

VK-1 SERVICE NOTES

SPECIFICATIONS

TUNE RANGE: ±30 cents CHORUS-VIBRATO RATE: 0.3-8 Hz
 OUTPUT: L = -24 dB; M = -12 dB; H = 0 dB
 POWER CONSUMPTION: 20 Watts
 DIMENSIONS: 1130 (w) x 148 (h) x 448 (d) mm
 WEIGHT: 16 Kg

Knob no.78 (016-078)

Pot. EVHCOAK15B14 (026-003)
 (EVH8MA360B14)

Pot. EVHCOAK15A15 (026-176)
 (EVH8MA360A15)

Pot. EVHCOAK15B54 (026-004)
 (EVH8MA360)

Pot. EVHCOAK15B14 (026-003)

Switch 320. 2 E1-1
 White (001-315)
 Orange (001-317)
 Blue (001-320)

Top cover H18 (086H018)

Trim H6 (093H006)

Cabinet H221
 (081H221)

Endblock H21
 (091H021)

Drawbar (set)
 RD-19C

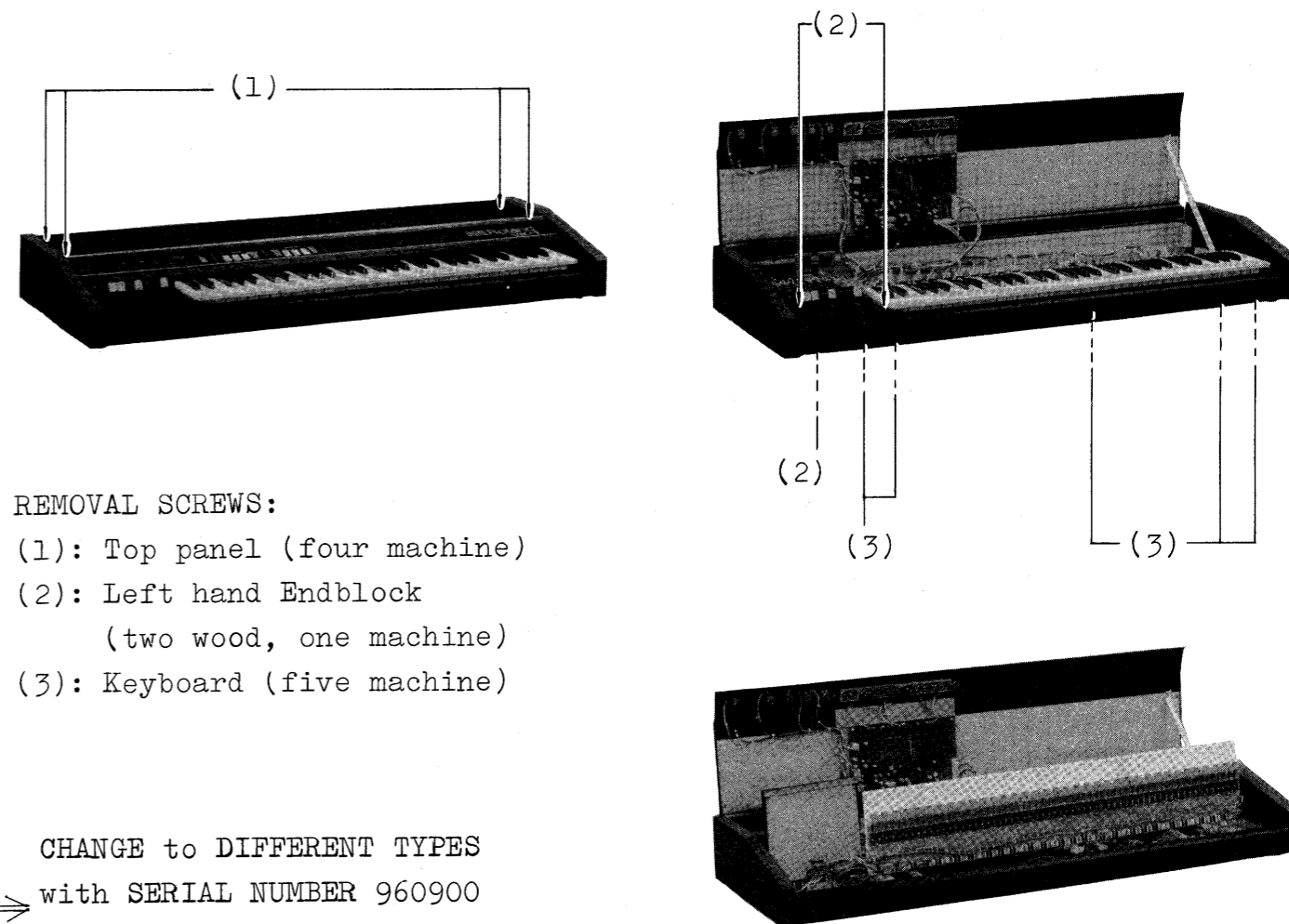
Keyboard
 SK361-A

Panel H67
 (072H067)

Endblock H22
 (091H022)



DISASSEMBLY



REMOVAL SCREWS:

- (1): Top panel (four machine)
- (2): Left hand Endblock
 (two wood, one machine)
- (3): Keyboard (five machine)

CHANGE to DIFFERENT TYPES
 with SERIAL NUMBER 960900
 Detail in PARTS LIST on PAGE 10

Switch HSW0372-1-30 (001-206)

Hinge H11 (059H011)

Jack HLJ0259-01-030
 (009-021)

Jack HLJ0259-01-020
 (009-057)

