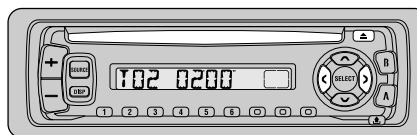


Service Manual

Pioneer

DEH-2130R/X1M/EW



ORDER NO.
CRT2434

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-2130R

DEH-2100R

X1M/EW

X1M/EW

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

Model No.	Order No.	Mech. Module	Remarks
CX-958	CRT2423	S8.1	CD Mech. Module: Circuit Description, Mech. Description, Disassembly

CONTENTS

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PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

● **CD Player Service Precautions**

1. For pickup unit(CXX1285) handling, please refer to "Disassembly"(see page 48).
During replacement, handling precautions shall be taken to prevent an electrostatic discharge(Protection by a short pin).

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 check the grating after changing the service pickup unit(see page 43).

1. SAFETY INFORMATION

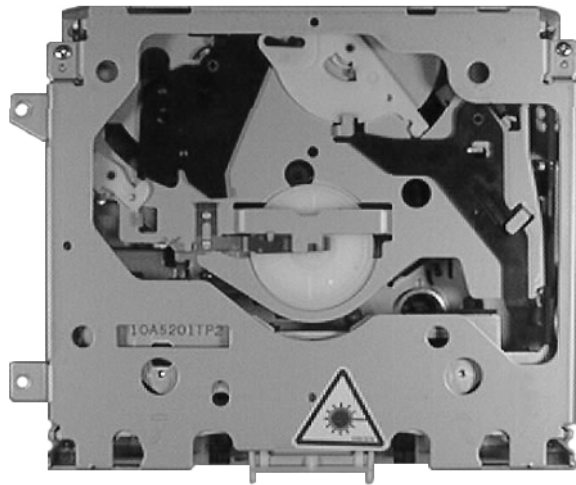
This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly 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.

1. Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
 2. During repair or tests, do not view laser beam for 10 seconds or longer.
2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.
 3. The triangular label is attached to the mechanism unit frame.

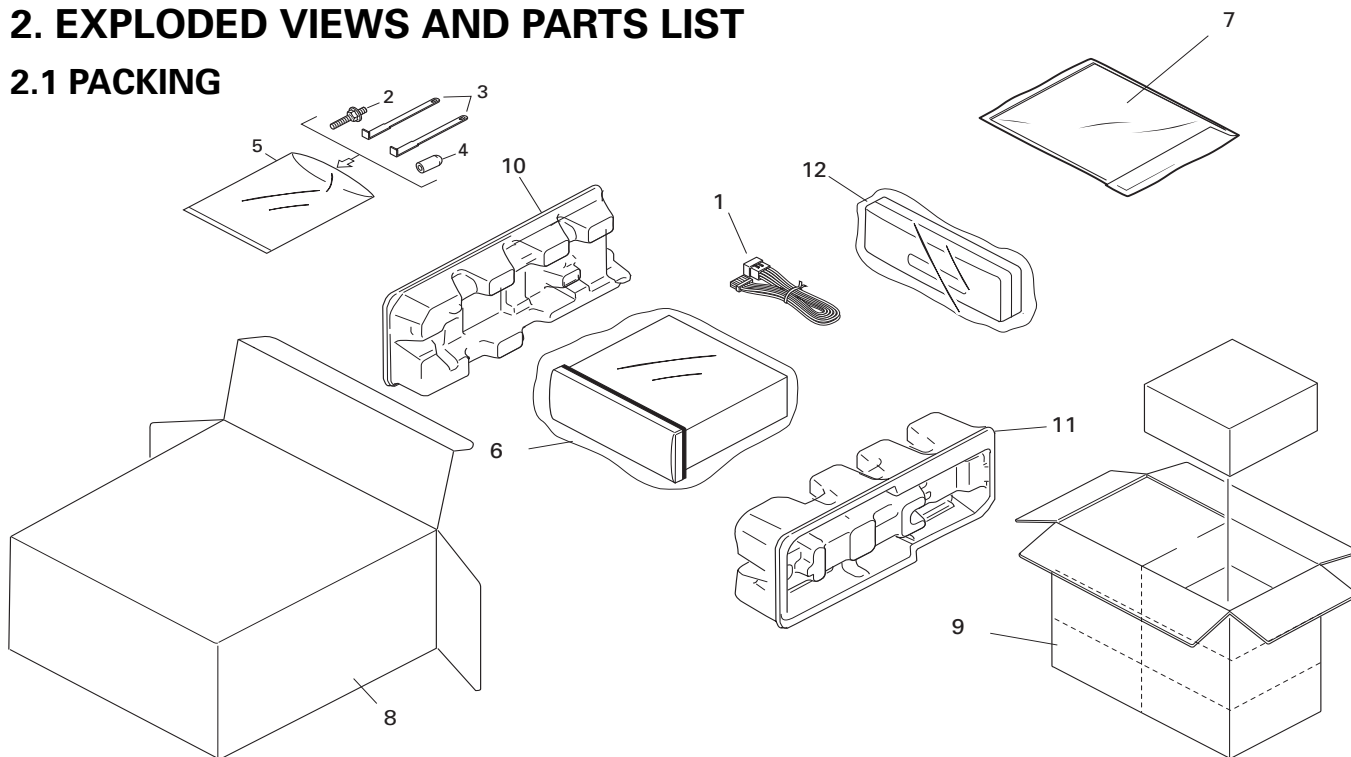


4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

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.

(1) PACKING SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Cord Assy	CDE6123	*	7-5 Passport	CRY1013
2	Screw	CBA1002	*	7-6 Warranty Card	CRY1157
3	Handle	CNC5395	8	Carton	See Contrast table(2)
4	Bush	CNV3930	9	Contain Box	See Contrast table(2)
*	5 Polyethylene Bag	E36-615	10	Protector	CHP2243
6	Polyethylene Bag	CEG-162	11	Protector	CHP2244
7-1	Polyethylene Bag	CEG1116	12	Case Assy	CXB3520
7-2	Owner's Manual	CRD3137			
7-3	Owner's Manual	CRD3138			
7-4	Installation Manual	CRD3139			

(2) CONTRAST TABLE

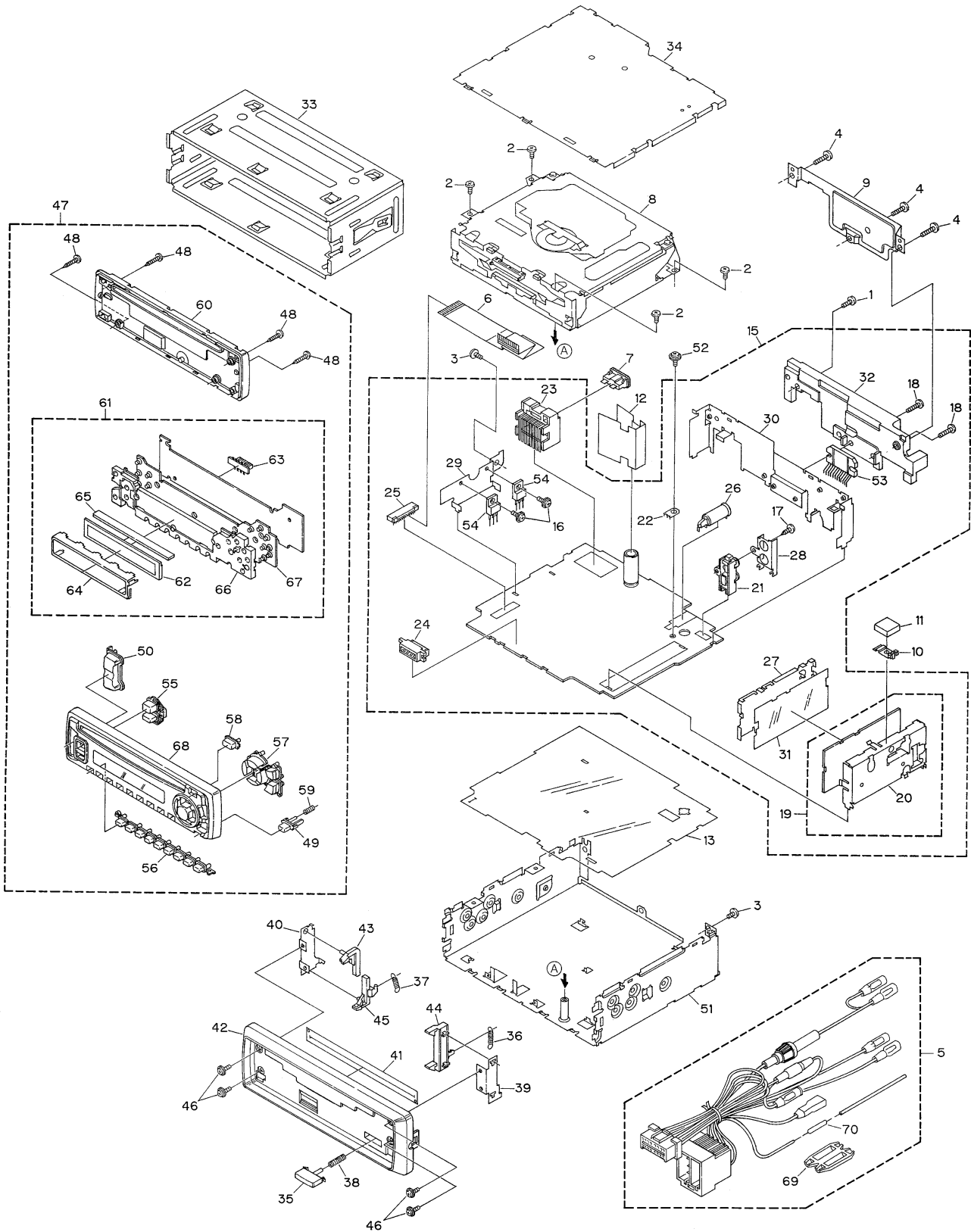
DEH-2130R/X1M/EW and DEH-2100R/X1M/EW are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
8	Carton	CHG3951	CHG3950
9	Contain Box	CHL3951	CHL3950

● Owner's Manual, Installation Manual

Model	Part No.	Language
DEH-2130R/X1M/EW	CRD3137	English, Spanish, German
DEH-2100R/X1M/EW	CRD3138	French, Italian, Dutch
	CRD3139	English, Spanish, German, French, Italian, Dutch

2.2 EXTERIOR



(1) EXTERIOR SECTION PARTS LIST

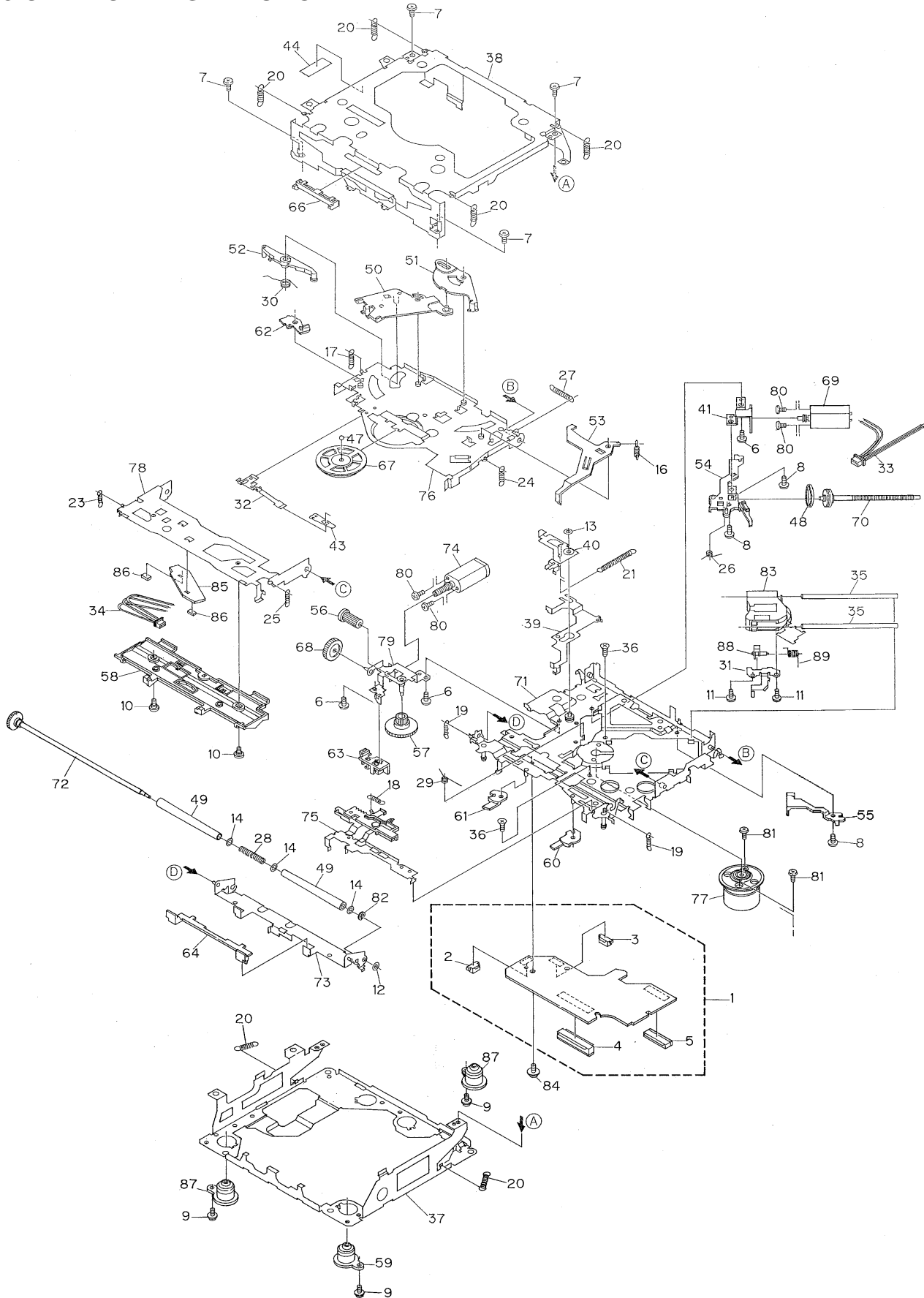
Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BMZ26P120FMC	36	Spring	CBH1835
2	Screw	BSZ26P060FMC	37	Spring	CBH2208
3	Screw	BSZ30P060FMC	38	Spring	CBH2367
4	Screw	BSZ30P120FMC	39	Bracket	CNC6791
5	Cord Assy	CDE6123	40	Holder	CNC8042
6	Cable	CDE6160	41	Cover	CNM6276
7	Fuse(10A)	CEK1136	42	Panel	See Contrast table(2)
8	CD Mechanism Module(S8.1)	CXK5203	43	Arm	CNV4692
9	Cover	CNC8367	44	Arm	CNV4728
10	Holder	CNC8884	45	Arm	CNV5576
11	Spacer	CNM4913	46	Screw	IMS20P030FZK
12	Insulator	CNM6224	47	Detach Grille Assy	See Contrast table(2)
13	Insulator	CNM6386	48	Screw	BPZ20P100FZK
14		49	Button(Detach)	See Contrast table(2)
15	Tuner Amp Assy	CWM6764	50	Button(+, -)	See Contrast table(2)
16	Screw	ASZ26P080FMC	51	Chassis Unit	See Contrast table(2)
17	Screw	BPZ26P080FMC	52	Screw	ISS26P055FUC
18	Screw	BSZ26P160FMC	53	IC(IC302)	TDA7384
19	FM/AM Tuner Unit	CWE1500	54	Transistor(Q904, 981)	2SD2396
20	Holder	CNC7532	55	Button(Source)	CAC6494
21	Pin Jack(CN301)	CKB1041	56	Button(1-6)	CAC6275
22	Terminal(CN403)	CKF1059	57	Button(B, A, Cross)	See Contrast table(2)
23	Connector(CN901)	CKM1299	58	Button(Eject)	CAC6277
24	Connector(CN601)	CKS3581	59	Spring	CBH2210
25	Connector(CN605)	CKS3838	60	Cover	See Contrast table(2)
26	Antenna Jack(CN402)	CKX1056	61	Keyboard Unit	See Contrast table(2)
27	Holder	CNC7533	62	LCD(LCD1801)	CAW1559
28	Holder	CNC8041	63	Connector(CN1801)	CKS3580
29	Holder	CNC8043	64	Holder	CNC8517
30	Holder	CNC8588	65	Rubber	CNV5954
31	Insulator	CNM5967	66	Lighting Conductor	CNV5965
32	Heat Sink	CNR1506	67	Rubber	CNV5966
33	Holder Unit	CXB2687	68	Grille Unit	See Contrast table(2)
34	Case Unit	CXB4033	69	Cap	CNS1472
35	Button	CAC4836	70	Resistor	RS1/2PMF102J

(2) CONTRAST TABLE

DEH-2130R/X1M/EW and DEH-2100R/X1M/EW are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
42	Panel	CNS5340	CNS5188
47	Detach Grille Assy	CXB4595	CXB4592
49	Button(Detach)	CAC5929	CAC5789
50	Button(+, -)	CAC6458	CAC6273
51	Chassis Unit	CXB4624	CXB4623
57	Button(B, A, Cross)	CAC6459	CAC6276
60	Cover	CNS5773	CNS5772
61	Keyboard Unit	CWM6779	CWM6778
68	Grille Unit	CXB4612	CXB4611

2.3 CD MECHANISM MODULE



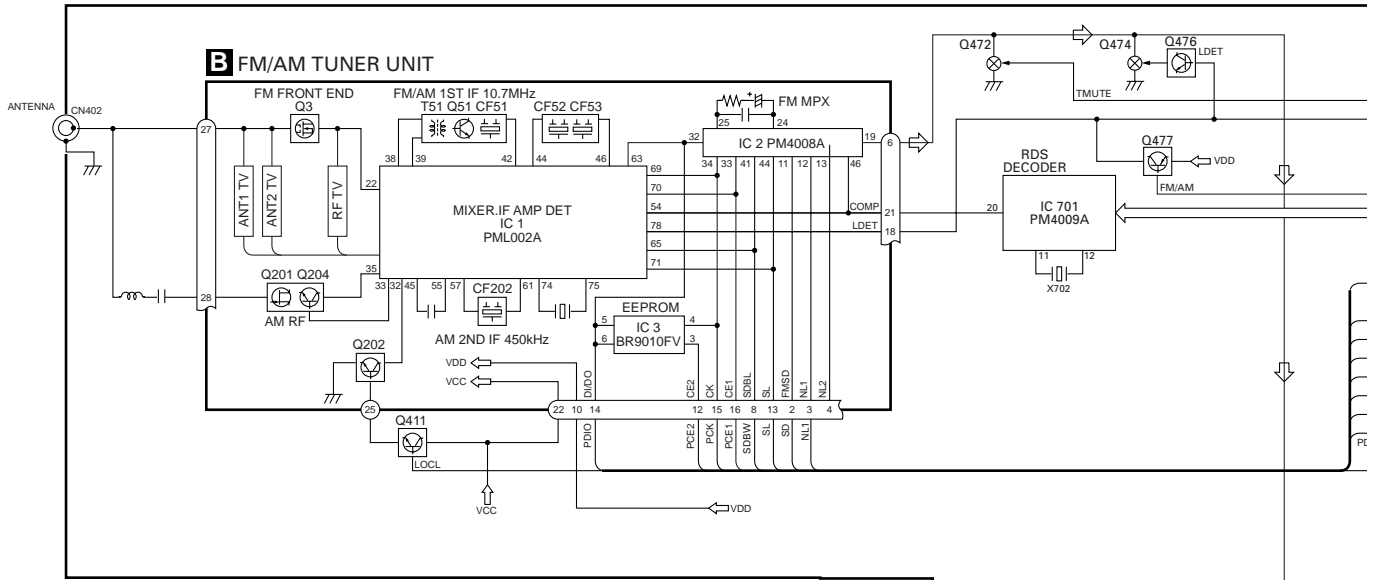
● CD MECHANISM MODULE SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Control Unit	CWX2411	46	*****	
2	Connector(CN802)	CKS2192	47	Ball	CNR1189
3	Connector(CN801)	CKS2193	48	Belt	CNT1086
4	Connector(CN701)	CKS2773	49	Roller	CNV4509
5	Connector(CN101)	CKS3486	50	Arm	CNV6037
6	Screw	BMZ20P030FMC	51	Arm	CNV5247
7	Screw	BSZ20P040FMC	52	Arm	CNV5248
8	Screw(M2x3)	CBA1077	53	Arm	CNV5249
9	Screw(M2x5)	EBA1028	54	Guide	CNV5254
10	Screw	CBA1243	55	Guide	CNV5255
11	Screw(M2x4)	CBA1362	56	Gear	CNV5257
12	Washer	CBF1037	57	Gear	CNV5256
13	Washer	CBF1038	58	Guide	CNV6176
14	Washer	CBF1060	59	Damper	CNV6174
15	*****		60	Arm	CNV6096
16	Spring	CBH2079	61	Arm	CNV6031
17	Spring	CBH2117	62	Arm	CNV6211
18	Spring	CBH2314	63	Guide	CNV6012
19	Spring	CBH2110	64	Guide	CNV5510
20	Spring	CBH2282	65	*****	
21	Spring	CBH2318	66	Guide	CNV5751
22	*****		67	Clamper	CNV6013
23	Spring	CBH2324	68	Gear	CNV5813
24	Spring	CBH2118	69	Motor Unit(M1)	CXB2190
25	Spring	CBH2161	70	Screw Unit	CXB4726
26	Spring	CBH2163	71	Chassis Unit	CXB4797
27	Spring	CBH2189	72	Gear Unit	CXB4728
28	Spring	CBH2249	73	Arm Unit	CXB4729
29	Spring	CBH2260	74	Motor Unit(M2)	CXB2195
30	Spring	CBH2262	75	Lever Unit	CXB4730
31	Bracket	CNC8568	76	Arm Unit	CXB4731
32	Spring	CBL1369	77	Motor Unit(M3)	CXB2562
33	Connector	CDE5531	78	Arm Unit	CXB4732
34	Connector	CDE5532	79	Bracket Unit	CXB4795
35	Shaft	CLA3304	80	Screw	JFZ20P025FMC
36	Screw(M2.6x6)	CBA1458	81	Screw	JGZ17P025FZK
37	Frame	CNC8565	82	Washer	YE20FUC
38	Frame	CNC8749	83	Pickup Unit(Service)(P8)	CXX1285
39	Lever	CNC7546	84	Screw	IMS26P030FMC
40	Arm	CNC8663	* 85	PCB	CNX2982
41	Bracket	CNC8567	86	Photo-transistor(Q1, 2)	CPT230SX-TU
42	*****		87	Damper	CNV6175
43	Spacer	CNM3315	88	Rack	CNV6014
44	Sheet	CNM6659	89	Spring	CBH2315
45	*****				

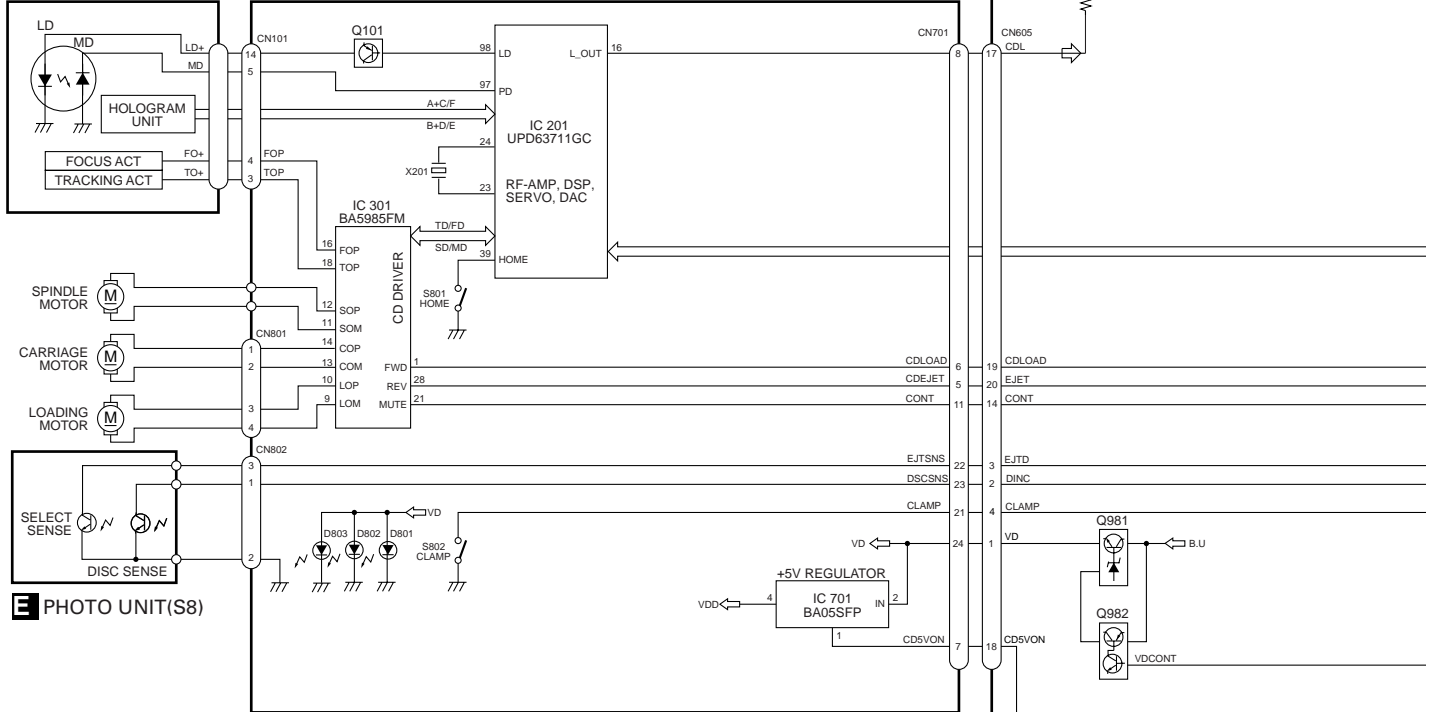
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

