

# VK09

## SERVICE NOTES

First Edition

### ●SPECIFICATIONS

●Keyboard ..... 61 Keys; C<sub>1</sub> ~ C<sub>6</sub>

●Drawbars ..... Sine Wave  
16', 5-1/3', 8', 4', 2-2/3', 2'  
Bright Wave  
16', 5-1/3', 8', 4', 2-2/3', 2'

●Control Panel  
Tune..... ±50 cents

●Rear Panel  
Jack ... Output Jack, Headphone Jack (8Ω: Stereo)  
Vibrato, Slow/Fast Select Footswitch Jack (DP-2)  
Gate Output Jack (OFF: OV/ON: +15V)  
Switch ..... Output Level L/M/H  
(-24dBm/-12dBm/0dBm)

●Dimensions ..... 892(W)x106(H)x347(D)mm

●Power consumption ..... 12W

●Weight ..... 9kg

Power switch  
SDG5P001-1 (13129101) 100V  
SDG5P001-2 (13129102) 117V  
SDG5P502 (13129103) 220/240V  
Button  
N-506 (2247050600)

Musick rack  
holder  
H110(064H110)

Pot.  
EVHCOAP15C14  
10kC (13229128)  
Knob  
N-128 (2246012800)

Panel removal  
screws  
Joint screw H5  
3 x 30mm brown

Panel  
H84A (072H084A)

Drawbar  
Complete assy w/pcb  
OPH134 (149H134)  
(pot, and button are  
separately available,  
see parts list)

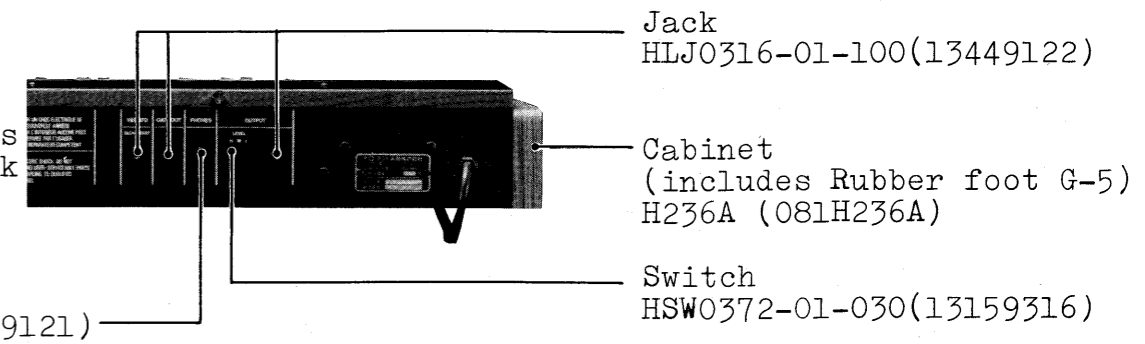
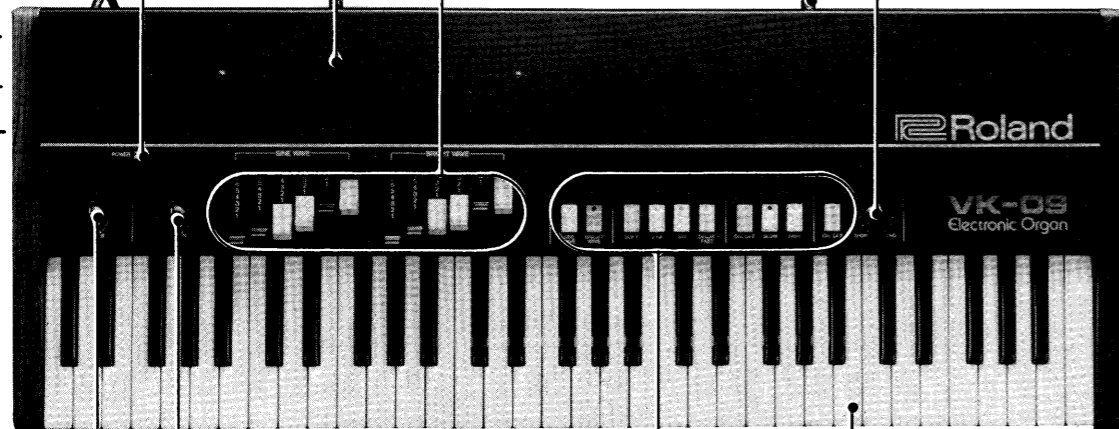
Pot.  
EVHCOAP15B15  
100kB(13229126)

Switch  
with LED  
KHC11901 (13129712)

Keyboard SK-361A  
Keyboard removal screws  
4 x 15mm truss black  
(7 pcs at bottom)

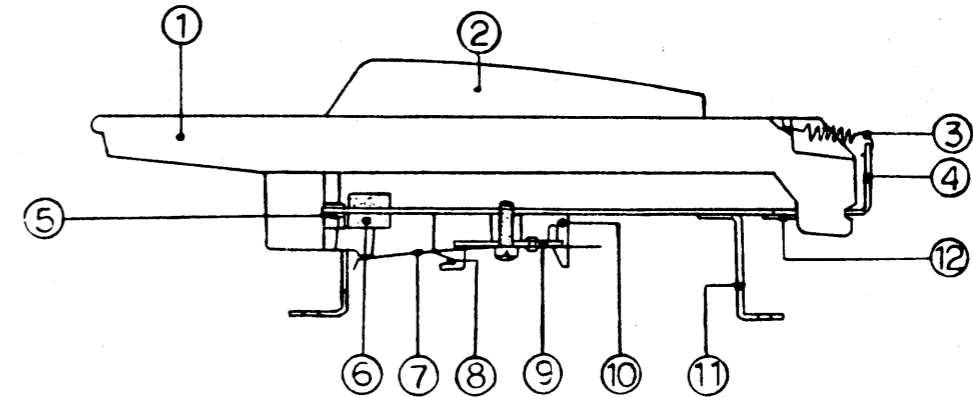
Pot.  
EVHCOAP15A14  
10kA (13229130)

Tablet  
N-167(2247516700) wht  
N-168(2247516800) orn  
N-169(2247516900) yel  
N-180(2247518000) red



### 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



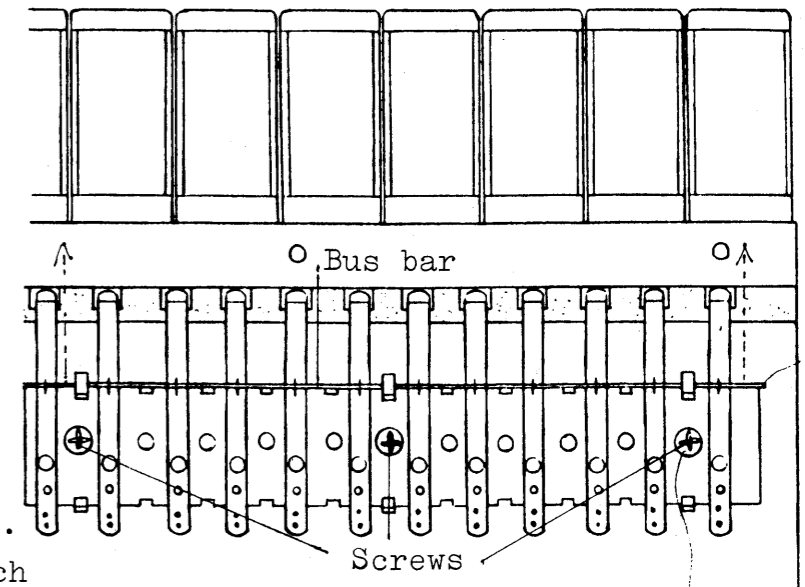
HOW TO REMOVE KEY and KEYSWITCH UNIT

#### Key

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

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



**PARTS LIST**

Roland has employed new part codings (8-10 digits). Being in transition period, two other codings are still effective on this list.

