

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
RP202/03		R-304	10k X 9 SIP network
RP204-09		R-314	2K X 9 SIP network
S201	MIDI OUT/THRU Switch	S-096	DPTT rt angle slide switch
SW1	Power switch	S-054	240V Power switch
SW2		S-062	110/220 Voltage selector
U201	Floppy Controller Output Buffer	I-280	7406
U202/03	<b>Keyboard and Footswitch Tri-state Buffers</b>	I-216	4503 hex 3-state buffer
	Normally, pins -12 and -14 of U203 are held high by R203 and R204. When ALTERNATE RELEASE or AUX footswitch is pressed, pin -14 or -12 (respectively) is pulled low. When -RD FTSW (from U226-9) goes low, the levels at these inputs are placed onto D0 and D1 of the Data Bus. Similarly, when -RD KBD (from U226-15) goes low, PA0-PA7 are placed of the Data Buss. When -RD FTSW goes low, U206 Keyboard Processor's outputs PA0-PA7 are placed on the Data Bus.		
U204	<b>Keyboard Matrix Driver</b>	I-207	4022 Octal counter
	Operates in conjunction with U206 Keyboard Controller to select one of eight columns of the keyboard matrix. (For details, see U206.)		
U205	<b>Disk Drive Interface</b>	I-074	1770
	Cordinates the storage and retrieval of data on disk. Selected by -FLOPPY CS (from U218-14). Initialized on power-on by -RESET (from U208-6).		
U206	<b>Keyboard Processor</b>	I-626	68B01 Updated Kybrd controller
	Strobes the keyboard matrix, then informs the CPU of key presses or releases, including velocity information for each note. When a key is pressed, -KBD INT goes low. If -KBD INT EN (from U220-2) is high, this level reaches U215 CPU's -IRQ input, and the CPU generates -RD KBD to read data from the keyboard processor. U204 Keyboard Matrix Driver places a high level on one column of the keyboard matrix at a time, and inputs P10-17 and P30-37 --normally pulled low by RP202/03-- sense the closure of any switches on the column currently selected. After each column is checked, U206-8 clocks U204, advancing the counter and selecting the next column. After strobing the fourth column, U204 informs the keyboard processor by generating a carry signal which is sensed at U206-21.		
U207	<b>+5V Regulator</b>	I-410	7805
U208	<b>Miscellaneous Inverters</b>	I-268	74HC14 Hex inv Schmitt trigger
U209	<b>Miscellaneous Gates</b>	I-264	74HC00 Quad 2-in NAND
U210	<b>Clock Divider</b>	I-278	74HC4020
	Divides the 16 MHz clock signal (buffered by U209-8 and -6) to produce 8 MHz and 997 Hz clocks.		

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U211	<b>MIDI UART</b>	I-060	68B50
	<p>Converts parallel data from the CPU into serial form for transmission over MIDI, and transfers received MIDI data to the CPU.</p> <p>The CPU communicates with the UART by means of the Data Bus, address line A0, R/-W, E, and the chip select from U218--12. To write or read, the CPU sets -CS2 (pin -9) low. To read, R/-W is set high; it is low to write. RSEL (A0) selects the UART internal register. Once the address and data lines are steady, the actual data transfer occurs on the falling edge of "E" (pin -14).</p> <p>Once a byte to be transmitted has been placed in the UART, it is shifted out TXDATA, bit by bit, one for every 16 TX clock pulses (31.25 KHz from U216-13). When the TXD output is low, the emitter of Q202 is low, and current flows through the external MIDI circuit. If TXD is high, no current flows.</p> <p>Incoming data is converted from a current loop in the MIDI cable to a logic signal by U217 optoisolator, and applied to RXD (U211-2). This data stream is converted to parallel form by referring it to the RX clock (U211-3).</p> <p>After a byte is completely received or transmitted, -IREQ (pin -7) goes high, requesting interrupt service from the CPU via U222-8 and U221-8. If ADC INT EN (U228-4) is low, then U226-6 is high, and the request reaches the CPU. If the CPU receives the request while ADC INT EN is high, then it knows the U306 Successive Approximation Register is the origin of the interrupt.</p>		
U212/13	<b>Scratchpad RAM</b>	I-073	6116P-4
	<p>Decoded by U218-10, and address line A11. Stores results of calculations, arpeggiations, and other program parameters. At power-on, preset program parameters are loaded into RAM from U214 Operating ROM. When diagnostics disk is auto-loaded, the CPU executes instructions stored in scratchpad. Scratchpad RAM is volatile, so all data stored there is lost when power is switched off.</p>		
U214	<b>Operating ROM</b>	Z-1067	27256
	<p>Contains the operating software for the CPU. Address and data lines are connected to the CPU, and the CPU reads the ROM by setting address line A15 and either "Q" (U215-35) or "E" (U215-34), then setting address line A0-A14.</p>		
U215	<b>CPU</b>	I-075	68B09
	<p>This eight-bit microprocessor coordinates all activities in the 2000, and is driven by the 8 MHz clock from U210 (inverted at U208-12). At power-on, -RESET (from U208-6) causes the CPU to begin executing instructions. To execute instructions, U214 Operating ROM is selected by U228-8, then addressed by the sixteen-line Address Bus, then places instructions on the eight-line Data Bus. To carry out an instruction the CPU addresses other circuits similarly: a chip select is generated, often accompanied by eight-bit data, or further decoding by address lines. The</p>		

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CPU sets or resets R/-W (U215-32) for data input or output through these circuits. Q and E signals are generated for decoding purposes.

The CPU has three interrupt inputs at pins -2, -3, and -4. The priority of these interrupts is determined by the current operation, during which corresponding interrupt enable signals (KBD INT EN, NMI INT EN, and ADC INT EN --see U220) are generated as necessary. (For details of the circuits which cause these interrupts, see U206 Keyboard Processor, U210 Clock Divider, U211 UART, and U306 (Section 3).

