DENON

SERVICE MANUAL

ELECTRONIC PIANO

MODEL
EP-5000

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NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

1. **Handle the power supply cord carefully**
   Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the play attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the cover. If problems occur, contact your WURLITZER dealer.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside INSTRUMENTS. Electric shock or malfunction may result.

Please, record and retain the Model name and serial number of your INSTRUMENTS shown on the rating label.
Model No. EP-913R

NOTE: To allow you to enjoy music at a stable operation, it is recommended to use this in a room 10°C~35°C.

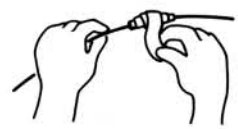
SAFETY INSTRUCTIONS FOR ELECTRONIC PIANO

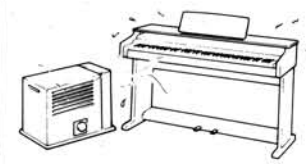
■ INSTALLATION

1. Operate the INSTRUMENTS only from a power source which is indicated on the rating label (indication) at the back of the INSTRUMENTS.
2. Prayed cords and broken plugs may cause a fire or shock hazard.
   Do not damage the power cord.
   - Do not cut and splice the power cord.
   - When removing the power cord from wall outlet, be sure to unplug by holding the play attachment and not by pulling the cord. Do not hold the plug with wet hands.
   - Call your service technician for replacement of damaged cords and plugs.
3. Select a place so that the location or position does not interfere with the proper ventilation of the INSTRUMENTS for releasing heat generated during operation.
   - Select a flat and level surface allowing enough space for setting up and operation.
   - Never block the bottom ventilation holes placing the INSTRUMENTS on a bed, sofa, rug etc.
   - Never place the INSTRUMENTS in a "built-in" enclosure unless proper ventilation is provided.
   - Never place the INSTRUMENTS near a radiator, heat register or stove.
   - Avoid locations where the INSTRUMENTS is exposed directly to the sun light.


Check voltage


Do not pinch power cord.


Do not splice power cord.


Avoid heat.

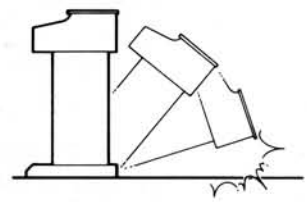
■ USE

1. Do not expose the INSTRUMENTS to rain or water (liquid). Do not spill liquid or insert metal objects inside the set. Rain, water or liquid such as cosmetics as well as metal may cause electric shorts which can result in fire or shock hazard. If anything gets inside, unplug the power cord and have a WURLITZER service technician check your set before further use.
2. Never leave your INSTRUMENTS switched on when leaving the house. For added protection of your audio system during lightning storm or when the INSTRUMENTS is to be left unused for a long period of time, be sure to unplug the power cord from the wall outlet.
3. Take care so that the INSTRUMENTS is not dropped to avoid damaging the cabinet which defeats safeguards or injuring yourself. If the INSTRUMENTS has been dropped or the cabinet has been damaged, unplug the INSTRUMENTS and have it checked by a WURLITZER service technician to restore the safeguards.


Remove power in your absence.

■ SERVICING

1. The servicing of the INSTRUMENTS must not be attempted by yourself beyond that described in the operating instructions. In case of problems that cannot be settled by referring to your operating instructions, unplug the power cord and contact your WURLITZER dealer. No user serviceable parts are inside the INSTRUMENTS. Only qualified service technician can service inside your INSTRUMENTS.
2. Refer to the operating instructions for maintenance and cleaning.


Do not down.


No user-serviceabie parts in side.

DISASSEMBLY

Fig. 1

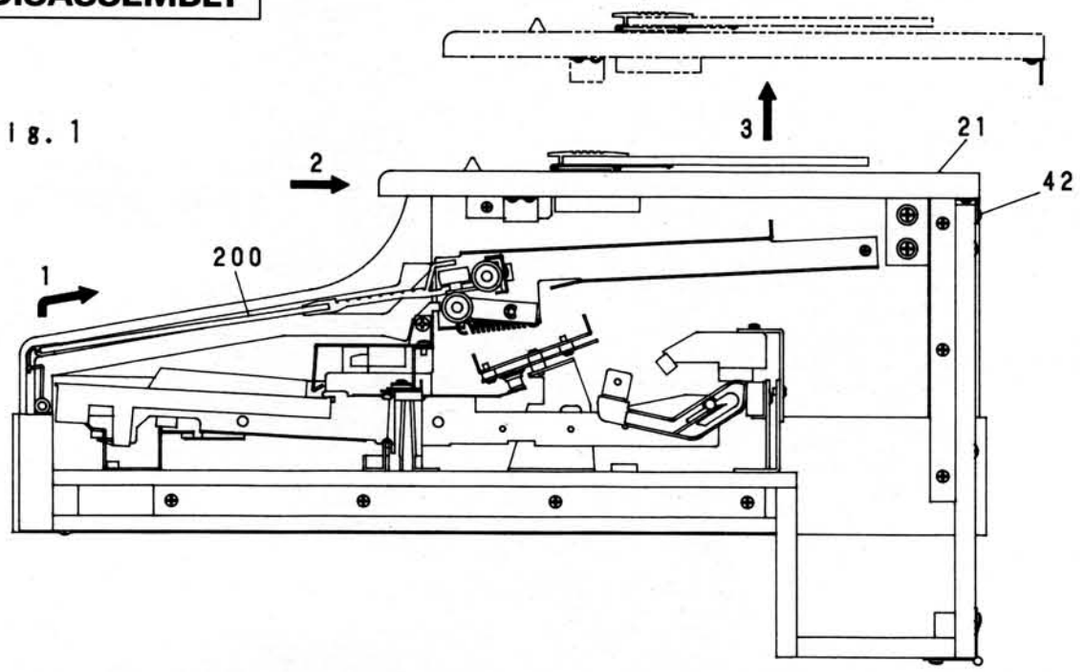


Fig. 2

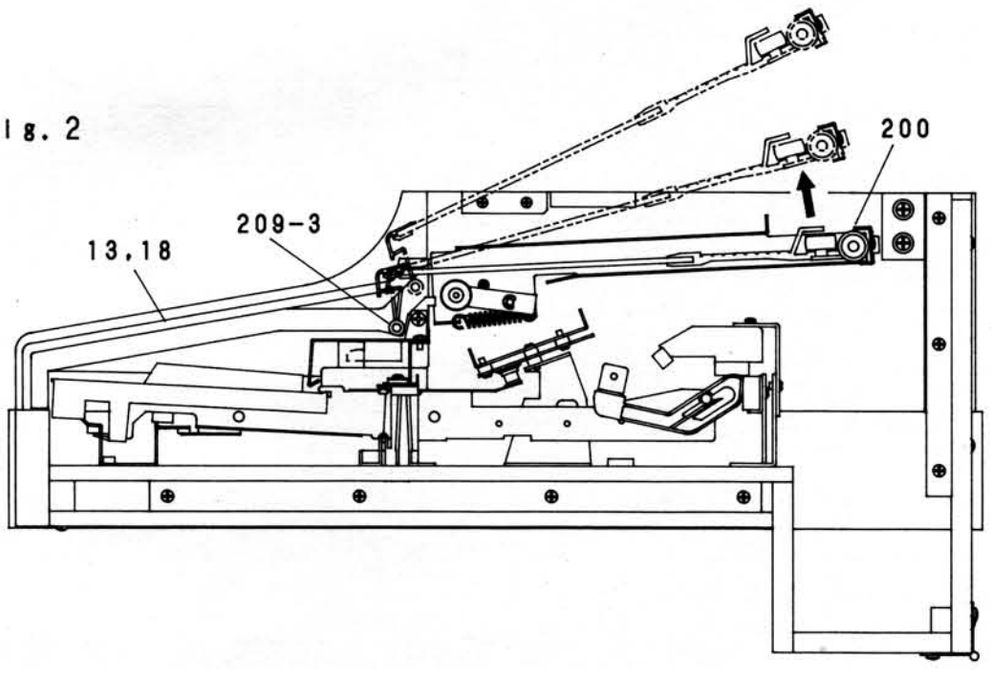


Fig. 3

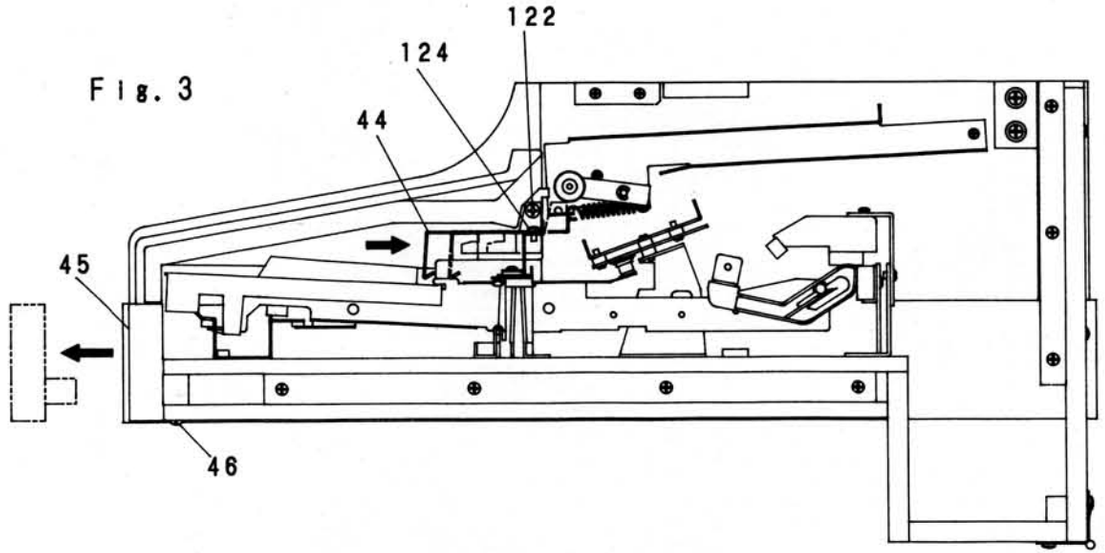
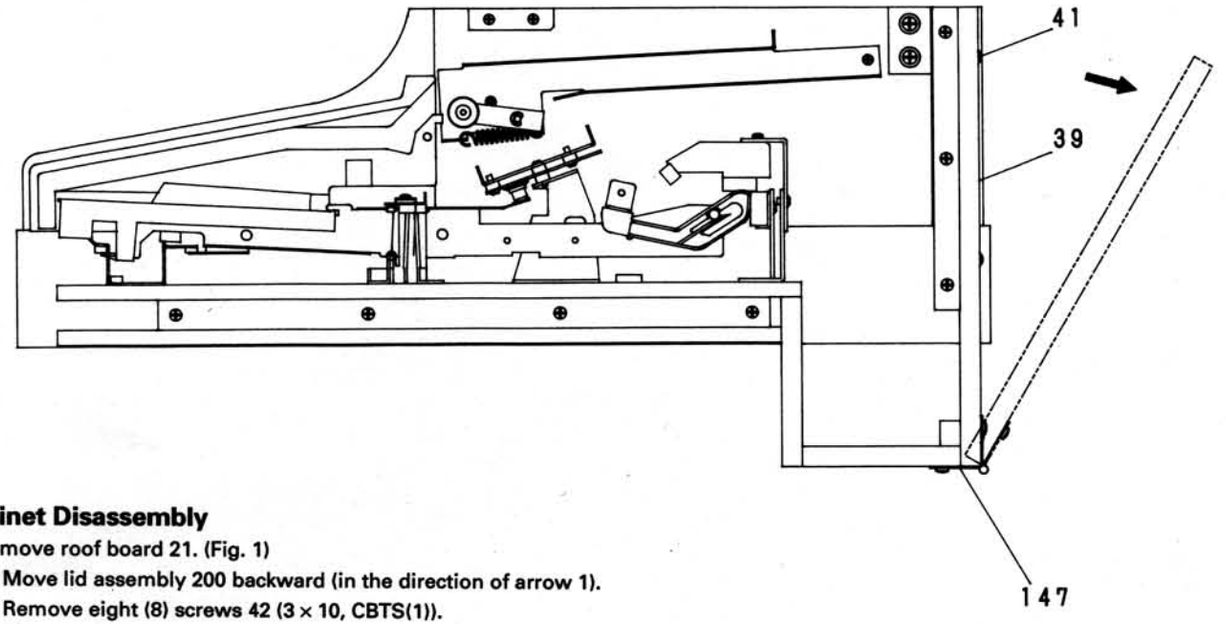


Fig. 4



Cabinet Disassembly

1. Remove roof board 21. (Fig. 1)
   1) Move lid assembly 200 backward (in the direction of arrow 1).
   2) Remove eight (8) screws 42 (3 × 10, CBTS(1)).
   3) Move roof board 21 in the direction of arrow 2 and remove it in the direction of arrow 2,
2. Remove lid assembly 200. (Fig. 2)
   1) Move lid assembly 200 backward and lift its rear in the direction of the arrow.
   2) Lift guide roller (B) 209-3 at the front obliquely along the grooves in cover guides (L) 13 and (R) 18 to remover it.
3. Remove top panel semi-assembly 44 and front board assembly 45. (Fig. 3)
   1) Remove two (2) screws 122 (3.5 × 30, CTTS(1)) each on the left and right and screw 124 (3 × 6, CBTS(S)), then move top panel semi-assembly 44 in the direction of the arrow to remove it.
   2) Remove five (5) screws 46 (4 × 40, CTTS(1)) and then front board assembly 45 in the direction of the arrow.
4. Open rear board 49. (Fig. 4)
   1) Remove nine (9) screws 41 (3.5 × 20, CTTS(1)) and turn rear board 39 to open it using rear hinge 147 as a fulcrum.

