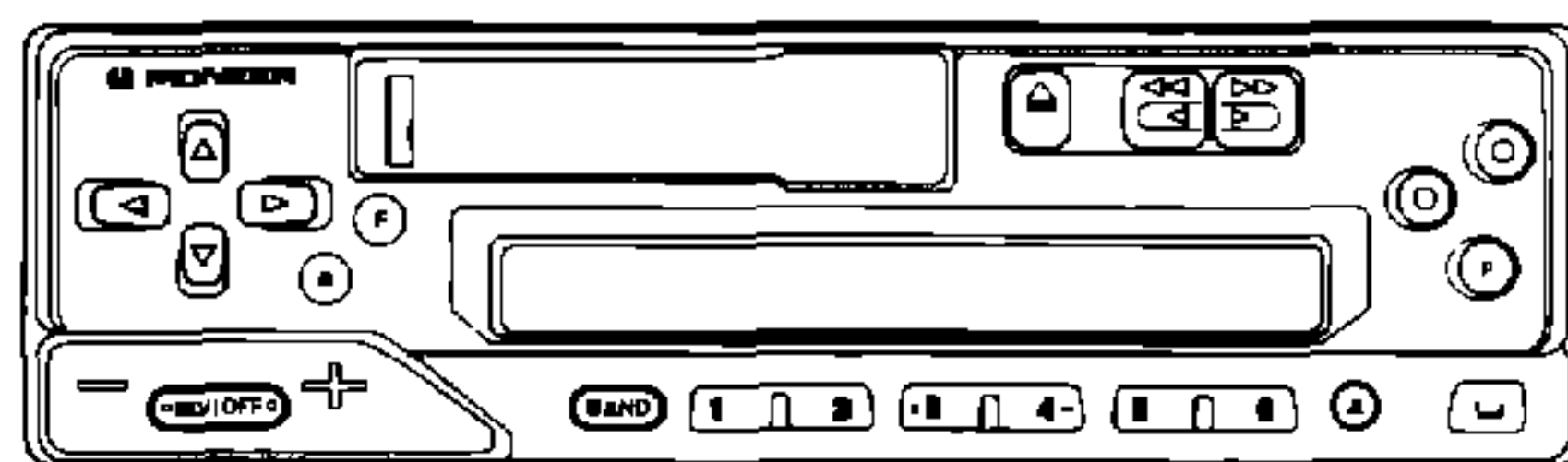


Service Manual



ORDER NO.
CRT1951

MULTI-CD CONTROL HIGH POWER CASSETTE FM/MW/LW TUNER

KEH-P16

X1M/EW

NOTE:

- See the separate manual CX-644(CRT1800) for the cassette mechanism description.
- The cassette mechanism assy employed in this model is one of X-2M series
- This model has no CD test mode.
For the operations in the CD test mode, refer to the CD player's Service Manual.

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1. SAFETY INFORMATION

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

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 501 Orchard Road, #10-00, Lane Crawford Place, Singapore 0923

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

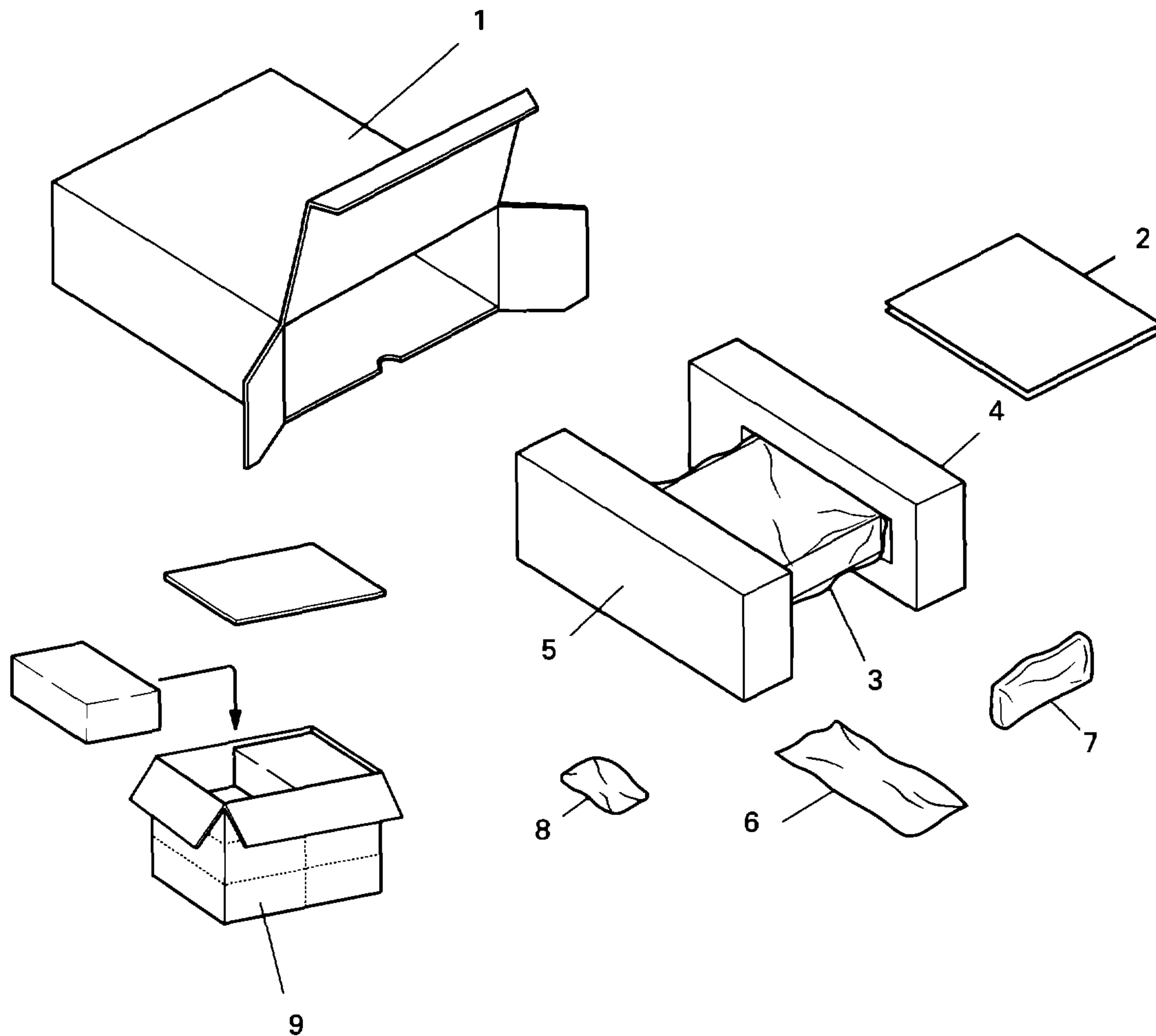


Fig. 1

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.

● **Parts List**

Mark No.	Description	Part No.
1	Carton	CHG3175
2-1	Owner's Manual	CRD2204
2-2	Owner's Manual	CRD2284
2-3	Installation Manual	CRD2205
* 2-4	Warranty Card	CRY1087
3	Polyethylene Bag	CEG-162
4	Protector	CHP1622
5	Protector	CHP1623
6	Cord Assy	CDE5342
7	Case Assy	CXB1063
8	Accessory Assy	CEA1917
9	Contain Box	CHL3175

● **Owner's Manual, Installation Manual**

Model	Part No.	Language
KEH-P16/X1M/EW	CRD2204	English, Spanish, German
	CRD2284	French, Italian, Dutch
	CRD2205	English, Spanish, German, French Italian, Dutch

● **Accessory Assy**

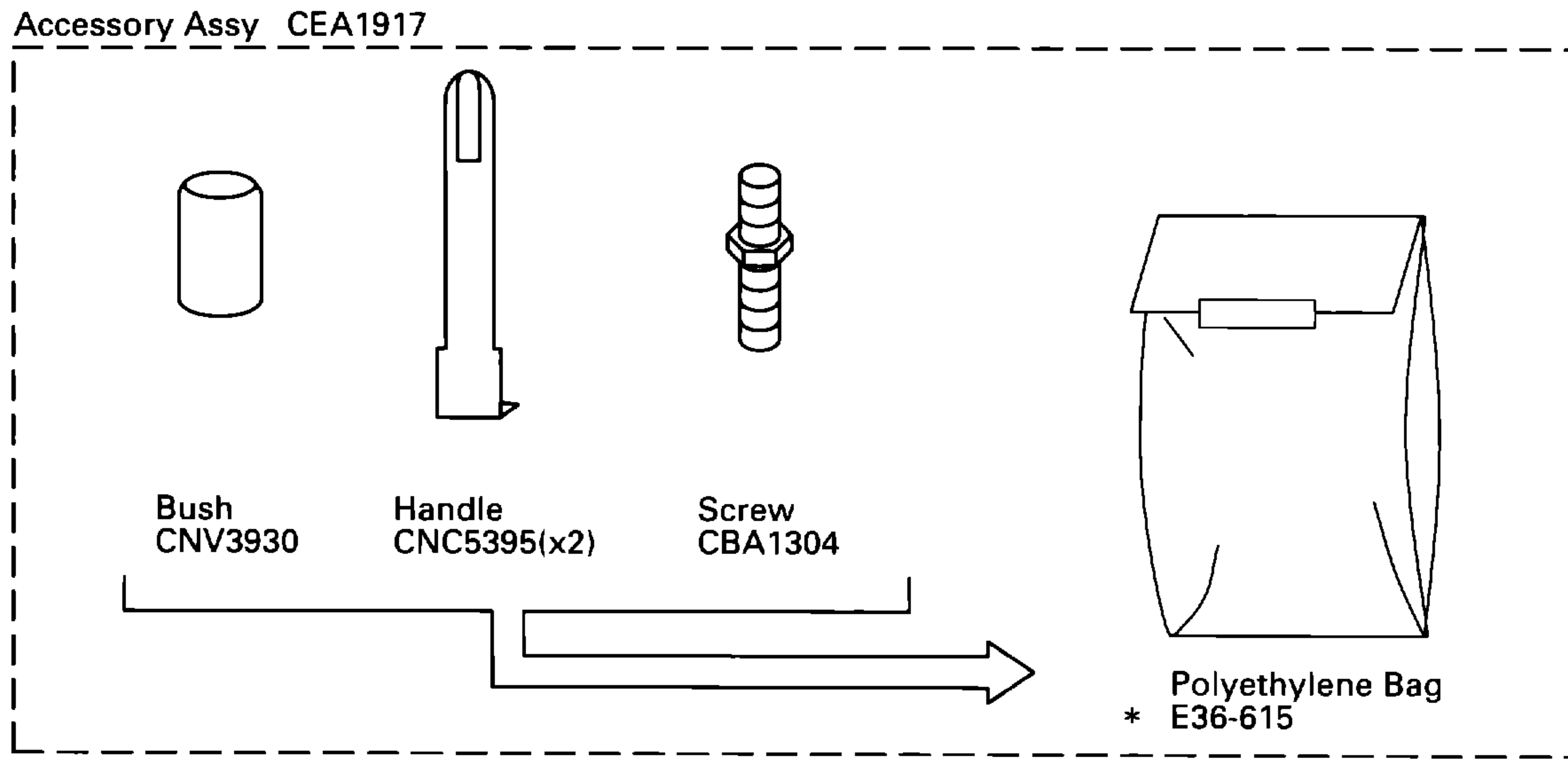


Fig. 2

2.2 EXTERIOR

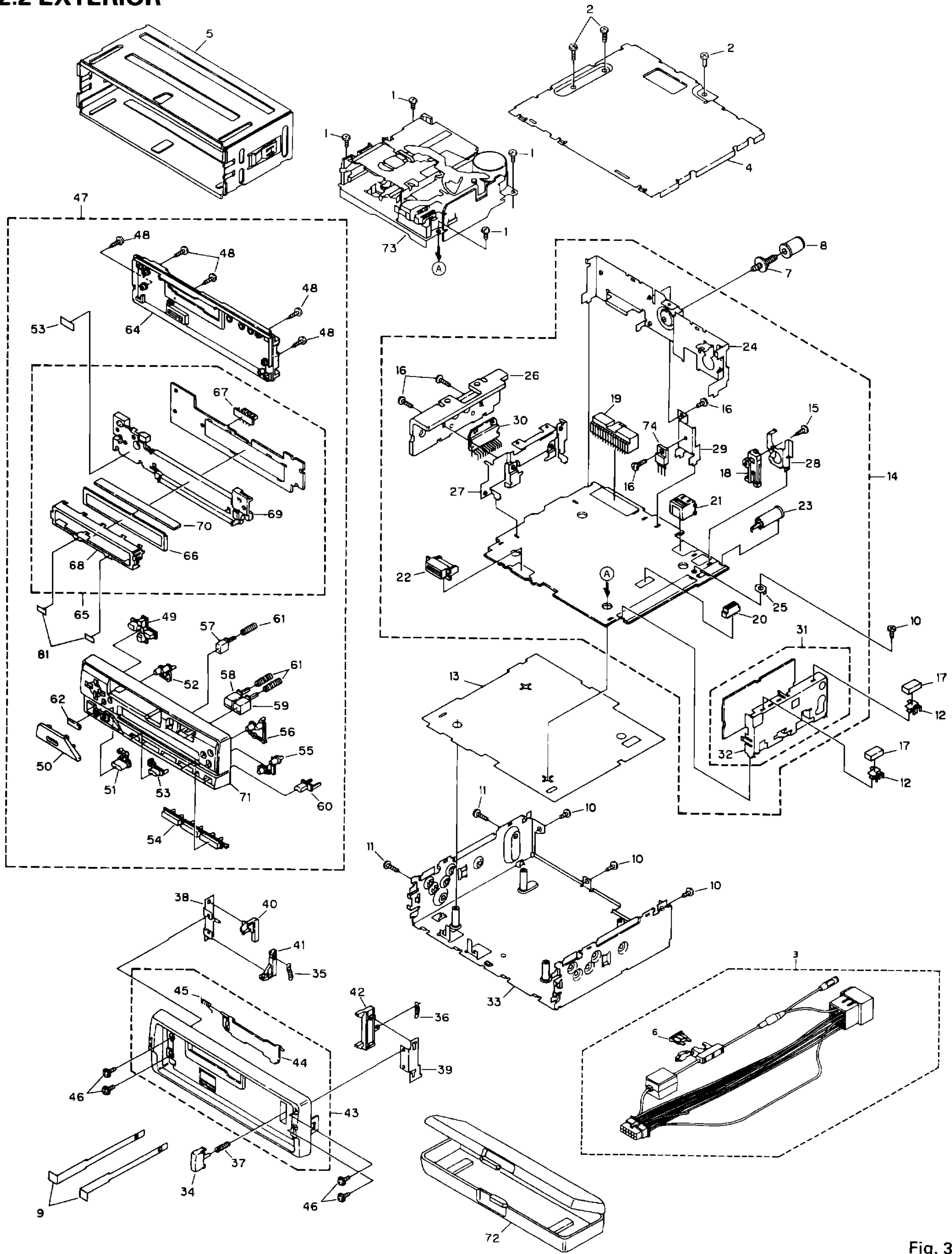


Fig. 3

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BSZ26P050FMC	46	Screw	IMS20P030FZK
2	Screw	BSZ30P100FMC	47	Detach Grille Assy	CXA9995
3	Cord Assy	CDE5342	48	Screw	BPZ20P120FZK
4	Case	CNB2074	49	Button	CAC4859
5	Holder	CNC5394	50	Button(-,+)	CAC4991
6	Fuse(10A)	CEK1136	51	Button(SOURCE)	CAC4861
7	Screw	CBA1304	52	Button(F,A)	CAC4862
8	Bush	CNV3930	53	Button(BAND)	CAC4863
9	Handle	CNC5395	54	Button(1-6)	CAC4992
10	Screw	BSZ30P060FMC	55	Button	CAC5161
11	Screw	BSZ30P100FMC	56	Button	CAC4866
12	Holder	CNC5704	57	Button(⊞)	CAC4867
13	Insulator	CNM5025	58	Button(◀◀)	CAC4868
14	Tuner Amp Unit	CWM5180	59	Button(▶▶)	CAC4869
15	.....		60	Button(⊞)	CAC4993
16	Screw	BSZ26P080FMC	61	Spring	CBH1836
17	Cushion	CNM4870	62	Cushion	CNM5156
18	.....		63	Cushion	CNM5271
19	Plug(CN601)	CKM1226	64	Cover	CNS4181
20	Connector(CN604)	CKS3362	65	Key Board Unit	CWM5190
21	Connector(CN602)	CKS3408	66	LCD(LCD901)	CAW1417
22	Connector(CN603)	CKS3581	67	Connector(CN901)	CKS3580
23	Antenna Jack(CN301)	CKX1056	68	Holder	CNC6831
24	Panel	CNB2107	69	Lighting Conductor	CNV4753
25	Holder	CNC5399	70	Connector	CNV4754
26	Heat Sink	CNC6217	71	Grille Unit	CXA9843
27	Holder	CNC6372	72	Case Assy	CXB1063
28	.....		73	Cassette Mechanism Assy	EXK3456
29	Holder	CNC6845	74	Transistor(Q801)	2SD2037
30	IC(IC501)	HA13151	75-80	.....
31	FM/AM Tuner Unit	CWE1416	81	Spacer	CNM5319
32	Holder	CNC6555			
33	Chassis Unit	CXA9856			
34	Button	CAC4836			
35	Spring	CBH1834			
36	Spring	CBH1835			
37	Spring	CBH1933			
38	Bracket	CNC6135			
39	Bracket	CNC6791			
40	Arm	CNV4692			
41	Arm	CNV4693			
42	Arm	CNV4728			
43	Panel Unit	CXA9848			
44	Door	CAT1835			
45	Spring	CBH1838			

2.3 CASSETTE MECHANISM ASSY

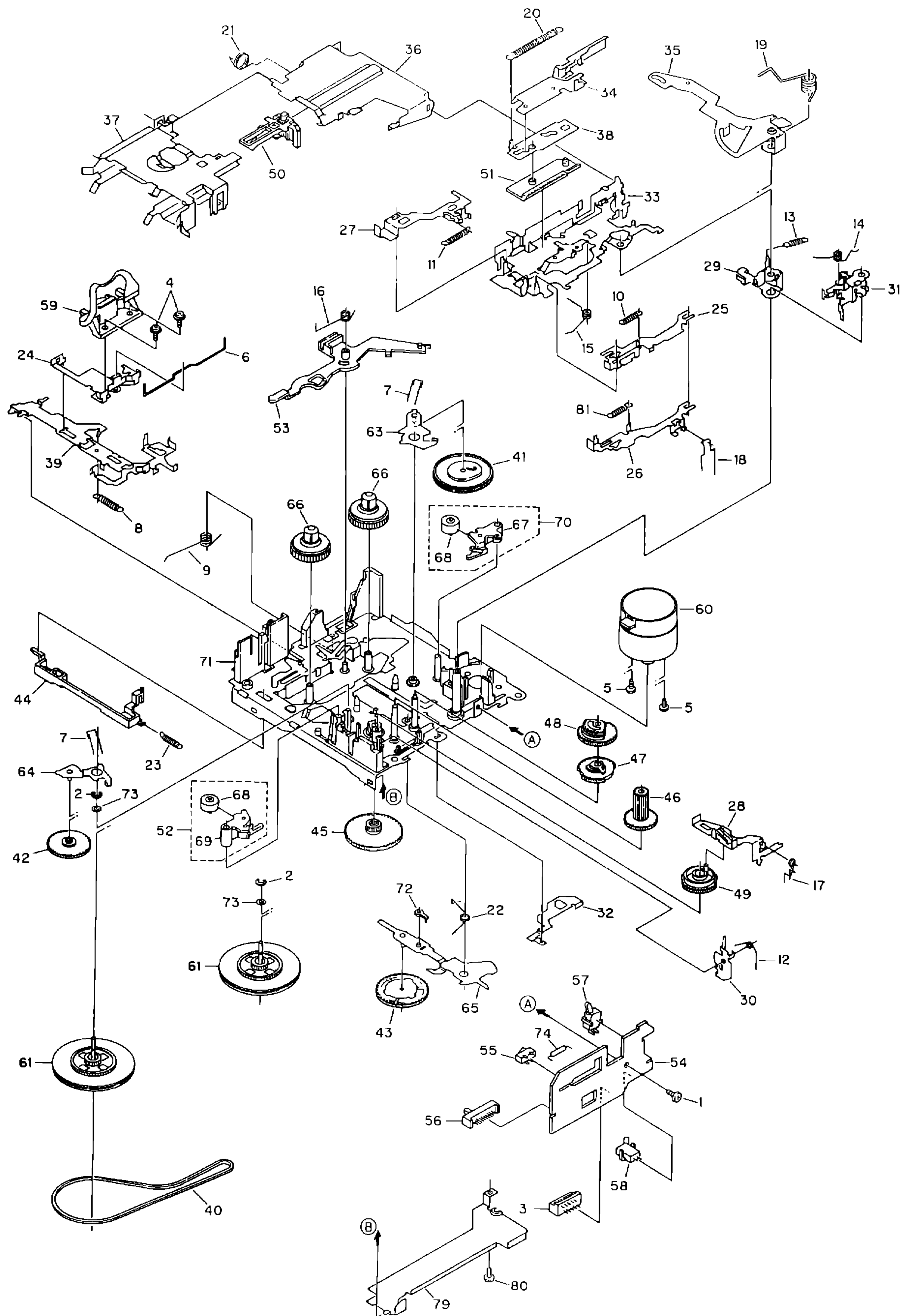


Fig. 4

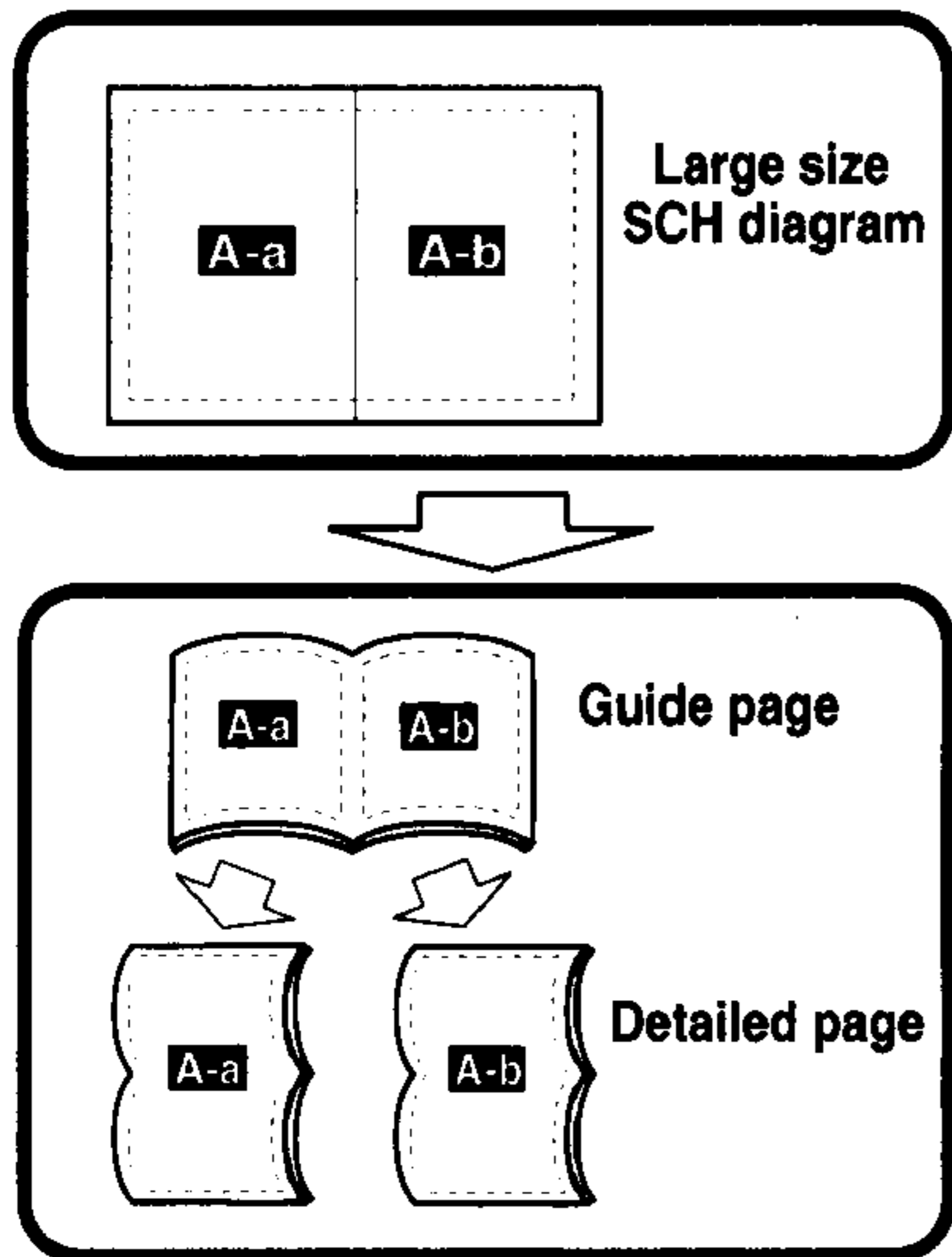
● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BSZ23P050FMC	41	Gear	ENV1504
2	Washer	CBG1003	42	Gear	ENV1470
3	Connector(CN1)	CKS2829	43	Gear	ENV1471
4	Screw(M2x5)	EBA1028	44	Lever	ENV1472
5	Screw(M2x2.5)	EBA1037	45	Gear	ENV1474
6	Spring	EBH1554	46	Gear	ENV1475
7	Spring	EBH1555	47	Gear	ENV1493
8	Spring	EBH1556	48	Gear	ENV1477
9	Spring	EBH1557	49	Gear	ENV1499
10	Spring	EBH1591	50	Lever	ENV1480
11	Spring	EBH1559	51	Lever	ENV1487
12	Spring	EBH1560	52	Pinch Holder Unit	EXA1483
13	Spring	EBH1561	53	Arm	ENV1489
14	Spring	EBH1562	* 54	P.C.Board	ENP1148
15	Spring	EBH1563	55	Switch(Eject)(S4)	ESG1002
16	Spring	EBH1590	56	Switch(FWD)(REV)(S3)	ESH1006
17	Spring	EBH1565	57	Switch(Load)(S1)	ESN1016
18	Spring	EBH1566	58	Switch(Mute)(S2)	ESN1017
19	Spring	EBH1567	59	Head Assy(HD1)	EXA1466
20	Spring	EBH1568	60	Motor Unit(M1)	EXA1467
21	Spring	EBH1569	61	Flywheel Unit	EXA1468
22	Spring	EBH1571	62	.....
23	Spring	EBH1579	63	Arm Unit	EXA1447
24	Head Base	ENC1457	64	Arm Unit	EXA1448
25	Lever	ENC1429	65	Arm Unit	EXA1449
26	Lever	ENC1430	66	Reel Unit	EXA1450
27	Lever	ENC1431	67	Pinch Holder	ENV1466
28	Lever	ENC1432	68	Pinch Roller	ENV1501
29	Arm	ENC1433	69	Pinch Holder	ENV1467
30	Arm	ENC1434	70	Pinch Holder Unit	EXA1482
31	Arm	ENC1435	71	Chassis Unit	EXA1465
32	Arm	ENC1451	72	Service Arm	EXX1048
33	Bracket	ENC1437	73	Washer	HBF-179
34	Lever	ENC1438	74	Resistor(R1)	RD1/4HM472J
35	Arm	ENC1439	75-78	.....
36	Frame	ENC1440	79	Cover	ENC1452
37	Holder	ENC1441	80	Screw	BSZ23P050FMC
38	Lever	ENC1446	81	Spring	EBH1592
39	Lever	ENC1454			
40	Belt	ENT1027			