U216	<b>Program Interval Timer</b>	I-072	8254 Timer/counter
	Carries out three independent programmable functions. Decoded by U218-15, U219-3, and U228-3. Address lines A0 and A1 select the internal registers, which then are read or written into. The counter/timer's three gates are used as follows:		
	1. U216-10 feeds U223 PLL to generate the sample memory TUNE CLOCK which responds to the PITCH wheel, LFO, and MASTER TUNE. The 8 MHz clock is divided by a variable value stored in one of U216's internal registers. This value is determined by the combined effect of the PITCH wheel, Master Tune setting, and LFO on the 2000's tuning.		
	2. U216-13 divides the 8MHz clock from U210-3 for 500kHz MIDI clock and A-440. U216-16 gates this section, which is clocked by U105-13 One-shot, which generates a pulse of a duration corresponding to the voltage at the wiper of one of the front panel potentiometers. While the pulse is generated, U216 counts the number of pulses received at pin -18. When the pulse ends, the CPU reads the timer's internal register which contains the final count, then interprets this count as the pot setting.		
U217	<b>Optoisolator</b>	I-330	PC900 Opto-isolator
	See U211 MIDI ACIA.		
U218	<b>Memory Decoder</b>	I-253	74HC138
	Decodes address lines A12-A14 to generate chip select signals for U216 Program Interval Timer, U205 Floppy Controller, U225/26 Decoders, U211 MIDI ACIA, and U212/13 Scratchpad RAM. Enabled by A15 and U219-11.		
U219	<b>Miscellaneous Gates</b>	I-251	74HC32
U220	<b>Latch</b>	I-513	74HC174
	Generates enable signals for interrupt logic, the filter and side select switch, and A440 circuits. When pin -9 is strobed by U225-13, data lines D0-D5 are latched to outputs Q0-Q5. At power-on, -RESET is low, ensuring that all outputs are cleared.		
U221	<b>Miscellaneous Inverters</b>	I-249	74HC04
U222	<b>Miscellaneous NAND Gates</b>	I-279	74HC10
	See U225, U223, and U211.		

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U223	<b>Master Tune Oscillator</b> Generates the TUNE CLOCK for the 2000's sample memory, by effectively multiplying the clock output from U216-10 which responds to the current PITCH wheel position and LFO and MASTER TUNE settings. U223-9 responds to changes in the frequency of the clock appearing at pin -6, but at 4096 times the frequency. U222-6 inverts this clock, which is divided by U224 Master Tune Divider. U224-1 feeds U223-3, completing the phase locked loop.	I-352	564 Phase locked loop
U224	<b>TUNE Clock Divider</b> See U223.	I-278	74HC4020
U225/26	<b>Miscellaneous Latches</b> Decode address lines A0-A3 and A6-A8 respectively. Decoded by U218-13 and -11 respectively to generate one enable signal at a time.	I-253	74HC138
U227	<b>Not used</b>		
U228	<b>Miscellaneous NAND Gates</b>	I-264	74HC00 Quad 2-in NAND
U229	<b>Miscellaneous Latches</b> Operates similar to U225. Decoded by U225-7. Decodes address lines A3-A5.	I-253	74HC138
U230	<b>+5V Regulator</b>	I-410	7805
U231	<b>-12V Regulator</b>	I-415	79M12
U232	<b>+12V Regulator</b>	I-424	7812
U233-36	<b>Custom Chip</b> Coordinates the output of sample data from sample RAM to the eight voices. Each chip handles two voices (channels). Address lines A0-A2 select the internal registers, then specify the sample data to be output, including the pitch, direction, and voice on which it is to appear.	I-624	2000 Custom chip

PCB5 supplies 6 MHz clock to pin -33 of each IC, and TUNE CLOCK is supplied by U224-9. Chip selects come from U229-11, -10, -9, and -7. Data is read from sample memory, one voice at a time. Following the output of data for one voice, the corresponding IC generates a CHIP ON pulse, which feeds the next IC's SYNC IN (pin -36), and sample memory is then read for the next voice.

The custom ICs address sample memory via the nine RA Bus lines, the four -RAS lines, the -CAS, and -WROUT (from U234-15). Pull up resistor packs RP205 and RP206 satisfy the custom IC open collector outputs. These signals are buffered by U241 and U248 to provide the BA Bus, and the other corresponding signals. Data is written from, or read onto the DQ (sample) Bus lines DQ0-DQ11 depending on the state of -BW (read/write select, from U241-16). -RAS0 selects the standard 256K memory. The remaining -RAS lines are provided for expanded memory. -CAS is used for refreshing the sample RAM.

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The TH Bus carries data defining the voice over which sample data is to be output.

U233 is the only custom IC used for addressing sample data when reading onto the Data Bus rather than to the voice DACs (see U336). Similarly, U234 is the only one used for the writing of data from the Data Bus onto the DQ Bus. (For details see U238 and U239, below.)

U237-40	<b>Data/DQ Latches</b> Control the flow of data from the 12-bit DQ Bus onto the eight-bit Data Bus, and visa-versa. When -BW is low, sample data is written into sample memory eight bits at a time. First, -WR LS SAMPLE goes low, and the lowest eight bits of sample data are latched from the Data Bus onto U237 outputs DQ0-DQ7. -WR MS SAMPLE then goes low, and the remaining four bits are latched to U239 outputs DQ8-DQ11. To read from sample memory, -RD LS SAMPLE goes low, and the lowest eight bits of sample data are placed onto the outputs of U238. Then -RD MS SAMPLE goes low, and the top four bits of sample data are placed on the outputs of U240.	I-260	74HC374
U241	<b>RA/BA Bus Buffers</b> See U233.	I-257	74HC244
U242-47	<b>Sample RAM</b> Each IC contains one bit of the sample memory. All ICs are addressed identically, but feed different lines of the DQ Bus.	I-076	256K X 1 DRAM
U248	<b>RA/BA Bus Buffers</b> See U233.	I-257	74HC244
U249-54	<b>Sample RAM</b> Same as U242-47.	I-076	256K X 1 DRAM
U255	<b>Misc OR Gates</b> Used on PCB5.	I-251 I-249	74HC32 74HC04
Y201		E-178	16MHz Crystal
Z-356 T1	<b>2000 Transformer Subassembly</b>	E-179 J-084 P-031 P-049	Model 2000 transformer 7-pin locking housing Polarizing pins socket pins
		E-001 E-002 E-003 E-065 E-082 E-103 E-189	18 AWG Stranded red 18 AWG Stranded blue 18 AWG Stranded black 18 AWG Stranded yellow 18 AWG Stranded green 6MHz Crystal 4-pin Ribbon .1" housing
	Used on PCB5.		