When ordering replacements, callout parts in full number followed by part name whichever coding they are designated by.

**Keyboard SK-361A**

**CASE**

081H236A	Cabinet	H236A	
	Rubber foot	G-5	
072H084A	Panel	H84A	
064H110	Holder	H110	music rack
092H009	Music rack	H09	

**KNOB. BUTTON. TABLET**

2247050600	Button	N-506	blk	power sw.
2247012800	Knob	N-128	pot.	
2247516700	Tablet	N-167	wht	
2247516800	Tablet	N-168	orn	
2247516900	Tablet	N-169	yel	
2247518000	Tablet	N-180	red	

**SWITCH**

13129101	SDG5P001-1	power	100V
13129102	SDG5P001-2	power	117V
13129103	SDG5P502	power	220/240V
13159316	HSW0372-01-030	slide	
13129712	KHC11901	w/LED	tablet

**JACK**

13449122	HLJ0316-01-100	
13449121	HLJ0316-01-020	stereo PHONES

**COIL. TRANSFORMER**

022H043J	PT-H43J	power	100V
022H043C	PT-H43C	power	117V
022H043D	PT-H43D	power	220/240V
022-135	Coil 40M-067-018	10uH	osc.

**PCB ASSEMBLY**

144H023A	AGH023A (pcb 052H322A)	DRAWBAR	GENERATOR
149H134A	OPH134A (pcb 052H323A)	DRAWBAR	
149H135B	OPH135B (pcb 052H324B)	SWITCH	
146H063B	PSH063B (pcb 052H325B)	P.SUPPLY	100V
146H064B	PSH064B (pcb 052H325B)		117V
146H065B	PSH065B (pcb 052H325B)		220/240V

**SEMICONDUCTOR**

IC			
15199504	TA7222AP	amp	
15179125	TMS3617NS	chromatic div'r/keyer	
15159124T0	TC4093BP	quadruple 2-input NAND shimitt	
15159106T0	TC4016BP	quad bilateral switch	
15159104T0	TC4011BP(or HD14011BP)	quad 2-in NAND	gate
15159105T0	TC4013BP(or HD14013BP)	dual D Flip-Flop	
15199110T0	TA7179P	regulator	
15229802	BA662A (or B)	vari-conductance amp	
15169504	MN3101	BBD driver	
15219213	MN3009	BBD 256-stage	
15189105	uPC4558C	dual op amp	
Transistor			
15119602	2SB647		
15119112	2SA1015-Y	or GR	
15129115	2SC1815-Y	or GR	
15139101	2SK30ATM-Y	FET	
15119805	2SB834-0		
15129815	2SD880-0		

**Diode**

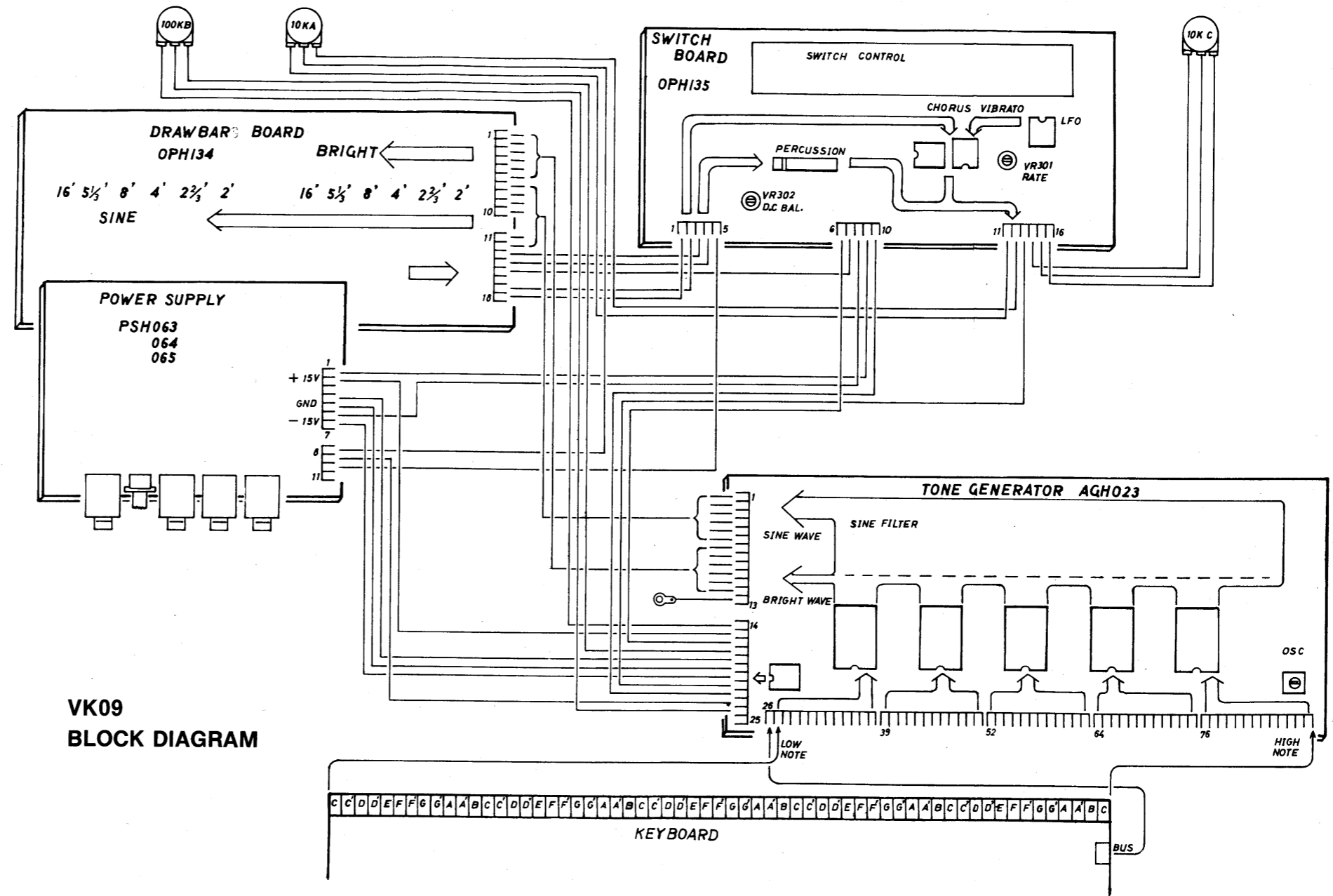
15019548	RD12EB	or 05Z12U	zener
15019103	1S2473	or M8555	
15019245	1B4B41	rectifer bridge	1.0A 100V

