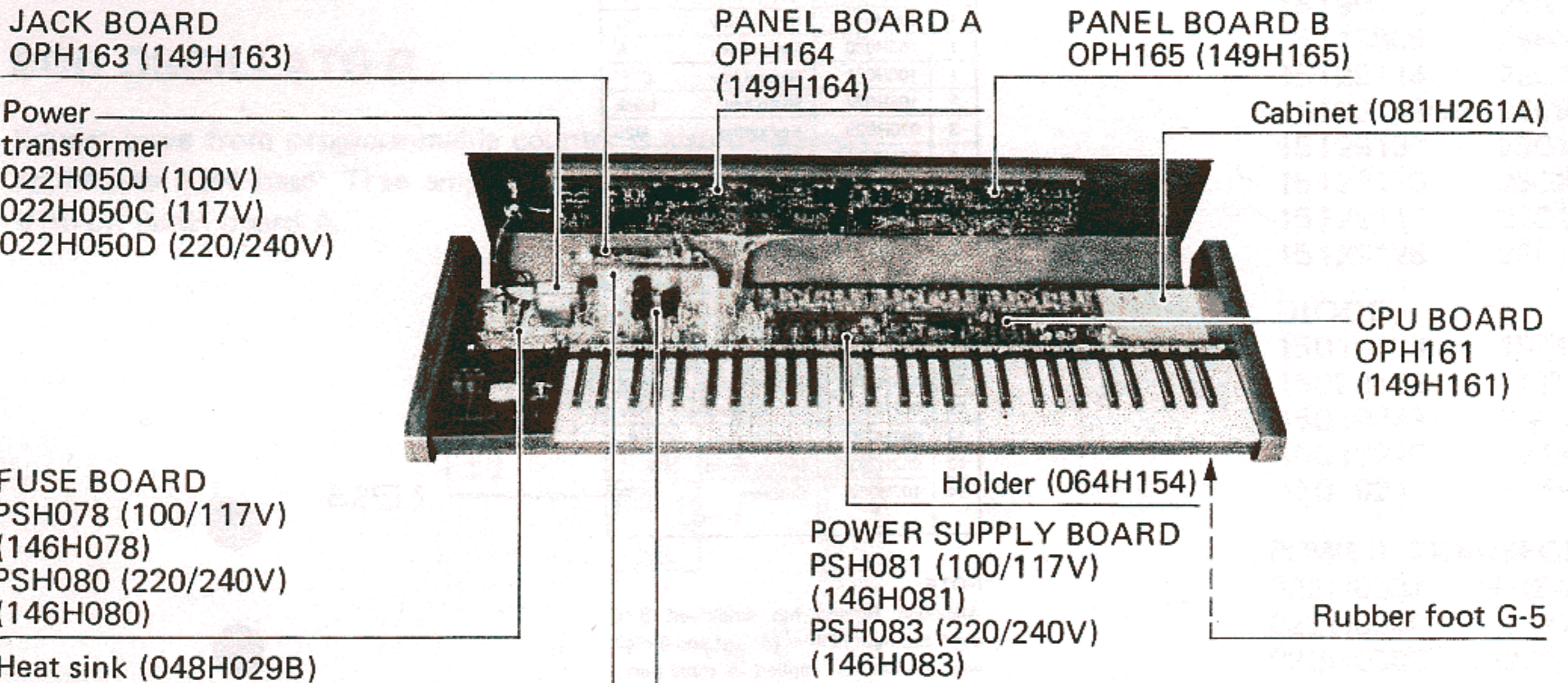
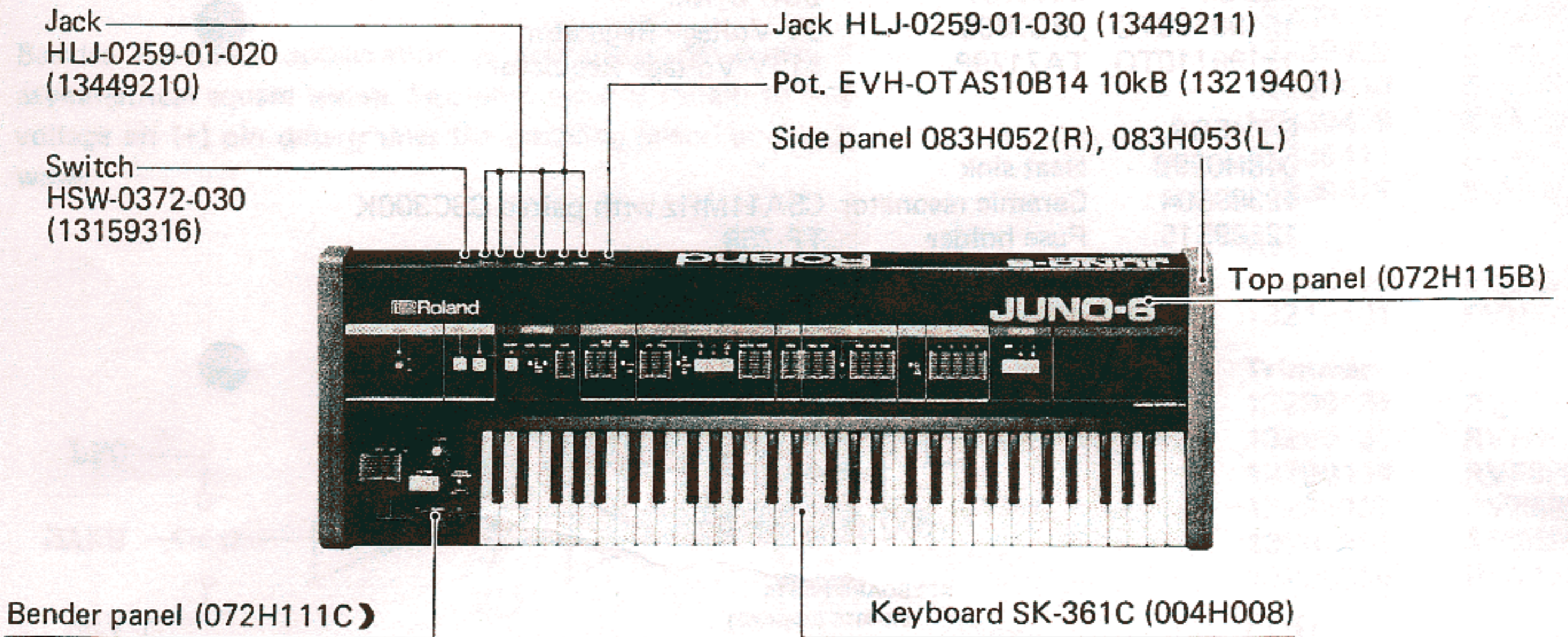


JU-6 SERVICE NOTES

First Edition

SPECIFICATIONS

- | | |
|-------------------------------------|--|
| Keyboard: 61 Keys (5 octaves) C2-C7 | Arpeggio: Rate (1.5Hz-50Hz) |
| VCF: Cutoff frequency (4Hz-40kHz) | Bender control range: DCO (± 7 keys max.) |
| ENV modulation (10 octaves max.) | VCF (± 4 octaves max.) |
| LFO modulation (6 octaves max.) | Output level: L(-30dBm)/M(-15dBm)/H(0dBm) |
| Keyboard follow (0-100%) | Output: (mono, stereo) |
| ENV: Attack time (1ms-3s) | Tune: (± 50 cents) |
| Decay time (2ms-12s) | Dimension: 1060(W) x 113(H) x 378(D) mm |
| Sustain level (0-100%) | Weight: 11kg |
| Release time (2ms-12s) | Power: 25W |
| LFO: Rate (0.3Hz-20Hz) | |
| Delay (0-2.5s) | |



PARTS LIST

KEYBOARD

004H008 SK-361C (61 Keys)

CASE

081H261A Cabinet
 083H052 Side panel (right)
 083H053 Side panel (left)
 072H115B Top panel
 072H111C Bender panel
 064H154 Holder
 Rubber foot G-5

KNOB, BUTTON

22470128 Knob
 016H004 Knob
 016H029 Button (orange)
 016H030 Button (yellow)
 016H036 Button (white)
 12479703 KT3-2 (Key top) (ivory)

POWER SWITCH

1314910 1801-0121

PUSH SWITCH

13129321 SUT11A-1
 13129322 SUT11A-2
 13129531 SUT32A-1
 13129532 SUT32A-2

LEVER SWITCH

13139136 SLE-622-18P
 13139135 SLE-623-18P

SLIDE SWITCH

13159316 HSW-0372-01-030

KEY SWITCH UNIT

13129717 KEH 10003 w/k ey top KT3-2
 13129714 KEH 10903 switch proper
 13129719 Guide pin CHC3 2801A
 22269208 Cushion rubber CK42602A

PCB

149H161B CPU board OPH 161B
 (etch mask 052H370B)
 149H164A PANEL board A OPH164A
 (etch mask 052H372A)
 149H165A PANEL board B OPH165A
 (etch mask 052H373A)
 149H162A BENDER board OPH162A
 (etch mask 052H371A)
 149H163A JACK board OPH163A
 (etch mask 052H374A)
 146H081A POWER SUPPLY board PSH081A (100/117V)
 146H083A POWER SUPPLY board PSH083A (220/240V)
 (etch mask 052H369A)
 146H078A FUSE board PSH078A (100/117V)
 146H080A FUSE board PSH080A (220/240V)
 (etch mask 052H348A)

JACK

13449211 HLJ-0259-01-030 (mono)
 13449210 HLJ-0259-01-020 (stereo)

FUSE

12559331 GGS-0.8A prim. (100V/117V)
 12559511 CEE T500mA prim. (220/240V)
 12559513 CEE T1.0A sec. (220/240V)

BENDER UNIT

029-022 PB-4

POSISTOR

15229909 ERS-B33G561 560Ω
 15229910 ERS-B33G122 1.2KΩ

RESISTOR ARRAY

13829821 RGDS8 x 103K 10K x 8
 13910113 RGDS4 x 103K 10K x 4
 13910114 RGDS4 x 223K 22K x 4

POTENTIOMETER

Slider

13339416 EVA-TOHC14A14 10kA
 13339409 EVA-TOHC14B14 10kB
 13339410 EVA-TOHC14A54 50kA
 13339419 EVA-TOHC14B54 50kB
 13339411 EVA-TOHC14B15 100kB
 13339418 EVA-TOHC14A16 1MA

Rotary

13219759 EWJ-EJAP20B14 10kB x 2
 13219401 EVH-OTAS10B14 10kB

Trimmer

13299134 RVF8P01-502 5kB
 13299135 RVF8P01-103 10kB
 13299136 RVF8P01-503 50kB
 13299137 RVF8P01-104 100kB
 13299553 RVS0707V101-102M 1kB
 13299554 RVS0707V101-502M 5kB

COIL

022A018 S167999 37μH

TRANSISTOR

15199113 2SA1015-GR
 15119805 2SB834-O
 15129114 2SC1815-GR
 15129108OA 2SC945 (NZ-noise generator)
 15129130 2SC1583-F
 15129136 2SC2878-A or B
 15129117 2SC1923
 15129128 2SC752-Y

DIODE

15019103 1S2473
 15029103 TLR124 (LED)
 15019249 KV1226X (Varicap)
 15019245 1B4B41
 15019243 1B4B1