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
		E-190	21-pin 2" Ribbon jumper
		E-190	21-pin 2" Ribbon jumper
		J-007	16-pin DIP socket
	Used for U242-47, U249-54, and J205 (connector to front panel).		
		J-016	40-pin DIP socket
	Used for U233-36, and U206.		
		J-045	28-pin DIP socket
	Used for U214.		
	For mounting PCB5.	J-108	16-pin wire wrap socket
		M-024	6-32 X 3/8" Pan hd phil
		M-099	4-40 Nut 1/4" outside diameter
		M-100	4-40 X 3/8" Flat hd phil
		M-107	#411 Nylon shoulder washer
		M-141	#6 Star washer ext tooth
		M-155	1/2" Standoff
		M-370	T0-22 Greaseless insulator
		M-516	6-32 X 1/2" Nylon flathead screw
		M-517	6-32 Nylon hex nut
		MW2000-5	One-regulator heatsink
		MW2000-6	3-regulator heatsink
		PC2000-2	2000 2 Board
		PC2000-5	2000 5 Board

## SECTION 3

### VOICE CIRCUITS PCB3

Before troubleshooting PCB3, check that the board is updated as described on page 0.14.

#### DIAGNOSTIC TESTS

The diagnostics disk offers three tests which test the computer system counter circuits, the keyboard, sound RAM, and the footswitch inputs.

To run these diagnostic tests:

Auto-load (from power-on) the diagnostic disk. (See page 0.10)

When the display reads "??", press the PRESETS switch corresponding to the desired test.

The tests are numbered as follows:

<u>Switch</u>	<u>TEST</u>	<u>See Page</u>
1	Counter/Timer	2.1
2	Keyboard test	2.2
3	Output Filter	3.1
4	DAC (three tests)	3.2
5	Sound RAM	2.2
6	LED test	1.1
7	Switch test	1.2
8	Footswitch test	2.4

Descriptions of tests #3, and #4 follow.

#### Test #3: Output Filter Test

This test is for verifying operation of each voice's analog circuits.

Note: When initially selected, the filter resonance is at its maximum setting, and the filter cutoff frequency is at minimum. To avoid possible damage to speakers or hearing, turn the monitor system volume down.

With the diagnostic "??" prompt displayed, press 3.  
The display goes blank.

Front panel switches control test operation as follows:

Switch	Function
<u>DEC</u>	Increases filter resonance
<u>INC</u>	Decreases filter resonance
<u>EXECUTE</u>	Increases filter cutoff frequency
1-8	Selects voice 1-8

**PRESET** LEDs 1 through 8 indicate which voice is currently selected. The display reads "uP" when **INC** is pressed and resonance is not at its maximum value. Similarly, the display reads "dn" when **DEC** is pressed and resonance is not at its lowest value.

Increase the monitor system volume to an agreeable level.

Check that all voices play approximately the same frequency.

To exit this test, and return to the "??" prompt, press the **AUX** footswitch.

#### **TEST #4: DAC TEST**

This test verifies operation of U315 CV DAC, and is in three successive parts.

To select the DAC tests:

Press **4**.

The display reads "1", indicating that DAC test #1 is selected. (Descriptions of each DAC test follow.)

#### DAC Test #1

This test sets one DAC bit at a time, allowing careful monitoring of the DAC output.

Front panel switches control test operation as follows:

Switch	Function
<u>INC</u>	Set previous DAC bit (increase DAC output)
<u>DEC</u>	Set next DAC bit (decrease DAC output)
<u>EXECUTE</u>	Select ramp output to S/Hs.
<u>PRESET</u>	Select DAC test #2

Attach DVM to TP01 (next to U328).

Use **INC** and **DEC** to change the DAC output.

The **PRESET** LEDs show which DAC bit is currently set. Initially all DAC bits are off. Table 3.1 below shows the approximate voltage reading to expect for each DAC bit set.

Monitor the DAC output as it changes.

Each time the DAC output is increased, it doubles. Each time it is decreased, it is halved. The only exception to this is when the output moves to or from zero. (See Table 3.1, below.)

<u>Bit #</u>	<u>Approximate Voltage</u>
None	0
0	0.001V
1	0.002V
2	0.004V
3	0.009V
4	0.018V
5	0.037V
6	0.075V
7	0.150V
8	0.300V
9	0.600V
10	1.200V
11	2.400V

**TABLE 3.1**  
**DAC TEST #1 APPROXIMATE VOLTAGE READINGS**

When done testing the DAC:

To select DAC test #2, press **PRESET**.

Or, to exit the DAC tests, press **EXECUTE**.

#### DAC Test #2

This test --like DAC test #1-- distributes the same voltage to all S/Hs. Rather than output a steady, manually variable level, however, this test generates three waveforms, providing another convenient means of checking of the operation of the CV DAC.

When selected, the 2000 generates a ramp waveform going from 0 to 5V. This waveform can be seen at the output of the DAC buffer.

The display reads "2", indicating DAC test 2 is selected.

Front panel switches control test operation as follows:

<u>Switch</u>	<u>Function</u>
<b>DEC</b>	Select ramp output
<b>INC</b>	Select triangle output
<b>EXECUTE</b>	Select square output
<b>PRESET</b>	Select DAC test #3
<b>SAMPLE</b>	Decrease wave frequency
<b>CONTROL 1</b>	Increase wave frequency

The **PRESET** LEDs indicate which DAC bit is set.

Attach scope probe to TP01 (next to U328).

Check that the selected waveform appears at the DAC output.

When done testing the DAC:

To select DAC test #3, press **PRESET**.

Or, to exit the DAC tests, press **EXECUTE**.

### DAC Test #3

This test outputs different signals to each S/H, allowing easy checking for correct operation of the S/H multiplexers (U325/28/31).

There are three test options:

1. Output discrete voltages to each S/H.
2. Output 5 V peak to peak square wave to each S/H.
3. Output slow ramp to each S/H.

The display reads "3", indicating DAC test 3 is selected.

Front panel switches control test operation as follows:

<u>Switch</u>	<u>Function</u>
<b>DEC</b>	Select square wave S/H outputs
<b>INC</b>	Select ramp output to S/Hs
<b>EXECUTE</b>	Select test #2
<b>PRESET</b>	Select test #1

To exit the DAC tests, and return to the "??" prompt, press **EXECUTE**.

