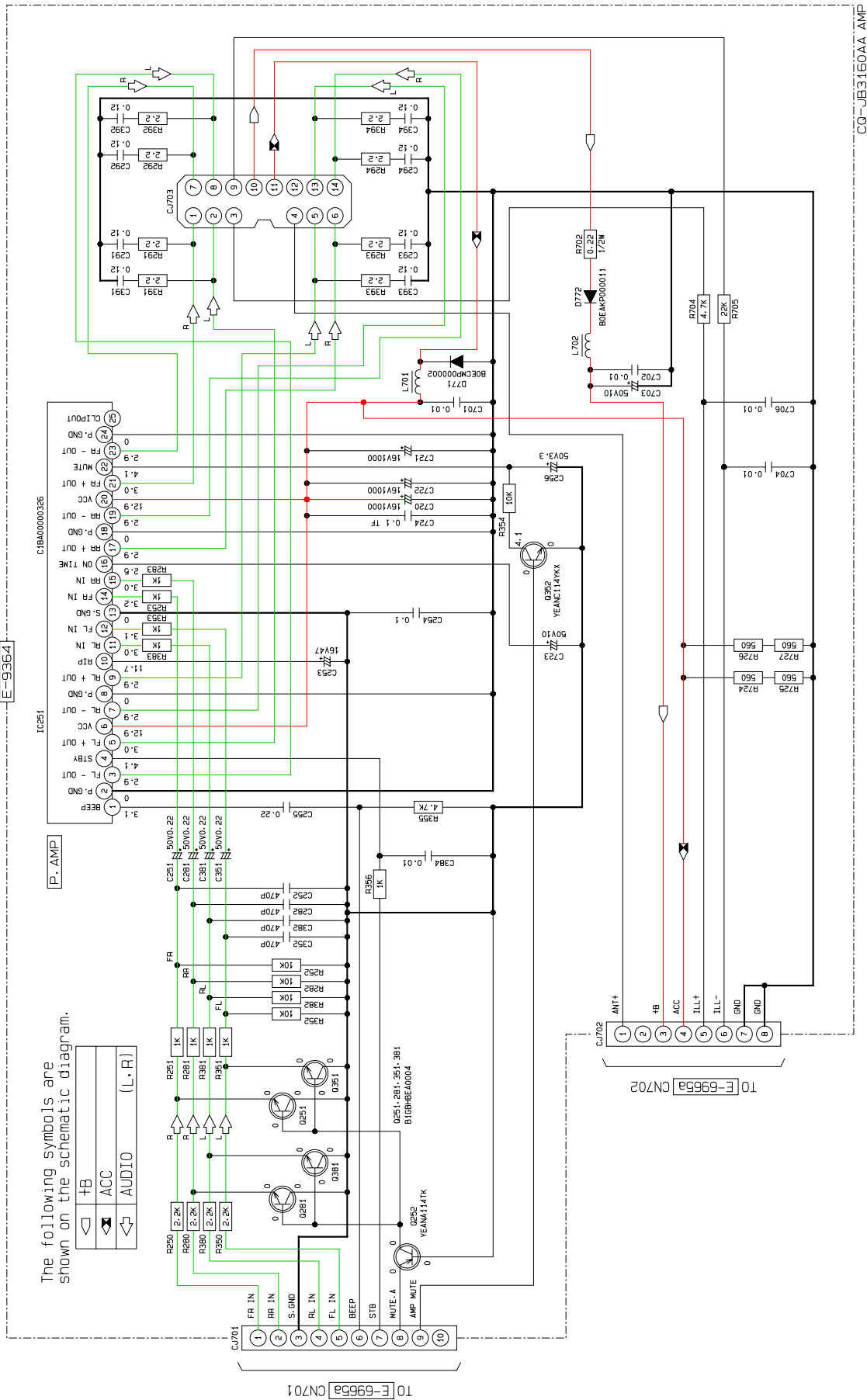
# 12 SCHEMATIC DIAGRAM (1)

## 12.1. Display Block



The following symbols are shown on the schematic diagram.