POWER TRANSFORMER

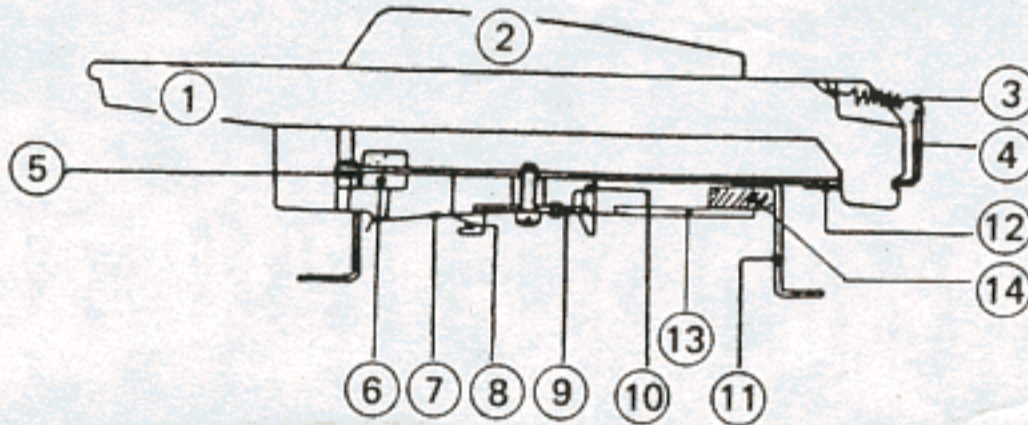
022H050J (100V)
 022H050C (117V)
 022H050D (220/240V)

IC

15179135	μPD8049C-238	CPU
15159113HO	HD14051BP	Single 83CH Multiplexer
15159104HO	HD4011BP	Quadruple 2-Input NAND Gate
15159105HO	HD14013BP	Dual D-type Flip-Flop
15159112	TC4049BP	Hex Inverter/Buffer
15159116TO	TC4069UBP	Hex Inverter
15159120TO	TC4099BP	
15179110MO	μPD8253C	Triple Programmable Interval Timers
15229801	IR3109	VCF
15229807	IR3R01	ADSR
15229802	BA662 A or B	VCA
15169117HO	HD7407	Hex Buffers/Drivers
15169310HO	HD74LS42	BCO-TO-Decimal Decoder
15189118HO	TL082	OP Amp
15189142	TA75558S	OP Amp
15189143	TA75559S	OP Amp
15189105	μPC4558C	OP Amp
15189136BO	M5218L	OP Amp
020-215	MN3009	BBD
020-224	MN3101	BBD Driver
15199106TO	μPC7805	5V Voltage Regulator
15199110TO	TA7179P	±15V Voltage Regulator

OTHERS

048H029B	Heat sink	
12389804	Ceramic resonator	CSA11MHz with paired CSC300K
12199515	Fuse holder	TF-758

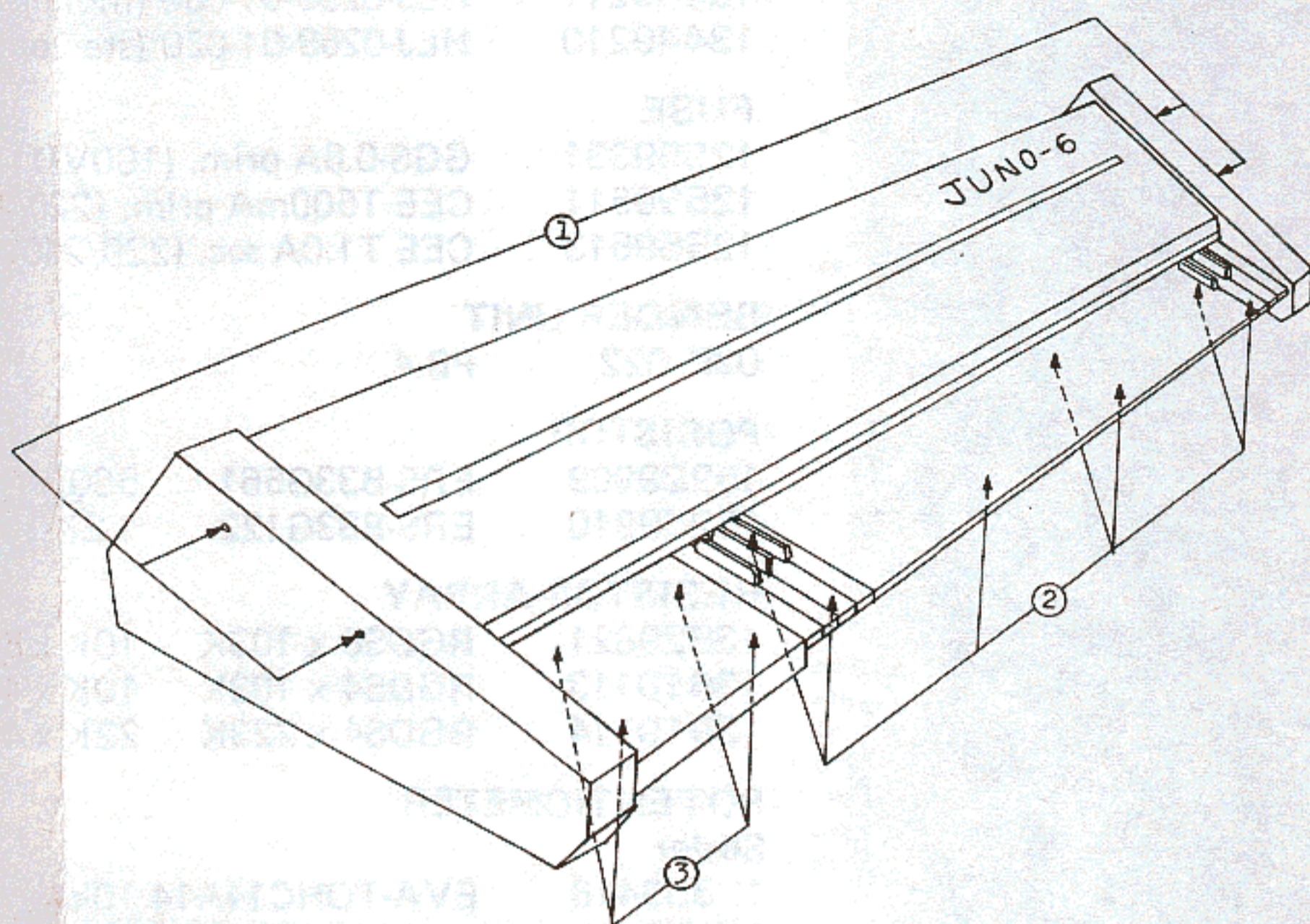


KEYBOARD PARTS
SK-361C (004H008)

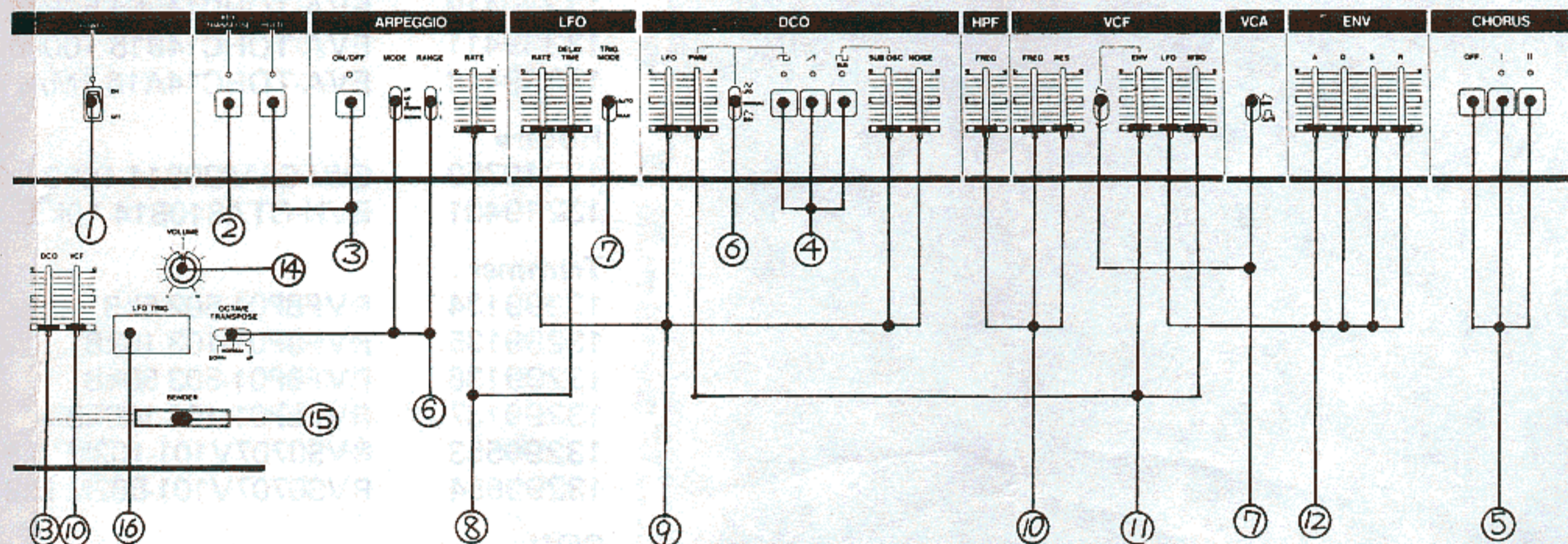
NO	PART NO	DESCRIPTION
1	106H026	Natural key C F
1	106H027	Natural key D
1	106H028	Natural key E B
1	106H029	Natural key G
1	106H030	Natural key A
1	106H031	Natural key C' F'
2	106H032	Sharp key black
3	070H029	Key spring H29
4	061H086A	Chassis H86A
5	068H004	Guide bushing H4
6	101H141	Level felt H141
7	071H044	Contact leaf H44
8	071H051	Busbar 8P H51
	071H054	Busbar 5P H54
9	043H007	Switch unit 12P H7
	043H008	Switch unit 13P H8
10	104H029	Busbar holder H29
11	062H024	Chassis bracket H24
12	098H006	Key stopper H6
13	052H283-5	Matrix board H283-5
14	107H059	Cushion H59

NOTE:

Although Roland has employed 8-10 digit coding, old ones (6 digit and 6 digit with H) are still applied to some parts.



