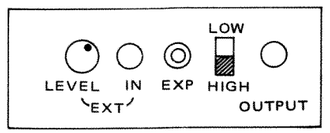
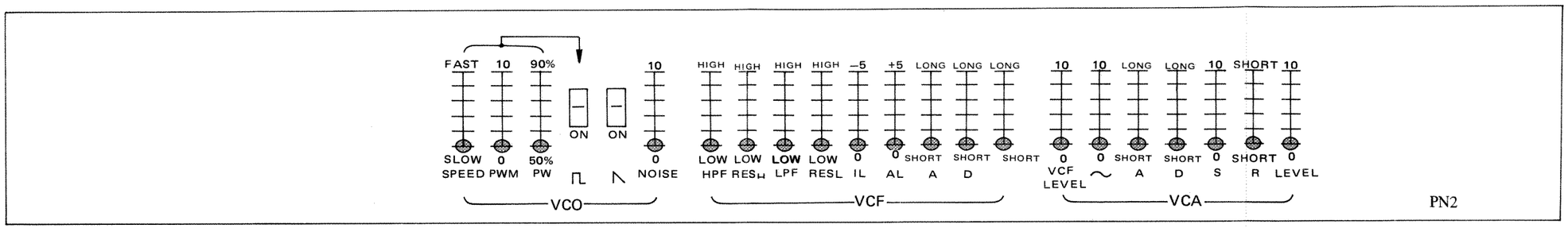
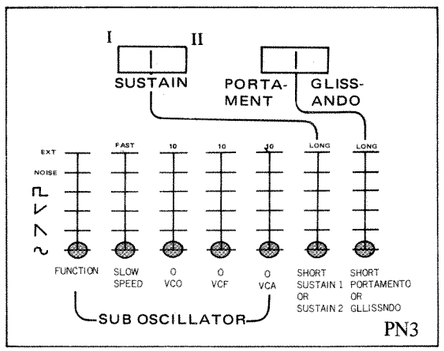
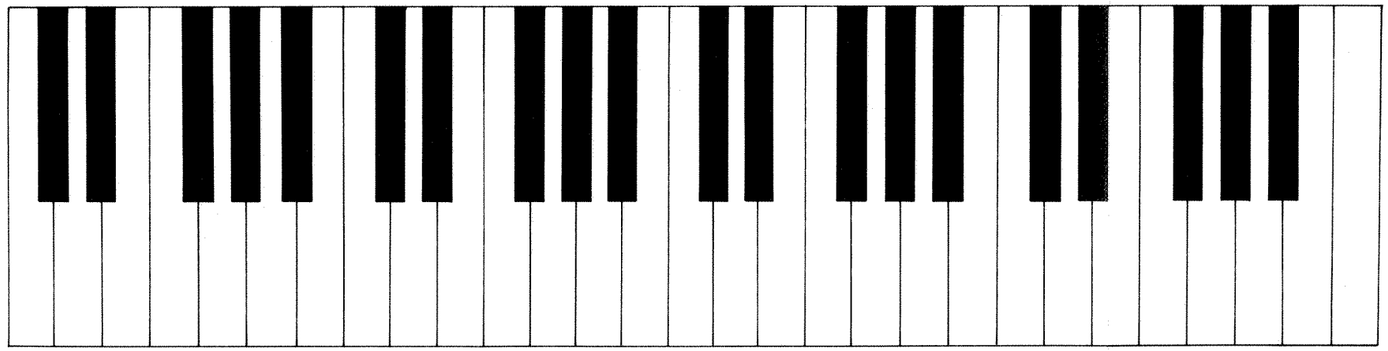
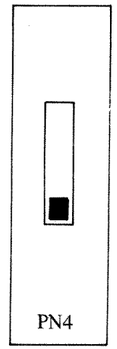
## Assembly Layout (Top View)



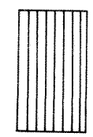



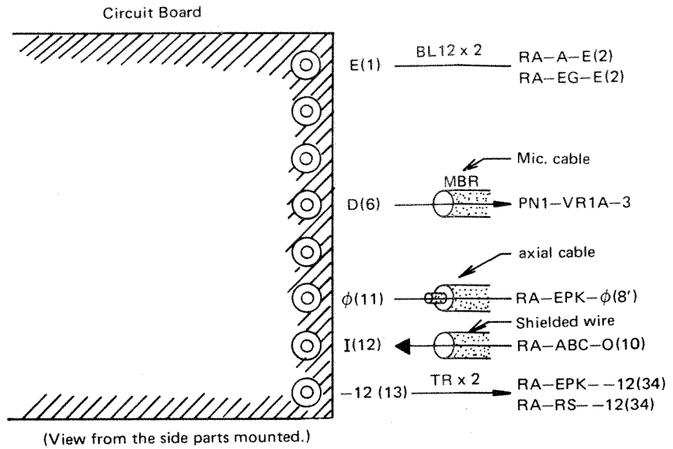






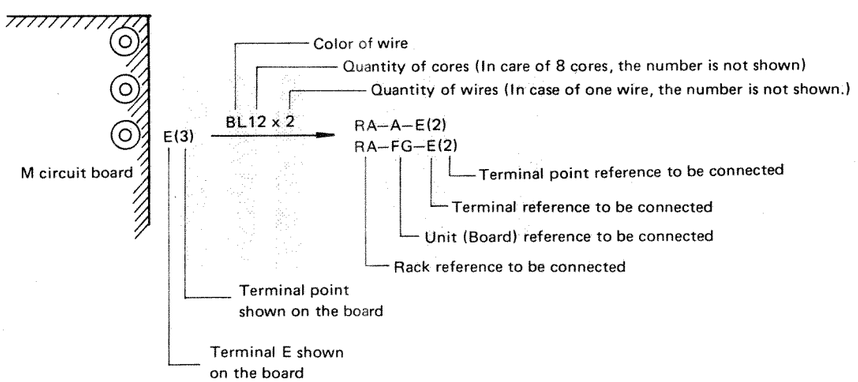
## CORDING GUIDE

CIRCUIT BOARD AND WIRING



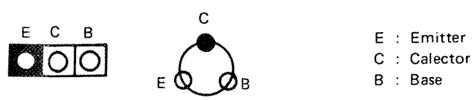

(View from the side parts mounted.)

The coding system is as follows.




Two (2) black wires go from "E" of M circuit board to each "E" terminal of A and FG boards.

NOTE; Transistor.




NOTE: ABBREVIATIONS OF WIRE COLOR IN ELECTONE

| | | | |
|---|---|---|---|
| BL . . . . . .BLACK | BR . . . . . .BROWN | RE . . . . . .RED | OR . . . . . .ORANGE |
| YE . . . . . .YELLOW | GR . . . . . .GREEN | BE . . . . . .BLUE | VI . . . . . .VIOLET |
| GY . . . . . GRAY | WH . . . . . .WHITE | GG . . . . . .GRASS GREEN | SB . . . . . .SKY BLUE |
| PK . . . . . .PINK | TR . . . . . TRANSPARENT | TP.' . . . . . TIN PLATED WIRE | |

← CORDING GUIDE

## SPECIFICATIONS

KEYBOARD
- 49 keys

TONE SELECTORS

| | |
|---|---|
| String 1 | Harpsichord |
| String 2 | Guitar 1 |
| Brass 1 | Guitar 2 |
| Brass 2 | Funky 1 |
| Flute | Funky 2 |
| Electric Piano | Funky 3 |
| Clavichord | (Panel) |

TONE CONTROLS
- VCO Section
  - ⋀ (Saw tooth wave)
  - ⎍ (Pulse wave)
  - PW (Pulse width)
  - PWM (Pulse width modulation)
  - SPEED
  - NOISE
- VCF Section
  - HPF (High pass filter)
  - LPF (Low pass filter)
  - RESH (Resonance, high)
  - RESL (Resonance, low)
  - IL (Initial level)
  - AL (Attach level)
  - A (Attack time)
  - D (Decay time)
- VCA Section
  - VCA Level
  - ~ (Sine wave)
  - A (Attack time)
  - D (Decay time)
  - S (Sustain level)
  - R (Release time)

EFFECT CONTROLS
- Ring Modulator
  - Modulation
  - Speed
  - Attack Time
  - Decay Time
  - Depth
- Touch Response
  - VCO
  - VCF
  - Brilliance
  - Level
- Sub Oscillator
  - Function (⋀, ⋁, ⎍, NOISE, EXTERNAL)
  - Speed
  - VCO
  - VCF
  - VCA
- Sustain 1
- Sustain 2
- Portamento
- Glissando
- Resonance
- Brilliance
- Pitch
- Transposition
  - Normal
  - 1 oct up
  - 1 oct down
  - 2 oct down

OTHER FITTINGS
- Head Phone Jack
- EXT, IN
- LEVEL CONTROL
- OUT PUT JACK
- (FOOT CONTROLER)

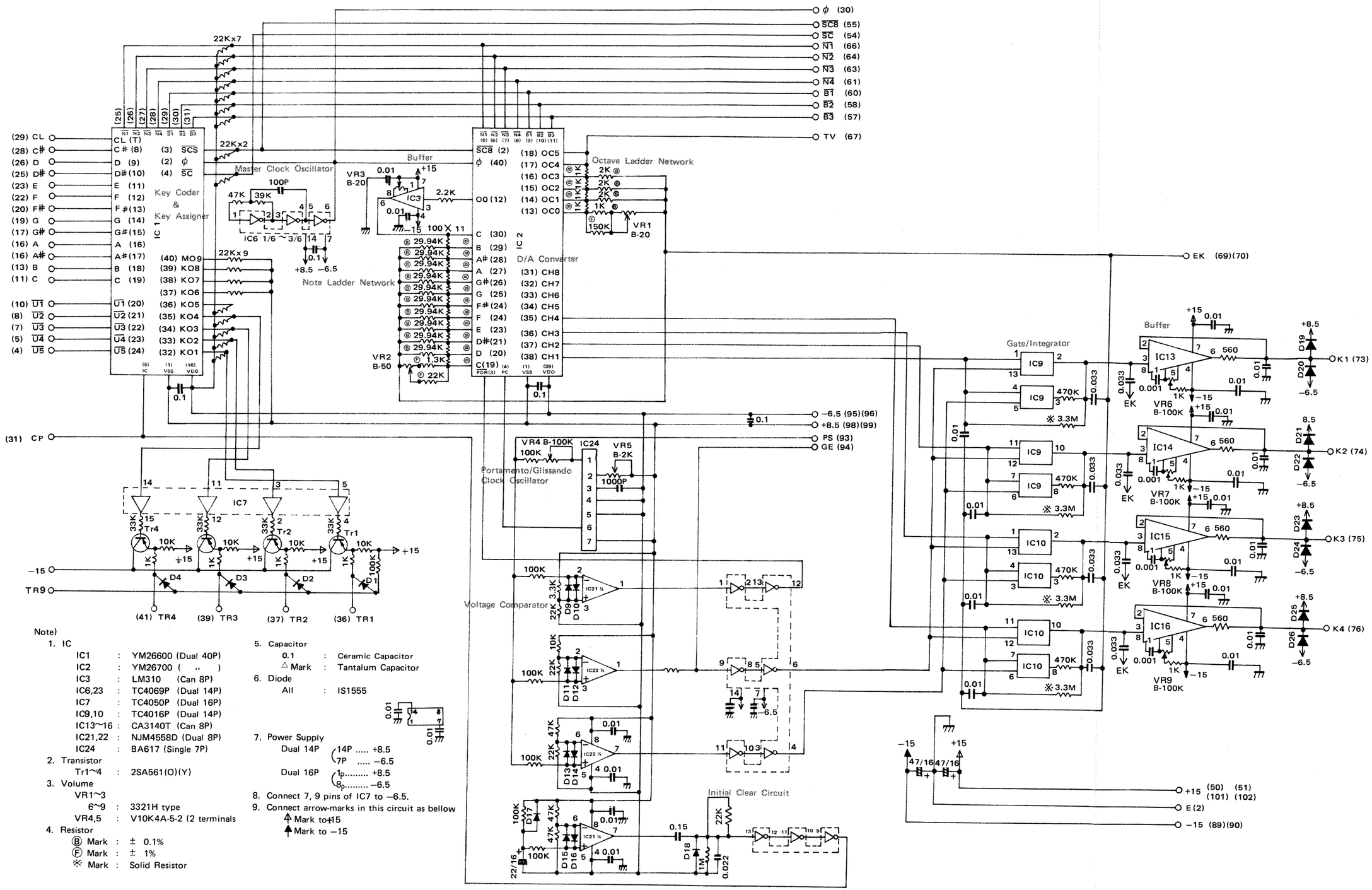
CIRCUITRY
- Power Consumption: 56W
- Power Source : 50/60 Hz, AC

DIMENTIONS
- Width : 98 cm (38-1/2")
- Depth : 49 cm (19")
- Height : 106 cm (41-1/2")

WEIGHT 35 kg (77 Lbs)

Specification subject to change without notice.

## KAS (Key Assigner) Circuit



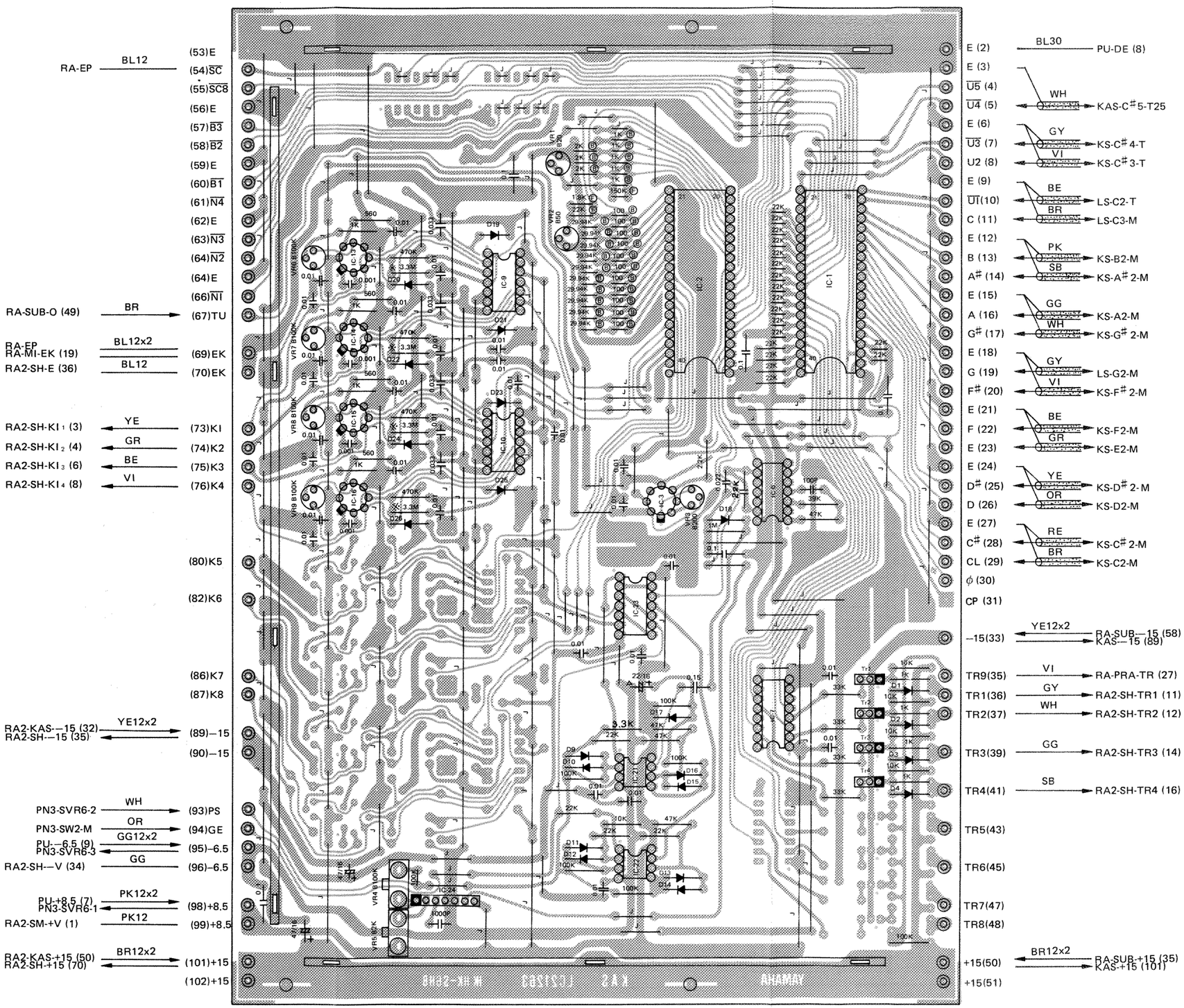

Note)

1. IC
   - IC1 : YM26600 (Dual 40P)
   - IC2 : YM26700 ( ,, )
   - IC3 : LM310 (Can 8P)
   - IC6,23 : TC4069P (Dual 14P)
   - IC7 : TC4050P (Dual 16P)
   - IC9,10 : TC4016P (Dual 14P)
   - IC13～16 : CA3140T (Can 8P)
   - IC21,22 : NJM4558D (Dual 8P)
   - IC24 : BA617 (Single 7P)
2. Transistor
   - Tr1～4 : 2SA561(O)(Y)
3. Volume
   - VR1～3
     - 6～9 : 3321H type
     - VR4,5 : V10K4A-5-2 (2 terminals
4. Resistor
   - Ⓑ Mark : ± 0.1%
   - Ⓕ Mark : ± 1%
   - ※ Mark : Solid Resistor
5. Capacitor
   - 0.1 : Ceramic Capacitor
   - △ Mark : Tantalum Capacitor
6. Diode
   - All : IS1555
7. Power Supply
   - Dual 14P (14P ..... +8.5, 7P ..... −6.5)
   - Dual 16P (1p..... +8.5, 8p..... −6.5)
8. Connect 7, 9 pins of IC7 to −6.5.
9. Connect arrow-marks in this circuit as bellow
   - Mark to +15
   - Mark to −15



KEC-4489-69 ⚠

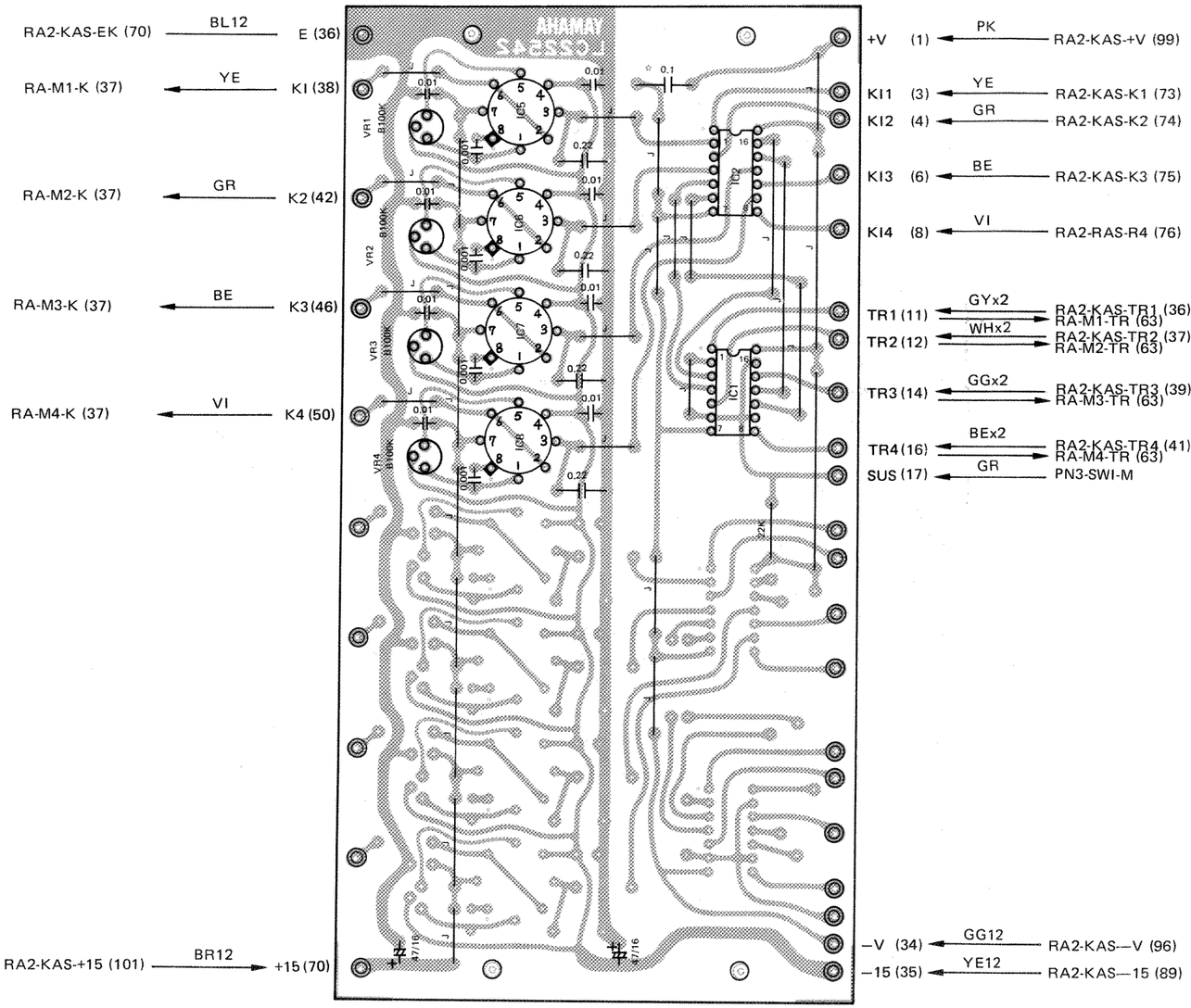
## KAS Circuit Board




Note)

1. IC1 : YM26600 (Dual 40P)
   IC2 : YM26700 ( ,, )
   IC3 : LM310 (Can 8P)
   IC7 : TC4050P (Dual 16P)
   IC6,23: IC4069P (Dual 14P)
   IC9,10 : TC4016P ( ,, )
   IC13～16 : CA3140T (Can 8P)
   IC21,22 : NJM4558D (Dual 8P)
   IC24 : BA617 (Single 7P)
2. Transistor
   Tr1～4 : 2SA561 (O)(Y)
3. Volume
   VR1～3, 6～9 : 3321M type
   VR4, 5 : V10K4A-5-2 (2 terminals)
4. Resistor
   Ⓑ : ± 0.1%
   Ⓕ : ± 1%
   ※ : Solid Resistor
5. Capacitor
   △ marked : Tantalum Capacitor
   0.1 : Ceramic Capacitor
6. Diode
   All D : 1S1555
7. Camber-stop Hardware
   AA03991
8. Camber-stop Hardware
   AA03992

