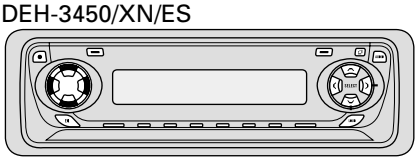
Pioneer sound.vision.soul

Service Manual

DEH-3450/XN/ES



ORDER NO.
CRT2758

HIGH POWER CD PLAYER WITH FM/AM TUNER

DEH-3450 XN/ES

DEH-2450F XN/ES

COMPACT disc DIGITAL AUDIO

● This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech. Module	Remarks
CX-977	CRT2624	S9	CD Mech. Module:Circuit Description, Mech.Description, Disassembly

CONTENTS

For details, refer to "Important symbols for good services" on the next page.

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PIONEER EUROPE NV Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

K-ZZD. NOV. 2001 Printed in Japan

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

● CD Player Service Precautions

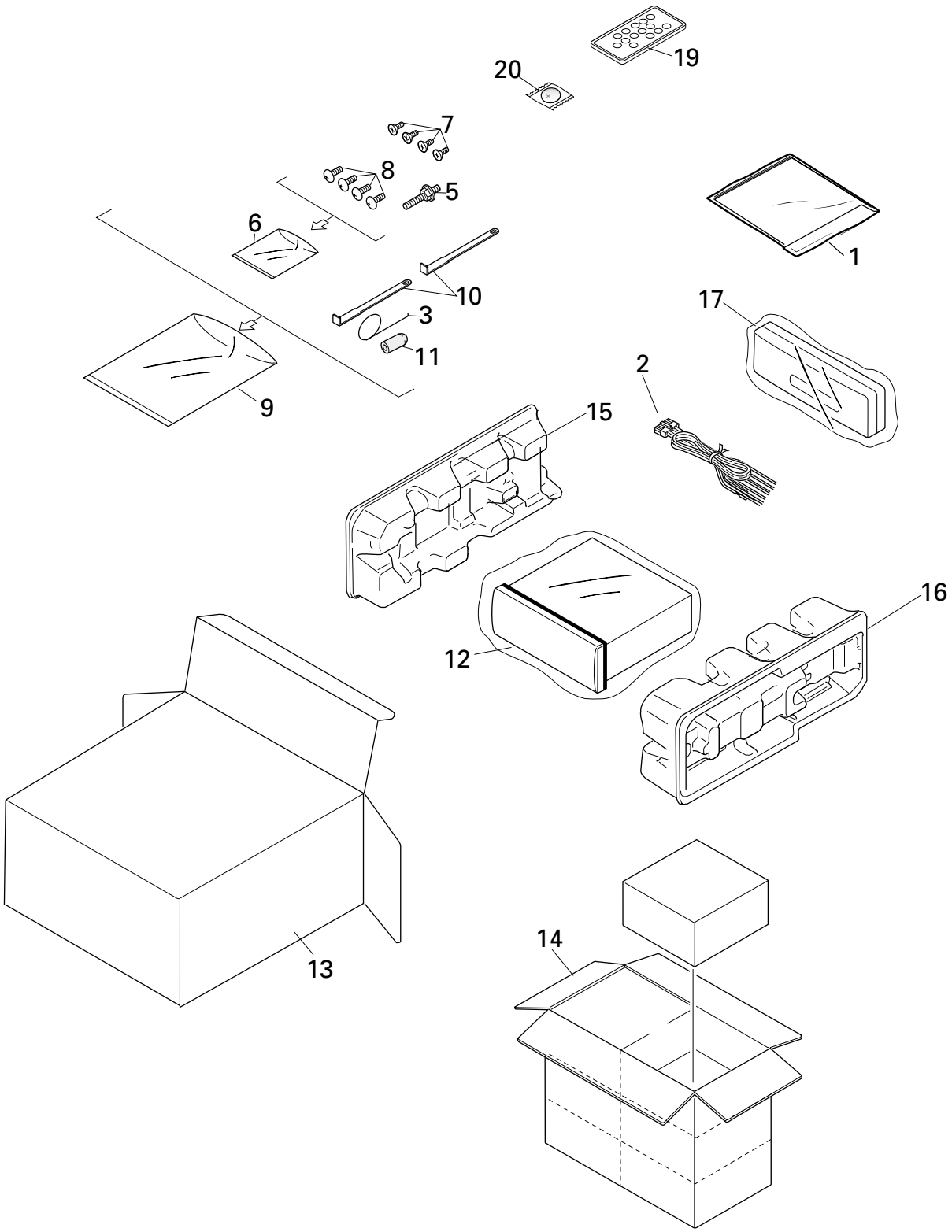
1. For pickup unit(CXX1480) handling, please refer to"Disassembly"(see page 42).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a jumper-solder).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the pickup unit(see page 39).
4. In this product, because the memory capacity of the microcomputer is insufficient, the test mode is not installed. However grating of the pickup unit can be confirmed.

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.
- For the applying amount of lubricants or glue, follow the instructions in this manual.
  (In the case of no amount instructions, apply as you think it appropriate.)

(1) PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD3499
	1-2	Installation Manual	CRD3503
	1-3	Polyethylene Bag	CEG1116
	2	Cord Assy	CDE6468
	3	Spring	CBH1650
	4	•••••	
	5	Screw	CBA1002
*	6	Polyethylene Bag	CEG-127
	7	Screw	CRZ50P090FMC
	8	Screw	TRZ50P080FMC
*	9	Polyethylene Bag	CEG-158
	10	Handle	CNC5395
	11	Bush	CNV3930
	12	Polyethylene Bag	CEG-162
	13	Carton	See Contrast table(2)
	14	Contain Box	See Contrast table(2)
	15	Protector	CHP2251
	16	Protector	CHP2252
	17	Case Assy	CXB3520
	18	•••••	
	19	Remote Control Unit	See Contrast table(2)
*	20	Battery	See Contrast table(2)

(2) CONTRAST TABLE

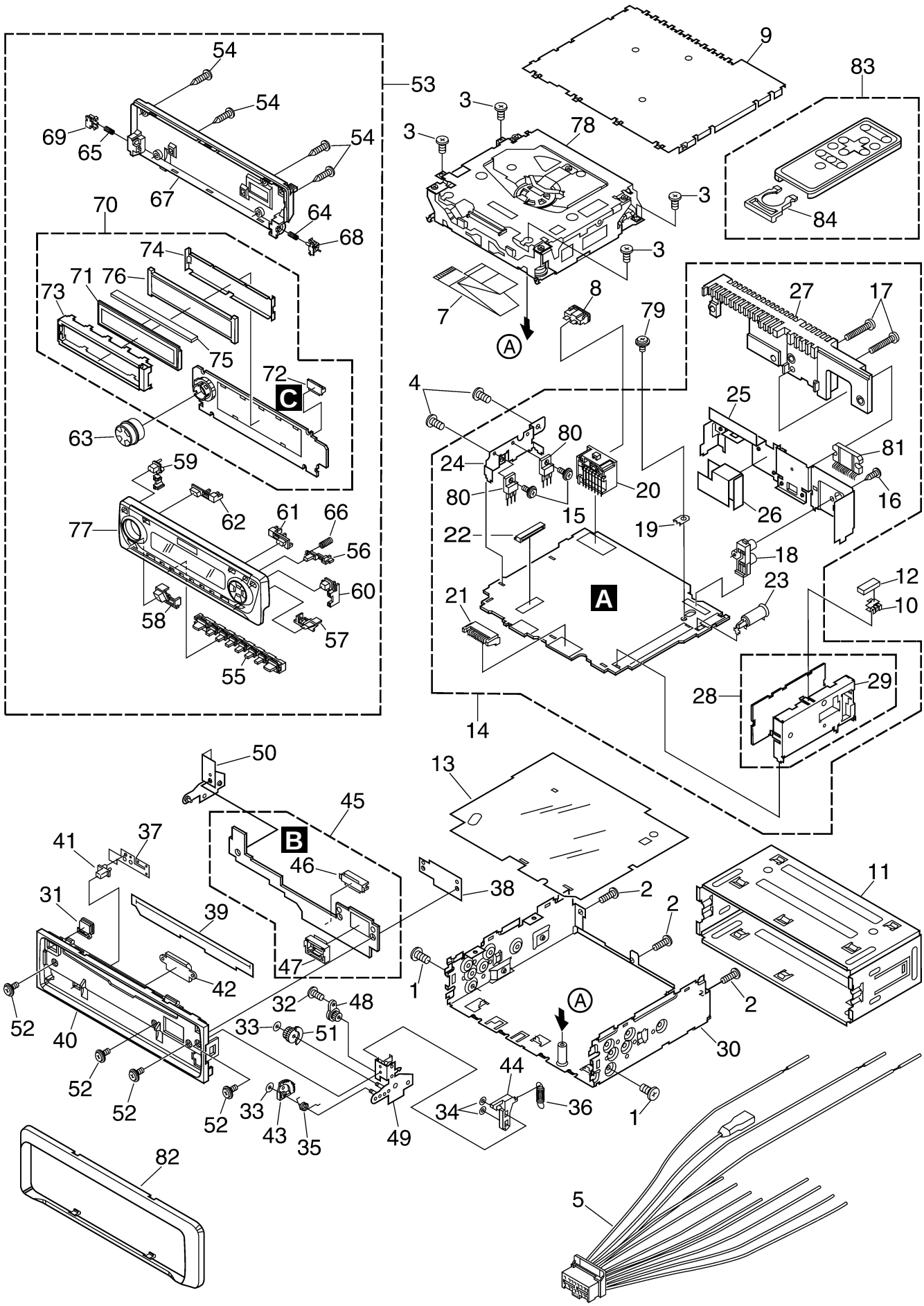
DEH-3450/XN/ES and DEH-2450F/XN/ES are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.	
			DEH-3450/XN/ES	DEH-2450F/XN/ES
	13	Carton	CHG4545	CHG4641
	14	Contain Box	CHL4545	CHL4641
	19	Remote Control Unit	CXB8743	Not used
*	20	Battery	CEX1065	Not used

● Owner's Manual, Installation Manual

Model	Part No.	Language
DEH-3450/XN/ES	CRD3499	English, Spanish, Portuguese(B), Chinese, Arabic
DEH-2450F/XN/ES	CRD3503	

2.2 EXTERIOR


54
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22
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18
21
A
23
12
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29
14
50
45
B
46
47
13
41
37
31
39
42
52
40
52
52
52
32
48
33
51
52
33
43
35
49
38
2
2
2
1
A
30
11
44
34
36
1
82
5

(1) EXTERIOR SECTION PARTS LIST

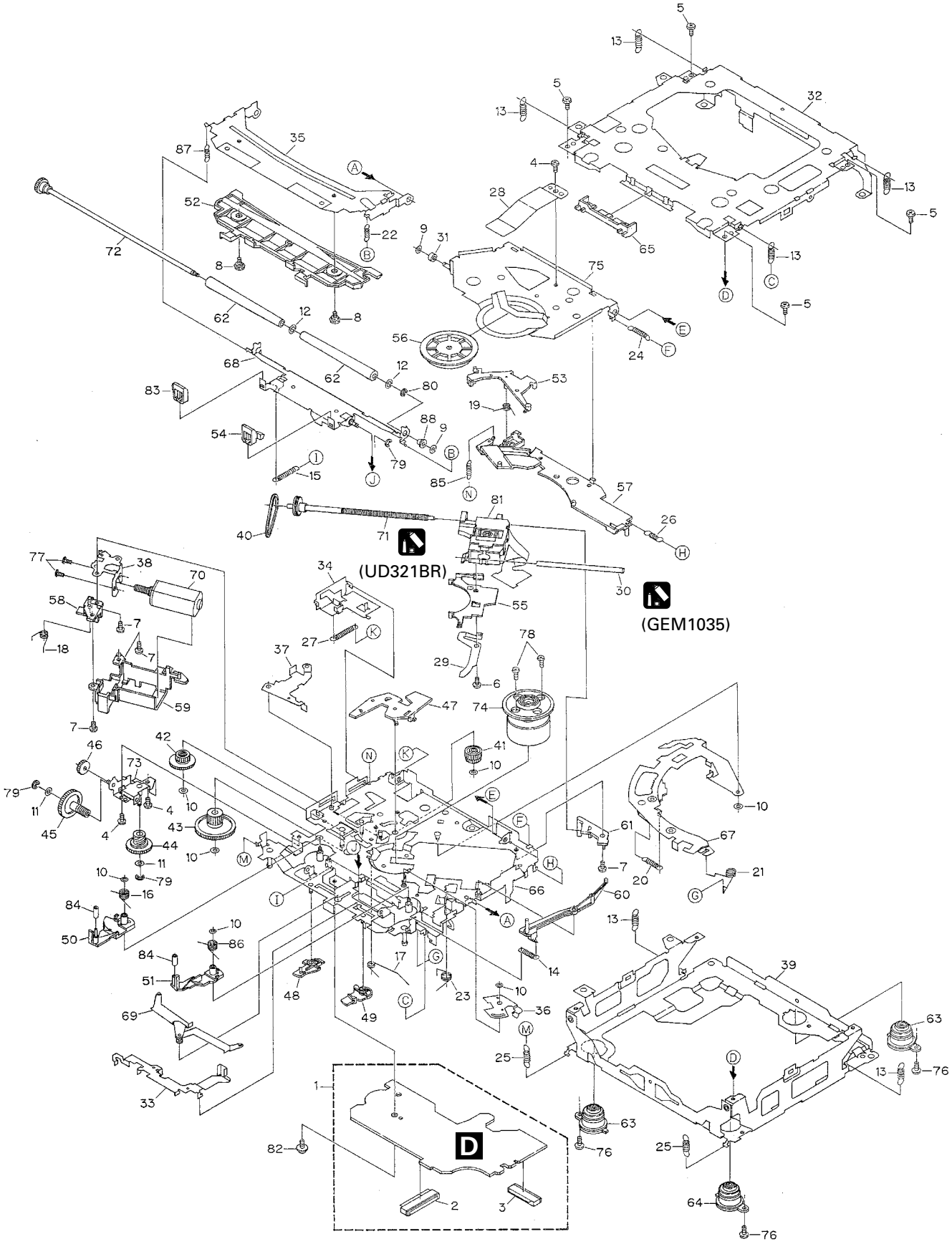
Mark No.	Description	Part No.
1	Screw	BMZ30P040FZK
2	Screw	BMZ30P100FMC
3	Screw	BSZ26P060FMC
4	Screw	BSZ30P060FMC
5	Cord Assy	CDE6468
6	•••••	
7	Cable	CDE6610
8	Fuse(10A)	CEK1136
9	Case	CNB2686
10	Holder	CNC5704
11	Holder	CNC8659
12	Cushion	CNM4870
13	Insulator	CNM6948
14	Tuner Amp Unit	See Contrast table(2)
15	Screw	ASZ26P060FMC
16	Screw	BPZ26P080FMC
17	Screw	BSZ26P160FMC
18	Pin Jack(CN351)	CKB1028
19	Terminal(CN404)	CKF1059
20	Plug(CN901)	CKM1330
21	Plug(CN750)	CKS3537
22	Connector(CN501)	CKS3835
23	Antenna Jack(CN402)	CKX1056
24	Holder	CNC8615
25	Holder	CNC9619
26	Insulator	CNM6949
27	Heat Sink	CNR1614
28	FM/AM Tuner Unit	CWE1563
29	Holder	CNC8815
30	Chassis Unit	CXB6100
31	Button(EJECT)	CAC6839
32	Screw(M2x2)	CBA1176
33	Washer	CBF1038
34	Washer	CBF1039
35	Spring	CBH2428
36	Spring	CBH2429
37	Spring	CBL1512
38	Holder	CNC9096
39	Cover	CNM6854
40	Panel	CNS6278
41	Pin	CNV6486
42	Lighting Conductor	CNV6487
43	Gear	CNV6507
44	Arm	CNV6508
45	Panel Unit	CWM7375
46	Socket(CN1950)	CKS3550
47	Connector(CN1951)	CKS4206
48	Damper Unit	CXB5070
49	Holder Unit	CXB6356
50	Holder Unit	CXB6357
51	Clutch Unit	CXB6358
52	Screw	IMS20P045FZK
53	Detach Grille Assy	See Contrast table(2)
54	Screw	BPZ20P100FZK
55	Button(1-6)	CAC7225
56	Button(OPEN)	CAC7227
57	Button(LOUD)	CAC7229
58	Button(EQ)	CAC7231
59	Button(CLOCK)	CAC7233
60	Button(AUDIO)	CAC7234
61	Button(LOCAL)	CAC7235
62	Button(BSM)	CAC7236
63	Knob	CAC7527
64	Spring	CBH2430
65	Spring	CBH2431
66	Spring	CBH2630
67	Cover	CNS6740
68	Holder	CNV6505
69	Holder	CNV6506
70	Keyboard Unit	See Contrast table(2)
71	LCD	See Contrast table(2)
72	Connector(CN1901)	CKS4524
73	Holder	CNC9757
74	Sheet	CNM7647
75	Connector	CNV6440
76	Lighting Conductor	CNV7244
77	Sub Grille Assy	See Contrast table(2)
78	CD Mechanism Module(S9ANA)	CXK5501
79	Screw	ISS26P055FUC
80	Transistor(Q510,910)	2SD2396
81	IC(IC361)	See Contrast table(2)
82	Panel	See Contrast table(2)
83	Remote Control Unit	See Contrast table(2)
84	Cover	See Contrast table(2)

(2) CONTRAST TABLE

DEH-3450/XN/ES and DEH-2450F/XN/ES are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		DEH-3450/XN/ES	DEH-2450F/XN/ES
14	Tuner Amp Unit	CWM7976	CWM8320
53	Detach Grille Assy	CXB8398	CXB8781
70	Keyboard Unit	CWM7979	CWM8370
71	LCD	CAW1707	CAW1724
77	Sub Grille Assy	CXB8415	CXB8787
81	IC(IC361)	PAL007A	TDA7386
82	Panel	CNS7070	CNS6332
83	Remote Control Unit	CXB8743	Not used
84	Cover	CNS7068	Not used

2.3 CD MECHANISM MODULE

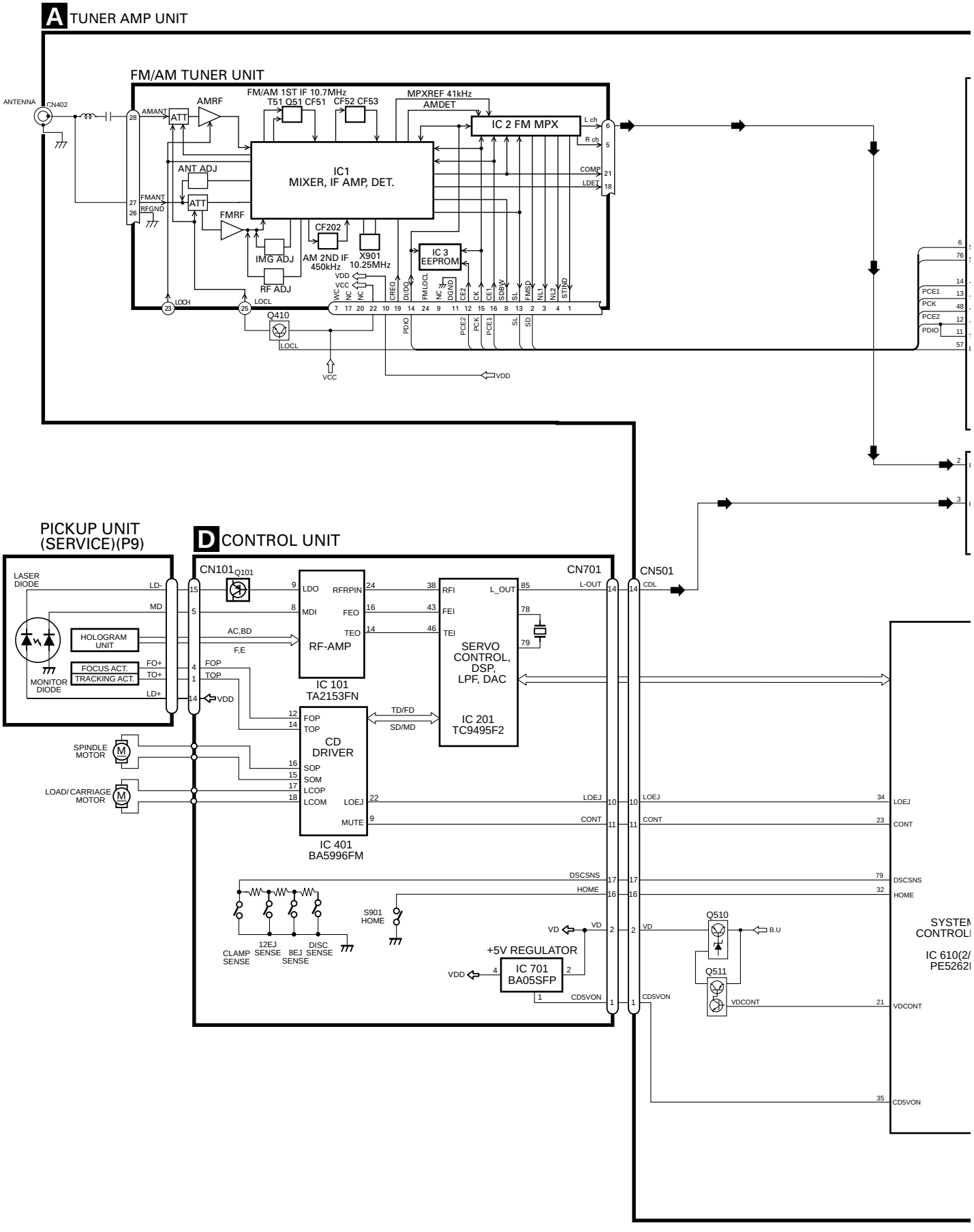


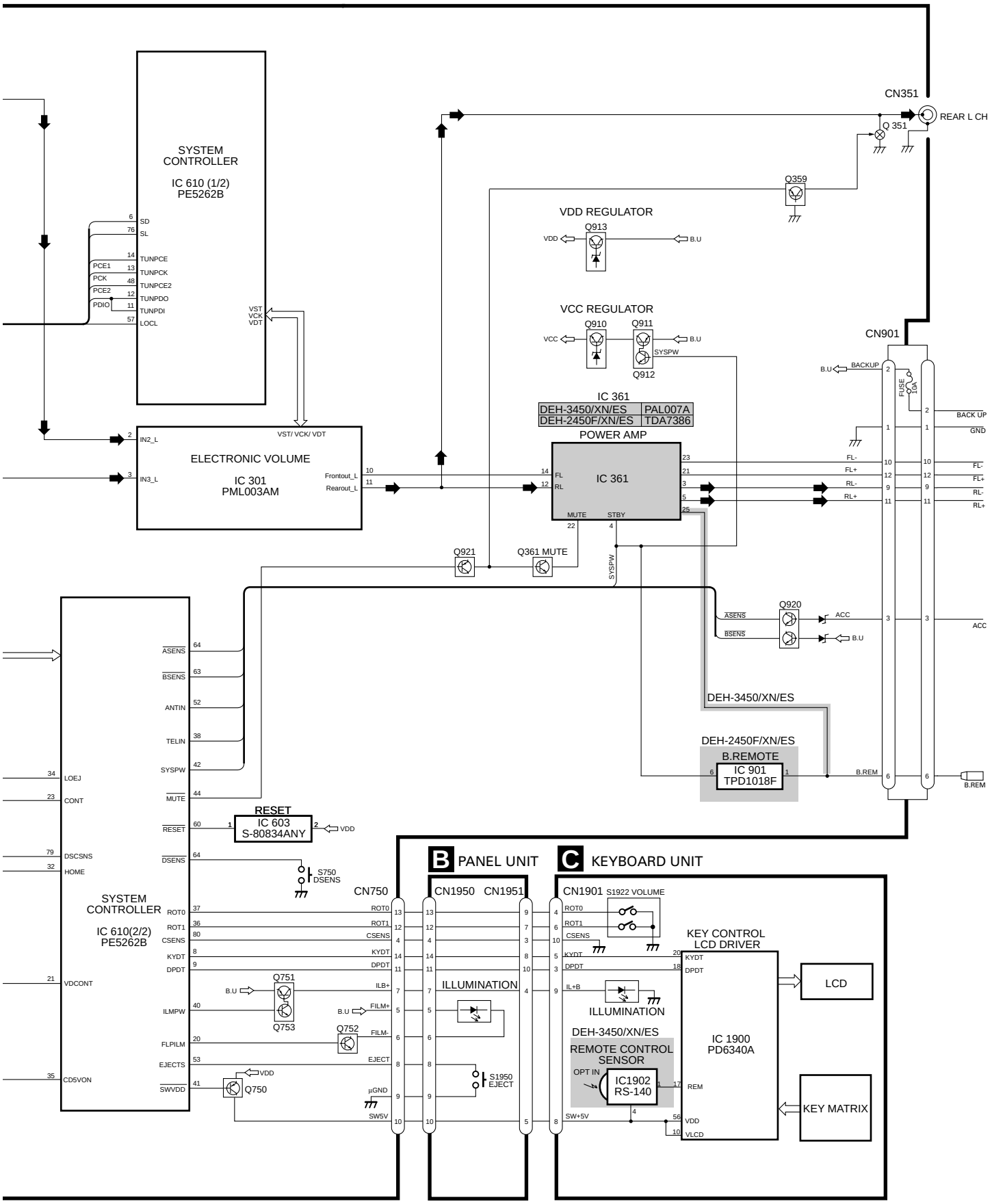
● CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Control Unit	CWX2481
	2	Connector(CN701)	CKS1959
	3	Connector(CN101)	CKS3486
	4	Screw	BMZ20P025FMC
	5	Screw	BSZ20P040FMC
	6	Screw(M2x4)	CBA1362
	7	Screw(M2x3)	CBA1527
	8	Screw	CBA1545
	9	Washer	CBF1037
	10	Washer	CBF1038
	11	Washer	CBF1039
	12	Washer	CBF1060
	13	Spring	CBH2378
	14	Spring	CBH2379
	15	Spring	CBH2514
	16	Spring	CBH2533
	17	Spring	CBH2382
	18	Spring	CBH2383
	19	Spring	CBH2384
	20	Spring	CBH2527
	21	Spring	CBH2386
	22	Spring	CBH2537
	23	Spring	CBH2390
	24	Spring	CBH2391
	25	Spring	CBH2523
	26	Spring	CBH2426
	27	Spring	CBH2444
	28	Spring	CBL1561
	29	Spring	CBL1553
	30	Shaft	CLA3845
	31	Roller	CLA3910
	32	Frame	CNC9654
	33	Lever	CNC9664
	34	Lever	CNC8949
	35	Arm	CNC9661
	36	Arm	CNC9016
	37	Arm	CNC9017
	38	Bracket	CNC9123
	39	Frame	CNC9656
	40	Belt	CNT1086
	41	Gear	CNV6886
	42	Gear	CNV6316
	43	Gear	CNV6317
	44	Gear	CNV6318
	45	Gear	CNV6319
	46	Gear	CNV6320
	47	Arm	CNV6322
	48	Arm	CNV6323
	49	Arm	CNV6324
	50	Arm	CNV6888
	51	Arm	CNV6889
	52	Guide	CNV6327
	53	Arm	CNV6924
	54	Guide	CNV6921
	55	Rack	CNV6923
	56	Clamper	CNV6331
	57	Arm	CNV6332
	58	Guide	CNV6333
	59	Cover	CNV6334
	60	Arm	CNV6335
	61	Guide	CNV6336
	62	Roller	CNV6338
	63	Damper	CNV6339
	64	Damper	CNV6340
	65	Guide	CNV6925
	66	Chassis Unit	CXB7980
*	67	Arm Unit	CXB7983
	68	Arm Unit	CXB7984
	69	Arm Unit	CXB7985
	70	Motor Unit(M2)	CXB5903
	71	Screw Unit	CXB5904
	72	Gear Unit	CXB8076
	73	Bracket Unit	CXB7982
	74	Motor Unit(M1)	CXB6007
	75	Arm Unit	CXB8504
	76	Screw(M2x5)	EBA1028
	77	Screw	JFZ20P020FMC
	78	Screw	JGZ17P020FZK
	79	Washer	YE15FUC
	80	Washer	YE20FUC
	81	Pickup Unit(Service)(P9)	CXX1480
	82	Screw	IMS26P030FMC
	83	Guide	CNV6922
	84	Roller	CNV6887
	85	Spring	CBH2509
	86	Spring	CBH2512
	87	Spring	CBH2536
	88	Collar	CNV6906