**POTENTIOMETER**

13229126	EVHCOAP15A14	10kA
13229128	EVHCOAP15C14	10kC
13229130	EVHCOAP15B15	100kB
	compatible with EVHCOAK15	
Trimmer		
13229113	H1051A011-(SR19R)	4.7KB
13229114	H1051A013-(SR19R)	10KB
Drawbar	pot w/knob	
003H001	Drawbar H1	2'
003H002	Drawbar H2	2-2/3'
003H003	Drawbar H3	4'
003H004	Drawbar H4	8'
003H005	Drawbar H5	5-1/3'
003H006	Drawbar H6	16'
	potentiometer only	
. . .	S401XKA03-2.7KC	
	knob only	
. . .	Knob #19	2-2/3'
. . .	Knob #21	5-2/3'
. . .	Knob #21	16'
. . .	Knob #20	8'
. . .	Knob #20	4'
. . .	Knob #20	2'

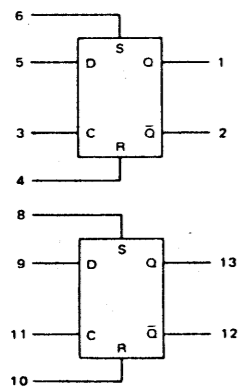
**FUSE**

12559133	MGPO001 1A	prim.	100V
12559311	MGPO001 1A	csa prim.	117V
12559511	CEE T500mA(s)	prim.	220/240V
12559513	CEE T1A(s)	second	220/240V



VK09  
BLOCK DIAGRAM

BLOCK DIAGRAM



V<sub>DD</sub> = Pin 14  
V<sub>SS</sub> = Pin 7

TRUTH TABLE

CLOCK <sup>1</sup>	INPUTS			OUTPUTS	
	DATA	RESET	SET	Q	$\bar{Q}$
0	0	0	0	0	1
1	1	0	0	1	0
X	X	0	0	Q	$\bar{Q}$
X	X	1	0	0	1
X	X	0	1	1	0
X	X	1	1	1	1

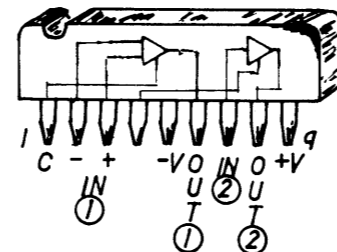
No Change

X = Don't Care  
1 = Level Change

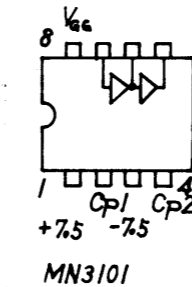
TC4013BP



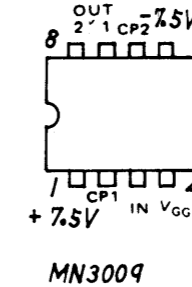
2SK30A GR  
2SK30A Y



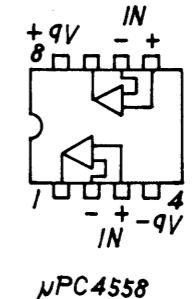
BA662



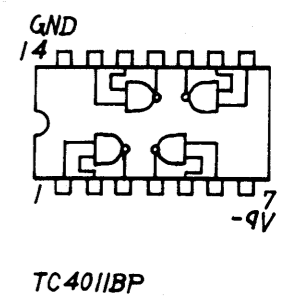
MN3101



MN3009



JPC4558

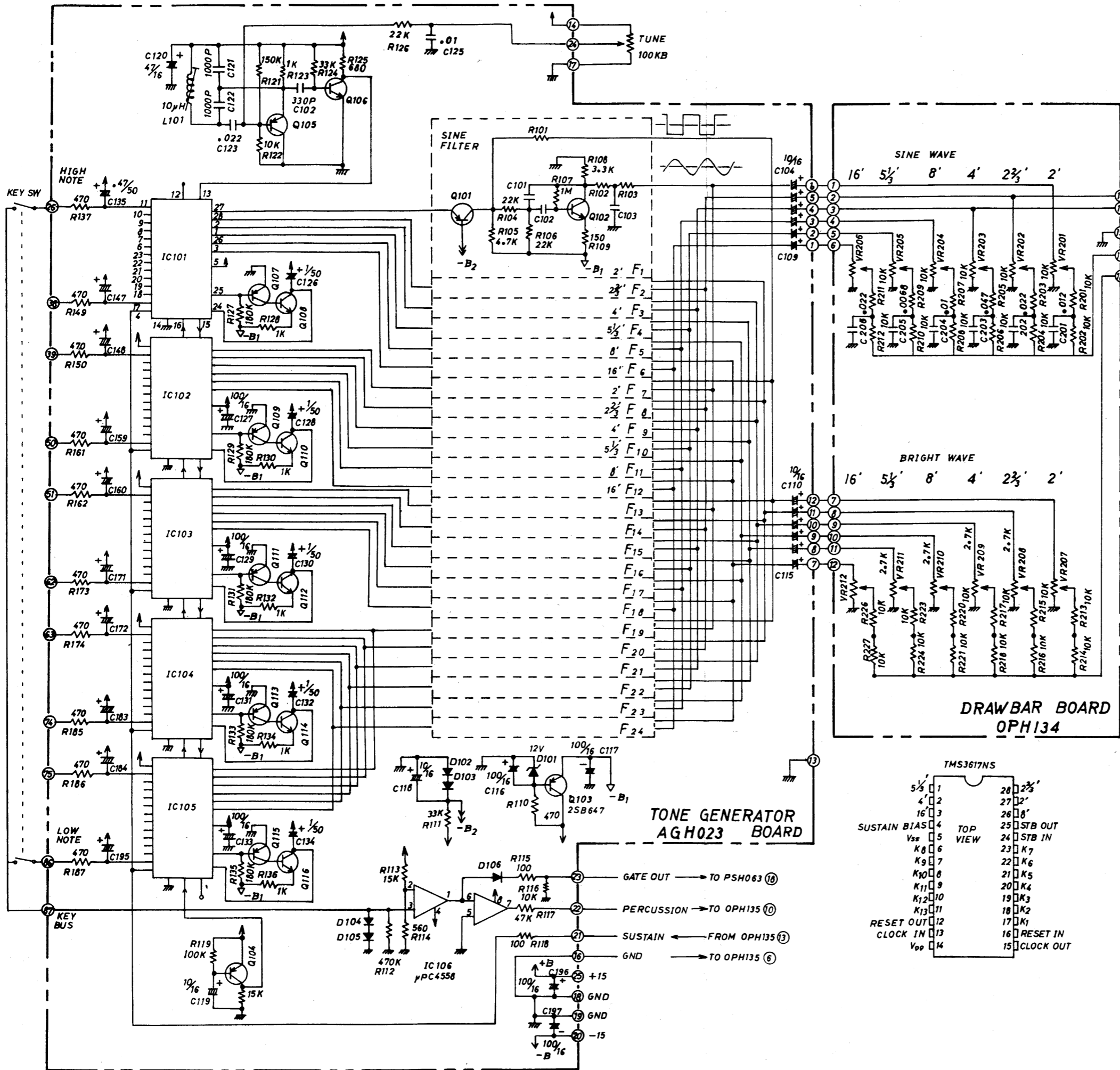


TC4011BP

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

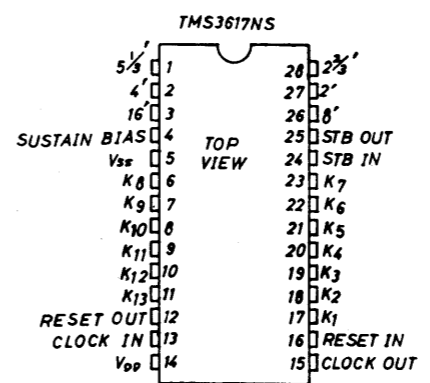
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- IC101~105 TMS 3617NS
- IC106  $\mu$ PC4558
- PNP 2SA1015
- NPN 2SC1815
- Q103 2SB647
- L101 40M018 (10 $\mu$ H)
- D101 05Z12Z
- D102~106 M8555
- VR201~212 2.7K