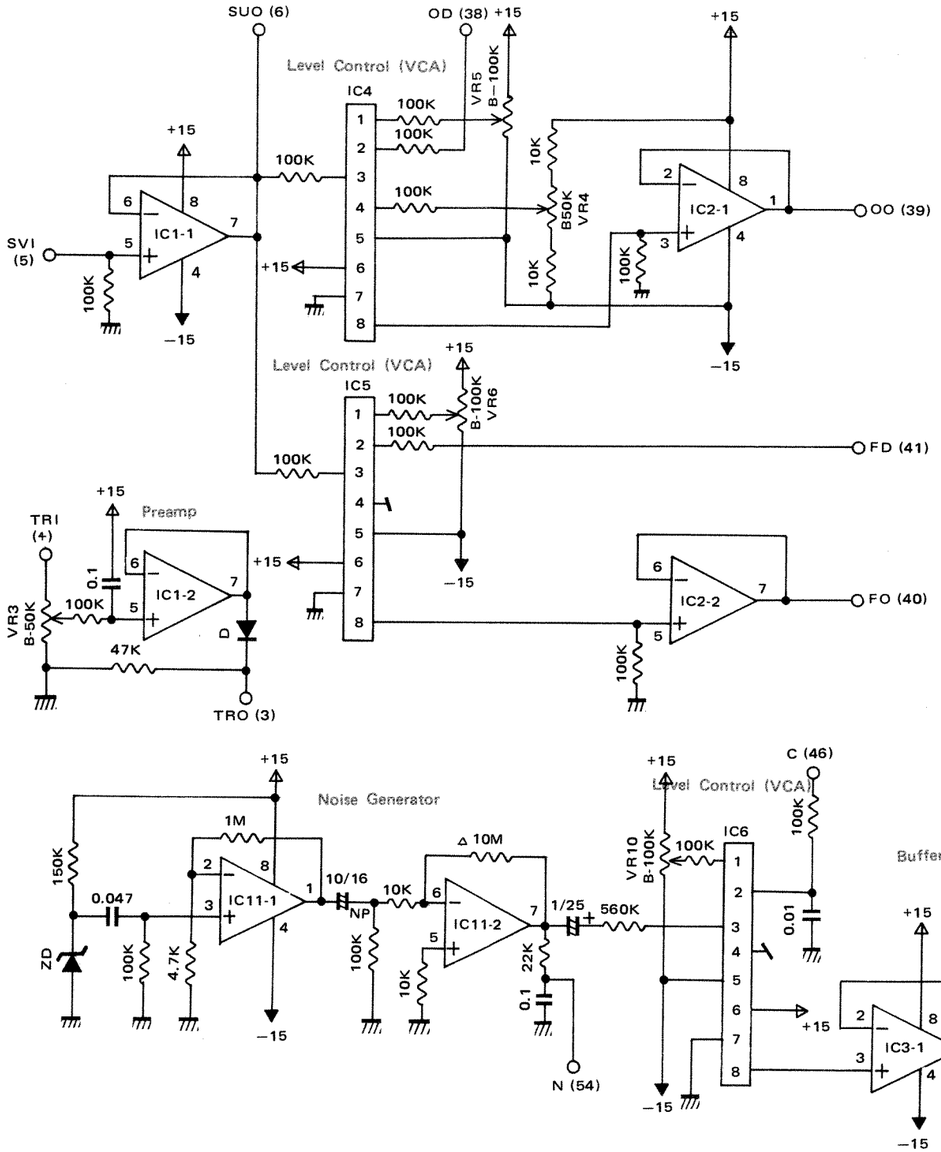
## SH Circuit Board

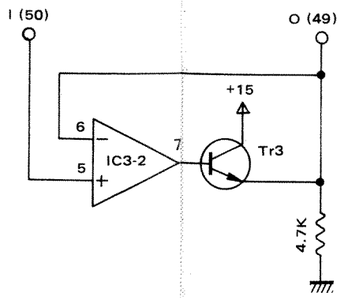



Note)

1. Capacitor
   ☆ Mark : Ceramic Capacitor
   Others : Mylar Capacitor
2. Volume
   3321H
3. IC
   IC1 : TC4011P
   IC2 : TC4016P
   IC5～8 : CA3140T
4. Print Board
   # 2259 2

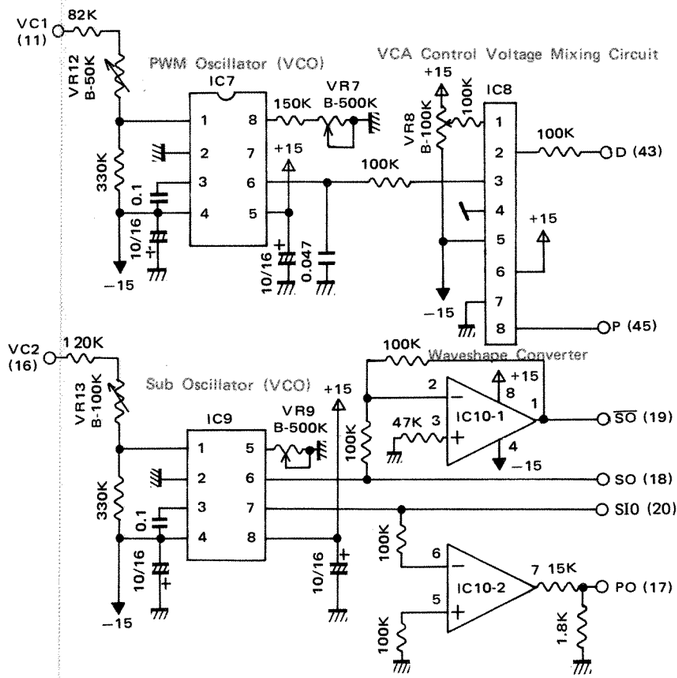
# SUB (Sub Oscillator) Circuit

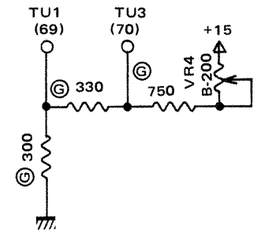


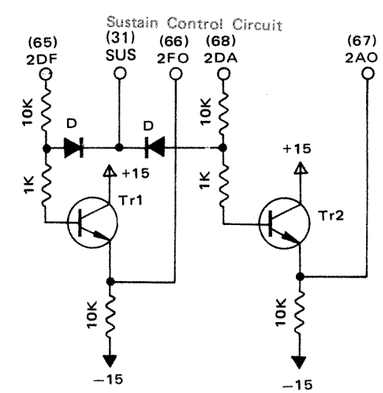




Note)

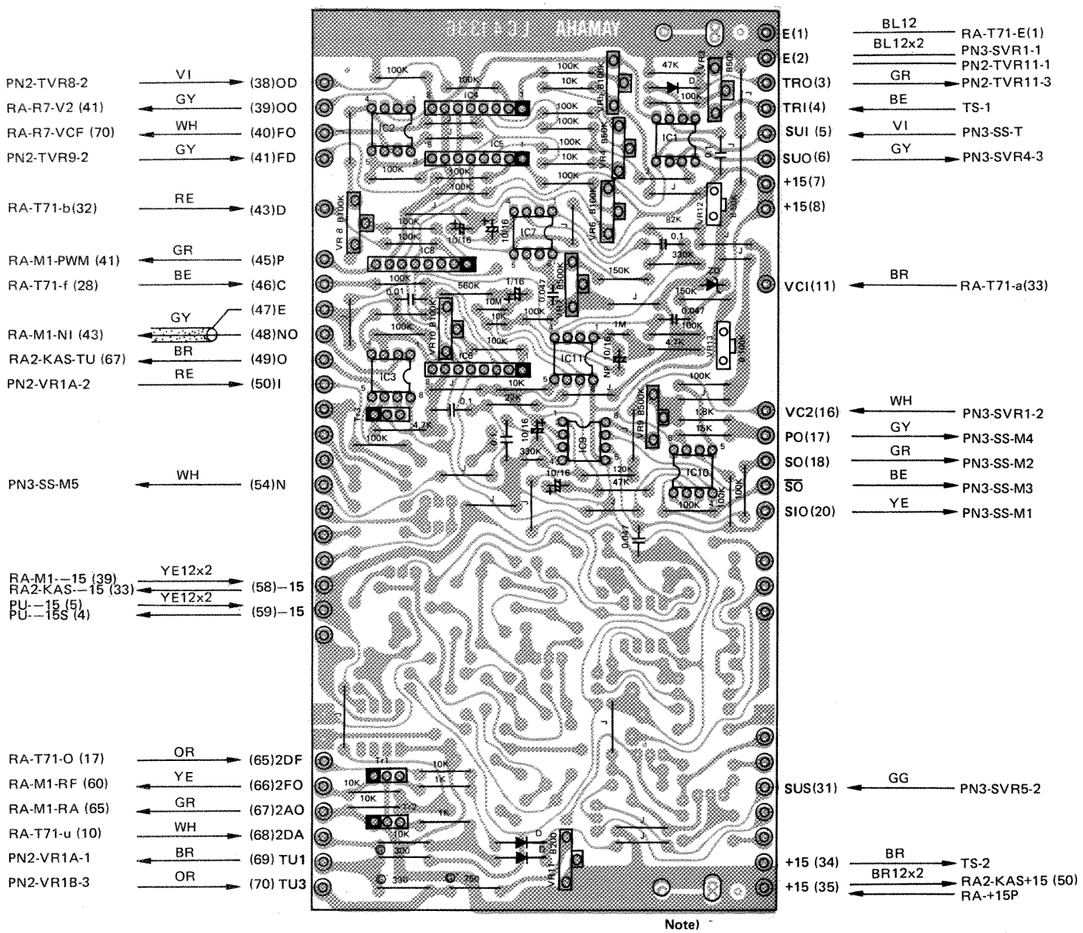
1. Diode
   - D : IS1555
   - ZD : IS1715P
2. All VR : V-10K
3. Resistor
   - △ Mark : Solid Resistor
   - Nothing Mark : (¼W) Horizontal-type carbon
   - Ⓖ Mark: 2% Resistor
4. Transistor
   - Tr1, 2, 3 : 2SC458(C) or (D)
5. IC
   - IC1,2,3,10,11: NJM4558 (JRC) pair
   - IC4,5,6,8 : IG00151(A)(B)
   - IC7,9 : IG00150



## SUB Circuit Board

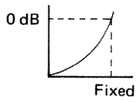



Note)

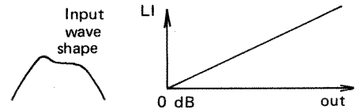
1. Print Board : LC41336
2. Transistor
   Tr1,2,3 : 2SC458(C) or (D)
3. IC1,2,3,10,11 : NJM4558
   IC4,5,6,8 : IG00151(A)(B)
   IC7,9 : IG00150
4. Diode : IS1555
   ZD : IS1715
5. △ Mark : Slid Resistor
   Ⓢ Mark : 2% Resistor
6. All Volume : V-10K

## VCOII IC (IG00151)

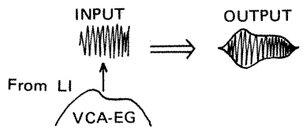
1. EI ..... Input voltage for level control.
   Input of the control voltage is provided for changing the level expotenentially.



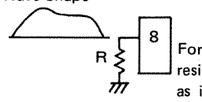

2. LI ..... Input of level control voltage.
   Input of the control voltage is provided for linear change of the level.




3. +IN ..... Input
   Input of the level modulated signal is provided.



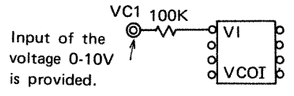

4. −IN ..... Negative feed back.
   Normally unused.
5. Vee ..... −15V input power source.
6. Vcc ..... +15V input power source.
7. GND ..... Earth
8. OUT ..... Output
   Output of the following wave shape is produced.



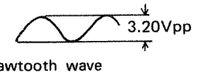

For checking, connect the resistor of 10K~30K ohm as illustrated.

## VCO I IC (IG00150)

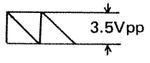
1. VI ..... Input of the control voltage.
   The frequency is variable in accordance with the voltage supplied.



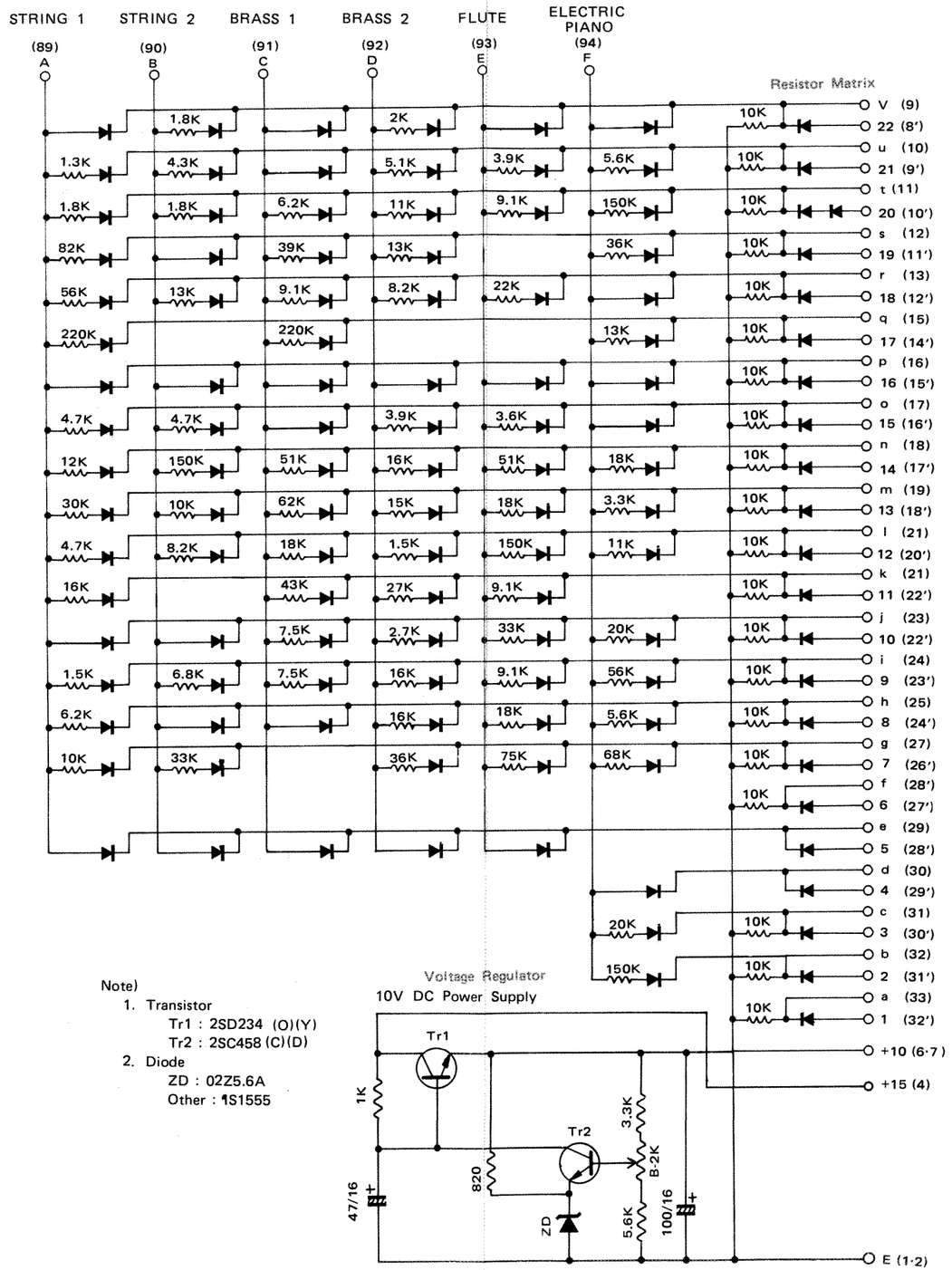

2. GND ..... Earth
3. C ..... Capacitor for determination of the frequency.
4. Vee ..... −15V input power source.
5. Vcc ..... +15V input power source.
6. SIO ..... Output of sine wave.




7. SO ..... Output of sawtooth wave




8. Iadj ..... Setting for standard electric current.
   The standard electric current is set so as to be the output 200Hz when VC1 is 10V and VC2 is zero volt.




Note)

1. Transistor
   Tr1 : 2SD234 (O)(Y)
   Tr2 : 2SC458 (C)(D)
2. Diode
   ZD : 02Z5.6A
   Other : 1S1555

## T71 (Tone Preset 1) Circuit

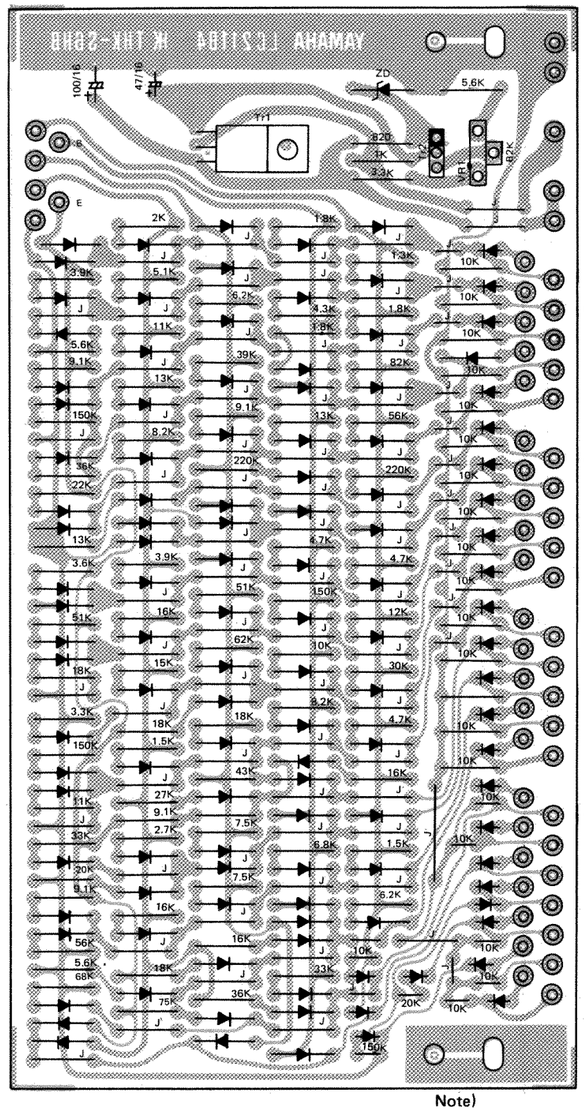
(Unit: V)

| Input \ Output | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| String 1 | A | 0 | 0 | 0 | 0 | 10 | 0 | 5.00 | 6.17 | 8.70 | 10 | 3.85 | 6.80 | 2.50 | 4.55 | 6.80 | 10 | 0.45 | 1.52 | 1.09 | 8.47 | 8.85 | 10 |
| String 2 | B | 0 | 0 | 0 | 0 | 10 | 0 | 2.33 | 10 | 5.95 | 10 | 0 | 5.49 | 5.00 | 0.63 | 6.80 | 10 | 0 | 4.35 | 10 | 8.47 | 6.99 | 8.47 |
| Brass 1 | C | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 5.71 | 10 | 1.89 | 3.57 | 1.39 | 1.64 | 10 | 10 | 0.43 | 5.24 | 2.04 | 6.17 | 10 | 10 |
| Brass 2 | D | 0 | 0 | 0 | 0 | 10 | 0 | 2.17 | 3.85 | 7.87 | 2.70 | 8.70 | 4.00 | 3.85 | 7.19 | 10 | 0 | 5.49 | 4.35 | 0 | 4.76 | 6.62 | 8.33 |
| Flute | E | 0 | 0 | 0 | 0 | 10 | 0 | 1.18 | 3.57 | 5.24 | 2.33 | 0.63 | 3.57 | 1.64 | 7.35 | 10 | 0 | 3.13 | 0 | 5.24 | 7.19 | 10 | 10 |
| Electric Piano | F | 0 | 0.63 | 3.33 | 10 | 0 | 0 | 1.28 | 6.41 | 1.52 | 3.33 | 0 | 4.76 | 7.52 | 3.57 | 10 | 4.35 | 10 | 2.17 | 0.63 | 6.41 | 10 | 10 |

## T71 Circuit Board

PN2-TS5-M —RE→ (39')B
PN2-TS5-M —GR→ (41')E

PN2-TS2-T —BR→ (39)A
PN2-TS3-M —OR→ (40)C
PN2-TS4-M —YE→ (41)D
PN2-TS6-M —BE→ (42)F



E (1) —BL12x2→ RA-EP, RA-SUB-E (1)
E (2) —BL12→ TS-4

+15 (4) —BR12→ RA-+15P

+10 (6) —OR12x2→ PN2-TVR2-1, PN3-SVR5-1
+10 (7)

v (9) —GG→ RA -T72-v (9)
u (10) —WHx2→ RA-T72-u (10), RA-SUB-2DA (68)
t (11) —GY→ PA-T72-t (12)
s (12) —VI→ RA-T72-s (13)
r (13) —BE→ RA-T72-r (14)

q (15) —GR→ RA-T72-q (15)
p (16) —YE→ RA-T72-P (16)
o (17) —ORx2→ RA-T72-o (17), RA-SUB-2DF (65)
n (18) —RE→ RA-T72-n (19)
m (19) —BR→ RA-T72-m (20)

l (21) —PK→ RA-T72-l (21)
K (22) —SB→ RA-T72-k (22)
J (23) —GG→ RA-T72-j (23)
i (24) —WH→ RA-T72-i (24)
h (25) —GY→ RA-T72-h (26)

g (27) —VI→ RA-T72-g (27)
f (28) —BEx2→ RA-T72-f (28), RA-SUB-C (46)
e (29) —GR→ RA-T72-e (29)
d (30) —YE→ RA-T72-d (30)
c (31) —OR→ RA-T72-c (31)
b (32) —REx2→ RA-T72-b (32), RA-SUB-D (43)
a (33) —BRx2→ RA-T72-a (33), RA-SUB-VCI (11)

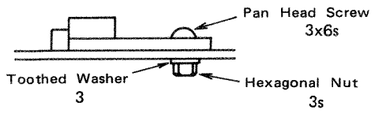
22 (8') —GG→ PN1-SVR20-2
21 (9') —WH→ PN1-SVR19-2
20 (10') —GY→ PN1-SVR18-2
19 (11') —VI→ PN1-SVR17-2
18 (12') —BE→ PN1-SVR16-2

17 (14') —GR→ PN1-SVR15-2
16 (15') —YE→ PN1-SVR14-2
15 (16') —OR→ PN1-SVR13-2
14 (17') —RE→ PN1-SVR12-2
13 (18') —BR→ PN1-SVR11-2

