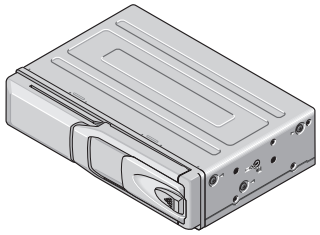
Service Manual



ORDER NO.
CRT2589

MULTI-COMPACT DISC PLAYER

CDX-P670 X1N/EW

COMPACT disc DIGITAL AUDIO

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

Model No.	Order No.	Mech. Module	Remarks
CX-892	CRT2356	C7	CD Mech. Module:Circuit Description, Mech. Description, Disassembly

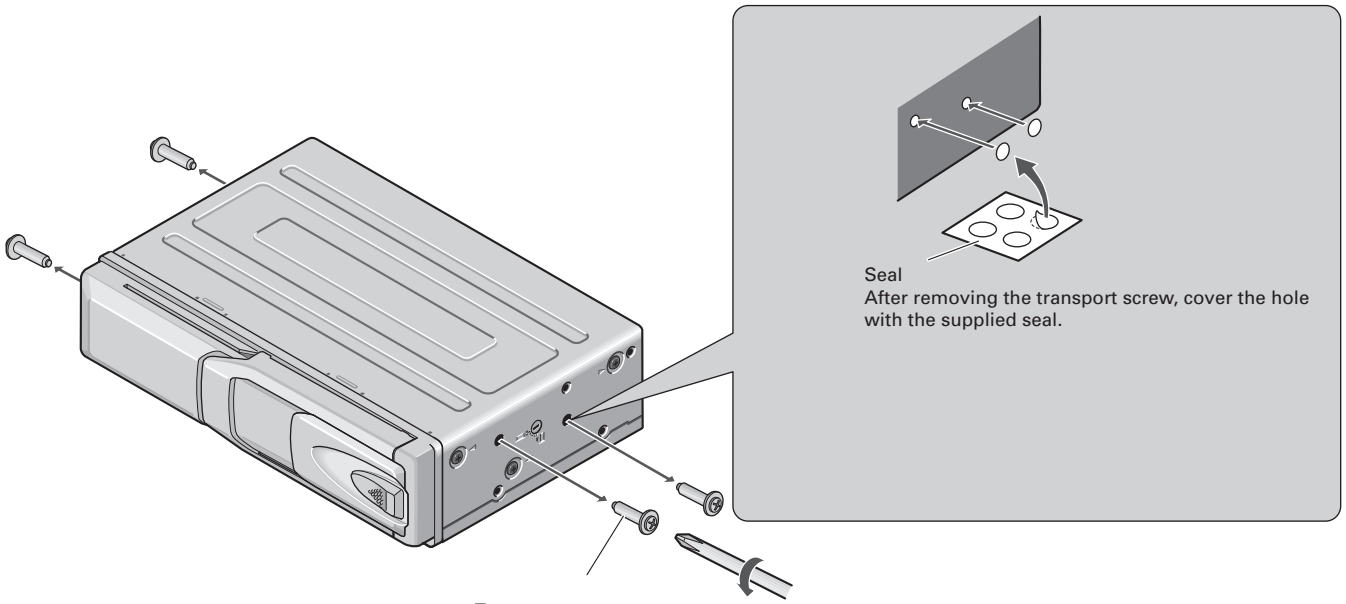
CONTENTS

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

K-ZZY. NOV. 2000 Printed in Japan

● CD Player Service Precautions

1. For pickup unit(CXX1285) handling, please refer to"Disassembly"(see page 44).
   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 checking the grating after changing the service pickup unit(see page 32).
4. Since these screws protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.



Seal
After removing the transport screw, cover the hole with the supplied seal.

Transport screw
Attach to the original position before transporting the set.

A transport screw has been attached to the set in order to protect it during transportation. After removing the transport screw, cover the hole with the supplied seal. Be sure to remove the transport screw before mounting the set. The removed transport screw should be retained in the accessory bag for use the next time the set is transported.

1. SAFETY INFORMATION

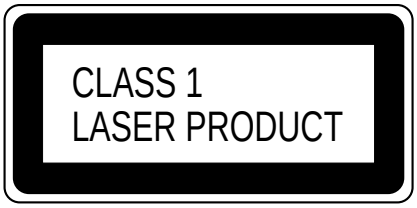
1. Safety Precautions for those who Service this Unit.

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

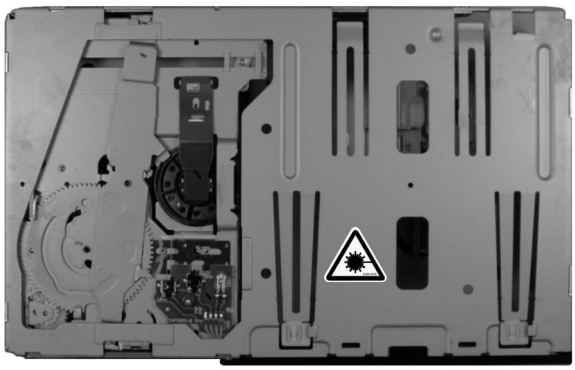
Caution:

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 rear of the player.



3. The triangular label is attached to the mechanism unit frame.

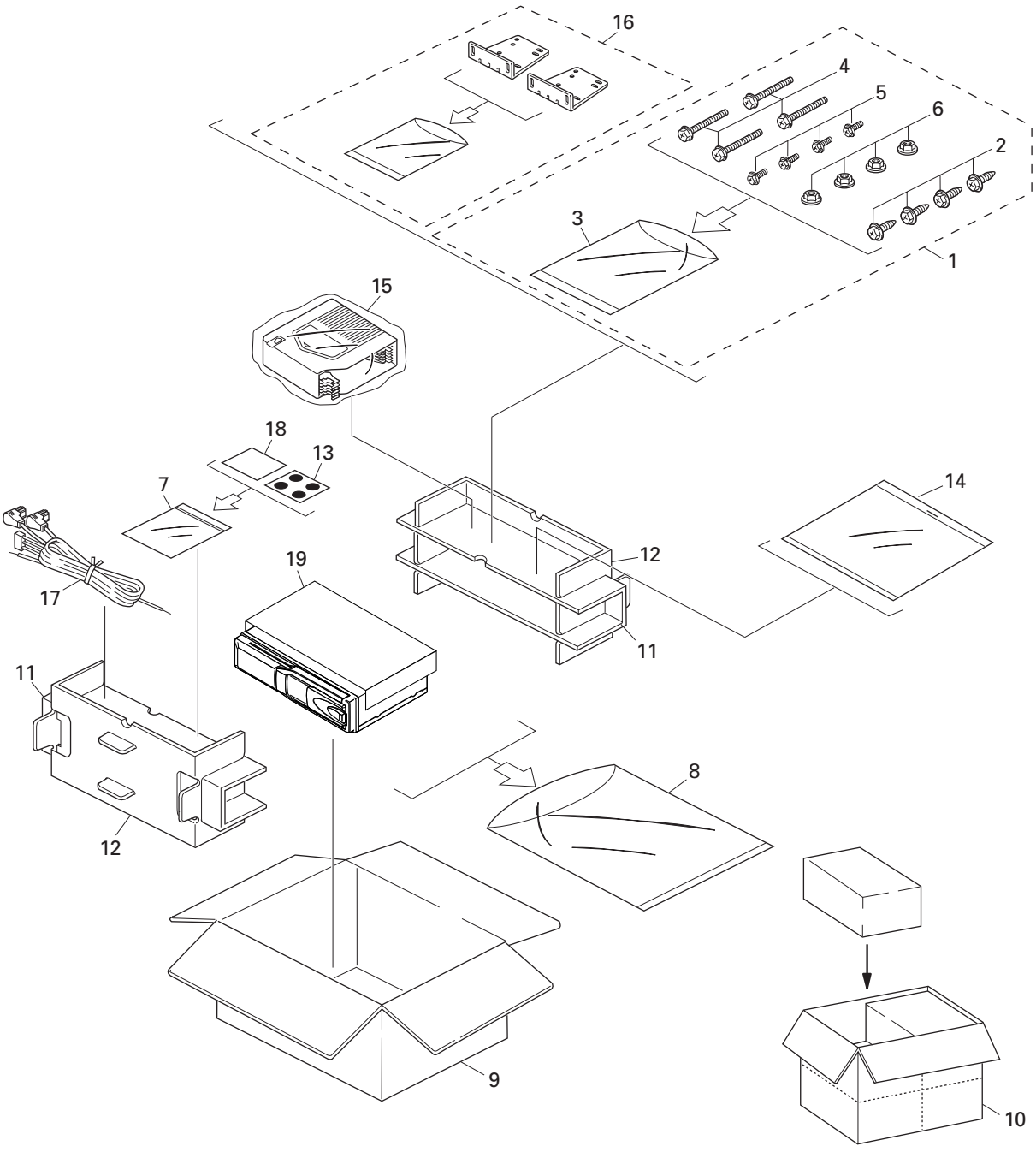


4. Specifications of Laser Diode

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.

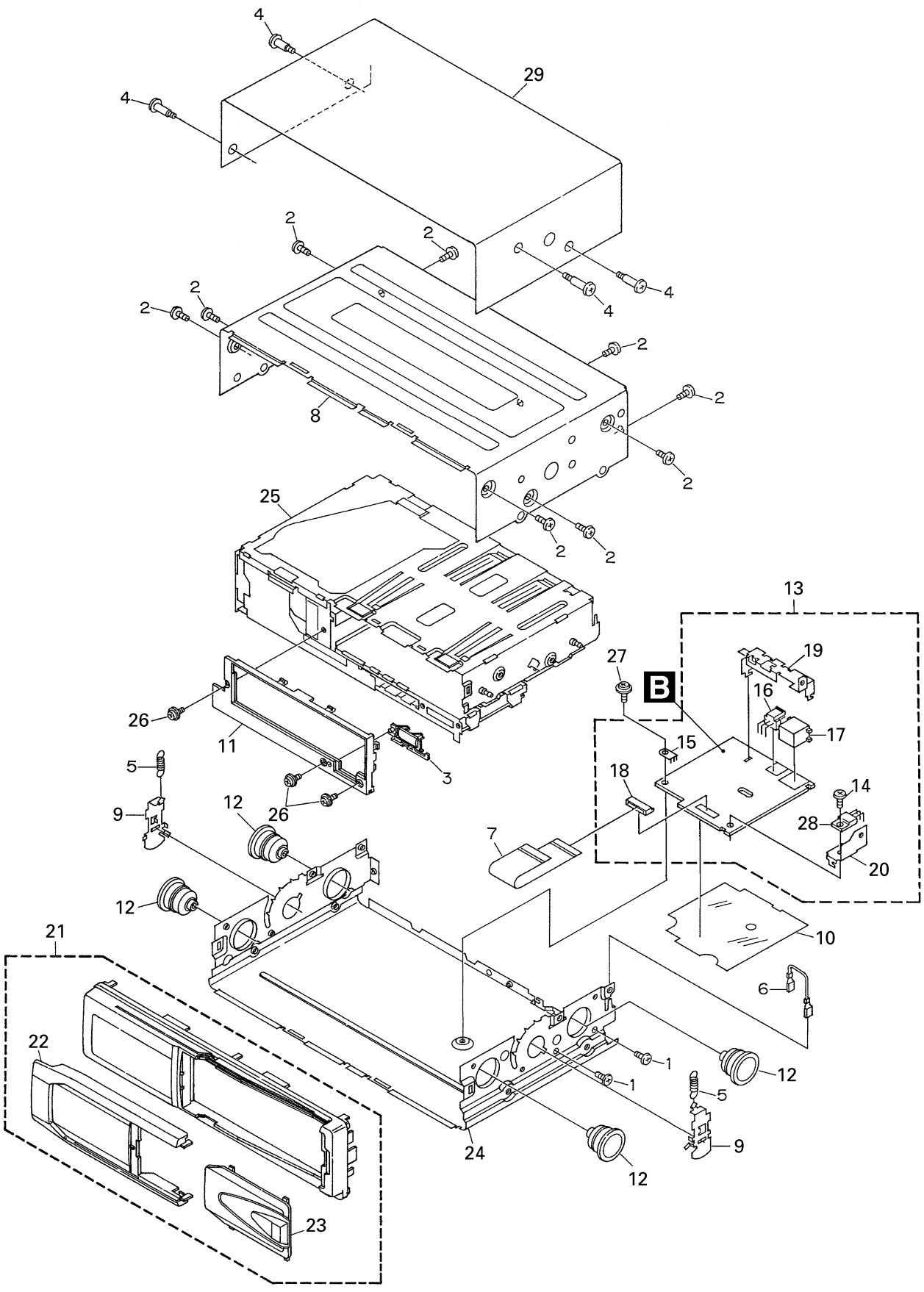
● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw Assy	CEA1962
	2	Screw	CBA1295
*	3	Polyethylene Sheet	CNM5158
	4	Screw	HMB60P500FMC
	5	Screw	HMF40P080FZK
	6	Nut	NF60FMC
	8	Polyethylene Bag	CEG1042
*	7	Polyethylene Bag	CEG1099
	9	Carton	CHG4278
	10	Contain Box	CHL4278
	11	Protector	CHP2133
	12	Protector	CHP2134
	13	Seal	CNM5599
	14-1	Owner's Manual	CRD3318
	14-2	Owner's Manual	CRD3319
*	14-3	Warranty Card	CRY1157
	15	Magazine Assy	CXB6518
	16	Angle Assy	CXB3591
	17	Cord	CDE5830
*	18	Caution Card	CRP1090
*	19	Caution Card	CRP1232

● Owner's Manual

Part No.	Language
CRD3318	English, Italian, French
CRD3319	German, Dutch, Spanish

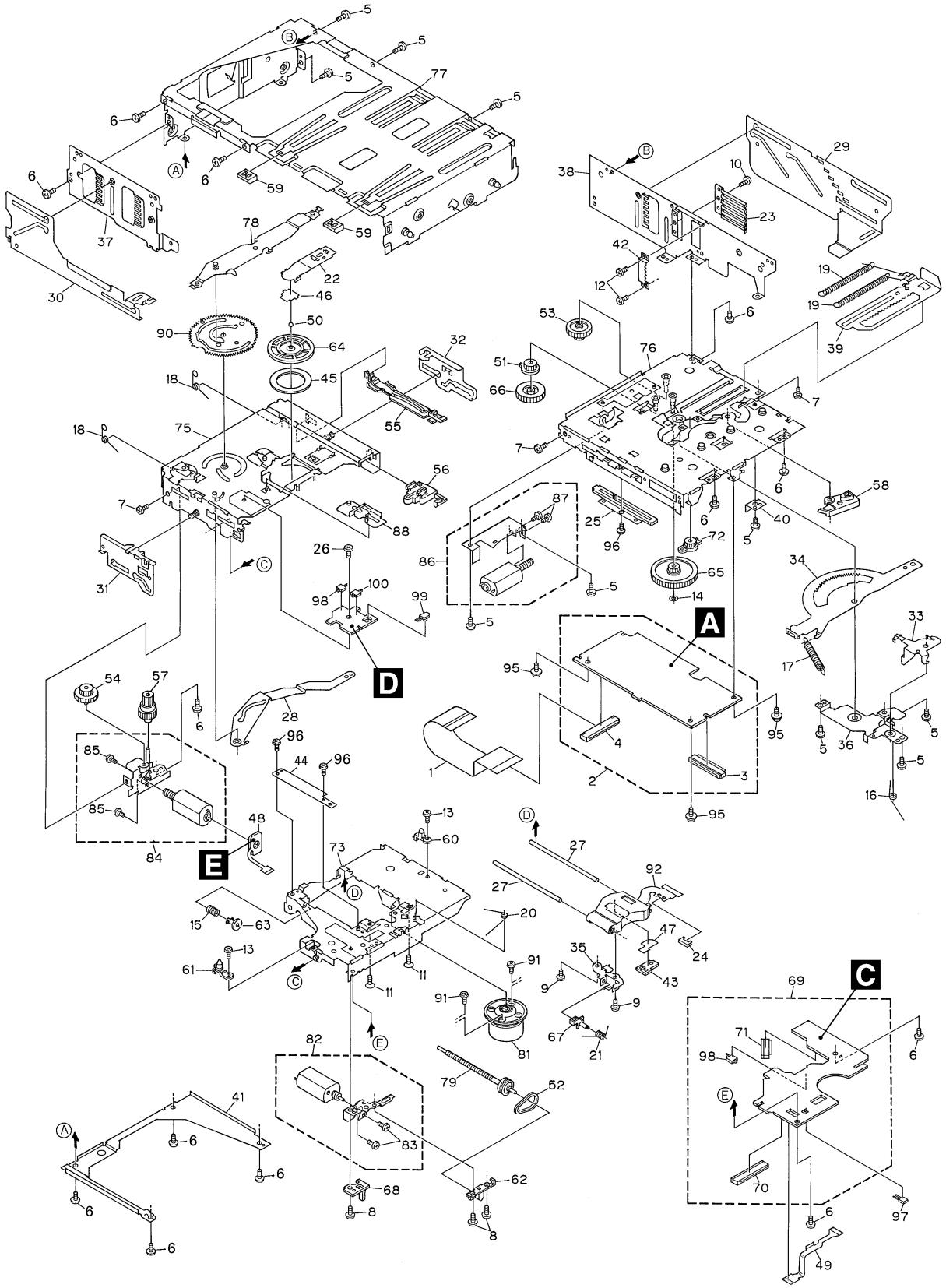
2.2 EXTERIOR


4
4
29
2
2
2
2
4
4
2
2
2
2
8
2
2
2
25
13
19
27
B
16
17
15
18
14
28
20
26
11
3
5
9
12
26
7
12
10
6
21
22
1
1
12
5
9
24
12
23

● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ26P040FMC
	2	Screw	BMZ30P040FZK
	3	Button	CAC6363
	4	Screw	CBA1460
	5	Spring	CBH1859
	6	Connector	CDE5525
	7	Connector	CDE6478
	8	Upper Case	CNB2431
	9	Arm	CNC8058
	10	Insulator	CNM6074
	11	Panel	CNS5216
	12	Damper	CNV5591
	13	Power Unit	CWX2512
	14	Screw	BMZ26P060FMC
	15	Terminal(CN902)	CKF1059
	16	Plug(CN901)	CKS-460
	17	Connector(CN921)	CKS3407
	18	Connector(CN911)	CKS3831
	19	Holder	CNC8055
	20	Holder	CNC8056
	21	Grille Assy	CXB6823
	22	Door	CAT2198
	23	Door	CAT2199
	24	Lower Case Unit	CXB7005
	25	CD Mechanism Module(C7R2)	CXK4850
	26	Screw	IMS20P030FZK
	27	Screw	IMS26P040FMC
	28	Transistor(Q910)	2SD2396
*	29	Caution Card	CRP1232