PARTS LIST OF EXPLODED VIEW

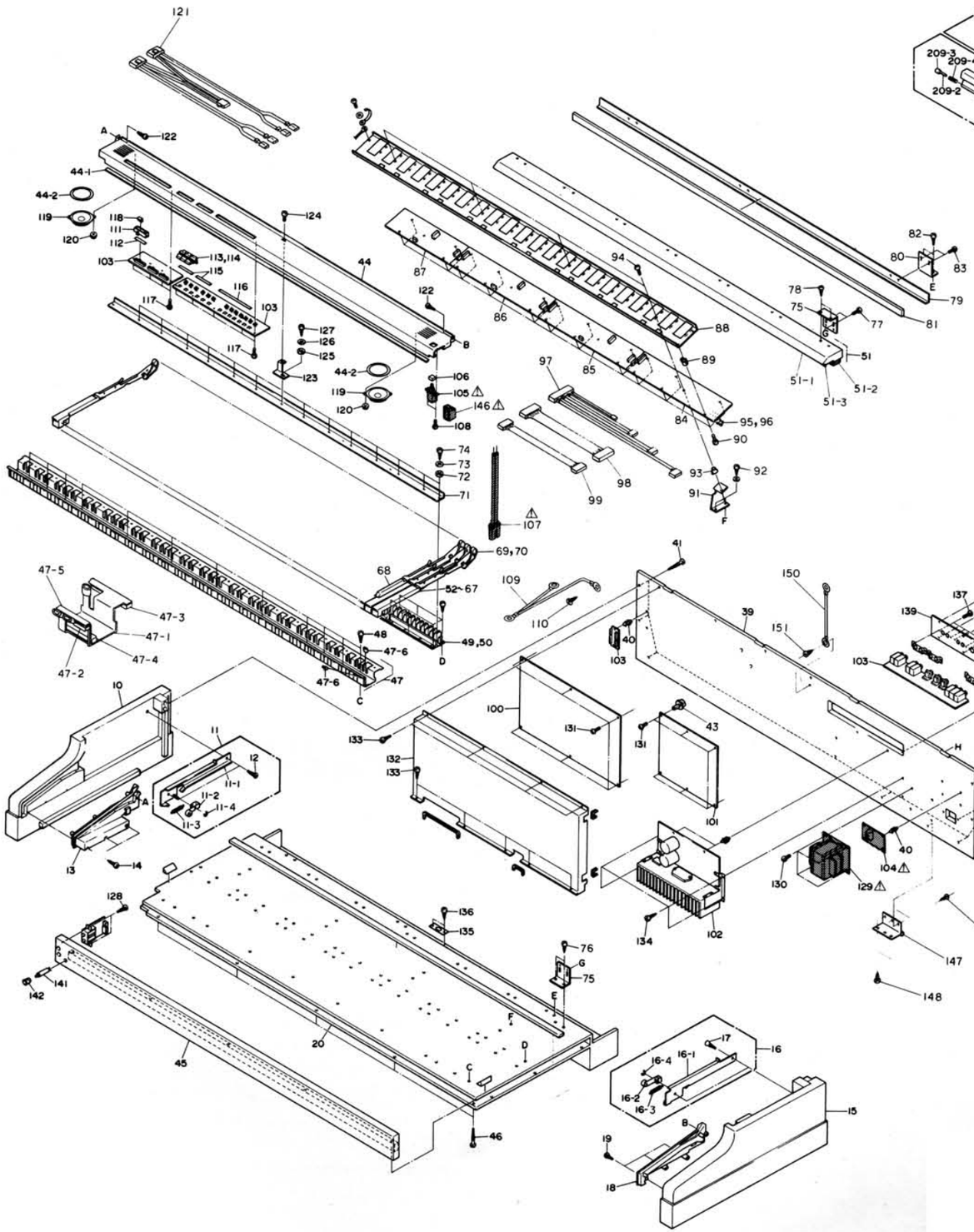
No.	Part Name	EP-5000	
		Q'ty	Part No.
1	SIDE BOARD (L) ASS'Y	(1)	1077286005
-1	SIDE BOARD (L)	1	1077287004
-2	FOOT (L)	1	1077288003
-3	4 × 40 CTTS (1)	2	4734803032
-4	JOINT BRACKET	2	4127184009
-5	3.5 × 16 CTTS (1)	4	4734806026
2	SIDE BOARD (R) ASS'Y	(1)	1077289002
-1	SIDE BOATD (R)	1	1077290004
-2	FOOT (R)	1	1077291003
-3	4x40 CTTS (1)	2	4734803032
-4	JOINT BRACKET	2	4127184009
-5	3.5x16 CRWS	4	4734806026
-6	CORD HOLER	2	EP-4772
-7	3.1 × 16 CRWS	2	4720309029
3	SPEAKER BOX ASS'Y	(1)	1077292002
-1	SPEAKER BOX SEMI ASS'Y	1	1077293001
-2	CORD HOLDER	4	EP-4772
-3	3 × 8 CBRTS (1)	4	4730304014
-4	SPEAKER GRILL (L) ASS'Y	1	1077295009
-5	SPEAKER GRILL (R) ASS'Y	1	1077297007
-6	16RG03M (SPEAKER)	2	3017017009
-7	16RG04M (SPEAKER)	2	3017018008
-8	M4 FLANGE NUT	16	SC-1050H
-9	4P CONNECTOR ASS'Y	1	2037470009
-10	3.5 × 32 CRWS	8	4720413012
-11	REAR BOARD	1	1077299005
-12	3.5 × 20 CTTS (1)	14	4734806000
4,5,6	PEDAL BOX ASS'Y	(1)	1077300004
4	PEDAL BOX SEMI ASS'Y	1	1077301003
5	PEDAL BOARD ASS'Y	(1)	1077303001
-1	PEDAL BOARD	1	1077305009
-2	PEDAL	3	4367263023
-3	PEDAL FLANGE	6	4367082000
-4	PF. BUSH	6	4367083106
-5	4 × 14 CPS (W,SW)	12	4700021026
-6	PEDAL SPRING	3	4367148009
-7	PEDAL SWITCH BRACKET	3	4127160104
-8	PEDAL SWITCH	3	2127001003
-9	3P PEDAL WIRE	1	2039458008
-10	2 ×10 CPS	3	4711810006
-11	3.5 × 10 CBTS (1)	3	4733804003
6	3.5 × 25 CRWS	6	4720411014
7	6 × 55 CTS	8	4714804019
8	ADJUSTER	1	1047038005
9	PRESS WING SCREW	4	MMP1142
10	SIDE BOARD (L) SEMI ASS'Y	1	1077216004
11	GUIDE RAIL (L) ASS'Y	(1)	4097016605
-1	GUIDE RAIL (L) SEMI ASS'Y	1	4097015305
-2	ROLLER ARM ASS'Y	1	4307104304
-3	ROLLER ARM SPRING	1	4367293103
-4	3E RING	1	4361003009
12	3 × 12 CFTS (1)	2	4732306010
13	COVER GUIDE (L)	1	4097011516
14	3 × 16 CBRTS (1)	3	4730309019
15	SIDE BOARD (R) SEMI ASS'Y	1	1077219001
16	GUIDE RAIL (R) ASS'Y	(1)	4097018603
-1	GUIDE RAIL (R) SEMI ASS'Y	1	4097017303
-2	ROLLER ARM ASS'Y	1	4307104304
-3	ROLLER ARM SPRING	1	4367293103
-4	3E RING	1	4761003009
17	3 × 12 CFTS (1)	2	4732306010

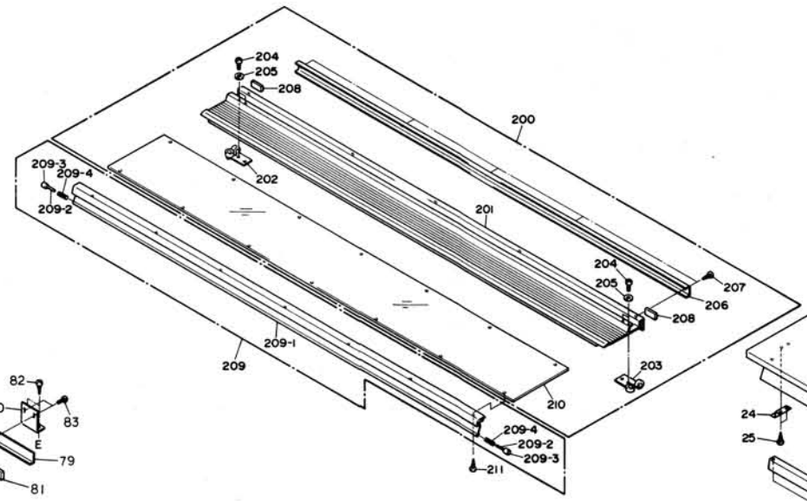
No.	Part Name	EP-5000	
		Q'ty	Part No.
18	COVER GUIDE (R)	1	4097012418
19	3 × 16 CBRTS (1)	3	4730309019
20	BOTTOM BOARD ASS'Y	1	1077221109
21	ROOF BOARD	1	1077225008
22	ANGLE BRACKET	4	4037010001
23	3 × 12 CBRTS (1)	8	4730306012
24	TOP BRACKET	2	2010023J
25	3 × 12 CBRTS (1)	4	4730306012
26	REFORM RAIL	1	4097020109
27	3.5 × 12 CBTS	5	4733804045
28	MUSIC STOPPER	1	4397035108
29	3 × 18 CBTS (P)	4	4737500060
30	3.5 W	4	4751134001
31	SCORE HOLDER	1	4397022111
32	SCORE SUPPORT	1	1037055014
33	SCORE HINGE	2	4017027108
34	3 × 6 CBTS (P)	4	4737508004
35	PROTECTION SHEET	2	1247123008
36	—		
37	PROTECTION SHEET	1	1247118000
38	3 × 10 CBTS (1)	4	4733804006
39	REAR BOARD	1	1077322008
40	LOCKING SUPPORT	8	4498079005
41	3.5 × 20 CTTS (1)	9	4734806000
42	3 × 10 CBTS (1)	8	4733816004
43	EARTH NUT	12	4777036002
44	TOP PANEL SEMI ASS'Y	1	1027191014
-1	KEY FELT	1	1247095068
-2	SPEAKER HIMELON	2	1227032000
45	FRONT BOARD ASS'Y	1	1077232004
46	4 × 40 CTTS (1)	5	4734803029
47	FRONT GUIDE RAIL ASS'Y	(1)	4307073532
-1	FRONT GUIDE RAIL	1	4367224211
-2	FRONT RAIL FELT	1	1247109006
-3	FRONT RAIL FELT	1	1247110008
-4	FRONT RAIL FELT	1	1247111007
-5	PANEL FELT	1	1247070038
-6	KEY GUIDE	88	4317002001
48	3.5 × 14 CBTS (1) (SW)	50	4718003007
49	CENTER RAIL	6	4367179104
50	DENTER RAIL (S)	1	4367317005
51	BACK RAIL ASS'Y	(1)	1007129116
-1	BACK RAIL	1	1017315017
-2	BACK RAIL FELT	1	1247087018
-3	BACK RAIL FELT	1	1247087034
52	KEY ASS'Y (W) A	5	4367304005
53	KEY ASS'Y (W) A	2	4367305004
54	KEY ASS'Y (W) B	6	4367304018
55	KEY ASS'Y (W) B	2	4367305017
56	KEY ASS'Y (W) C	6	4367304021
57	KEY ASS'Y (W) C	1	4367305020
58	KEY ASS'Y (W) D	6	4367304034
59	KEY ASS'Y (W) D	1	4367305033
60	KEY ASS'Y (W) E	6	4367304047
61	KEY ASS'Y (W) E	1	4367305046
62	KEY ASS'Y (W) F	6	4367304050
63	KEY ASS'Y (W) F	1	4367305059
64	KEY ASS'Y (W) G	6	4367304063
65	KEY ASS'Y (W) G	1	4367305062
66	KEY ASS'Y (W) A'	1	4367304076
67	KEY ASS'Y (W) C'	1	4367305075
68	KEY ASS'Y (W) A#	36	4307071107