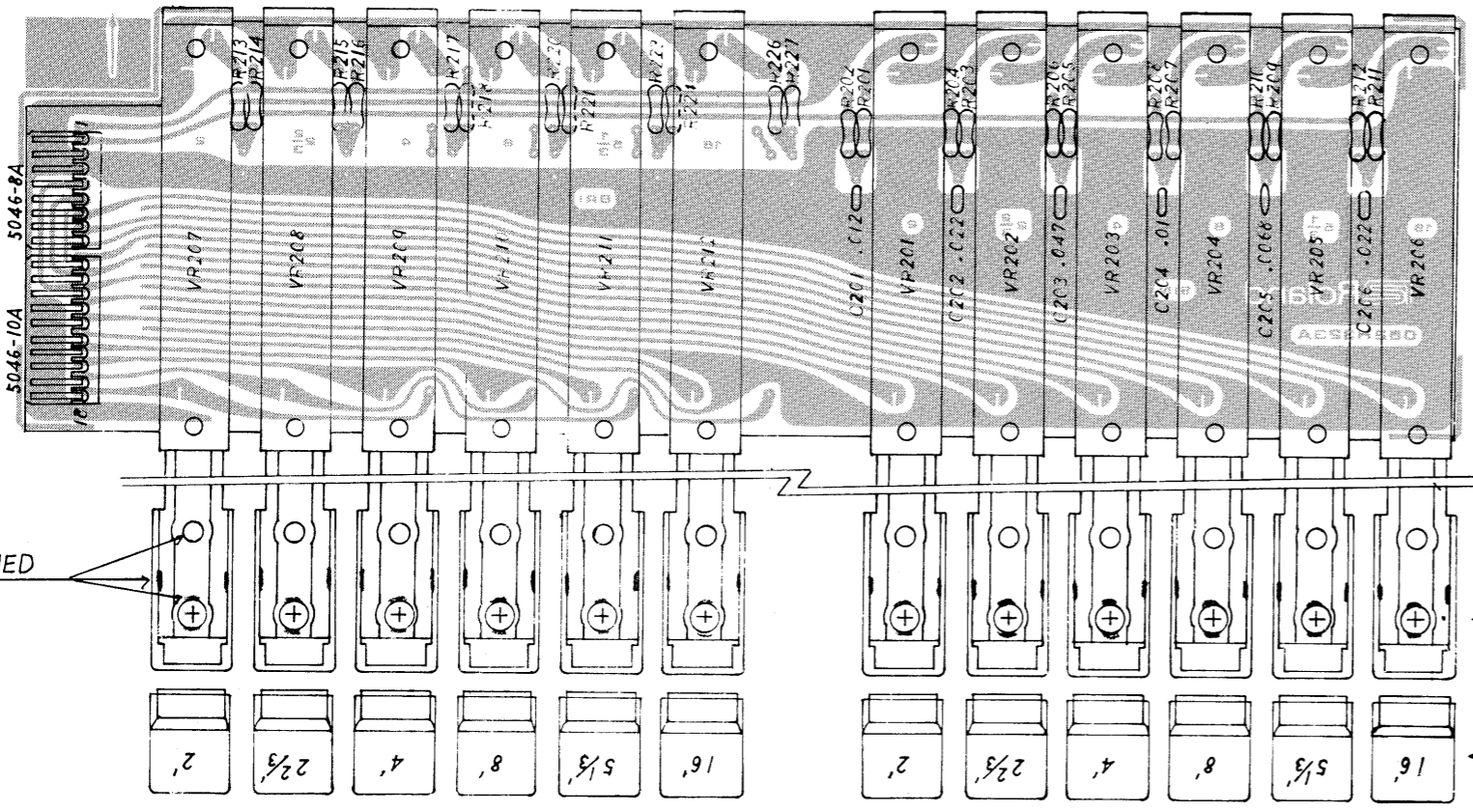
**SINE FILTER**

	R <sub>101</sub>	C <sub>101</sub>	C <sub>102</sub>	R <sub>102</sub>	R <sub>103</sub>	C <sub>103</sub>
F <sub>1</sub>	10K	330P	15K			
F <sub>2</sub>	↑	470P	↑			
F <sub>3</sub>		680P	↑			
F <sub>4</sub>		.001 $\mu$	10K	10K	.018	
F <sub>5</sub>		.0018	↑	↑	.027	
F <sub>6</sub>		.0033	↑	↑	.027	
F <sub>7</sub>		820P	22K			
F <sub>8</sub>		680P	↑			
F <sub>9</sub>		.0018	↑			
F <sub>10</sub>		.0022	10K	10K	.027	
F <sub>11</sub>		.0039	↑	↑	.082	
F <sub>12</sub>		.0082	↑	↑	.047	
F <sub>13</sub>		.0015	33K			
F <sub>14</sub>		.0022	↑			
F <sub>15</sub>		.0033	↑			
F <sub>16</sub>		.0047	10K	10K	.056	
F <sub>17</sub>	15K	.0068	↑	↑	.1	
F <sub>18</sub>	10K	.01	↑	↑	.082	
F <sub>19</sub>	↑	.0056	22K			
F <sub>20</sub>		.01	↑			
F <sub>21</sub>		.0068	15K	15K	.027	
F <sub>22</sub>		.01	↑	↑	.056	
F <sub>23</sub>		.015	10K	10K	.082	
F <sub>24</sub>		.033	↑	↑	.1	



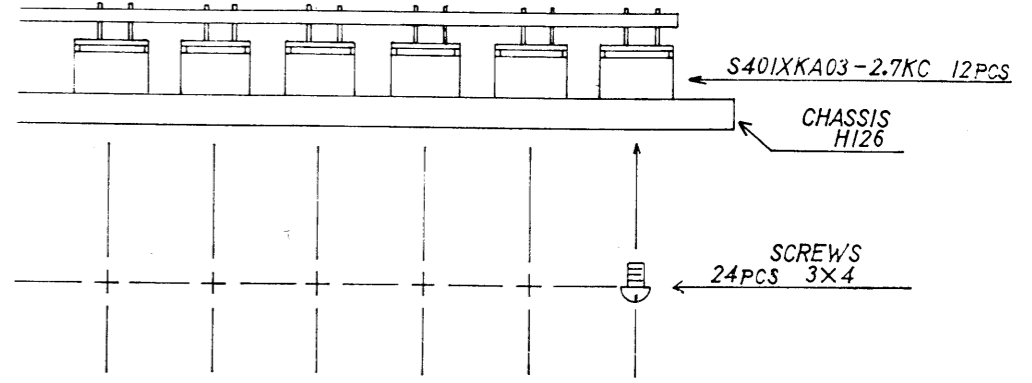
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41