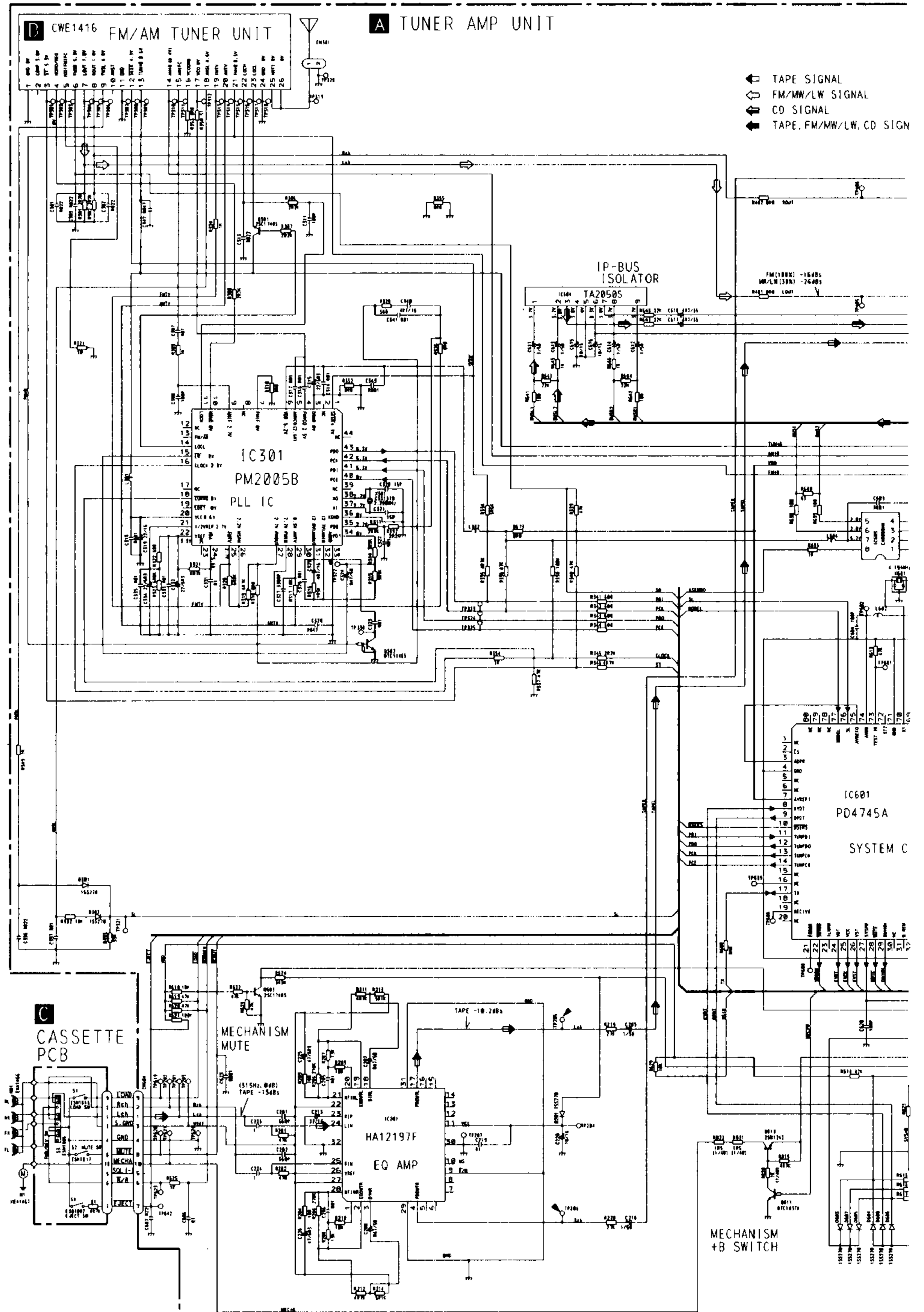
3. SCHEMATIC DIAGRAM

3.1 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-b

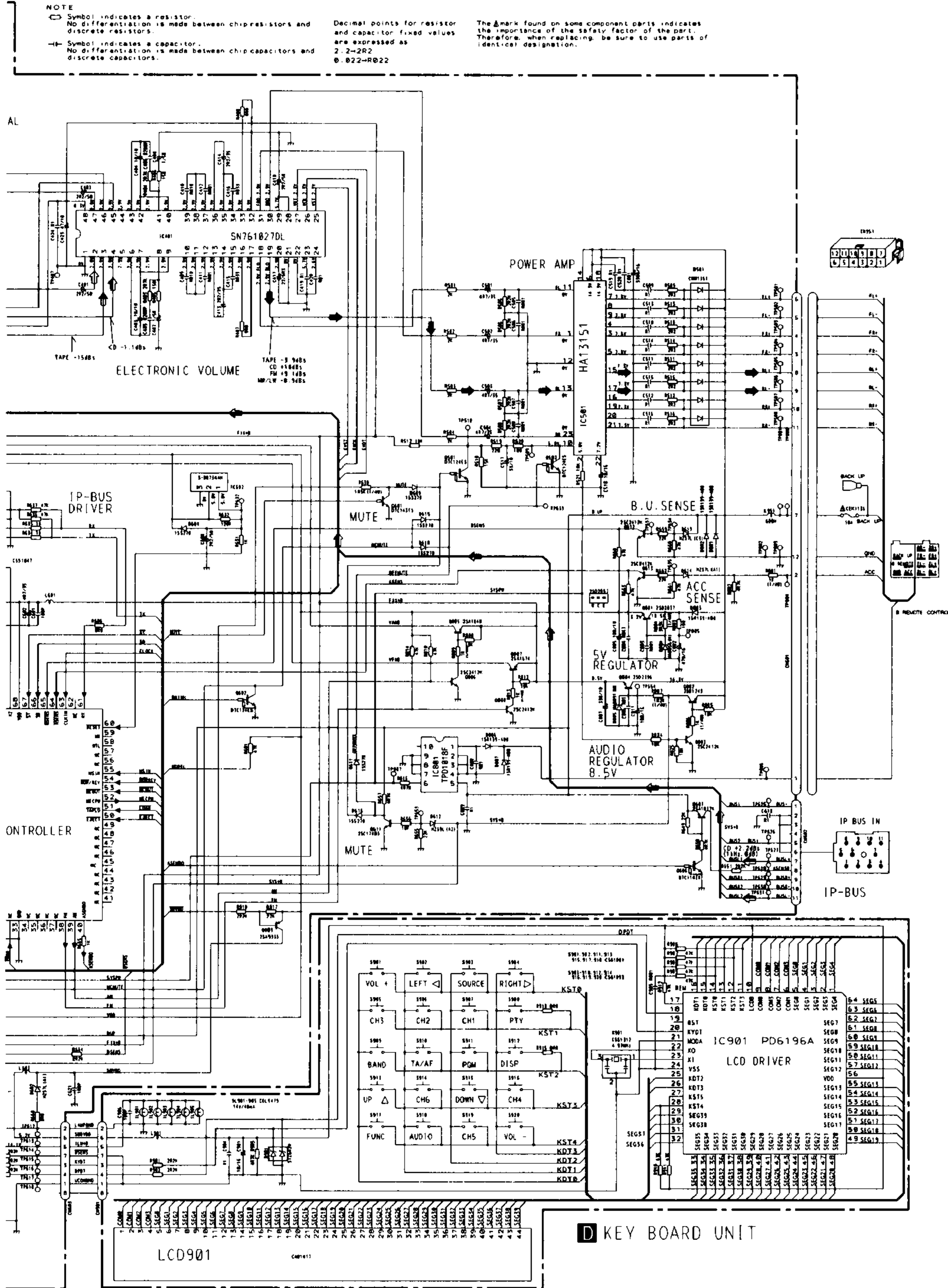
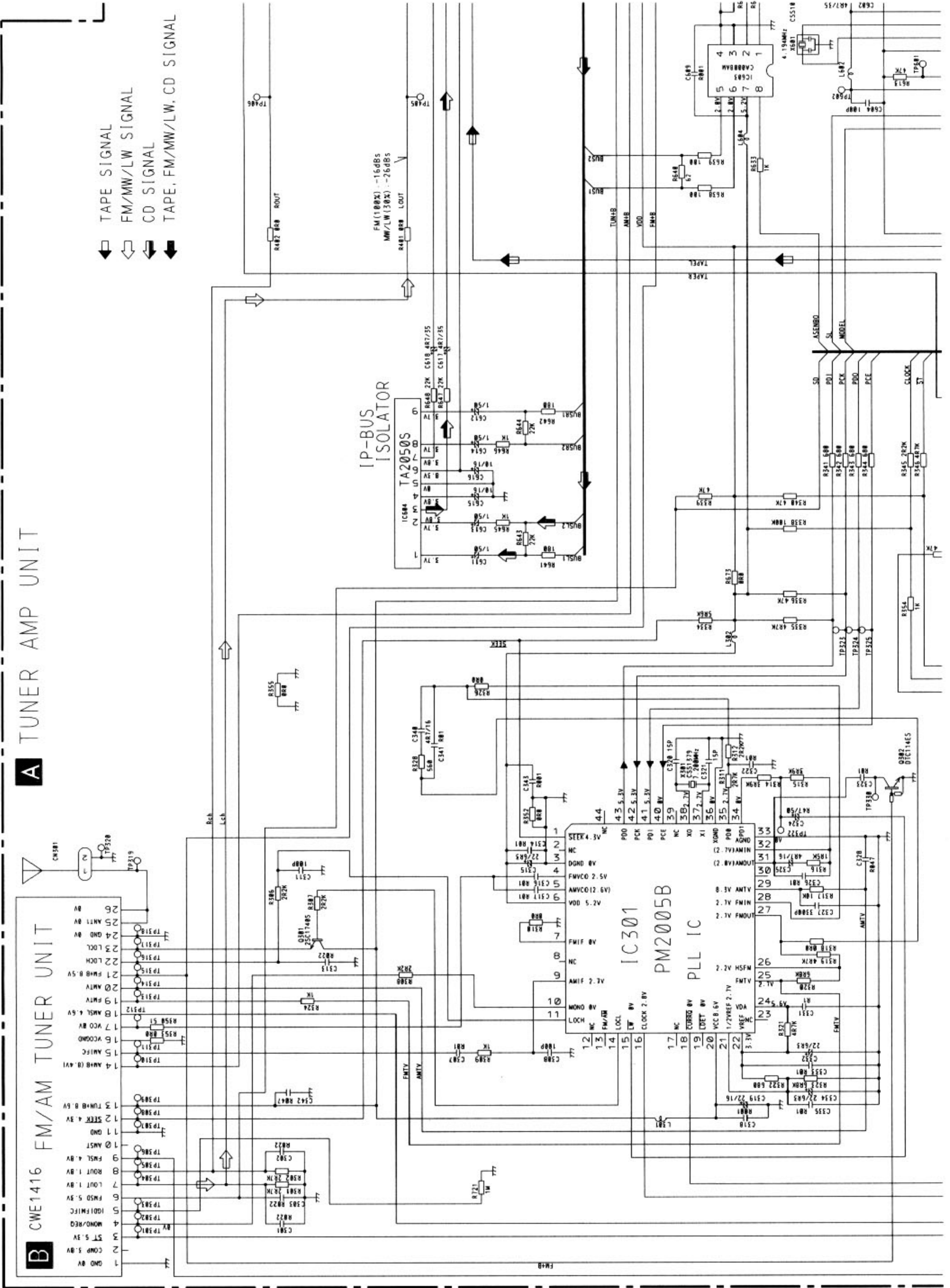


Fig. 5

A-a

A TUNER AMP UNIT

B CWE1416 FM/AM TUNER UNIT



- ▶ TAPE SIGNAL
- ◀ FM/MW/LW SIGNAL
- ◀ CD SIGNAL
- ▶ TAPE, FM/MW/LW, CD SIGNAL

IP-BUS ISOLATOR

IC301
PM2005B
PLL IC

IC604
TA2050S

FM18

A-a

A-a A-b

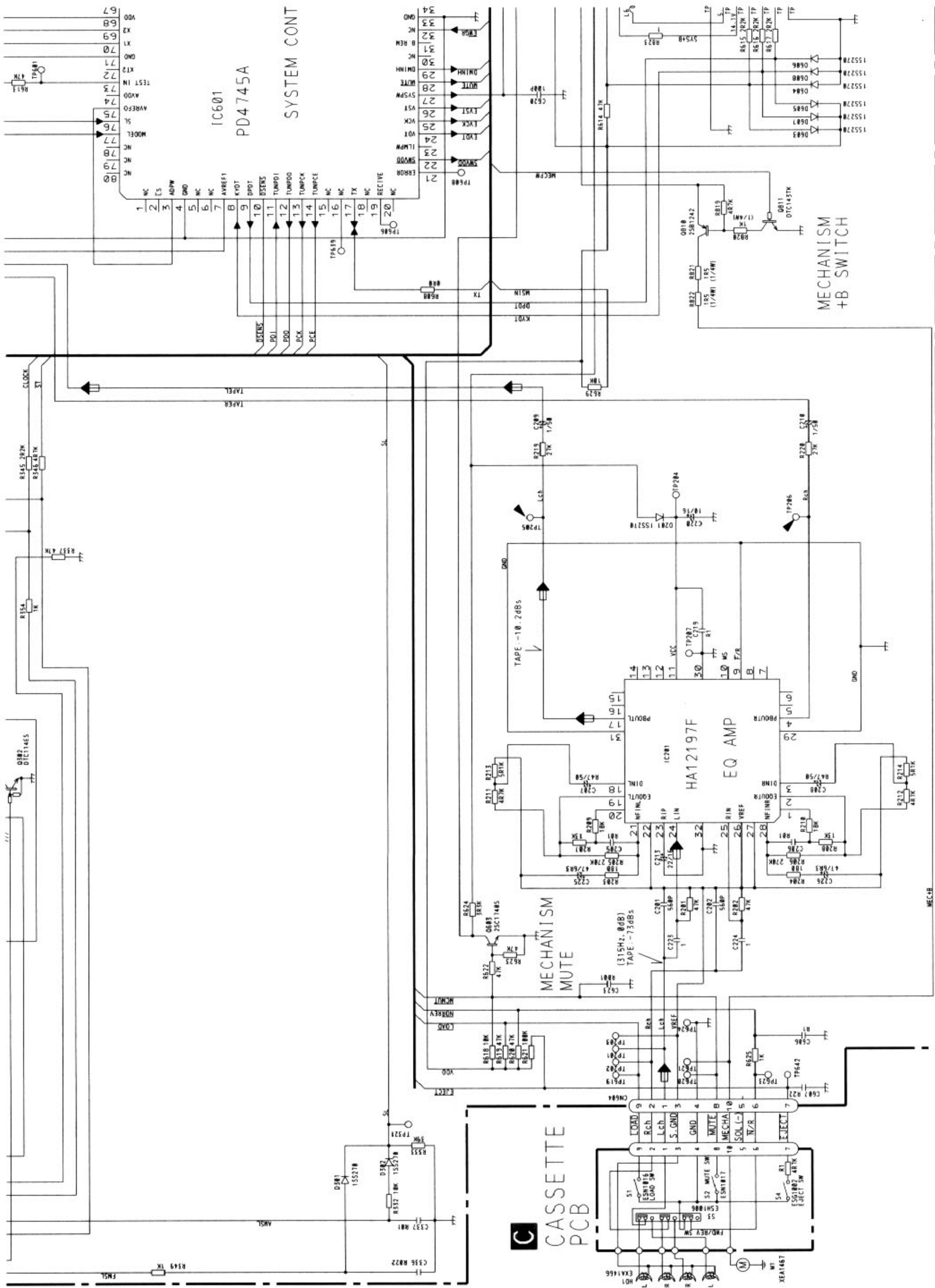


Fig. 6

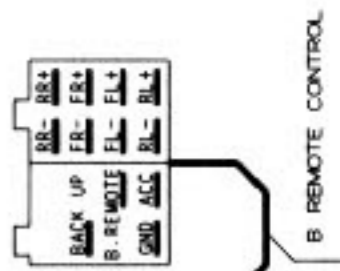
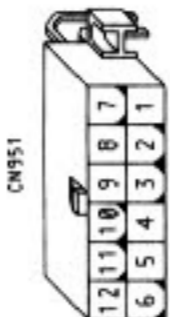
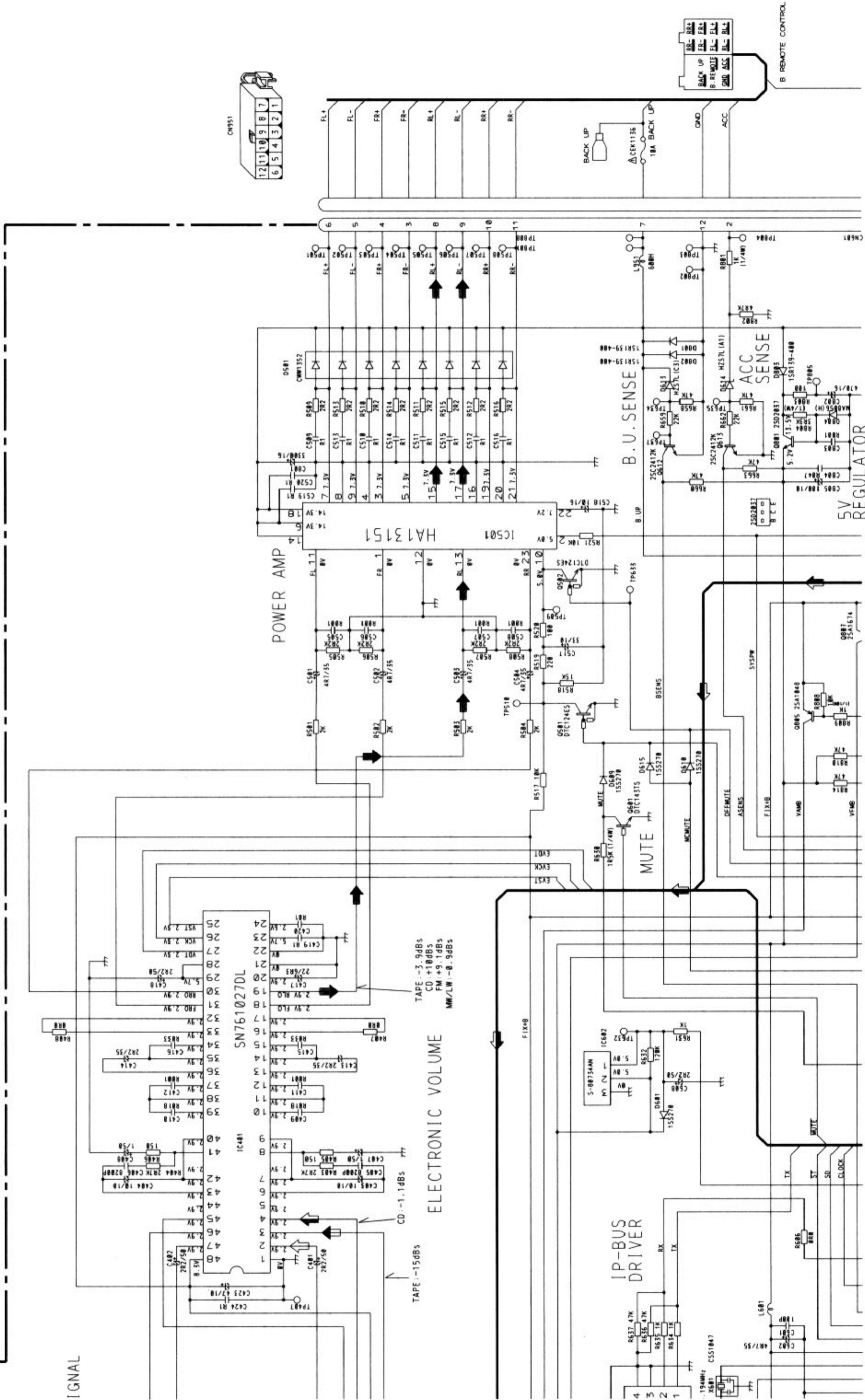
A-a

NOTE 1: Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.

