ADJUSTMENT

Adjustment must be performed in the order listed below.

POWER SUPPLY BOARD
↓
ENTERING TEST MODE
↓
MODULE BOARD
↓
JACK BOARD
↓
CHECKING MIDI FUNCTION

CAUTION

Allow at least 10 minutes for warmup period; mandatory upon VCF adjustments.

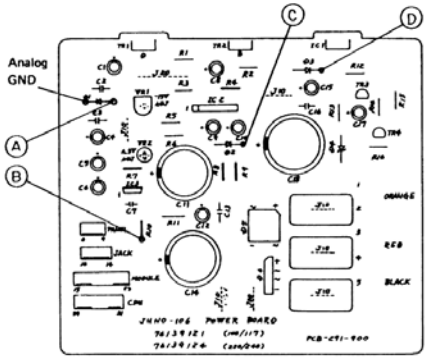
1. DC SUPPLY VOLTAGES (POWER SUPPLY BOARD)

CAUTION

Any slight adjustment on this board must be followed by a complete adjustment of the rest. Do not touch the trimmers inadvertently before checking the test points for voltage.

Test instrument: Digital voltmeter with 10mV resolution.

1-1. Adjust VR1 for −15V ± 10mV at Ⓐ.
1-2. Adjust VR2 for +5V ± 10mV at Ⓑ.
1-3. Verify +15V ± 0.8V at Ⓒ.
1-4. Verify +5V ± 0.5V at Ⓓ.



TEST PROGRAM

The following adjustments can be performed with the aid of Test Program stored in the CPU on the CPU Board.

To enter the test mode, hold KEY TRANSPOSE down and turn the JUNO-106 ON; the display window will read 88 indicating that the unit is in the test mode. During the test mode, each switch serves as follows:

SWITCH		FUNCTION DURING THE TEST MODE
KEY ASSIGNMENT	POLY 1	UNISON: All six modules are assigned simultaneously to a key being pressed.
	POLY 2	NON ROTARY: The voices are assigned to the keys played in the order CH1 to CH6 as long as the previous keys are held down. One-key staccato always sounds CH1 only. The display window indicates currently assigned channel number.
	POLY 1 & POLY 2	ROTARY: The voices are assigned in cyclic manner; 7th key steals the voice from the 1st key. The display window indicates current channel number.
BANK GROUP	GROUP A GROUP B	HOLD OFF HOLD ON
TAPE CHECK LED	SAVE LED VERIFY LED	MIDI FUNCTION II CHECK MIDI FUNCTION I CHECK
MIDI CH		Turns D/A output to 0V

Pressing BANK buttons also evokes Test Program and sets the front panel controls as below. PATCH buttons have no effects in the test mode.

BANK NO.	TEST FUNCTION	LFO		DCO								HPF	VCF						VCA		ENV				CHORUS
		RATE	DELAY	RANGE	⊓	⩘	SUB	NOISE	LFO	PWM	PWM MODE		FREQ	RESO	ENV	ENV POLA	LFO	KYBD	⩘/⊓	LEVEL	A	D	S	R	
1	VCA OFFSET	5	0	8′			0	0	0	0	M	1	10	0	0	N	0	10	⩘	5	0	0	0	0	0
2	SUB OSC	5	0	8′			10	0	0	0	M	1	10	0	0	N	0	10	⩘	5	0	0	10	0	0
3	VCA GAIN VCF	5	0	8′			0	0	0	0	M	1	6.3	10	0	N	0	10	⩘	5	0	0	10	0	0
4	⩘	5	0	8′		ON	0	0	0	0	M	1	10	0	0	N	0	10	⩘	5	0	0	10	0	0
5	PWM 50%	5	0	8′	ON		0	0	0	0	M	1	10	0	0	N	0	10	⩘	5	0	0	10	0	0
6	NOISE LEVEL	5	0	8′			0	10	0	0	M	1	10	0	0	N	0	10	⩘	5	0	0	10	0	0
7	VCF HIGH LOW	5	0	8′			0	0	0	0	M	1	10	10	0	N	0	10	⩘	5	0	0	10	0	0
8	RE-TRIGGER	5	0	8′	ON		0	0	0	0	M	1	10	0	0	N	0	10	⩘	5	0	1.3	0	1.3	0

Not all TEST FUNCTIONs are involved in the adjustment.