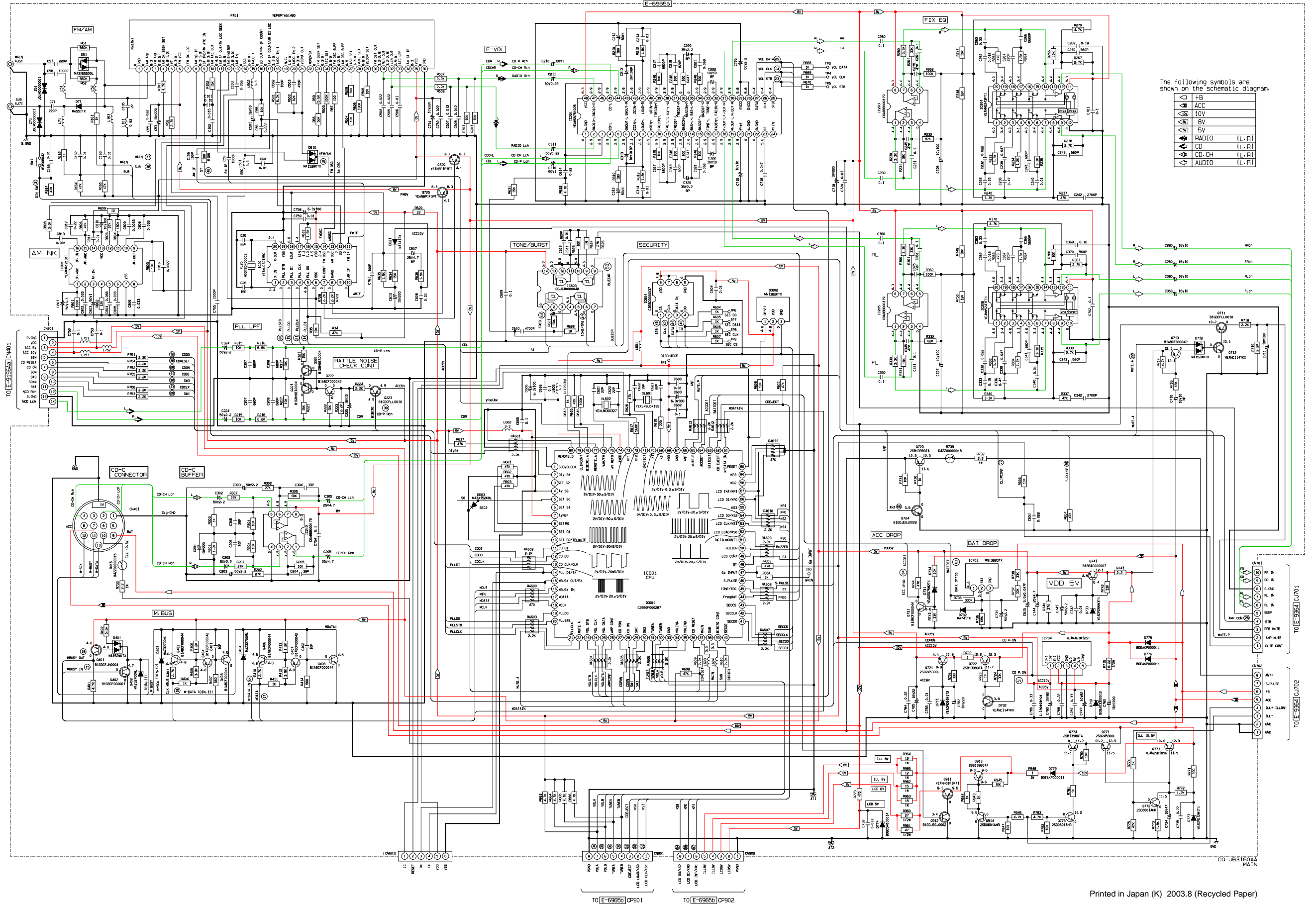
# 12.2. Amp. Block





# 13 SCHEMATIC DIAGRAM (2)

## 13.1. Main Block



**NCD-8KAI**

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**(YEP0FX5122)**

**'03. 8. 4**



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## 1 FEATUERS

- NCD-8KAI CD Deck.
- 8cm/12cm CD.
- The specifications are based on the main unit.

## 2 LASER PRODUCTS

**Do not take apart this unit or attempt to make any changes yourself.**

This unit is very intricate that uses a laser pickup to retrieve information from the surface of compact discs. The laser is carefully shielded so that its rays remain inside the cabinet. Therefore, never try to disassemble the player or alter any of its parts since you may be exposed to laser rays and dangerous voltages.

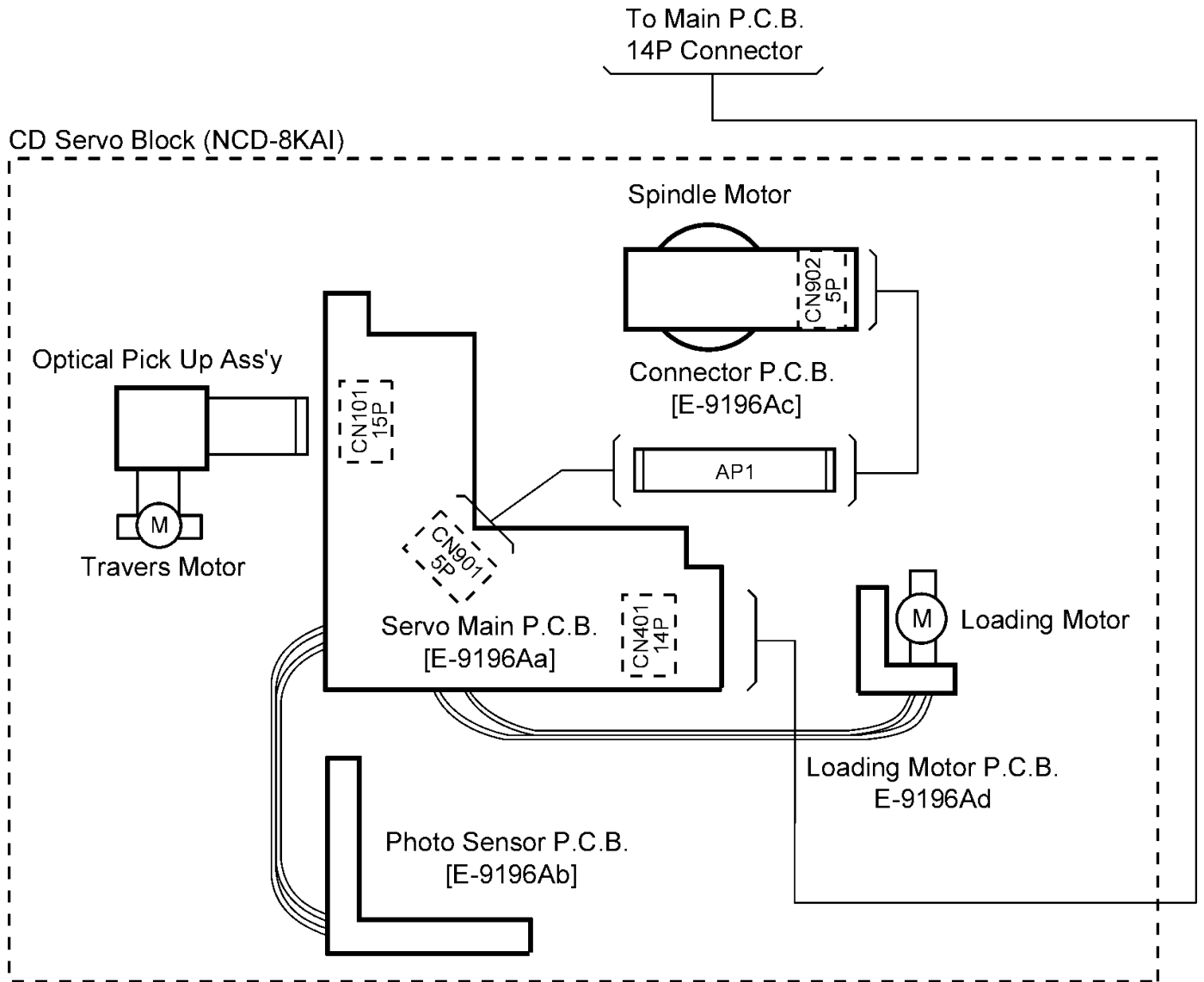
**Laser products :**

Wave length	780nm
Laser power	No hazardous radiation is emitted with safety protection.