2.3 CD MECHANISM MODULE

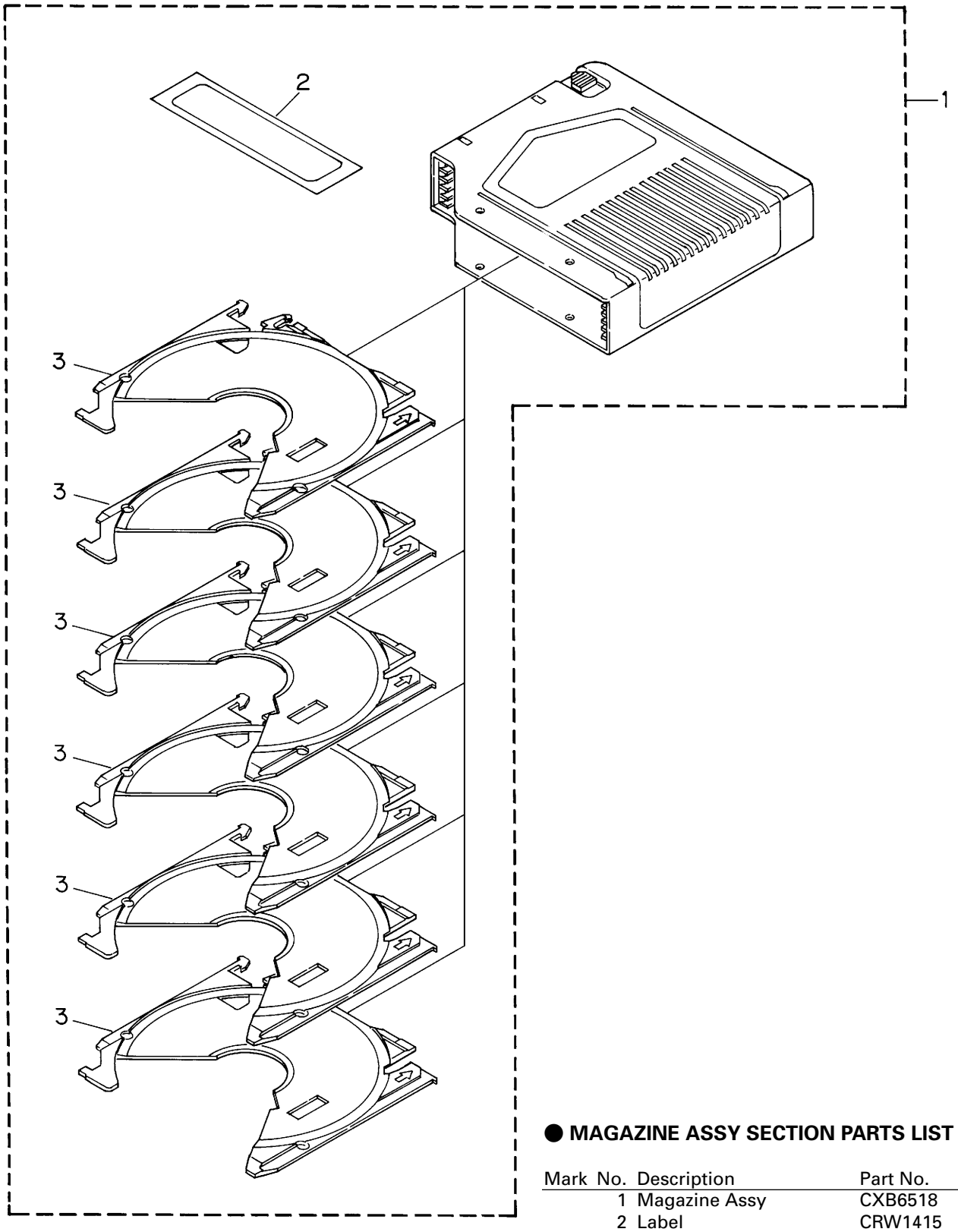


● CD MECHANISM MODULE SECTION PARTS LIST

Mark No.	Description	Part No.
1	Connector	CDE6069
2	CD Core Unit	CWX2487
3	Connector(CN701)	CKS1963
4	Connector(CN101)	CKS2272
5	Screw	BMZ20P025FMC
6	Screw(M2x2.5)	CBA1037
7	Screw(M2x2.5)	CBA1041
8	Screw(M2x2)	CBA1176
9	Screw(M2x4)	CBA1362
10	Screw(M2x1.4)	CBA1387
11	Screw(M2x2.5)	CBA1493
12	Screw(M2x1.6)	CBA1476
13	Screw(M2x3)	CBA1486
14	Washer	CBF1038
15	Spring	CBH2172
16	Spring	CBH2173
17	Spring	CBH2174
18	Spring	CBH2175
19	Spring	CBH2285
20	Spring	CBH2177
21	Spring	CBH2178
22	Spring	CBL1390
23	Spring	CBL1393
24	Short Pin	CBL1239
25	Volume(VR801)	CCW1023
26	Screw(M2x1.5)	CBA1491
27	Shaft	CLA3894
28	Arm	CNC8482
29	Lever	CNC7902
30	Lever	CNC7904
31	Lever	CNC7905
32	Lever	CNC7906
33	Arm	CNC7908
34	Arm	CNC7909
35	Holder	CNC7911
36	Holder	CNC7912
37	Frame	CNC7917
38	Frame	CNC7918
39	Lever	CNC7919
40	Stopper	CNC7920
41	Frame	CNC7921
42	Bracket	CNC8354
43	Plate	CNC8375
44	Cover	CNC8434
45	Sheet	CNM6009
46	Spacer	CNM6428
47	Sheet	CNM6296
48	PCB	CNP5227
49	PCB	CNP5228
50	Ball	CNR1189
51	Gear	CNR1531
52	Belt	CNT1086
53	Gear	CNV5472
54	Gear	CNV5473
55	Rail	CNV5920
56	Lever	CNV6091
57	Gear	CNV5477
58	Arm	CNV5478
59	Holder	CNV5480
60	Guide	CNV5921
61	Guide	CNV5922
62	Holder	CNV5483
63	Holder	CNV5484
64	Clamper	CNV5485
65	Gear	CNV5486
66	Gear	CNV5562
67	Holder	CNV5563
68	Lighting Conductor	CNV5785
69	Mechanism PCB	CWX2303
70	Connector(CN801)	CKS1965
71	Connector(CN802)	CKS3486
72	Damper Unit	CXA7714
73	Chassis Unit	CXB4463
74	•••••	
75	Chassis Unit	CXB4461
76	Magazine Holder Unit	CXB4459
77	Frame Unit	CXB4426
78	Arm Unit	CXB2855
79	Screw Unit	CXB4464
80	•••••	
81	Motor Unit(M851)(SPINDLE)	CXB3003
82	Motor Unit(M854)(CARRIAGE)	CXB3004
83	Screw	JFZ20P025FMC
84	Motor Unit(M853)(TRAY)	CXB4421
85	Screw	JFZ20P025FMC
86	Motor Unit(M852)(ELV)	CXB3006
87	Screw	JFZ20P025FMC
88	Lever Unit	CXB3938
89	•••••	
90	Gear Unit	CXB5061

Mark	No.	Description	Part No.
	91	Screw	JGZ17P025FZK
	92	Pickup Unit(Service)	CXX1285
	93	•••••	
	94	•••••	
	95	Screw	IMS26P040FMC
	96	Screw	JFZ20P025FNI
	97	Photo-transistor(Q851)	PT4800
	98	Spring Switch(S851,S853)	CSN1051
	99	LED(D851)	CN504-2
	100	Spring Switch(S852)	CSN1052

2.4 MAGAZINE ASSY

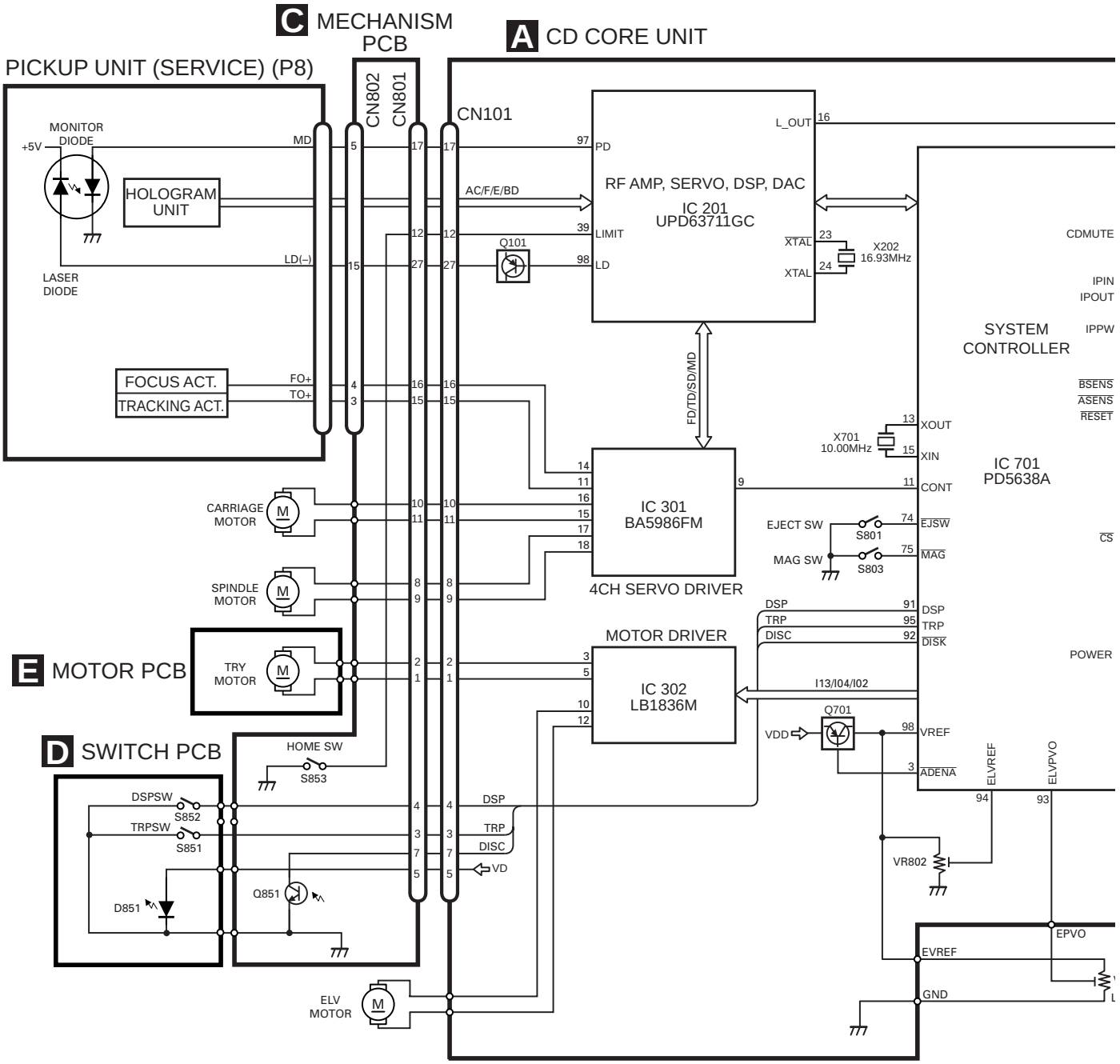


● **MAGAZINE ASSY SECTION PARTS LIST**

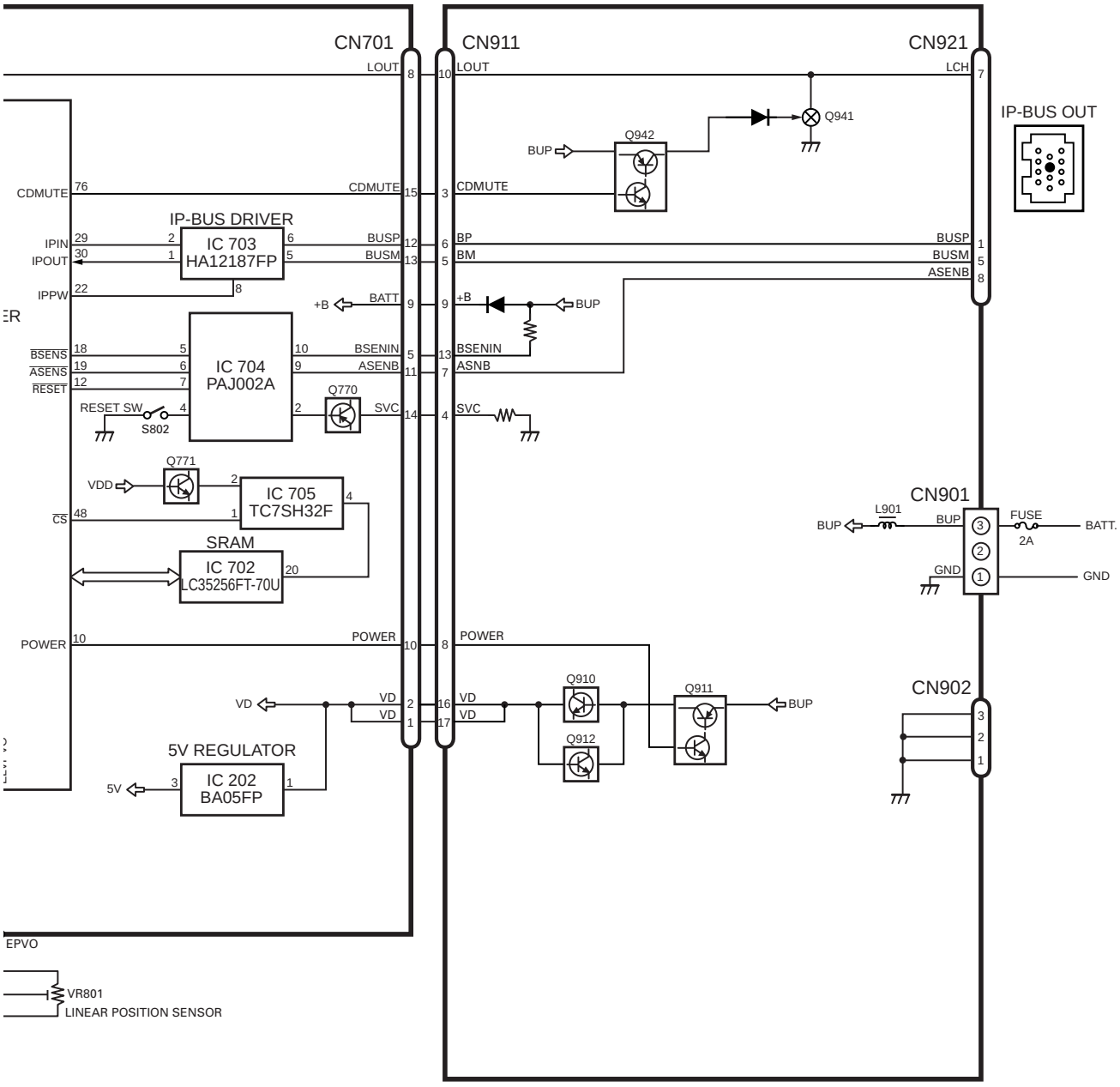
Mark No.	Description	Part No.
1	Magazine Assy	CXB6518
2	Label	CRW1415
3	Tray	CNV5341

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

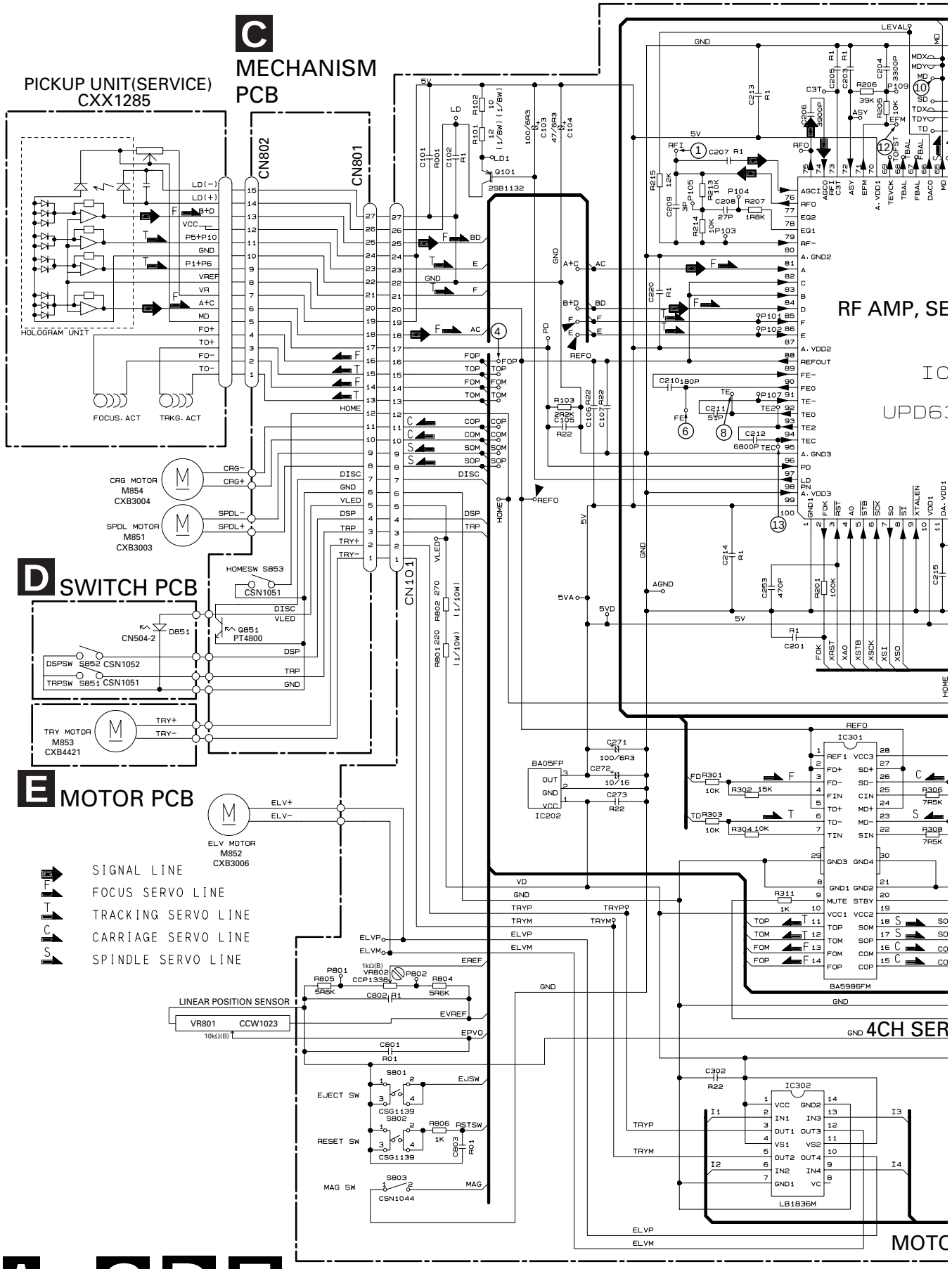


B POWER UNIT


CN701
CN911
CN921
LOUT
LCH
IP-BUS OUT
Q941
Q942
BUP
CDMUTE
IP-BUS DRIVER
IC 703
HA12187FP
IPIN
IPOUT
IPPW
BUSP
BUSM
BP
BM
ASENB
BATT
+B
IC 704
PAJ002A
BSENS
ASENS
RESET
BSENIN
ASNB
Q770
RESET SW
S802
SVC
Q771
VDD
IC 705
TC7SH32F
CS
SRAM
IC 702
LC35256FT-70U
CN901
L901
FUSE
2A
BATT.
GND
POWER
Q910
Q911
Q912
VD
CN902
5V REGULATOR
IC 202
BA05FP
5V
EPVO
VR801
LINEAR POSITION SENSOR