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

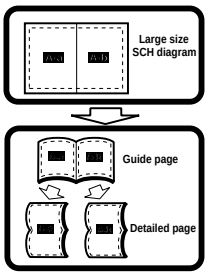


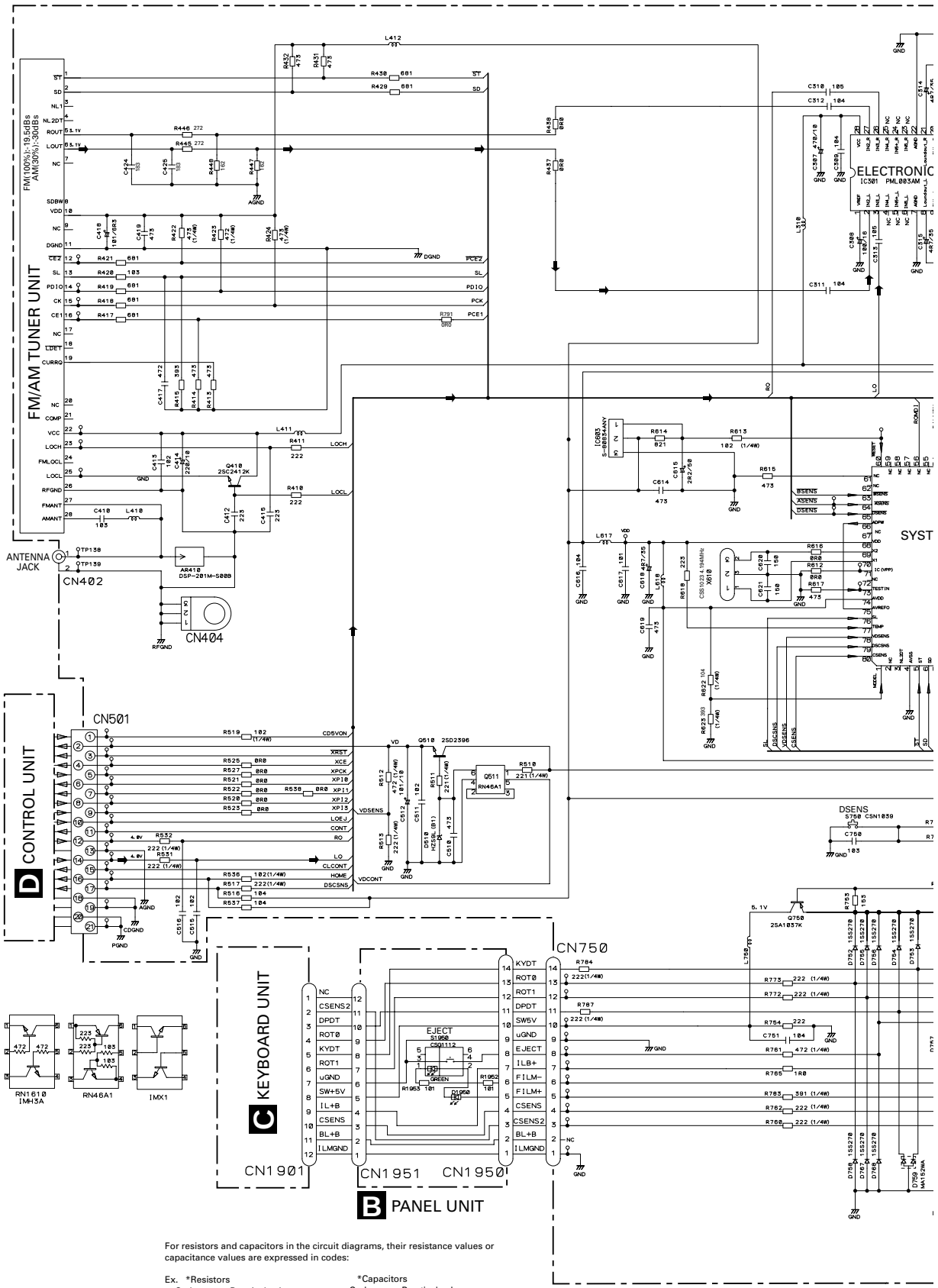

SYSTEM CONTROLLER
IC 610 (1/2)
PE5262B
SD
SL
TUNPCE
TUNPCK
TUNPCE2
TUNPDO
TUNPDI
LOCL
PCE1
PCK
PCE2
PDIO
VST
VCK
VDT
CN351
REAR L CH
Q 351
Q359
VDD REGULATOR
Q913
VDD
B.U
VCC REGULATOR
Q910
Q911
Q912
VCC
SYSPW
CN901
BACKUP
FUSE 10A
BACK UP
GND
IC 361
DEH-3450/XN/ES PAL007A
DEH-2450F/XN/ES TDA7386
POWER AMP
IC 361
FL
RL
MUTE
STBY
FL-
FL+
RL-
RL+
VST/ VCK/ VDT
IN2_L
IN3_L
ELECTRONIC VOLUME
IC 301
PML003AM
Frontout_L
Rearout_L
Q921
Q361 MUTE
Q920
ASENS
BSENS
ACC
DEH-3450/XN/ES
DEH-2450F/XN/ES
B.REMOTE
IC 901
TPD1018F
B.REM
ANTIN
TELIN
SYSPW
MUTE
LOEJ
CONT
RESET
IC 603
S-80834ANY
DSCSNS
HOME
DSENS
S750
SYSTEM CONTROLLER
IC 610(2/2)
PE5262B
ROT0
ROT1
CSENS
KYDT
DPDT
VDCONT
ILMPW
FLPILM
EJECTS
SWVDD
CD5VON
Q751
Q753
Q752
Q750
ILB+
FILM+
FILM-
EJECT
µGND
SW5V
B PANEL UNIT
C KEYBOARD UNIT
CN750
CN1950
CN1951
CN1901
S1922 VOLUME
ILLUMINATION
S1950
EJECT
IL+B
KEY CONTROL
LCD DRIVER
IC 1900
PD6340A
LCD
KEY MATRIX
REMOTE CONTROL
SENSOR
OPT IN
IC1902
RS-140
REM
SW+5V
VDD
VLCD

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

A-a



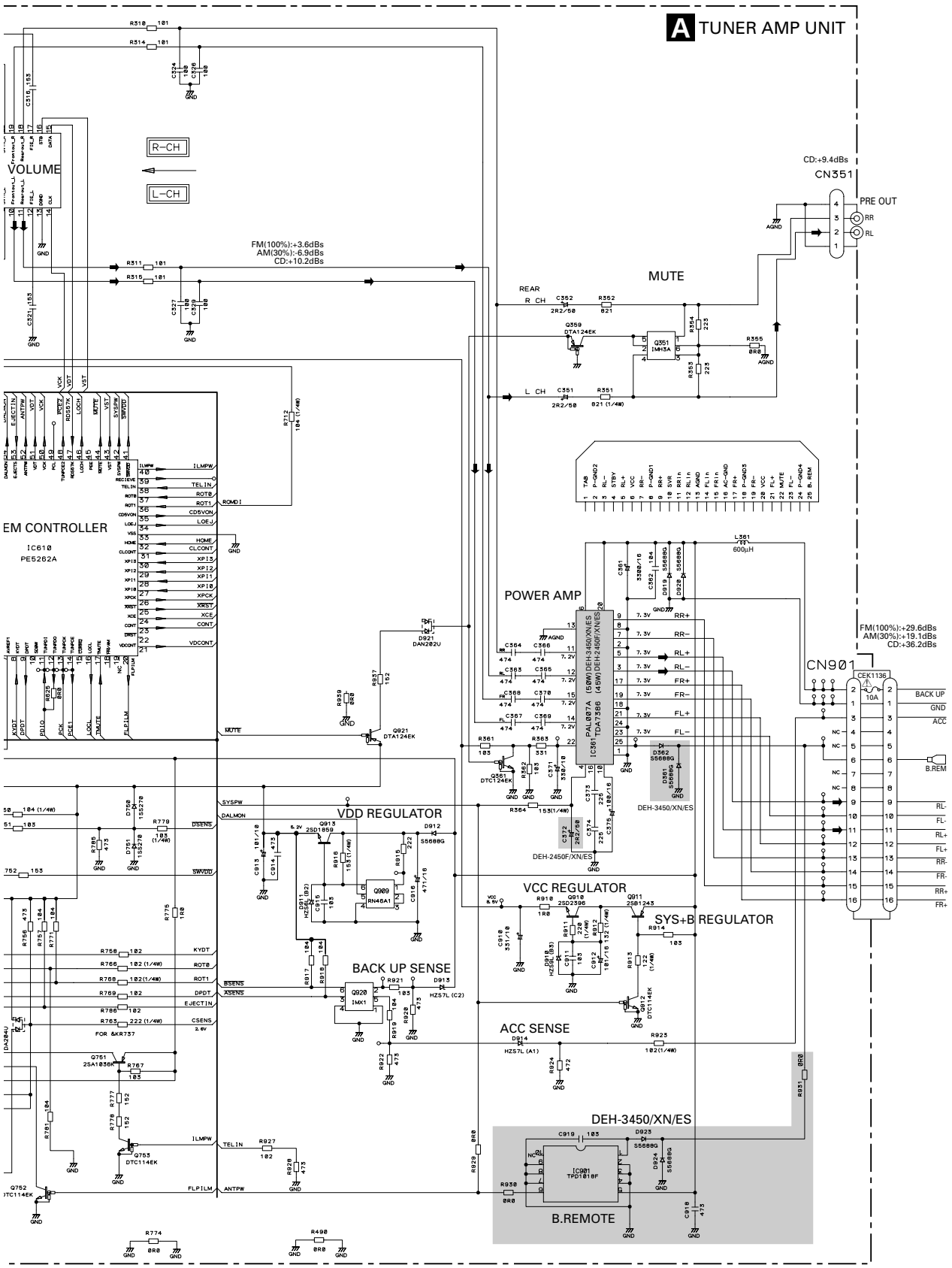


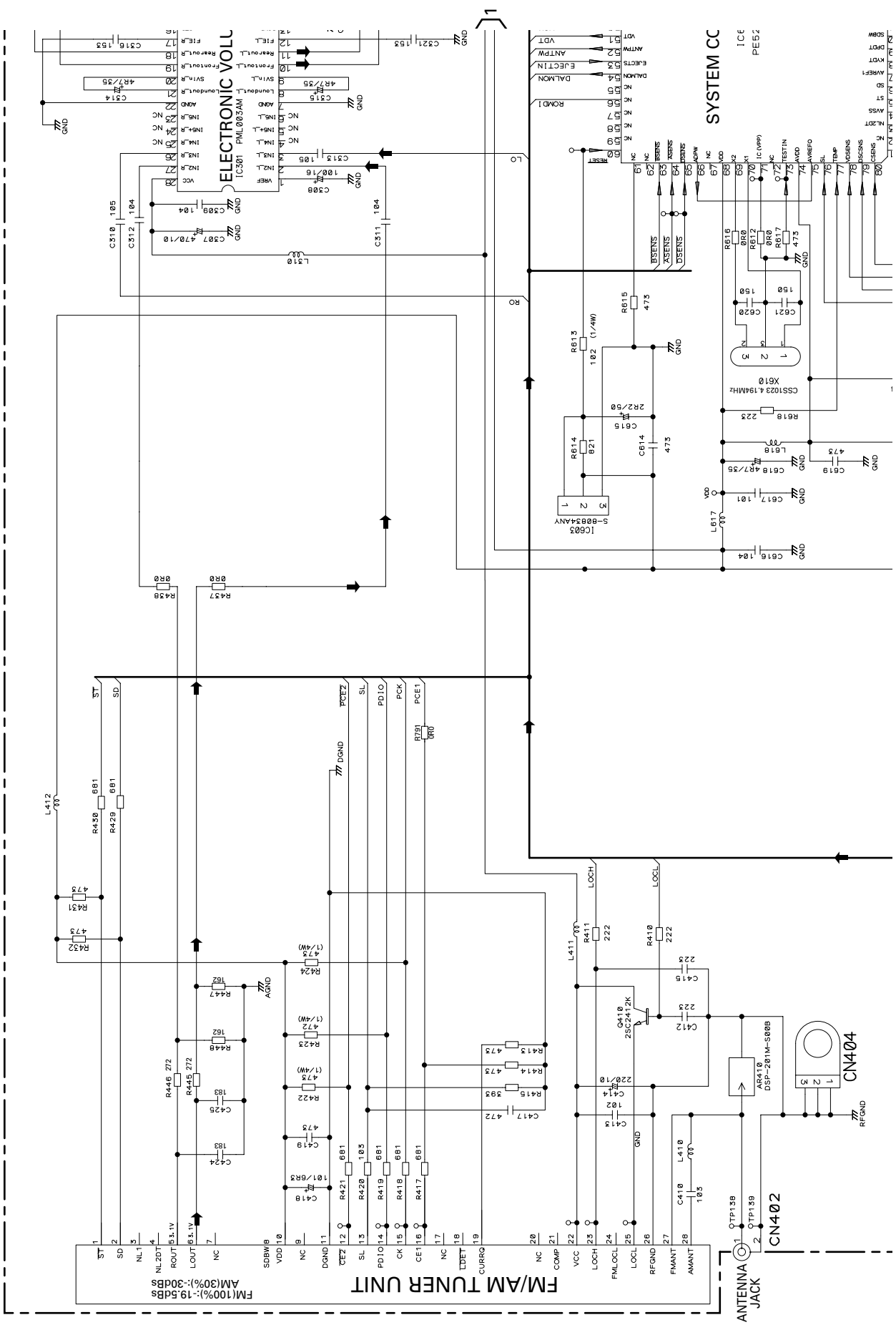
For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

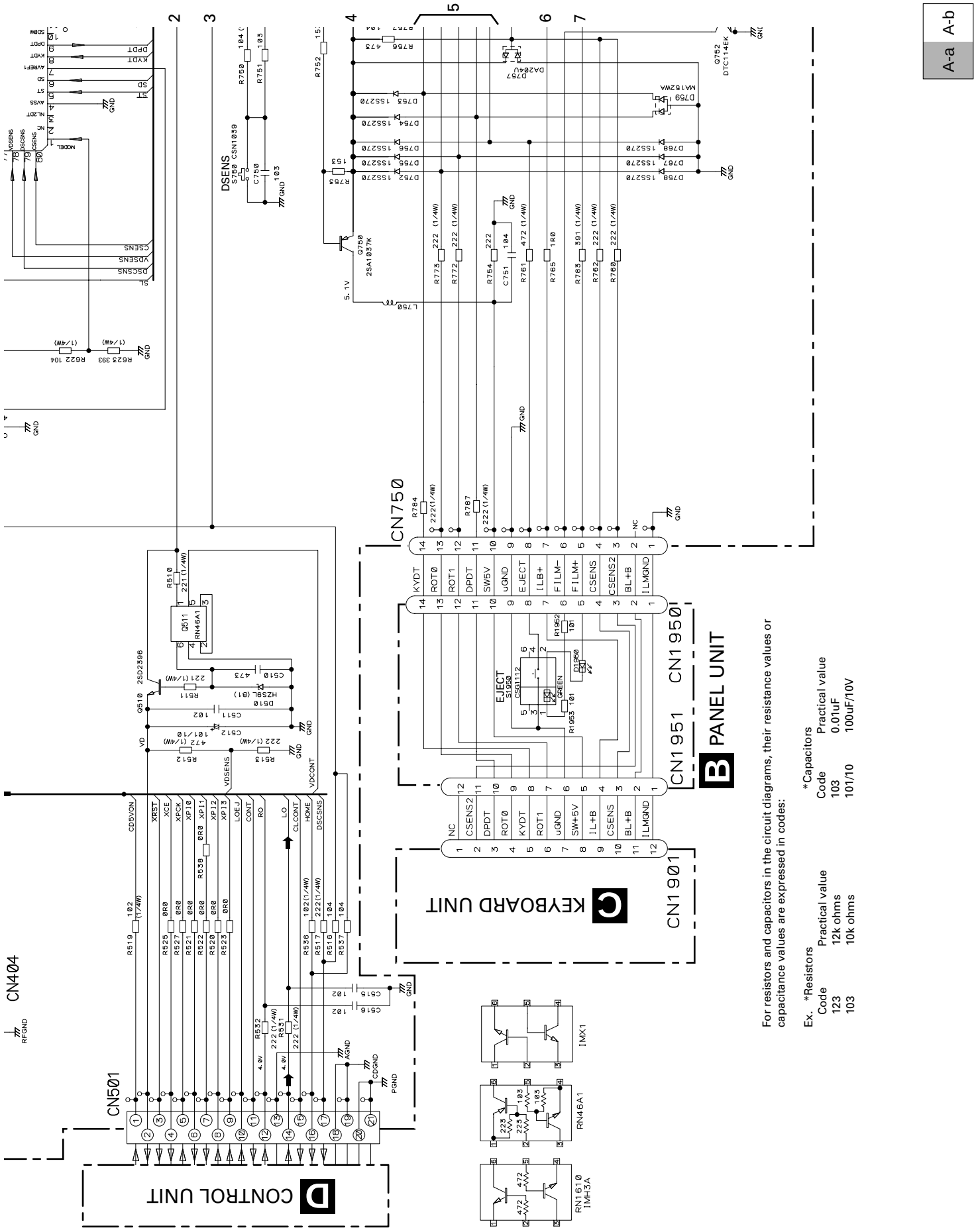
Ex. *Resistors		*Capacitors	
Code	Practical value	Code	Practical value
123	12k ohms	103	0.01uF
103	10k ohms	101/10	100uF/10V

A B

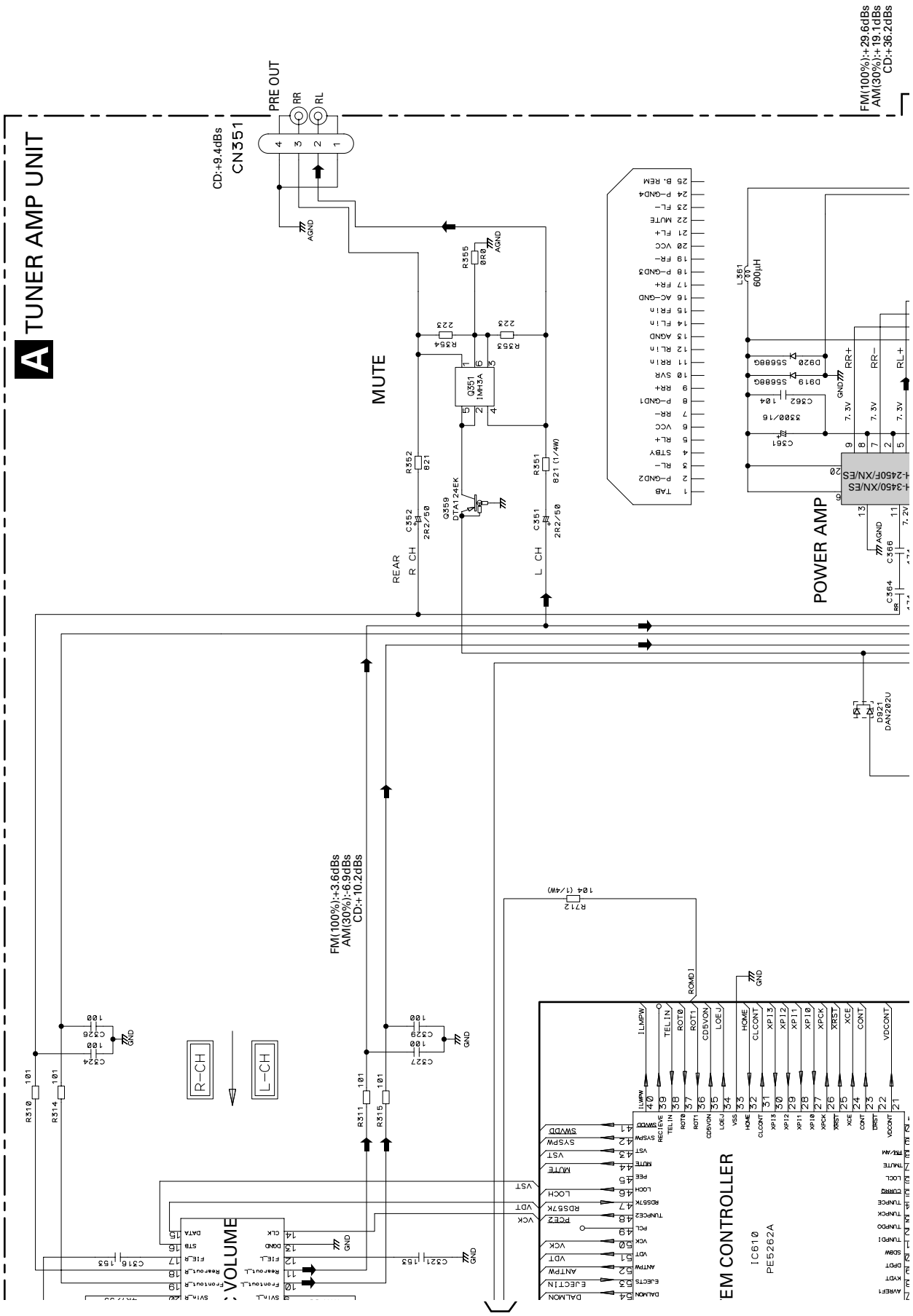
A-b

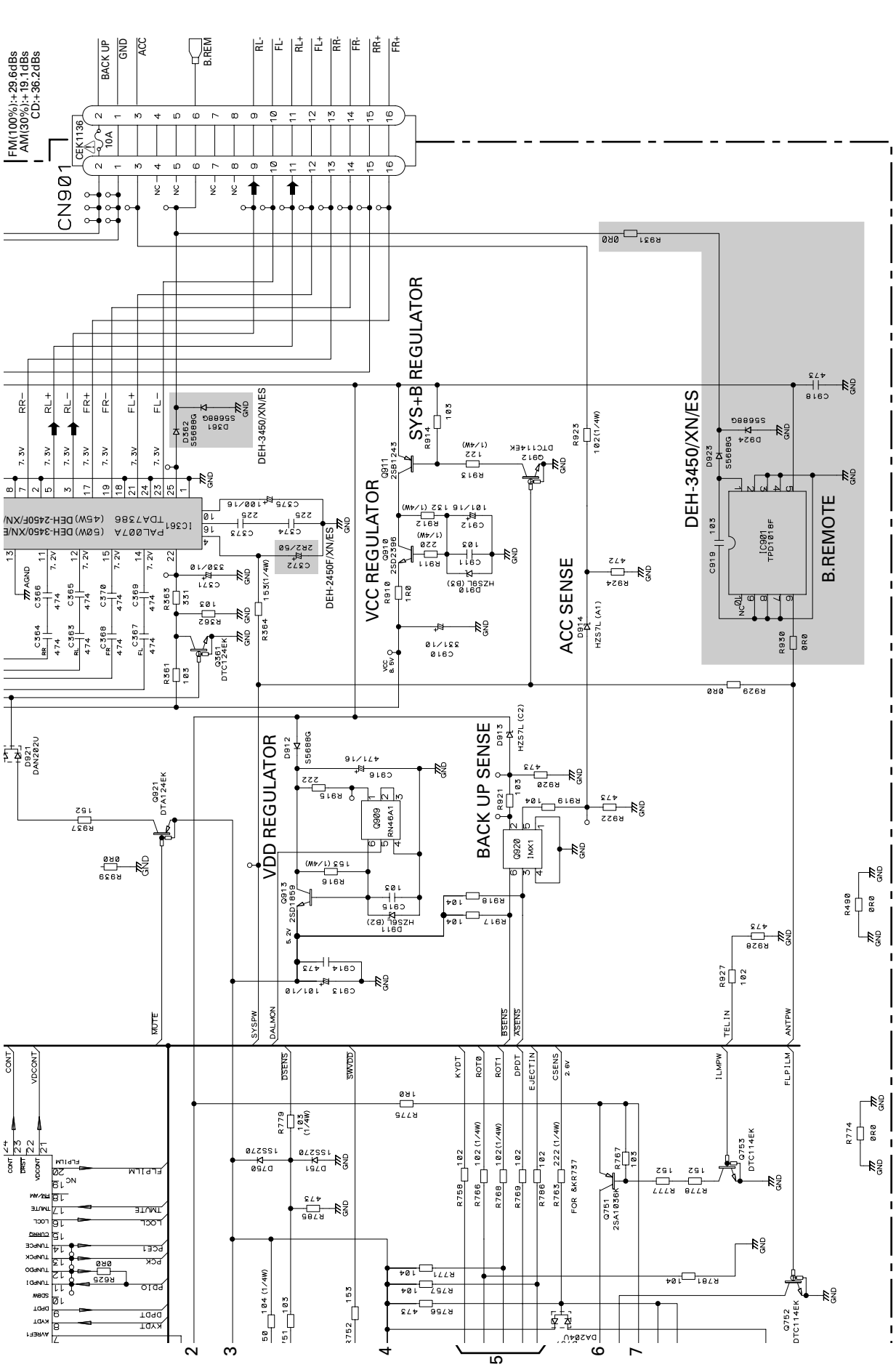

A TUNER AMP UNIT
VOLUME
R-CH
L-CH
FM(100%):+3.6dBs
AM(30%):-6.9dBs
CD:+10.2dBs
MUTE
REAR
R CH
L CH
CD:+9.4dBs
CN351
PRE OUT
RR
RL
EM CONTROLLER
IC610
PE5262A
POWER AMP
IC361
PAL007A (50W) DEH-3450/XN/ES
TDA7386 (45W) DEH-2450F/XN/ES
L361
600µH
FM(100%):+29.6dBs
AM(30%):+19.1dBs
CD:+36.2dBs
CN901
CEK1136
10A
BACK UP
GND
ACC
B.REM
RL-
FL-
RL+
FL+
RR-
FR-
RR+
FR+
VDD REGULATOR
VCC REGULATOR
SYS+B REGULATOR
BACK UP SENSE
ACC SENSE
DEH-3450/XN/ES
DEH-2450F/XN/ES
B.REMOTE
IC901
TPD1018F


A-b
A-a
ELECTRONIC VOLL
IC301
PML003AM
SYSTEM CC
FM/AM TUNER UNIT
FM(100%):-19.5dBs
AM(30%):-30dBs
ANTENNA JACK
CN402
CN404
X610
CSS1023 4.194MHz
IC603
S-80834ANY
Q410
2SC2412K
AE410
DSP-201M-S00B
ST
SD
NL1
NL2DT
ROUT
LOUT
NC
SDBW
VDD
DGND
CE2
SL
PDIO
CK
CE1
LDET
CURRQ
COMP
VCC
LOCH
FMLOCL
LOCL
RFGND
FMANT
AMANT
RFGND