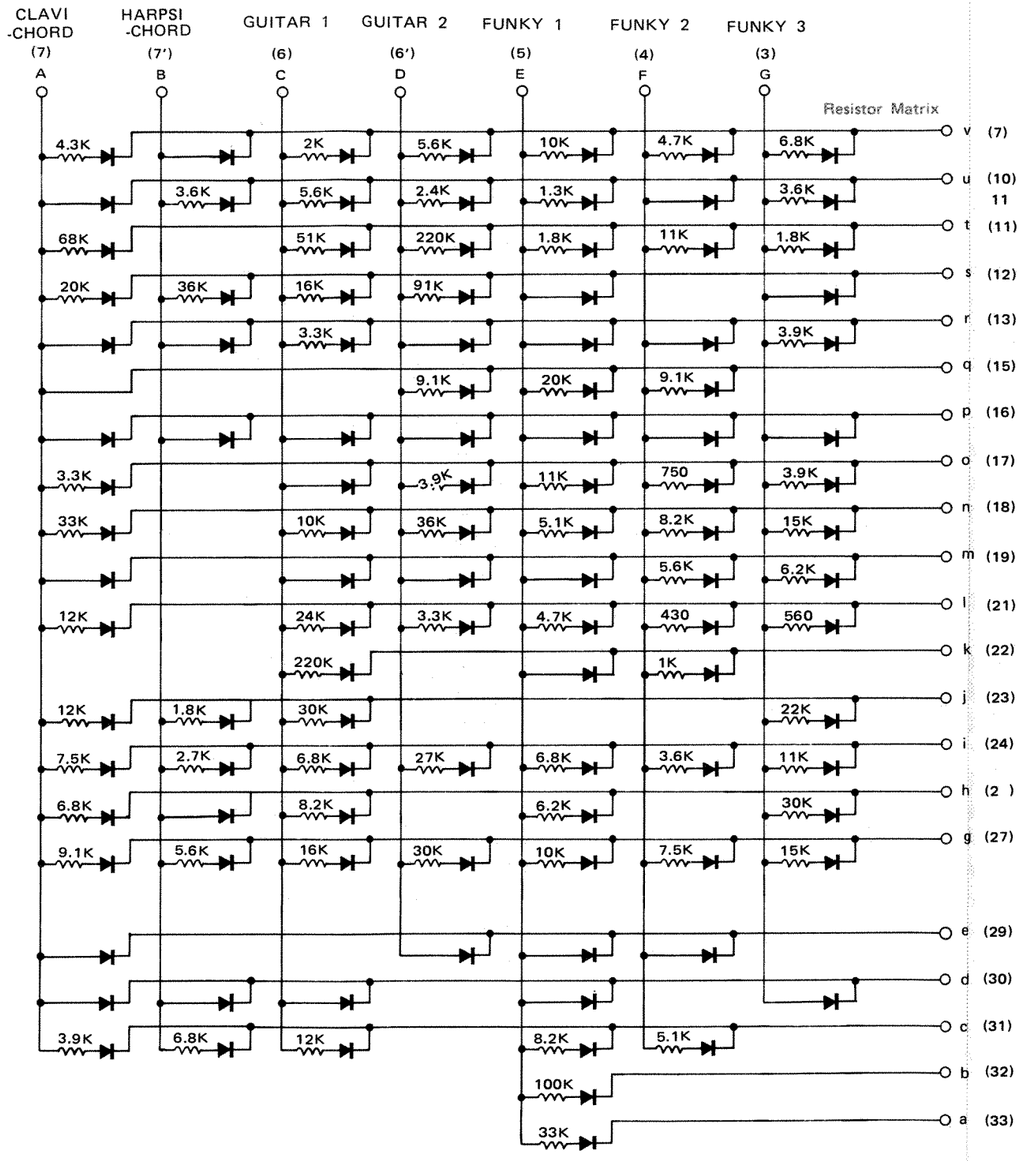
12 (20') —PK→ PN1-SVR10-2
11 (21') —SB→ PN1-SVR9-2
10 (22') —GG→ PN1-SVR8-2
9 (23') —RE→ RA-PRA-fLO (57)
8 (24') —GY→ PN1-SVR6-2

7 (26') —BR→ RA-PRA-fHO (59)
6 (27') —BE→ PN1-SVR4-2
5 (28') —GR→ PN1-SW2-T
4 (29') —YE→ PN1-SW1-T
3 (30') —OR→ PN1-SVR3-2
2 (31') —RE→ PN1-SVR2-2
1 (32') —BR→ PN1-SVR1-2

Note)
1. Print Board : LC21183
2. Transistors
   Tr1 : 2SD234 (O)(Y)
   Tr2 : 2SC458 (C)(O)
3. Diode
   ZD : 02Z5.6A
   Others : IS1555
4. Tr1 Install method



# T72 (Tone Preset 2) Circuit



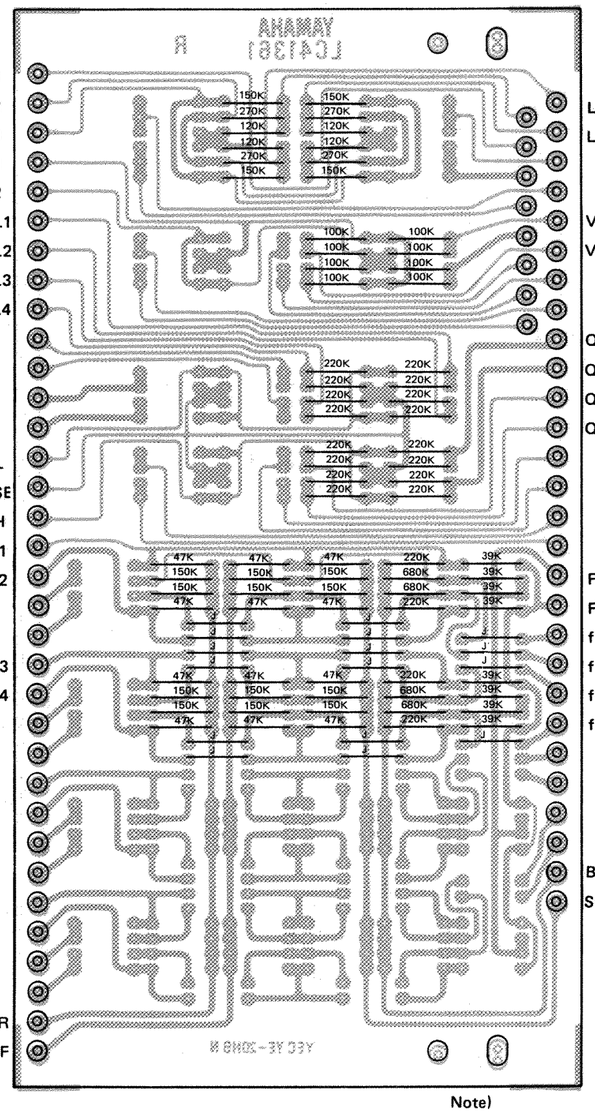

Note) Diode : 1S1555

(Unit: V)

| Input \ Output | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g |
| Clavi -chord A | 0 | 0 | 7.19 | 10 | 10 | 0 | 5.24 |
| Harpsi -chord B | 0 | 0 | 5.95 | 10 | 0 | 0 | 6.41 |
| Guitar 1 C | 0 | 0 | 4.55 | 10 | 0 | 0 | 3.85 |
| Guitar 2 D | 0 | 0 | 0 | 0 | 10 | 0 | 2.50 |
| Funky 1 E | 2.33 | 0.91 | 5.49 | 10 | 10 | 0 | 5.00 |
| Funky 2 F | 0 | 0 | 6.62 | 0 | 10 | 0 | 5.71 |
| Funky 3 G | 0 | 0 | 0 | 10 | 0 | 0 | 4.00 |

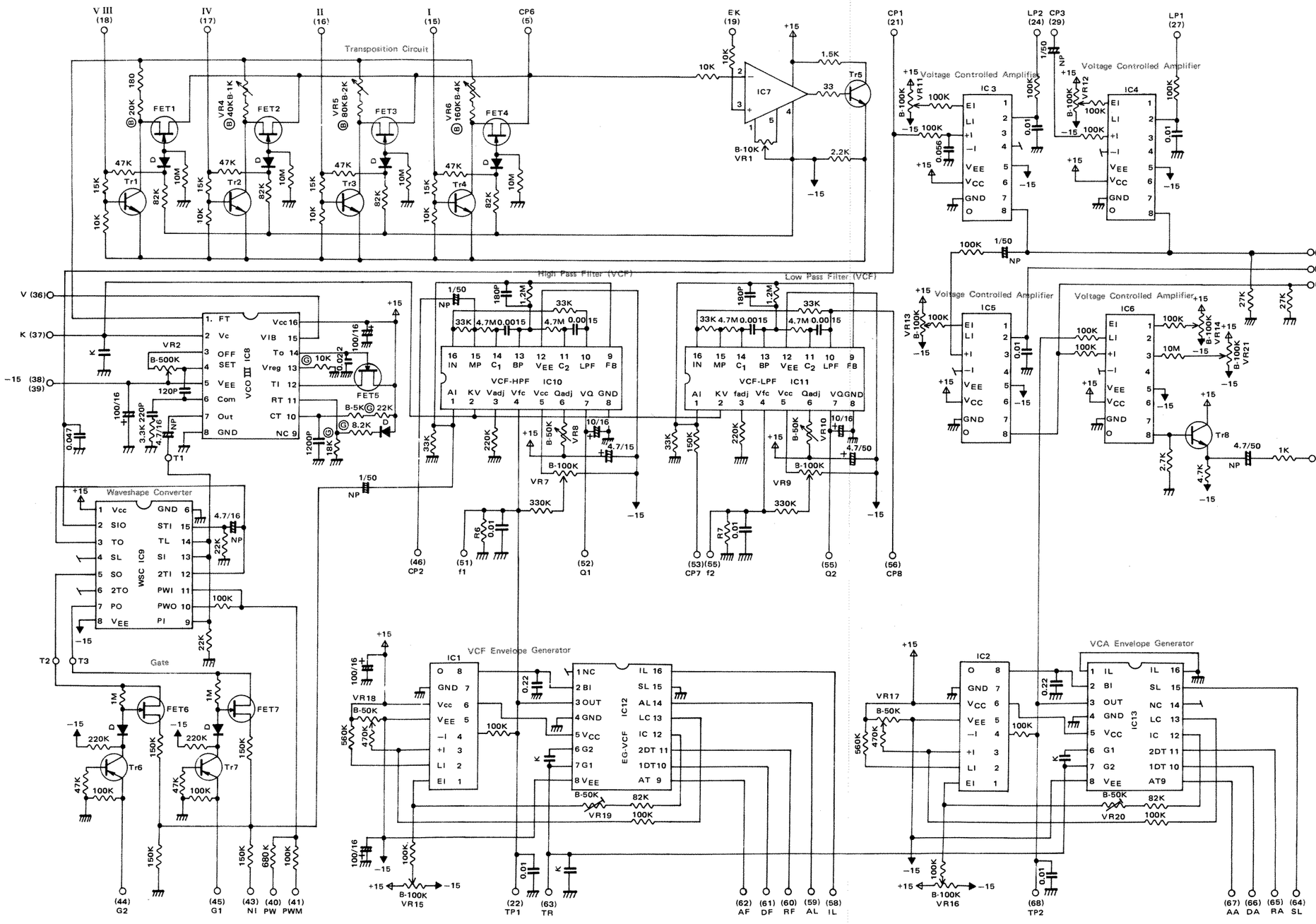
| Input \ Output | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clavi -chord A | 5.95 | 5.71 | 4.55 | 0 | 4.55 | 10 | 2.33 | 7.52 | 10 | 0 | 10 | 3.33 | 1.28 | 10 | 6.79 |
| Harpsi -chord B | 10 | 7.87 | 8.47 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 2.17 | 0 | 7.35 | 10 |
| Guitar 1 C | 5.49 | 5.95 | 2.50 | 0.43 | 2.94 | 10 | 5.00 | 10 | 10 | 0 | 7.52 | 3.85 | 1.64 | 6.41 | 8.33 |
| Guitar 2 D | 0 | 2.70 | 10 | 0 | 7.52 | 10 | 2.17 | 7.19 | 10 | 5.24 | 10 | 0.99 | 0.43 | 8.06 | 6.41 |
| Funky 1 E | 6.17 | 5.95 | 0 | 10 | 6.80 | 10 | 6.62 | 4.76 | 10 | 3.33 | 10 | 10 | 8.47 | 8.85 | 5.00 |
| Funky 2 F | 0 | 7.35 | 0 | 9.09 | 9.59 | 6.41 | 5.49 | 9.30 | 10 | 5.24 | 10 | 0 | 4.76 | 10 | 6.80 |
| Funky 3 G | 2.50 | 4.76 | 3.13 | 0 | 9.47 | 6.17 | 4.00 | 7.19 | 10 | 0 | 7.19 | 10 | 8.47 | 7.35 | 5.95 |

## R7 Circuit Board




Note)
1. Print Board : LC41360
2. Transistor

# M (Master) Circuit




| | CS-80 | CS-60,50 |
|---|---|---|
| R1 | Ⓑ 10K | Ⓑ 20K |
| R2 | Ⓑ 20K | Ⓑ 40K |
| R3 | Ⓑ 40K | Ⓑ 80K |
| R4 | Ⓑ 80K | Ⓑ 160K |
| R5 | 100 | 180 |
| VR4 | B-500 | B-1K |
| VR5 | B-1K | B-2K |
| VR6 | B-2K | B-5K |

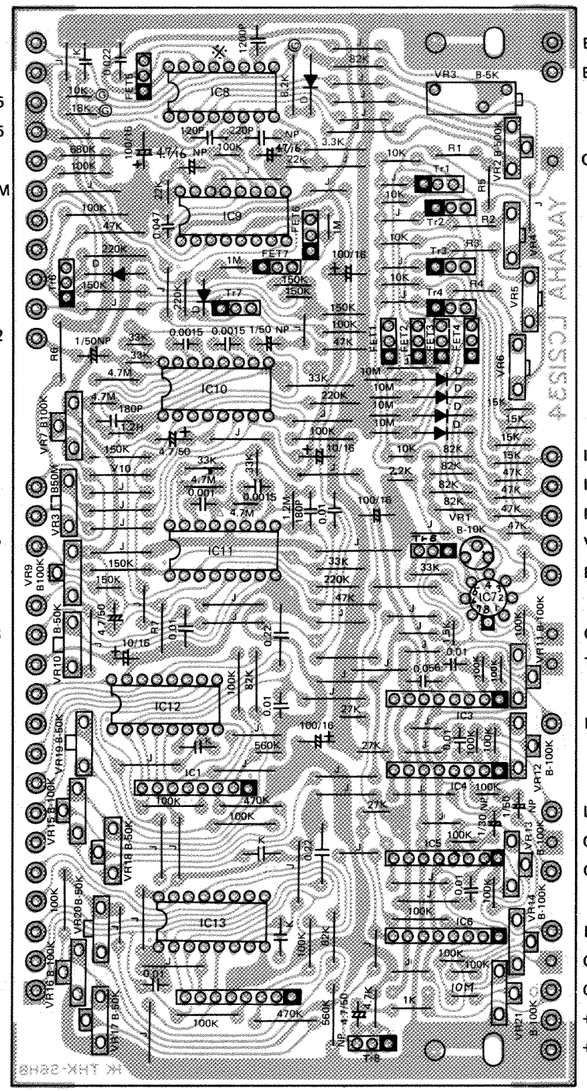
Note)

1. Tr1～Tr5,Tr8 : 2SC458(C) or (D)
   Tr6, Tr7 : 2SA561(Y) or (O)
   FET1～7 : 2SK30(Y)
2. D : IS1555
3. VR1 : 3321H type
   VR3 : 3006 type
   Other VR : V10K8-1-2 (3 terminals)
   : V10K4A-5-2 (2 terminals)
4. Ⓖ Mark : Metal Film Resistor (1%)
   Ⓑ Mark : ,, (0.1%)
5. K Mark : Ceramic Capacitor (1000P)
6. IC
   IC views show the pin disposition looked from upper. (Opposite to Pattern)
7. Surround the parts of [----] with the pattern of 3 terminal.
8. IC
   IC1～6: IG00151(A)(B)
   IC7 : TA7504M
   IC8 : IG00153
   IC9 : IG00158
   IC10,11: IG00156(A)(B)(C)
   IC12 : IG00152(A)(B)(C)(D)
   IC13 : IG00159(A)(B)(C)(D)
9. ※Mark : Styrol Capacitor 1200P

Constant value of R6, R7 in IC10,11 according to rank

| | CS80 | CS50,60 | |
|---|---|---|---|
| A | 2.7K | 2.7K | R6 |
| B | 2.2K | 2.2K | |
| C | 1.8K | 1.8K | |
| A | 3.3K | 3.0K | R7 |
| B | 2.7K | 2.4K | |
| C | 2.2K | 2.0K | |

## M1, M2 Circuit Board




Note)

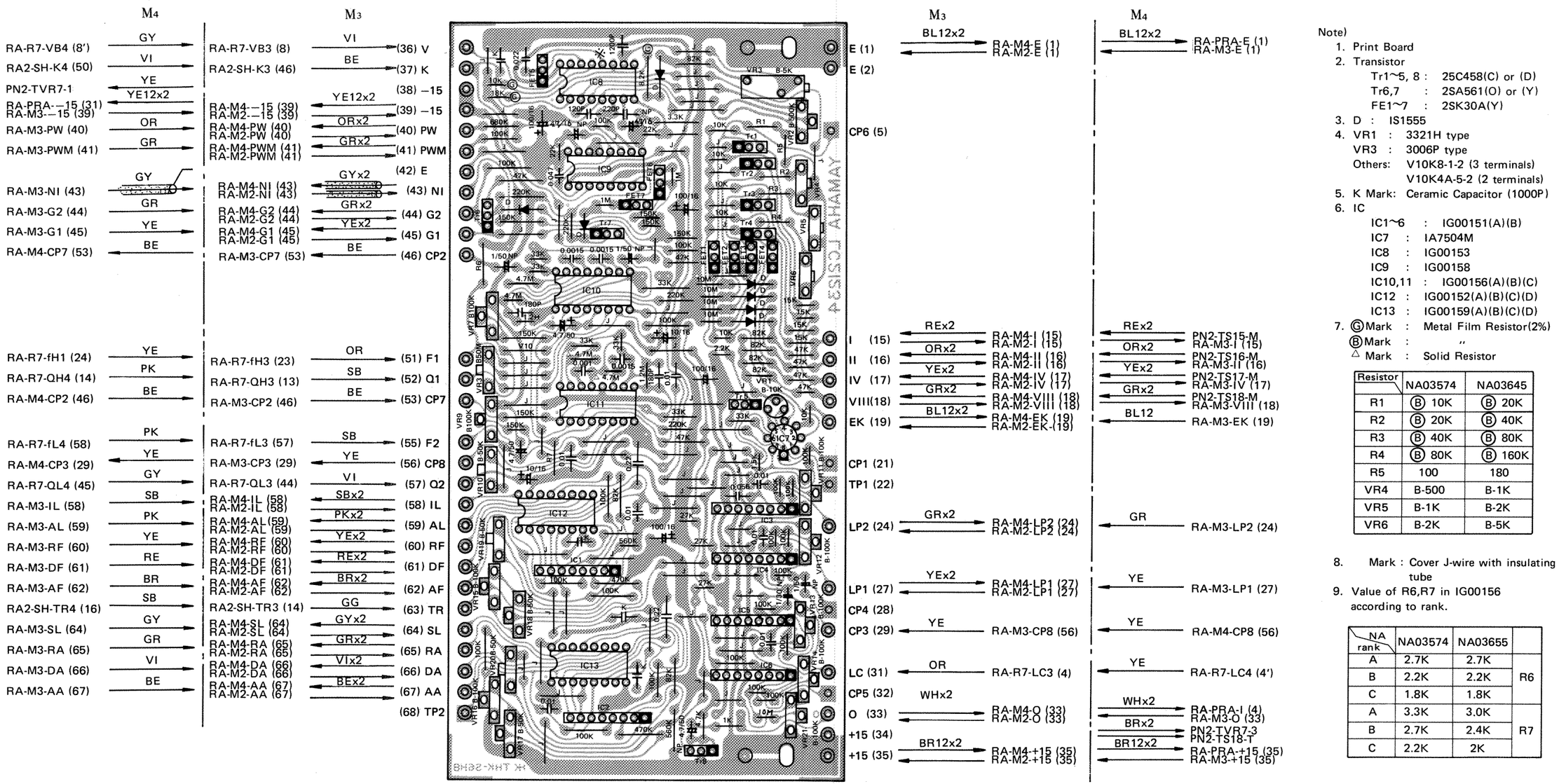
1. Print Board
2. Transistor
   - Tr1～5, 8 : 25C458(C) or (D)
   - Tr6,7 : 2SA561(O) or (Y)
   - FE1～7 : 2SK30A(Y)
3. D : IS1555
4. VR1 : 3321H type
   VR3 : 3006P type
   Others: V10K8-1-2 (3 terminals)
   V10K4A-5-2 (2 terminals)
5. K Mark: Ceramic Capacitor (1000P)
6. IC
   - IC1～6 : IG00151(A)(B)
   - IC7 : IA7504M
   - IC8 : IG00153
   - IC9 : IG00158
   - IC10,11 : IG00156(A)(B)(C)
   - IC12 : IG00152(A)(B)(C)(D)
   - IC13 : IG00159(A)(B)(C)(D)
7. Ⓖ Mark : Metal Film Resistor (2%)
   Ⓑ Mark : 〃 (0.1%)
   △ Mark : Solid Resistor

| Resistor / NA | NA03574 | NA03645 |
|---|---|---|
| R1 | Ⓑ 10K | Ⓑ 20K |
| R2 | Ⓑ 20K | Ⓑ 40K |
| R3 | Ⓑ 40K | Ⓑ 80K |
| R4 | Ⓑ 80K | Ⓑ 160K |
| R5 | 100 | 180 |
| VR4 | B-500 | B-1K |
| VR5 | B-1K | B-2K |
| VR6 | B-2K | B-5K |

8. Mark : Cover J-wire with insulating tube
9. Value of R6, R7 in IG00156 according to rank.

| NA / rank | NA03574 | NA03655 | |
|---|---|---|---|
| A | 2.7K | 2.7K | R6 |
| B | 2.2K | 2.2K | |
| C | 1.8K | 1.8K | |
| A | 3.3K | 3.0K | R7 |
| B | 2.7K | 2.4K | |
| C | 2.2K | 2K | |

# M3, M4 Circuit Board




Note)

1. Print Board
2. Transistor
   - Tr1～5, 8 : 25C458(C) or (D)
   - Tr6,7 : 2SA561(O) or (Y)
   - FE1～7 : 2SK30A(Y)
3. D : IS1555
4. VR1 : 3321H type
   VR3 : 3006P type
   Others: V10K8-1-2 (3 terminals)
   V10K4A-5-2 (2 terminals)
5. K Mark: Ceramic Capacitor (1000P)
6. IC
   - IC1～6 : IG00151(A)(B)
   - IC7 : IA7504M
   - IC8 : IG00153
   - IC9 : IG00158
   - IC10,11 : IG00156(A)(B)(C)
   - IC12 : IG00152(A)(B)(C)(D)
   - IC13 : IG00159(A)(B)(C)(D)
7. Ⓖ Mark : Metal Film Resistor(2%)
   Ⓑ Mark : ,,
   △ Mark : Solid Resistor

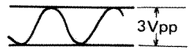
| Resistor | NA03574 | NA03645 |
|---|---|---|
| R1 | Ⓑ 10K | Ⓑ 20K |
| R2 | Ⓑ 20K | Ⓑ 40K |
| R3 | Ⓑ 40K | Ⓑ 80K |
| R4 | Ⓑ 80K | Ⓑ 160K |
| R5 | 100 | 180 |
| VR4 | B-500 | B-1K |
| VR5 | B-1K | B-2K |
| VR6 | B-2K | B-5K |

8. Mark : Cover J-wire with insulating tube
9. Value of R6,R7 in IG00156 according to rank.

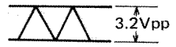
| NA / rank | NA03574 | NA03655 | |
|---|---|---|---|
| A | 2.7K | 2.7K | R6 |
| B | 2.2K | 2.2K | |
| C | 1.8K | 1.8K | |
| A | 3.3K | 3.0K | R7 |
| B | 2.7K | 2.4K | |
| C | 2.2K | 2K | |

## WSC IC (IG00158)

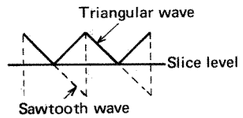
1. 1. Vcc ..... +15V input power source
2. SIO ..... Output of the sine wave



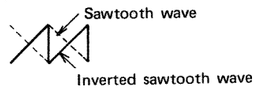

3. TO ..... Output of triangular wave.




4. SL ..... Input of slice level.
   Input of the DC voltage is provided to the pin for determination of the inverting level which makes triangular wave from sawtooth wave.