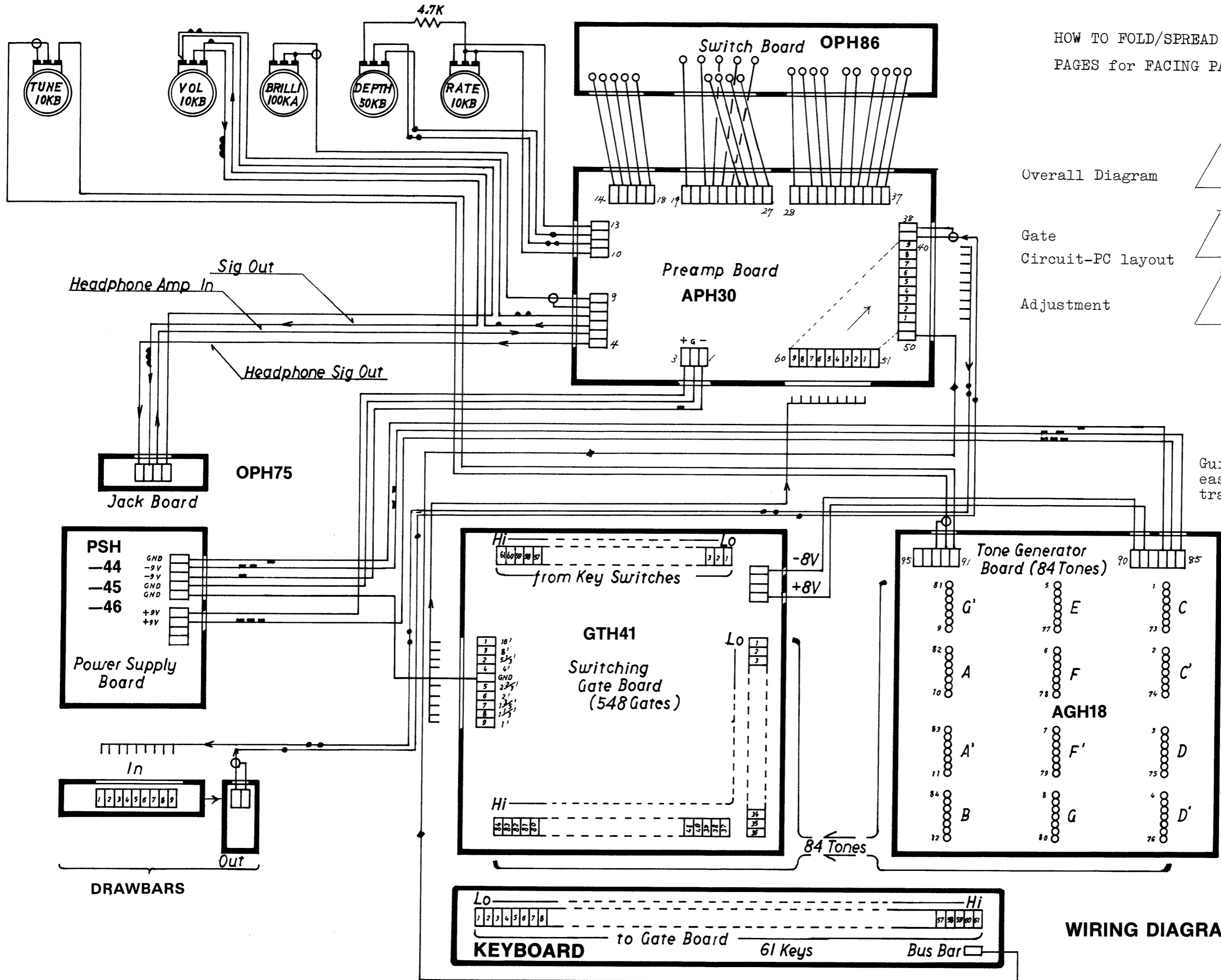
Switch

SDA1SA-1 (001-258) 100V

SDA2SA-1 (001-259) 117V

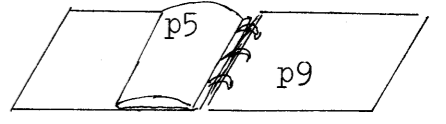
SDA4SA-1 (001-260) 220/240V

Rubber foot G-5
 (111-021)

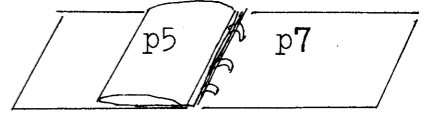


HOW TO FOLD/SPREAD RELATED PAGES for FACING PAGES

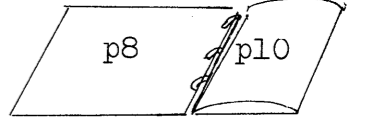
Overall Diagram



Gate Circuit-PC layout



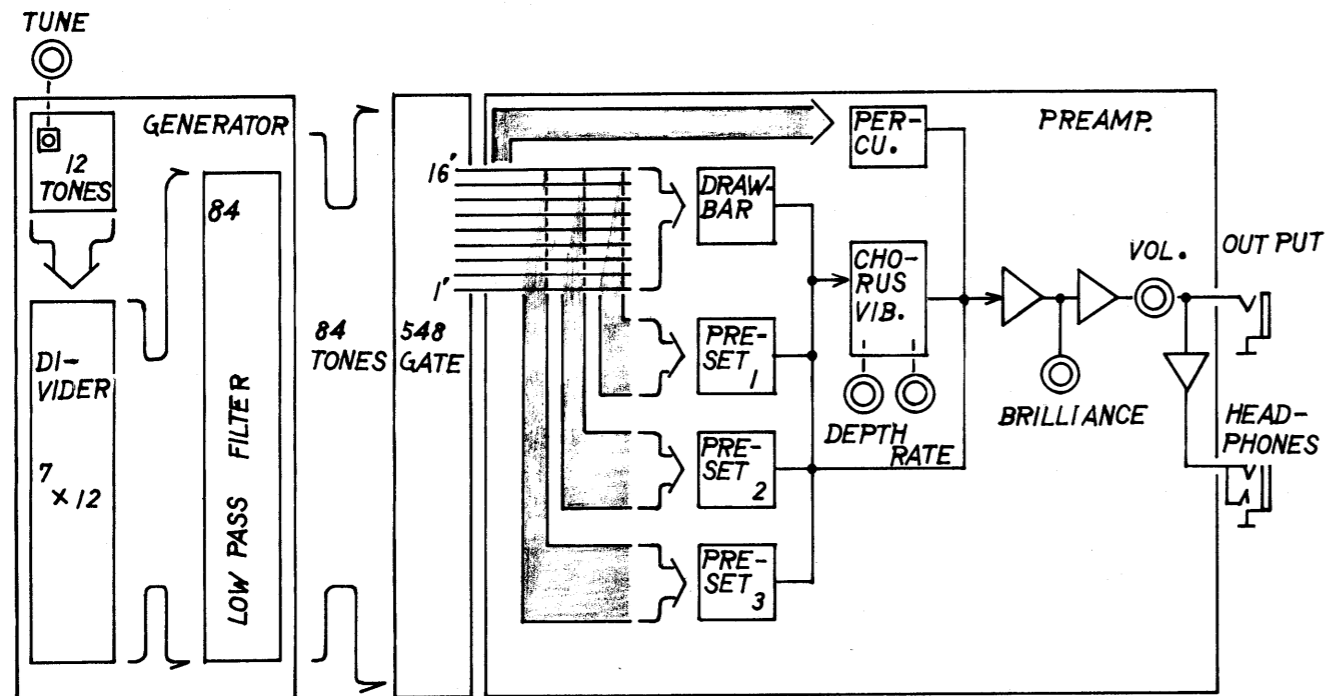
Adjustment



● ▲ ■ ◆ :
Guide marks for easier flow line tracking.

WIRING DIAGRAM

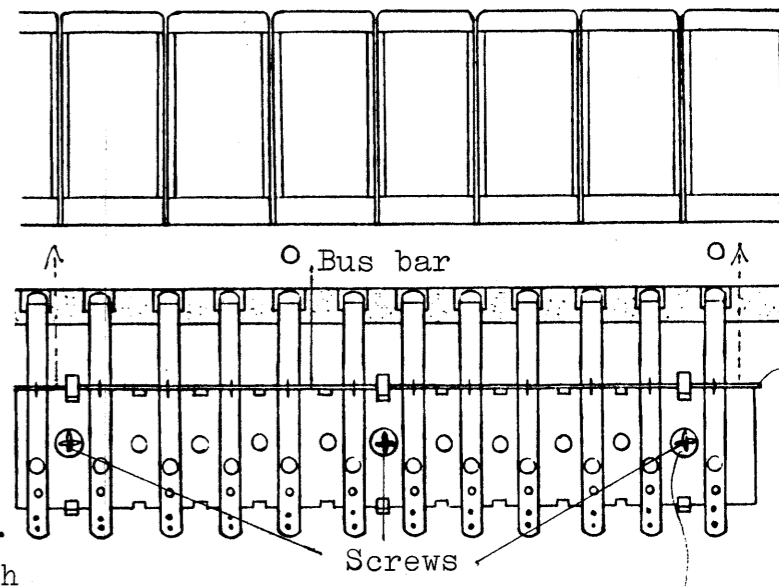
BLOCK DIAGRAM



HOW TO REMOVE KEY and KEYSWITCH UNIT

Key (see fig. left below)

1. Remove key stopper (12).
2. Remove key spring (3).
3. Slide key leftwards and lift it out of chassis.
4. When inserting a new key, take care not to bend contact leaf (7) with the key leg.