## PARTS LIST/HARDWARE DESCRIPTION

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
Z-359	PCB3 Assembly		
C301		C-003	33p 50V 10% Disc radial
C302		C-045	.1 50V Decoupler Mono radial
C303		C-008	.001 50V 10% Mylar radial
C304/05		C-128	1uF 20% MLC radial
C306		C-045	.1 50V Decoupler Mono radial
C307		C-045	.1 50V Decoupler Mono radial
C308		C-045	.1 50V Decoupler Mono radial
C309		C-001	5pF 50V 20% Disc radial
C310		C-045	.1 50V Decoupler Mono radial
C311		C-081	2.2uF 50V Elect radial low leak
C312		C-045	.1 50V Decoupler Mono radial
C313		C-045	.1 50V Decoupler Mono radial
C314		C-045	.1 50V Decoupler Mono radial
C315		C-035	10 20V Tant radial
C316		C-039	1000pF 50V 5% Poly axial
C317		C-102	.01 50V 5% Mylar radial
C318		C-035	10 20V Tant radial
C319		C-045	.1 50V Decoupler Mono radial
C320		C-045	.1 50V Decoupler Mono radial
C321		C-045	.1 50V Decoupler Mono radial
C322		C-045	.1 50V Decoupler Mono radial
C323		C-012	.01 50V 20% Mylar radial
C324		C-045	.1 50V Decoupler Mono radial
C325		C-130	10MF 16V Elect radial
C326		C-065	20pF 10% 100V Ceramic radial
C327		C-045	.1 50V Decoupler Mono radial
C328		C-003	33p 50V 10% Disc radial
C329		C-045	.1 50V Decoupler Mono radial
C330		C-136	120pF 5% MLC radial
C331-333		C-045	.1 50V Decoupler Mono radial
C334		C-136	120pF 5% MLC radial
C335-337		C-045	.1 50V Decoupler Mono radial
C338		C-136	120pF 5% MLC radial
C339/40		C-012	.01 50V 20% Mylar radial
C341		C-133	1500pF 5% Mylar radial
C342		C-135	270pF 5% MLC radial
C343		C-132	100pF 5% MLC radial
C344/45		C-012	.01 50V 20% Mylar radial
C346		C-133	1500pF 5% Mylar radial
C347		C-135	270pF 5% MLC radial
C348		C-132	100pF 5% Mylar radial
C349/50		C-102	.01 50V 5% Mylar radial
C351		C-133	1500pF 5% Mylar radial
C352		C-135	270pF 5% MLC radial
C353		C-132	100pF 5% Mylar radial
C354-357		C-045	.1 50V Decoupler Mono radial
C358		C-131	220pF 5% MLC radial

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
C359		C-132	100pF 5% MLC radial
C360		C-131	220pF 5% MLC radial
C361		C-132	100pF 5% MLC radial
C362		C-131	220pF 5% MLC radial
C363		C-132	100pF 5% MLC radial
C364		C-047	120pF 1000V 10% Disc radial
C365-368		C-045	.1 50V Decoupler Mono radial
C369-80		C-012	.01 50V 20% Mylar radial
C381		C-020	1uF 25V Tant
C382-85		C-012	.01 50V 20% Mylar radial
C386-388		C-045	.1 50V Decoupler Mono radial
C389-92		C-012	.01 50V 20% Mylar radial
C393/394		C-045	.1 50V Decoupler Mono radial
C395-98		C-012	.01 50V 20% Mylar radial
C399		C-045	.1 50V Decoupler Mono radial
C3100		C-125	.033 5% Mylar radial
C3101		C-045	.1 50V Decoupler Mono radial
C3102		C-064	2.2uF 50V Nonpolar elect radial
C3103		C-064	2.2uF 50V Nonpolar elect radial
C3104		C-134	470pF 5% Mylar radial
C3105-107		C-125	.033 5% Mylar radial
C3108	Not used		
C3109/110		C-045	.1 50V Decoupler Mono radial
C3111		C-012	.01 50V 20% Mylar radial
C3112		C-065	20pF 10% 100V Ceramic radial
C3113-115		C-045	.1 50V Decoupler Mono radial
C3116		C-081	2.2uF 50V Elect radial low leak
C3117/118		C-045	.1 50V Decoupler Mono radial
C3119		C-064	2.2uF 50V Nonpolar elect radial
C3120		C-134	470pF 5% Mylar radial
C3121-123		C-125	.033 5% Mylar radial
C3124	Not used		
C3125/126		C-045	.1 50V Decoupler Mono radial
C3127		C-012	.01 50V 20% Mylar radial
C3128		C-065	20pF 10% 100V Ceramic radial
C3129-131		C-045	.1 50V Decoupler Mono radial
C3132		C-081	2.2uF 50V Elect radial low leak
C3133/134		C-045	.1 50V Decoupler Mono radial
C3135		C-064	2.2uF 50V Nonpolar elect radial
C3136		C-134	470pF 5% Mylar radial
C3137-139		C-125	.033 5% Mylar radial
C3140	Not used		
C3141/142		C-045	.1 50V Decoupler Mono radial
C3143		C-012	.01 50V 20% Mylar radial
C3144		C-065	20pF 10% 100V Ceramic radial
C3145-147		C-045	.1 50V Decoupler Mono radial
C3148		C-081	2.2uF 50V Elect radial low leak
C3149/150		C-045	.1 50V Decoupler Mono radial
C3151		C-064	2.2uF 50V Nonpolar elect radial
C3152		C-134	470pF 5% Mylar radial
C3153-155		C-125	.033 5% Mylar radial
C3156	Not used		