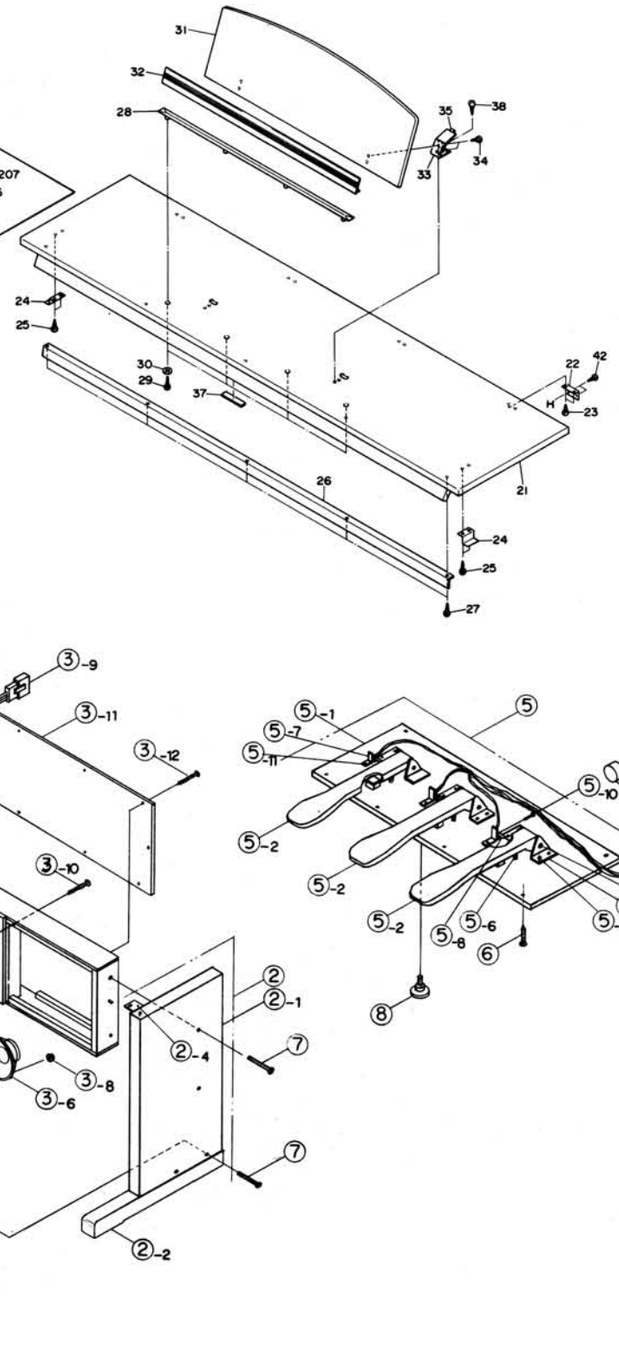
No.	Part Name	EP-5000	
		Q'ty	Part No.
69	HAMMER	81	4367183213
70	HAMMER	7	4367183226
71	TOP RAIL	1	4367189330
72	FELT WASHER	14	1247108007
73	3.5W	14	4751134001
74	3.5 × 12 CBRTS (2)	15	4730800013
75	BACK RAIL BRACKET	14	4127126000
76	3.5 × 14 CBTS (1) (SW)	14	4718003007
77	4 × 6 CTTS (2)	14	4738003003
78	3.5 × 14 CBTS (1) (SW)	14	4718003007
79	CUSHION RAIL	1	4367254003
80	CUSHION BRACKET	3	4127130008
81	CUSHION RAIL FELT	1	1247094014
82	3.5 × 14 CBTS (1) (SW)	6	4718003007
83	4 × 6 CTTS (S)	6	4738003003
84	SWITCH BOARD I UNIT	1	BP-343
85	SWITCH BOARD II UNIT	1	BP-339
86	SWITCH BOARD III UNIT	1	BP-344
87	SWITCH BOARD IV UNIT	1	BP-341
88	SWITCH BASE	1	4117092211
89	COLLAR	30	4497023010
90	3 × 10 CBRTS (S)	26	4737005002
91	BASE BRACKET	4	4127144104
92	3.1 × 14 CBTS (1) (SW)	8	4718003001
93	COLLOAR	4	4497023010
94	3.1 × 16 CBTS (S)	4	4737005031
95	8 KEY RUBBER SWITCH	11	2128582107
96	1 KEY RUBBER SWITCH	1	2128584105
97	11P CONNECTOR ASS'Y	1	2047426001
98	10P CONNECTOR ASS'Y	1	2045031032
99	6P CONNECTOR ASS'Y	1	2041432020
100	MAIN BOARD UNIT	1	3997011015
101	CONTROL BOARD UNIT	1	3997008002
102	POWER BOARD UNIT	1	3997009027
103	MULTIPLEX P.C.B.	1	BP-410
⚠ 104	L/FILTER BOARD UNIT	1	BP-399-2
⚠ 105	POWER SWITCH	1	2128590018
106	PUSH BUTTON	1	1137015048
⚠ 107	SW. CONNECTOR ASS'Y	1	2033512055
108	3 × 6 CBTS (S)	2	4737002034
109	EARTH WIRE ASS'Y	1	2097038025
110	3.5 × 10 CBTS (1)	1	4733804003
111	VOLUME PANEL	3	1037092103
112	BLIND SHEET	3	1227027108
113	SWITCH BUTTON (S)	2	1137032005
114	SWITCH BUTTON	1	1137030104
115	BLIND SHEET	1	1227029164
116	BLIND SHEET	2	1227029177
117	3 × 6 CBTS (S)	9	4737002034
118	SLIDE VOLUME KNOB	3	1137031103
119	PT-01M (CONE TWEETER)	2	3017023006
120	3 NUT-W	4	SC1082-2
121	SPEAKER WIRE ASS'Y	1	2045051009
122	3.5 × 30 CTTS (1)	2	4734806042
123	PANEL SUPPORT	1	4127181109
124	3 × 6 CBTS (S)	1	4737002034
125	FELT WASHER	1	1247108007
126	3.5W	1	4751134001
127	3.5 × 12 CBRTS (2)	1	4730800013
128	3.5 × 12 CBTS (1)	2	4733804045
⚠ 129	POWER TRANS	1	2338539005
130	4 × 14 CTS	4	4714408020

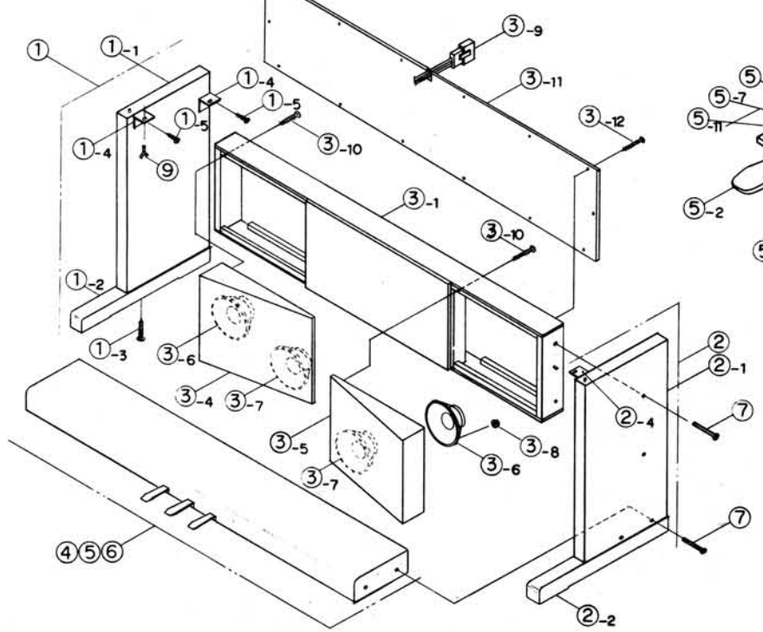
No.	Part Name	EP-5000	
		Q'ty	Part No.
131	3 × 6 CBTS (S)	12	4777002034
132	SHIELD CASE	1	4147013202
133	3.5 × 10 CBTS (1)	10	4733804003
134	3.5 × 10 CBTS (1)	4	4733804003
135	PLUG BRACKET	1	4127182001
136	3.5 × 10 CBTS (1)	2	4733804003
137	3 × 8 CBTS (S)	6	4737002021
138	PUSH RIVET	6	4770210003
139	AUX PANEL	1	1027193009
140	3 × 10 CBTS (1)	8	4733814006
141	LED ASS'Y	1	3937018081
142	LED BUSHING	1	4430310007
⚠ 143	AC CORD WITH PLUG	1	2062021009
⚠ 144	BUSHING	1	4450047004
145	BUSHING PLATE	1	4127133005
⚠ 146	SWITCH COVER	1	4157006005
147	REAR HINGE	2	4017034007
148	3 × 10 CBTS (1)	4	4733816004
149	3 × 10 CBTS (1)	6	4733816004
150	STAY	1	1297010006
151	3.5 × 10 CBTS (1)	1	4733804003
200	LID ASS'Y	(1)	1037094004
201	REAR LID	1	1037054316
202	R/BRACKET (L) ASS'Y	1	4397025406
203	R/BRACKET (R) ASS'Y	1	4397026405
204	3 × 8 CBTS (S)	4	4737002018
205	3 W	4	4751003006
206	COVER SUPPORTER	1	4337005004
207	3 × 6 CBTS (P)	5	4737500002
208	PANEL FELT	2	1247096025
209	FRONT LID ASS'Y	(1)	1037095003
-1	FRONT LID	1	1037052211
-2	ROLLER SHAFT (B)	2	4227002201
-3	GUIDE ROLLER (B)	2	4217002004
-4	SPRING	2	4367294102
210	WINDOW	1	1037053304
211	3 × 5 CBTS (B0)	1	4733814006
250	CARTON CASE ASS'Y (PIANO STAND)	(1)	5017415104
251	CASE	1	5017416006
252	CUSHION ASS'Y	1	5027508001
253	OUT CARTON	1	5017413122
300	CARTON CASE ASS'Y (PIANO MAIN UNIT)	(1)	5017402007
301	CARTON CASE	1	5017366033
302	OVER SIDE CUSHION	1	5027445009
303	UNDER SIDE CUSHION	1	5027446008
304	F.R. COVER	2	5027470016
305	OVER COVER	1	5027471002
306	UNDER COVER	1	5027472001
307	KEY CUSHION	2	5027473000
308	PAD	2	5047029104
309	OUT CARTION	1	5017413009
401	INSTRUCTION MANUAL (PIANO STAND)	1	5117231000
402	OWNERS MANUAL (PIANO MAIN UNIT)	1	5117230001

EXPLODED VIEW



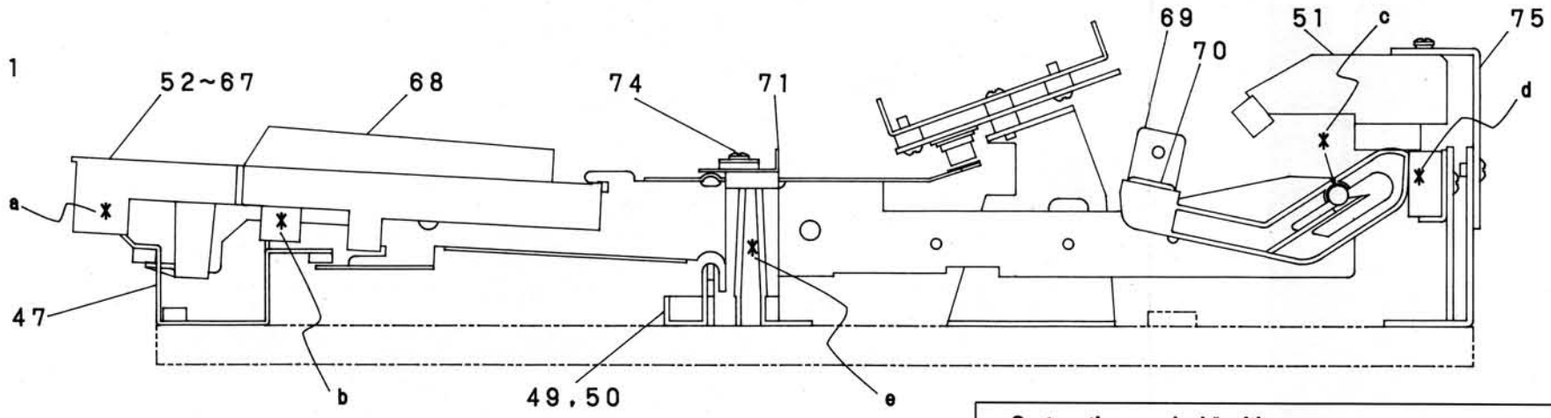






DISASSEMBLY OF KEYS

Fig. 1



Coat sections marked * with grease.

a. Contact between the inside of natural key and key guide
b. Contact between the inside of chromatic key and key guide
c. Engagement between hammers and hammer shaft
d. Contact between the hammers and cushion rail felt
e. Contact between the key assembly and center rail

Grease — Silicone grease SB-1 (white) ..... a, b, c, d
Shinetsu silicone grease G30M
Shinetsu silicone oil KF96H 100,000CS > Mixing ratio: 1:1
PLASTILUBE EP(brown) ..... e