3.2 CD MECHANISM MODULE

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

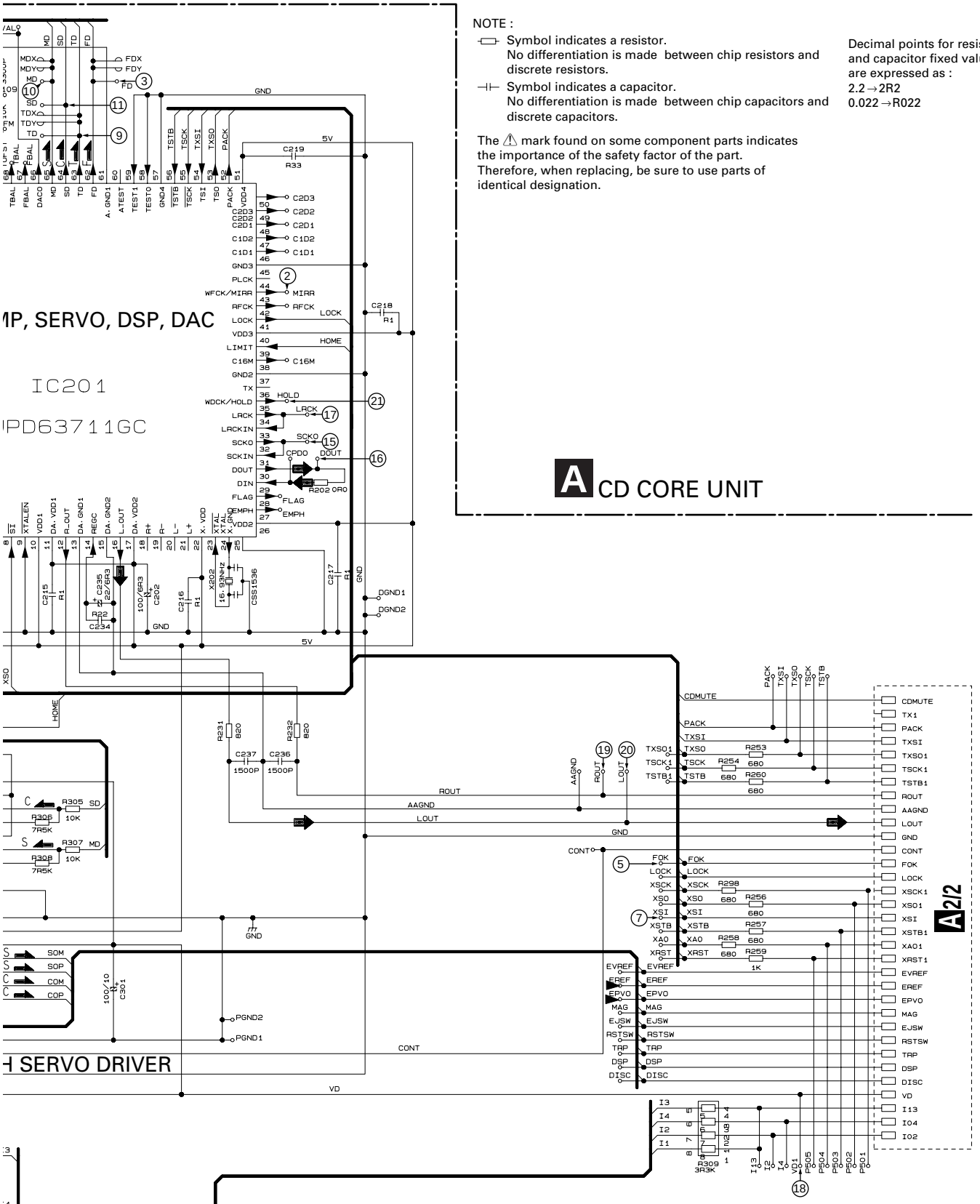


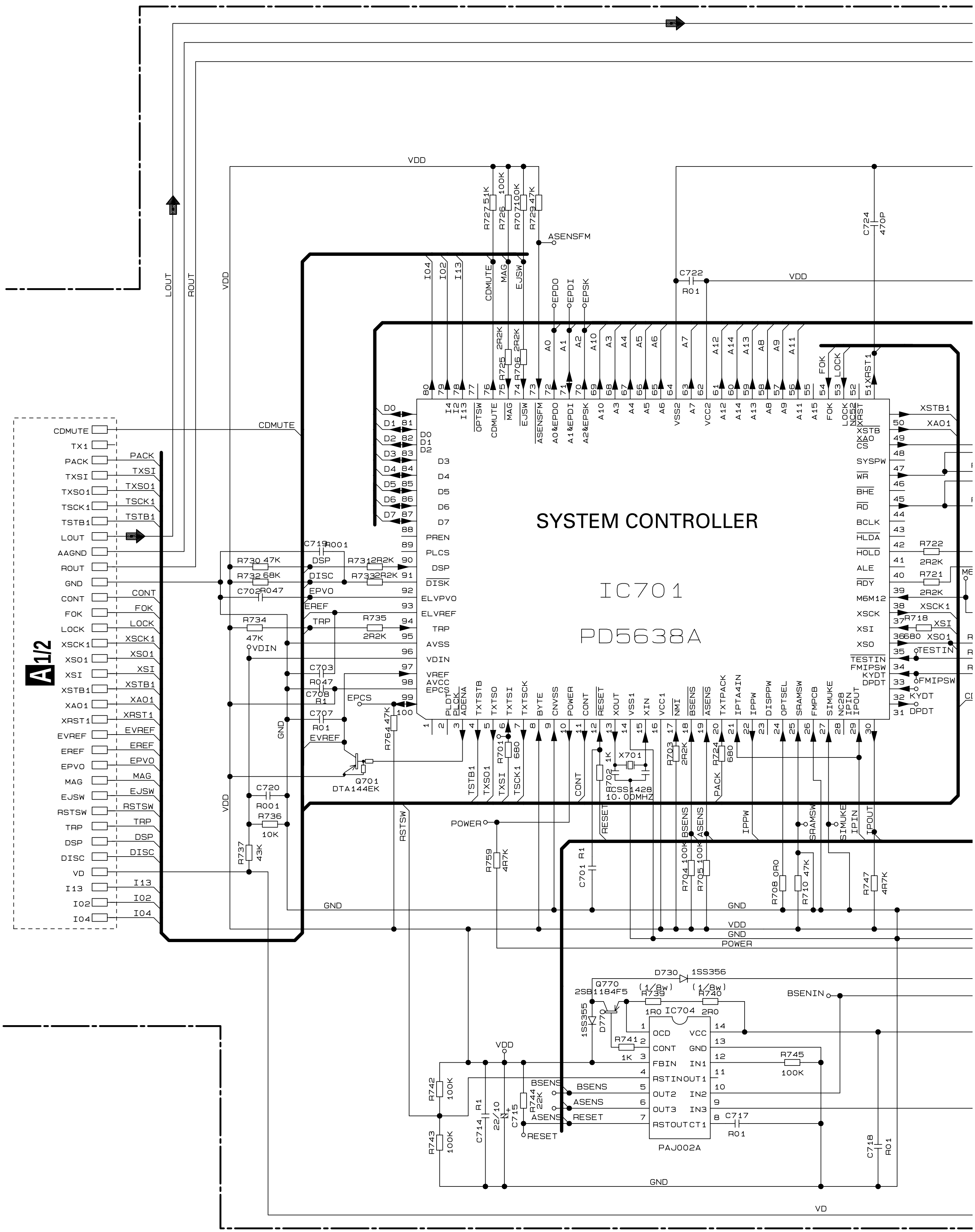
NOTE :

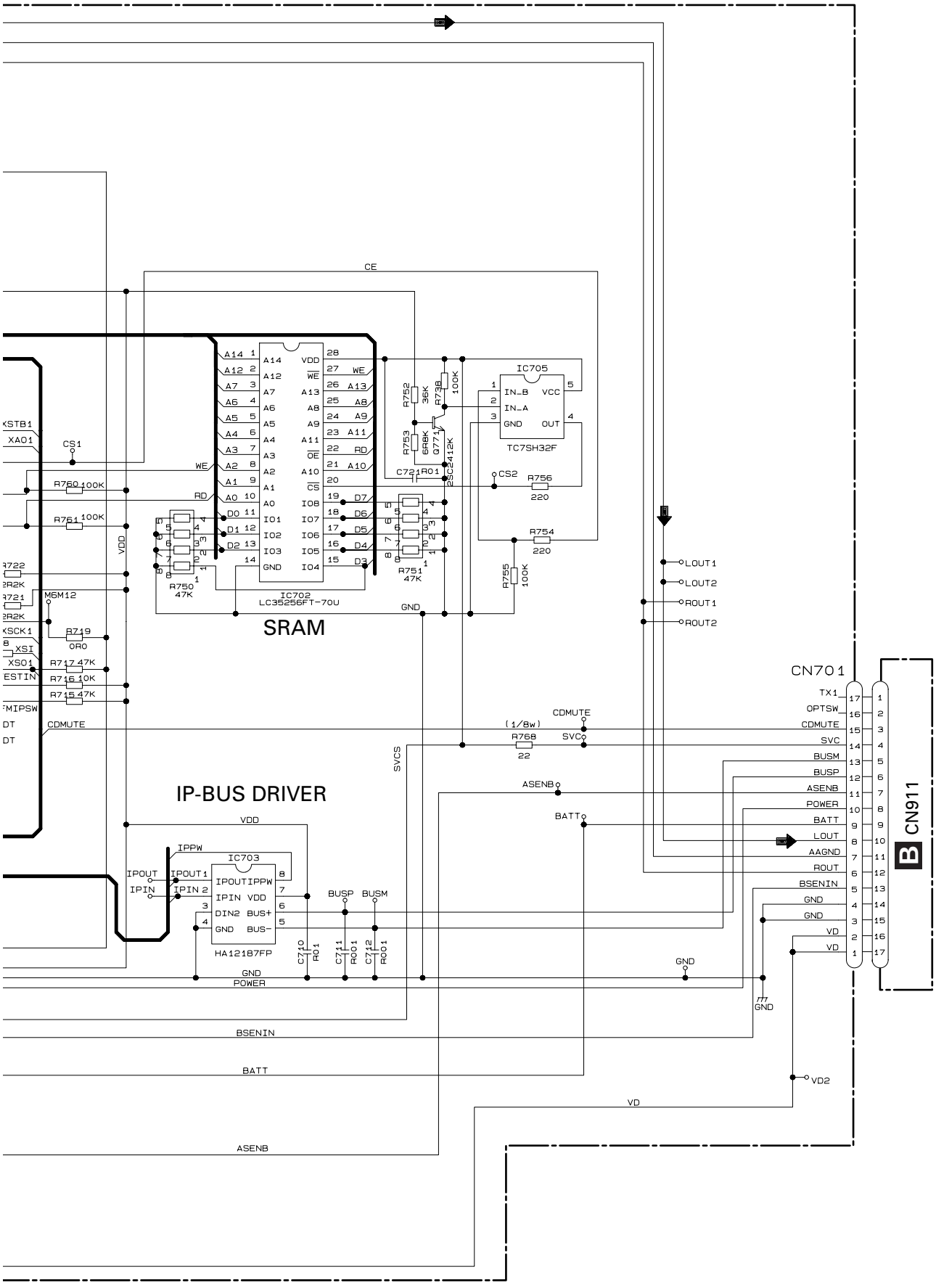
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ 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.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2 → 2R2
0.022 → R022



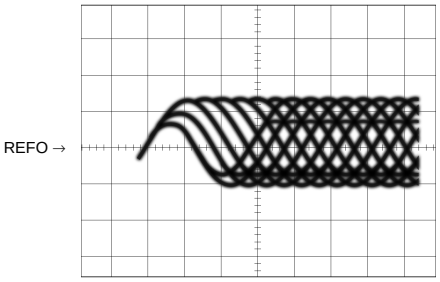

SYSTEM CONTROLLER
IC701
PD5638A
A1/2
IC704
PAJ002A
Q701
DTA144EK
Q770
2SB1184F5
D730 1SS356
D770 1SS355
X701
RCSS1428
10.00MHZ
VDD
GND
VD
POWER
ASENSFM
CDMUTE
TX1
PACK
TXSI
TXSO1
TSCK1
TSTB1
LOUT
AAGND
ROUT
CONT
FOK
LOCK
XSCK1
XSO1
XSI
XSTB1
XAO1
XRST1
EVREF
EREF
EPVO
MAG
EJSW
RSTSW
TRP
DSP
DISC
I13
IO2
IO4
BSENS
ASENS
RESET
BSENIN


SRAM
IP-BUS DRIVER
IC702
LC35256FT-70U
IC705
TC7SH32F
IC703
HA12187FP
CN701
CE
CS1
CS2
WE
RD
VDD
GND
CDMUTE
SVCS
ASENB
BATT
BSENIN
VD
VD2
POWER
BUSP
BUSM
LOUT1
LOUT2
ROUT1
ROUT2
TX1
OPTSW
SVC
LOUT
AAGND
ROUT

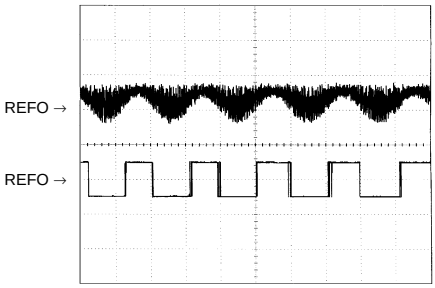
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

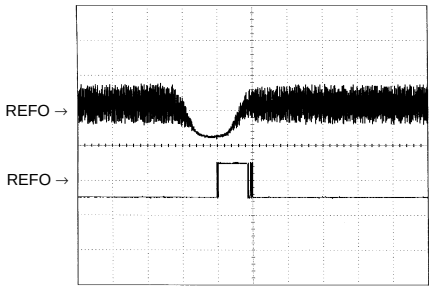
① RFI 0.5V/div. 0.5µs/div.
Normal mode: play



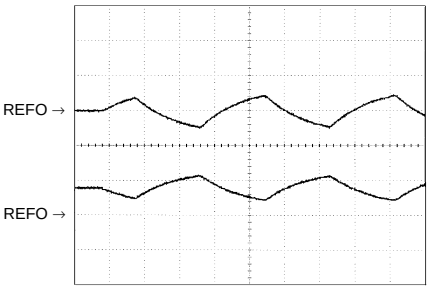
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



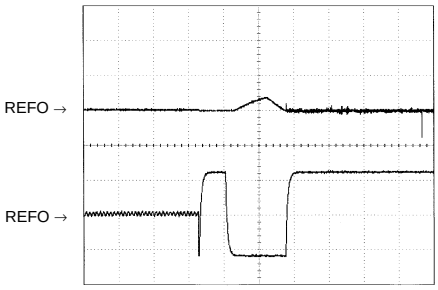
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800µm



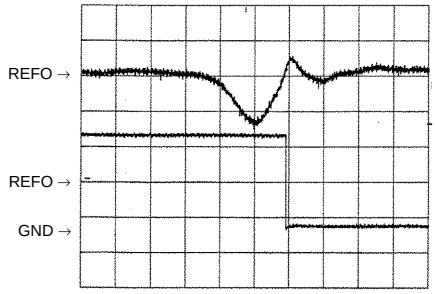
③ CH1: FD 0.5V/div. 0.2s/div.
④ CH2: FOR 2V/div.
Test mode: No disc, Focus close



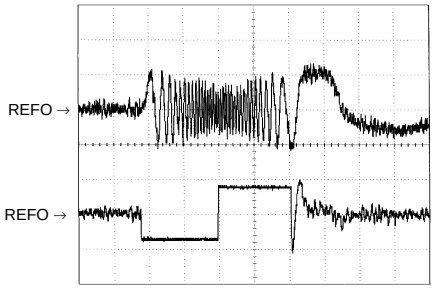
③ CH1: FD 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



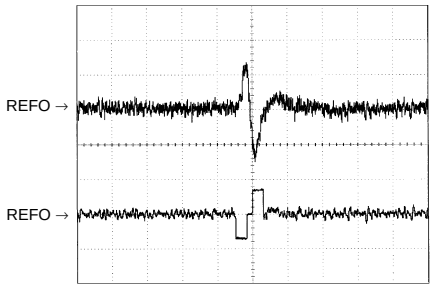
⑥ CH1: FE 0.5V/div. 1ms/div.
⑦ CH2: XSI 2V/div.
Normal mode: Focus close



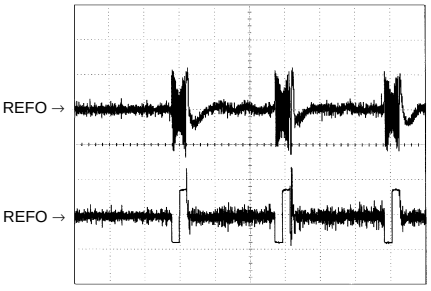
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 32 tracks jump (REV)



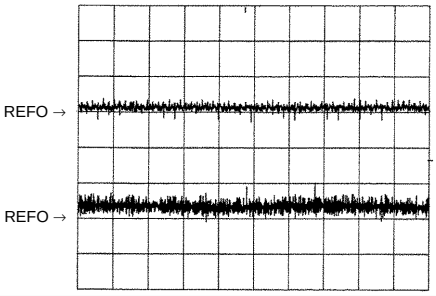
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: Single jump (REV)



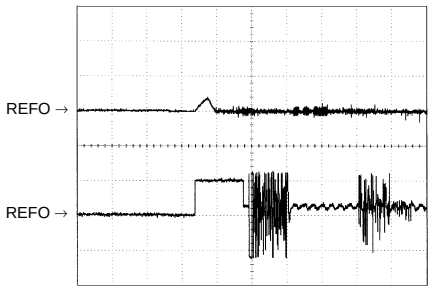
⑧ CH1: TE 0.5V/div. 5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 100 tracks jump (REV)



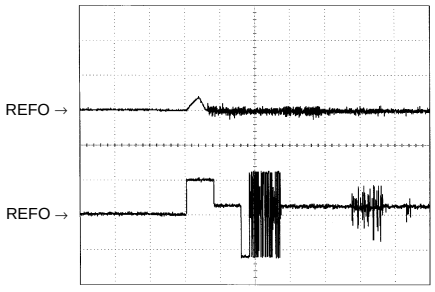
⑥ CH1: FE 0.1V/div. 20ms/div.
③ CH2: FD 0.2V/div.
Normal mode: Play



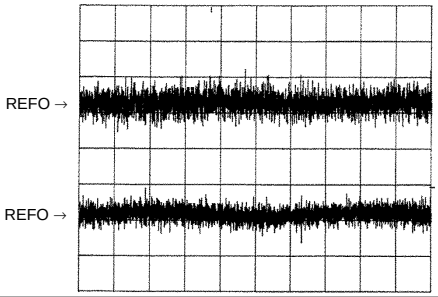
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (12cm)



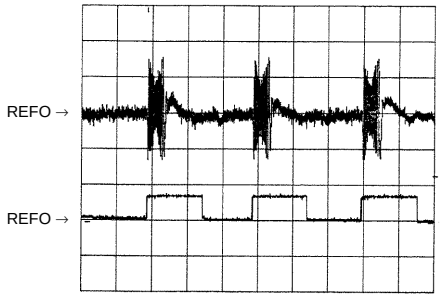
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (8cm)



⑧ CH1: TE 0.2V/div. 20ms/div.
⑨ CH2: TD 0.2V/div.
Normal mode: play

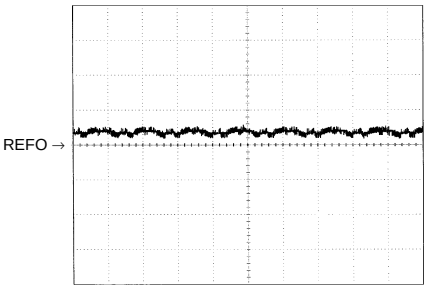


⑧ CH1: TE 0.5V/div. 5ms/div.
⑪ CH2: SD 0.5V/div.
TEST mode:100Tracks jump(FWD)



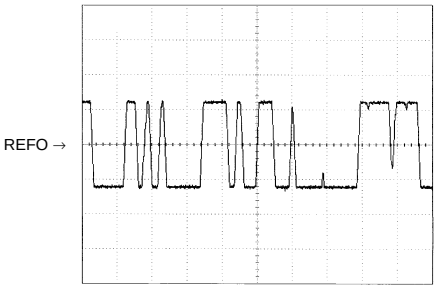
⑩ MD 0.5V/div. 0.1s/div.