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
C3157/158		C-045	.1 50V Decoupler Mono radial
C3159		C-012	.01 50V 20% Mylar radial
C3160		C-065	20pF 10% 100V Ceramic radial
C3161-163		C-045	.1 50V Decoupler Mono radial
C3164/165		C-047	120pF 1000V 10% Disc radial
C3166/167		C-045	.1 50V Decoupler Mono radial
C3168		C-081	2.2uF 50V Elect radial low leak
C3169/170		C-045	.1 50V Decoupler Mono radial
C3171		C-064	2.2uF 50V Nonpolar elect radial
C3172		C-134	470pF 5% Mylar radial
C3173-175		C-125	.033 5% Mylar radial
C3176	Not used		
C3177/178		C-045	.1 50V Decoupler Mono radial
C3179		C-102	.01 50V 5% Mylar radial
C3180		C-065	20pF 10% 100V Ceramic radial
C3181-183		C-045	.1 50V Decoupler Mono radial
C3184		C-081	2.2uF 50V Elect radial low leak
C3185/186		C-045	.1 50V Decoupler Mono radial
C3187		C-064	2.2uF 50V Nonpolar elect radial
C3188		C-134	470pF 5% Mylar radial
C3189-191		C-125	.033 5% Mylar radial
C3192	Not used		
C3193/194		C-045	.1 50V Decoupler Mono radial
C3195		C-012	.01 50V 20% Mylar radial
C3196		C-065	20pF 10% 100V Ceramic radial
C3197-199		C-045	.1 50V Decoupler Mono radial
C3200		C-081	2.2uF 50V Elect radial low leak
C3201		C-045	.1 50V Decoupler Mono radial
C3202		C-045	.1 50V Decoupler Mono radial
C3203		C-064	2.2uF 50V Nonpolar elect radial
C3204		C-134	470pF 5% Mylar radial
C3205-207		C-125	.033 5% Mylar radial
C3208	Not used		
C3209/210		C-045	.1 50V Decoupler Mono radial
C3211		C-012	.01 50V 20% Mylar radial
C3212		C-065	20pF 10% 100V Ceramic radial
C3213-215		C-045	.1 50V Decoupler Mono radial
C3216		C-081	2.2uF 50V Elect radial low leak
C3217		C-045	.1 50V Decoupler Mono radial
C3217		?	
C3218/219		C-045	.1 50V Decoupler Mono radial
C3219		C-045	.1 50V Decoupler Mono radial
C3220		C-130	10MF 16V Elect radial
C3221		C-064	2.2uF 50V Nonpolar elect radial
C3222		C-134	470pF 5% Mylar radial
C3223-225		C-125	.033 5% Mylar radial
C3226	Not used		
C3227/228		C-045	.1 50V Decoupler Mono radial
C3229		C-102	.01 50V 5% Mylar radial
C3230		C-065	20pF 10% 100V Ceramic radial
C3231-233		C-045	.1 50V Decoupler Mono radial
C3234		C-081	2.2uF 50V Elect radial low leak

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
C3235-238		C-045	.1 50V Decoupler Mono radial
C3239		C-045	.1 50V Decoupler Mono radial
D301/02		D-005	1N914
D303-05		D-008	1N34
D306-13		D-005	1N914
J301	Sample Input	J-090	1/4" Stereo jack w/swton
J302/03	<b>LEFT/RIGHT Audio Outputs</b>	J-090	1/4" Stereo jack w/swton
	When the LEFT/SEREO output is not used, J302-4 connects with J302-5, routing the mono signal to J303-2 RIGHT/MONO output jack. When the LEFT/STEREO output is used, J302-5 disconnects from -4 and connects with -6, so the left audio from U333-7 appears at U303-2 RIGHT/MONO output jack.		
R301		R-008	1k 1/4W 5%
R302		R-064	5.1 1/4W 5%
R303		R-092	110 k 1/4W 5%
R304		R-064	5.1 1/4W 5%
R305		R-008	1k 1/4W 5%
R306/07		R-012	10k 1/4W 5%
R308	Sample Input Attenuator	R-249	1M Rt angle pot
R309/10		R-025	100k 1/4W 5%
R311		R-533	2k 1/4W 1%
R312		R-012	10k 1/4W 5%
R313		R-137	2.49k 1/4W 1%
R314		R-423	20 1/4W 5%
R315		R-012	10k 1/4W 5%
R316		R-107	4.99k 1/4W 1%
R317		R-012	10k 1/4W 5%
R318		R-137	2.49k 1/4W 1%
R319		R-532	1.24k 1/4W 1%
R320		R-112	15k 1/4W 1%
R321		R-108	10k 1/4W 1%
R322		R-064	5.1 1/4W 5%
R323		R-532	1.24k 1/4W 1%
R324		R-055	7.5k 1/4W 1%
R325		R-043	47 1/4W 5%
R326-28		R-012	10k 1/4W 5%
R329		R-530	3.92k 1/4W 1%
R330		R-524	2.94k 1/4W 1%
R331	R-523	7.87k 1/4W 1%	
R332	R-530	3.92k 1/4W 1%	
R333	R-524	2.94k 1/4W 1%	
R334	R-523	7.87k 1/4W 1%	
R335	R-529	6.81k 1/4W 1%	
R336	R-527	5.11k 1/4W 1%	
R337	R-184	13.7k 1/4W 1%	
R338	R-529	6.81k 1/4W 1%	
R339	R-527	5.11k 1/4W 1%	
R340	R-184	13.7k 1/4W 1%	

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
R341		R-197	59.1k 1/4W 1%
R342		R-526	44.2 1/4W 1%
R343		R-522	118k 1/4W 1%
R344		R-197	59.1k 1/4W 1%
R345		R-526	44.2 1/4W 1%
R346		R-522	118k 1/4W 1%
R347/48		R-528	340k 1/4W 1%
R349/50		R-525	255k 1/4W 1%
R351/52		R-521	681k 1/4W 1%
R353-55		R-008	1k 1/4W 5%
R356/57		R-012	10k 1/4W 5%
R358		R-064	5.1k 1/4W 5%
R359		R-015	20k 1/4W 5%
R360/61		R-026	200k 1/4W 5%
R362		R-422	200 1/4W 5%
R363		R-108	10k 1/4W 1%
R364		R-144	20.0k 1/4W 1%
R365		R-101	1k 1/4W 1%
R366		R-132	42.2k 1/4W 1%
R367		R-519	200 1/4W 1%
R368		R-108	10k 1/4W 1%
R369		R-012	10k 1/4W 5%
R370		R-005	390 1/4W 5%
R371		R-012	10k 1/4W 5%
R372		R-073	24k 1/4W 5%
R373		R-108	10k 1/4W 1%
R374		R-144	20.0k 1/4W 1%
R375		R-101	1k 1/4W 1%
R376		R-132	42.2k 1/4W 1%
R377		R-519	200 1/4W 1%
R378		R-108	10k 1/4W 1%
R379		R-012	10k 1/4W 5%
R380		R-005	390 1/4W 5%
R381		R-012	10k 1/4W 5%
R382		R-073	24k 1/4W 5%
R383		R-108	10k 1/4W 1%
R384		R-144	20.0k 1/4W 1%
R385		R-101	1k 1/4W 1%
R386		R-132	42.2k 1/4W 1%
R387		R-519	200 1/4W 1%
R388		R-108	10k 1/4W 1%
R389		R-012	10k 1/4W 5%
R390		R-005	390 1/4W 5%
R391		R-012	10k 1/4W 5%
R392		R-073	24k 1/4W 5%
R393		R-108	10k 1/4W 1%
R394		R-144	20.0k 1/4W 1%
R395		R-101	1k 1/4W 1%
R396		R-132	42.2k 1/4W 1%
R397		R-519	200 1/4W 1%
R398		R-108	10k 1/4W 1%
R399		R-012	10k 1/4W 5%