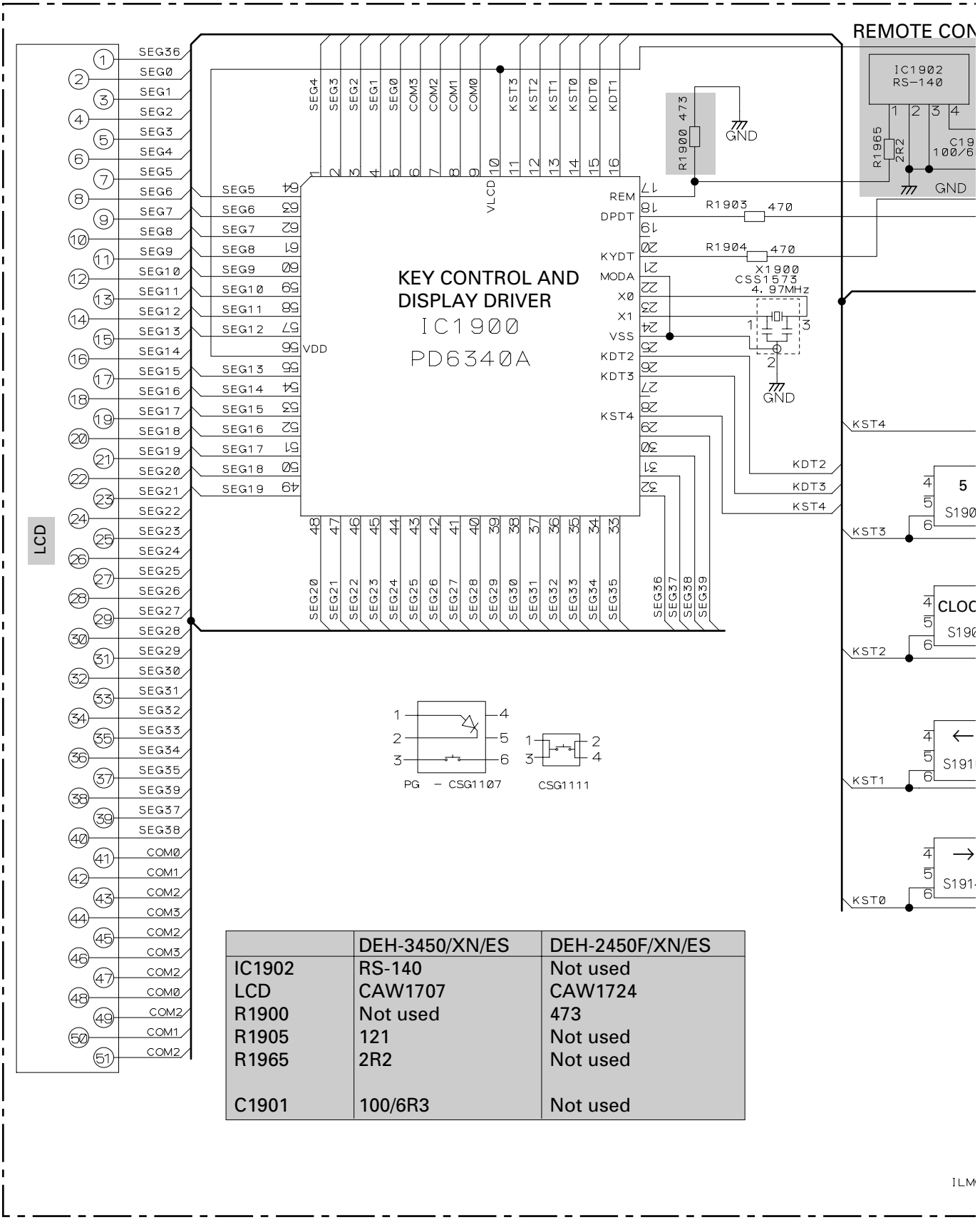

A-b
A-a
CN750
CN1951
CN1950
B PANEL UNIT
CN1901
C KEYBOARD UNIT
CN501
D CONTROL UNIT
CN404
EJECT
DSENS
IMX1
RN46A1
RN1810
1M13A
For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:
Ex. *Resistors
Code Practical value
123 12k ohms
103 10k ohms
*Capacitors
Code Practical value
103 0.01uF
101/10 100uF/10V

A-a A-b

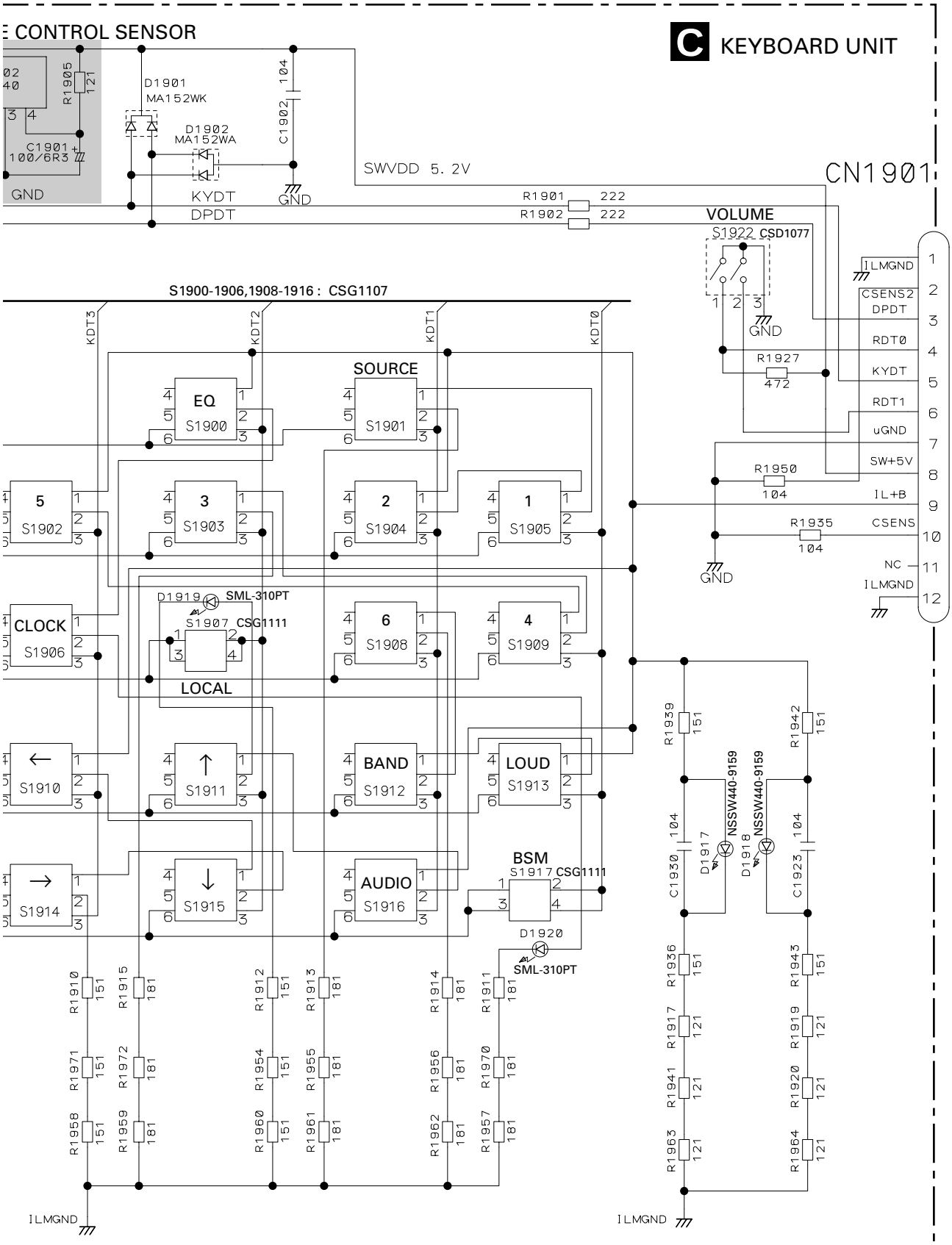

A TUNER AMP UNIT
PRE OUT
RR
RL
CD:+9.4dBs
CN351
AGND
MUTE
Q351
1MH3A
R352
821
R351
821 (1/4W)
Q359
DTA124EK
C352
2R2/50
C351
2R2/50
REAR
R CH
L CH
R355
0R0
R354
22
R353
22
FM(100%):+29.6dBs
AM(30%):+19.1dBs
CD:+36.2dBs
L361
600µH
D920
D919
S5588G
C362
104
C361
3300/16
GND
RR+
RR−
RL+
7.3V
POWER AMP
C566
C564
D921
DAN202U
FM(100%):+3.6dBs
AM(30%):-6.9dBs
CD:+10.2dBs
R712
104 (1/4W)
R310
R314
R311
R315
101
C326
C324
C329
C327
100
R-CH
L-CH
VOLUME
SYSTEM CONTROLLER
IC610
PE5262A
ILMPW
TEL IN
ROTB
ROTT
CD5VON
LOEJ
HOME
CLCONT
XPI3
XPI2
XPI1
XPI0
XPCK
XRST
XCE
CONT
VDCONT
SWDD
SYSPW
VST
MUTE
LOCH
RDS57K
PCE2
VCK
VDT
ANTPW
EJECTIN
DALMON
RONDI
VST
VDT
VCK


CN901
FM(100%):+29.6dBs
AM(30%):+19.1dBs
CD:+36.2dBs
BACK UP
GND
ACC
B.REM
RL-
FL-
RL+
FL+
RR-
FR-
RR+
FR+
CEK1136
10A
DEH-3450/XN/ES
DEH-2450F/XN/ES
SYS+B REGULATOR
VCC REGULATOR
ACC SENSE
VDD REGULATOR
BACK UP SENSE
B.REMOTE
IC361
TDA7386
PAL007A
MUTE
SYSPW
DALMON
BSENS
ASENS
TELIN
ANTPW
CONT
VDCONT
DSENS
SWVDD
KYDT
ROT0
ROT1
DPDT
EJECTIN
CSENS
ILMPW
FLPILM

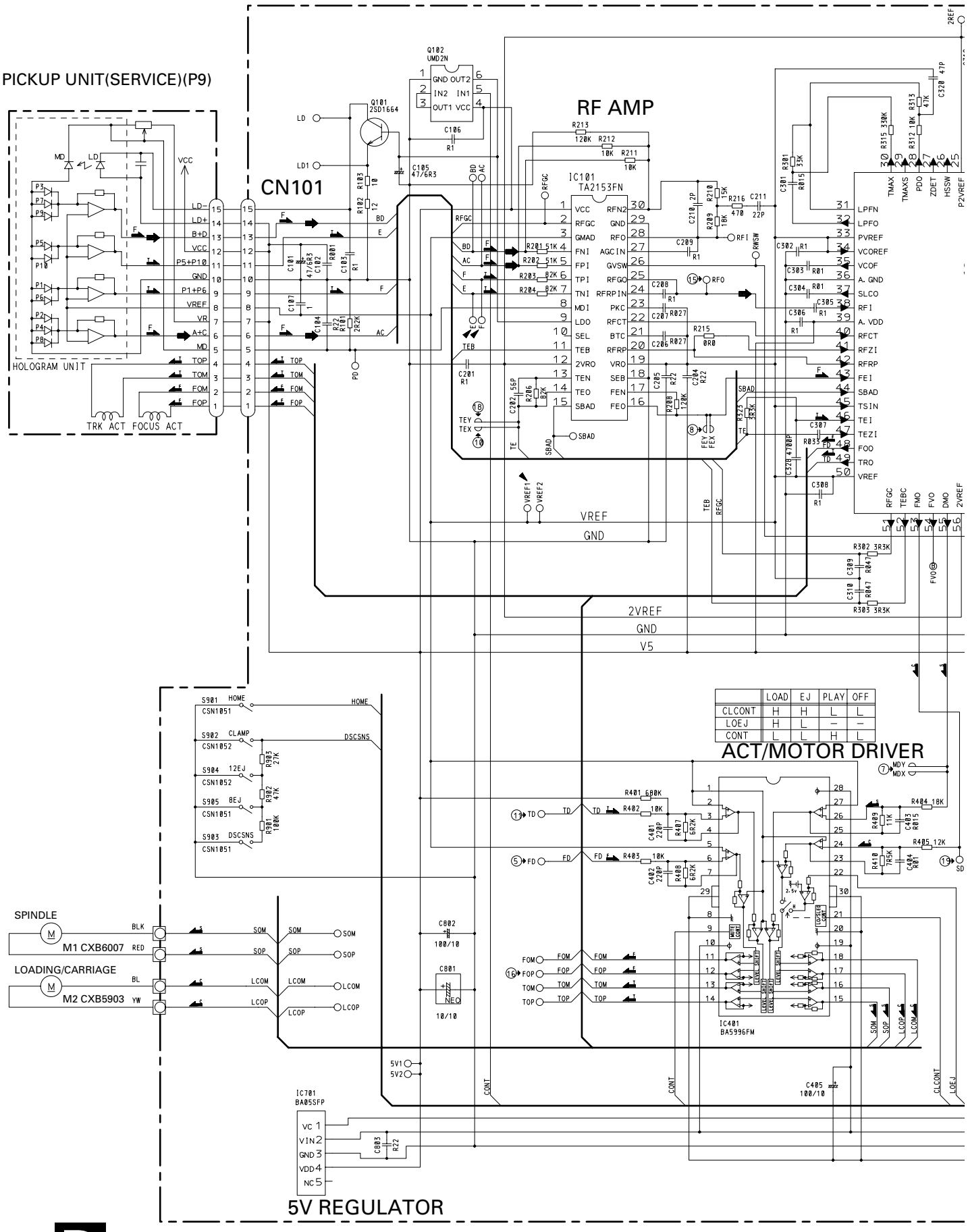
3.3 KEYBOARD UNIT



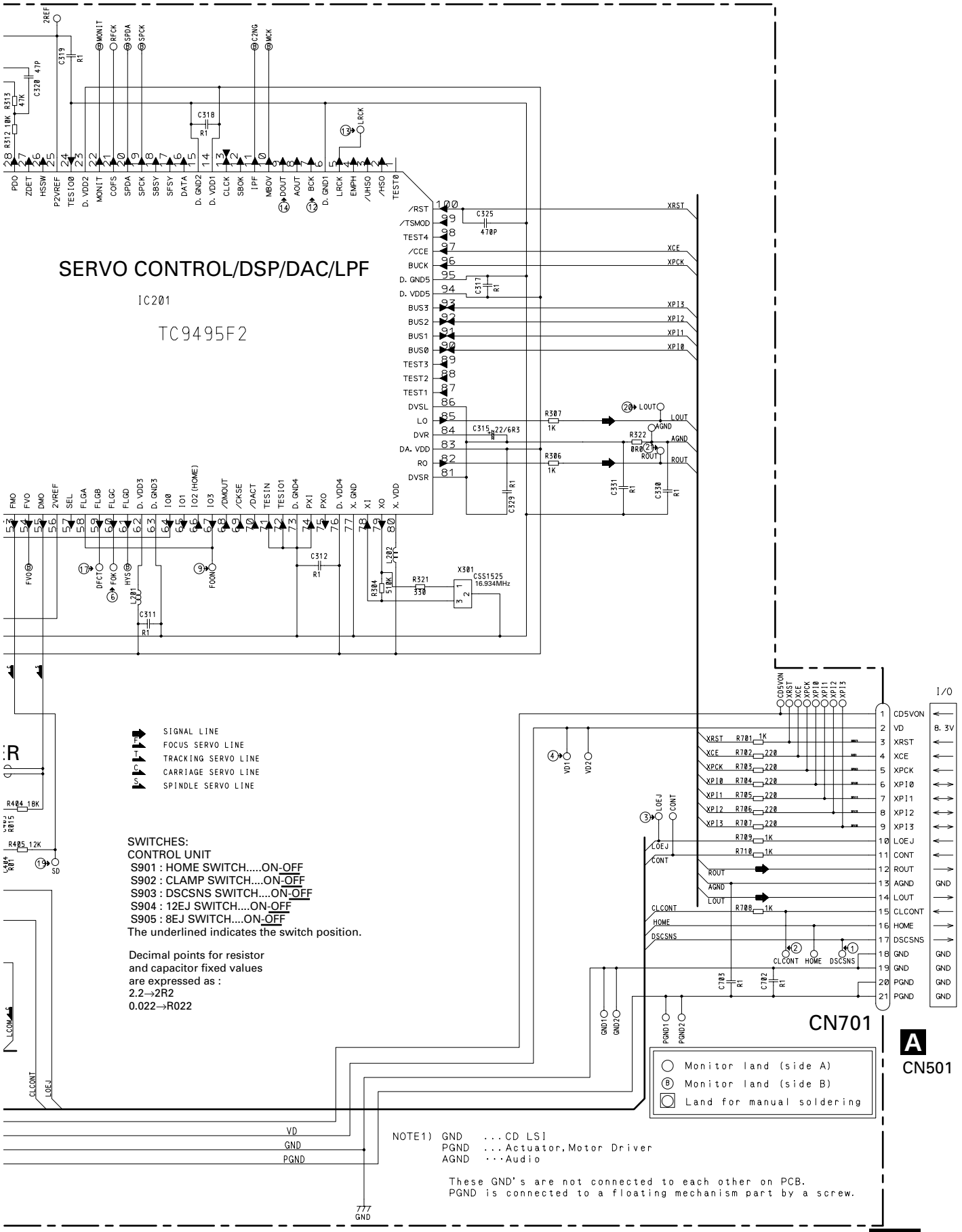
	DEH-3450/XN/ES	DEH-2450F/XN/ES
IC1902	RS-140	Not used
LCD	CAW1707	CAW1724
R1900	Not used	473
R1905	121	Not used
R1965	2R2	Not used
C1901	100/6R3	Not used


E CONTROL SENSOR
C KEYBOARD UNIT
R1905
121
C1901
100/6R3
GND
D1901
MA152WK
D1902
MA152WA
C1902
104
KYDT
DPDT
GND
SWVDD 5. 2V
CN1901
R1901 222
R1902 222
VOLUME
S1922 CSD1077
S1900-1906,1908-1916 : CSG1107
KDT3
KDT2
KDT1
KDT0
SOURCE
EQ
S1900
S1901
5
S1902
3
S1903
2
S1904
1
S1905
D1919 SML-310PT
S1907 CSG1111
CLOCK
S1906
6
S1908
4
S1909
LOCAL
S1910
S1911
BAND
S1912
LOUD
S1913
S1914
S1915
AUDIO
S1916
BSM
S1917 CSG1111
D1920
SML-310PT
ILMGND
R1927
472
R1950
104
R1935
104
NC
CSENS2
DPDT
RDT0
KYDT
RDT1
uGND
SW+5V
IL+B
CSENS
B
CN1951
R1939
151
R1942
151
NSSW440-9159
D1917
D1918
C1930
104
C1923
104
R1936
151
R1943
151
R1917
121
R1919
121
R1941
121
R1920
121
R1963
121
R1964
121
R1910
151
R1915
181
R1912
151
R1913
181
R1914
181
R1911
181
R1971
151
R1972
181
R1954
151
R1955
181
R1956
181
R1970
181
R1958
151
R1959
181
R1960
151
R1961
181
R1962
181
R1957
181

3.4 CD MECHANISM MODULE D CONTROL UNIT



	LOAD	EJ	PLAY	OFF
CLCONT	H	H	L	L
LOEJ	H	L	–	–
CONT	L	L	H	L

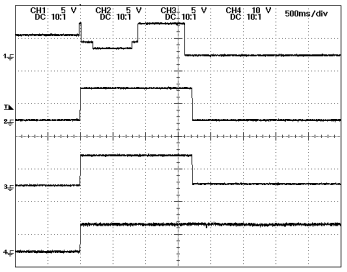

SERVO CONTROL/DSP/DAC/LPF
IC201
TC9495F2
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
SWITCHES:
CONTROL UNIT
S901 : HOME SWITCH.....ON-OFF
S902 : CLAMP SWITCH....ON-OFF
S903 : DSCSNS SWITCH....ON-OFF
S904 : 12EJ SWITCH....ON-OFF
S905 : 8EJ SWITCH....ON-OFF
The underlined indicates the switch position.
Decimal points for resistor
and capacitor fixed values
are expressed as :
2.2→2R2
0.022→R022
CN701
CN501
Monitor land (side A)
Monitor land (side B)
Land for manual soldering
NOTE1) GND ...CD LSI
PGND ...Actuator,Motor Driver
AGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
VREF:2.1V

● Waveforms

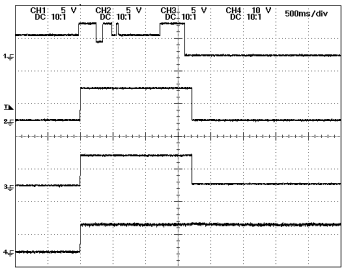
① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div.
③ CH3:LOEJ 5V/div. 500ms/div.
④ CH4:VD 10V/div.
When loading (12 cm CD)

Ref. : GND
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div.
③ CH3:LOEJ 5V/div. 500ms/div.
④ CH4:VD 10V/div.
When loading (8 cm CD)

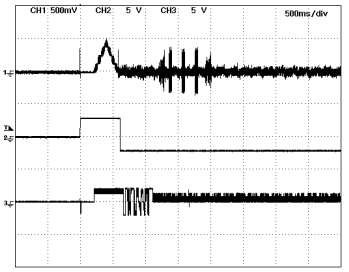
Ref. : GND
Mode : Normal



⑤ CH1:FD 500mV/div.
⑥ CH2:FOK 5V/div. 500ms/div.
⑦ CH3:MD 5V/div.

When setting up "Source On"

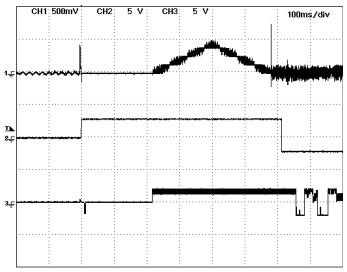
Ref. : VREF
Mode : Normal



⑤ CH1:FD 500mV/div.
⑥ CH2:FOK 5V/div. 100ms/div.
⑦ CH3:MD 5V/div.

Magnified drawing for "time"

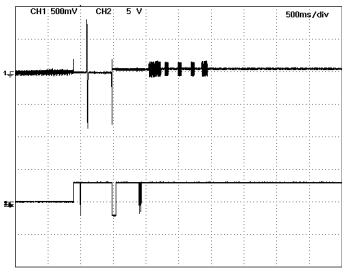
Ref. : VREF
Mode : Normal



⑧ CH1:FE 500mV/div.
⑨ CH2:FOON 5V/div. 500ms/div.

When setting up "Source On"

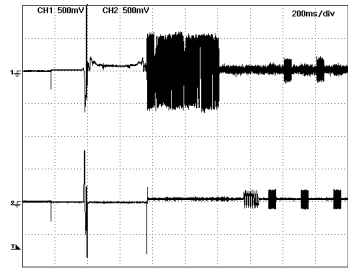
Ref. : VREF
Mode : Normal



⑩ CH1:TE 500mV/div.
⑧ CH2:FE 500mV/div. 200ms/div.

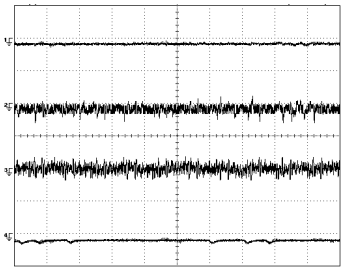
When setting up "Source On"

Ref. : VREF
Mode : Normal



⑧ CH1:FE 500mV/div.
⑤ CH2:FD 500mV/div.
⑩ CH3:TE 500mV/div. 1ms/div.
⑪ CH4:TD 500mV/div.
During "Play"

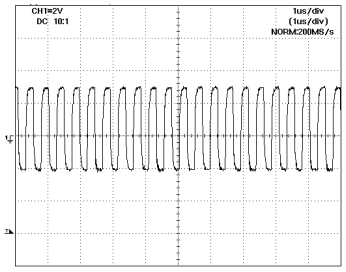
Ref. : VREF
Mode : Normal



⑫ CH1:BCK 2V/div. 1µs/div.

During "Play"

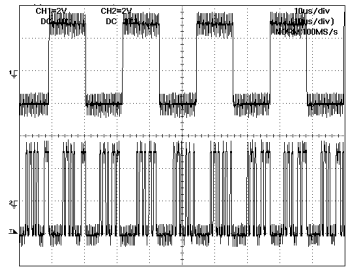
Ref. : VREF
Mode : Normal



⑬ CH1:LRCK 2V/div.
⑭ CH2:DOUT 2V/div. 10µs/div.

During "Play"

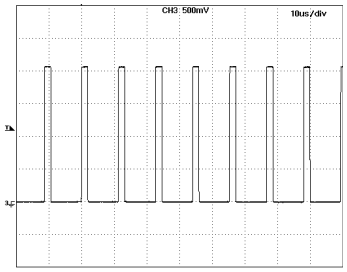
Ref. : VREF
Mode : Normal



⑦ CH1:MD 500mV/div. 10µs/div.

During "Play"

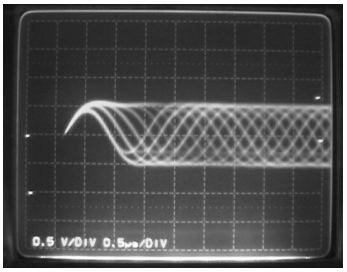
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 500mV/div. 0.5µs/div.

During "Play"

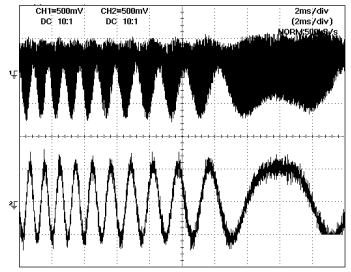
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 500mV/div.
⑩ CH2:TE 500mV/div. 2ms/div.

During "Tracking Open"

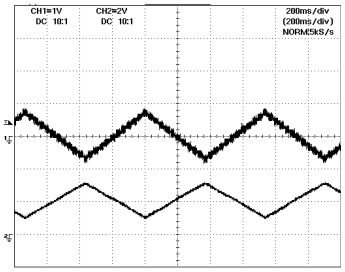
Ref. : VREF
Mode : Test



⑤ CH1:FD 1V/div.
⑯ CH2:FOP 2V/div. 200ms/div.

With no disk inserted
During "Focus Close"

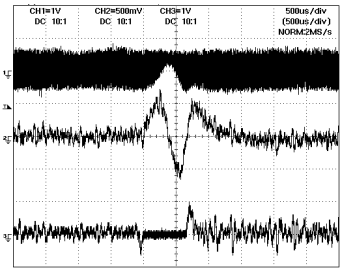
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 500mV/div. 500µs/div.
⑪ CH3:TD 1V/div.

1 Track Jump

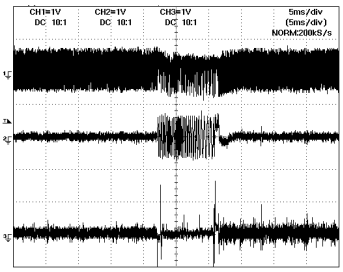
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 1V/div. 5ms/div.
⑪ CH3:TD 1V/div.

32 Track Jump

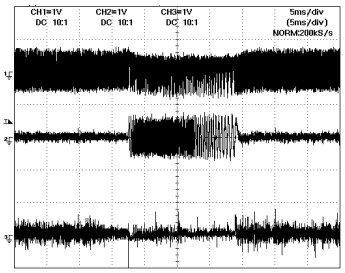
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 1V/div. 5ms/div.
⑪ CH3:TD 1V/div.

100 Track Jump

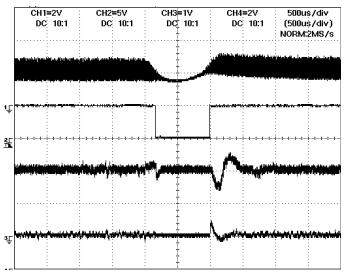
Ref. : VREF
Mode : Test



⑮ CH1:RFO 2V/div.
⑰ CH2:DFCT 5V/div. 500µs/div.
⑤ CH3:FD 1V/div.
⑪ CH4:TD 2V/div.