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**DRAWBAR BOARD**  
OPH134A (149H134A)  
(pcb 052H323A)

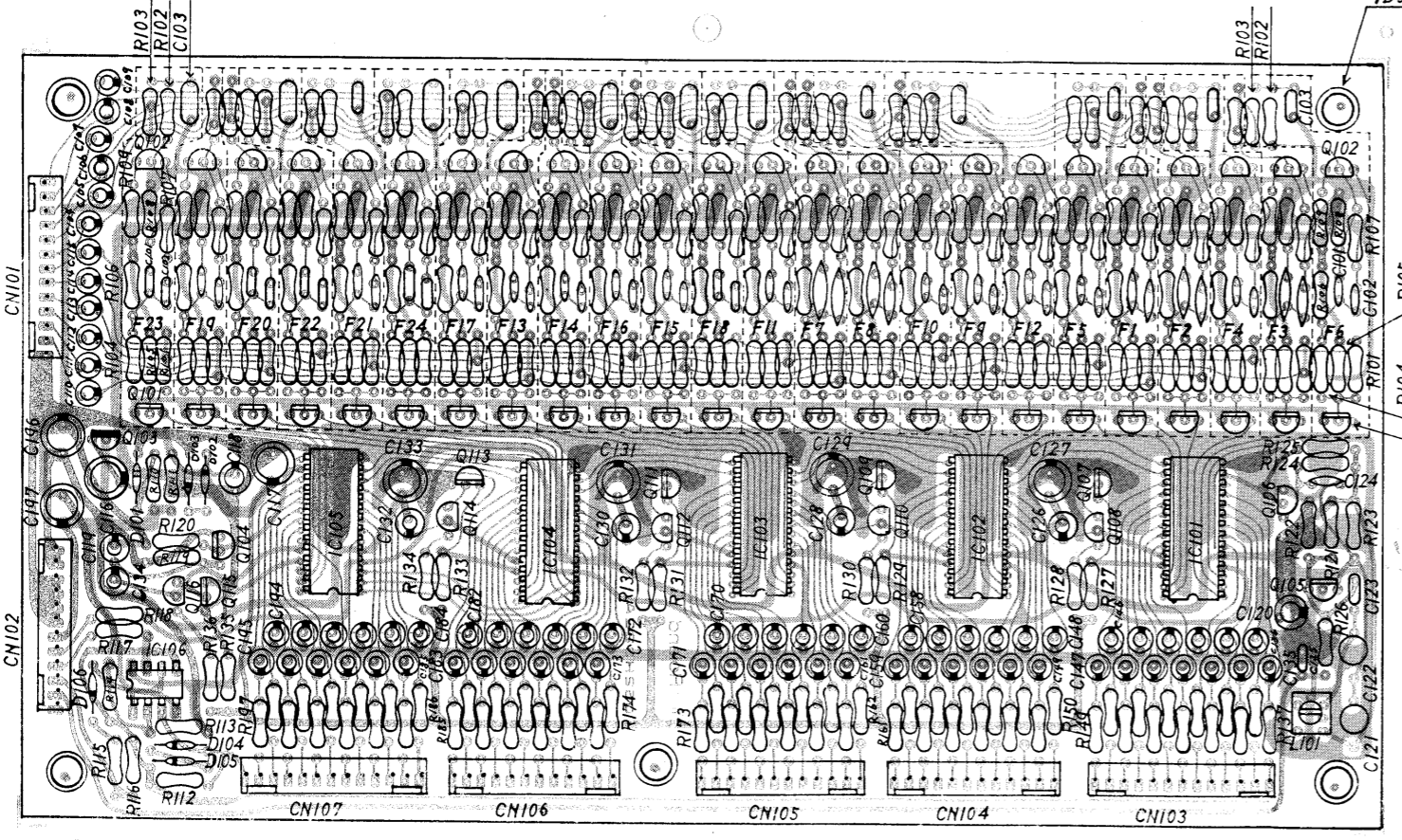
KNOB  
2 2/3 : \*19 BLACK  
5 2/3, 16' : \*21 BROWN  
8', 4', 2' : \*20 IVORY



