

TECHNICAL SERVICE INFORMATION for



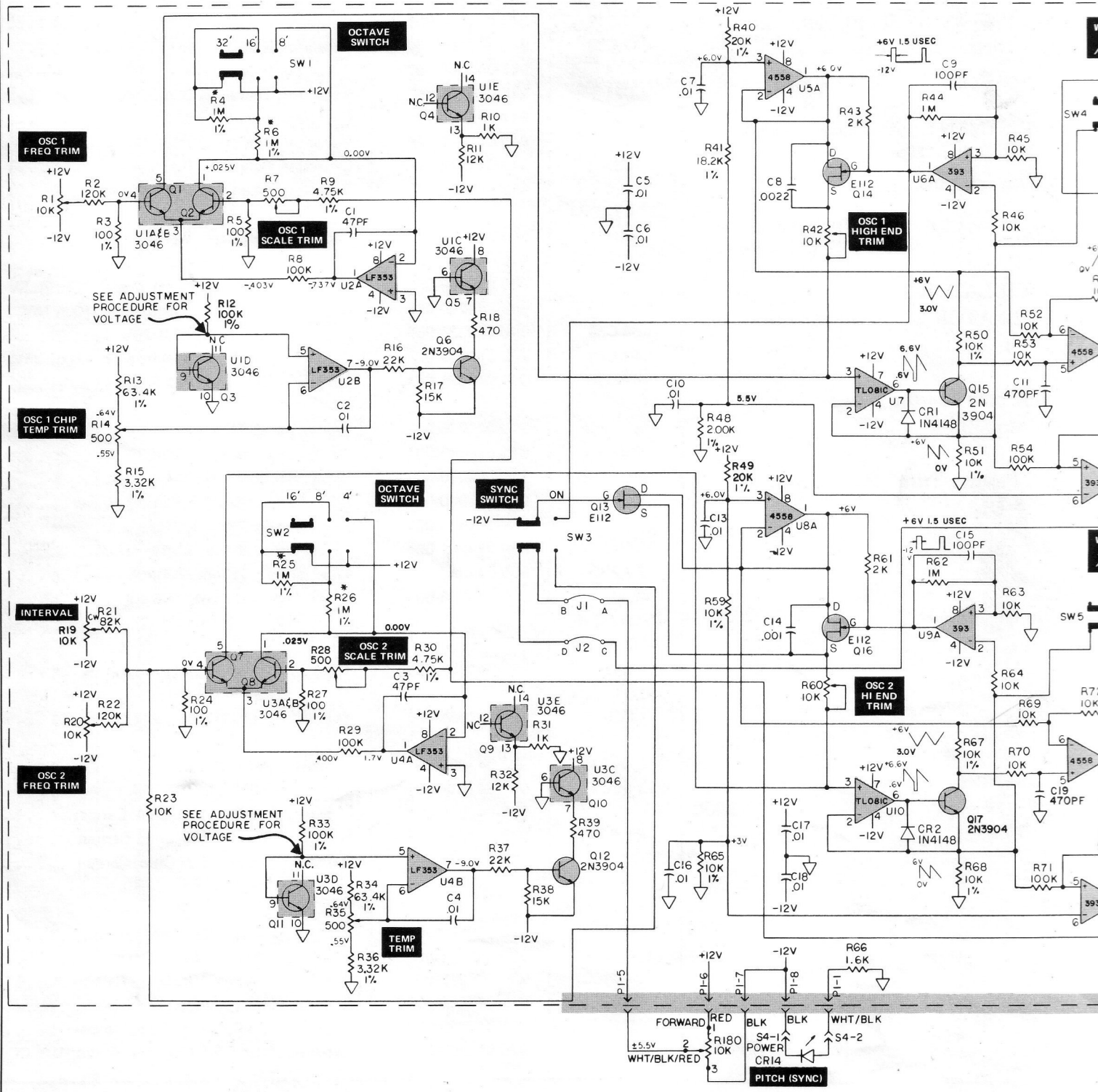
Domestic Model 336A
Export Model 336BX

(ABOVE SERIAL NO. 4160)

MOOG MUSIC INC.