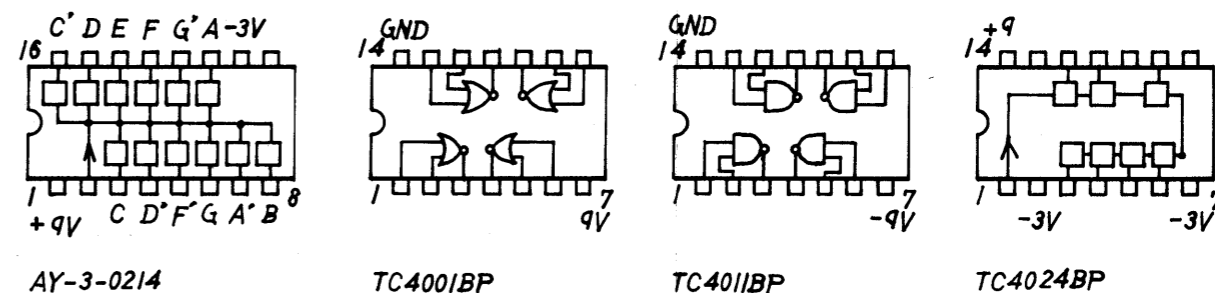
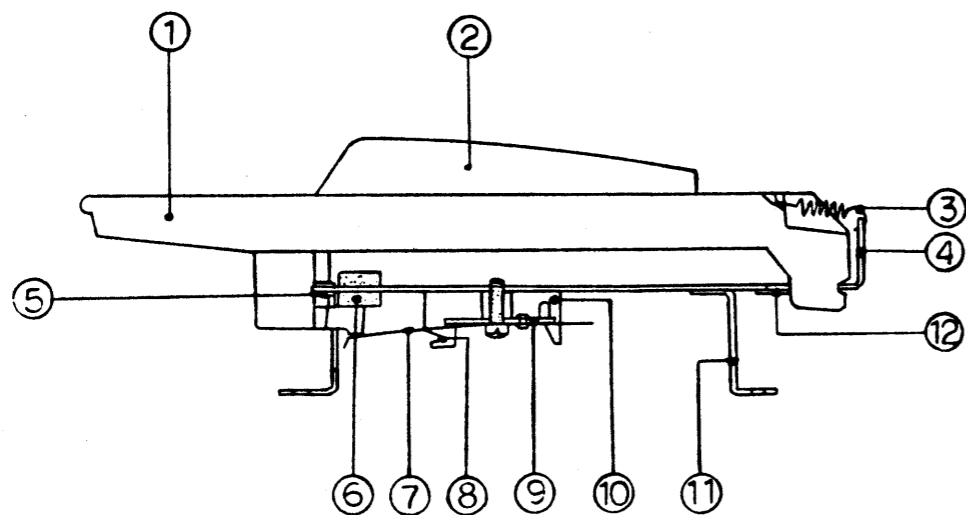


Keyswitch unit (see fig. right)

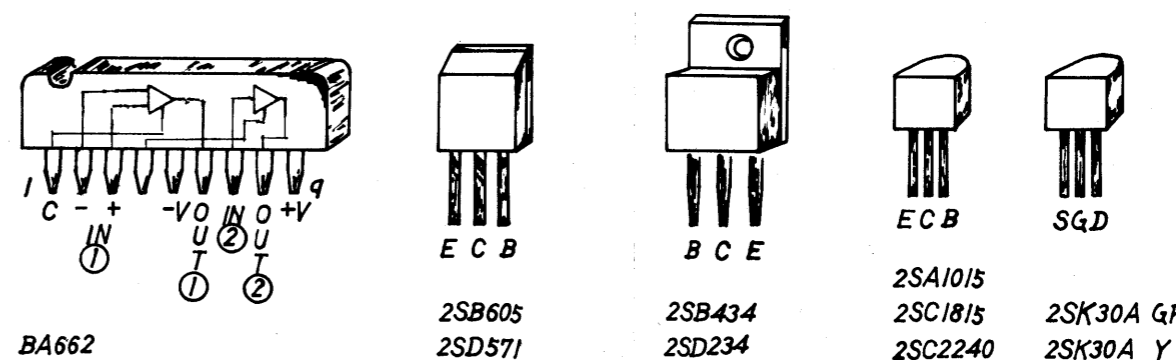
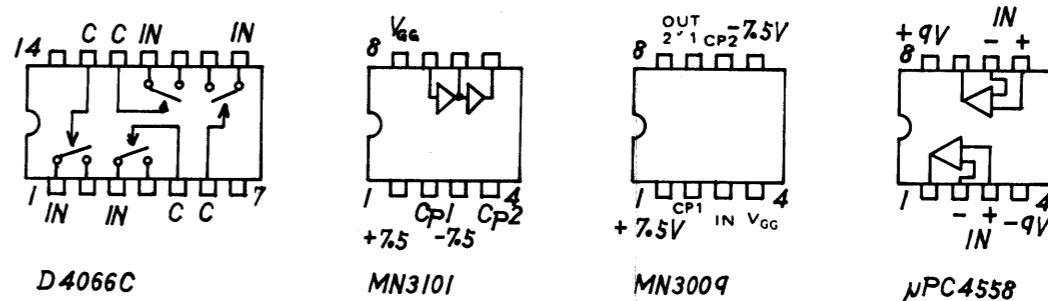
1. Pull bus bar upward out of hooks.
2. Remove three screws on the switch unit, it's ready to remove.

KEYBOARD PARTS

NO.	PART NO.	DESCRIPTION	NO.	PART NO.	DESCRIPTION
1	106H026	Natural key C, F	5	068H004	Guide bush H4
1	106H027	Natural key D	6	101H143	Level felt H143
1	106H028	Natural key E, B	7	071H044	Contact leaf H44
1	106H029	Natural key G	8	071H049	Bus bar 6lp H49
1	106H030	Natural key A	9	043H007	Switch unit 12p H7
1	106H031	Natural key C, F'	9	043H008	Switch unit 13p H8
2	106H032	Sharp key	10	104H029	Holder H29
3	070H029	Key spring H29	11	062H024	Chassis bracket H24
4	061H086A	Chassis H86A	12	098H006	Key stopper H6



(Top View)



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41

A HOW TO ISOLATE DEFECTIVE KEYS

B Reading of information described on page 6 is recommendable for understanding Gate-Keyptr circuit conception.

C Example 1

D D3 signal won't come out with 8' drawer.

E 1. See table 1 on page 6. Find the coincidence point between D3 column and 8-foot row -- 27D.

F Analog switch is no.27 located at IC25 in 8-foot row on GTH41.

G 2. While holding down D3 key, check the switch pins for input signal, control voltage, and output signal.