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
R3100/101		R-016	30k 1/4W 5%
R3102		R-005	390 1/4W 5%
R3103		R-012	10k 1/4W 5%
R3104		R-073	24k 1/4W 5%
R3105		R-108	10k 1/4W 1%
R3106		R-101	1k 1/4W 1%
R3107		R-132	42.2k 1/4W 1%
R3108		R-144	20.0k 1/4W 1%
R3109		R-519	200 1/4W 1%
R3110		R-108	10k 1/4W 1%
R3111		R-012	10k 1/4W 5%
R3112		R-005	390 1/4W 5%
R3113		R-013	13k 1/4W 5%
R3114		R-073	24k 1/4W 5%
R3115		R-108	10k 1/4W 1%
R3116		R-144	20.0k 1/4W 1%
R3117		R-101	1k 1/4W 1%
R3118		R-132	42.2k 1/4W 1%
R3119		R-519	200 1/4W 1%
R3120		R-108	10k 1/4W 1%
R3121		R-013	13k 1/4W 5%
R3122		R-005	390 1/4W 5%
R3123		R-012	10k 1/4W 5%
R3124		R-073	24k 1/4W 5%
R3125		R-108	10k 1/4W 1%
R3126		R-144	20.0k 1/4W 1%
R3127		R-101	1k 1/4W 1%
R3128		R-132	42.2k 1/4W 1%
R3129		R-519	200 1/4W 1%
R3130		R-108	10k 1/4W 1%
R3131		R-012	10k 1/4W 5%
R3132		R-073	24k 1/4W 5%
R3133		R-005	390 1/4W 5%
R3134/135		R-012	10k 1/4W 5%
R3136/137		R-108	10k 1/4W 1%
R3138		R-144	20.0k 1/4W 1%
R3139		R-101	1k 1/4W 1%
R3140		R-132	42.2k 1/4W 1%
R3141		R-519	200 1/4W 1%
R3142		R-108	10k 1/4W 1%
R3143		R-012	10k 1/4W 5%
R3144		R-073	24k 1/4W 5%
R3145		R-005	390 1/4W 5%
R3146		R-012	10k 1/4W 5%
S301	INPUT ATTEN. SWITCH	S-096	DPTT Rt angle slide switch
TB301	DATA + MISC		
TB302	POWER SUPPLIES		
TP1	DAC OUTPUT		

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U301/02	<b>Sample Word Latches</b>	I-260	74HC374 Upon receiving -LSADC from U226 Decoder, U302 latches the eight least significant bits from U306 Successive Approximation Register outputs Q0-Q7 to the Data Bus. U301 is then enabled by -MSADC, latching the four most significant bits onto the main data bus, completing the 12-bit sample word.
U303/04	<b>CV DAC Latches</b>	I-513	74HC174 Latch twelve-bit words to U315 CV DAC, six bits at a time. U229 Decoder generates -HI DAC, then -LO DAC to enable U303, then U304, placing twelve-bit values of control voltages for each voice's analog circuits (VCA and VCF).
U305	<b>CV Address Latch</b>	I-513	74HC174 Provides address signals for U325/28/31 CV Demultiplexers. Upon receiving -S/HCON from U229, U305 latches A, B, C, and enable signals from the Main data bus.
U306	<b>Successive Approximation Register</b>	I-019	2504 12-bit SAR Generates 12-bit words for D/A conversion, then comparison with incoming analog sample voltages. At pin -13 receives Sample Clock from U216-13 Counter. Initially, -SC from U307-8 goes low, setting Q11 at pin -21. At the same time, -SC is inverted at U307-6, enabling U310 Sample/Hold, which samples, then holds the incoming audio signal at U310-5.  For each SAMPLE CLOCK received at pin -13, the next least significant bit (at U313 DAC inputs) is set, starting with bit 12. The output of U313 is compared with the value held at U310-5. If the original DAC output exceeds the sample input, U314-7 goes high. This level reaches pin -11, and determines whether or not the current DAC bit is reset for the next comparison. After twelve such comparisons, pin -3 goes low, U307-11 goes high, reaching U215-4, the CPU -FIRQ input. R301/C301 delay this level before it clocks the 12-bit sample word to U301/02 outputs.
U307-3, -6, -8, -11	<b>Miscellaneous gates</b>	I-264	74HC00 Quad 2-in NAND See U306.
U308	<b>Sample Clock Divider</b>	I-281	74HC161 or 74HC163 Divides the SAMPLE CLOCK to the required sample rate. As all A/D conversions require the same amount of time, QC and QD are Nanded to produce -SC which is low for the first received sample clocks. While -SC is low, the audio sample input is switched through to U310-5, where this value is held when -SC goes high again.
U309	<b>Sample Input Buffer</b>	I-323	LF356 FET Op amp The audio sample input is initially ac-coupled by C304/05, filtered by R304/C303, then scaled by R308. When S301 is open, U309 offers between unity and times-ten gain. When the switch is closed, the gain range is 20 to 200. C309 compensates the op amp.