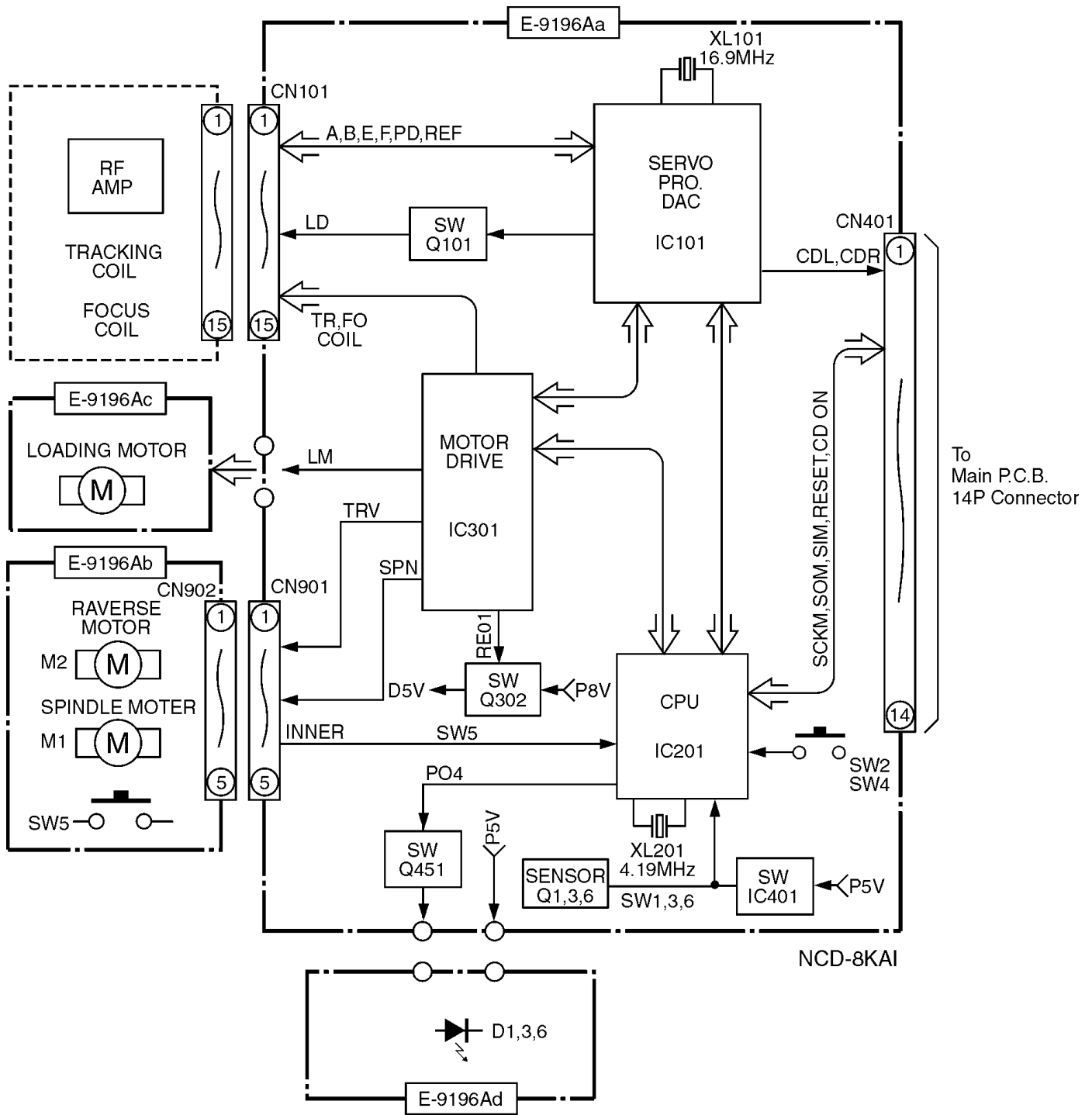
**Caution**

This product utilizes a laser. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### 3 WIRING CONNECTION (CD Deck)



# 4 BLOCK DIAGRAM (CD Deck)



# 5 TERMINALS DESCRIPTION (CD Servo Block)

IC101 : C1BB0000414

Pin No.	Port	Description	I/O	(V)
1	D.GND	Digital GND	-	0
2	RFOK	RFOK signal	O	4.9
3	/RST	Reset	I	5.1
4	A0	Command/parameter identification	I	3.9
5	/STB	Data strobing	I	5.1
6	/SCK	Clock signal	I	3.7
7	SO	Serial data output	O	0.8
8	SI	Serial data input	I	3.2
9	/XTALEN	Crystal oscillator control	I	0
10	D.VDD	Digital VDD	-	5
11	DA.VDD	DA converter VDD	-	5
12	ROUT	Rch audio output	AO	2.6
13	DA.GND	DA converter GND	-	0
14	REGC	External capacitor for SCF regulator	A-	2.7
15	DA.GND	DA converter GND	-	0
16	LOUT	Lch audio output	AO	2.6
17	DA.DVV	DA converter VDD	-	5
18	R+	Rch+ PWM output	O	-
19	R-	Rch- PWM output	O	-
20	L-	Lch- PWM output	O	-
21	L+	Lch+ PWM output	O	-
22	X.VDD	Crystal oscillator VDD	-	5
23	/XTAL	Crystal oscillator	O	0
24	XTAL	Crystal oscillator	I	2.6
25	X.GND	Crystal oscillator GND	-	0
26	D.VDD	Digital VDD	-	5
27	EMPH	Preemphasis information	O	5
28	FLAG	Flag output	O	0
29	DIN	Serial data input	I	2.6
30	DOUT	Cereal audio data output	O	2.6
31	SCKIN	Cereal clock input	I	2.6
32	SCKO	-	O	2.6
33	LRCKIN	LRCK signal	I	2.6
34	LRCK	LR identification	O	2.6
35	HOLD/WDCK	-	O	0
36	TX	-	-	-
37	D.GND	Digital GND	-	0
38	C16M	-	-	-
39	LIMIT	-	I	0
40	D.VDD	Digital VDD	-	5
41	LOCK	EFM synchronous detection	O	5
42	RFCK	Frame synchronization	O	2.6
43	MIRR/WFCK	-	O	0
44	PLCK	Bit clock monitor	O	2.6
45	D.GND	Digital GND	-	0
46	C1D1	C1 error correction	O	0
47	C1D2	C1 error correction	O	0
48	C2D1	C2 error correction	O	0
49	C2D2	C2 error correction	O	0
50	C2D3	C2 error correction	O	0
51	D.VDD	Digital VDD	-	5
52	PACK	PAC synchronization of CD-TEXT	O	1.8
53	TSO	Serial output of CD-TEXT	O	0
54	TSI	Serial input of CD-TEXT	I	0
55	/TSCK	Cereal clock input of CD-TEXT	I	0
56	TSTB	Parameter strobing signal of CD-TEXT	I	0
57	D.GND	Digital GND	-	0
58	TEST0	Test	I	0
59	TEST1	Test	I	0
60	ATEST	Test	AO	0

