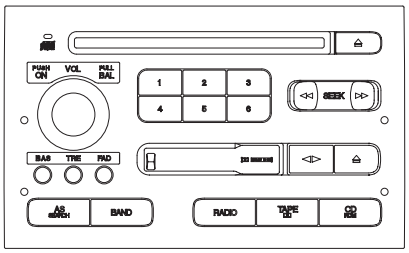
Pioneer sound.vision.soul

Service Manual

SAAB



ORDER NO.
CRT2740

HEAD UNIT(3 in 1)

FX-M2317ZSA

X1B/ES

COMPACT disc DIGITAL AUDIO

VEHICLE	DESTINATION	PRODUCED AFTER	SAAB PART No.	ID No.	PIONEER MODEL No.
SAAB 9-5	GENERAL AREA	2001	5038153	———	FX-M2317ZSA/X1B/ES

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

Model No.	Order No.	Mech. Module	Remarks
CX-1011	CRT2406	3L	Cassette Mech. Module:Mech.Description, Disassembly
CX-958	CRT2423	S8.1	CD Mech. Module:Circuit Description, Mech.Description, Disassembly

CONTENTS

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) 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. AUG. 2001 Printed in Japan

● **CD Player Service Precautions**

1. For pickup unit(CXX1285) handling, please refer to"Disassembly"(see page 59).
   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 56).

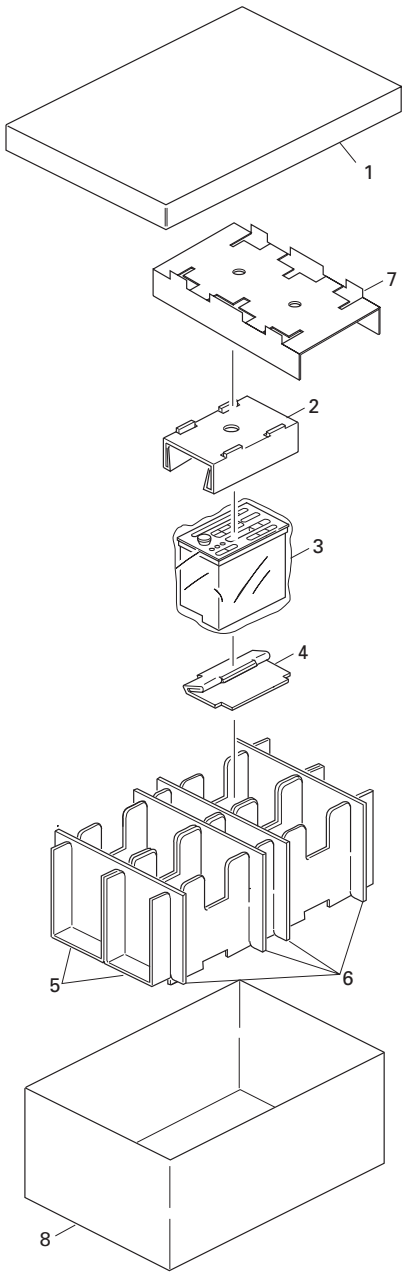
1. SAFETY INFORMATION

CAUTION

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

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



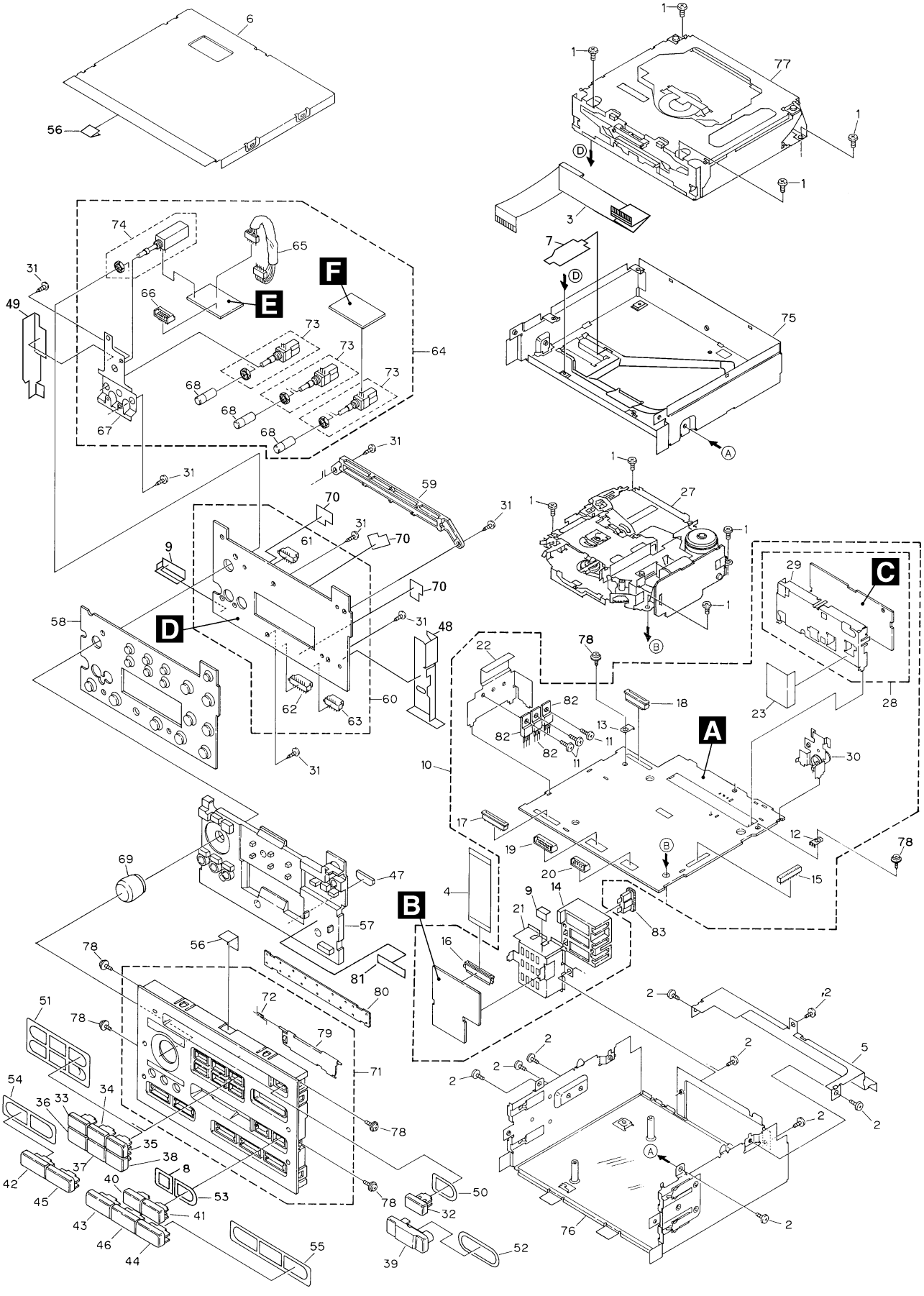
NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark No.	Description	Part No.
1	Cover	UHW1584
2	Protector	UHP1912
3	Polyethylene Bag	UEG1057
4	Protector	UHP1823
5	Protector	UHP1825
6	Protector	UHP1826
7	Protector	UHP1824
8	Contain Box	UHL-085

2.2 EXTERIOR

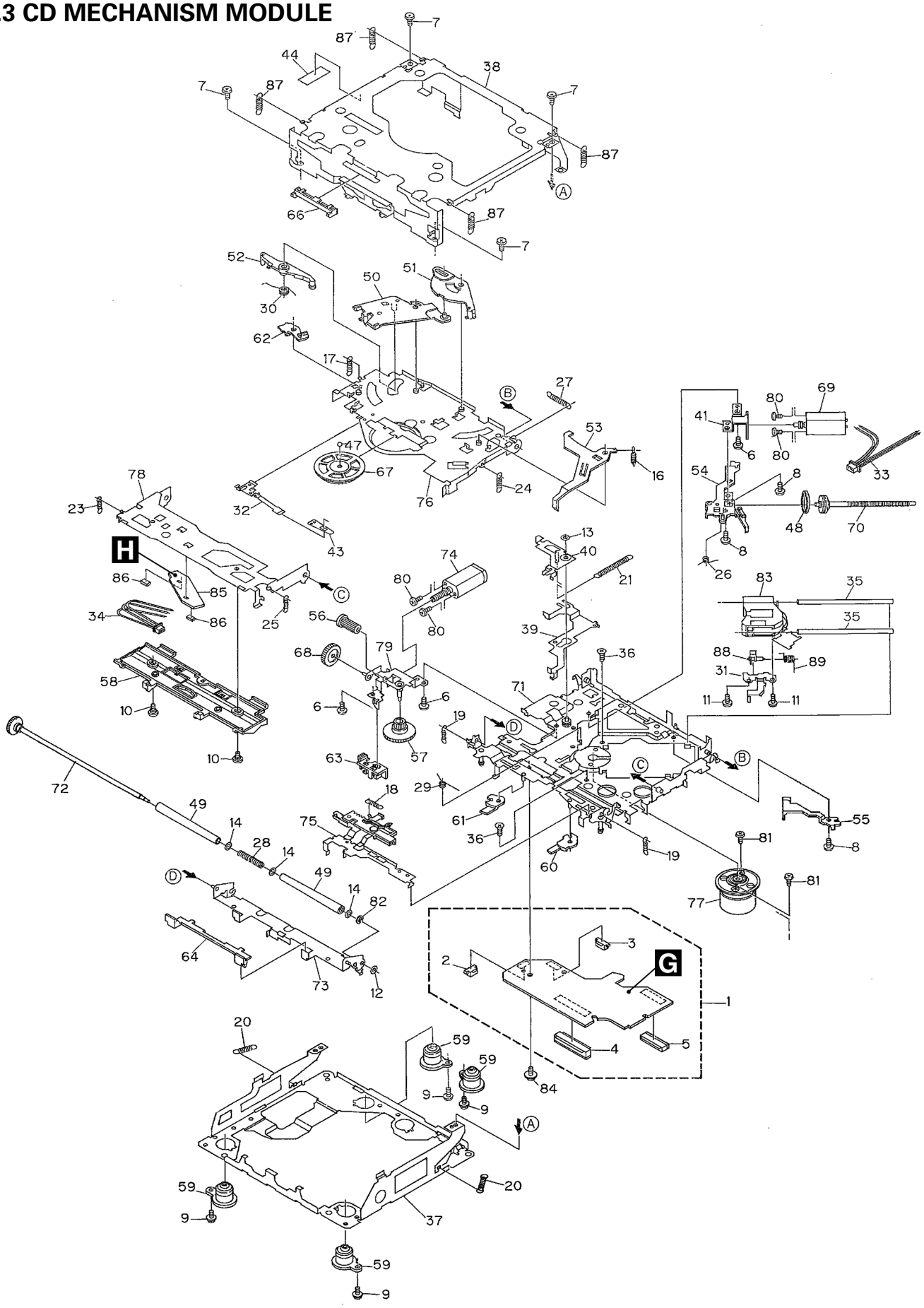


● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BMZ30P050FMC
	3	Connector	UDE-039
	4	Connector	CDE4952
	5	Case	CNB1958
	6	Case	CNB1959
	7	Cover	CNM5914
	8	Insulator	CNM5298
	9	Insulator	CNM5454
	10	Tuner Mother Assy	UWM-018
	11	Screw	BMZ30P060FMC
	12	Terminal(CN803)	CKF1059
	13	Terminal(CN804)	CKF1059
	14	Connector(CN851)	CKM1258
	15	Connector(CN651)	CKS3568
	16	Connector(CN852)	CKS1963
	17	Connector(CN701)	CKS3706
	18	Connector(CN801)	CKS3866
	19	Plug(CN601)	CKS3537
	20	Plug(CN602)	CKS3535
	21	Holder	CNC5906
	22	Holder	CNC5986
*	23	Insulator	CNM4912
	24-26	•••••	
	27	Cassette Mechanism Module	EXK4220
	28	Tuner Unit	CWE1422
	29	Holder	CNC6122
	30	Antenna Unit(CN501)	CXA9328
	31	Screw	BPZ26P100FMC
	32	Button(CD EJECT)	CAC5703
	33	Button(1)	CAC5704
	34	Button(2)	CAC5705
	35	Button(3)	CAC5706
	36	Button(4)	CAC5707
	37	Button(5)	CAC5708
	38	Button(6)	CAC5709
	39	Button(SEEK)	CAC5710
	40	Button(<>)	CAC5711
	41	Button(TAPE EJECT)	CAC5712
	42	Button(AS)	CAC5713
	43	Button(RADIO)	CAC5721
	44	Button(CD)	CAC5717
	45	Button(BAND)	CAC5720
	46	Button(TAPE)	CAC5716
	47	Spacer	CNM4949

Mark	No.	Description	Part No.
	48	Insulator	CNM5452
	49	Insulator	CNM5453
	50	Insulator	CNM5135
	51	Insulator	CNM5136
	52	Insulator	CNM5137
	53	Insulator	CNM5297
	54	Insulator	CNM5139
	55	Insulator	CNM5140
	56	Insulator	CNM5247
	57	Lighting Conductor	CNV4220
	58	Rubber	CNV5020
	59	Holder	CNV4535
	60	Keyboard Unit	UWM-021
	61	Socket(CN903)	CKS3548
	62	Socket(CN901)	CKS3550
	63	Socket(CN902)	CKS3548
	64	Volume Unit	UWM-020
	65	Cord(CN904)	CDE4761
	66	Plug(CN905)	CKS3535
	67	Holder	CNC6818
	68	Knob Assy	CXA7840
	69	Knob Assy	CXB5608
	70	Spacer	CNM5455
	71	Grille Unit	CXB1843
	72	Spring	CBH1371
	73	Volume(VR902,903,904)	CCS1089
	74	Volume(VR901)	CSD1036
	75	Chassis	UNA-004
	76	Chassis Unit	CXB7507
	77	CD Mechanism Module(S8.1)	CXK5224
	78	Screw	IMS30P050FMC
*	79	Door	CAT1684
	80	Cover	CNM4768
	81	Film	CNM5299
	82	Transistor(Q802,815,818)	2SB1185
	83	Fuse(FU851)	CEK1005

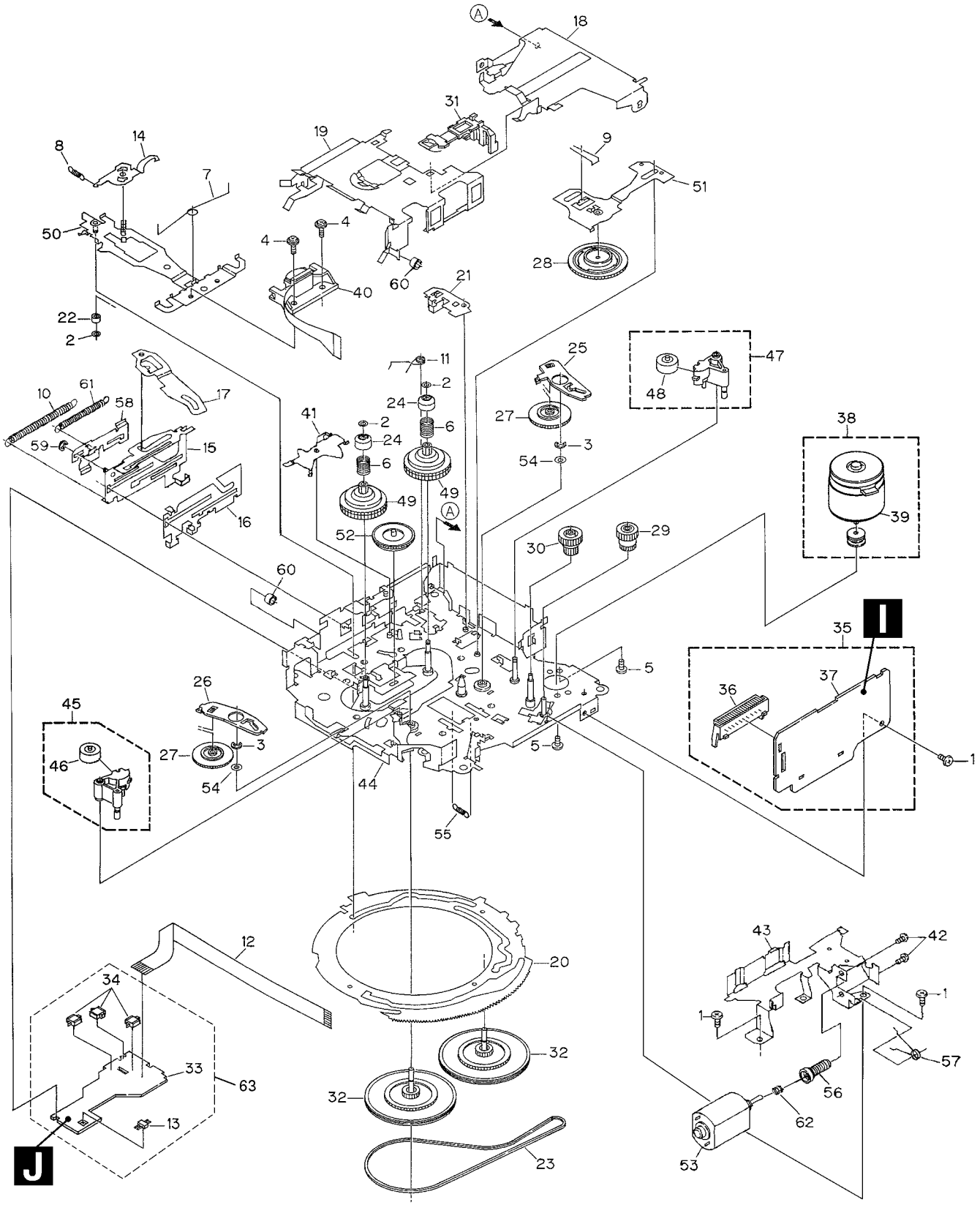
2.3 CD MECHANISM MODULE



● CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Control Unit	CWX2411
	2	Connector(CN802)	CKS2192
	3	Connector(CN801)	CKS2193
	4	Connector(CN701)	CKS2773
	5	Connector(CN101)	CKS3486
	6	Screw	BMZ20P030FMC
	7	Screw	BSZ20P040FMC
	8	Screw(M2x3)	CBA1077
	9	Screw(M2x5)	EBA1028
	10	Screw	CBA1554
	11	Screw(M2x4)	CBA1362
	12	Washer	CBF1037
	13	Washer	CBF1038
	14	Washer	CBF1060
	15	•••••	
	16	Spring	CBH2079
	17	Spring	CBH2117
	18	Spring	CBH2314
	19	Spring	CBH2373
	20	Spring	CBH2282
	21	Spring	CBH2318
	22	•••••	
	23	Spring	CBH2324
	24	Spring	CBH2118
	25	Spring	CBH2161
	26	Spring	CBH2163
	27	Spring	CBH2189
	28	Spring	CBH2377
	29	Spring	CBH2260
	30	Spring	CBH2262
	31	Bracket	CNC8568
	32	Spring	CBL1531
	33	Connector	CDE5531
	34	Connector	CDE5532
	35	Shaft	CLA3894
	36	Screw(M2.6x6)	CBA1458
	37	Frame	CNC9159
	38	Frame	CNC9160
	39	Lever	CNC8694
	40	Arm	CNC8663
	41	Bracket	CNC8567
	42	•••••	
	43	Spacer	CNM3315
	44	Sheet	CNM6659
	45	•••••	
	46	•••••	
	47	Ball	CNR1189
	48	Belt	CNT1086
	49	Roller	CNV4509
	50	Arm	CNV6037
	51	Arm	CNV5247
	52	Arm	CNV5248
	53	Arm	CNV5249
	54	Guide	CNV5254
	55	Guide	CNV5255
	56	Gear	CNV5257
	57	Gear	CNV5256
	58	Guide	CNV6272
	59	Damper	CNV5266
	60	Arm	CNV6096
	61	Arm	CNV6031
	62	Arm	CNV6853
	63	Guide	CNV6012
	64	Guide	CNV5510
	65	•••••	
	66	Guide	CNV5751
	67	Clamper	CNV6013
	68	Gear	CNV5813
	69	Motor Unit(M1)	CXB2190
	70	Screw Unit	CXB5892
	71	Chassis Unit	CXB5811
	72	Gear Unit	CXB4728
	73	Arm Unit	CXB5753
	74	Motor Unit(M2)	CXB2195
	75	Lever Unit	CXB4730
*	76	Arm Unit	CXB7754
	77	Motor Unit(M3)	CXB2562
	78	Arm Unit	CXB4732
	79	Bracket Unit	CXB4795
	80	Screw	JFZ20P025FMC
	81	Screw	JGZ17P025FZB
	82	Washer	YE20FUC
	83	Pickup Unit(Service)(P8)	CXX1285
	84	Screw	IMS26P030FMC
*	85	PCB	CNX2982
	86	Photo-transistor(Q1, 2)	CPT230SX-TU
	87	Spring	CBH2372
	88	Rack	CNV6014
	89	Spring	CBH2315

2.4 CASSETTE MECHANISM MODULE

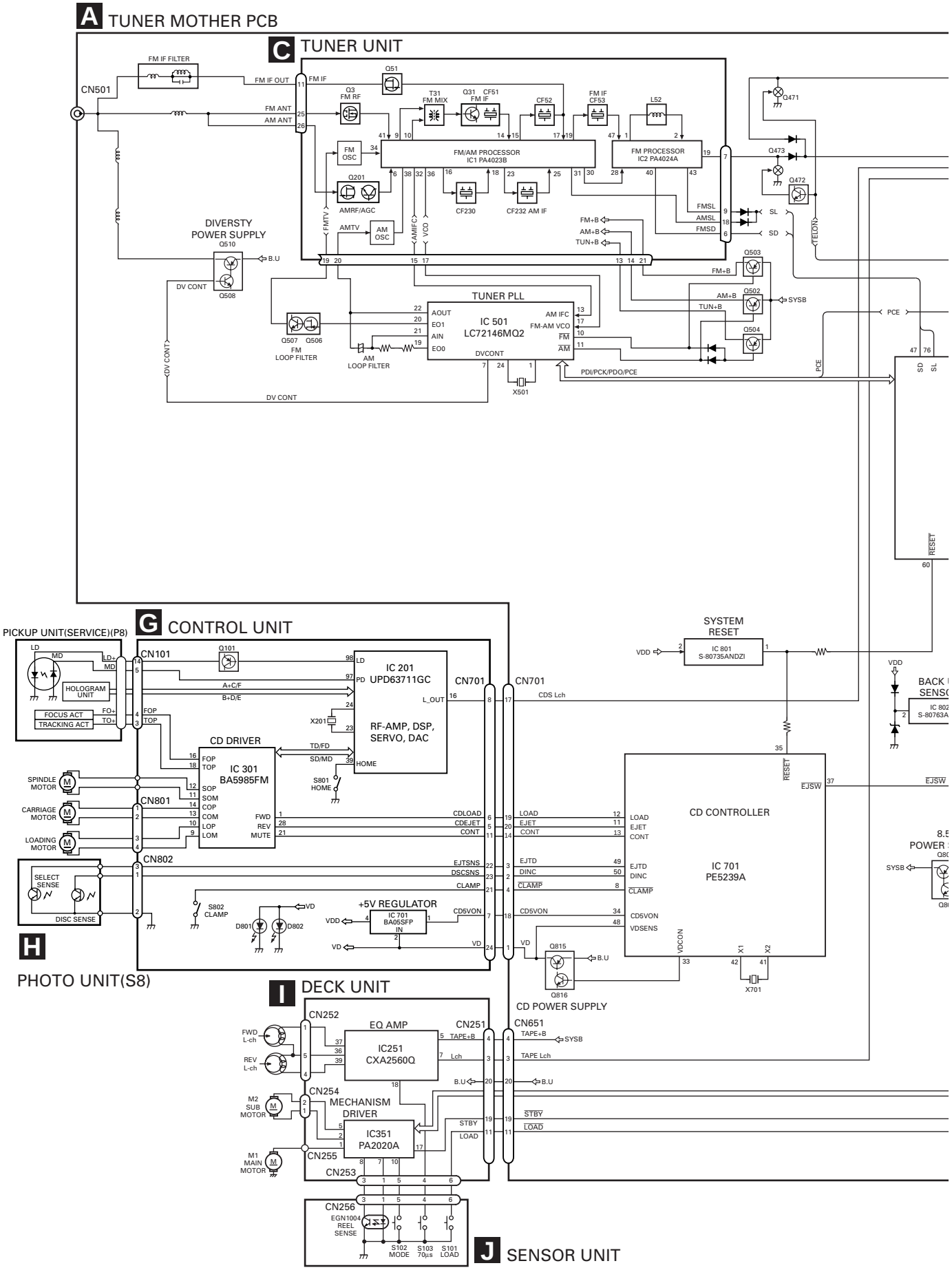


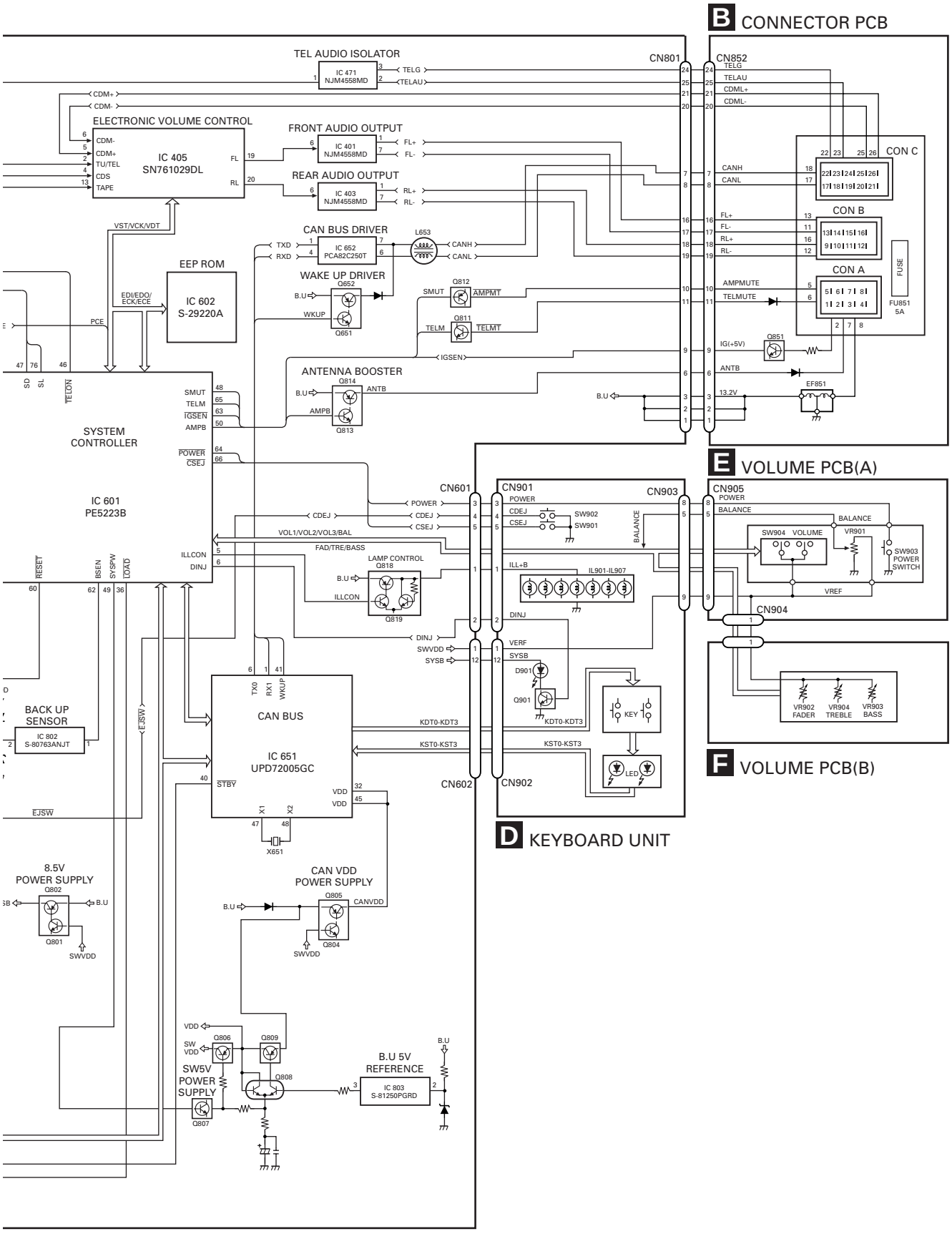
● CASSETTE MECHANISM MODULE SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC
2	Washer	CBF1037
3	Washer	CBG1003
4	Screw	EBA1028
5	Screw	CBA1037
6	Spring	EBH1653
7	Spring	EBH1642
8	Spring	EBH1641
9	Spring	EBH1626
10	Spring	EBH1627
11	Spring	EBH1648
12	Cord	EDD1024
13	Photo-reflector(Q101)	EGN1004
14	Arm	ENC1526
15	Lever Unit	EXA1610
16	Lever	ENC1543
17	Arm	ENC1532
18	Frame	ENC1533
19	Holder	ENC1547
20	Gear	ENC1535
21	Arm	ENC1550
22	Roller	ENR1040
23	Belt	ENT1027
24	Collar	ENV1508
25	Arm	ENV1539
26	Arm	ENV1540
27	Gear	ENV1569
28	Gear	ENV1547
29	Gear	ENR1044
30	Worm Wheel	ENV1559
31	Lever	ENV1551
32	Flywheel	ENV1554
33	Gathering PCB	ENX1071
34	Switch(S101,S102,S103)	ESG1007
35	Deck Unit	EWM1037
36	Plug(CN251)	CKS3540
37	Gathering PCB	ENX1069
38	Motor Unit(M1)	EXA1491
39	Motor	EXM1028
40	Head Assy(HD1)	EXA1506
41	Arm	ENC1537
42	Screw	JGZ20P025FNI
43	Guide	ENC1545
44	Chassis Unit	EXA1609
45	Pinch Holder Unit	EXA1608
46	Pinch Roller	ENV1518
47	Pinch Holder Unit	EXA1607
48	Pinch Roller	ENV1518
49	Reel Unit	EXA1585
50	Head Base Unit	EXA1611
51	Lever Unit	EXA1587
52	Gear Unit	EXA1596
53	Motor Unit(M2)	EXA1623
54	Washer	HBF-179
55	Spring	EBH1537
56	Gear	ENV1544
57	Spring	EBH1654
58	Lever	ENC1548
59	Washer	YE15FUC
60	Tube	ENM1039
61	Spring	EBH1645
62	Spring	EBH1647
63	Sensor Unit	EWM1036