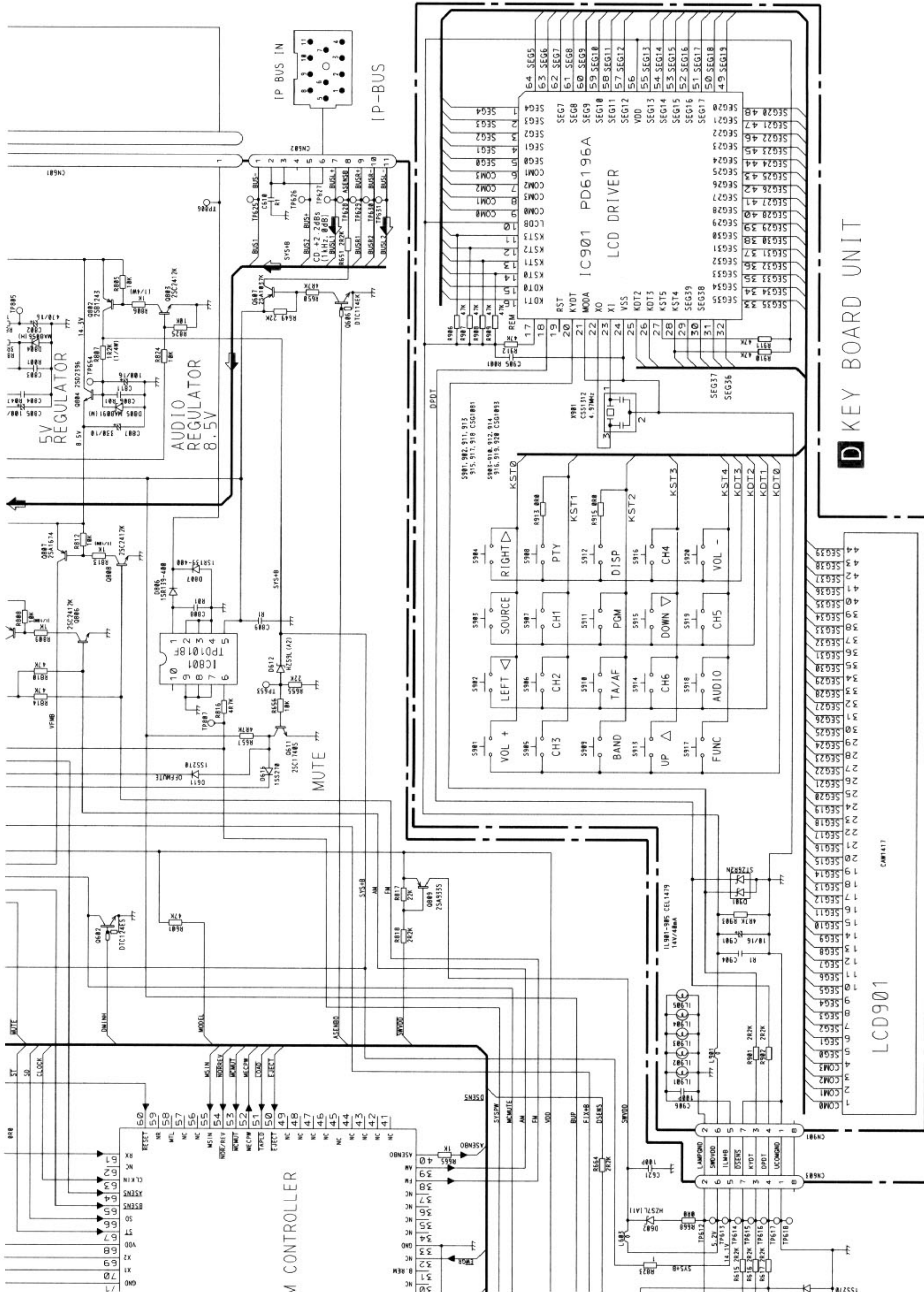
NOTE 2: Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

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

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



A-a A-b



D KEY BOARD UNIT

LCD901

Fig. 7

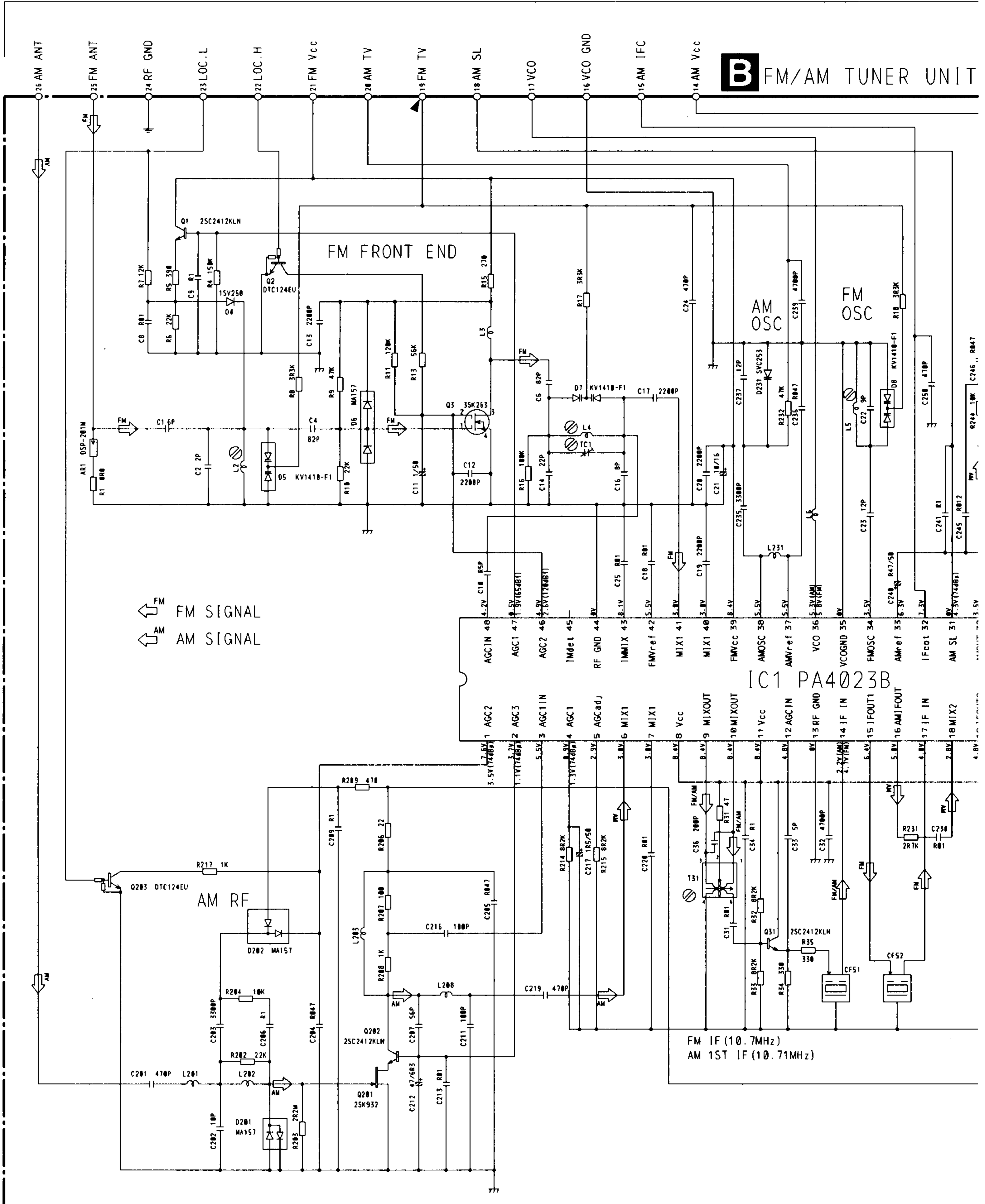
A-b

3.2 FM/AM TUNER UNIT

A

B

FM/AM TUNER UNIT



FM SIGNAL
 AM SIGNAL

IC1 PA4023B

FM IF (10.7MHz)
 AM 1ST IF (10.71MHz)

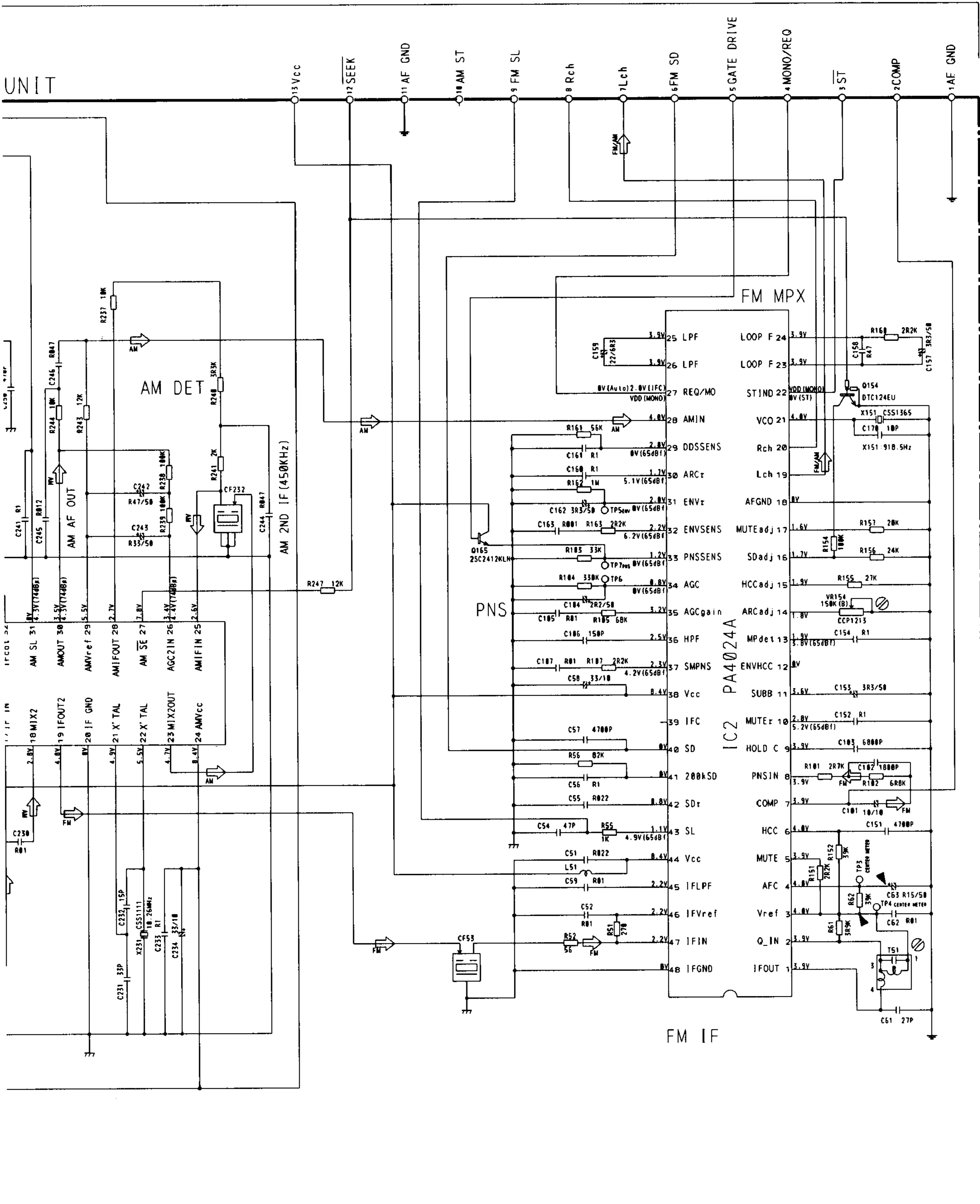


Fig. 8

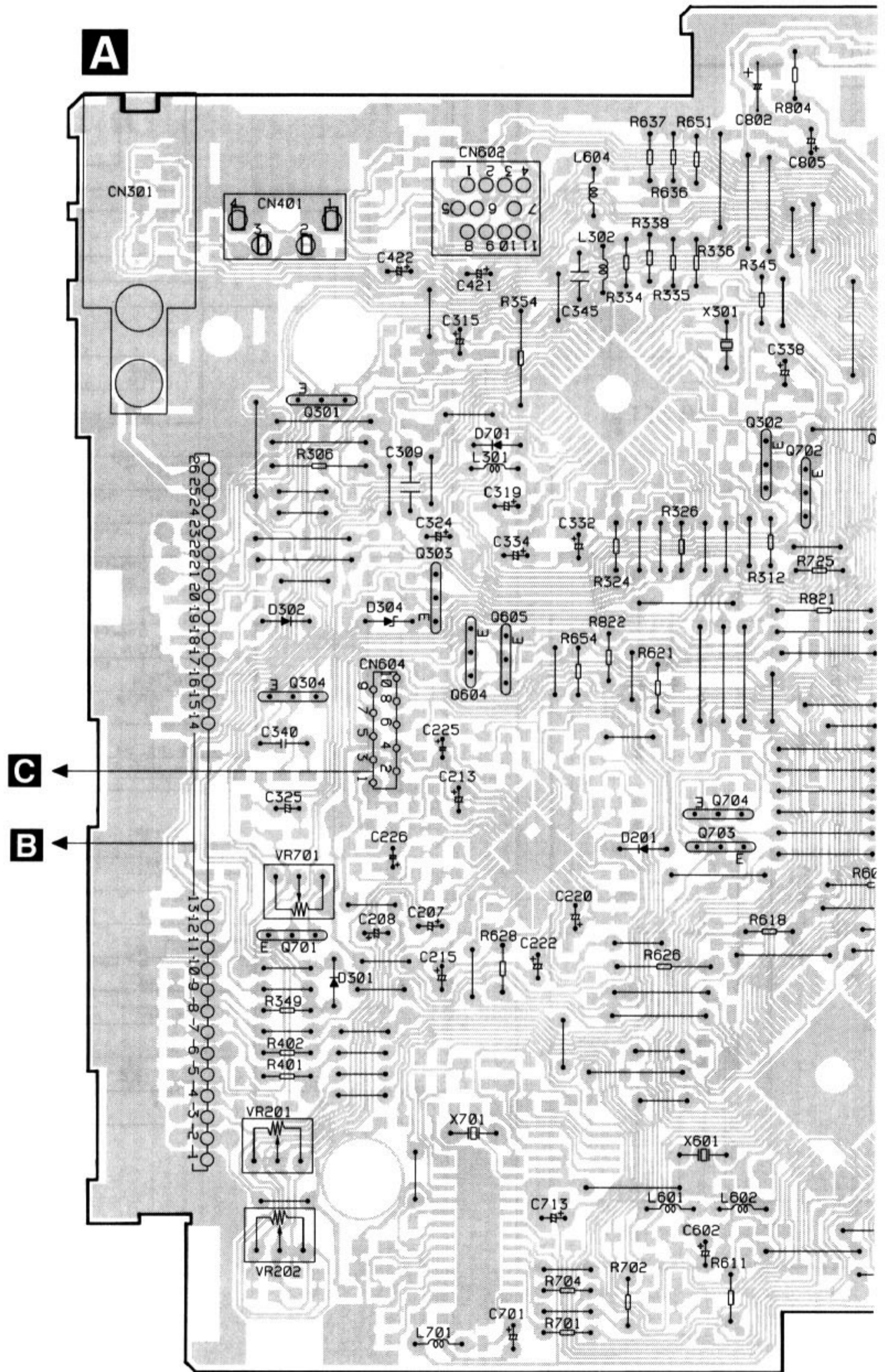
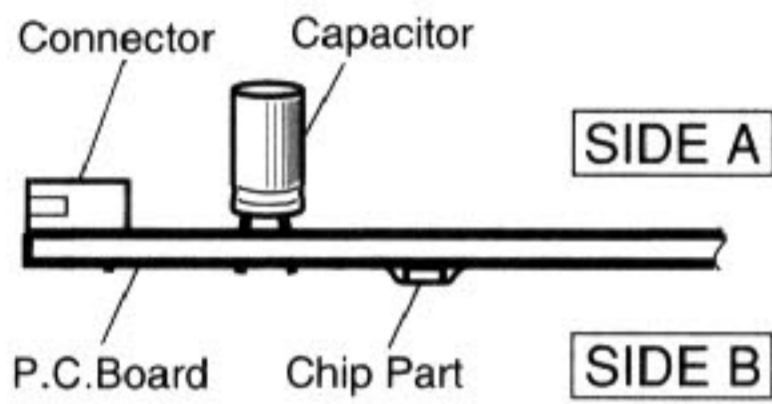


4. PCB CONNECTION DIAGRAM

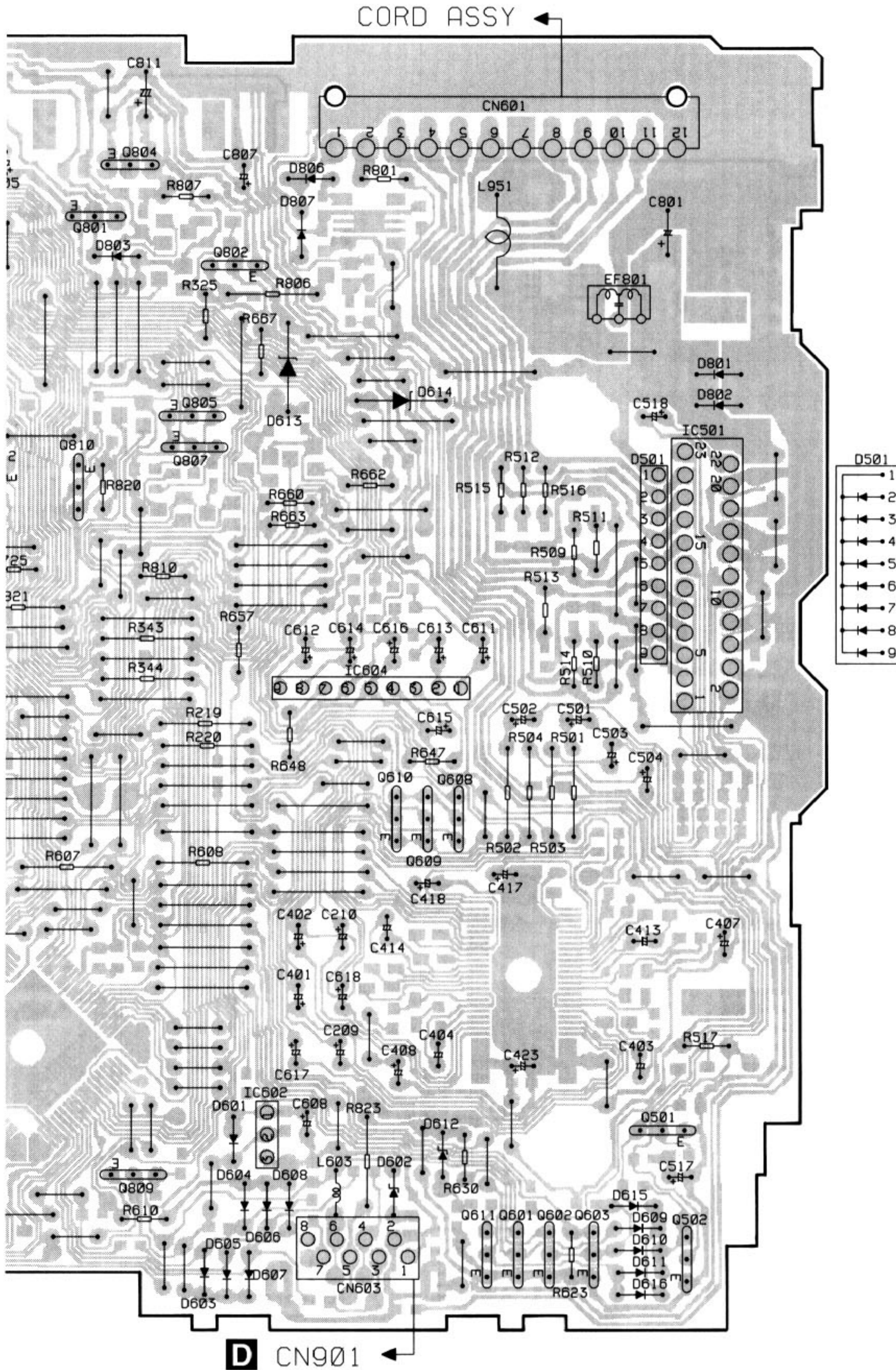
4.1 TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

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



SIDE A

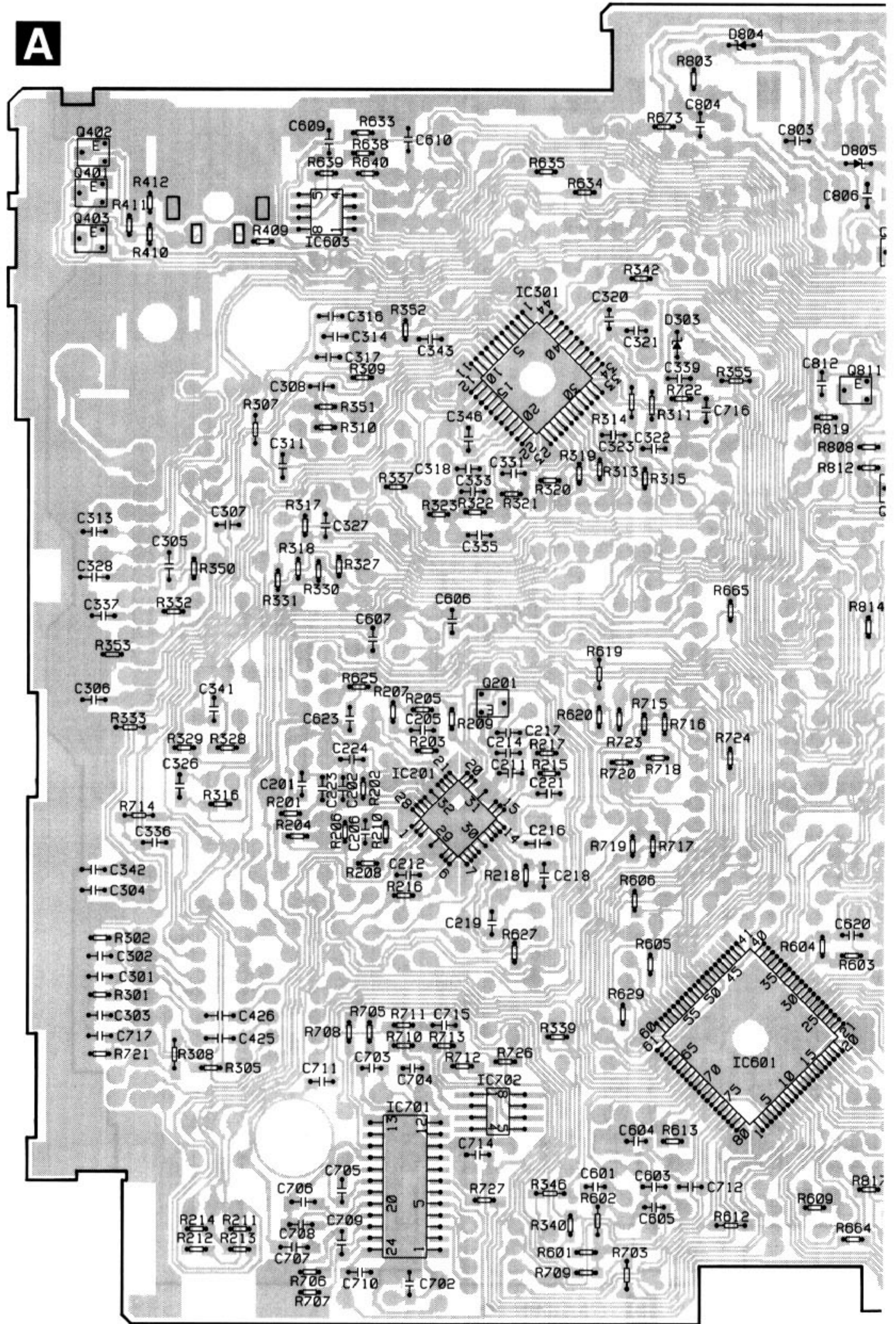


ADJ	IC. Q
	Q804
	Q801
	Q802
	Q301 Q805
	Q302 Q810
	Q702 Q807
	Q303
	Q605
	Q304 IC604
	Q604
	Q610 Q608
	Q704
	Q703
VR701	Q609
	Q701
VR201	IC602
	Q501
	Q809
VR202	Q611 Q603
	Q602 Q601
	Q502