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U310	<b>Sample and Hold</b> Holds the filtered audio input signal during A/D conversion (see U306). When pin -8 is high, the input is switched to the output, and C316 charges. When pin -8 goes low, the output is isolated from the input and the sampled voltage remains at pin -5.	I-355	LF398
U311-7	<b>Final Sample Buffer</b> See U312 Filter Switch.	I-324	NE5532 Dual op amp
U311-1	<b>Reference Buffer</b>	I-324	NE5532 Dual op amp
U312	<b>Filter Switch</b> Selects one of three filtered versions of the audio sample input according to the current sample rate. The audio input is processed by three parallel four-pole filter circuits with cutoff frequencies of 6 kHz, 12 kHz, and 16 kHz for sampling rates of 16 kHz, 31 kHz, and 41 kHz respectively. R326/27/28 act as input resistors to U311 Final Sample Buffer, so that when any of U312's inputs are gated to outputs -3 and -13, U312 is only switching a current. This allows negative "voltages" to be switched without needing dual supplies. D303/04/05 protect U312's inputs.	I-277	4052
U313	<b>Sampling DAC</b> Converts 12-bit sample words from U306 into complimentary currents at IO and -ID. R313 senses these currents and converts them into a potential difference which is added to the voltage held at U310-5. When the voltage across R313 is identical to, but of the opposite polarity of U310-5, U314 Comparator switches, and U314-7 goes high.	I-517	6012 DAC
U314	<b>Sample Comparator</b> Determines whether the output of U313 Sampling DAC exceeds that of U310 Sample and Hold. D301/02 protect non-inverting input U314-2.	I-301	311 Precision comparator
U315	<b>CV DAC</b> Translates 12-bit control words from U303/04 into analog current, IO, which is turned into a current by U316 CV DAC Buffer. R320/21 and C324/25 set VREF- at 4.8V.	I-517	6012 DAC
U316	<b>CV DAC Buffer</b> Converts the CV DAC output current into a voltage. R319, R323, C326.	I-323	LF356 FET Op amp
U317-22	<b>2-Pole Low Pass Filter</b> The audio sample input is processed by three chains of filters simultaneously, but only one filter output is selected at a time. Each IC half is configured as a 2-pole low pass filter with its cutoff frequency suited to the sample rate to which the filter chain corresponds.	I-324	NE5532 Dual op amp
U323	<b>Mono Output Driver</b> Sums outputs U333-1 and -7 Left and Right Output Drivers through R356/57. R358 sets the gain of the MONO output.	I-317	NE5534 Signetics

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
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When the LEFT/STEREO output is not used, J302-4 connects with J302-5, routing the mono signal to J303-2 RIGHT/MONO output jack. When the LEFT/STEREO output is used, J302-5 disconnects from -4 and connects with -6, so the left audio from U333-7 appears at U303-2 RIGHT/MONO output jack.

U324	VCA Sample/Holds Voices 5-8	I-332	084/TL074CN Quad op amp
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Each IC quarter buffers the voltage held at C369-72 from the 2000's analog voice circuits.

U325	VCA Demultiplexer	I-211	4051 8-in analog mux
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"Distributes" control voltages (CVs) to each of the 2000's voices by switching portions of the U316 CV DAC's output (Vcv) which appears at pin -3 (Vin) to U324/26 VCA Sample/holds one at a time.

Vcv is a multiplexed signal, one divided into many sections, each section being at a voltage (corresponding to a CV) which is not expected to change in the next few microseconds. This sequence of voltages is repeated. The CPU generates addresses which determine to which sample/hold each CV should be routed. These addresses appear at outputs Q0-7 of U305 which feed U325, U328, and U331 Demultiplexers. Vcv is switched to only one output of a demultiplexer at a time. When an output is enabled, the capacitor at the output charges to the current Vcv level, then remains at that voltage as other sample/holds are "refreshed."

Each demux's Vin is fed by U316-6. Pin -6 (driven by U305-15, I0) must be driven high to be enabled, or else all outputs are disconnected from pin -3 (Vin). Signals A, B, and C (also from U305) determine which of eight outputs is enabled.

Notice that each demultiplexer handles a different type of CV (for VCA, VCF cutoff, or resonance), and that the same addresses on each demux corresponds to the same voice (ie, voice 1 is handled by the demux "X0" output, voice 2 by "X1," and so forth). If any voice's VCA and VCF both exhibit problems, be sure to check the A, B, and C signals.

U326	VCA Sample/Holds Voices 1-4	I-332	084/TL074CN Quad op amp
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Similar to U324.

U327	VCF Sample Holds Voices 5-8	I-332	084/TL074CN Quad op amp
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Similar to U324.

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
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When the LEFT/STEREO output is not used, J302-4 connects with J302-5, routing the mono signal to J303-2 RIGHT/MONO output jack. When the LEFT/STEREO output is used, J302-5 disconnects from -4 and connects with -6, so the left audio from U333-7 appears at U303-2 RIGHT/MONO output jack.

U324	<b>VCA Sample/Holds Voices 5-8</b> Each IC quarter buffers the voltage held at C369-72 from the 2000's analog voice circuits.	I-332	084/TL074CN Quad op amp
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U325	<b>VCA Demultiplexer</b> "Distributes" control voltages (CVs) to each of the 2000's voices by switching portions of the U316 CV DAC's output (Vcv) which appears at pin -3 (Vin) to U324/26 VCA Sample/holds one at a time.	I-211	4051 8-in analog mux
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Vcv is a multiplexed signal, one divided into many sections, each section being at a voltage (corresponding to a CV) which is not expected to change in the next few microseconds. This sequence of voltages is repeated. The CPU generates addresses which determine to which sample/hold each CV should be routed. These addresses appear at outputs Q0-7 of U305 which feed U325, U328, and U331 Demultiplexers. Vcv is switched to only one output of a demultiplexer at a time. When an output is enabled, the capacitor at the output charges to the current Vcv level, then remains at that voltage as other sample/holds are "refreshed."

Each demux's Vin is fed by U316-6. Pin -6 (driven by U305-15, I0) must be driven high to be enabled, or else all outputs are disconnected from pin -3 (Vin). Signals A, B, and C (also from U305) determine which of eight outputs is enabled.

Notice that each demultiplexer handles a different type of CV (for VCA, VCF cutoff, or resonance), and that the same addresses on each demux corresponds to the same voice (ie, voice 1 is handled by the demux "X0" output, voice 2 by "X1," and so forth). If any voice's VCA and VCF both exhibit problems, be sure to check the A, B, and C signals for shorts.