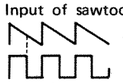



5. $\overline{SO}$ ..... Output of the inverter wave
   Output of inverted sawtooth wave is produced.

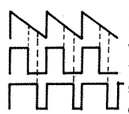



6. 2TO ..... Output of double triangle wave
   Double triangle wave is produced from triangle wave.
7. PO ..... Output of pulse wave.

8. Vee ..... −15V input power source.
9. PI ..... Input of pulse wave
   Input of sawtooth wave is provided.



10. PWO ..... Output of OP amplifier.
11. PWI ..... Input of OP amplifier.



Input of the voltage is provided for determination of the sensitivity of PWM lever so that the pulse width is changed.

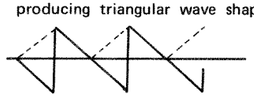
12. 2TI ..... Input of triangular wave for producing double triangular wave shape.

Input of triangular wave (TO) is provided for making double triangular wave shape.

13. $\overline{SI}$ ..... Input of the pulse for producing inverted sawtooth wave.

Input of the sawtooth wave is provided from VCO III for producing inverted sawtooth wave shape.

14. TI ..... Input of the wave is provided for producing triangular wave shape.



15. STI ..... Input of the wave for producing sine wave.

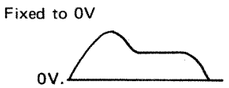
Input of the triangular wave (TO) is provided for producing sine wave.

16. GND ..... Earth

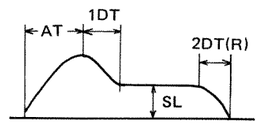
## VCA-EG IC (IG00159)

This IC generates envelope wave shape which is supplied to VCA and control the tone volume.

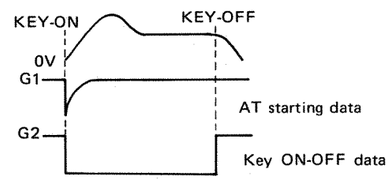
1. IL ..... Input of initial level.



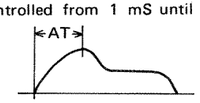

2. BI ..... Input of buffer amplifier.
3. OUT .... The buffer amplifier is built in for the purpose of matching inpedance.
   Output wave shape.



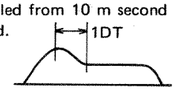

4. GND ..... Earth
5. Vcc ..... +15V input power source.
6. G1 ..... Gate 1
7. G2 ..... Gate 2




8. Vee ..... +15V input power source.
9. AT ..... Input of buffer voltage for determination of attack time.
   Input of the voltage between zero V and 10V is provided and the attack time is controlled from 1 mS until 1S.

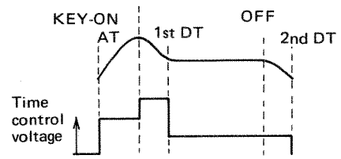



10. 1DT ..... Input of buffer voltage for determination of decay time.
    Input of the voltage between zero V and 10V is provided and the decay time is controlled from 10 m second until 10 second.



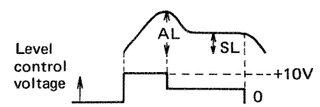

11. 2DT ..... Input of buffer voltage for determination of release time.
    Input of the voltage between zero V and 10V is provided and the time key-off until release is controlled from 10 mS until 10 S.


12. TC ..... Output of time control.
    Output of the DC voltage is produced so that the each time of Attack, 1st Decay and 2nd Decay are controlled.




The higher the voltage, the shorter the time and the lower the voltage, the longer the voltage.

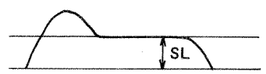
13. LC ..... Output of level control



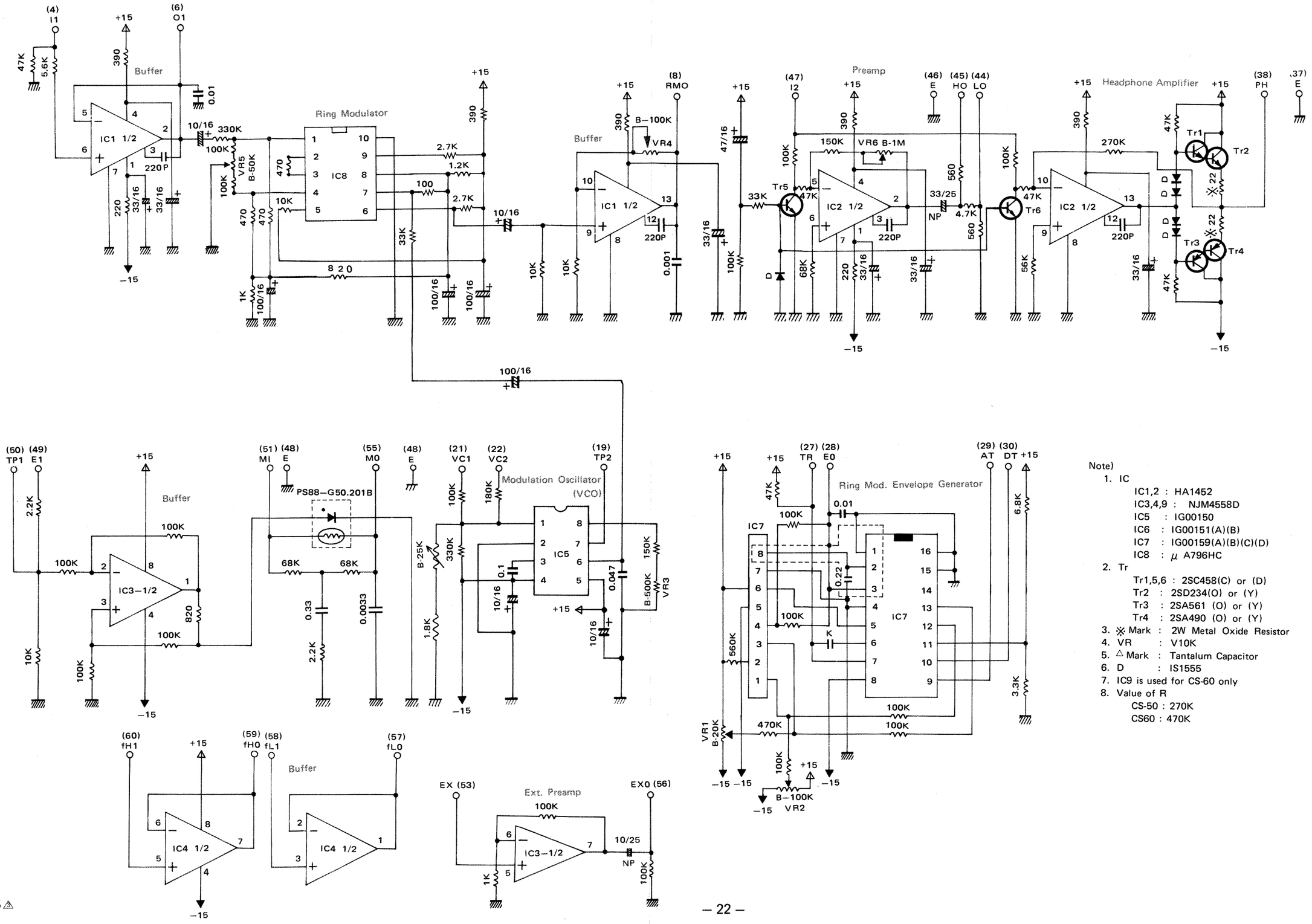

Output of the DC voltage for AL and SL control is provided.

The higher the voltage , the higher the level and the lower the voltage, the lower the level.

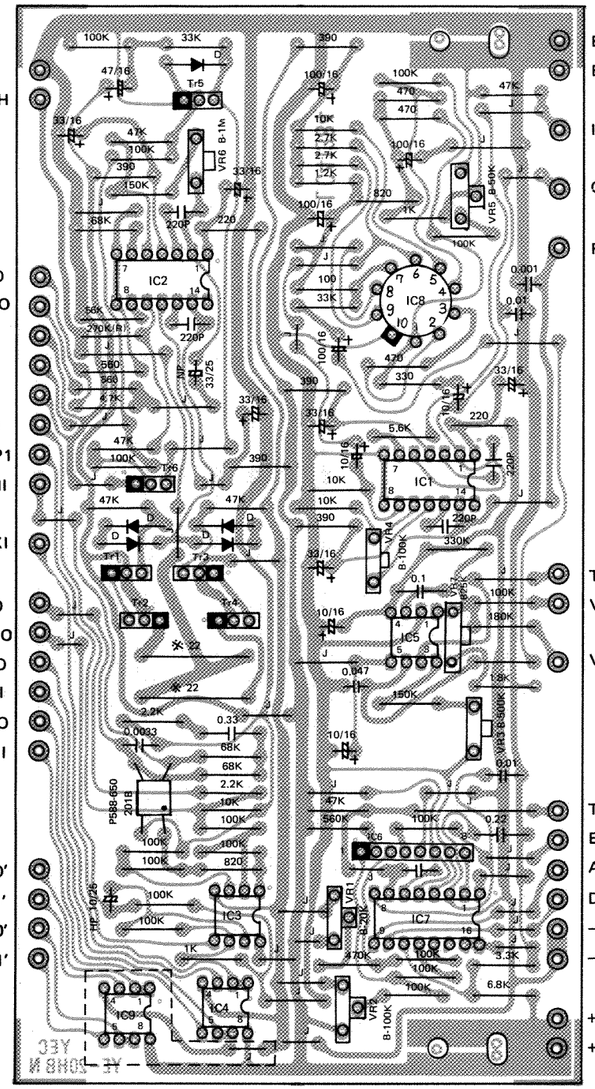
15. SL ..... Input of buffer voltage for determination of the sustain level.
    Input of the voltage between zero V and 10V is provided so that the sustain level can be controlled.



# PRA (Pre Amp) Circuit



## PRA Circuit Board




PN6-E — BL12 — (37)E
PN6-S — WH12 — (38)PH

PN5-SW-M — BR — (44)LO
PN5-SW-B — RE — (45) HO
(46)E
PN2-VR2-2 — OR — (47)I2
(48)E
PN5-EXP-1 — GR — (49)EI
(50)TP1
PN2-TVR5-2 — YE — (51) MI
PN5-VR-2 — BE — (53) EXI

PN2-VR2-3 — GR — (55)MO
PN3-SS-M6 — BR — (56)EXO
RA-T71-9 (23') — RE — (57)fLO
PN1-SVR7-2 — WH — (58) fLI
RA-T71-7 (26') — BR — (59)fHO
PN1-SVR5-2 — VI — (60) fHI

(64)fLO'
(65)fL1'
(66)fH0'
(67)fH1'

E (1) — BL12x2 — PN2-TVR7-5, RA-M4-E (1)
E (2) — BL12x2 — PN2-VR2-EP, PN5-EXP-3
I1 (4) — WH — RA-M4-O (33)
O1 (6) — RE — PN2-TVR5-1
RMO(8) — OR — PN2-TVR5-3

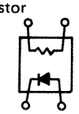
TP2(19)
VC1(20) — YE — PN2-TVR4-2
VC2(22) — GR — PN2-TVR3-2

TR (27) — VI — RA2-KAS-TR9 (35)
EO (28) — BE — PN2-TVR3-3
AT (29) — VI — PN2-TVR1-2
DT (30) — GY — PN2-TVR2-2
–15(31) — YE12 — RA-M4-–15 (39)
–15(32) — YE12x2 — PN5-EXP-2, TS-3

+15 (34)
+15 (35) — BR12 — RA-M4-+15

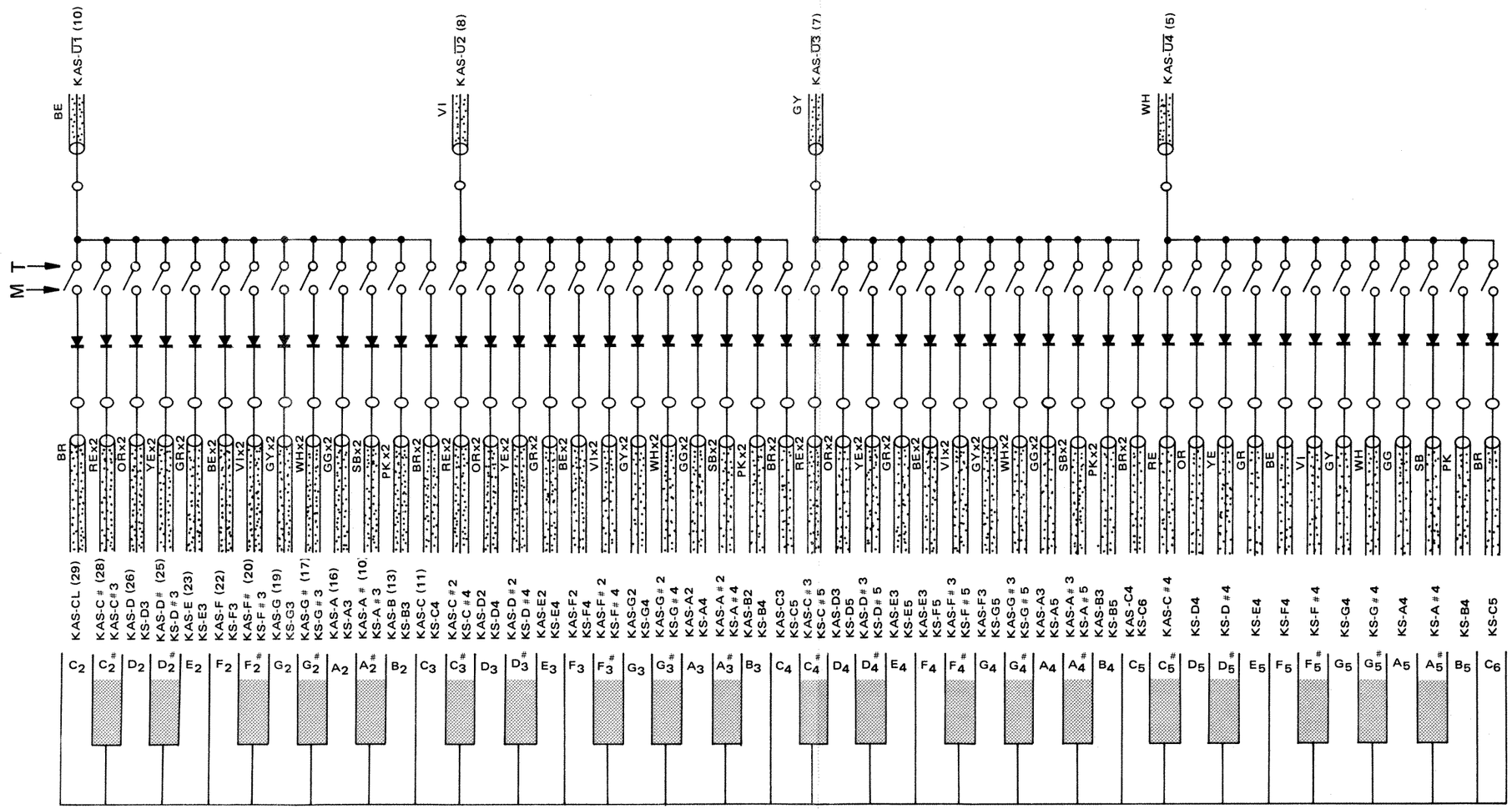
Note)

1. Print Board : LC41384
2. Transistor
   - Tr1,5,6 : 2SC458(C) or (D)
   - Tr2 : 2SD234(O) or (Y)
   - Tr3 : 2SA561(O) or (Y)
   - Tr4 : 2SA490(O) or (Y)
3. IC
   - IC1,2 : HA1452
   - IC3,4,9 : NJM4555D
   - IC5 : IG00150
   - IC6 : IG00151 (A)(B)
   - IC7 : IG00149(A)(B)(C)(D)
   - IC8 : μA796HC
4. Diode D : IS1555
5. Others
   - ※ Mark : 2W Metal Oxide Resistor
   - VR : V10K
   - △ Mark : Tantalum Capacitor
   - NP : Non-polar Capacitor
   - Install P588-G50-210B as below.

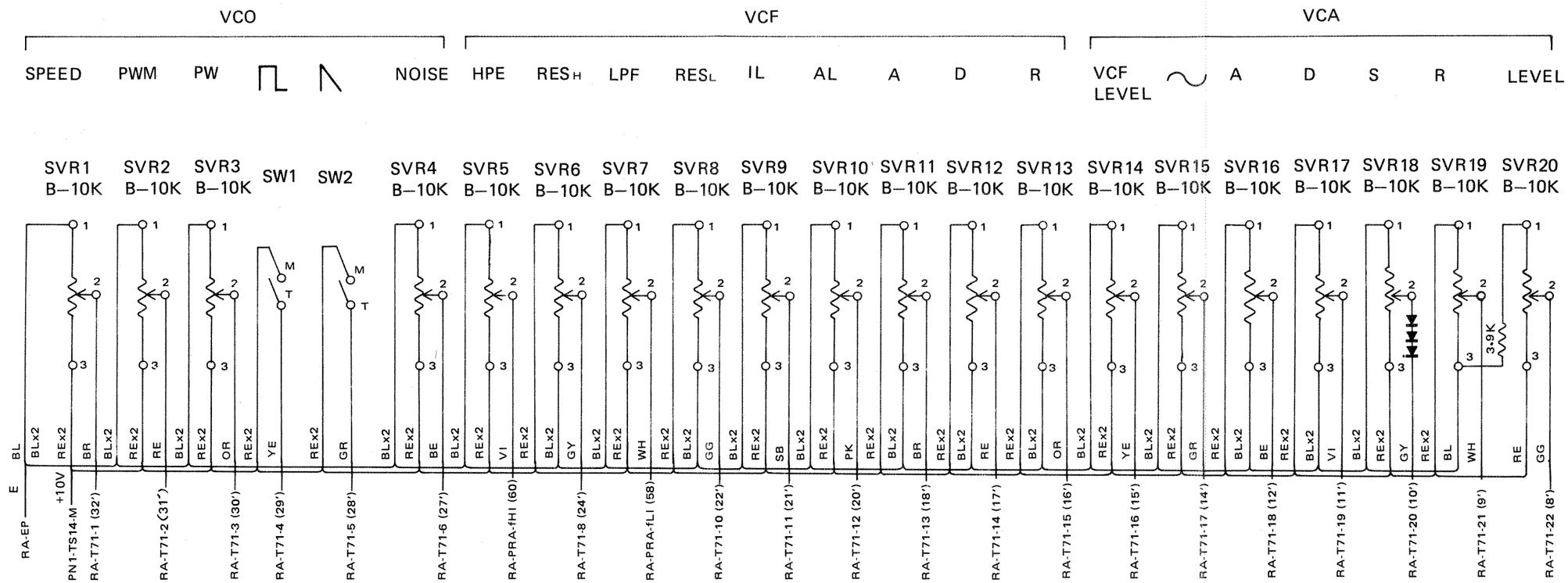


6. Use only NA03704 in [------]
7. Constant value of R
   - NA03704 ⟹ 470K
   - NA04486 ⟹ 270K

## KS (Key Switch) Circuit



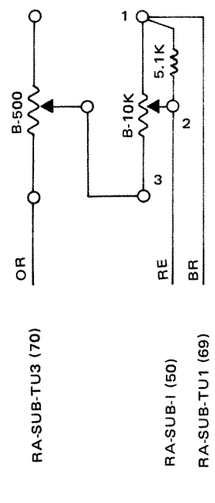
## PN1 (Pannel 1) Circuit



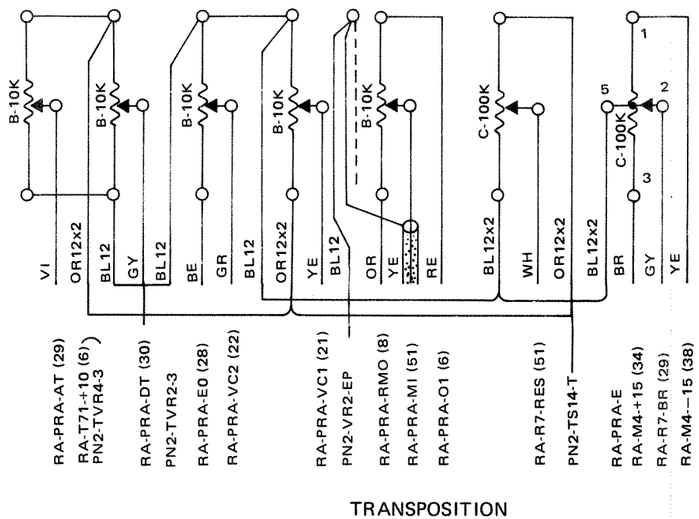

Note)
1. Diode : IS1555
2. Adjust three wires and cover then with insulating tube