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

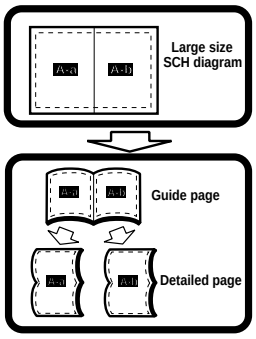
3.1 BLOCK DIAGRAM




B CONNECTOR PCB
TEL AUDIO ISOLATOR
IC 471 NJM4558MD
CN801
CN852
TELG
TELAU
CDM+
CDM-
CDML+
CDML-
ELECTRONIC VOLUME CONTROL
IC 405 SN761029DL
FRONT AUDIO OUTPUT
IC 401 NJM4558MD
FL+
FL-
REAR AUDIO OUTPUT
IC 403 NJM4558MD
RL+
RL-
CANH
CANL
CON C
CON B
CON A
FUSE
FU851 5A
AMPMUTE
TELMUTE
IG(+5V)
ANTB
13.2V
EF851
Q851
VST/VCK/VDT
EEP ROM
IC 602 S-29220A
EDI/EDO/ECK/ECE
PCE
CAN BUS DRIVER
IC 652 PCA82C250T
TXD
RXD
L653
WAKE UP DRIVER
Q652
Q651
WKUP
Q812
AMPMT
Q811
TELMT
IGSEN
ANTENNA BOOSTER
Q814
Q813
AMPB
SYSTEM CONTROLLER
IC 601 PE5223B
SMUT
TELM
IGSEN
AMPB
POWER
CSEJ
SD
SL
TELON
RESET
BSEN
SYSPW
LOAD
ILLCON
DINJ
E CONNECTOR PCB
CN601
CN901
CN903
POWER
CDEJ
CSEJ
SW902
SW901
BALANCE
VOL1/VOL2/VOL3/BAL
FAD/TRE/BASS
LAMP CONTROL
Q818
Q819
ILL+B
IL901-IL907
DINJ
SWVDD
SYSB
VERF
D901
Q901
KEY
LED
KDT0-KDT3
KST0-KST3
CN602
CN902
D KEYBOARD UNIT
E VOLUME PCB(A)
CN905
SW904
VOLUME
VR901
SW903 POWER SWITCH
VREF
CN904
F VOLUME PCB(B)
VR902 FADER
VR904 TREBLE
VR903 BASS
BACK UP SENSOR
IC 802 S-80763ANJT
EJSW
CAN BUS
IC 651 UPD72005GC
TX0
RX1
WKUP
STBY
VDD
X1
X2
X651
8.5V POWER SUPPLY
Q802
Q801
CAN VDD POWER SUPPLY
Q805
Q804
CANVDD
SW5V POWER SUPPLY
Q806
Q809
Q808
Q807
SW VDD
B.U 5V REFERENCE
IC 803 S-81250PGRD
B.U

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

A TUNER MOTHER PCB

C TUNER UNIT

T : FM, AM SIGNAL
D : TAPE SIGNAL
C : CD SIGNAL
A : AUDIO SIGNAL

CN501

FM IF FILTER

FM LOOP FILTER

DIVERSITY POWER SUPPLY

AM LOOP FILTER

PLL IC

G CONTROL

IC701 PE5239

CD CONTRO

CN601

CN901

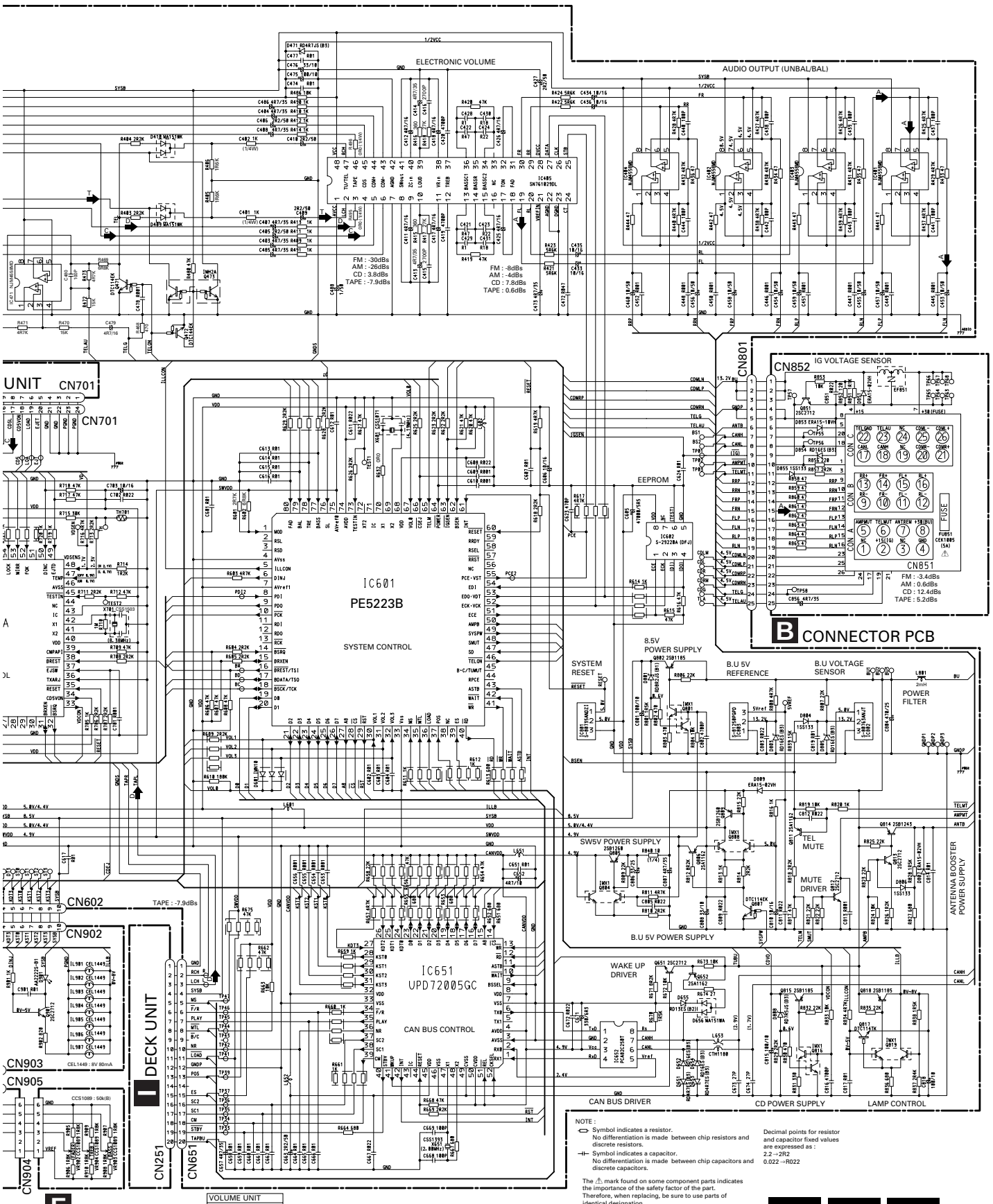
TUNER MOTHER ASSY
Consists of
TUNER MOTHER PCB
CONNECTOR PCB

D KEYBOARD UNIT

E VOLUME PCB

ADE

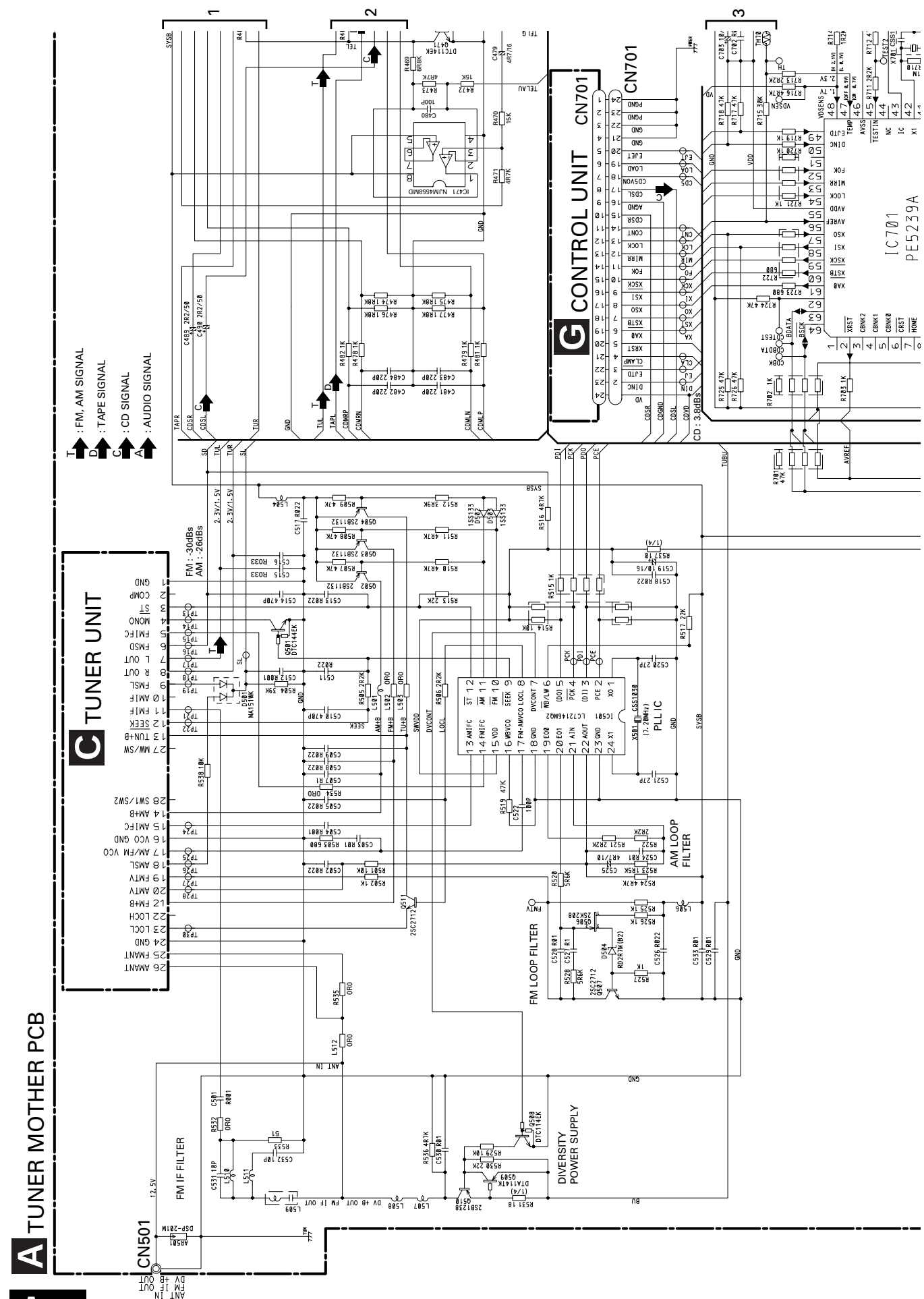
A-b

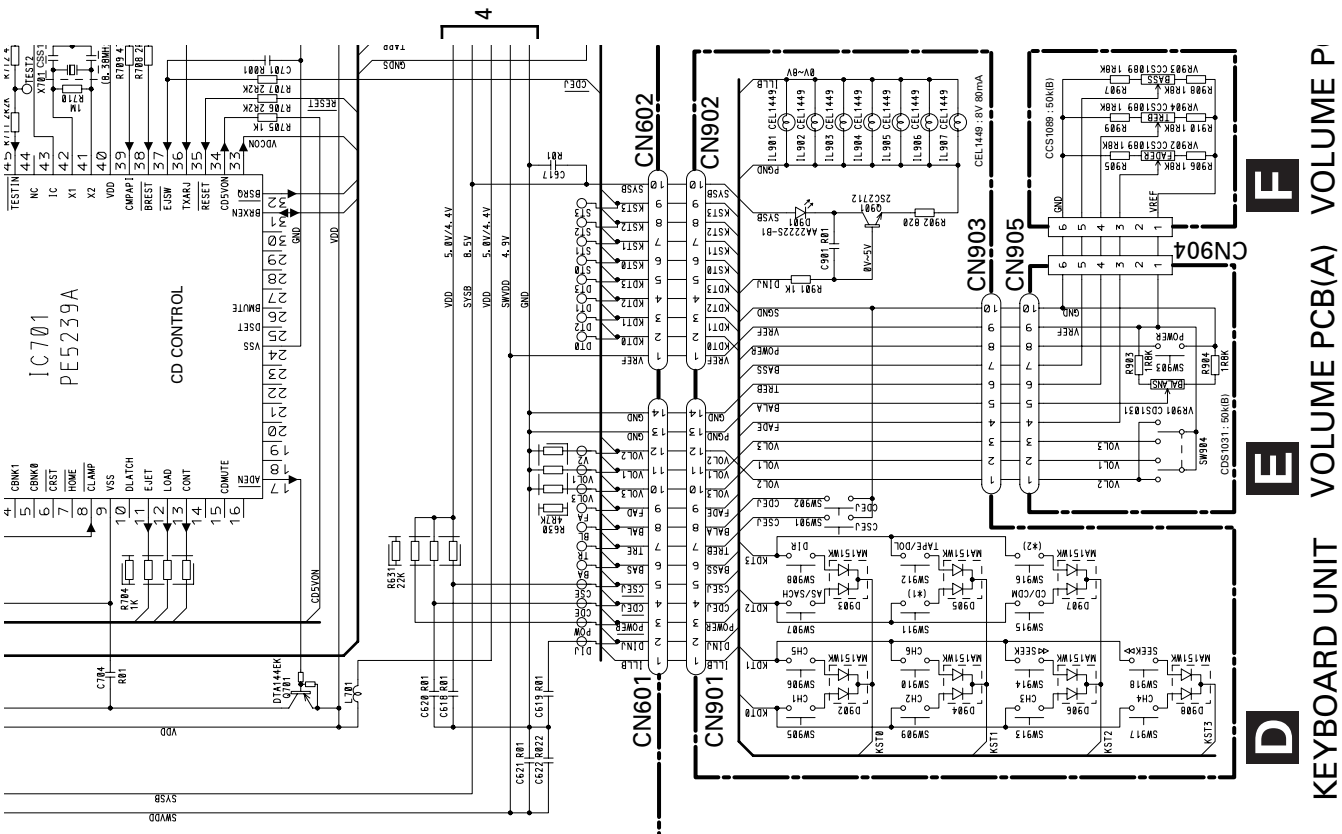


NOTE :
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

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.

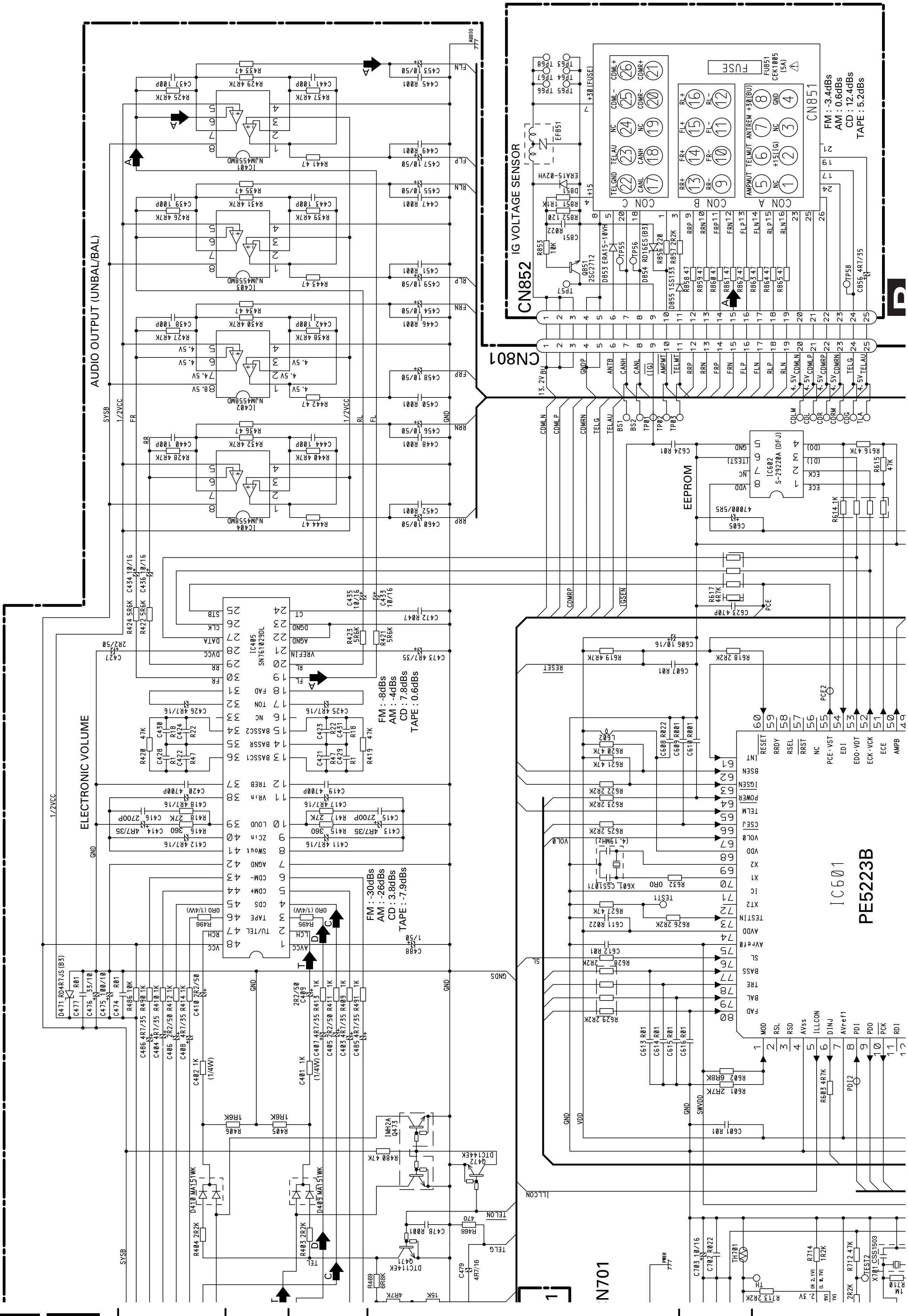
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022


A-a A-b
A TUNER MOTHER PCB
B CONTROL UNIT
C TUNER UNIT
D : FM, AM SIGNAL
C : TAPE SIGNAL
A : CD SIGNAL
B : AUDIO SIGNAL
CN501
CN701
IC701
PE5239A
FM IF FILTER
DIVERSITY POWER SUPPLY
FM LOOP FILTER
AM LOOP FILTER
PLL IC
FM : -30dBs
AM : -26dBs
CD : 3.8dBs

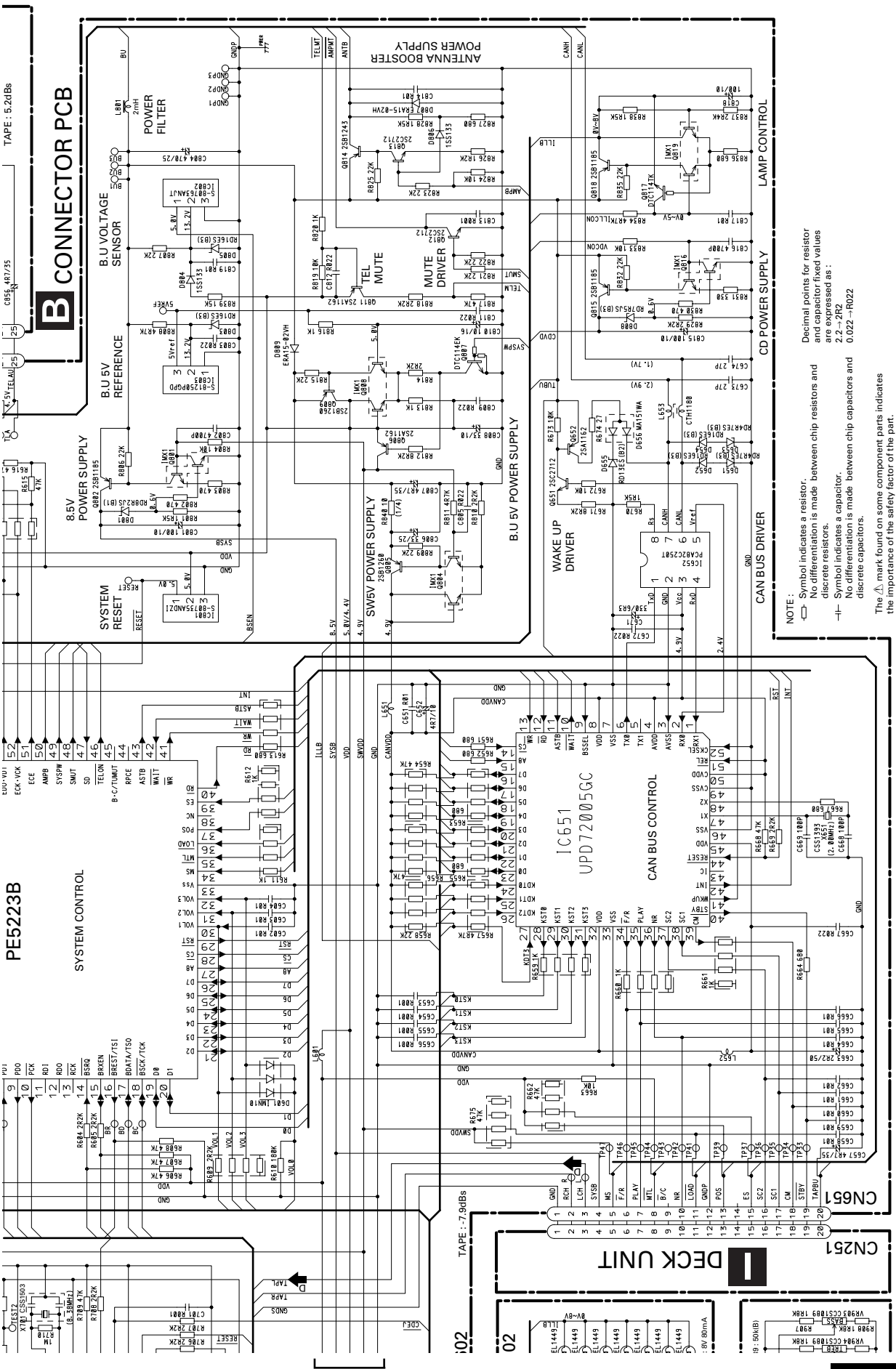


TUNER MOTHER ASSY
Consists of
TUNER MOTHER PCB
CONNECTOR PCB

A-b
A-a


AUDIO OUTPUT (UNBAL/BAL)
ELECTRONIC VOLUME
IG VOLTAGE SENSOR
CN852
CN801
CN851
EEPROM
IC601
PE5223B
IC401 NJM4558MD
IC402 NJM4558MD
IC403 NJM4558MD
IC404 NJM4558MD
IC405 SN761029DL
IC602 S-29220A (DFJ)
FM : -3.4dBs
AM : 0.6dBs
CD : 12.4dBs
TAPE : 5.2dBs
FM : -8dBs
AM : -4dBs
CD : 7.8dBs
TAPE : 0.6dBs
FM : -30dBs
AM : -26dBs
CD : 3.8dBs
TAPE : -7.9dBs

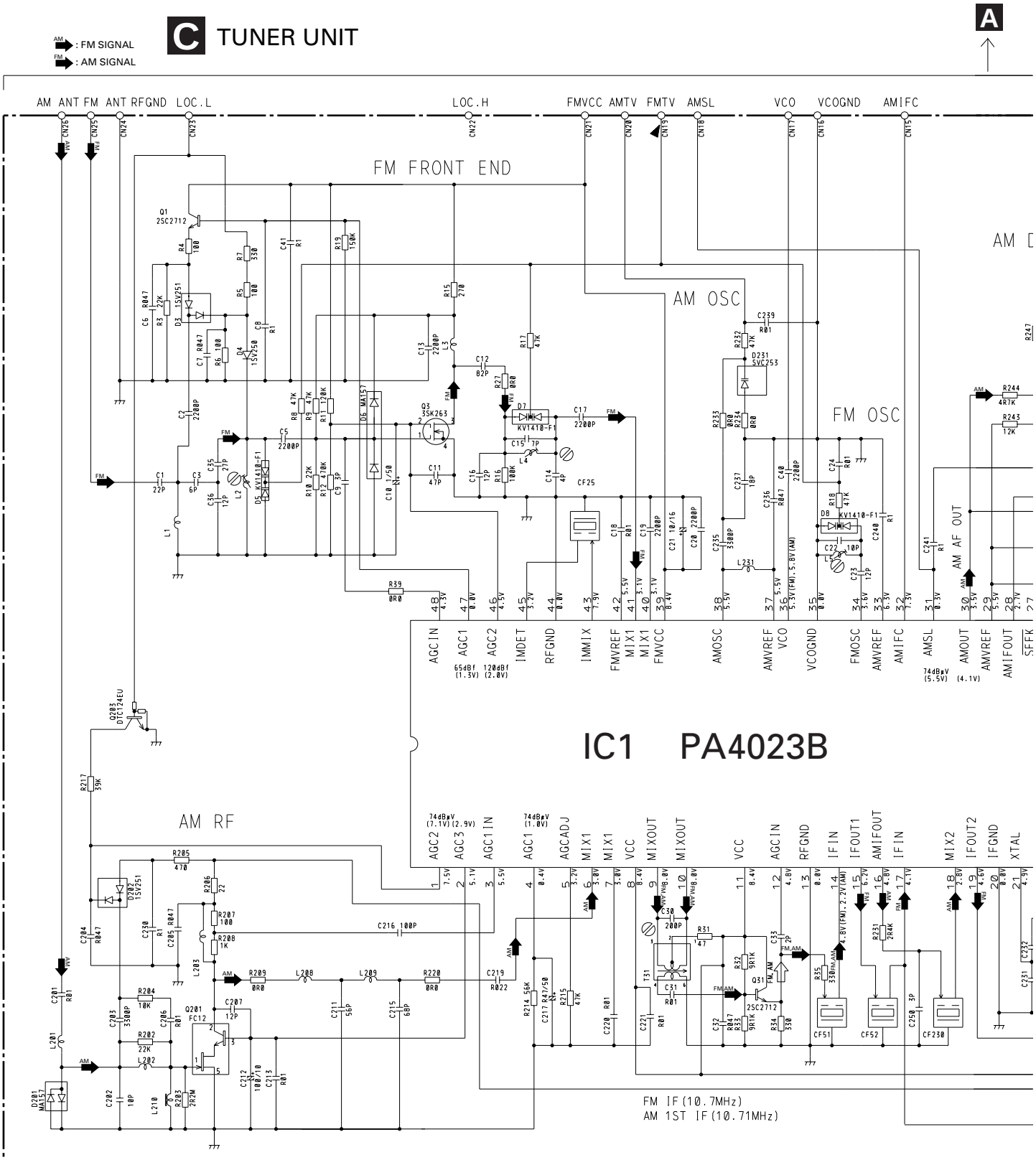
A-b B

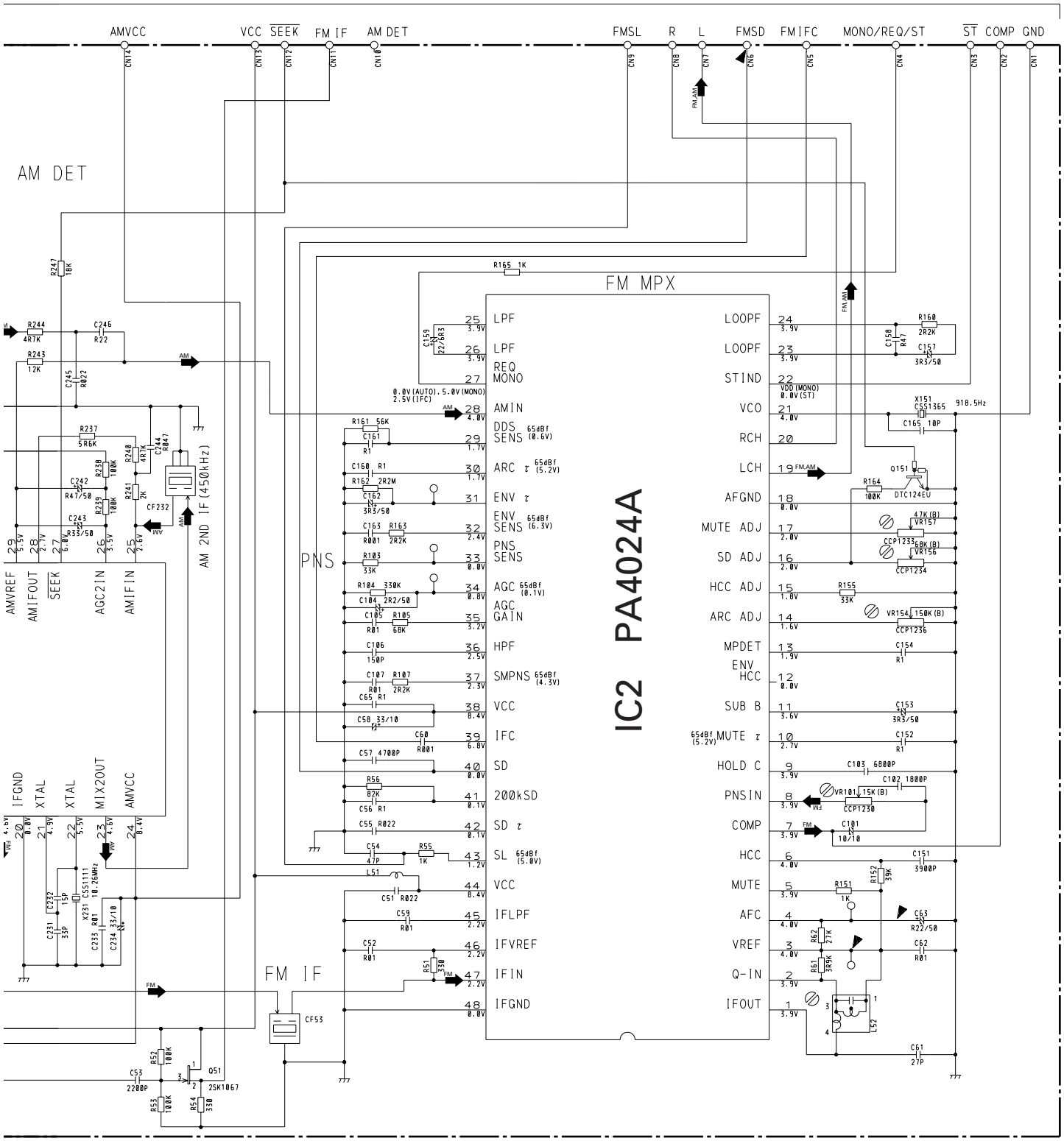

B CONNECTOR PCB
POWER FILTER
B.U VOLTAGE SENSOR
B.U 5V REFERENCE
8.5V POWER SUPPLY
SYSTEM RESET
ANTENNA BOOSTER POWER SUPPLY
TEL MUTE
MUTE DRIVER
B.U 5V POWER SUPPLY
SW5V POWER SUPPLY
WAKE UP DRIVER
CAN BUS DRIVER
CD POWER SUPPLY
LAMP CONTROL
PE5223B
SYSTEM CONTROL
IC651 UPD72005GC
CAN BUS CONTROL
CN651
CN251
DECK UNIT
VOLUME PCB(B)
VOLUME UNIT
Consists of
VOLUME PCB(A)
VOLUME PCB(B)
TAPE : 5.2dBs
TAPE : -7.9dBs
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