- ①: Top panel removal screws
Joint 3 x 35mm (116H008)
- ②: Keyboard removal screws
4 x 15mm truss Fe Br
- ③: Bender panel removal screws
TP 3 x 15mm pan Fe Br



1	Switch	1801-0121 (13149102)	
2	Switch	SUT11A-1 (13129321)	Button orange (016H029) yellow (016H030) white (016H036)
3	Switch	SUT11A-2 (13129322)	
4	Switch	SUT32A-1 (13129531)	
5	Switch	SUT32A-2 (13129532)	
6	Switch	SLE-623-18P (13139135)	
7	Switch	SLE-622-18P (13139136)	
8	Pot.	EVA-TOHC14A16 1MA (13339418)	Knob (016H004)
9	Pot.	EVA-TOHC14A54 50kA (13339410)	
10	Pot.	EVA-TOHC14B54 50kB (13339419)	
11	Pot.	EVA-TOHC14B14 10kB (13339409)	
12	Pot.	EVA-TOHC14B15 100kB (13339411)	
13	Pot.	EVA-TOHC14A14 10kA (13339416)	
14	Pot.	EWJ-EJAP20B14 10kB x 2 (13219759)	Knob (22470128)
15	Bender assy	PB-4 (029-022)	
16	Switch w/key top	KEH10003 (13129717)	
	See parts list		
	All LEDs	TLR124 (15029103)	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

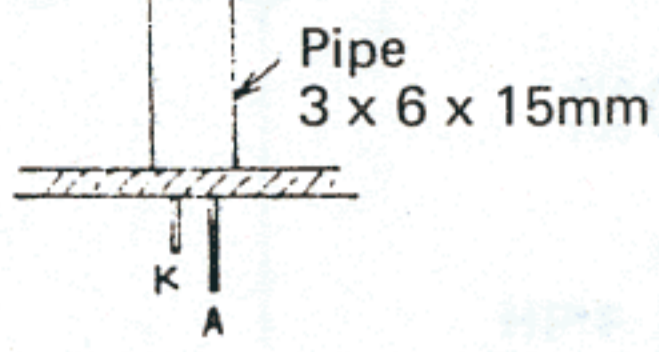
JACK BOARD OPH163A(149H163A)(pcb 052H374A)

LED
TLR-124

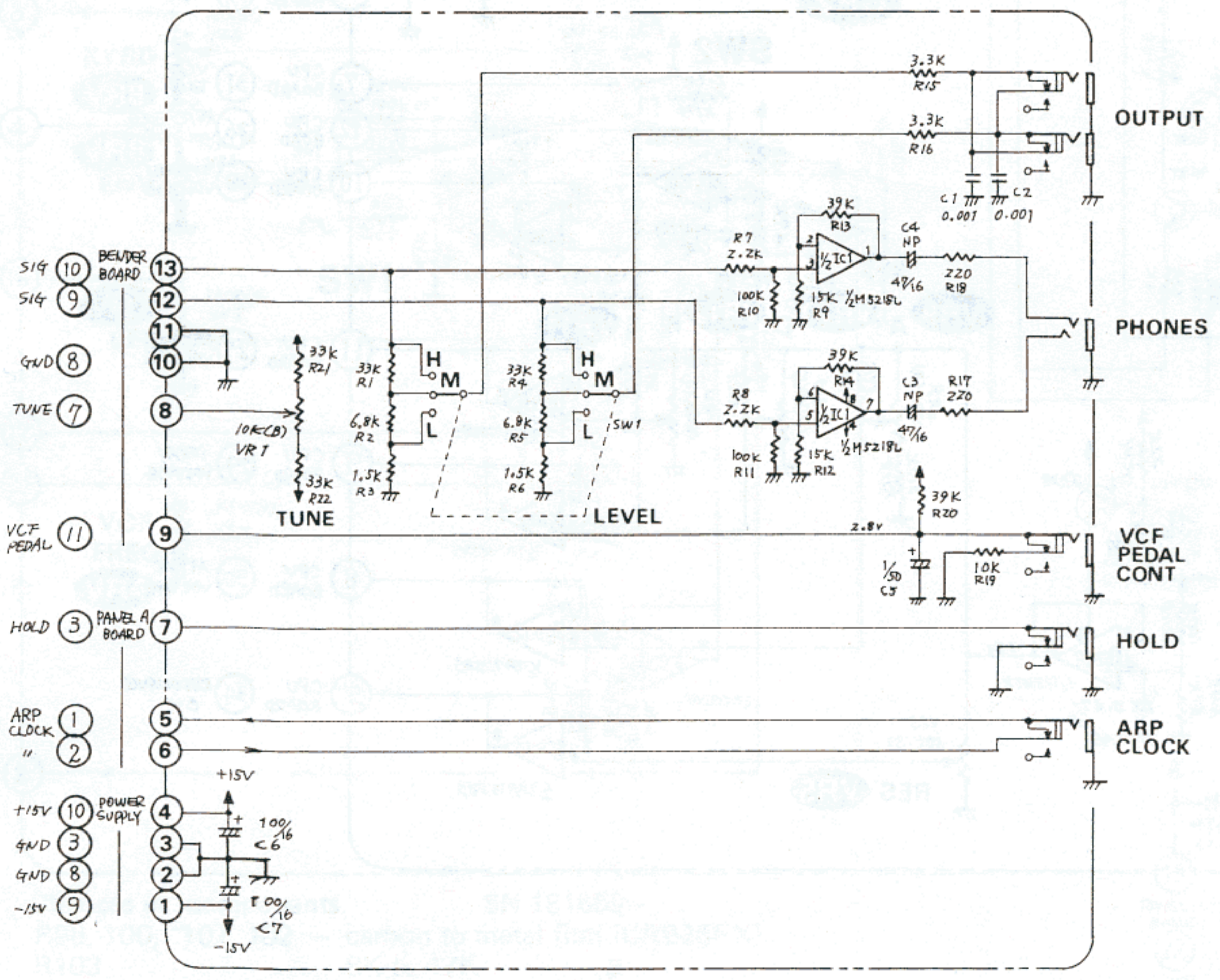
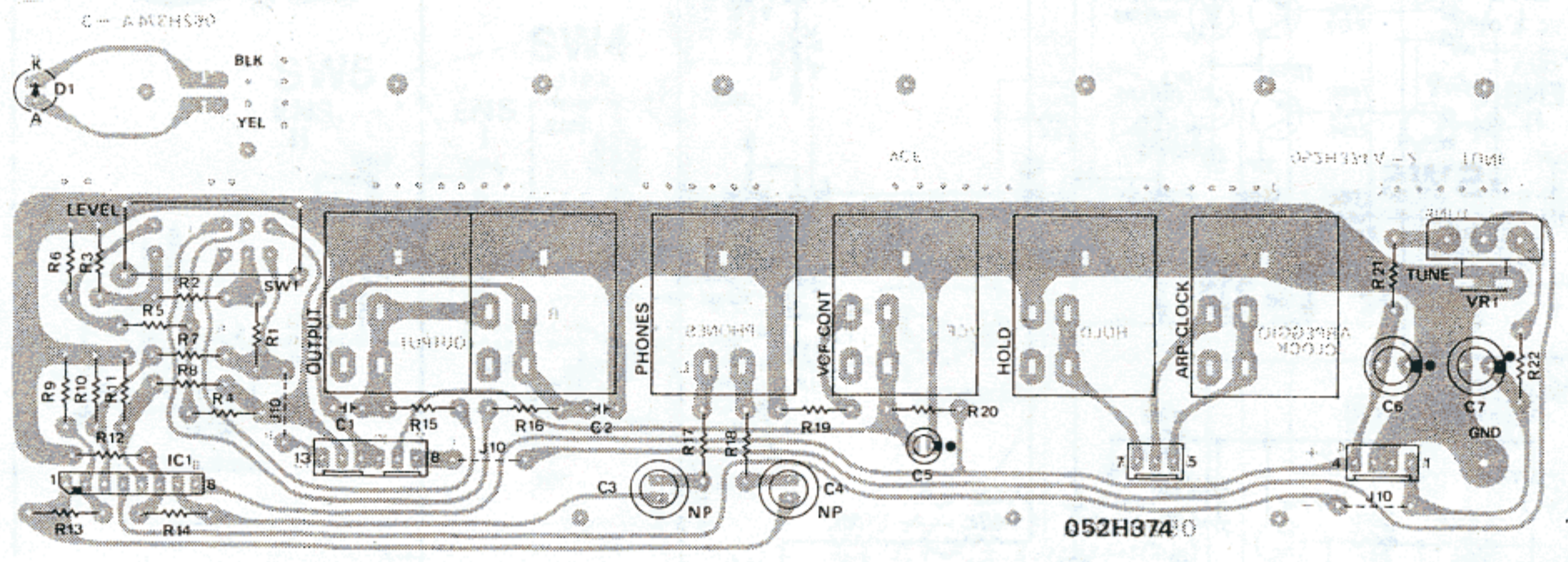
SW1 HSW0372-01-030
VR1 EVH-OTAS10B14

JK-3 JK-1, 2, 4, 5, 6

HLJ-0259-01-020
HLJ-0259-01-030



SW1 JK-1 JK-2 JK-3 JK-4 JK-5 JK-6 VR1



ADJUSTMENT SAMMARY

Use OSCILLOSCOPE unless otherwise specified.

No particular channel, test point, trimmer, etc. are defined in the procedures common to sextuple circuits. Begin with channel 1 (CH1).

KEY ASSIGNMENT

Some adjustments need to be done in unique key assign mode available only in TEST MODE.

TEST MODE

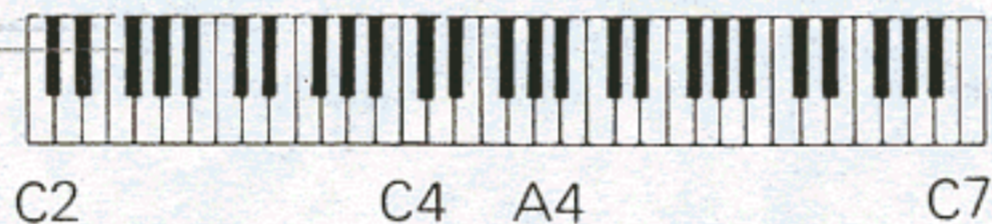
To enter test mode hold KEY TRANSPOSE until power is ON.

Select key assign mode through ARPEGGIO MODE selector:

- **UP (UNISON):** six voices sounds simaltenously
- **UP & DOWN (ROTARY):** as the name implies, CPU assigns channels (in the order numbered, example, 1, 2, ... 6, 1) to the keys played (legato or staccato), and remembers the last channel even after the key is released. New assignment will start with the next channel. Note that the first key does not always activate CH1. The above applies to repeated striking on the same key.
- **DOWN (NON-ROTARY):** The key first played is always assigned CH1. Until the objective channel is assigned, the preceding key(s) can not be released.

To escape TEST MODE turn power OFF. Allow 3 sec for CPU reset circuit before turning on again.

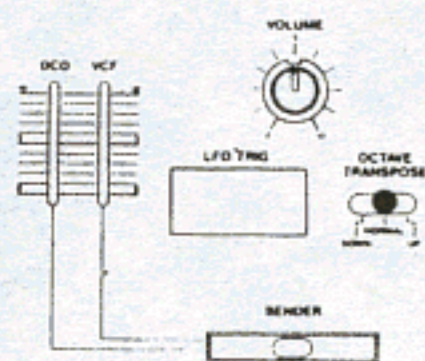
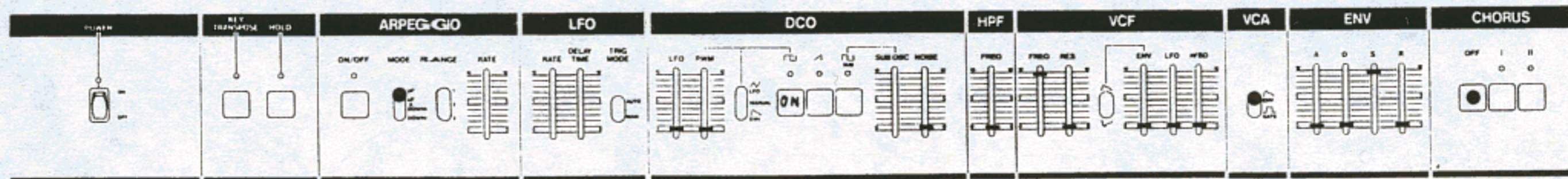
KEY DESIGNATION



DC SUPPLY VOLTAGE (Power Supply Board)

- **TEST POINTS:** terminal 10 (+15V); terminal 8 (ground) (Connect to digital voltmeter, DVM.)
1. Adjust VR1 for $+15 \pm 0.01V$.
 2. Verify voltage of -14.5 to $-15.5V$ at terminal 9 ($-15V$).