Normal mode: Play (12cm)



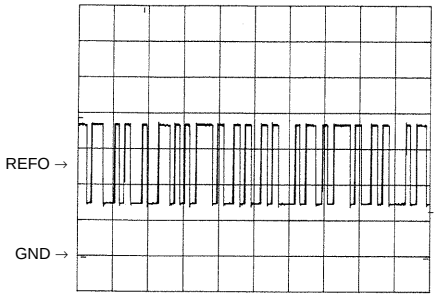
⑩ MD 1V/div. 10ms/div.

Long Search (12cm)

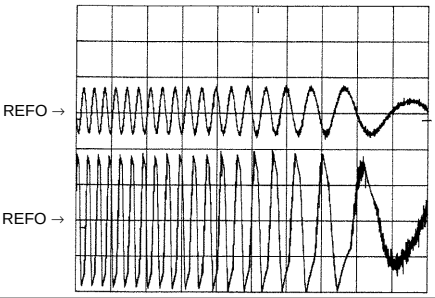


⑫ EFM 1V/div. 5µs/div.

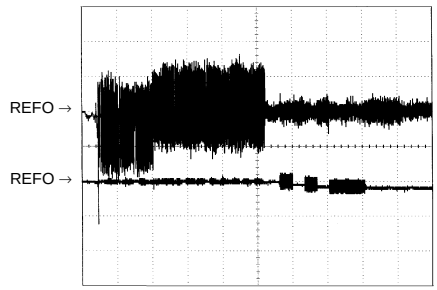
Normal mode: Play



⑧ CH1: TE 1V/div. 2ms/div.
⑬ CH2: TEC 1V/div.
Test mode: Focus close
Tracking open

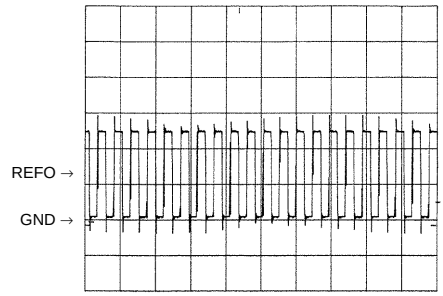


⑧ CH1: TE 0.5V/div. 0.2s/div.
⑥ CH2: FE 0.5V/div.
Normal mode: AGC after focus close



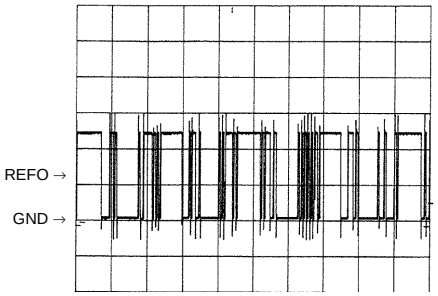
⑮ SCKO 2V/div. 1µs/div.

Normal mode: Play

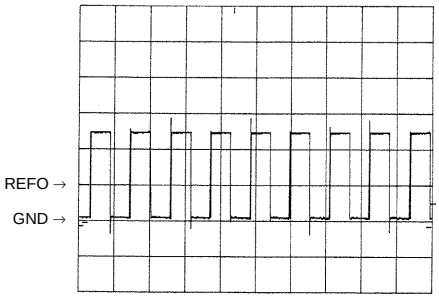


⑯ DOUT 2V/div. 10µs/div.

Normal mode: Play

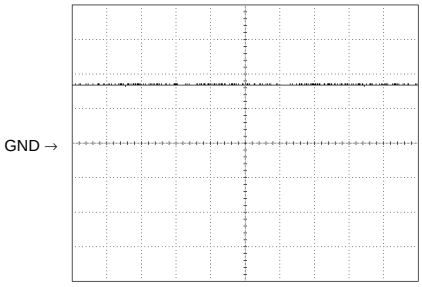


⑰ LRCK 2V/div. 20µs/div.
Normal mode: Play

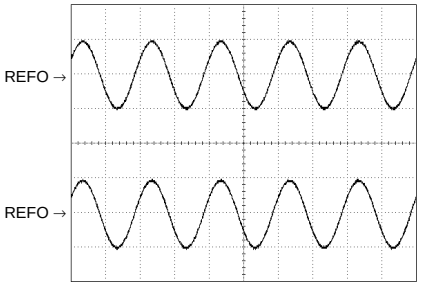


⑱ VD 5V/div. 50ms/div.

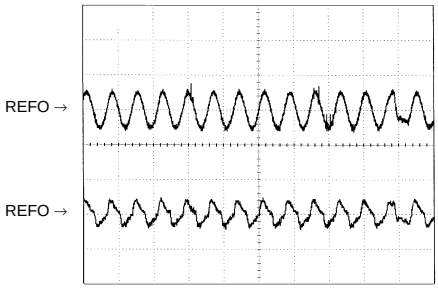
Normal mode: No disc



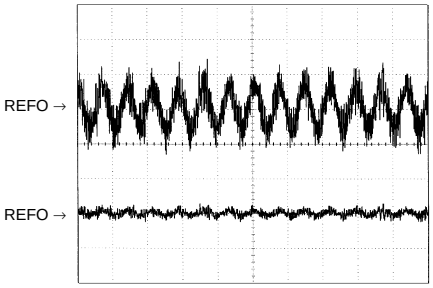
⑲ CH1: R OUT 2V/div.
⑳ CH2: L OUT 2V/div.
500µs/div.
Normal mode: Play (1kHz 0dB)



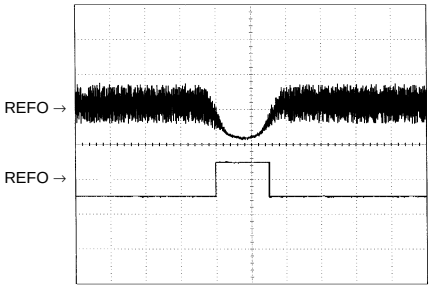
⑥ CH1: FE 0.2V/div.
③ CH2: FD 0.5V/div.
1ms/div.
Normal mode: During AGC



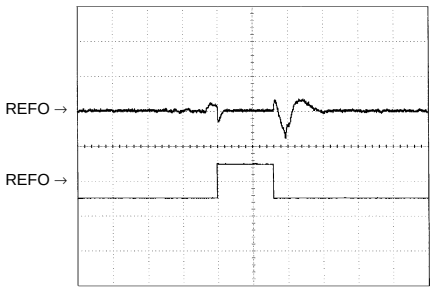
⑧ CH1: TE 0.2V/div.
⑨ CH2: TD 0.5V/div.
1ms/div.
Normal mode: During AGC



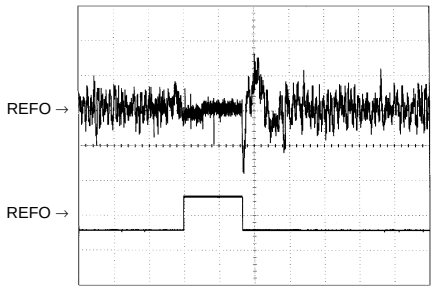
① CH1: RFI 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)



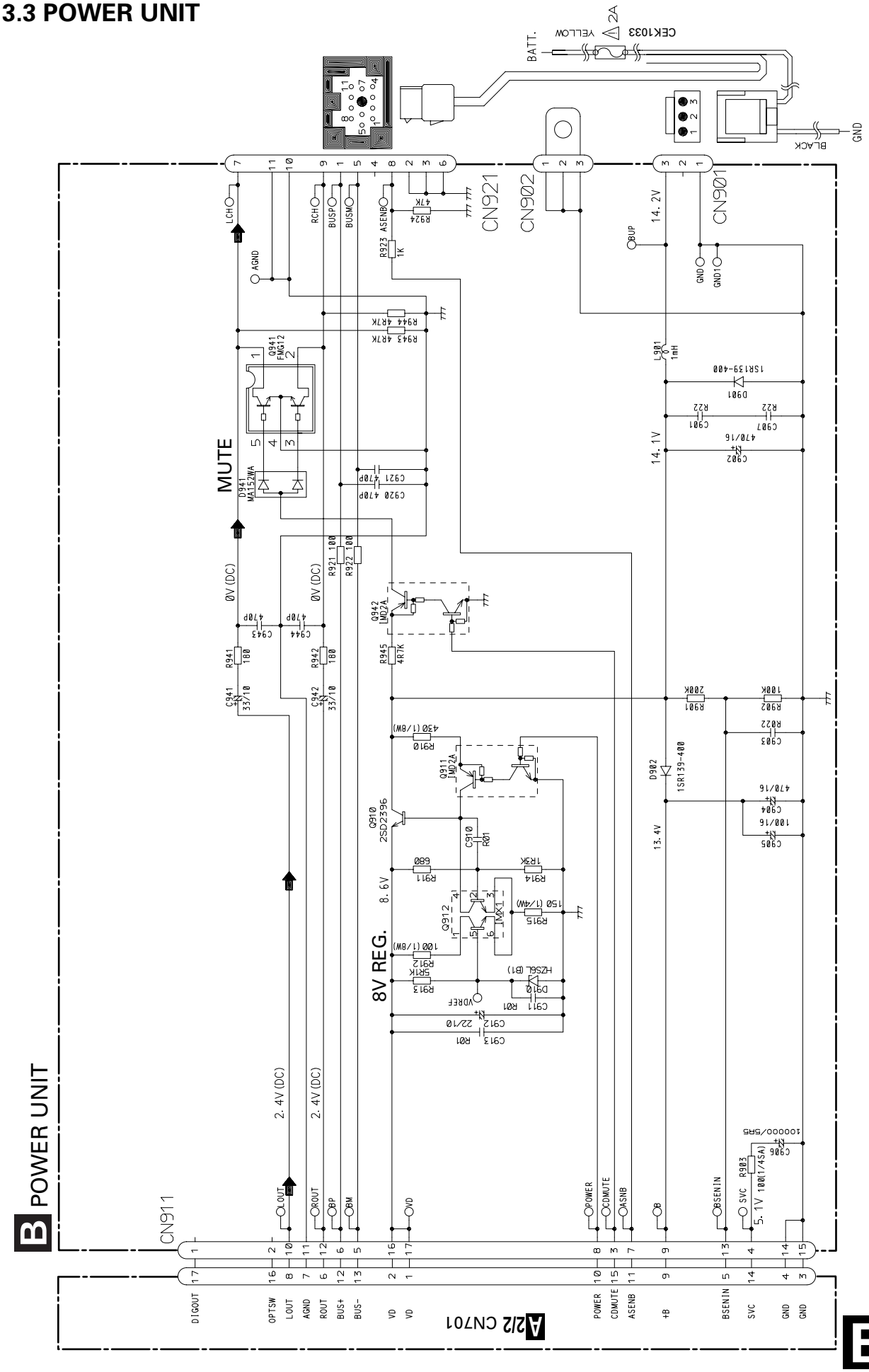
③ CH1: FD 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)



⑨ CH1: TD 0.1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)