A-a A-b

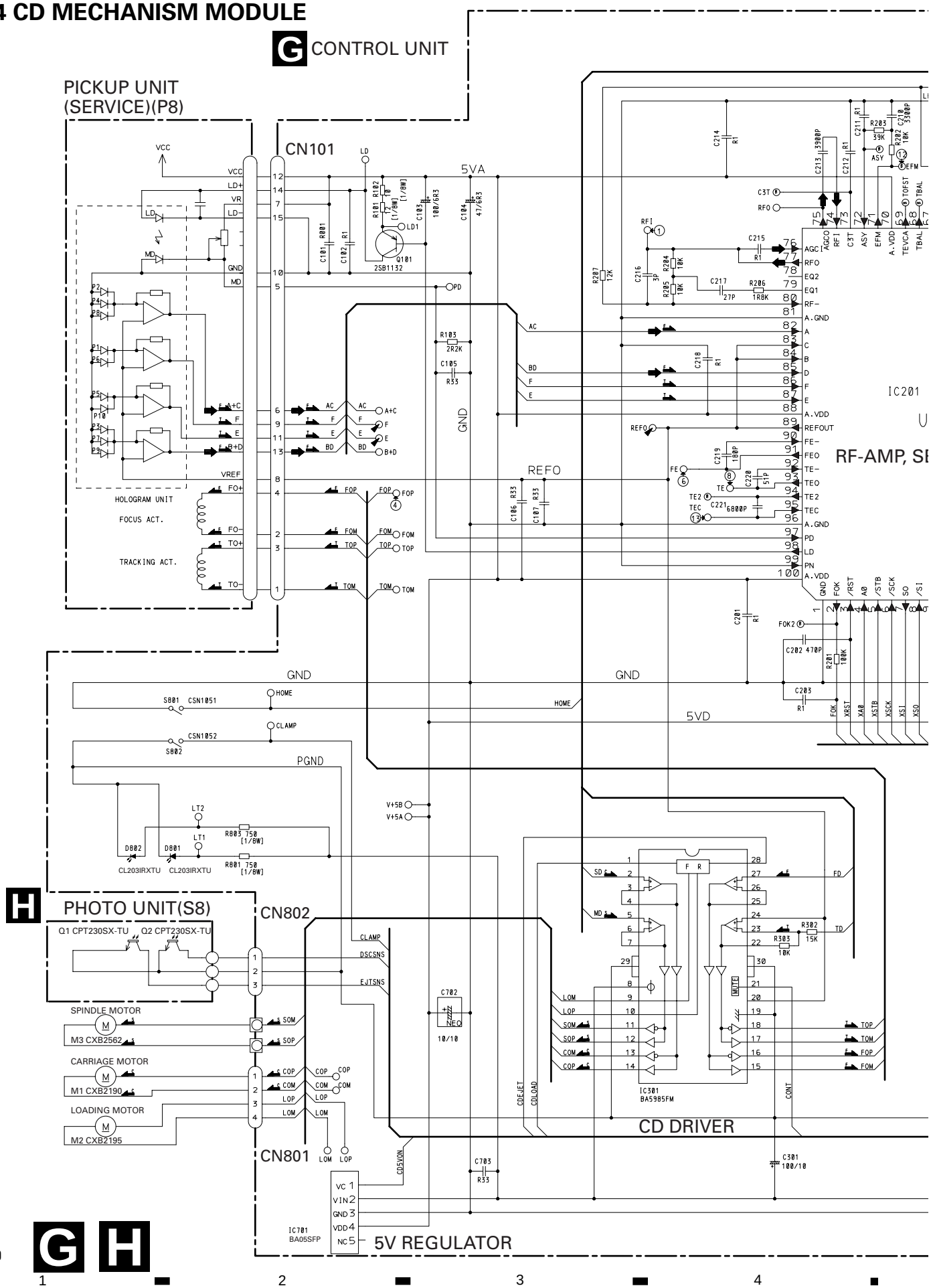
A-b B

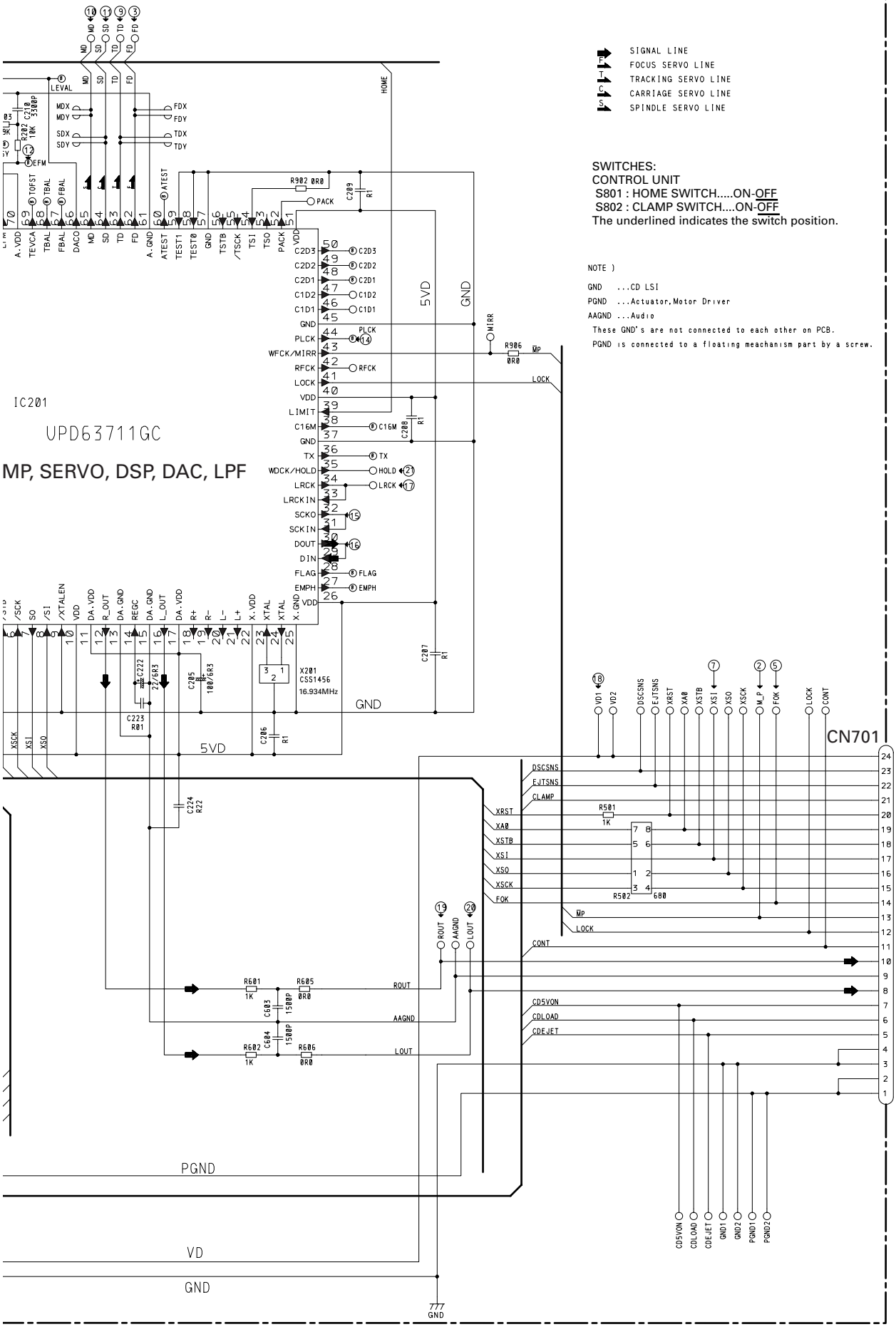
3.3 TUNER UNIT




AMVCC
VCC
SEEK
FM IF
AM DET
FMSL
R
L
FMSD
FMIFC
MONO/REQ/ST
ST
COMP
GND
AM DET
FM MPX
IC2 PA4024A
LPF
LPF
REQ
MONO
AMIN
DDS SENS
ARC τ
ENV τ
ENV SENS
PNS SENS
AGC
AGC GAIN
HPF
SMPNS
VCC
IFC
SD
200kSD
SD τ
SL
VCC
IFLPF
IFVREF
IFIN
IFGND
LOOPF
LOOPF
STIND
VCO
RCH
LCH
AFGND
MUTE ADJ
SD ADJ
HCC ADJ
ARC ADJ
MPDET
ENV HCC
SUB B
MUTE τ
HOLD C
PNSIN
COMP
HCC
MUTE
AFC
VREF
Q-IN
IFOUT
PNS
FM IF
AM 2ND IF (450kHz)
CF232
CF53
Q51
2SK1067
X151
CS51365
918.5Hz
DTC124EU
AMVREF
AMIFOUT
SEEK
AGC2IN
AMIFIN
IFGND
XTAL
XTAL
MIX2OUT
AMVCC

3.4 CD MECHANISM MODULE

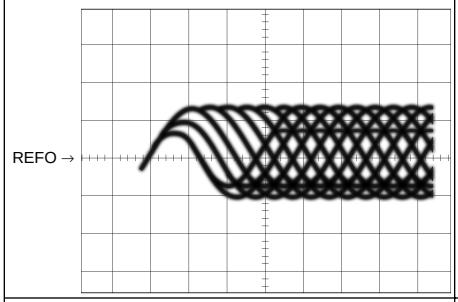



SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
SWITCHES:
CONTROL UNIT
S801 : HOME SWITCH.....ON-OFF
S802 : CLAMP SWITCH....ON-OFF
The underlined indicates the switch position.
NOTE)
GND ...CD LSI
PGND ...Actuator, Motor Driver
AAGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating meachanism part by a screw.
IC201
UPD63711GC
MP, SERVO, DSP, DAC, LPF
X201
CSS1456
16.934MHz
5VD
GND
CN701
VD
DSCSNS
EJTSNS
CLAMP
XRST
XA0
XSTB
XSI
XSO
XSCK
FOK
MIRR
LOCK
CONT
ROUT
AAGND
LOUT
CD5VON
CDLOAD
CDEJET
GND
PGND
PGND1
PGND2
A CN701

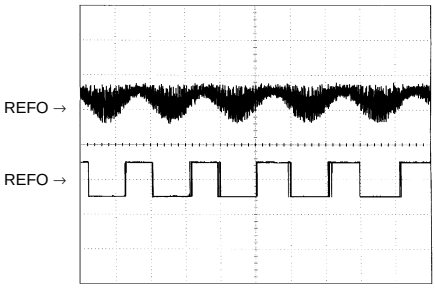
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

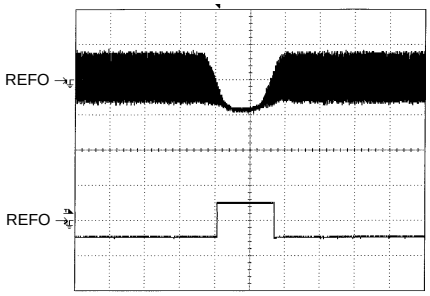
① RFI 0.5V/div. 0.5µs/div.
Normal mode: play



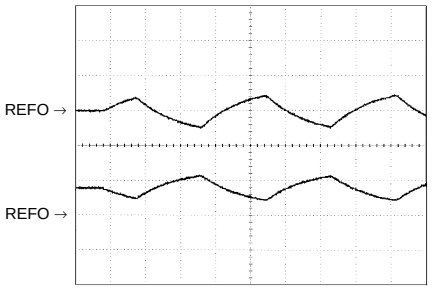
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



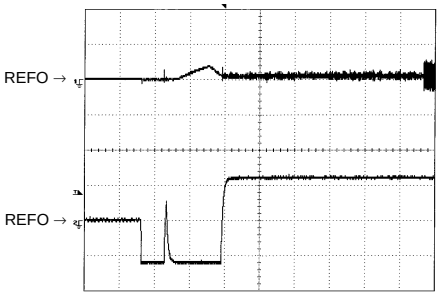
① CH1: RFI 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800µm



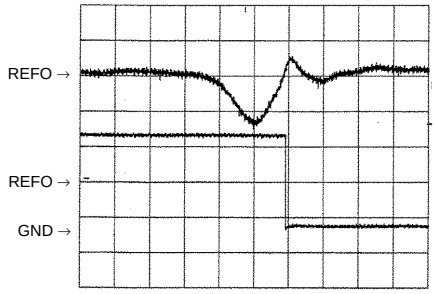
③ CH1: FD 0.5V/div. 0.2s/div.
④ CH2: FO+ 2V/div.
Test mode: No disc, Focus close



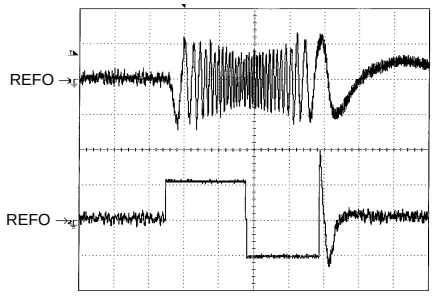
③ CH1: FD 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



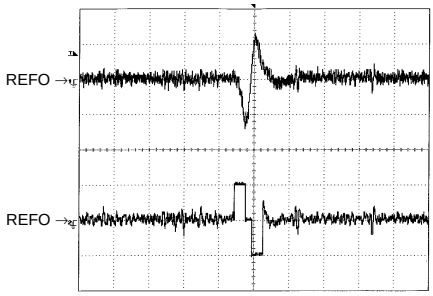
⑥ CH1: FE 0.5V/div. 1ms/div.
⑦ CH2: XSI 2V/div.
Normal mode: Focus close



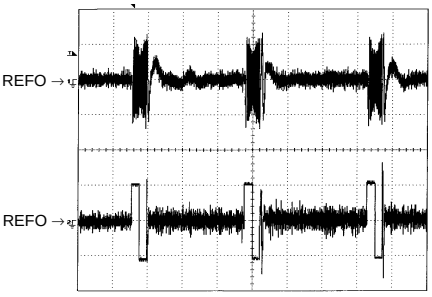
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 32 tracks jump (FWD)



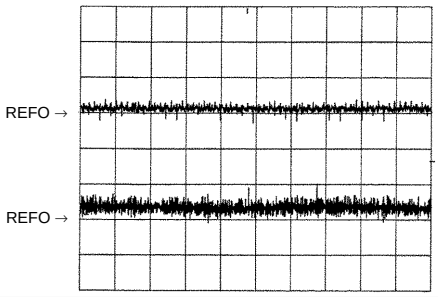
⑧ CH1: TE 0.5V/div. 0.5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: Single jump (FWD)



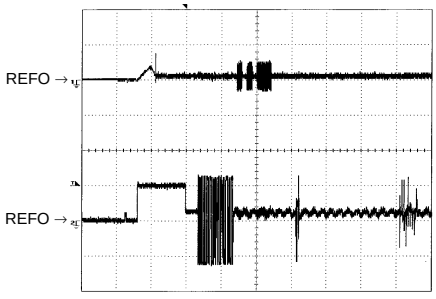
⑧ CH1: TE 0.5V/div. 5ms/div.
⑨ CH2: TD 0.5V/div.
Test mode: 100 tracks jump (FWD)



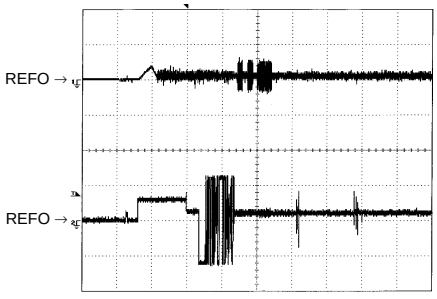
⑥ CH1: FE 0.1V/div. 20ms/div.
③ CH2: FD 0.2V/div.
Normal mode: Play



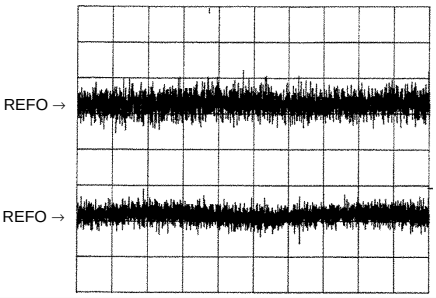
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (12cm)



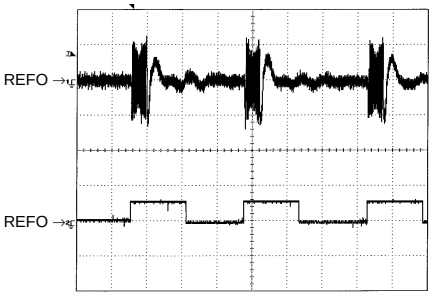
③ CH1: FD 0.5V/div. 0.5s/div.
⑩ CH2: MD 1V/div.
Normal mode: Focus close (8cm)



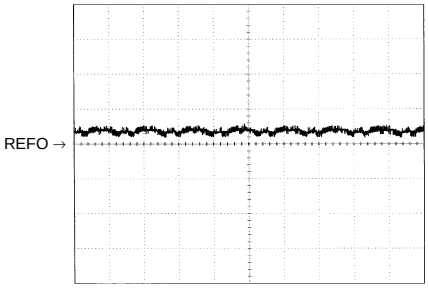
⑧ CH1: TE 0.2V/div. 20ms/div.
⑨ CH2: TD 0.2V/div.
Normal mode: play



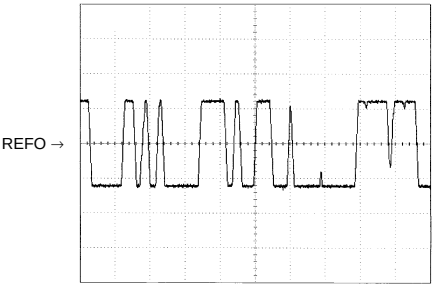
⑧ CH1: TE 0.5V/div. 5ms/div.
⑪ CH2: SD 0.5V/div.
TEST mode: 100 Tracks jump(FWD)



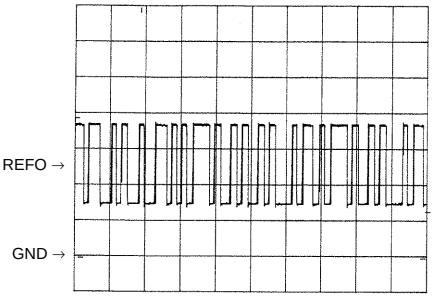
⑩ MD 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



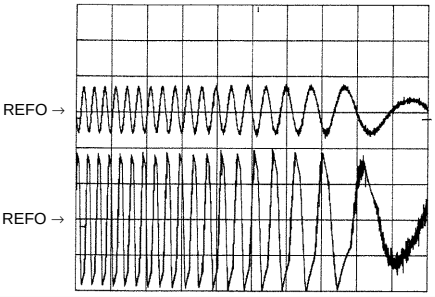
⑩ MD 1V/div. 10ms/div.
Normal mode:
Long Search (12cm)



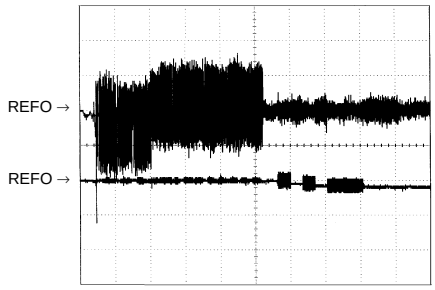
⑫ EFM 1V/div. 5µs/div.
Normal mode: play



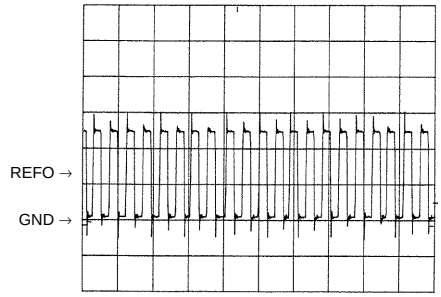
⑧ CH1: TE 1V/div. 2ms/div.
⑬ CH2: TEC 1V/div.
Test mode: Focus close
Tracking open



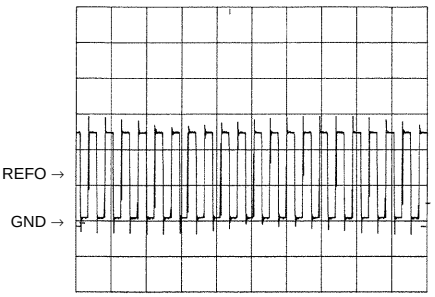
⑧ CH1: TE 0.5V/div. 0.2s/div.
⑥ CH2: FE 0.5V/div.
Normal mode: AGC after focus close



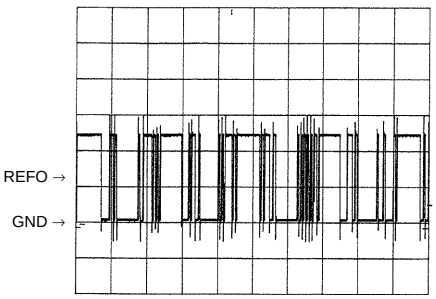
⑭ PLCK 2V/div. 0.5µs/div.
Normal mode: play



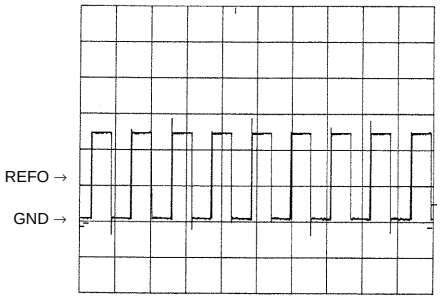
⑮ SCKO 2V/div. 1µs/div.
Normal mode: play



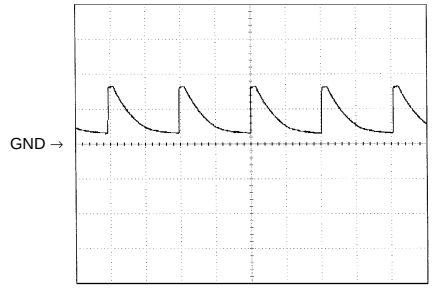
⑯ Dout 2V/div. 10µs/div.
Normal mode: play



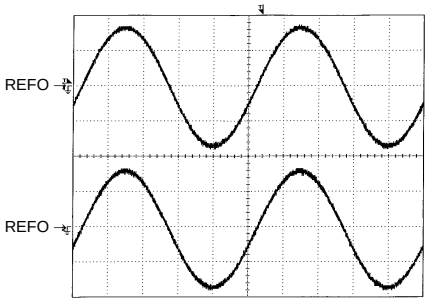
⑰ LRCK 2V/div. 20µs/div.
Normal mode: play



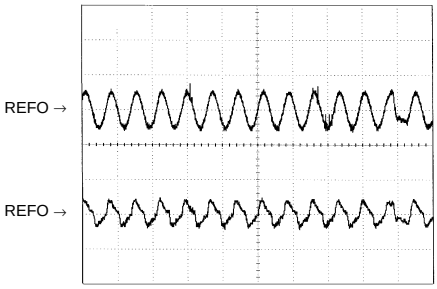
⑱ VD 5V/div. 50ms/div.
Normal mode: No disc



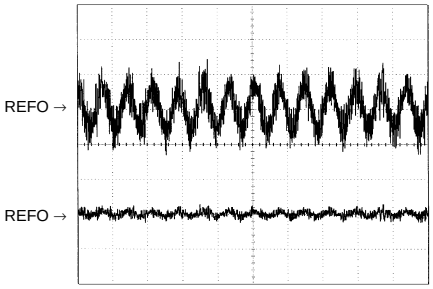
⑲ CH1: R OUT 1V/div.
⑳ CH2: L OUT 1V/div.
0.2ms/div.
Normal mode: Play (1kHz 0dB)



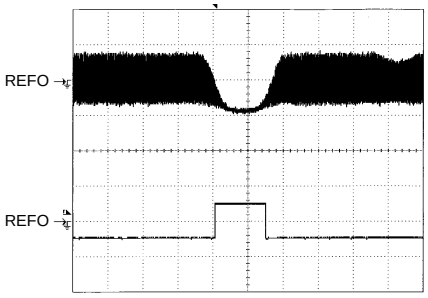
⑥ CH1: FE 0.2V/div.
③ CH2: FD 0.5V/div.
1ms/div.
Normal mode: During AGC



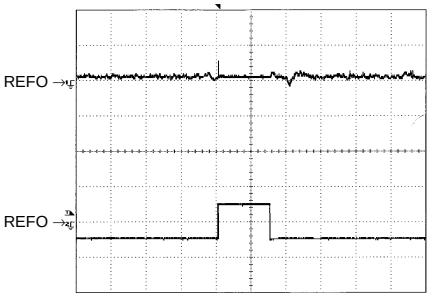
⑧ CH1: TE 0.2V/div.
⑨ CH2: TD 0.5V/div.
1ms/div.
Normal mode: During AGC



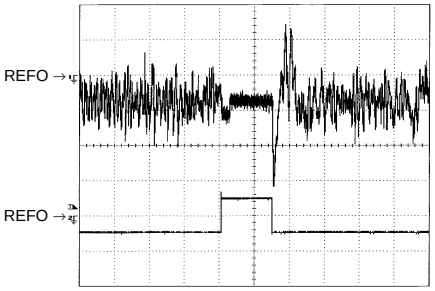
① CH1: RFI 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)



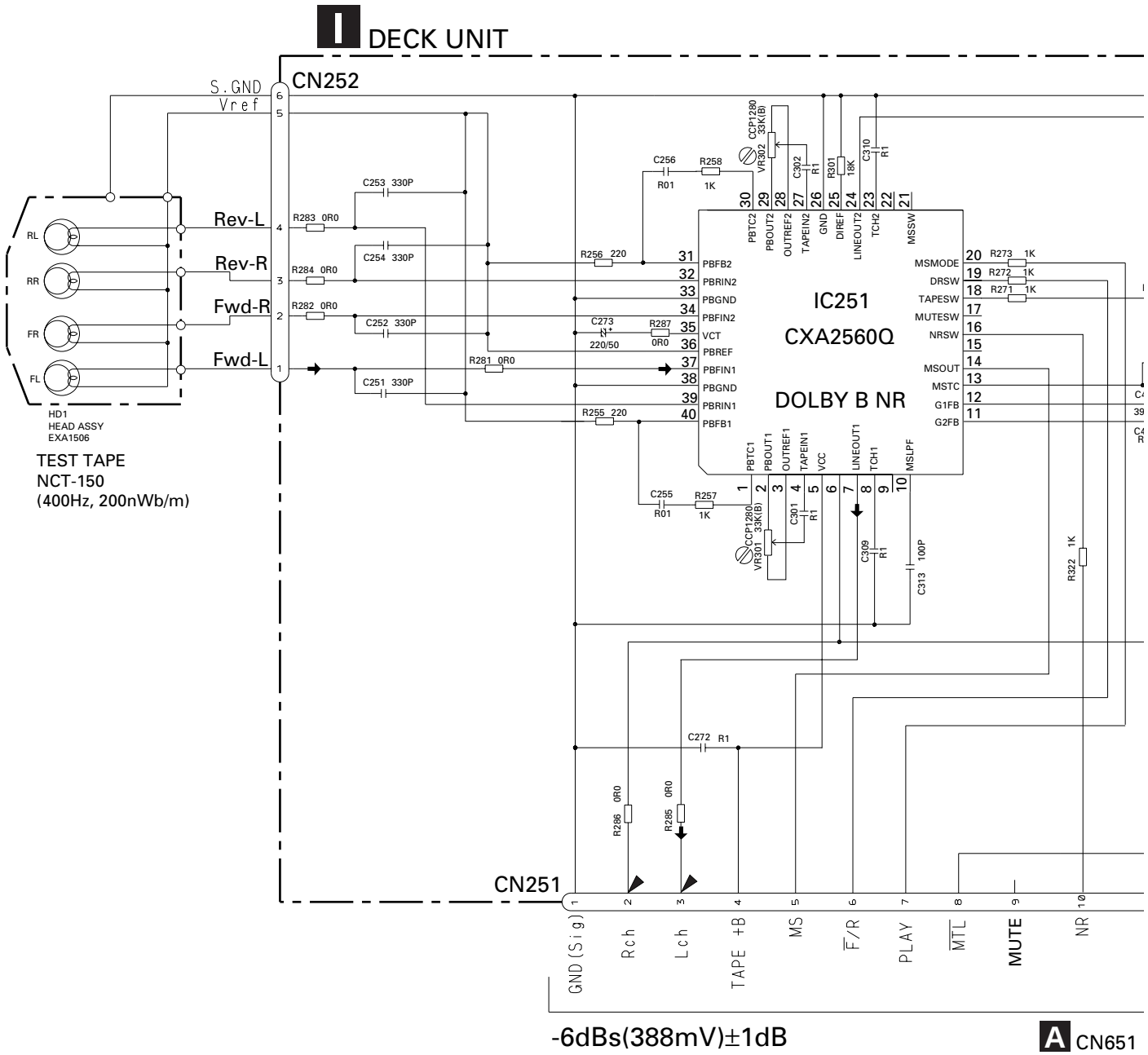
③ CH1: FD 0.5V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)

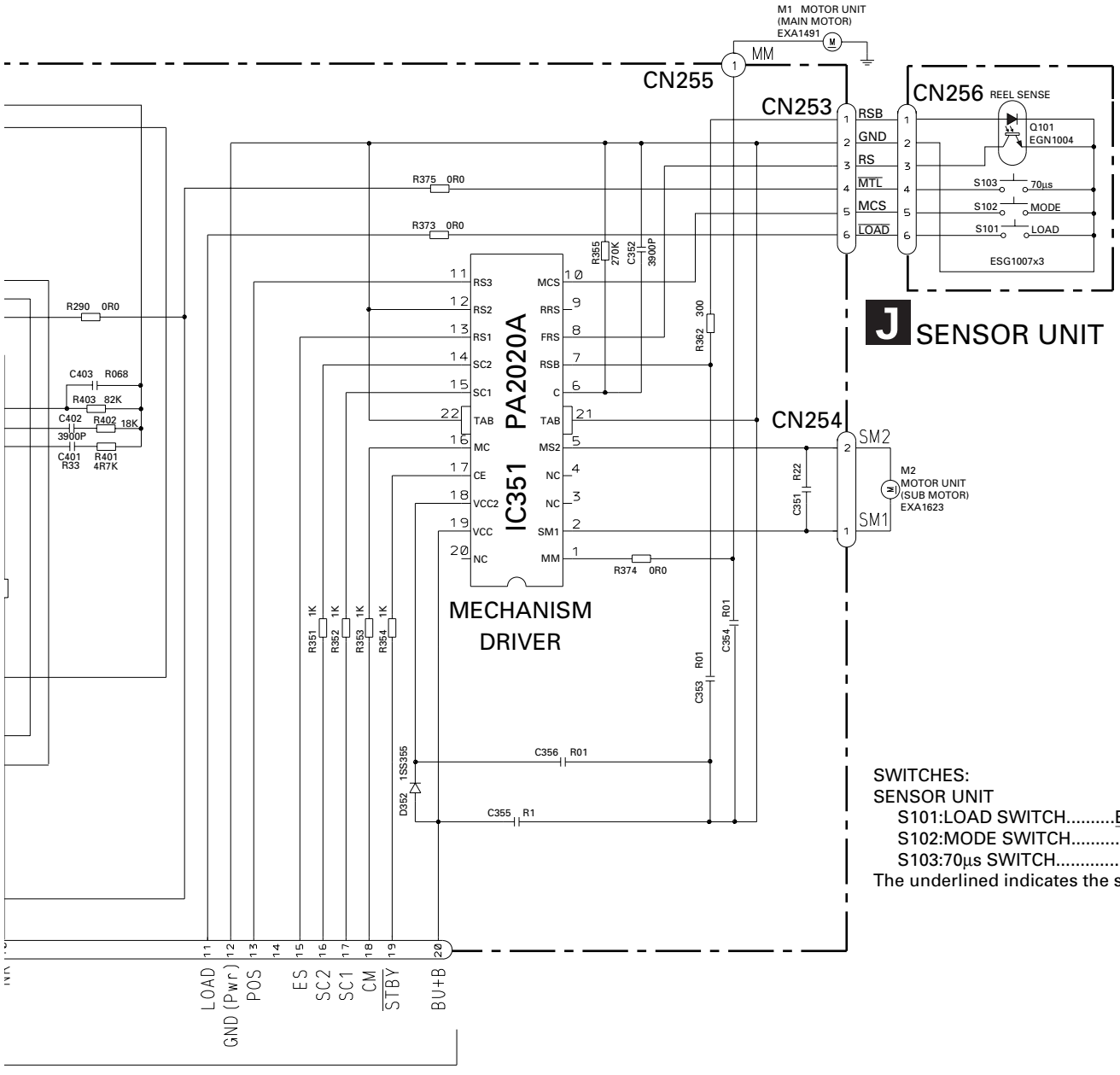


⑨ CH1: TD 0.1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm(B.D)



3.5 CASSETTE MECHANISM MODULE





SWITCHES:
SENSOR UNIT
S101:LOAD SWITCH.....EJECT-PLAY
S102:MODE SWITCH.....ON-OFF
S103:70µs SWITCH.....ON-OFF
The underlined indicates the switch position.