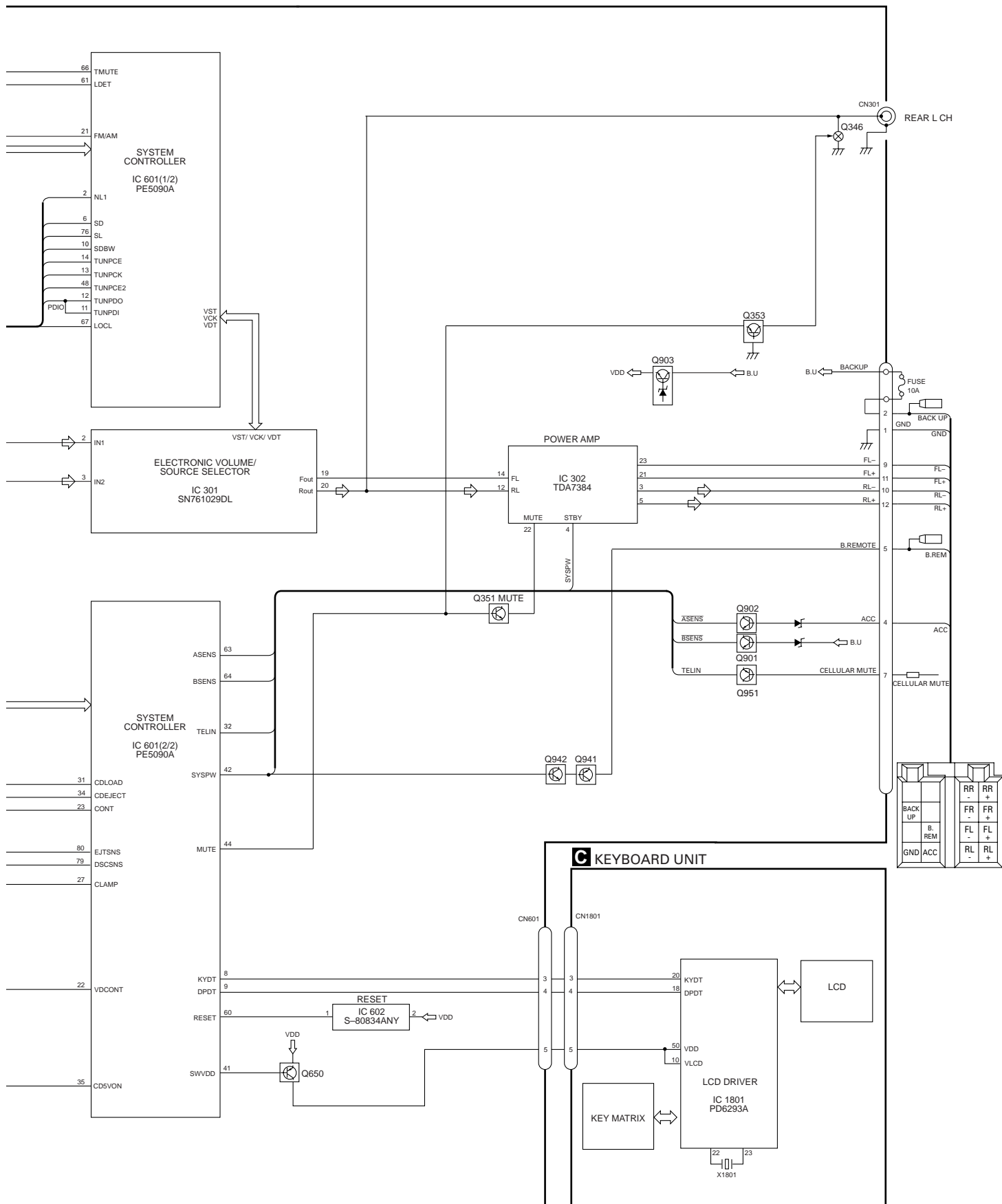
3.1 BLOCK DIAGRAM

A TUNER AMP ASSY



B PICKUP UNIT(SERVICE)(P8) CONTROL UNIT





A

B

C

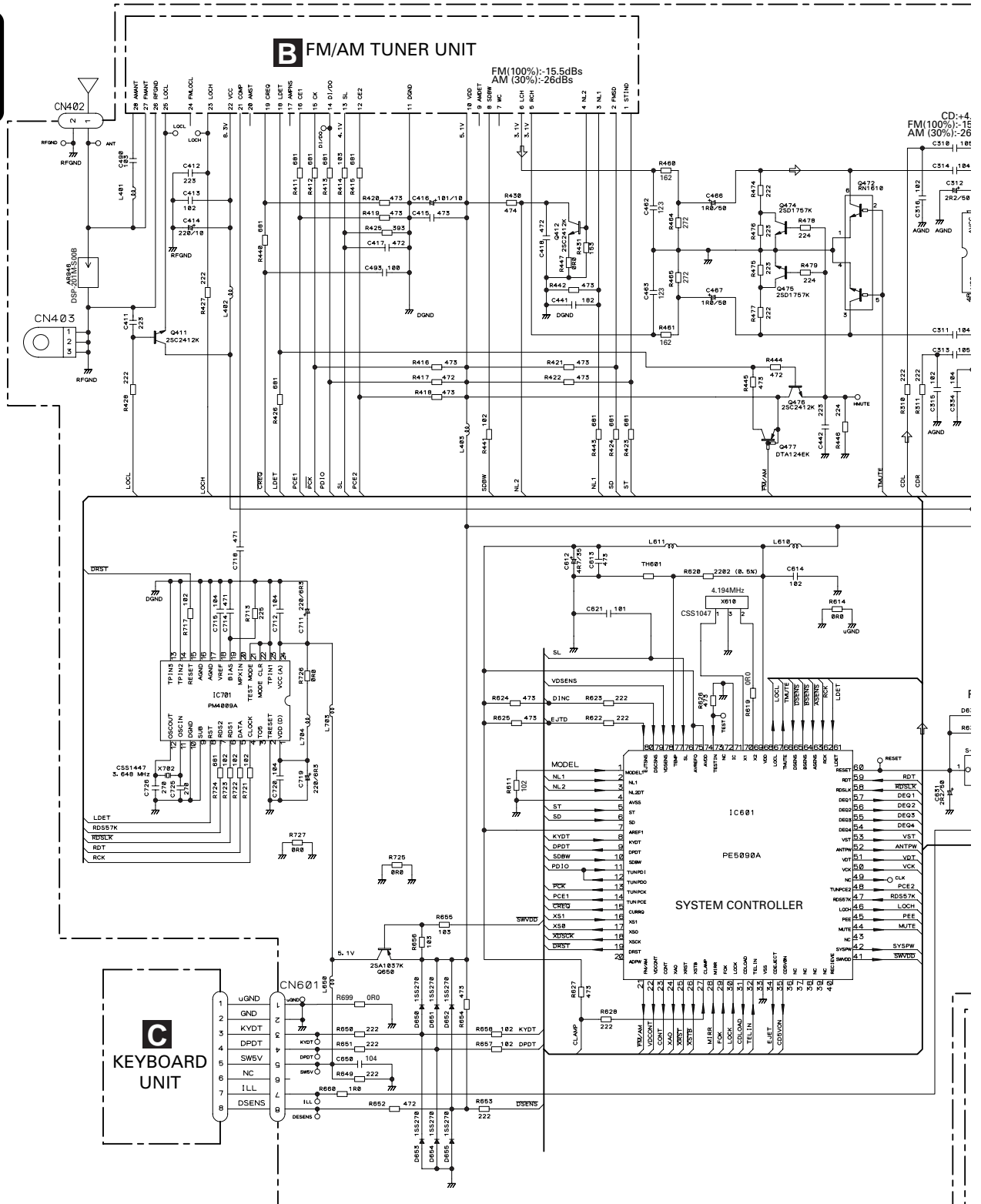
D

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

B FM/AM TUNER UNIT



C KEYBOARD UNIT

NOTE:
- Symbol indicates a resistor.
- No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor.
- No differentiation is made between chip capacitors and discrete capacitors.
The triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

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

B

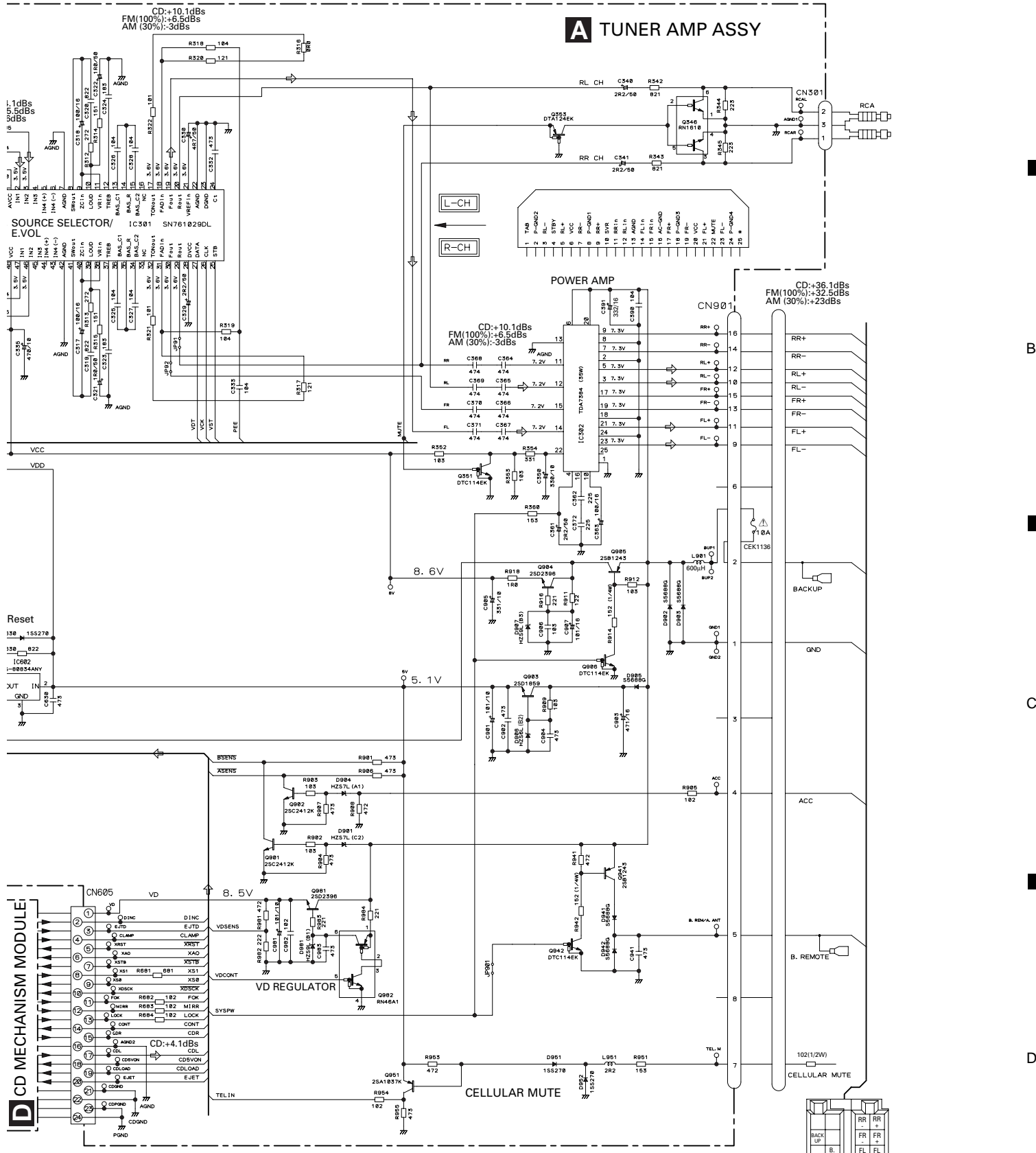
C

D

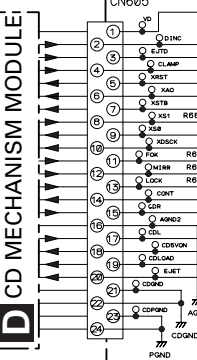


A-b

A TUNER AMP ASSY



A
B
C
D



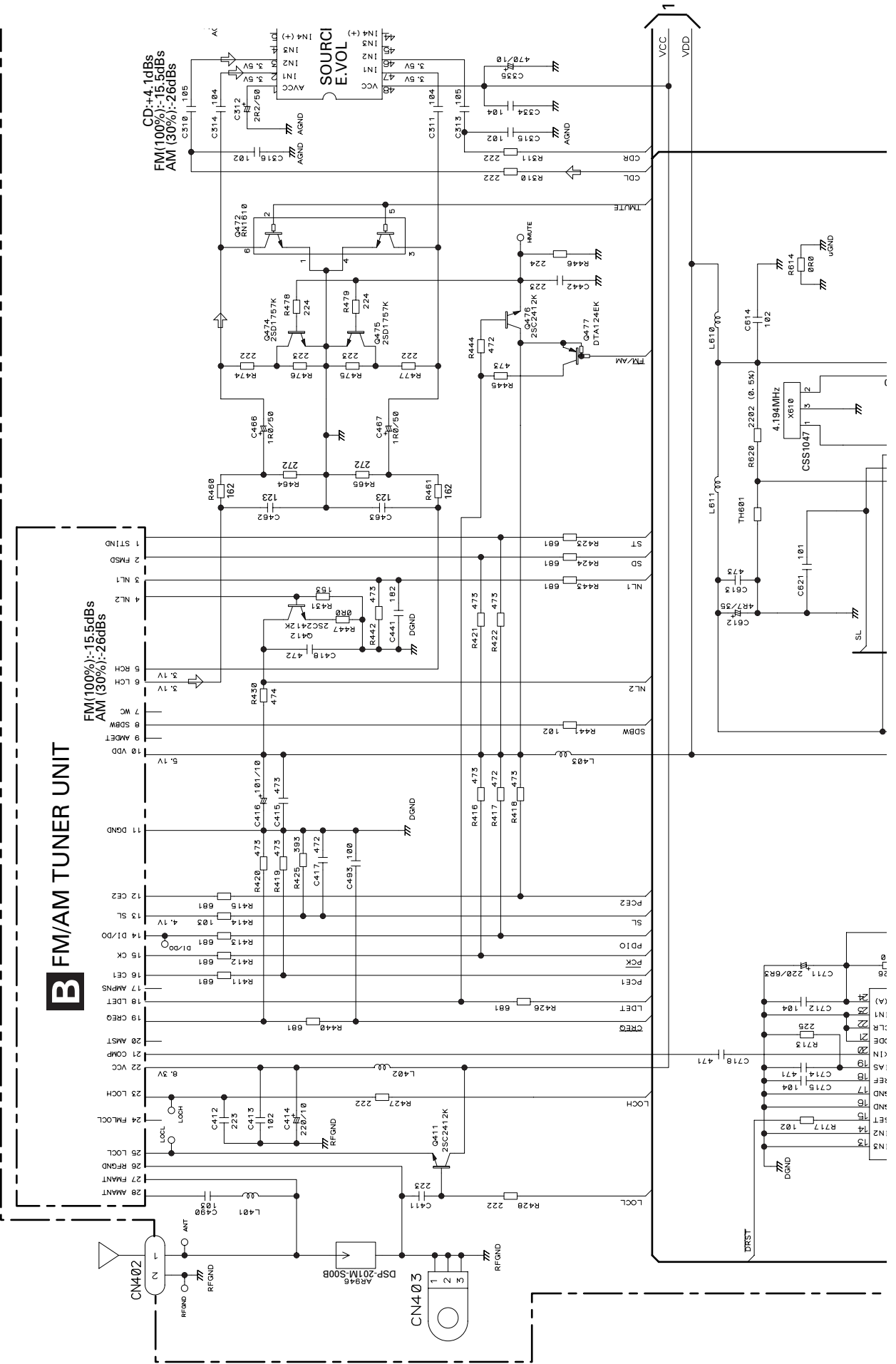
A-a A-b

A

B

C

D



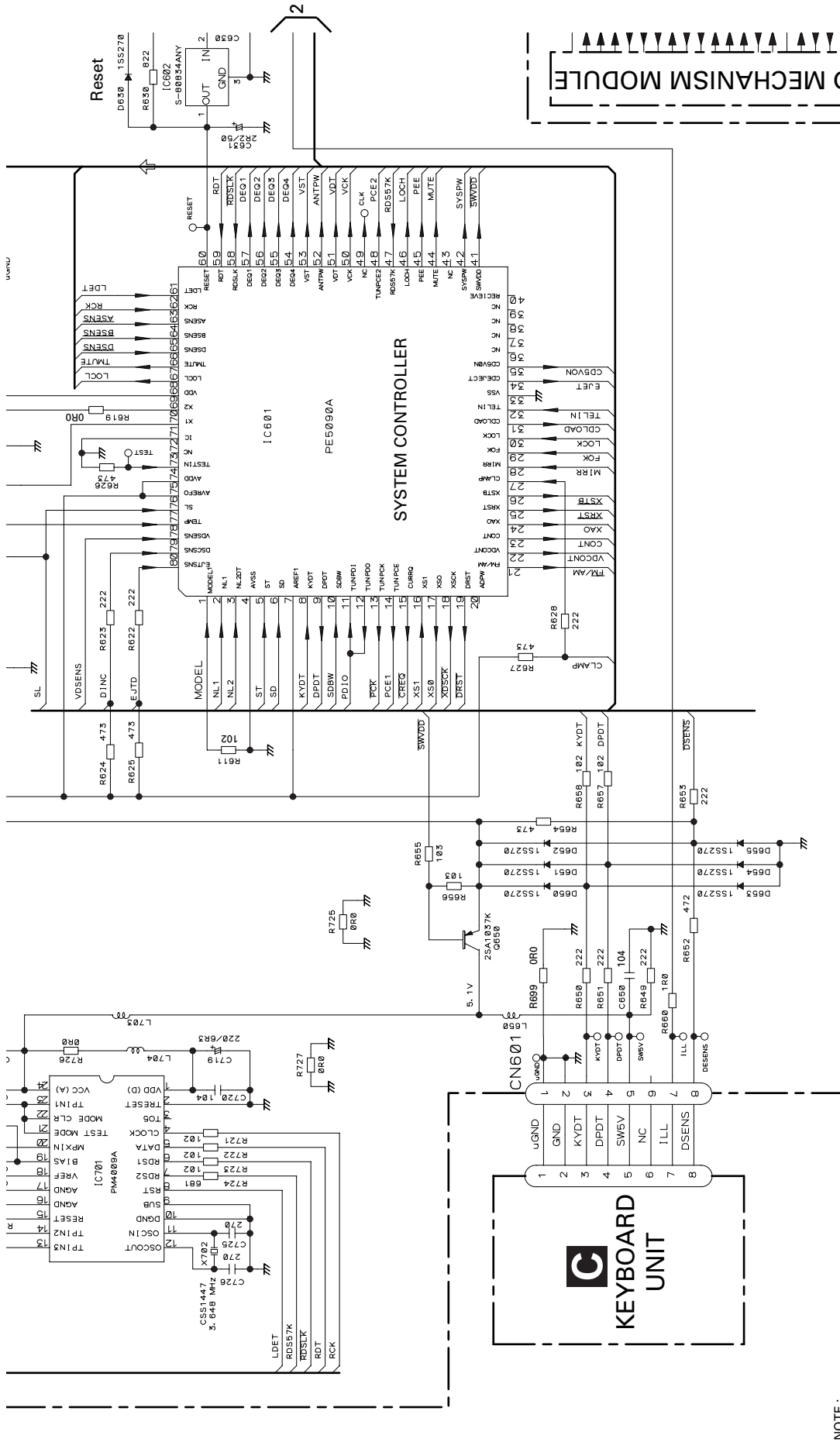
A-a

1

2

3

4



NOTE :
 - Symbol indicates a resistor.
 - No differentiation is made between chip resistors and discrete resistors.
 - Symbol indicates a capacitor.
 - No differentiation is made between chip capacitors and discrete capacitors.

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

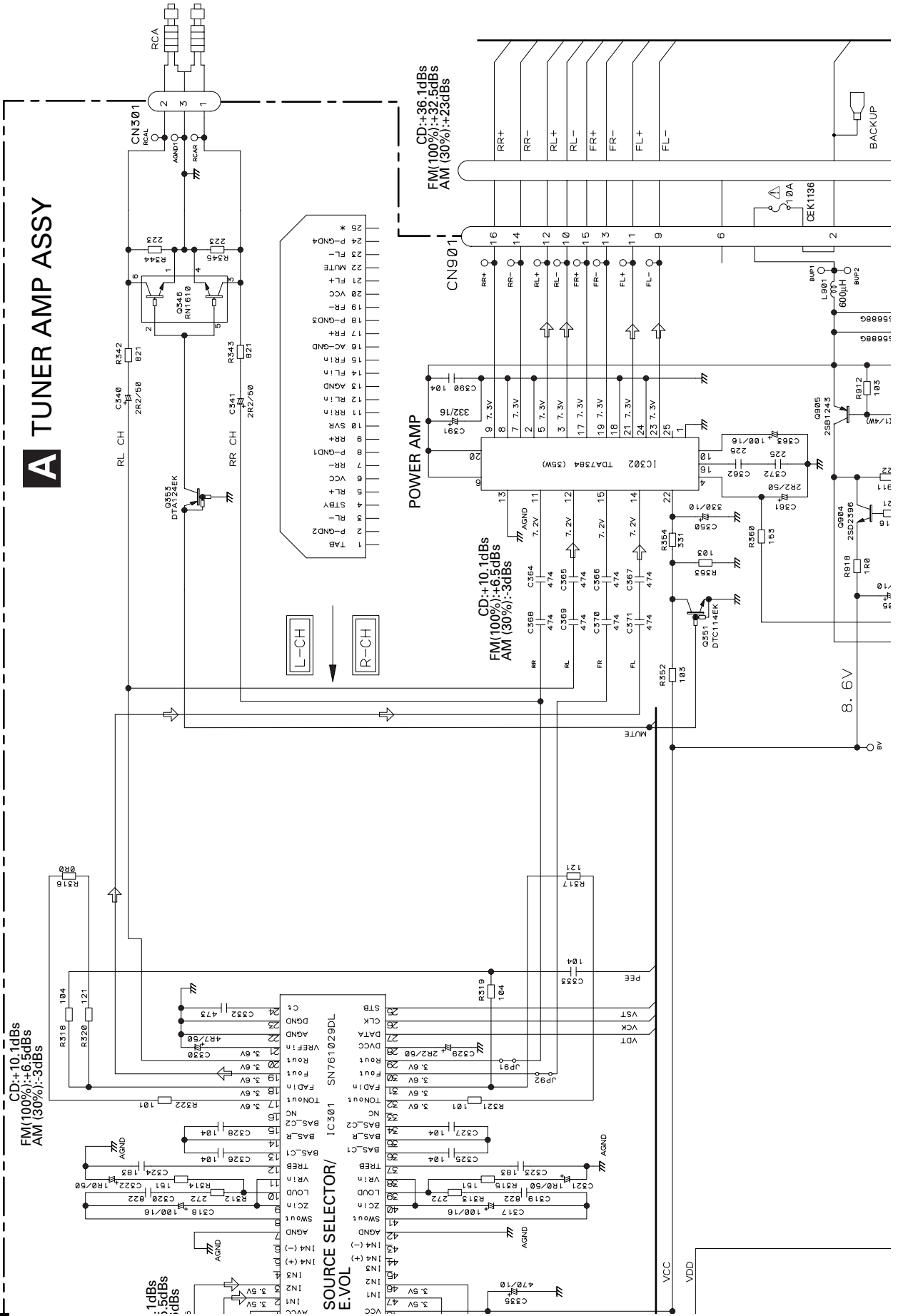
*Resistors	
Code	Practical value
123	12k ohms
103	10k ohms
*Capacitors	
Code	Practical value
103	0.01µF
101/10	100µF/10V