SCREWS  
12PCS 3x8 B1

KNOBS 12PCS

COLLAR BUSH  
TA307  
TB300 x 5

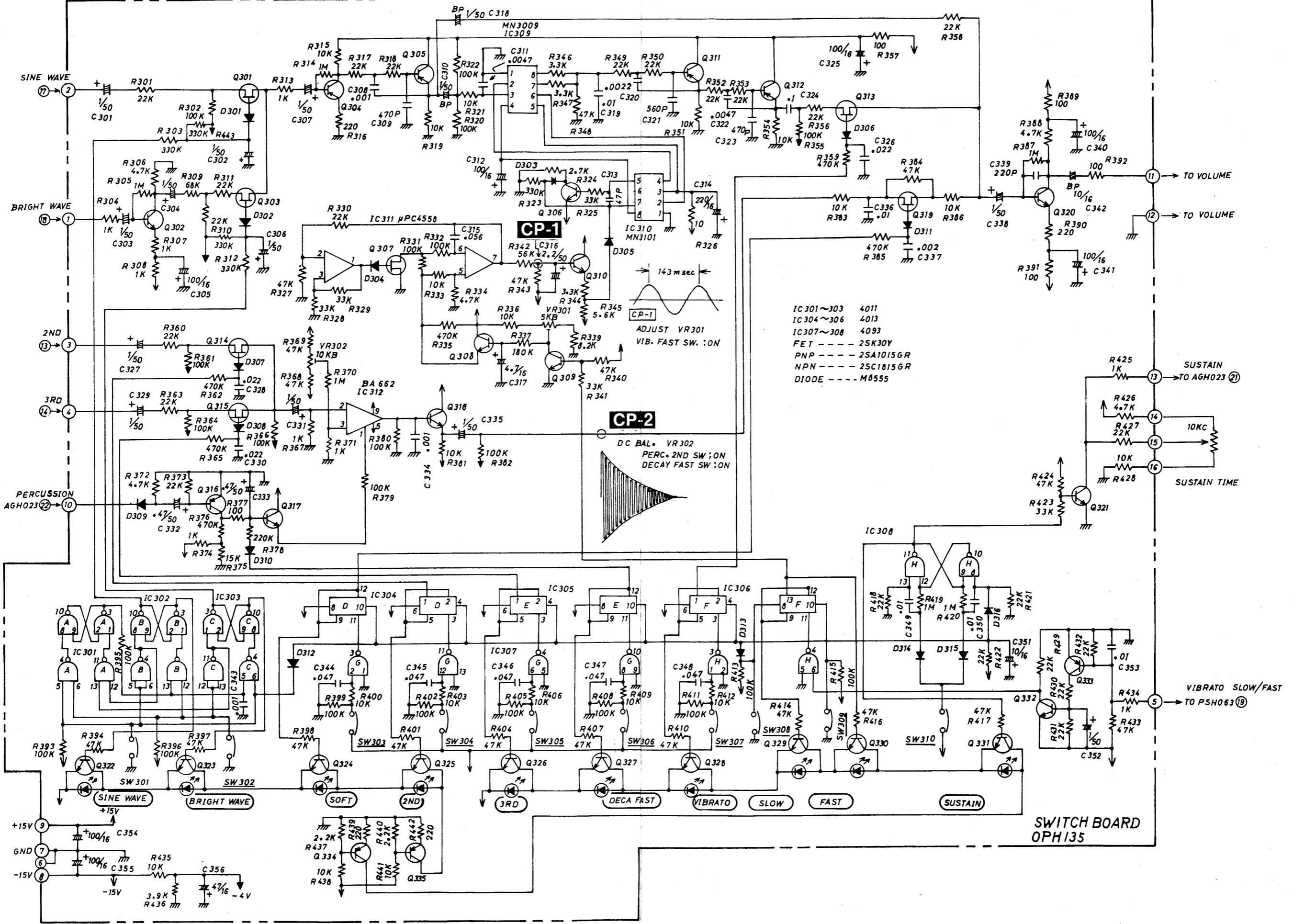


**TONE GENERATOR**  
AGH023A (144H023A)  
(pcb 052H322A)

ICs : IC101~IC105 TMS3617NS 5pcs  
IC : IC106  $\mu$ PC4558C  
Diodes : D101 RD12EB or 05212U  
Diodes : D102~D106 IS2473 or MB555 5pcs  
Transistor : Q103 2SB647  
Transistors : 2SA1015Y or GR 31pcs  
Transistors : 2SC1815Y or GR 30pcs

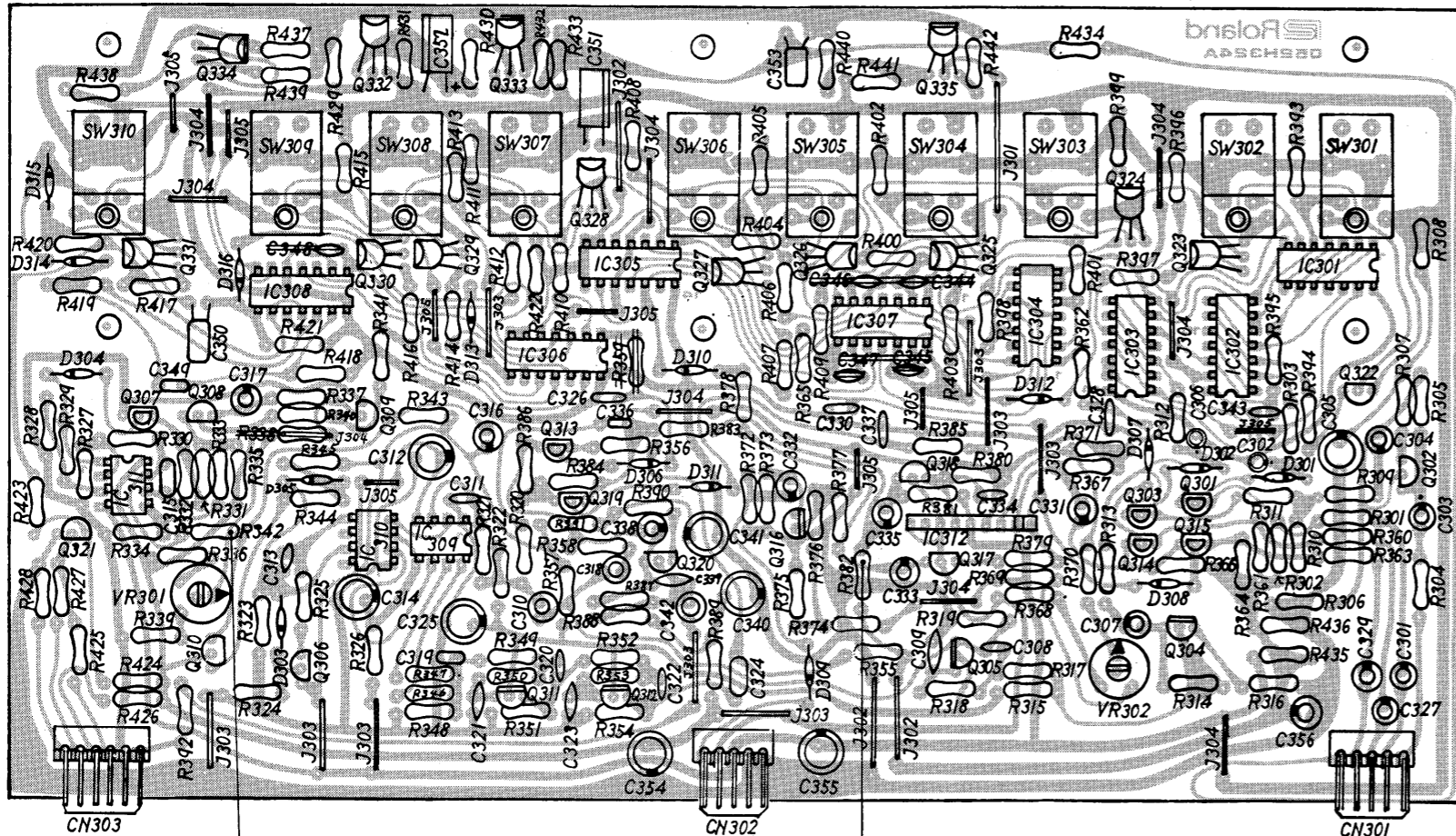
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z



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

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**SWITCH BOARD  
OPH135A**

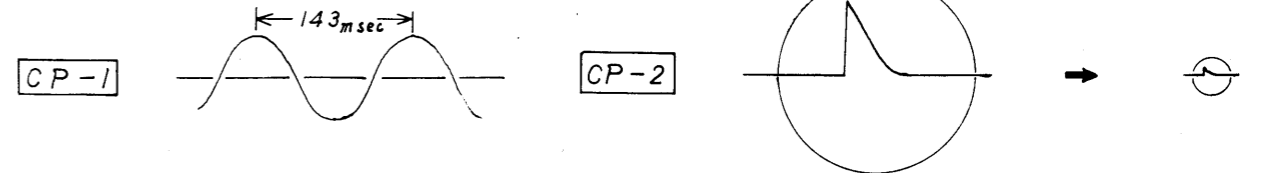
ADJUSTMENT

**VIBRATO RATE**

Switch VIBRATO "FAST" to ON.  
Set VR301 for the waveform below.