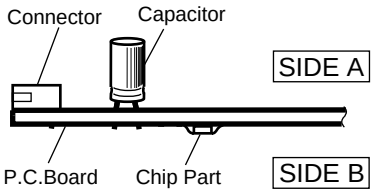
CN651

4. PCB CONNECTION DIAGRAM

4.1 TUNER MOTHER PCB

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

Q542 Q541
Q553 Q554
Q543

Q501 Q511
Q404 Q403
Q402
Q401
Q473 Q508
Q507 Q510
Q471
Q506 Q509
Q505
IC403 Q472

Q551

IC401 IC501
IC552
Q813 IC553
Q814 IC405
Q503

IC402 Q504
Q802
Q502
Q801
IC551

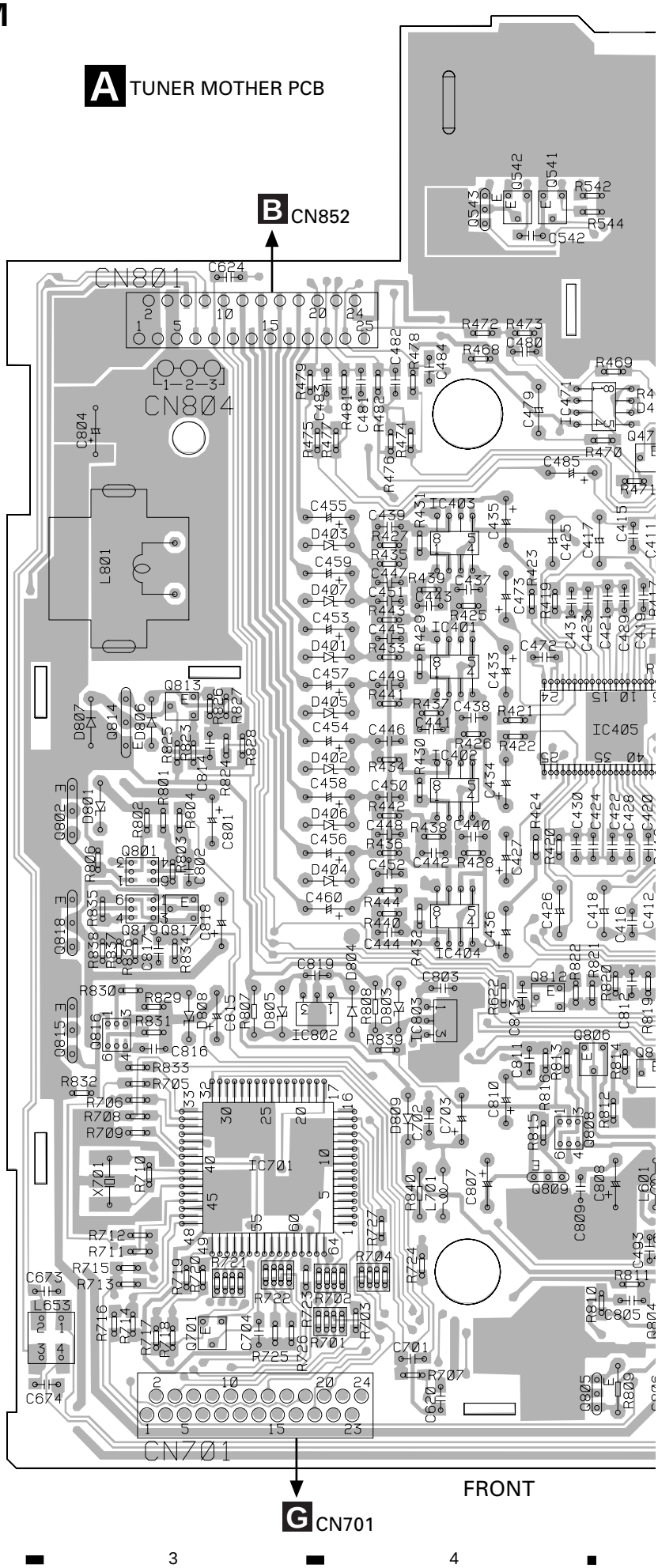
Q819 Q817
IC404 IC602
Q818
IC801
Q812 Q811
IC802 Q806
IC803 Q807
Q815 Q816

Q808
IC701 IC601
Q809
Q470 IC651

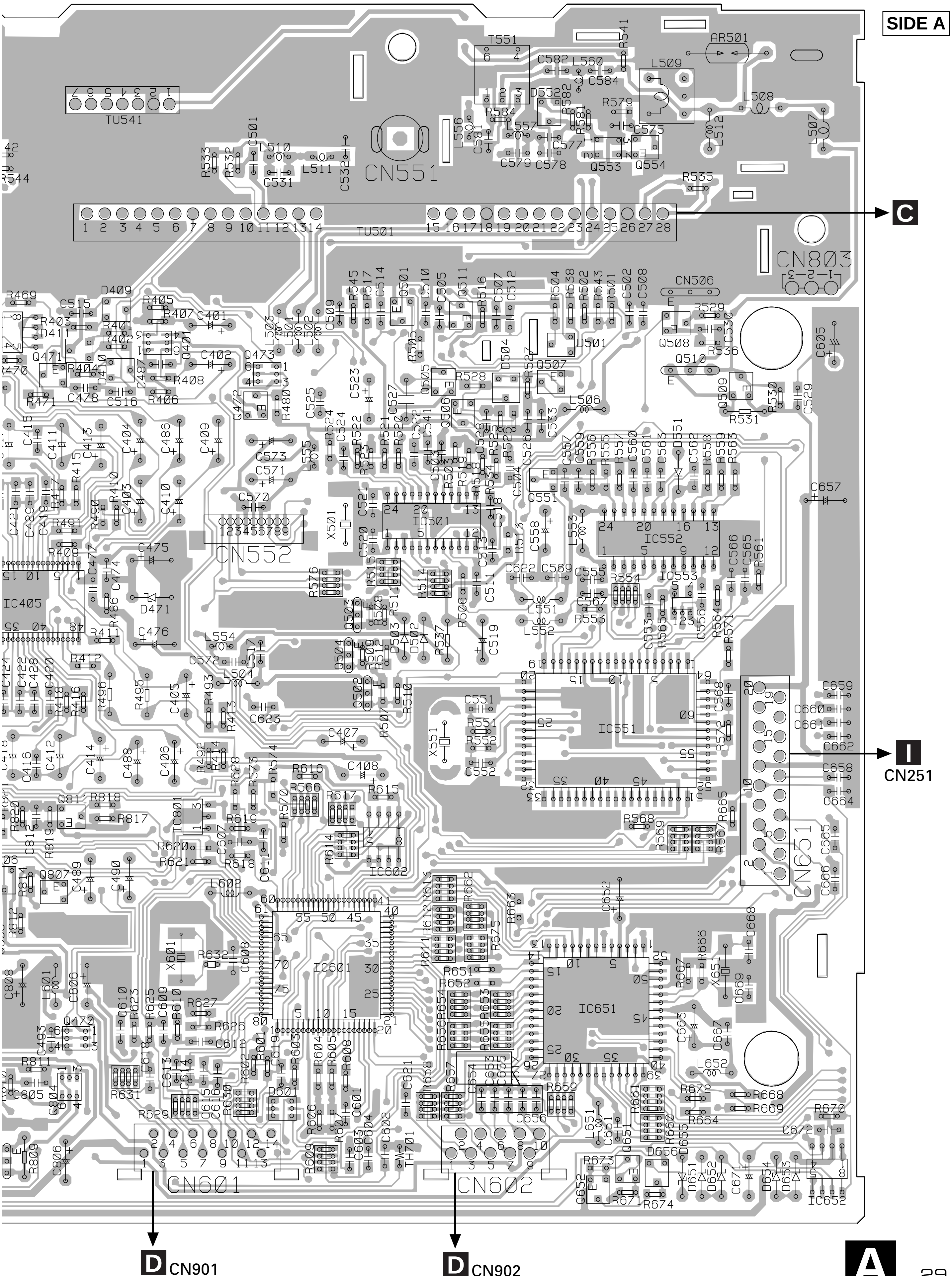
Q804

Q701
Q651
Q805

Q652 IC652

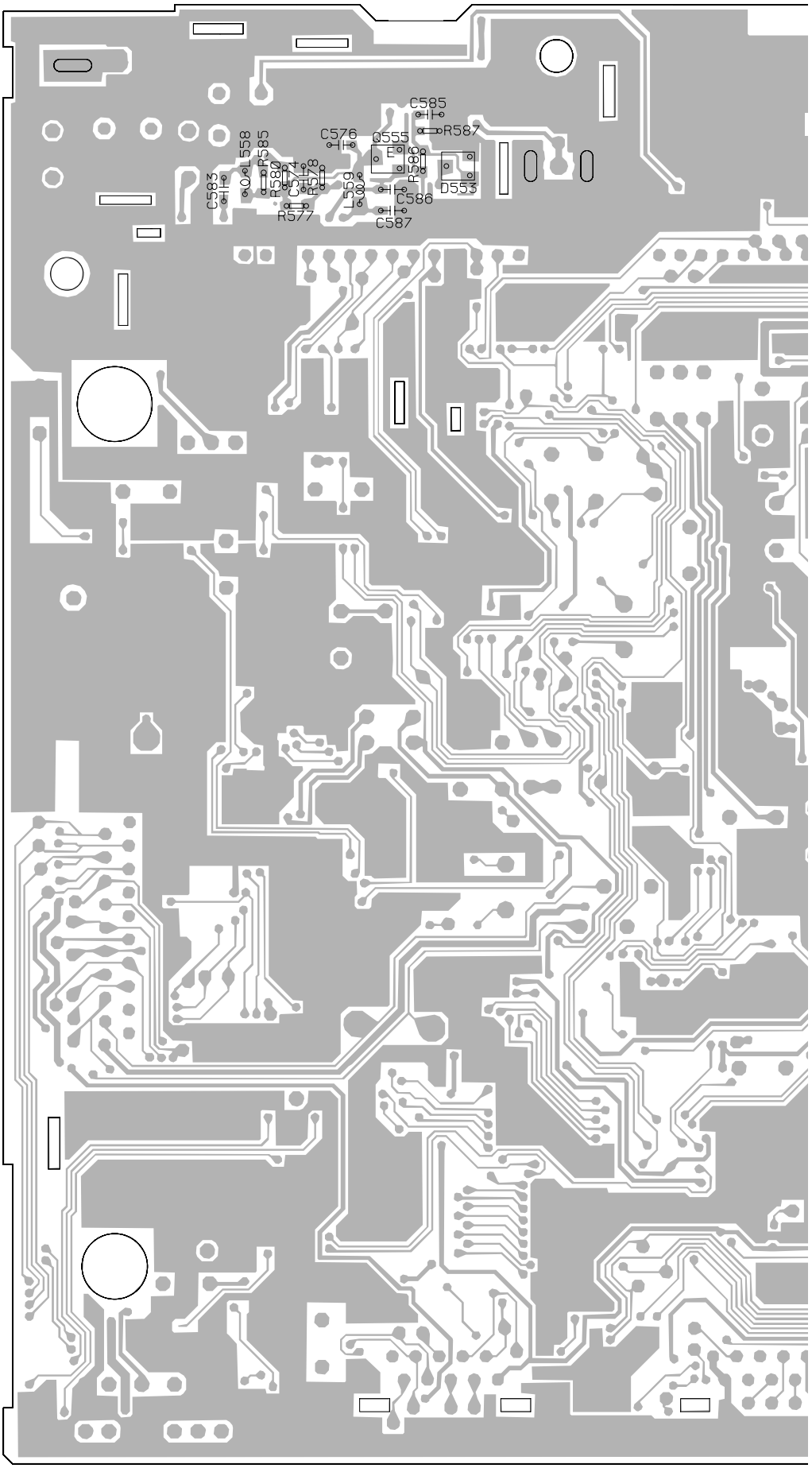


SIDE A

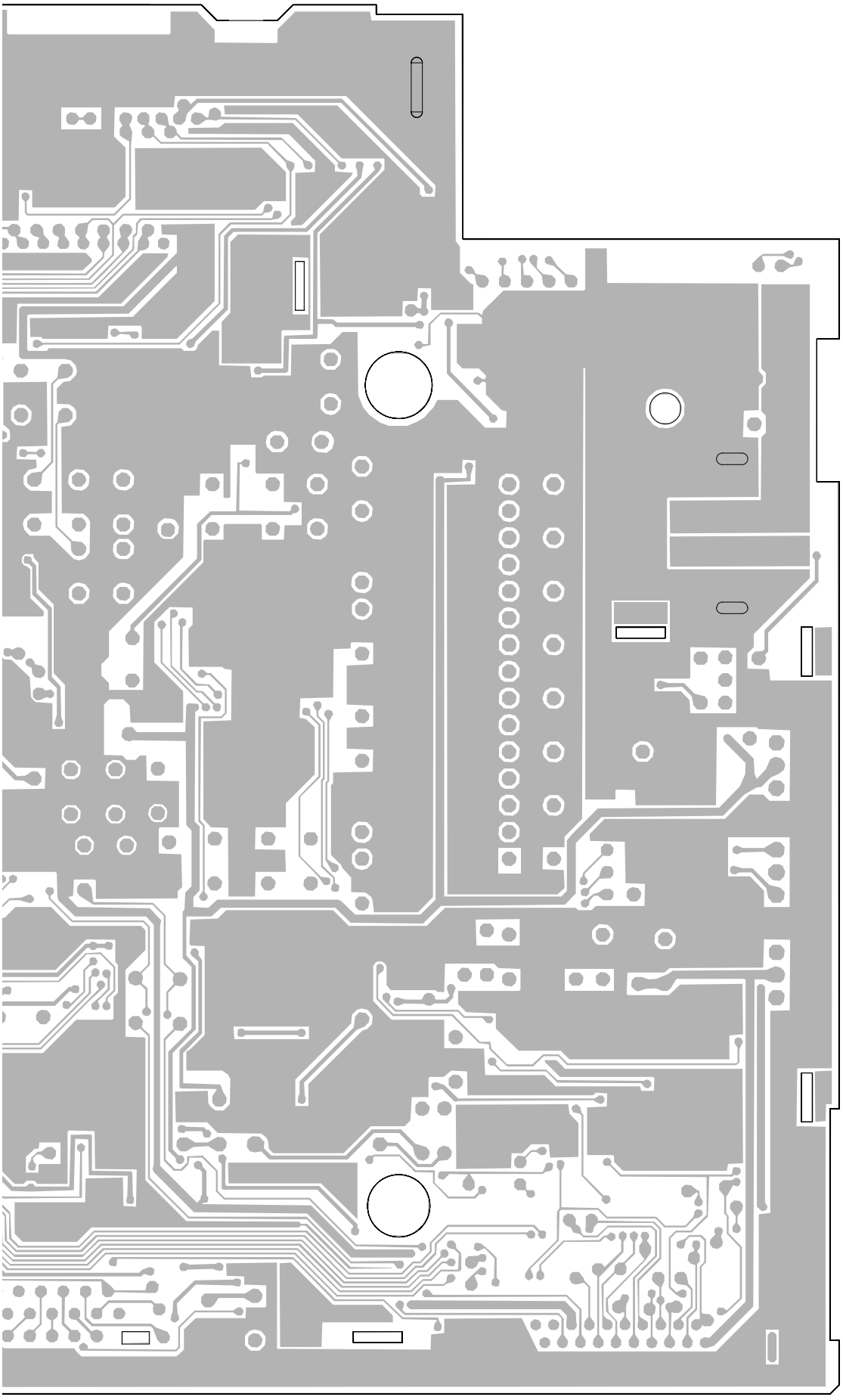

TU541
TU501
CN551
CN552
CN803
CN506
IC405
IC501
IC552
IC553
IC551
IC601
IC602
IC651
IC652
IC801
CN651
CN601
CN602
AR501
T551
X501
X551
X601
X651
C
I
CN251
D
CN901
D
CN902