When reproducing black dots (800µm)

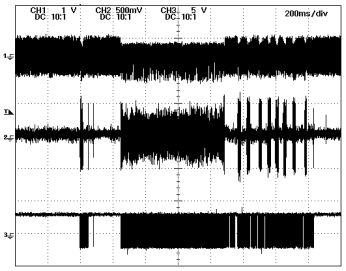
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 500mV/div. 200ms/div.
⑰ CH3:DFCT 5V/div.

During inside/outside search

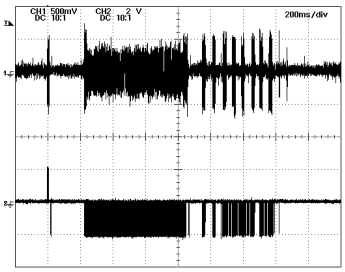
Ref. : VREF
Mode : Normal



⑱ CH1:TEY 500mV/div. 200ms/div.
⑲ CH2:SD 2V/div.

During inside/outside search

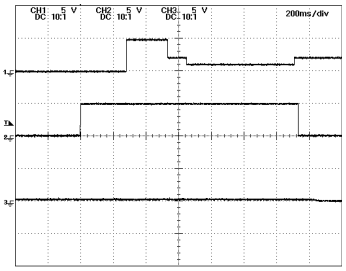
Ref. : VREF
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div. 200ms/div.
③ CH3:LOEJ 5V/div.

When "Eject" (12 cm CD)

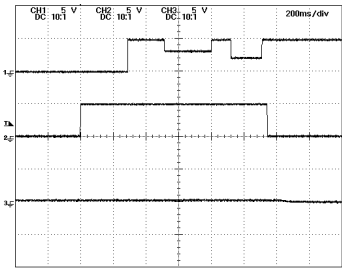
Ref. : GND
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div. 200ms/div.
③ CH3:LOEJ 5V/div.

When "Eject" (8cm CD)

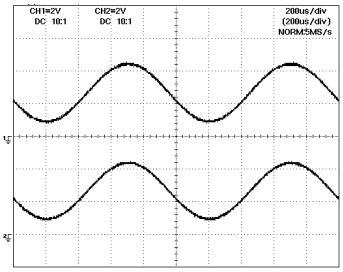
Ref. : GND
Mode : Normal



⑳ CH1:LOUT 2V/div.
㉑ CH2:ROUT 2V/div. 200µs/div.

"Play" in 1kHz, 0dB

Ref. : GND
Mode : Normal



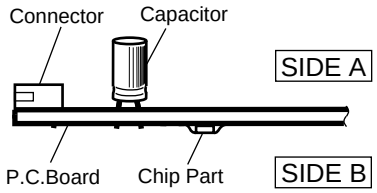
4. PCB CONNECTION DIAGRAM

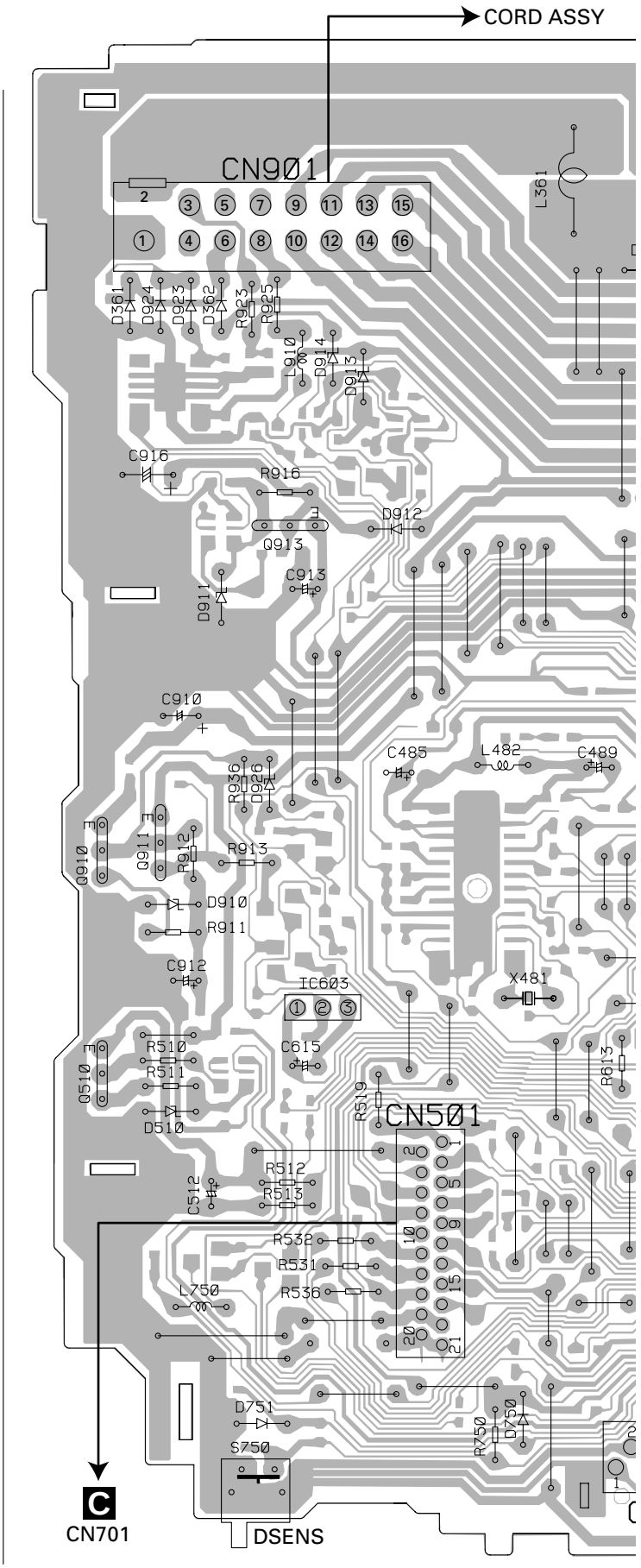
4.1 TUNER AMP UNIT

A TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

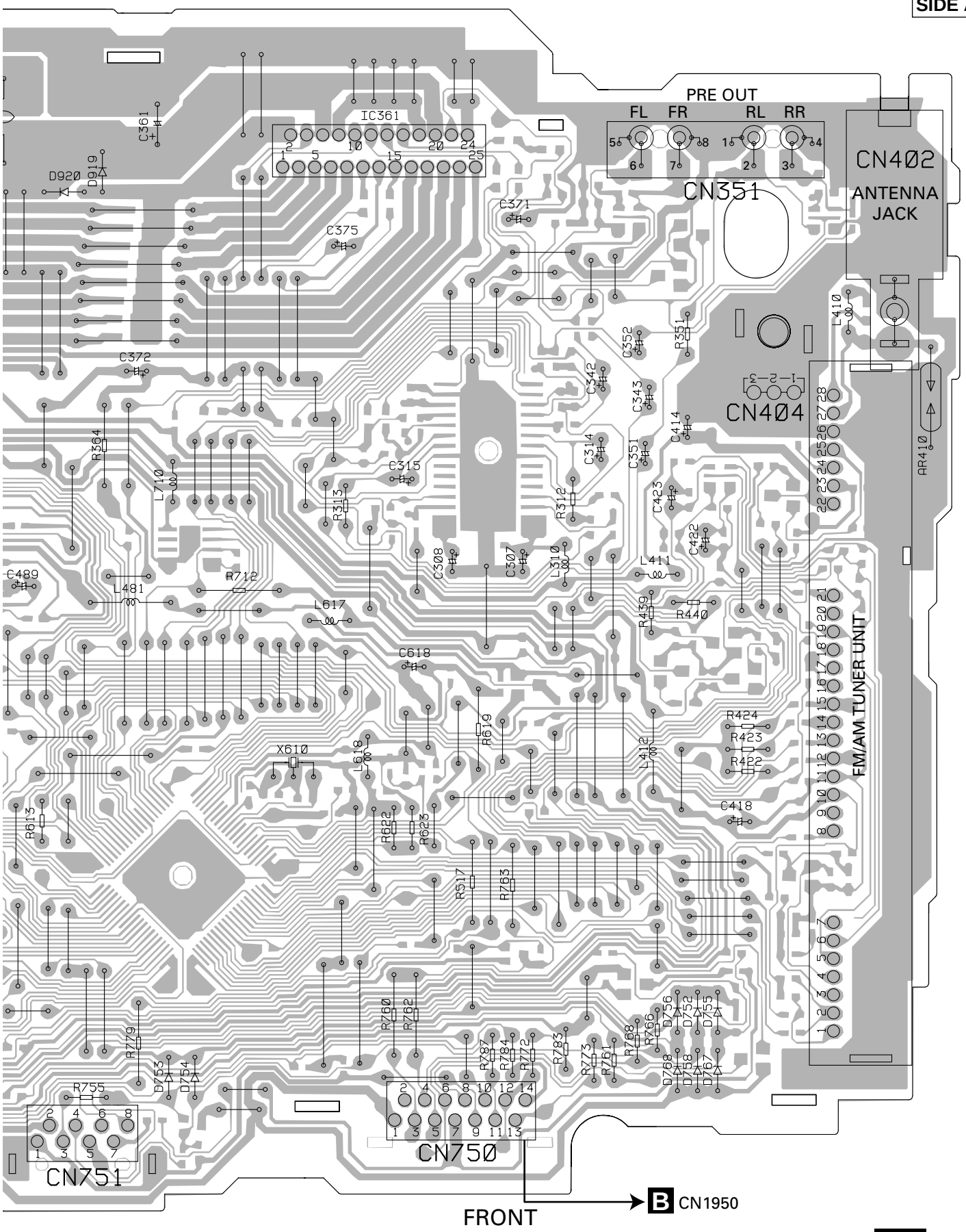
1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



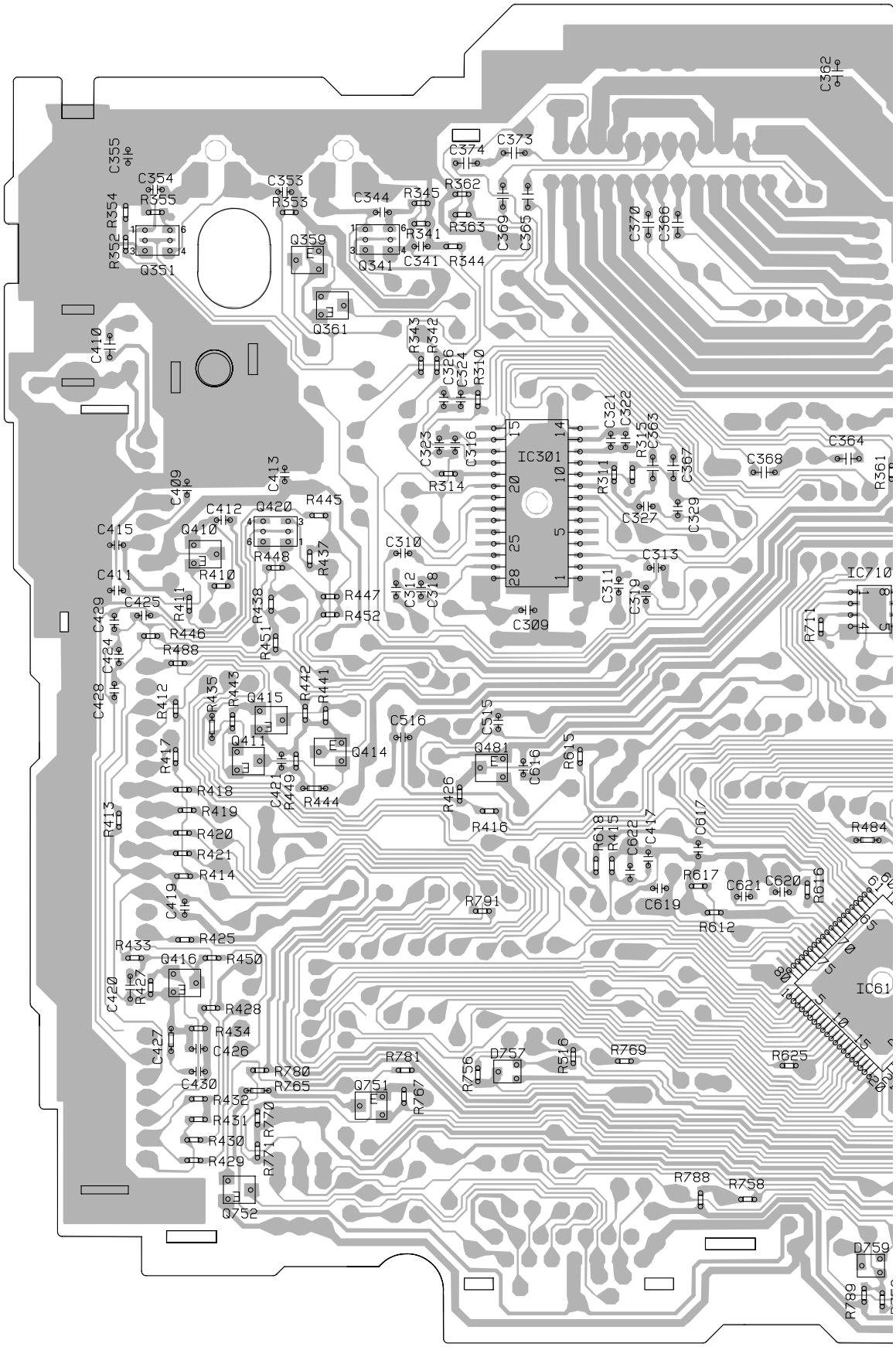


SSY

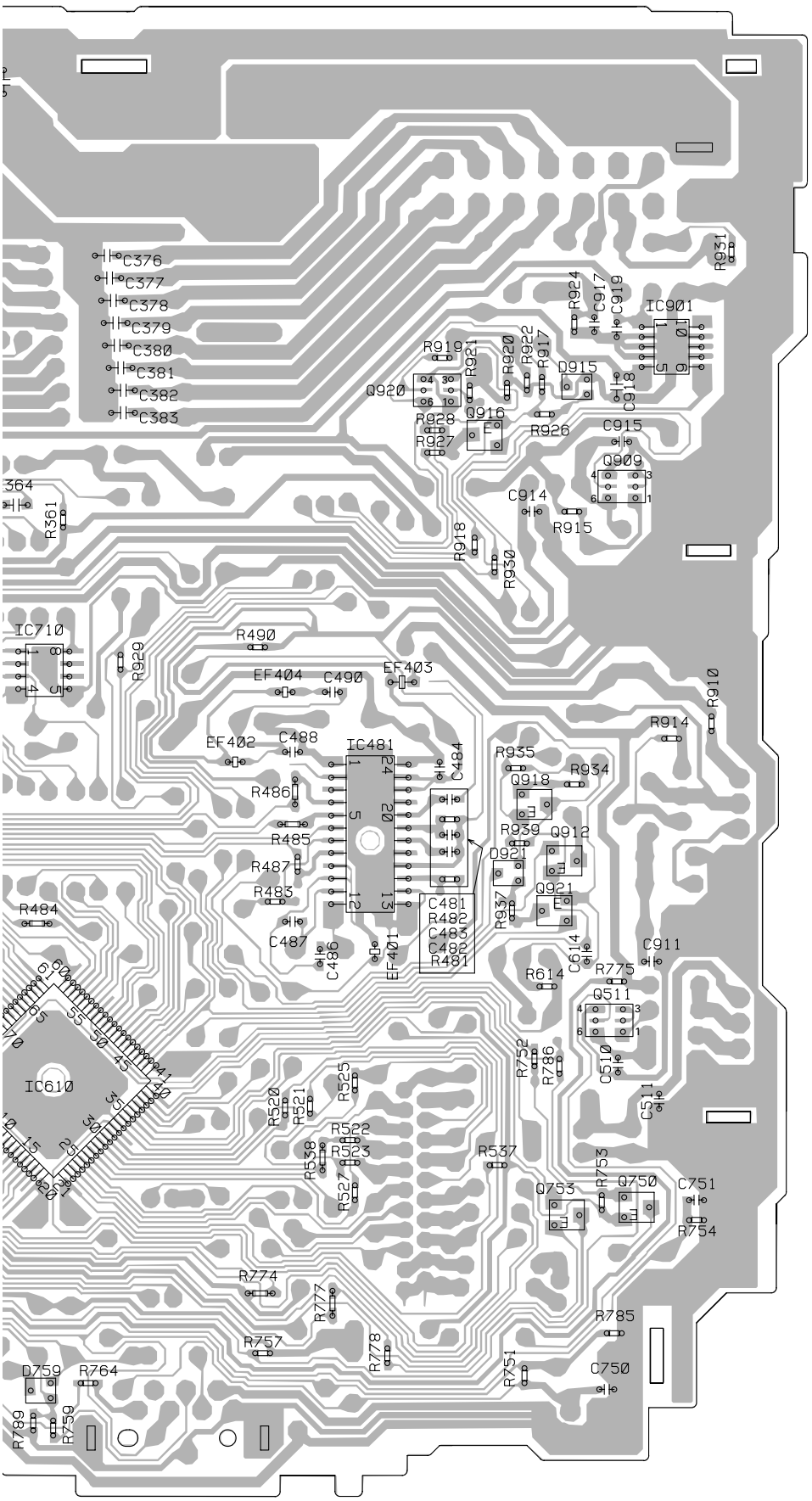
SIDE A


PRE OUT
FL FR RL RR
CN351
CN402
ANTENNA JACK
CN404
IC361
C361
D920
D919
C371
C375
C372
L410
R351
C352
C342
C343
C414
C351
C314
R364
L710
C315
R313
R312
C423
C422
C308
C307
L310
L411
C489
L481
R712
L617
R439
R440
C618
R619
X610
L618
L412
R424
R423
R422
C418
R613
R622
R623
R517
R783
R779
D753
D754
R755
R760
R762
R787
R784
R772
R773
R761
R768
R766
D756
D752
D755
D768
D758
D767
CN751
CN750
FM/AM TUNER UNIT
B CN1950
FRONT