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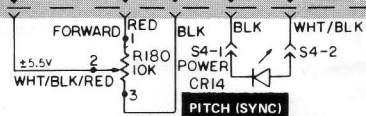
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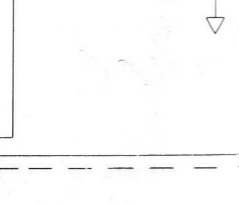
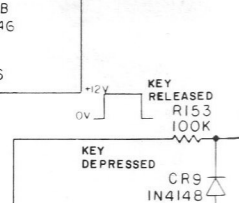
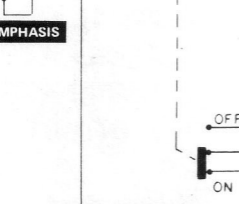
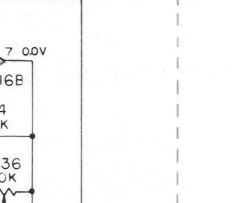
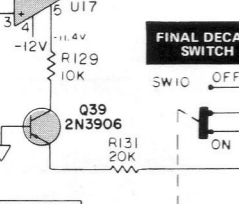
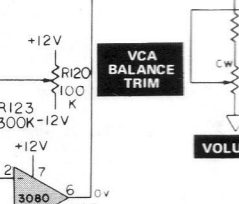
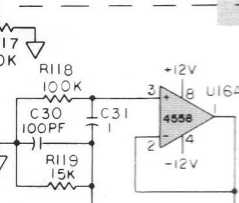
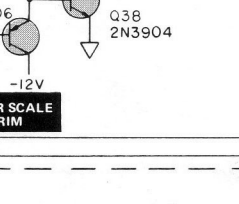
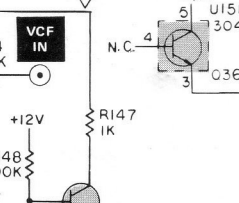
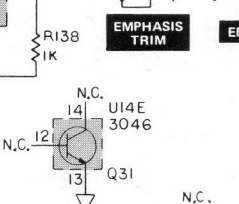
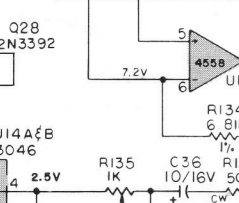
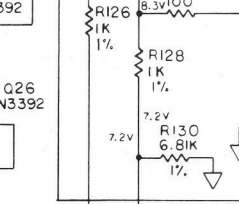
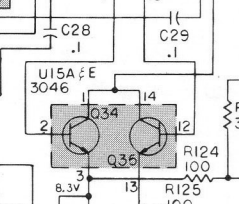
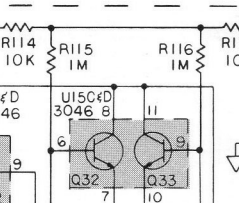
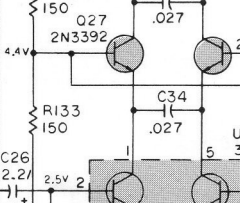