3.3 POWER UNIT

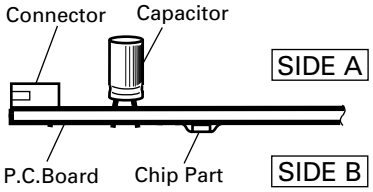


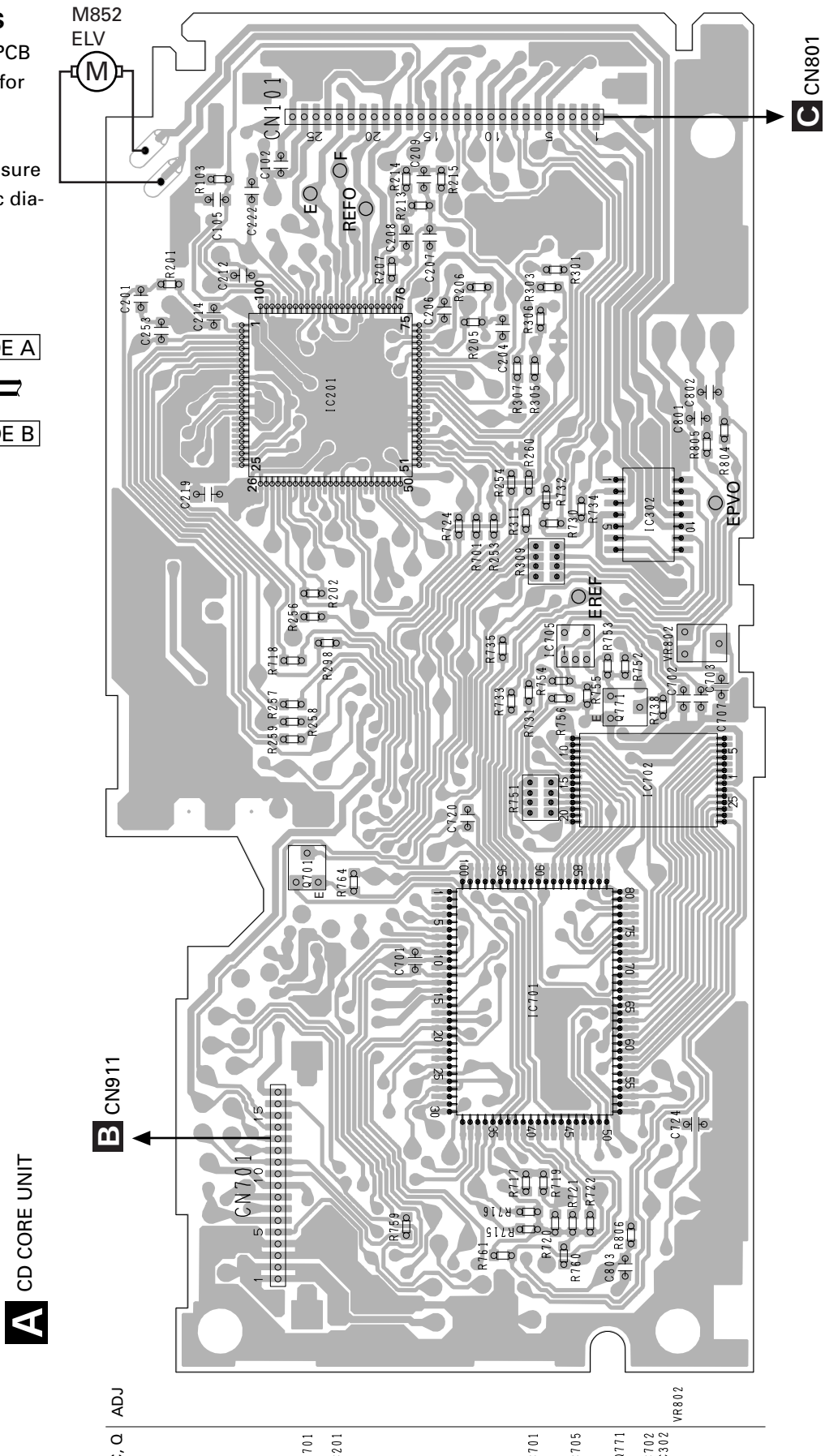
4. PCB CONNECTION DIAGRAM

4.1 CD CORE UNIT

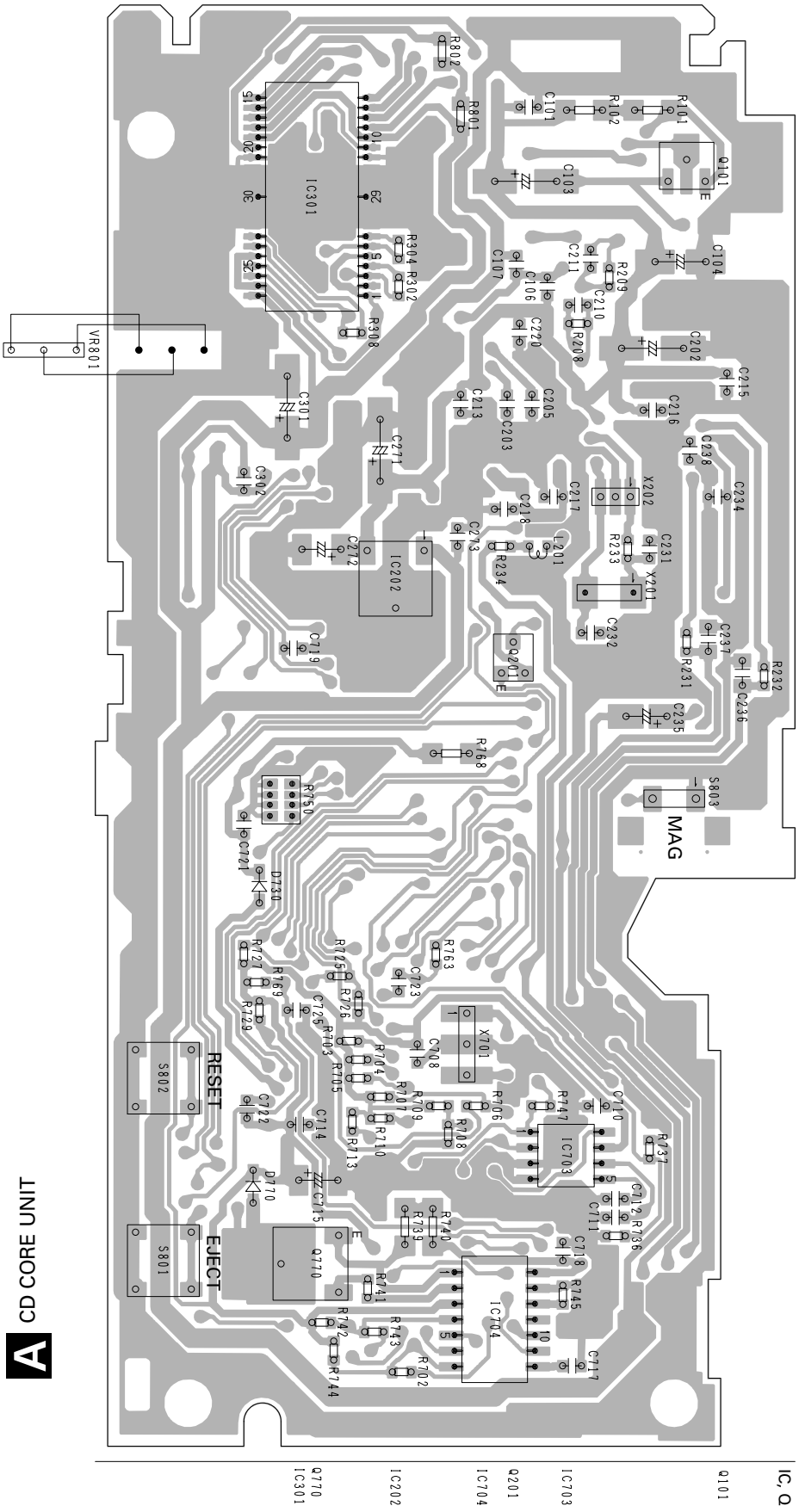
NOTE FOR PCB DIAGRAMS

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





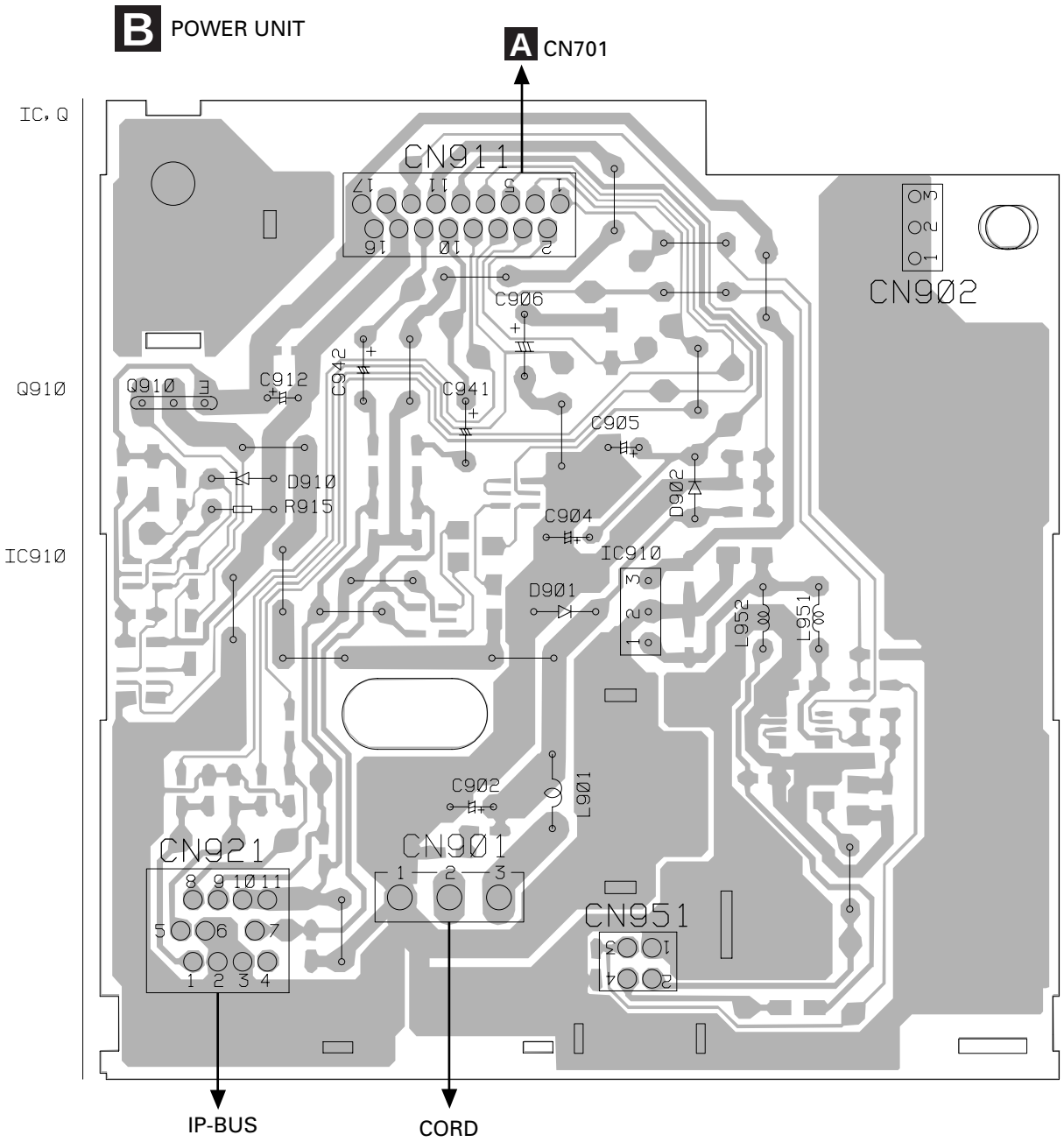
SIDE B



A CD CORE UNIT

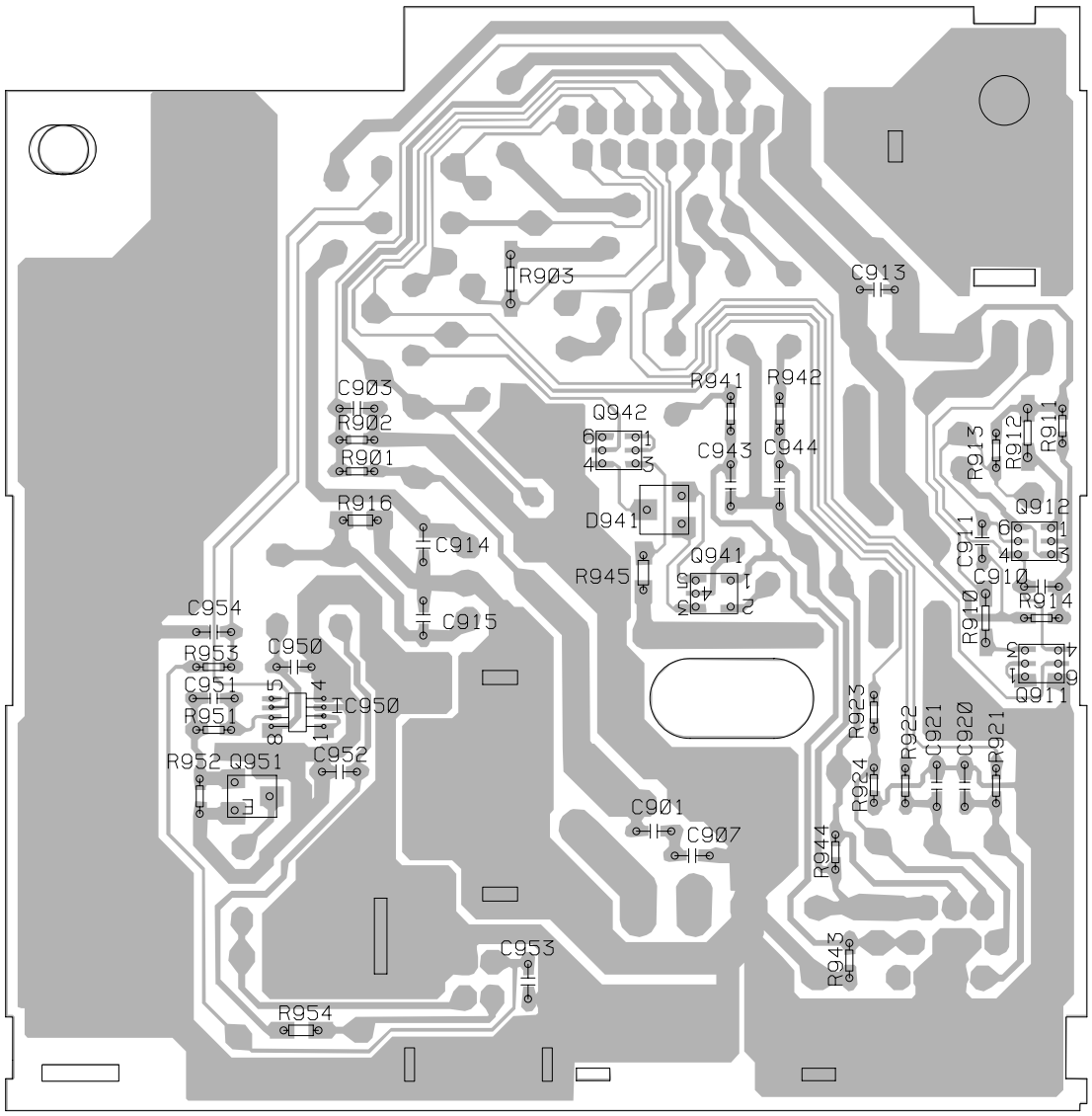
4.2 POWER UNIT

SIDE A



SIDE B

B POWER UNIT



IC, Q

Q942

Q912

Q941

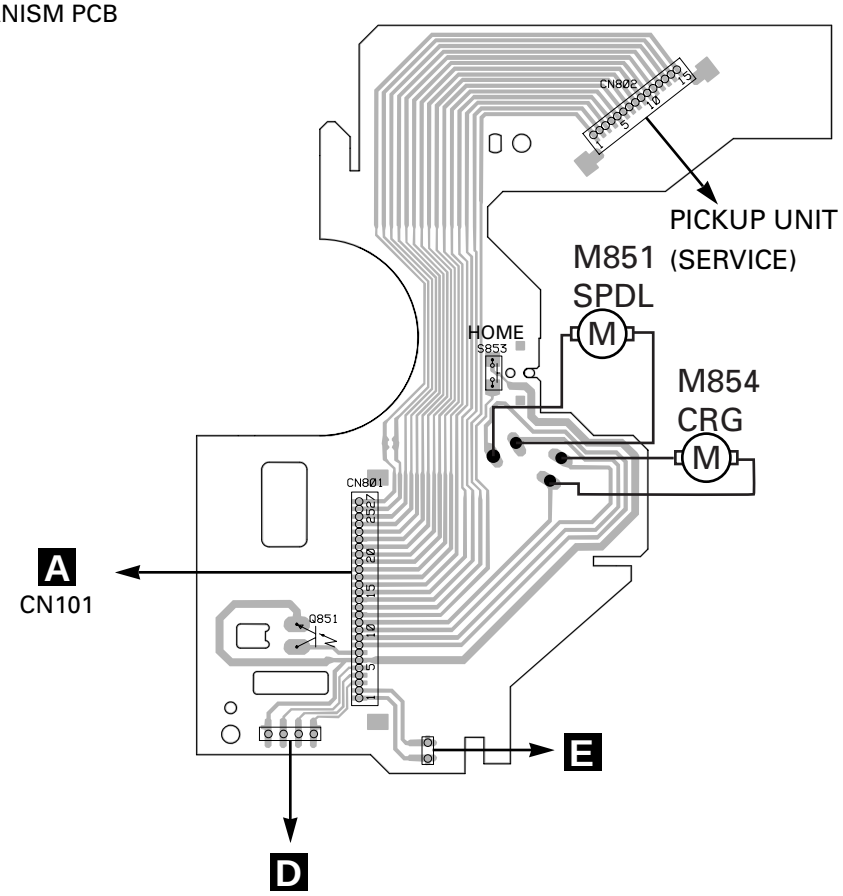
Q911

IC950

Q951

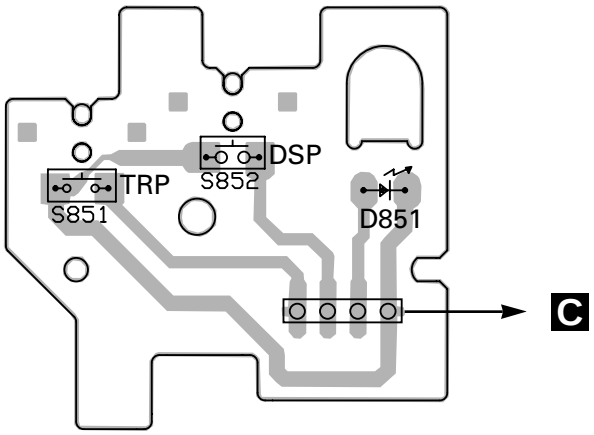
4.3 MECHANISM PCB

C MECHANISM PCB



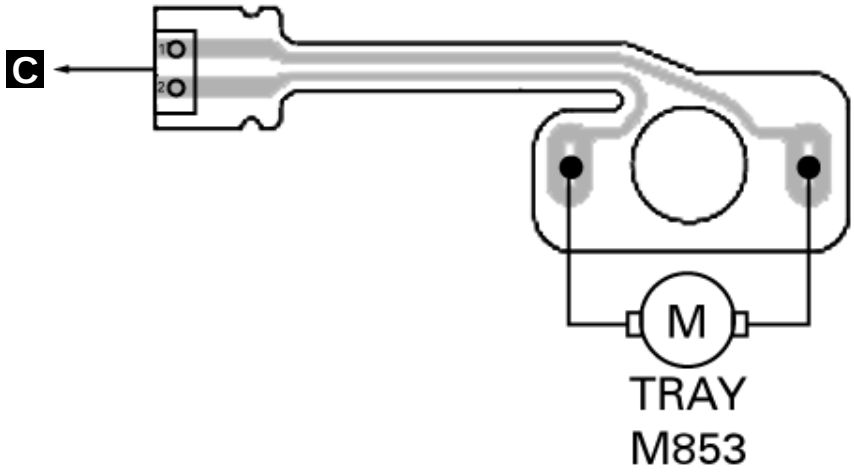
4.4 SWITCH PCB

D SWITCH PCB



4.5 MOTOR PCB

E MOTOR PCB



5. ELECTRICAL PARTS LIST

NOTE:

- 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 : CWX2487
Unit Name : CD Core Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	201	IC	UPD63711GC
IC	202	IC	BA05FP
IC	301	IC	BA5986FM
IC	302	IC	LB1836M
IC	701	IC	PD5638A
IC	702	IC	LC35256FT-70U
IC	703	IC	HA12187FP
IC	704	IC	PAJ002A
IC	705	IC	TC7SH32F
Q	101	Transistor	2SB1132
Q	701	Transistor	DTA144EK
Q	770	Transistor	2SB1184F5
Q	771	Transistor	2SC2412K
D	730	Diode	1SS356
D	770	Diode	1SS355
X	202	Ceramic Resonator 16.93MHz	CSS1536
X	701	Radiator 10.00MHz	CSS1428
S	801	Push Switch(EJECT)	CSG1139
S	802	Push Switch(RESET)	CSG1139
S	803	Spring Switch(MAG)	CSN1044
VR	802	Semi-fixed 1kΩ(B)	CCP1338

RESISTORS

=====Circuit Symbol and No.		===Part Name	Part No.
R	101		RS1/8S120J
R	102		RS1/8S100J
R	103		RS1/16S222J
R	201		RS1/16S104J
R	202		RS1/16S0R0J
R	205		RS1/16S103J
R	206		RS1/16S393J
R	207		RS1/16S182J
R	213		RS1/16S103J
R	214		RS1/16S103J
R	215		RS1/16S123J
R	231		RS1/16S821J
R	232		RS1/16S821J
R	253		RS1/16S681J
R	254		RS1/16S681J
R	256		RS1/16S681J
R	257		RS1/16S681J
R	258		RS1/16S681J
R	259		RS1/16S102J
R	260		RS1/16S681J
R	298		RS1/16S681J
R	301		RS1/16S103J
R	302		RS1/16S153J
R	303		RS1/16S103J
R	304		RS1/16S103J
R	305		RS1/16S103J
R	306		RS1/16S752J
R	307		RS1/16S103J
R	308		RS1/16S752J
R	309		RAB4C332J
R	311		RS1/16S102J
R	701		RS1/16S681J
R	702		RS1/16S102J
R	703		RS1/16S222J
R	704		RS1/16S104J
R	705		RS1/16S104J
R	706		RS1/16S222J
R	707		RS1/16S104J
R	708		RS1/16S0R0J
R	715		RS1/16S473J
R	716		RS1/16S103J
R	717		RS1/16S473J
R	718		RS1/16S681J
R	719		RS1/16S0R0J
R	721		RS1/16S222J
R	722		RS1/16S222J
R	724		RS1/16S681J
R	725		RS1/16S222J
R	726		RS1/16S104J
R	727		RS1/16S513J
R	729		RS1/16S473J
R	730		RS1/16S473J
R	731		RS1/16S222J
R	732		RS1/16S683J
R	733		RS1/16S222J
R	734		RS1/16S473J
R	735		RS1/16S222J
R	736		RS1/16S103J
R	737		RS1/16S433J
R	738		RS1/16S104J
R	739		RS1/8S1R0J
R	740		RS1/8S2R0J
R	741		RS1/16S102J
R	742		RS1/16S104J
R	743		RS1/16S104J
R	744		RS1/16S223J
R	745		RS1/16S104J
R	747		RS1/16S472J
R	750		RAB4C473J
R	751		RAB4C473J
R	752		RS1/16S3602D
R	753		RS1/16S6801D
R	754		RS1/16S221J
R	755		RS1/16S104J
R	756		RS1/16S221J
R	759		RS1/16S472J
R	760		RS1/16S104J
R	761		RS1/16S104J
R	764		RS1/16S473J
R	768		RS1/8S220J

=====Circuit Symbol and No.	===	Part Name	Part No.
R	801		RS1/10S221J
R	802		RS1/10S271J
R	804		RS1/16S562J
R	805		RS1/16S562J
R	806		RS1/16S102J

CAPACITORS

C	101		CKSRYB102K50
C	102		CKSRYB104K16
C	103		CEV101M6R3
C	104		CEV470M6R3
C	105		CKSRYB224K16
C	106		CKSRYB224K16
C	107		CKSRYB224K16
C	201		CKSRYB104K16
C	202		CEV101M6R3
C	203		CKSRYB104K16
C	204		CKSRYB332K50
C	205		CKSRYB104K16
C	206		CKSRYB392K50
C	207		CKSRYB104K16
C	208		CCSRCH270J50
C	209		CCSRCJ3R0C50
C	210		CCSRCH181J50
C	211		CCSRCH510J50
C	212		CKSRYB682K50
C	213		CKSRYB104K16
C	214		CKSRYB104K16
C	215		CKSRYB104K16
C	216		CKSRYB104K16
C	217		CKSRYB104K16
C	218		CKSRYB104K16
C	219		CKSQYB334K16
C	220		CKSRYB104K16
C	234		CKSRYB224K16
C	235		CEV220M6R3
C	236		CCSQSL152J50
C	237		CCSQSL152J50
C	238		CKSRYB103K25
C	253		CKSRYB471K50
C	271		CEV101M6R3
C	272	10µF/16V	CCH1399
C	273		CKSRYB224K16
C	301		CEV101M10
C	302		CKSRYB224K16
C	701		CKSRYB104K16
C	702		CKSRYB473K16
C	703		CKSRYB473K16
C	707		CKSRYB103K25
C	708		CKSRYB104K16
C	710		CKSRYB103K25
C	711		CKSRYB102K50
C	712		CKSRYB102K50
C	714		CKSRYB104K16
C	715	22µF/10V	CCH1403
C	717		CKSRYB103K25
C	718		CKSRYB103K25
C	719		CKSRYB102K50
C	720		CKSRYB102K50
C	721		CKSRYB103K25
C	722		CKSRYB103K25
C	724		CKSRYB471K50
C	801		CKSRYB103K25
C	802		CKSRYB104K16
C	803		CKSRYB103K25