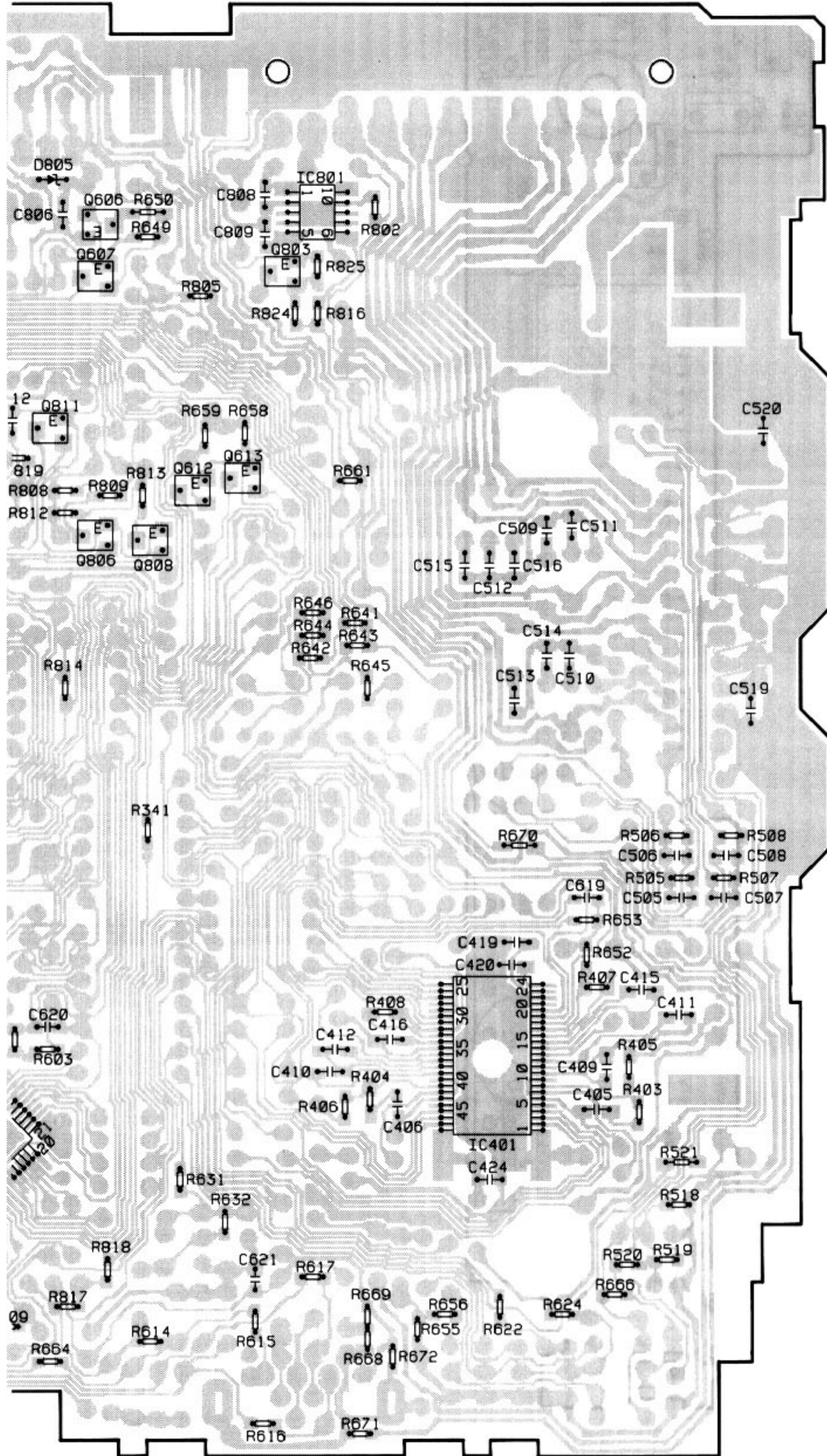
Fig. 9

A

A



A



IC. Q **SIDE B**

Q402
IC801
Q606
Q401
Q403
Q607 Q803
IC603

IC301 Q811
Q613 IC501
Q612

Q806
Q808

Q201

IC201

IC601
IC401

IC702

IC701

Fig. 10

4.2 KEY BOARD UNIT

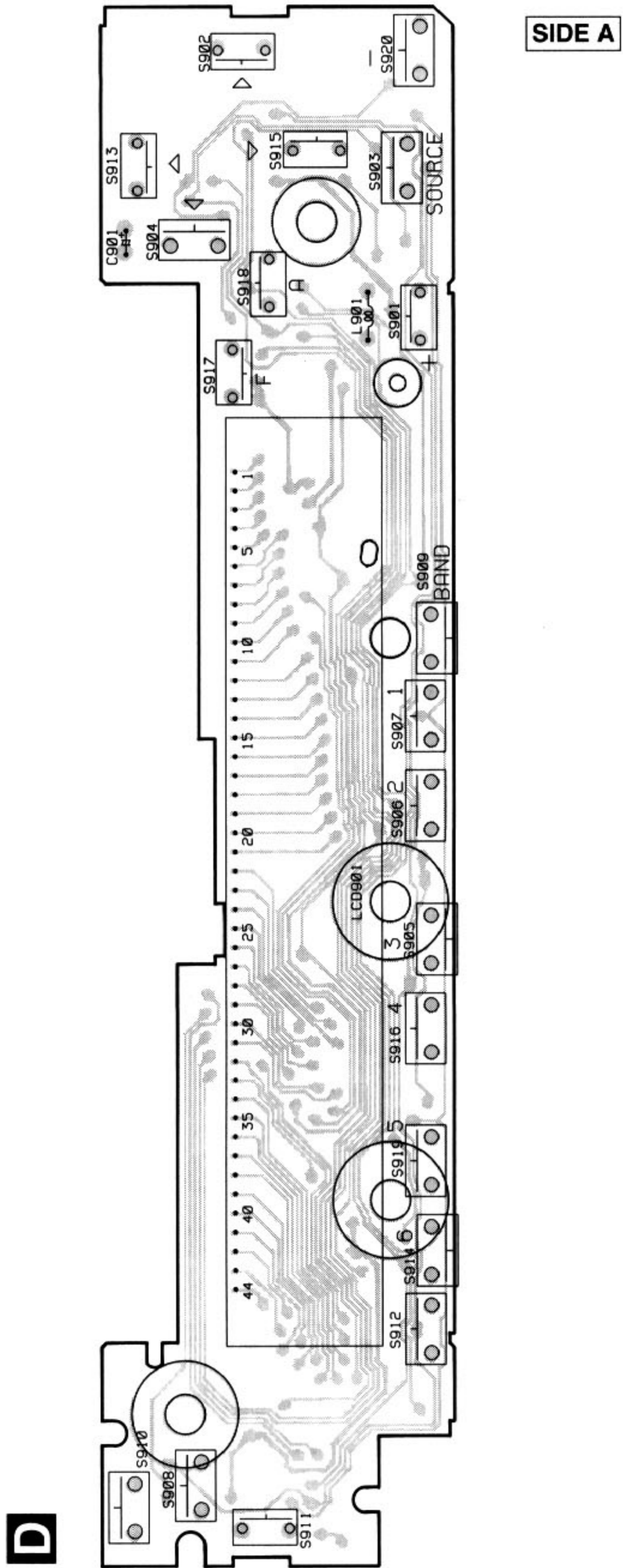


Fig. 11

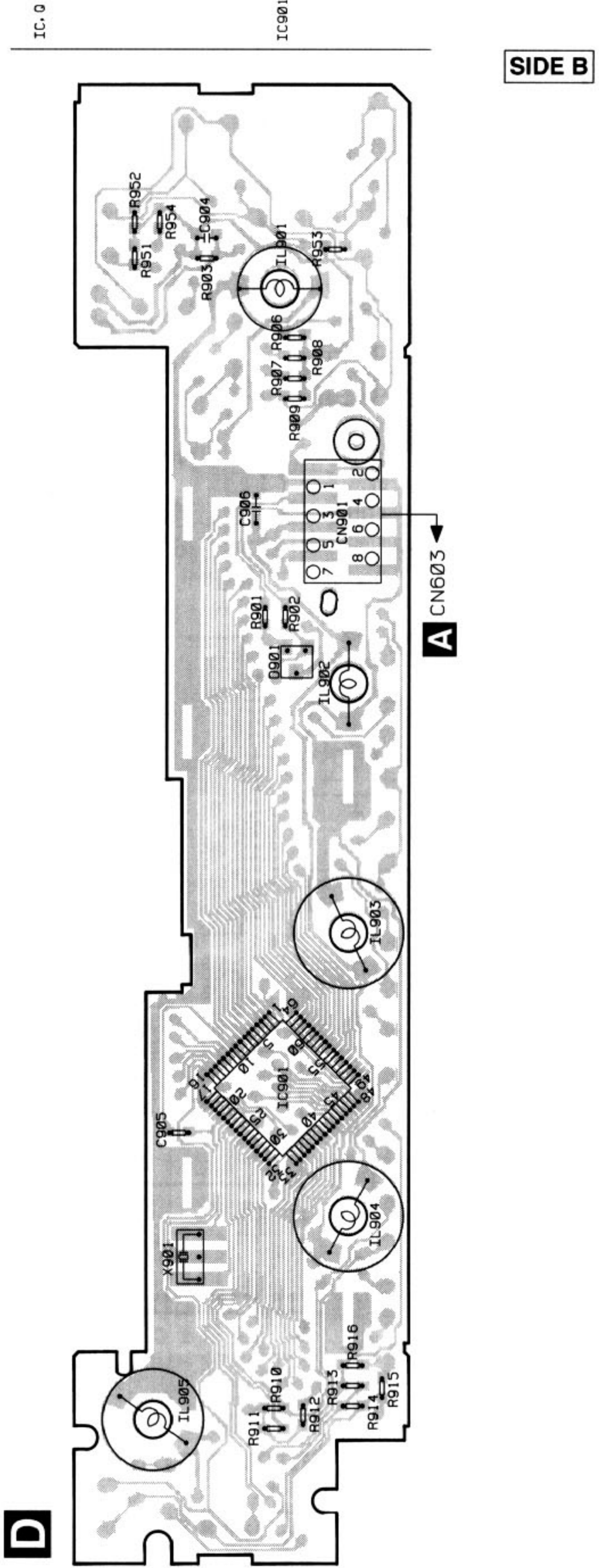


Fig. 12

4.3 FM/AM TUNER UNIT

SIDE A

22

B

B

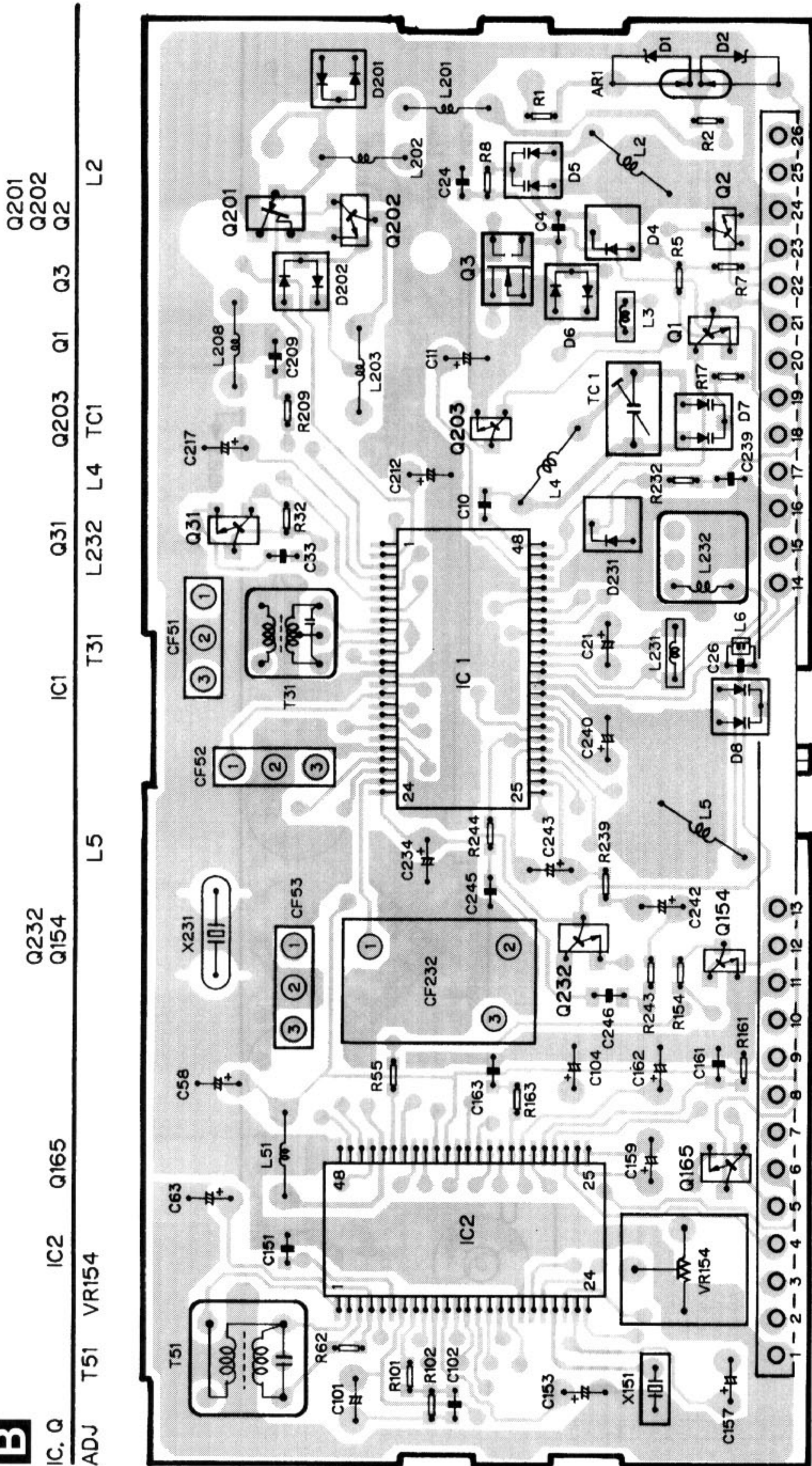
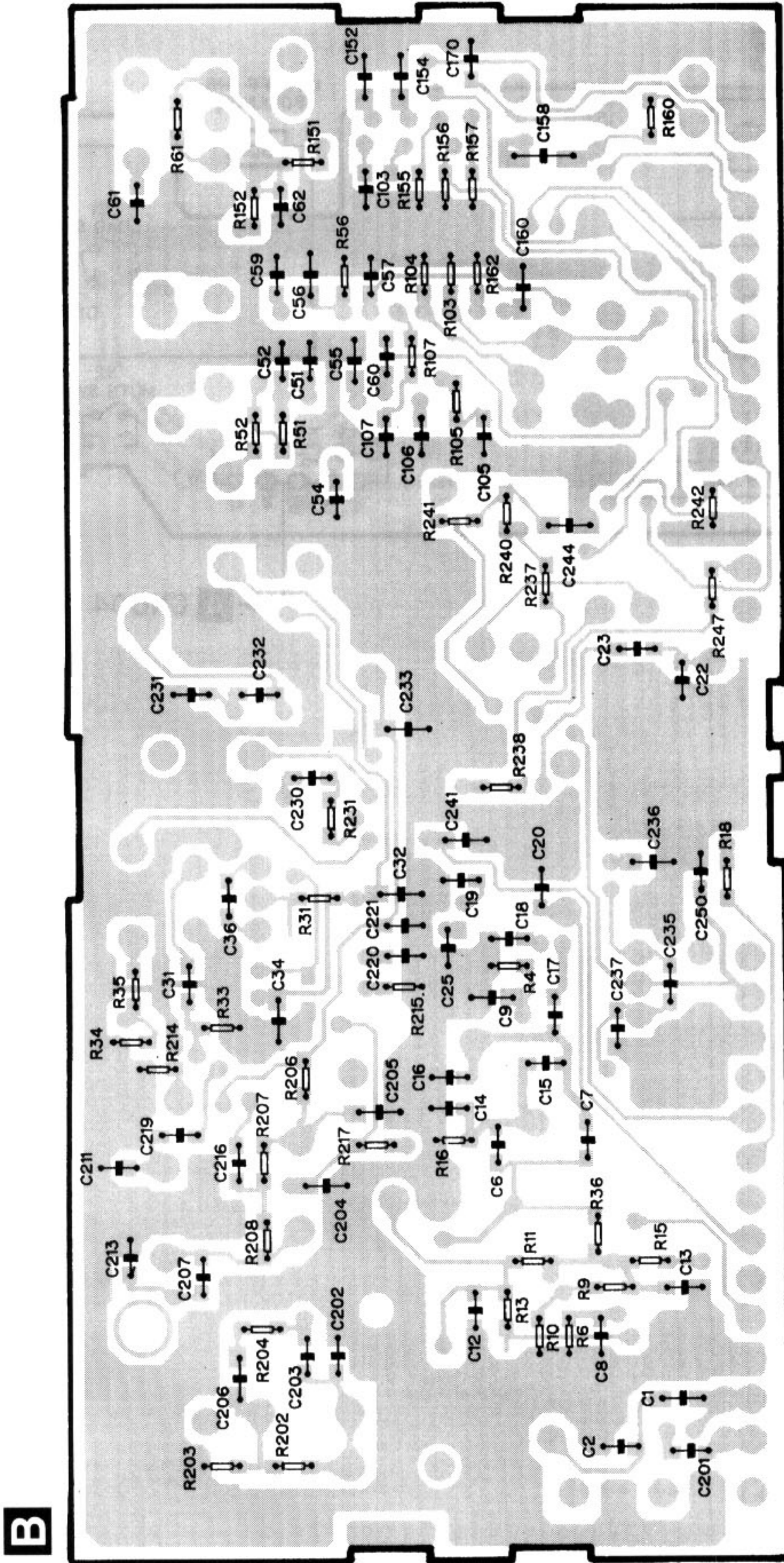


Fig. 13

SIDE B



B

Fig. 14

B

4.4 CASSETTE PCB

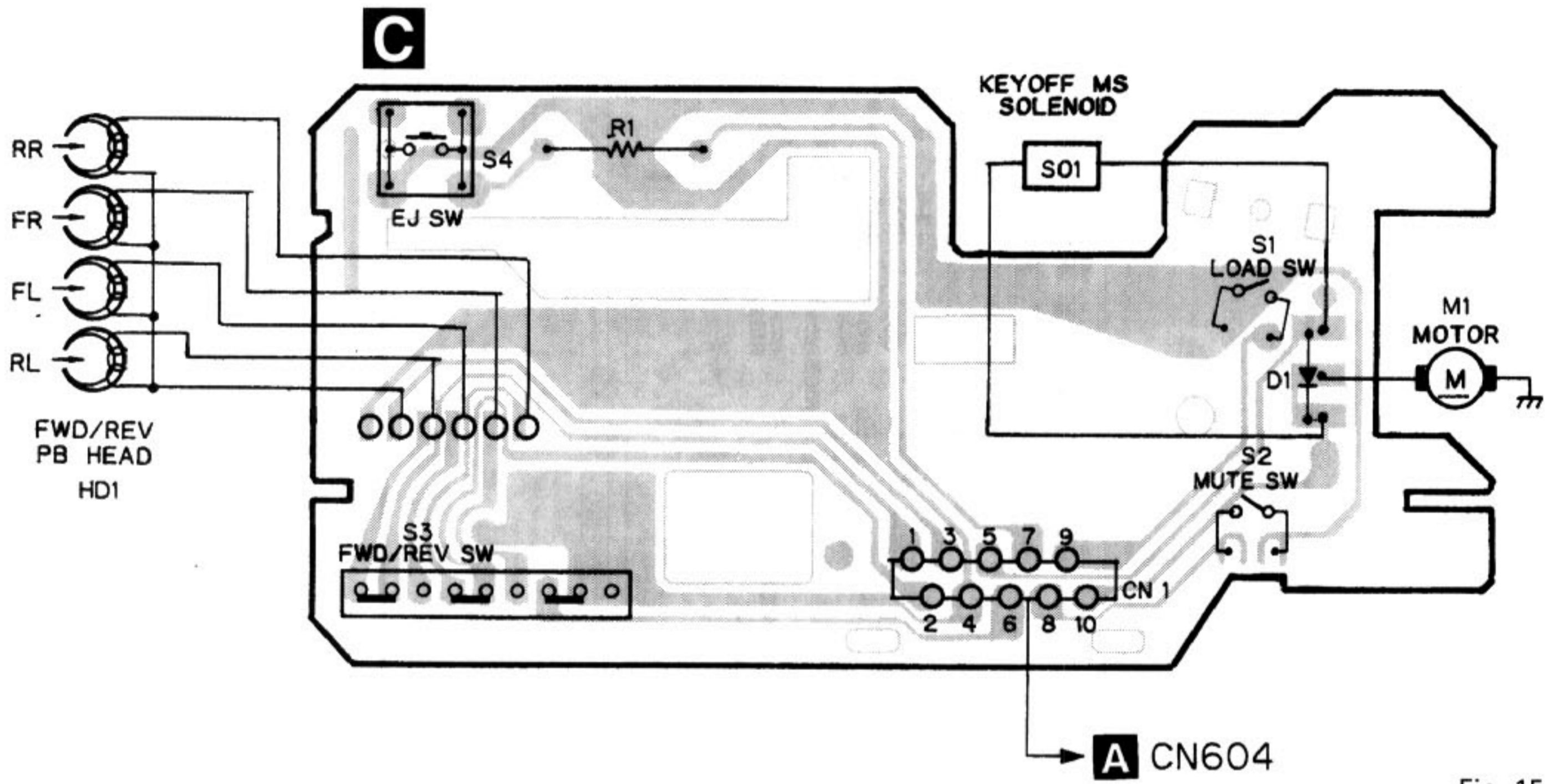


Fig. 15

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/OS○○○○J,RS1/○○S○○○○J

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

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

====Circuit Symbol & No.====Part Name	Part No.	====Circuit Symbol & No.====Part Name	Part No.
B Unit Number : CWE1416		R 8	RS1/16S332J
Unit Name : FM/AM Tuner Unit		R 9	RS1/16S473J
MISCELLANEOUS		R 10	RS1/16S223J
IC 1 IC	PA4023B	R 11	RS1/16S124J
IC 2 IC	PA4024A	R 13	RS1/16S563J
Q 1 Transistor	2SC2412KLN	R 15	RS1/16S271J
Q 2 Transistor	DTC124EU	R 16	RS1/16S104J
Q 3 FET	3SK263	R 17	RS1/16S332J
		R 18	RS1/16S332J
		R 31	RS1/16S470J
Q 31 Transistor	2SC2412KLN		
Q 154 Transistor	DTC124EU	R 32	RS1/16S822J
Q 165 Transistor	2SC2412KLN	R 33	RS1/16S822J
Q 201 FET	2SK932	R 34	RS1/16S331J
Q 202 Transistor	2SC2412KLN	R 35	RS1/16S331J
		R 51	RS1/16S271J
Q 203 Transistor	DTC124EU		
D 4 Diode	1SV250	R 52	RS1/16S560J
D 5 Diode	KV1410-F1	R 55	RS1/16S102J
D 6 Diode	MA157	R 56	RS1/16S823J
D 7 Diode	KV1410-F1	R 61	RS1/16S392J
		R 62	RS1/16S393J
D 8 Diode	KV1410-F1		
D 201 Diode	MA157	R 101	RS1/16S272J
D 202 Diode	MA157	R 102	RS1/16S682J
D 231 Diode	SVC253	R 103	RS1/16S333J
L 2 Coil	CTC1108	R 104	RS1/16S334J
		R 105	RS1/16S683J
L 3 Inductor	LCTB2R2K2125		
L 4 Coil	CTC1108	R 107	RS1/16S222J
L 5 Coil	CTC1107	R 151	RS1/16S222J
L 6 Inductor	LCTBR15K1608	R 152	RS1/16S393J
L 51 Ferri-Inductor	LAU150K	R 154	RS1/16S104J
		R 155	RS1/16S273J
L 201 Ferri-Inductor	LAU4R7K		
L 202 Ferri-Inductor	LAU330K	R 156	RS1/16S243J
L 203 Inductor	CTF1287	R 157	RS1/16S203J
L 208 Inductor	LAU121K	R 160	RS1/16S222J
L 231 Inductor	LCTA3R3J3225	R 161	RS1/16S563J
		R 162	RS1/16S105J
T 31 Coil	CTE1116		
T 51 Coil	CTC1136	R 163	RS1/16S222J
TC 1 Capacitor	CCL1038	R 202	RS1/16S223J
CF 51 Ceramic Filter	CTF1292	R 203	RS1/16S225J
CF 52 Ceramic Filter	CTF1292	R 204	RS1/16S103J
		R 206	RS1/16S220J
CF 53 Ceramic Filter	CTF1292		
CF 232 Ceramic Filter	CTF1348	R 207	RS1/16S101J
X 151 Resonator 920.5kHz	CSS1365	R 208	RS1/16S102J
X 231 Crystal Resonator 10.26MHz	CSS1111	R 209	RS1/16S471J
VR 154 Semi-fixed 150kΩ(B)	CCP1213	R 214	RS1/16S822J
		R 215	RS1/16S822J
AR 1 Capacitor with Discharge Gap	DSP-201M		
RESISTORS		R 217	RS1/16S102J
		R 231	RS1/16S272J
		R 232	RS1/16S473J
R 1	RS1/16S0R0J	R 237	RS1/16S103J
R 4	RS1/16S154J	R 238	RS1/16S104J
R 5	RS1/16S391J		
R 6	RS1/16S223J	R 239	RS1/16S104J
R 7	RS1/16S123J	R 240	RS1/16S332J
		R 241	RS1/16S202J
		R 243	RS1/16S123J
		R 244	RS1/16S103J