The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A-a A-b

A-a A-b

A TUNER AMP ASSY



A-b

A

B

C

D

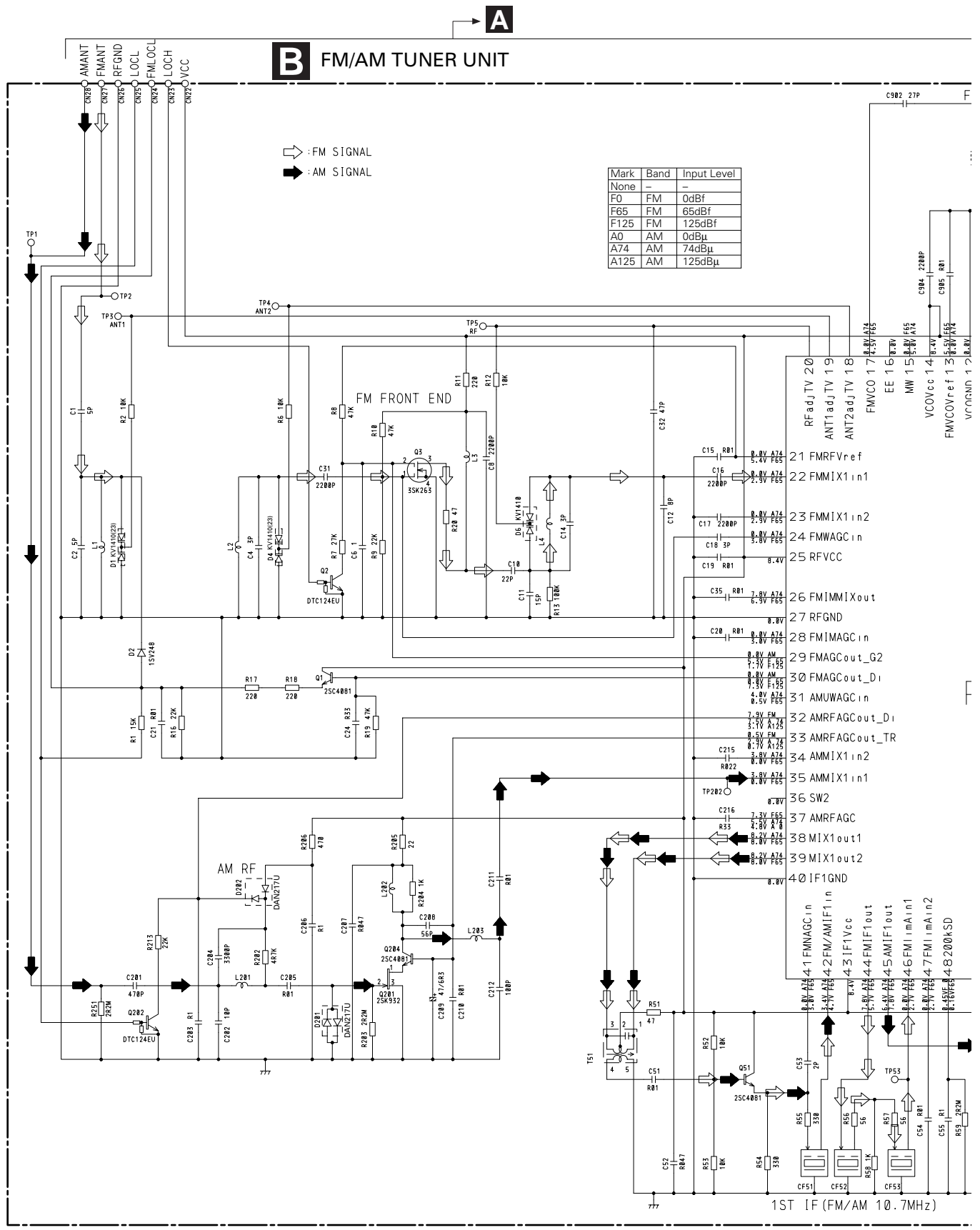
3.3 FM/AM TUNER UNIT

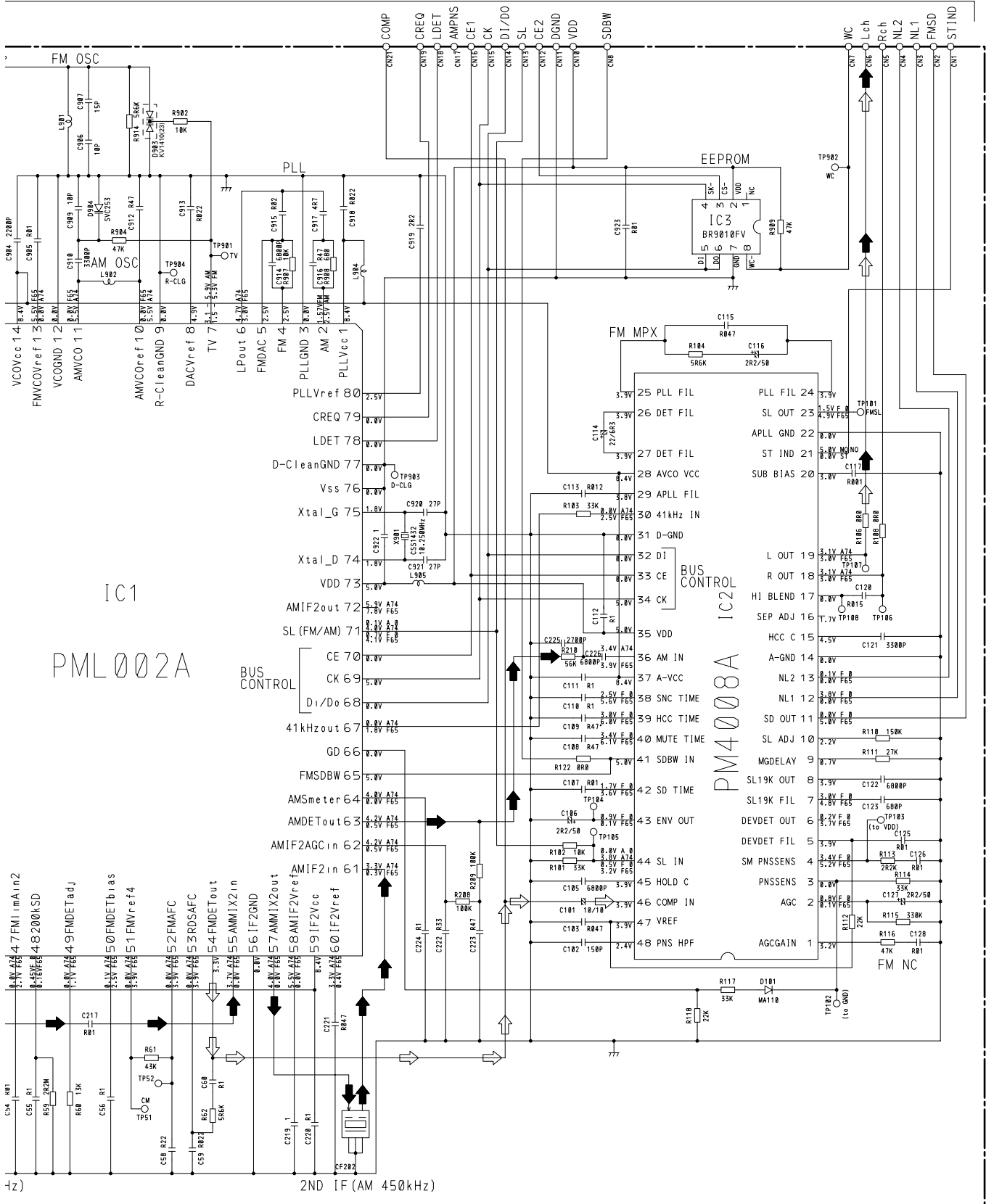
A

B

C

D





IC1
PML002A

IC2
PM4008A



1 2 3 4

DEH-213OR,210OR

3.4 KEYBOARD UNIT

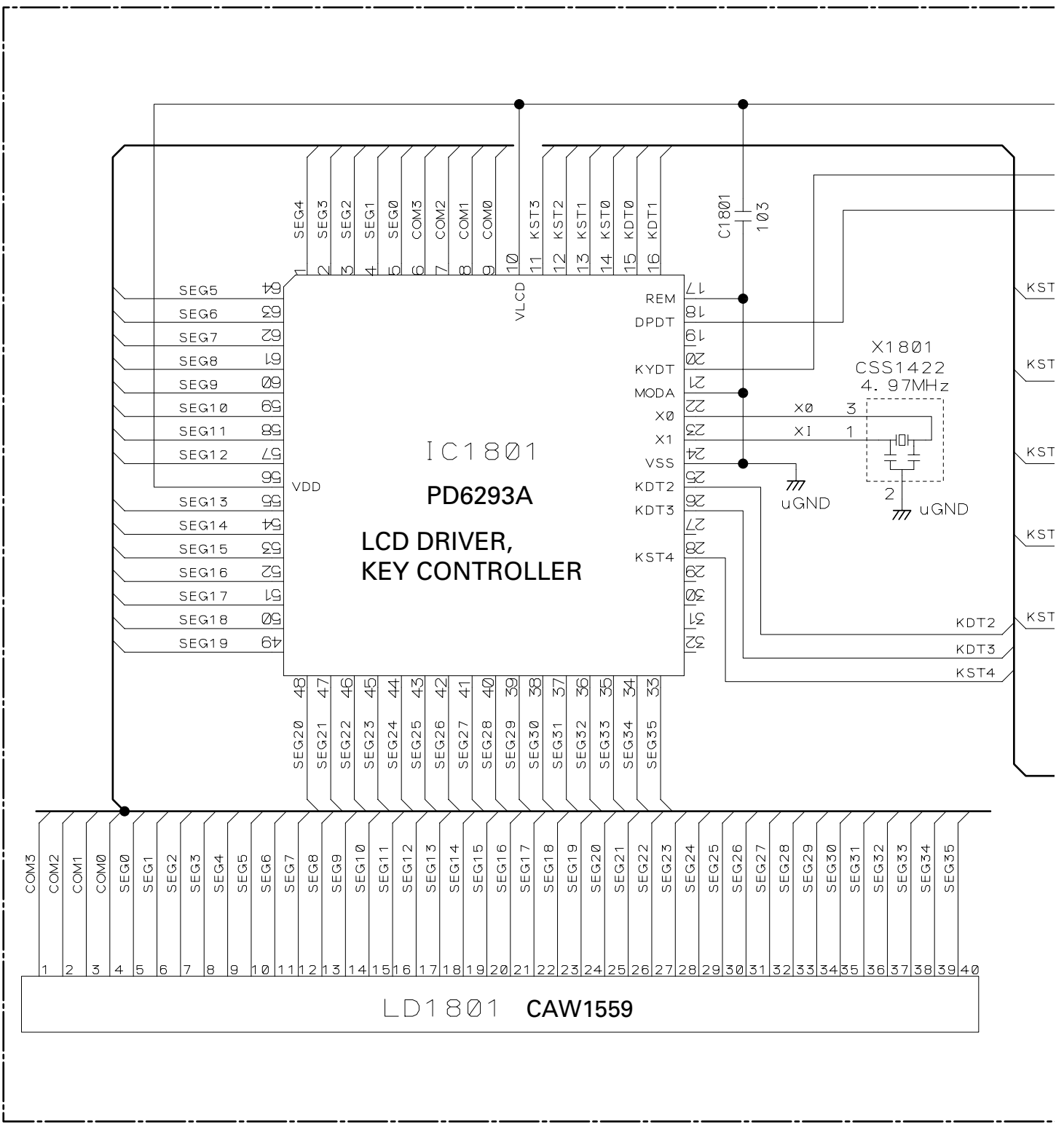
C KEYBOARD UNIT

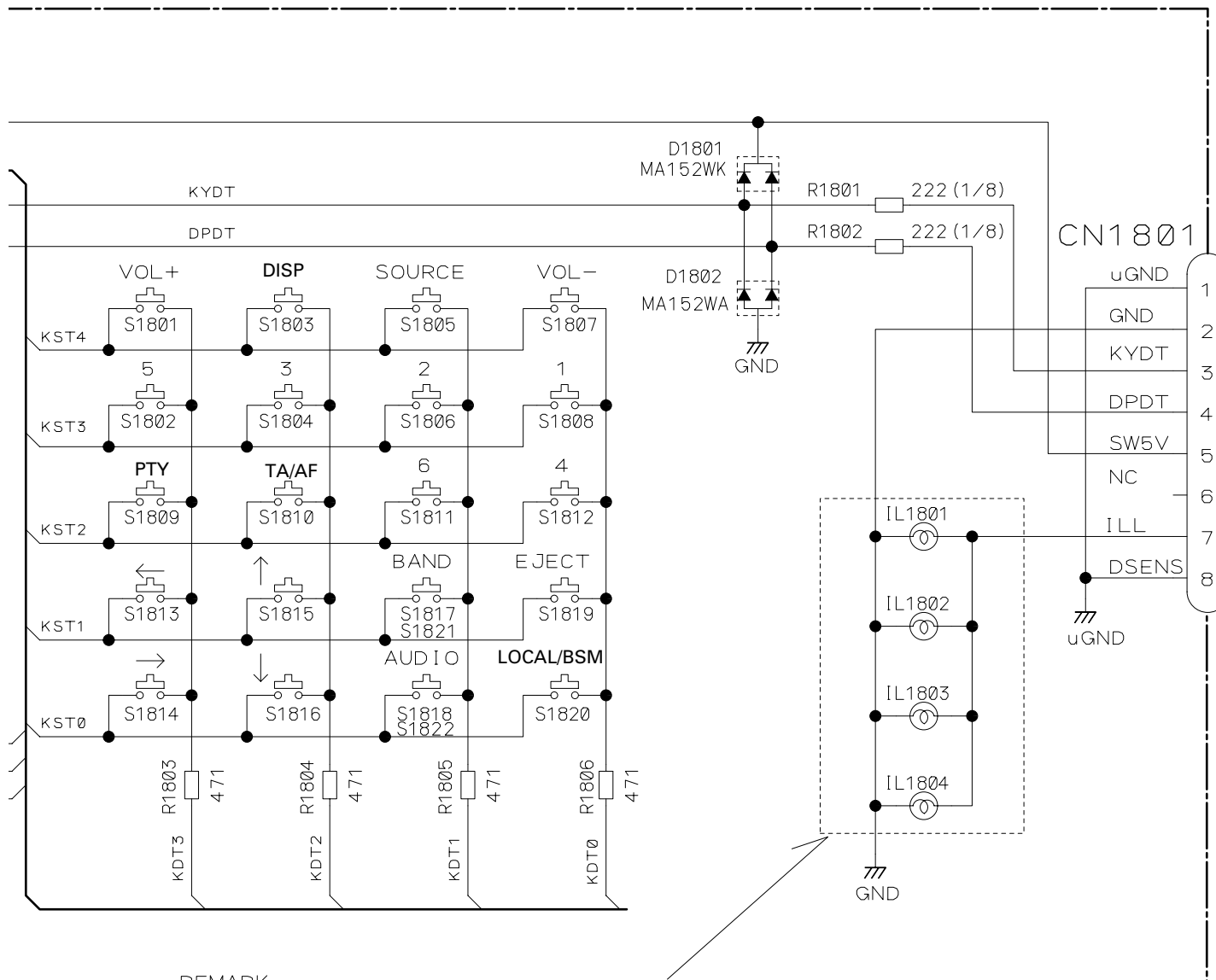
A

B

C

D





REMARK

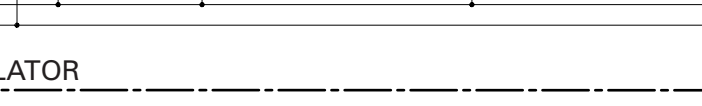
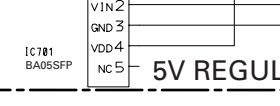
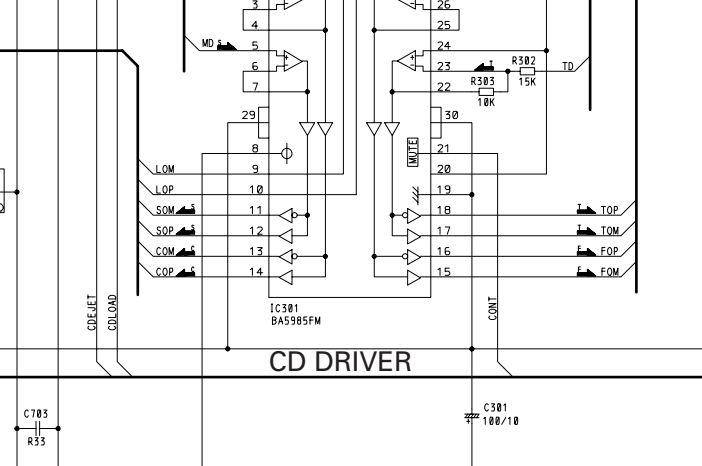
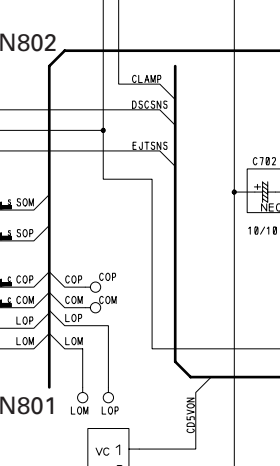
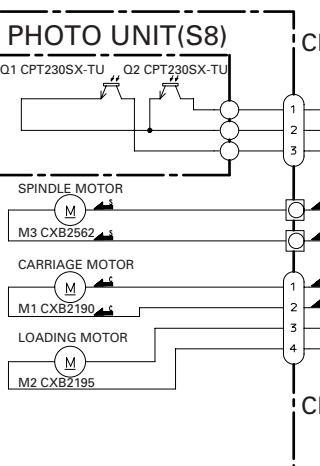
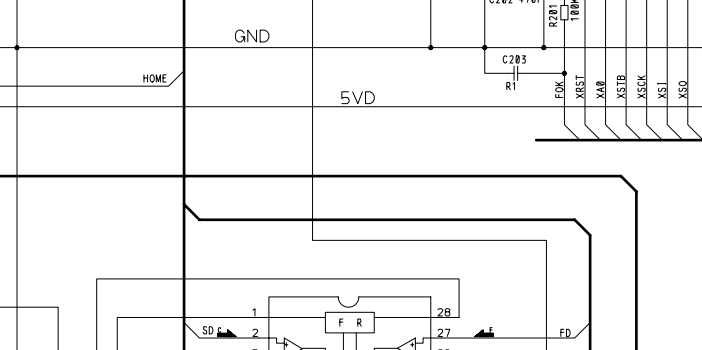
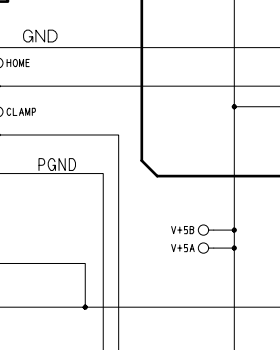
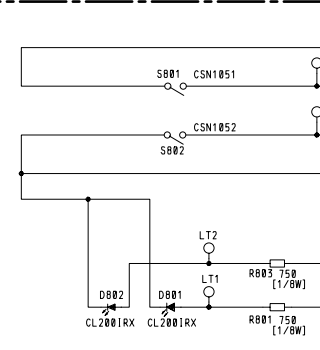
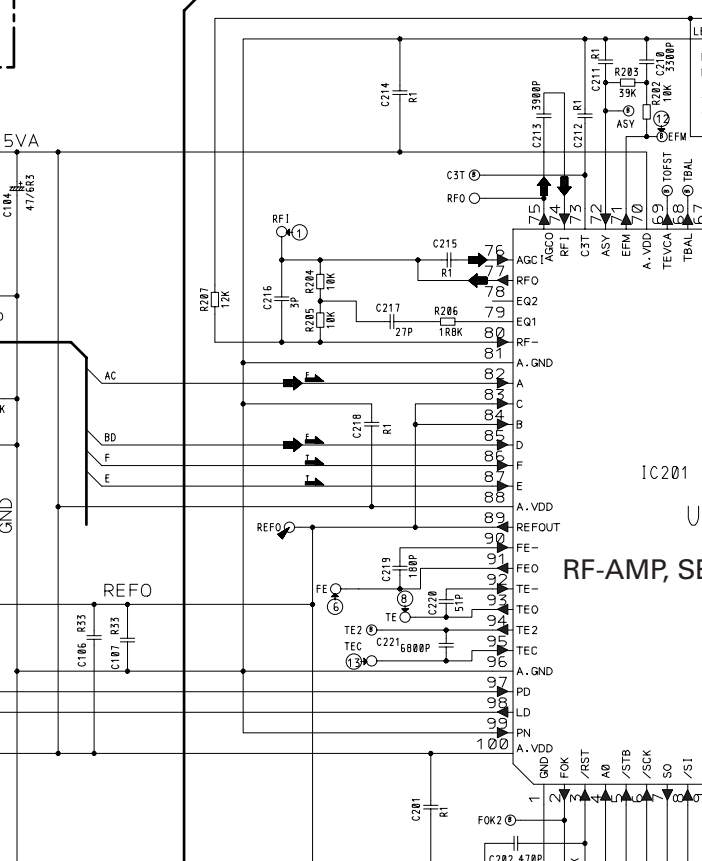
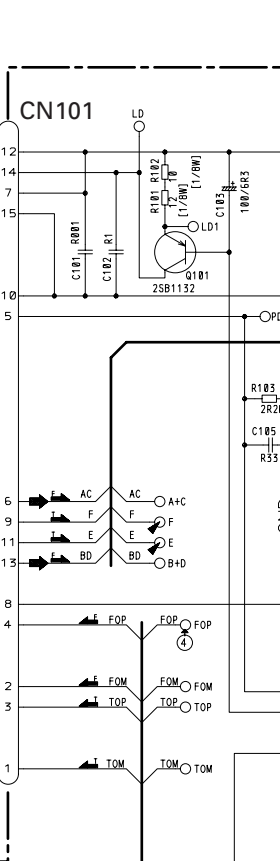
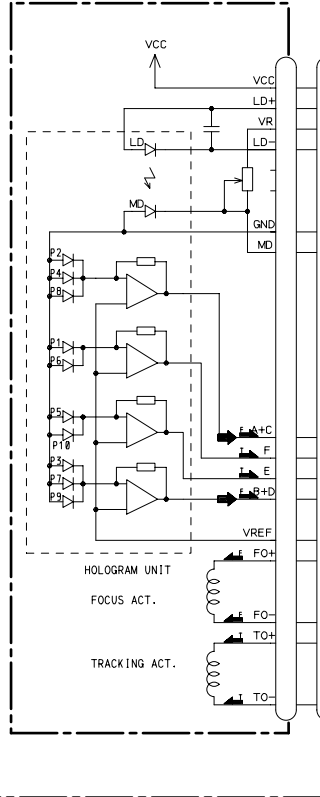
 CARBON CONTACT RUBBER SWITCH

	DEH-2130R/X1M/EW	DEH-2100R/X1M/EW
IL1801-1804	CEL1638(14V 40mA)	CEL1547(14V 40mA)

3.5 CD MECHANISM MODULE

D CONTROL UNIT

PICKUP UNIT (SERVICE)(P8)

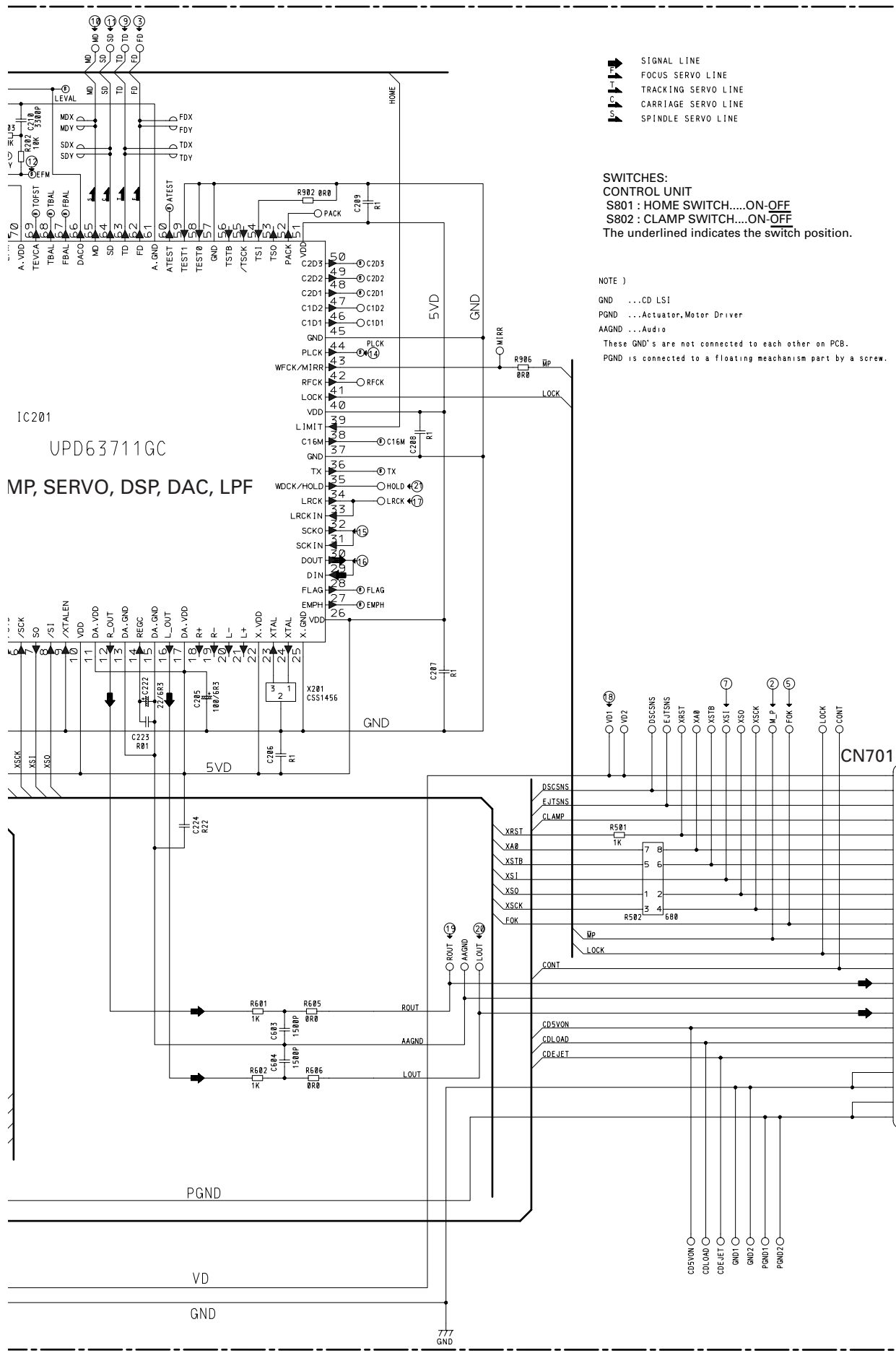


A

B

C

D



- ▶ SIGNAL LINE
- ▶ FOCUS SERVO LINE
- ▶ TRACKING SERVO LINE
- ▶ CARRIAGE SERVO LINE
- ▶ SPINDLE SERVO LINE

SWITCHES:
 CONTROL UNIT
 S801 : HOME SWITCH.....ON-OFF
 S802 : CLAMP SWITCH.....ON-OFF
 The underlined indicates the switch position.