Edit functions also are active in test mode; when an edit is made, display window lights a dot. To return to the test mode, press the same BANK button again.

2. DCO CV OFFSET (MODULE BOARD)

Test instrument: Voltmeter (1mV resolution)
Test point: TP3
Key assignment: POLY 1 (UNISON during test mode).

2-1. Press MIDI CH button; D/A converter turns its output to 0V.

CAUTION

Pressing any key on the keyboard releases MIDI CH, letting the D/A to develop voltage according to that key. Press MIDI CH again to defeat the key voltage.

2-2. Adjust VR33 for 0V reading.
2-3. Leave MIDI CH ON for the next adjustment 3.

3. VCA BIAS (MODULE BOARD)

Test instrument: Voltmeter (1mV resolution)
Test point: TP7
Key assignment: POLY 1 (UNISON during test mode).

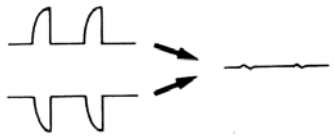
3-1. Press MIDI CH. Refer to "CAUTION in 2-1".
3-2. Adjust VR34 for a reading within +0.25V to +0.27V.

4. VCA OFFSET (MODULE BOARD)

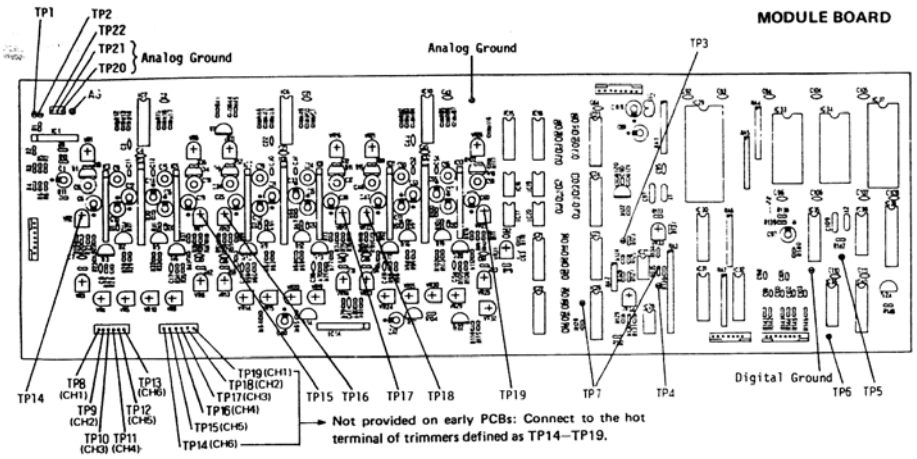
Test instrument: Oscilloscope
Test point. TP8 (CH1) to TP13 (CH6)
BANK: 1
Key assignment: POLY 1 (UNISON during test mode)

4-1. Adjust the following trimmers, respectively, for the minimum thumps.

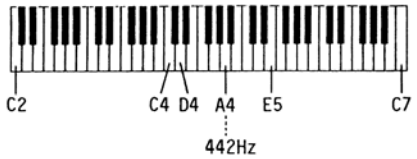
VR NO.	30	25	20	15	10	5
CH NO.	1	2	3	4	5	6



MODULE BOARD



KEY DESIGNATION



5. VCF RESONANCE (MODULE BOARD)

CAUTION

This adjustment must be done after 10 minutes has passed and after 3. VCA BIAS has been finished.

Test instrument:	Oscilloscope
Test point:	TP19 (CH1) to TP14 (CH6)
Key assignment:	POLY 1 (UNISON during test mode).
BANK:	3

5-1. While holding down C4 key, adjust the trimmers listed below, respectively, for 4.8Vp-p sine wave.

VR NO.	26	21	16	11	6	1
CH NO.	1	2	3	4	5	6

6. VCA GAIN (MODULE BOARD)

CAUTION

This adjustment must follow 5. VCF RESONANCE.

Test instrument:	Oscilloscope
Test point:	TP8 (CH1) to TP13 (CH6)
Key assignment:	POLY 1 (UNISON during test mode)
BANK:	3

6-1. While holding down C4 key, adjust the following trimmers, respectively, for 6Vp-p sinewave.

VR NO.	27	22	17	12	7	2
CH NO.	1	2	3	4	5	6

7. VCF FREQUENCY (MODULE BOARD)

CAUTION

This adjustment must be performed after 10-minute warmup has passed.