A TUNER AMP UNIT



SIDE B



IC, Q

A

Q359
Q341
Q351
IC901

Q361
Q920
Q916

Q909

B

IC301

Q420
Q410

IC710

IC481
Q415
Q918
Q411
Q414 Q481
Q912

Q921

C

Q511

Q416

IC610

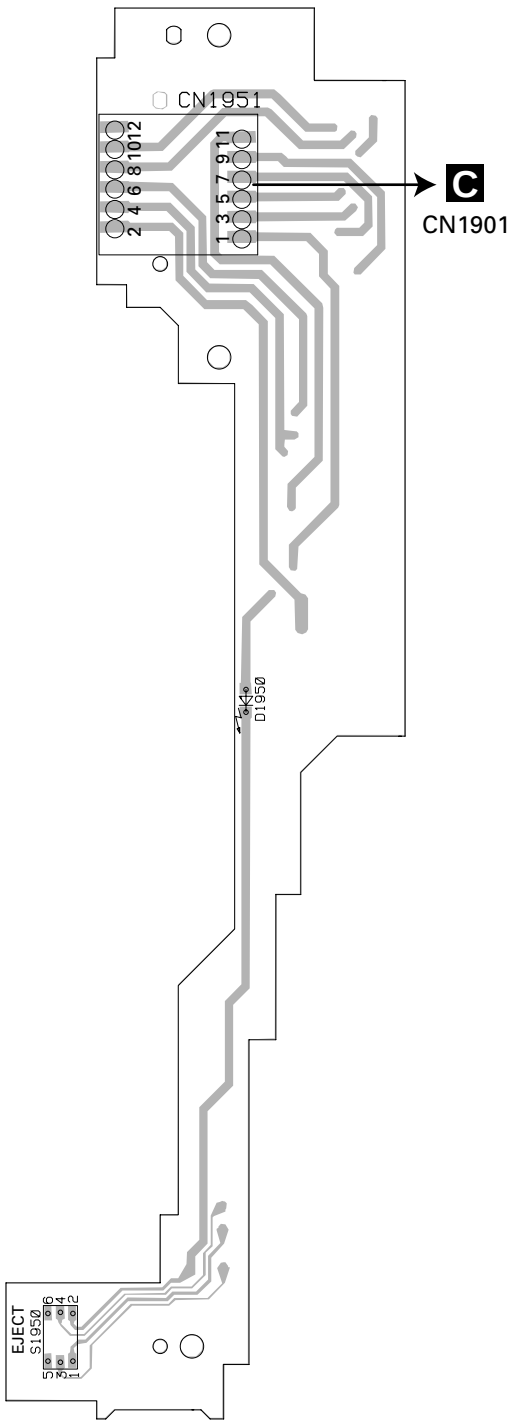
Q750
Q751 Q753

Q752

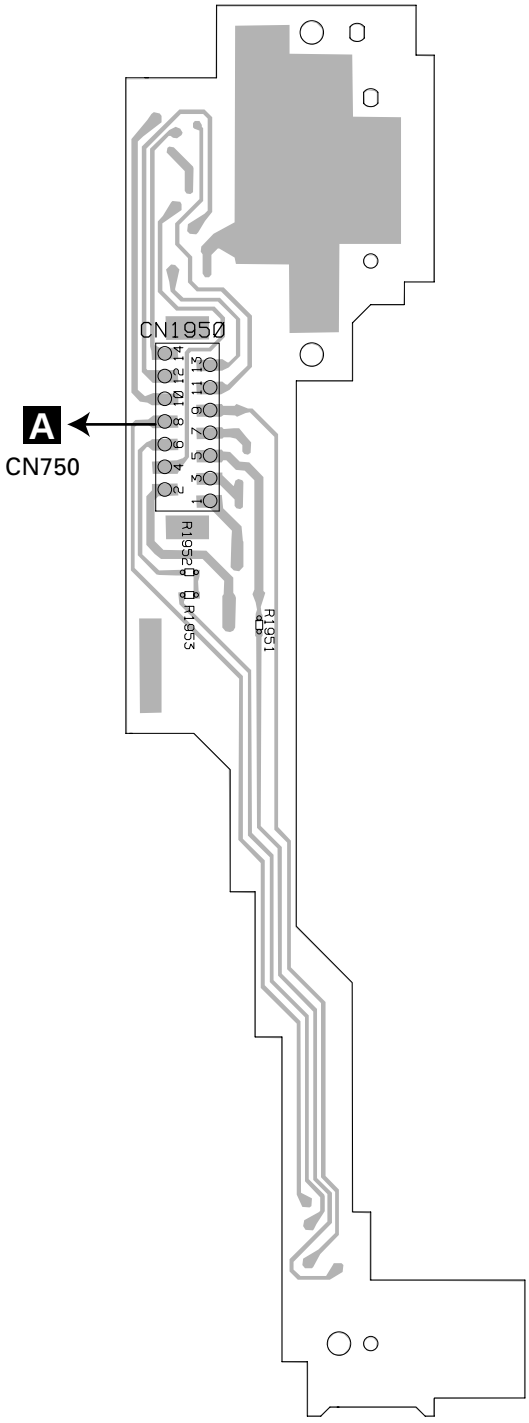
D

SIDE B

B PANEL UNIT



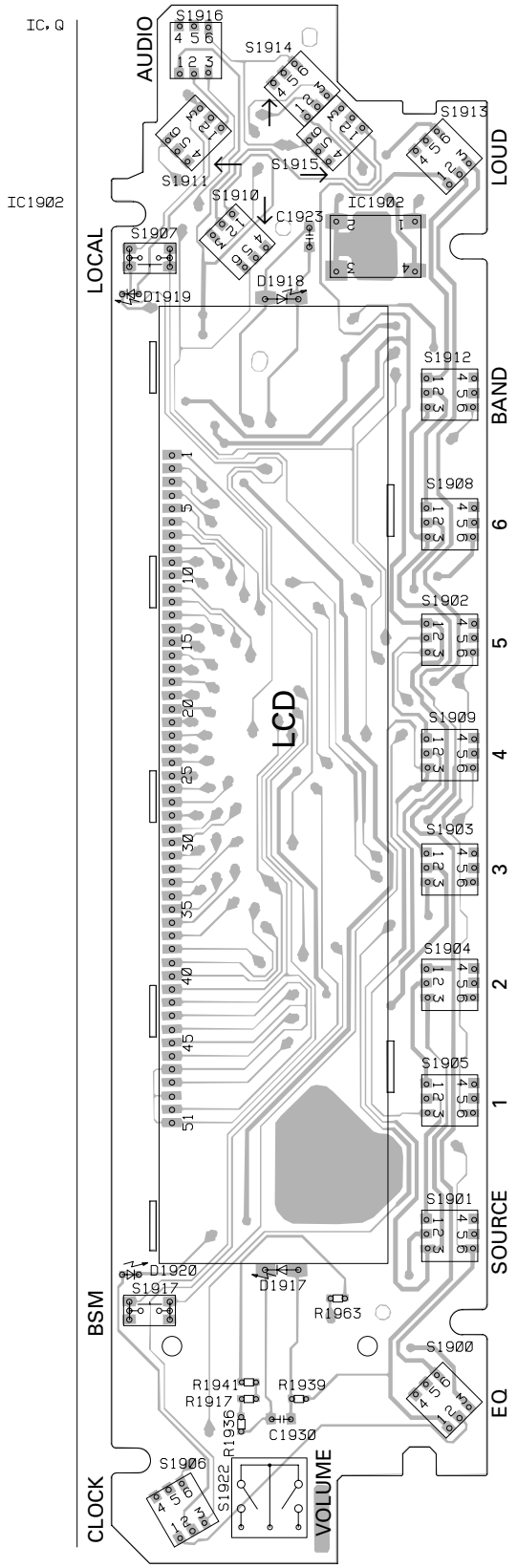
B PANEL UNIT



4.3 KEYBOARD UNIT

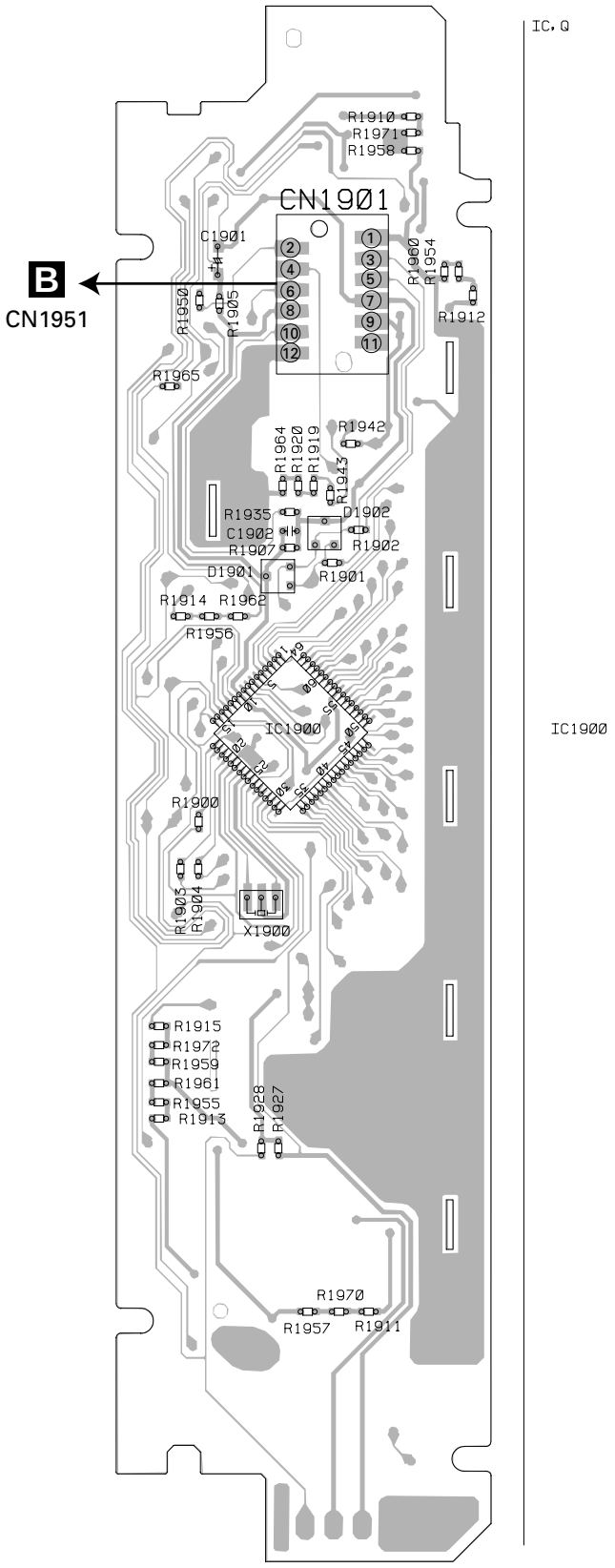
SIDE A

C KEYBOARD UNIT

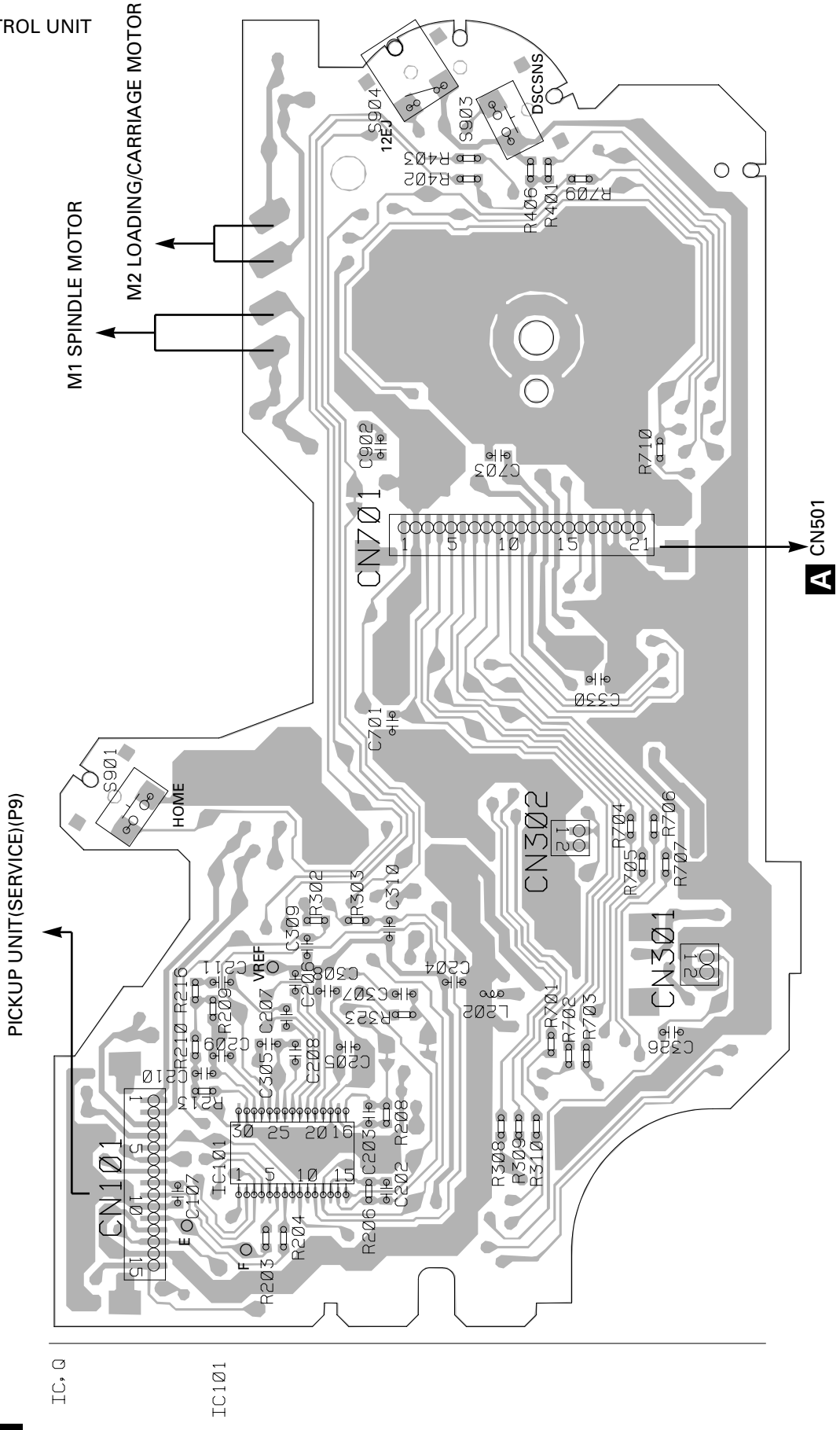


SIDE B

C KEYBOARD UNIT

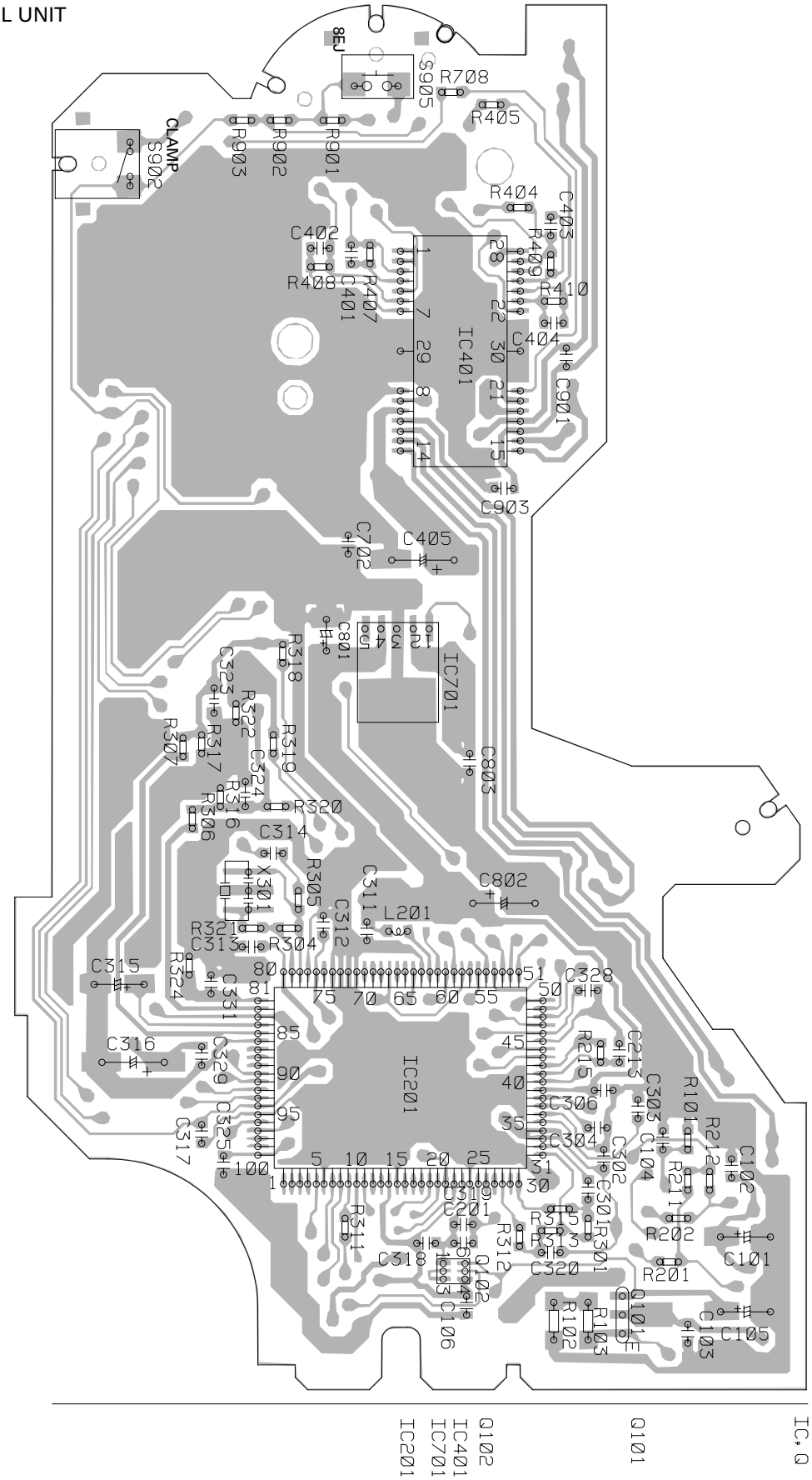


4.4 CD MECHANISM MODULE



D CONTROL UNIT

SIDE B



5. ELECTRICAL PARTS LIST

NOTES:

● Parts whose parts numbers are omitted are subject to being not supplied.

● The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A Unit Number : CWM7976(DEH-3450/XN/ES)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	301	IC	PML003AM
IC	361	IC	PAL007A
IC	603	IC	S-80834ANY
IC	610	IC	PE5262A
Q	351	Transistor	IMH3A
Q	359	Transistor	DTA124EK
Q	361	Transistor	DTC124EK
Q	410	Transistor	2SC2412K
Q	510	Transistor	2SD2396
Q	511	Transistor	RN46A1
Q	750	Transistor	2SA1037K
Q	751	Transistor	2SA1036K
Q	752	Transistor	DTC114EK
Q	753	Transistor	DTC114EK
Q	909	Transistor	RN46A1
Q	910	Transistor	2SD2396
Q	911	Transistor	2SB1243
Q	912	Transistor	DTC114EK
Q	913	Transistor	2SD1859
Q	920	Transistor	IMX1
Q	921	Transistor	DTA124EK
D	361	Diode	S5688G
D	362	Diode	S5688G
D	510	Diode	HZS9L(B1)
D	750	Diode	1SS270
D	751	Diode	1SS270
D	752	Diode	1SS270
D	753	Diode	1SS270
D	754	Diode	1SS270
D	755	Diode	1SS270
D	756	Diode	1SS270
D	757	Diode Network	DA204U
D	758	Diode	1SS270
D	759	Diode	MA152WA
D	767	Diode	1SS270
D	768	Diode	1SS270
D	910	Diode	HZS9L(B3)
D	911	Diode	HZS6L(B2)
D	912	Diode	S5688G
D	913	Diode	HZS7L(C2)
D	914	Diode	HZS7L(A1)
D	919	Diode	S5688G
D	920	Diode	S5688G
D	921	Diode	DAN202U
L	310	Inductor	LAU1R0K
L	361	Choke Coil 600μH	CTH1221
L	410	Ferri-Inductor	LAU4R7K
L	411	Ferri-Inductor	LAU2R2K
L	412	Ferri-Inductor	LAU2R2K
L	617	Ferri-Inductor	LAU101K
L	618	Ferri-Inductor	LAU2R2K
L	750	Ferri-Inductor	LAU2R2K
X	610	Crystal Resonator 4.194304MHz	CSS1023
S	750	Switch(DSENS)	CSN1039
		FM/AM Tuner Unit	CWE1563
AR	410	Surge Protector	DSP-201M-S00B

RESISTORS

R	310		RS1/16S101J
R	311		RS1/16S101J
R	314		RS1/16S101J
R	315		RS1/16S101J
R	351		RD1/4PU821J
R	352		RS1/16S821J
R	353		RS1/16S223J
R	354		RS1/16S223J
R	355		RS1/16S0R0J
R	361		RS1/16S103J
R	362		RS1/16S103J
R	363		RS1/16S331J
R	364		RD1/4PU153J
R	410		RS1/16S222J
R	411		RS1/16S222J
R	413		RS1/16S473J
R	414		RS1/16S473J
R	415		RS1/16S393J
R	417		RS1/16S681J
R	418		RS1/16S681J
R	419		RS1/16S681J
R	420		RS1/16S103J
R	421		RS1/16S681J
R	422		RD1/4PU473J
R	423		RD1/4PU472J
R	424		RD1/4PU473J
R	429		RS1/16S681J
R	430		RS1/16S681J
R	431		RS1/16S473J
R	432		RS1/16S473J
R	437		RS1/16S0R0J
R	438		RS1/16S0R0J
R	445		RS1/16S272J
R	446		RS1/16S272J
R	447		RS1/16S162J
R	448		RS1/16S162J
R	490		RS1/16S0R0J
R	510		RD1/4PU221J
R	511		RD1/4PU221J
R	512		RD1/4PU472J
R	513		RD1/4PU222J
R	516		RS1/16S104J
R	517		RD1/4PU222J
R	519		RD1/4PU102J
R	520		RS1/16S0R0J

Circuit Symbol and No.		Part Name	Part No.
R	521		RS1/16S0R0J
R	522		RS1/16S0R0J
R	523		RS1/16S0R0J
R	525		RS1/16S0R0J
R	527		RS1/16S0R0J
R	531		RD1/4PU222J
R	532		RD1/4PU222J
R	536		RD1/4PU102J
R	537		RS1/16S104J
R	538		RS1/16S0R0J
R	612		RS1/16S0R0J
R	613		RD1/4PU102J
R	614		RS1/16S821J
R	615		RS1/16S473J
R	616		RS1/16S682J
R	617		RS1/16S473J
R	618		RS1/16S223J
R	622		RD1/4PU104J
R	623		RD1/4PU393J
R	625		RS1/16S0R0J
R	712		RD1/4PU104J
R	750		RD1/4PU104J
R	751		RS1/16S103J
R	752		RS1/16S153J
R	753		RS1/16S153J
R	754		RS1/16S222J
R	756		RS1/16S473J
R	757		RS1/16S104J
R	758		RS1/16S102J
R	760		RD1/4PU222J
R	761		RD1/4PU472J
R	762		RD1/4PU222J
R	763		RD1/4PU222J
R	765		RS1/16S1R0J
R	766		RD1/4PU102J
R	767		RS1/16S103J
R	768		RD1/4PU102J
R	769		RS1/16S102J
R	771		RS1/16S104J
R	772		RD1/4PU222J
R	773		RD1/4PU222J
R	774		RS1/16S0R0J
R	775		RS1/16S1R0J
R	777		RS1/16S152J
R	778		RS1/16S152J
R	779		RD1/4PU103J
R	781		RS1/16S104J
R	783		RD1/4PU391J
R	784		RD1/4PU222J
R	786		RS1/16S102J
R	787		RD1/4PU222J
R	791		RS1/16S0R0J
R	910		RS1/16S1R0J
R	911		RD1/4PU220J
R	912		RD1/4PU132J
R	913		RD1/4PU122J
R	914		RS1/16S103J
R	915		RS1/16S222J
R	916		RD1/4PU153J
R	917		RS1/16S104J
R	918		RS1/16S104J
R	919		RS1/16S104J
R	920		RS1/16S473J
R	921		RS1/16S103J
R	922		RS1/16S473J
R	923		RD1/4PU102J
R	924		RS1/16S472J
R	927		RS1/16S102J
R	928		RS1/16S473J
R	937		RS1/16S152J
R	939		RS1/16S0R0J

CAPACITORS

Circuit Symbol and No.		Part Name	Part No.
C	307		CEJQ470M10
C	308		CEJQ100M16
C	309		CKSRYB104K25
C	310		CKSRYB105K6R3
C	311		CKSRYB104K25
C	312		CKSRYB104K25
C	313		CKSRYB105K6R3
C	314		CEJQ4R7M35
C	315		CEJQ4R7M35
C	316		CKSRYB153K25
C	321		CKSRYB153K25
C	324		CCSRCH100D50
C	326		CCSRCH100D50
C	327		CCSRCH100D50
C	329		CCSRCH100D50
C	351		CEJQ2R2M50
C	352		CEJQ2R2M50
C	361	3300µF/16V	CCH1368
C	362		CKSRYB104K25
C	363		CKSQYB474K16
C	364		CKSQYB474K16
C	365		CKSQYB474K16
C	366		CKSQYB474K16
C	367		CKSQYB474K16
C	368		CKSQYB474K16
C	369		CKSQYB474K16
C	370		CKSQYB474K16
C	371		CEJQ330M10
C	373		CKSQYB225K10
C	374		CKSQYB225K10
C	375		CEJQ100M16
C	410		CKSQYB103K25
C	412		CKSRYB223K50
C	413		CKSRYB102K50
C	414		CEJQ220M10
C	415		CKSRYB223K50
C	417		CKSRYB472K50
C	418		CEJQ101M6R3
C	419		CKSRYB473K50
C	424		CKSRYB183K25
C	425		CKSRYB183K25
C	510		CKSRYB473K50
C	511		CKSRYB102K50
C	512		CEJQ101M10
C	515		CKSRYB102K50
C	516		CKSRYB102K50
C	614		CKSRYB473K50
C	615		CEJQ2R2M50
C	616		CKSRYB104K25
C	617		CCSRCH101J50
C	618		CEJQ4R7M35
C	619		CKSRYB473K50
C	620		CCSRCH150J50
C	621		CCSRCH150J50
C	750		CKSRYB103K50

=====Circuit Symbol and No.		===Part Name	Part No.
C	751		CKSRYB104K25
C	910	330µF/16V	CCH1326
C	911		CKSRYB103K50
C	912		CEJQ101M16
C	913		CEJQ101M10
C	914		CKSRYB473K50
C	915		CKSRYB103K50
C	916	470µF/16V	CCH1331

A Unit Number : CWM8320(DEH-2450F/XN/ES)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	301	IC	PML003AM
IC	361	IC	TDA7386
IC	603	IC	S-80834ANY
IC	610	IC	PE5262A
IC	901	IC	TPD1018F
Q	351	Transistor	IMH3A
Q	359	Transistor	DTA124EK
Q	361	Transistor	DTC124EK
Q	410	Transistor	2SC2412K
Q	510	Transistor	2SD2396
Q	511	Transistor	RN46A1
Q	750	Transistor	2SA1037K
Q	751	Transistor	2SA1036K
Q	752	Transistor	DTC114EK
Q	753	Transistor	DTC114EK
Q	909	Transistor	RN46A1
Q	910	Transistor	2SD2396
Q	911	Transistor	2SB1243
Q	912	Transistor	DTC114EK
Q	913	Transistor	2SD1859
Q	920	Transistor	IMX1
Q	921	Transistor	DTA124EK
D	510	Diode	HZS9L(B1)
D	750	Diode	1SS270
D	751	Diode	1SS270
D	752	Diode	1SS270
D	753	Diode	1SS270
D	754	Diode	1SS270
D	755	Diode	1SS270
D	756	Diode	1SS270
D	757	Diode Network	DA204U
D	758	Diode	1SS270
D	759	Diode	MA152WA
D	767	Diode	1SS270
D	768	Diode	1SS270
D	910	Diode	HZS9L(B3)
D	911	Diode	HZS6L(B2)
D	912	Diode	S5688G
D	913	Diode	HZS7L(C2)
D	914	Diode	HZS7L(A1)
D	919	Diode	S5688G
D	920	Diode	S5688G
D	921	Diode	DAN202U
D	923	Diode	S5688G
D	924	Diode	S5688G
L	310	Inductor	LAU1R0K
L	361	Choke Coil 600µH	CTH1221
L	410	Ferri-Inductor	LAU4R7K
L	411	Ferri-Inductor	LAU2R2K
L	412	Ferri-Inductor	LAU2R2K
L	617	Ferri-Inductor	LAU101K
L	618	Ferri-Inductor	LAU2R2K
L	750	Ferri-Inductor	LAU2R2K
X	610	Crystal Resonator 4.194304MHz	CSS1023
S	750	Switch(DSENS)	CSN1039

=====Circuit Symbol and No.		===Part Name	Part No.
		FM/AM Tuner Unit	CWE1563
AR	410	Surge Protector	DSP-201M-S00B

RESISTORS

R	310	RS1/16S101J
R	311	RS1/16S101J
R	314	RS1/16S101J
R	315	RS1/16S101J
R	351	RD1/4PU821J
R	352	RS1/16S821J
R	353	RS1/16S223J
R	354	RS1/16S223J
R	355	RS1/16S0R0J
R	361	RS1/16S103J
R	362	RS1/16S103J
R	363	RS1/16S331J
R	364	RD1/4PU153J
R	410	RS1/16S222J
R	411	RS1/16S222J
R	413	RS1/16S473J
R	414	RS1/16S473J
R	415	RS1/16S393J
R	417	RS1/16S681J
R	418	RS1/16S681J
R	419	RS1/16S681J
R	420	RS1/16S103J
R	421	RS1/16S681J
R	422	RD1/4PU473J
R	423	RD1/4PU472J
R	424	RD1/4PU473J
R	429	RS1/16S681J
R	430	RS1/16S681J
R	431	RS1/16S473J
R	432	RS1/16S473J
R	437	RS1/16S0R0J
R	438	RS1/16S0R0J
R	445	RS1/16S272J
R	446	RS1/16S272J
R	447	RS1/16S162J
R	448	RS1/16S162J
R	490	RS1/16S0R0J
R	510	RD1/4PU221J
R	511	RD1/4PU221J
R	512	RD1/4PU472J
R	513	RD1/4PU222J
R	516	RS1/16S104J
R	517	RD1/4PU222J
R	519	RD1/4PU102J
R	520	RS1/16S0R0J
R	521	RS1/16S0R0J
R	522	RS1/16S0R0J
R	523	RS1/16S0R0J
R	525	RS1/16S0R0J
R	527	RS1/16S0R0J
R	531	RD1/4PU222J
R	532	RD1/4PU222J
R	536	RD1/4PU102J
R	537	RS1/16S104J
R	538	RS1/16S0R0J
R	612	RS1/16S0R0J
R	613	RD1/4PU102J
R	614	RS1/16S821J
R	615	RS1/16S473J
R	616	RS1/16S682J
R	617	RS1/16S473J
R	618	RS1/16S223J
R	622	RD1/4PU104J
R	623	RD1/4PU393J
R	625	RS1/16S0R0J

Circuit Symbol and No.		Part Name	Part No.
R	712		RD1/4PU104J
R	750		RD1/4PU104J
R	751		RS1/16S103J
R	752		RS1/16S153J
R	753		RS1/16S153J
R	754		RS1/16S222J
R	756		RS1/16S473J
R	757		RS1/16S104J
R	758		RS1/16S102J
R	760		RD1/4PU222J
R	761		RD1/4PU472J
R	762		RD1/4PU222J
R	763		RD1/4PU222J
R	765		RS1/16S1R0J
R	766		RD1/4PU102J
R	767		RS1/16S103J
R	768		RD1/4PU102J
R	769		RS1/16S102J
R	771		RS1/16S104J
R	772		RD1/4PU222J
R	773		RD1/4PU222J
R	774		RS1/16S0R0J
R	775		RS1/16S1R0J
R	777		RS1/16S152J
R	778		RS1/16S152J
R	779		RD1/4PU103J
R	781		RS1/16S104J
R	783		RD1/4PU391J
R	784		RD1/4PU222J
R	786		RS1/16S102J
R	787		RD1/4PU222J
R	791		RS1/16S0R0J
R	910		RS1/16S1R0J
R	911		RD1/4PU220J
R	912		RD1/4PU132J
R	913		RD1/4PU122J
R	914		RS1/16S103J
R	915		RS1/16S222J
R	916		RD1/4PU153J
R	917		RS1/16S104J
R	918		RS1/16S104J
R	919		RS1/16S104J
R	920		RS1/16S473J
R	921		RS1/16S103J
R	922		RS1/16S473J
R	923		RD1/4PU102J
R	924		RS1/16S472J
R	927		RS1/16S102J
R	928		RS1/16S473J
R	929		RS1/16S0R0J
R	930		RS1/16S0R0J
R	931		RS1/16S0R0J
R	937		RS1/16S152J
R	939		RS1/16S0R0J

CAPACITORS

Circuit Symbol and No.		Part Name	Part No.
C	307		CEJQ470M10
C	308		CEJQ100M16
C	309		CKSRYB104K25
C	310		CKSRYB105K6R3
C	311		CKSRYB104K25
C	312		CKSRYB104K25
C	313		CKSRYB105K6R3
C	314		CEJQ4R7M35
C	315		CEJQ4R7M35
C	316		CKSRYB153K25
C	321		CKSRYB153K25
C	324		CCSRCH100D50
C	326		CCSRCH100D50
C	327		CCSRCH100D50
C	329		CCSRCH100D50
C	351		CEJQ2R2M50
C	352		CEJQ2R2M50
C	361		CCH1368
C	362		CKSRYB104K25
C	363		CKSQYB474K16
C	364		CKSQYB474K16
C	365		CKSQYB474K16
C	366		CKSQYB474K16
C	367		CKSQYB474K16
C	368		CKSQYB474K16
C	369		CKSQYB474K16
C	370		CKSQYB474K16
C	371		CEJQ330M10
C	372		CEJQ2R2M50
C	373		CKSQYB225K10
C	374		CKSQYB225K10
C	375		CEJQ100M16
C	410		CKSQYB103K25
C	412		CKSRYB223K50
C	413		CKSRYB102K50
C	414		CEJQ220M10
C	415		CKSRYB223K50
C	417		CKSRYB472K50
C	418		CEJQ101M6R3
C	419		CKSRYB473K50
C	424		CKSRYB183K25
C	425		CKSRYB183K25
C	510		CKSRYB473K50
C	511		CKSRYB102K50
C	512		CEJQ101M10
C	515		CKSRYB102K50
C	516		CKSRYB102K50
C	614		CKSRYB473K50
C	615		CEJQ2R2M50
C	616		CKSRYB104K25
C	617		CCSRCH101J50
C	618		CEJQ4R7M35
C	619		CKSRYB473K50
C	620		CCSRCH150J50
C	621		CCSRCH150J50
C	750		CKSRYB103K50
C	751		CKSRYB104K25
C	910	330µF/16V	CCH1326
C	911		CKSRYB103K50
C	912		CEJQ101M16
C	913		CEJQ101M10
C	914		CKSRYB473K50
C	915		CKSRYB103K50
C	916	470µF/16V	CCH1331
C	918		CKSQYB473K50
C	919		CKSRYB103K50

C Unit Number : CWM7979(DEH-3450/XN/ES)
Unit Name : Keyboard Unit

MISCELLANEOUS

IC	1900	IC	PD6340A
IC	1902	IC	RS-140
D	1901	Diode	MA152WK
D	1902	Diode	MA152WA
D	1917	LED	NSSW440-9159

=====Circuit Symbol and No.		===Part Name	Part No.
D	1918	LED	NSSW440-9159
D	1919	LED	SML-310PT
D	1920	LED	SML-310PT
X	1900	Ceramic Resonator	CSS1573
S	1900	Switch	CSG1107
S	1901	Switch	CSG1107
S	1902	Switch	CSG1107
S	1903	Switch	CSG1107
S	1904	Switch	CSG1107
S	1905	Switch	CSG1107
S	1906	Switch	CSG1107
S	1907	Push Switch	CSG1111
S	1908	Switch	CSG1107
S	1909	Switch	CSG1107
S	1910	Switch	CSG1107
S	1911	Switch	CSG1107
S	1912	Switch	CSG1107
S	1913	Switch	CSG1107
S	1914	Switch	CSG1107
S	1915	Switch	CSG1107
S	1916	Switch	CSG1107
S	1917	Push Switch	CSG1111
S	1922	Switch(VOLUME)	CSD1077
		LCD	CAW1707

RESISTORS

R	1901		RS1/16S222J
R	1902		RS1/16S222J
R	1903		RS1/16S470J
R	1904		RS1/16S470J
R	1905		RS1/16S121J
R	1910		RS1/16S151J
R	1911		RS1/16S181J
R	1912		RS1/16S151J
R	1913		RS1/16S181J
R	1914		RS1/16S181J
R	1915		RS1/16S181J
R	1917		RS1/16S121J
R	1919		RS1/16S121J
R	1920		RS1/16S121J
R	1927		RS1/16S472J
R	1935		RS1/16S104J
R	1936		RS1/16S151J
R	1939		RS1/16S151J
R	1941		RS1/16S121J
R	1942		RS1/16S151J
R	1943		RS1/16S151J
R	1950		RS1/16S104J
R	1954		RS1/16S151J
R	1955		RS1/16S181J
R	1956		RS1/16S181J
R	1957		RS1/16S181J
R	1958		RS1/16S151J
R	1959		RS1/16S181J
R	1960		RS1/16S151J
R	1961		RS1/16S181J
R	1962		RS1/16S181J
R	1963		RS1/16S121J
R	1964		RS1/16S121J
R	1965		RS1/16S2R2J
R	1970		RS1/16S181J
R	1971		RS1/16S151J
R	1972		RS1/16S181J

CAPACITORS

C	1901		CSZS100M6R3
C	1902		CKSRYB104K25
C	1923		CKSQYF104Z50
C	1930		CKSQYF104Z50

=====Circuit Symbol and No.		===Part Name	Part No.