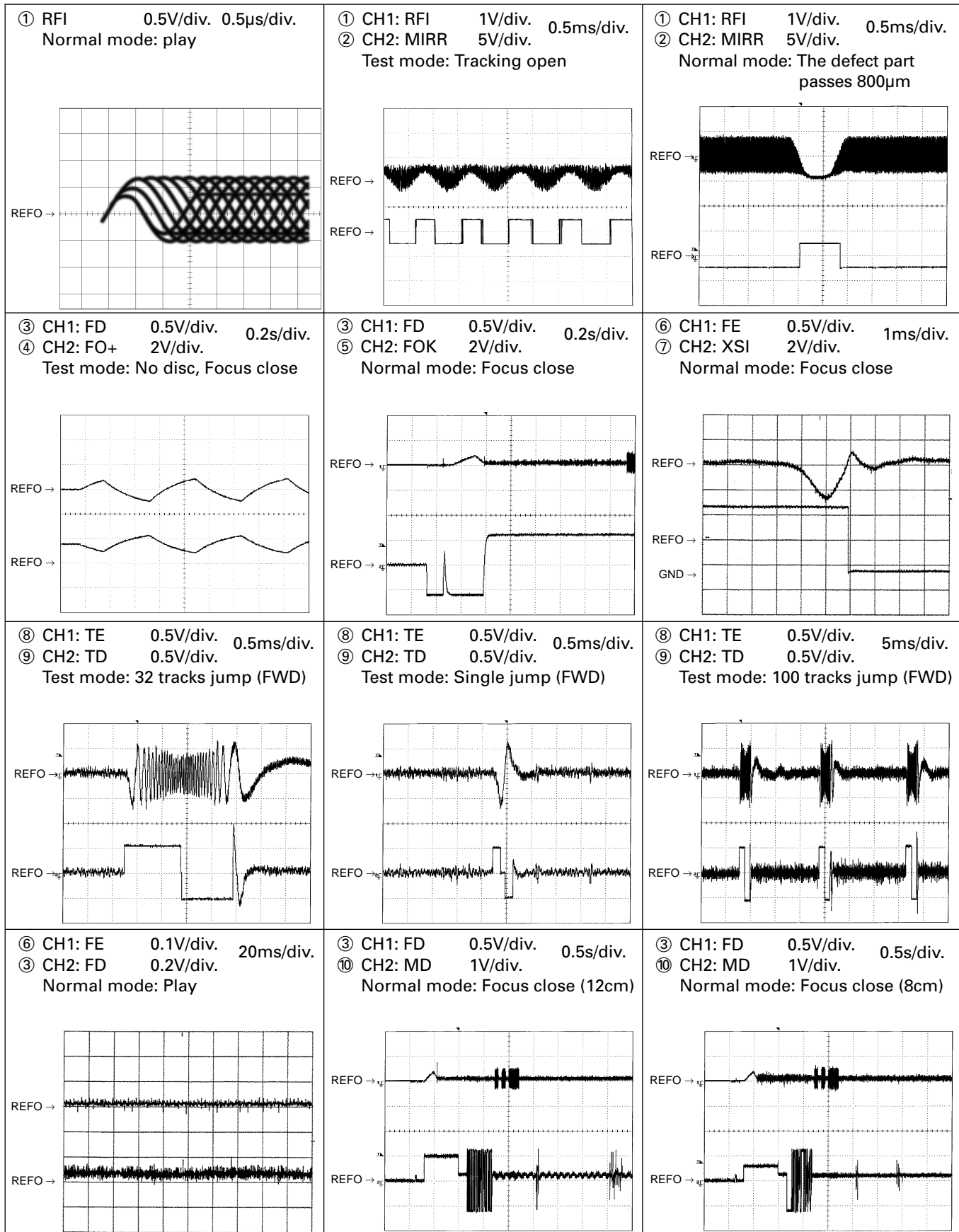
NOTE)
 GND ... CD LSI
 PGND ... Actuator, Motor Driver
 AAGND ... Audio
 These GND's are not connected to each other on PCB.
 PGND is connected to a floating mechanism part by a screw.

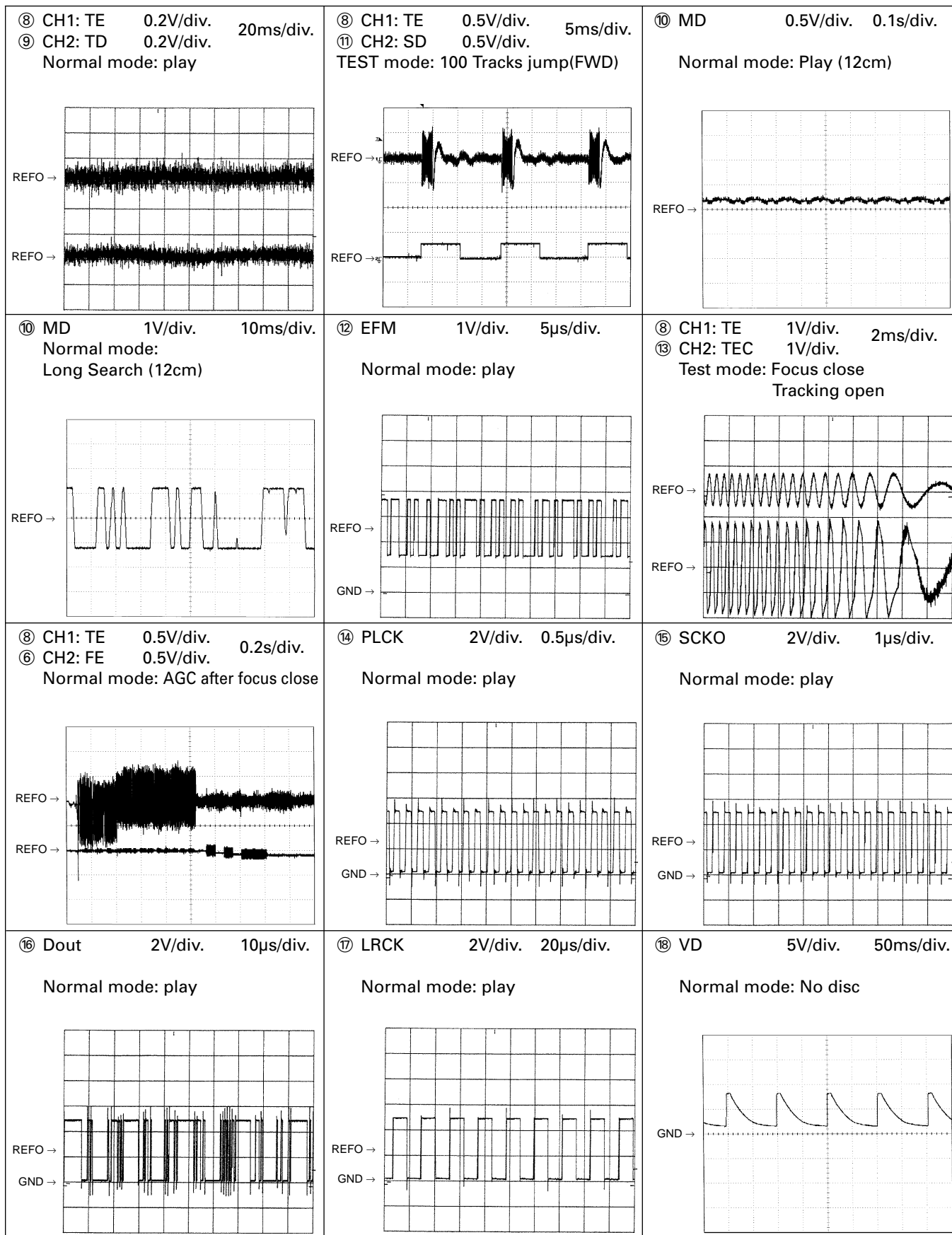
A CN605

D

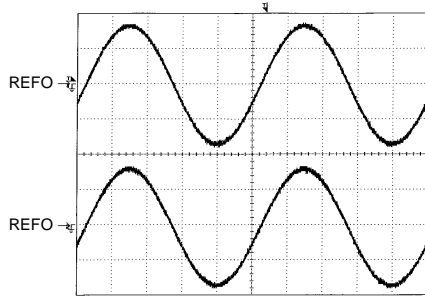
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
 2. Reference voltage
 REFO:2.5V

● Waveforms

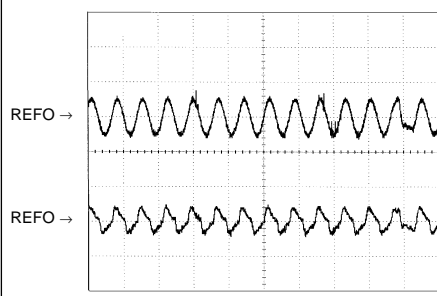




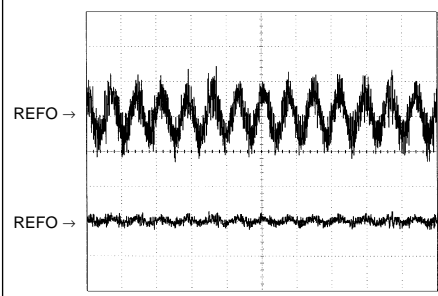
⑱ CH1: R OUT 1V/div. 0.2ms/div.
 ⑳ CH2: L OUT 1V/div.
 Normal mode: Play (1kHz 0dB)



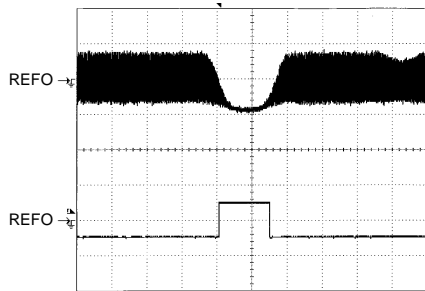
⑥ CH1: FE 0.2V/div. 1ms/div.
 ③ CH2: FD 0.5V/div.
 Normal mode: During AGC



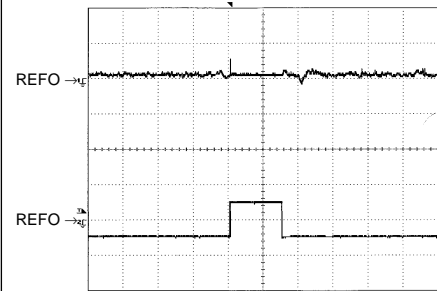
⑧ CH1: TE 0.2V/div. 1ms/div.
 ⑨ CH2: TD 0.5V/div.
 Normal mode: During AGC



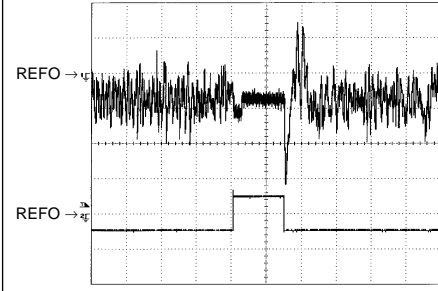
① CH1: RFI 1V/div. 0.5ms/div.
 ② CH2: HOLD 5V/div.
 Normal mode: The defect part passes
 800μm(B.D)



③ CH1: FD 0.5V/div. 0.5ms/div.
 ② CH2: HOLD 5V/div.
 Normal mode: The defect part passes
 800μm(B.D)



⑨ CH1: TD 0.1V/div. 0.5ms/div.
 ② CH2: HOLD 5V/div.
 Normal mode: The defect part passes
 800μm(B.D)