Pin No.	Port	Description	I/O	(V)
61	A.GND	Analog GND	-	2.6
62	FD	Foci drive	AO	0
63	TD	Tracking drive	AO	2.6
64	SD	Thread drive	AO	2.6
65	MD	Spindle drive	AO	2.6
66	DAC0	-	-	-
67	DAC1	-	AO	2.6
68	DAC2	-	AO	2.6
69	DAC3	-	-	-
70	A.VDD	Analog +5V Power Supply	-	5
71	EFM	E FM signal output	O	2.6
72	ASY	Reference voltage input of EFM comparator	AI	2.6
73	C3T	For 3T detection	A-	3
74	RFI	RF signal for EFM data generation	AI	2.6
75	AGCO	RF signal output after gain adjusted	AO	2.6
76	AGCI	RF-AGC amplifier input	AI	2.6
77	RFO	RF Samingamp output	AO	2.8
78	EQ2	-	-	-
79	EQ1	Equalizer connection of RF amplifier	A-	2.7
80	RF-	RF Samingamp reversing input	AI	2.4
81	A.GND	Analog GND	-	0
82	A	Photodetector A input	AI	2.6
83	C	Photodetector C input	AI	2.6
84	B	Photodetector B input	AI	2.6
85	D	Photodetector D input	AI	2.7
86	F	Photodetector F input	AI	2.7
87	E	Photodetector E input	AI	2.6
88	A.VDD	Analog VDD	-	5
89	REFOUT	Reference potential output	AO	2.5
90	FE-	Focus error amplifier reversing input	AI	2.5
91	FEO	Focus error amplifier output	AO	2.5
92	TE-	Tracking error amplifier reversing input	AI	2.6
93	TEO	Tracking error amplifier output	AO	2.5
94	TE2	Tracking error output after it amplifies	AO	2.6
95	TEC	Tracking comparator input	AI	2.5
96	A.GND	Analog GND	-	0
97	PD	PD detection signal input	AI	0
98	LD	LD controlling current output	AO	3
99	PN	APC control electrode setting	I	0
100	A.VDD	Analog VDD	-	5

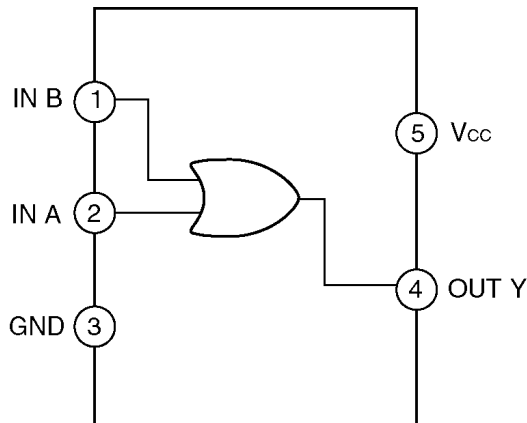
IC201 : C2BBFD000374

Pin No.	Port	Description	I/O	(V)
1	A0	Address output	O	3.8
2	/RST	Reset	O	5.1
3	RFOK	RFOK signal	I	4.9
4	/PS2	IC301 mute	O	5.1
5	/PC1	IC301 mute	O	0
6	TRV	Traverse motor control	O	2.5
7	LOD	Loading motor control	O	2.5
8	PS2	Connected test pin (PS2)	-	0
9	PC1	Connected test pin (PC1)	-	5.1
10	PC	Connected test pin (PC)	-	0
11	IFR	Connected GND	-	0
12	NC	Connected test pin (TP12)	-	0.6
13	VPP	Connected GND	-	0
14	X2	Crystal oscillator	-	3.3
15	X1	Crystal oscillator	-	2.9
16	VSS	GND	-	0
17	VDD	+5V power supply	-	5.1
18	/RESET	Reset input	I	5.1
19	TP19	Connected test pin (TP19)	-	0
20	TP20	Connected test pin (TP20)	-	0
21	TP21	Connected test pin (TP21)	-	0
22	AMUTE(NC)	-	-	-

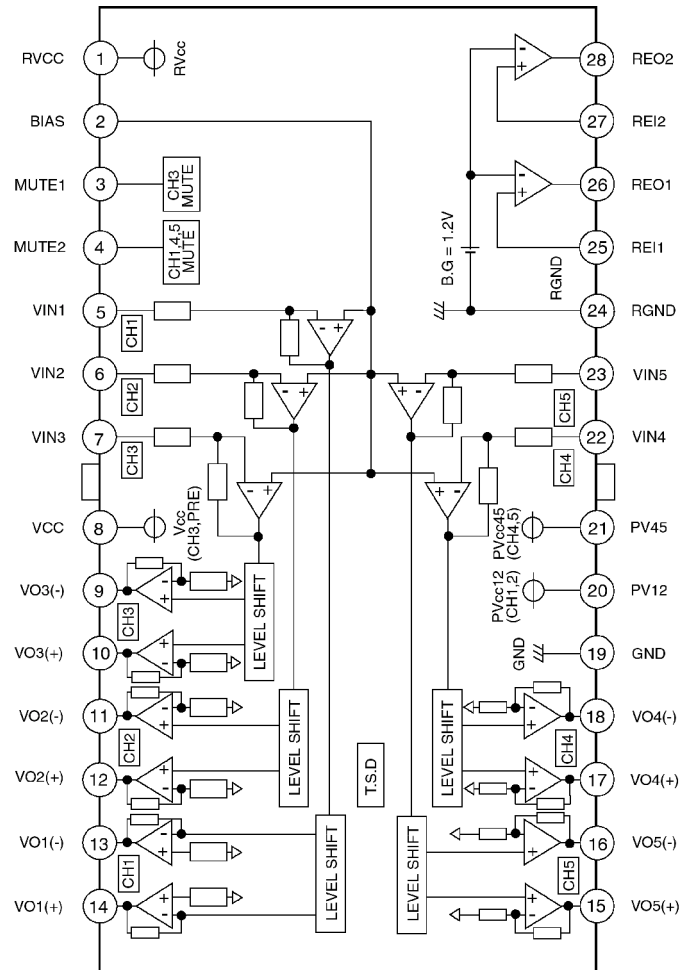
Pin No.	Port	Description	I/O	(V)
23	CDON	CD power supply ON	I	5.0
24	INTP1	Connected GND	-	0
25	INTP0	Connected GND	-	0
26	SIMO	Serial data output	I	0
27	SOMI	Serial data input	O	2.9
28	SCKM	Shift clock (Serial data)	I	5.0
29	Q1 SW1	Disk insertion sensor signal	I	4.6
30	Q3 SW3	Disk presetting sensor signal	I	4.6
31	Q6 SW6	Preliminary sensor	I	4.7
32	SW4	Disk clamp	I	0
33	SW5	Inner SW	I	4.9
34	SW2	Feeder Arm	I	5.1
35	TP35	Connected test pin (TP35)	-	0
36	TP36	-	-	0
37	TP37	Connected test pin (TP37)	-	0.5
38	VDD	+5V power supply	-	5.1
39	VSS	GND	-	0
40	/XEN	XEN signal	O	0
41	SI	Serial data input	O	3.1
42	SO	Serial data output	I	0.7
43	/SCK	Shift clock	O	3.6
44	/STB	Strobing	O	5.0