Fig. 4

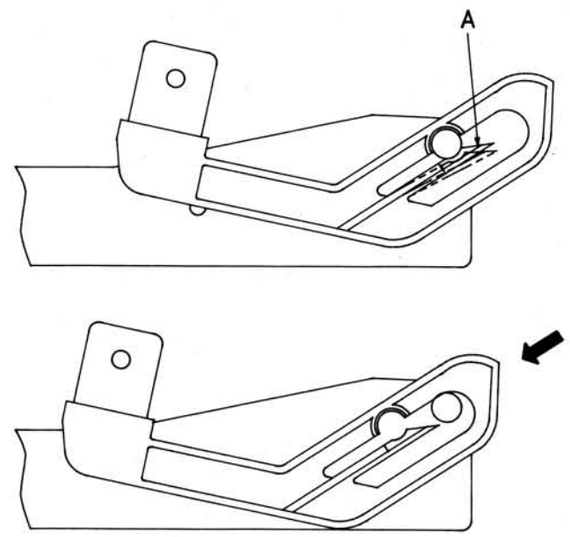


Fig. 2

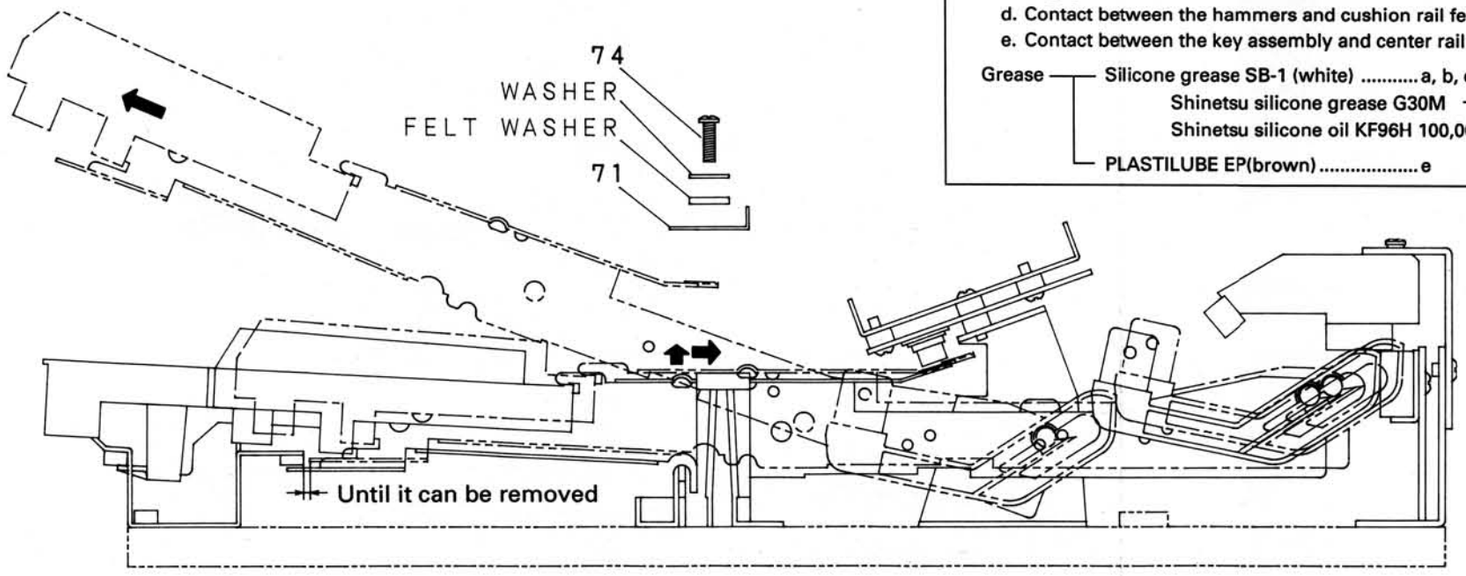
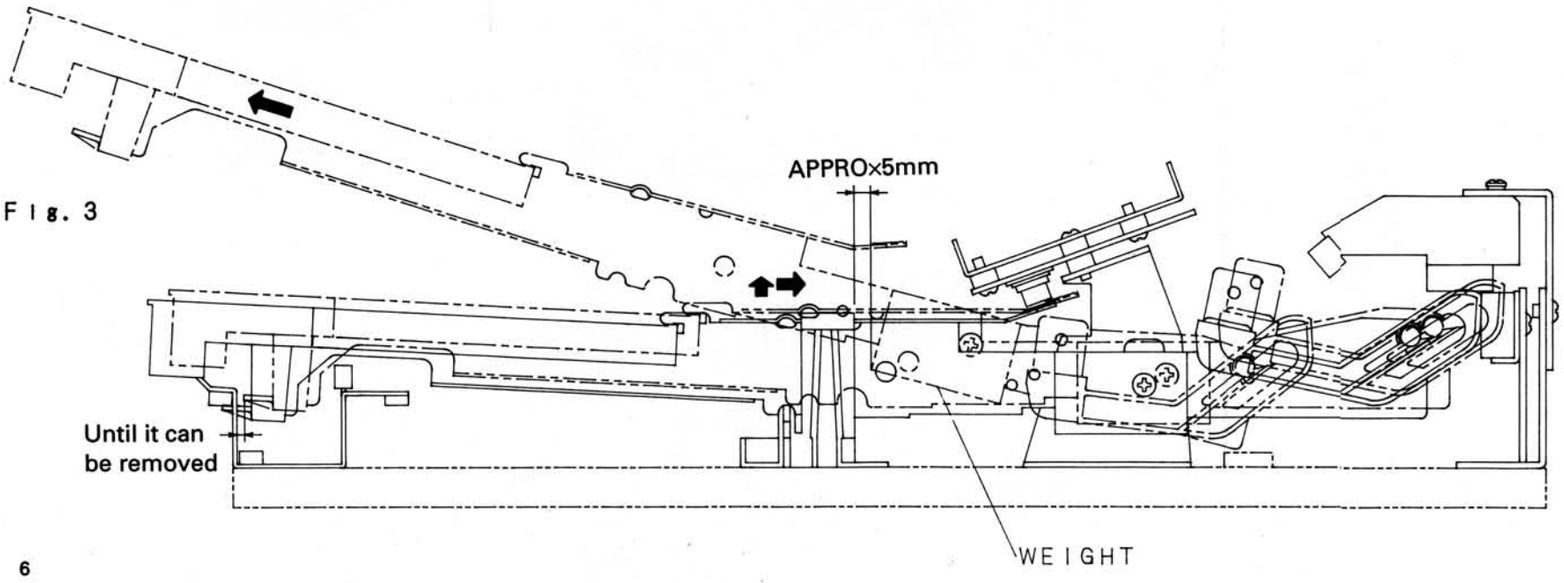


Fig. 3



Keyboard Disassembly – Cross-sectional view (Fig. 1)

*Remove chromatic keys first, and install natural keys first.

1. Chromatic key removal (Fig. 2)
   1) Remove fifteen (15) screws 74 (3.5 × 12, CBTS(2)) and then top rail 71.
   2) Lift key assembly (B) 68 and move it backward to release the upper limit stopper section at the front bottom from front guide rail assembly 47.
   3) Lift the front of the chromatic key block and pull out the block forward obliquely. Since hammers 69 and 70 rotate freely at this time, hold them so the block can easily be pulled out.
2. Natural key removal (Fig. 3)
   1) Lift key assemblies (W) 52-67 and move them backward to release the upper limit stopper section from front guide rail assembly 47.
   2) Lift the front of the natural key and the key forward obliquely up to about 5 mm where the weight nearly touched center rails 49 and 50 and then turn it to the left or right by 45° to pull it out. Since hammer 69 rotates freely at this time, hold it so the key can easily be pulled out.
3. Hammer removal (Fig. 4)
   1) Depress sections A of hammers 69 and 70 and push the hammers in the direction of the arrow to remove them.

ADJUSTMENT OF KEYS

Fig. 1

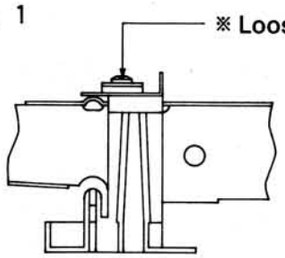


Fig. 2 Loosen screw A holding back rail bracket 75 (so that it moves when it is hit by the handle of screwdriver) and lower the back rail so that the keyboard sinks 10.5±0.5 mm,then tighten the screw. (The keyboard sinks more when back rail 51 is lowered and sinks less when it is raised.)

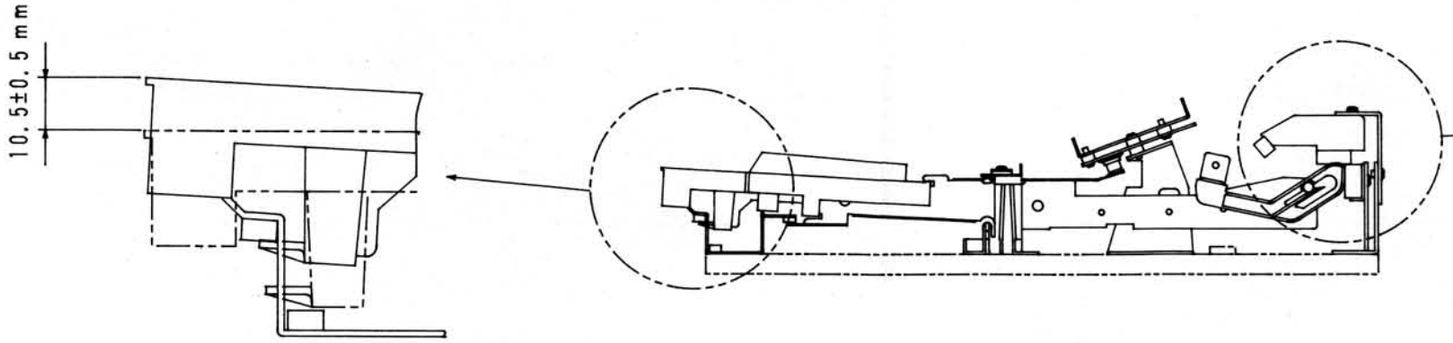


Fig. 3

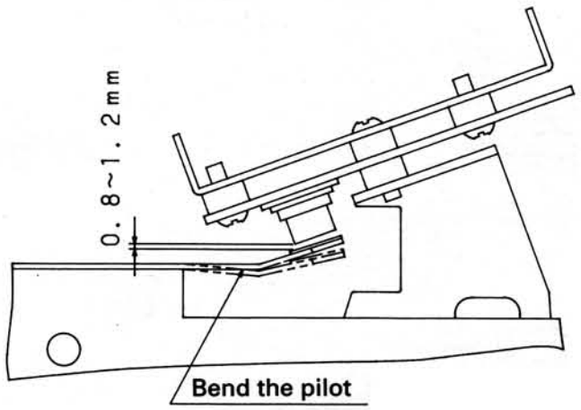
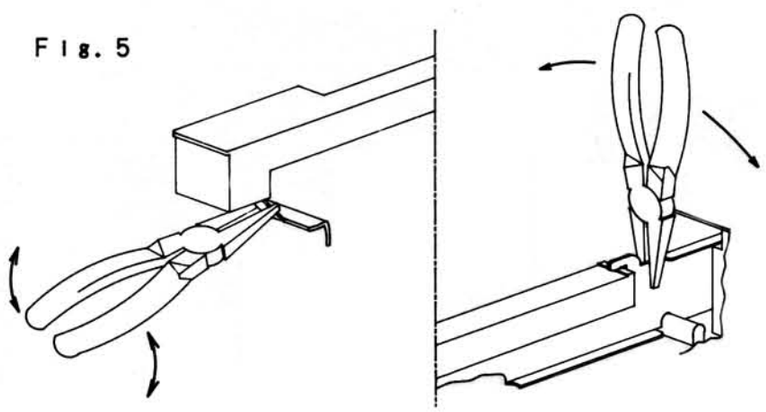


Fig. 4

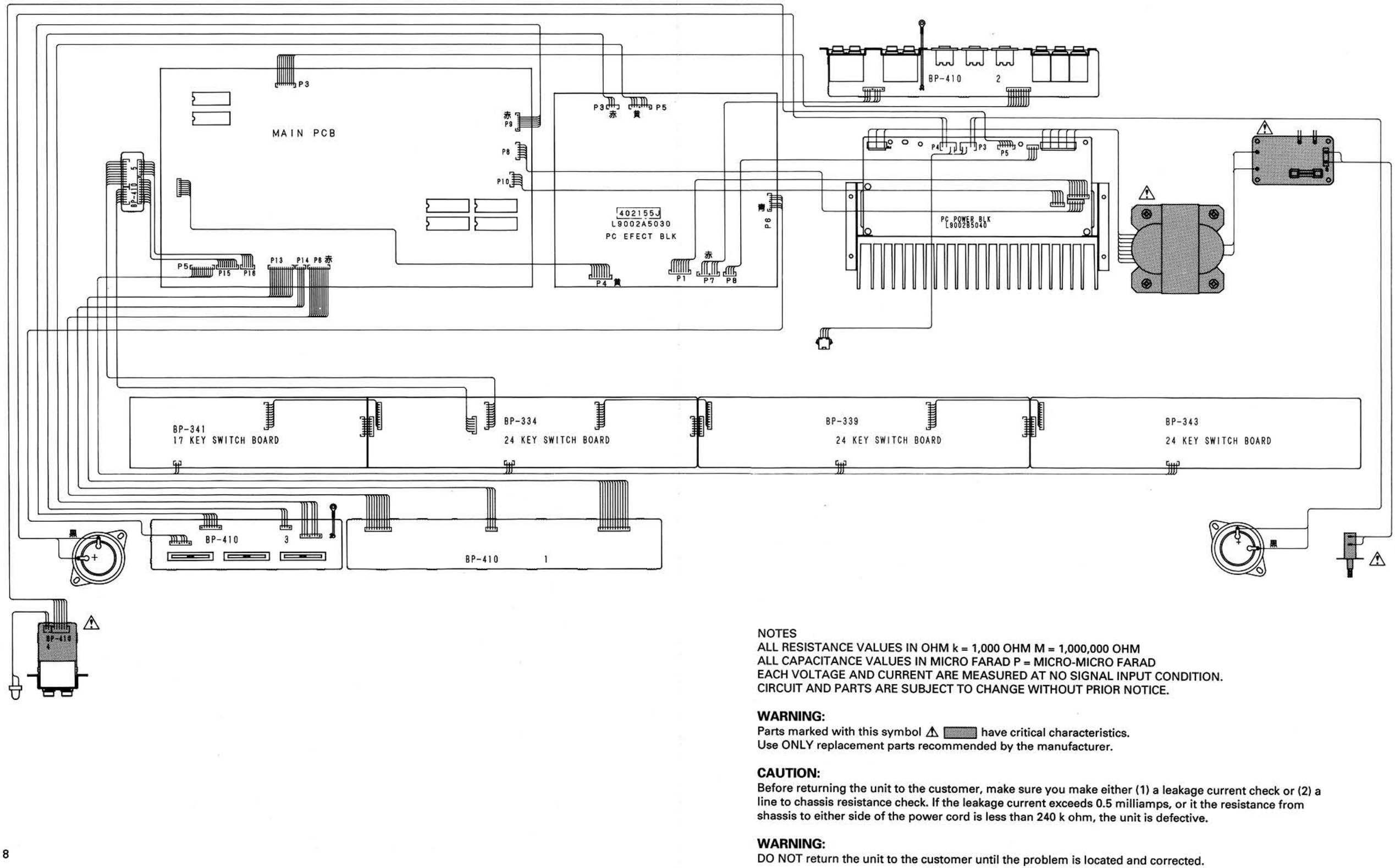
Fig. 5



Causes of Defect, Remedies and Adjustments

1. Key does not return
   - a) The key arm comes into contact with the switch base bracket ..... Bend the key arm to eliminate the contact.
   - b) Since the screws holding the top rail are too tight, the cabinet is warped, swelled or shrunk, causing the gap of the center rail to be narrower ..... Loosen the screws holding the top rail. (Fig. 1)
   - c) No grease at the key guide ..... Coat with grease (Silicone grease SB-1 *White)
   - d) No grease at the center rail ..... Coat with grease (Plastilube EP *Brown)
   - e) The rotation of hammers is not smooth (no grease at the shaft, defective engagement) ..... Coat with grease (Silicone grease SB-1 *white) * Replace the hammers if engagement is defective.
2. Key noise
   - a) No grease between the center rail and key arm ..... Coat with grease (Plastilube EP *Brown)
   - b) The key arm comes into contact with the switch base bracket ..... Bend the key arm to eliminate the contact.
   - c) Lifting of the center rail and fulcrum at which the key arm rotates (when a key is pressed, the keyboard hits the key cushion first) ..... Defective adjustment of keyboard height (refer to keyboard height adjustment)
   - d) Touching of keys ..... Adjust the tilt of keyboard (refer to keyboard tilt adjustment)
3. Adjustment This action is feasible to adjust the keyboard height and the gap at the actuators of the rubber switch and key arm as well as the keyboard tilt and horizontal alignment.
   - a) Adjusting the tilt of keyboard ..... (Fig. 4)
   - b) Adjusting the alignment of kyeboard (horizontal) ..... (Fig. 5)
   - c) Adjusting the height of keyboard ..... (Fig. 2)
   - d) Adjusting the gap at the actuators of the rubber switch and key arm ..... (Fig. 3)