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

B Unit Number : CWX2512
Unit Name : Power Unit

MISCELLANEOUS

Q	910	Transistor	2SD2396
Q	911	Transistor	IMD2A
Q	912	Transistor	IMX1
Q	941	Transistor	FMG12
Q	942	Transistor	IMD2A
D	901	Diode	1SR139-400
D	902	Diode	1SR139-400
D	910	Diode	HZS6L(B1)
D	941	Diode	MA152WA
L	901	Choke Coil 1mH	CTH1047

RESISTORS

R	901		RS1/16S204J
R	902		RS1/16S104J
R	903		RS1/4SA101J
R	910		RS1/8S431J
R	911		RS1/16S681J
R	912		RS1/8S101J
R	913		RS1/16S512J
R	914		RS1/16S132J
R	915		RD1/4PU151J
R	921		RS1/16S101J
R	922		RS1/16S101J
R	923		RS1/16S102J
R	924		RS1/16S473J
R	941		RS1/16S181J
R	942		RS1/16S181J
R	943		RS1/16S472J
R	944		RS1/16S472J
R	945		RS1/10S472J

CAPACITORS

C	901		CKSRYB224K16
C	902		CEAT471M16
C	903		CKSRYB223K25
C	904		CEAT471M16
C	906	0.1F/5.5V	CCL1054
C	907		CKSRYB224K16
C	910		CKSRYB103K50
C	911		CKSRYB103K50
C	912		CEJA220M10
C	913		CKSRYB103K50
C	920		CCSRCH471J50
C	921		CCSRCH471J50
C	941		CEJA330M10
C	942		CEJA330M10
C	943		CCSRCH471J50
C	944		CCSRCH471J50

C Unit Number :
Unit Name : Mechanism PCB

Q	851	Photo-transistor	PT4800
S	853	Spring Switch(HOME)	CSN1051

D Unit Number :
Unit Name : Switch PCB

D	851	LED	CN504-2
S	851	Spring Switch(TAP)	CSN1051
S	852	Spring Switch(DSP)	CSN1052

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

E Unit Number :
Unit Name : Motor PCB

M	853	Motor Unit(TRAY)	CXB4421

Miscellaneous Parts List

		Pickup Unit(P8)(Service)	CXX1285
M	851	Motor Unit(SPINDLE)	CXB3003
M	852	Motor Unit(ELV)	CXB3006
M	854	Motor Unit(CARRIAGE)	CXB3004
VR	801	Volume 10kΩ(B)	CCW1023

6. ADJUSTMENT

6.1 CD ADJUSTMENT

● 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 tray extraction and return operations is performed by means of the photo transistor in this unit. Consequently, if the inside of the unit is exposed to a strong light source with the outer casing removed for repairs or adjustment, the following malfunctions may occur:
  *Even with a disc loaded, the unit detects "no disc" and cannot start play.
  *Although a 12-cm disc is loaded, the unit detects "8cm disc" mistakenly.
  When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

- During exchanging discs, do not press the keys for the discs to be exchanged.

Key to adjustment text inside (12 keys type)	HEAD UNIT (6 keys type)
BAND	BAND
TRK+/FF	TRK+/FF
TRK-/REV	TRK-/REV
7	1
8	2
9	3
10	4
11	5
12	6
DISC-	DISC-
SOURCE ON/OFF	SOURCE ON/OFF

6.2 CHECKING THE GRATING

● Checking the Grating After Changing the Pickup Unit

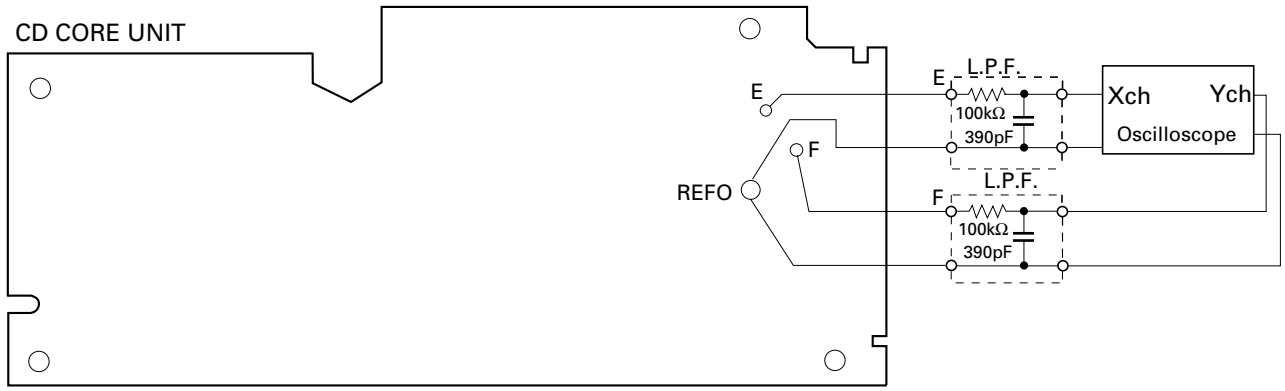
• **Note :**
CD mechanism modules the grating angle of the pickup unit cannot be adjusted after the pickup unit is changed. The pickup unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted pickup unit for the CD mechanism module.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

• **Purpose :**
To check that the grating is within an acceptable range.

• **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 track searching taking a long time, may appear.

• **Method :**

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



• **Checking Procedure**
1. Enter Test mode, then select Multi-CD player and switch the 5V regulator on.
2. Using the **TRK+** and **TRK-** buttons, move the pickup unit to the innermost track.
3. Press key **9** to close focus, the display should read "91". Press key **9** 2 times. Enter Rough Servo mode. Press key **8** to implement the tracking balance adjustment the display should now read "81".
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 pickup 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.

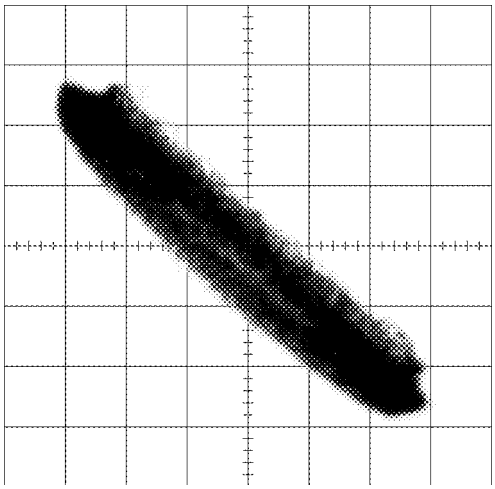
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

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

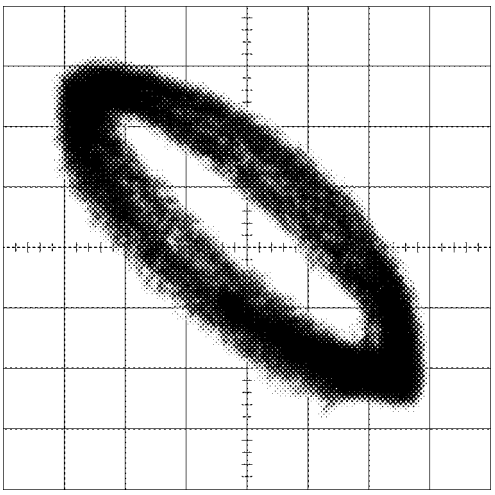
Grating waveform

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

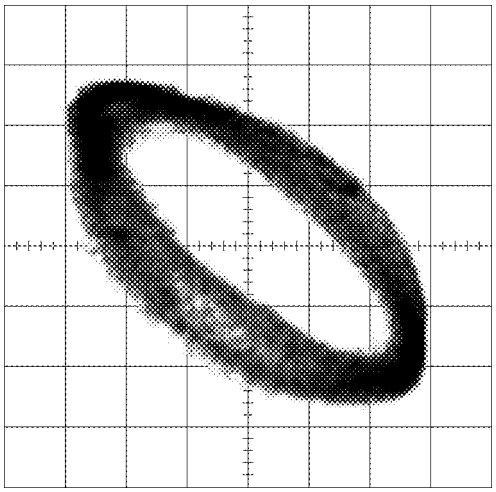
0˚



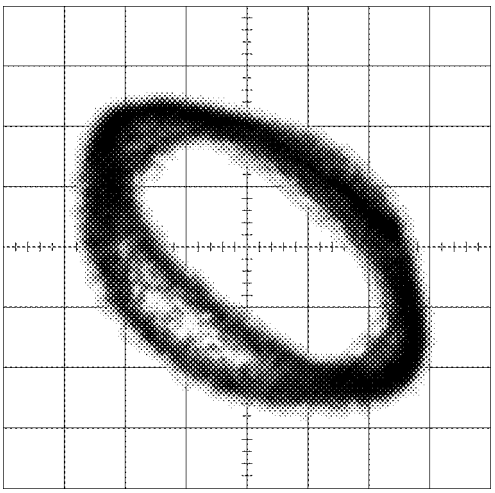
30˚



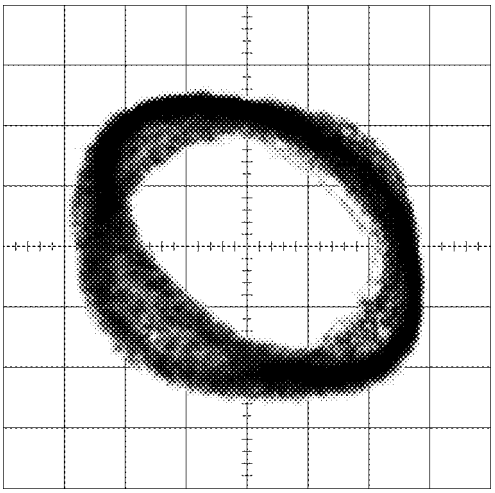
45˚



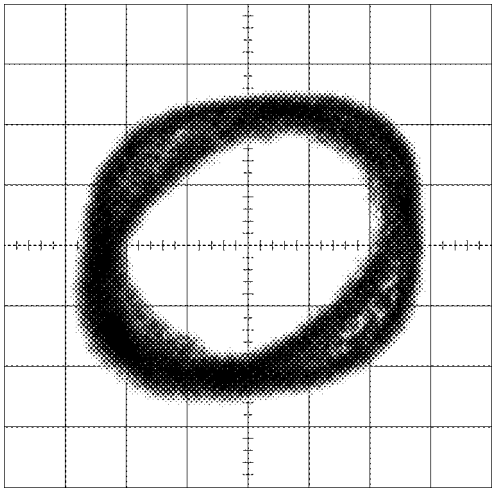
60˚



75˚



90˚



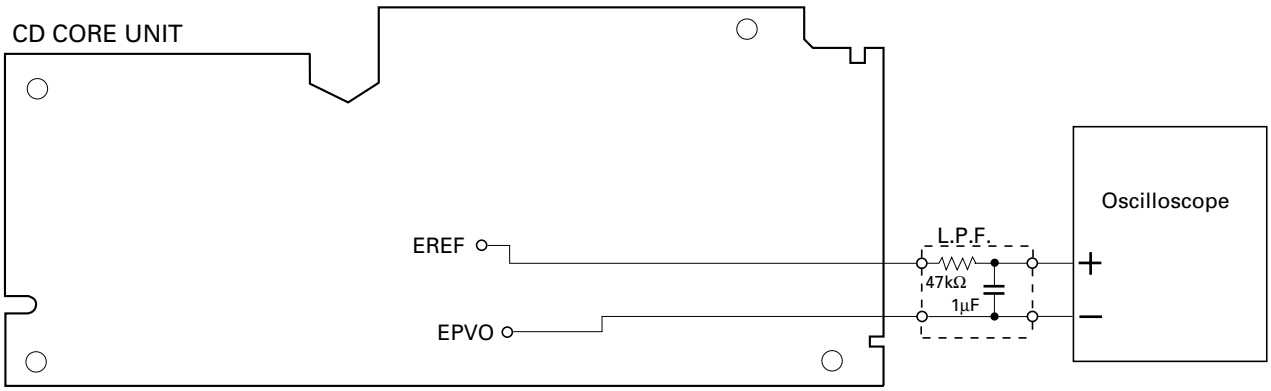
6.3 ADJUSTMENT OF ELEVATION WHEN THE CD CORE UNIT HAS BEEN REMOVED FOR MAINTENANCE

● **Adjustment When Error Code 60 is Displayed Because of Malfunctioning Elevation**

• **Note :**
This mechanisms is detects the height of the stage using slide-variable resistance.
To absorb dislocation of the stage height caused by differences in the mechanism and the CD core unit, adjustment must be made for each CD-mechanism module using a variable resistor.
Normally, readjustment is not needed, as this has been adjusted at the factory. However, adjustment of elevation is required according to the procedure explained below if an elevation error has occurred or if the CD core unit has been removed.

• **Purpose :**
To adjust and confirm whether or not elevation operates correctly.

• **Adjustment Method :**
• Measuring Equlpment: Oscilloscope, One L.P.F.
• Measuring Points : EREF, EPVO
• Setting : Without a magazine in Test mode
With the mechanism placed upside-down (Place the CD mechanism module so that the CD core unit is above.)



• **Confirmation Procedure**

Examples of display

1. Enter Test mode, then select Multi-CD player.

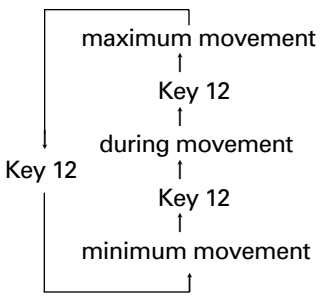
TRACK	FUNCTION
	' "

2. Press key **7** to enter Mechanism Test mode.

TRACK	FUNCTION
72	00' 00"

3. Press key **12** twice to specify the amount of movement.

The amount of movement changes each time key **12** is pressed.



TRACK	FUNCTION
72	00' 02"

TRACK	FUNCTION
72	00' 01"

TRACK	FUNCTION
72	00' 00"

Examples of display

4. Press key **9** to set ELV/TRAY mode to TRAY.

TRACK	FUNCTION
72	01' 02"

5. Press key **FF** to release the clamp and return the tray to the magazine.

Release the clamp

6. Press key **9** to enter Elevation Move mode.

TRACK	FUNCTION
72	00' 02"

7. Use key **FF/REV** to operate elevation and set if to the graduation of the third step (Fig. 1).

8. Make the adjustment.
   Use VR802 to adjust the difference in potential between EREF and EPVO to 0 ±10 mV.

9. When adjustment is completed, press key **BAND** to exit Mechanism Test mode.

TRACK	FUNCTION
72	00' 02"

10. Confirm operation of the mechanism.
    Place the mechanism horizontally (CD core unit below). Take care not to short-circuit the PCB.

TRACK	FUNCTION
	' "

11. Confirm the height of the stage. Use the DISC± key to select Disc No.3.

    Check if the stopper bend of the clamp lever is engaged in the groove of the frame stopper (Fig. 2-4).

TRACK	FUNCTION
04	00' 00"

• **Note :**
The stopper bend will be pressed downward into the groove for final clamping. Confirm the engagement position of the stopper bend.

• If the stopper bend is engaged in the center and pressed downward, adjustment is completed. Go to step 15.

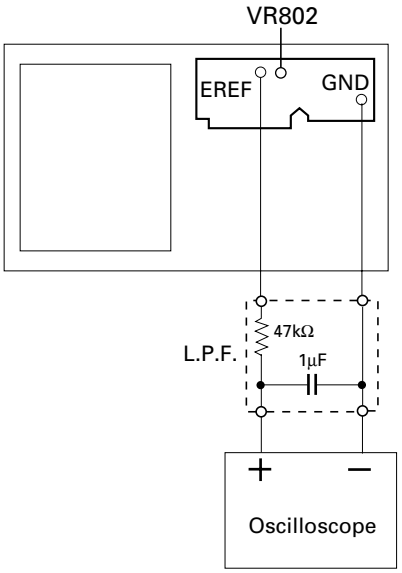
• If the stopper bend is dislocated, check the amount of dislocation by following steps 12 to 14.

12. To see the amount of dislocation, place the mechanism upside-down. If the stopper bend has been dislocated in the direction of the first CD, turn VR802 to the left(Fig. 2).

    To lower the stage toward the sixth step by 0.1 mm, reduce the voltage of EREF (adjusted in step 8) by 20 mV.

    If the stopper bend has been dislocated in the direction of the sixth CD, turn VR802 to the right(Fig. 4).

    To raise the stage toward the first step by 0.1 mm, increase the voltage of EREF (adjusted in step 8) by 20 mV.



13. Place the mechanism horizontal. Go back to step 11 to reconfirm the stage height.

14. When adjustment of the stage height is completed, proceed as follows:

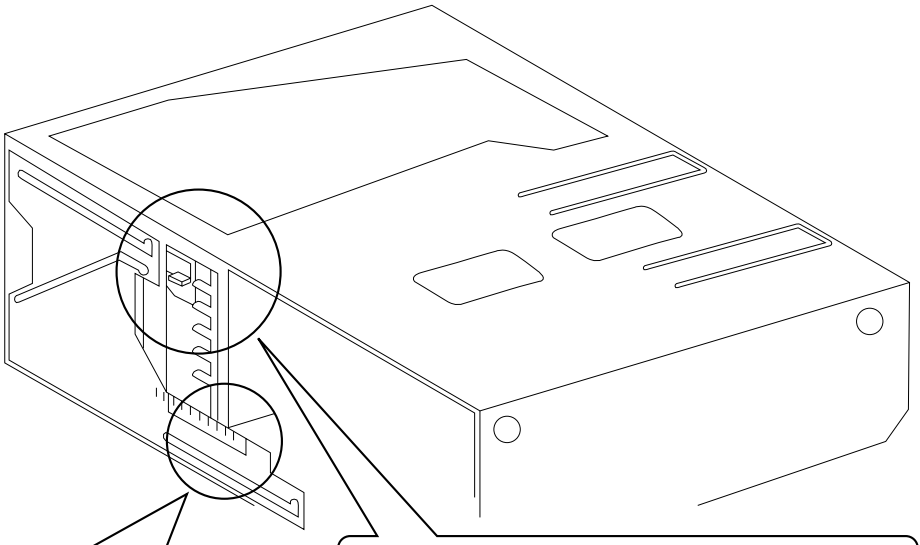
15. Press the **EJECT** switch.

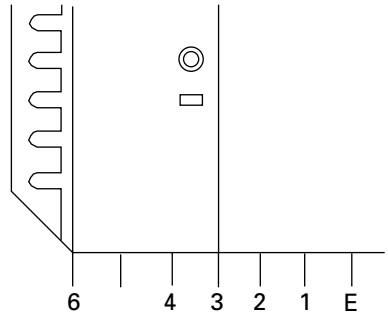
16. Once operation of the mechanism has stopped, turn the power OFF.

17. Wait more than one minute after the power is turned off, then turn the power ON and insert a magazine.

18. Check if the mechanism operates correctly with the first and fourth CDs.

19. If the mechanism operates properly, adjustment is completed. If the mechanism operates improperly, make the adjustment again.