A B C D

A TUNER MOTHER PCB



SIDE B



IC, Q

Q555

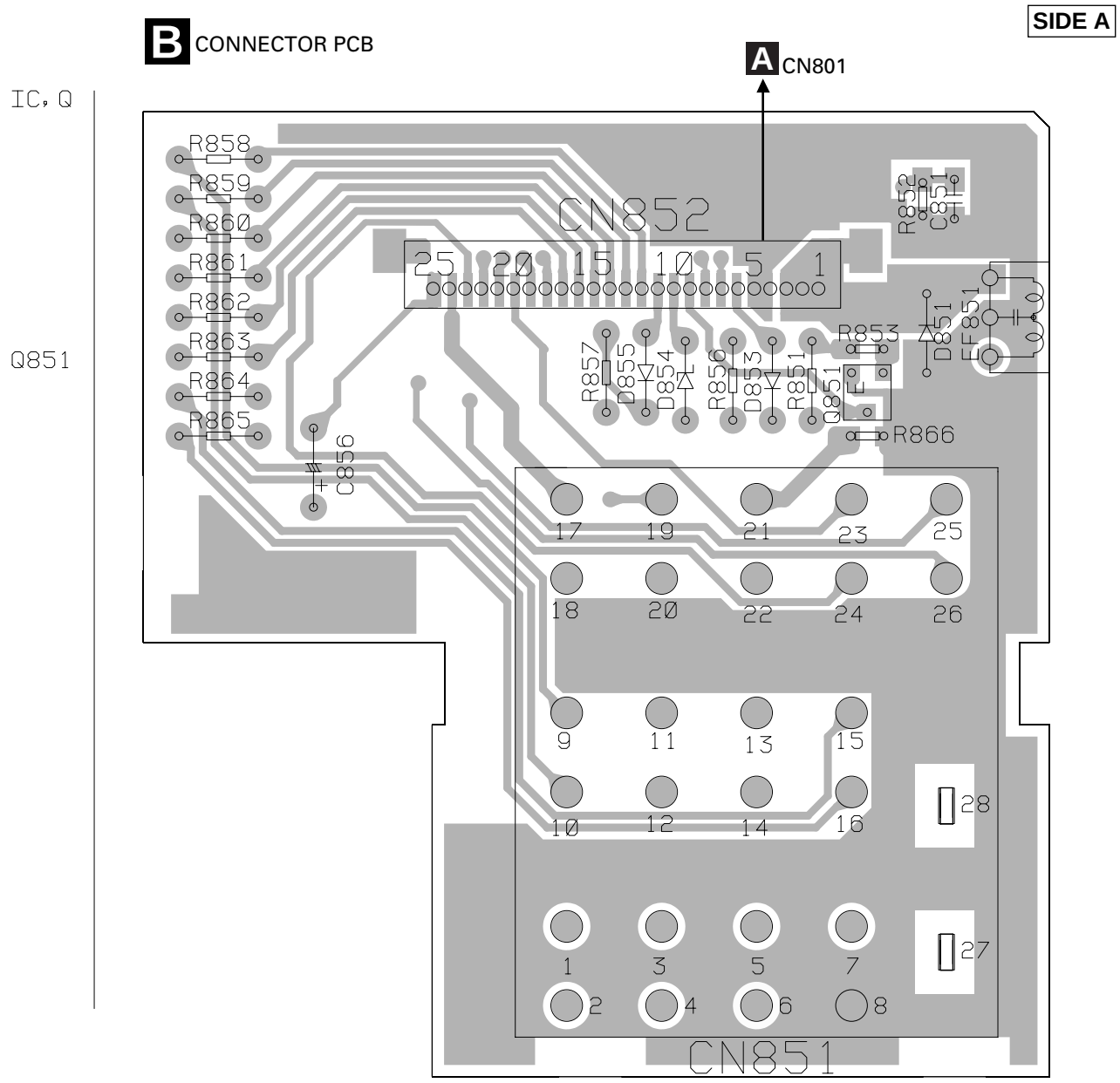
A

B

C

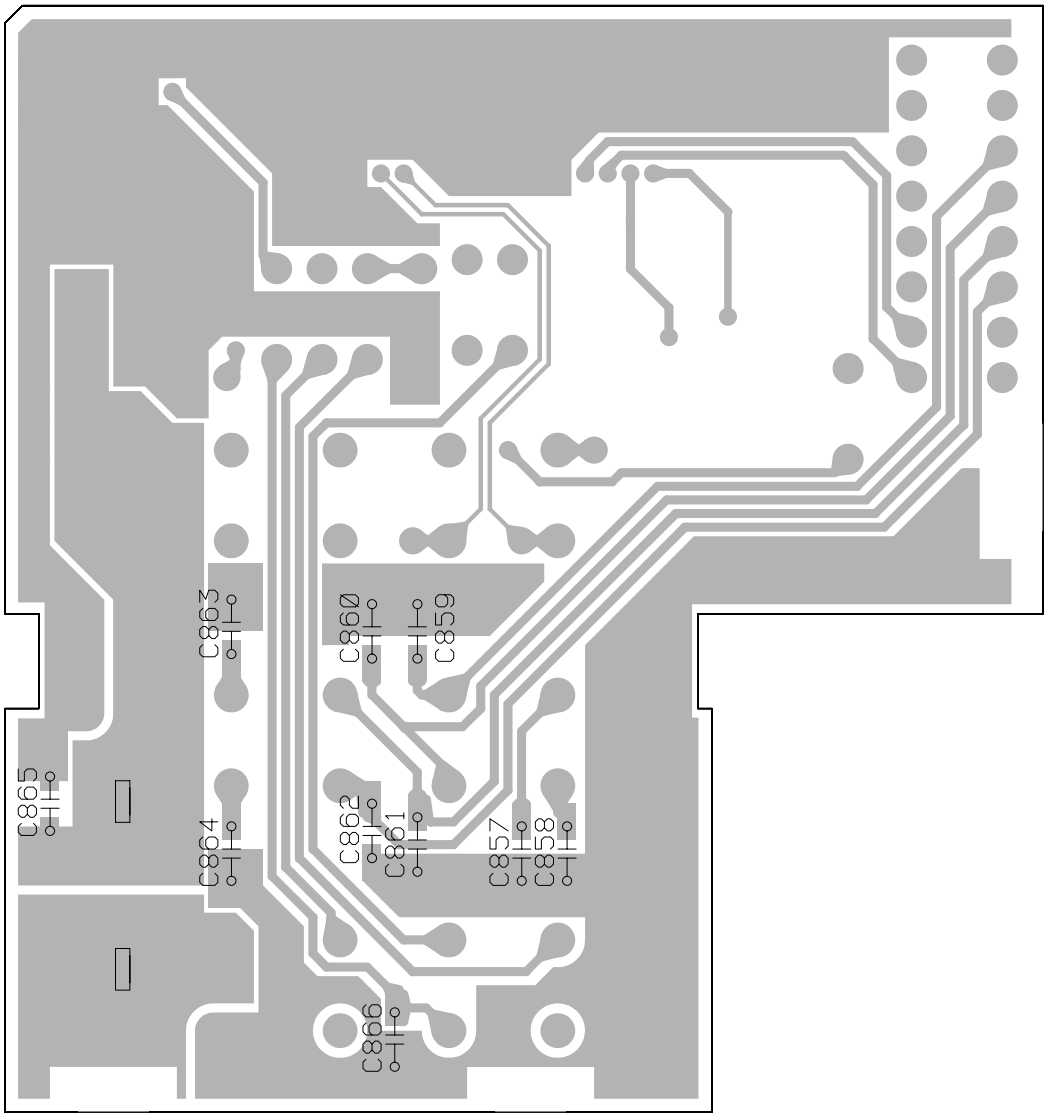
D

4.2 CONNECTOR PCB



B CONNECTOR PCB

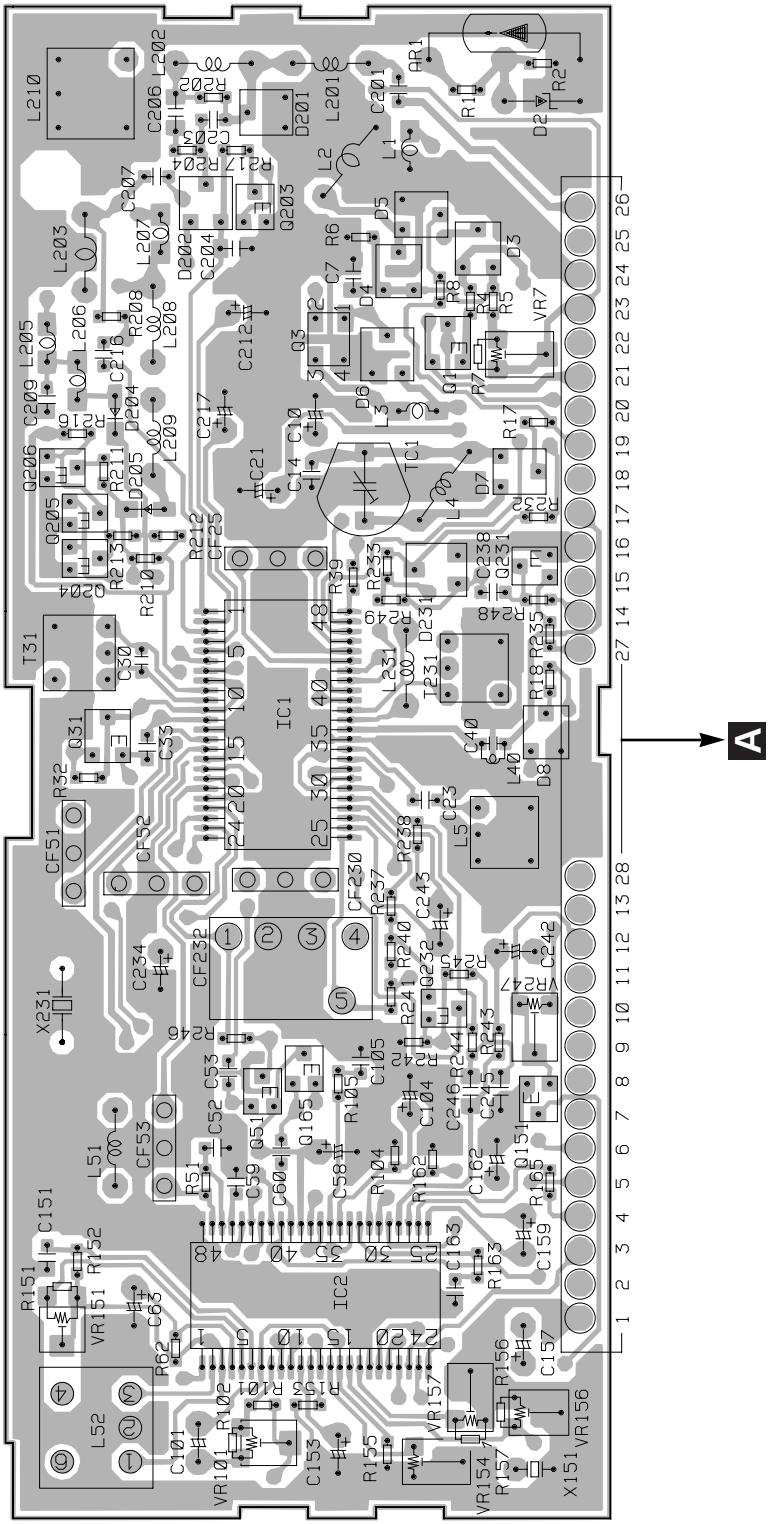
SIDE B



4.3 TUNER UNIT

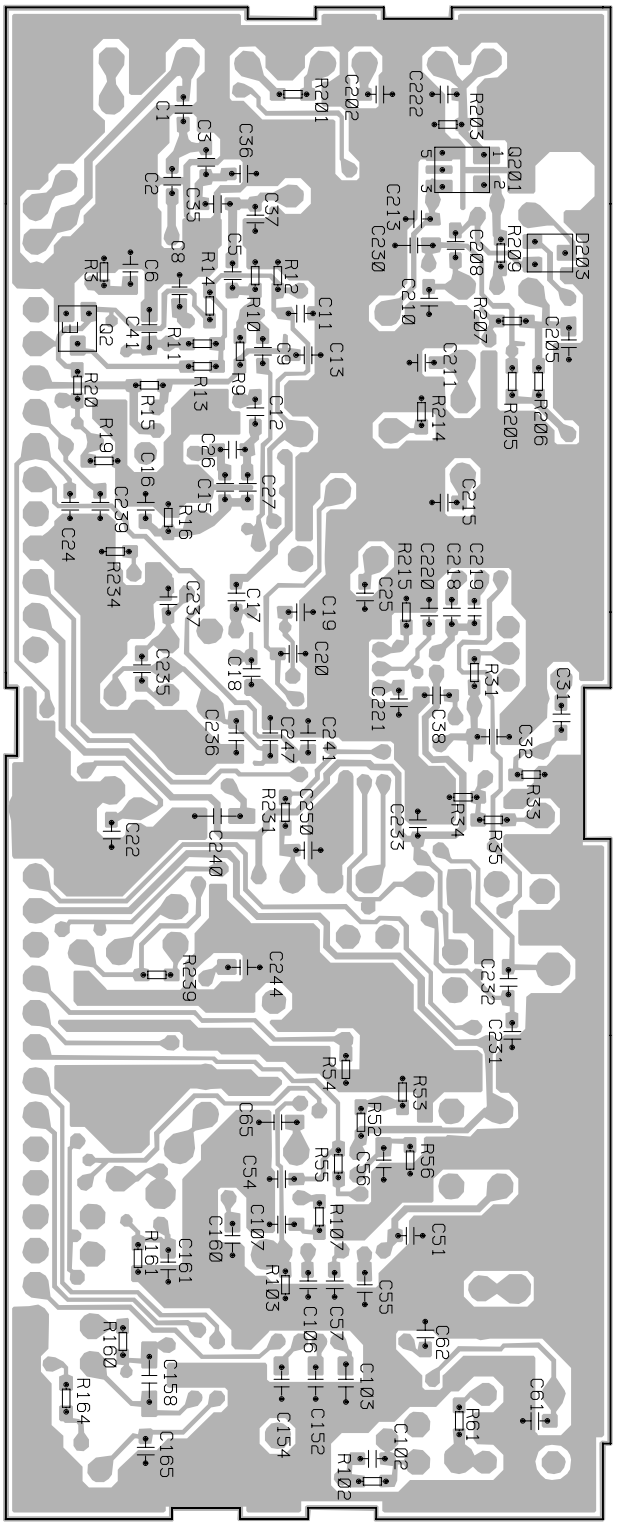
C TUNER UNIT

SIDE A



C TUNER UNIT

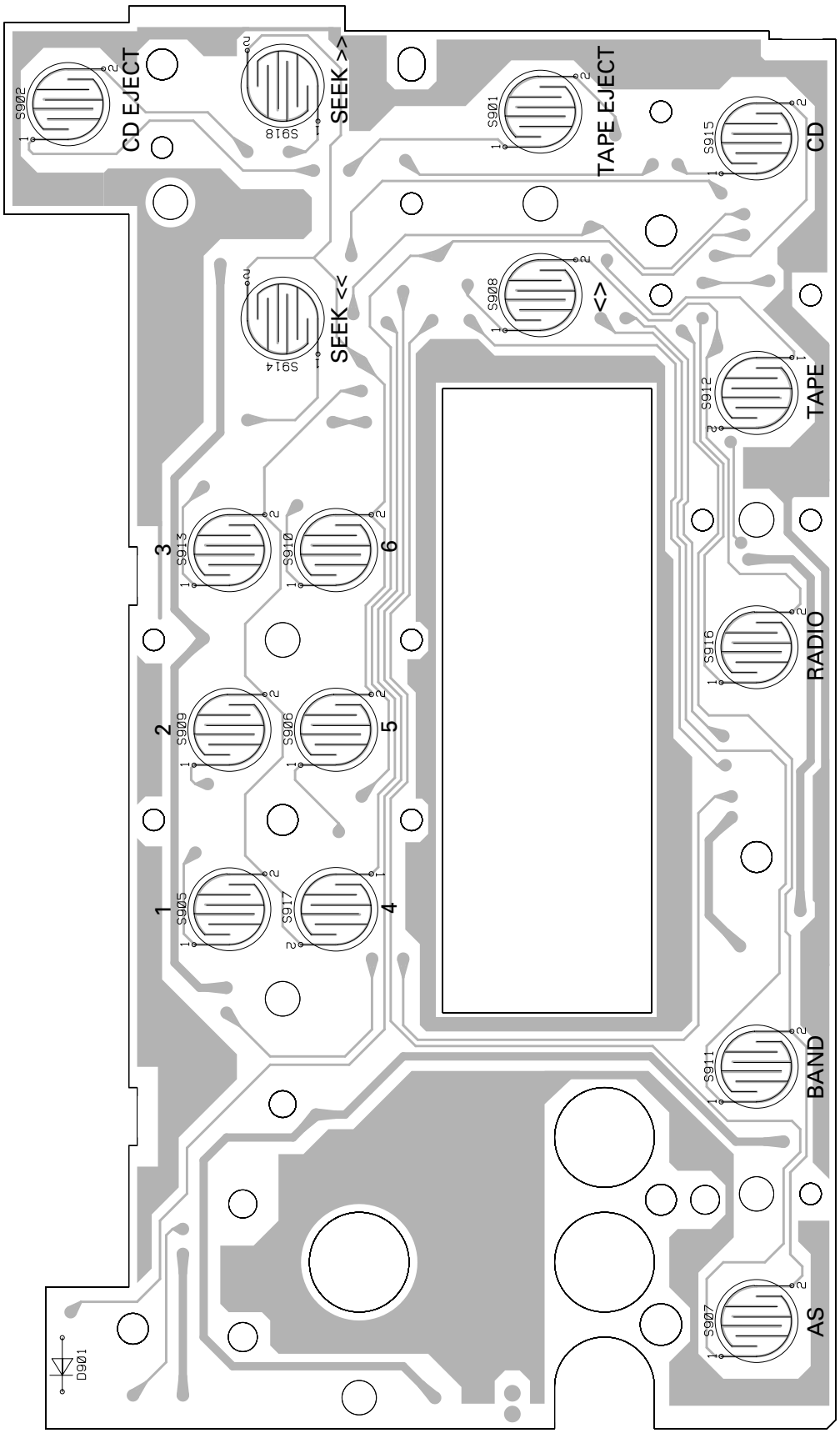
SIDE B



4.4 KEYBOARD UNIT

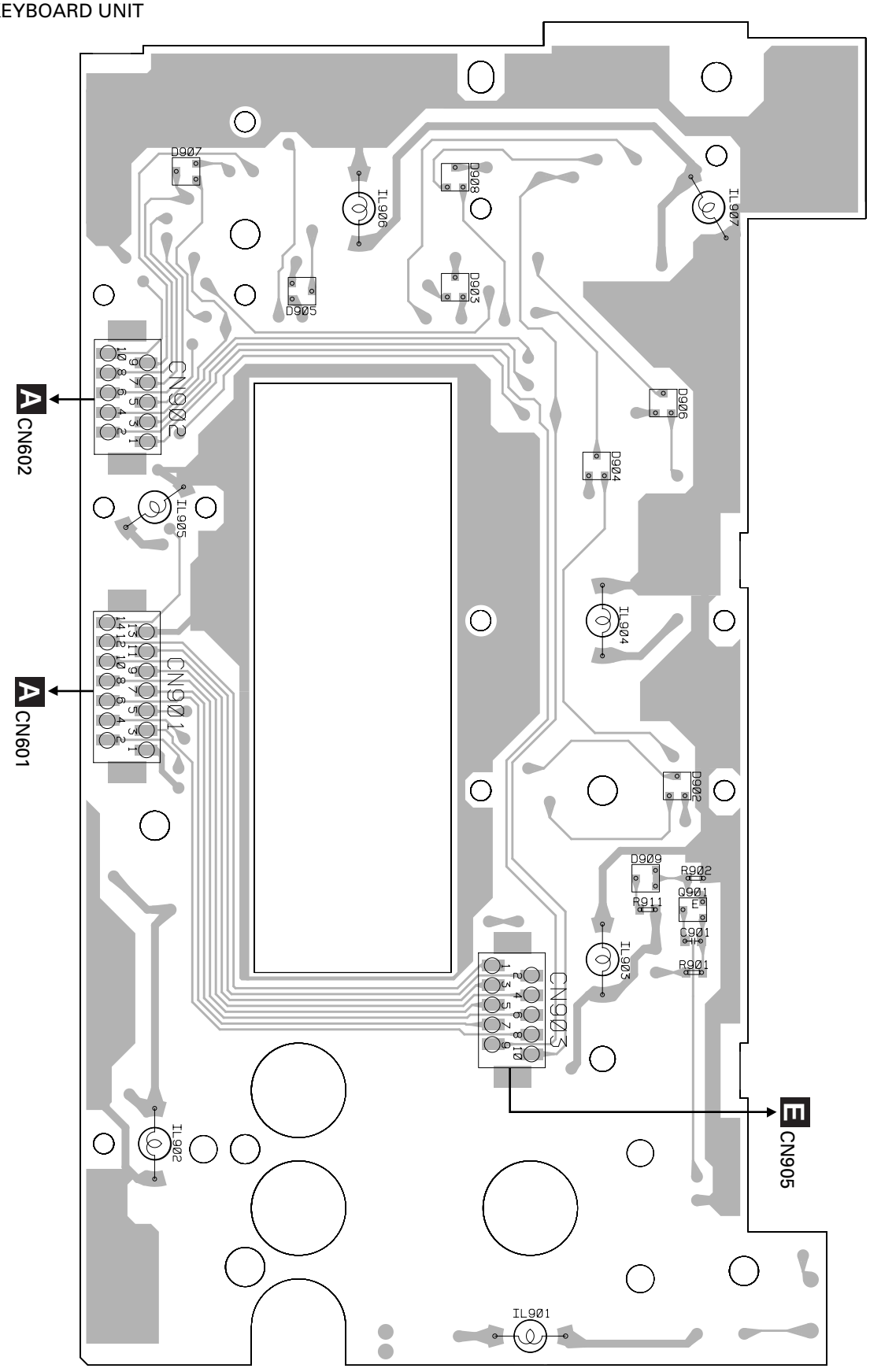
D KEYBOARD UNIT

SIDE A



D KEYBOARD UNIT

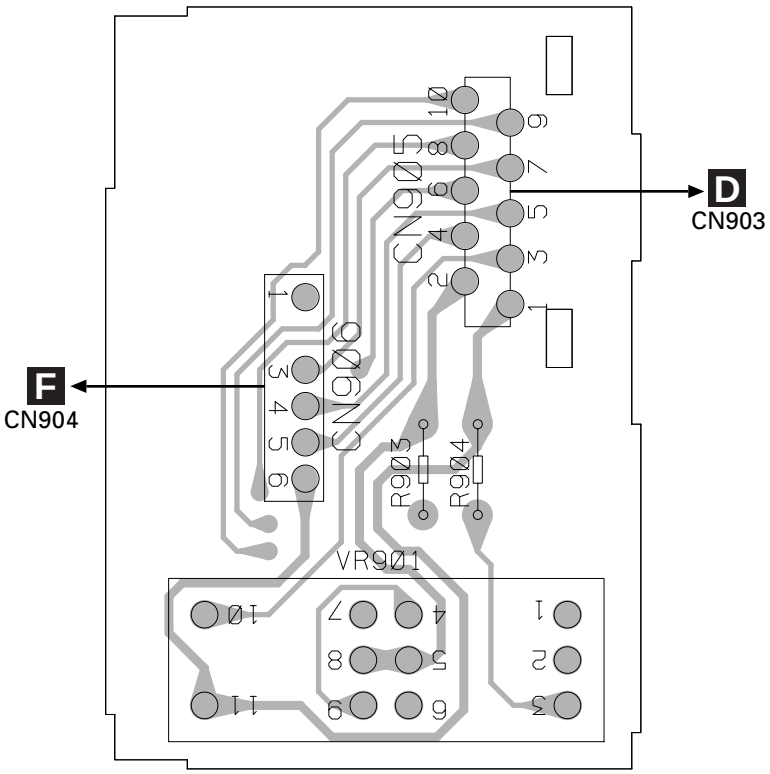
SIDE B



4.5 VOLUME PCB(A)

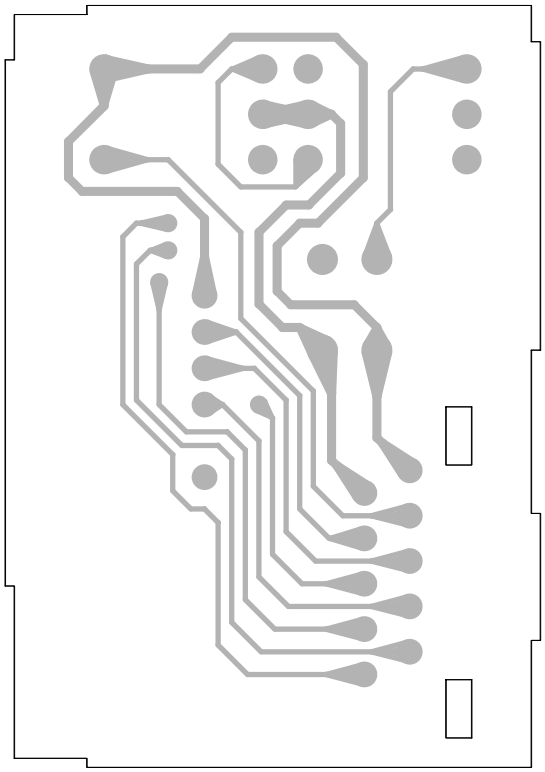
SIDE A

E VOLUME PCB(A)



SIDE B

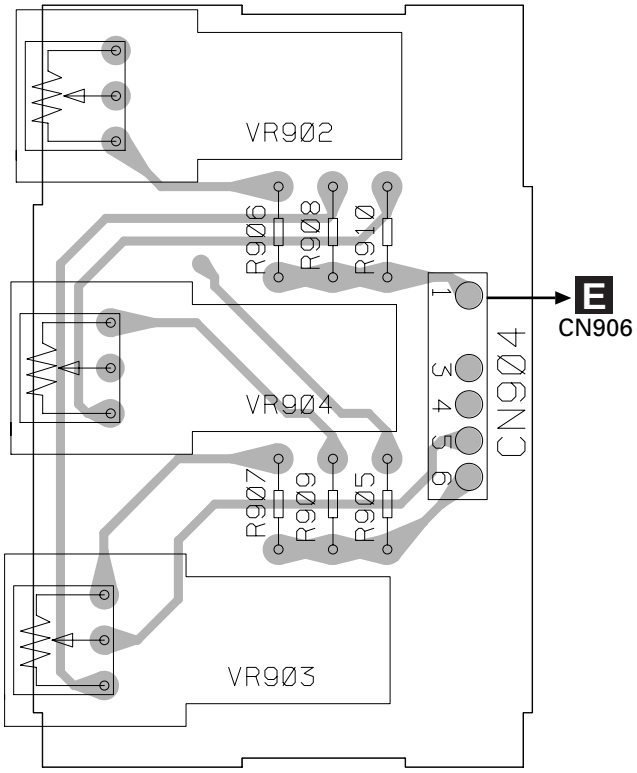
E VOLUME PCB(A)



4.6 VOLUME PCB(B)

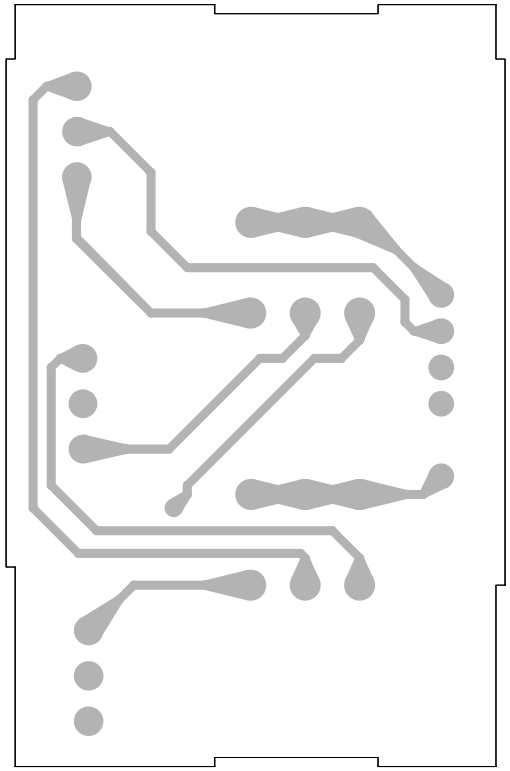
F VOLUME PCB(B)

SIDE A

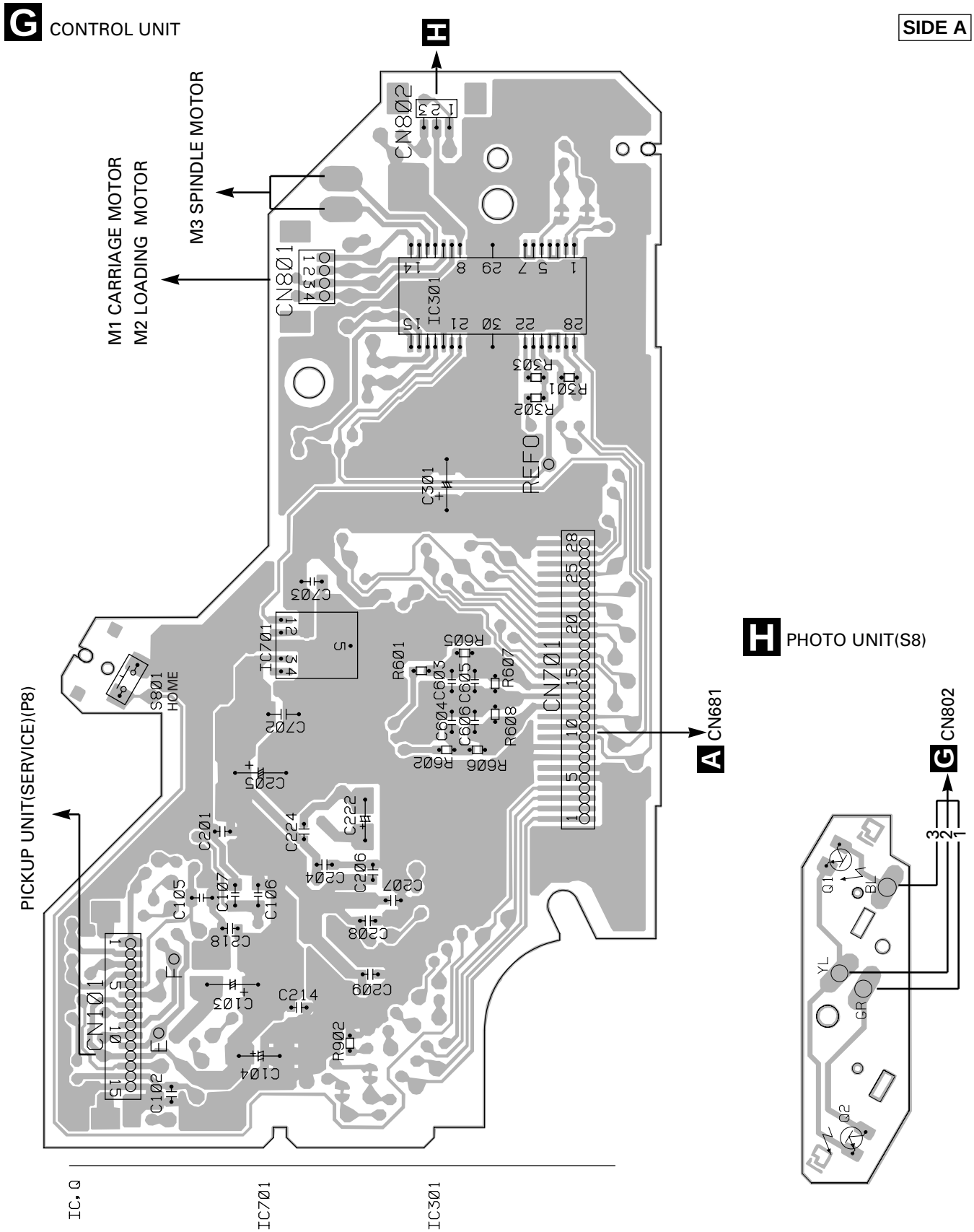


F VOLUME PCB(B)

SIDE B

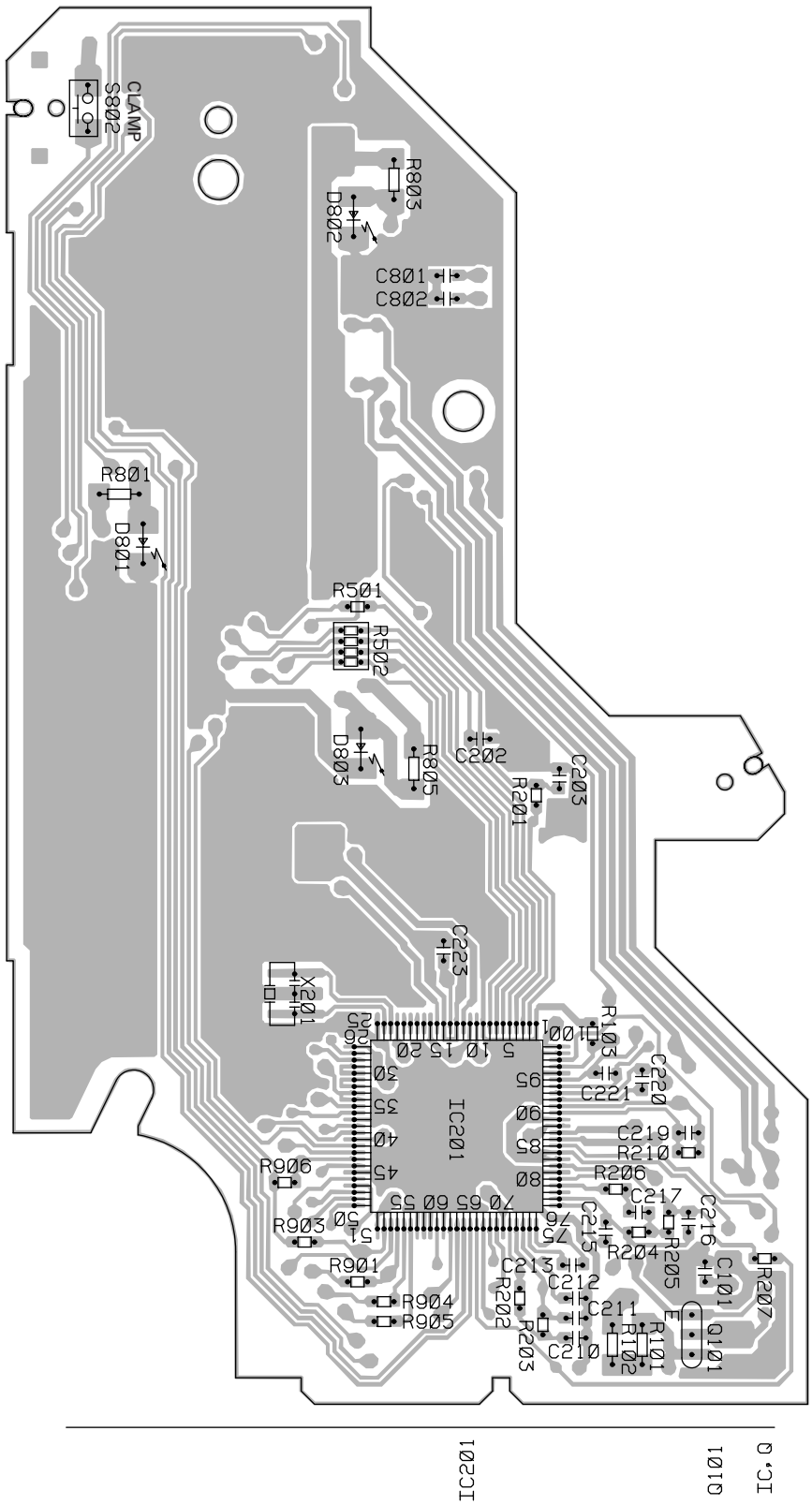


4.7 CD MECHANISM MODULE



G CONTROL UNIT

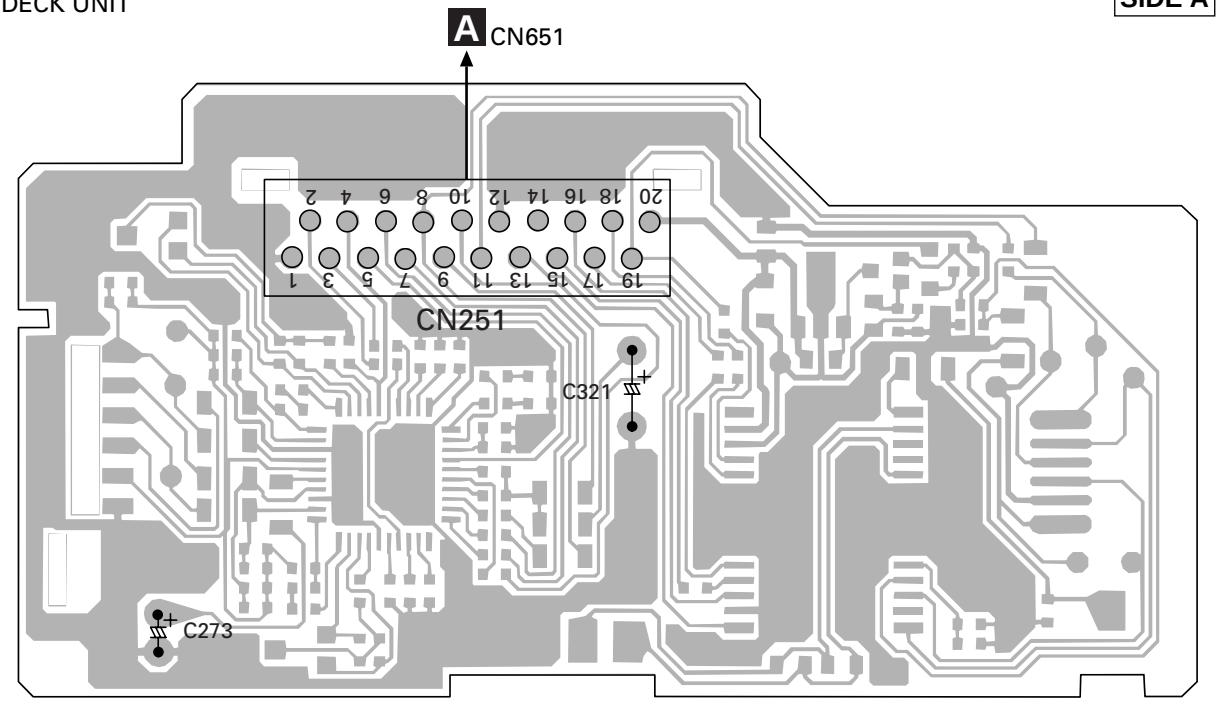
SIDE B



4.8 DECK UNIT

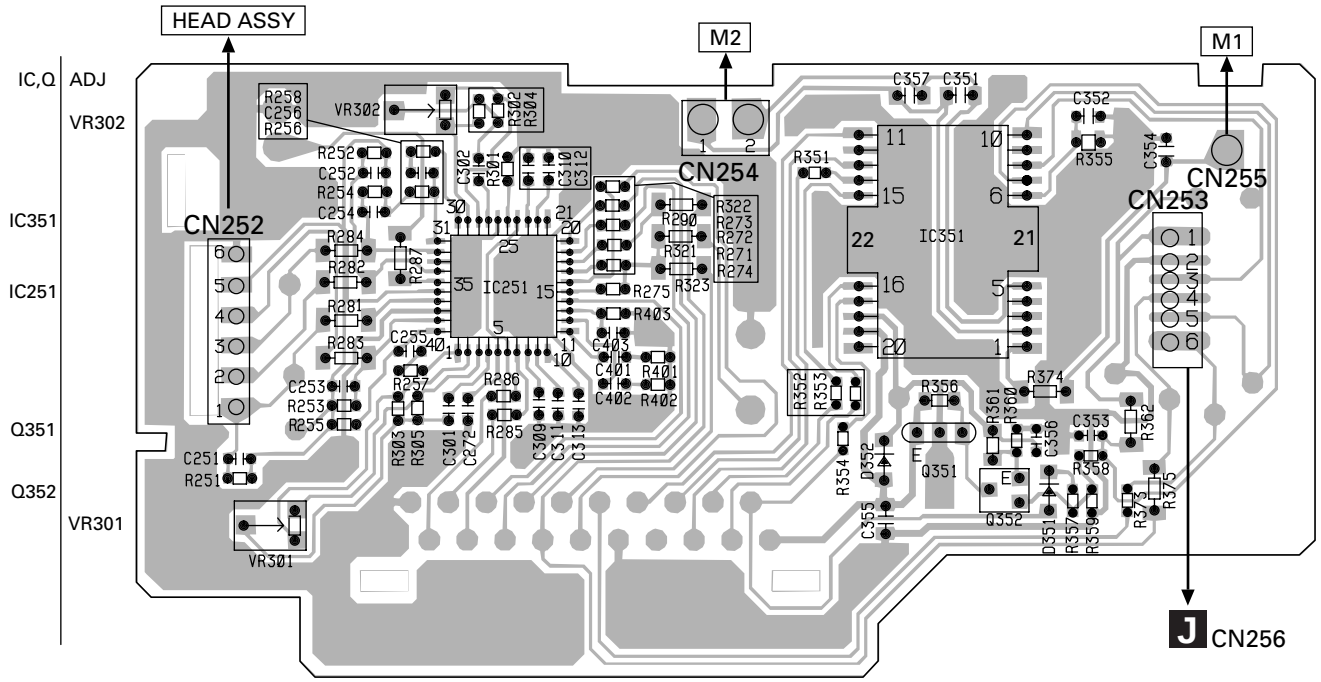
DECK UNIT

SIDE A

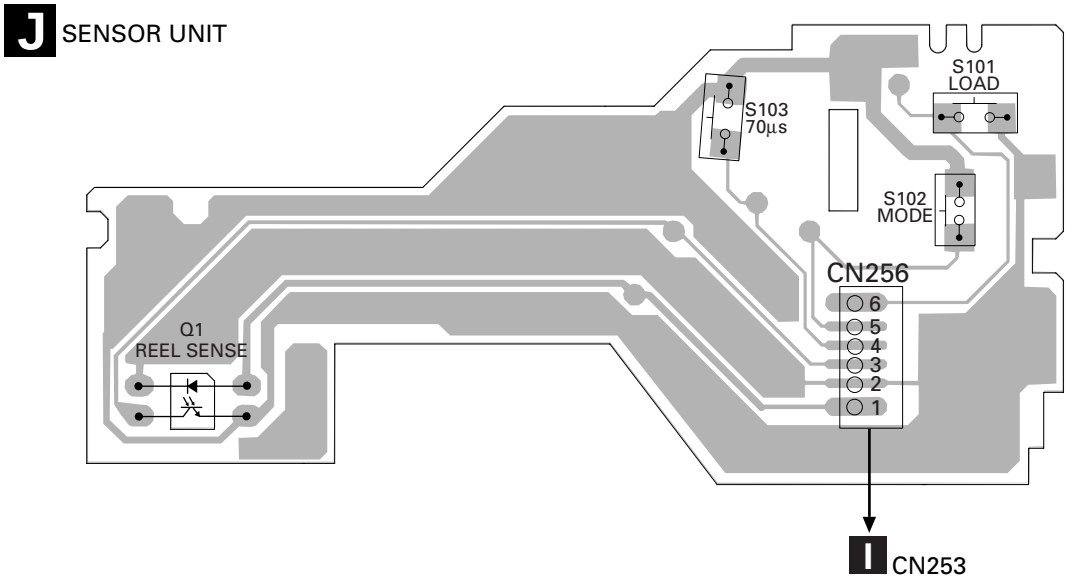


DECK UNIT

SIDE B



4.9 SENSOR UNIT



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.....