BLOCK DIAGRAM



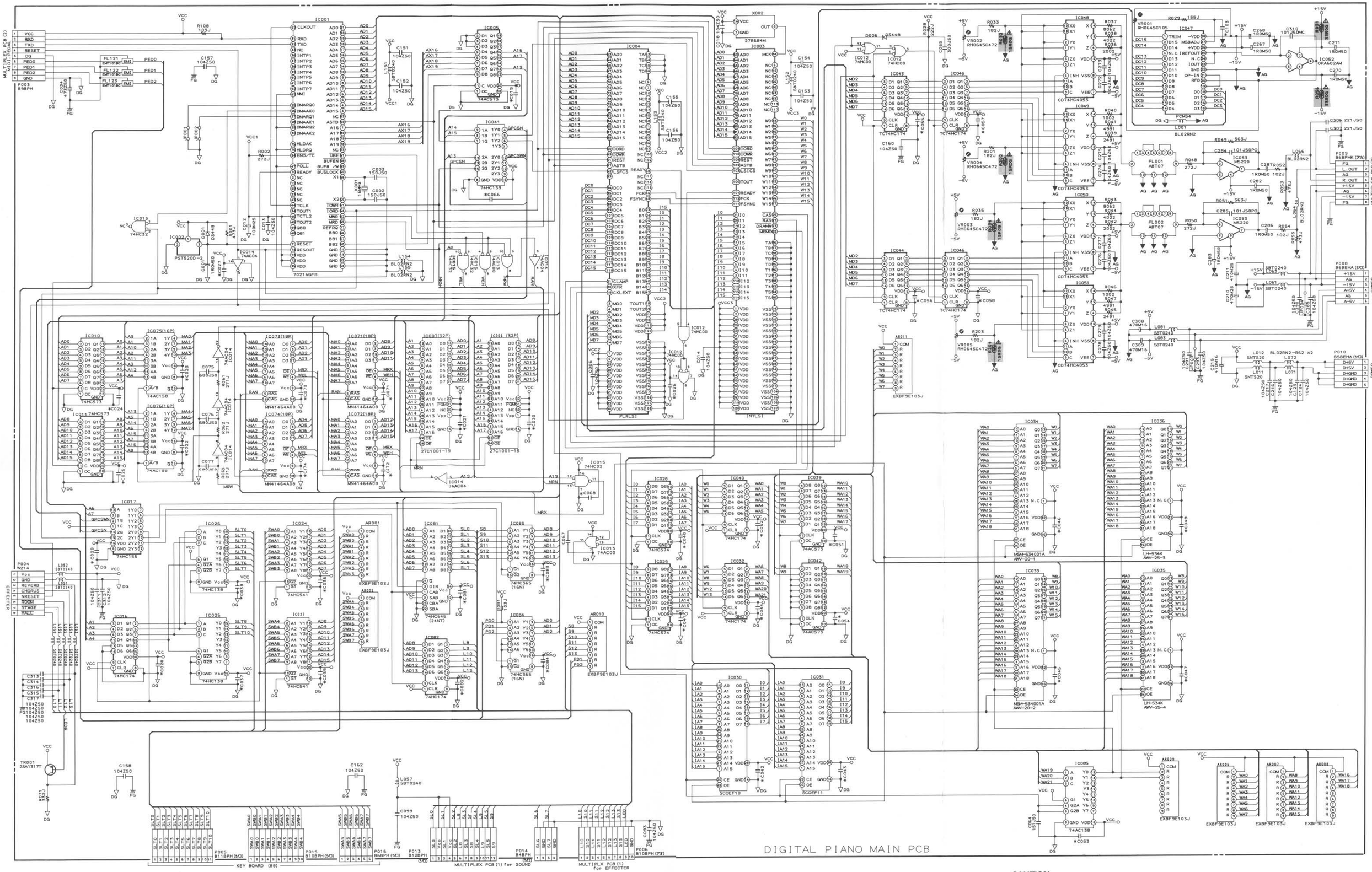
NOTES
ALL RESISTANCE VALUES IN OHM k = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
Parts marked with this symbol ⚠ ▒▒ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or it the resistance from shassis to either side of the power cord is less than 240 k ohm, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

3997011015 MAIN BOARD CIRCUIT DIAGRAM



NOTES
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CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
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Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
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WARNING:
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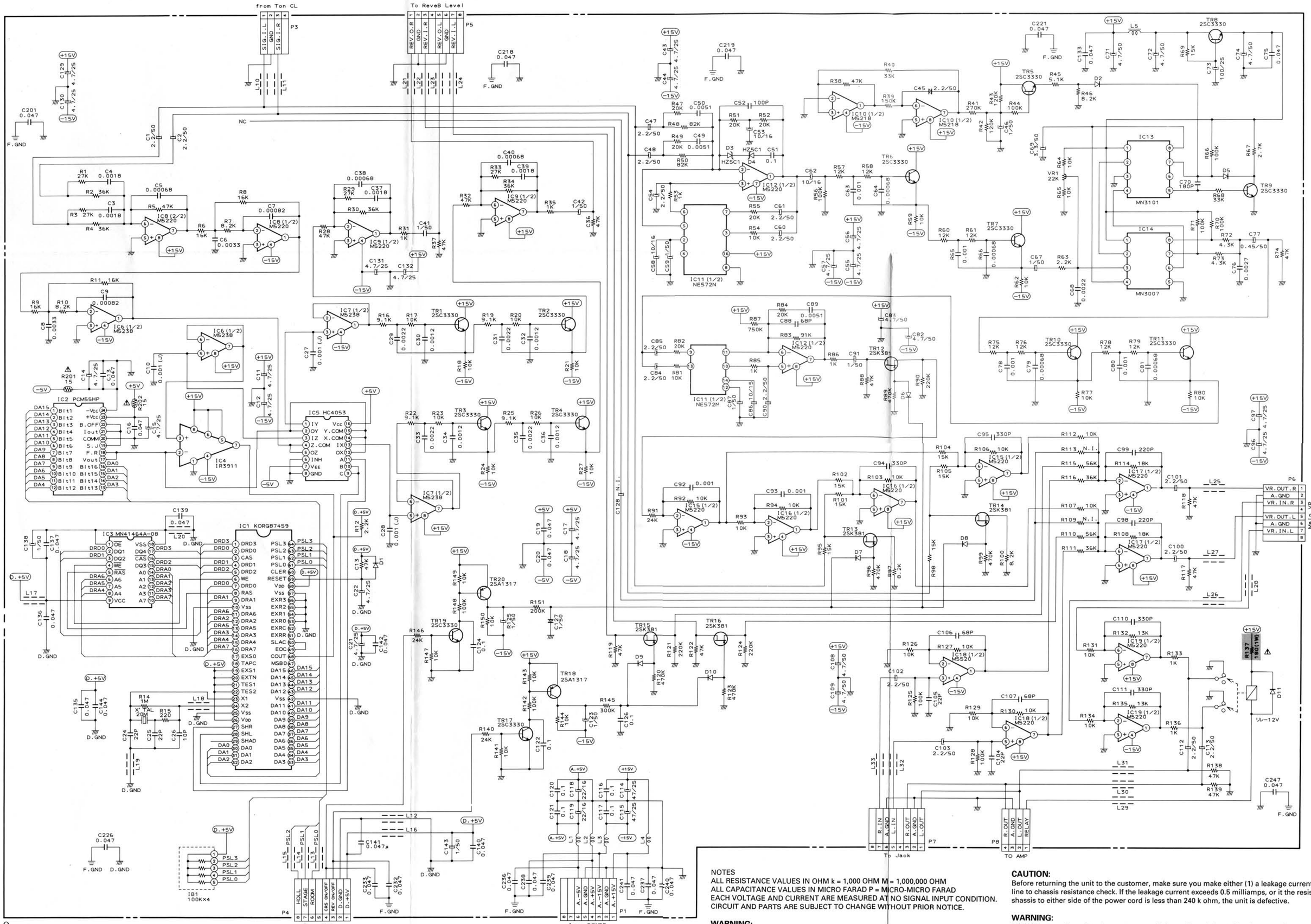
3997008002 CONTROL BOARD CIRCUIT DIAGRAM



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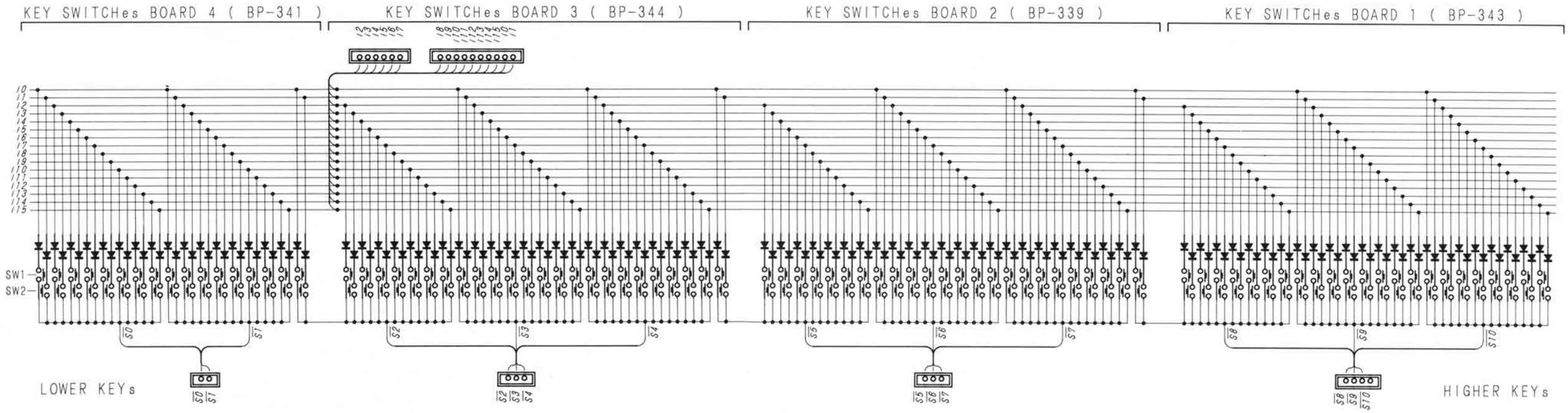
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

BP-343, 339, 334, 341 SWITCH BOARD CIRCUIT DIAGRAM



KEY SWITCHes BOARDs (88 KEYs MATRIX)

KEY SWITCH :