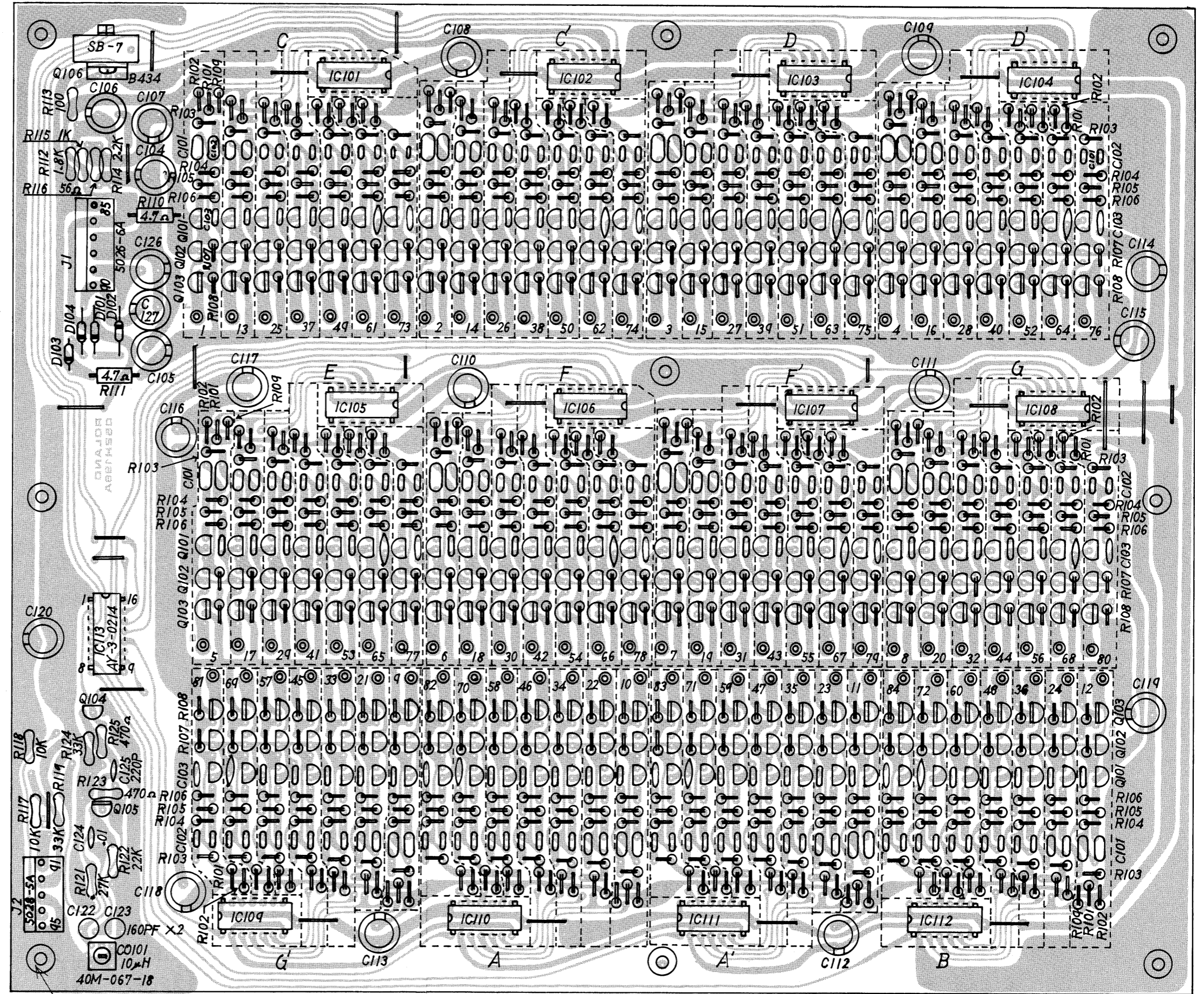
H Example 2

I A4 leaks without any key pressed when 5 1/3' bar is drawn.

J From the table, suspect one is no. 46 switch located at IC35.

K 1. Check the control and output pins and compare the results with other switch pins.

- L** Diodes
D101~D104: M8555 4pcs
- M** ICs
IC101~IC112: TC4024P 12pcs
- N** Transistors
Q101-Q102-Q104: 2SC1815GR 169pcs
Q103 Q105 2SA1015GR 85pcs
- O** Electrolytics
C106-C108-C120: 100/16 16pcs
C126-C127
C104-C105-C107: 470/16 3pcs



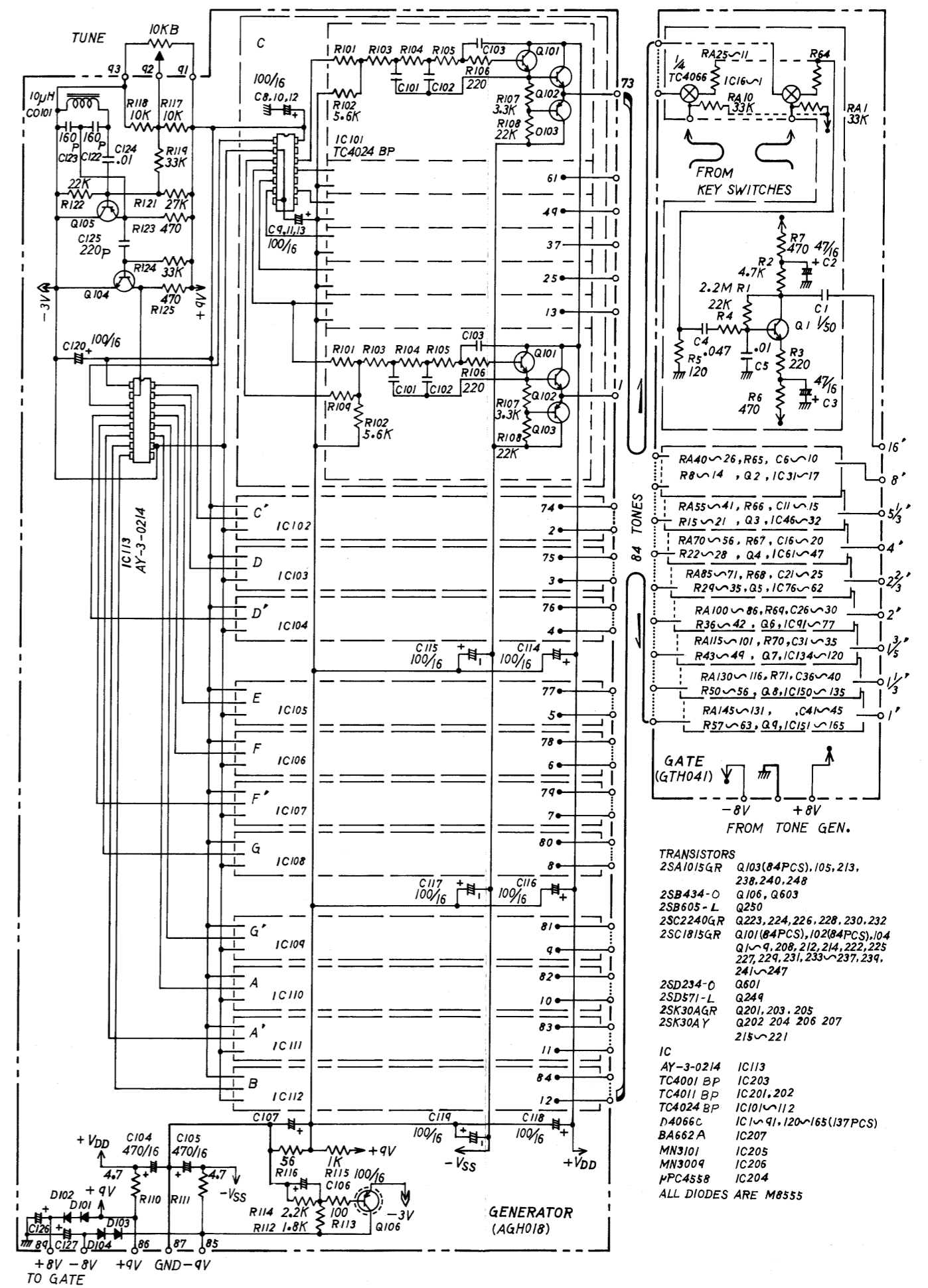
P-C-B Holder
TA305-TB300 9Pairs

PCB 052H198A

AGH18A (144H018A)