====Circuit Symbol & No.====Part Name	Part No.	====Circuit Symbol & No.====Part Name	Part No.
R 247	RS1/16S123J	C 212	CEJA470M6R3
CAPACITORS		C 213	CKSRYB103K25
C 1	CCSQCH6R0D50	C 216	CCSRCH101J50
C 2	CCSRCK2R0C50	C 217	CEJA1R5M50
C 4	CCSRCH820J50	C 219	CCSRCH471J50
C 6	CCSRCH820J50	C 220	CKSRYB103K25
C 8	CKSRYB103K25	C 230	CKSRYB103K25
C 9	CKSQYB104K16	C 231	CCSRCH330J50
C 10	CCSRCKR50C50	C 232	CCSRCH150J50
C 11	CEJA1R0M50	C 233	CKSQYB104K16
C 12	CKSRYB222K50	C 234	CEJA330M10
C 13	CKSRYB222K50	C 235	CKSRYB332K50
C 14	CCSRCH220J50	C 236	CKSQYB473K16
C 16	CCSRCH8R0D50	C 237	CCSRCH120J50
C 17	CKSRYB222K50	C 239	CKSRYB472K50
C 18	CKSRYB103K25	C 240	CEJAR47M50
C 19	CKSRYB222K50	C 241	CKSQYB104K16
C 20	CKSRYB222K50	C 242	CEJAR47M50
C 21	CEJA100M16	C 243	CEJAR33M50
C 22	CCSRTH9R0D50	C 244	CKSQYB473K16
C 23	CCSRTH120J50	C 245	CKSRYB123K25
C 24	CCSRCH471J50	C 246	CKSQYB473K16
C 25	CKSRYB103K25	C 250	CCSRCH471J50
C 31	CKSRYB103K25	A Unit Number : CWM5180 Unit Name : Tuner Amp Unit	
C 32	CKSQYB472K50		
C 33	CCSRCH5R0C50	MISCELLANEOUS	
C 34	CKSQYB104K16	IC 201	IC HA12197F
C 36	CCSRRH201J50	IC 301	IC PM2005B
C 51	CKSRYB223K25	IC 401	IC SN761027DL
C 52	CKSRYB103K25	IC 501	IC HA13151
C 54	CCSRCH470J50	IC 601	IC PD4745A
C 55	CKSQYB223K25	IC 602	IC S-80734AN
C 56	CKSQYB104K16	IC 603	IC CA0008AM
C 57	CKSRYB472K50	IC 604	IC TA2050S
C 58	CEJA330M10	IC 801	IC TPD1018F
C 59	CKSRYB103K25	Q 301	Transistor 2SC1740S
C 61	CCSRCH270J50	Q 302	Transistor DTC114ES
C 62	CKSRYB103K25	Q 501	Transistor DTC124ES
C 63	CEJAR15M50	Q 502	Transistor DTC124ES
C 101	CEJANP100M10	Q 601	Transistor DTC143TS
C 102	CKSRYB182K50	Q 602	Transistor DTC124ES
C 103	CKSRYB682K25	Q 603	Transistor 2SC1740S
C 104	CEJA2R2M50	Q 606	Transistor DTC114EK
C 105	CKSRYB103K25	Q 607	Transistor 2SA1037K
C 106	CCSRCH151J50	Q 611	Transistor 2SC1740S
C 107	CKSRYB103K25	Q 612	Transistor 2SC2412K
C 151	CKSRYB472K50	Q 613	Transistor 2SC2412K
C 152	CKSQYB104K16	Q 801	Transistor 2SD2037
C 153	CEJA3R3M50	Q 802	Transistor 2SB1243
C 154	CKSQYB104K16	Q 803	Transistor 2SC2412K
C 157	CEJA3R3M50	Q 804	Transistor 2SD2396
C 158	CKSYB474K16	Q 805	Transistor 2SA1048
C 159	CEJA220M6R3	Q 806	Transistor 2SC2412K
C 160	CKSQYB104K16	Q 807	Transistor 2SA1674
C 161	CKSQYB104K16	Q 808	Transistor 2SC2412K
C 162	CEJA3R3M50	Q 809	Transistor 2SA933S
C 163	CKSRYB102K50	Q 810	Transistor 2SB1242
C 170	CCSRCH100D50	Q 811	Transistor DTC143TK
C 201	CCSRCH471J50	D 201	Diode 1SS270
C 202	CCSRCH100D50	D 301	Diode 1SS270
C 203	CKSRYB332K50	D 302	Diode 1SS270
C 204	CKSQYB473K16	D 501	Diode CWW1352
C 205	CKSQYB473K16	D 601	Diode 1SS270
C 206	CKSQYB104K16	D 602	Diode HZS7L(A1)
C 207	CCSRCH560J50	D 603	Diode 1SS270
C 209	CKSQYB104K16	D 604	Diode 1SS270
C 211	CCSRCH101J50		

====Circuit Symbol & No.====Part Name	Part No.	====Circuit Symbol & No.====Part Name	Part No.
D 605 Diode	1SS270	R 324	RD1/4PU102J
D 606 Diode	1SS270	R 326	RD1/4PU0R0J
D 607 Diode	1SS270	R 328	RS1/10S561J
D 608 Diode	1SS270	R 332	RS1/10S103J
D 609 Diode	1SS270	R 333	RS1/8S393J
D 610 Diode	1SS270	R 334	RD1/4PU562J
D 611 Diode	1SS270	R 335	RD1/4PU472J
D 612 Diode	HZS9L(A2)	R 336	RD1/4PU473J
D 613 Diode	HZS7L(C3)	R 337	RS1/10S473J
D 614 Diode	HZS7L(A1)	R 338	RD1/4PU104J
D 615 Diode	1SS270	R 339	RS1/10S473J
D 616 Diode	1SS270	R 340	RS1/10S473J
D 801 Diode	1SR139-400	R 341	RS1/10S681J
D 802 Diode	1SR139-400	R 342	RS1/10S681J
D 803 Diode	1SR139-400	R 343	RD1/4PU681J
D 804 Diode	MA8056(H)	R 344	RD1/4PU681J
D 805 Diode	MA8091(M)	R 345	RD1/4PU222J
D 806 Diode	1SR139-400	R 346	RS1/8S472J
D 807 Diode	1SR139-400	R 349	RD1/4PU102J
L 301 Ferri-Inductor	LAU101K	R 350	RS1/10S510J
L 302 Ferri-Inductor	LAU101K	R 352	RS1/10S0R0J
L 601 Ferri-Inductor	LAU101K	R 353	RS1/10S0R0J
L 602 Ferri-Inductor	LAU101K	R 354	RD1/4PU102J
L 603 Ferri-Inductor	LAU101K	R 355	RS1/8S0R0J
L 604 Ferri-Inductor	LAU2R2K	R 401	RD1/4PU0R0J
L 951 600H	CTH1168	R 402	RD1/4PU0R0J
X 301 Crystal Resonator 7.200MHz	CSS1379	R 403	RS1/10S272J
X 601 Ceramic Resonator 4.194MHz FM/AM Tuner Unit	CSS1047	R 404	RS1/10S272J
	CWE1416	R 405	RS1/10S151J
		R 406	RS1/10S151J
		R 407	RS1/10S0R0J
		R 408	RS1/10S0R0J
RESISTORS		R 501	RD1/4PU202J
R 201	RS1/10S473J	R 502	RD1/4PU202J
R 202	RS1/10S473J	R 503	RD1/4PU202J
R 203	RS1/10S181J		
R 204	RS1/10S181J	R 504	RD1/4PU202J
R 205	RS1/10S274J	R 505	RS1/10S222J
R 206	RS1/10S274J	R 506	RS1/10S222J
R 207	RS1/10S133J	R 507	RS1/10S222J
R 208	RS1/10S133J	R 508	RS1/10S222J
R 209	RS1/10S183J		
R 210	RS1/10S183J	R 509	RD1/4PU2R2J
R 211	RS1/10S472J	R 510	RD1/4PU2R2J
R 212	RS1/10S472J	R 511	RD1/4PU2R2J
R 213	RS1/10S512J	R 512	RD1/4PU2R2J
R 214	RS1/10S512J	R 513	RD1/4PU2R2J
R 219	RD1/4PU273J	R 514	RD1/4PU2R2J
R 220	RD1/4PU273J	R 515	RD1/4PU2R2J
R 301	RS1/10S272J	R 516	RD1/4PU2R2J
R 302	RS1/10S272J	R 517	RD1/4PU103J
R 306	RD1/4PU222J	R 518	RS1/10S153J
R 307	RS1/8S222J	R 519	RS1/10S221J
R 308	RS1/8S222J	R 520	RS1/10S101J
R 309	RS1/10S102J	R 521	RS1/8S103J
R 310	RS1/10S0R0J	R 601	RS1/10S473J
R 311	RS1/8S272J	R 606	RS1/10S0R0J
R 312	RD1/4PU222J	R 608	RD1/4PU0R0J
R 314	RS1/8S392J	R 613	RS1/10S473J
R 315	RS1/10S392J	R 614	RS1/10S473J
R 316	RS1/10S152J	R 615	RS1/10S222J
R 317	RS1/10S103J	R 616	RS1/10S222J
R 318	RS1/10S0R0J	R 617	RS1/10S222J
R 319	RS1/10S472J	R 618	RD1/4PU103J
R 320	RS1/10S682J	R 619	RS1/8S473J
R 321	RS1/10S472J	R 620	RS1/10S473J
R 322	RS1/10S681J	R 621	RD1/4PU104J
R 323	RS1/10S682J		

====Circuit Symbol & No.====Part Name	Part No.	====Circuit Symbol & No.====Part Name	Part No.
R 622	RS1/10S473J	CAPACITORS	
R 623	RD1/4PU473J	C 201	CKSQYB561K50
R 624	RS1/10S332J	C 202	CKSQYB561K50
R 625	RS1/10S102J	C 205	CKSQYB103K25
R 629	RS1/10S103J	C 206	CKSQYB103K25
R 630	RD1/4PU152J	C 207	CEALR47M50
R 631	RS1/10S102J	C 208	CEALR47M50
R 632	RS1/10S124J	C 209	CEJA1R0M50
R 633	RS1/10S102J	C 210	CEJA1R0M50
R 634	RS1/10S102J	C 213	CEAL220M16
R 635	RS1/10S102J	C 219	CKSQYB104K16
R 636	RD1/4PU473J	C 220	CEAL100M16
R 637	RD1/4PU473J	C 223	CKSQYB105K10
R 638	RS1/10S101J	C 224	CKSQYB105K10
R 639	RS1/10S101J	C 225	CEAL470M6R3
R 640	RS1/10S620J	C 226	CEAL470M6R3
R 641	RS1/10S181J	C 301	CKSQYB223K25
R 642	RS1/10S181J	C 302	CKSQYB223K25
R 643	RS1/10S223J	C 303	CKSQYB223K25
R 644	RS1/10S223J	C 307	CKSQYB103K25
R 645	RS1/10S102J	C 308	CCSQCH101K50
R 646	RS1/10S102J	C 311	CCSQCH101K50
R 647	RD1/4PU223J	C 313	CKSQYB223K25
R 648	RD1/4PU223J	C 314	CKSQYB103K25
R 649	RS1/10S223J	C 315	CEAL220M6R3
R 650	RS1/8S472J	C 316	CKSQYB103K25
R 651	RD1/4PU222J	C 317	CKSQYB103K25
R 655	RS1/10S223J	C 318	CKSQYB102K50
R 656	RS1/10S103J	C 319	CEAL220M16
R 657	RD1/4PU472J	C 320	CCSQCH150J50
R 658	RS1/10S473J	C 321	CCSQCH150J50
R 659	RS1/10S223J	C 322	CKSQYB103K25
R 660	RD1/4PU473J	C 323	CKSQYB103K25
R 661	RS1/10S473J	C 324	CEALR47M50
R 662	RD1/4PU223J	C 325	CCH1250
R 663	RD1/4PU473J	C 326	CKSQYB103K25
R 664	RS1/10S222J	C 327	CKSQYB332K50
R 665	RS1/10S102J	C 328	CKLSR473K16
R 668	RS1/10S0R0J	C 331	CKSQYB104K16
R 673	RS1/10S0R0J	C 332	CEAL220M6R3
R 721	RS1/10S105J	C 333	CKSQYB103K25
R 801	RD1/4PU102J	C 334	CEAL220M6R3
R 802	RS1/10S472J	C 335	CKSQYB103K25
R 803	RS1/10S101J	C 336	CKSQYB223K25
R 804	RD1/4PU332J	C 337	CKSQYB103K25
R 805	RS1/10S103J	C 340	CCH1165
R 806	RD1/4PU102J	C 341	CKSQYB103K25
R 807	RD1/4PU122J	C 342	CKSQYB473K16
R 808	RS1/10S103J	C 343	CKSQYB102K50
R 809	RS1/10S102J	C 401	CEJA2R2M50
R 810	RD1/4PU473J	C 402	CEJA2R2M50
R 812	RS1/10S103J	C 403	CEJANP100M10
R 813	RS1/10S102J	C 404	CEJANP100M10
R 814	RS1/10S473J	C 405	CKSQYB822K50
R 816	RS1/10S472J	C 406	CKSQYB822K50
R 817	RS1/10S223J	C 407	CEJA1R0M50
R 818	RS1/10S222J	C 408	CEJA1R0M50
R 819	RS1/10S472J	C 409	CKSQYB183K25
R 820	RD1/4PU102J	C 410	CKSQYB183K25
R 821	RD1/4PU1R5J	C 411	CKSQYB102K50
R 822	RD1/4PU1R5J	C 412	CKSQYB102K50
R 823	RD1/4PU1R0J	C 413	CEJANP2R2M35
R 824	RS1/10S103J	C 414	CEJANP2R2M35
R 825	RS1/10S103J	C 415	CKSQYB333K25
		C 416	CKSQYB333K25
		C 417	CEJA220M6R3

====Circuit Symbol & No.====Part Name	Part No.	====Circuit Symbol & No.====Part Name	Part No.	
C 418	CEJA2R2M50	S 907	Switch	CSG1093
C 419	CKSQYB104K16	S 908	Switch	CSG1093
C 420	CKSQYB103K25	S 909	Switch	CSG1093
C 423	CEJA470M10	S 910	Switch	CSG1093
C 424	CKSQYB104K16	S 911	Switch	CSG1081
C 501	CEJA4R7M35	S 912	Switch	CSG1093
C 502	CEJA4R7M35	S 913	Switch	CSG1081
C 503	CEJA4R7M35	S 914	Switch	CSG1093
C 504	CEJA4R7M35	S 915	Switch	CSG1081
C 505	CKSQYB102K50	S 916	Switch	CSG1093
C 506	CKSQYB102K50	S 917	Switch	CSG1081
C 507	CKSQYB102K50	S 918	Switch	CSG1081
C 508	CKSQYB102K50	S 919	Switch	CSG1093
C 509	CKSQYB104K16	S 920	Switch	CSG1093
C 510	CKSQYB104K16	IL 901	Lamp 14V 40mA	CEL1479
C 511	CKSQYB104K16	IL 902	Lamp 14V 40mA	CEL1479
C 512	CKSQYB104K16	IL 903	Lamp 14V 40mA	CEL1479
C 513	CKSQYB104K16	IL 904	Lamp 14V 40mA	CEL1479
C 514	CKSQYB104K16	IL 905	Lamp 14V 40mA	CEL1479
C 515	CKSQYB104K16	LCD 901	LCD	CAW1417
C 516	CKSQYB104K16			
C 517	CEJA330M10			
C 518	CEJA100M16			
C 519	CKSQYB104K16			
C 520	CKSQYB104K16			
C 601	CCSQCH101K50			
C 602	CEAL4R7M35			
C 604	CCSQCH101K50			
C 606	CKSQYB104K16			
C 607	CKSQYB224K16			
C 608	CEJA2R2M50			
C 609	CKSQYB102K50			
C 610	CKSQYB104K16			
C 611	CEJA1R0M50			
C 612	CEJA1R0M50			
C 613	CEJA1R0M50			
C 614	CEJA1R0M50			
C 615	CEJA100M16			
C 616	CEJA100M16			
C 617	CEJA4R7M35			
C 618	CEJA4R7M35			
C 620	CCSQCH101K50			
C 621	CCSQCH101J50			
C 623	CKSQYB102K50			
C 801	3300µF/16V			
C 802	470µF/16V			
C 803	CKSQYB102K50			
C 804	CKSQYB473K16			
C 805	CEJA101M10			
C 806	CKSQYB103K25			
C 807	330µF/10V			
C 808	CCH1181			
C 809	CKSQYB103K25			
C 809	CKSQYB104K16			
C 811	100µF/16V			
C 811	CCH1179			

RESISTORS

R 901	RS1/10S222J
R 902	RS1/10S222J
R 903	RS1/10S472J
R 906	RS1/10S473J
R 907	RS1/10S473J
R 908	RS1/10S473J
R 909	RS1/10S473J
R 910	RS1/10S473J
R 911	RS1/10S473J
R 912	RS1/10S473J
R 913	RS1/10S0R0J
R 915	RS1/10S0R0J

CAPACITORS

C 901	CEAL100M16
C 904	CKSQYB104K50
C 905	CKSQYB102K50
C 906	CCSCH101J50

C Unit Number :
Unit Name : Cassette PCB

S 1	Switch(Load)	ESN1016
S 2	Switch(Mute)	ESN1017
S 3	Switch(FWD/REV)	ESH1006
S 4	Switch(Eject)	ESG1002
R 1		RD1/4HM472J

Miscellaneous Parts List

M 1	Motor Unit	EXA1467
HD 1	Head Assy	EXA1466

D Unit Number : CWM5190
Unit Name : Key Board Unit

MISCELLANEOUS

IC 901	IC	PD6196A
D 901	Diode	STZ6R2N
L 901	Ferri-Inductor	LAU101K
X 901	Ceramic Resonator 4.97MHz	CSS1312
S 901	Switch	CSG1081
S 902	Switch	CSG1081
S 903	Switch	CSG1093
S 904	Switch	CSG1093
S 905	Switch	CSG1093
S 906	Switch	CSG1093

6. ADJUSTMENT

● Connection Diagram

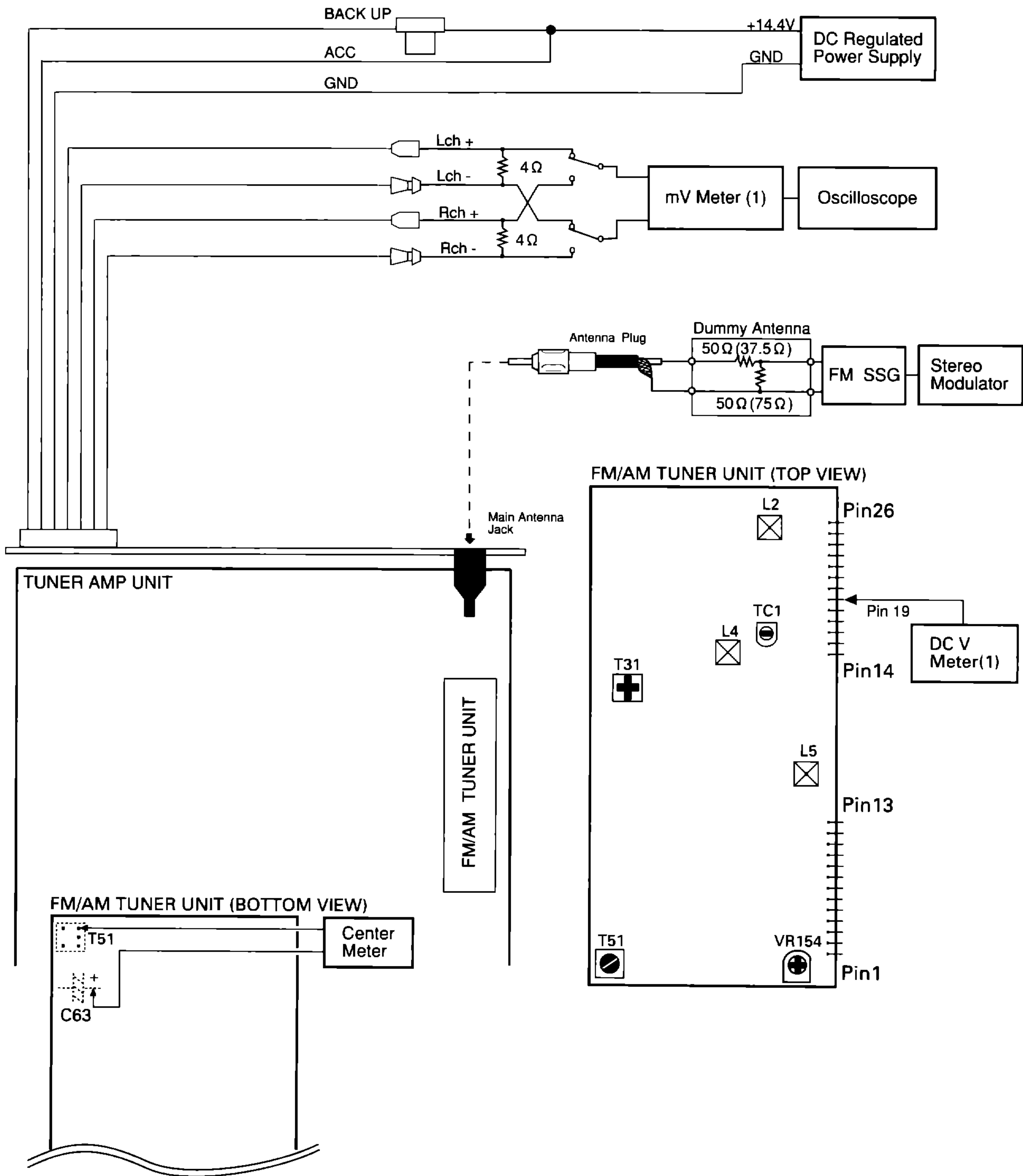


Fig. 16

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.) or 400Hz 100%(75kHz Dev.)

S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

S2:STEREO MOD., 400Hz, L or R=60%(40.50kHz+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.