C Unit Number : CWM8370(DEH-2450F/XN/ES)
Unit Name : Keyboard Unit

MISCELLANEOUS

IC	1900	IC	PD6340A
D	1901	Diode	MA152WK
D	1902	Diode	MA152WA
D	1917	LED	NSSW440-9159
D	1918	LED	NSSW440-9159
D	1919	LED	SML-310PT
D	1920	LED	SML-310PT
X	1900	Ceramic Resonator 4.97MHz	CSS1573
S	1900	Switch	CSG1107
S	1901	Switch	CSG1107
S	1902	Switch	CSG1107
S	1903	Switch	CSG1107
S	1904	Switch	CSG1107
S	1905	Switch	CSG1107
S	1906	Switch	CSG1107
S	1907	Push Switch	CSG1111
S	1908	Switch	CSG1107
S	1909	Switch	CSG1107
S	1910	Switch	CSG1107
S	1911	Switch	CSG1107
S	1912	Switch	CSG1107
S	1913	Switch	CSG1107
S	1914	Switch	CSG1107
S	1915	Switch	CSG1107
S	1916	Switch	CSG1107
S	1917	Push Switch	CSG1111
S	1922	Switch(VOLUME)	CSD1077
		LCD	CAW1724

RESISTORS

R	1900		RS1/16S473J
R	1901		RS1/16S222J
R	1902		RS1/16S222J
R	1903		RS1/16S470J
R	1904		RS1/16S470J
R	1910		RS1/16S151J
R	1911		RS1/16S181J
R	1912		RS1/16S151J
R	1913		RS1/16S181J
R	1914		RS1/16S181J
R	1915		RS1/16S181J
R	1917		RS1/16S121J
R	1919		RS1/16S121J
R	1920		RS1/16S121J
R	1927		RS1/16S472J
R	1935		RS1/16S104J
R	1936		RS1/16S151J
R	1939		RS1/16S151J
R	1941		RS1/16S121J
R	1942		RS1/16S151J
R	1943		RS1/16S151J
R	1950		RS1/16S104J
R	1954		RS1/16S151J
R	1955		RS1/16S181J
R	1956		RS1/16S181J
R	1957		RS1/16S181J
R	1958		RS1/16S151J
R	1959		RS1/16S181J
R	1960		RS1/16S151J
R	1961		RS1/16S181J
R	1962		RS1/16S181J
R	1963		RS1/16S121J
R	1964		RS1/16S121J
R	1970		RS1/16S181J
R	1971		RS1/16S151J

=====Circuit Symbol and No.	Part Name	Part No.
R 1972		RS1/16S181J

CAPACITORS

C 1902		CKSRYB104K25
C 1923		CKSQYF104Z50
C 1930		CKSQYF104Z50

B Unit Number : CWM7375
Unit Name : Panel Unit

D 1950	LED	CL220PGC
S 1950	Push Switch(EJECT)	CSG1112
R 1952		RS1/16S101J
R 1953		RS1/16S101J

D Unit Number : CWX2481
Unit Name : Control Unit

MISCELLANEOUS

IC 101	IC	TA2153FN
IC 201	IC	TC9495F2
IC 401	IC	BA5996FM
IC 701	IC	BA05SFP
Q 101	Transistor	2SD1664
Q 102	Transistor	UMD2N
L 201	Inductor	CTF1546
L 202	Inductor	CTF1546
X 301	Ceramic Resonator 16.934MHz	CSS1525
S 901	Spring Switch(HOME)	CSN1051
S 902	Spring Switch(CLAMP)	CSN1052
S 903	Spring Switch(DSCSNS)	CSN1051
S 904	Spring Switch(12EJ)	CSN1052
S 905	Spring Switch(8EJ)	CSN1051

RESISTORS

R 101	RS1/16S222J
R 102	RS1/8S120J
R 103	RS1/8S100J
R 201	RS1/16S513J
R 202	RS1/16S513J
R 203	RS1/16S823J
R 204	RS1/16S823J
R 206	RS1/16S823J
R 208	RS1/16S124J
R 209	RS1/16S183J
R 210	RS1/16S153J
R 211	RS1/16S103J
R 212	RS1/16S103J
R 213	RS1/16S124J
R 215	RS1/16S0R0J
R 216	RS1/16S471J
R 301	RS1/16S333J
R 302	RS1/16S332J
R 303	RS1/16S332J
R 304	RS1/16S514J
R 306	RS1/16S102J
R 307	RS1/16S102J
R 312	RS1/16S103J
R 313	RS1/16S473J
R 315	RS1/16S334J
R 321	RS1/16S331J
R 322	RS1/16S0R0J
R 323	RS1/16S332J
R 401	RS1/16S684J
R 402	RS1/16S103J

=====Circuit Symbol and No.	Part Name	Part No.
R 403		RS1/16S103J
R 404		RS1/16S183J
R 405		RS1/16S123J
R 407		RS1/16S622J
R 408		RS1/16S622J
R 409		RS1/16S113J
R 410		RS1/16S752J
R 701		RS1/16S102J
R 702		RS1/16S221J
R 703		RS1/16S221J
R 704		RS1/16S221J
R 705		RS1/16S221J
R 706		RS1/16S221J
R 707		RS1/16S221J
R 708		RS1/16S102J
R 709		RS1/16S102J
R 710		RS1/16S102J
R 901		RS1/16S104J
R 902		RS1/16S473J
R 903		RS1/16S273J

CAPACITORS

C 101	CEV470M6R3
C 102	CKSRYB102K50
C 103	CKSRYB104K16
C 104	CKSRYB224K16
C 105	CEV470M6R3
C 106	CKSRYB104K16
C 107	CKSRYB105K6R3
C 201	CKSRYB104K16
C 202	CCSRCH560J50
C 204	CKSRYB224K16
C 205	CKSRYB224K16
C 206	CKSRYB273K25
C 207	CKSRYB273K25
C 208	CKSRYB104K16
C 209	CKSRYB104K16
C 210	CCSRCK2R0C50
C 211	CCSRCH220J50
C 301	CKSRYB153K25
C 302	CKSRYB104K16
C 303	CKSRYB103K50
C 304	CKSRYB103K50
C 305	CKSRYB104K16
C 306	CKSRYB104K16
C 307	CKSRYB333K16
C 308	CKSRYB104K16
C 309	CKSRYB473K16
C 310	CKSRYB473K16
C 311	CKSRYB104K16
C 312	CKSRYB104K16
C 315	CEV220M6R3
C 317	CKSRYB104K16
C 318	CKSRYB104K16
C 319	CKSRYB104K16
C 320	CCSRCH470J50
C 325	CKSRYB471K50
C 328	CKSRYB472K50
C 329	CKSRYB104K16
C 330	CKSRYB104K16
C 331	CKSRYB104K16
C 401	CKSRYB221K50
C 402	CKSRYB221K50
C 403	CKSRYB153K25
C 404	CKSRYB103K50
C 405	CEV101M10
C 702	CKSRYB104K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	703		CKSRYB104K16
C	801	10µF/10V	CCH1349
C	802		CEV101M10
C	803		CKSRYB224K16

Miscellaneous Parts List

		Pickup Unit(Service)(P9)	CXX1480
M	1	Motor Unit(SPINDLE)	CXB6007
M	2	Motor Unit(LOADING/CARRIAGE)	CXB5903

6. ADJUSTMENT

6.1 CD ADJUSTMENT

1) Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to VREF(approx. 2.1V) instead of GND.
  If VREF and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
  Do not connect the negative probe of the measuring equipment to VREF and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to VREF with the channel 2 negative probe connected to GND.
  Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
  If by accident VREF comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- The RFI and RFO signals are easy to oscillate because of a wide band. When observing them, insert a resistor of about 1 kΩ to the series.

- This equipment will not guarantee the load ejection operation when the mechanical unit is turned upside down. In particular, if the ejection operation is incorrectly performed and recovery is disabled, the recovery is enabled by resetting a product or turning ACC off to on.

2) Test Mode

This mode is used for adjusting the CD mechanism module of the device.

- Test mode starting procedure
  Reset while pressing the **4** and **6** keys together.

- Test mode cancellation
  Switch ACC, back-up OFF.

- After pressing the EJECT key, do not press any other key until the disk is completely ejected.

- If the ► or ◄ key is pressed while focus search is in progress, immediately turn the power off (otherwise the actuator may be damaged due to adhesion of the lenses).

6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

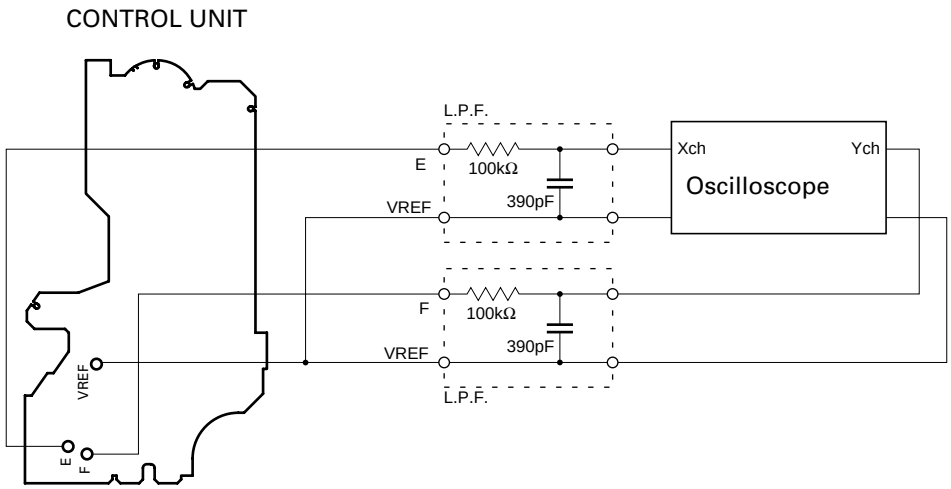
• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, VREF
• Disc	• ABEX TCD-784
• Mode	• TEST MODE



• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. The display will change, returning to "81" on the fourth press.
3. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
4. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

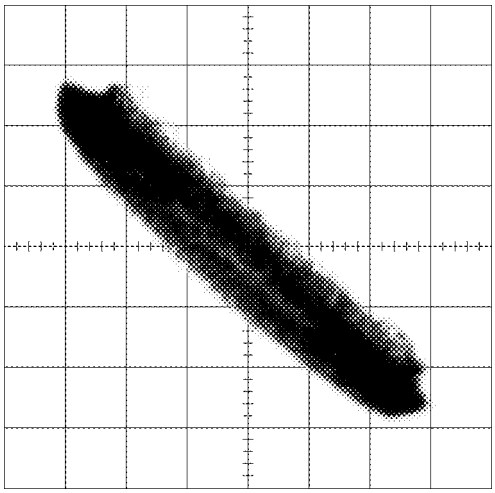
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

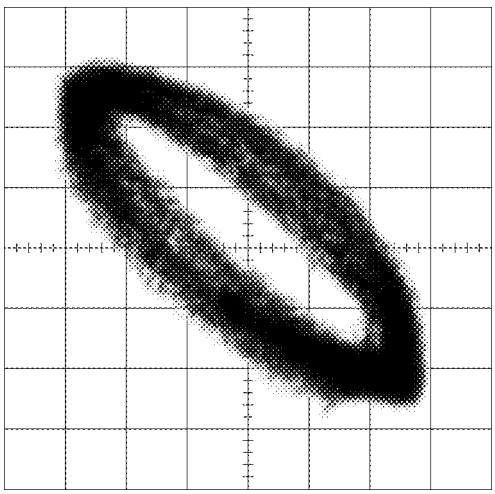
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

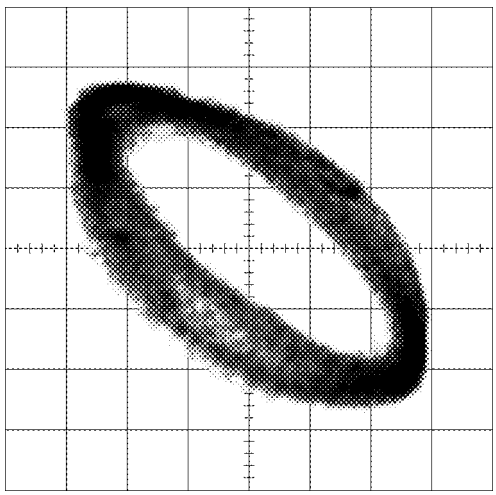
0°



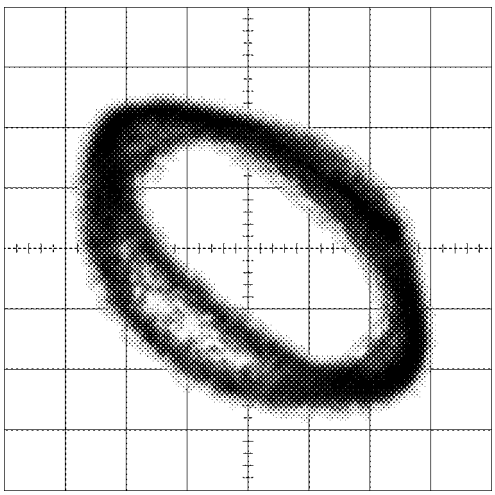
30°



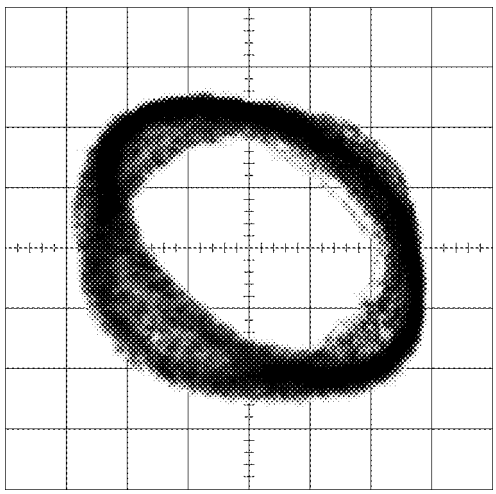
45°



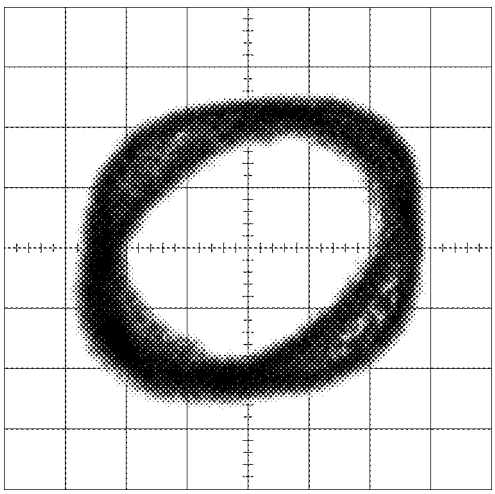
60°



75°



90°



6.3 ERROR MODE

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR–xx	ERR–xx	E–xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Communication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. → Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (not shown)**

1. Remove the Case.

● **Removing the Panel Assy (Fig.1)**

1 Remove the two screws and then remove the Panel Assy.

● **Removing the CD Mechanism Module (Fig.1)**

2 Remove the four screws and then remove the CD Mechanism Module.

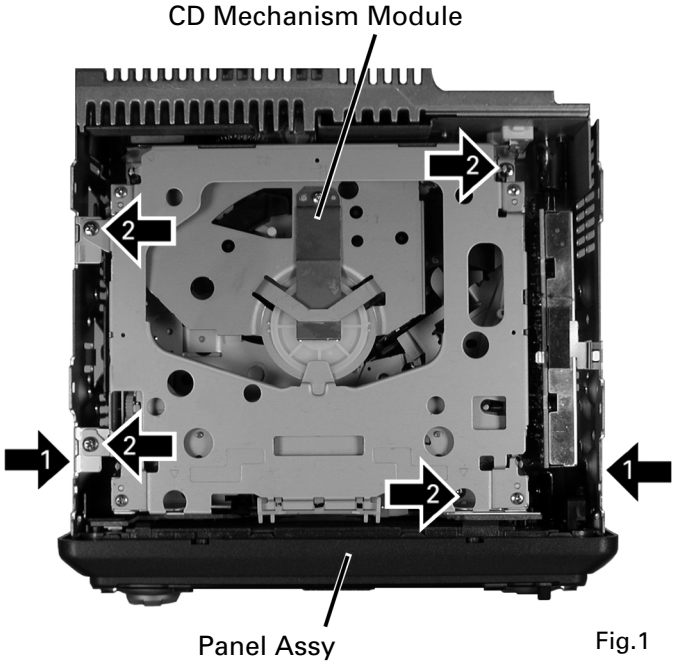


Fig.1

● **Removing the Tuner Amp Unit (Fig.2)**

1 Remove the two screws.

2 Remove the three screws.

3 Straight the tabs at three locations indicated.

4 Remove the screw and then remove the Tuner Amp Unit.

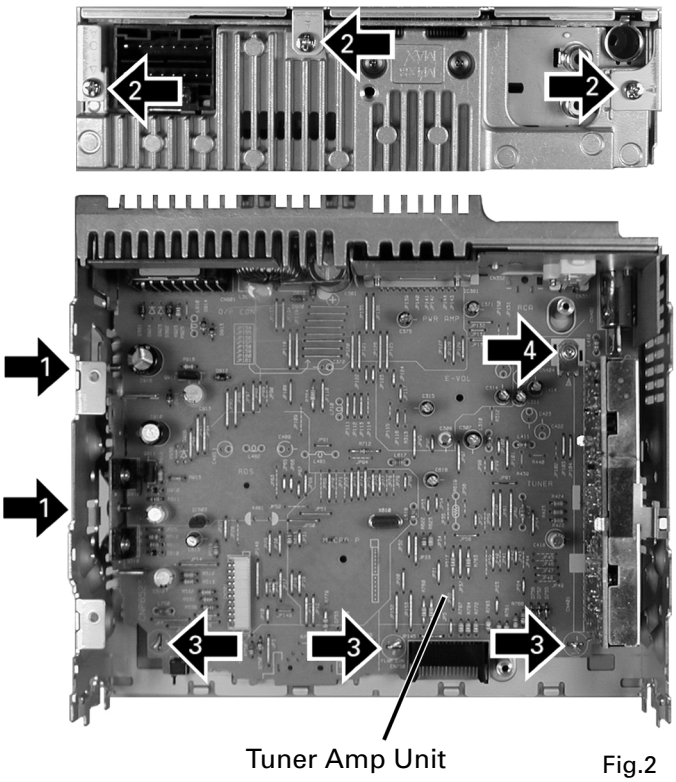
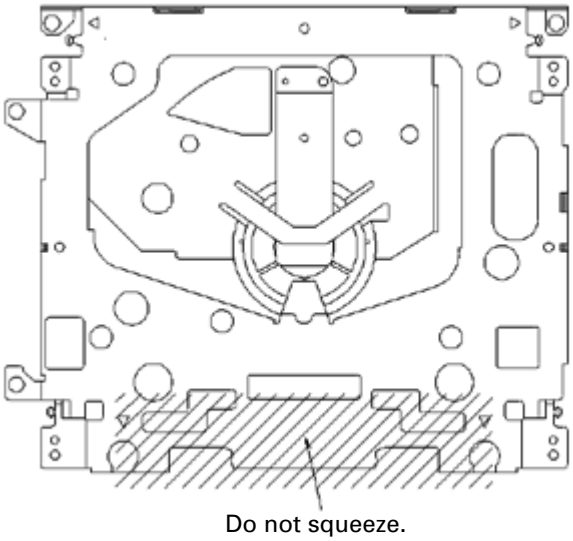


Fig.2

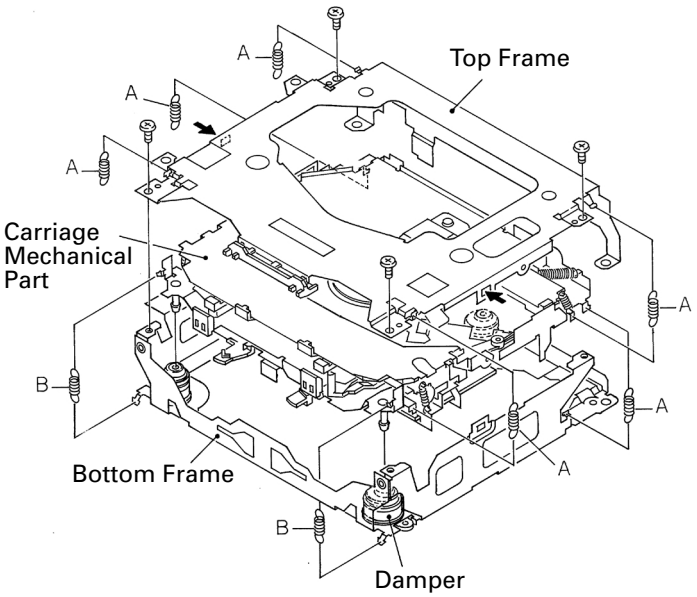
● How to hold the Mechanical Unit

1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



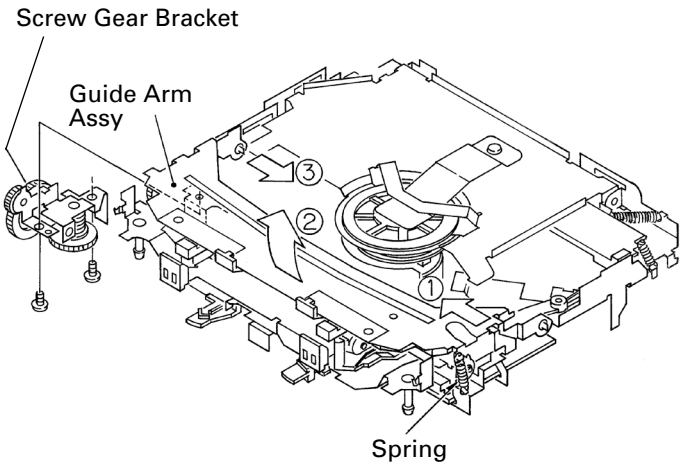
● How to remove the Top and Bottom Frame

1. When the disk is in "clamp" state, unlock Spring A (6 pieces) and Spring B (2 pieces), and unscrew screws (4 pieces).
2. Unlock each 1 of pawl at the both side of the frame, then remove the top frame.
3. Remove the Carriage Mechanical part in such way that; you remove the mechanical part from 3 pieces of Damper while slowly pulling up the part.
4. Now, the top frame has been removed, and under this state, fix the genuine Connector again, and eject the disk.
   (Caution)
   When you reassemble the Carriage Mechanical part, apply a bit of alcohol to Dampers.



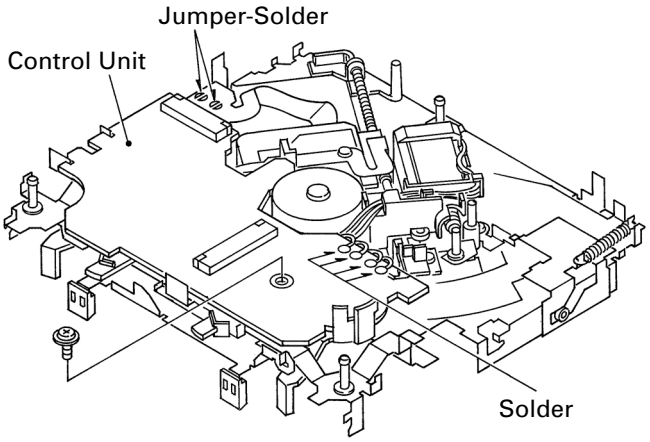
● How to remove the Guide Arm Assy

1. Unlock the spring (1 piece) at the right side of the assembly.
2. Unscrew screws (2 pieces), then remove the Screw Gear Bracket.
3. Shift the Guide Arm Assy to the left and slowly rotate it to the upper direction.
4. When the Guide Arm Assy rotates approximately 45 degree, shift the Assy to the right side direction and remove it.



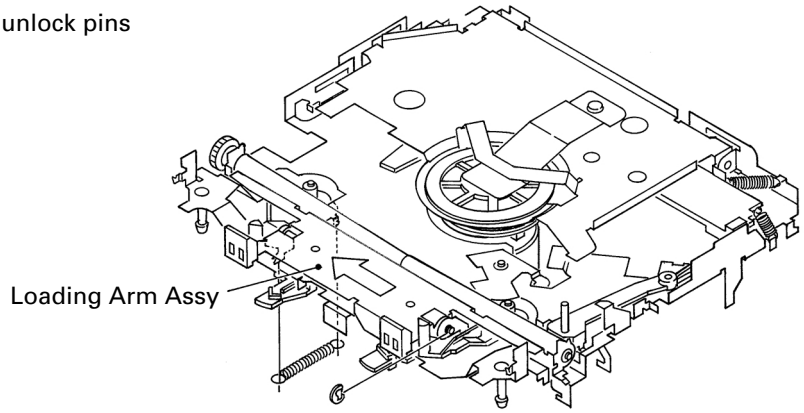
● How to remove the Control Unit

1. Give jumper-solder treatment to the Flexible Wire of the Pickup unit, then remove the wire from the Connector.
2. Remove all 4 points of solder-treatment on the Lead Wire. Also, unscrew the screw(1 piece).
3. Then, Remove the Control unit.
   (Caution)
   Be careful not to damage SW when you reassemble the Control Unit into the device.



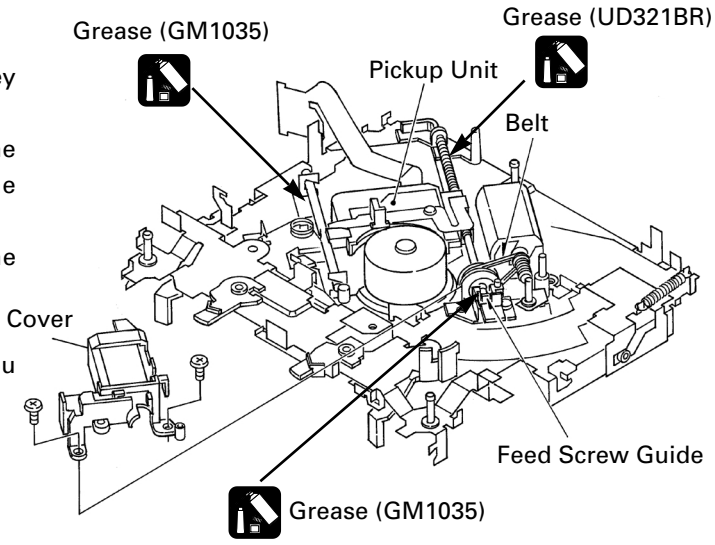
● How to remove the Loading Arm Assy

1. Unlock the spring (1 piece) and remove the E ring (1 piece) of the Fulcrum Shaft.
2. Shift the arm to the left side direction and unlock pins (2 pieces).