4. PCB CONNECTION DIAGRAM

A TUNER AMP ASSY

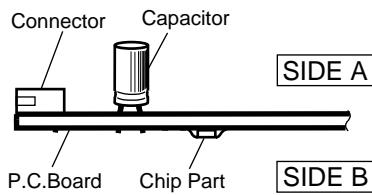
CORD ASSY

4.1 TUNER AMP ASSY

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



IC, Q

IC302

Q941

Q904

Q905

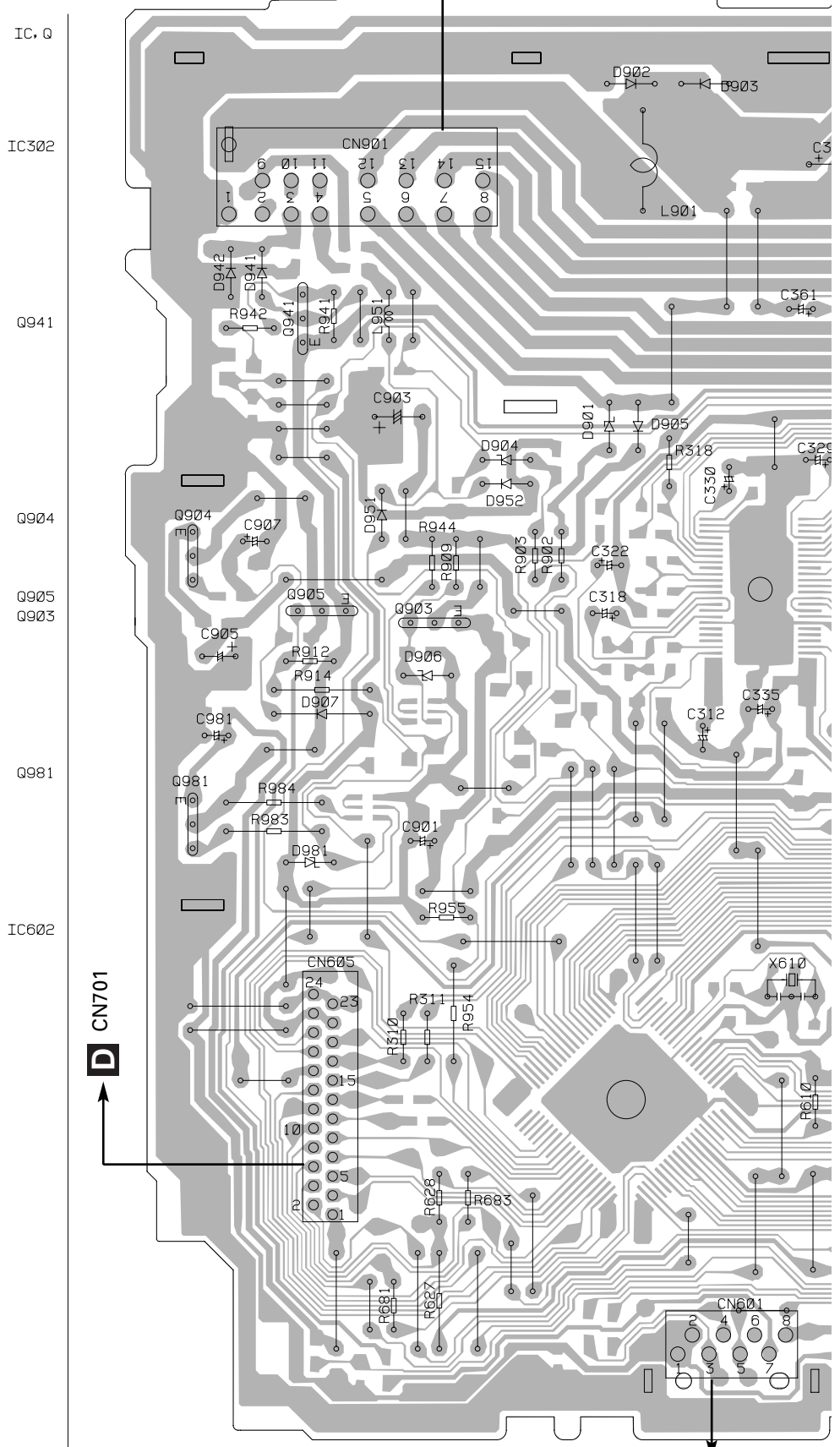
Q903

Q981

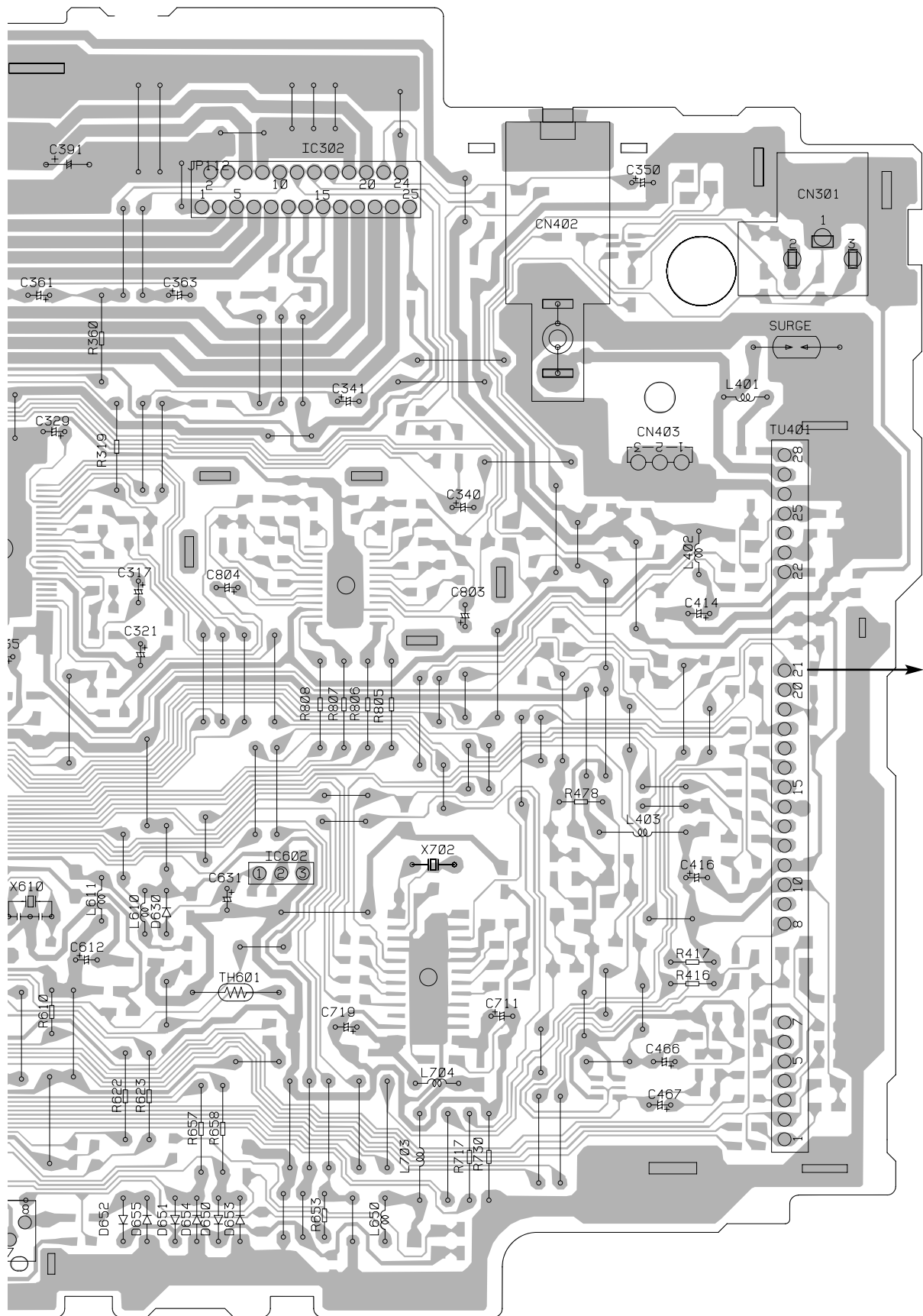
IC602

D CN701

C CN1801



SIDE A



B

A

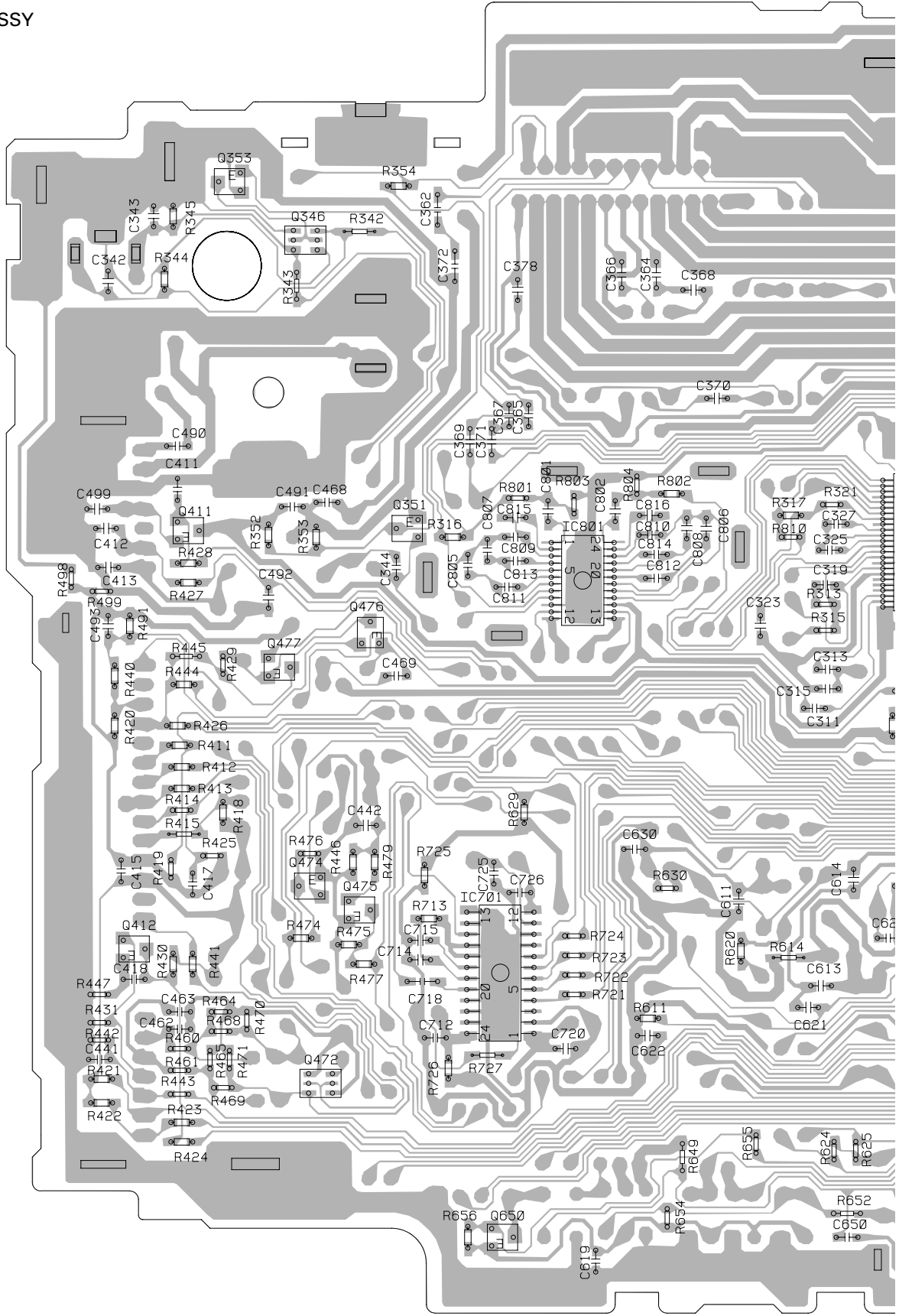
A TUNER AMP ASSY

A

B

C

D



SIDE B

IC, Q

A

Q353

Q346

Q942

IC301

Q411 Q351

Q476 Q951

Q902 Q920

Q477

Q901

Q906

Q982

Q474

Q475

IC701

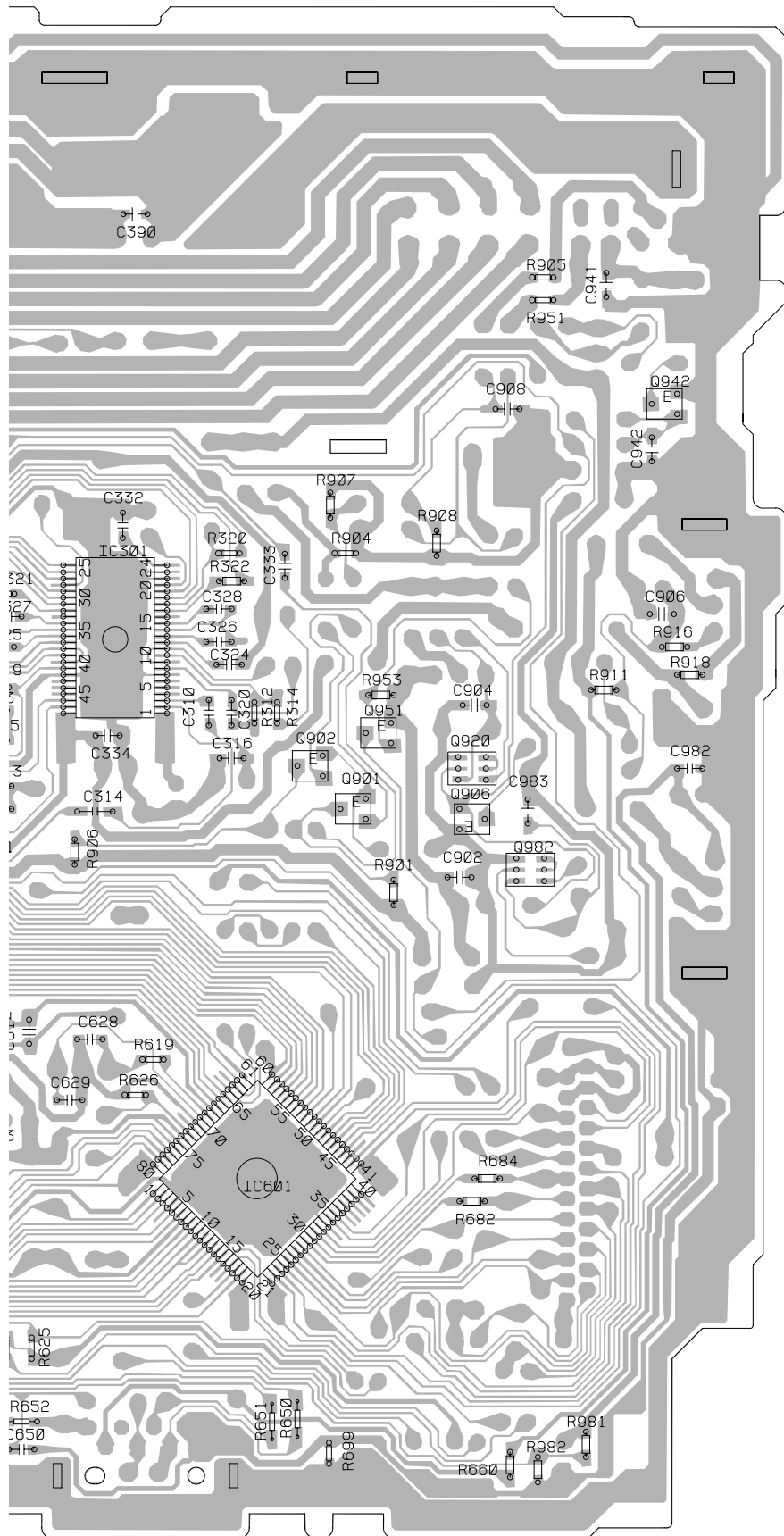
Q412

IC601

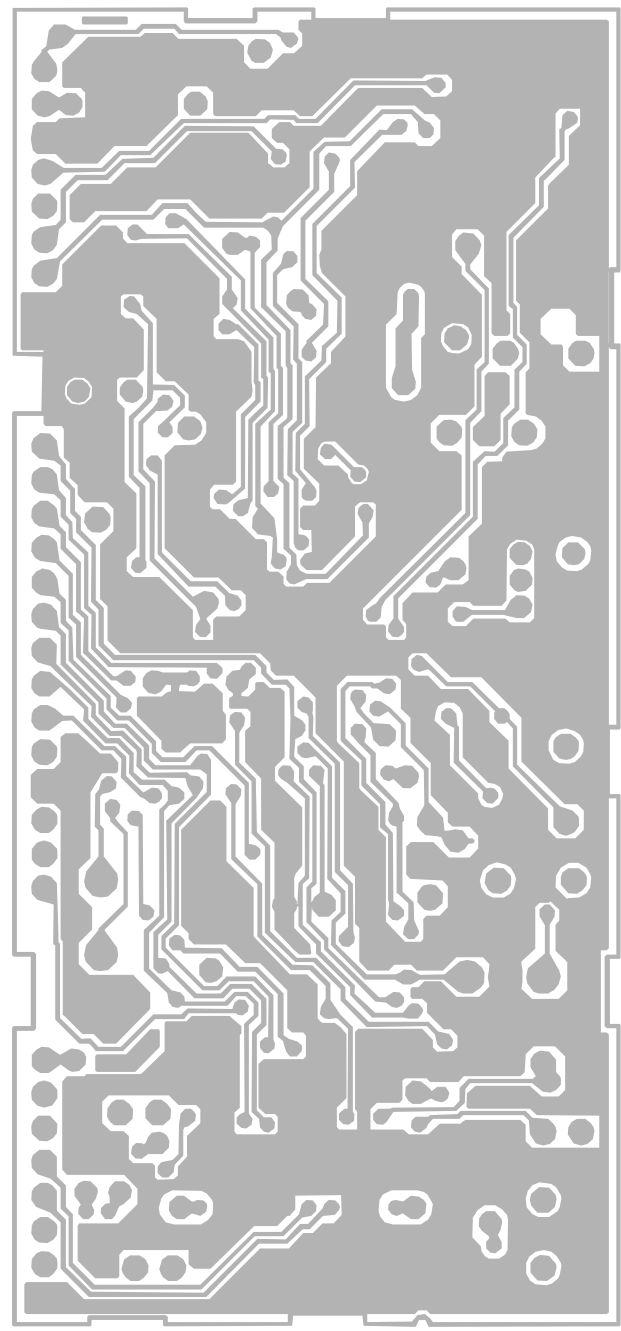
Q472

Q650

D



SIDE B



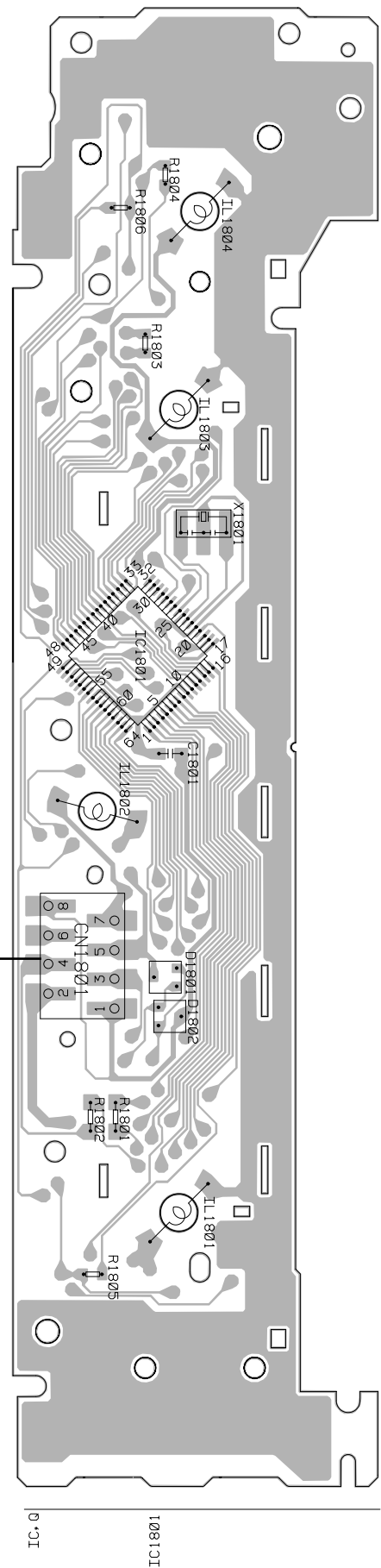
B FM/AM TUNER UNIT

B

SIDE B

A CN601

C KEYBOARD UNIT

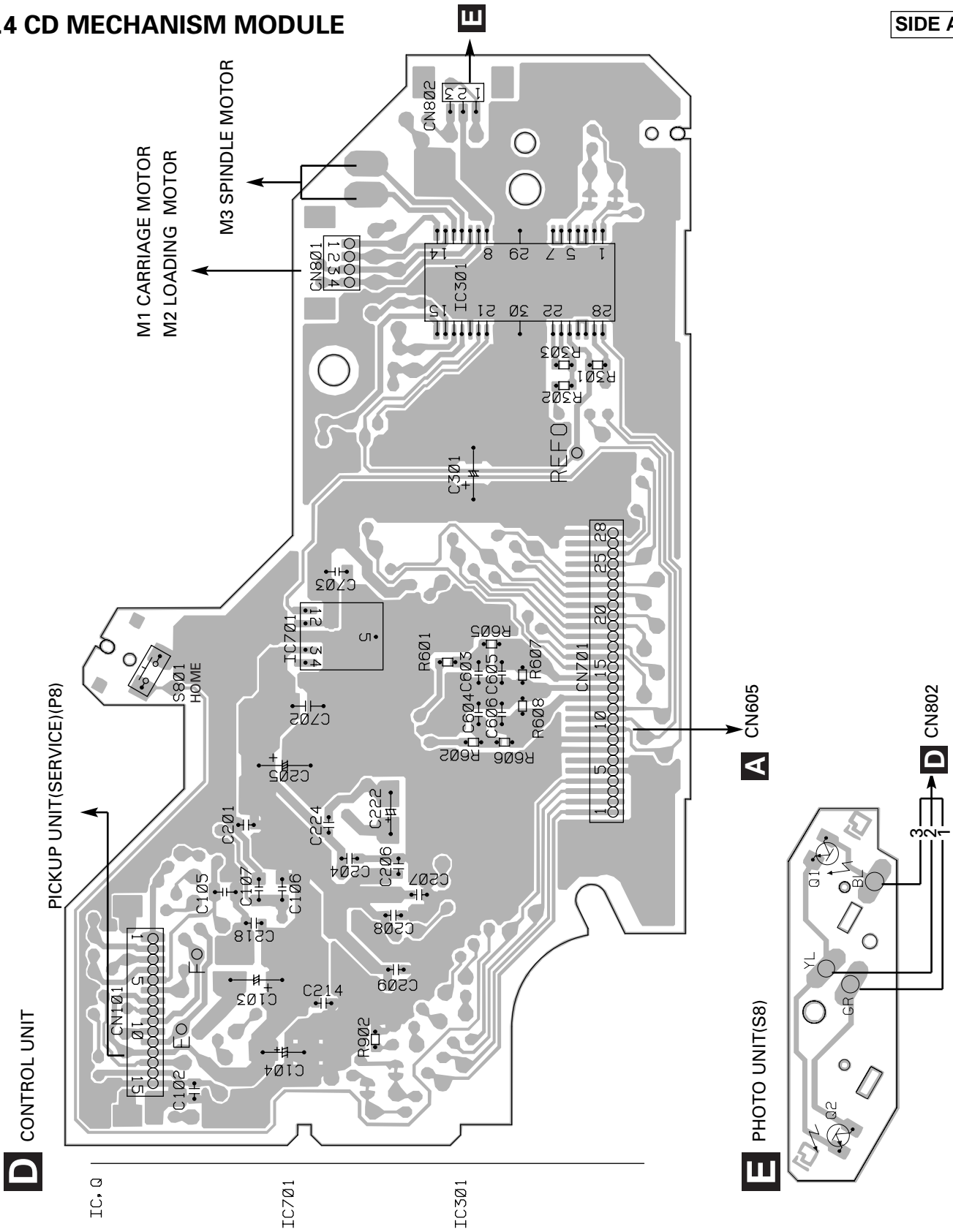


IC, d1

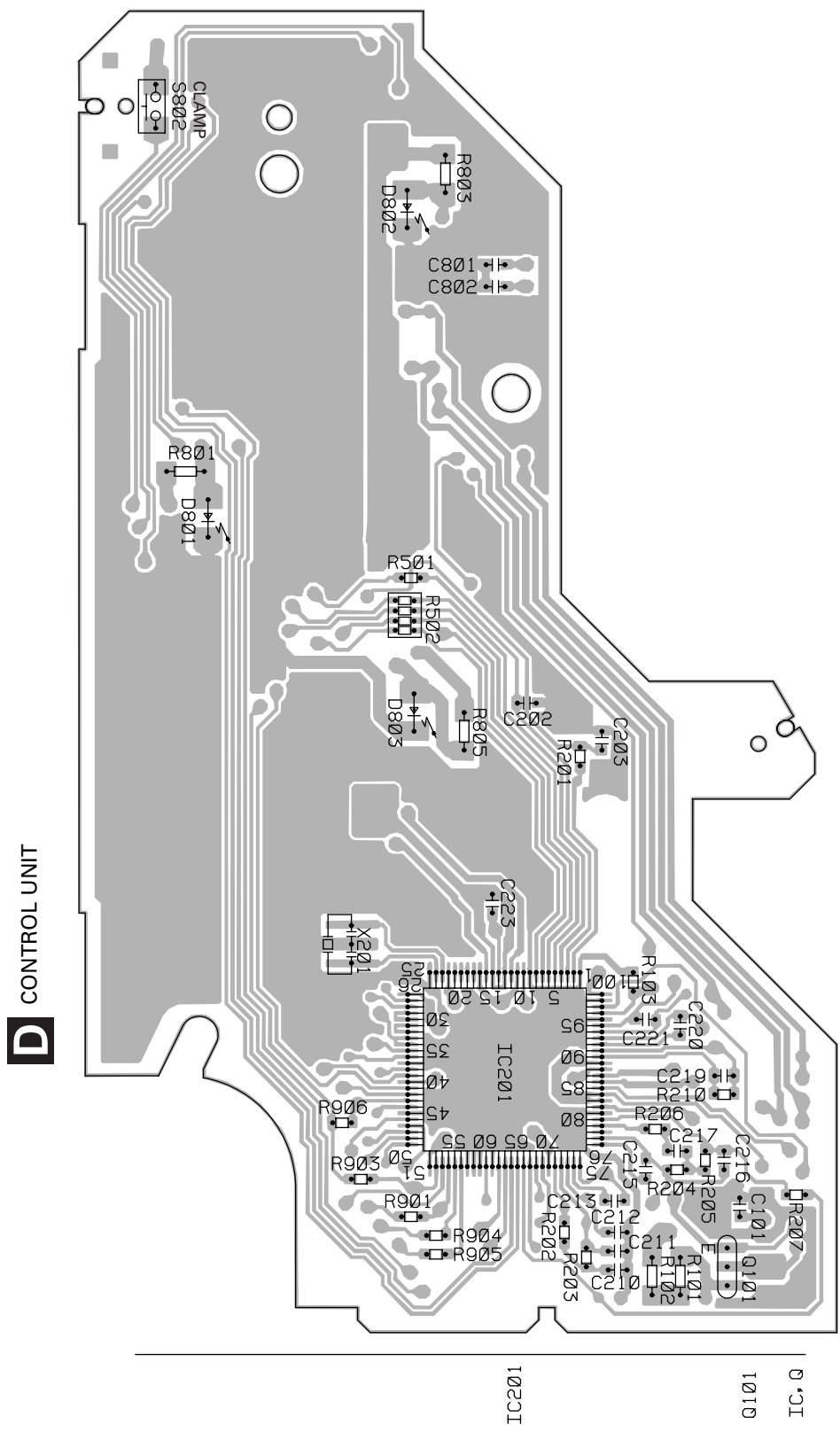
IC1801

4.4 CD MECHANISM MODULE

SIDE A



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/OSOOOJ,RS1/OOSOOOJ

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

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

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
A Unit Number : CWM6764		L 650 Ferri-Inductor	LAU2R2K
Unit Name : Tuner Amp Assy		L 703 Inductor	LAU100K
MISCELLANEOUS		L 704 Ferri-Inductor	LAU101K
IC 301 IC	SN761029DL	L 901 Choke Coil 600μH	CTH1221
IC 302 IC	TDA7384	L 951 Ferri-Inductor	LAU2R2K
IC 601 IC	PE5090A	TH 601 Thermistor	CCX1031
IC 602 IC	S-80834ANY	X 610 Ceramic Resonator 4.194MHz	CSS1047
IC 701 IC	PM4009A	X 702 Crystal Resonator 3.648MHz	CSS1447
		AR 946 Arrester	DSP-201M-S00B
			CWE1500
		RESISTORS	
Q 346 Transistor	RN1610	R 310	RD1/4PU222J
Q 351 Transistor	DTC114EK	R 311	RD1/4PU222J
Q 353 Transistor	DTA124EK	R 312	RS1/10S272J
Q 411 Transistor	2SC2412K	R 313	RS1/10S272J
Q 412 Transistor	2SC2412K	R 314	RS1/10S151J
Q 472 Transistor	RN1610	R 315	RS1/10S151J
Q 474 Transistor	2SD1757K	R 316	RS1/10S0R0J
Q 475 Transistor	2SD1757K	R 317	RS1/10S121J
Q 476 Transistor	2SC2412K	R 318	RD1/4PU104J
Q 477 Transistor	DTA124EK	R 319	RD1/4PU104J
Q 650 Transistor	2SA1037K	R 320	RS1/10S121J
Q 901 Transistor	2SC2412K	R 321	RS1/10S101J
Q 902 Transistor	2SC2412K	R 322	RS1/10S101J
Q 903 Transistor	2SD1859	R 342	RS1/8S821J
Q 904 Transistor	2SD2396	R 343	RS1/8S821J
Q 905 Transistor	2SB1243	R 344	RS1/10S223J
Q 906 Transistor	DTC114EK	R 345	RS1/10S223J
Q 941 Transistor	2SB1243	R 352	RS1/10S103J
Q 942 Transistor	DTC114EK	R 353	RS1/10S103J
Q 951 Transistor	2SA1037K	R 354	RS1/10S331J
Q 981 Transistor	2SD2396	R 360	RD1/4PU153J
Q 982 Transistor	RN46A1	R 411	RS1/10S681J
D 650 Diode	1SS270	R 412	RS1/10S681J
D 651 Diode	1SS270	R 413	RS1/10S681J
D 652 Diode	1SS270	R 414	RS1/10S103J
D 653 Diode	1SS270	R 415	RS1/8S681J
D 654 Diode	1SS270	R 416	RD1/4PU473J
D 655 Diode	1SS270	R 417	RD1/4PU472J
D 901 Diode	HZS7L(C2)	R 418	RS1/10S473J
D 902 Diode	S5688G	R 419	RS1/10S473J
D 903 Diode	S5688G	R 420	RS1/10S473J
D 904 Diode	HZS7L(A1)	R 421	RS1/10S473J
D 905 Diode	S5688G	R 422	RS1/10S473J
D 906 Diode	HZS6L(B2)	R 423	RS1/10S681J
D 907 Diode	HZS9L(B3)	R 424	RS1/10S681J
D 941 Diode	S5688G	R 425	RS1/10S393J
D 942 Diode	S5688G	R 426	RS1/10S681J
D 951 Diode	1SS270	R 427	RS1/10S222J
D 952 Diode	1SS270	R 428	RS1/10S222J
D 981 Diode	HZS9L(B1)	R 430	RS1/10S474J
L 401 Ferri-Inductor	LAU4R7K		
L 402 Ferri-Inductor	LAU2R2K		
L 403 Inductor	LAU100K		
L 610 Ferri-Inductor	LAU101K		
L 611 Ferri-Inductor	LAU2R2K		

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
R 431	RS1/10S153J	R 911	RS1/10S122J
R 440	RS1/10S681J	R 912	RD1/4PU103J
R 441	RS1/10S102J	R 914	RD1/4PU152J
R 442	RS1/10S473J	R 916	RS1/10S221J
R 443	RS1/10S681J	R 918	RS1/10S1R0J
R 444	RS1/10S472J	R 941	RD1/4PU472J
R 445	RS1/8S473J	R 942	RD1/4PU152J
R 446	RS1/10S224J	R 951	RS1/10S153J
R 447	RS1/10S0R0J	R 953	RS1/10S472J
R 460	RS1/10S162J	R 954	RD1/4PU102J
R 461	RS1/10S162J	R 955	RD1/4PU473J
R 464	RS1/10S272J	R 981	RS1/10S472J
R 465	RS1/10S272J	R 982	RS1/10S222J
R 474	RS1/10S222J	R 983	RD1/4PU221J
R 475	RS1/10S223J	R 984	RD1/4PU221J
R 476	RS1/10S223J	CAPACITORS	
R 477	RS1/10S222J	C 310	CKSQYB105K16
R 478	RD1/4PU224J	C 311	CKSQYB104K16
R 479	RS1/10S224J	C 312	CEJA2R2M50
R 611	RS1/10S102J	C 313	CKSQYB105K16
R 614	RS1/8S0R0J	C 314	CKSYB104K16
R 619	RS1/10S0R0J	C 315	CKSQYB102K50
R 620	RN1/10SE2202D	C 316	CKSQYB102K50
R 622	RD1/4PU222J	C 317	CEJA100M16
R 623	RD1/4PU222J	C 318	CEJA100M16
R 624	RS1/10S473J	C 319	CKSQYB822K50
R 625	RS1/10S473J	C 320	CKSQYB822K50
R 626	RS1/10S473J	C 321	CEAL1R0M50
R 627	RD1/4PU473J	C 322	CEJA1R0M50
R 628	RD1/4PU222J	C 323	CKSQYB183K50
R 630	RS1/10S822J	C 324	CKSQYB183K50
R 649	RS1/8S222J	C 325	CKSQYB104K16
R 650	RS1/8S222J	C 326	CKSQYB104K16
R 651	RS1/8S222J	C 327	CKSQYB104K16
R 652	RS1/8S472J	C 328	CKSQYB104K16
R 653	RD1/4PU222J	C 329	CEJA2R2M50
R 654	RS1/10S473J	C 330	CEJA4R7M50
R 655	RS1/10S103J	C 332	CKSQYB473K16
R 656	RS1/10S103J	C 333	CKSQYB104K16
R 657	RD1/4PU102J	C 334	CKSQYB104K16
R 658	RD1/4PU102J	C 335	CEAL470M10
R 660	RS1/10S1R0J	C 340	CEAL2R2M50
R 681	RD1/4PU681J	C 341	CEJA2R2M50
R 682	RS1/10S102J	C 350	CEJA330M10
R 683	RD1/4PU102J	C 361	CEJA2R2M50
R 684	RS1/10S102J	C 362	CKSYB225K16
R 699	RS1/10S0R0J	C 363	CEJA100M16
R 713	RS1/10S225J	C 364	CKSYB474K16
R 717	RD1/4PU102J	C 365	CKSQYB474K16
R 721	RS1/10S102J	C 366	CKSYB474K16
R 722	RS1/10S102J	C 367	CKSQYB474K16
R 723	RS1/10S102J	C 368	CKSQYB474K16
R 724	RS1/10S681J	C 369	CKSYB474K16
R 725	RS1/10S0R0J	C 370	CKSQYB474K16
R 726	RS1/10S0R0J	C 371	CKSYB474K16
R 727	RS1/8S0R0J	C 372	CKSQYB225K10
R 901	RS1/10S473J	C 390	CKSQYB104K16
R 902	RD1/4PU103J	C 391	CCH1368
R 903	RD1/4PU103J	C 411	CKSQYB223K25
R 904	RS1/10S473J	C 412	CKSQYB223K25
R 905	RS1/10S102J	C 413	CKSQYB102K50
R 906	RS1/10S473J	C 414	CEJA220M10
R 907	RS1/10S473J	C 415	CKSQYB473K16
R 908	RS1/10S472J	C 416	CEAL101M10
R 909	RD1/4PU103J	C 417	CKSQYB472K50
		C 418	CKSQYB472K50

3300µF/16V

DEH-213OR,210OR

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
C 441	CKSQYB182K50	L 203	Inductor
C 442	CKSQYB223K25	L 901	Coil
C 462	CKSQYB123K25	L 902	Inductor
C 463	CKSQYB123K25	L 904	Inductor
C 466	CEJA1R0M50	L 905	Inductor
C 467	CEJA1R0M50	T 51	Coil
C 490	CKSQYB103K50	CF 51	Ceramic Filter
C 493	CCSQCH100J50	CF 52	Ceramic Filter
C 612	CEJA4R7M35	CF 53	Ceramic Filter
C 613	CKSQYB473K16	CF 202	Ceramic Filter
C 614	CKSQYB102K50	X 901	Crystal Resonator 10.250MHz
C 621	CCSQCH101J50		
C 630	CKSQYB473K16		
C 631	CEAL2R2M50		
C 650	CKSQYB104K16		
C 711	CEAL220M6R3		
C 712	CKSQYB104K16		
C 714	CKSQYB471K50		
C 715	CKSQYB104K16		
C 718	CKSQYB471K50		
C 719	CEAL220M6R3		
C 720	CKSQYB104K16		
C 725	CCSQCH270J50		
C 726	CCSQCH270J50		
C 901	CEJA101M10		
C 902	CKSQYB473K16		
C 903	CCH1331		
C 904	CKSQYB473K16		
C 905	CCH1326		
C 906	CKSQYB103K50		
C 907	CEJA101M16		
C 941	CKSQYB473K16		
C 981	CEJA101M10		
C 982	CKSQYB102K50		
C 983	CKSQYB473K16		

RESISTORS

R 1	RS1/16S153J
R 2	RS1/16S103J
R 6	RS1/16S103J
R 7	RS1/16S273J
R 8	RS1/16S473J
R 9	RS1/16S223J
R 10	RS1/16S473J
R 11	RS1/16S221J
R 12	RS1/16S103J
R 13	RS1/16S104J
R 16	RS1/16S223J
R 17	RS1/16S221J
R 18	RS1/16S221J
R 19	RS1/16S473J
R 20	RS1/16S470J
R 51	RS1/16S470J
R 52	RS1/16S103J
R 53	RS1/16S103J
R 54	RS1/16S331J
R 55	RS1/16S331J
R 56	RS1/16S560J
R 57	RS1/16S560J
R 58	RS1/16S102J
R 59	RS1/16S225J
R 60	RS1/16S133J
R 61	RS1/16S433J
R 62	RS1/16S562J
R 101	RS1/16S333J
R 102	RS1/16S103J
R 103	RS1/16S333J
R 104	RS1/16S562J
R 106	RS1/16S0R0J
R 108	RS1/16S0R0J
R 110	RS1/16S154J
R 111	RS1/16S273J
R 112	RS1/16S223J
R 113	RS1/16S222J
R 114	RS1/16S333J
R 115	RS1/16S334J
R 116	RS1/16S473J
R 117	RS1/16S333J
R 118	RS1/16S223J
R 122	RS1/16S0R0J
R 202	RS1/16S472J
R 203	RS1/16S225J
R 204	RS1/16S102J
R 205	RS1/16S220J
R 206	RS1/16S471J
R 208	RS1/16S104J
R 209	RS1/16S104J
R 210	RS1/16S563J
R 213	RS1/16S223J
R 251	RS1/16S225J
R 902	RS1/16S103J
R 904	RS1/16S473J

B Unit Number : CWE1500
 Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

IC 1	IC	PML002A
IC 2	IC	PM4008A
IC 3	IC	BR9010FV
Q 1	Transistor	2SC4081
Q 2	Transistor	DTC124EU
Q 3	FET	3SK263
Q 51	Transistor	2SC4081
Q 201	FET	2SK932
Q 202	Transistor	DTC124EU
Q 204	Transistor	2SC4081
D 1	Diode	KV1410(23)
D 2	Diode	1SV248
D 4	Diode	KV1410(23)
D 6	Diode	KV1410(23)
D 101	Diode	1SS355
D 201	Diode	DAN217U
D 202	Diode	DAN217U
D 903	Diode	KV1410(23)
D 904	Diode	SVC253
L 1	Coil	CTC1155
L 2	Coil	CTC1155
L 3	Inductor	LCTB100K2125
L 4	Coil	CTC1155
L 201	Inductor	LCTB330K1608
L 202	Inductor	CTF1287