Test instrument:	Frequency counter or Tuner
Test point:	TP8 (CH1) to TP13 (CH6), or OUTPUT
Key assignment:	POLY 1 (UNISON during test mode) or POLY 1 + POLY 2 (ROTARY during test mode) – when checking at OUTPUT
BANK:	3

7-1. While holding C4 key, adjust the trimmers listed below, respectively, for 248Hz (B3 pitch).

VR NO.	29	24	19	14	9	4
CH NO.	1	2	3	4	5	6

8. VCF WIDTH (MODULE BOARD)

CAUTION

Perform this adjustment after at least 10-minute warmup.

Test instrument:	Frequency counter or Tuner
Test point:	TP8 (CH1) to TP13 (CH6), or OUTPUT (tuner method)
Key assignment:	POLY 1 or POLY 1 + POLY 2 (OUTPUT)
BANK:	3

8-1. Holding C6 key down, adjust each trimmer listed below respectively for 992Hz (equal to B5 note).

VR NO.	28	23	18	13	8	3
CH NO.	1	2	3	4	5	6

NOTE: Procedures 7 and 8 interact. Repeat the steps in both paragraphs until satisfactory result is obtained (within ± 10 cents on the tuner).

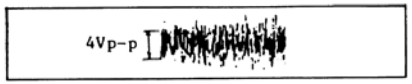
9. NOISE LEVEL (MODULE BOARD)

CAUTION

6. VCA GAIN must have been finished before this adjustment is performed.

Test instrument:	Oscilloscope
Test point:	TP8
Key assignment:	POLY 1
BANK:	6

9-1. Holding any key on the keyboard down, adjust VR32 for 4Vp-p on the scope.



10. PWM (MODULE BOARD)

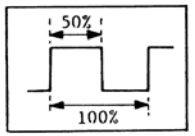
CAUTION

2. DCO CV OFFSET must have been finished.

50%

Test instrument:	Oscilloscope
Test point:	TP8 (CH1) to TP13 (CH6)
Key assignment:	POLY 1
BANK:	5

10-1. While holding C4 key down, adjust VR31 for a 50% duty cycle.



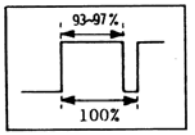
Tolerance: 48–52%

10-2. Confirm that the duty cycles of the rest channels (TP9 – TP13) are within 48 – 52%.

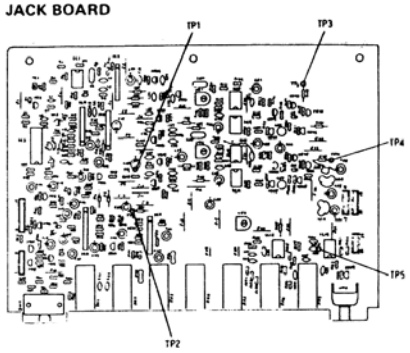
95%

10-3. Holding C4 key down, confirm that duty cycle of all channels are within 93 – 97% with PWM set at 10.

NOTE: If, incidentally, the PWM knob has been set at 10, lower it then raise to 10 again.



JACK BOARD

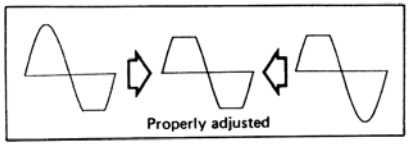


11. CHORUS BIAS (JACK BOARD)

Test instrument:	Oscilloscope, Audio generator
Test point:	TP1 (CH1), TP2 (CH2)
VCA LEVEL:	0
CHORUS:	I

11-1. Feed 10Vp-p, 1kHz, sine wave into TP2 of the MODULE BOARD.

11-2. Adjust VR1 (CH1) and VR2 (CH2) on the JACK Board respectively so that positive and negative halve are symmetrical with respect to the center horizontal line.