## PN2 (Pannel 2) Circuit

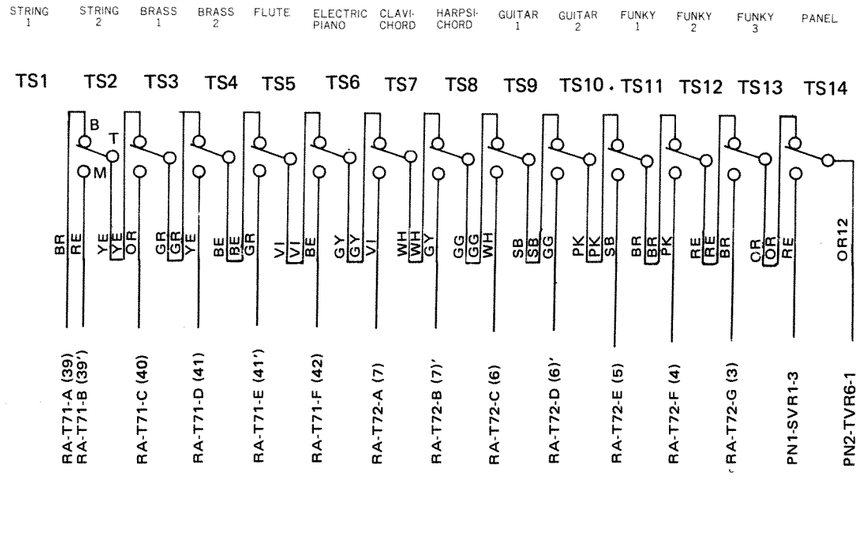
PITCH



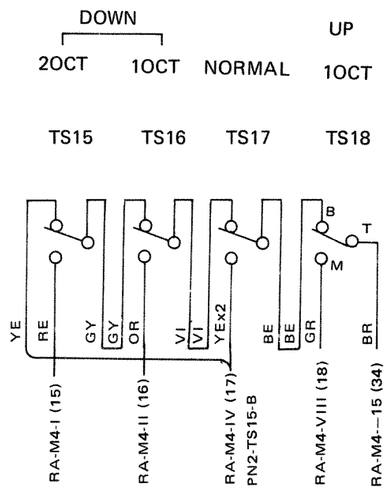

ATTACK TIME / DECAY TIME / DEPTH / SPEED / MODULATION / RESONANCE / BRILLIANCE



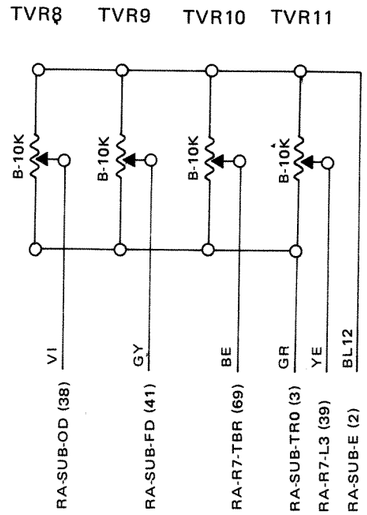

TONE SELECTOR



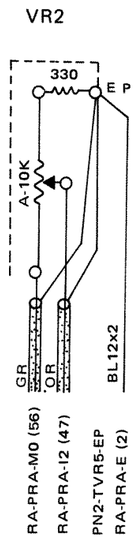

TRANSPOSITION

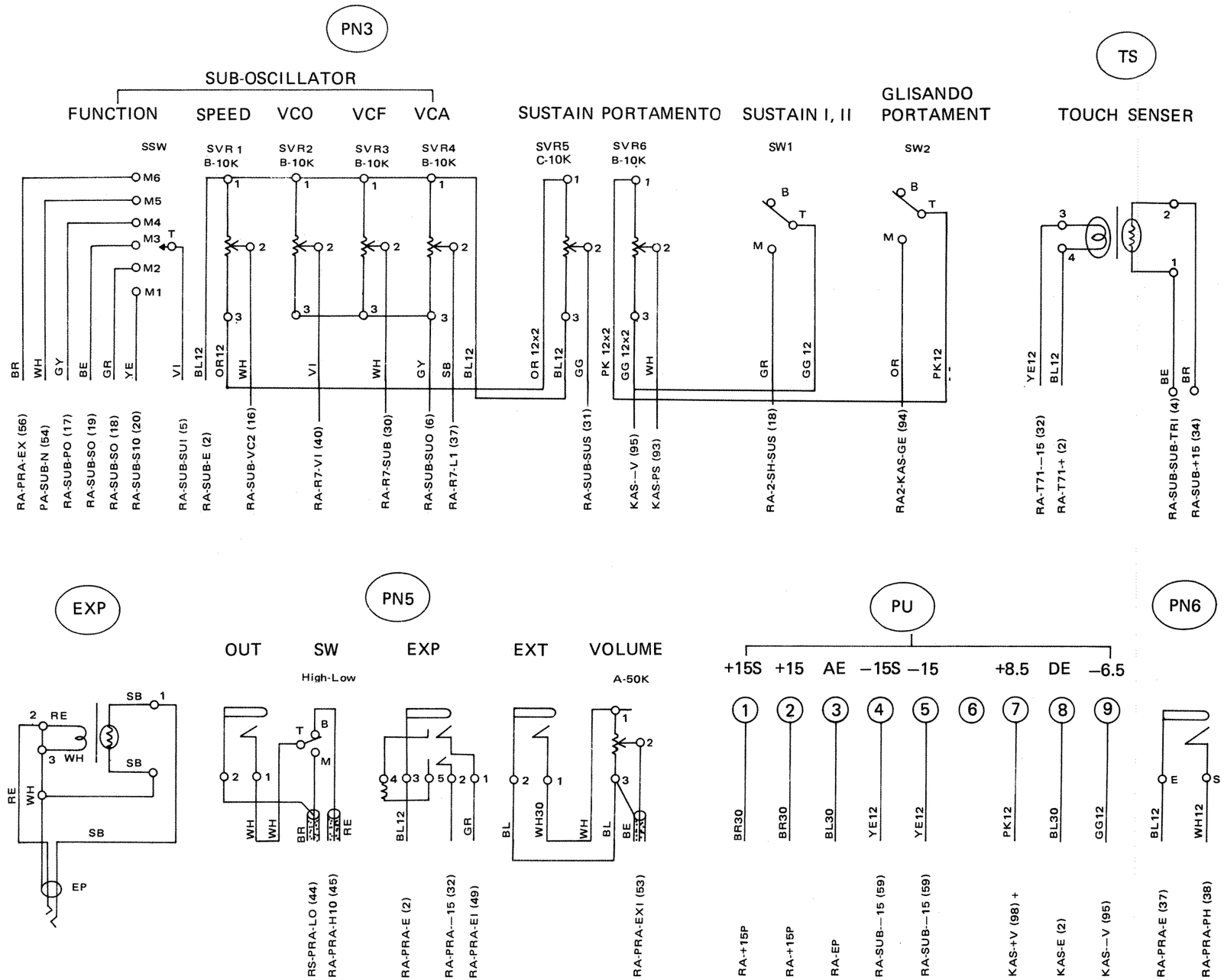



TOUCH RESPONSE

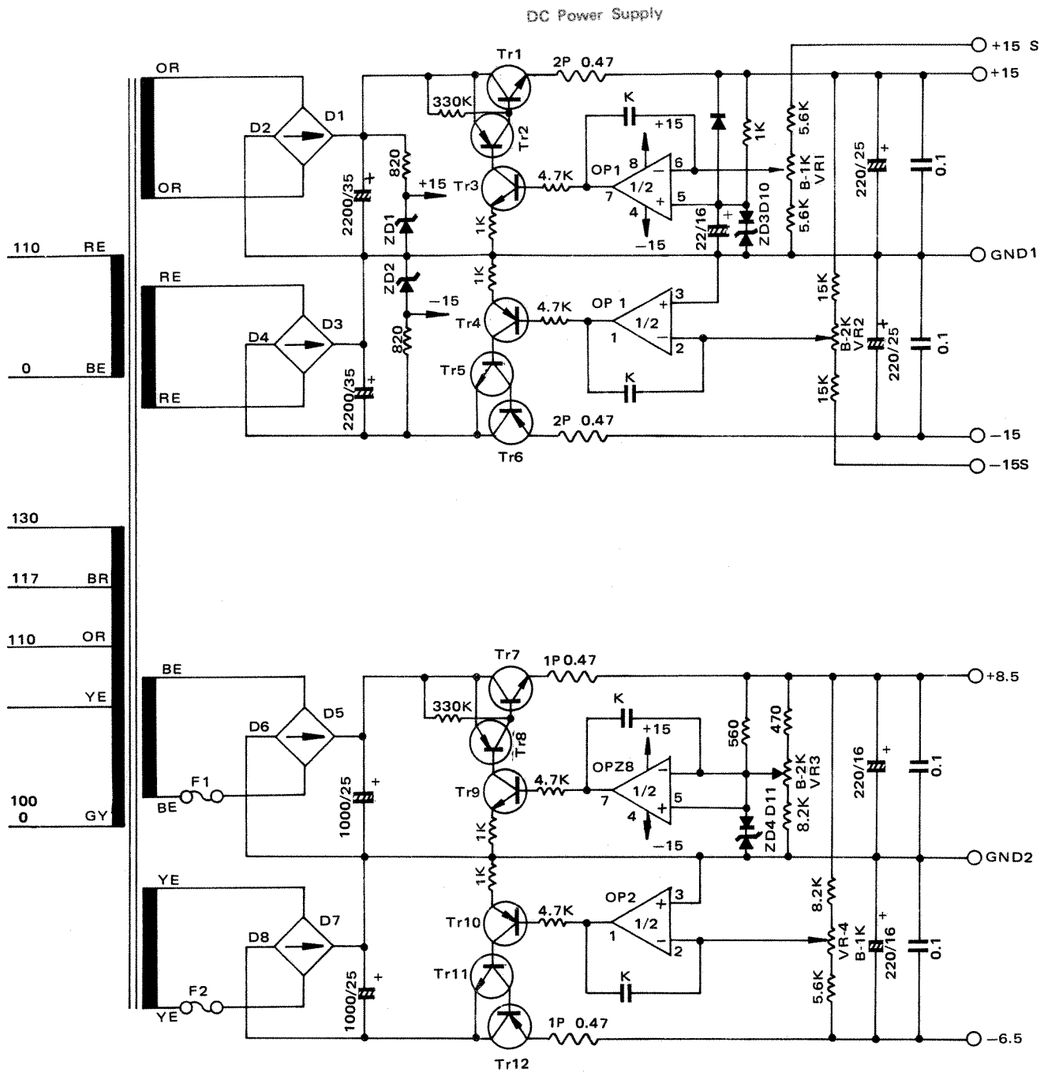



VOLUME




PN3
SUB-OSCILLATOR
FUNCTION
SPEED
VCO
VCF
VCA
SUSTAIN PORTAMENTO
SUSTAIN I, II
GLISANDO PORTAMENT
TOUCH SENSER
SSW
SVR 1 B-10K
SVR2 B-10K
SVR3 B-10K
SVR4 B-10K
SVR5 C-10K
SVR6 B-10K
SW1
SW2
M6
M5
M4
M3
M2
M1
T
B
M
BR
WH
GY
BE
GR
YE
VI
BL12
OR12
OR 12x2
PK 12x2
GG 12x2
GG
GG 12
OR
PK12
YE12
RA-PRA-EX (56)
PA-SUB-N (54)
RA-SUB-PO (17)
RA-SUB-SO (19)
RA-SUB-SO (18)
RA-SUB-S10 (20)
RA-SUB-SUI (5)
RA-SUB-E (2)
RA-SUB-VC2 (16)
RA-R7-VI (40)
RA-R7-SUB (30)
RA-SUB-SUO (6)
RA-R7-L1 (37)
RA-SUB-SUS (31)
KAS-—V (95)
KAS-PS (93)
RA-2-SH-SUS (18)
RA2-KAS-GE (94)
TS
RA-T71—15 (32)
RA-T71-+ (2)
RA-SUB-SUB-TRI (4)
RA-SUB-+15 (34)
EXP
RE
SB
EP
PN5
OUT
SW
High-Low
EXT
VOLUME
A-50K
RS-PRA-LO (44)
RA-PRA-H10 (45)
RA-PRA-E (2)
RA-PRA—15 (32)
RA-PRA-EI (49)
RA-PRA-EXI (53)
PU
+15S
+15
AE
—15S
—15
+8.5
DE
—6.5
BR30
BL30
YE12
PK12
GG12
RA-+15P
RA-EP
RA-SUB—15 (59)
KAS-+V (98) +
KAS-E (2)
KAS—V (95)
PN6
E
S
WH12
RA-PRA-E (37)
RA-PRA-PH (38)

## SVU Circuit



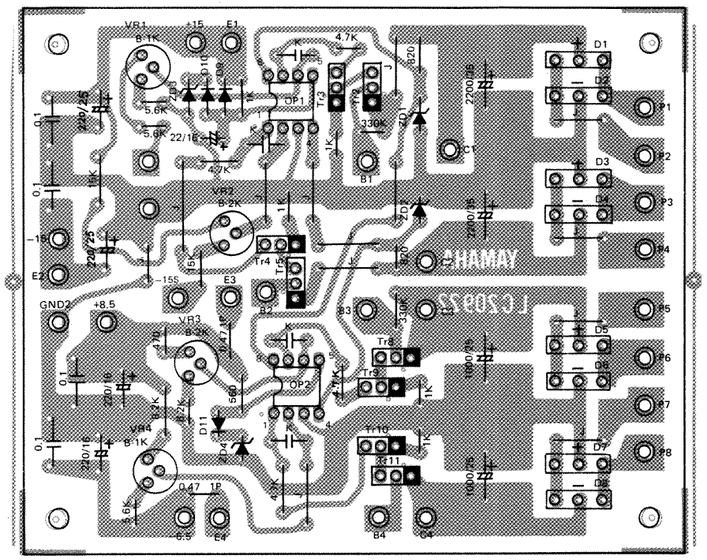

Note)

1. Transistor
   - Tr1 : 2SD203
   - Tr2, 12 : 2SA490 (Y)
   - Tr3,9,11 : 2SC828 (Y)
   - Tr4,8,10 : 2SA561 (Y)
   - Tr5, 7 : 2SD234 (O)
   - Tr6 : 2SA745
2. Diode
   - D1,3,5,7 : 10DC-4
   - D2,4,6,8 : 10DC-4R
   - D9,10,11 : 1S1555
3. Zener Diode
   - ZD1, 2 : WZ150
   - ZD3, 4 : 1S1715
4. OP Amplifier
   - OP1, 2 : RC4558
5. Fuse
   - F1 : 0.5A
   - F2 : 0.5A
6. VR1~4 : 3321H type
7. Ceramic Capacitor

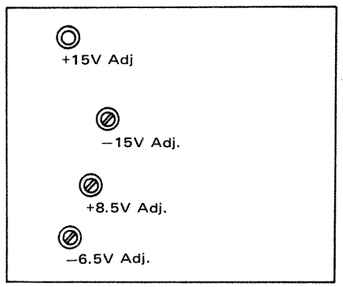




## SVU Circuit Board

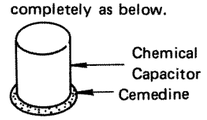



Adjustment



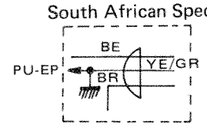

Note)

1. Print Board : LC20922
2. Transistor
   - Tr2 : 2SA490 (Y)
   - Tr4,8,10 : 2SA561 (Y)
   - Tr3,9,11 : 2SC828 (Y)
   - Tr5 : 2SD234 (O)
3. Diode
   - D1,3,5,7 : 10DC-4
   - D2,4,6,8 : 10DC-4R
   - D9,10,11 : 1S1555
4. Zener Diode
   - ZD1,2 : WZ150
   - ZD3,4 : 1S1715
5. K Mark : Ceramic Capacitor
6. OP Amplifier
   - OP1, 2 : RC4558
7. Volume
   - VR1~4 : 3321H type
8. Application Sketch of Cemedine
   Apply cemedine to the peripheral end surface of chemical capacitor completely as below.

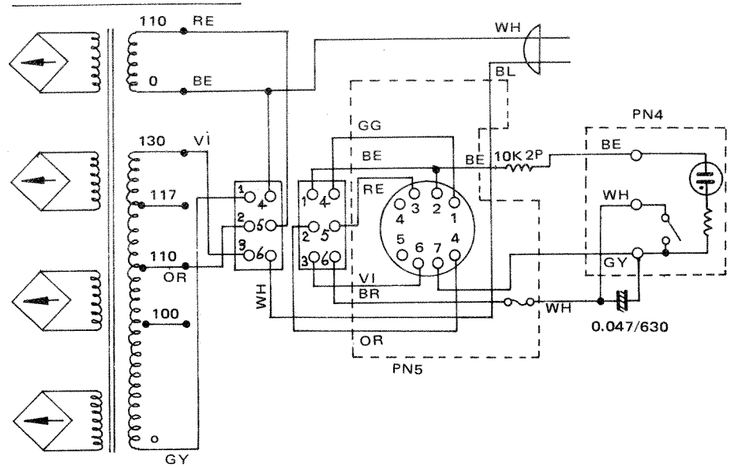


## Power Supply NP0013Z (Primary) Circuit

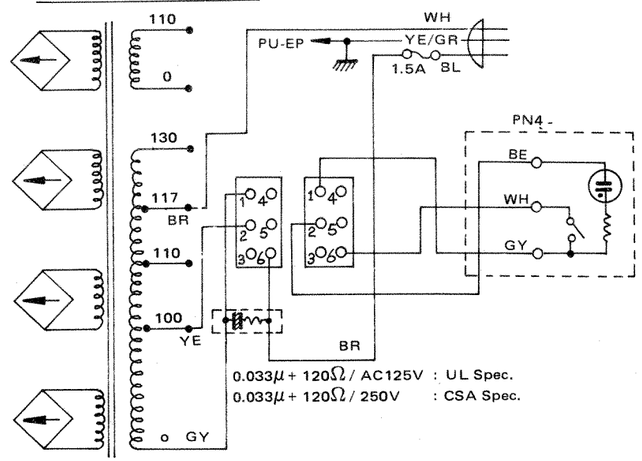
South African Spec.



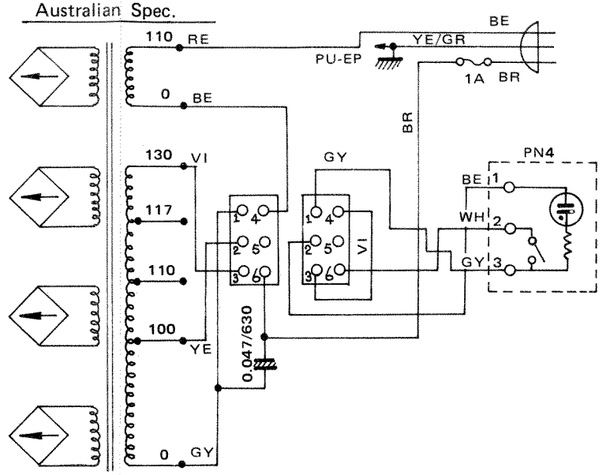

General · South African Spec.



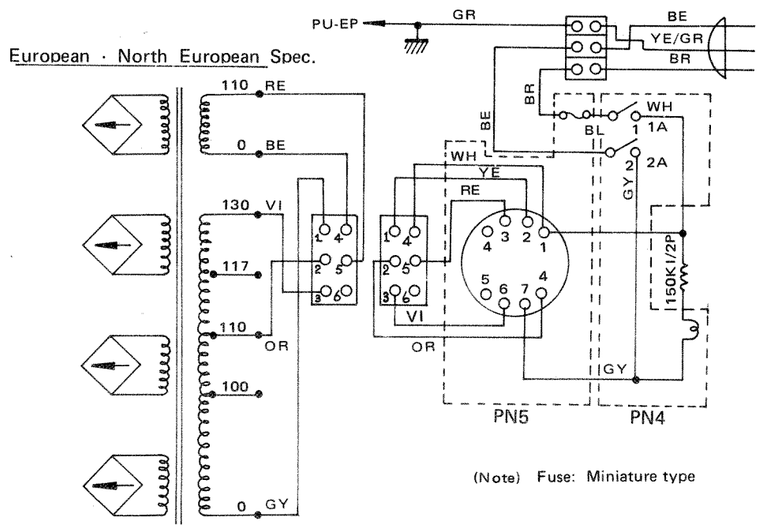

UL · CSA Spec.




Australian Spec.

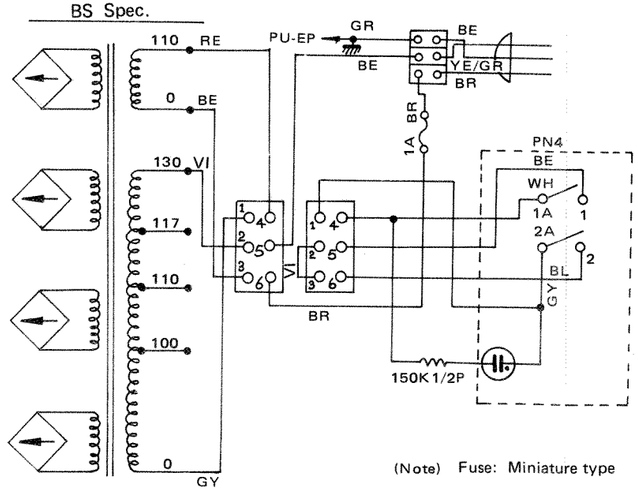



European · North European Spec.




(Note) Fuse: Miniature type

BS Spec.




(Note) Fuse: Miniature type

# YAMAHA

## COMBO SYNTHESIZER

# CS-50

# SERVICE MANUAL

006361

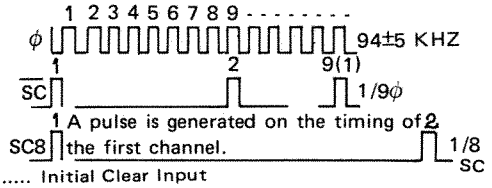
# INDEX

## KEY CODER LSI (YM26600)

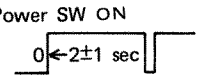
The LSI detects what keys are held down by judging the pulse combination of the octave and note.
It also generates the seven bit key code, which is processed by time sharing, in accordance with the key held down.

Pin. No. — Pin Name

1. VSS .....+8.5V Power Supply
2. $\phi$ ..... Master Clock Input
3. SC ..... Synchro-clock Output
4. SC8 ..... Synchro-clock Output on the first channel.



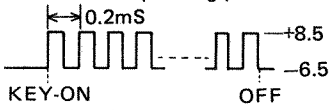

5. IC ..... Initial Clear Input




On this timing, C4# code is memoried.

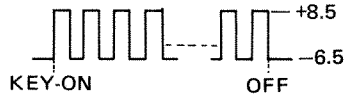
6. VDD .....−6.5V Power Supply Input
7. CL
8. C#
19. C .... Note on data input

When the key is depressed, the pulse is supplied the corresponding pin of the note.




20. V1
24. V5 .... Octave on data input

When the key is depressed, the pulse is supplied to the corresponding pin of the octave.



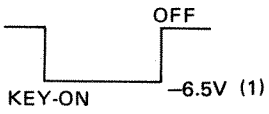

25. $\overline{N1}$
28. $\overline{N4}$ .... Note code data output

| | C# | D | D# | E | F | F# | G | G# | A | A# | B | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| N | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| N | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| N | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

29. B1
31. B3 .... Octave Code Data Output

| | C2 | C2#~C3 | C3#~C4 | C4#~C5 | C5#~C6 |
|---|---|---|---|---|---|
| B1 | 0 | 1 | 0 | 1 | 0 |
| B2 | 1 | 0 | 0 | 1 | 1 |
| B3 | 1 | 1 | 1 | 0 | 0 |

32. KO1
39. KO8 .... Key on Data Output



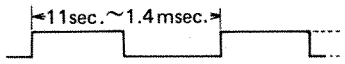

The number of note sounded is variable by using this pin.
i.e.) Up to 4 notes: Supply −6.5V to $\overline{KO5}$.
Up to 3 notes: Supply −6.5V to $\overline{KO4}$.