TABLE of RESISTANCE and CAPACITANCE

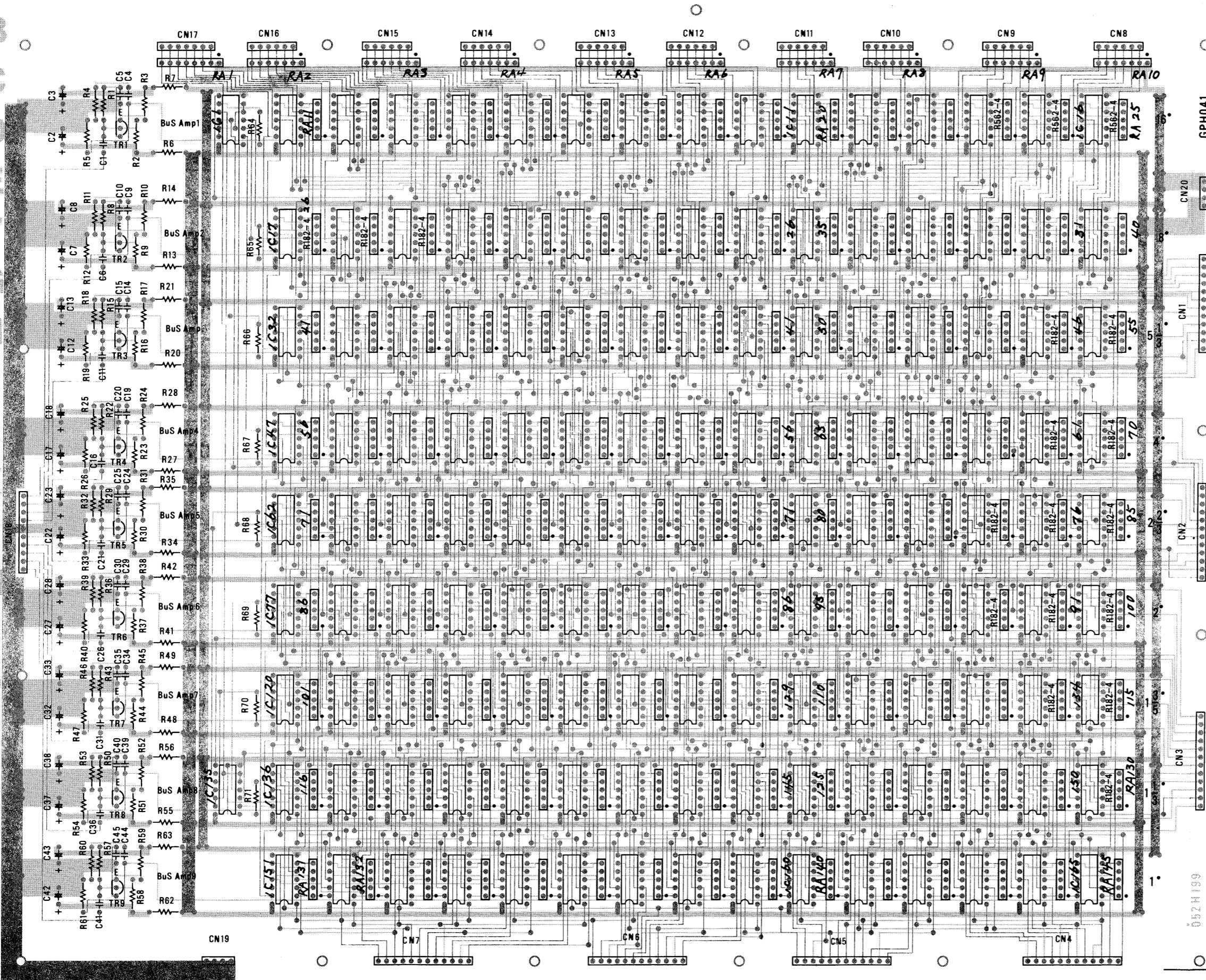
No	R101	R102	R103.104.105	R106	R107	R108	R109	C101.102	C103	Frequency
C										
1-2	47K	5.6K	47K	220Ω	3.3K	22K	56K	.068 μ	.012 μ	65.4 · 69.29
13-14	82K						NONE	.027 μ	.0068 μ	130.81 · 138.59
25-26	56K							.015 μ	.0033 μ	261.62 · 277.18
37-38	39K		↓					.0068 μ	.0015 μ	523.25 · 554.36
49-50	27K		22K					.0068 μ	.0018 μ	1046.50 · 1108.72
61-62	18K		↓					.0033 μ	820P	2093.00 · 2217.45
73-74	15K	↓	↓	↓	↓	↓	↓	.0018 μ	390P	4186.00 · 4434.91
D										
3-4	47K	5.6K	47K	220Ω	3.3K	22K	56K	.056 μ	.012 μ	73.41 · 77.78
15-16	82K						NONE	.027 μ	.0056 μ	146.83 · 155.56
27-28	56K							.012 μ	.0027 μ	293.66 · 311.12
39-40	39K		↓					.0068 μ	.0015 μ	587.32 · 622.25
51-52	27K		22K					.0068 μ	.0015 μ	1174.65 · 1244.50
63-64	18K		↓					.0033 μ	820P	2349.31 · 2489.01
75-76	15K	↓	↓	↓	↓	↓	↓	.0018 μ	390P	4698.63 · 4978.02
E										
5-6	56K	5.6K	47K	220Ω	3.3K	22K	68K	.047 μ	.01 μ	82.40 · 87.30
17-18	82K						NONE	.022 μ	.0047 μ	164.81 · 174.61
29-30	56K							.01 μ	.0022 μ	329.62 · 349.22
41-42	39K		↓					.0056 μ	.0012 μ	659.25 · 698.45
53-54	27K		22K					.0056 μ	.0012 μ	1318.51 · 1396.91
65-66	18K		↓					.0027 μ	680P	2637.01 · 2793.82
77-78	15K	↓	↓	↓	↓	↓	↓	.0015 μ	390P	5274.03 · 5587.64
F										
7-8	56K	5.6K	47K	220Ω	3.3K	22K	68K	.039 μ	.0082 μ	92.49 · 97.99
19-20	68K						NONE	.018 μ	.0039 μ	184.99 · 195.99
31-32	47K							.01 μ	.0022 μ	369.99 · 391.99
43-44	33K		↓					.0047 μ	.001 μ	739.98 · 783.99
55-56	22K		22K					.0047 μ	.0012 μ	1479.97 · 1567.98
67-68	15K		↓					.0022 μ	680P	2959.95 · 3135.96
79-80	15K	↓	↓	↓	↓	↓	↓	.0012 μ	330P	5919.90 · 6271.72
G										
9-10	68K	5.6K	47K	220Ω	3.3K	22K	82K	.033 μ	.0082 μ	103.82 · 110.00
21-22	68K						NONE	.015 μ	.0033 μ	207.65 · 220.00
33-34	47K							.0082 μ	.0018 μ	415.30 · 440.00
45-46	33K		↓					.0047 μ	.001 μ	630.60 · 880.00
57-58	22K		22K					.0047 μ	.001 μ	1661.21 · 1760.00
69-70	15K		↓					.0018 μ	470P	3322.43 · 3520.00
81-82	15K	↓	↓	↓	↓	↓	↓	.001 μ	220P	6644.87 · 7040.00
A										
11-12	68K	5.6K	47K	220Ω	3.3K	22K	82K	.027 μ	.0068 μ	116.54 · 123.47
23-24	68K						NONE	.015 μ	.0033 μ	233.08 · 246.94
35-36	47K							.0082 μ	.0018 μ	466.16 · 493.88
47-48	33K		↓					.0033 μ	820P	932.32 · 987.76
59-60	22K		22K					.0047 μ	.001 μ	1864.65 · 1975.53
71-72	15K		↓					.0018 μ	470P	3729.30 · 3951.06
83-84	15K	↓	↓	↓	↓	↓	↓	.001 μ	220P	7458.61 · 7902.12



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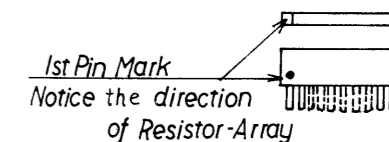


GTH41 (147H041)

P-C-B 052H199

Resistors	2.2M	R1	.8	.15	.22	.24	.36	.43	.50	.57
	4.7K	R2	.9	.16	.23	.30	.37	.44	.51	.58
	220Ω	R3	.10	.17	.24	.31	.38	.45	.52	.59
	22K	R4	.11	.18	.25	.32	.39	.46	.53	.60
	120Ω	R5	.12	.19	.26	.33	.40	.47	.54	.61
	470Ω	R6	.13	.20	.27	.34	.41	.48	.55	.62
	470Ω	R7	.14	.21	.28	.35	.42	.49	.56	.63
1.8K	R8	.65	.66	.67	.68	.69	.70	.71		
Electrolytics 100μ/16V	C2	.3	.7	.8	.12	.13	.17	.18	.22	
			.23	.27	.28	.32	.33	.37	.38	.42

Resistor-Array



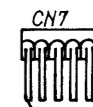
Resistor Array without designation:

RM-4 222 (116pcs)

RA2~RA10 are RM-6 333 (9pcs)

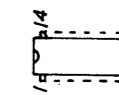
Read designations on the pc board;

R182-4 as RM-4 182, R562-4 as RM-4 392.