Tuner Mother Assy
Consists of
Tuner Mother PCB
Connector PCB

A B Unit Number : UWM-018
Unit Name : Tuner Mother Assy

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	401	IC	NJM4558MD
IC	402	IC	NJM4558MD
IC	403	IC	NJM4558MD
IC	404	IC	NJM4558MD
IC	405	IC	SN761029DL
IC	471	IC	NJM4558MD
IC	501	IC	LC72146MQ2
IC	601	IC	PE5223B
IC	602	IC	S-29220A
IC	651	IC	UPD72005GC
IC	652	IC	PCA82C250T
IC	701	IC	PE5239A
IC	801	IC	S-80735ANDZI
IC	802	IC	S-80763ANJT
IC	803	IC	S-81250PGPD
Q	471	Transistor	DTC114EK
Q	472	Transistor	DTC144EK
Q	473	Transistor	IMH2A
Q	501	Transistor	DTC144EK
Q	502	Transistor	2SB1132
Q	503	Transistor	2SB1132
Q	504	Transistor	2SB1132
Q	506	Transistor	2SK208
Q	507	Transistor	2SC2712
Q	508	Transistor	DTC114EK
Q	509	Transistor	DTA114TK
Q	510	Transistor	2SB1238
Q	511	Transistor	2SC2712
Q	651	Transistor	2SC2712
Q	652	Transistor	2SA1162
Q	701	Transistor	DTA144EK
Q	801	Transistor	IMX1
Q	802	Transistor	2SB1185
Q	804	Transistor	IMX1
Q	805	Transistor	2SB1260
Q	806	Transistor	2SA1162
Q	807	Transistor	DTC114EK
Q	808	Transistor	IMX1
Q	809	Transistor	2SB1260
Q	811	Transistor	2SA1162
Q	812	Transistor	2SC2712
Q	813	Transistor	2SC2712
Q	814	Transistor	2SB1243
Q	815	Transistor	2SB1185
Q	816	Transistor	IMX1
Q	817	Transistor	DTC114TK
Q	818	Transistor	2SB1185
Q	819	Transistor	IMX1
Q	851	Transistor	2SC2712
D	409	Chip Diode	MA151WK
D	410	Chip Diode	MA151WK
D	471	Diode	RD4R7JS(B3)
D	501	Chip Diode	MA151WK
D	502	Diode	1SS133
D	503	Diode	1SS133
D	504	Diode	RD2R7M(B2)
D	601	Diode	IMN10
D	651	Diode	RD4R7ES(B3)
D	652	Zener Diode	RD16ES(B3)
D	653	Diode	RD4R7ES(B3)
D	654	Zener Diode	RD16ES(B3)
D	655	Diode	RD13ES(B2)
D	656	Diode	MA151WA
D	801	Diode	RD8R2JS(B1)
D	803	Zener Diode	RD16ES(B3)
D	804	Diode	1SS133
D	805	Zener Diode	RD16ES(B3)
D	806	Diode	1SS133
D	807	Diode	ERA15-02VH
D	808	Diode	RD7R5JS(B3)
D	809	Diode	ERA15-02VH
D	851	Diode	ERA15-02VH
D	853	Diode	ERA15-10VH
D	854	Zener Diode	RD16ES(B3)
D	855	Diode	1SS133
L	501	Ferri-Inductor	LAU4R7K
L	502	Resistor	RD1/4PU0R0J
L	503	Resistor	RD1/4PU0R0J
L	504	Ferri-Inductor	LAU4R7K
L	506	Ferri-Inductor	LAU4R7K
L	507	Inductor	CTF1053
L	508	Inductor	CTF1374
L	509	Coil	CTE1123
L	510	Inductor	LCTBR27K2125
L	511	Coil	LCTBR22K2125
L	512	Resistor	RD1/4PU0R0J
L	601	Ferri-Inductor	LAU4R7K
L	602	Ferri-Inductor	LAU4R7K
L	651	Ferri-Inductor	LAU220K
L	652	Ferri-Inductor	LAU220K
L	653	Choke Coil	CTH1180
L	701	Ferri-Inductor	LAU4R7K
L	801	Choke Coil 2mH	CTH1074
TH	701	Thermistor	CCX1015
X	501	Crystal Resonator 7.2MHz	CSS1030
X	601	Ceramic Resonator 4.194MHz	CSS1071
X	651	Radiator 2.00MHz	CSS1393
X	701	Radiator 8.380MHz	CSS1503
FU	851	Fuse 5A	CEK1005
EF	851	EMI Filter	CCG1006

Circuit Symbol and No.		Part Name	Part No.
AR	501	Arrester	DSP-201M
		Tuner Unit	CWE1422

RESISTORS

R	403		RS1/10S222J
R	404		RS1/10S222J
R	405		RS1/10S162J
R	406		RS1/10S162J
R	409		RS1/10S102J
R	410		RS1/10S102J
R	411		RS1/10S102J
R	412		RS1/10S102J
R	413		RS1/10S102J
R	414		RS1/10S102J
R	415		RS1/10S361J
R	416		RS1/10S361J
R	417		RS1/10S273J
R	418		RS1/10S273J
R	419		RS1/10S473J
R	420		RS1/10S473J
R	421		RS1/10S562J
R	422		RS1/10S562J
R	423		RS1/10S562J
R	424		RS1/10S562J
R	425		RS1/10S472J
R	426		RS1/10S472J
R	427		RS1/10S472J
R	428		RS1/10S472J
R	429		RS1/10S472J
R	430		RS1/10S472J
R	431		RS1/10S472J
R	432		RS1/10S472J
R	433		RS1/10S470J
R	434		RS1/10S470J
R	435		RS1/10S470J
R	436		RS1/10S470J
R	437		RS1/10S472J
R	438		RS1/10S472J
R	439		RS1/10S472J
R	440		RS1/10S472J
R	441		RS1/10S470J
R	442		RS1/10S470J
R	443		RS1/10S470J
R	444		RS1/10S470J
R	468		RS1/10S471J
R	469		RS1/10S682J
R	470		RS1/10S153J
R	471		RS1/10S472J
R	472		RS1/10S153J
R	473		RS1/10S472J
R	474		RS1/10S182J
R	475		RS1/10S182J
R	476		RS1/10S182J
R	477		RS1/10S182J
R	478		RS1/10S102J
R	479		RS1/10S102J
R	480		RS1/10S473J
R	481		RS1/10S102J
R	482		RS1/10S102J
R	486		RS1/10S103J
R	490		RS1/10S102J
R	491		RS1/10S102J
R	495		RD1/4PU0R0J
R	496		RD1/4PU0R0J

Circuit Symbol and No.		Part Name	Part No.
R	501		RS1/10S103J
R	502		RS1/10S102J
R	503		RS1/10S681J
R	504		RS1/10S393J
R	505		RS1/10S222J
R	506		RS1/10S222J
R	507		RS1/10S473J
R	508		RS1/10S473J
R	509		RS1/10S473J
R	510		RS1/10S472J
R	511		RS1/10S472J
R	512		RS1/10S392J
R	513		RS1/10S223J
R	514		RAB4C103J
R	515		RAB4C102J
R	516		RS1/10S472J
R	517		RS1/10S223J
R	519		RS1/10S473J
R	520		RS1/10S562J
R	521		RS1/10S222J
R	522		RS1/10S222J
R	523		RS1/10S152J
R	524		RS1/10S472J
R	525		RS1/10S102J
R	526		RS1/10S102J
R	527		RS1/10S102J
R	528		RS1/10S562J
R	529		RS1/10S103J
R	530		RS1/10S223J
R	531		RD1/4PU180J
R	532		RS1/10S0R0J
R	533		RS1/10S510J
R	534		RS1/10S0R0J
R	535		RS1/10S0R0J
R	536		RS1/10S472J
R	537		RD1/4PU100J
R	538		RS1/10S103J
R	601		RS1/10S272J
R	602		RS1/10S682J
R	603		RS1/10S472J
R	604		RS1/10S222J
R	605		RS1/10S222J
R	606		RS1/10S473J
R	607		RS1/10S473J
R	608		RS1/10S473J
R	609		RAB4C222J
R	610		RS1/10S184J
R	611		RAB4C102J
R	612		RAB4C102J
R	613		RAB4C681J
R	614		RAB4C102J
R	615		RS1/10S473J
R	616		RS1/10S473J
R	617		RAB4C472J
R	618		RS1/10S222J
R	619		RS1/10S472J
R	620		RS1/10S473J
R	621		RS1/10S473J
R	622		RS1/10S222J
R	623		RS1/10S222J
R	625		RS1/10S222J
R	626		RS1/10S222J
R	627		RS1/10S473J
R	628		RS1/10S222J
R	629		RAB4C222J

Circuit Symbol and No.		Part Name	Part No.
R	630		RAB4C472J
R	631		RAB4C223J
R	632		RS1/16S0R0J
R	651		RS1/10S681J
R	652		RS1/10S681J
R	653		RAB4C681J
R	654		RAB4C473J
R	655		RAB4C681J
R	656		RAB4C473J
R	657		RAB4C472J
R	658		RAB4C223J
R	659		RAB4C102J
R	660		RAB4C102J
R	661		RAB4C102J
R	662		RAB4C473J
R	663		RS1/10S103J
R	664		RS1/10S681J
R	667		RS1/10S681J
R	668		RS1/10S473J
R	669		RS1/10S222J
R	670		RS1/10S152J
R	671		RS1/10S822J
R	672		RS1/10S103J
R	673		RS1/10S103J
R	674		RS1/10S270J
R	675		RAB4C473J
R	701		RAB4C473J
R	702		RAB4C102J
R	703		RS1/10S102J
R	704		RAB4C102J
R	705		RS1/10S102J
R	706		RS1/10S222J
R	707		RS1/10S222J
R	708		RS1/10S222J
R	709		RS1/10S473J
R	710		RS1/10S105J
R	711		RS1/10S222J
R	712		RS1/10S473J
R	713		RS1/10S222J
R	714		RS1/10S122J
R	715		RS1/10S303J
R	716		RS1/10S472J
R	717		RS1/10S473J
R	718		RS1/10S473J
R	719		RS1/10S102J
R	720		RS1/10S102J
R	721		RAB4C102J
R	722		RAB4C681J
R	723		RS1/10S681J
R	724		RS1/10S473J
R	725		RS1/10S473J
R	726		RS1/10S473J
R	801		RS1/10S152J
R	802		RS1/10S471J
R	803		RS1/10S471J
R	804		RS1/10S103J
R	806		RS1/10S223J
R	807		RD1/4PU223J
R	808		RD1/4PU472J
R	809		RD1/4PU223J
R	810		RS1/10S222J
R	811		RS1/10S472J
R	812		RS1/10S822J
R	813		RS1/10S102J
R	814		RS1/10S222J

Circuit Symbol and No.		Part Name	Part No.
R	815		RS1/10S223J
R	816		RS1/10S102J
R	817		RS1/10S473J
R	818		RS1/10S222J
R	819		RS1/10S103J
R	820		RS1/10S102J
R	821		RS1/10S223J
R	822		RS1/10S223J
R	823		RS1/10S223J
R	824		RS1/10S103J
R	825		RS1/10S223J
R	826		RS1/10S122J
R	827		RS1/10S681J
R	828		RS1/10S152J
R	829		RS1/10S222J
R	830		RS1/10S471J
R	831		RS1/10S331J
R	832		RS1/10S223J
R	833		RS1/10S103J
R	834		RS1/10S472J
R	835		RS1/10S223J
R	836		RS1/10S681J
R	837		RS1/10S242J
R	838		RS1/10S152J
R	839		RS1/10S153J
R	840		RD1/4PU100J
R	851		RD1/4PU112J
R	852		RS1/10S121J
R	853		RS1/10S103J
R	856		RD1/4PU221J
R	857		RD1/4PU222J
R	858		RD1/4PU470J
R	859		RD1/4PU470J
R	860		RD1/4PU470J
R	861		RD1/4PU470J
R	862		RD1/4PU470J
R	863		RD1/4PU470J
R	864		RD1/4PU470J
R	865		RD1/4PU470J

CAPACITORS

Circuit Symbol and No.		Part Name	Part No.
C	401	Resistor	RD1/4PU102J
C	402	Resistor	RD1/4PU102J
C	403		CEAL4R7M35
C	404		CEAL4R7M35
C	405		CEAL2R2M50
C	406		CEAL2R2M50
C	407		CEAL4R7M35
C	408		CEAL4R7M35
C	409		CEAL2R2M50
C	410		CEAL2R2M50
C	411		CEALNP4R7M16
C	412		CEALNP4R7M16
C	413		CEAL4R7M35
C	414		CEAL4R7M35
C	415		CKSQYB272K50
C	416		CKSQYB272K50
C	417		CEALNP4R7M16
C	418		CEALNP4R7M16
C	419		CKSQYB472K50
C	420		CKSQYB472K50
C	421		CKSQYB474K16
C	422		CKSQYB474K16
C	423		CKSQYB224K16
C	424		CKSQYB224K16
C	425		CEALNP4R7M16

=====Circuit Symbol and No.		===Part Name	Part No.
C	426		CEALNP4R7M16
C	427		CEAL2R2M50
C	428		CKSQYB104K50
C	429		CKSQYB104K50
C	430		CKSQYB184K16
C	431		CKSQYB184K16
C	433		CEAL100M16
C	434		CEAL100M16
C	435		CEAL100M16
C	436		CEAL100M16
C	437		CCSQCH101J50
C	438		CCSQCH101J50
C	439		CCSQCH101J50
C	440		CCSQCH101J50
C	441		CCSQCH101J50
C	442		CCSQCH101J50
C	443		CCSQCH101J50
C	444		CCSQCH101J50
C	445		CKSQYB102K50
C	446		CKSQYB102K50
C	447		CKSQYB102K50
C	448		CKSQYB102K50
C	449		CKSQYB102K50
C	450		CKSQYB102K50
C	451		CKSQYB102K50
C	452		CKSQYB102K50
C	453		CEAS100M50
C	454		CEAS100M50
C	455		CEAS100M50
C	456		CEAS100M50
C	457		CEAS100M50
C	458		CEAS100M50
C	459		CEAS100M50
C	460		CEAS100M50
C	472		CKSQYB473K50
C	473		CEAL4R7M35
C	474		CKSQYB103K50
C	475		CEAL101M10
C	476		CEAL330M10
C	477		CKSQYB103K50
C	478		CKSQYB102K50
C	479		CEALNP4R7M16
C	480		CCSQCH101J50
C	481		CCSQCH221J50
C	482		CCSQCH221J50
C	483		CCSQCH221J50
C	484		CCSQCH221J50
C	485		CEAL4R7M35
C	486		CEAL4R7M35
C	488		CEAL1R0M50
C	489		CEAL2R2M50
C	490		CEAL2R2M50
C	501		CKSQYB102K50
C	502		CKSQYB223K50
C	503		CKSQYB103K50
C	504		CKSQYB102K50
C	505		CKSQYB223K50
C	507		CKSQYB104K50
C	508		CKSQYB223K50
C	509		CKSQYB223K50
C	510		CKSQYB471K50
C	511		CKSQYB223K50
C	512		CKSQYB102K50
C	513		CKSQYB223K50
C	514		CKSQYB471K50

=====Circuit Symbol and No.		===Part Name	Part No.
C	515		CKSQYB333K25
C	516		CKSQYB333K25
C	517		CKSQYB223K50
C	518		CKSQYB223K50
C	519		CEAL100M16
C	520		CCSQCH270J50
C	521		CCSQCH270J50
C	522		CCSQCH101J50
C	524		CKSQYB103K50
C	525	4.7µF/10V	CCH1280
C	526		CKSQYB223K50
C	527		CFTNA104J50
C	528		CKSQYB103K50
C	529		CKSQYB103K50
C	530		CKSQYB103K50
C	531		CCSQCH100D50
C	532		CCSQCH100D50
C	533		CKSQYB103K50
C	601		CKSQYB103K50
C	602		CKSQYB103K50
C	603		CKSQYB103K50
C	604		CKSQYB103K50
C	605	0.047F/5.5V	CCL1040
C	606		CEAL100M16
C	607		CKSQYB103K50
C	608		CKSYB223K25
C	609		CKSQYB102K50
C	610		CKSQYB102K50
C	611		CKSQYB223K50
C	612		CKSQYB103K50
C	613		CKSQYB103K50
C	614		CKSQYB103K50
C	615		CKSQYB103K50
C	616		CKSQYB103K50
C	617		CKSQYB103K50
C	618		CKSQYB103K50
C	619		CKSQYB103K50
C	620		CKSQYB103K50
C	621		CKSQYB103K50
C	622		CKSQYB223K50
C	623		CKSQYB471K50
C	624		CKSQYB103K50
C	651		CKSQYB103K50
C	652		CASAQ4R7M10
C	653		CKSQYB102K50
C	654		CKSQYB102K50
C	655		CKSQYB102K50
C	656		CKSQYB102K50
C	657		CEAL4R7M35
C	658		CKSQYB103K50
C	659		CKSQYB103K50
C	660		CKSQYB103K50
C	661		CKSQYB103K50
C	662		CKSQYB103K50
C	663		CEAL2R2M50
C	664		CKSQYB103K50
C	665		CKSQYB103K50
C	666		CKSQYB103K50
C	667		CKSQYB223K50
C	668		CCSQCH101J50
C	669		CCSQCH101J50
C	671		CEAS331M6R3
C	672		CKSQYB223K50
C	673		CCSQCH270J50
C	674		CCSQCH270J50

=====Circuit Symbol and No.		===Part Name	Part No.
C	701		CKSQYB102K50
C	702		CKSQYB223K50
C	703		CEAL100M16
C	704		CKSQYB103K50
C	801	100µF/10V	CCH1282
C	802		CKSQYB472K50
C	803		CKSQYB223K50
C	804		CEAS471M25
C	805		CKSQYB223K50
C	806		CEAL330M25
C	807		CEAL4R7M35
C	808		CEAL330M10
C	809		CKSQYB223K50
C	810		CEAL100M16
C	811		CKSQYB223K50
C	812		CKSQYB223K50
C	813		CKSQYB102K50
C	814		CKSQYB103K50
C	815		CEAS101M10
C	816		CKSQYB472K50
C	817		CKSQYB103K50
C	818		CEAS101M10
C	819		CKSQYB103K50
C	851		CKSQYB223K50
C	856		CEAL4R7M35

D Unit Number : UWM-021
Unit Name : Keyboard Unit

MISCELLANEOUS

Q	901	Transistor	2SC2712
D	901	LED	AA2222S-B1
D	902	Chip Diode	MA151WK
D	903	Chip Diode	MA151WK
D	904	Chip Diode	MA151WK
D	905	Chip Diode	MA151WK
D	906	Chip Diode	MA151WK
D	907	Chip Diode	MA151WK
D	908	Chip Diode	MA151WK
IL	901	Lamp 8V 80mA	CEL1449
IL	902	Lamp 8V 80mA	CEL1449
IL	903	Lamp 8V 80mA	CEL1449
IL	904	Lamp 8V 80mA	CEL1449
IL	905	Lamp 8V 80mA	CEL1449
IL	906	Lamp 8V 80mA	CEL1449
IL	907	Lamp 8V 80mA	CEL1449

RESISTORS

R	901	RS1/10S102J
R	902	RS1/10S821J

CAPACITORS

C	901	CKSQYB103K50

Volume Unit
Consists of
Volume PCB(A)
Volume PCB(B)

E F Unit Number : UWM-020
Unit Name : Volume Unit

MISCELLANEOUS

VR	901	Volume 50kΩ(B)	CSD1036
VR	902	Volume 50kΩ(B)	CCS1089
VR	903	Volume 50kΩ(B)	CCS1089
VR	904	Volume 50kΩ(B)	CCS1089

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

RESISTORS

R	903		RD1/4PU182J
R	904		RD1/4PU182J
R	905		RD1/4PU182J
R	906		RD1/4PU182J
R	907		RD1/4PU182J
R	908		RD1/4PU182J
R	909		RD1/4PU182J
R	910		RD1/4PU182J

I Unit Number : EWM1037
Unit Name : Deck Unit

MISCELLANEOUS

IC	251	IC	CXA2560Q
IC	351	IC	PA2020A
D	352	Diode	1SS355
VR	301	Semi-fixed 33kΩ(B)	CCP1280
VR	302	Semi-fixed 33kΩ(B)	CCP1280

RESISTORS

R	255		RS1/16S221J
R	256		RS1/16S221J
R	257		RS1/16S102J
R	258		RS1/16S102J
R	271		RS1/16S102J
R	272		RS1/16S102J
R	273		RS1/16S102J
R	281		RS1/8S0R0J
R	282		RS1/8S0R0J
R	283		RS1/8S0R0J
R	284		RS1/8S0R0J
R	285		RS1/16S0R0J
R	286		RS1/16S0R0J
R	287		RS1/8S0R0J
R	290		RS1/8S0R0J
R	301		RS1/16S183J
R	322		RS1/16S102J
R	351		RS1/16S102J
R	352		RS1/16S102J
R	353		RS1/16S102J
R	354		RS1/16S102J
R	355		RS1/16S274J
R	362		RS1/8S301J
R	373		RS1/16S0R0J
R	374		RS1/8S0R0J
R	375		RS1/8S0R0J
R	401		RS1/16S472J
R	402		RS1/16S183J
R	403		RS1/16S823J

CAPACITORS

C	251		CKSRYB331K50
C	252		CKSRYB331K50
C	253		CKSRYB331K50
C	254		CKSRYB331K50
C	255		CKSRYB103K50
C	256		CKSRYB103K50
C	272		CKSRYB104K16
C	273	220µF/50V	ECH0001
C	301		CKSRYB104K16
C	302		CKSRYB104K16
C	309		CKSRYB104K16
C	310		CKSRYB104K16
C	313		CCSRCH101J50
C	351		CKSQYB224K25
C	352		CKSRYB392K50

Circuit Symbol and No.		Part Name	Part No.
C	353		CKSRYB103K50
C	354		CKSRYB103K50
C	355		CKSQYB104K50
C	356		CKSRYB103K50
C	401		CKSRYB334K10
C	402		CKSRYB392K50
C	403		CKSRYB683K16

J Unit Number : EWM1036
Unit Name : Sensor Unit

MISCELLANEOUS

Q	101	Photo-reflector	EGN1004
S	101	Switch(LOAD)	ESG1007
S	102	Switch(MODE)	ESG1007
S	103	Switch(70µs)	ESG1007

C Unit Number : CWE1422
Unit Name : Tuner Unit

MISCELLANEOUS

IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2712
Q	3	FET	3SK263
Q	31	Transistor	2SC2712
Q	51	Transistor	2SK1067
Q	151	Transistor	DTC124EU
Q	201	Transistor	FC12
Q	203	Transistor	DTC124EU
D	3	Diode	1SV251
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	6	Diode	MA157
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	1SV251
D	231	Diode	SVC253
L	1	Inductor	LCTBR12K2125
L	2	Coil	CTC1145
L	3	Inductor	LCTB4R7K2125
L	4	Coil	CTC1131
L	5	Coil	CTC1147
L	51	Ferri-Inductor	LAU150K
L	52	Coil	CTC1136
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1371
L	208	Inductor	LAU390K
L	209	Ferri-Inductor	LAU680K
L	210	Coil	CTB1103
L	231	Inductor	LAU3R3J
T	31	Coil	CTE1116
CF	25	Ceramic Filter	CTF1290
CF	51	Ceramic Filter	CTF1290
CF	52	Ceramic Filter	CTF1290
CF	53	Ceramic Filter	CTF1290
CF	230	Crystal Filter	CTF1262
CF	232	Ceramic Filter	CTF1348
X	151	Radiator 918.5Hz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	101	Semi-fixed 15kÉ∂(B)	CCP1230
VR	154	Semi-fixed 150kÉ∂(B)	CCP1236
VR	156	Semi-fixed 68kÉ∂(B)	CCP1234
VR	157	Semi-fixed 47kÉ∂(B)	CCP1233

RESISTORS

Circuit Symbol and No.		Part Name	Part No.
R	3		RS1/16S223J
R	4		RS1/16S101J
R	5		RS1/16S101J
R	6		RS1/16S101J
R	7		RS1/10S331J
R	8		RS1/16S473J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	12		RS1/16S474J
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S473J
R	18		RS1/16S473J
R	19		RS1/16S154J
R	27		RS1/16S0R0J
R	31		RS1/16S470J
R	32		RS1/16S912J
R	33		RS1/16S912J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	39		RS1/16S0R0J
R	51		RS1/16S331J
R	52		RS1/16S104J
R	53		RS1/16S104J
R	54		RS1/16S331J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S273J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/10S102J
R	152		RS1/16S393J
R	155		RS1/16S333J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S225J
R	163		RS1/16S222J
R	164		RS1/16S104J
R	165		RS1/16S102J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	205		RS1/16S471J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S0R0J
R	214		RS1/16S563J
R	215		RS1/16S473J
R	217		RS1/16S393J
R	220		RS1/10S0R0J
R	231		RS1/16S242J
R	232		RS1/16S473J
R	233		RS1/16S0R0J
R	234		RS1/16S0R0J
R	237		RS1/16S562J
R	238		RS1/16S104J
R	239		RS1/16S104J
R	240		RS1/16S472J
R	241		RS1/16S202J
R	243		RS1/16S183J

=====Circuit Symbol and No.		===Part Name	Part No.
R	244		RS1/16S472J
R	247		RS1/10S153J

CAPACITORS

C	1		CCSRCH220J50
C	2		CKSRYB222K50
C	3		CCSRCH6R0D50
C	5		CKSRYB222K50
C	6		CKSQYB473K16
C	7		CKSQYB473K16
C	8		CKSQYB104K16
C	9		CCSRCJ3R0C50
C	10		CEJA1R0M50
C	11		CCSRCH470J50
C	12		CCSRCH820J50
C	13		CKSRYB222K50
C	14		CCSRCH4R0C50
C	15		CCSRCH7R0D50
C	16		CCSRCH120J50
C	17		CKSRYB222K50
C	18		CKSRYB103K25
C	19		CKSRYB222K50
C	20		CKSRYB222K50
C	21		CEJA100M16
C	22		CCSRRH100D50
C	23		CCSRRH120J50
C	24		CKSRYB103K25
C	30		CCSRRH201J50
C	31		CKSRYB103K25
C	32		CKSQYB473K16
C	33		CCSRCK2R0C50
C	35		CCSRCH270J50
C	36		CCSRCH120J50
C	40		CKSRYB222K50
C	41		CKSQYB104K16
C	51		CKSRYB223K25
C	52		CKSRYB103K25
C	53		CKSRYB222K50
C	54		CCSRCH470J50
C	55		CKSQYB223K25
C	56		CKSQYB104K16
C	57		CKSRYB472K50
C	58		CEJA330M10
C	59		CKSRYB103K25
C	60		CKSRYB102K50
C	61		CCSRCH270J50
C	62		CKSRYB103K25
C	63		CEJAR22M50
C	65		CKSQYB104K16
C	101		CEJANP100M10
C	102		CKSRYB182K50
C	103		CKSQYB682K50
C	104		CEJA2R2M50
C	105		CKSRYB103K25
C	106		CCSRCH151J50
C	107		CKSRYB103K25
C	151		CKSRYB392K50
C	152		CKSQYB104K16
C	153		CEJA3R3M50
C	154		CKSQYB104K16
C	157		CEJA3R3M50
C	158		CKSYB474K16
C	159		CEJA220M6R3
C	160		CKSQYB104K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	161		CKSQYB104K16
C	162		CEJA3R3M50
C	163		CKSRYB102K50
C	165		CCSRCH100D50
C	201		CKSRYB103K25
C	202		CCSRCH100D50
C	203		CKSRYB332K50
C	204		CKSQYB473K16
C	205		CKSQYB473K16
C	206		CKSQYB103K25
C	207		CCSRCH120J50
C	211		CCSRCH560J50
C	212		CEJA101M10
C	213		CKSRYB103K25
C	215		CCSRCH680J50
C	216		CCSRCH101J50
C	217		CEJAR47M50
C	219		CKSRYB223K25
C	220		CKSRYB103K25
C	221		CKSRYB103K25
C	230		CKSQYB104K16
C	231		CCSRCH330J50
C	232		CCSRCH150J50
C	233		CKSRYB103K25
C	234		CEJA330M10
C	235		CKSRYB332K50
C	236		CKSQYB473K16
C	237		CCSRTH180J50
C	239		CKSRYB103K25
C	240		CKSYB104K16
C	241		CKSQYB104K16
C	242		CEJAR47M50
C	243		CEJAR33M50
C	244		CKSQYB473K16
C	245		CKSQYB223K25
C	246		CKSQYB224K16
C	250		CCSRCJ3R0C50

G 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	Chip LED	CL203IRXTU
D	802	Chip LED	CL203IRXTU
X	201	Ceramic Resonator 16.934MHz	CSS1456
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

=====Circuit Symbol and No.		===Part Name	Part No.
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		CKSRYB102K50
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
C	220		CCSRCH510J50
C	221		CKSRYB682K25
C	222		CEV220M6R3
C	223		CKSRYB103K25
C	224		CKSRYB224K10
C	301		CEV101M10
C	603		CCSQSL152J50
C	604		CCSQSL152J50
C	702	10μF/10V	CCH1349
C	703		CKSQYB334K16

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

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

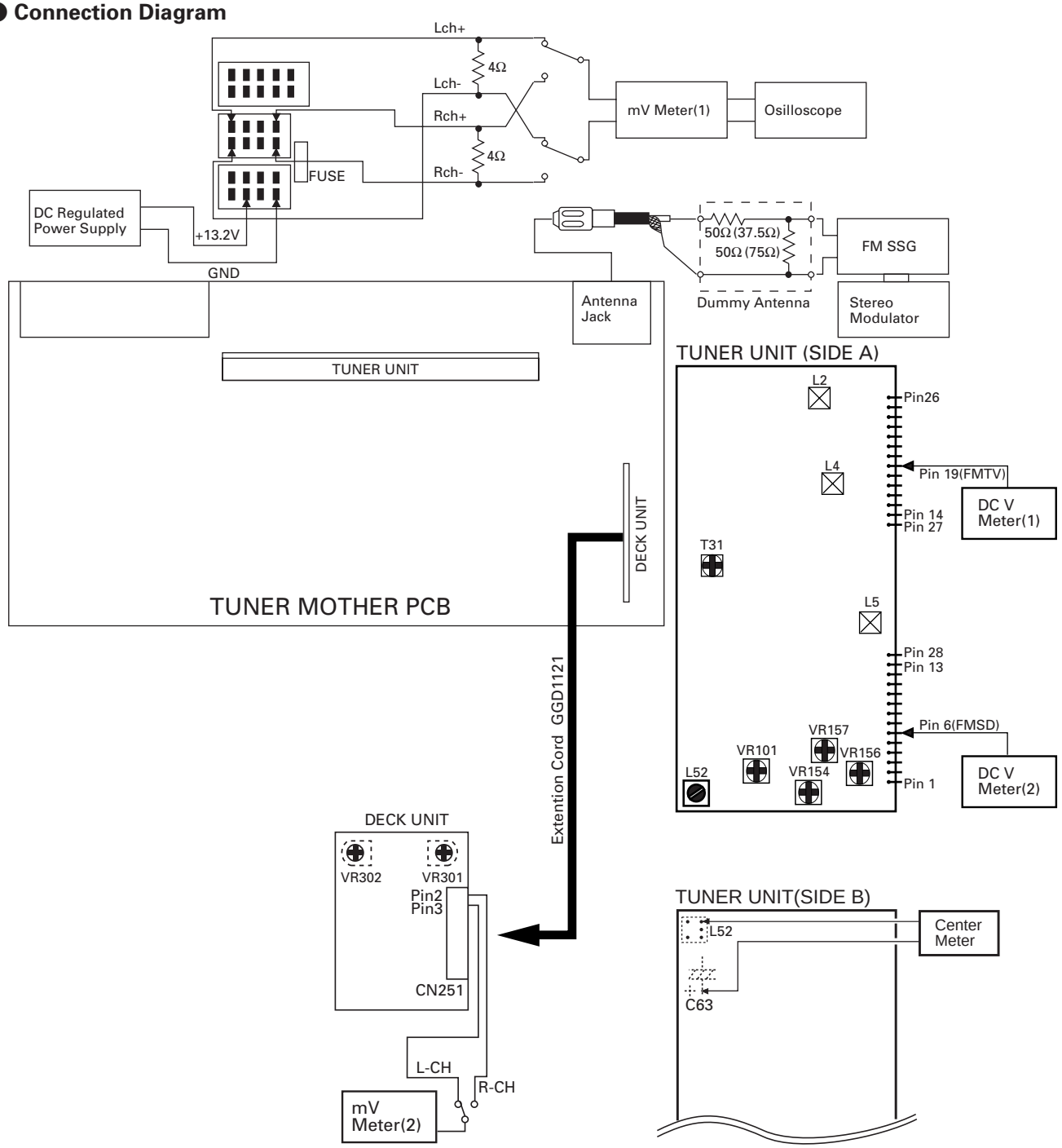
Miscellaneous Parts List

		Pickup Unit(Service)(P8)	CXX1285
M	1	Motor Unit(CARRIAGE)	CXB2190
M	2	Motor Unit(LOADING)	CXB2195
M	3	Motor Unit(SPINDLE)	CXB2562
M	1	Motor Unit(MAIN)	EXA1491
M	2	Motor Unit(SUB)	EXA1623
HD	1	Head Assy	EXA1506

6. ADJUSTMENT

6.1 TUNER, CASSETTE SECTION

● **Connection Diagram**



FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
S1:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6.5V
Center Meter	1	98.1 M	65-85	98.1	L52	Center Meter : 0
IFT	1	98.1 M	5-15	98.1	T31	mV Meter(1) : Maximum
ANT Coil	1	89.9 M	5-15	89.9	L2	mV Meter(1) : Maximum
RF Coil	1	89.9 M	5-15	89.9	L4	mV Meter(1) : Maximum
Soft	1	98.1 M	65	98.1	•••••	mV Meter(1) : AdB
Mute	2	98.1 M	14	98.1	VR157	mV Meter(1) : A-3dB
Search	1	98.1 M	24	98.1	VR156	DC V Meter(2) : more than 3.5V
Sensitivity	2	98.1 M	23	98.1	VR156	DC V Meter(2) : 0V
	3	Repeat steps 1 and 2 until the adjustment standards are satisfied.				
Separation	1	98.1 S	65	98.1	VR101	mV Meter(1) : Maximum
ARC Separation	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB

DOLBY B NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz,200nwb/m)	VR301(Lch),VR302(Rch)	mV Meter(2) : –6dBm(388mV)±1dB (DOLBY NR Switch : OFF)

6.2 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.