MASTER OSCILLATOR (CPU Board)



- **TEST MODE:** UP (UNISON)
- **CONTROLS:** TUNE (rear panel) at midpoint

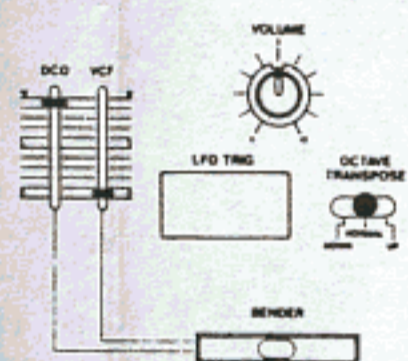
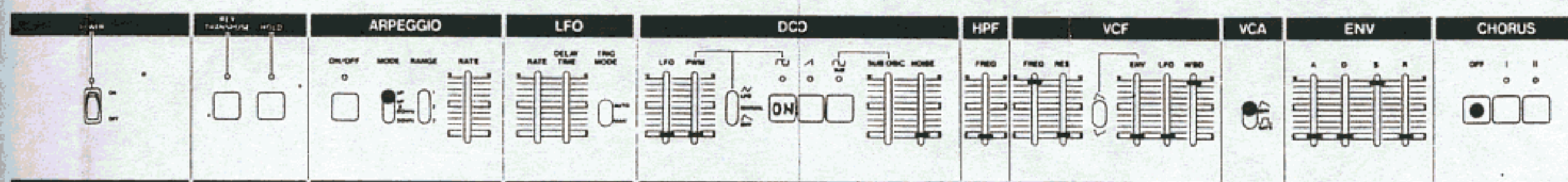
BIAS

- **TEST POINT:** TP-2 (VR39 wiper) (Connect to scope or DVM. Do not use low impedance meter.)
1. Adjust VR39 for $7.2 \pm 0.1V$.

TUNING

- **TEST POINT:** TP-3, pin 10 of IC55 or OUTPUT jack
1. While holding down A4 key, adjust L1 for 442Hz. L1 is very tricky, so readjust VR39 for fine tune, as necessary. This has little effect on BIAS adjustment.

BENDER CONTROL (BENDER Board)



- **TEST MODE:** UP
- **TEST POINT:** same as for TUNING, above

1. Use HOLD function. With E5 note on, tilt and hold BENDER lever at the leftmost position and adjust VR1 so that the frequency is 442Hz (A4 note).
2. HOLD D4 key. With BENDER at the rightmost, adjust VR2 so that frequency is 442Hz.

SAWTHOOTH WIDTH & LEVEL (CPU Board)

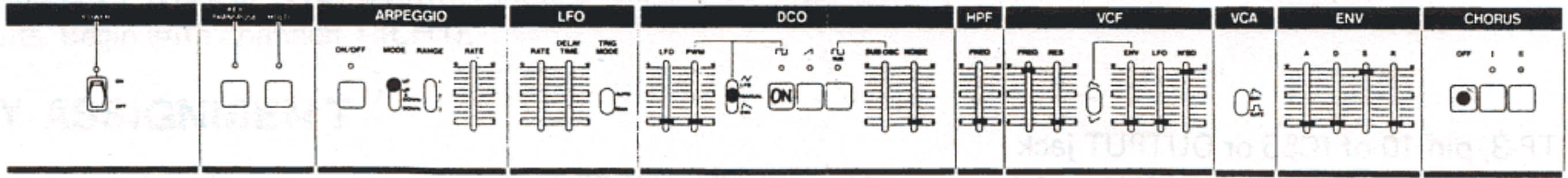
- **CONTROLS:** OCTAVE TRANSPOSE at NORMAL
 - **TEST POINT:** TP-3
 - **TEST MODE:** UP
1. Set VR37 and VR38 at midpoint.
 2. Striking C2 and C7 keys alternately (with break between notes), adjust WIDTH VR37 for the same amplitude on both keys.
 3. While holding C4 key down, adjust LEVEL VR38 for 12Vp-p. Next, check TP-3 of the remaining channels (2-6) for $12 \pm 0.5Vp-p$.

PULSE WIDTH (CPU Board, PANEL BOARD A)

- **CONTROLS:** DCO section – WAVEFORM-PWM; MODE-MANUAL; PWM slider-0
 - **TEST POINT:** pin 1 (CH1) of TP-4 (CPU board) (scope – 1V/div, 0.2ms/div)
 - **TEST MODE:** UP
1. While holding down B4 key, adjust VR9 of PANEL BRD A for a 496Hz rectangular of duty cycle 50. Check all other channels (pins 2-6) for 48-52 duty cycle.
 2. Set PWM slider to 10 and check every pin of TP-4 for 95 to 98% duty cycle.

VCA (CPU Board)

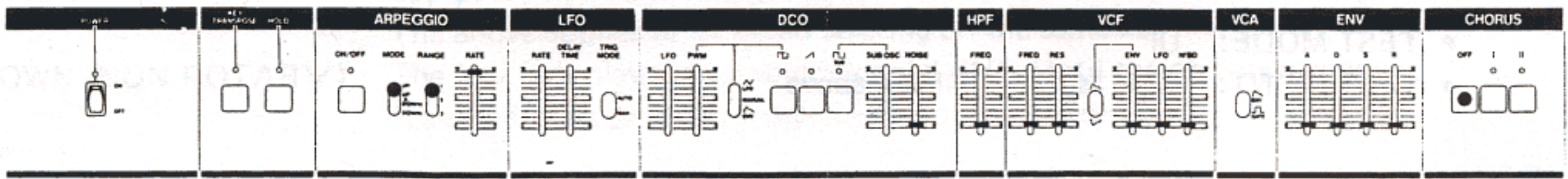
GAIN



- TEST POINT: TP-4 (pins 1-6)
- TEST MODE: UP

1. Depressing C5 key, adjust VCA GAIN VR4 for 4Vp-p.

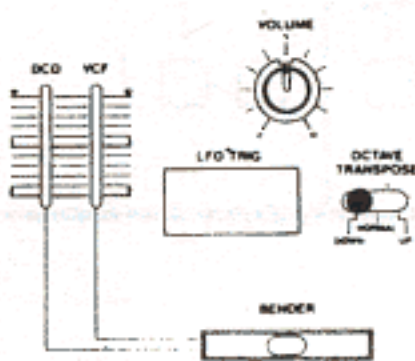
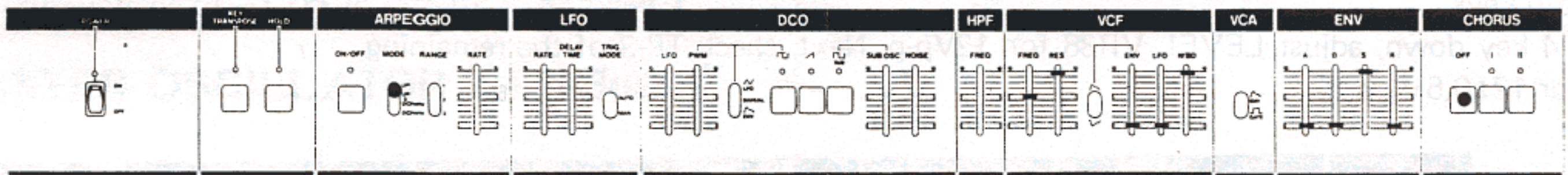
OFFSET



- TEST POINT: TP-4 (pins 1-6) (scope 0.2V/div)
- TEST MODE: Normal (Push ARPEGGIO. This overrides Test Key Assign Mode until pushed again.)

1. HOLD ON more than one note, 6 channels will be gated in sequence.
 2. Adjust OFFSET VR5 for reasonable straightness.

VCF (CPU Board)



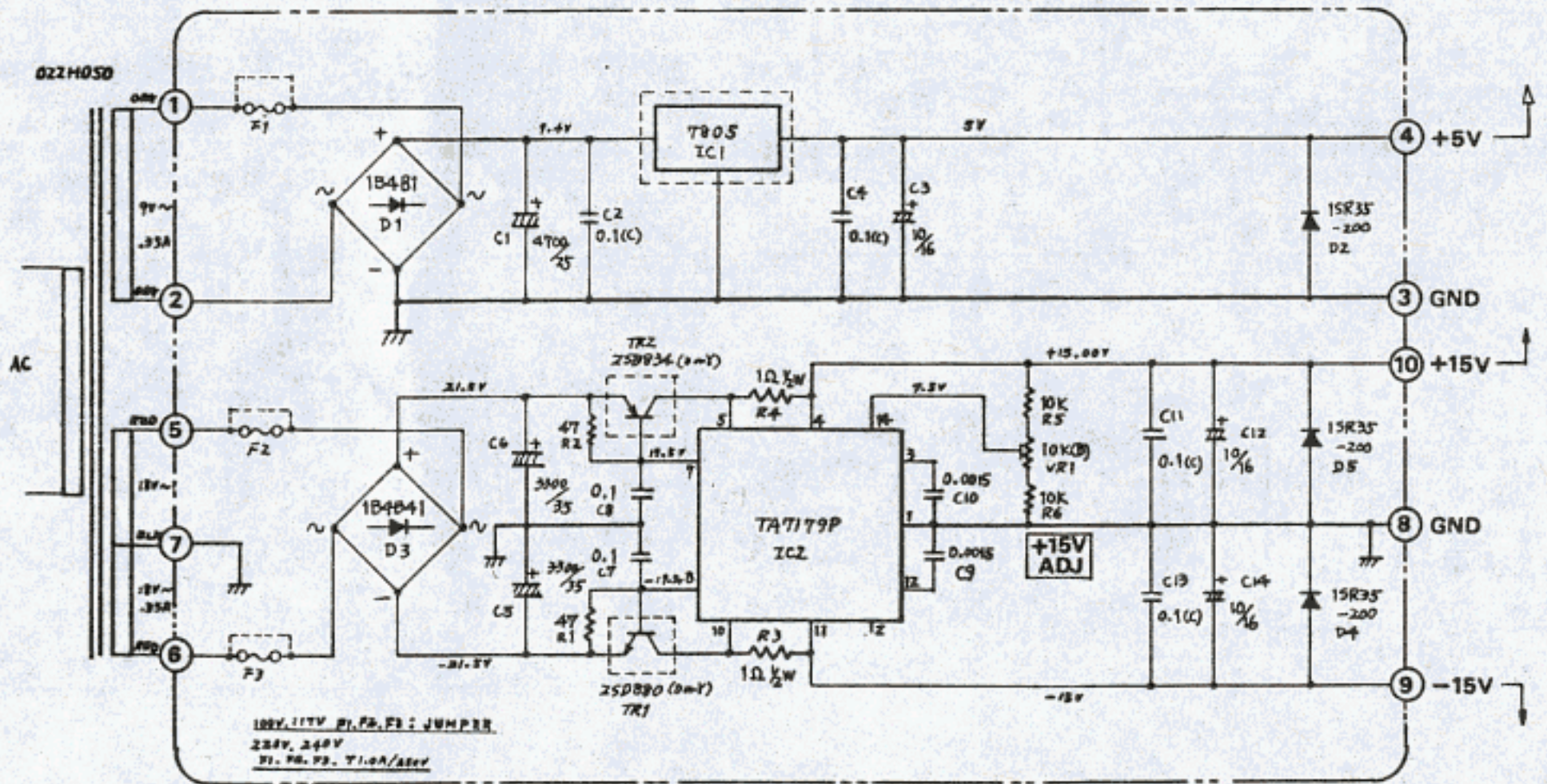
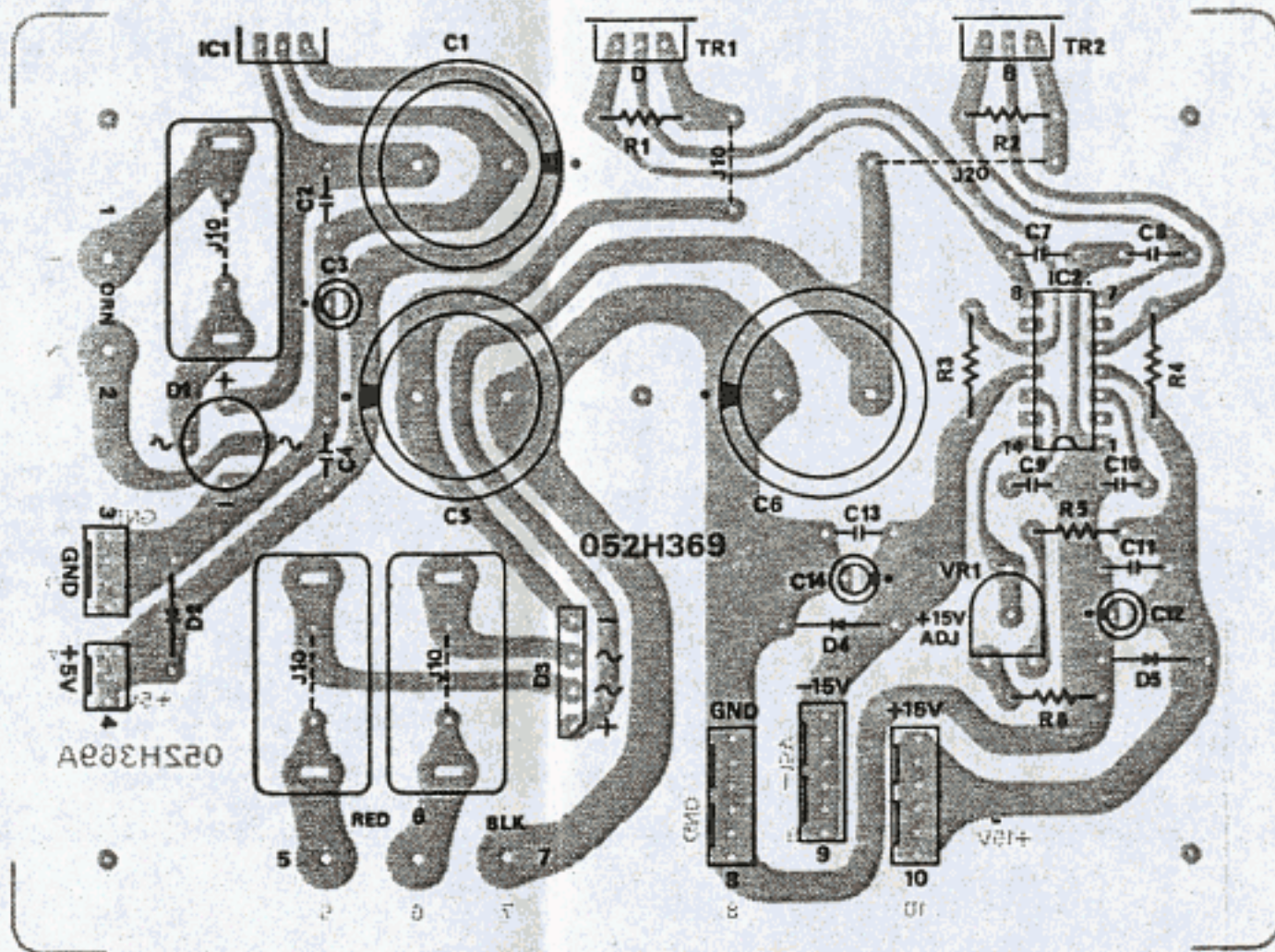
- TEST POINT: TP-4 (pins 1-6)
- TEST MODE: UP