NOTES
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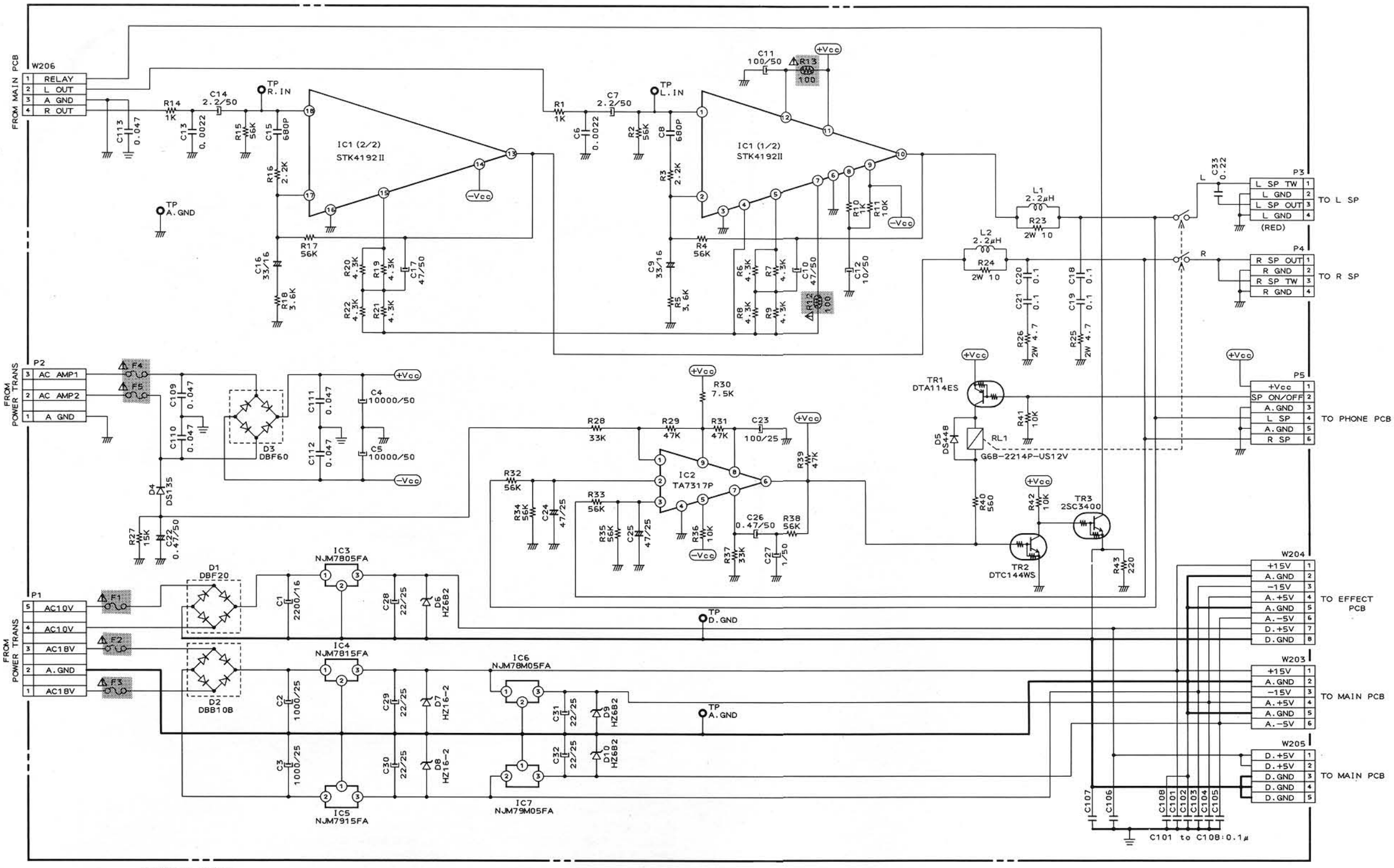
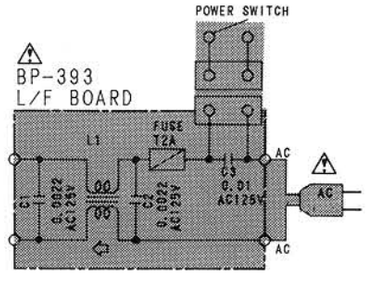
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

3997009027 POWER BOARD CIRCUIT DIAGRAM



POWER PCB

BP-393-2 L/FILTER BOARD CIRCUIT DIAGRAM



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CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
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Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
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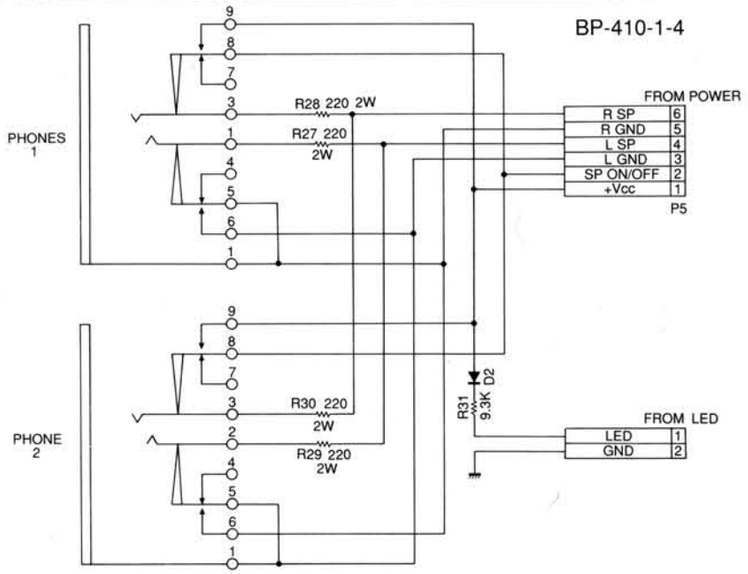
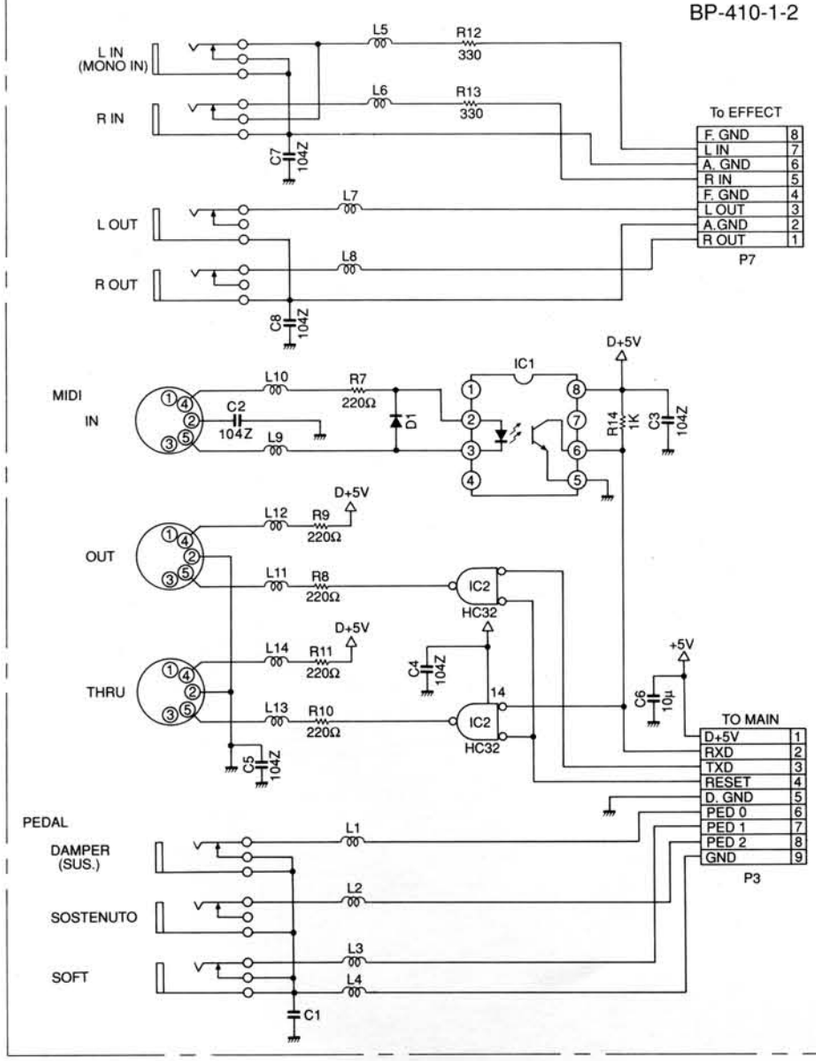
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

BP-410 MULTIPLE BOARD CIRCUIT DIAGRAM

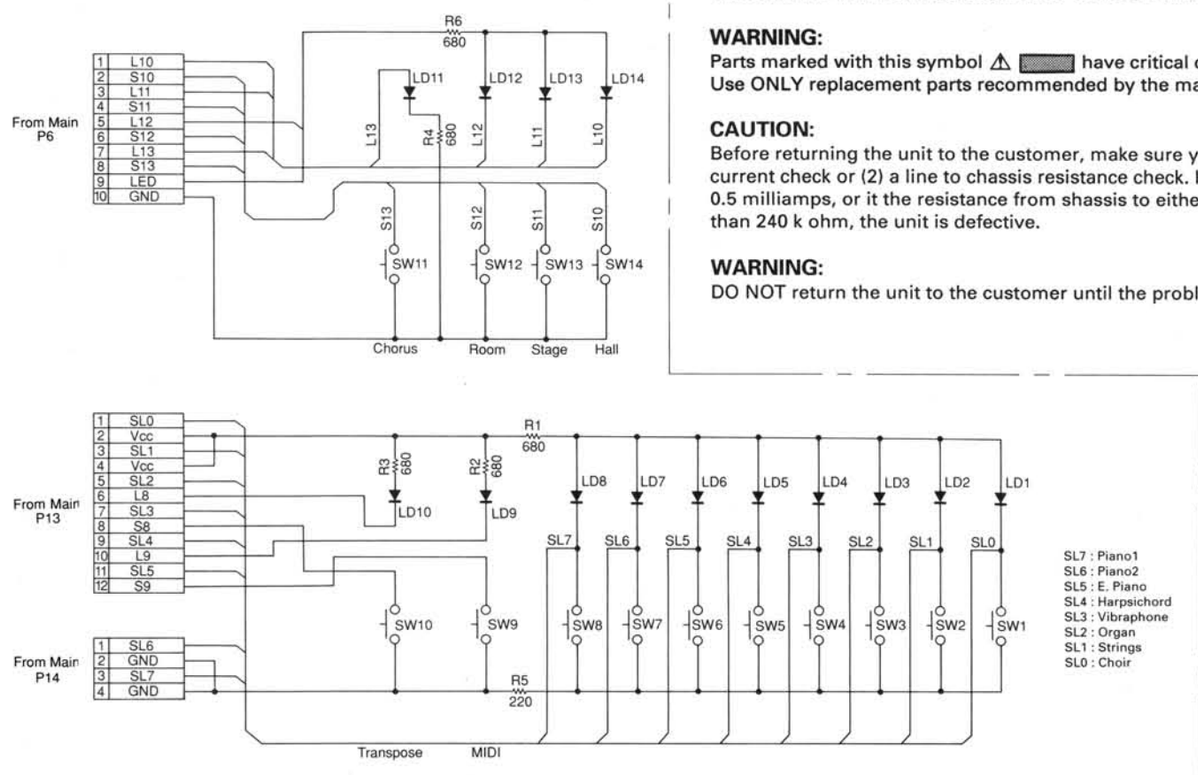
BP-410-1-4



BP-410-1-2



BP-410-1-1



NOTES
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CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
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Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
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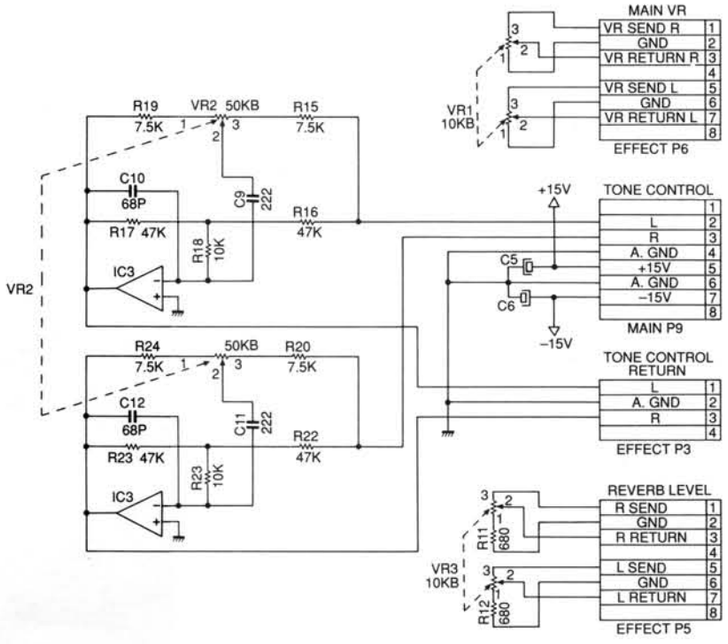
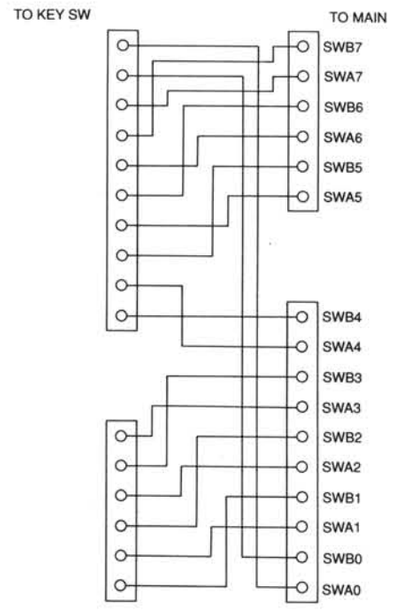
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