40. Mode .... Switching output for sound model
For 8 notes .... Supply −6.5V (1)
For 7 notes .... Supply +8.5V (0)

## KEY ASSIGNER & D-A CONVERTER LSI (YM26700)

The time shared key data is supplied to the LSI. Analog DC voltage is produced in corporation with key by the data and supplied to each channel.

1. VSS ..... +8.5V Power Supply
2. $\overline{SC8}$ ..... Synchro-clock input on the first channel.
3. $\overline{POR}$ ..... Portamento and Glissando operation. When the portament VR is turned on, +8.5V is supplied to the pin and actuate.
4. PC ..... Clock input for Portament and Glissando operation.




The frequency is variable by changing the portamento VR.

5. $\overline{N1}$
8. $\overline{N4}$ ..... Note code data input
Note code data is supplied to the pins from key coder LSI.

9. $\overline{B1}$
11. $\overline{B3}$ ..... Octave code data input
Octave code data is supplied to the pins from key coder LSI.

12. OO ..... Output for octave key voltage. (8ch time sharing)
Provided the output key voltage for the octave selected from octave code.

13. OCT0
18. OCT5 ..... Input for octave key voltage.

* TU pin: 4.0V

| | OCT0 | OCT1 | OCT2 | OCT3 | OCT4 | OCT5 |
|---|---|---|---|---|---|---|
| Voltage | 0.25V | 0.5V | 1.0V | 2.0V | 4.0V | 4.0V |

The voltage of TU line is divided by the ladder composed resistors and supplied to each pin constantly.

19. C#
30. C .... Input for note key voltage

OO pin: 4.0V

| | C# | D | D# | E | F | F# |
|---|---|---|---|---|---|---|
| Voltage | 2.119 | 2.245 | 2.378 | 2.520 | 2.670 | 2.828 |

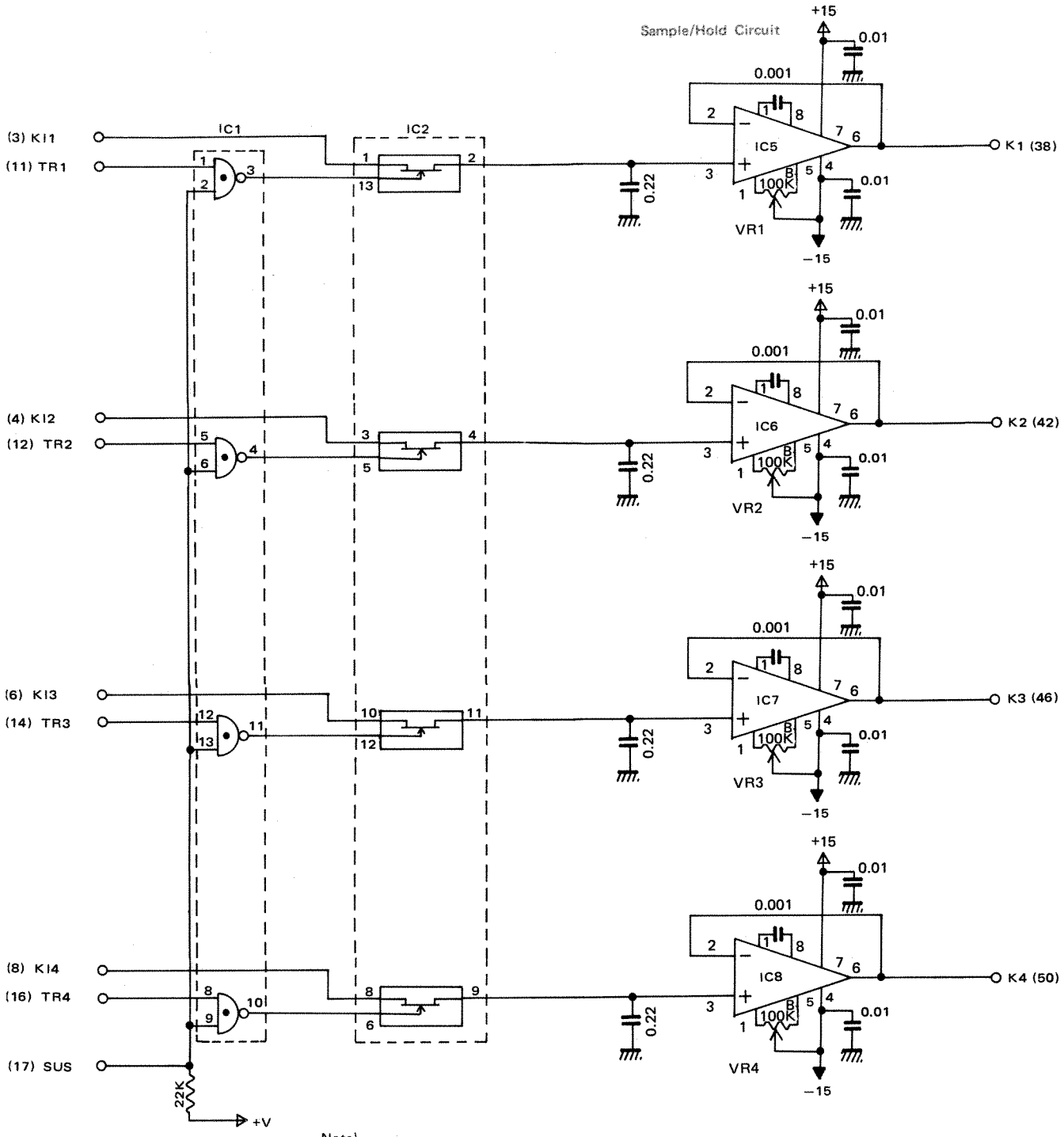
| | G | G# | A | A# | B | C |
|---|---|---|---|---|---|---|
| Voltage | 2.997 | 3.175 | 3.364 | 3.564 | 3.775 | 4.0V |

The voltage of OO line is divided by the ladder composed resistors and supplied to each pin constantly.

31. CH8
38. CH1 .... Key voltage output
The output of voltage determined by each key is provided in accordance with the channel key code.

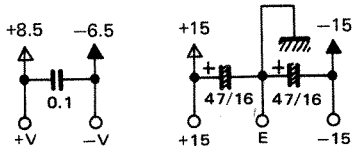
39. VDD .... −6.5V Power Supply, Input
40. $\phi$ ..... Master Clock Input f=94±5KHz

## SH (Sample Hold) Circuit

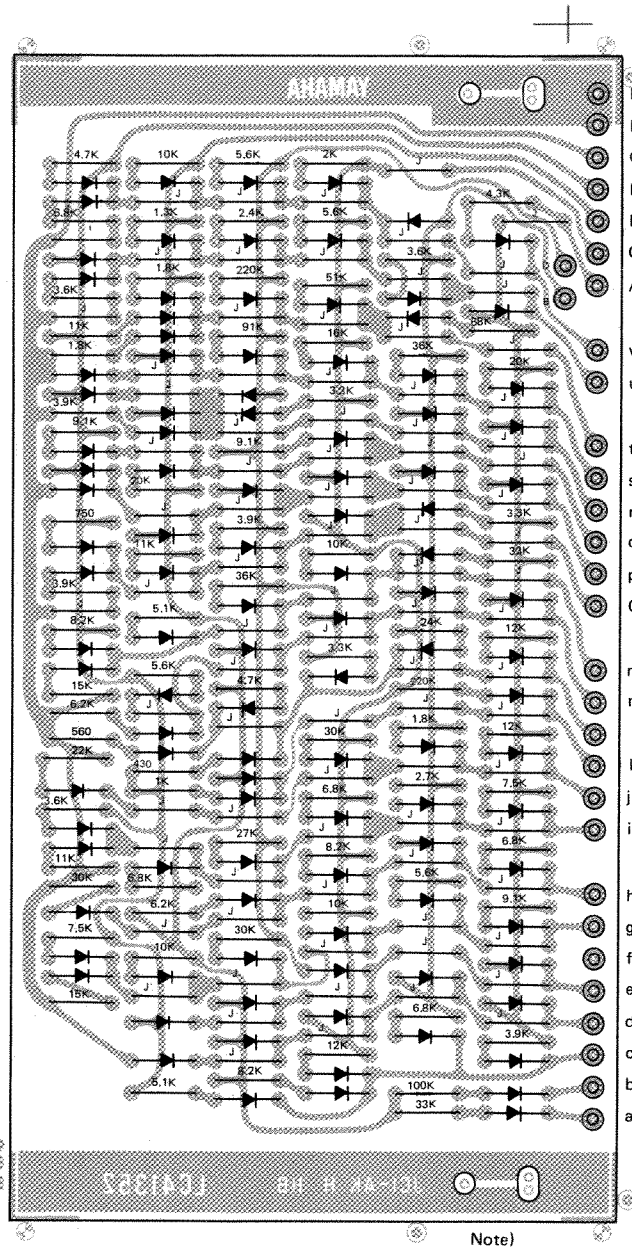



Note)

1. IC1,3 : TC4011P
   IC2,4 : TC4016P
   Power Supply of IC
   7 Pin ..... −V
   14 Pin ..... +V
2. Capacitor
   0.1 ..... Ceramic Capacitor
   0.22 ... Mylar Capacitor
   47/16... Electrolytic Capacitor



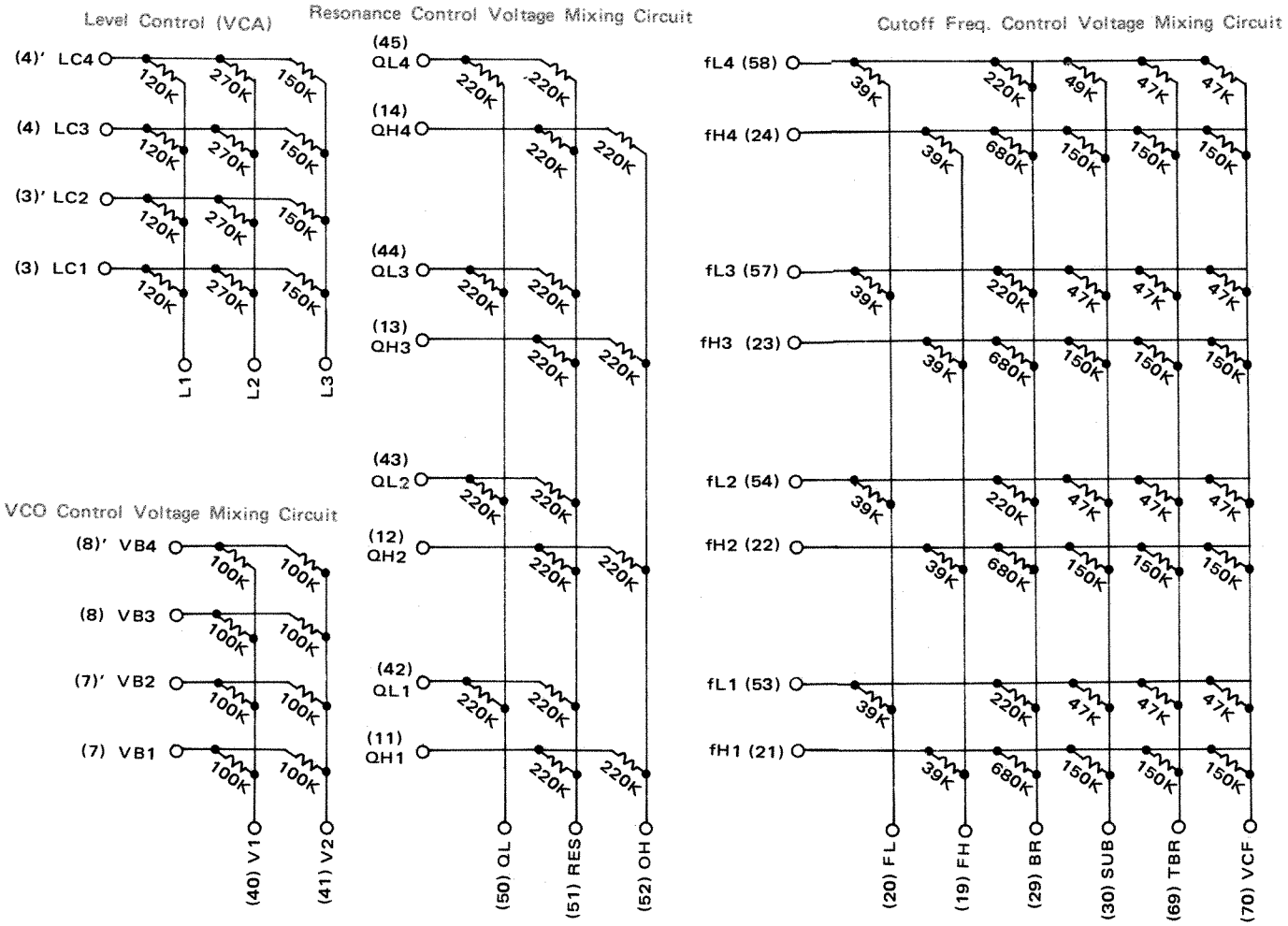
# T72 Circuit Board



E (1)
E (2)
G (3) ← BR ← PN2-TS13-M
F (4) ← PK ← PN2-TS12-M
E (5) ← SB ← PN2-TS11-M
C (6) ← WH ← PN2-TS9-M
A (7) ← VI ← PN2-TS7-M
D (6') ← GG ← PN2-TS10-M
B (7') ← GY ← PN2-TS8-M
v (9) ← GG ← RA-R7-L2 (38) / RA-T71-v (9)
u(10) ← WH ← RA-T71-u (10)
t(12) ← GYx2 ← RA-M1-SL (64) / RA-T71-t (11)
s(13) ← VIx2 ← RA-M1-DA (66) / RA-T71-S (12)
r (14) ← BEx2 ← RA-M1-AA (67) / RA-T71-r (13)
q (15) ← GRx2 ← RA-M1-LP2 (24) / RA-T71-q (15)
p (16) ← YEx2 ← RA-M1-LP1 (27) / RA-T71-P (16)
O (17) ← OR ← RA-T71-O (17)
n (19) ← REx2 ← RA-M1-DF (61) / RA-T71-n (18)
m(20) ← BRx2 ← RA-M1-AF (62) / RA-T71-m (19)
l (21) ← PKx2 ← RA-M1-AL (59) / RA-T71-l (21)
k (22) ← SBx2 ← RA-M1-JL (58) / RA-T71-k (22)
j (23) ← GGx2 ← RA-R7-QL (50) / RA-T71-j (23)
i (24) ← WHx2 ← RA-R7-FL (20) / RA-T71-i (24)
h (26) ← GYx2 ← RA-R7-QH (52) / RA-T71-h (25)
g (27) ← VIx2 ← RA-R7-FH (19) / RA-T71-g (27)
f (28) ← BE ← RA-T71-f (28)
e (29) ← GRx2 ← RA-M1-G2 (94) / RA-T71-e (29)
d (30) ← YEx2 ← RA-M1-G1 (45) / RA-T71-d (30)
c (31) ← ORx2 ← RA-M1-PW (40) / RA-T71-c (31)
b (32) ← RE ← RA-T71-b (32)
a (33) ← BR ← RA-T71-a (33)

Note)
1. Print Board : LC41352
2. Diode : 1S1555

# R7 (Registor) Circuit



## VCO III IC (IG00153)

This IC is used for voltage controlled oscillator.
Many defferent frequencies are produced by the voltage supplied.

1. FT ..... Resistor for determination of the feet.
   The electric current is provided to the pin from transposition changing circuit so that the octave can be determined.

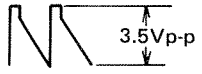
2. KV ..... Input of the key voltage
   The input of the voltage is provided to the pin in corporation with the keys held down.

   High voltage ..... High frequency
   Low voltage ..... Low frequency

| Input Voltage | Output Frequency |
|---|---|
| 0.250V | 130.8Hz (C2) |
| 0.500V | 261.6Hz (C3) |
| 1.000V | 523.2Hz (C4) |
| 2.000V | 1046.0Hz (C5) |
| 4.000V | 2093.0Hz (C6) |

Transposition "normal"

3.
4. OFF-SET .... Zero adjustment of input buffer circuit
5. Vee ..... −15V input power source.
6. Com .... Phase compensation for input buffer amplifier.
   Normally, the output (KV + 1V) is supplied to the pin.
7. OUT .... Output

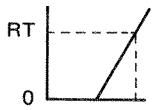



Asto the frequency, refer to the Pin No.2 (KV).

8. GND ..... Earth
9. Vref ..... Input of the standard voltage.
10. CT ..... Circuit for time constant.

The following wave shape is produced.

11. RT ..... Circuit for time constant.



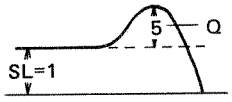

Determines the discharging voltage level.

12. T1 ..... Input for the comparator.
    Input of the wave shape ( ) is provided. from the pin no. 14 (TO).

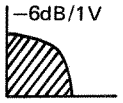
14. TO ..... Output from time constant circuit.
    The following wave shape is produced.
15. VIB ..... Input for vibrato control wave.
    Input of the control wave is provided by VCO lever of SUB-OSC.
16. Vcc ..... +15V input power source.

## VCF IC (IG00156)

1. AI ..... Signal Input
   Input signals from VCO and WSC are provided to this pin.
2. KV ..... Key voltage input
   In order to change the tone color according to the tone range of keyboard, the designated voltage of the key will supplied to the pin. (0.25-4.0V)
3. fc ..... Adjustment of the cut off frequency.
   Set the control currency of the cut off frequency.
4. Vf ..... Input of the cut off voltage.
   Input voltage of cut off frequency is supplied to this pin so that the tone color can be changed. The center point of the cut off frequency can be also set.
   When the VK is 0.25V and Vf is 5V, the cut off frequency is set to just 1KMz.
5. Vcc ..... +15V input power source
6. Q0 ..... Q adjustment.
   The Q control current sets the Q equal to 5, when Vq is 0 volt.

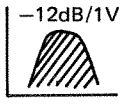



7. Vq ..... Input of the voltage for Q control.
   Q is variable according to the control voltage supplied.
   When the control voltage is
   0V (Max.), Q=5
   When the control voltage is
   10V (Min.), Q=0.5
8. GND .... Earth
9. FB ..... Q feed back
   This is the feed back output pin for the Q control by which the Q is determined.
10. LP ..... Low-pass output




The output of lower frequencies are produced.

11. C2 ..... C pin for determination of the cut off frequency.
12. Vee ..... −15V power source.
13. BP ..... Band-pass output.




The output of intermediate frequences are produced.

14. C1 ..... C pin for determination of the cut off frequency.
15. HP ..... Hi-pass output

The output of higher frequencies are produced.

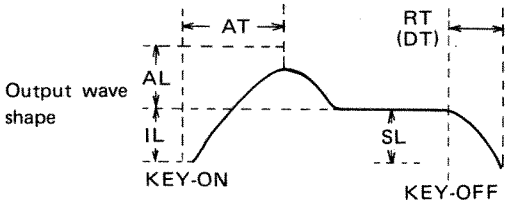
16. IN ..... In]ut of feed back
    The input signal for determination of cut off frequency.

## VCF-EG IC (IG00152)

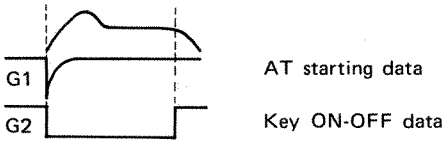
This IC generates envelope wave shape which is supplied to VCF and control the tone color.

1. NC ..... Not connected
2. BI ..... Input of buffer amplifier.
3. OUT .... Output of buffer amprifier.

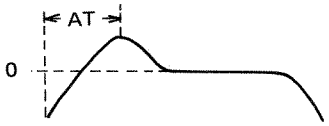
The buffer amplifier is built in for the purpose of matching inpedance.



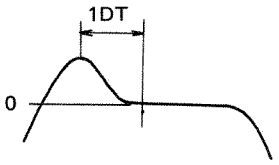

4. GND .... Earth
5. Vcc ..... +15V input power source.
6. G1 ..... Gate 1
7. G2 ..... Gate 2



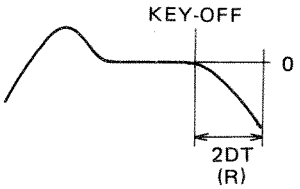

8. Vee ..... −15V input power source.
9. AT ..... Input of buffer voltage for determination of the attack time.
Input of the voltage between zero V and 10V is provided and the attack time is controlled from 1 mS until 1S.



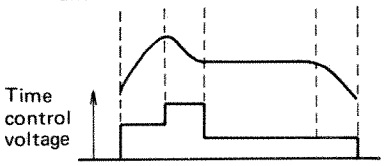

10. 1DT ..... Input of buffer voltage for determination of the decay time.
Input of the voltage between zero V and 10V is provided and the first decay time is controlled from 10mS until 10 S.




11. 2DT ..... Input of buffer voltage for determination of the release time.
Input of the voltage between zero V to 10V is provided and the time from KEY-ON until release is controlled from 10m second until 10 second.

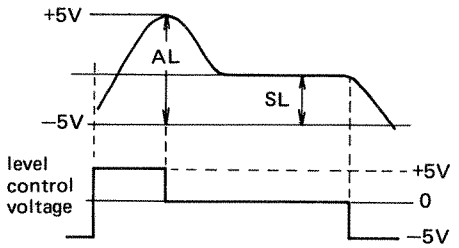



12. TC ..... Output of the time control.
Output of DC voltage is produced so that the each time of attack, 1DT and 2DT are controlled.




The higher the voltage, the shorter the time and the lower the voltage the longer the time.

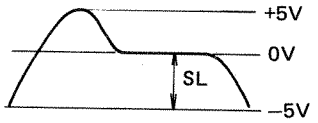
13. LC ..... Output of level control.



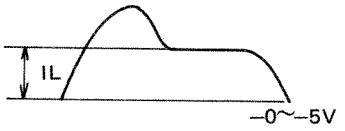

The higher the voltage, the higher the level and the lower the voltage the lower the level.

15. SL ..... Input of buffer voltage for determination of the sustain level.

Normally fixed to zero(0) volt.




16. IL ..... Input of buffer voltage for determination of the initial level.
Input of the voltage between zero (0) and ten (10) is provided and the initial level is controlled from zero to minus 5 volt.