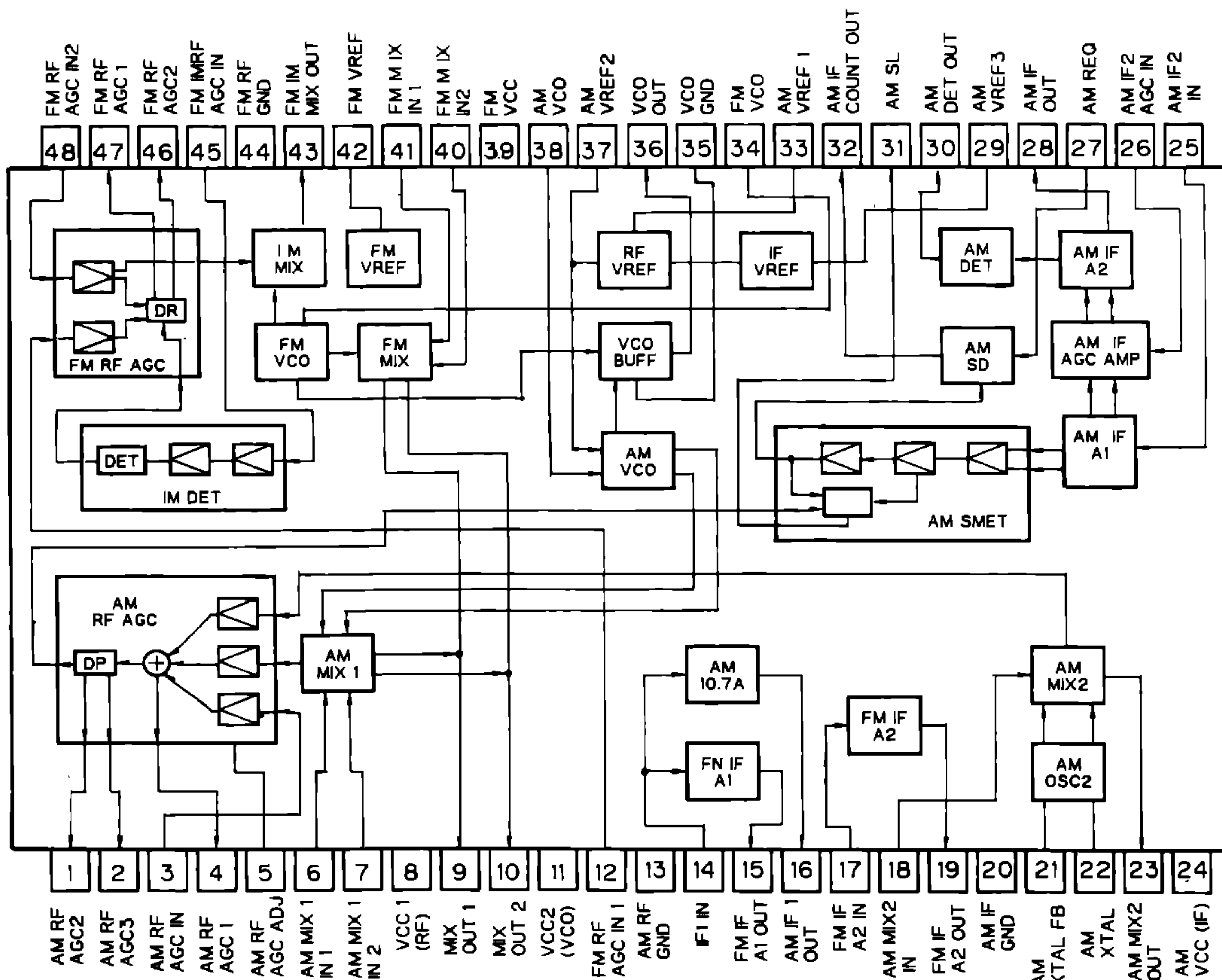
	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	.....	.....	108.0	L5	DC V Meter(1) : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	5	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	6	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	7	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

7. GENERAL INFORMATION

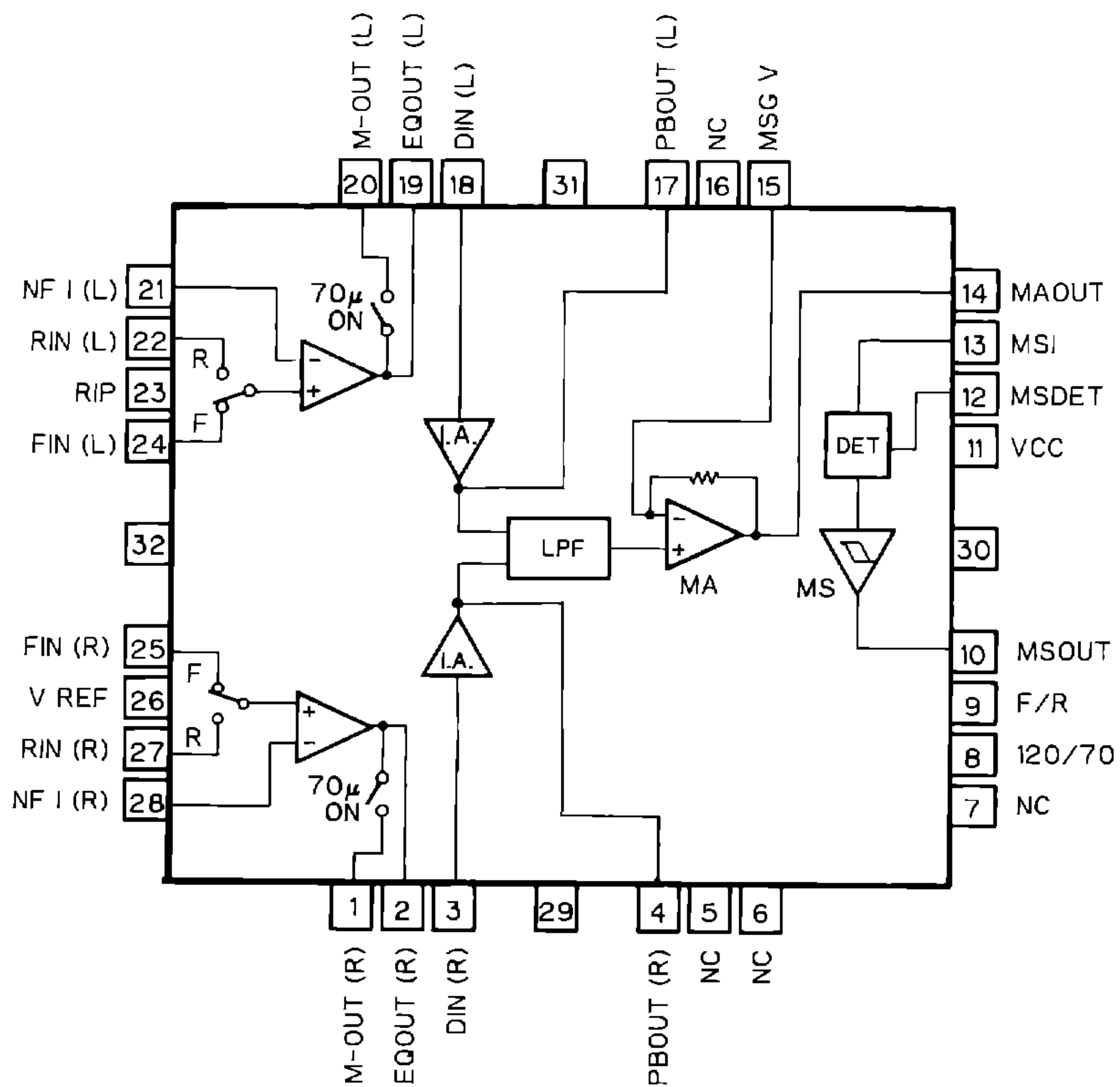
7.1 PARTS

7.1.1 IC

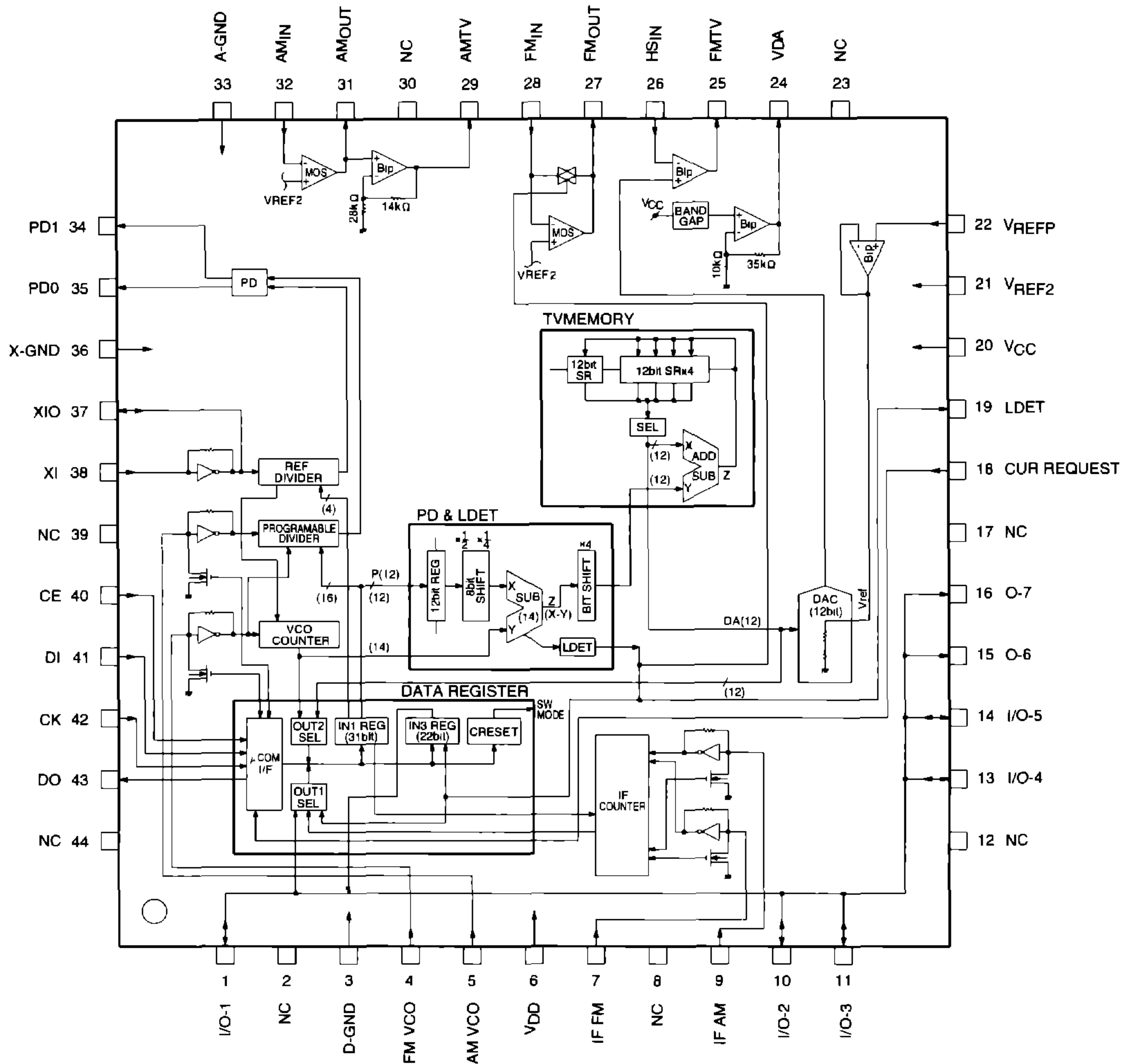
PA4023B



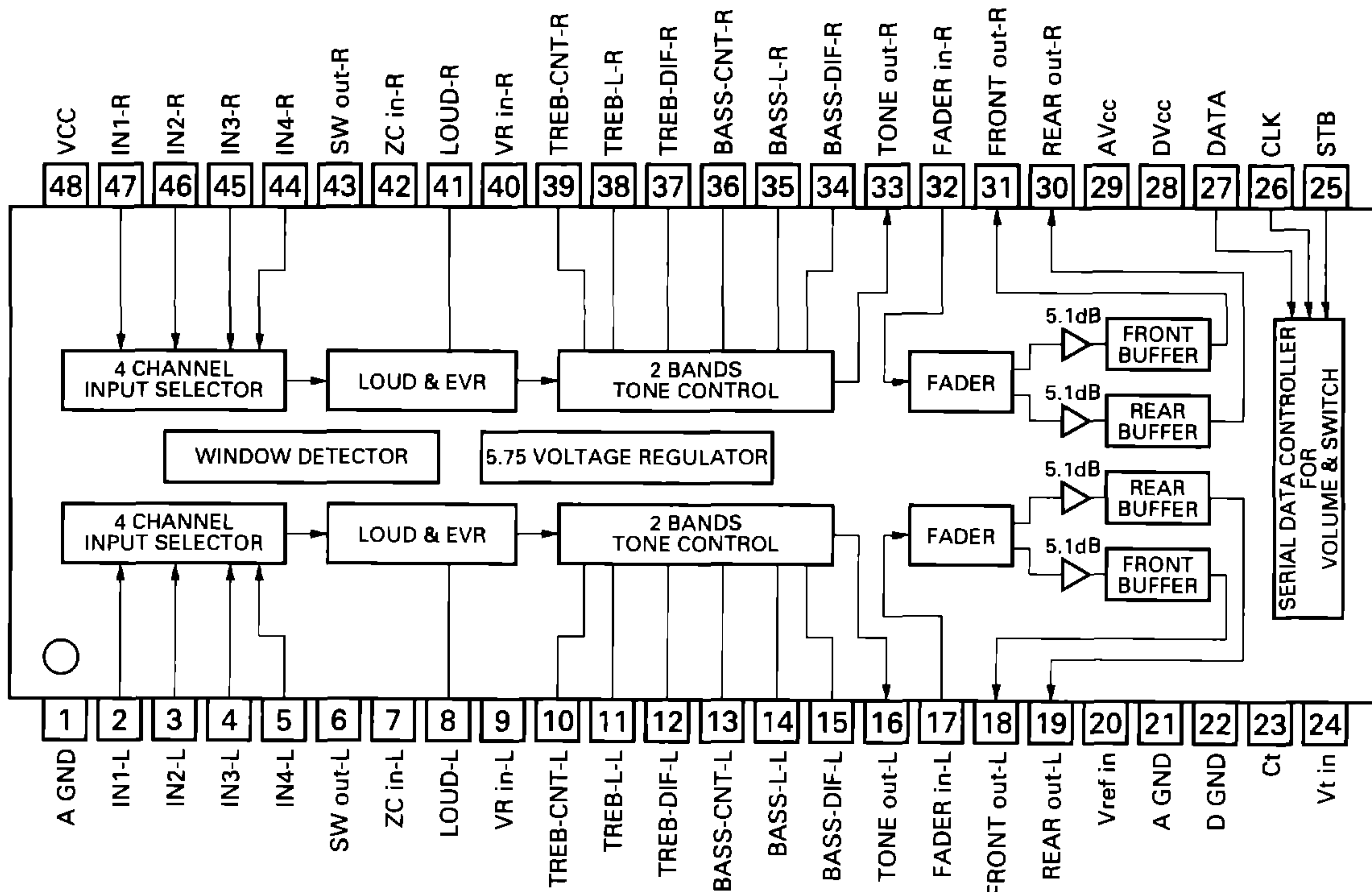
HA12197F

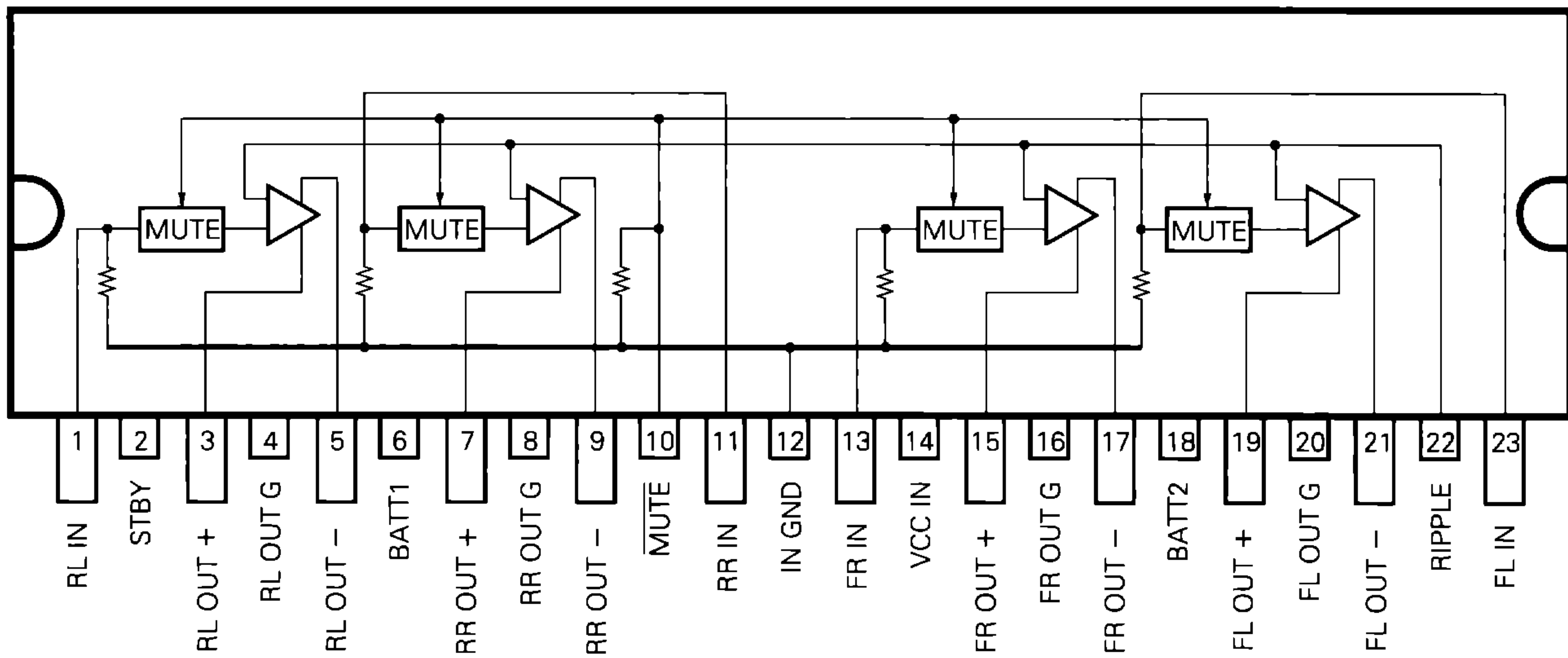


PM2005B



SN761027DL



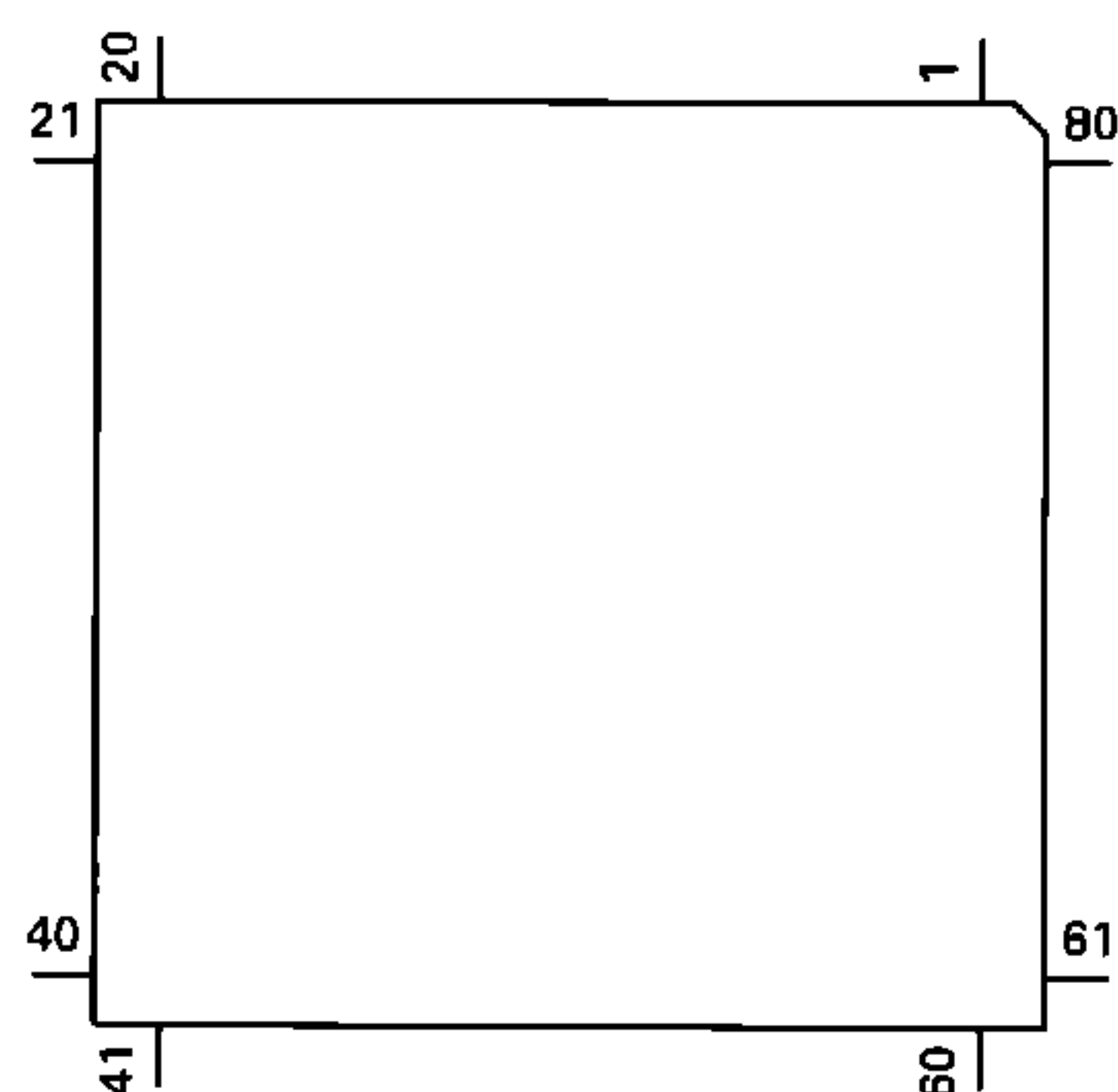


● Pin Functions (PD4745A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1,2	NC			Not used
3	ADPW	O	C	Control output for analog input reference power
4	GND			GND
5,6	NC			Not used
7	AVREF1			(D/A converter standard voltage)
8	KYDT	I		Key data input
9	DPDT	O	C	Key data output
10	DSENS	I		Grille detach sense
11	TUNPDI	I		PLL IC data input
12	TUNPDO	O	C	PLL IC data output
13	TUNPCK	O	C	PLL IC clock
14	TUNPCE	O	C	PLL IC chip enable
15	CURRO	O	C	Tuner voltage FIX output
16	NC			Not used
17	TX	O	C	IP BUS output
18	NC			Not used
19	RECIVE	O	C	During RDS data reception output
20	NC			Not used
21	EORR	O	C	Correct RDS error output
22	SWVDD	O	C	Grille power supply control output
23	ILMPW	O	C	Illumination power supply control output
24	VDT	O	C	Data output for electronic volume
25	VCK	O	C	Clock output for electronic volume
26	VST	O	C	Strobe pulse output for electronic volume
27	SYSPW	O	C	System power supply control output
28	MUTE	O	C	System mute output
29	DMINH	O	C	Mechanism mute cancel output
30	NC			Not used
31	B.REM	O	C	B remote output
32	NC			Not used
33	GND			GND
34-37	NC			Not used
38	FM	O	N	FM power control output
39	AM	O	N	AM power control output
40	ASENBO	O	C	Slave power supply control output
41-48	NC			Not used
49	MSOUT	O	C	MS output
50	EJECT	I		Eject key input pin

Pin No.	Pin Name	I/O	Format	Function and Operation
51	TAPLD	I		Tape loading input
52	MECPW	O	C	Mechanism power output
53	MCMUT	I	C	Mechanism mute request
54	NOR/REW	I		Normal reverse input
55	MSIN	I		MS sense
56,57	NC			Not used
58	MTL	O	C	Metal output
59	NR	O	C	Dolby output
60	RESET	I		Reset Input
61-62	NC			Not used
62	RCK	I		RDS demodulation clock input
63	CLKIN	I		Clock input
64	ASENS	I		ACC power sense input
65	BSENS	I		Back up power sense input
66	SD	I		SD input
67	ST	I		Stereo input
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	GND			GND
72	XT2			Sub clock
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			(A/D converter standard voltage input)
76	SL	I		Signal level input
77	MODEL	I		Model select
78-80	NC			Not used

*PD4745A



IC's marked by* are MOS type.