12. LOAD OFFSET (JACK BOARD)

Test instrument:	Voltmeter with 1mV resolution
Test point:	TP5

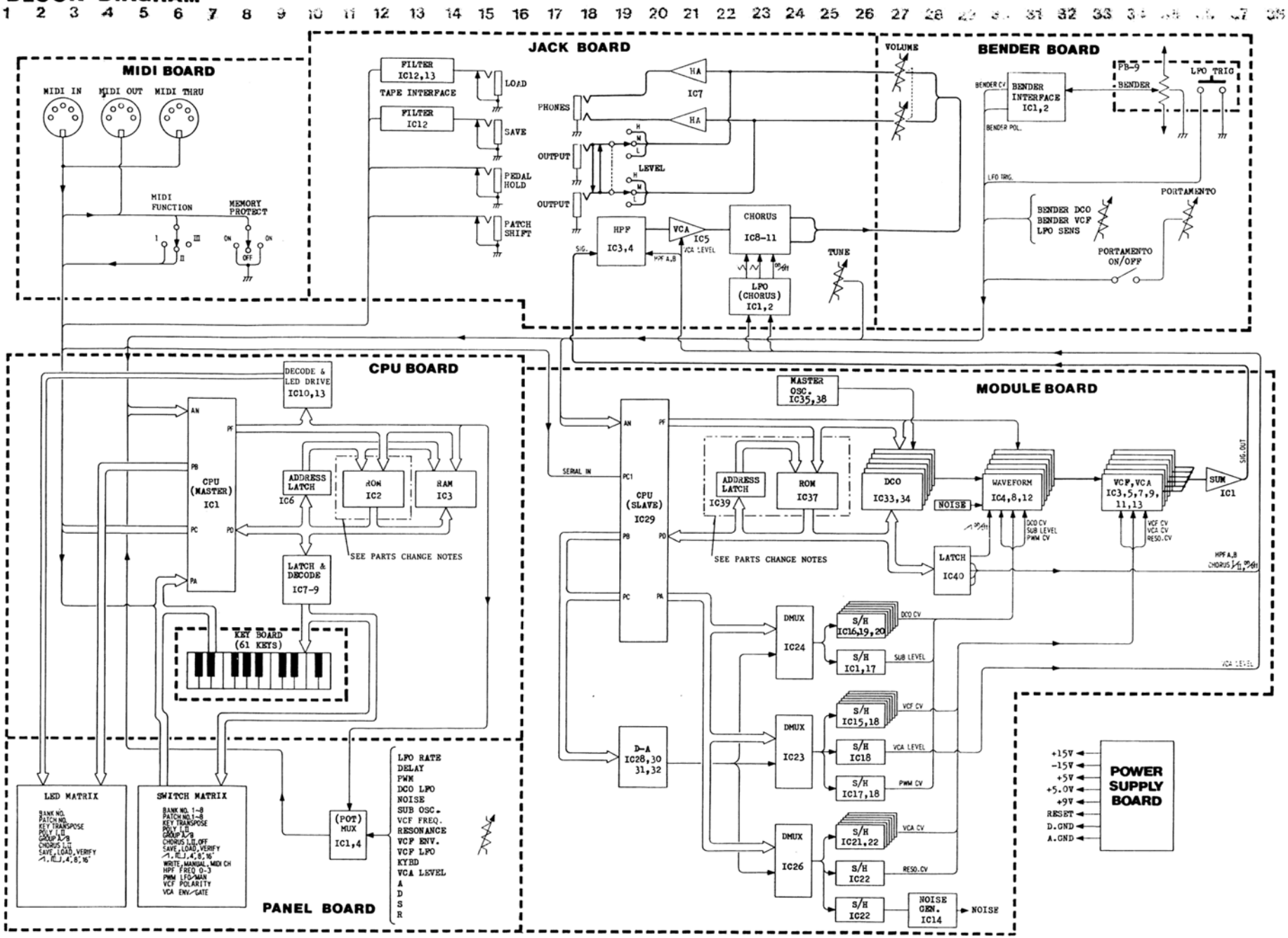
12-1. Adjust VR3 for 0mV reading.