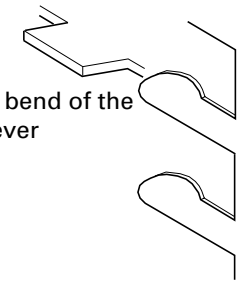
Adjust the insertion gate of magazine to the third scale.

Fig. 1

Stopper bend of the clamp lever

Frame stopper

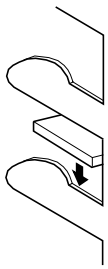
NG



Dislocated toward the first CD.

Fig. 2

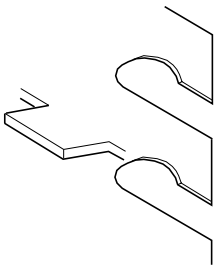
OK



Engaged in the center and pressed downward.

Fig. 3

NG



Dislocated toward the sixth CD.

Fig. 4

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

● CD 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.

- If the 8 or 9 key is pressed while focus search is in progress, immediately turn the power off (otherwise the actuator may be damaged due to the lens stuck).

- 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.

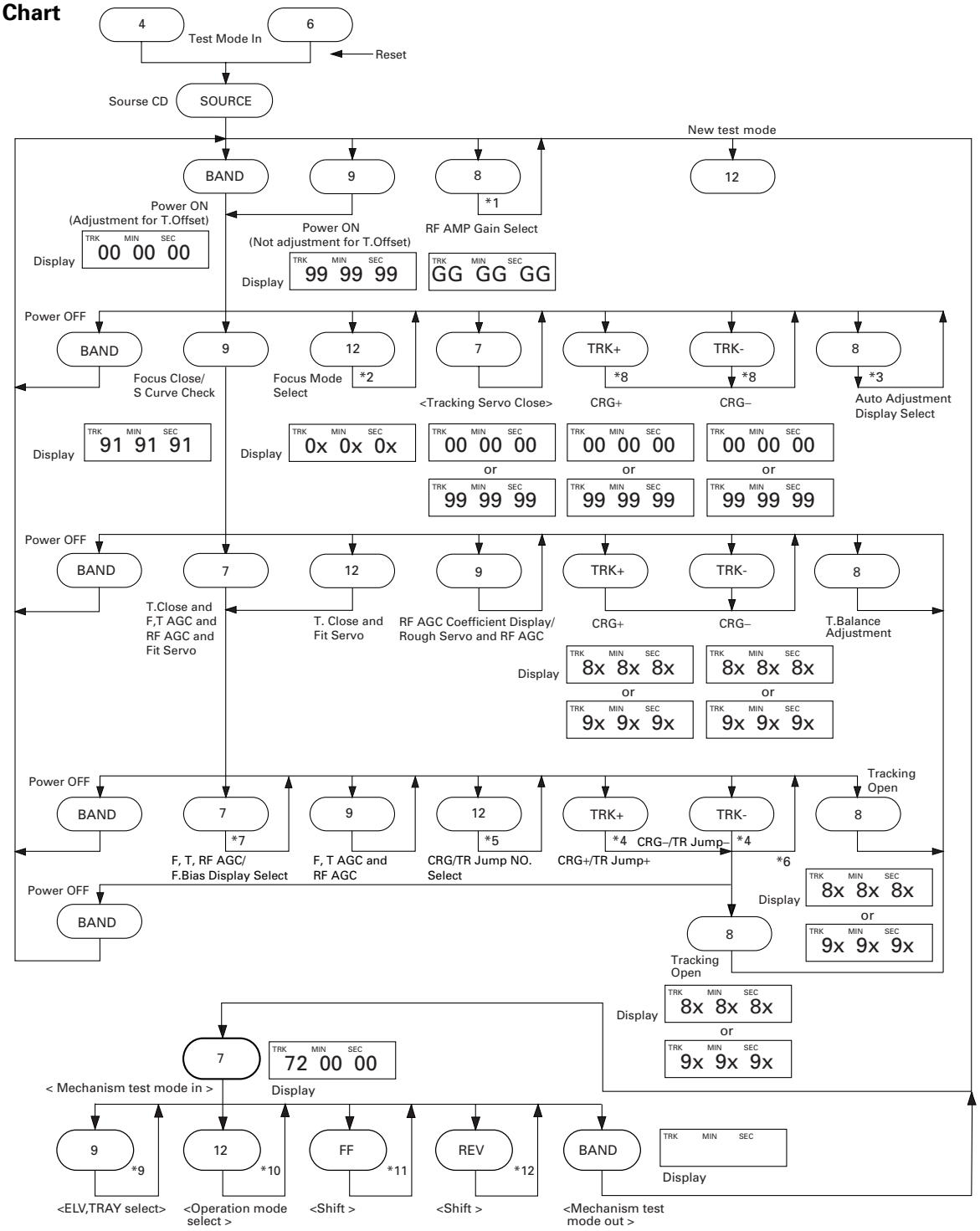
- Powering Off/On resets the jump mode to "Single TR (91)", the RF AMP gain setting to 0 dB, and the automatic adjustment value to the initial value.

- During exchanging discs, do not press the keys for the discs to be exchanged.

- The following head units are exceptional so that their entering ways to the test mode are different from others.
  Test mode starting procedure
  Reset while pressing the **3** and **5** keys together.

  KEH-P5010R/X1M/EW
  KEH-4011/X1M/EE
  KEH-P5011/X1M/EE
  KEH-4010R/X1M/EW
  KEH-P4010RB/X1M/EW
  KEH-P4013R/X1M/EW
  KEH-5015/X1M/ES
  KEH-P4010/X1M/UC
  KEH-P4015/X1M/ES

● Flow Chart


4
Test Mode In
6
Reset
Sourse CD
SOURCE
New test mode
BAND
9
8
12
*1
Power ON
(Adjustment for T.Offset)
Display
TRK MIN SEC
00 00 00
Power ON
(Not adjustment for T.Offset)
RF AMP Gain Select
99 99 99
GG GG GG
Power OFF
BAND
9
12
7
TRK+
TRK-
8
Focus Close/
S Curve Check
Focus Mode
Select
*2
<Tracking Servo Close>
*8
CRG+
CRG–
*3
Auto Adjustment
Display Select
91 91 91
0x 0x 0x
or
Power OFF
BAND
7
12
9
TRK+
TRK-
8
T.Close and
F,T AGC and
RF AGC and
Fit Servo
T. Close and
Fit Servo
RF AGC Coefficient Display/
Rough Servo and RF AGC
CRG+
CRG–
T.Balance
Adjustment
8x 8x 8x
9x 9x 9x
Power OFF
BAND
7
9
12
TRK+
TRK-
8
Tracking
Open
*7
*5
*4
CRG–/TR Jump–
*6
F, T, RF AGC/
F.Bias Display Select
F, T AGC and
RF AGC
CRG/TR Jump NO.
Select
CRG+/TR Jump+
Power OFF
BAND
8
Tracking
Open
7
72 00 00
< Mechanism test mode in >
9
12
FF
REV
BAND
*9
*10
*11
*12
<ELV,TRAY select>
<Operation mode
select >
<Shift >
<Shift >
<Mechanism test
mode out >
*1 TYP → +6dB → +12dB
Display 06 06 06 12 12 12
*2 Focus Close → S Curve Check
Display 00 00 00 (99 99 99) 01 01 01
*3 F.Offset Display → RF.Offset Display → F.Cansel Display
F.Cancel Value = {Top Rank 8bit of Set Value (7F [H] to 80 [H]) + 128} / 4
= 63 [D] to (32 [D]) to 00 [D]
*4 Single TR/32TR/100TR
*5 Single TR → 32TRK → 100TRK → CRG Move
Display 9x(8x):91(81) 92(82) 93(83) 94(84)
*6 CRG Move, 100TR Jump Only
*7 TRK, MIN, SEC → F.AGC Gain → T.AGC Gain → RF AGC Gain
(F,T.AGC Gain = (Present Value/Initial Value) × 20)
*8 Voltage of CRG Motor = 2 [V]
*9 ELV motor select → TRAY motor select
72 00 0X Display 72 10 0X
*10 8ms pulse drive → 24ms pulse drive → DC drive
72 00 00 Display 72 00 01 72 00 02
48ms pulse drive → 100ms pulse drive → DC drive
72 10 00 Display 72 10 01 72 10 02
*11 ELV select : ELV dowm (Disc 12 → 1)
TRAY select : TRAY out
*12 ELV select : ELV up (Disc 1 → 12)
TRAY select : TRAY in

● 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 OR Err–xx	E–xx

* When the system is manufactured for an OEM basis, the error display will be configured according to the customer specification.

(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).
A1	System	Mechanism power failure	Mechanism elevation reference voltage is out of prescription. →EREF adjustment VR and/or power abnormal.
50	Mecha-nism	An error upon ejection	MAG switch release time has time out. Elevation time out when eject.
60	Mecha-nism	An error while putting in and out the tray	Tray in / out time has time out. Tray is caught when put in.

Code	Class	Displayed error code	Description of the code and potential cause(s)
70	Mecha-nism	An error upon elevation	Elevation time has time out.
80	Mecha-nism	An error with an em-pty magazine inserted	No disc is available.

Remarks: 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

M-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 4 and 6 keys together.

② Select M-CD for the source through the specified procedure including use of the [SOURCE] key. Then, press the 12 key while maintaining the regulator turned off.

③ After the above operations, the new test mode remains on irrespective of whether the M-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	Test mode		New test mode	
(Example)	Power Off	Power On	In-play	Error Production
BAND	To power on (offset adjustment performed)	To power off	–	Time/Err.No. switching
UP	–	FWD-Kick	FF/TR+	–
DOWN	–	REV-Kick	REV/TR-	–
7	–	T.Close (AGC performed) /parameter display switching	Scan	–
8	RF AMP gain switching	Parameter display switching /T.BAL adjustment/T.Open	Mode	–
9	To power on (offset adjustment not performed)	F.Close/RF AGC/F.T.AGC	–	–
10	–	F.Open	–	–
11	–	Jump Off	–	–
12	–	F.Mode switching /T.Close (no AGC)/Jump switching	Auto/Manu	T.No./Time switching

Key (Example)	Mechanism Test Mode
BAND	Back to the test mode
UP	Playing the mechanism
DOWN	Playing the mechanism
7	Mechanism test mode in
8	–
9	TRAY/ELV select
10	–
11	–
12	Operation step select

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
00	CD+5V ON process in progress.	None
01	Servo LSI initialization (1/3) in progress.	None
02	Servo LSI CRAM initialization in progress.	None
03	Servo LSI initialization (2/3) in progress.	None
04	Offset adjustment (1/3) in progress.	None
05	Offset adjustment (2/3) in progress.	None
06	Offset adjustment (3/3) in progress.	None
07	FZD adjustment in progress.	None
08	Servo LSI initialization (3/3) in progress.	None
10	Carriage move to home position started.	None
11	Carriage move to home position started.	None
12	Carriage is moving toward inner diameter.	Specified 10 seconds has been passed or failure on home switch.
13	Carriage is moving toward outer diameter.	Specified 10 seconds has been passed or failure on home switch.
14	Carriage outer kick in progress.	None
15	Carriage outer diameter feed (1 second) in progress.	None
20	Servo close started.	None
21	Pre-processing for focus search started.	None
22	Spindle rotation and focus search started.	None
23	Waiting for focus close (XSI=Low).	Specified focus search time has been passed.
24	Standing by after focus close is over.	Specified focus search time has been passed.
25	Focus search preprocessing is in progress while setup protection is turned on.	None

Status No.	Contents	Protective action
26	Focus search preprocessing is in progress while focus recovery is turned on.	None
27	Wait time after focus close is set up.	Off focus.
28	Standing by after focus close is over.	Off focus.
29	Setup (1/2) before T balance adjustment is started.	Off focus.
30	Setup (2/2) before T balance adjustment is started.	Off focus.
31	T balance adjustment started.	Off focus.
32	T balance adjustment (1/2).	Off focus.
33	T balance adjustment (2/2).	Off focus.
34	Waiting for spindle rotation to end. Spindle rough servo.	Off focus.
35	Standing by after spindle rough servo is over.	Off focus.
36	RF AGC started.	Off focus.
37	RF AGC started.	Off focus.
38	RF AGC ending process in progress.	Off focus.
39	Tracking close in progress.	Off focus.
40	Standing by after tracking is closed. Carriage closing in progress.	Off focus.
41	Focus/tracking AGC started.	Off focus.
42	Focus AGC started.	Off focus.
43	Focus AGC in progress.	Off focus.
44	Tracking AGC in progress.	Off focus.
45	Standing by after focus/tracking AGC are over.	Off focus.
46	Spindle processes applicable servo.	Off focus.
47	Check for servo close is started.	Off focus.
48	Check of LOCK pin started.	Off focus or spindle not locked.
49	RF AGC started.	Off focus.
50	RF AGC in progress.	Off focus.
51	Standing by after RF AGC is over.	Off focus.

(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)**

1. Remove the nine screws.
2. Remove the Upper Case.

● **Removing the CD Mechanism Module (Fig.5)**

1 Remove the four dampers.

2 Remove the two springs.

Disconnect the connector and then remove the CD Mechanism Module.

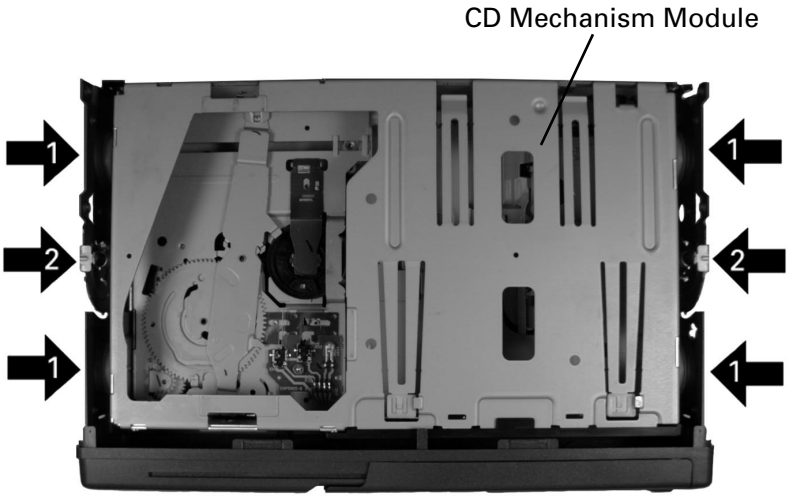


Fig.5

● **Removing the Power Unit (Fig.6)**

1 Remove the two screws.

2 Remove the screw.

3 Straight the tabs at location indicated and then remove the Power Unit.

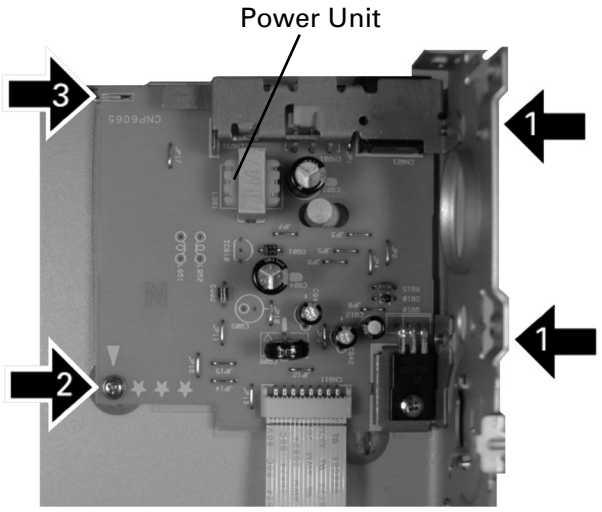


Fig.6

● **Removing the Door**

1. Remove the Door(A) in the direction of arrow② while pushing the Grille in the direction of arrow①, the slide is done as it is in the direction of arrow③ and remove the Door(A). (Fig.7)

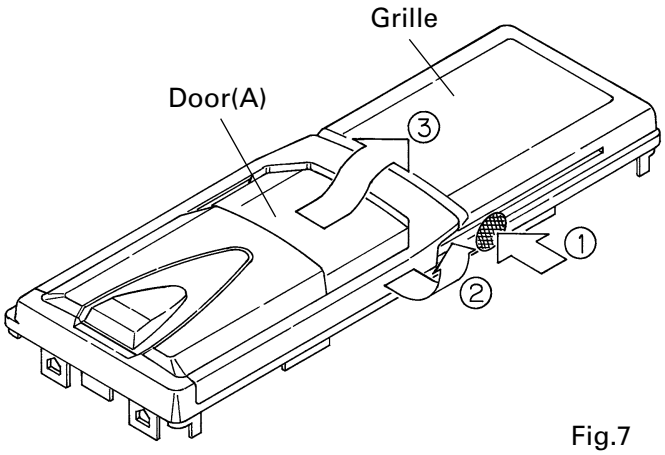


Fig.7

2. The slide is done in the direction of arrow⑤ and remove the Door(B) while spread out the Door(A) in the direction of arrow④. (Fig.8)

*) The illustration of the text for 12-Disc type but disassembling method is the same for 6-Disc type.

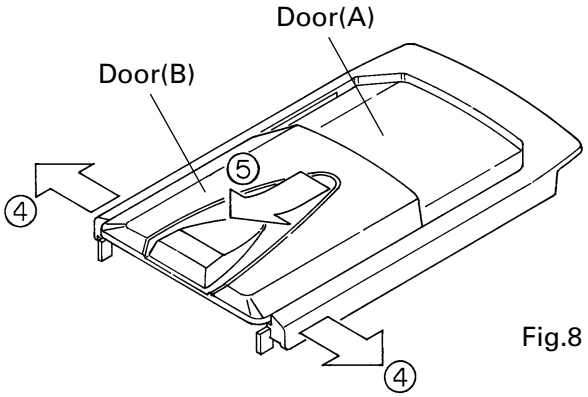


Fig.8

● Removing the Pickup Unit

1. Insert the short pin from the pickup unit in the flexible PCB.
2. Remove the flexible PCB from the connector.
3. Remove the flexible card from the connector.
4. Remove the lead wires to which the spindle motor and carriage motor assy were soldered.
5. Remove the two screws and lift the mechanism PCB up as shown in the figure on the upper right. At this time, make sure that the motor PCB and flexible relay card are not pulled excessively.