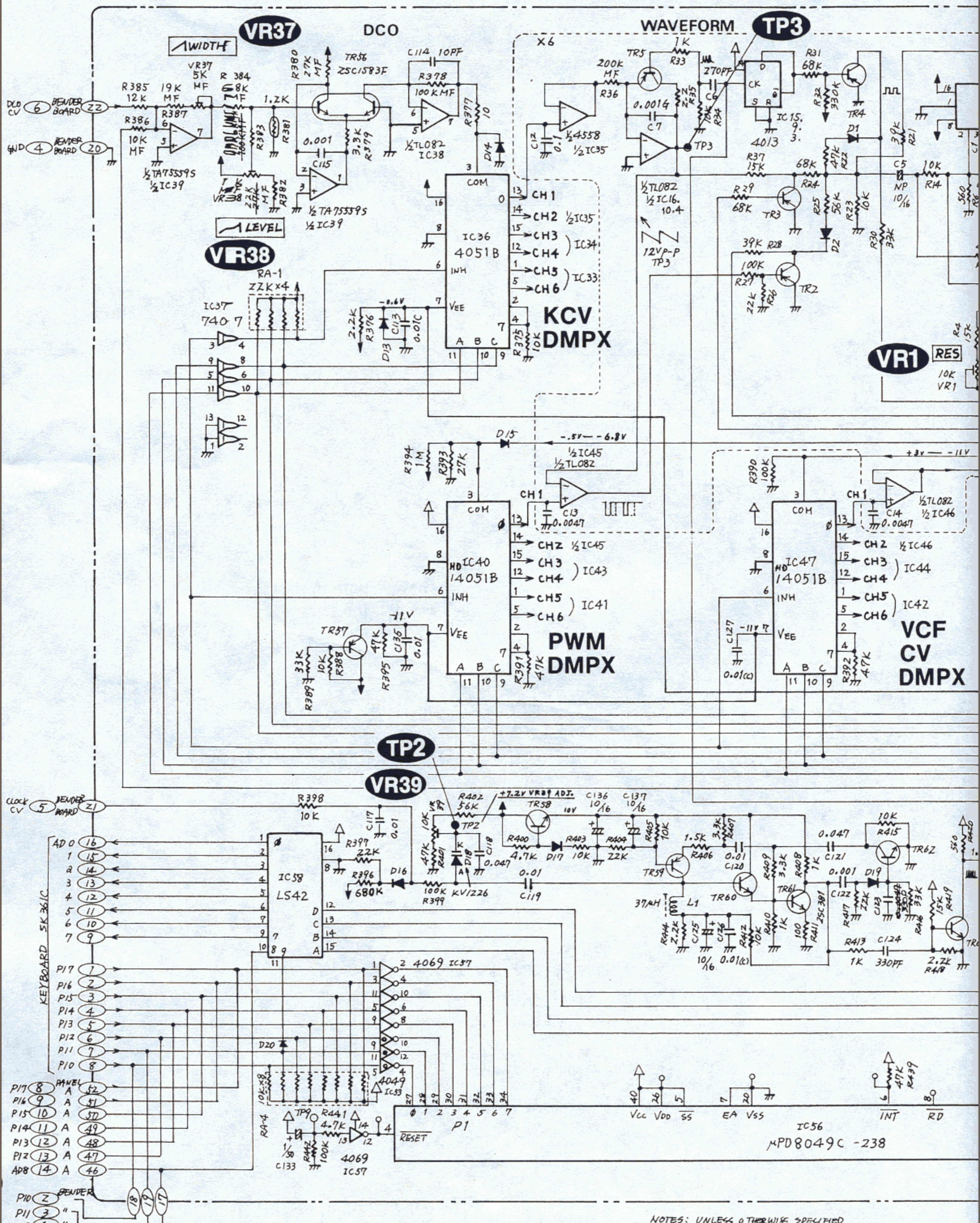
POWER SUPPLY BOARD

PSH081A (146H081A) 100/117V (less fuses)

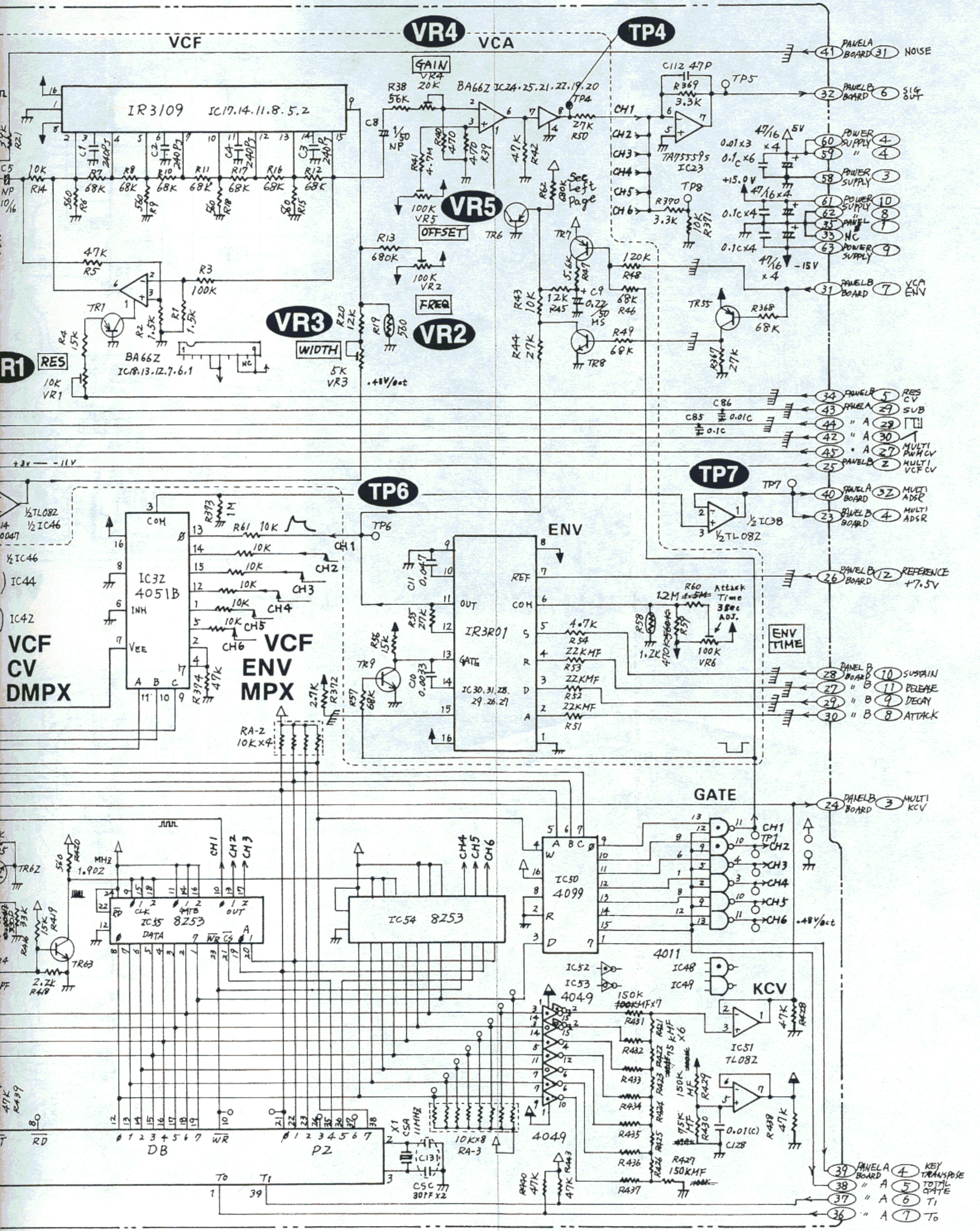
PSH083A (146H083A) 220/240V

(pcb 052H0369A)