## 6 IC BLOCK DIAGRAM (CD Deck)

IC401 C0JBAE000087



IC301 C0GBY0000012



# 7 CD CHANGER PARTS LIST

Notes :

1. Be sure to make your orders of replacement parts according to this list.
2. 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.
3. Location keys in the remarks column indicates the general location of the parts shown in the exploded drawing, as in a road map.
4. The marking (RTL) indicates that Retention Time is limited for this item. After the discontinuation of assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

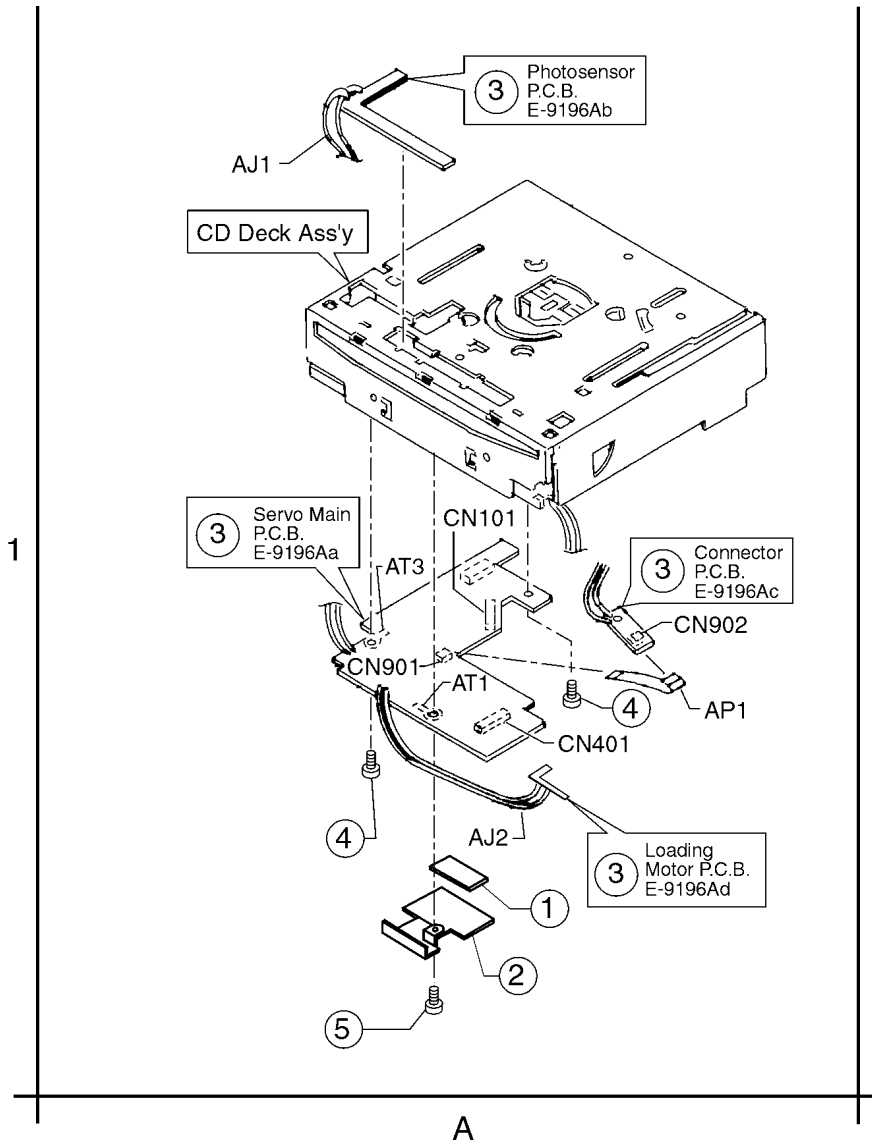
Ref. No.	Part No.	Part Name & Description	Remarks
<b>[E9196A] CD Servo Block</b>			
<b>IC's and TRANSISTORS</b>			
IC101	C1BB00000414	IC	
IC201	C2BBFD000433	IC	
IC301	C0GBY0000012	IC	
IC401	C0JBAE0000087	IC	
Q1	B3HB00000012	Transistor	
Q3	B3HB00000012	Transistor	
Q6	B3HB00000012	Transistor	
Q101	2SB766ATX	Transistor	
Q302	2SB766ATX	Transistor	
Q451	B1GBCFCJ0005	Transistor	
<b>DIODES</b>			
D1	YEADAN1102W	Diode	
D3	YEADAN1102W	Diode	
D6	YEADAN1102W	Diode	
D123	BOACCK0000005	Diode	
D401	MA152WKT	Diode	
D901	MA152WAT	Diode	
<b>CAPACITORS</b>			
C100	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C101	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C102	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C103	F3H0J1070005	Tantalum, 100 $\mu$ F 6.3WV	
C112	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C114	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C115	EEVFC0J470R	Electrolytic, 47 $\mu$ F 6.3WV	
C117	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C122	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C126	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C133	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C140	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C151	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C170	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C171	YECUZ1C333KX	Ceramic, 0.033 $\mu$ F 16WV	
C172	YECUZ1C333KX	Ceramic, 0.033 $\mu$ F 16WV	
C173	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C174	F1H1H222A190	Ceramic, 2200PF 50WV	
C176	F1H1C473A005	Ceramic, 0.047 $\mu$ F 16WV	
C177	YECUZ1H040CC	Ceramic, 4PF 50WV	
C179	YECUS1H220JC	Ceramic, 22PF 50WV	
C180	YECUS1C104KX	Ceramic, 0.1 $\mu$ F 16WV	