U326	<b>VCA Sample/Holds Voices 1-4</b> Similar to U324.	I-332	084/TL074CN Quad op amp
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U327	<b>VCF Sample Holds Voices 5-8</b> Similar to U324.	I-332	084/TL074CN Quad op amp
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U328	<b>VCF Demultiplexer</b> Similar to U325. Feeds U327 and U329 VCF Sample/Holds.	I-211	4051 8-in analog mux
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U329	<b>VCF Sample/Holds Voices 1-4</b> Similar to U324.	I-332	084/TL074CN Quad op amp
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<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U330	Resonance Sample/Holds Voices 5-8 Similar to U324.	I-332	084/TL074CN Quad op amp
U331	Resonance Demultiplexer Similar to U325. Feeds U330 and U332	I-211	4051 8-in analog mux Resonance Sample/Holds.
U332	Resonance Sample/Holds Voices 1-4 Similar to U324.	I-332	084/TL074CN Quad op amp
U333	Left and Right Drivers Sum the voice VCA/VCF output currents. R3100 and R3101 set the output levels of the left and right output channels respectively.	I-324	NE5532 Dual op amp
U334	Voice Decoder Selects which of the eight voices receives a 12-bit sample word. Pins -5 and -6 are held at ground and 5V (respectively) so only BI is required to enable U334. BCHAN, B, and C signals determine which voice latch is enabled to receive sample data.	I-253	74HC138
U335	VCA/VCF Voice 1 Provides analog processing of the audio output current from U336 Voice 1 DAC. Consists of separate filter, VCA, and panning circuits, but is configured for basic VCF/VCA analog processing. The signal received at pin -8 passes through the built-in 4-pole low-pass filter, then is scaled by the VCA.  Normally, R360 pulls pin -14 high, keeping A-440 panned to the grounded "B OUT." During Sample Tuning function, -A440 pans the A-440 signal received at pin -16 to "A OUT" which is combined with voice 1's audio output. (Only voice 1 is used for A-440.) C3100/R361/C3102/R362 ac-couple and scale the A-440 suitably.  Capacitors A-D set the frequency around which the VCF cutoff varies with VCF 1 (at pin -2), which is biased and scaled by R364-66 and C3103. The resonance CV received at pin -7 comes directly from the S/H, and requires no processing.  C3116 ac-couples the VCF output to the VCA input. C3117, R370, R372, and D306 smoothe the VCA envelopes from the Sample/Holds, with D306 changing the RC time constant depending on the direction of the CV change. Finally, the VCA output is summed with the outputs from other voices by U333.  For further details, refer to the 3379 data sheet.	I-351	3379
U336	Voice 1 DAC	I-517	6012 DAC
U337-40	Sample Data Latches Voice 1	I-228	4174 Hex latch

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U379	Voice 8 DAC	I-517	6012 DAC
U380-83	Sample Data Latches Voice 8	I-228	4174 Hex latch
U384	-5V Regulator	I-411	LM7905/79M05 -5V 1A V-regulator
	For VCF/VCA ICs.	J-041	18-pin DIP socket
PC2000-3	2000 3 Board		

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U341	VCA/VCF Voice 2 Similar to U335.	I-351	3379
U342	Voice 2 DAC	I-517	6012 DAC
U343-46	Sample Data Latches Voice 2	I-228	4174 Hex latch
U347	VCA/VCF Voice 3 Similar to U335.	I-351	3379
U348	Voice 3 DAC	I-517	6012 DAC
U349-52	Sample Data Latches Voice 3	I-228	4174 Hex latch
U353	VCA/VCF Voice 4 Similar to U335.	I-351	3379
U354	Voice 4 DAC	I-517	6012 DAC
U355-58	Sample Data Latches Voice 4	I-228	4174 Hex latch
U359	VCA/VCF Voice 5 Similar to U335.	I-351	3379
U360	Voice 5 DAC	I-517	6012 DAC
U361-64	Sample Data Latches Voice 5	I-228	4174 Hex latch
U365	VCA/VCF Voice 6 Similar to U335.	I-351	3379
U366	Voice 6 DAC	I-517	6012 DAC
U367-70	Sample Data Latches Voice 6	I-228	4174 Hex latch
U371	VCA/VCF Voice 7 Similar to U335.	I-351	3379
U372	Voice 7 DAC	I-517	6012 DAC
U373-76	Sample Data Latches Voice 7	I-228	4174 Hex latch
U377	DAC Reference	I-323	LF356 FET Op amp
U378	VCA/VCF Voice 8 Similar to U335.	I-351	3379

SECTION 4  
MEMORY EXPANSION

Standard Prophet-2000s are equipped with 256k of sample memory, divided into "A" and "B" memory halves of 128k. When the memory expansion kit is installed, each memory half is doubled to 256k. To accommodate the increase in sample data, disk storage capacity must also be increased. This is accomplished by using double-sided disks and disk-drives.

If the memory expansion is installed in a unit with a single-sided disk drive, the disk drive must be replaced. As some models already feature double-sided drives, there are two memory expansion kits:

Model 877

Includes the expansion board, new firmware, double-sided disk drive, and mounting hardware.

Model 878

Same as the Model 877, but without the disk drive.

The only way to tell if a single-, or double-sided drive is installed is to open the 2000, and read the label on the back of the drive itself. Drive model MD351 is single-sided. Drive model MD350 is double-sided.

Sound disks created for standard-memory 2000s may still be loaded into expanded models, then transferred onto double-sided disks. The single-sided disks can then be kept for back-up.

Order the appropriate expansion kit through Sequential's service department.

When troubleshooting the 2000, the expansion board may be removed without affecting basic operation. The Model 879 Diagnostic Disk loads with standard or expanded memory.

NOTE: Double-sided disk drives will only function properly if PCB2 is modified as described on page 0.13.



PARTS LIST/HARDWARE DESCRIPTION

<u>DESIGNATOR</u>	<u>FUNCTION</u>	<u>SEQUENTIAL PART#</u>	<u>DESCRIPTION</u>
U101-12	Sample RAM	I-076	256k X 1 DRAM
U113/14	Address line buffers	I-257	74HC244
C101-12		C-121	.33uF 50V 20% Mono radial
C113/14		C-045	.1 50V Decoupler Mono radial
C115		C-023	47uF 10V 20% Tant radial
RP101/02		R-308	2k X 7 SIP 10%
J101		J-102	30-pin dbl row PC mount
		Z-1068	Memory expansion software

Non-designated Parts

Only with Model 877 kit  
For U101-12

E-200	3 1/2" dbl-sided disk drive
J-007	16 pin dip sockets
M-024	6-32 X 3/8" pan hd phil
M-141	#6 star washer ext tooth
PC-877	Expansion PC board