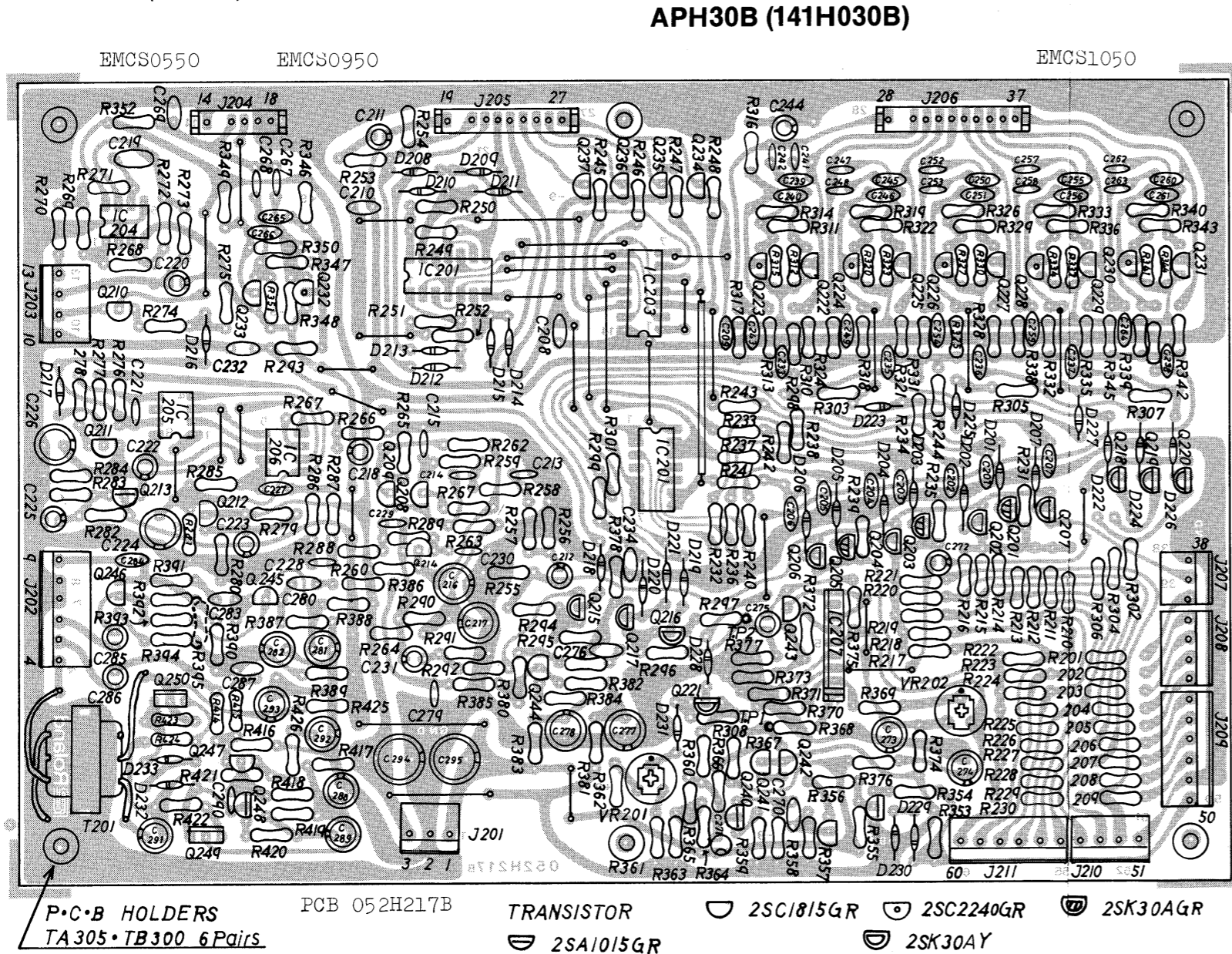
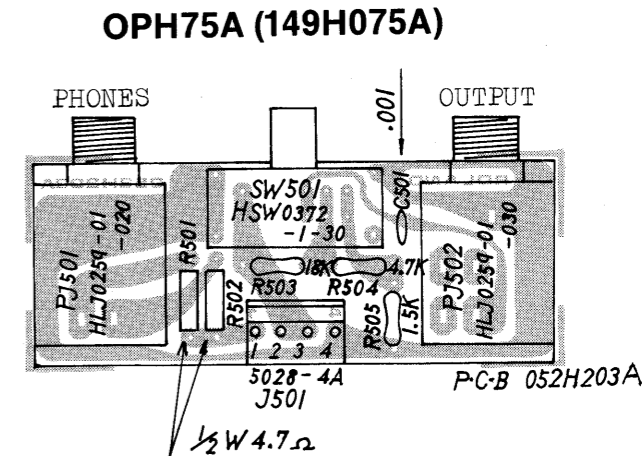
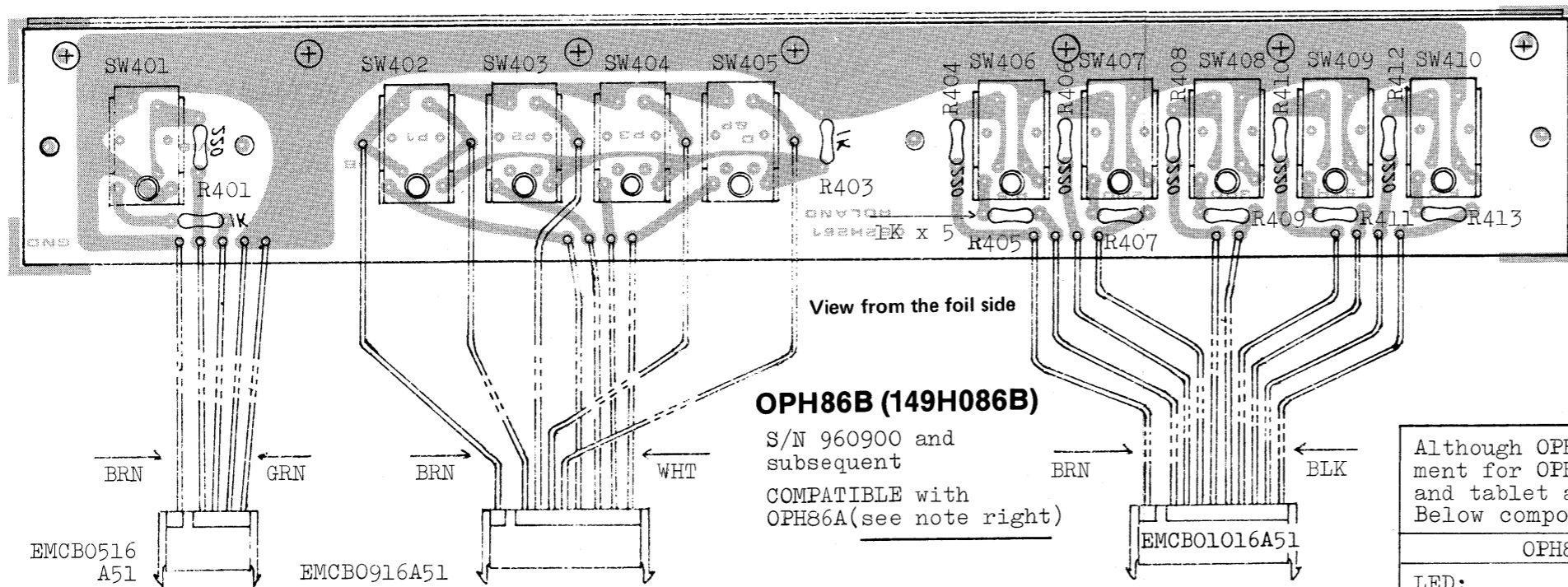
- Connectors
- CN1.2,8~16 13PCS : 5045-6A
 - CN17 1PC : 5045-7A
 - CN18 2PCS : 5045-5A
 - CN20 1PC : 5045-4A
 - CN3~7 10PCS : 5046-6A

All Transistors are 2SC1815GR (9pcs)