Ref. No.	Part No.	Part Name & Description	Remarks
C181	F1H1H220A487	Ceramic, 22PF 50WV	
C182	F1H1H220A487	Ceramic, 22PF 50WV	
C183	F1H1H220A487	Ceramic, 22PF 50WV	
C184	F1H1H220A487	Ceramic, 22PF 50WV	
C185	YECUZ1H150JC	Ceramic, 15PF 50WV	
C186	YECUZ1H150JC	Ceramic, 15PF 50WV	
C190	YECUS1H560JM	Ceramic, 56PF 50WV	
C192	YECUS1H560JM	Ceramic, 56PF 50WV	
C193	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C195	YECUZ1H102KX	Ceramic, 1000PF 50WV	
C217	F1H1A4740004	Ceramic, 0.47 $\mu$ F 10WV	
C218	YECUZ1H103KX	Ceramic, 0.01 $\mu$ F 50WV	
C301	YECUS1C474KX	Ceramic, 0.47 $\mu$ F 16WV	
C302	EEVFC1C470P	Electrolytic, 47 $\mu$ F 16WV	
C304	F1J1C1050013	Ceramic, 1 $\mu$ F 16WV	
C320	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C321	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C322	F1H1H222A190	Ceramic, 2200PF 50WV	
C323	F1H1H681A201	Ceramic, 680PF 50WV	
C326	EEVFC0J101P	Electrolytic, 100 $\mu$ F 6.3WV	
C410	ECEVOJA101SP	Electrolytic, 100 $\mu$ F 6.3WV	
C603	YECUZ1C104KX	Ceramic, 0.1 $\mu$ F 16WV	
C604	F1H1H101A231	Ceramic, 100PF 50WV	
C605	YECUZ1H471JC	Ceramic, 470PF 50WV	
C606	YECUZ1H471JC	Ceramic, 470PF 50WV	
C607	F1H1H101A231	Ceramic, 100PF 50WV	
<b>RESISTORS</b>			
L123	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
L181	ERJ6GEY0R00V	Chip, 0 $\Omega$ 1/10W	
L182	ERJ6GEY0R00V	Chip, 0 $\Omega$ 1/10W	
R102	ERJ8GEYJ100V	Chip, 10 $\Omega$ 1/8W	
R103	ERJ8GEYJ120V	Chip, 12 $\Omega$ 1/8W	
R123	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
R125	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R171	ERJ3GEYJ333V	Chip, 33k $\Omega$ 1/16W	
R172	ERJ3GEYJ333V	Chip, 33k $\Omega$ 1/16W	
R179	ERJ3GEYJ682V	Chip, 6.8k $\Omega$ 1/16W	
R181	ERJ8GEY0R00V	Chip, 0 $\Omega$ 1/8W	
R186	ERJ3GEYJ333V	Chip, 33k $\Omega$ 1/16W	
R187	ERJ3GEYJ333V	Chip, 33k $\Omega$ 1/16W	
R188	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R213	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R218	ERJ3GEYJ563V	Chip, 56k $\Omega$ 1/16W	
R223	ERJ3GEYJ563V	Chip, 56k $\Omega$ 1/16W	
R226	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
R228	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
R256	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R257	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R258	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R291	ERJ3GEYJ472V	Chip, 4.7k $\Omega$ 1/16W	
R292	ERJ3GEYJ472V	Chip, 4.7k $\Omega$ 1/16W	
R305	ERJ3GEYJ122V	Chip, 1.2k $\Omega$ 1/16W	
R306	ERJ3GEYJ103V	Chip, 10k $\Omega$ 1/16W	
R322	ERJ3GEYJ682V	Chip, 6.8k $\Omega$ 1/16W	
R323	ERJ3GEYJ223V	Chip, 22k $\Omega$ 1/16W	
R325	ERJ3GEYJ472V	Chip, 4.7k $\Omega$ 1/16W	
R326	ERJ3GEYJ153V	Chip, 15k $\Omega$ 1/16W	
R327	ERJ6GEY0R00V	Chip, 0 $\Omega$ 1/10W	
R336	ERJ3GEYJ103V	Chip, 10k $\Omega$ 1/16W	
R401	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R411	ERJ3GEYJ334V	Chip, 330k $\Omega$ 1/16W	
R423	ERJ3GEY0R00V	Chip, 0 $\Omega$ 1/16W	
R454	ERJ6GEYJ271	Chip, 270 $\Omega$ 1/10W	
R456	ERJ3GEYJ472V	Chip, 4.7k $\Omega$ 1/16W	
R461	ERJ3GEYJ823V	Chip, 82k $\Omega$ 1/16W	
R463	ERJ3GEYJ823V	Chip, 82k $\Omega$ 1/16W	
R466	ERJ6GEYJ823	Chip, 82k $\Omega$ 1/10W	
R471	ERJ8GEYJ121V	Chip, 120 $\Omega$ 1/8W	
R473	ERJ8GEYJ121V	Chip, 120 $\Omega$ 1/8W	
R476	ERJ8GEYJ121V	Chip, 120 $\Omega$ 1/8W	
R481	ERJ6GEYJ104	Chip, 100k $\Omega$ 1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R604	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
R605	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
R606	ERJ3GEYJ473V	Chip, 47k $\Omega$ 1/16W	
<b>CONNECTORS</b>			
CN101	YEAESFW15R1E	Connector, 15P	
CN401	K1MN14B00028	Connector, 14P	
CN901	K1MN05B00010	Connector, 5P	
CN902	K1MN05B00009	Connector, 5P	
<b>SWITCHES</b>			
SW2	ESE22MH32	Switch	
SW4	YEAS09275	Switch	
<b>COILS</b>			
L183	J0JAC0000052	Coil	
L184	J0JAC0000052	Coil	
L604	J0JCC0000166	Coil	
L607	J0JCC0000166	Coil	

Ref. No.	Part No.	Part Name & Description	Remarks
<b>CRYSTALS</b>			
XL101	H2D169500017	Crystal	
XL201	H2D419400001	Crystal	
<b>NOISE FILTER</b>			
R190	J0JAC0000052	Noise Filter	
<b>Mechanical Parts</b>			
<b>MISCELLANEOUS</b>			
AJ1	YEAJ071287	Cord w/Plug	
AJ2	YEAJ071285	Cord w/Plug	
AP1	YEAP2711	FPC, 5P	
AT1	YEATSD00405	Terminal	
AT3	YEATSD00405	Terminal	
1	YEFS011800	Pad	
2	YEFF011070A	Heat Sink	
3	YEP0PT9196E0	PCB w/Component	RTL
4	XYN2+J4FX	Screw, 2 * 4	
5	XYN2+J6FX	Screw, 2 * 6	