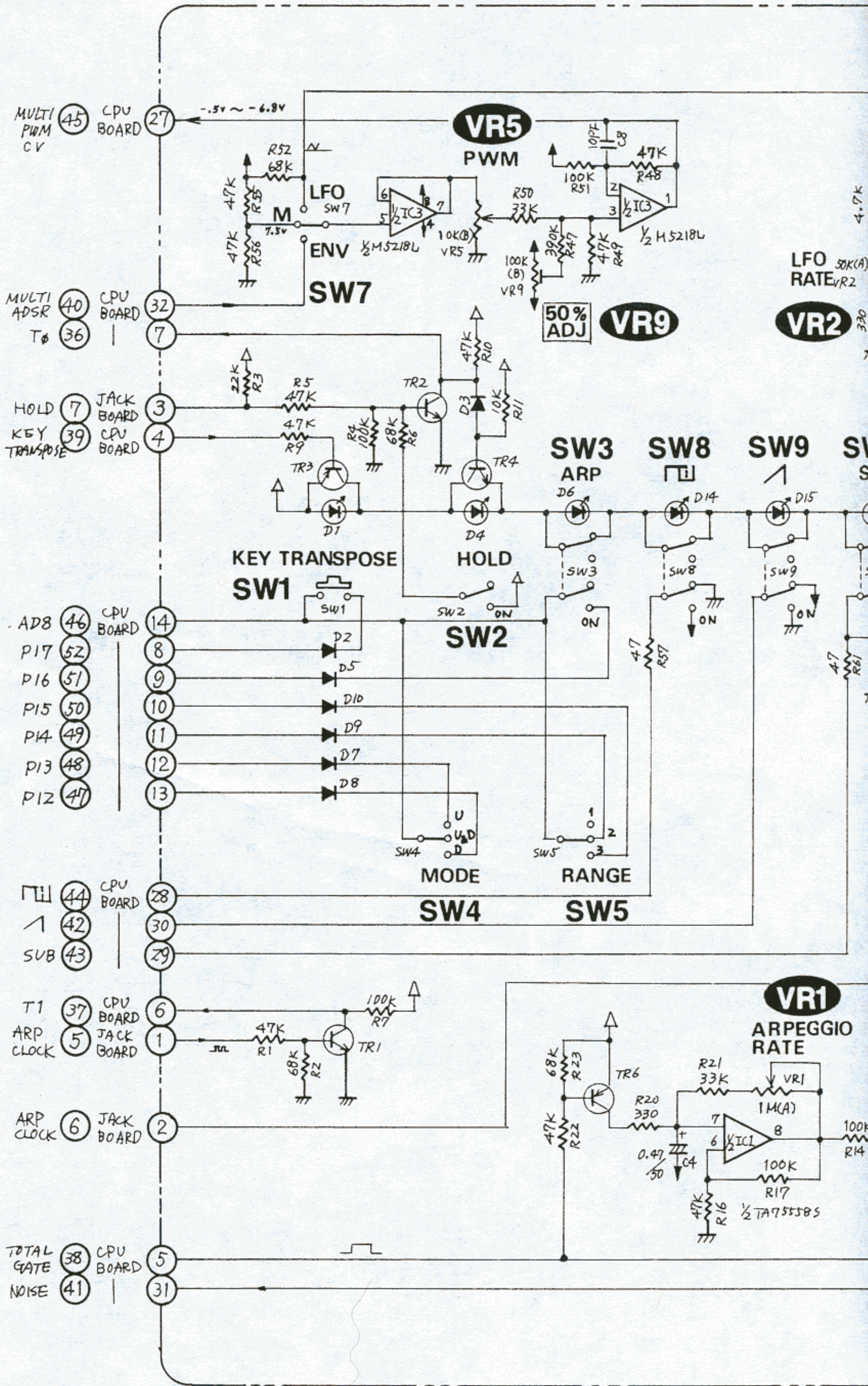
NOTES: UNLESS OTHERWISE SPECIFIED
 1) ALL NPN TRANSISTORS ARE ZSC1583F (490V)
 2) ALL PNP TRANSISTORS ARE ZSA1015 (490V)
 3) ALL...



3). ALL DIODES ARE 1S2473

- SW1:
SUT11A-1
- SW2, 3:
SUT11A-2
(push-lock)
- SW4, 5, 7:
SLE623-18P
- SW6:
SLE622-18P
- SW8-10:
SUT32A-1
(gang)
- Button:
white H36
orange H29
yellow H30

- VR1, 3:
EVA-TOHC14A16
- VR2, 4, 6, 7:
EVA-TOHC14A54
- VR5:
EVA-TOHC14B14

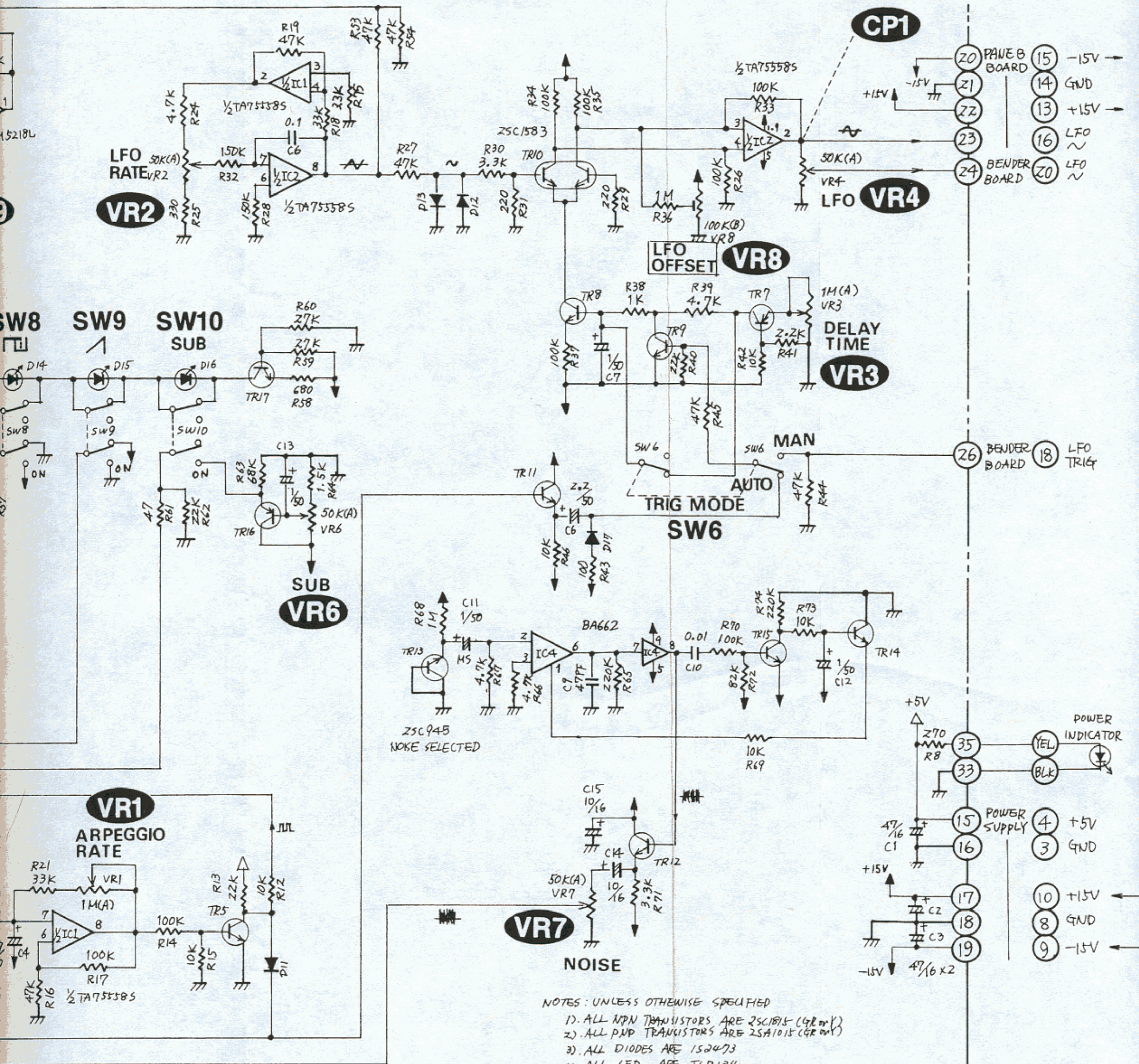


- MULTI PWM CV (45) CPU BOARD (27)
- MULTI ADSR T₀ (40) CPU BOARD (32)
- HOLD KEY TRANSPOSE (7) JACK BOARD (3)
- (39) CPU BOARD (4)
- AD8 (46) CPU BOARD (14)
- P17 (52) (8)
- P16 (51) (9)
- P15 (50) (10)
- P14 (49) (11)
- P13 (48) (12)
- P12 (47) (13)
- (44) CPU BOARD (28)
- (42) (30)
- SUB (43) (29)
- T1 ARP CLOCK (37) CPU BOARD (6)
- (5) JACK BOARD (1)
- ARP CLOCK (6) JACK BOARD (2)
- TOTAL GATE NOISE (38) CPU BOARD (5)
- (41) (31)