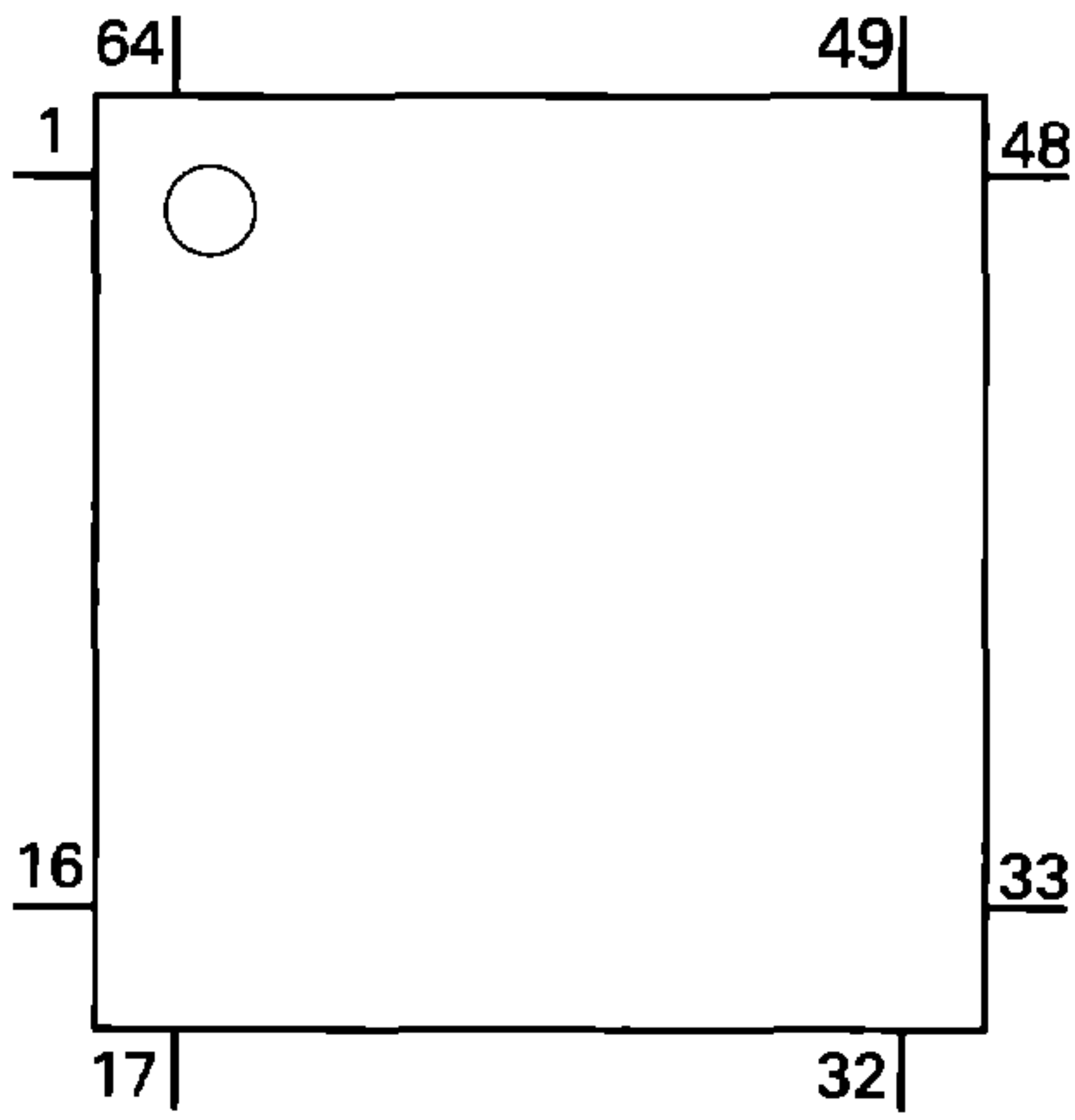
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

Format	Meaning
C	C MOS
N	N channel open drain

● **Pin Functions(PD6196A)**

Pin No.	Pin Name	I/O	Function and Operation
1-5	SEG4-0	O	LCD segment output
6-9	COM3-0	O	Common driver output
10	V3		LCD bias power supply
11-14	KS4-1	O	Key strobe output
15,16	KD1,2	I	Key data input
17	REM	I	Remote control reception
18	SI	I	UART input
19	RST	I	System reset
20	SO	O	UART output
21	MODA		GND
22	X0		Crystal oscillator connection pin
23	X1		Crystal oscillator connection pin
24	VSS		GND
25,26	KD3,4	I	Key data input
27,28	KS6,5	O	Key strobe output
29-55	SEG39-13	O	LCD segment output
56	VCC		5V
57-64	SEG12-5	O	LCD segment output

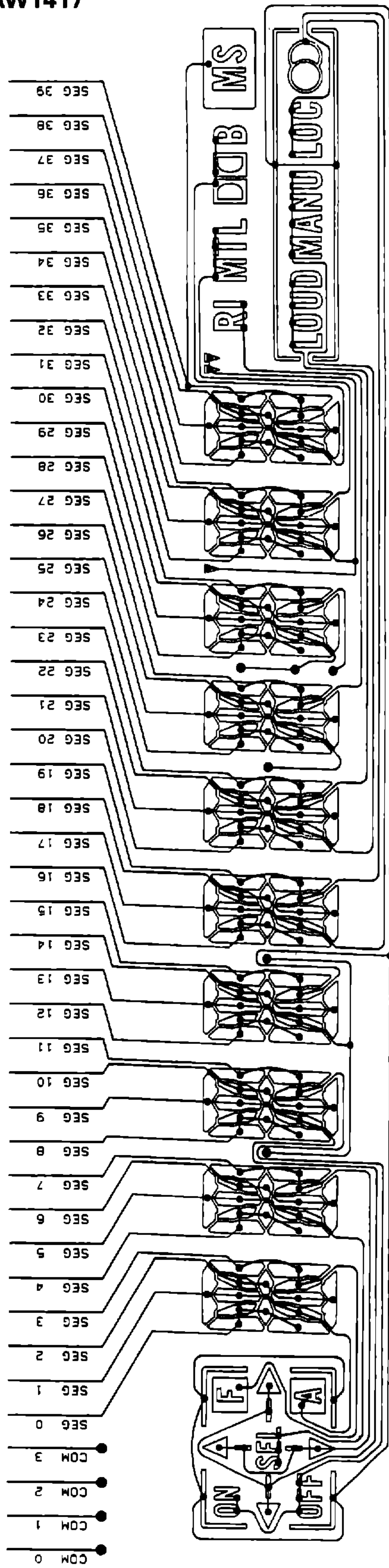
*PD6196A



7.1.2 DISPLAY

● CAW1417

SEGMENT



COMMON

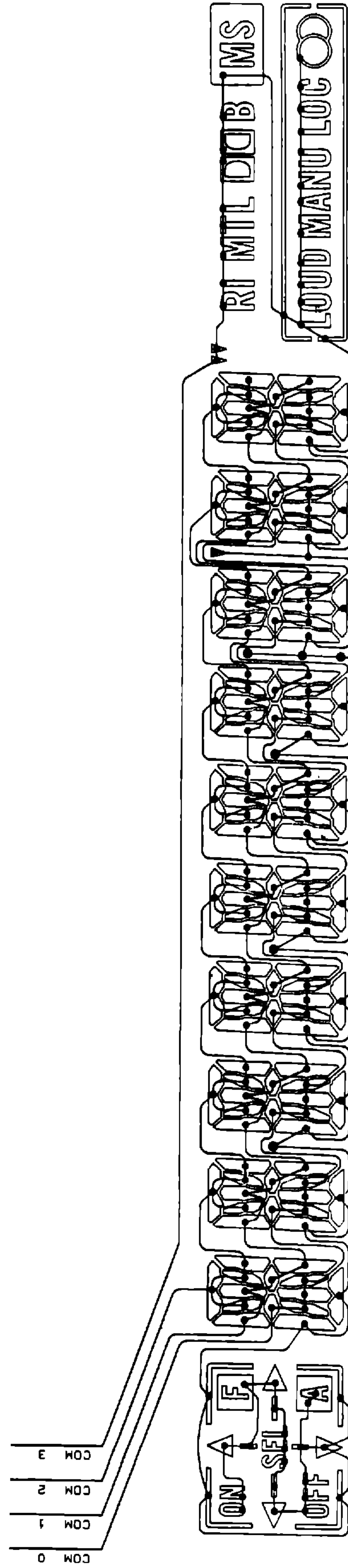
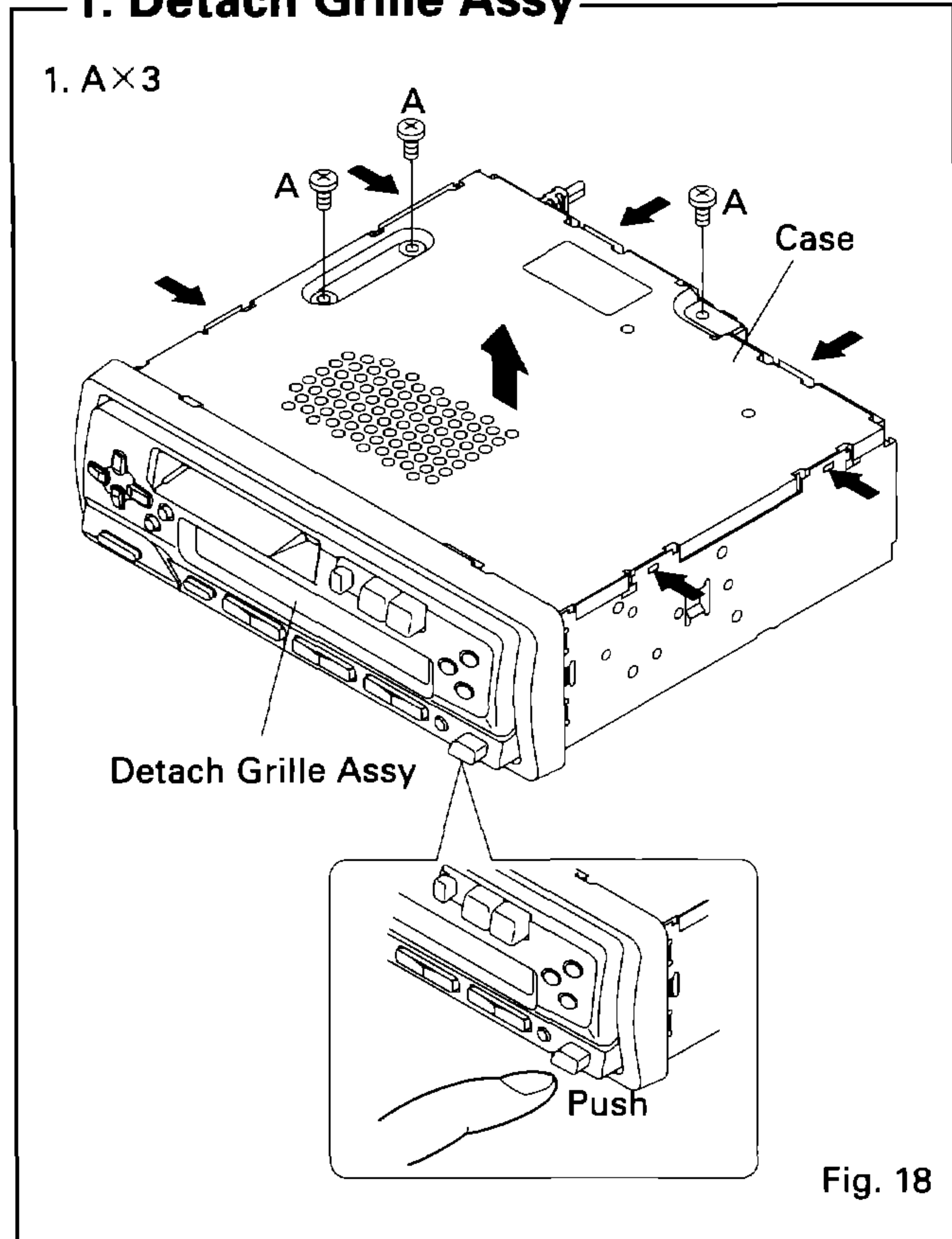