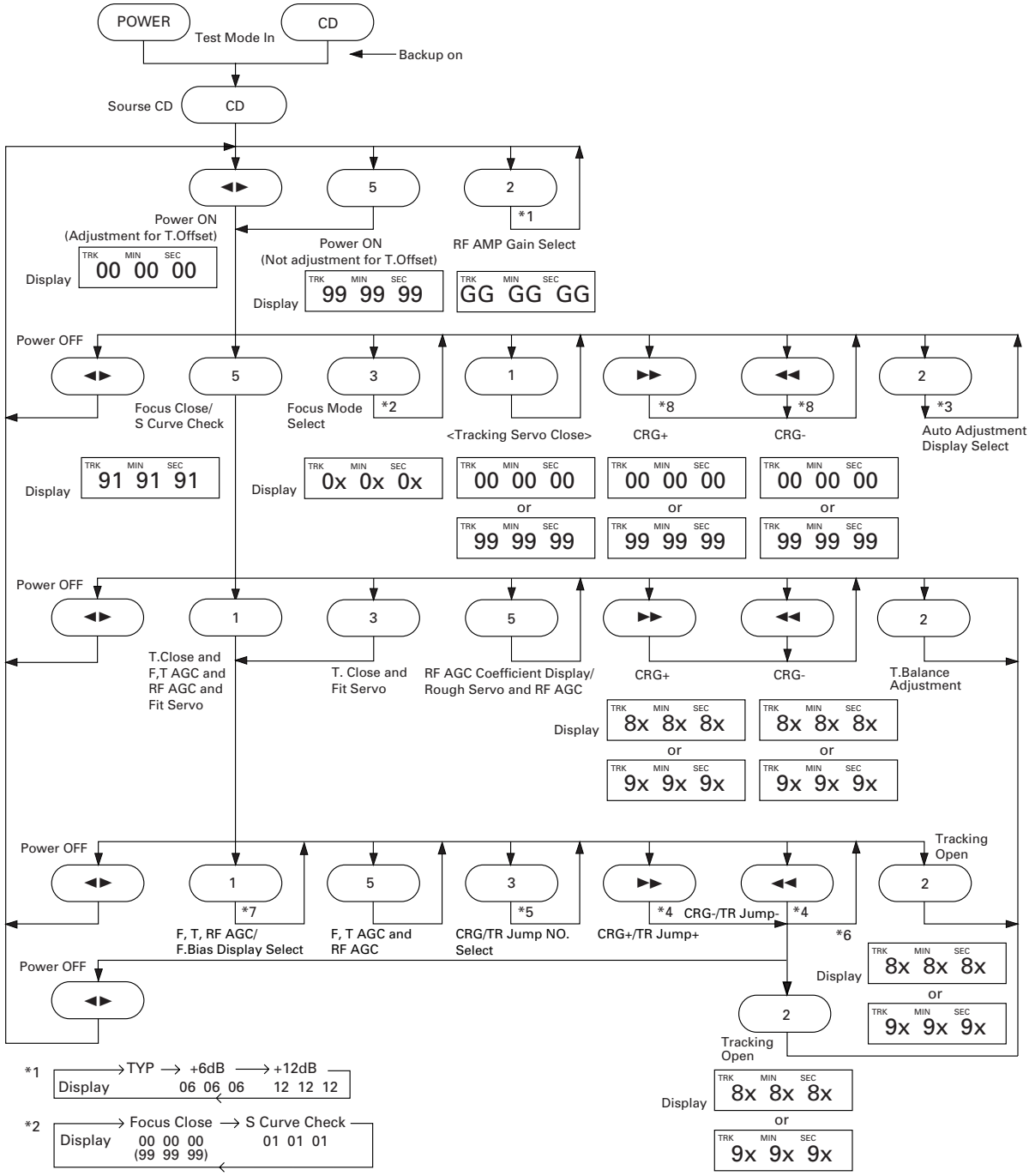
- After pressing the EJECT key, do not press any other key until the disk is completely ejected.

- 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 “Single TR (91)”, the RF AMP gain setting to 0 dB, and the automatic adjustment value to the initial value.

● Flow Chart



*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) x 20)

*8 Voltage of CRG Motor = 2 [V]

6.3 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

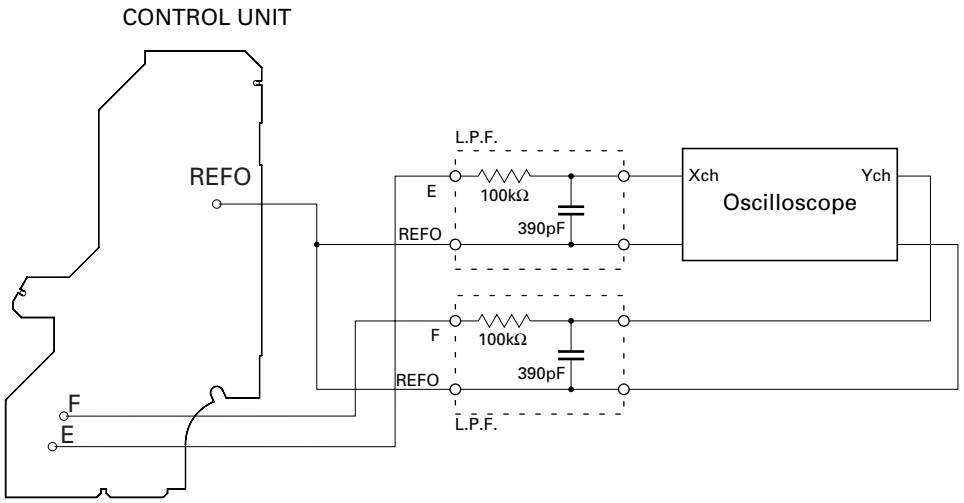
• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best 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, REFO
• 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.

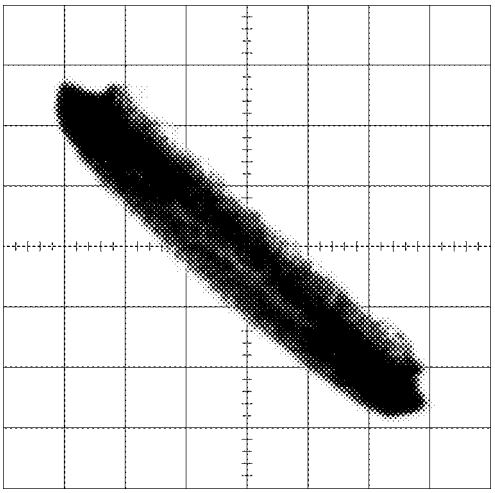
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

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

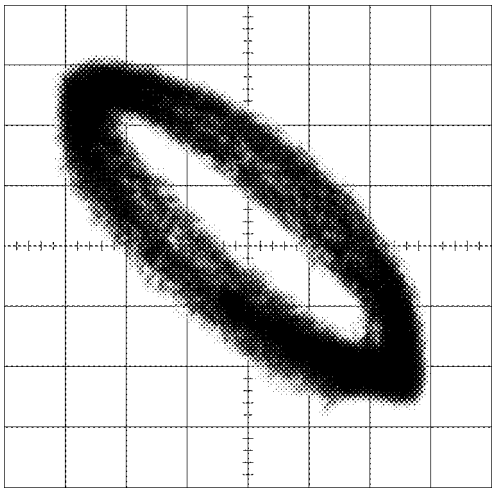
Grating waveform

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

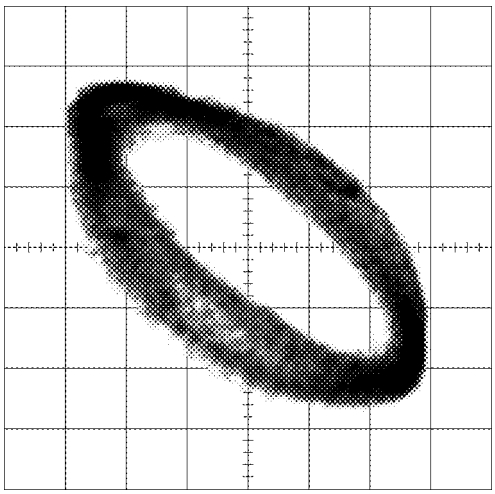
0°



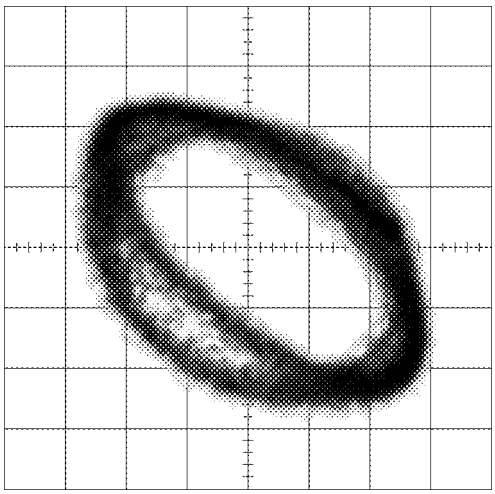
30°



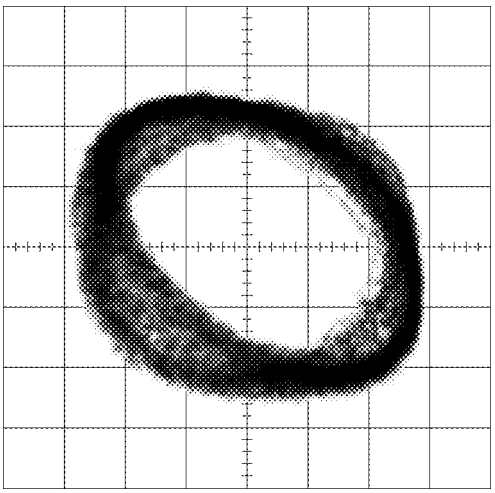
45°



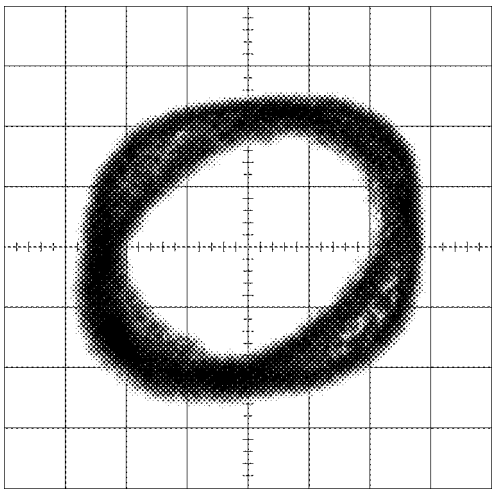
60°



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) Main 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

(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 main 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.

7.1.2 DISASSEMBLY

● **Removing the Case (not shown)**

1. Remove the Case.

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

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

● **Removing the Grille Assy (Fig.1)**

2 Remove the four screws and then remove the Grille Assy.

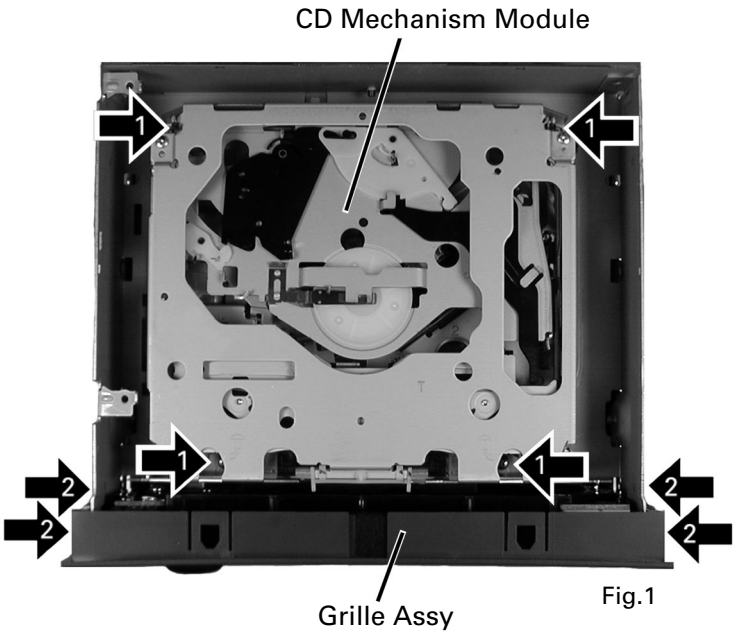


Fig.1

● **Removing the Chassis (Fig.2)**

1 Remove the three screws and then remove the Chassis.

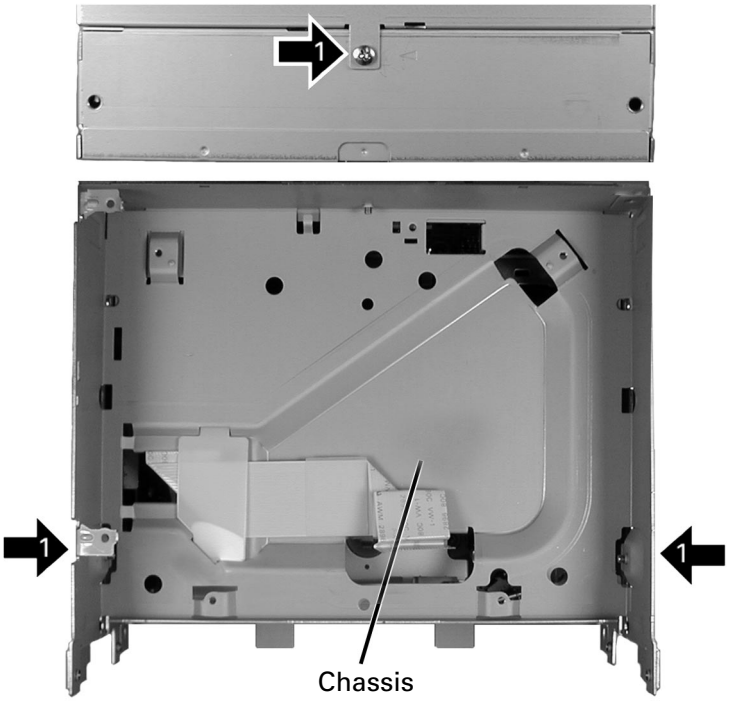


Fig.2

● **Removing the Case (Fig.3)**

1 Remove the two screws and then remove the Case.

● **Removing the Cassette Mechanism Module (Fig.3)**

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

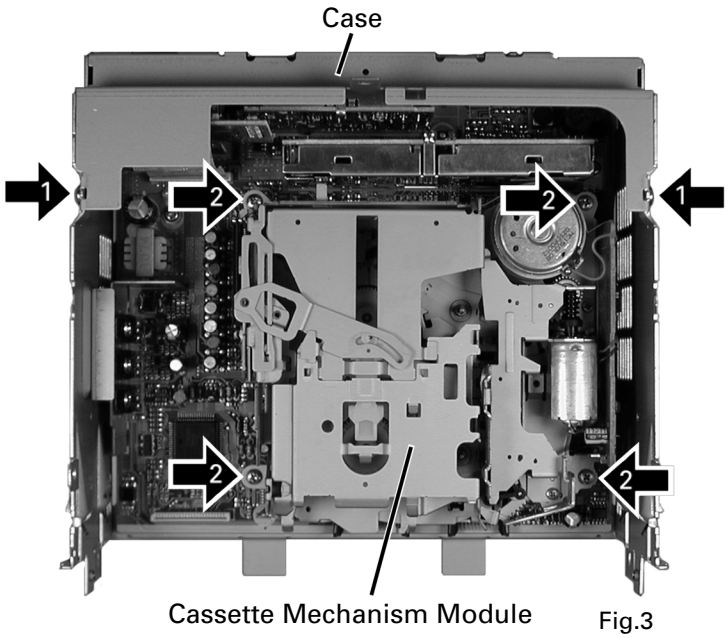


Fig.3

● **Removing the Connector PCB (Fig.4)**

1 Remove the screw.

Disconnect the connector and then remove the Connector PCB.

● **Removing the Tuner Mother PCB (Fig.4)**

2 Remove the three screws.

3 Straight the tabs at two locations indicated.

4 Remove the two screws and then remove the Tuner Mother PCB.

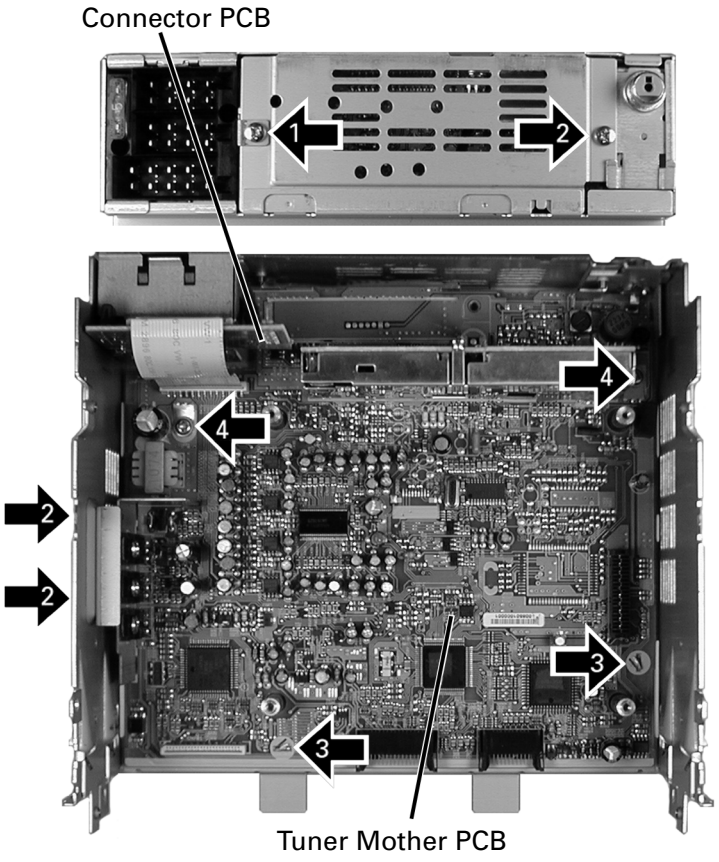
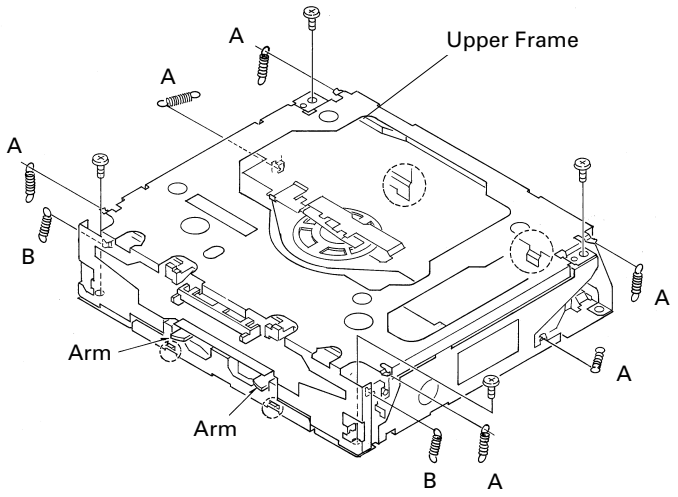


Fig.4

● Removing the Upper Frame

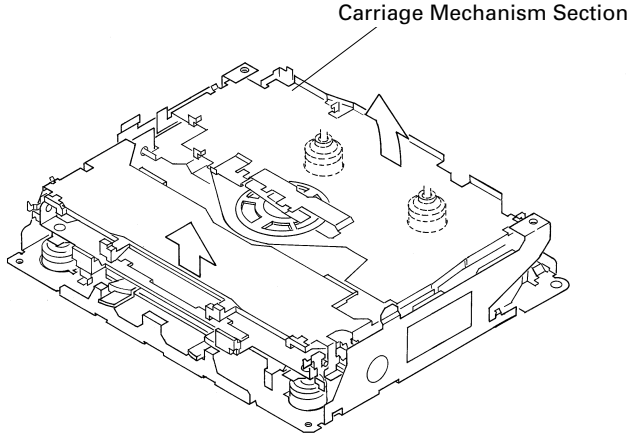
1. Remove six Springs A, two Springs B and four Screws.
2. Remove two Tabs situated on rear side of the Upper Frame, remove two Arms on the front side, then remove two Tabs on the front side.



● Removing the Carriage Mechanism Section

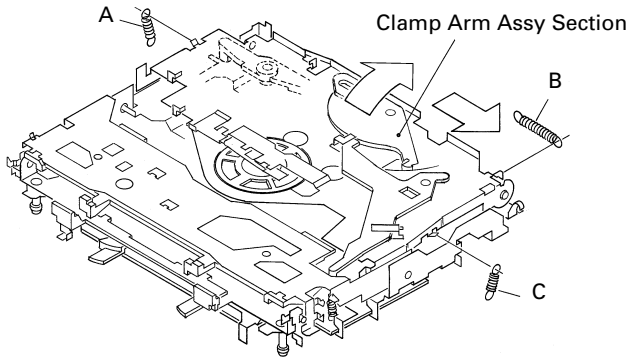
1. Disengage the Carriage Mechanism Section from the two dampers situated in the front side by driving it up, then disengage and remove the mechanism from the one damper by driving it up aslant into front side direction.

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



● Removing the Clamp Arm Assy Section

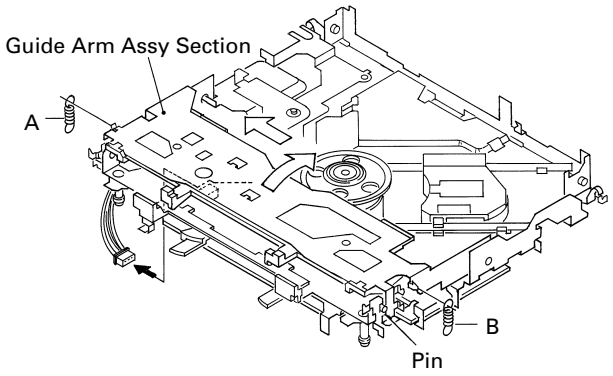
1. Remove a Spring A, a B and a Spring C.
2. Drive the Clamp Arm Assy Section up into rear side direction, then disengage the arm from its current position Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward right side to remove it.



● Removing the Guide Arm Assy Section

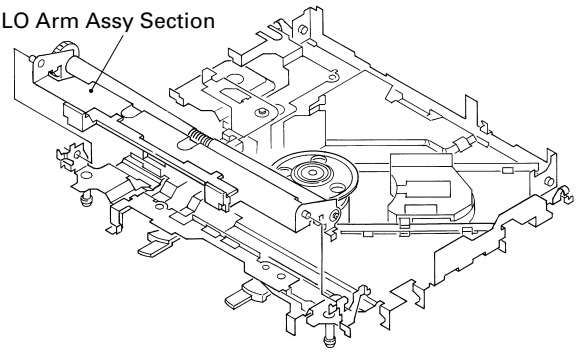
1. Remove a connector, a spring A and B
2. Drive the Guide Arm Assy Section up aslant into rear side direction, then remove it from a Pin. Finally, drive the assembly approximately 45 degrees upward, then slide the assembly toward left side to remove it.

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



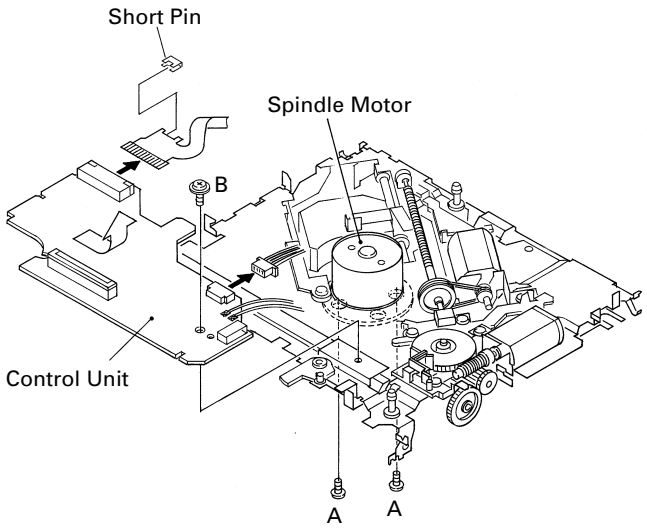
● Removing the LO Arm Assy Section

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



● Removing the Control Unit and the Spindle Motor

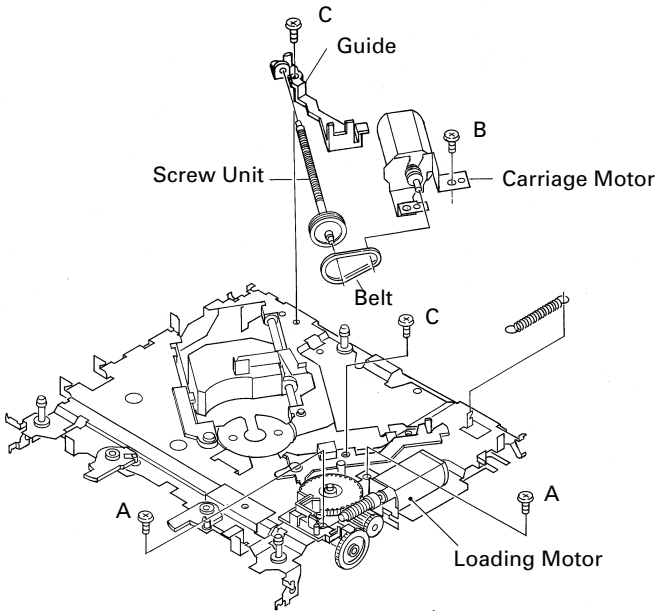
1. Remove from the connector after mounting the short pin on the flexible PCB of the pickup unit.
2. Remove two Soldered joints, then remove two Screws A.
3. Remove two connectors and a Screw B.
4. Disengage the Control Unit from two Tabs, then dismount the unit by sliding it toward left.
5. Dismount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



● Removing the Loading Motor and Carriage Motor

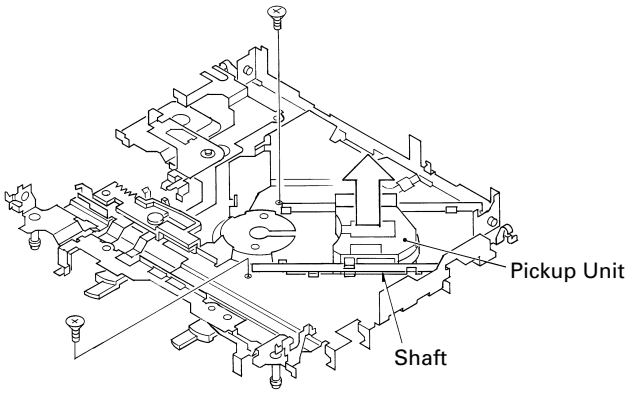
1. Remove the Spring and two Screws A.
2. Dismount the Loading Motor.
3. Remove the Belt, a Screw B, two Screws C, a Guide and a Screw Unit.
4. Dismount the Carriage Motor.

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

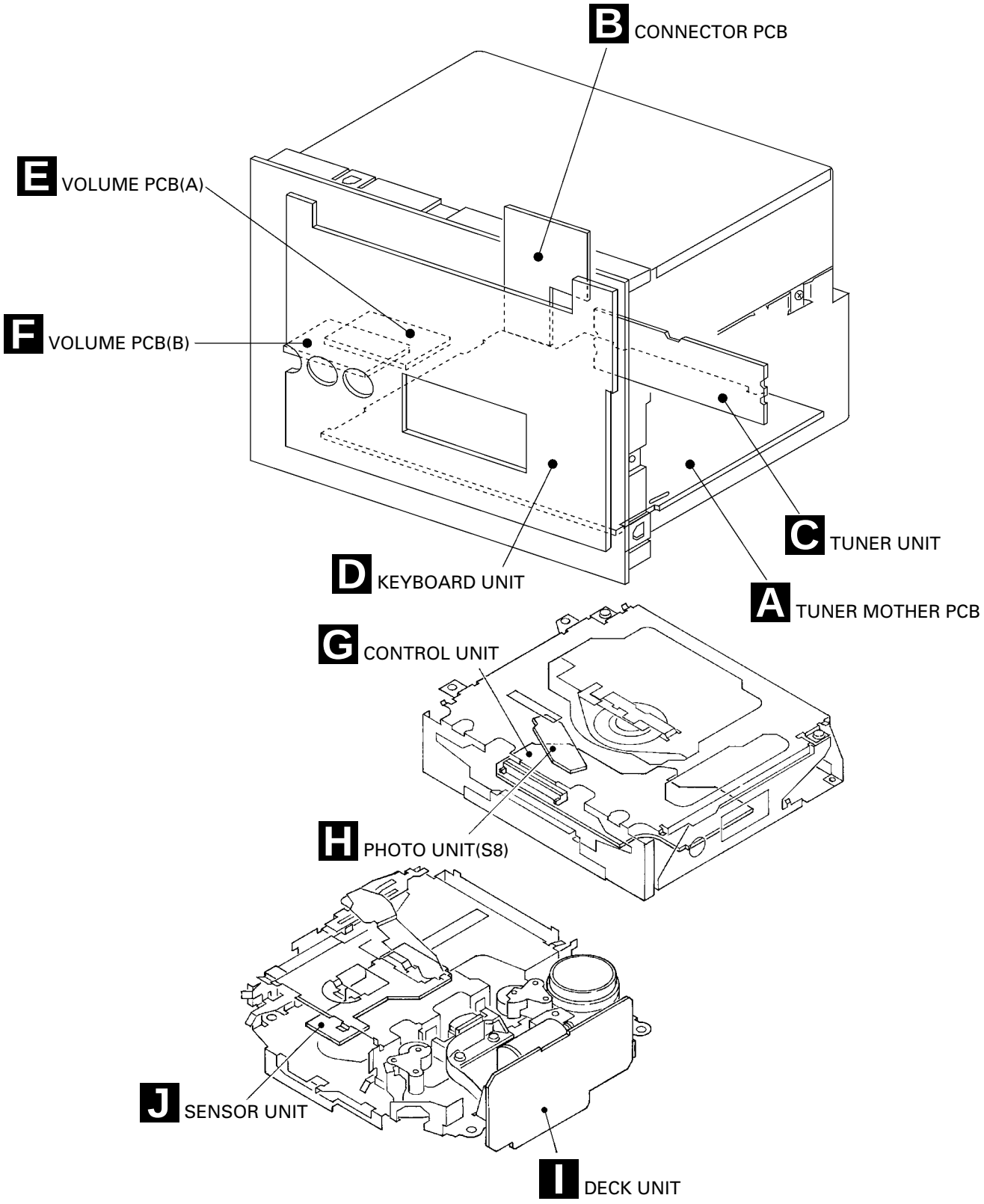


● Removing the Pickup Unit

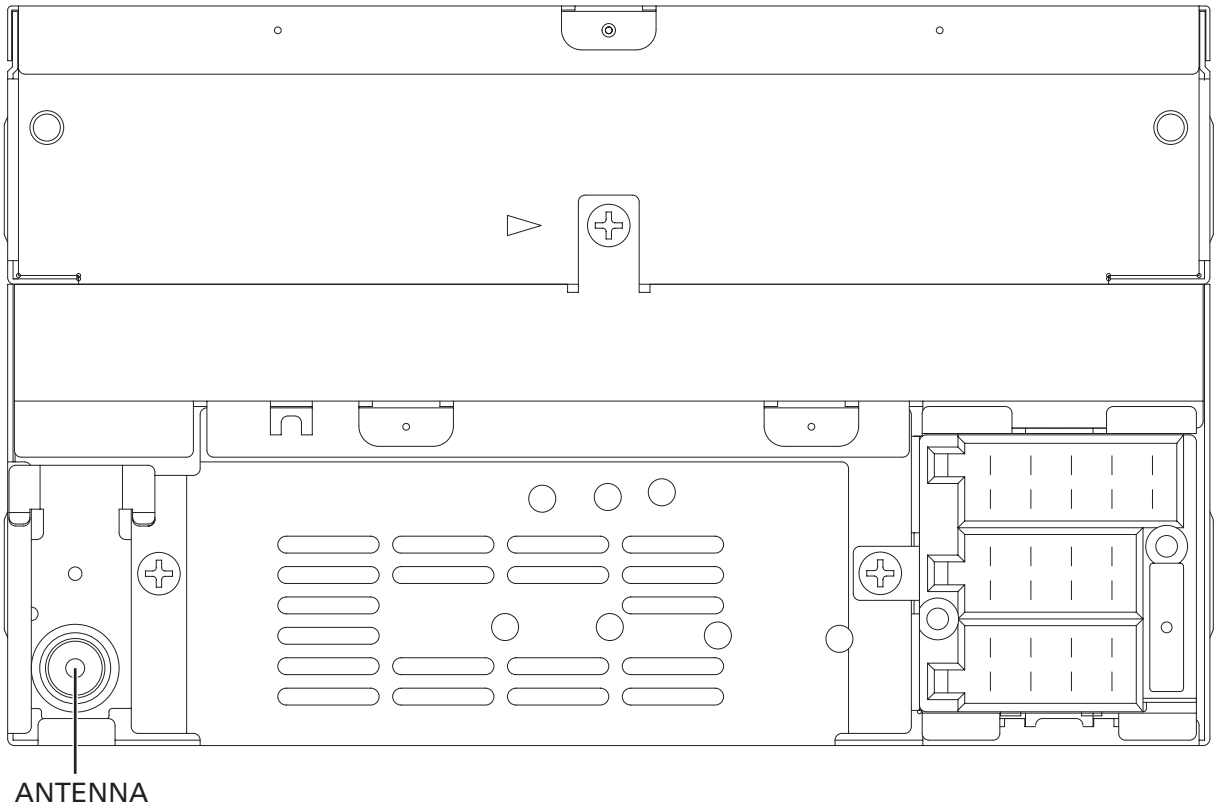
1. Remove two Screws and a Shaft.
2. Dismount the Pickup Unit.