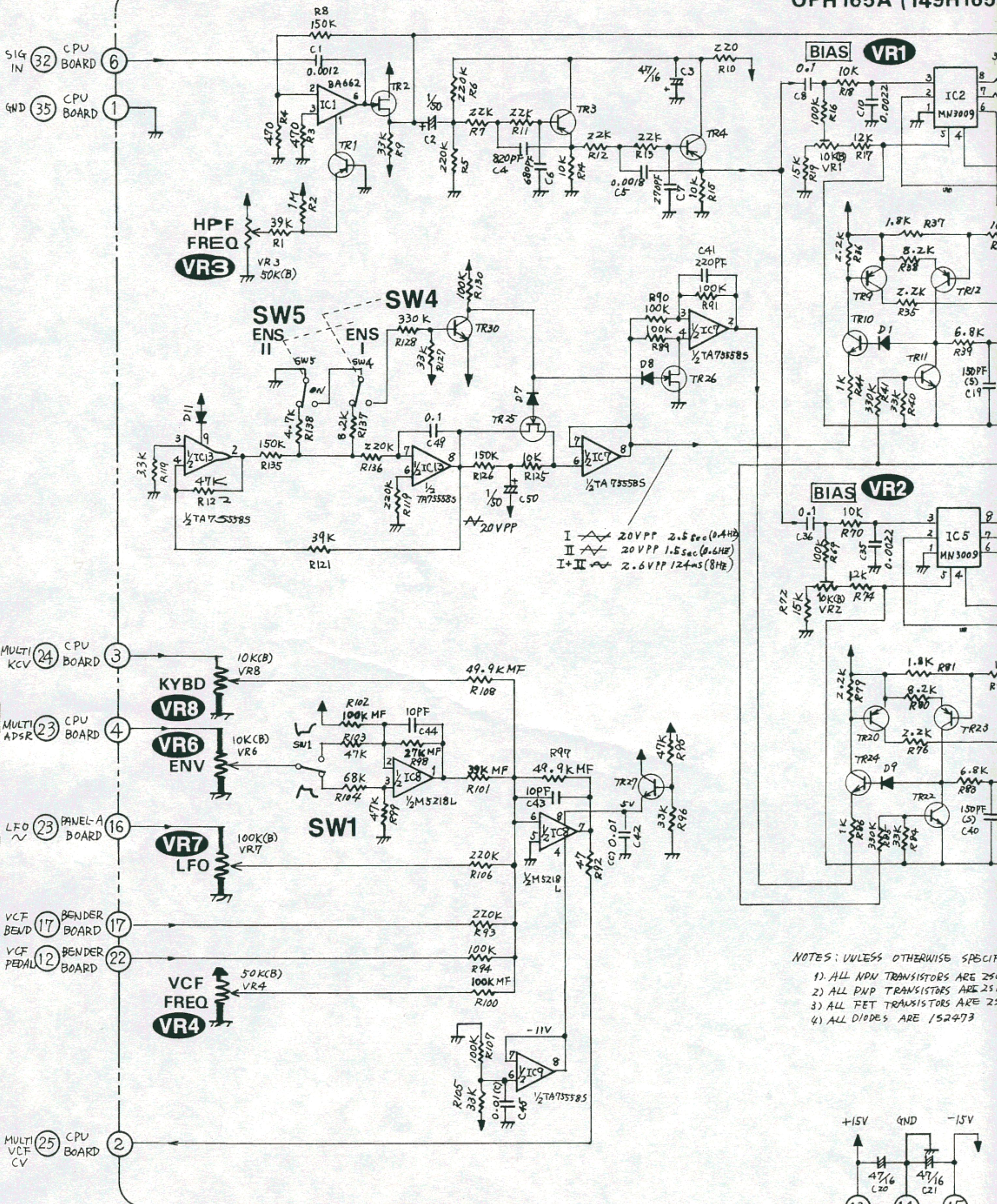
LFO RATE VR2
50K(A)
330

VR1 ARPEGGIO RATE
1M(A)
100K
R14
100K
R17
1/2 TA7558S
47K R16
0.47/50 C4
R20 330
R21 33K
TR6
68K R23
47K R22

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40



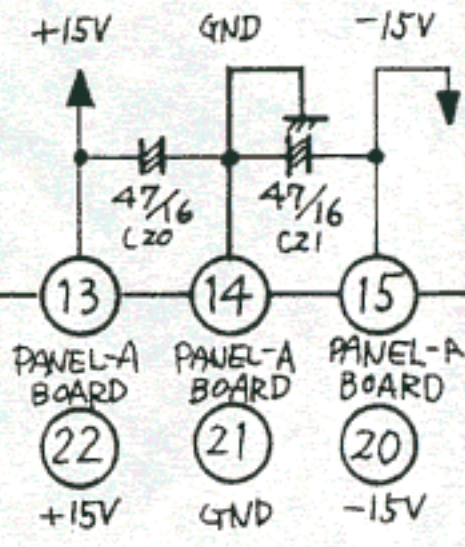
- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL NPN TRANSISTORS ARE 2SC1815 (48mV)
 2. ALL PNP TRANSISTORS ARE 2SA1015 (48mV)
 3. ALL DIODES ARE 1S2473
 4. ALL LED ARE TLR124



I Δ 20VPP 2.5sec (0.4Hz)
 II Δ 20VPP 1.5sec (0.6Hz)
 I+II Δ 2.6VPP 12 μ s (8Hz)

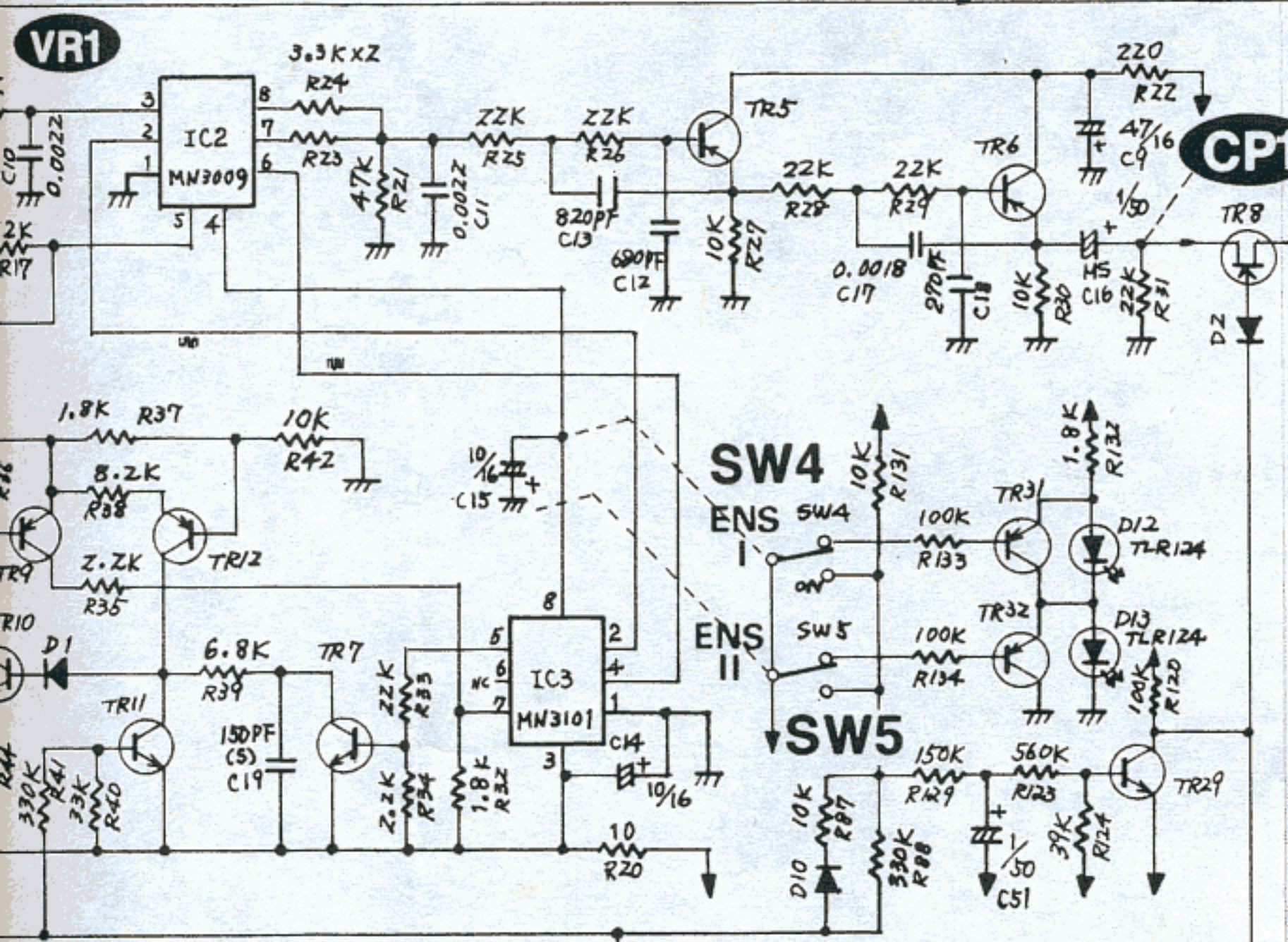
NOTES: UNLESS OTHERWISE SPECIFIED
 1) ALL NPN TRANSISTORS ARE 2N3904
 2) ALL PNP TRANSISTORS ARE 2N3906
 3) ALL FET TRANSISTORS ARE 2N3858
 4) ALL DIODES ARE 1N4148

Changes in components SN 181650—
 R98, 100, 101, 102 — carbon to metal film (CRB25FX)
 R103 — 8K to 47K
 R104 — 47K to 68K

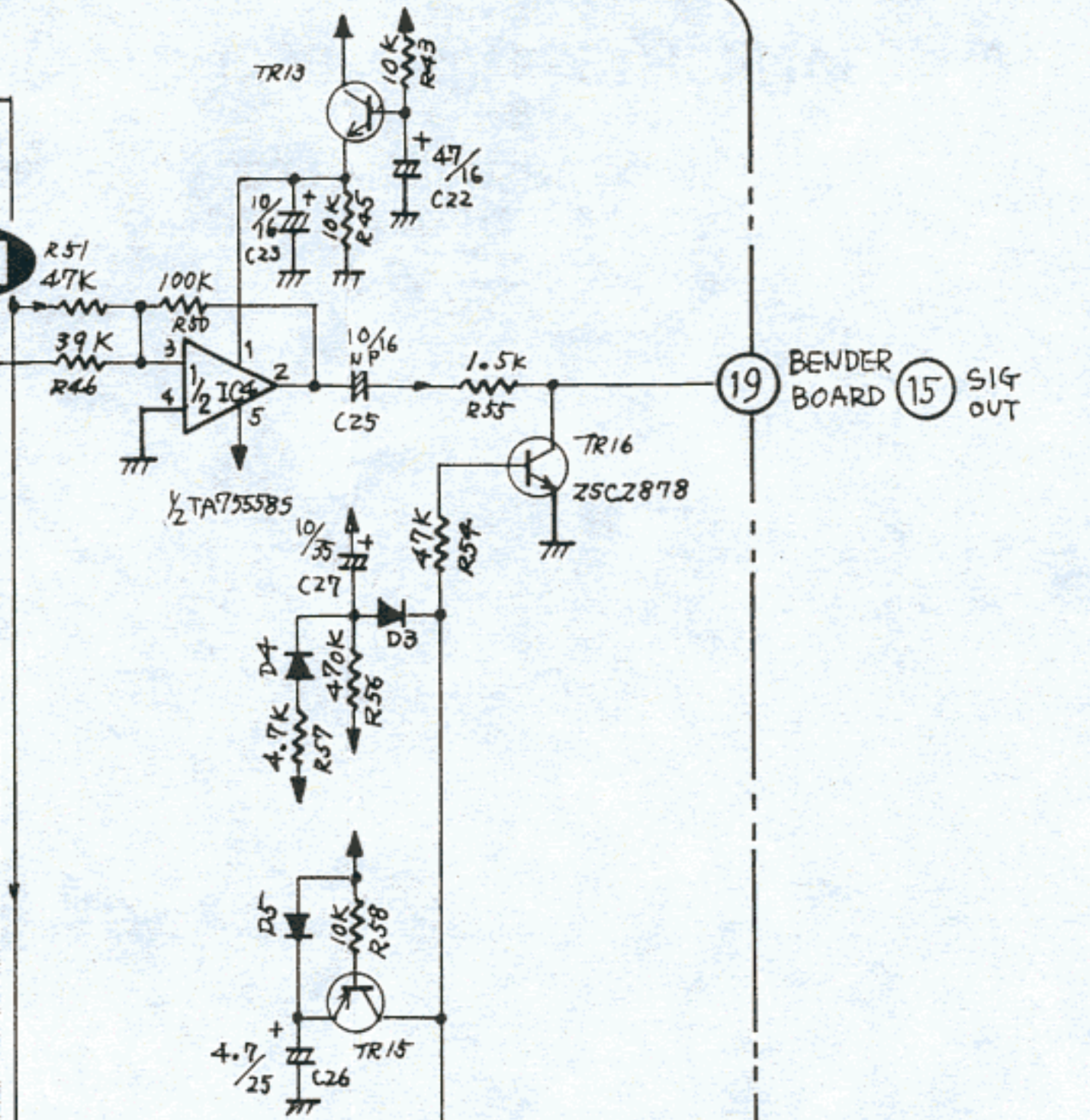


55A (149H165A)