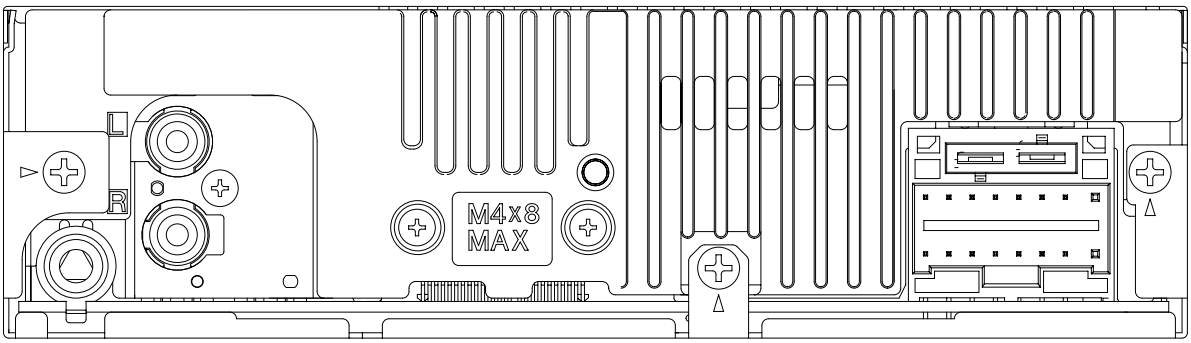


● How to remove the Pickup Unit

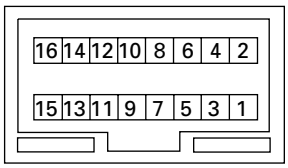
1. Unscrew 2 pieces of screws, then remove the Pulley Cover.
2. Remove the Feed Screw unit from the pawl of the Feed Screw Guide (The pawl is located inside the guide).
3. Remove the belt from the Pulley, then remove the Pickup unit.
   (Caution)
   Make sure not to stain the belt with grease when you fix the belt.



7.1.2 CONNECTOR FUNCTION DESCRIPTION



ANTENNA PRE OUT



1. GND
2. BACK UP
3. ACC
4. NC
5. NC
6. B.REM
7. NC
8. NC
9. RL-
10. FL-
11. RL+
12. FL+
13. RR-
14. FR-
15. RR+
16. FR+

7.2 PARTS

7.2.1 IC

● **Pin Functions(PE5262A)**

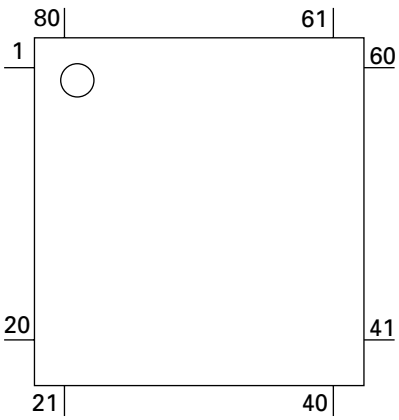
Pin No.	Pin Name	I/O	Format	Function and Operation
1	MODEL1	I		Model select input
2,3	NC			Not used
4	AVSS	I		A/D GND
5	ST	I		FM stereo input
6	SD	I		SD input
7	AVREF1			A/D converter reference voltage
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	SDBW	I		SDBW input
11	TUNPDI	I		PLL IC data input
12	TUNPDO	O	C	PLL IC data output
13	TUNPCK	O	C	PLL IC clock output
14	TUNPCE	O	C	PLL IC chip enable output
15	$\overline{\text{CURRQ}}$	O		Tuner voltage FIX output
16	LOCL	O	C	Local L output
17	NC			Not used
18	$\overline{\text{FM}}$/AM	O	C	FM/AM power select output
19	NC			Not used
20	FLPILM	O	C	Inside of flap illumination output
21	VDCONT	O	C	VD control output
22	NC			Not used
23	CONT	O	C	Servo driver power supply control output
24	XCE	O	C	CD LSI chip enable output
25	$\overline{\text{XRST}}$	O	C	CD LSI reset output
26	XPCK	O	C	CD LSI clock output
27-30	XPI0-3	I/O	C	CD LSI data input/output
31	CLCONT	O	C	Driver input select output
32	HOME	I	C	Home position detector input
33	VSS			GND
34	LOEJ	O	C	CD load motor LOAD/EJECT direction exchange output
35	CD5VON	O	C	CD +5V power supply control output
36,37	ROT1-0	I		Rotary encoder data input
38	TELIN	I		Telephone mute input
39	NC			Not used
40	ILMPW	O	C	Illumination power supply control output
41	$\overline{\text{SWVDD}}$	O	C	Keyboard unit power supply control output
42	SYSPW	O	C	System power supply control output
43	VST	O	C	Strobe pulse output for electronic volume
44	$\overline{\text{MUTE}}$	O	C	System mute output
45	PEE	O	C	Beep tone output
46	LOCH	O	C	Local H output
47	NC			Not used
48	TUNPCE2	O	C	EEPROM chip enable output
49	PCL	O	C	Clock adjustment output
50	VCK	O	C	Clock output for electronic volume
51	VDT	O	C	Data output for electronic volume
52	ANTPW	O		Antenna output
53	EJECTS	I		Eject key input pin
54	DALMON	O	C	Stand-by output
55–59	NC			Not used
60	$\overline{\text{RESET}}$	I		Reset input
61,62	NC			Not used
63	$\overline{\text{BSENS}}$	I		Back up power sense input
64	$\overline{\text{ASENS}}$	I		ACC power sense input
65	$\overline{\text{DSENS}}$	I		Grille detach sense
66	ADPW	O	C	A/D converter power supply output
67	NC			Not used

Pin No.	Pin Name	I/O	Format	Function and Operation
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1	I		Crystal oscillator connection pin
71	IC(VPP)			Connect to GND
72	NC			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		CD temperature sense input
78	VDSENS	I		VD power supply voltage sense input
79	DISCSNS	I		CD DISC sense input
80	CSENS	I		Flap open/close sense input

Output Format	Meaning
C	C MOS output

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

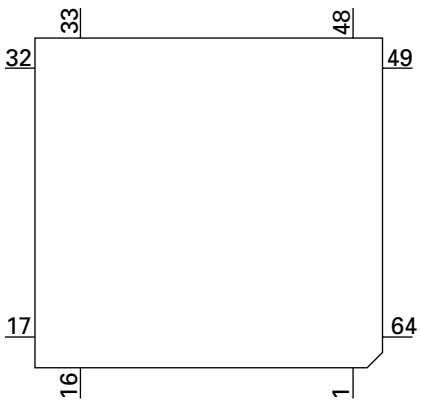
*PE5262A



● **Pin Functions (PD6340A)**

Pin No.	Pin Name	I/O	Function and Operation
1-5	SEG4-0	O	LCD segment output
6-9	COM3-0	O	LCD common output
10	VLCD		LCD drive power supply
11-14	KST3-0	O	Key strobe output
15,16	KDT0,1	I	Key data input (analogue input)
17	REM	I	Remote control reception
18	DPDT	I	Display data input
19	NC		Not used
20	KYDT	O	Key data output
21	MODA		GND
22	X0		Crystal oscillator connection pin
23	X1		Crystal oscillator connection pin
24	VSS		GND
25,26	KDT2,3	I	Key data input
27	NC		Not used
28	KST4	O	Key strobe output
29-32	NC		Not used
33-55	SEG35-13	O	LCD segment output
56	VDD		Power supply
57-64	SEG12-5	O	LCD segment output

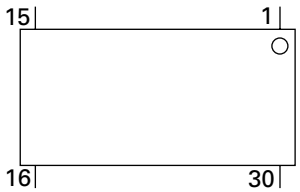
*PD6340A



● **Pin Functions(TA2153FN)**

Pin No.	Pin Name	I/O	Function and Operation
1	VCC		Power supply voltage terminal
2	RFGC	I	RF amplitude adjustment control signal terminal
3	GMAD	I	AGC amplifier frequency characteristic adjustment terminal
4	FNI	I	Main beam amplifier input terminal
5	FPI	I	Main beam amplifier input terminal
6	TPI	I	Sub beam amplifier input terminal
7	TNI	I	Sub beam amplifier input terminal
8	MDI	O	Monitor photodiode amplifier input terminal
9	LDO	I	Laser diode amplifier output terminal
10	SEL	I	APC circuit ON/OFF signal, LDO terminal control input terminal and bottom and peak detection frequency switching terminals
11	TEB	I	Tracking error balance adjustment signal input terminal
12	2VRO	O	Reference voltage (2VRO) output terminal
13	TEN	I	Tracking error signal generation amplifier reverse phase input terminal
14	TEO	O	Tracking error signal generation amplifier output terminal
15	SBAD	O	Sub beam addition signal output terminal
16	FEO	O	Focus error signal generation amplifier output terminal
17	FEN	I	Focus error signal generation amplifier reverse phase input terminal
18	SEB	I	RFRP generation circuit mode switching terminal
19	VRO	O	Reference voltage (VREF) output terminal
20	RFRP	O	Signal generation amplifier output terminal for track count
21	BTC	I	Bottom detection time constant adjustment terminal for RFCT signal generation
22	RFCT	O	RFRP signal center level output terminal
23	PKC	I	Peak detection time constant adjustment signal for RFCT signal generation
24	RFRPIN	I	Signal generation amplifier input terminal for track count
25	RFGO	O	RF signal amplitude adjustment amplifier output terminal
26	GVSW	I	AGC, FE or TE amplifier gain switching terminal
27	AGCIN	I	RF signal amplitude adjustment amplifier input terminal
28	RFO	O	RF signal generation amplifier output terminal
29	GND	I	GND terminal
30	RFN2	I	RF signal generation amplifier input terminal

TA2153FN

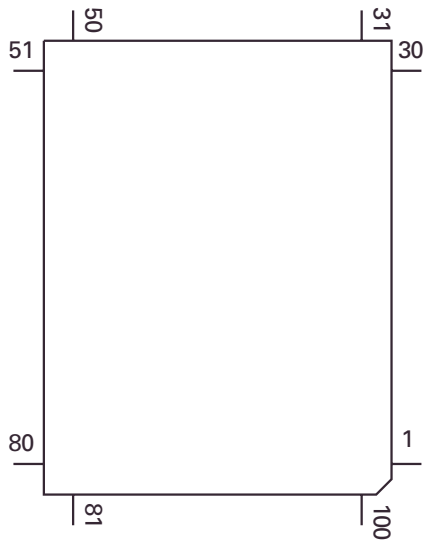


● **Pin Functions(TC9495F2)**

Pin No.	Pin Name	I/O	Function and Operation
1	TESTO		Test mode terminal
2	$\overline{HSO}$	O	Replay speed flag output terminal
3	$\overline{UHSO}$	O	Replay speed flag output terminal
4	EMPH	O	Emphasis flag output terminal for sub code Q data
5	LRCK	O	Channel clock (44.1 kHz) output terminal
6	VSS		Digital ground terminal
7	BCK	O	Bit clock output terminal
8	AOUT	O	Digital audio data output terminal
9	DOUT	O	Digital out output terminal
10	MBOV	O	Buffer memory over signal output terminal
11	IPF	O	Correction flag output terminal
12	SBOK	O	CRCC decision result output for sub code Q data
13	CLCK	I/O	Clock input/output terminal for sub code P-W data read
14	VDD		Digital + power supply terminal (5 V)
15	VSS		Digital ground terminal
16	DATA	O	Sub code P-W data output terminal
17	SFSY	O	Replay-system frame sync signal output terminal
18	SBSY	O	Sub code block sync output terminal
19	SPCK	O	Clock for processor status signal read
20	SPDA	O	Processor status signal output terminal
21	COFS	O	Correction-system frame clock (7.35 kHz) output terminal
22	MONIT	O	LSI internal signal output terminal
23	VDD		Digital + power supply terminal (5 V)
24	TESIO0	I	Test input/output terminal
25	P2VREF		PLL-system only 2VREF terminal
26	HSSW	O	The VREF voltage is reached for double or quad speed.
27	ZDET	O	One-bit DAC zero detection flag output terminal
28	PDO	O	Phase error signal issue between the EFM and PLCK signals
29	TMAXS	O	TMAX detection result output terminal
30	TAMX	O	TMAX detection result output terminal
31	LPFN	I	Reverse input terminal of amplifier for lowpass filter
32	LPFO	O	Output terminal of amplifier for lowpass filter
33	PVREF		PLL-system only VREF terminal
34	VCOREF	I	VCO center frequency reference level terminal
35	VCOF	O	Filter terminal for VCO
36	AVSS		Analog-system ground terminal
37	SLCO	O	Output terminal of DAC for data slice level generation
38	RFI	I	RF signal input terminal
39	AVDD		Analog-system power supply terminal (5 V)
40	RFCT	I	RFRP signal center level input terminal
41	RFZI	I	Input terminal for RFRP signal zero cross
42	RFRP	I	RF ripple signal input terminal
43	FEI	I	Focus error signal input terminal
44	SBAD	I	Sub beam addition signal input terminal
45	TSIN	I	Test input terminal
46	TEI	I	Tracking error input terminal
47	TEZI	I	Input terminal for tracking error or zero cross
48	FOO	O	Focus equalizer output terminal
49	TRO	O	Tracking equalizer output terminal
50	VREF		Analog reference power supply terminal
51	RFGC	O	RF amplitude adjustment control signal output terminal
52	TEBC	O	Tracking balance control signal output terminal
53	FMO	O	Feed equalizer output terminal
54	FVO	O	Speed error signal or feed search EQ output
55	DMO	O	Disc equalizer output terminal
56	2VREF		Analog reference power supply terminal
57	SEL	O	APC circuit ON/OFF signal output terminal

Pin No.	Pin Name	I/O	Function and Operation
58-61	FLGA-D	O	External flag output terminal for internal signal monitor
62	VDD		Digital + power supply terminal (5 V)
63	VSS		Digital ground terminal
64	IO0	O	RF amplifier gain switching terminal
65	IO1	O	Not used
66	IO2	I	HOME detection switch input terminal
67	IO3	O	FocusDrv and signal output terminal
68	$\overline{\text{DMOUT}}$	I	Field equalizer PWM output terminal for IO0 and IO1 Disc equalizer PWM output terminal for IO2 and IO3
69	$\overline{\text{CKSE}}$	I	Usually open
70	$\overline{\text{DACT}}$	I	DAC test mode terminal
71	TESIN	I	Test input terminal
72	TESIO1	I	Test input/output terminal
73	VSS		Digital ground terminal
74	PXI	I	DPS-system clock oscillator circuit input terminal
75	PXO	O	DPS-system clock oscillator circuit output terminal
76	VDD		Digital + power supply terminal (5 V)
77	XVSS		Ground terminal for system clock oscillator circuit
78	XI	I	System clock oscillator circuit input terminal
79	XO	O	System clock oscillator circuit output terminal
80	XVDD		For system clock oscillator circuit + power supply terminal
81	DVSR		R channel D/A converting unit power supply terminal
82	RO	O	R channel data forward rotation output terminal
83	DVDD		D/A converting unit power supply terminal (5 V)
84	DVR		Reference voltage terminal
85	LO	O	L channel forward rotation output terminal
86	DVSL		L channel D/A converting unit power supply terminal
87-89	TEST1-3	I	Test mode terminal
90-93	BUS0-3	I/O	Data input/output terminal for microcomputer interface
94	VDD		Digital + power supply terminal (5 V)
95	VSS		Digital ground terminal
96	BUCK	I	Clock terminal for microcomputer interface
97	$\overline{\text{CEE}}$	I	Chip enable signal for microcomputer interface
98	TEST4	I	Test mode terminal
99	$\overline{\text{TSMOD}}$	I	Test mode terminal
100	$\overline{\text{RST}}$	I	Reset signal input terminal

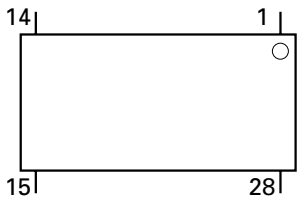
*TC9495F2



● **Pin Functions(BA5996FM)**

Pin No.	Pin Name	Function and Operation
1	VR	Input pin for reference voltage
2	OPIN2(+)	Input pin for non-inverting input for CH2 preamplifier
3	OPIN2(-)	Input pin for inverting input for CH2 preamplifier
4	OPOUT2	Output pin for CH2 preamplifier
5	OPIN1(+)	Input pin for non-inverting input for CH1 preamplifier
6	OPIN1(-)	Input pin for inverting input from CH1 preamplifier
7	OPOUT1	Output pin for CH1 preamplifier
8	GND	Ground pin
9	MUTE	Mute control pin
10	POWVCC1	Power supply pin for CH1, CH2, and CH3 at "Power" stage
11	VO1(-)	Driver CH1 - Negative output
12	VO1(+)	Driver CH2 - Positive output
13	VO2(-)	Driver CH2 - Negative output
14	VO2(+)	Driver CH2 - Positive output
15	VO3(+)	Driver CH2 - Positive output
16	VO3(-)	Driver CH2 - Negative output
17	VO4(+)	Driver CH4 - Positive output
18	VO4(-)	Driver CH4 - Negative output
19	POWVCC2	Power supply pin for CH4 at "Power" stage
20	GND	Ground pin
21	CNT	Control pin
22	LDIN	Loading input
23	OPOUTSL	Output pin for preamplifier for thread
24	OPINSL	Input pin for preamplifier for thread
25	OPOUT3	CH3 preamplifier output pin
26	OPIN3(-)	Input pin for inverting input for CH3 preamplifier
27	OPIN3(+)	Input pin for non-inverting input for CH3 preamplifier
28	PREVCC	PreVcc

BA5996FM



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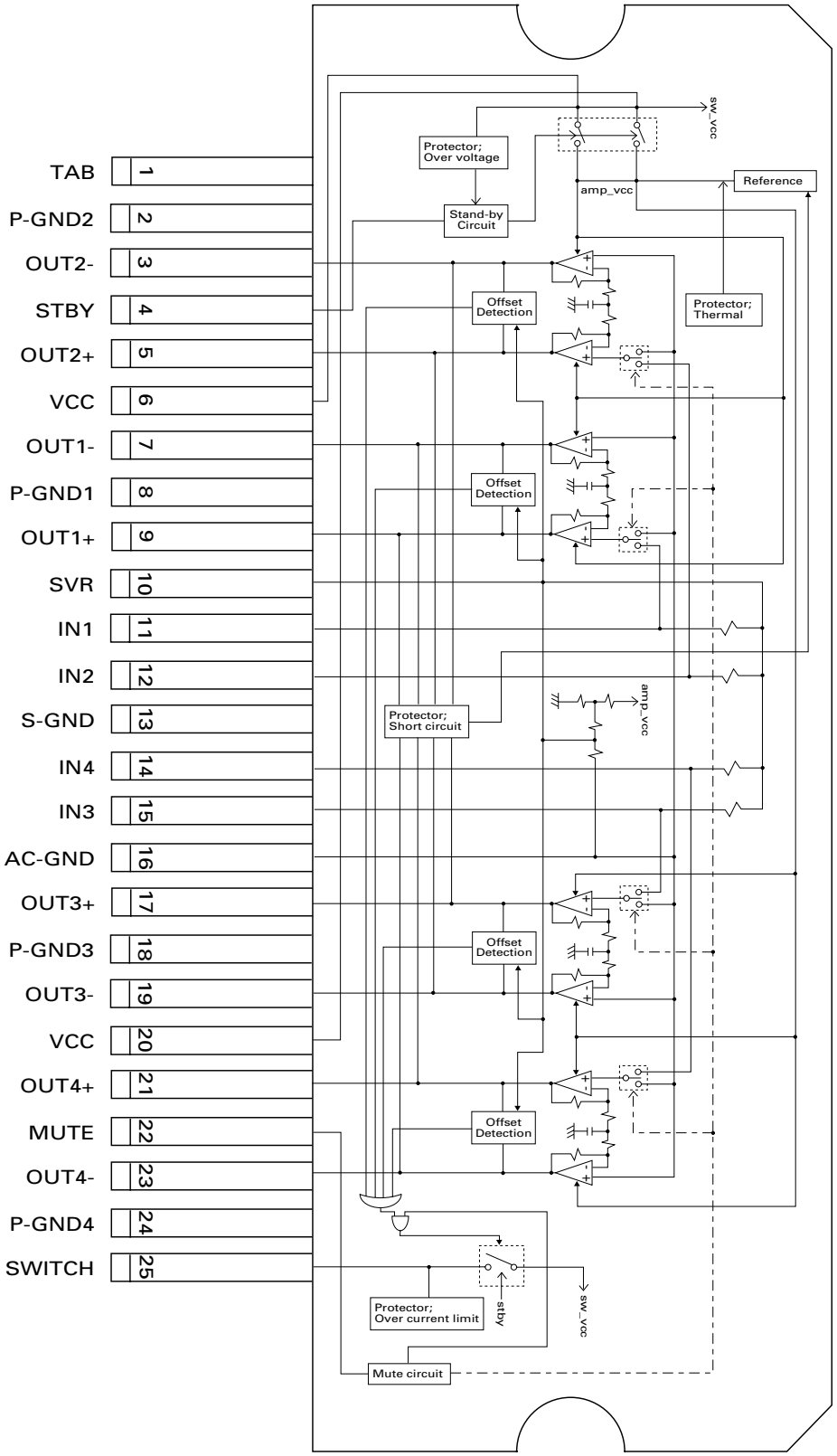
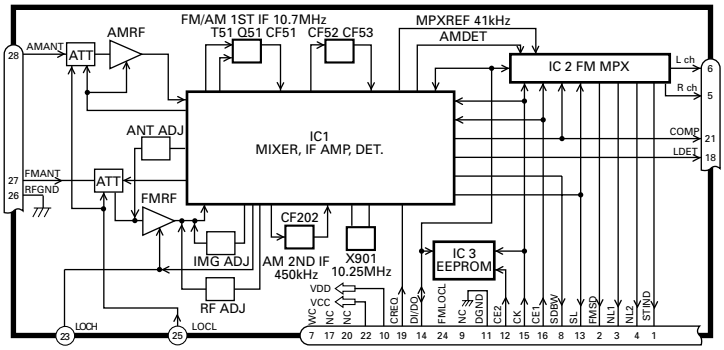

TAB 1
P-GND2 2
OUT2- 3
STBY 4
OUT2+ 5
VCC 6
OUT1- 7
P-GND1 8
OUT1+ 9
SVR 10
IN1 11
IN2 12
S-GND 13
IN4 14
IN3 15
AC-GND 16
OUT3+ 17
P-GND3 18
OUT3- 19
VCC 20
OUT4+ 21
MUTE 22
OUT4- 23
P-GND4 24
SWITCH 25
Protector; Over voltage
Stand-by Circuit
sw_vcc
amp_vcc
Reference
Protector; Thermal
Offset Detection
Protector; Short circuit
Protector; Over current limit
stby
Mute circuit