7.1.3 PCB LOCATIONS



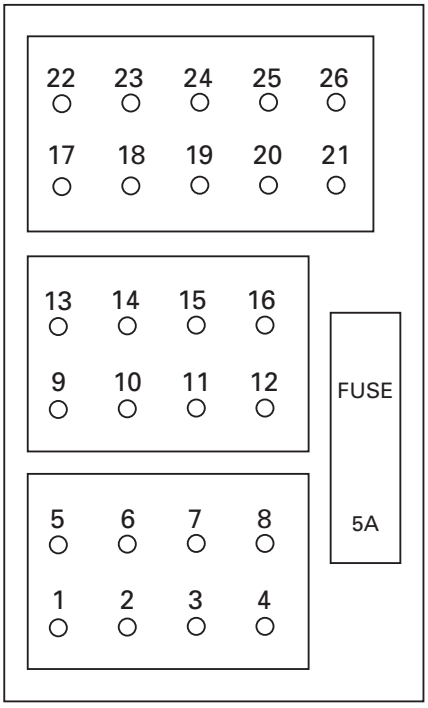
7.1.4 CONNECTOR FUNCTION DESCRIPTION



NO.	Pin name
1	NC
2	+15 (IG)
3	NC
4	GND
5	AMPMUT
6	TELMUT
7	ANTREM
8	+30 (BU)

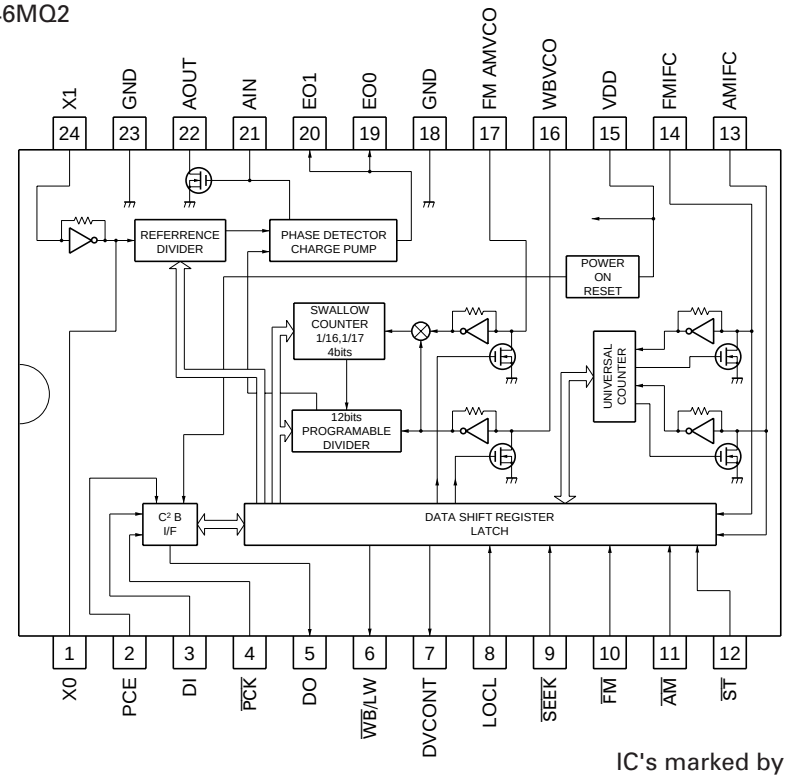
NO.	Pin name
9	RR-
10	FR-
11	FL-
12	RL-
13	RR+
14	FR+
15	FL+
16	RL+

NO.	Pin name
17	CANL
18	CANH
19	NC
20	CDMR-
21	CDMR+
22	TELGND
23	TELAU
24	NC
25	CDML-
26	CDML+



7.2 IC

*LC72146MQ2



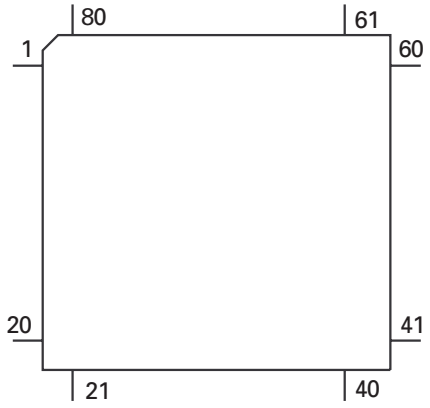
IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

● **Pin Functions(PE5223B)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	MOD	I		Destination sense analog input
2	RSL	I		Sub tuner signal level analog input
3	RSD	I		Sub tuner station detect input
4	AVSS			A/D GND
5	ILLCON	O	C	Illumination power analog output
6	DINJ	O	C	Disc set indicator control output
7	AVREF1			(D/A converter standard voltage)
8	PDI	I		PLL data input
9	PDO	O	C	PLL data output
10	$\overline{\text{PCK}}$	O	C	PLL clock output
11	RDI	I		Serial data input for RDS IC
12	RDO	O	C	Serial data output for RDS IC
13	$\overline{\text{RCK}}$	O	C	Serial clock output for RDS IC
14	$\overline{\text{BSRQ}}$	I		P-BUS serial pole request input
15	BRXEN	I/O	C	P-BUS reception enable input/output
16	$\overline{\text{BREST}}$/TSI	O	C	P-BUS reset output
17	BDATA/TSO	I/O	C	P-BUS serial data input/output
18	$\overline{\text{BSCK}}$/TCK	I/O	C	P-BUS serial clock input/output
19-26	D0-7	I/O	C	Address/Data input/output
27	A8	O	C	Address output
28	$\overline{\text{CS}}$	O	C	CAN BUS chip select output
29	$\overline{\text{RST}}$	O	C	CAN BUS IC reset output
30-32	VOL1-3	I		Rotary encoder input
33	VSS			GND
34	MS	I		Cassette mechanism MS sense input
35	$\overline{\text{MTL}}$	I		Cassette mechanism metal detect input
36	$\overline{\text{LOAD}}$	I		Cassette mechanism loading detect input
37	POS	I		Cassette mechanism position sense input

Pin No.	Pin Name	I/O	Format	Function and Operation
38	NC			Not used
39	ES	I		Cassette mechanism end sense input
40	$\overline{RD}$	O	C	Read signal output
41	$\overline{WR}$	O	C	Write signal output
42	$\overline{WAIT}$	I		External wait signal input
43	ASTB	O	C	Timing output for external RAM
44	RPCE	O	C	RDS PLL chip enable output
45	B.C/TUMUT	O	C	Tuner mute output/Dolby C output
46	$\overline{TELON}$	O	C	Select output of external input
47	SD	I		Station detect input
48	SMUT	O	C	Mute output
49	SYSPW	O	C	System power supply control output
50	AMPB	O	C	Amplifier power output
51	ECE	O	C	EEPROM chip enable output
52	ECK/VCK	O	C	EEPROM/E.VOL clock output
53	EDO/VDT	O	C	EEPROM/E.VOL data output
54	EDI	I		Data input from EEPROM
55	PCE/VST	O	C	PLL chip enable/E.VOL strobe output
56	NC			Not used
57	$\overline{RRST}$	O	C	Reset output for RDS IC
58	RSEL	O	C	Select output for RDS IC
59	RRDY	I		Ready input for RDS IC
60	$\overline{RESET}$	I		Reset input
61	INT	I		CAN BUS squeeze signal input
62	BSEN	I		Back Up power sense input
63	$\overline{IGSEN}$	I		ACC power sense input
64	$\overline{POWER}$	I		CD +5 control input
65	TELM	I		Telephone mute input
66	$\overline{CSEJ}$	I		Tape eject switch input
67	VOL0	I		Rotary encoder edge input
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	XT2			Open
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	BASS	I		A/D converter input from BASS volume
78	TRE	I		A/D converter input from TREBLE volume
79	BAL	I		A/D converter input from BALANCE volume
80	FAD	I		A/D converter input from FADER volume

*PE5223B

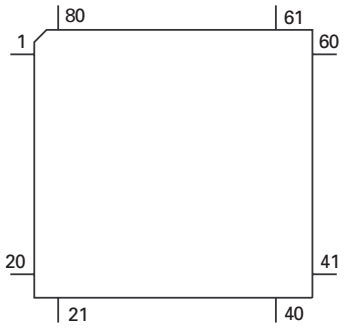


Format	Meaning
C	C MOS

● **Pin Functions(PE5239A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	NC			Not used
2	$\overline{\text{XRST}}$	O	C	CD LSI reset output
3-7	NC			Not used
8	$\overline{\text{CLAMP}}$	I		Disc clamp sense input
9	VSS			GND
10	NC			Not used
11	EJET	O	C	Loading motor eject control output
12	LOAD	O	C	Loading motor load control output
13	CONT	O	C	Servo driver power supply control output
14	NC			Not used
15	CDMUTE	O	C	CD mute output
16	NC			Not used
17	$\overline{\text{ADEN}}$	O	C	A/D reference voltage output
18-23	NC			Not used
24	VSS			GND
25-30	NC			Not used
31	BRXEN	I/O	C	P-BUS reception enable input/output
32	$\overline{\text{BSRQ}}$	O	C	P-BUS serial pole request output
33	VDCON	O	C	VD control output
34	CD5VON	O	C	CD +5V power supply control output
35	$\overline{\text{RESET}}$	I		Reset input
36	TXARJ	I		Set up of TX output select input
37	$\overline{\text{EJSW}}$	I		Eject switch input
38	$\overline{\text{BREST}}$	I		P-BUS reset input
39	CMPARI	I		Compression select input
40	VDD			Power supply
41	X2			Crystal oscillator connection pin
42	X1			Crystal oscillator connection pin
43	IC			GND
44	NC			Not used
45	$\overline{\text{TESTIN}}$	I		Test program mode input
46	AVSS			A/D GND
47	TEMP	I		Temperature detect input
48	VDSENS	I		Over voltage sense input
49	EJTD	I		Disc eject position detect input
50	DINC	I		Disc detect input
51	NC			Not used
52	FOK	I		FOK signal input
53	MIRR	I		MIRR detect signal input
54	LOCK	I		Spindle lock detect input
55	AVDD			Positive power supply terminal for analog circuit
56	AVREF	I		A/D converter reference voltage input
57	XSO	I		LSI data input
58	XSI	O	C	LSI data output
59	$\overline{\text{XSCK}}$	O	C	LSI clock output
60	$\overline{\text{XSTB}}$	O	C	CD LSI strobe output
61	XA0	O	C	Control signal distinguishing data output
62	NC			Not used
63	BDATA	I/O	C	P-BUS serial data input/output
64	$\overline{\text{BSCK}}$	I/O	C	P-BUS serial clock input/output

*PE5239A



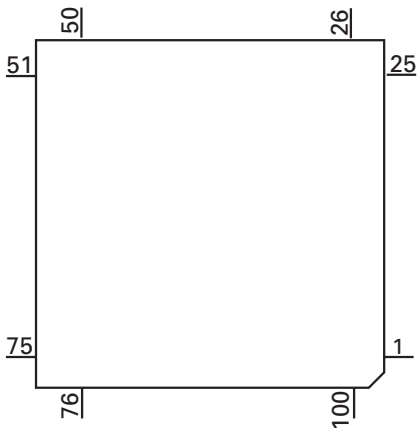
Format	Meaning
C	C MOS

● **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	$\overline{RST}$	I	Reset signal input
4	A0	I	Command/parameter identification signal input
5	$\overline{STB}$	I	Data strobe signal input
6	$\overline{SCK}$	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	$\overline{XTALEN}$	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	$\overline{XTAL}$	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	$\overline{TSCK}$	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

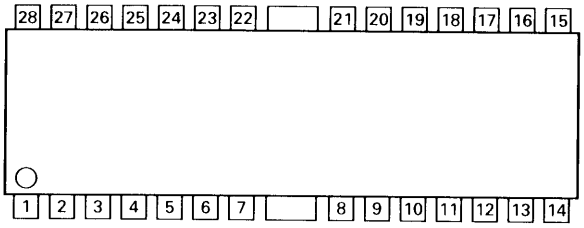
*UPD63711GC



● **Pin Functions (BA5985FM)**

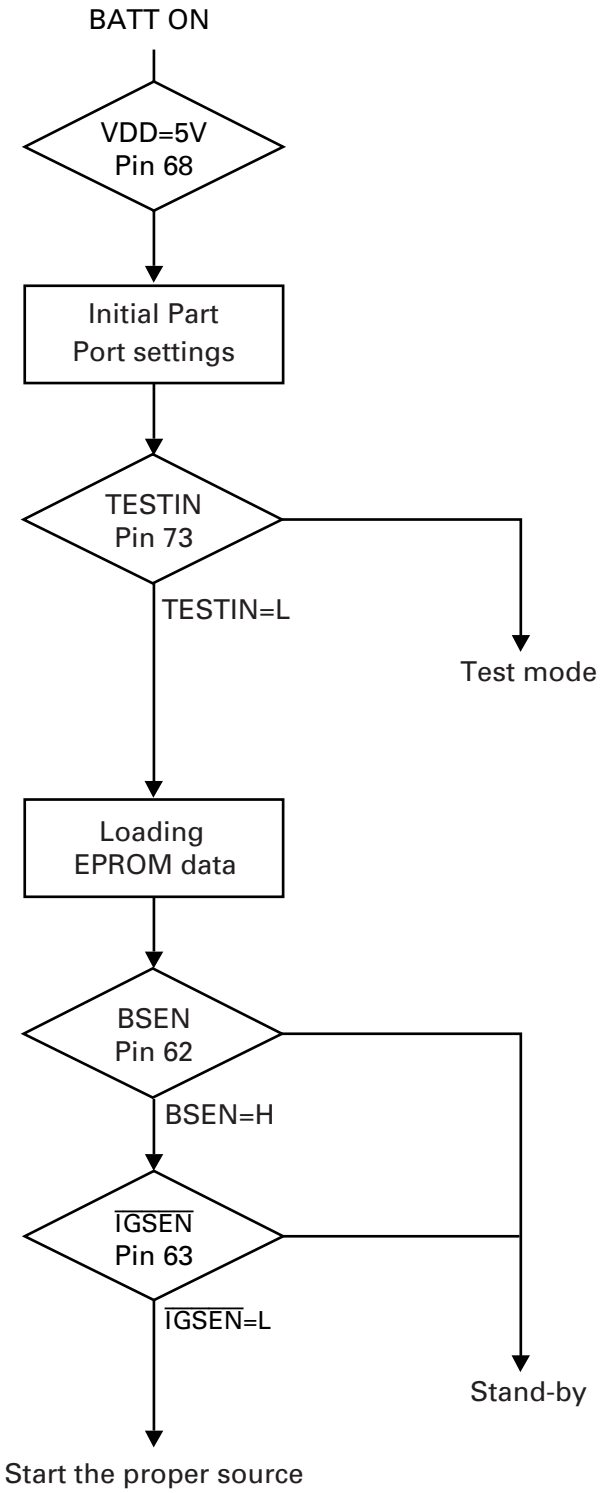
Pin No.	Pin Name	I/O	Function and Operation
1	FWD	I	Loading driver FWD input
2	OPIN1(+)	I	CH1 pre-amplifier input
3	OPIN1(–)	I	CH1 pre-amplifier inverted input
4	OPOUT1	O	CH1 pre-amplifier output
5	OPIN2(+)	I	CH2 pre-amplifier input
6	OPIN2(–)	I	CH2 pre-amplifier inverted input
7	OPOUT2	O	CH2 pre-amplifier 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

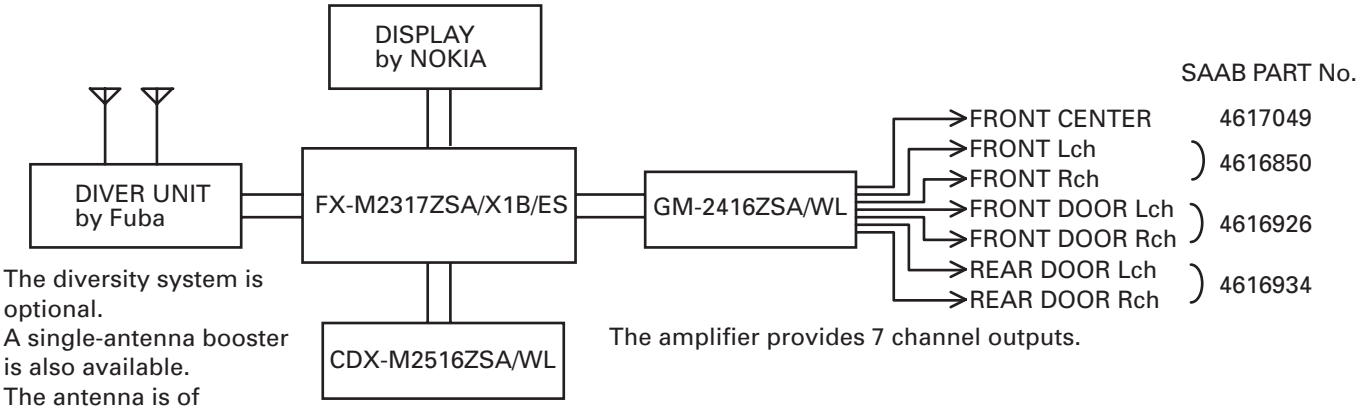


7.3 EXPLANATION

7.3.1 OPERATIONAL FLOW CHART



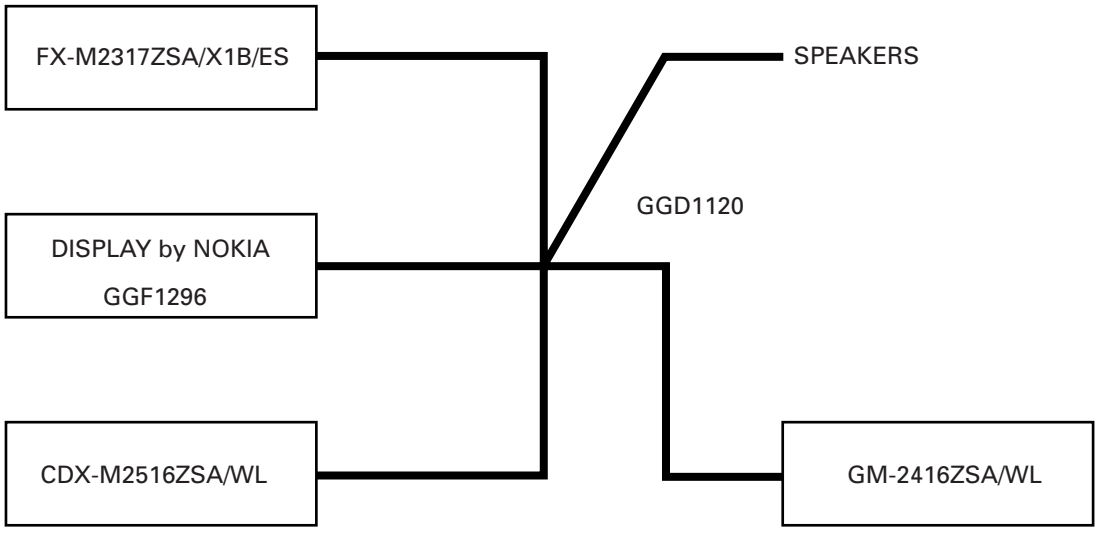
7.3.2 SYSTEM BLOCK DIAGRAM



The diversity system is optional.
A single-antenna booster is also available.
The antenna is of window-glass built-in type.

The amplifier provides 7 channel outputs.

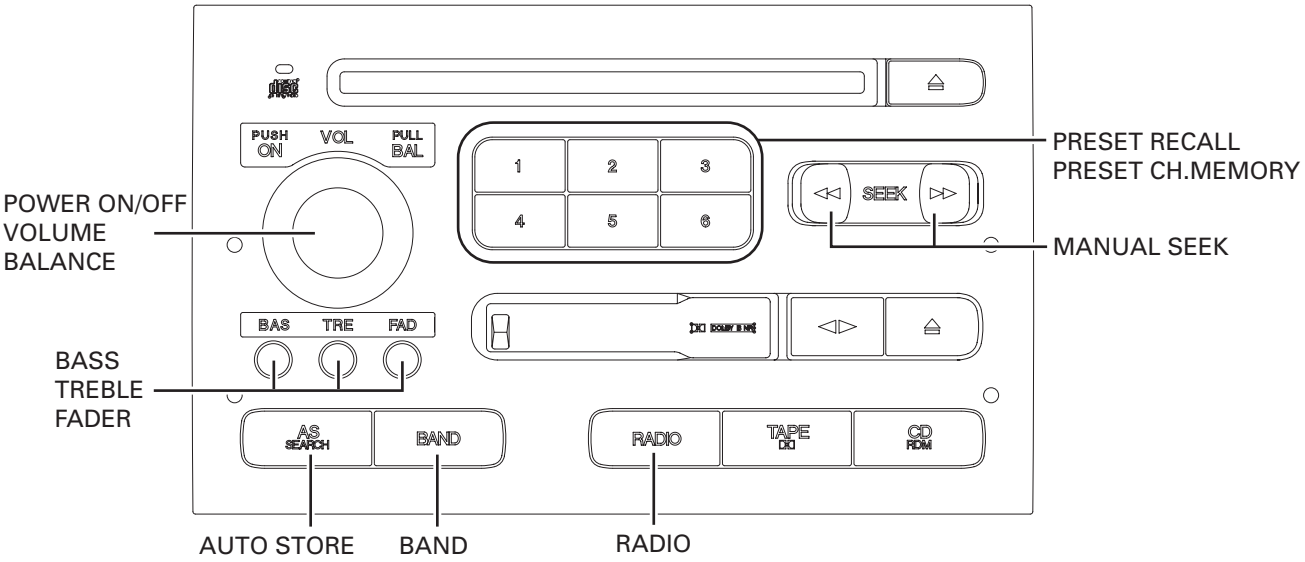
7.3.3 JIG CONNECTION DIAGRAM



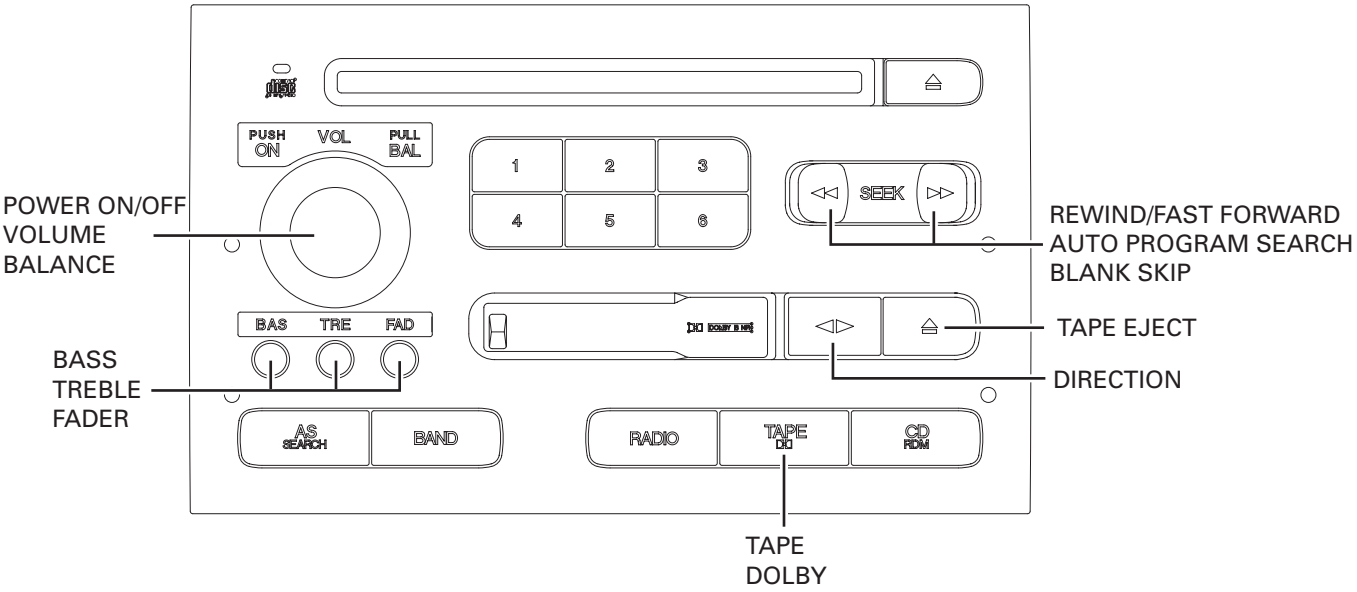
8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

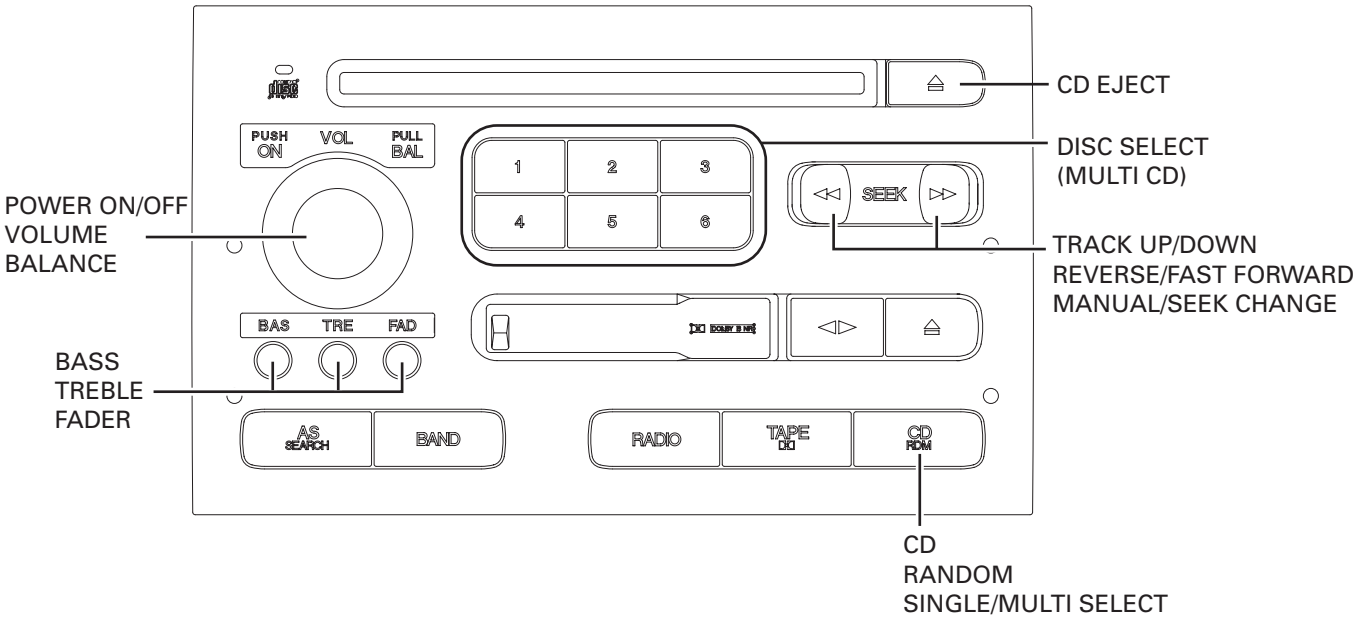
● **RADIO**



● **TAPE**



● **CD**



8.2 SPECIFICATIONS

Power source.....13.5V±0.1V
Grounding system.....Negative type
Dimensions.....195.6(W)x118.2(H)x183.5(D)mm
Weight 2280g
Backup current.....0.3mA or less

AUDIO
Tone control
Tone charact bass.....±9dB
Tone charact treble.....±9dB
Fader charact.....-30dB or less
Balance charact.....-30dB or less

CD
System .....Compact disc audio system
Usable discs .....Compact disc
Signal .....Sampling frequency:44.1kHz
Number of quantization bits:16;linear
S/N .....80dB or more
Distortion.....0.03% or less
Separation .....70dB or more

TAPE
Tape .....Compact cassette tape(C30-C90)
Tape speed .....4.76 cm/sec.(+0.14 cm/sec.,-0.05 cm/sec.)
Crosstalk .....40dB or less
Separation .....35dB or more
S/N .....45dB or more
Distortion.....2% or less

FM TUNER
Frequency .....87.5-108.0 MHz
Usable sensitivity 9dBf
S/N .....50dB or more
Distortion.....1.0% or less
Separation .....25dB or more

AM TUNER
Frequency .....531-1602 kHz(9kHz)
530-1710 kHz(10kHz)
Selectivity .....45dB or more(±9kHz)
S/N .....45dB or more
Distortion.....1.0% or less