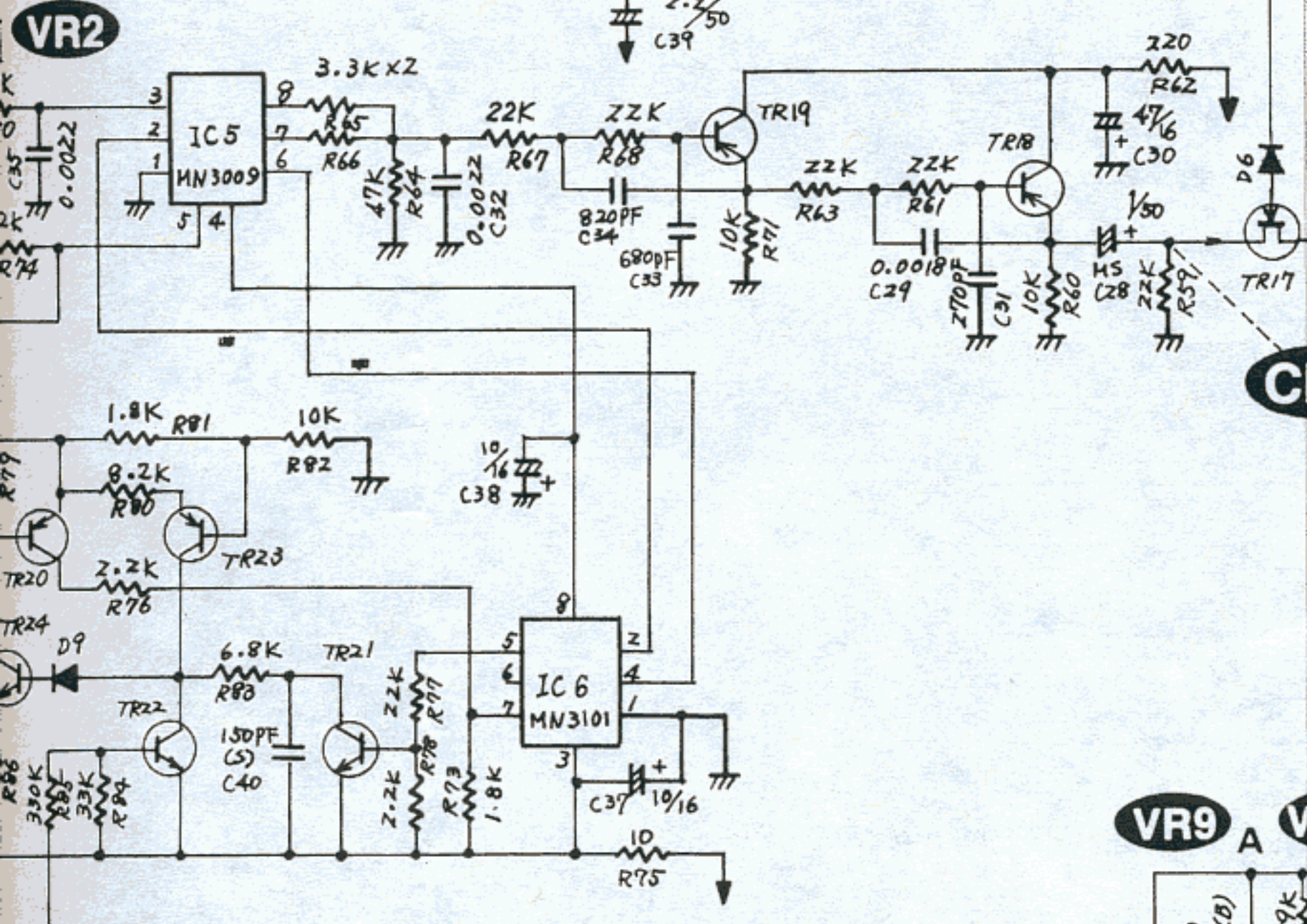
VR1



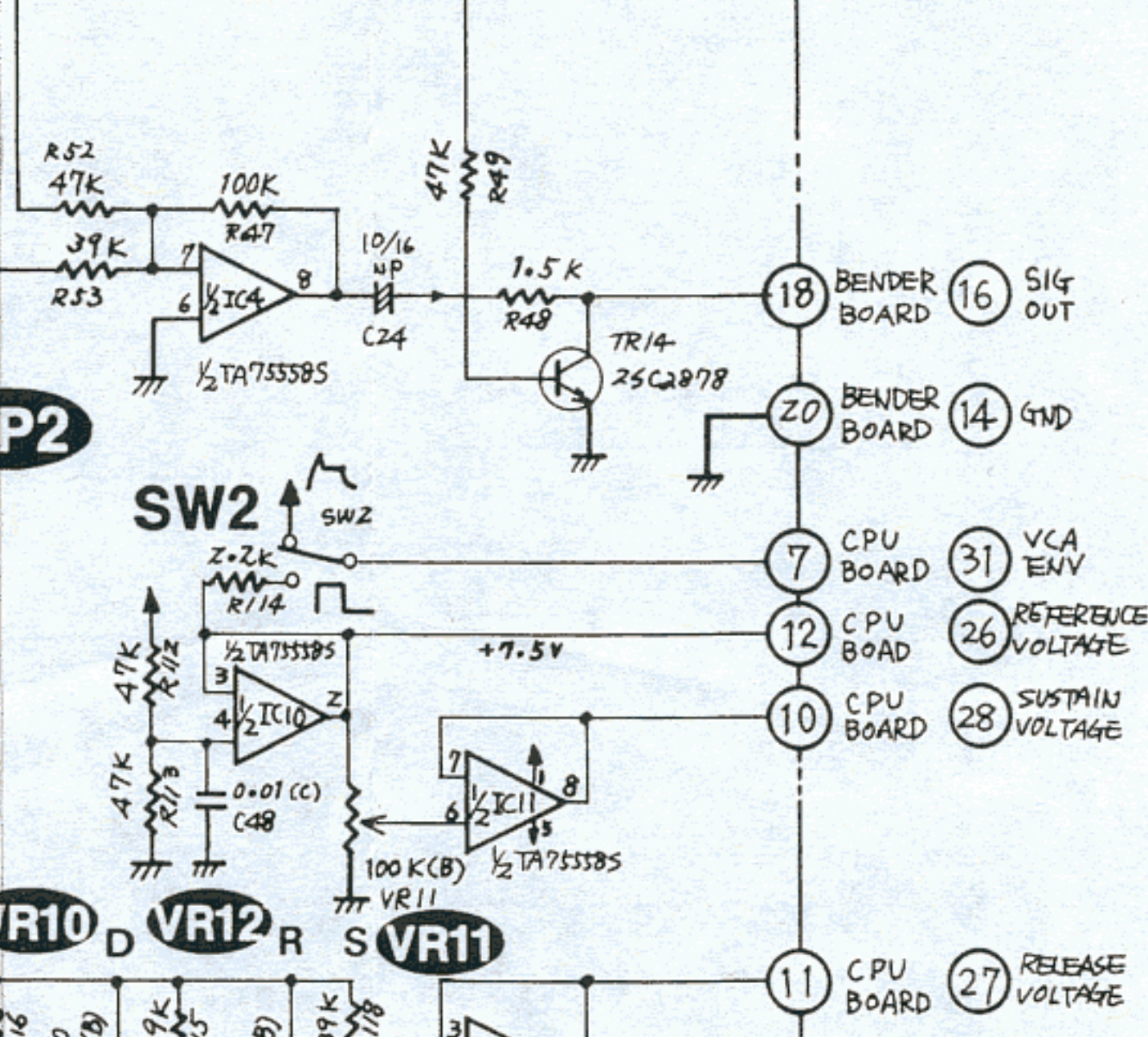
CP1



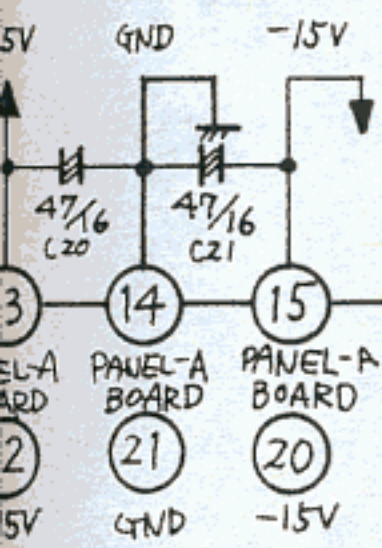
VR2



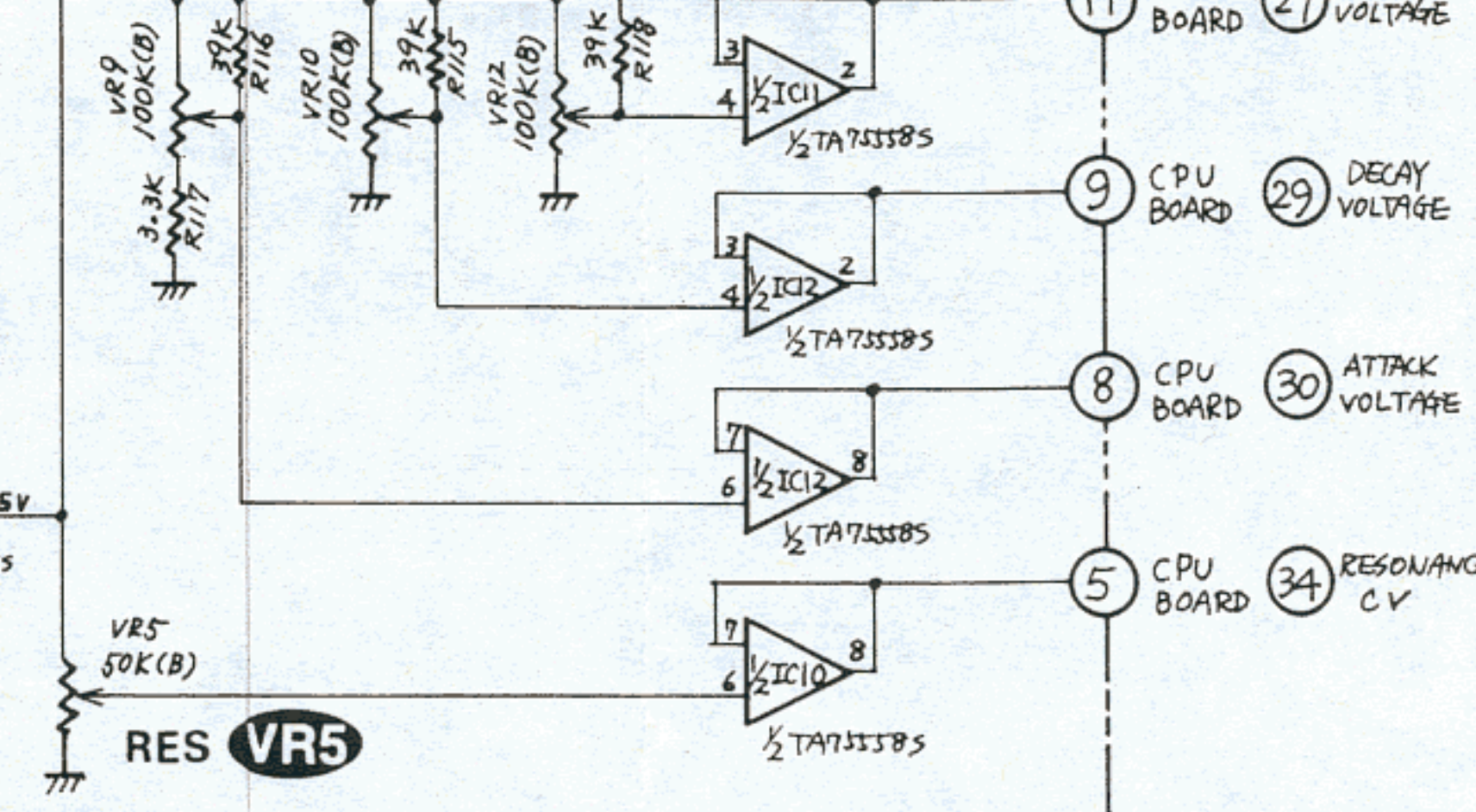
CP2



UNLESS OTHERWISE SPECIFIED
 NPN TRANSISTORS ARE 2SC1815 (GRM)
 PNP TRANSISTORS ARE 2SA1015 (GRM)
 FET TRANSISTORS ARE 2SK30A (GRM)
 DIODES ARE 1S2473



VR9 A VR10 D VR12 R S VR11



- 19 BENDER BOARD 15 SIG OUT
- 18 BENDER BOARD 16 SIG OUT
- 20 BENDER BOARD 14 GND
- 7 CPU BOARD 31 VCA ENV
- 12 CPU BOARD 26 REFERENCE VOLTAGE
- 10 CPU BOARD 28 SUSTAIN VOLTAGE
- 11 CPU BOARD 27 RELEASE VOLTAGE
- 9 CPU BOARD 29 DECAY VOLTAGE
- 8 CPU BOARD 30 ATTACK VOLTAGE
- 5 CPU BOARD 34 RESONANCE CV