====Circuit Symbol and No.====Part Name	Part No.	====Circuit Symbol and No.====Part Name	Part No.
R 907	RS1/16S103J	C 208	CCSRCH560J50
R 908	RS1/16S681J	C 209	CEAL470M6R3
R 909	RS1/16S473J	C 210	CKSRYP103K50
R 914	RS1/16S562J	C 211	CKSRYP103K50
		C 212	CCSRCH101J50
CAPACITORS		C 215	CKSRYP223K25
C 1	CCSQCH5R0C50	C 216	CKSQYB334K16
C 2	CCSRCH5R0C50	C 217	CKSRYP103K50
C 4	CCSRCJ3R0C50	C 219	CKSQYB105K10
C 6	CKSQYB105K10	C 220	CKSRYP104K16
C 8	CKSRYP222K50		
C 10	CCSRCH220J50	C 221	CKSRYP473K16
C 11	CCSRCH150J50	C 222	CKSQYB334K16
C 12	CCSRCH8R0D50	C 223	CKSQYB474K16
C 14	CCSRCJ3R0C50	C 224	CKSRYP104K16
C 15	CKSRYP103K50	C 225	CKSRYP272K50
C 16	CKSRYP222K50	C 226	CKSRYP682K25
C 17	CKSRYP222K50	C 902	CCSRCH270J50
C 18	CCSRCJ3R0C50	C 904	CKSRYP223K25
C 19	CKSRYP103K50	C 905	CKSRYP103K50
C 20	CKSRYP103K50	C 906	CCSRTH100D50
C 21	CKSRYP103K50	C 907	CCSRTH150J50
C 24	CKSQYB334K16	C 909	CCSRTH100D50
C 31	CKSRYP222K50	C 910	CKSRYP333K50
C 32	CCSRCH470J50	C 912	CKSQYB474K16
C 35	CKSRYP103K50	C 913	CKSRYP223K25
C 51	CKSRYP103K50	C 914	CKSRYP682K25
C 52	CKSRYP473K16	C 915	CKSQYB223K25
C 53	CCSRCK2R0C50	C 916	CKSQYB474K16
C 54	CKSRYP103K50	C 917	CKSYB475K10
C 55	CKSRYP104K16	C 918	CKSRYP223K25
C 56	CKSRYP104K16	C 919	CKSQYB225K10
C 58	CKSQYB224K16	C 920	CCSRCH270J50
C 59	CKSRYP223K25	C 921	CCSRCH270J50
C 60	CKSRYP104K16	C 922	CKSYB105K16
C 101	CEALNP100M10	C 923	CKSRYP103K50
C 102	CCSRCH151J50		
C 103	CKSRYP473K16		
C 105	CKSRYP682K25		
C 106	CEAL2R2M50		
C 107	CKSRYP103K50		
C 108	CKSQYB474K16		
C 109	CKSQYB474K16		
C 110	CKSRYP104K16		
C 111	CKSRYP104K16		
C 112	CKSRYP104K16		
C 113	CKSRYP123K25		
C 114	CEAL220M6R3		
C 115	CKSRYP473K16		
C 116	CEAL2R2M50		
C 117	CKSRYP102K50		
C 120	CKSRYP153K25		
C 121	CKSRYP332K50		
C 122	CKSRYP682K25		
C 123	CKSRYP681K50		
C 125	CKSRYP103K50		
C 126	CKSRYP103K50		
C 127	CEAL2R2M50		
C 128	CKSRYP103K50		
C 201	CCSRCH471J50		
C 202	CCSRCH100D50		
C 203	CKSRYP104K16		
C 204	CKSRYP332K50		
C 205	CKSRYP103K50		
C 206	CKSRYP104K16		
C 207	CKSRYP473K16		
		IC 1801	IC PD6293A
		D 1801	Diode MA152WK
		D 1802	Diode MA152WA
		X 1801	Ceramic Resonator 4.97MHz CSS1422
		IL 1801	Lamp 14V 40mA(DEH-2130R) CEL1638
		IL 1801	Lamp 14V 40mA(DEH-2100R) CEL1547
		IL 1802	Lamp 14V 40mA(DEH-2130R) CEL1638
		IL 1802	Lamp 14V 40mA(DEH-2100R) CEL1547
		IL 1803	Lamp 14V 40mA(DEH-2130R) CEL1638
		IL 1803	Lamp 14V 40mA(DEH-2100R) CEL1547
		IL 1804	Lamp 14V 40mA(DEH-2130R) CEL1638
		IL 1804	Lamp 14V 40mA(DEH-2100R) CEL1547
		LCD1801	LCD CAW1559
		RESISTORS	
		R 1801	RS1/8S222J
		R 1802	RS1/8S222J
		R 1803	RS1/10S471J
		R 1804	RS1/10S471J
		R 1805	RS1/10S471J
		R 1806	RS1/10S471J
		CAPACITORS	
		C 1801	CKSQYB103K25

C Unit Number : CWM6779(DEH-2130R)
: CWM6778(DEH-2100R)
Unit Name : Keyboard Unit

MISCELLANEOUS

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

D Unit Number : CWX2411
Unit Name : Control Unit

MISCELLANEOUS

IC	201	IC	UPD63711GC
IC	301	IC	BA5985FM
IC	701	IC	BA05SFP
Q	101	Transistor	2SB1132
D	801	LED	CL200IRX
D	802	LED	CL200IRX
X	201	Ceramic Oscillator 16.934MHz	CS51456
S	801	Spring Switch(HOME)	CSN1051
S	802	Spring Switch(CLAMP)	CSN1052

RESISTORS

R	101	RS1/8S120J
R	102	RS1/8S100J
R	103	RS1/16S222J
R	201	RS1/16S104J
R	202	RS1/16S103J
R	203	RS1/16S393J
R	204	RS1/16S103J
R	205	RS1/16S103J
R	206	RS1/16S182J
R	207	RS1/16S123J
R	302	RS1/16S153J
R	303	RS1/16S103J
R	501	RS1/16S102J
R	502	RA4C681J
R	601	RS1/16S102J
R	602	RS1/16S102J
R	605	RS1/16S0R0J
R	606	RS1/16S0R0J
R	801	RS1/8S751J
R	803	RS1/8S751J
R	902	RS1/16S0R0J
R	906	RS1/16S0R0J

CAPACITORS

C	101	CCSRCH102J25
C	102	CKSRYB104K16
C	103	CEV101M6R3
C	104	CEV470M6R3
C	105	CKSQYB334K16
C	106	CKSQYB334K16
C	107	CKSQYB334K16
C	201	CKSRYB104K16
C	202	CKSRYB471K50
C	203	CKSRYB104K16
C	205	CEV101M6R3
C	206	CKSRYB104K16
C	207	CKSRYB104K16
C	208	CKSRYB104K16
C	209	CKSRYB104K16
C	210	CKSRYB332K50
C	211	CKSRYB104K16
C	212	CKSRYB104K16
C	213	CKSRYB392K50
C	214	CKSRYB104K16
C	215	CKSRYB104K16
C	216	CCSRCJ3R0C50
C	217	CCSRCH270J50
C	218	CKSRYB104K16
C	219	CCSRCH181J50

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

C	220	CCSRCH510J50
C	221	CKSRYB682K25
C	222	CEV220M6R3
C	223	CKSRYB103K25
C	224	CKSRYB224K10
C	301	CEV101M10
C	603	CCSQL152J50
C	604	CCSQL152J50
C	702	10μF/10V
C	703	CCH1349
		CKSQYB334K16

E Unit Number :
Unit Name : Photo Unit(S8)

Q	1	Photo-transistor	CPT230SX-TU
Q	2	Photo-transistor	CPT230SX-TU

Miscellaneous Parts List

M	1	Pickup Unit(Service)(P8)	CXX1285
M	1	Motor Unit(CARRIAGE)	CXB2190
M	2	Motor Unit(LOADING)	CXB2195
M	3	Motor Unit(SPINDLE)	CXB2562
		Fuse(10A)	CEK1136

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 REFO(approx. 2.5V) instead of GND.

If REFO 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 REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO 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 REFO 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.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit. Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
 - *During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.
 - *The unit will not load a disc.

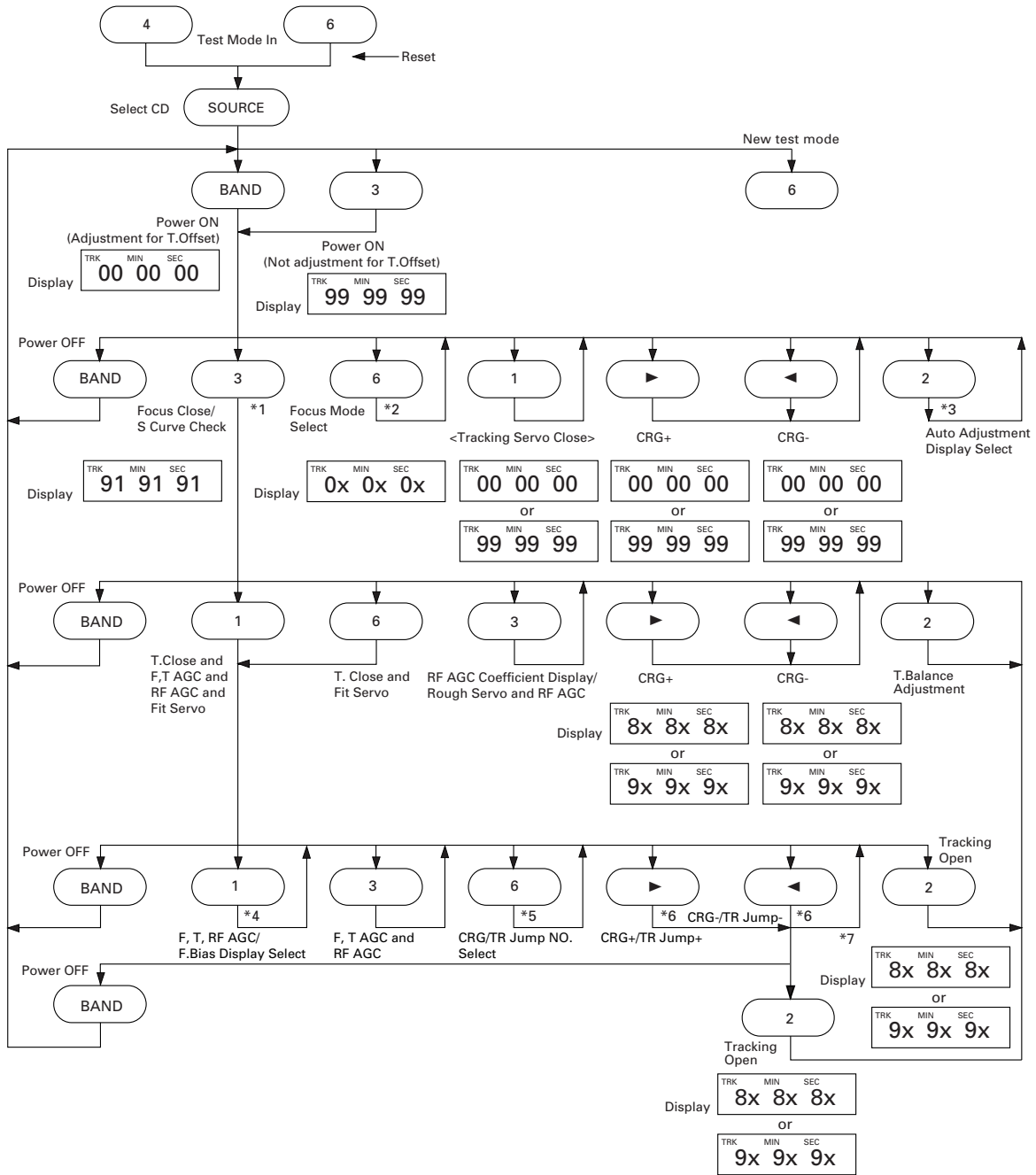
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

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).
- Jump operation of TRs other than 100TR continues after releasing the key. CRG move and 100TR jump operations are brought into the "Tracking close" status when the key is released.
- Powering Off/On resets the jump mode to "1TR", and the automatic adjustment value to the initial value.

● Flow Chart



*1 "00", "99"→Focus Close / "01"→S.Curve

*6 1TR/4TR/10TR/32TR/100TR

*2 → Focus Close 00(99) → S.Curve 01 → LD Off 02

*7 CRG Move,100TR Jump

*3 → F.Cancel → T.Offset → The original display

*4 → TRK, MIN, SEC → F.AGC Gain → T.AGC Gain → F.Bias

*5 → 1TR 91(81) → 4TR 92(82) → 10TR 93(83) → 32TR 94(84) → 100TR 95(85) → CRG Move 96(86)

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 :

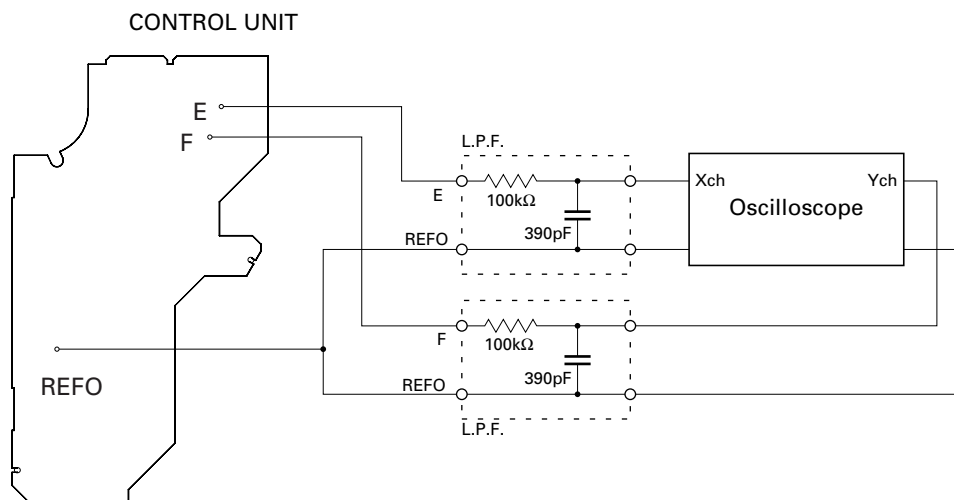
To check that the grating is within an acceptable range when the PU unit is changed.

• 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, REFOUT |
| • Disc | • ABEX TCD-784 |
| • Mode | • TEST MODE |



• Checking Procedure

1. In test mode, load the disc and switch the 5V regulator on.
2. Using the ► and ◀ buttons, move the PU unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3 2 times. The display will change, returning to "81" on the fourth press.
4. 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.
5. 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

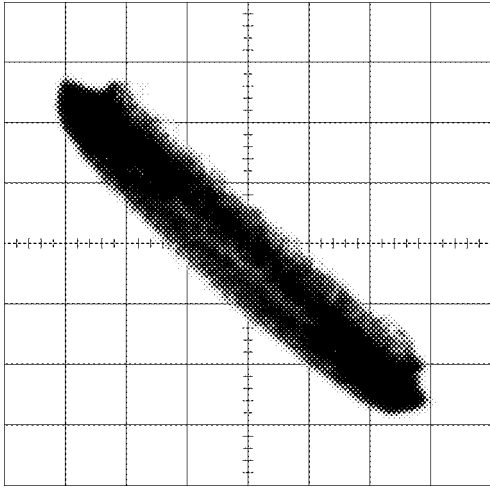
Reloading the disc changes the clamp position and may decrease the "wobble".

Grating waveform

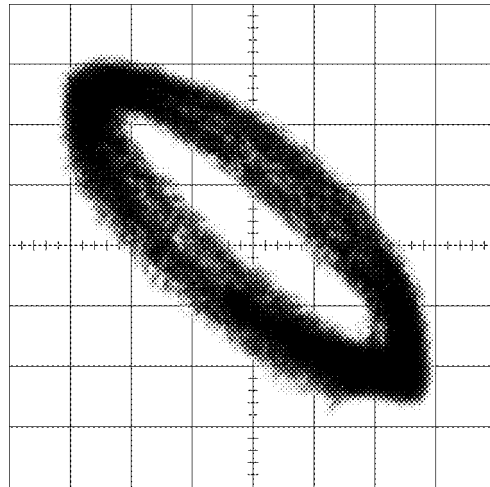
Ech → Xch 20mV/div, AC

Fch → Ych 20mV/div, AC

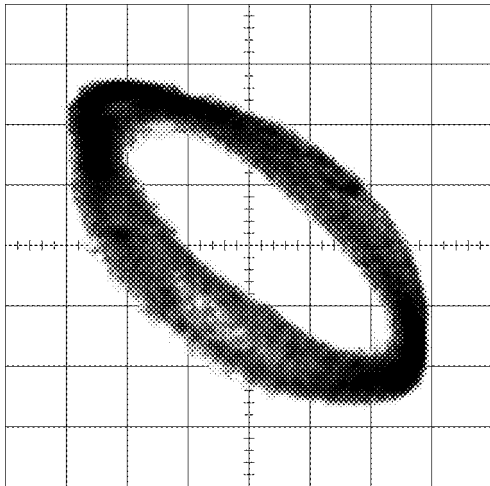
0°



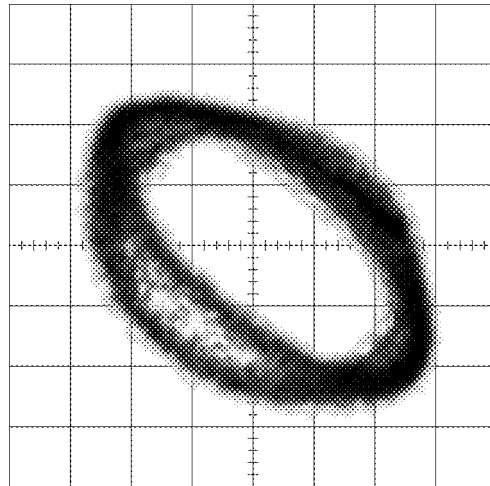
30°



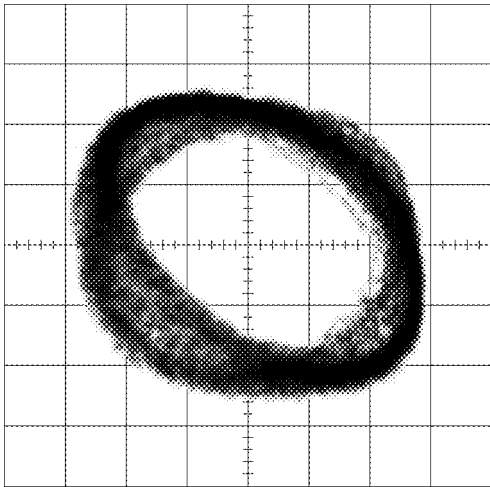
45°



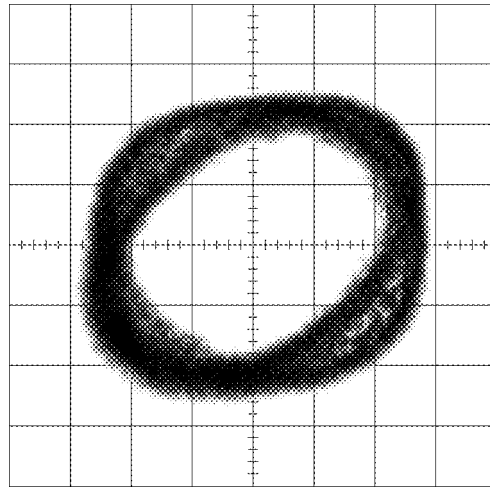
60°



75°



90°



7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

● Error Messages

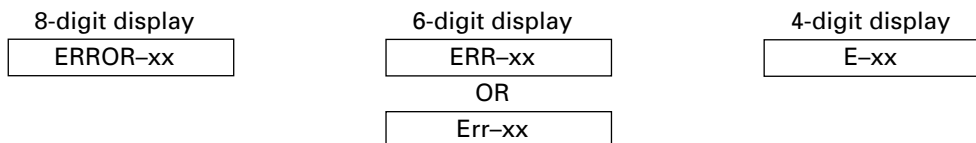
If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(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.



(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations.
		Subcode NG	A disc not containing CD-R data is found. Turned over disc are found, though rarely. → Failure on home switch or CRG move mechanism.
		RF AMP NG	An appropriate RF AMP gain can't be determined. → CD signal error.
17	Electricity	Setup NG	APC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
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.

A newly designed head unit must conform to the example given above.

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

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

● New Test Mode

S-CD plays the same way as before.

If an error such as off focus, spindle unlocking, unreadable sub-code, or sound skipping occurs after setup, its cause and time occurred (in absolute time) are displayed.

During setup, operational status of the control software (internal RAM: CPOINT) is displayed.

These displays and functions are prepared for enhancing aging in the servicing and efficiency of trouble analysis.

(1) Shifting to the New Test Mode

- ① Turn on the current test mode by starting the reset from the key.
- ② Select S-CD for the source through the specified procedure including use of the [SOURCE] key, and inserting the disc. Then, press the [Jump Mode Selector] key while maintaining the regulator turned off.
- ③ After the above operations, the new test mode remains on irrespective of whether the S-CD is turned on or off.
You can reset the new test mode by turning on the reset start.

* With some products, the new test mode can be reset through the same operations as that employed for shifting to the STBY mode (while maintaining the Acc turned off).

(2) Key Correspondence

Key (Example)	Test mode		New test mode	
	Power Off	Power On	In-play	Error Production
BAND	To power on (offset adjustment performed)	To power off	–	Time/Err.No. switching
▶	–	FWD-Kick	FF/TR+	–
◀	–	REV-Kick	REV/TR-	–
1	–	T.Close (AGC performed) /parameter display switching	Scan	–
2	–	T.BAL adjustment /T.Open	Mode	–
3	To power on (offset adjustment not performed)	F.Close/RF AGC/AGC	–	–
6	–	Mode switching /T.Close (no AGC)/Jump switching	Auto/Manu	–

Note: Eject and CD on/off is performed in the same procedure as that for the normal mode.

(3) Cause of Error and Error Code

Code	Class	Contents	Description and cause
40	Electricity	Off focus detected.	FOK goes low. → Damages/stains on disc, vibrations or failure on servo.
41	Electricity	Spindle unlocked.	FOK = Low continued for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
42	Electricity	Sub-code unreadable.	Sub-code was unreadable for 50 msec. → Damages/stains on disc, vibrations or failure on servo.
43	Electricity	Sound skipping detected.	Last address memory function was activated. → Damages/stains on disc, vibrations or failure on servo.

Note: Mechanical errors during aging are not displayed.

The error codes should be indicated in the same way as in the normal mode.

(4) Display of Operational Status (CPOINT) during Setup

Status No.	Contents	Protective action
01	Carriage move to home position started.	None
02	Carriage is moving toward inner diameter.	Specified 10 seconds has been passed or failure on home switch.
03	Carriage is moving toward outer diameter.	Specified 10 seconds has been passed or failure on home switch.
05	Carriage outer diameter feed (1 second) in progress.	None
11	Setup started.	None
12	Spindle rotation and focus search started.	None
13	Waiting for focus close (XSI=Low).	Specified focus search time has been passed.
14	Waiting for focus close (FOK=High). (After AGC)	Specified focus search time has been passed.
15	Waiting for focus close (FOK=High). (Before AGC)	Specified focus search time has been passed.
16	Rough AGC in progress.	Off focus.
17	Setup (1/2) before T balance adjustment is started.	Off focus.
18	Setup (2/2) before T balance adjustment is started.	Off focus.
24	T balance adjustment (1/2).	Off focus.
25	T balance adjustment (2/2).	Off focus.
26	Standing by after spindle rough servo is over.	Off focus.
27	Setup before RF AGC (first) is started.	Off focus.
28	RF AGC (first) in progress.	Off focus.
29	Setup before RF AGC (second) is started.	Off focus.
30	RF AGC (second) in progress.	Off focus.
31	Tracking close in progress.	Off focus.
32	Standing by after tracking is closed.	Off focus.
33	Focus AGC started.	Off focus.
34	Focus AGC in progress. Tracking AGC started.	Off focus.
35	Tracking AGC in progress. Spindle processes applicable servo.	Off focus.
36	Check of MIRR and LOCK pin. RF AGC in progress. CRG close in progress. Check of sub-code.	Off focus. Spindle not locked. Sub-code unreadable.

(5) Display Examples

1) During Setup (When status no. = 11)

TRK No.	MIN.	SEC.
11	11'	11"

2) During Operation (TOC read, TRK search, Play, FF and REV)

The same as in the normal mode.

3) When a Protection Error Occurred

Switch to the following displays (A) and (B) using the [BAND] switch:

(A) Error occurrence timing display in absolute time.

An example: Error occurred in 12th tune at 34'56" in absolute time.

TRK No.	MIN.	SEC.
12	34'	56"

(B) Error No. display

An example: Error #40 (Off focus is detected)

ERROR-40

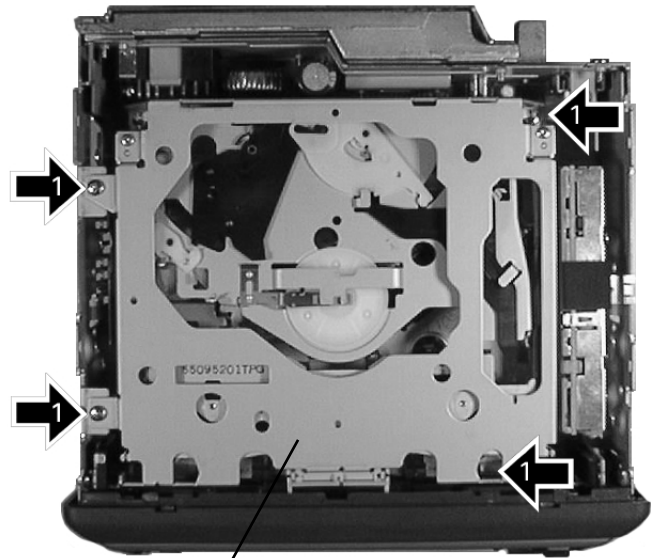
7.1.2 DISASSEMBLY

● **Removing the Upper Case (not shown)**

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

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module (not shown).