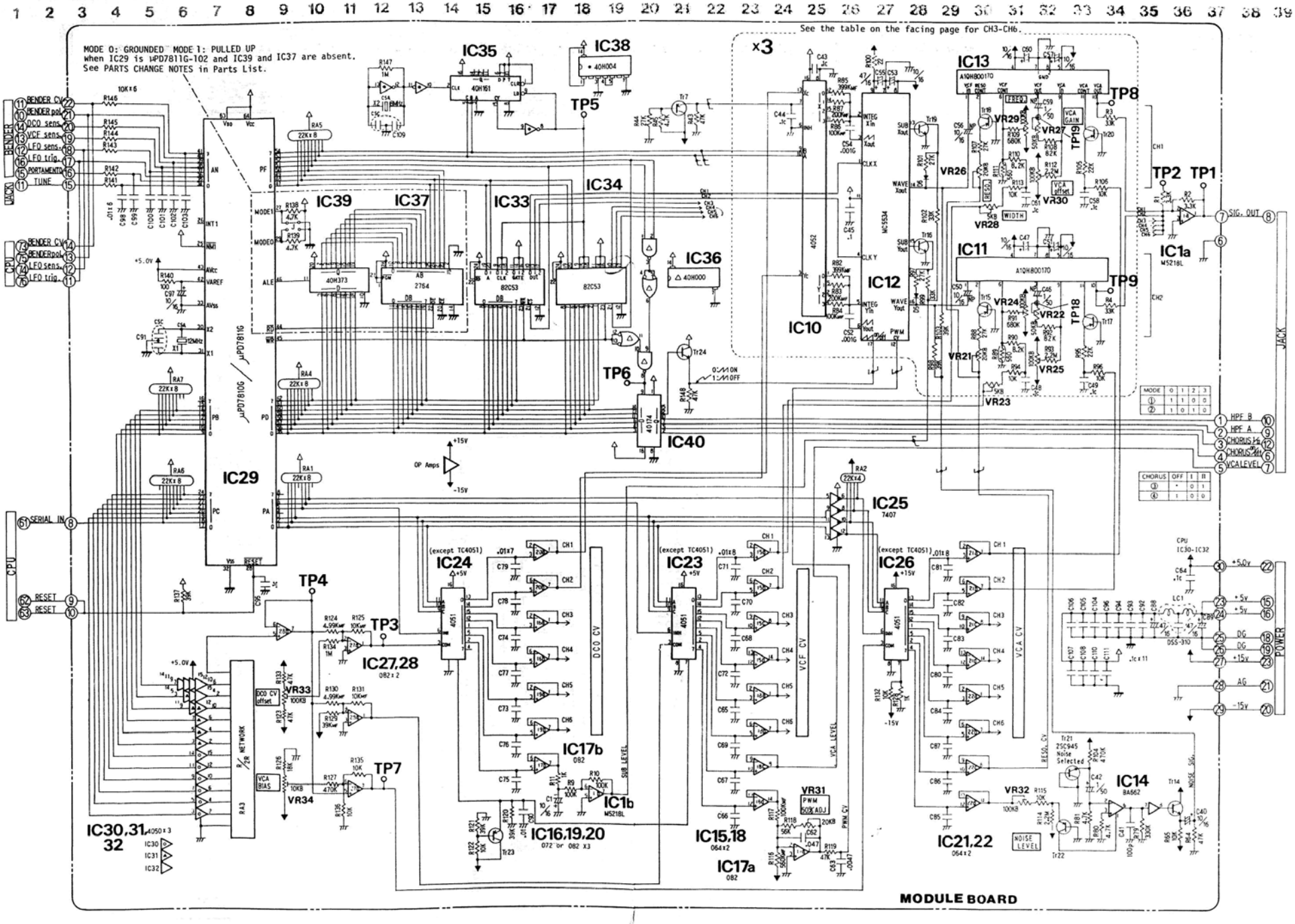
13. MIDI FUNCTION SWITCH CHECK

13-1. Verify the following with FUNCTION set at respective position.

I: only VERIFY LED lights
II: only SAVE LED lights
III: no LEDs light

BLOCK DIAGRAM




MODE 0: GROUNDED MODE 1: PULLED UP
When IC29 is μPD7811G-102 and IC39 and IC37 are absent.
See PARTS CHANGE NOTES in Parts List.
See the table on the facing page for CH3-CH6.
x3
IC35
IC38
TP5
IC39
IC37
IC33
IC34
IC36
IC29
IC40
IC13
IC12
IC10
IC11
IC1a
TP8
TP2
TP1
TP9
TP6
TP4
TP3
IC27,28
IC24
IC23
IC26
IC25
IC17b
IC1b
IC16,19,20
IC15,18
IC17a
IC21,22
IC14
IC30,31,32
VR33
VR34
VR31
VR32
BENDER JACK
CPU
JACK
POWER
MODULE BOARD