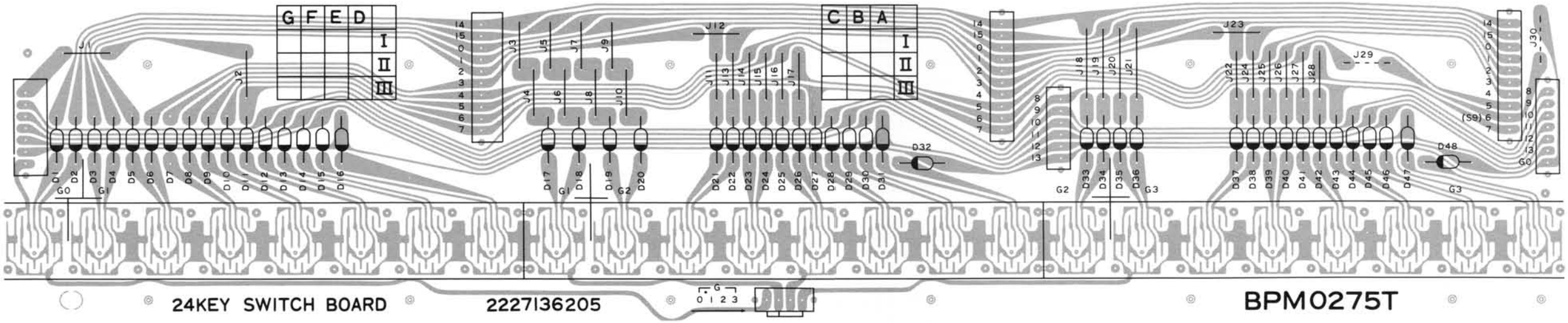
BP-410-1-3



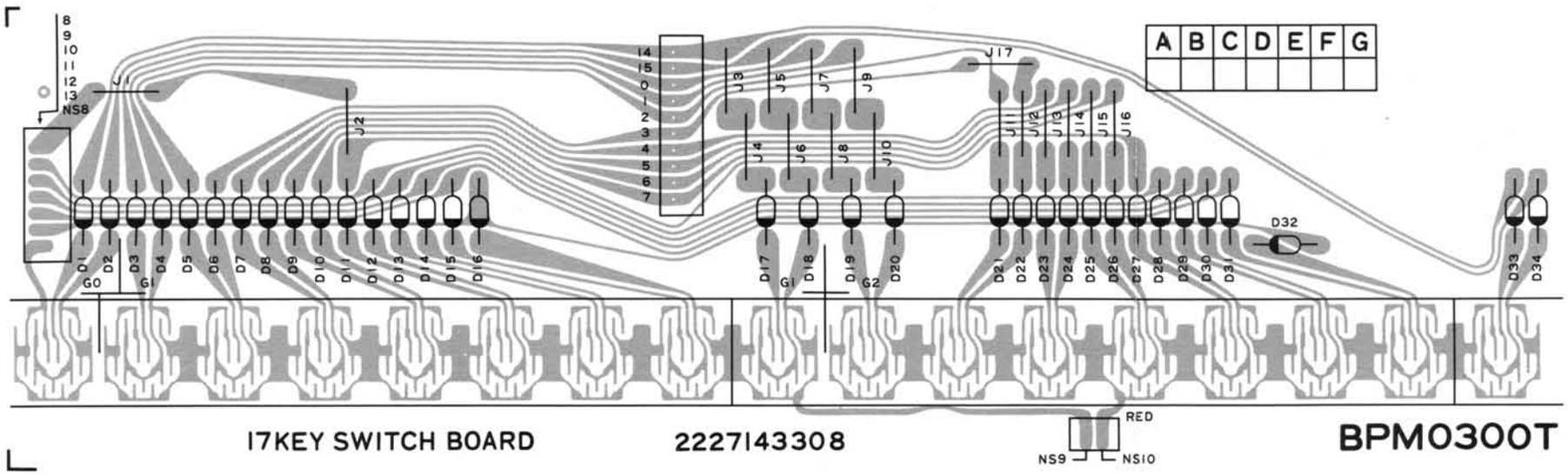
BP-410-1-5



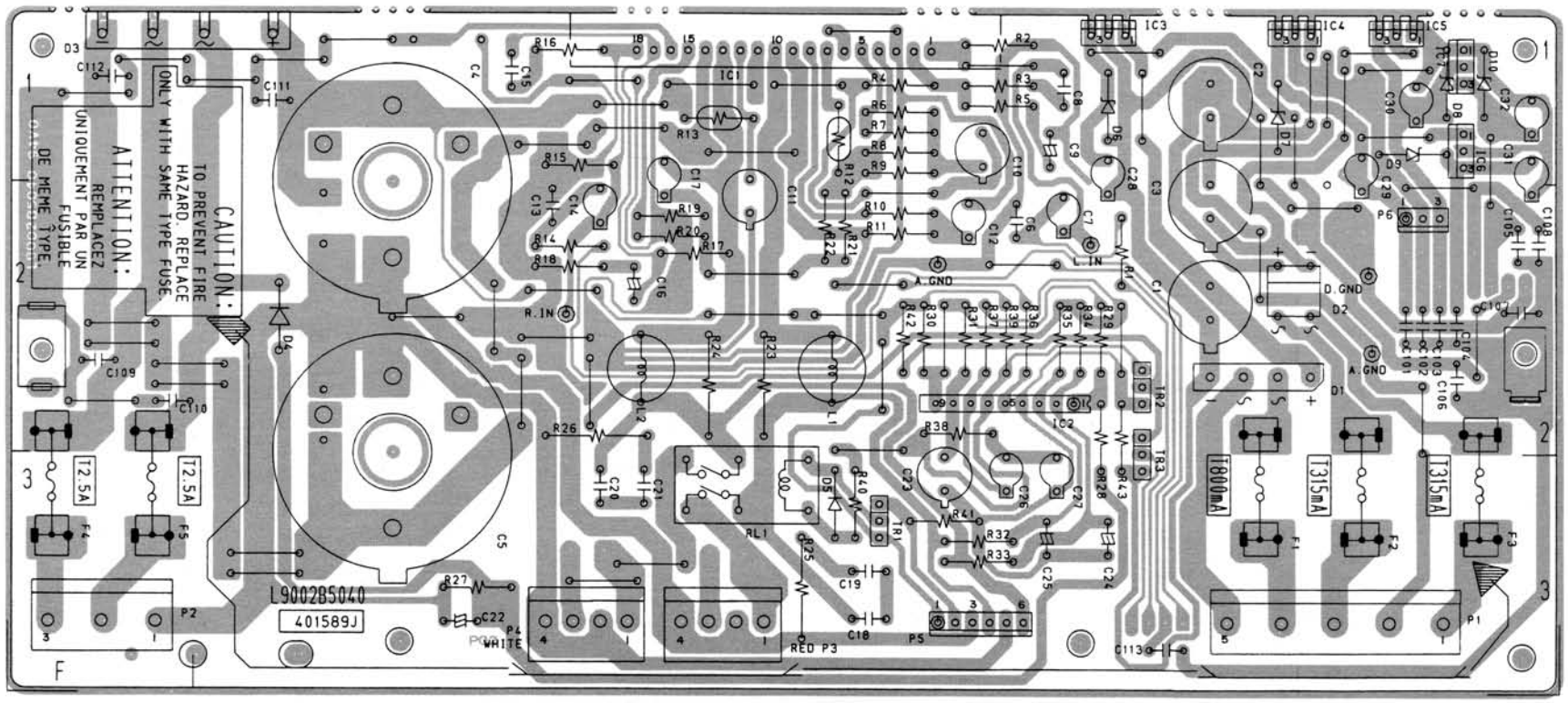
BP-343, 339, 344 SWITCH BOARD UNIT



BP-341 SWITCH BOARD UNIT

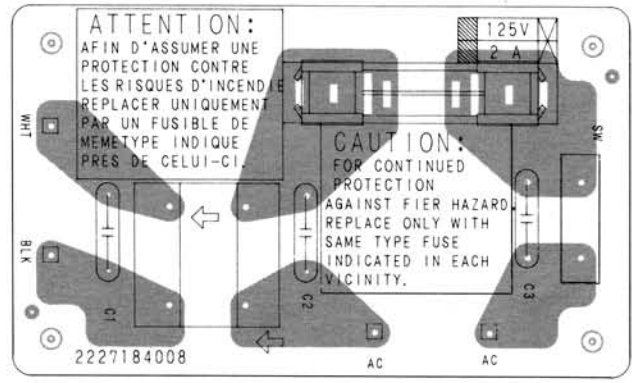


3997009027 POWER BOARD UNIT

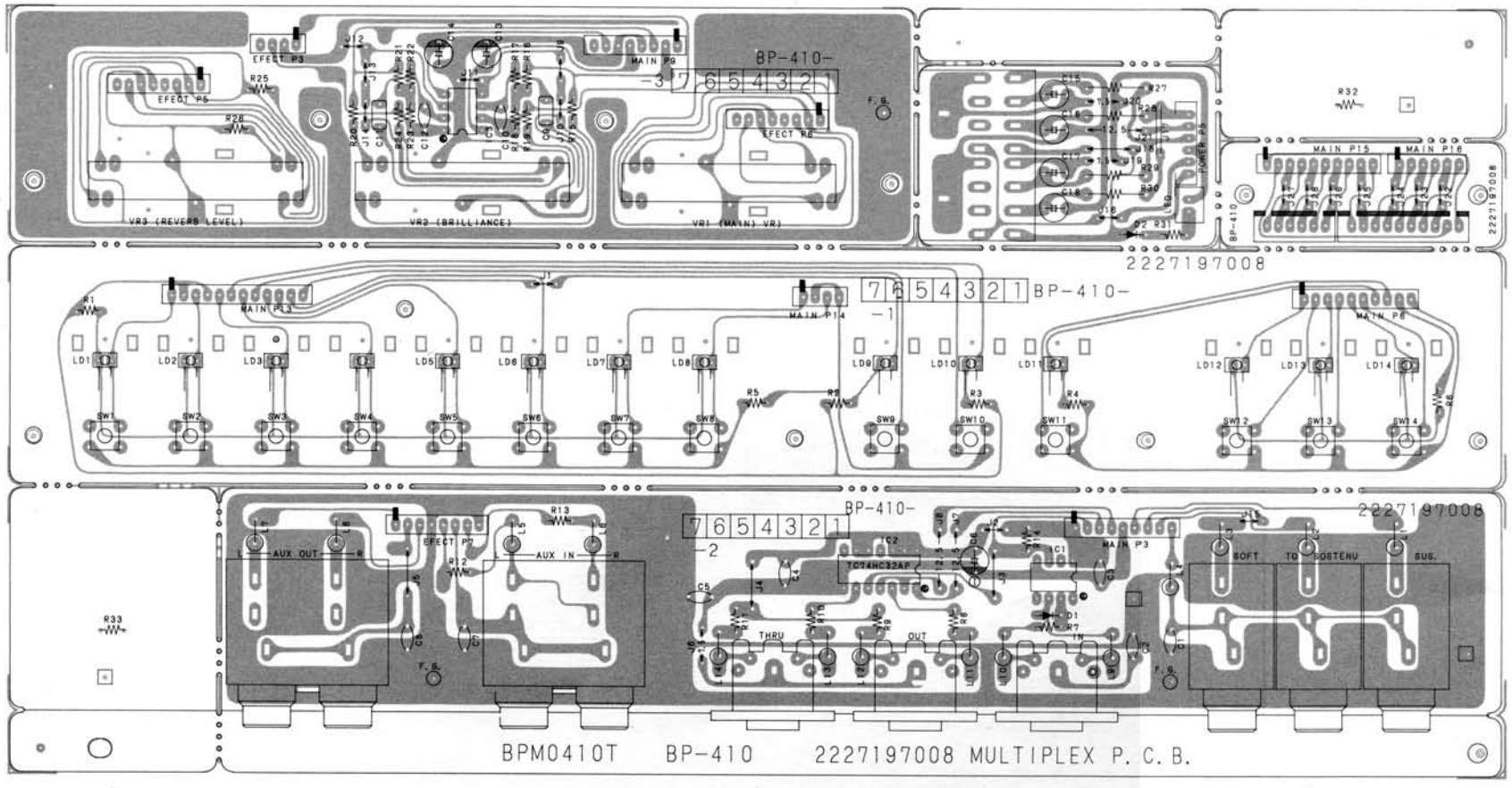


POWER PCB L9002B5040

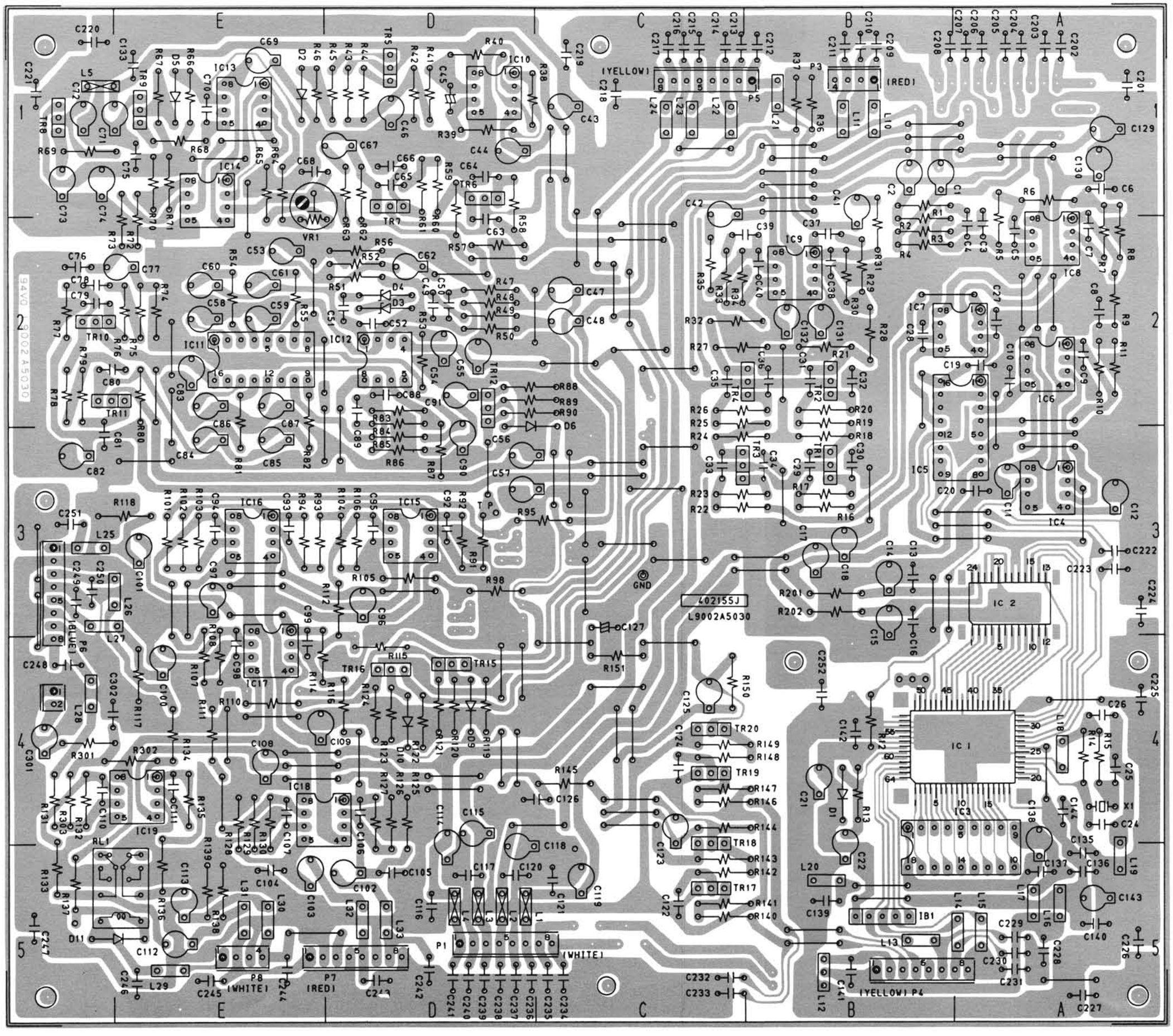
BP-393-2 L/FILTER BOARD UNIT



BP-410 MULTIPLEX BOARD UNIT



3997008002 CONTROL BOARD UNIT



EFFECT PCB L9002A5030

PRINCIPAL PARTS LOCATION

ICS

IC1	A,B4
IC2	A3
IC3	A,B5
IC4	A3
IC5	A,B2
IC6	A2
IC7	A,B2
IC8	A2
IC9	B2
IC10	D1
IC11	E2
IC12	D2
IC13	E1
IC14	E1
IC15	D3
IC16	E3
IC17	E4
IC18	D,E4
IC19	E4