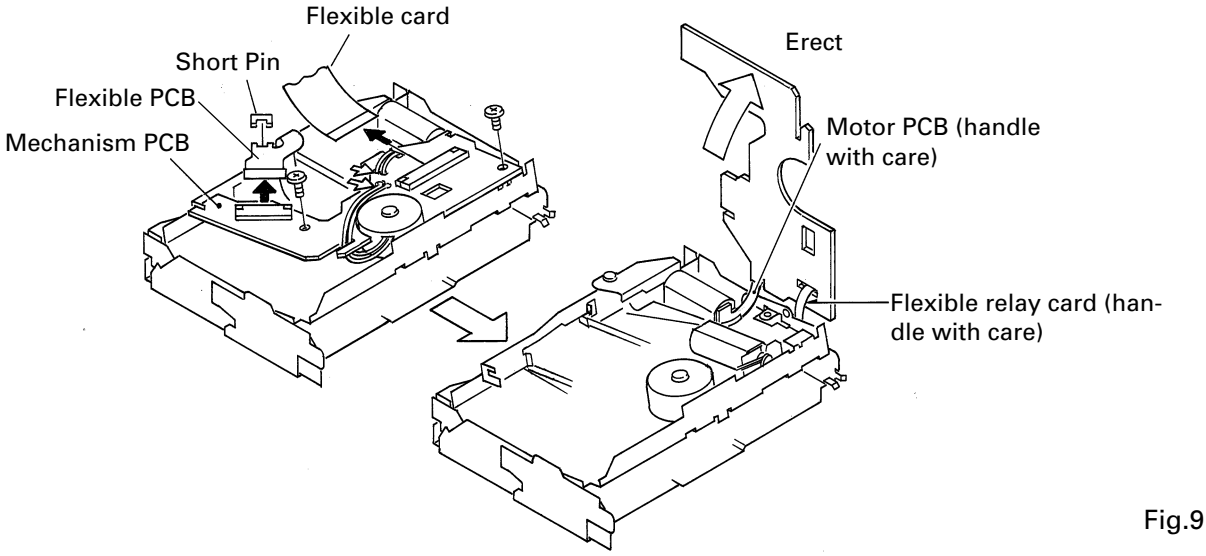


Fig.9

6. Remove screw A and then remove the carriage motor assy, lighting conductor, feed screw holder, feed screw and belt (see Fig.10).
7. Remove screw B on the main side and the pickup unit together with the guide shaft (see Fig.10).

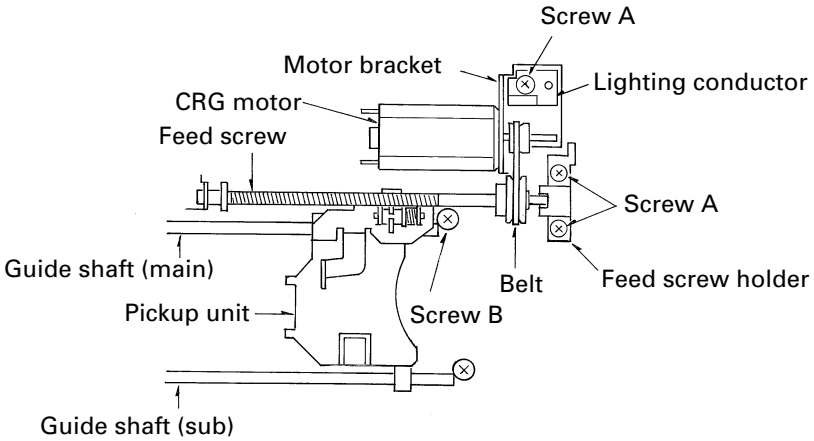
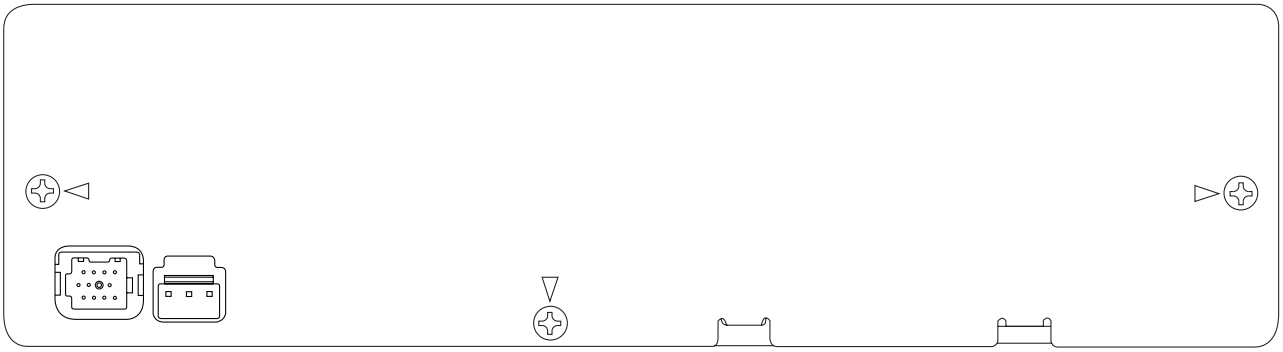
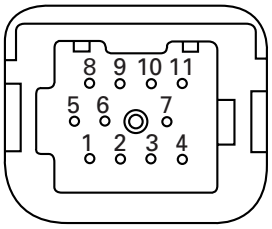


Fig.10

7.1.3 CONNECTOR FUNCTION DESCRIPTION

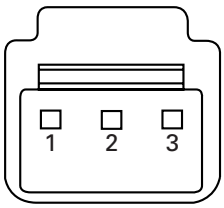


IP-BUS



1.BUS+
2.GND
3.GND
4.NC
5.BUS-
6.GND
7.LCH
8.ASENB
9.RCH
10.SGNDR
11.SGNDL

POWER SUPPLY



1.GND
2.ACC
3.BATT

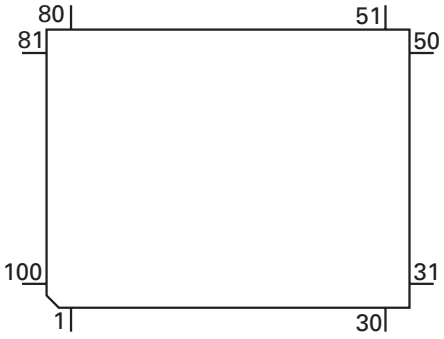
7.2. IC

● **Pin Functions (PD5638A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1,2	NC			Not used
3	$\overline{\text{ADENA}}$	O	C	A/D reference voltage output
4	TXTSTB	O	C	TEXT parameter output
5	TXTSO	O	C	TEXT control parameter serial output
6	TXTSI	I		TEXT data serial input
7	TXTSCK	O	C	TEXT clock output
8	BYTE	I		VCC joint
9	CNVSS	I		VSS joint
10	POWER	O	C	CD +5V control output
11	CONT	O	C	Servo driver output control
12	$\overline{\text{RESET}}$	I		Reset input
13	XOUT	O		Crystal oscillating element connection pin
14	VSS			GND
15	XIN	I		Crystal oscillating element connection pin
16	VCC			VDD
17	$\overline{\text{NMI}}$	I		Pull up
18	$\overline{\text{BSENS}}$	I		Back up power sense input
19	$\overline{\text{ASENS}}$	I		Acc sense input
20	TXTPACK	I		TEXT PACK interrupt input
21	IPTA4IN	I		IPIN joint
22	IPPW	O	C	Power supply control output for IP-BUS interface IC
23	NC			Not used
24	OPTSEL	I		Pull down
25	SRAMSW	I		″L″
26	FMPCB	I		Pull down
27	SIMUKE	I		Pull down
28	NC			Not used
29	IPIN	I		Data input from IP-BUS interface IC
30	IPOUT	O	C	Data output for IP-BUS interface IC
31,32	NC			Not used
33	FMIPSW	I		″H″
34	$\overline{\text{TESTIN}}$	I		Test program mode input
35	XSO	O	C	CD LSI data output
36	XSI	I		CD LSI data input
37	XSCK	O	C	CD LSI clock output
38	M6M12	I		6/12 disc select input
39–43	NC			Not used
44	$\overline{\text{RD}}$	O	C	SRAM enable output
45	NC			Not used
46	$\overline{\text{WR}}$	O	C	SRAM write enable output
47	SYSPW	O	C	System power supply control output
48	$\overline{\text{CS}}$	O	C	SRAM chip select output
49	XAO	O	C	CD LSI data discernment control signal output
50	$\overline{\text{XSTB}}$	O	C	CD LSI strobe output
51	$\overline{\text{XRST}}$	O	C	CD LSI reset output
52	NC			Not used
53	LOCK	I		Spindle lock detector input
54	FOK	I		FOK signal input
55	NC			Not used
56	A11	O	C	SRAM address bus output
57	A9	O	C	SRAM address bus output
58	A8	O	C	SRAM address bus output
59	A13	O	C	SRAM address bus output
60	A14	O	C	SRAM address bus output
61	A12	O	C	SRAM address bus output
62	VCC			VDD
63	A7	O	C	SRAM address bus output
64	VSS			GND

Pin No.	Pin Name	I/O	Format	Function and Operation
65–68	A6-A3	O	C	SRAM address bus output
69	A10	O	C	SRAM address bus output
70	A2 & (EPSK)	O	C	SRAM address bus output and (E2PROM clock output)
71	A1 & (EPDI)	O/I	C	SRAM address bus output and (E2PROM data input)
72	A0 & (EPDO)	O	C	SRAM address bus output and (E2PROM data output)
73	$\overline{\text{ASENSFM}}$	I		Pull up
74	$\overline{\text{EJSW}}$	I		Eject key switch interrupt input
75	$\overline{\text{MAG}}$	I		Magazine lock switch interrupt input
76	CDMUTE	O	C	CD mute output
77	NC			Not used
78	I13	O	C	Motor driver control output
79	I2	O	C	Motor driver control output
80	I4	O	C	Motor driver control output
81–88	D0-D7	I/O	C	SRAM data bus input/output
89,90	NC			Not used
91	DSP	I		DISC detect timing input
92	$\overline{\text{DISK}}$			Disc detector input
93	ELVPVO			Voltage input from ELV position sense
94	ELVREF			ELV reference voltage input
95	TRP	I		Tray position input
96	AVSS			A/D GND
97	VDIN			Power supply short sensor input
98	VREF	I		A/D converter reference voltage input
99	AVCC			A/D VCC
100	EPCS	I/O	C	E2PROM detect input , Chip select output

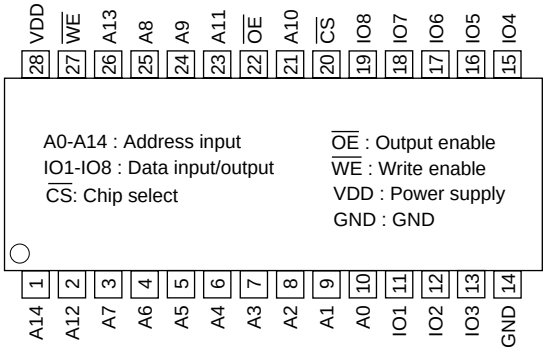
*PD5638A



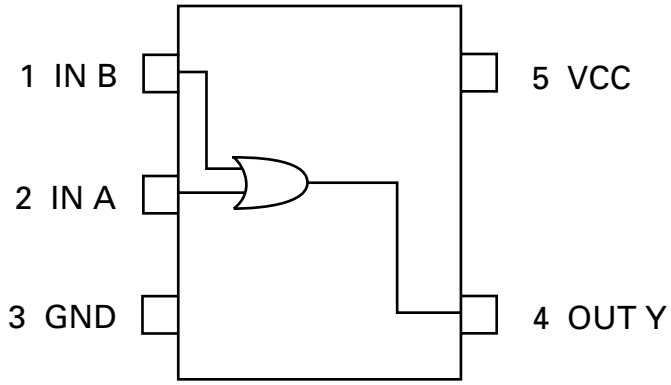
Format	Meaning
C	C MOS

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

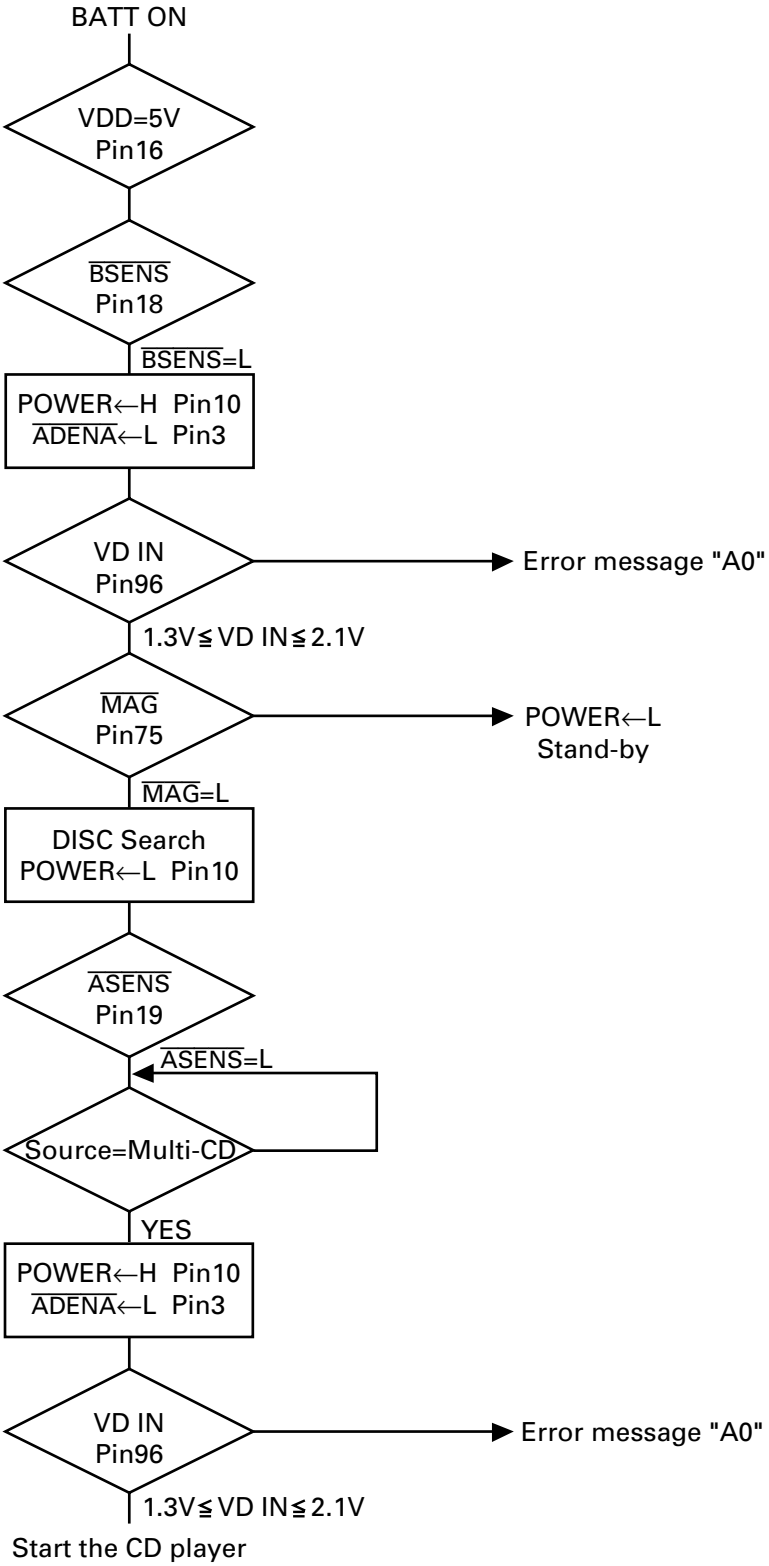
LC35256FT-70U



TC7SH32F



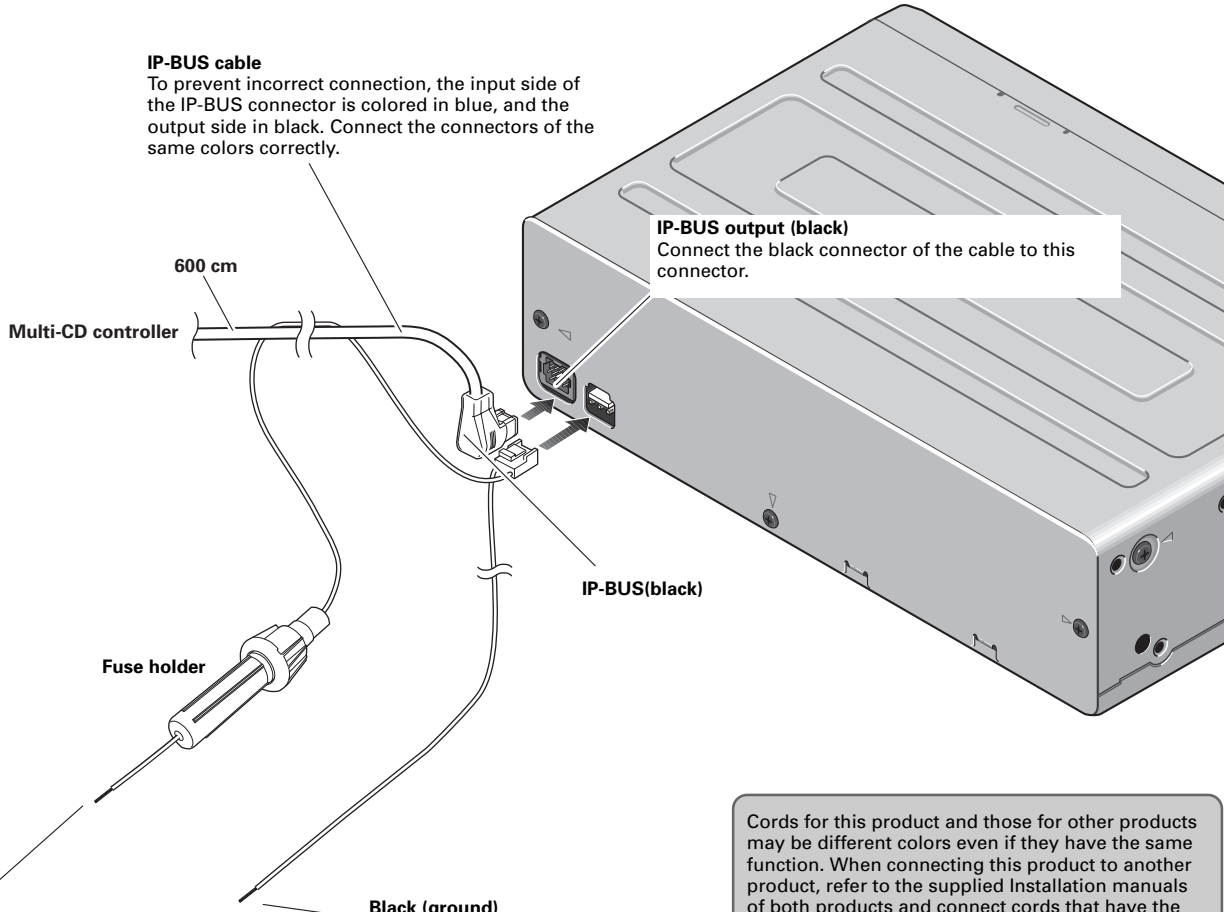
7.3 OPERATIONAL FLOW CHART



8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

Connecting the Units



Cords for this product and those for other products may be different colors even if they have the same function. When connecting this product to another product, refer to the supplied Installation manuals of both products and connect cords that have the same function.

8.2 SPECIFICATIONS

General

System ..... Compact disc audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Power source ..... 14.4 V DC
(10.8 — 15.1 V allowable)
Max. current consumption ..... 1.0 A
Weight ..... 1.9 kg (4.2 lbs.)
Dimensions ..... 248 (W) × 66 (H) × 168 (D) mm
[9-3/4 (W) × 2-5/8 (H) × 6-5/8 (D) in.]
Backup current ..... 1mA or less

Audio

Frequency characteristics ..... 5 — 20,000 Hz (± 1 dB)
Signal-to-noise ratio ..... 92 dB (1 kHz) (IHF-A Network)
Distortion ..... 0.006 %
Dynamic range ..... 90 dB (1 kHz)
Output level ..... 1,000 mV (1 kHz, 0 dB)
Number of channels ..... 2 (stereo)

Note:

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