## 8 EXPLODED VIEW (CD Deck)

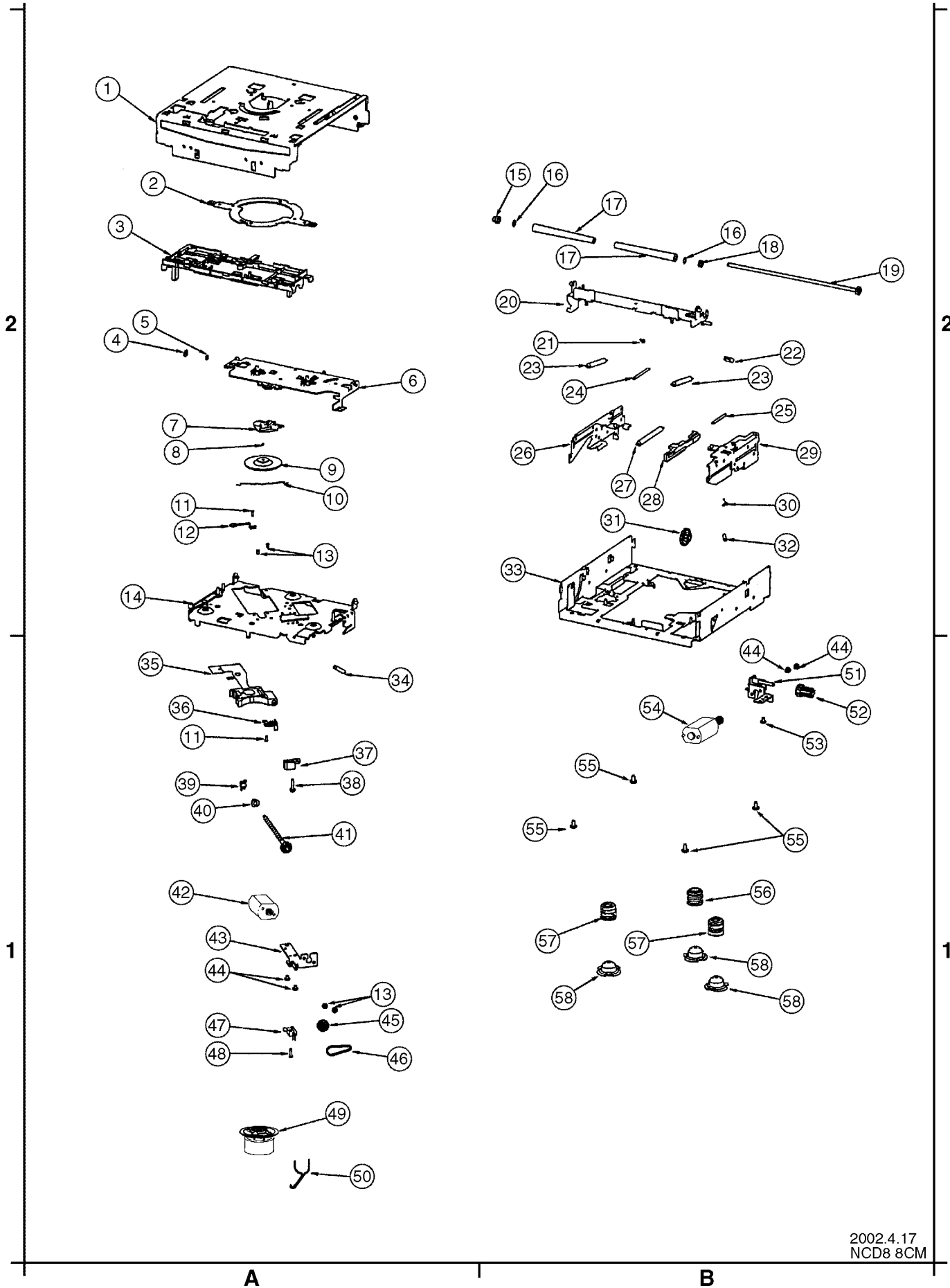


# 9 MECHANISM PART (YGP0FX4246)

Ref. No.	Part No.	Part Name & Description	Remarks
1	YGFA011934	Upper Chassis	
2	YGFX0462017	Lock Link Lever	
3	YGFX236153	Disc Guide	
4	YGFX0051590	Spring Washer	
5	XUC15V	Snap Ring	
6	YGFX249489	Clamp Arm Unit Ass'y	
7	YGFX0052363	Clamper Spring	
8	YEFX999957	Ball Baring	
9	YGFX007640	Clamper	
10	YGFX0051991C	Spring, Motor	
11	YEJS02037A	Screw (Pickup)	
12	YEFX0052557	Traverse Guide	
13	XQN17+A25FX	Screw, 1.7mmX25mm	
14	YGFA011915	Suspension Chassis Ass'y	
15	YGF04138	Roller Baring (2)	
16	YEW04128	Washer	
17	YGFX218310	Rubber Roller	
18	YGF04144	Roller Bearing (1)	
19	YGP0FX3507	Roller Gear Ass'y	
20	YGFX0462019	Feeder Arm Ass'y	
21	YEF011723	Pad (2)	
22	YEF011712	Pad (1)	
23	YGFX0052362	Spring (Feeder Arm)	
24	YGFX0052395	Offset Spring	
25	YGFX0052355	Spring (Rack Plate)	
26	YGFX0462015A	Suspension Lock Plate (L)	
27	YGFX0052360	Spring, Suspension Lock Plate (L)	
28	YGFX0031104	Rack Plate	
29	YGP0FX4165	Suspension Lock Plate (R) Ass'y	
30	YGFX0052356	Spring (Rack Lock Lever)	
31	YGFX0031108	Drive Gear (2)	
32	YGFX0052361	Spring (Rock Plate)	
33	YGFA011779	Main Chassis (L) Ass'y	
34	YGFX0052353	Clamp Arm Spring	
35	YEP0FX4378	Optical Pickup Ass'y	
36	YGFX9992027	Feed Screw Bearing	
37	YGF04150	Feed Screw Housing (A)	
38	XYN2+J10FX	Screw (Housing)	
39	YGFX0052386	Thrust Adjusting Spring	
40	YGF04137A	Feed Screw Housing (B)	
41	YEJT03211	Traverse Gear Ass'y	
42	YGP0FX4162	Traverse Motor Ass'y	
43	YGFX018658	Motor Bracket Ass'y	
44	YEJS06097A	Screw 2mmX25mm	
45	YGFX026124A	Idler Pulley	
46	YEF03080	Rubber Belt	
47	YEAS23151A	Leaf Switch	
48	YEJS02018FZ	Screw	
49	YGP0FX3529	Spindle Motor Ass'y	
50	YGAJ071286	Motor Cable	
51	YGFX018660	Loading Motor Bracket (M) Ass'y	
52	YGFX003940	Drive Gear (1)	
53	YEJS06188	Screw (LM Bracket)	
54	YGP0FX4167	Loading Motor Ass'y	
55	YEJT03216	Screw (Main Chassis)	
56	YGFX0052359	Suspension Spring (B)	
57	YGFX0052358	Suspension Spring (A)	
58	YEF04730	Oil Dumper	