CD Mechanism Module

Fig.1

● **Removing the Tuner Amp Assy**

1 Remove the two screws (Fig.2).

2 Remove the three screws and then remove the Cover (Fig.2).

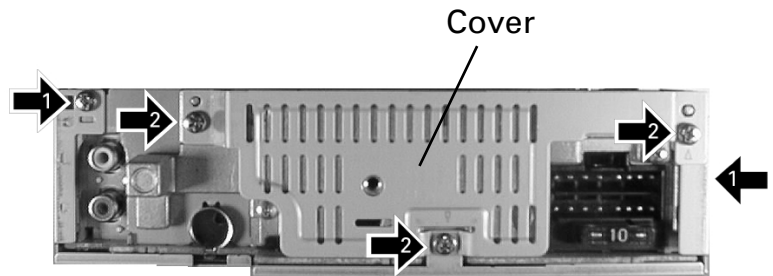
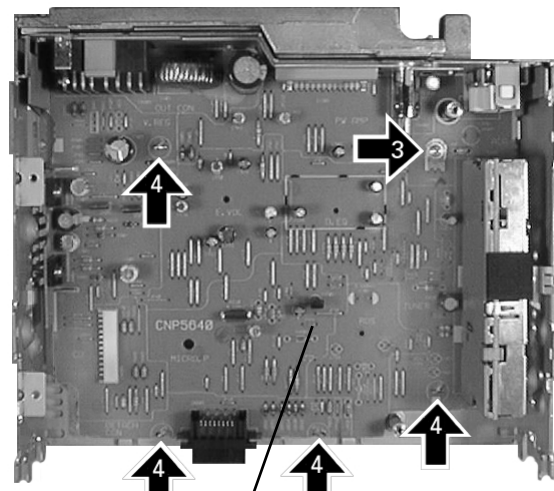


Fig.2

3 Remove the screw (Fig.3).

4 Disconnect the four claws and then remove the Tuner Amp Assy (Fig.3).

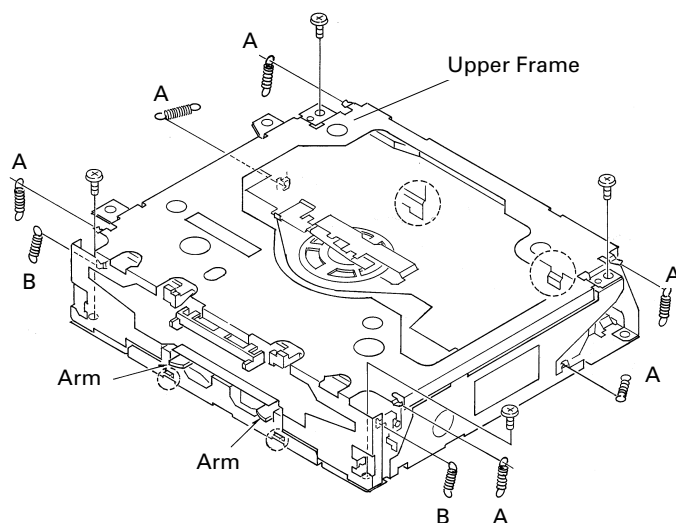


Tuner Amp Assy

Fig.3

● Removing the Upper Frame

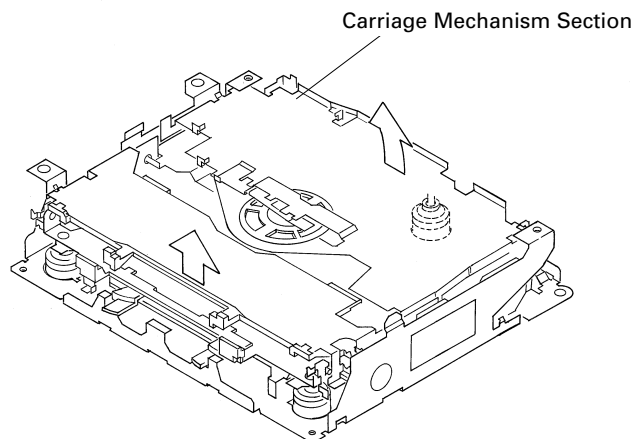
1. Remove six Springs A, two Springs B and four Screws.
2. Remove two Tabs situated on rear side of the Upper Frame, remove two Arms on the front side, then remove two Tabs on the front side.



● Removing the Carriage Mechanism

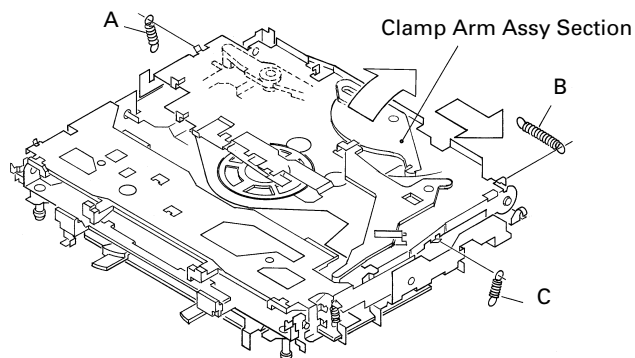
1. Disengage the Carriage Mechanism from the two dampers situated in the front side by driving it up, then disengage and remove the mechanism from the one damper by driving it up aslant into front side direction.

Note : When assembling the Carriage Mechanism, coat the dampers with alcohol prior to the assembly.



● Removing the Clamp Arm Assy

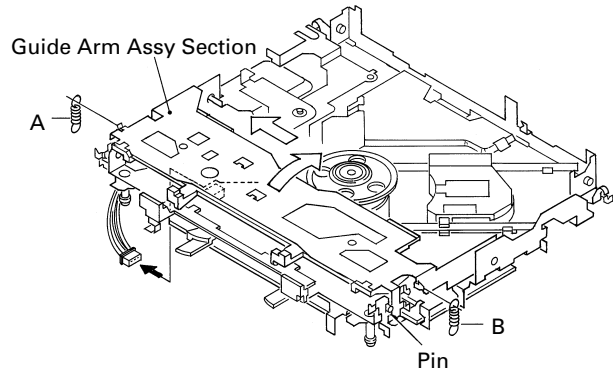
1. Remove a Spring A, a B and a Spring C.
2. Drive the Clamp Arm Assy up into rear side direction, then disengage the arm from its current position. Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward right side to remove it.



● **Removing the Guide Arm Assy**

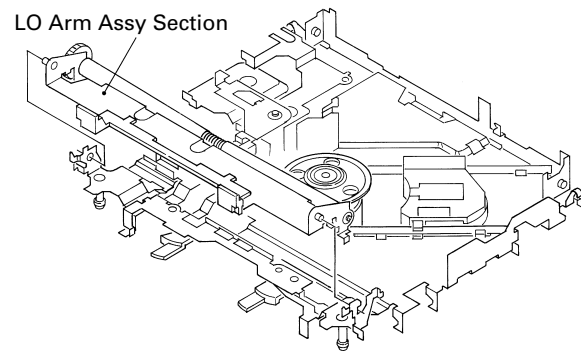
1. Remove a connector, a spring A and B
2. Drive the Guide Arm Assy up aslant into rear side direction, then remove it from a Pin. Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward left side to remove it.

Note : When assembling the guide arm assembly, route the cord inside the assembly. In this operation, care must be exercised so that cord may be caught by the gear.



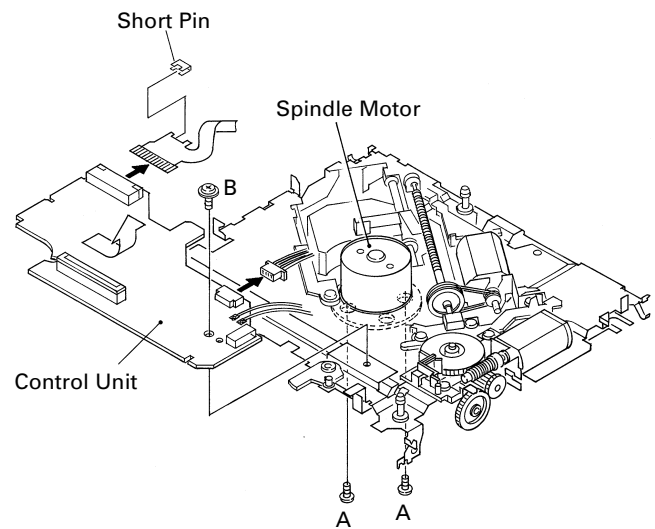
● **Removing the LO Arm Assy**

1. Remove two Pins to dismount the LO Arm Assy.



● **Removing the Control Unit and the Spindle Motor**

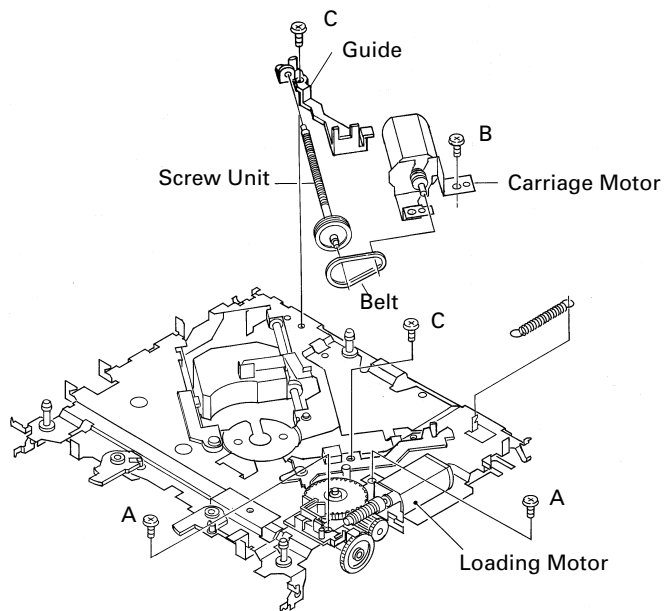
1. Remove from the connector after mounting the short pin on the flexible PCB of the pickup unit.
2. Remove two Soldered joints, then remove two Screws A.
3. Remove two connectors and a Screw B.
4. Disengage the Control Unit from two Tabs, then dismount the unit by sliding it toward left.
5. Dismount the Spindle Motor.



● Removing the Loading Motor and Carriage Motor

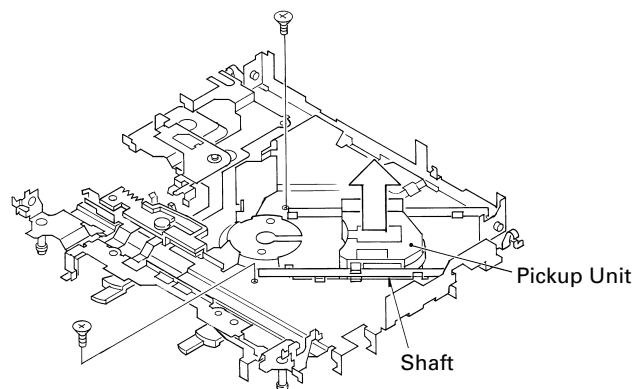
1. Remove the Spring and two Screws A.
2. Dismount the Loading Motor.
3. Remove the Belt, a Screw B, two Screws C, a Guide and a Screw Unit.
4. Dismount the Carriage Motor.

Note : When assembling the Belt, use care so that it may not be contaminated by grease.



● Removing the Pickup Unit

1. Remove two Screws and a Shaft.
2. Dismount the Pickup Unit.



7.2 PARTS

7.2.1 IC

● Pin Functions(PE5090A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	MODEL1	I		Model select input
2	NL1	I		Noise level input
3	NL2DT	I		Noise level input 2
4	AVSS			A/D GND
5	ST	I		Stereo input
6	SD	I		SD signal input
7	AREF1			(D/A converter standard voltage)
8	KYDT	I		Key data input
9	DPDT	O	C	Key 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	CURRQ	O	C	Tuner voltage FIX output
16	XSI	I	C	LSI data input
17	XSO	O	C	LSI data output
18	XSCK	O	C	LSI clock output
19	DRST	O	C	RDS decoder reset output
20	ADPW	O	C	A/D converter power output
21	FM/AM	O	C	FM/AM power select output
22	VDCONT	O	C	VD power control output
23	CONT	O	C	Servo driver power control output
24	XAO	O	C	CD LSI data discernment control signal output
25	XRST	O	C	CD LSI reset output
26	XSTB	O	C	CD LSI strobe output
27	CLAMP	I		Disc clamp sense input
28	MIRR	I		Mirror detection input
29	FOK	I		Focus OK signal input
30	LOCK	I		Spindle lock detector input
31	CDLOAD	O	C	LOAD motor loading control output
32	TELIN	I		Cellular mute input
33	VSS			GND
34	CDEJECT	O		LOAD motor eject control output
35	CD5VON	O	C	CD +5V power supply control output
36-39	NC			Not used
40	RECIEVE	O	C	RDS decoder receiving output
41	SWVDD	O	C	Grille power supply control output
42	SYSPW	O	C	System power supply control output
43	NC			Not used
44	MUTE	O	C	Mute output
45	PEE	O	C	Beep tone output
46	LOCH	O	C	LOCH output
47	RDS57K	I		57kHzBP-OUT sense input
48	TUNPCE2	O	C	EEPROM chip enable output 2
49	NC			Not used
50	VCK	O	C	Clock output for electronic volume
51	VDT	O	C	Data output for electronic volume
52	ANTPW	O	C	Antenna power output
53	VST	O	C	Strobe pulse output for electronic volume
54-57	DEQ4-1	O	C	Direct EQ data output 4-1
58	RDSLK	I		RDS LK signal input
59	RDT	I		RDS data input
60	RESET			Reset

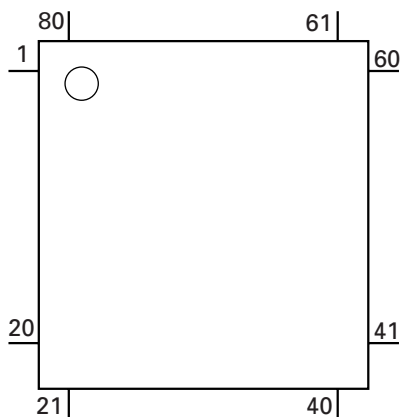
Pin No.	Pin Name	I/O	Format	Function and Operation
61	LDET	I		PLL lock sense input
62	RCK	I		RDS clock input
63	ASENS	I		ACC power sense input
64	BSENS	I		Back up power sense input
65	DSSENS	I		Grille detach sense input
66	TMUTE	O	C	Tuner mute output
67	LOCL	O	C	LOC L output
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	NC			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		Signal level input
77	TEMP	I		Temperature detector input
78	VDSSENS	I		Over voltage sense input
79	DSCSNS	I		Disc detect input
80	EJTSNS	I		Disc EJECT position detect input

Output Format	Meaning
C	C MOS output

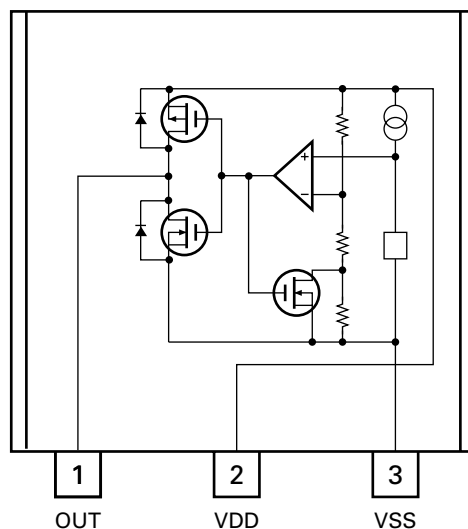
IC's marked by* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

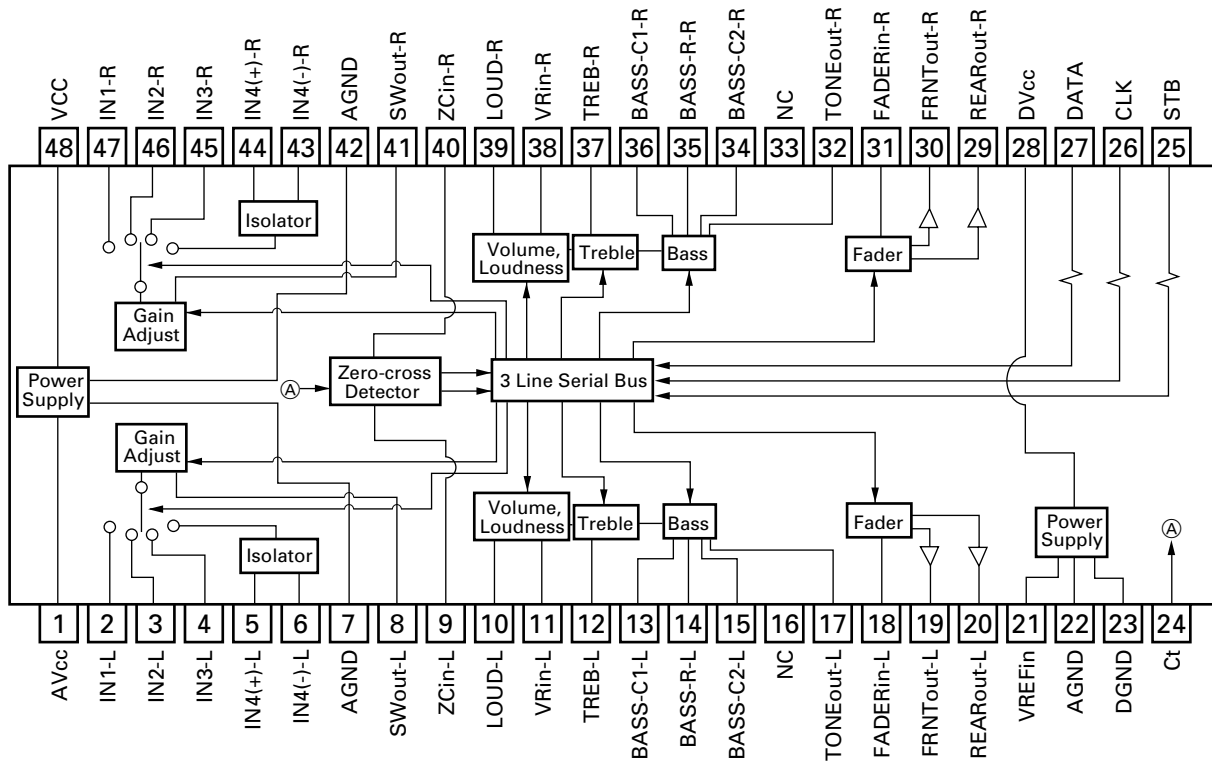
*PE5090A



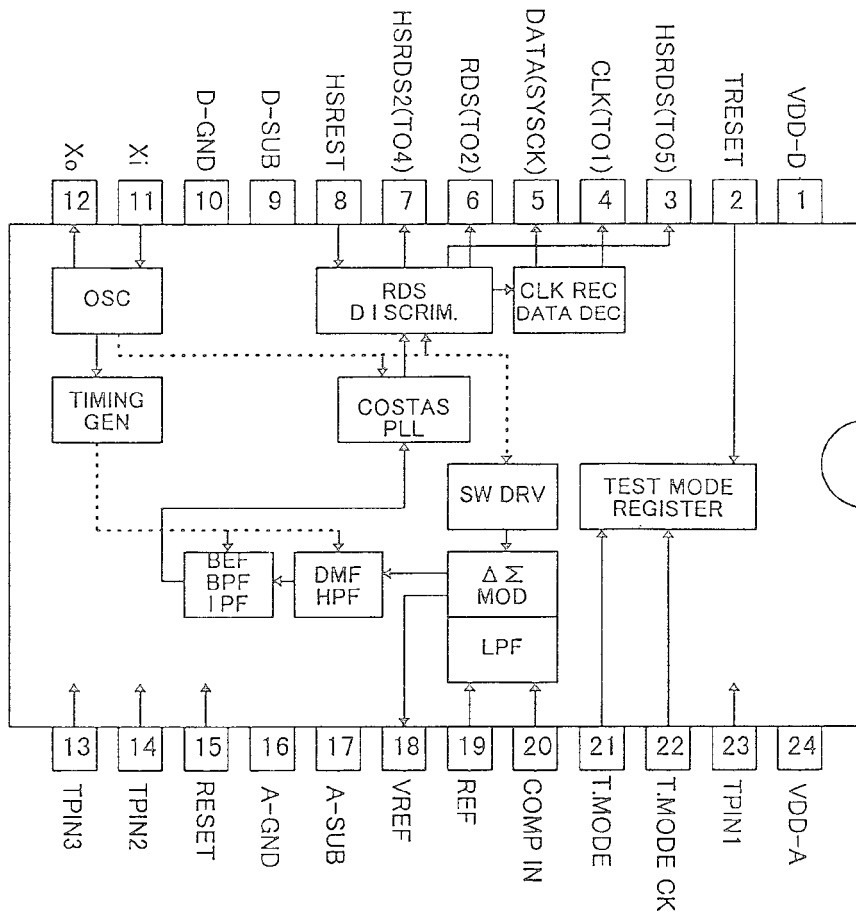
S-80834ANY



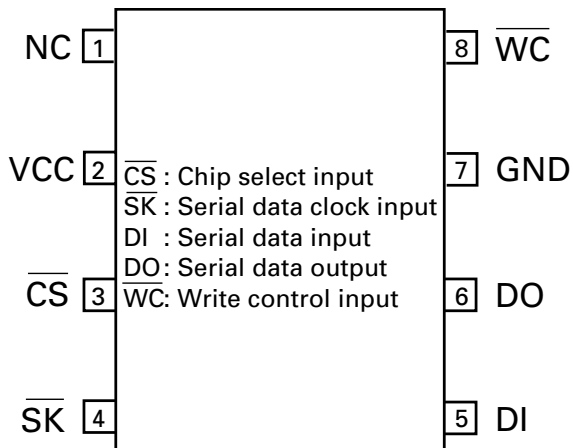
SN761029DL



PM4009A



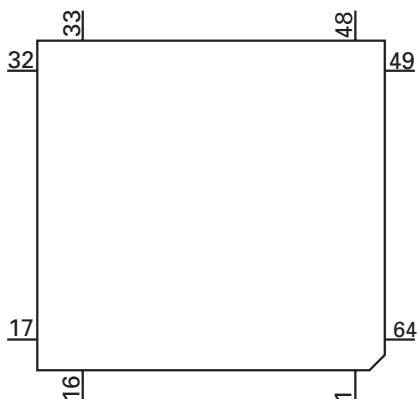
BR9010FV



● Pin Functions (PD6293A)

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

*PD6293A

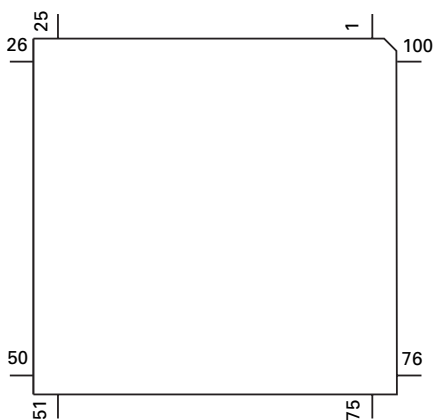


● Pin Functions (UPD63711GC)

Pin No.	Pin Name	I/O	Function and Operation
1	D.GND		Logic circuit GND
2	RFOK	O	RFOK signal output
3	RST	I	Reset signal input
4	A0	I	Command/parameter identification signal input
5	STB	I	Data strobe signal input
6	SCK	I	Clock signal input for serial data input/output
7	SO	O	Serial data and status signal output
8	SI	I	Serial data input
9	XTALEN	I	Crystal oscillation control pin
10	D.VDD		Positive power supply terminal to logic circuit
11	DA.VDD		Positive power supply terminal to D/A converter
12	R_OUT	O	Right channel audio output signal
13	DA.GND		D/A converter GND
14	REGC	I	The outside putting capacitor connection pin for SCF regulator
15	DA.GND		D/A converter GND
16	L_OUT	O	Left channel audio output signal
17	DA.VDD		Positive power supply terminal to D/A converter
18	R+	O	Right channel audio data output
19	R-	O	Right channel audio data output
20	L-	O	Left channel audio data output
21	L+	O	Left channel audio data output
22	X.VDD		Positive power supply terminal to crystal oscillation circuit
23	XTAL	I	Crystal oscillator connect pin
24	XTAL	O	Crystal oscillator connect pin
25	X.GND		Crystal oscillation circuit GND
26	D.VDD		Positive power supply terminal to logic circuit
27	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
28	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
29	DIN	I	Serial data input to internal DAC
30	DOUT	O	Serial audio data output
31	SCKIN	I	Serial clock input to internal DAC
32	SCKO	O	Audio data that is output from DOUT changes at rising edge of this clock
33	LRCKIN	I	LRCK signal input to internal DAC
34	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT
35	HOLD	O	Defect detection output
36	TX	O	Digital audio interface data output
37	D.GND		Logic circuit GND
38	C16M	O	Oscillator clock buffering output
39	LIMIT	I	Status of the pin is output at Bit 5 of the status output
40	D.VDD		Positive power supply terminal to logic circuit
41	LOCK	O	EFM synchronous detection signal
42	RFCK	O	Frame synchronous signal of XTAL-system
43	MIRR	O	MIRR output
44	PLCK	O	Monitor pin of bit clock
45	D.GND		Logic circuit GND
46	C1D1	O	Output pin for indicating the C1 error correction results
47	C1D2	O	Output pin for indicating the C1 error correction results
48	C2D1	O	Output pin for indicating the C2 error correction results
49	C2D2	O	Output pin for indicating the C2 error correction results
50	C2D3	O	Output pin for indicating the C2 error correction results
51	D.VDD		Positive power supply terminal to logic circuit
52	PACK	O	CD-TEXT PACK synchronous signal
53	TSO	O	CD-TEXT data serial output
54	TSI	I	CD-TEXT control parameter serial input
55	TSCK	I	CD-TEXT serial clock input
56	TSTB	I	CD-TEXT parameter strobe signal input
57	D.GND		Logic circuit GND