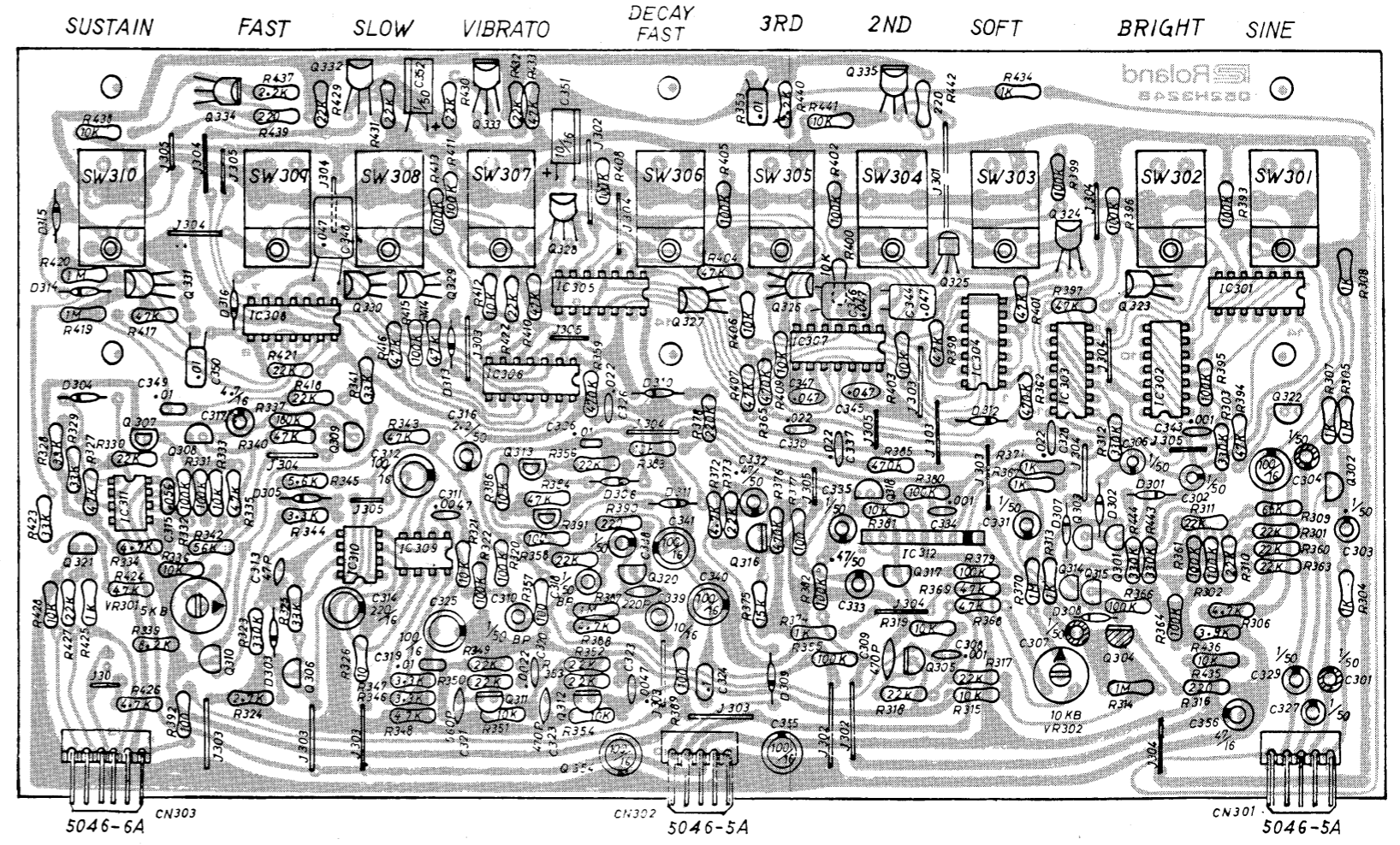
**PERCUSSION DC BALANCE**

Switch the PERCUSSIONS to OFF.  
Push the DRAWBARS to 0 (zero).  
Set VR302 for minimum key click.



**OPH135B (149H135B) (pcb 052H324B)**

below, with serial number 092300  
Parts soldered at foil side of OPH135A are mounted on component side.  
(C344 - C348, R347, R348, R359)



- TRANSISTORS**
- : 2SC1015Y GR
  - : 2SA1015Y GR
  - : 2SK30Y
  - : 2SA970 GR
  - : 50M1

C304  
correct polarity  
(+) at R309

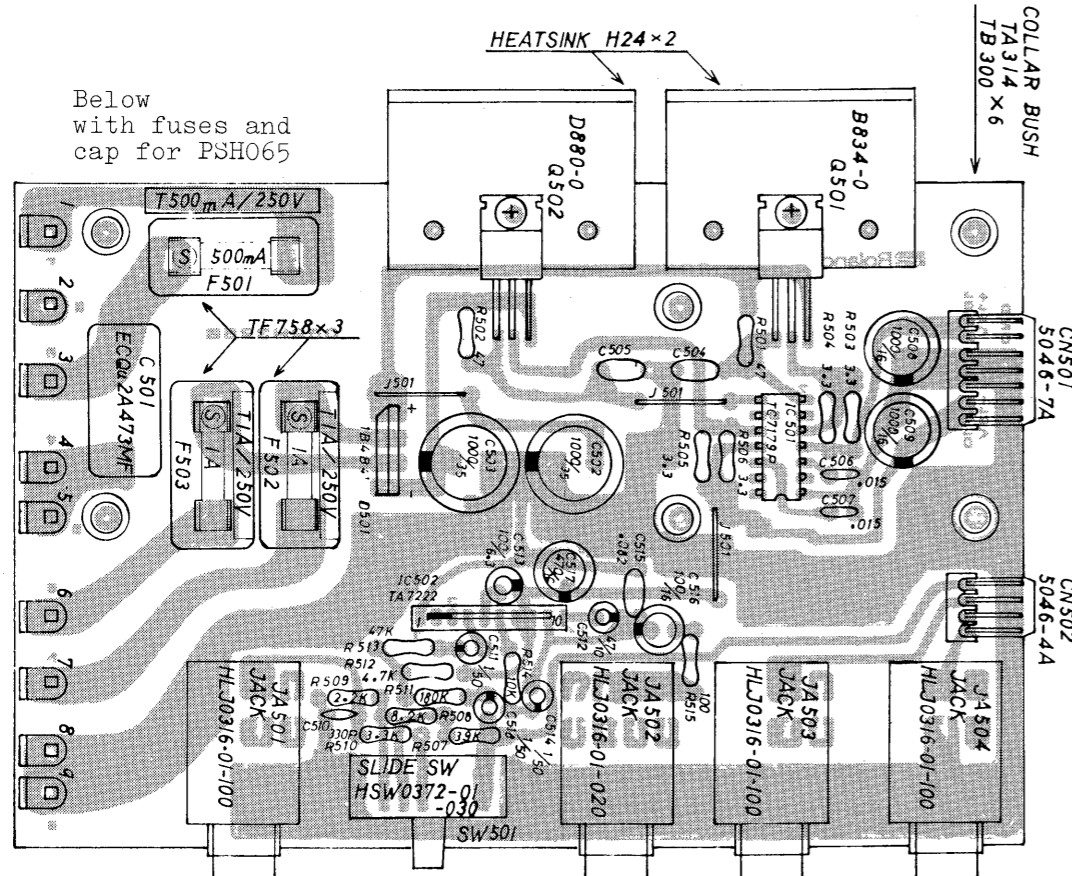
- IC.S**
- IC 301 ~ 303 : TC4011BP HD14011BP
  - IC 304 ~ 306 : TC4013BP HD14013BP
  - IC 307 ~ 308 : TC4093BP HD4093
  - IC 309 : MN3009
  - IC 310 : MN3101
  - IC 311 :  $\mu$ PC4558C
  - IC 312 : BA662

- SWITCHES**
- SW301 SW310 : KHC11901
- TABLETS**
- SW301 SW304 SW305 SW308 SW309 : WHITE
  - SW303 SW307 SW310 : ORANGE
  - SW306 : YELLOW
  - SW302 : RED