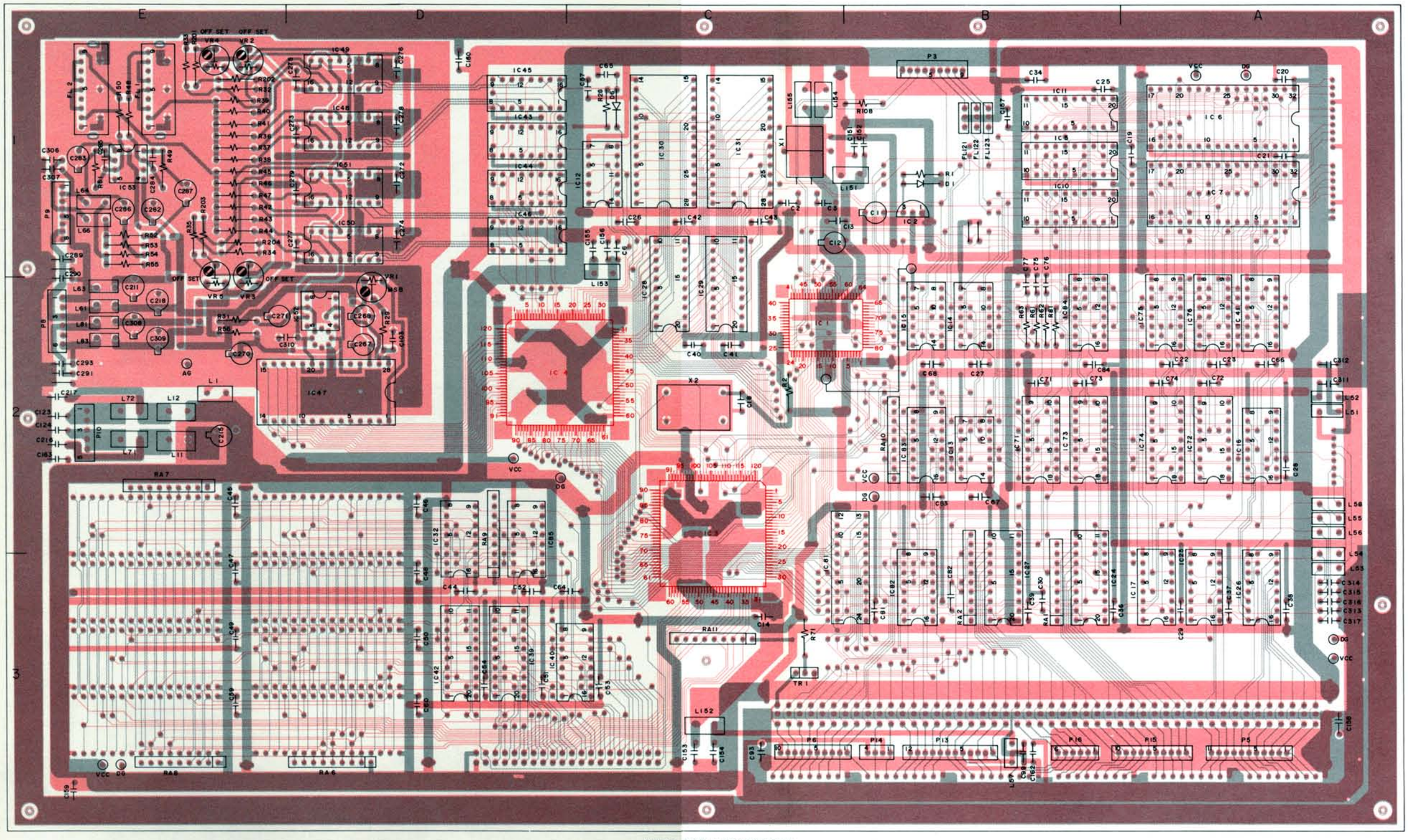
CONNECTORS

P1	D5
P3	B1
P4	B5
P5	C1
P6	F3
P7	D5
P8	E5

TRANSISTORS

TR1	B3
TR2	B2
TR3	C3
TR4	B,C2
TR5	D1
TR6	D1
TR7	D1
TR8	F1
TR9	E1
TR10	F2
TR11	E,F2
TR12	D2
TR15	D4
TR16	D4
TR17	C5
TR18	C5
TR19	C4
TR20	C4

3997011015 MAIN BOARD UNIT



MAIN PCB L9002A5010

PRINCIPAL PARTS LOCATION

ICS

IC1	B,C2
IC2	B1
IC3	C2,3
IC4	C,D2
IC5	B1
IC6	A1
IC7	A1
IC10	B1
IC11	B1
IC12	C1
IC13	B2
IC14	B2
IC15	B2
IC16	A2
IC17	A3
IC24	B2,3
IC25	A3
IC26	A3
IC27	B2,3
IC28	C1,2
IC29	C1,2
IC30	C1
IC31	C1
IC32	D2,3
IC39	D3
IC40	C,D3
IC41	A2
IC42	D3
IC43	D1
IC44	D1
IC45	D1
IC46	D1
IC47	D,E2
IC48	D1
IC49	D1
IC50	D1
IC51	D1
IC52	D2
IC53	E1
IC57	E3
IC58	D,E3
IC71	B2
IC72	A2
IC73	B2
IC74	A2
IC75	A2
IC76	A2
IC81	B2,3
IC82	B3
IC83	B2
IC84	B2
IC85	D2,3

CONNECTORS

P3	B1
P5	A3
P6	C3
P8	E2
P9	E1
P10	E2
P13	B3
P14	B3
P15	A3
P16	B3

TRANSISTOR

TR1	C3

VOLUME ADJUSTMENT

Test Mode and Adjustment EP-5000 MAIN PCB

Test mode

How to set to the test mode:

Press the CHOIR button and hold it, then turn the power switch on.

Only the PIANO 1 indicator lights.

How to release the test mode:

Press the tone select button or turn the power switch off and then on again.

Details of test mode:

Offset adjustment

MSB adjustment

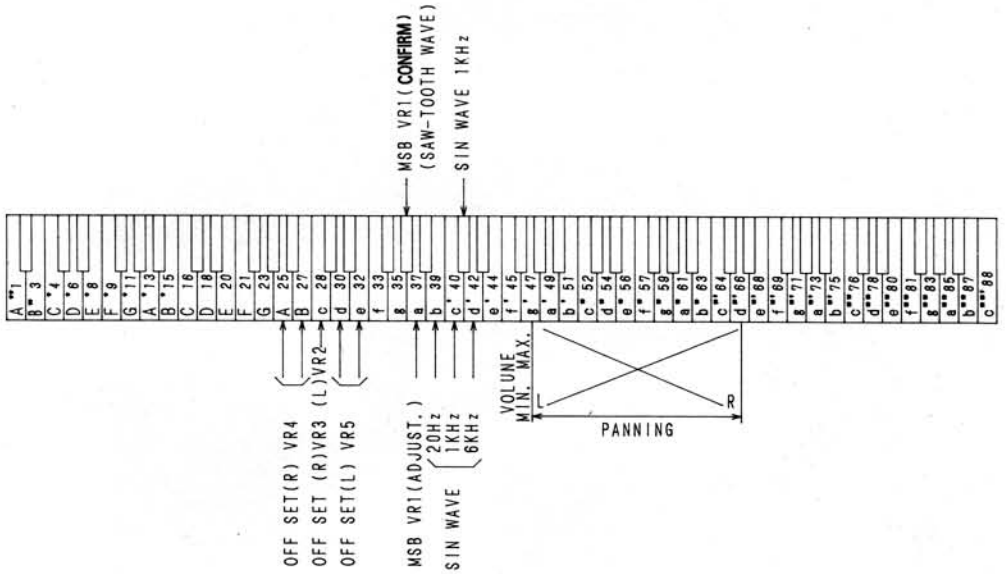
Sine-wave output (20Hz, 1kHz, 6kHz, 20kHz)

Sine-wave output (1kHz, output higher than above)

Panning

Relationship between the test mode and keyboard

See below.



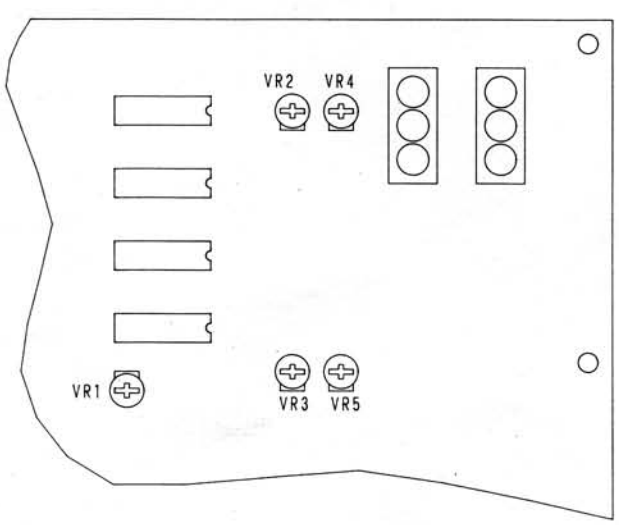
Adjustment

(1) Test equipment necessary for adjustment

Millivoltmeter

(2) Warm up the instrument for mode than 5 minutes and set it to the test mode, then start adjustments.

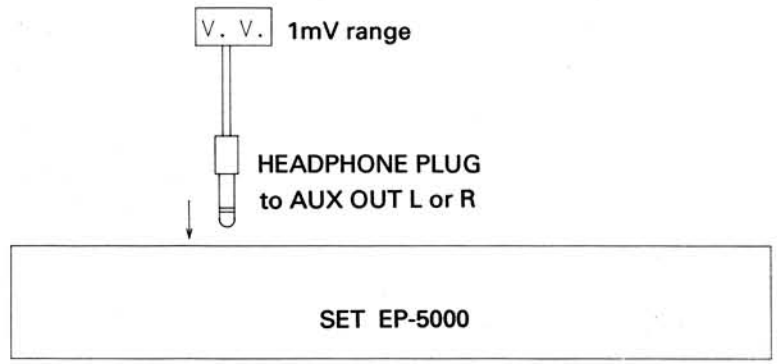
(3) Locations of adjustment components



(4) Order of adjustments

1. Warm up	more than 5 minutes
2. Teat mode	
3. Offset adjustment	1 VR2 (R Side)
	2 VR3 (L Side)
	3 VR4 (R Side)
	4 VR5 (L Side)
4. MSB adjustment	VR1

Adjustment



Setting of variable resistors on panel

Variable resistor	VOLUME	BRILLIANCE
Setting	MAX.	BRIGHT

Adjuatment

Adjust the variable resistors so the reading of the V.V. is minimum.

	Adjustment	Plug Position (AUX OUT)	KEY No.	Opration
1	VR2	R	28 (C)	VR2 Turn C on repeatedly.
2	VR3	L	28 (C)	VR3 Turn C on repeatedly.
3	VR4	R	30, 32 (D, E)	VR4 Turn D and E on alternately and repeatedly.
4	VR5	L	25, 27 (A,B)	VR5 Turn A and B on alternately and repeatedly.
5	VR1	L	37 (A)	VR1 Turn A on. (Adjust so the volume is minimum when hearing.)

SPECIFICATIONS

Model EP-5000

Keyboards	88 Keys (A_2~c^5)		
Sound range	7 octaves 1/4		
Voices	Piano 1•2, E.Piano, Harpsichord Vibraphone, Organ, Strings, Choir		
Effects	Reverb Chorus		
Controls	Volume, Tuning, Transpose		
Connecting Jacks	AUX IN (monaural, steleo)		
	AUX OUT (stereo)		
	Headphone terminal × 2		
	Sustain pedal, Soft pedal		
	MIDI IN, MIDI OUT, MIDI THRU		
Speakers	16 cm × 4, Tweeter × 2		
Output	30 W+30 W		
Dimensions	Width	Height	Depth
	1370 mm	860 mm	574 mm
Weight	74 Kg		

Note: The specifications and appearance are subject to changes with out notice.

LIST OF P.W.BOARD No.

Name of P.W.BOARD	P.W.BOARD No.
SWITCH BOARD I	BP-343
SWITCH BOARD II	BP-339
SWITCH BOARD III	BP-344
SWITCH BOARD IV	BP-341
MAIN BOARD	3997011015
CONTROL BOARD	3997008002
POWER BOARD	3997009027
MULTIPLEX BOARD	BP-410
L/FILTER BOARD	BP-393-2