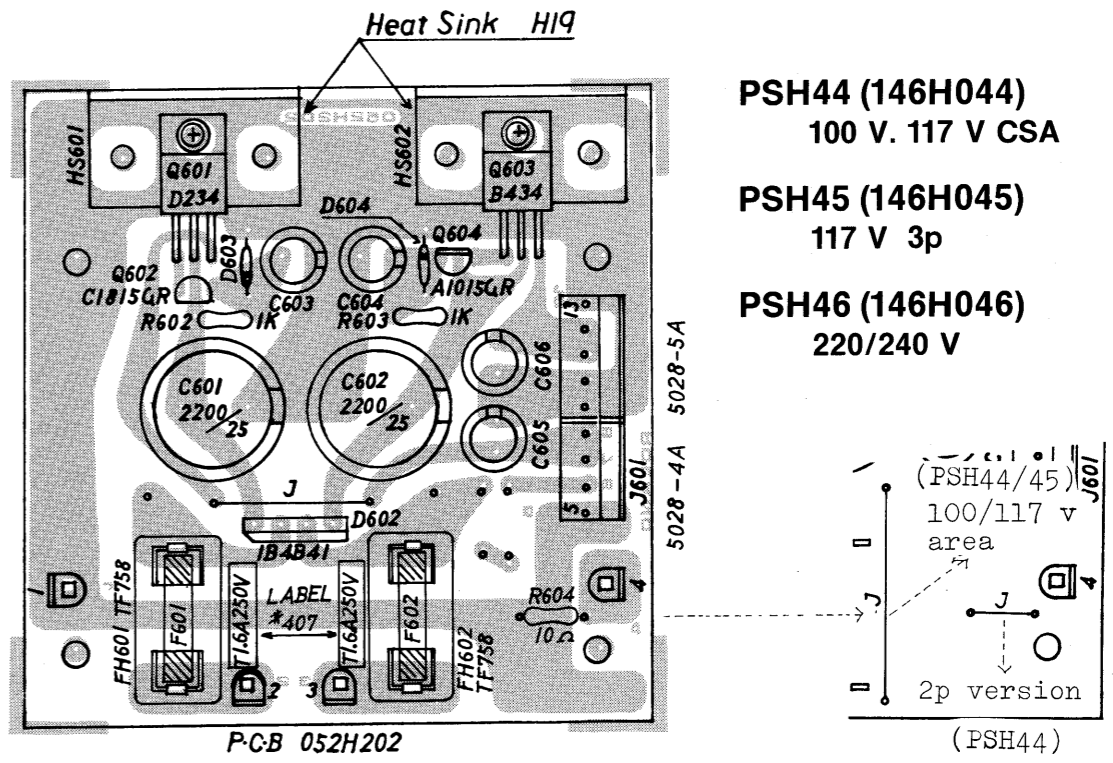
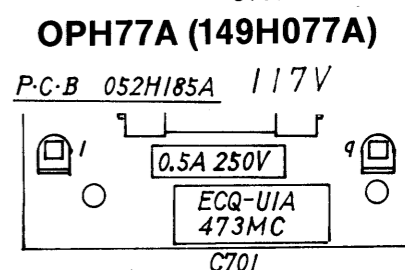
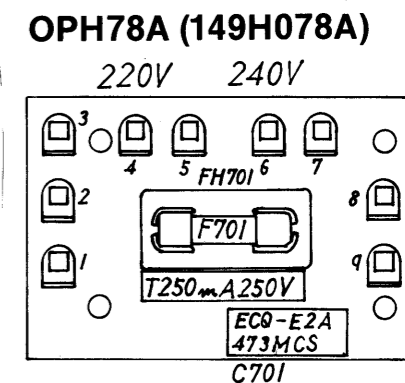
All ICs are NEC 4066 (137pcs)

P-C-B Holders TA305 and TB300 16pairs

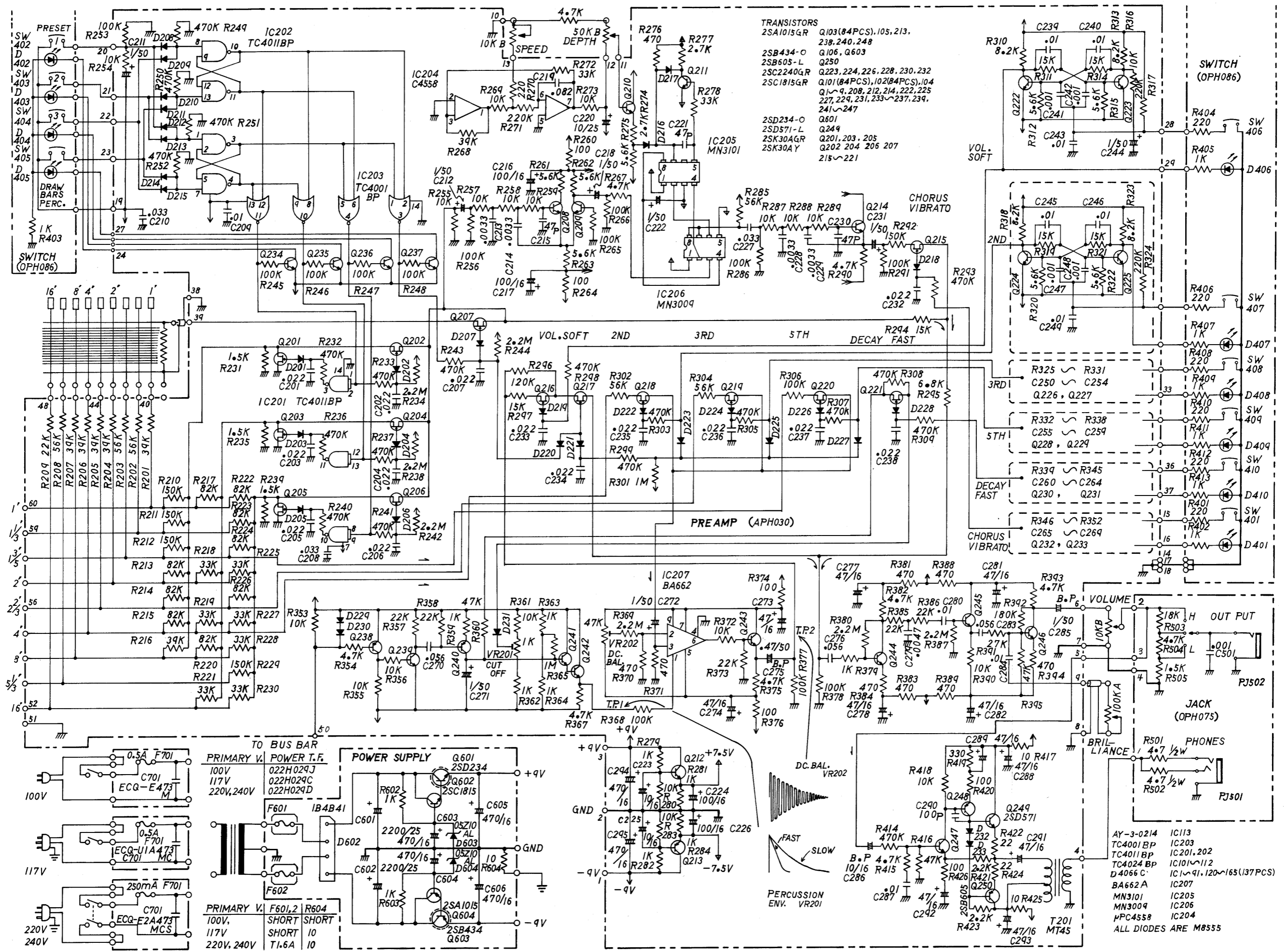


Although OPH86B is direct replacement for OPH86A, individual switch and tablet are not interchangeable. Below components list for both.