# YAMAHA

# COMBO SYNTHESIZER

## CS－50

## Parts List

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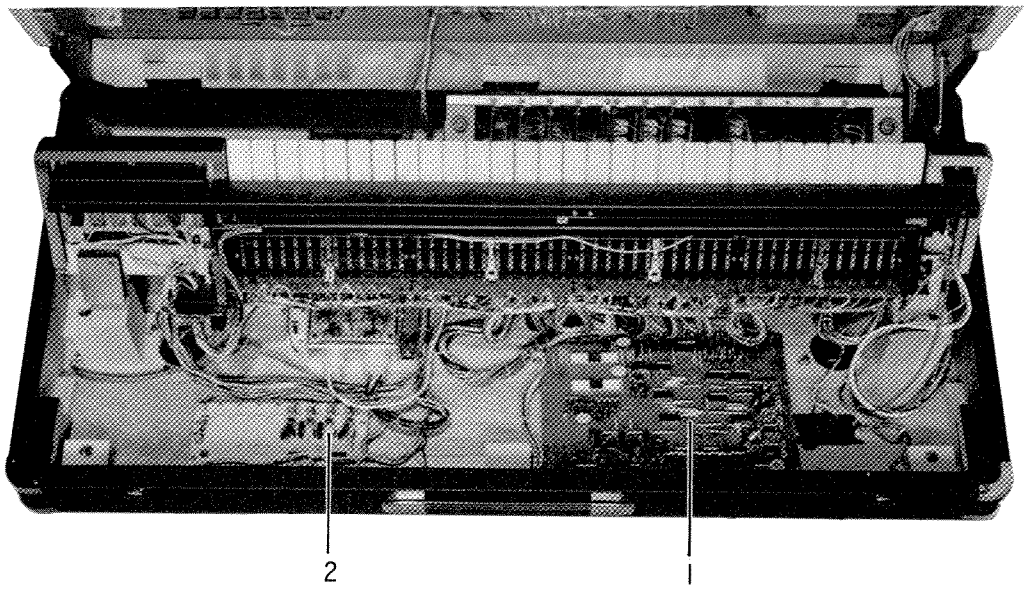
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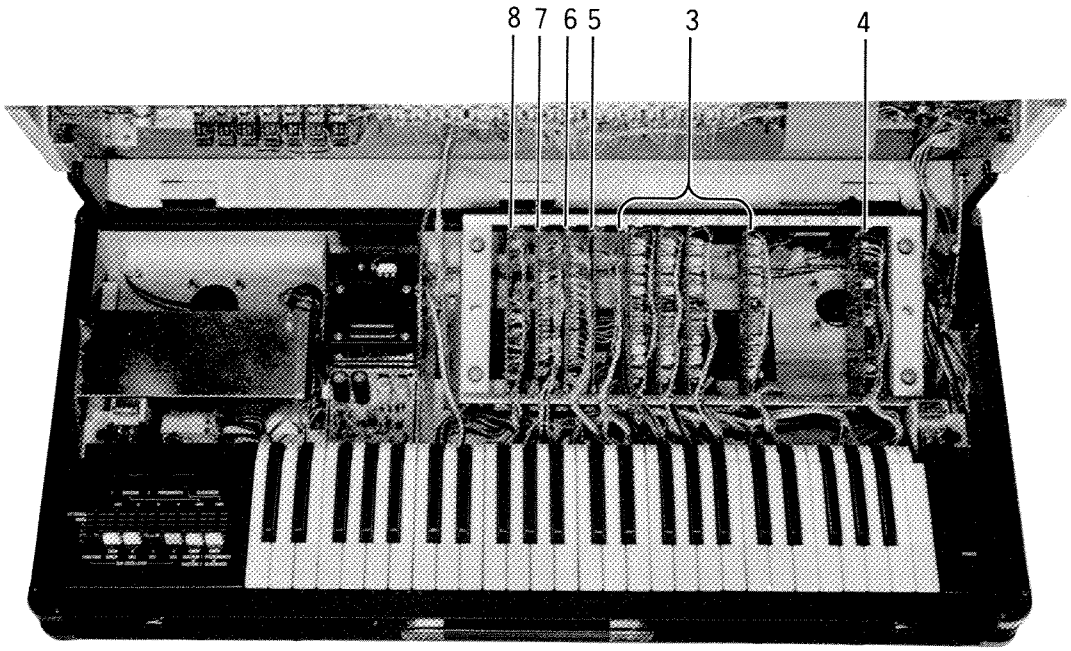
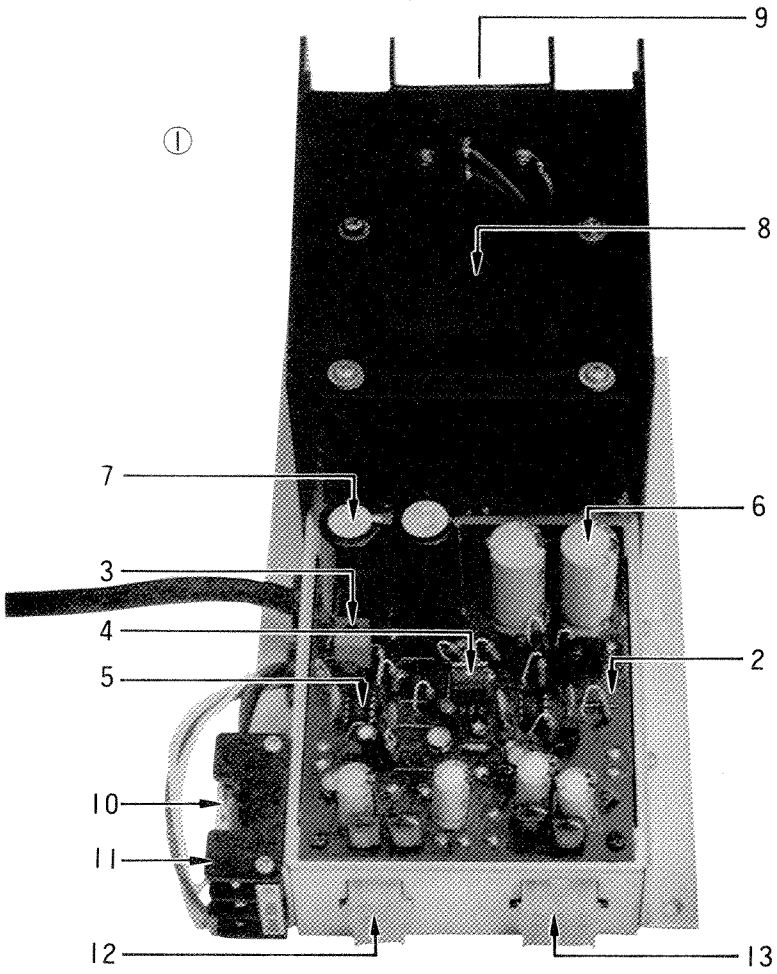

8 7 6 5
3
4

| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 1 | 30 12 50 NA 03 65 00 | KAS Circuit Board #21264 | KAS シート | | | |
| 2 | 30 12 50 NA 03 79 20 | SH —do.— #22542 | SH シート | | | |
| 3 | 30 12 50 NA 04 48 50 | M —do.— #21233 | M シート | | CS-60 | |
| 4 | 30 12 50 NA 04 48 60 | PRA —do.— #41383 | PRA シート | | | |
| 5 | 30 12 50 NA 04 48 10 | SUB —do.— #41336 | SUB シート | | | |
| 6 | 30 12 50 NA 04 48 40 | $R_7$ —do.— #41361 | $R_7$ シート | | | |
| 7 | 30 12 50 NA 04 47 20 | T7I —do.— #21183 | T7I シート | | | |
| | 30 12 50 NA 04 48 30 | T72 —do.— #41352 | T72 シート | | | |
| | | | | | | |
| | 30 10 00 YM 26 60 00 | LSI YM26600 | LSI | | | |
| | 30 10 00 YM 26 70 00 | —do.— YM26700 | LSI | | | |
| | 40 10 00 iG 00 10 40 | Integrated circuit TA7504M | 〃 | | | |
| | 40 10 00 iG 00 12 10 | —do.— LM310 | IC | | | |
| | 40 10 00 iG 00 12 40 | —do.— TC4011P | 〃 | | | |
| | 40 10 00 iG 00 12 60 | —do.— TC4069P | 〃 | | | |
| | 40 10 00 iG 00 13 90 | —do.— NJM4558D | 〃 | | | |
| | 40 10 00 iG 00 14 10 | —do.— BA617 | 〃 | | | |
| | 40 10 00 iG 00 15 00 | —do.— IG00150 | 〃 | VCOII | | |
| | 40 10 00 iG 00 15 10 | —do.— IG00151 | 〃 | VCA | | |
| | 40 10 00 iG 00 15 20 | —do.— IG00152 | 〃 | EG-VCF | | |
| | 40 10 00 iG 00 15 30 | —do.— IG00153 | 〃 | VCOIII | | |
| | 40 10 00 iG 00 15 60 | —do.— IG00156 | 〃 | VCF | | |
| | 40 10 00 iG 00 15 80 | —do.— IG00158 | 〃 | WSC | | |
| | 40 10 00 iG 00 15 90 | —do.— IG00159 | 〃 | EG-VCA | | |
| | 40 10 00 iG 00 16 20 | —do.— MA796HC | 〃 | | | |
| | 40 10 00 iG 00 16 90 | —do.— TC4016P | 〃 | | | |
| | 40 10 00 iG 00 17 90 | —do.— TC4050P | 〃 | | | |
| | 40 10 00 iG 00 22 20 | —do.— CA3140T | 〃 | | | |
| | | | | | | |
| | 40 10 00 iA 04 90 20 | Transistor 2SA490 | トランジスタ | | | |
| | 40 10 00 iA 05 61 70 | —do.— 2SA561 | 〃 | | | |
| | 40 10 00 iC 04 58 80 | —do.— 2SC458 | 〃 | | | |
| | 40 10 00 iD 02 34 30 | —do.— 2SD234 | 〃 | | | |
| | | | | | | |
| | 40 10 00 iE 00 00 10 | FET 2SK30 | FET | | | |
| | | | | | | |
| | 40 10 00 iF 00 00 40 | Diode 1S1555 | ダイオード | | | |
| | 40 10 00 iF 00 03 00 | —do.— 1S1715P | 〃 | | | |
| | 40 10 00 iF 00 04 20 | Zener diode 02Z5.6A | ツェナー | | | |
| | | | | | | |
| | 40 10 00 HU 36 53 00 | Metal film resistor 2% 300Ω | 金属被膜抵抗 | | | |
| | 40 10 00 HU 36 53 30 | —do.— —do.—330Ω | 〃 | | | |
| | 40 10 00 HU 36 57 50 | —do.— —do.—750Ω | 〃 | | | |
| | 40 10 00 HU 36 68 20 | —do.— —do.—8.2KΩ | 〃 | | | |
| | 40 10 00 HU 36 71 00 | —do.— —do.—10KΩ | 〃 | | | |

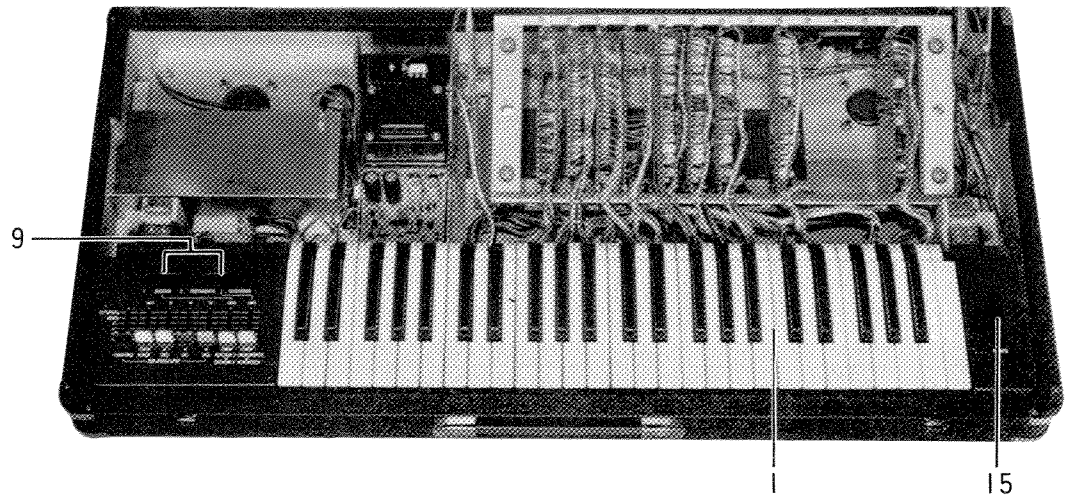
| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| | 40 10 00 HU 36 71 80 | Metal film resistor 2% 18KΩ | 金層被膜抵抗 | | | |
| | 40 10 00 HU 36 72 20 | —do.— —do.—22KΩ | 〃 | | | |
| | 40 10 00 HU 57 61 80 | —do.— 1%—1.8KΩ | 〃 | | | |
| | 40 10 00 HU 57 72 20 | —do.— —do.—22KΩ | 〃 | | | |
| | 40 10 00 HU 57 81 50 | —do.— —do.—150KΩ | 〃 | | | |
| | 40 10 00 HU 19 72 00 | —do.— 0.1% 20KΩ | 〃 | | | |
| | 40 10 00 HU 19 74 00 | —do.— —do.—40KΩ | 〃 | | | |
| | 40 10 00 HU 19 78 00 | —do.— —do.—80KΩ | 〃 | | | |
| | 40 10 00 HU 19 81 60 | —do.— —do.—160KΩ | 〃 | | | |
| | 40 10 00 HU 59 51 00 | —do.— 0.01%100Ω | 〃 | | | |
| | 40 10 00 HU 59 61 00 | —do.— —do.—1KΩ | 〃 | | | |
| | 40 10 00 HU 59 62 00 | —do.— —do.—2KΩ | 〃 | | | |
| | 40 10 00 HZ 00 08 60 | —do.— —do.—29.94KΩ | 〃 | | | |
| | | | | | | |
| | 40 10 00 Hi 30 93 30 | Solid resistor 3.3MΩ | ソリッド抵抗 | | | |
| | 40 10 00 Hi 20 94 70 | —do.— 4.7MΩ | 〃 | | | |
| | 40 10 00 Hi 20 99 90 | —do.— 10MΩ | 〃 | | | |
| | | | | | | |
| | 40 10 00 HL 32 42 20 | Metal oxide film resistor 2W 22Ω | 酸化金属被膜抵抗 | | | |
| | | | | | | |
| | 40 10 00 FF 04 31 20 | Polystyleme capacitor 1200pF | スチロールコンデンサ | | | |
| | | | | | | |
| | 40 10 00 FP 13 72 20 | Tantalum capacitor 16V 22μF | タンタル | | | |
| | 40 10 00 FM 09 71 00 | Nonpolar capacitor 16V 10μF | NP コンデンサ | | | |
| | 40 10 00 FM 22 71 00 | —do.— 25V 10μF | 〃 | | | |
| | 40 10 00 FM 22 73 00 | —do.— 25V 33μF | 〃 | | | |
| | 40 10 00 FM 11 61 00 | —do.— 50V 1μF | 〃 | | | |
| | 40 10 00 FM 11 64 00 | —do.— 50V 4.7μF | 〃 | | | |
| | | | | | | |
| | 40 10 00 HT 55 00 60 | Semi variable resistor 3006 typeB-5KΩ | 半固定抵抗 | | | |
| | | | | | | |
| | 40 10 00 HT 56 01 50 | —do.— 3321HType B-20Ω | 〃 | | | |
| | 40 10 00 HT 56 00 00 | —do.— —do.—B-50Ω | 〃 | | | |
| | 40 10 00 HT 56 00 20 | —do.— —do.—B-200Ω | 〃 | | | |
| | 40 10 00 HT 56 00 70 | —do.— —do.—B-10KΩ | 〃 | | | |
| | 40 10 00 HT 56 01 00 | —do.— —do.—B-100KΩ | 〃 | | | |
| | | | | | | |
| | 40 10 00 HT 12 00 10 | —do.— V10K4ATypeB-1KΩ | 〃 | | | |
| | 40 10 00 HT 12 00 80 | —do.— —do.—B-2KΩ | 〃 | | | |
| | 40 10 00 HT 12 00 20 | —do.— —do.—B-5KΩ | 〃 | | | |
| | 40 10 00 HT 12 00 50 | —do.— —do.—B-50KΩ | 〃 | | | |
| | 40 10 00 HT 12 00 70 | —do.— —do.—B- | 〃 | | | |
| | 40 10 00 HT 12 00 60 | —do.— —do.—B-500KΩ | 〃 | | | |
| | 40 10 00 HT 12 01 10 | —do.— —do.—B-1MΩ | 〃 | | | |
| | | | | | | |

| Ref. No. | Part No. | Descripton | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| | 40 10 00 HT 18 00 20 | Semi variable resistor V10K 8A Type B-200Ω | 半固定抵抗 | | | |
| | 40 10 00 HT 18 00 30 | —do.— —do.— B-2KΩ | 〃 | | | |
| | 40 10 00 HT 18 00 50 | —do.— —do.— B-20KΩ | 〃 | | | |
| | 40 10 00 HT 18 00 60 | —do.— —do.— B-50KΩ | 〃 | | | |
| | 40 10 00 HT 18 00 70 | —do.— —do.— B-100KΩ | 〃 | | | |
| | 40 10 00 HT 18 00 80 | —do.— —do.— B-500KΩ | 〃 | | | |




| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 1 | 30 12 00 NP 00 13 00 | Power Supply Unit | 電源ユニット | BS | | |
| | 30 12 00 NP 00 13 10 | —do.— | 〃 | 国内 | | |
| | 30 12 00 NP 00 13 20 | —do.— | 〃 | General | | |
| | 30 12 00 NP 00 13 30 | —do.— | 〃 | UL | | |
| | 30 12 00 NP 00 13 40 | —do.— | 〃 | South African | | |
| | 30 12 00 NP 00 13 50 | —do.— | 〃 | Australian | | |
| | 30 12 00 NP 00 13 60 | —do.— | 〃 | European, North European | | |
| | 30 12 00 NP 00 13 80 | —do.— | 〃 | CSA | | |
| | | | | | | |
| 2 | 30 12 00 NA 03 55 90 | SVU Circuit board #20922 | SVU シート | | | |
| 3 | 40 10 00 iA 04 90 20 | Transistor 2SA490 | トランジスタ | | | |
| | 40 10 00 iA 05 61 70 | —do.— 2SA561 | 〃 | | | |
| | 40 10 00 iC 08 28 80 | —do.— 2SC828 | 〃 | | | |
| 4 | 40 10 00 iD 02 34 10 | —do.— 2SD234 | 〃 | | | |
| | 40 10 00 iF 00 00 40 | Diode 1S1555 | ダイオード | | | |
| | 40 10 00 iH 00 01 40 | —do.— 10DC-4 | 〃 | | | |
| | 40 10 00 iH 00 01 50 | —do.— 10DC-4R | 〃 | | | |
| | 40 10 00 iF 00 01 00 | Zener diode 1S1715 | ツェナー | | | |
| | 40 10 00 iF 00 07 80 | —do.— WZ150 | 〃 | | | |

| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 5 | 40 10 00 iG 00 13 90 | Integrated circuit RC4558 | I C | | | |
| | 40 10 00 HL 31 24 70 | Metal oxide resistor 1P0.47Ω | 酸金抵抗 | | | |
| 6 | 40 10 00 FJ 14 91 00 | capacitor 25V 1000μF | コンデンサ | | | |
| 7 | 40 10 00 FJ 25 92 20 | —do.— 35V 2200μF | 〃 | | | |
| | | | | | | |
| 8 | 40 10 00 GA 02 86 10 | Power transtermer | 電源トランス | | | |
| | | | | | | |
| | 40 10 00 iA 04 90 10 | Transistor 2SA490 | トランジスタ | | | |
| | 40 10 00 iA 07 45 00 | —do. 2SA745 | 〃 | | | |
| 9 | 40 10 00 iD 02 03 00 | —do.— 2SD203 | 〃 | | | |
| | 40 10 00 iD 02 34 10 | —do.— 2SD234 | 〃 | | | |
| | | | | | | |
| | 40 10 00 FZ 00 01 10 | Sperk Killer 125V0.33μF+120Ω | CR 複合部品 | UL spec | | |
| | 40 10 00 FZ 00 09 50 | —do.— 250V —do.— | 〃 | CSA spec | | |
| | | | | | | |
| | 40 10 00 HM 52 24 70 | Cement molded resistor 2W 0.47Ω | セメント抵抗 | | | |
| | | | | | | |
| | 40 10 00 FQ 02 44 70 | Oil capacitor 630V 0.047μF | オイルコンデンサ | | | |
| | | | | | | |
| 10 | 40 10 00 KB 00 04 30 | Fuse 1.25A | ヒューズ | 国内 | | |
| | 40 10 00 KB 00 03 10 | —do.— 0.5A | 〃 | | | |
| | 40 10 00 KB 00 07 10 | —do.— miniature Type 0.5A | 〃 | BS, European, North European spec | | |
| | 40 10 00 KB 00 06 60 | —do.— —do.— 0.4A | 〃 | BS spec | | |
| | 40 10 00 KB 00 11 50 | —do.— Approved by UL 0.5A | 〃 | UL,CSA spec | | |
| | 40 10 00 KB 00 14 50 | —do.— —do.— 1.25A | 〃 | —do.— | | |
| | | | | | | |
| 11 | 40 10 00 LB 20 10 80 | Fuse holder Block Type | ヒューズホルダー | BS,European, North European spec | | |
| | 40 10 00 LB 20 10 90 | —do.— —do.— | 〃 | | | |
| | | | | | | |
| 12 | 40 10 00 LB 60 15 30 | Connector 6 pin | コネクター6P | | | |
| 13 | 40 10 00 LB 60 15 40 | —do.— 9 pin | 〃 9P | | | |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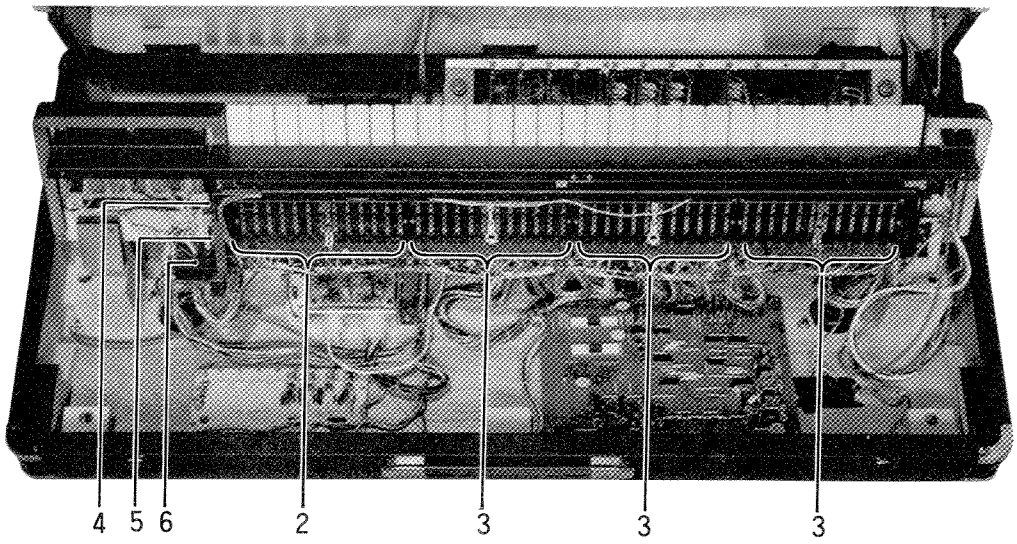
15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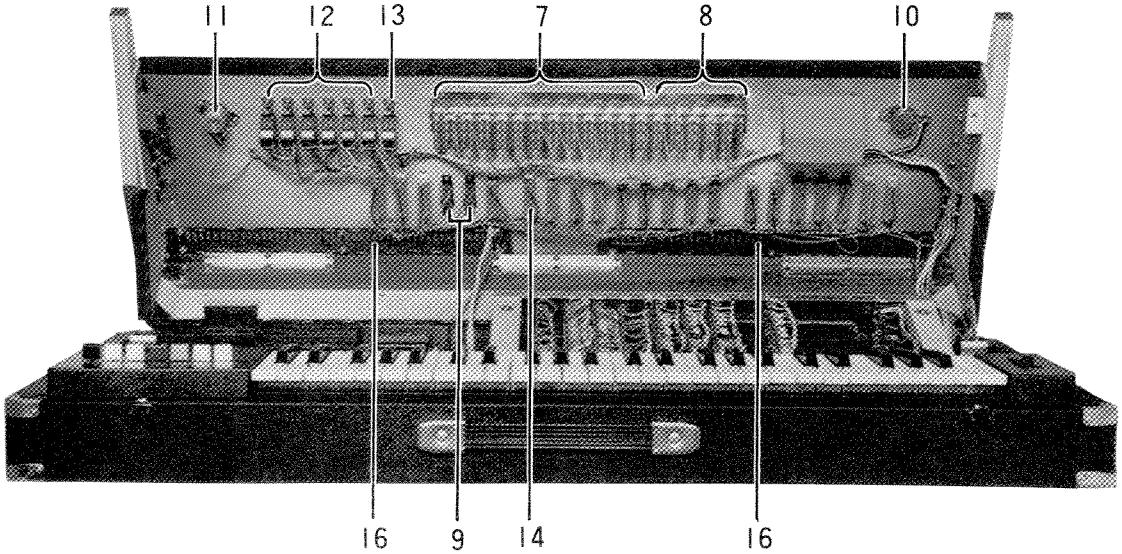
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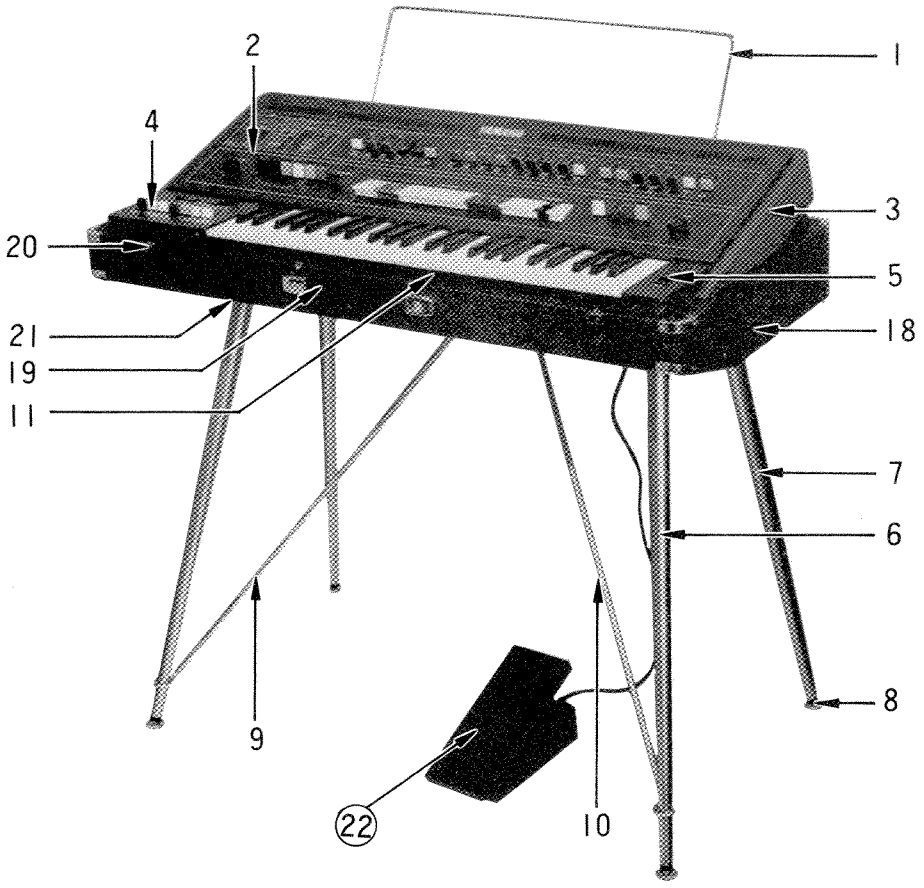
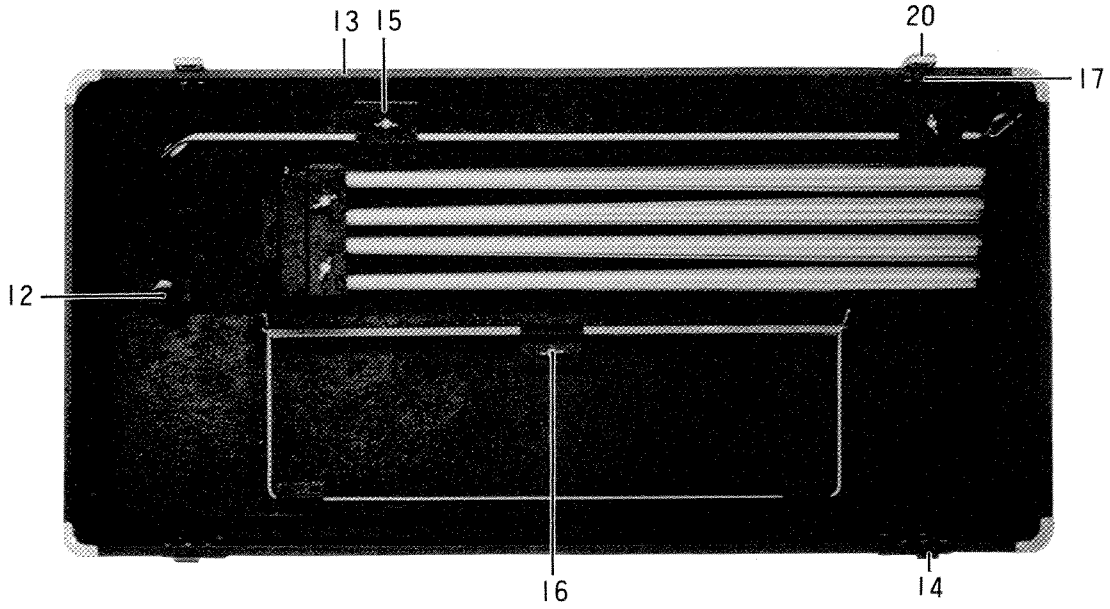
| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 1 | 30 12 50 NB 04 51 50 | Key board assembly | 鍵　盤 A'ssy | | | |
| | | | | | | |
| 2 | 30 10 00 NB 04 51 60 | Switch assembly IU #4085 | スイッチA'ssy | 13Keys | | |
| 3 | 30 10 00 NB 04 51 70 | —do.— 2・3・4U #4086 | 〃 | 12Keys | | |
| | | | | | | |
| | 30 10 00 CB 01 11 70 | White Key C.F | 白　鍵 | | | |
| | 30 10 00 CB 01 11 80 | —do.— D | 〃 | | | |
| | 30 10 00 CB 01 11 90 | —do.— E.B | 〃 | | | |
| | 30 10 00 CB 01 12 00 | —do.— G | 〃 | | | |
| | 30 10 00 CB 01 12 10 | —do.— A | 〃 | | | |
| | 30 10 00 CB 01 12 20 | —do.— C' | 〃 | | | |
| | 30 10 00 CB 01 12 30 | Black Key | 黒　鍵 | | | |
| | | | | | | |
| | 30 10 00 AA 01 56 70 | Key spring for White Key | キースプリング | | | |
| | 30 10 00 AA 01 56 80 | —do.— for Black Key | 〃 | | | |
| | | | | | | |
| 4 | 30 10 00 AA 03 24 40 | Plate for Shatter | シャッター取付板 | | | |
| 5 | 30 10 00 BC 00 27 90 | Shatter Plate | シャッター板 | | | |
| 6 | 30 10 00 NB 03 41 10 | Touch Control pick-up assembly | T・Cピックアップ A'ssy | | | |
| | | | | | | |
| | 30 10 00 CB 01 86 40 | Dust cover | ダストカバー | | | |
| | | | | | | |
| | 30 10 00 CB 02 86 00 | Kno White | ツ マ ミ 白 | | | |
| | 30 10 00 CB 02 86 10 | —do.— Black | 〃　黒 | | | |
| | 30 10 00 CB 02 86 20 | —do.— Red | 〃　赤 | | | |
| | 30 10 00 CB 02 86 30 | —do.— Green | 〃　緑 | | | |
| | 30 10 00 CB 02 86 40 | —do.— Yellow | 〃　黄 | | | |
| | 30 10 00 CB 02 86 50 | —do.— Gray | 〃　灰 | | | |
| | 30 10 00 CB 02 86 60 | —do.— Black | 〃　黒 | for Volume | | |
| | 30 10 00 CB 02 86 70 | TVR Knob White | 〃　白 | | | |
| | 30 10 00 CB 02 86 80 | —do.— Black | 〃　黒 | | | |
| | 30 10 00 CB 02 86 90 | —do.— Red | 〃　赤 | | | |
| | 30 10 00 CB 02 87 00 | —do.— Green | 〃　緑 | | | |
| | 30 10 00 CB 02 87 10 | —do.— Gray | 〃　灰 | | | |
| | 30 10 00 CB 03 01 20 | Knob Black (out side) | 〃 (外側) | for pitch | | |
| | 30 10 00 CB 03 01 30 | —dn.— —do.— (inside) | 〃 (内側) | —do.— | | |
| | | | | | | |
| 7 | 40 10 00 KA 90 04 20 | Push switch 14channel | プッシュ S W | for Tone Selector | | |
| 8 | 40 10 00 KA 90 04 30 | —do.— 4 channel | 〃 | for Transposition | | |
| | | | | | | |
| 9 | 40 10 00 KA 10 00 90 | See saw switch | シーソー S W | | | |
| | | | | | | |
| 10 | 40 10 00 HR 20 00 20 | Variable vesistor A-10KΩ | ボ リ ウ ム | for Volume | | |
| 11 | 40 10 00 HR 60 00 20 | —do.— B-10KΩ +B-500Ω | 〃 | for Pitch | | |
| | | | | | | |

| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 12 | 40 10 00 HP 70 00 10 | TVR B-10KΩ | T V R | | | |
| 13 | 40 10 00 HP 70 00 20 | —do.— B-10KΩ | 〃 | for Brilliance | | |
| | | | | | | |
| 14 | 40 10 00 HQ 30 00 10 | Slide variable resistor B-10KΩ | スライドVR | | | |
| | 40 10 00 HQ 30 03 20 | —do.— C-10KΩ | 〃 | for Sustain | | |
| | | | | | | |
| | 30 10 00 AA 03 67 70 | Back Pannel | バックパネル | General, South African models | | |
| | 30 10 00 AA 03 67 80 | —do.— | 〃 | 国内、UL,CSA,BS, Australian models | | |
| | 30 10 00 AA 03 70 20 | —do.— | 〃 | North European, European models | | |
| | | | | | | |
| | 40 10 00 LB 20 04 80 | Holder for fuse | ヒューズホルダー | General,South African models | | |
| | 40 10 00 LB 20 05 90 | —do.— | 〃 | North European, European models | | |
| | 30 10 00 CB 01 91 30 | Knob EXTERNAL-LEVEL | ツマミ | | | |
| | 40 10 00 HR 20 01 90 | Variable resister —do.— | ボリューム | | | |
| | 40 10 00 LB 20 02 50 | Voltage Selector | 電圧切替器 | | | |
| | 40 10 00 KA 40 00 00 | Slide Switch High↔Low | スライドSW | | | |
| | 40 10 00 LB 20 06 30 | Phone jack Output | ヘッドフォンジャック | | | |
| | 40 10 00 LB 40 01 00 | —do.— Foot cantroller | 〃 | | | |
| | | | | | | |
| 15 | 40 10 00 KA 10 00 60 | Power switch | パワーSW | 国内 | | |
| | 40 10 00 KA 10 00 70 | —do.— | 〃 | | | |
| | 40 10 00 KA 10 03 40 | —do.— | 〃 | European,North European,BS models | | |
| | | | | | | |
| | 40 10 00 JB 00 01 80 | Neon lamp | ネオン管 | European,North European,BSmodels | | |
| | 30 54 00 CB 00 16 60 | Pilot lens, red | 赤玉 | —do.— | | |
| | 30 10 00 CB 00 77 70 | Lamp holder | ランプホルダー | —do.— | | |
| | | | | | | |
| 16 | 30 10 00 AA 04 01 70 | Grille for radiator | 放熱グリル | | | |

# 4．Cabinet（外装部品）



| Ref. No. | Part No. | Description | | Remarks | Common Models | |
|---|---|---|---|---|---|---|
| 1 | 30 10 00 AA 03 69 70 | Music rest | 譜面台 | | | |
| | | | | | | |
| 2 | 30 12 50 00 04 45 10 | Control panel | コンパネ | | | |
| | 30 13 00 AA 01 65 00 | Stay for control panel | ステー | | | |
| 3 | 30 12 50 00 05 55 00 | Side panel | パネル側板 | | | |
| | 30 10 00 AA 03 68 40 | Bush for music rest | 譜面台ブッシュ | | | |
| | | | | | | |
| 4 | 30 12 50 00 04 55 10 | End block Left | 拍子木(左) | | | |
| 5 | DA 01 74 20 | —do.— Right | 〃 (右) | | | |
| | NK 00 27 30 | —do.— —do.— | 〃 (右) | North European, BS, European models | | |
| | | | | | | |
| 6 | 30 10 00 NB 00 78 40 | Leg Assembly Long | 脚柱 | | | |
| 7 | 30 10 00 NB 04 53 40 | —do.— Short | 〃 | | | |
| 8 | 30 10 00 NB 00 78 50 | Chair Grades | 脚台 | | | |
| 9 | 30 10 00 AA 03 69 00 | Stay Left | 支柱(左) | | | |
| 10 | 30 10 00 AA 03 69 10 | —do.— Right | 〃 (右) | | | |
| 12 | 40 10 00 EK 00 32 10 | Knob bolt for Stay sttopper | ノブボルト | 6×30 | | |
| | | | | | | |
| 11 | 30 10 00 AA 03 67 40 | Key board spacer | 目金 | | | |
| | | | | | | |
| 13 | 30 12 50 00 02 13 00 | External cover | ケース蓋 | | | |
| 14 | 30 10 00 AA 96 09 00 | Hinge Stopper | 引掛け丁番 | | | |
| 15 | 40 10 00 EV 75 01 50 | Wing bolt | 蝶ネジ | M5×15 | | |
| 16 | 40 10 00 EV 76 01 50 | —do.— | 〃 | M6×15 | | |
| | 40 10 00 CB 01 06 40 | P Nut | Pナット | | | |
| | 40 10 00 EA 03 01 00 | Pan head screw | ナベ小ネジ | 3×10 ZMCZ | | |
| 17 | 30 10 00 BB 00 18 90 | Nut | 特殊ナット | | | |
| | | | | | | |
| 18 | 30 12 50 00 04 07 00 | Cabinet | 本体ケース | | | |
| 19 | 30 10 00 NB 80 29 00 | Handle assembly | 取手A'ssy | | | |
| 20 | 30 10 00 AA 96 08 80 | Lock | パッチン錠 | | | |
| | | | | | | |
| 21 | 30 10 00 AA 01 39 20 | Flange, leg | 脚フランジ | | | |
| | 40 10 00 EA 05 02 50 | Pan head screw | ナベ小ネジ | 5×25 | | |
| | 40 10 00 EV 10 00 50 | Hexagonal nut | 六角ナット | 5 ZMCZ-Y | | |
| | 40 10 00 EW 20 00 50 | Flain washer | 平座金 | 5 | | |
| | 30 54 00 AA 80 18 50 | Grille radiator | 放熱グリル | | | |
| | 30 10 00 AA 03 68 40 | Bush Music rest | 譜面台ブッシュ | | | |
| | 30 12 50 00 04 07 10 | Lid AC cord | コード収納蓋 | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Ref. No. | Part No. | Description | | Remarks | Common Model | |
|---|---|---|---|---|---|---|
| (22) | 30 10 00 CB 01 02 60 | Case | ケ　ー　ス | | | |
| | 30 10 00 AA 01 37 70 | Flame | フ レ ー ム | | | |
| | 30 10 00 DB 03 00 40 | Rubber for Stopper | すべり止ゴム | | | |
| | 30 10 00 AA 01 38 00 | Pedal | 踏　　板 | | | |
| | 30 10 00 CB 00 36 80 | Rubber Pedal mat | マ　ッ　ト | | | |
| | | | | | | |
| | 40 10 00 EV 10 00 40 | Hexagonel nut 6S | 六角ナット | | | |
| | 40 10 00 EV 10 00 60 | —do.— 4S | 〃 | | | |
| | | | | | | |
| | 30 10 00 AA 01 08 10 | Shatter plate | シャッター板 | | | |
| | 40 10 00 CG 00 00 10 | | スリガラス | | | |
| | | | | | | |
| | 40 10 00 iK 00 00 30 | Photocell, Cds | C　d　s | | | |
| | 30 10 00 CB 00 76 30 | Phntocell holder | Cds ホルダー | | | |
| | | | | | | |
| | 40 10 00 JB 00 01 70 | Lamp, 24V 5W | ラ　ン　プ | | | |
| | 30 10 00 CB 00 76 40 | Lamp holder | ランプホルダー | | | |
| | 30 10 00 CB 00 76 20 | Cover for Lamp | ランプカバー | | | |
| | | | | | | |
| | 40 10 00 LB 20 01 20 | Lamp socket | ブラケット | | | |

# YAMAHA CS-50 SYNTHESIZER BLOCK DIAGRAM

KEYBOARD ( C2 ～ C6 )

SUB BOARD 1/6

REFERENCE VOLTAGE ADJUST

COARSE CONTROL ( -500 ～ +700 CENTS )

FINE CONTROL ( ±50 CENTS )

PITCH (PN2)

KAS BOARD

MASTER CLOCK OSC (4±1.5 kHz)

OCTAVE LADDER NETWORK

NOTE LADDER NETWORK

BUFFER

KEY CODER

KEY ASSIGNER

[IC1 YM2600]

[IC-2 YM2700]

GLISSANDO CIRCUIT

D/A CONVERTER

D/A CONVERTER

GATE/INTEGRATOR 4

GATE/INTEGRATOR 3

GATE/INTEGRATOR 2

GATE/INTEGRATOR 1

2.5M

4.6kΩ

BUFFER K4

BUFFER K3

BUFFER K2

BUFFER K1

INITIAL CLEAR CIRCUIT

BUFFERS

COMPARATOR FUNCTION

VCO -PWM/GLISS CLOCK OSC

VOLTAGE COMPARATORS

Key on signal

KEY ON OFF +8.5V -6.5V

PORTAMENTO GLISSANDO (PN3)

PORTAMENTO GLISSANDO (PN3)

SH BOARD

SAMPLE/HOLD CIRCUIT

SUSTAIN

M4 BOARD

M3 BOARD

M2 BOARD

M1 BOARD

VCO (1G00153)

WAVESHAPE CONVERTER (1G00156)

GATE

VCF -HIGH PASS FILTER (1G00154)

VCF -LOW PASS FILTER (1G00156)

VCA (1G00151)

VCA (1G00151)

VCA (1G00151)

TRANS-POSITION CIRCUIT

ENVELOPE GEN-FILTER (1G00152)

ENVELOPE GEN-AMP (1G00154)

10CT NORMAL 10CT UP 10CT DOWN 20CT DOWN

TRANSPOSITION (PN2)

FOOT PEDAL

FOOT CONTROLLER

PRA BOARD 5/6

PRA BOARD 5/5

PRA BOARD 5/4

(PN2) MODULATION

(PN2) VOLUME

(PN2) SPEED

(PN2) DEPTH

(PN2) ATTACK TIME

(PN2) DECAY TIME

DELAY CIRCUIT

HEAD-PHONE AMP

OUT

SPEAKER

HEAD-PHONE

ENVELOPE GEN -RING MOD (1G00159)

REAR PANEL (PN5)

(PN1)

VCO

VCF

VCA

(PN2)

RING MODULATOR

TONE SELECTOR

TRANSPOSITION

TOUCH RESPONSE

VOLUME

(PN3)

(PN4)

FOOT PEDAL

HEAD-PHONE

R7 BOARD 1/2

CONTROL VOLTAGE MIXING CIRCUIT -VCO

CONTROL VOLTAGE MIXING CIRCUIT -RESONANCE

CONTROL VOLTAGE MIXING CIRCUIT -CUTOFF FREQ

SUB BOARD 5/6

VCA -LEVEL CONTROL (1G00155)

VCO -PWM OSC (1G00153)

R7 BOARD 1/2

CONTROL VOLTAGE MIXING CIRCUIT -VCA

SUB BOARD 3/6

SUSTAIN CONTROL CIRCUIT

SUSTAIN (PN4)

T71 BOARD 3/3

VOLTAGE REGULATOR

DC POWER SUPPLY

RESONANCE (PN2)

BRILLIANCE (PN2)

SUB OSC (PN3)

VCO VCF VCA

TOUCH RESPONSE LEVEL BRILLIANCE VCO VCF

SUB BOARD 4/6

SUB BOARD 5/6

SUB BOARD 4/6

PRA BOARD 3/6

WAVESHAPE CONVERTER

VCA -LEVEL CONTROL (1G00155)

VCA -LEVEL CONTROL (1G00151)

VCO -SUB OSC (1G00150)

LPF

NOISE GENERATION

EXT. IN

LEVEL (PN5)

EXT. NOISE

FUNCTION (PN3)

SPEED (PN3)

RESISTOR MATRIX T71 BOARD 1/2

RESISTOR MATRIX T72 BOARD

STRING 1 STRING 2 BRASS 1 BRASS 2 FLUTE ELECTRIC PIANO CLAVI-CHORD HARPSI-CHORD GUITAR 1 GUITAR 2 FUNKY 1 FUNKY 2 FUNKY 3 PANEL

TONE SELECTOR (PN2)

PRA BOARD 1/3

PRA BOARD 2/3

PRA BOARD 3/3

SPEED PWM PW FL N NOISE HPF RES LPF RES IL AL A D R VCF LEVEL A D S R LEVEL

VCO VCF VCA (PN1)

SHOW IG PULSE AUDIO SIGNAL LOW FREQUENCY MODULATION SIGNAL DC CONTROL SIGNAL

# CS-50 OVERALL CIRCUIT DIAGRAM