Pin No.	Pin Name	I/O	Function and Operation
58	TEST0	I	Test pin
59	TEST1	I	Test pin
60	ATEST	O	Test pin
61	A.GND		Analog circuit GND
62	FD	O	Focus drive output
63	TD	O	Tracking drive output
64	SD	O	Sled drive output
65	MD	O	Spindle drive output
66	DAC0	O	DAC output for adjustment
67	DAC1	O	DAC output for adjustment
68	DAC2	O	DAC output for adjustment
69	DAC3	O	DAC output for adjustment
70	A.VDD		Positive power supply terminal to analog circuit
71	EFM	O	EFM signal output
72	ASY	I	EFM comparator reference voltage input
73	C3T		3T detection capacitor additional pin
74	RFI	I	RF signal input for EFM data regulation
75	AGCO	O	RF signal output of after gain adjustment
76	AGCI	I	RF-AGC amplifier input
77	RFO	O	RF summing amplifier output
78	EQ2		RF amplifier equalizer parts additional pin
79	EQ1		RF amplifier equalizer parts additional pin
80	RF-	I	RF summing amplifier inverted input
81	A.GND		Analog circuit GND
82	A	I	Photo detector A input
83	C	I	Photo detector C input
84	B	I	Photo detector B input
85	D	I	Photo detector D input
86	F	I	Photo detector F input
87	E	I	Photo detector E input
88	A.VDD		Positive power supply terminal to analog circuit
89	REFOUT	O	Reference electric potential output
90	FE-	I	Focus error amplifier inverted input
91	FEO	O	Focus error amplifier output
92	TE-	I	Tracking error amplifier inverted input
93	TEO	O	Tracking error amplifier output
94	TE2	O	Tracking error output of after amplification
95	TEC	I	Tracking comparator input
96	A.GND		Analog circuit GND
97	PD	I	PD detection signal input for LD output monitor
98	LD	O	LD control current output
99	PN	I	APC circuit control polarity set pin
100	A.VDD		Positive power supply terminal to analog circuit

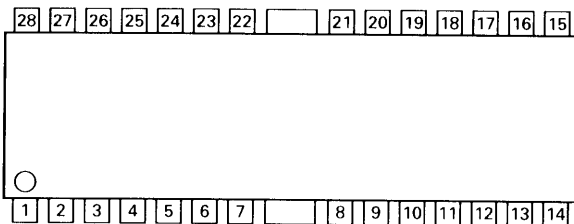
*UPD63711GC



● Pin Functions (BA5985FM)

Pin No.	Pin Name	I/O	Function and Operation
1	FWD	I	Loading driver FWD input
2	OPIN1(+)	I	CH1 pre-amplifier input
3	OPIN1(-)	I	CH1 pre-amplifier inverted input
4	OPOUT1	O	CH1 pre-amplifier output
5	OPIN2(+)	I	CH2 pre-amplifier input
6	OPIN2(-)	I	CH2 pre-amplifier inverted input
7	OPOUT2	O	CH2 pre-amplifier output
8	VCC		Power supply
9	VOL(-)	O	Loading driver negative output
10	VOL(+)	O	Loading driver positive output
11	VO2(-)	O	Driver CH2 negative output
12	VO2(+)	O	Driver CH2 positive output
13	VO1(-)	O	Driver CH1 negative output
14	VO1(+)	O	Driver CH1 positive output
15	VO4(+)	O	Driver CH4 positive output
16	VO4(-)	O	Driver CH4 negative output
17	VO3(+)	O	Driver CH3 positive output
18	VO3(-)	O	Driver CH3 negative output
19	GND		GND
20	BIAS	I	Bias input
21	MUTE		Mute control
22	OPOUT3	O	CH3 pre-amplifier output
23	OPIN3(-)	I	CH3 pre-amplifier inverted input
24	OPIN3(+)	I	CH3 pre-amplifier input
25	OPOUT4	O	CH4 pre-amplifier output
26	OPIN4(-)	I	CH4 pre-amplifier inverted input
27	OPIN4(+)	I	CH4 pre-amplifier input
28	REV	I	Loading driver REV input

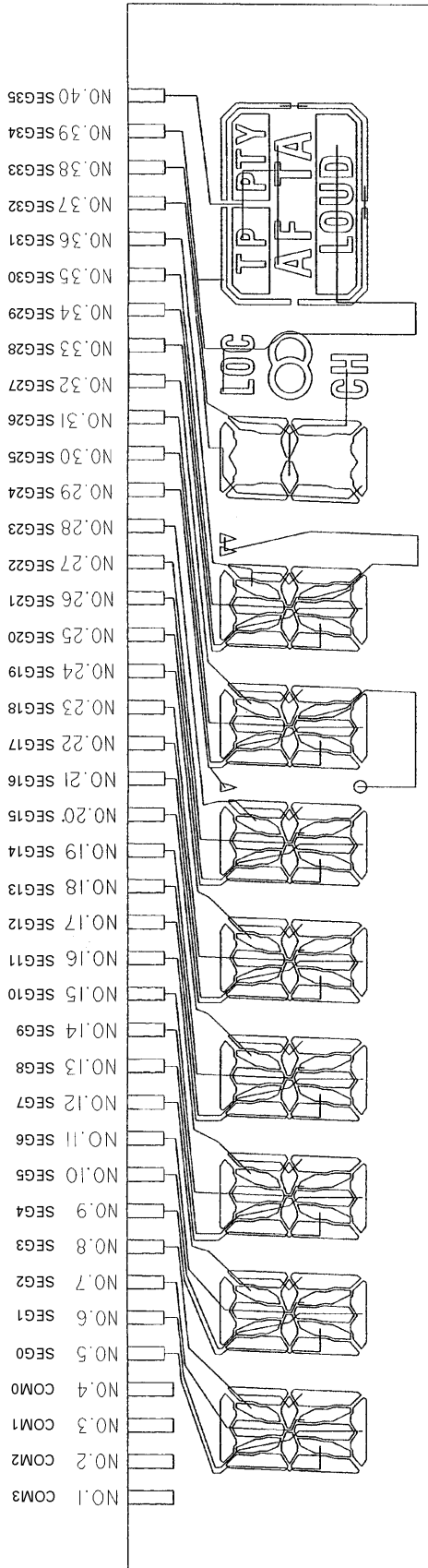
BA5985FM



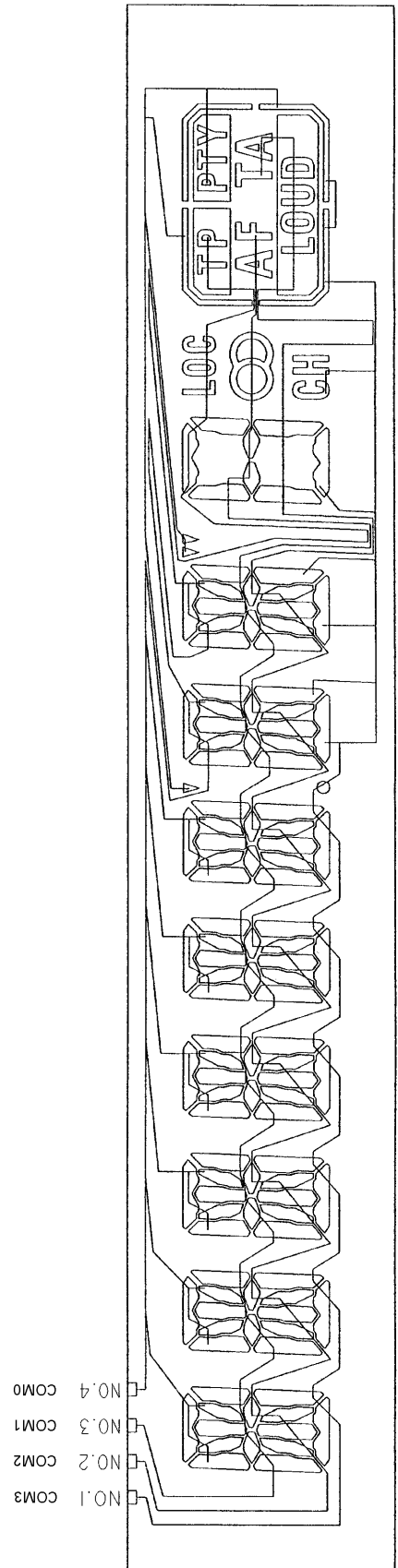
7.2.2 DISPLAY

● CAW1559

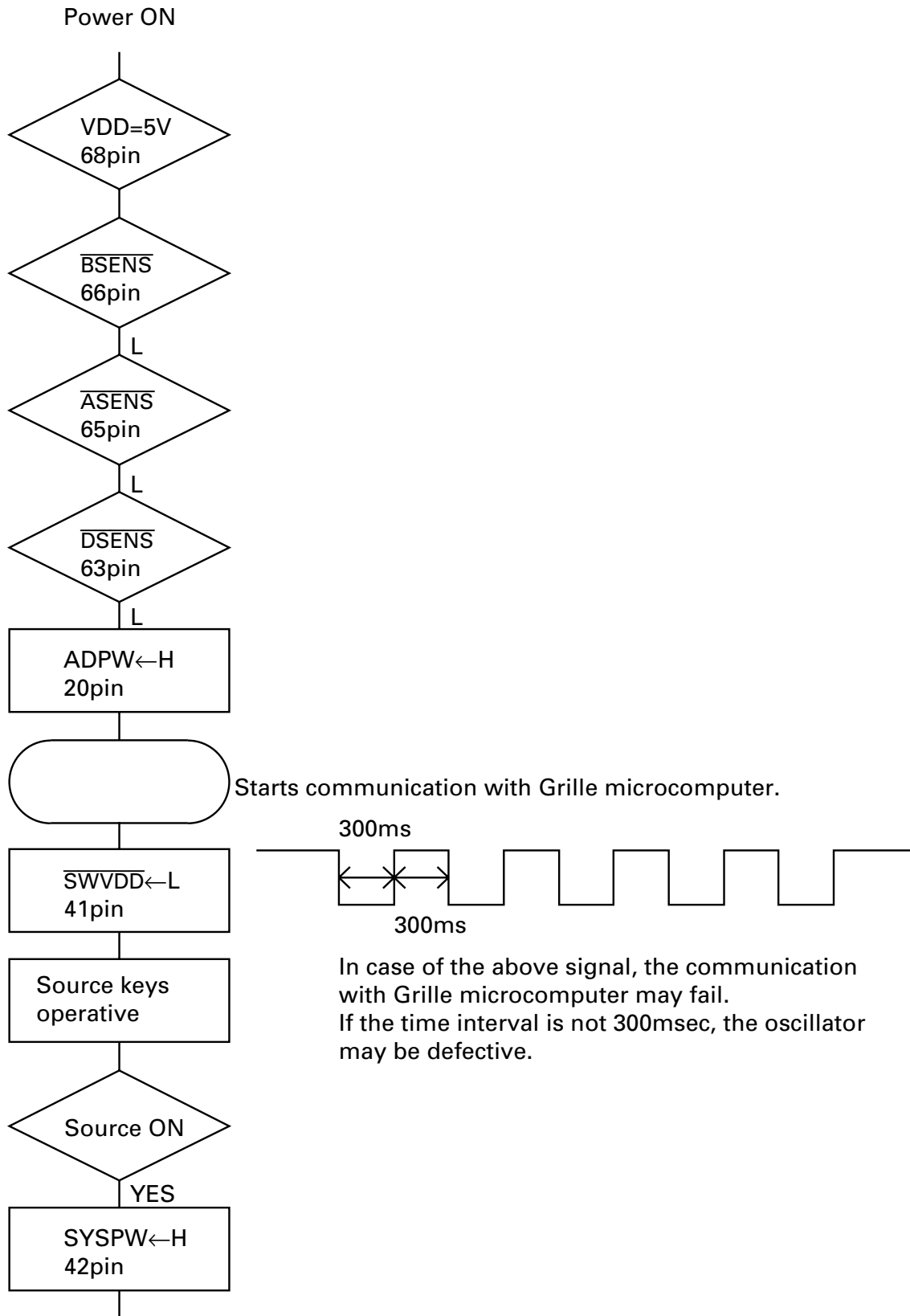
SEGMENT



COMMON



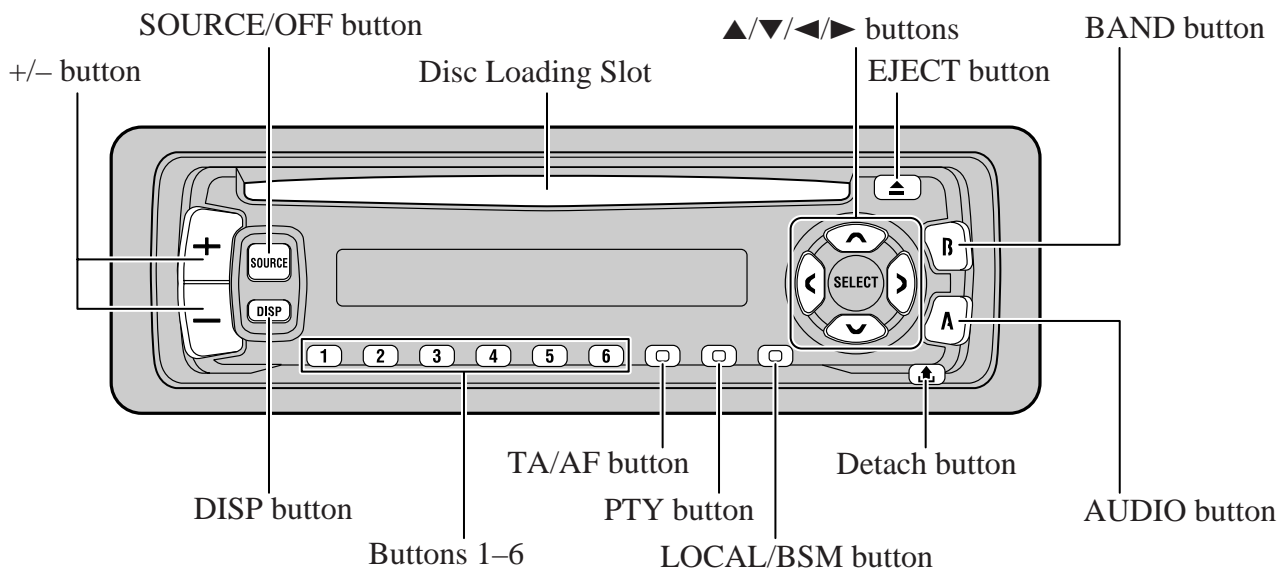
7.3 OPERATIONAL FLOW CHART



To each source's flow chart

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS



Basic Operation

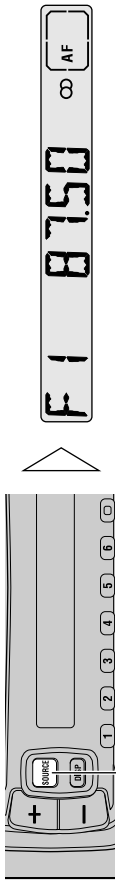
To Listen to Music

The following explains the initial operations required before you can listen to music.

Note:

- Loading a disc in this product.

1. Select the desired source (e.g. Tuner).



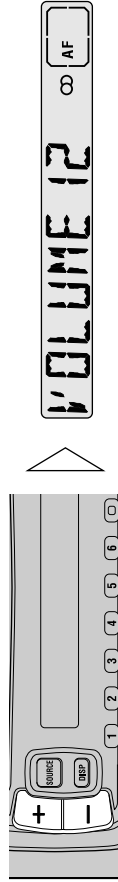
Each press changes the Source ...

Each press of the SOURCE/OFF button selects the desired source in the following order:
Built-in CD player → Tuner

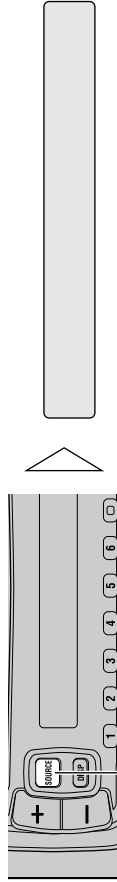
Note:

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

2. Raise or lower the volume.



3. Turn the source OFF.



Hold for 1 second

Basic Operation of Tuner

This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

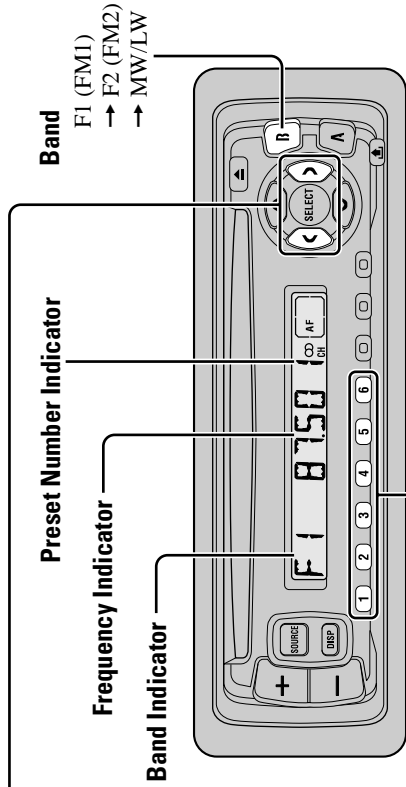
Manual and Seek Tuning

- You can select the tuning method by changing the length of time you press the ◀▶ button.

Manual Tuning (step by step)	0.5 seconds or less
Seek Tuning	0.5 seconds or more

Note:

- If you continue pressing the button for longer than 0.5 seconds, you can skip broadcast stations. Seek Tuning starts as soon as you release the button.
- Stereo indicator "◉" lights when a stereo station is selected.



Preset Tuning

- You can memorize broadcast stations in buttons 1 through 6 for easy, one-touch station recall.

Preset station recall	2 seconds or less
Broadcast station preset memory	2 seconds or more

Note:

- Up to 12 FM stations (6 in F1 (FM1) and F2 (FM2)) and 6 MW/LW stations can be stored in memory.
- You can also use the ▲ or ▼ buttons to recall broadcast stations memorized in buttons 1 through 6.

Basic Operation

Basic Operation of Built-in CD Player

Eject

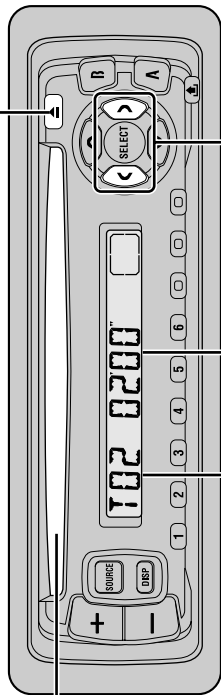
Note:

- The CD function can be turned ON/OFF with the disc remaining in this product.
- A disc left partially inserted after ejection may incur damage or fall out.

Disc Loading Slot

Note:

- 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 CD.



Track Search and Fast Forward/Reverse

- You can select between Track Search or Fast Forward/Reverse by pressing the ◀/▶ button for a different length of time.

Track Search	0.5 seconds or less
Fast Forward/Reverse	Continue pressing

Note:

- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down. Push the EJECT button and check the disc for damage before reinserting it.
- If a disc is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as "ERROR-14") appears on the display.

Audio Adjustment

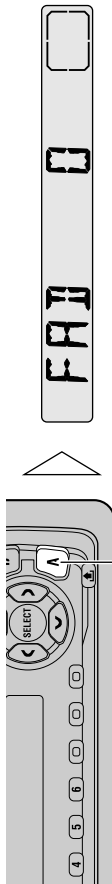
Entering the Audio Menu

With this Menu, you can adjust the sound quality.

Note:

- After entering the Audio Menu, if you do not perform an operation within about 30 seconds, the Audio Menu is automatically canceled.

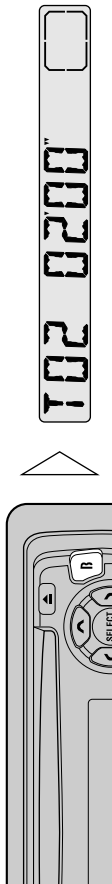
1. Select the desired mode in the Audio Menu.



Each press changes the Mode ...

2. Operate a mode.

3. Cancel the Audio Menu.



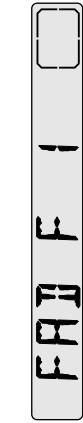
Audio Menu Functions

The Audio Menu features the following functions.

Balance Adjustment (FAD)

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

1. Press the **AUDIO** button and select the **Fader/Balance mode (FAD)** in the **Audio Menu**.



2. Adjust front/rear speaker balance with the **▲▼** buttons. "FAD F15" – "FAD R15" is displayed as it moves from front to rear.



3. Adjust left/right speaker balance with the **◀▶** buttons. "BAL L9" – "BAL R9" is displayed as it moves from left to right.

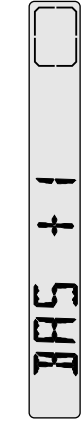
Note:

- "FAD 0" is the proper setting when 2 speakers are in use.

Bass Adjustment (BAS)

You can adjust a Bass level as desired.

1. Press the **AUDIO** button and select the **Bass mode (BAS)** in the **Audio Menu**.

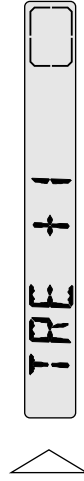


2. Boost or attenuate the bass level with the **▲▼** buttons. The display shows "+6" – "–6".

Treble Adjustment (TRE)

You can adjust a Treble level as desired.

1. Press the **AUDIO** button and select the **Treble mode (TRE)** in the **Audio Menu**.



2. Boost or attenuate the treble level with the **▲▼** buttons. The display shows "+6" – "–6".

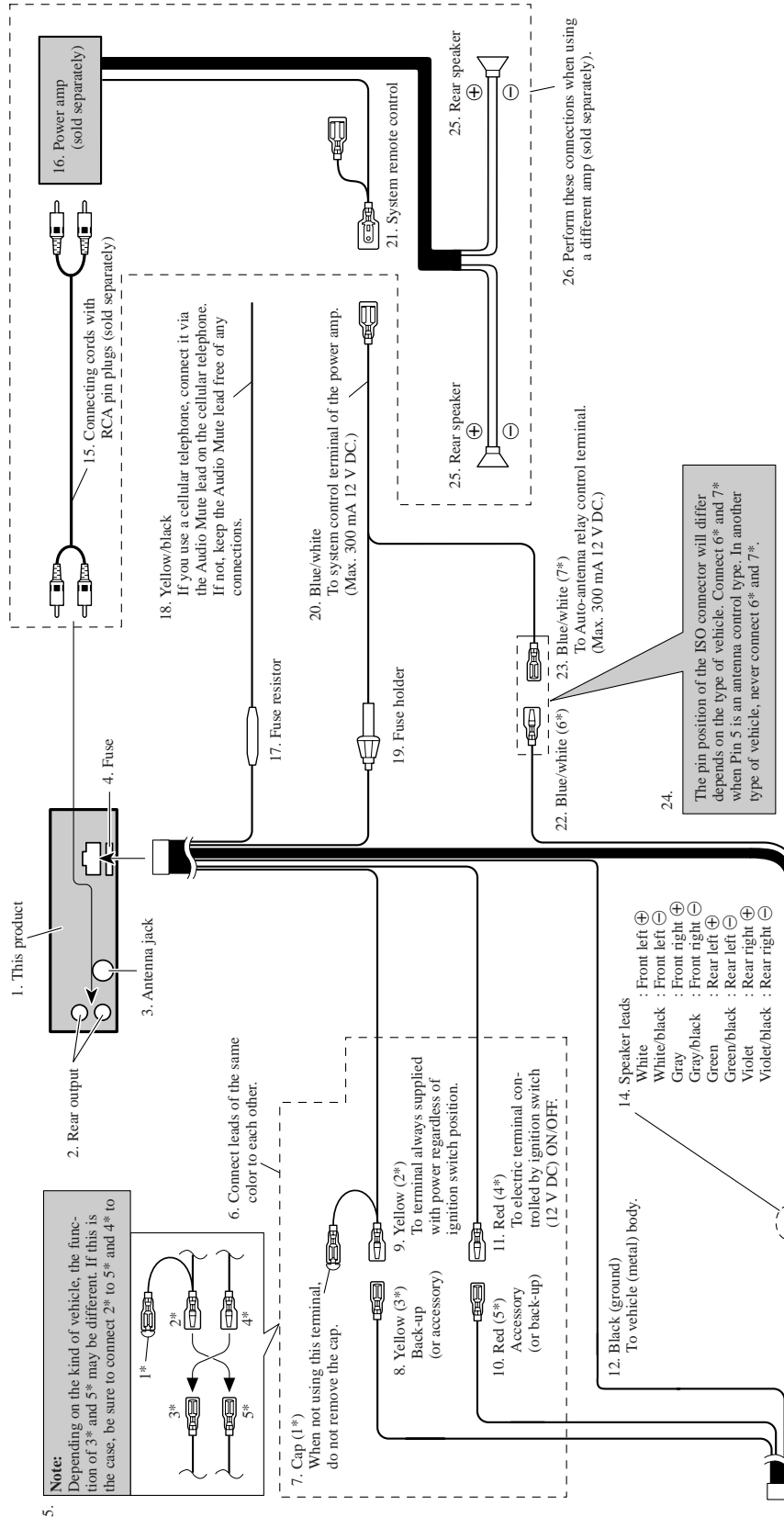
Loudness Adjustment (LOUD)

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

1. Press the **AUDIO** button and select the **Loudness mode (LOUD)** in the **Audio Menu**.



2. Switch the Loudness function ON/OFF with the **▲▼** buttons.



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
Dimensions	
(mounting size)	178 (W) × 50 (H) × 159 (D) mm
(front face)	188 (W) × 58 (H) × 19 (D) mm
Weight	1.4 kg

Amplifier

Maximum power output	40 W × 4
Continuous power output	22 W × 4 (DIN45324, +B = 14.4 V)
Load impedance	4 Ω (4 – 8 Ω allowable)
Preout maximum output level/output impedance	2.2 V / 1 kΩ
Tone controls	
(Bass)	±12 dB (100 Hz)
(Treble)	±12 dB (10 kHz)
Loudness contour	+10 dB (100 Hz), +7 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 MHz
Usable sensitivity	11 dBf (1.0 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 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)

MW tuner

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

LW tuner

Frequency range	153 – 281 kHz
Usable sensitivity	30 μV (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

Note:

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

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