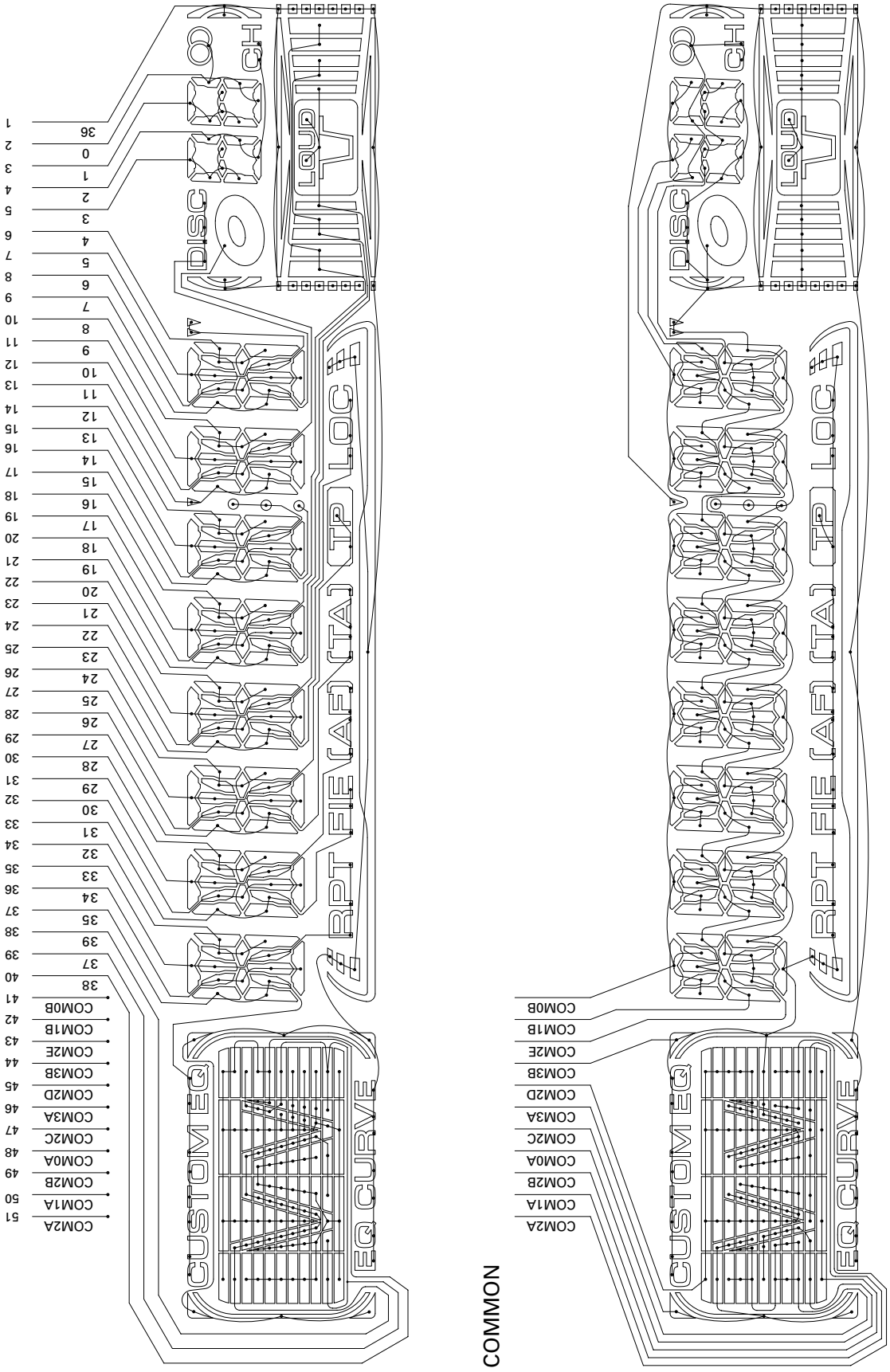
● FM/AM Tuner Unit



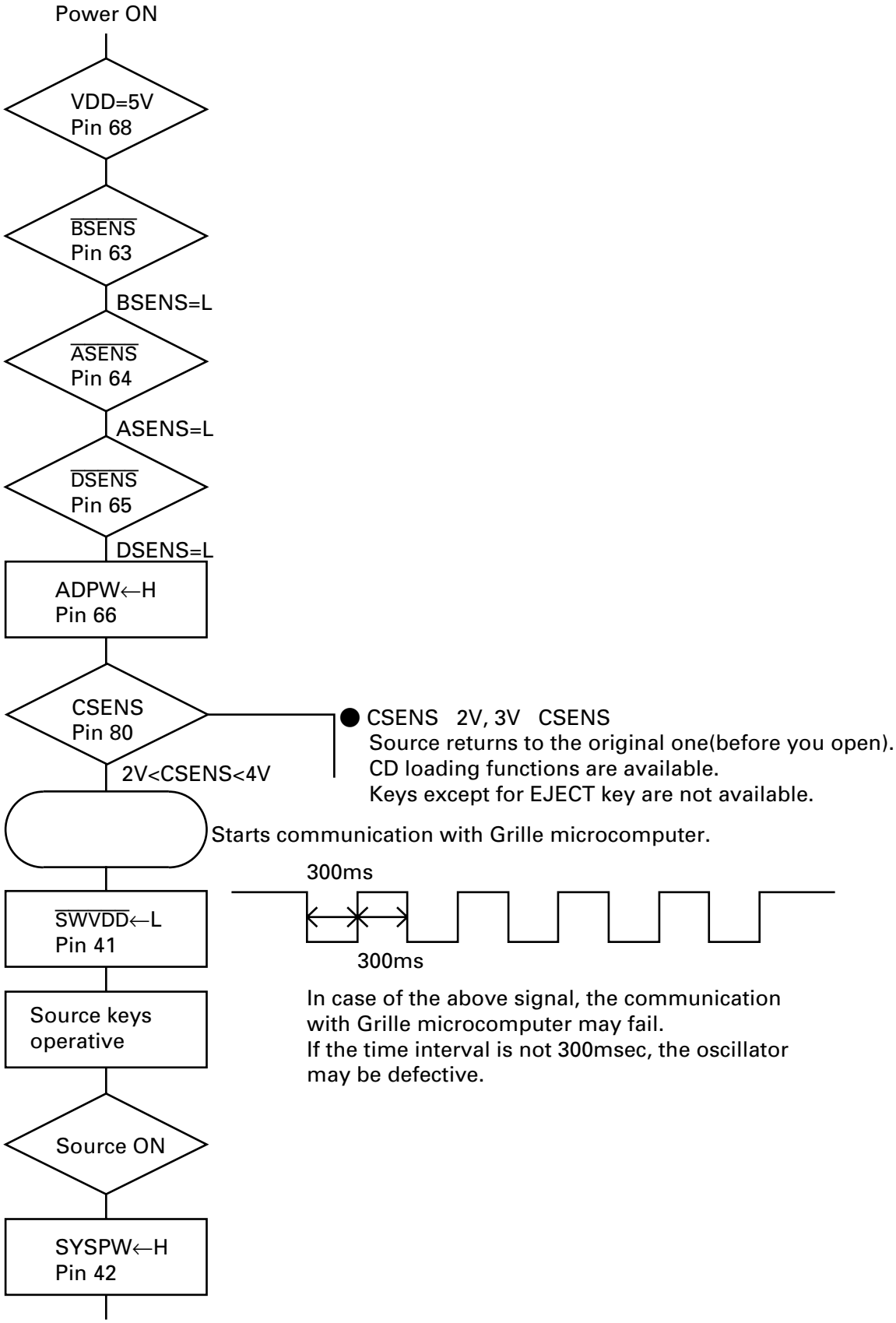
No.	Symbol	I/O	Explain	
1	STIND	O	stereo indicator	"Low" when the FM stereo signals are received. To be pulled up to the "VDD" at 47kΩ.
2	FMSD	O	FM station detector	"High" when signals are received. To be pulled up to the "VDD" at 47kΩ Meanwhile, 10kΩ should be used when taking diver FIX trigger from here and "High: 0.9VDD or more" and "Low: 250mV or less". (Should satisfy the diver IC specifications)
3	NL1	O	noise level-1	"High" when noise is received. Output for the RDS. GND at 47kΩ //1,800pF.
4	NL2	O	noise level-2	"High" when noise is received. Output for the RDS. GND at 36kΩ //330pF.
5	Rch	O	R channel output	FM stereo "R-ch" signal output or AM audio output. Add the specified de-emphasis constant.
6	Lch	O	L channel output	FM stereo "L-ch" signal output or AM audio output. Add the specified de-emphasis constant.
7	WC		write control	EEPROM write control. Writing permissible at "Low". Normally open.
8	SDBW	O	SD bandwidth	SD bandwidth signal output. For detection of detuning data for the RDS.
9	NC			Not used
10	VDD		power supply	Power supply pin for the digital section. DC 5V +/- 0.25V. Be careful about overlapping noise in the logic section.
11	DGND		digital ground	Grounding for the digital section.
12	CE2	I	chip enable-2	EEPROM chip enable. Active a "Low" To be pulled up to the "VDD" at 47kΩ
13	SL	I/O	signal level	Received FM/AM signal level (strength) output. Connect the specified load resistor and capacitor (10k Ω + 39k Ω //4,700pF)
14	DI/DO	I/O	data input/ data output	Data input/Data output To be pulled up to the "VDD" at 47kΩ
15	CK	I	clock	Clock input To be pulled up to the "VDD" at 47kΩ
16	CE1	I	chip enable-1	AF·RF chip enable. Active at "High" To be grounded at 47kΩ
17	NC			Not used
18	LDET	O	lock detector	Active at "Low". To be pulled up to the "VDD" at 47kΩ
19	CREQ	I	current request	Active at "Low". To be grounded at 47kΩ
20	NC			Not used
21	COMP	O	composite signal	FM composite signal output. r out < 100Ω
22	VCC		power supply	Analog section power supply pin.DC 8.4V +/- 0.3V
23	LOCH	I	local high	FM local high pin. When seeking local high, apply 5V together with "LOCL".
24	FMLOCL	I	FM local low	FM local low pin. When seeking local low, apply 5V to the base of the NPN transistor with which the specified resistor is being connected to the emitter. Keep it open in case of ordinary marketed models.
25	LOCL	I	local low	FM/AM local low pin. When seeking local low, apply 5V to the base of the NPN transistor. Since this pin is exclusive for AM when the FMLOCL is in use, do not drive it under FM.
26	RFGND		RF ground	Grounding for the antenna section.
27	FMANT	I	FM antenna input	FM antenna input. 75Ω. Surge absorber (DSP-201M-S00B) is necessary.
28	AMANT	I	AM antenna input	AM antenna input. High impedance. Connect to the antenna through an L (LAU type) of 4.7μH.To cope with the power transmission line hums, insert a series circuit consisting of an L (a coil of about 100mH) + R (a resistor of 470 Ω to 2.2kΩ) between the GND.

7.2.2 DISPLAY

● **CAW1707(DEH-3450/XN/ES), CAW1724(DEH-2450F/XN/ES)**



7.3 OPERATIONAL FLOW CHART



Completes power-on operation.(After that, proceed to each source operation.)

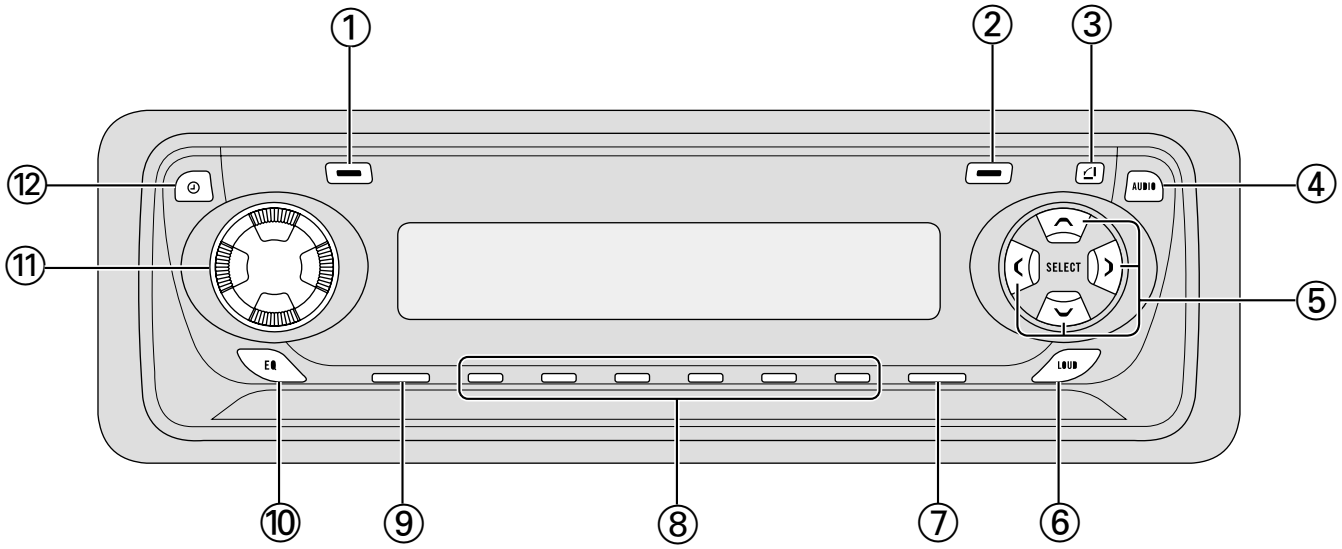
7.4 CLEANING 

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS



What's what

① BSM button
Press and hold for two seconds to switch BSM function on or off.

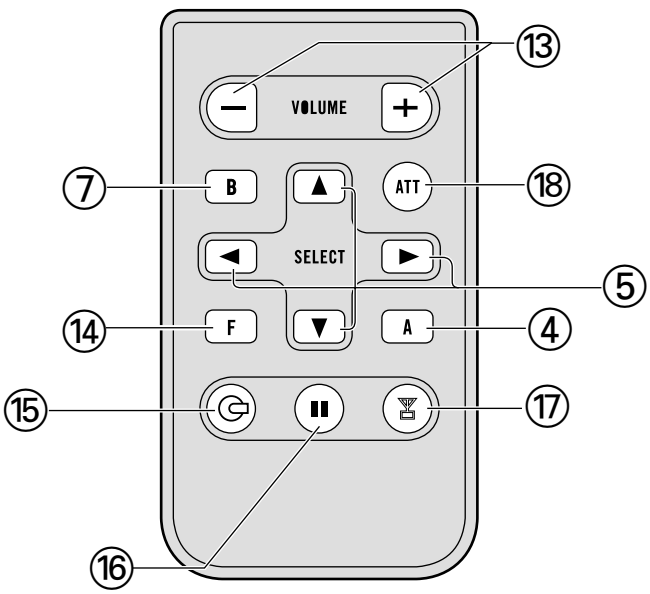
② LOCAL button
Press to switch local function on or off.

③ OPEN button
Press to open the front panel.

④ AUDIO button
Press to select various sound quality controls.

⑤ ▲/▼/◄/► buttons
Press to do manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

⑥ LOUDNESS button
Press to switch loudness function on or off.



⑦ BAND button
Press to select among three FM and one AM band and cancel the control mode of functions.

⑧ 1–6 (PRESET TUNING) buttons
Press for preset tuning.

⑨ SOURCE button
This unit is switched on by selecting a source. Press to cycle through all of the available sources.

⑩ EQ button
Press to select various equalizer curves.

⑪ VOLUME
Rotate to increase or decrease the volume.

⑫ CLOCK button
Press to switch clock display on or off. ▣

Remote control(DEH-3450)

A remote controller that enables remote operation of the head unit is supplied. Operation is the same as when using the button on the head unit. See the explanation of the head unit about the operation of each button with the exception of ATT, which is explained below.

⑬ +/– button
Raise or lower the volume.

⑭ FUNCTION button
Not used.

⑮ CD button
Press once to select a CD.

⑯ PAUSE button
Press once to pause play.

⑰ TUNER button
Press once to select a tuner.

⑱ ATT button
Press to quickly lower the volume level, by about 90%. Press once more to return to the original volume level. ▣

Power ON/OFF

Turning the unit on

Press SOURCE to turn the unit on.
When you select a source the unit is turned on. ▣

Selecting a source

You can select a source you want to listen to. To switch to the built-in CD player, load a disc in this unit (refer to page 10).

Press SOURCE to select a source.
Press SOURCE repeatedly to switch between the following sources:
Built-in CD player—Tuner

Notes

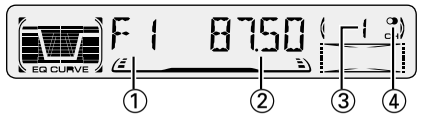
- When no disc is set in this product, built-in CD player source will not change.
- When this unit's blue/white lead is connected to the car's auto-antenna relay control terminal, the car's antenna extends when this unit's source is switched on. To retract the antenna, switch the source off. ▣

Turning the unit off

Press SOURCE and hold for at least one second to turn the unit off. ▣

Tuner

Listening to the radio



① BAND indicator
Shows which band the radio is tuned to, AM or FM.

② FREQUENCY indicator
Shows to which frequency the tuner is tuned.

③ PRESET NUMBER indicator
Shows what preset has been selected.

④ STEREO (◯◯) indicator
Shows that the frequency selected is being broadcast in stereo.

1 Press SOURCE to select the tuner.

2 Use VOLUME to adjust the sound level.
Rotate to increase or decrease the volume.

3 Press BAND to select a band.
Press BAND until the desired band is displayed, F1, F2, F3 for FM or AM.

4 To perform manual tuning, press ◄ or ► with quick presses.
The frequencies move up or down step by step.

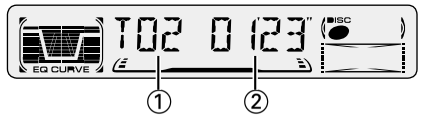
5 To perform seek tuning, press and hold ◄ or ► for about one second and release.
The tuner will scan the frequencies until a broadcast strong enough for good reception is found.
- You can cancel seek tuning by pressing either ◄ or ► with a quick press.
- If you press and hold ◄ or ► you can skip broadcasting stations. Seek tuning starts as soon as you release the buttons.

Note

- When the frequency selected is being broadcast in stereo the STEREO (◯◯) indicator will light. ▣

Built-in CD player

Playing a CD

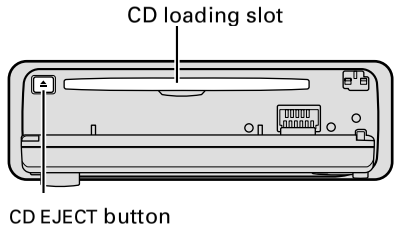


① TRACK NUMBER indicator
Shows the track currently playing.

② PLAY TIME indicator
Shows the elapsed playing time of the current track.

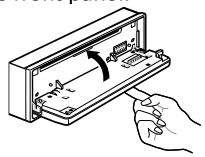
1 Press OPEN to open the front panel.
CD loading slot appears.

2 Insert a CD into the CD loading slot.
Playback will automatically start.



- You can eject a CD by pressing CD EJECT.

3 Close the front panel.



- After a CD has been inserted, press SOURCE to select the built-in CD player.

Built-in CD player

4 Use VOLUME to adjust the sound level.
Rotate to increase or decrease the volume.

5 To perform fast forward or reverse, press and hold ◄ or ►.

6 To skip back or forward to another track, press ◄ or ►.
Pressing ► skips to the start of the next track. Pressing ◄ once skips to the start of the current track. Pressing again will skip to the previous track.

Notes

- The built-in CD player plays one, standard, 12-cm or 8-cm (single) CD at a time. Do not use an adapter when playing 8-cm CDs.
- Do not insert anything other than a CD into the CD loading slot.
- If you cannot insert a disc completely or if after you insert a disc the disc does not play, check that the label side of the disc is up. Press CD EJECT to eject the disc, and check the disc for damage before inserting the disc again.
- If the built-in CD player does not operate properly, an error message such as ERROR-14 may be displayed. ▣

Playing tracks in a random order

Random play lets you play back tracks on the CD in a random order.

1 Press 4 to turn random play on.
RDM appears in the display. Tracks will play in a random order.

2 Press 4 to turn random play off.
Tracks will continue to play in order. ▣

Repeating play

Repeat play lets you hear the same track over again.

1 Press 5 to turn repeat play on.
RPT appears in the display. The track presently playing will play and then repeat.

2 Press 5 to turn repeat play off.
The track presently playing will continue to play and then play the next track.

Note

- If you perform track search or fast forward/reverse, repeat play is automatically cancelled. ▣

Pausing CD playback

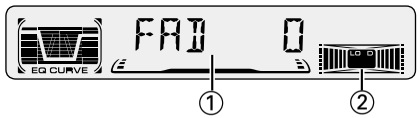
Pause lets you temporarily stop playback of the CD.

1 Press 6 to turn pause on.
PAUSE appears in the display. Play of the current track pauses.

2 Press 6 to turn pause off.
Play will resume at the same point that you turned pause on. ▣

Audio Adjustments

Introduction of audio adjustments



① AUDIO display
Shows the audio adjustments status.

② LOUD indicator
Appears in the display when loudness is turned on.

Press AUDIO to display the audio function names.
Press AUDIO repeatedly to switch between the following audio functions:
FAD (balance adjustment)—EQ-L (equalizer)—LOUD (loudness)—FIE (front image enhancer)—SLA (source level adjustment)

- When selecting the FM tuner as the source, you cannot switch to SLA.
- To return to the display of each source, press BAND.

Note

- If you do not operate the audio function within about 30 seconds, the display is automatically returned to the source display. ▣

Using balance adjustment

You can select a fader/balance setting that provides an ideal listening environment in all occupied seats.

1 Press AUDIO to select FAD.
Press AUDIO until FAD appears in the display.

- If the balance setting has been previously adjusted, BAL will be displayed.

2 Press ▲ or ▼ to adjust front/rear speaker balance.
Each press of ▲ or ▼ moves the front/rear speaker balance towards the front or the rear.

- FAD F15 – FAD R15 is displayed as the front/rear speaker balance moves from front to rear.
- FAD 0 is the proper setting when only two speakers are used.

3 Press ◄ or ► to adjust left/right speaker balance.
When you press ◄ or ►, BAL 0 is displayed.
Each press of ◄ or ► moves the left/right speaker balance towards the left or the right.

- BAL L9 – BAL R9 is displayed as the left/right speaker balance moves from left to right. ▣

Using the equalizer

The equalizer lets you adjust the equalization to match car interior acoustic characteristics as desired.

Recalling equalizer curves

There are six stored equalizer curves which you can easily recall at any time. Here is a list of the equalizer curves:

Display	Equalizer curve
SPR-BASS	Super bass
POWERFUL	Powerful
NATURAL	Natural
VOCAL	Vocal
CUSTOM	Custom
EQ FLAT	Flat

• CUSTOM is an adjusted equalizer curve that you create.
• When EQ FLAT is selected no supplement or correction is made to the sound. This is useful to check the effect of the equalizer curves by switching alternatively between EQ FLAT and a set equalizer curve.

Press EQ to select the equalizer.
• If the equalizer has been previously set to an equalizer curve other than POWERFUL then the title of that previously selected equalizer curve will be displayed, such as SPR-BASS, NATURAL, VOCAL, CUSTOM, or EQ FLAT. ▣

Adjusting equalizer curves

You can adjust the currently selected equalizer curve setting as desired. Adjusted equalizer curve settings are memorized in CUSTOM.

1 Press AUDIO to select the equalizer mode.
Press AUDIO until EQ-L/EQ-M/EQ-H appears in the display.

2 Select the band you want to adjust with the ◄/►.
EQ-L (low) —EQ-M (mid) —EQ-H (high)

3 Press ▲ or ▼ to adjust the equalizer curve.
Each press of ▲ or ▼ increases or decreases the equalizer curve respectively.
• +6 – –6 is displayed as the equalizer curve is increased or decreased.
• The actual range of the adjustments are different depending on which equalizer curve is selected.

Note
• If you make adjustments when a curve other than CUSTOM is selected, the newly adjusted curve will replace the previous curve. Then a new curve with CUSTOM appears on the display while selecting the equalizer curve. ▣

Adjusting loudness

Loudness compensates for deficiencies in the low- and high-sound ranges at low volume.

1 Press AUDIO to select LOUD.
Press AUDIO until LOUD appears in the display.

2 Select LOUD on or off with ▲/▼.

3 Select the desired level with ◄/►.
LOW (low) —MID (mid) —HI (high)

Note
• You can also switch LOUD on or off by pressing the LOUDNESS. ▣

Front image enhancer (FIE)

The F.I.E. (Front Image Enhancer) function is a simple method of enhancing front imaging by cutting mid- and high-range frequency output from the rear speakers, limiting their output to low-range frequencies. You can select the frequency you want to cut.

Precaution
• When the F.I.E. function is deactivated, the rear speakers output sound of all frequencies, not just bass sounds. Reduce the volume before disengaging F.I.E. to prevent a sudden increase in volume.

1 Press AUDIO to select FIE.
Press AUDIO until FIE appears in the display.

2 Select FIE on or off with ▲/▼.

3 Select the desired frequency with ◄/►.
100—160—250 (Hz)

Notes
• After switching the F.I.E. function ON, select the Fader/Balance mode in the Audio Menu, and adjust front and rear speaker volume levels until they are balanced.

• Switch the F.I.E. function OFF when using a 2-speaker system. ▣

Setting the FM tuning step

The tuning step employed by Seek Tuning in the FM mode can be switched between 100 kHz (preset at the factory) and 50 kHz.

1 Press AUDIO to select FM STEP.
Press AUDIO repeatedly until FM 100 appears in the display.

2 Select the FM tuning step with ◄/►.

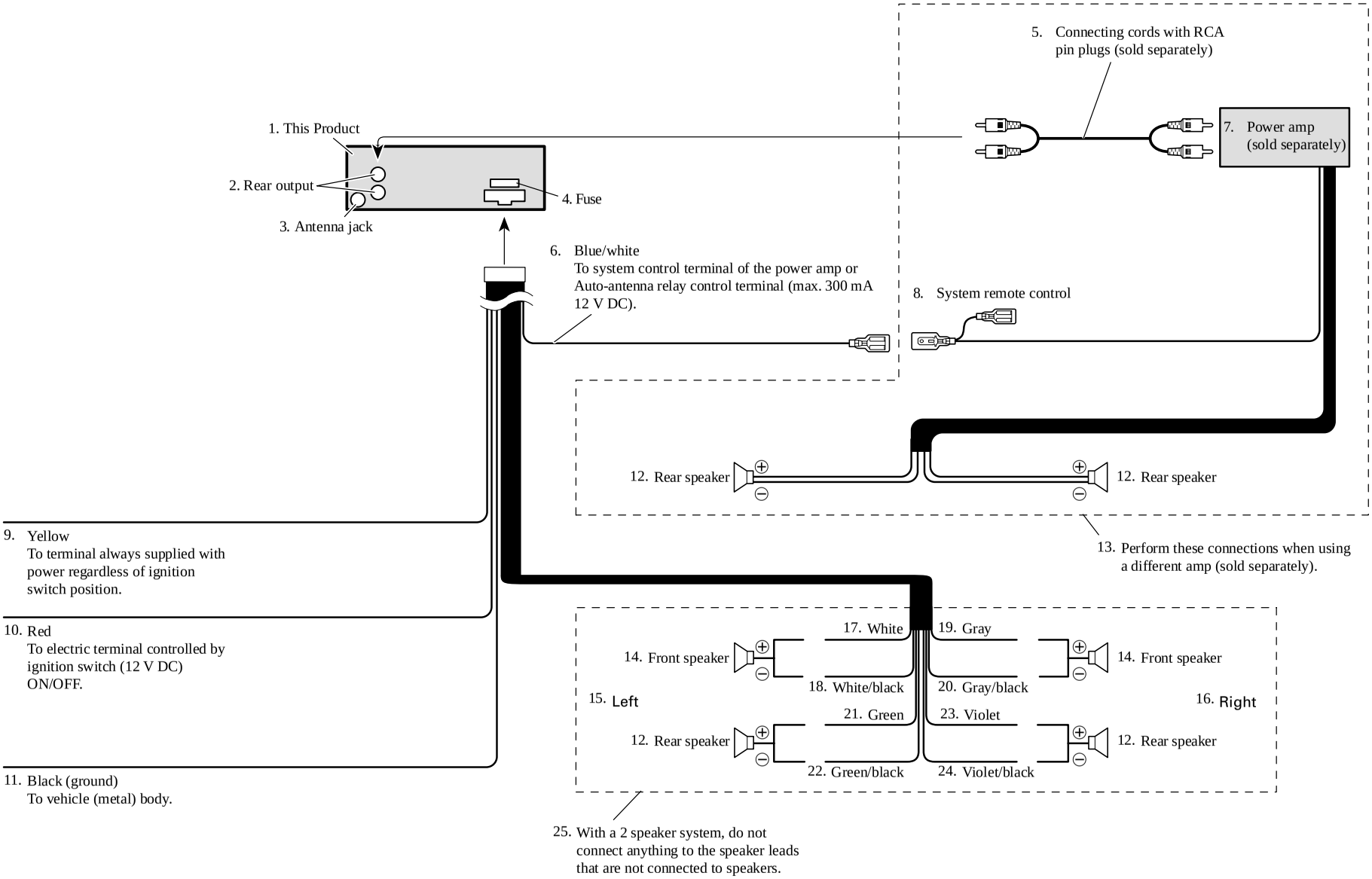
Note
• If seek tuning is performed in 50 kHz steps, stations may be tuned in imprecisely. Tune in the stations with manual tuning or use seek tuning again. ▣

Setting the AM tuning step

The AM tuning step can be switched between 9 kHz, the preset step, and 10 kHz. When using the tuner in North, Central or South America, reset the tuning step from 9 kHz (531 – 1,602 kHz allowable) to 10 kHz (530 – 1,640 kHz allowable).

1 Press AUDIO to select AM STEP.
Press AUDIO repeatedly until AM 9 appears in the display.

2 Select the AM tuning step with ◄/►.
Pressing ◄/► will switch the AM tuning step between 9 kHz and 10 kHz. The selected AM tuning step will appear in the display. ▣


1. This Product
2. Rear output
3. Antenna jack
4. Fuse
5. Connecting cords with RCA pin plugs (sold separately)
7. Power amp (sold separately)
6. Blue/white
To system control terminal of the power amp or Auto-antenna relay control terminal (max. 300 mA 12 V DC).
8. System remote control
12. Rear speaker
12. Rear speaker
13. Perform these connections when using a different amp (sold separately).
9. Yellow
To terminal always supplied with power regardless of ignition switch position.
10. Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
11. Black (ground)
To vehicle (metal) body.
17. White
19. Gray
14. Front speaker
14. Front speaker
18. White/black
20. Gray/black
15. Left
16. Right
21. Green
23. Violet
12. Rear speaker
12. Rear speaker
22. Green/black
24. Violet/black
25. With a 2 speaker system, do not connect anything to the speaker leads that are not connected to speakers.

8.2 SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Backup current..... 5 mA
Dimensions (W × H × D):
(DIN)
Chassis ..... 178 × 50 × 157 mm
Nose ..... 170 × 58 × 19 mm
(D)
Chassis ..... 178 × 50 × 162 mm
Nose ..... 170 × 46 × 14 mm
Weight ..... 1.5 kg

Audio

Continuous power output is 22 W (20 W for DEH-2450F) per channnel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output 50 W × 4 (DEH-3450)
45 W × 4 (DEH-2450F)
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance ..... 2.2 V/1 kΩ
Equalizer (3-Band Equalizer):
(LOW) ..... Level: ±12 dB
(MID) ..... Level: ±12 dB
(HIGH) ..... Level: ±12 dB
Loudness contour
(LOW) ..... +3.5 dB (100 Hz), +3 dB (10 kHz)
(MID) ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
(HIGH) ..... +11 dB (100 Hz), +11 dB (10 kHz) (volume : –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
Sampling frequency 44.1 kHz
Number of quantization bits ..... 16; linear
Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range ..... 92 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 – 108.0 MHz
Usable sensitivity ..... 9 dBf (0.8 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity 15 dBf (1.5 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range ..... 531 – 1,602 kHz (9 kHz)
530 – 1,640 kHz (10 kHz)
Usable sensitivity ..... 18 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)
50 dB (±10 kHz)

Infrared remote control

Wavelength ..... 940 nm ±50 nm
Output ..... typ; 12 mw/sr per infrared LED

Note

- Specifications and the design are subject to possible modifications without notice due to improvements. ▣