OPH86A	OPH86B
LED:	SLP135B
[Switch and Tablet]	
Given P/N as a set	Given separately
[Switch w/tablet]	[Tablet]
320. 2 El-1 blue	SW401, 406, 410 H13 blue
320. 2 El-1 white	SW402-404, 407-409 H10 white
320. 2 El-1 orange	SW405 H12 orange



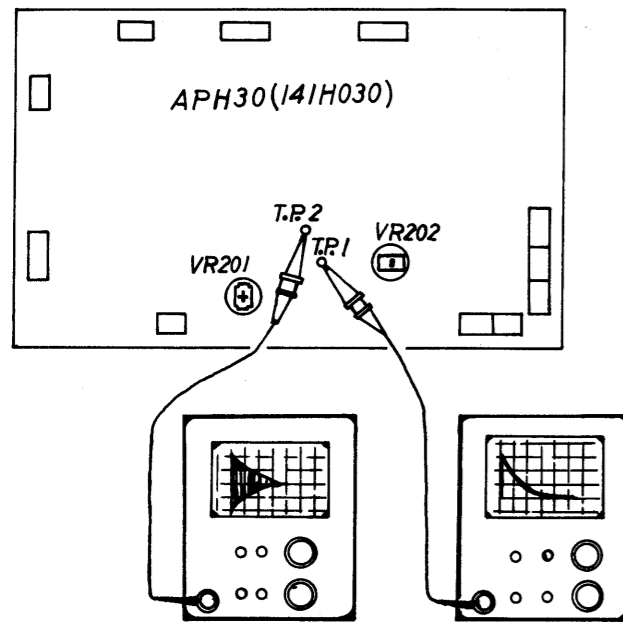
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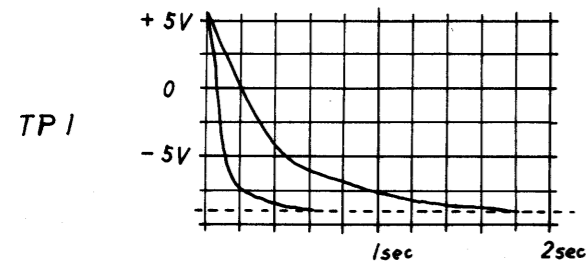
- TRANSISTORS
 2SA1015GR Q103(84PCS),105,213,
 238,240,248
 2SB434-O Q106, Q603
 2SB605-L Q250
 2SC2240GR Q223,224,226,228,230,232
 2SC1815GR Q101(84PCS),102(84PCS),104
 Q109,208,212,214,222,225
 227,229,231,233~237,239,
 241~247
 2SD234-O Q601
 2SD571-L Q249
 2SK30AGR Q201,203,205
 2SK30AY Q202,204,206,207
 215~221

- AY-3-0214 IC113
 TC4001BP IC203
 TC4011BP IC201,202
 TC4024BP IC101~112
 D4066C IC109,120~165(137PCS)
 IC207
 BA662A IC205
 MN3101 IC206
 MPC4558 IC204
 ALL DIODES ARE M8555

ADJUSTMENT



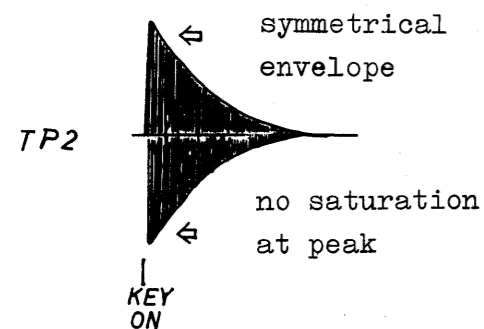
PERCUSSION DECAY



ADJUST VR201 : FAST 0.6 sec
SLOW 1.7 sec

PERCUSSION DC BALANCE

SET : DRAW BARS PERCUSSION SWITCH:ON
PERCUSSION 2ND SWITCH:ON
DECAY FAST SWITCH:ON



ADJUST VR202 : CENTERD WAVEFORM

PARTS LIST

Keyboard assy SK361-A

Drawbar set RD-109C

CABINET

- 081H221 Cabinet H221
- 111-021 Rubber foot G-5
- 059H011 Hinge H11
- 086H018 Top cover H18
- 093H006 Rim (on cover H18) H6
- 072H067 Panel H67 front
- 091H021 Endblock H21 left
- 091H022 Endblock H22 right
- * Tablet--- see NOTES
- 016-078 Knob no.78
- 009-057 Jack HLJ0259-01-020 stereo
- 009-021 Jack HLJ0259-01-030

SWITCH

- 001-258 SDA1SA-1 power 100 V
- 001-259 SDA2SA-1 power 117 V
- 001-260 SDA4SA-1 power 220/240 V
- 001-206 HSW0372-1-30 slide
- *001-315 320. 2 E1-1 tab. white
- *001-317 320. 2 E1-1 tab. orange
- *001-320 320. 2 E1-1 tab. blue
- * See NOTES

PCB

- 144H018A AGH18A (pcb 052H198A)
- 147H041 GTH41 (pcb 052H199)
- 141H030B APH30B (pcb 052H217B)
- 149H075A OPH75A (pcb 052H203A)
- *149H086A OPH86A (pcb 052H218A)
- 149H076A OPH76A (pcb 052H185A) 100 V
- 149H077A OPH77A (pcb 052H185A) 117 V
- 149H078A OPH78A (pcb 052H185A) 220/240 V
- 146H044 PSH44 (pcb 052H202) 100 V
- 146H045 PSH45 (pcb 052H202) 117 V
- 146H046 PSH46 (pcb 052H202) 220/240 V
- * For OPH86, see NOTES

TRANSFORMER. COIL

- 022H029J Pt H29J 100 V
- 022H029C Pt H29C 117 V
- 022H029D Pt H29D 220/240 V
- 022-131 Opt MT(ST)-45
- 022-135 Coil 40M-067-018 10 uH

SEMICONDUCTOR

Transistor

- 017-022 2SB434-0
- 017-010 2SD234-0 or 2SD526-0
- 017-072 2SD571-L
- 017-106 2SC1815-GR
- 017-123 2SC2240-GR
- 017-146 2SB605-L
- 017-155 2SA1015-GR
- 017-014 2SK30A-Y FET
- 017-016 2SK30A-GR FET

Diode

- 018-087 M8555
- 018-089 1B4B41 rectifier bridge
- 018-120 05Z10AL zener
- 019-034 SLP135B LED

IC

- 020-156 AY-3-0214
- 020-051 TC4001BP
- 020-040 TC4011BP
- 020-076 TC4024BP
- 020-254 μ PD4066C (NEC) only
- 020-160 BA662A
- 020-224 MN3101 BBD driver
- 020-215 MN3009 BBD 256 stages
- 020-097 μ PC4558

POTENTIOMETER

- 026-003 EVHCOAK15B14 10 kB
- 026-004 EVHCOAK15B54 50 kB
- 026-176 EVHCOAK15A15 100 kA
EVHCOAK15 can be replaced by EVH8MA360....
- 030-459 SR19R 1 kB trimmer
- 030-469 SR19R 47 kB trimmer

FUSE. FUSE HOLDER

- 008-040 MGP 0.5 A prim. 100.117 V
- 008-060 SEMKO T250 mA prim.220/240 V
- 008-069 SEMKO T1.6 A sec. 220/240 V
- 012-003 Fuse clip TF-758 sec.220/240V

CAPACITOR

Polyester film

- 035-047 ECQE1047MC .047/1000 V 100 V
- 035-108 ECQU1A473MC 047/125AC 117 V
- 035-310 ECQE2A473MCS 047/1000 V 220/240V

Electrolytic

- 032-193 ECEA50NR47 .47 mfd 50 V B.P.
- 032-190 ECEA50N1 1mfd 50 V Bi-polar
- 032-191 ECEA16N10U 10mfd 50 V Bi-po.
- 032-224 CE15E1V010K 1mfd 35 V tantalum

OTHERS

Line cord strain relief

- 047-040 SR-4N-4 100 V
- 047-031 SR-6N3-4 117 V
- 047-003 BU-4801 220/240 V
- 047-023 EA1702B clamp 220/240 V
- 064-134 Holder no.134
- 048H019 Heatsink H19

NOTES:

Changes on Tablet Switches and the PCB (with serial number 960900)

The switches are changed along with the tablets to the following:

- 13129712 Switch KHC-11901
- 016H010 Tablet H10 wht
- 016H012 Tablet H12 orn
- 016H013 Tablet H13 blu

Since the pin size and spans are different between two types, switch PCB assembly is also changed to

149H086B OPH86B (pcb 052H261).

Although individual switch and tablet are not interchangeable, they are compatible when replaced as a PCB assy.