- DIODES**
- : 1S2493 M8555

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 4

A B C D E F G H I J K L M N O P Q R S T U V

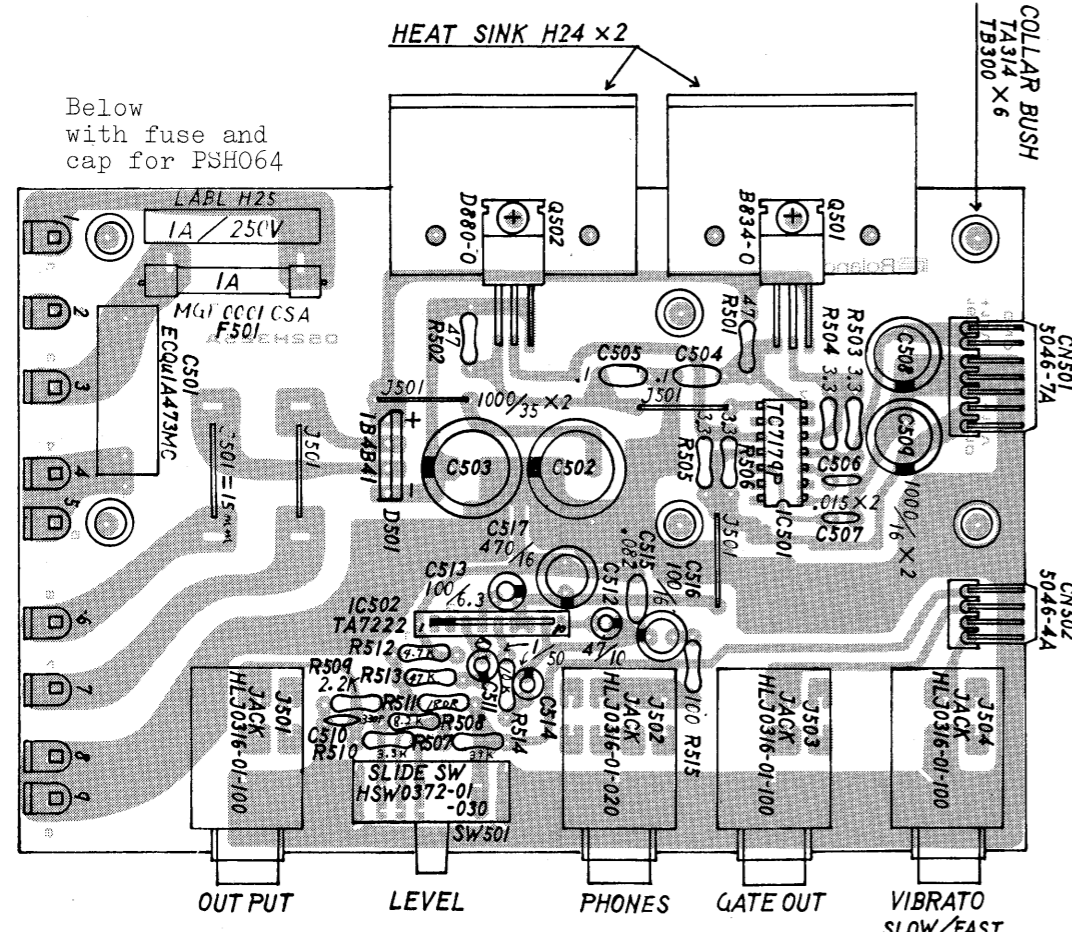
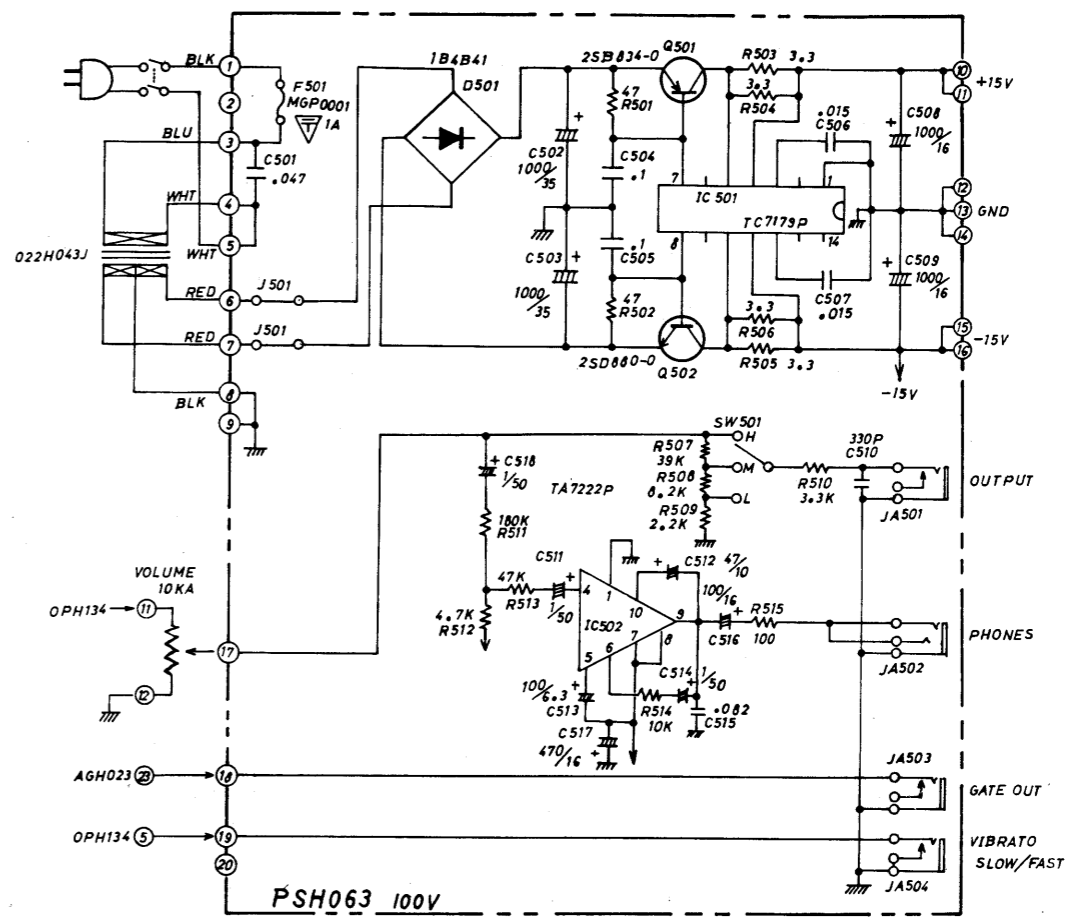


**POWER SUPPLY**  
**PSH063B(146H063B) 100V**  
**PSH064B(146H064B) 117V**  
**PSH065B(146H065B) 220/240V**  
 (pcb 052H325B)

With Serial Number around 092300  
 Differs from A version only in that C518 is mounted on the component side.

Power transformer secondary ratings  
 15VDC x 2 @300mA

Read TC7179P as TA7179P



**PSH063/064/065-A**

**NOTE:**  
 C518 leads are soldered on each side of the cut.  
 Conductive foil going to pin 1 of IC502 and R512 is cut. R512 reaches -15V via wire.