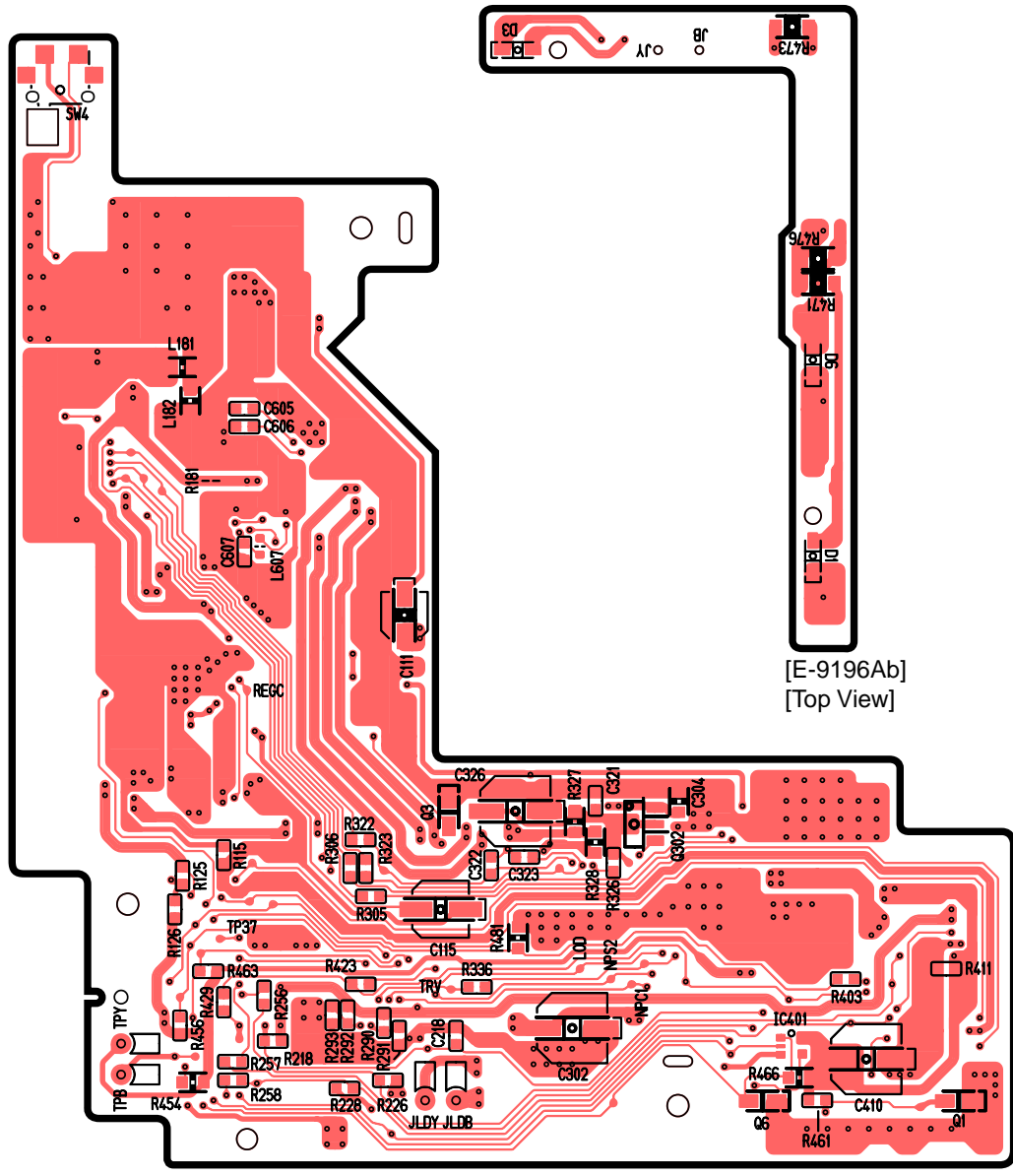
# 10 EXPLODED VIEW (YGP0FX4246)



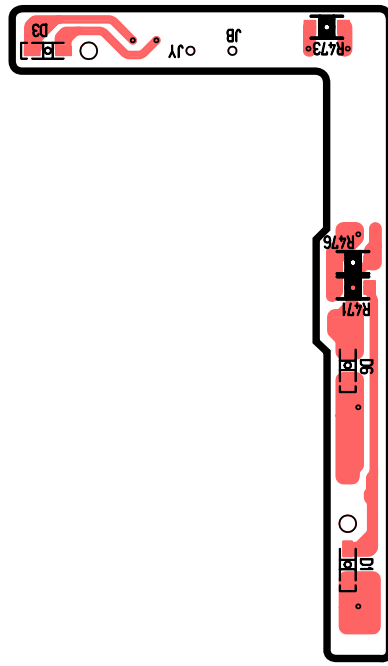
2002.4.17  
NCD8 8CM

# 11 WIRING DIAGRAM (CD Deck)

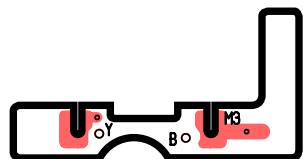
## 11.1. CD Servo Block (Top View)



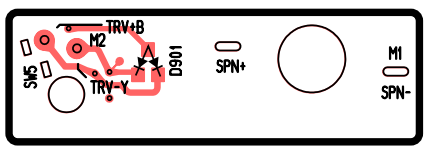
[E-9196Aa] [Top View]



[E-9196Ab] [Top View]



[E-9196Ad] [Top View]



[E-9196Ac] [Top View]

NCD-8KAI



# 12 SCHEMATIC DIAGRAM (CD Deck)