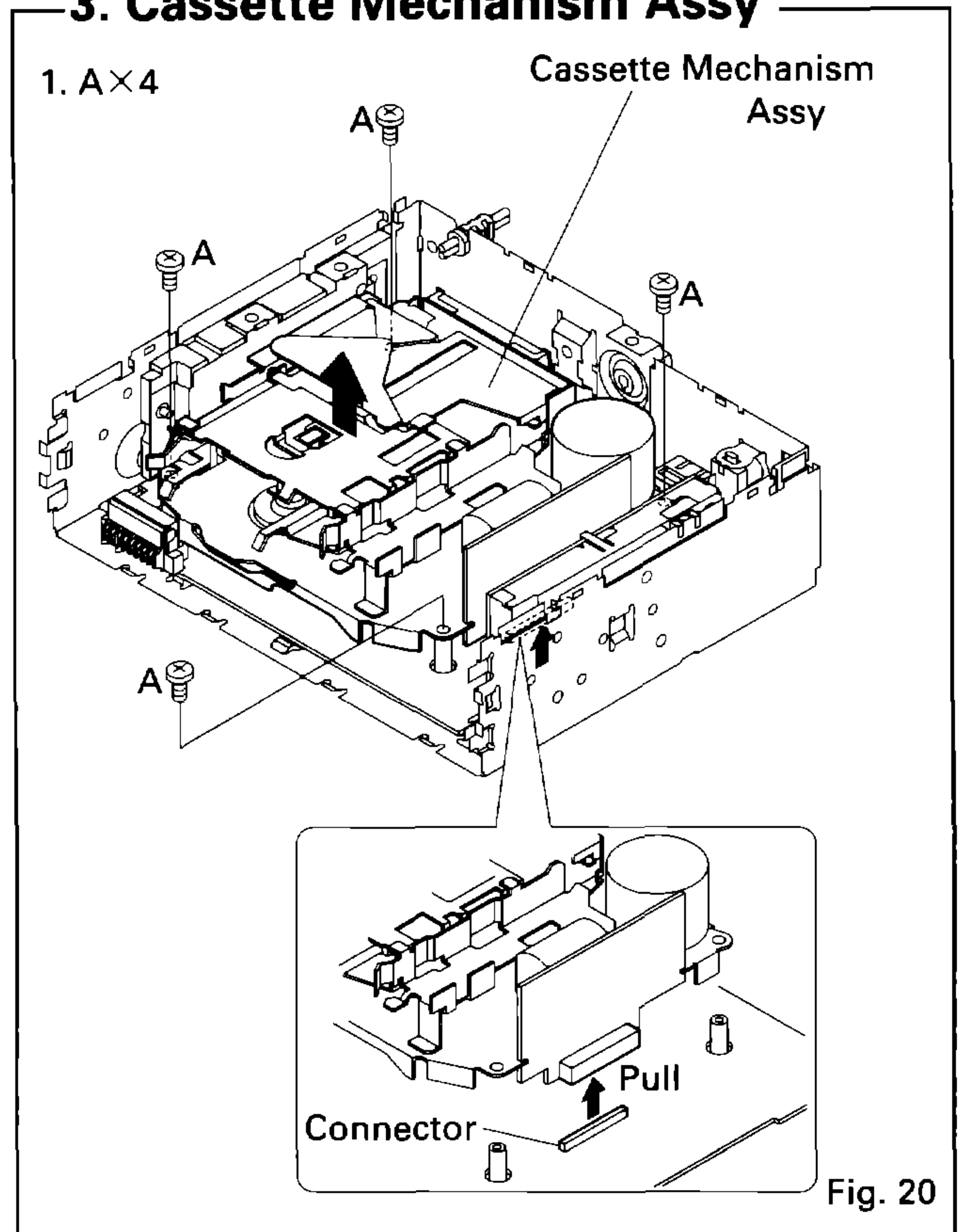
Fig. 17

7.2 DISASSEMBLY

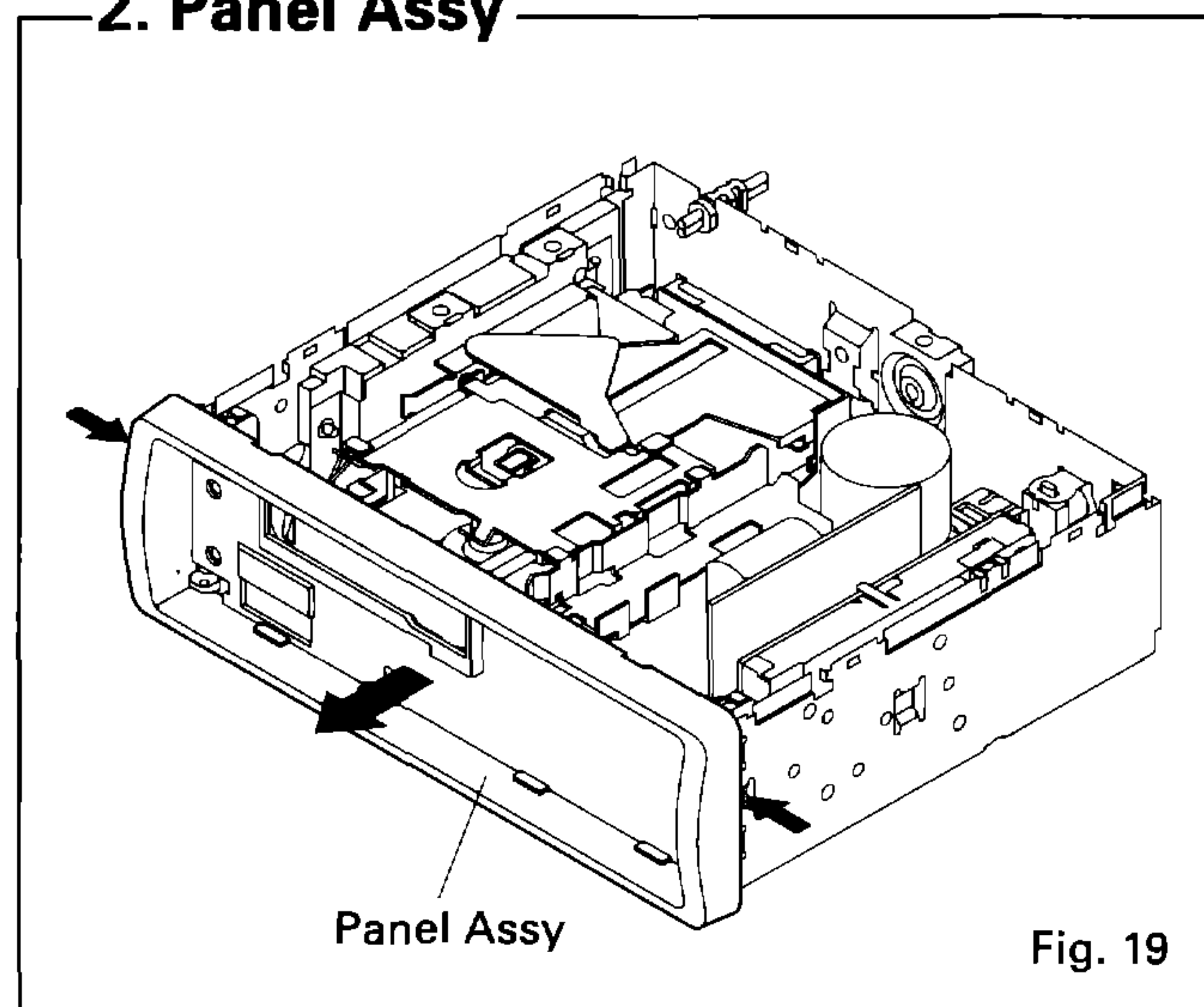
1. Detach Grille Assy



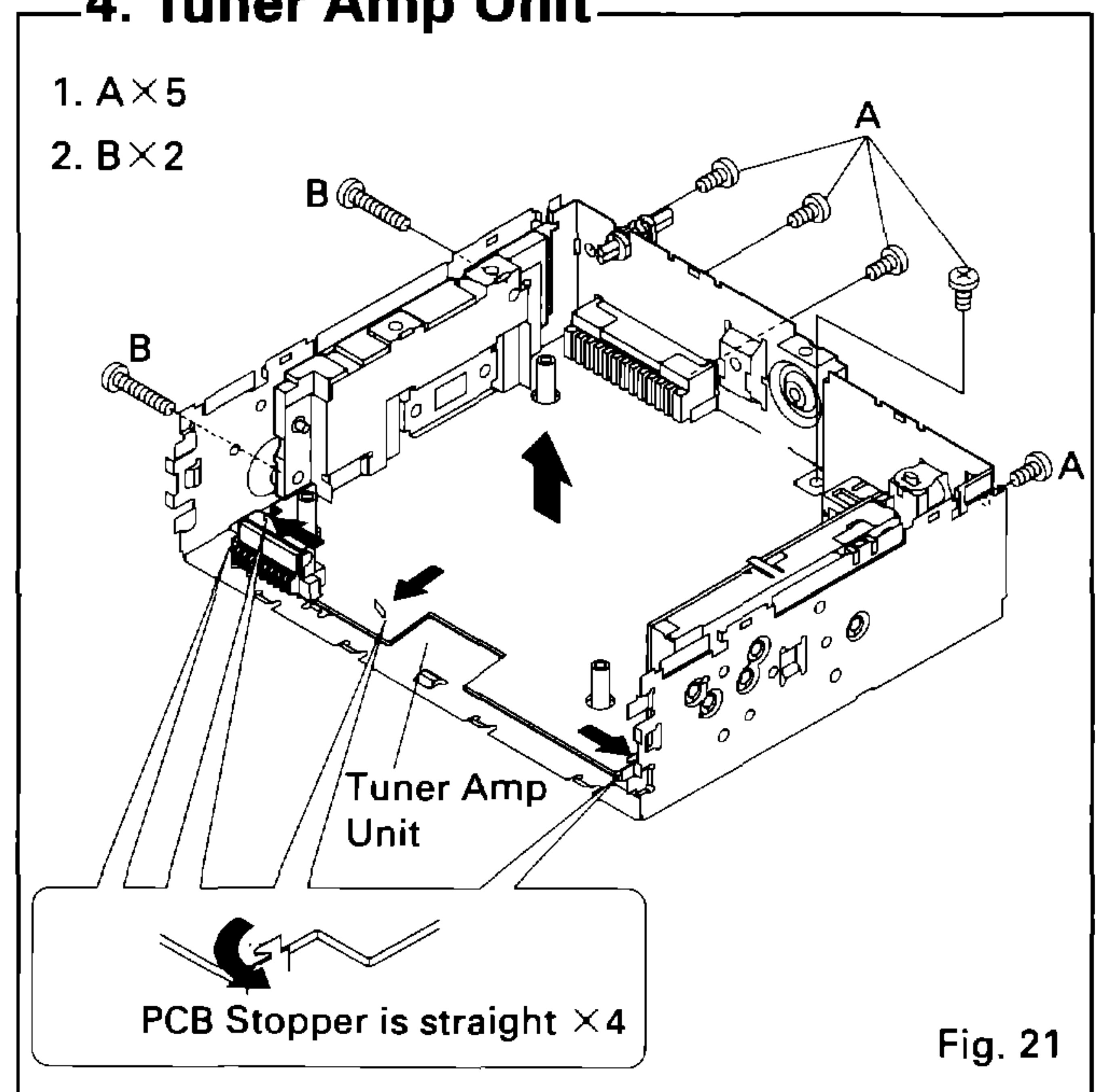
3. Cassette Mechanism Assy



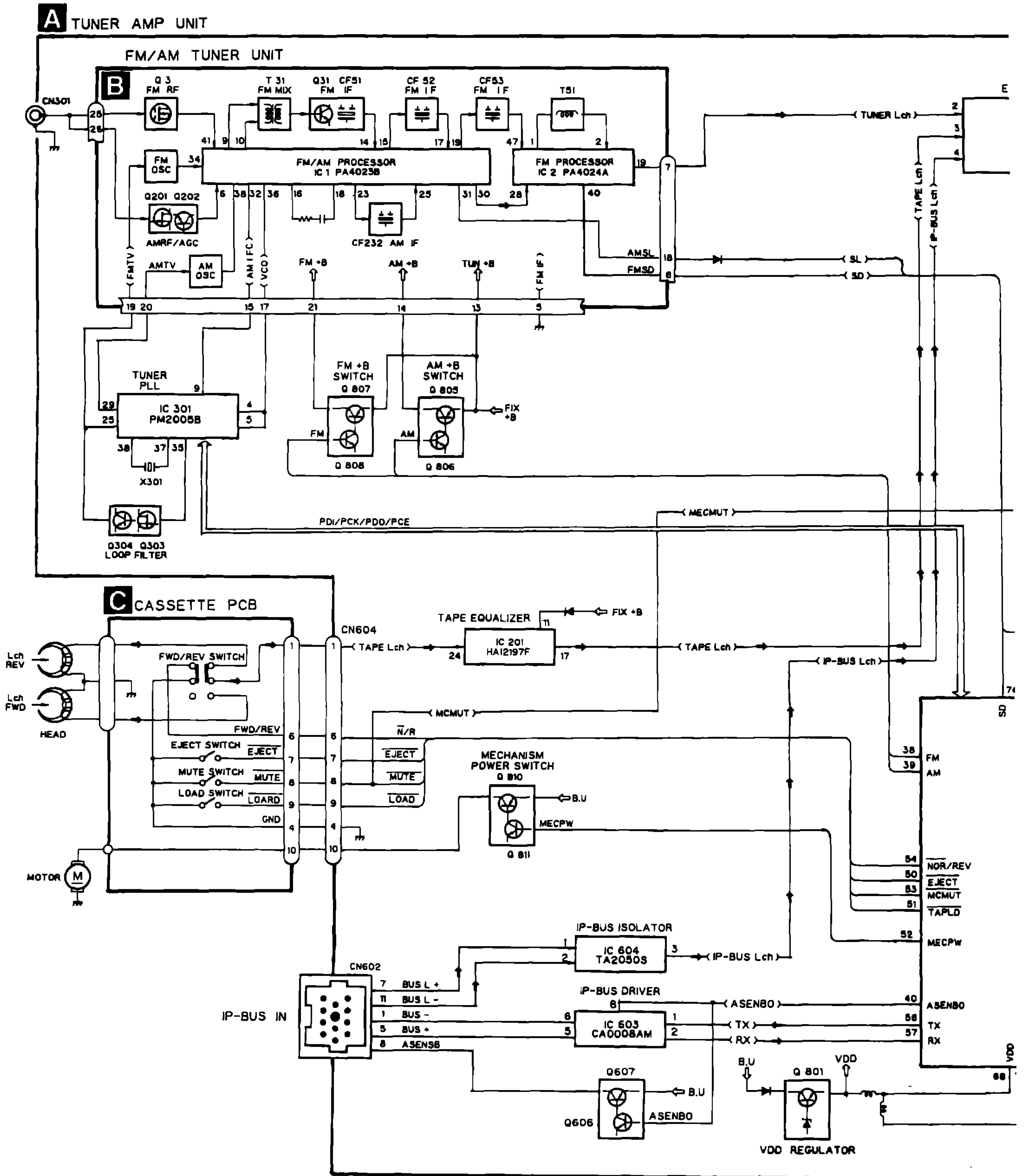
2. Panel Assy



4. Tuner Amp Unit



7.3 BLOCK DIAGRAM



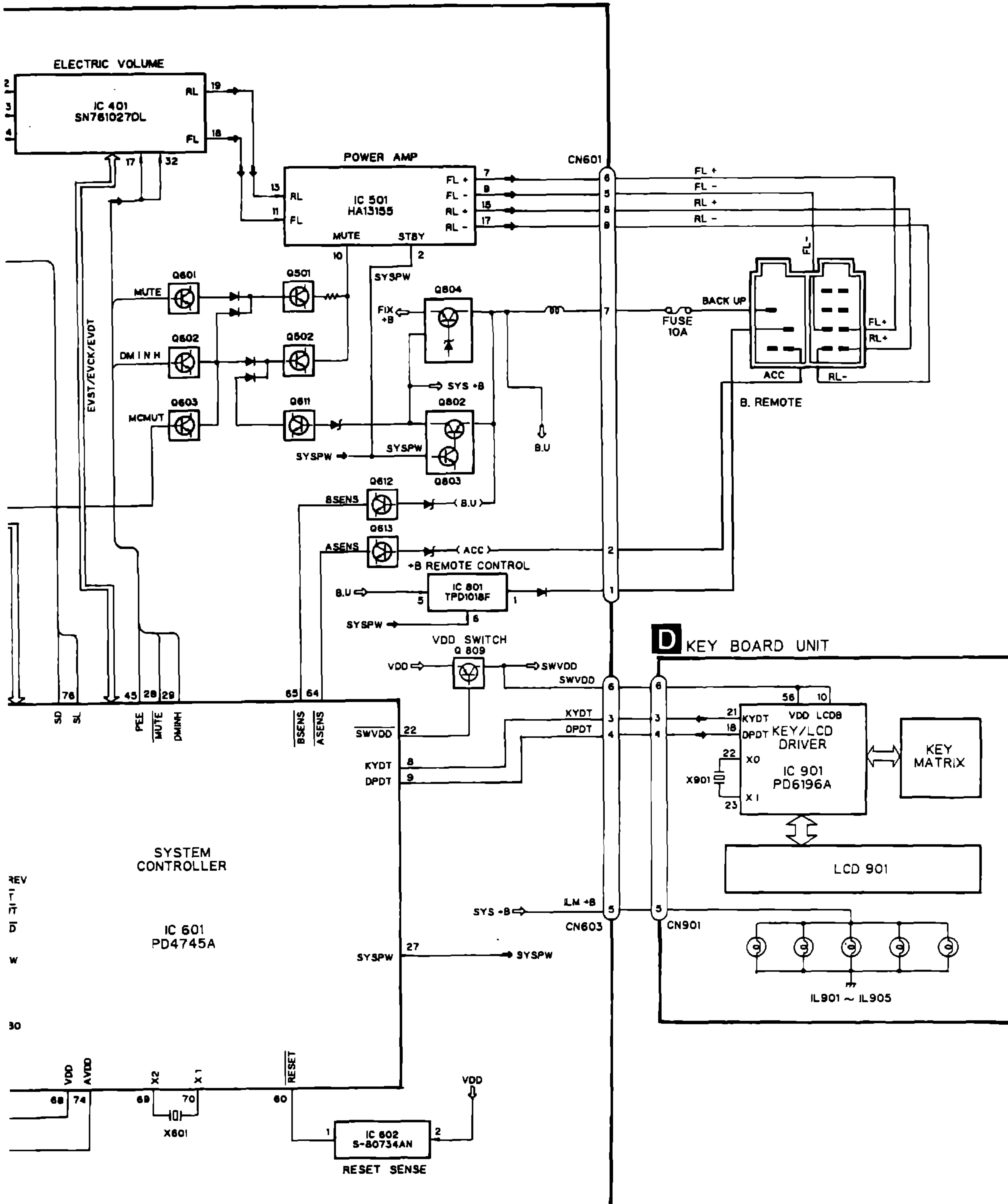


Fig. 22

8. OPERATIONS AND SPECIFICATIONS

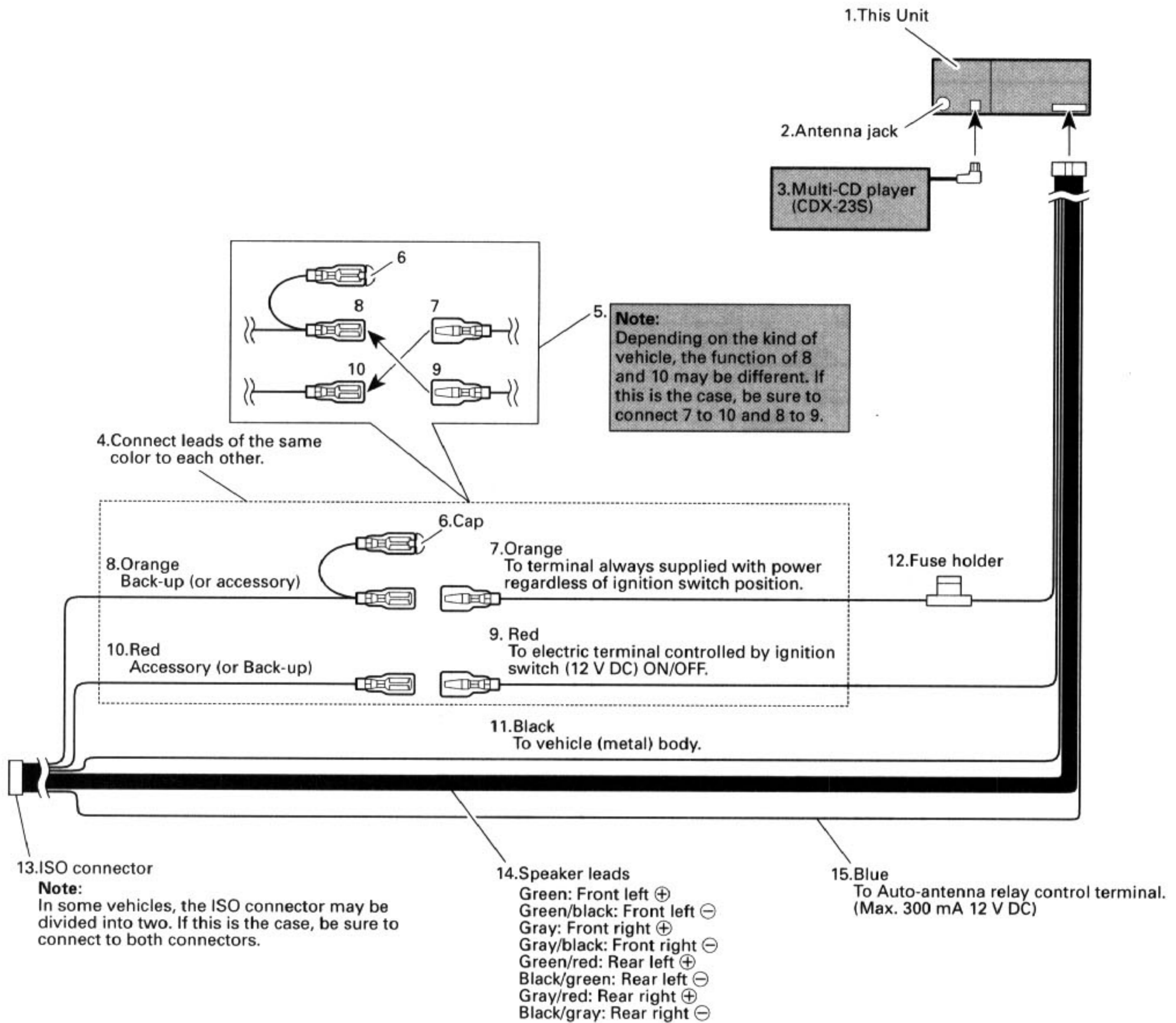


Fig. 23

Specifications

General

Power source 14.4 V DC (10.8 – 15.1 V allowable)
 Grounding system Negative type
 Max. current consumption 6.0 A
 Dimensions
 (mounting size) 178 (W) x 50 (H) x 150 (D) mm
 (front face) 188 (W) x 58 (H) x 19 (D) mm
 Weight 1.2 kg

Amplifier

Maximum power output 22 W x 4
 Continuous power output 14 W x 4
 (DIN45324, +B = 14.4 V)
 Load impedance 4 Ω (4 – 8 Ω allowable)
 Tone controls
 (Bass) ±12 dB (100 Hz)
 (Treble) ±12 dB (10 kHz)
 Loudness contour +10 dB (100 Hz), +7 dB (10 kHz)
 (volume: -30 dB)

Cassette player

Tape Compact cassette tape (C-30 – C-90)
 Tape speed 4.76 cm/sec. (+0.14 cm/sec. -0.05 cm/sec.)
 Fast forward/rewinding time Approx. 90 sec. for C-60
 Wow & flutter 0.13% (WRMS)
 Frequency response 40 – 14,000 Hz (±3 dB)
 Stereo separation 45 dB
 Signal-to-noise ratio 52 dB (IEC-A network)

FM tuner
 Frequency range 87.5 – 108 MHz
 Usable sensitivity 11 dBf (1.0 μV/75 Ω, mono, S/N: 30 dB)
 50 dB quieting sensitivity 16 dBf (1.7 μV/75 Ω, mono)
 Signal-to-noise ratio 70 dB (IEC-A network)
 Distortion 0.3% (at 65 dBf, 1 kHz, stereo)
 Frequency response 30 – 15,000 Hz (±3 dB)
 Stereo separation 40 dB (at 65 dBf, 1 kHz)

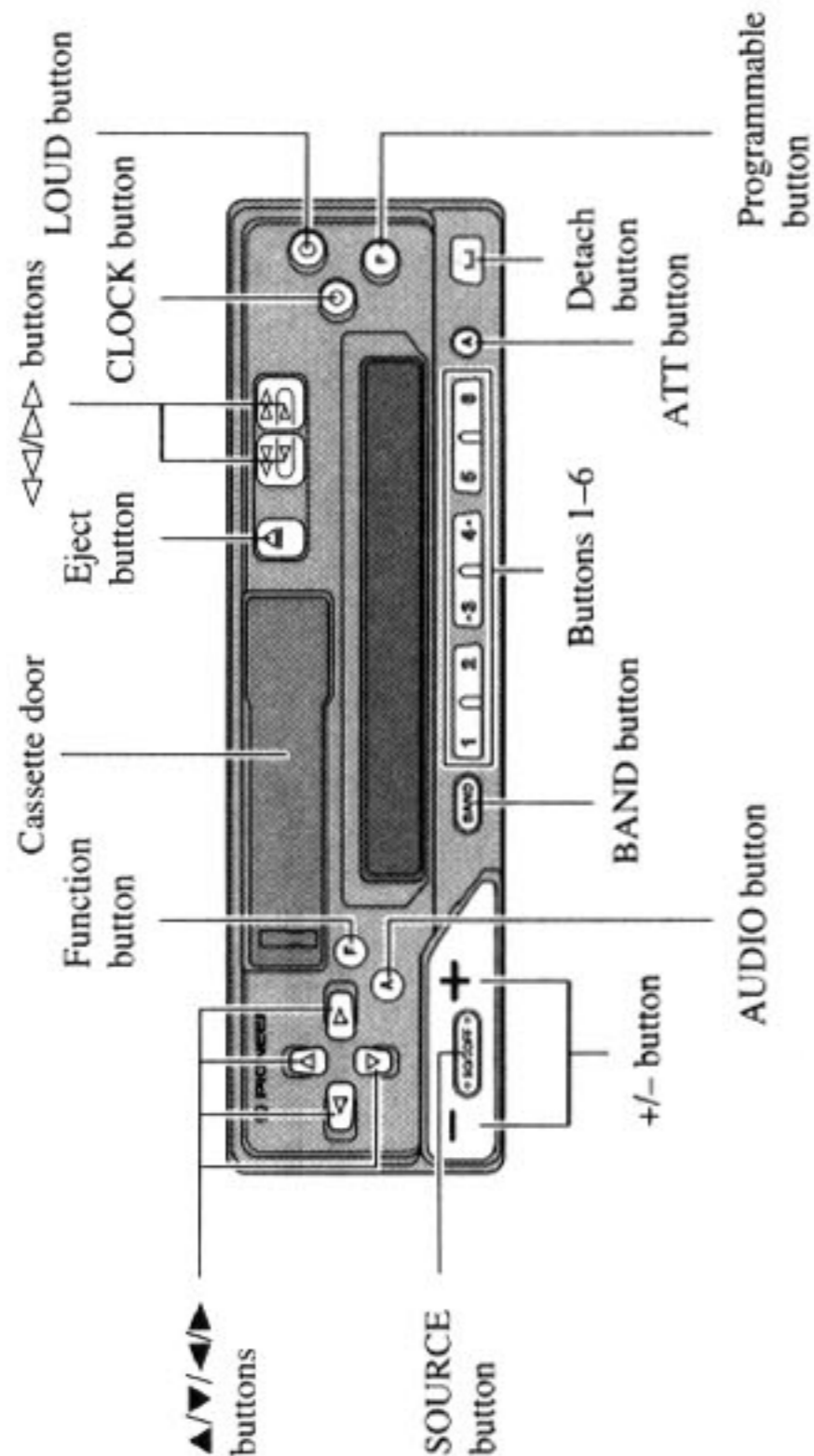
MW tuner
 Frequency range 531 – 1,602 kHz
 Usable sensitivity 18 μV (25 dB) (S/N: 20 dB)
 Selectivity 50 dB (±9 kHz)

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

Note:

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

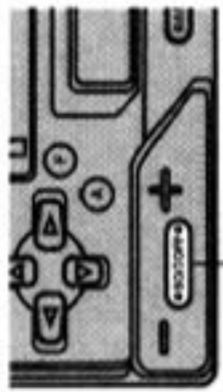
Key Finder



Tuner Operation

Basic Operation of Tuner

1. Select Tuner.

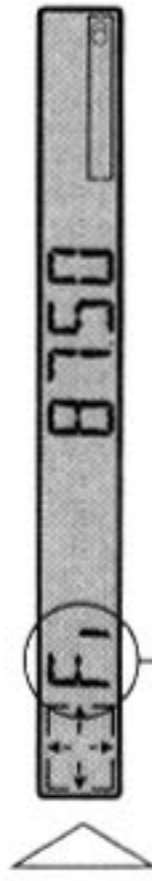
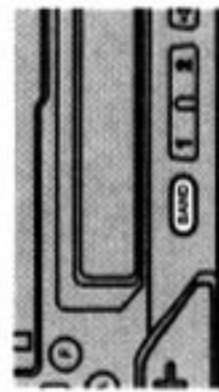


Each press changes the Source ...

Frequency appears on the display. ("CD" indicator lights when a stereo station is selected.)



2. Select the desired band.



FM → FII → FIII → MW/LW

3. Tune the receiver to a higher or lower frequency.



This product's tuner lets you select the tuning by changing the length of the time you press the button.

Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning	0.3 - 2 seconds
Manual Tuning (continuously)	2 seconds or more

Note:

- To select a weak broadcasting station that cannot be tuned in with the Seek Tuning function, tune in with Manual Tuning.

Basic Operation

Switching Power On

- Select the desired source (such as the tuner).



Each press of the SOURCE button selects the desired source in the following order:

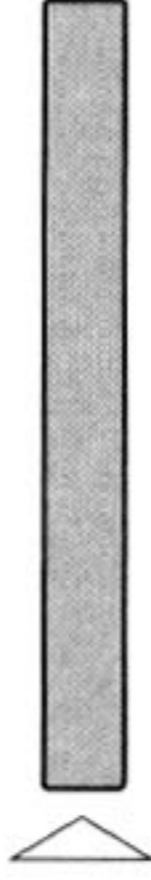
Tuner → Tape → Multi-CD player → AUX

Note:

- In the following cases, the sound source will not change:
 - No Multi-CD player is connected to this unit.
 - No cassette tape is set in this unit.
 - No magazine is set in the Multi-CD player.
 - AUX (external input) is set to OFF.

Switching Power Off

- Switch the sources OFF.



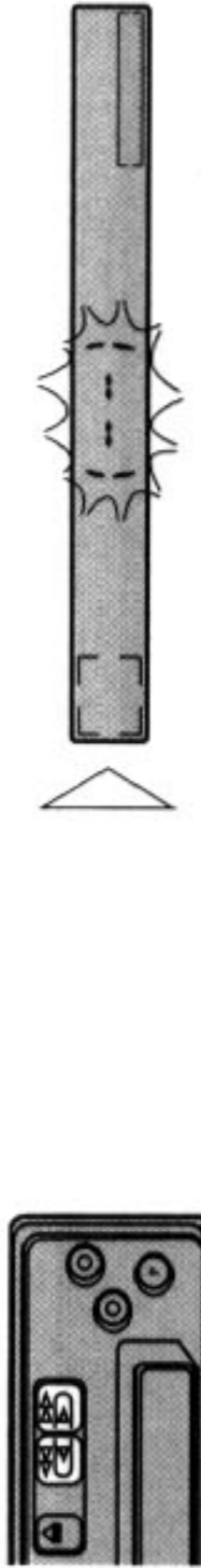
Hold for 1 second

Using the Cassette Player

■ Rewind

While “<->” is displayed, the system rewinds the cassette tape to the beginning of the current side.

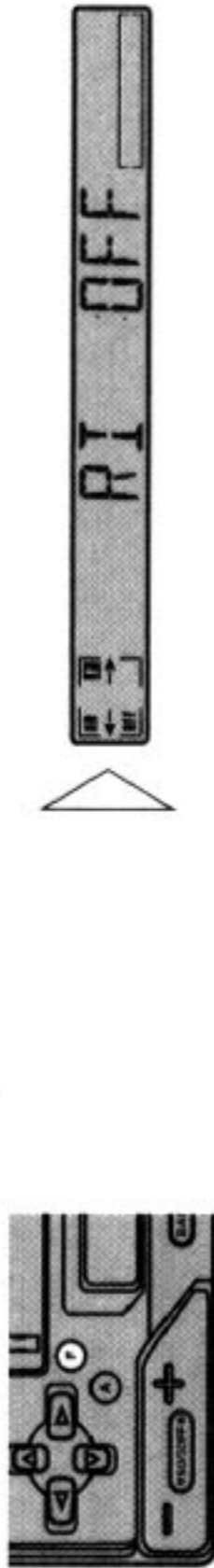
- **Rewind the cassette tape by pressing the button for the opposite direction as the tape play indicator.**



Entering the Function Menu

In this menu you can select Tape functions.

- **Select the Radio Intercept mode in Function Menu.**



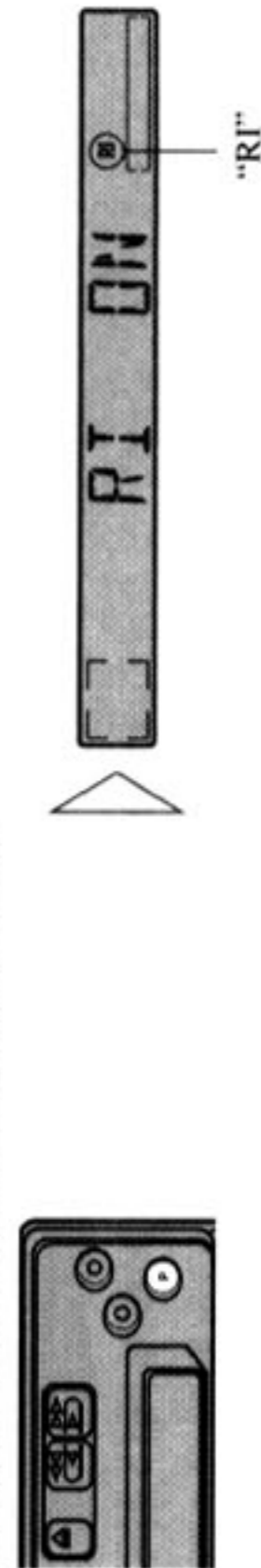
Note:

- You can cancel the Function Menu by pressing the BAND button.
- After selecting the Function Menu, if you do not perform an operation within about 30 seconds, the Function Menu is automatically canceled.
- This unit's cassette Function Menu enables Radio Intercept mode ON/OFF switching only. If you press the Function button for 2 seconds or more and select the Programmable button Setting mode, you can memorize the Radio Intercept mode ON/OFF setting beforehand. However, switching between ON and OFF is not possible with the Programmable button.
- You can cancel the Programmable button setting mode by pressing the BAND button.

Radio Intercept

This function allows you to listen to the radio during tape fast-forwarding/rewinding.

- **Switch the Radio Intercept mode ON.**



To switch the Radio Intercept mode OFF, repeat the preceding operation.

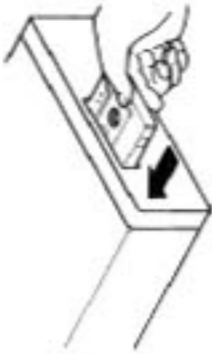
Note:

- You can also switch the Radio Intercept mode ON/OFF in the Function Menu.

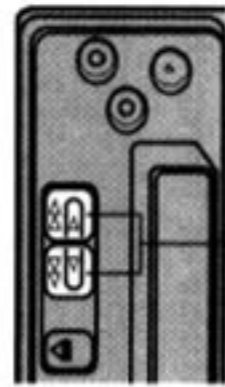
Using the Cassette Player

Basic Operation of Cassette Player

1. **Insert the cassette tape.**



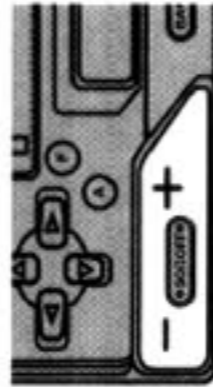
2. **Switch tape playback from side A to side B, or vice versa.**



Same Time



3. **Raise or lower the volume.**



4. **Remove the cassette tape.**



Note:

- The Tape function can be turned ON/OFF with the cassette tape remaining in this product. (See page 44.)

Fast Forward/Rewind

■ Fast Forward

While “<->” is displayed, the system fast-forwards the cassette tape to the end of the current side.

- **Fast-forward the cassette tape by pressing the button for the same direction as the tape play indicator.**