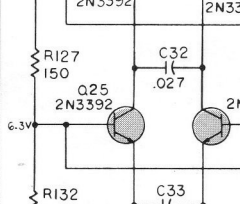
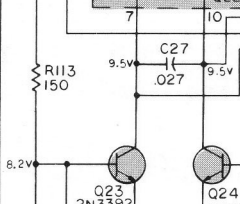
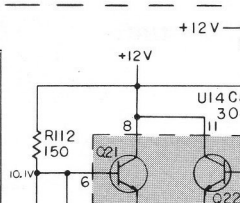
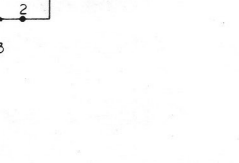
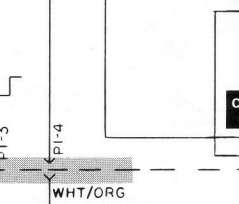
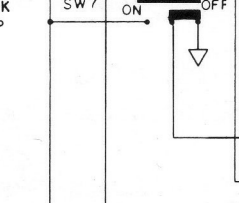
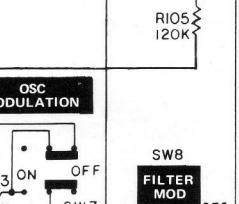
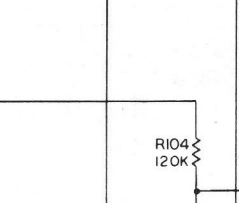
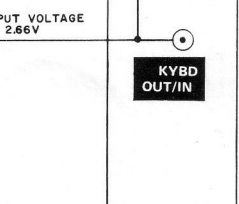
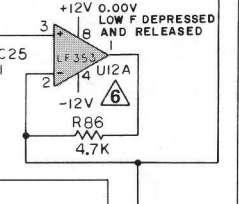
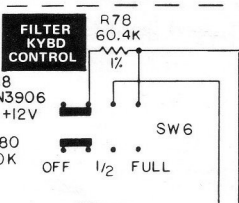
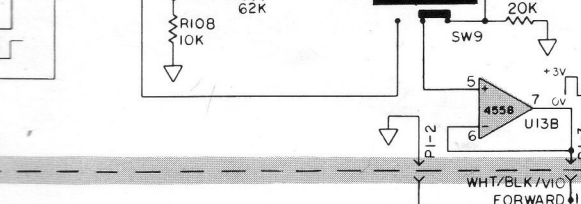
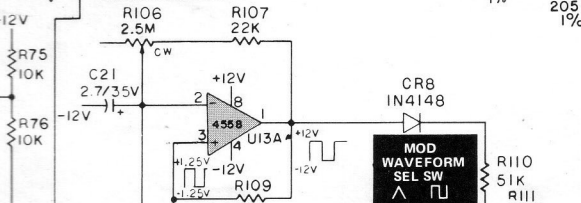
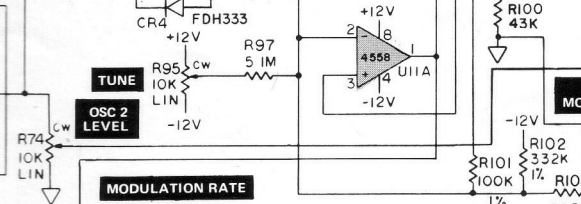
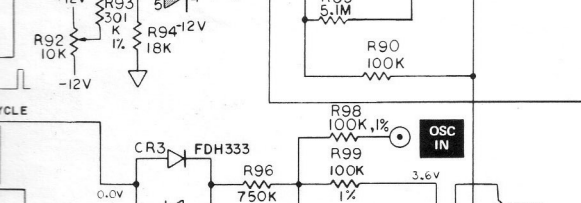
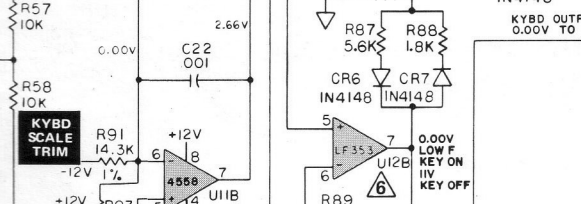
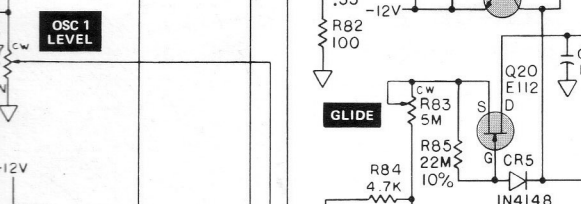
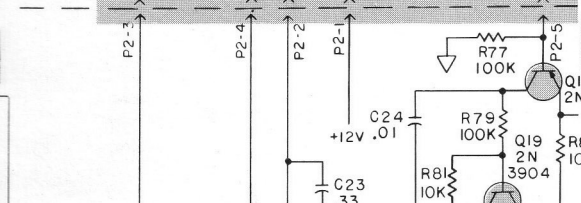
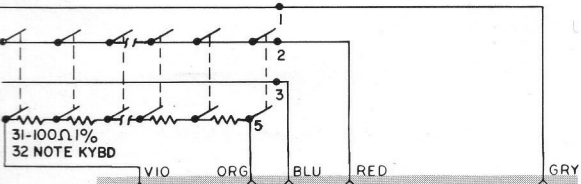
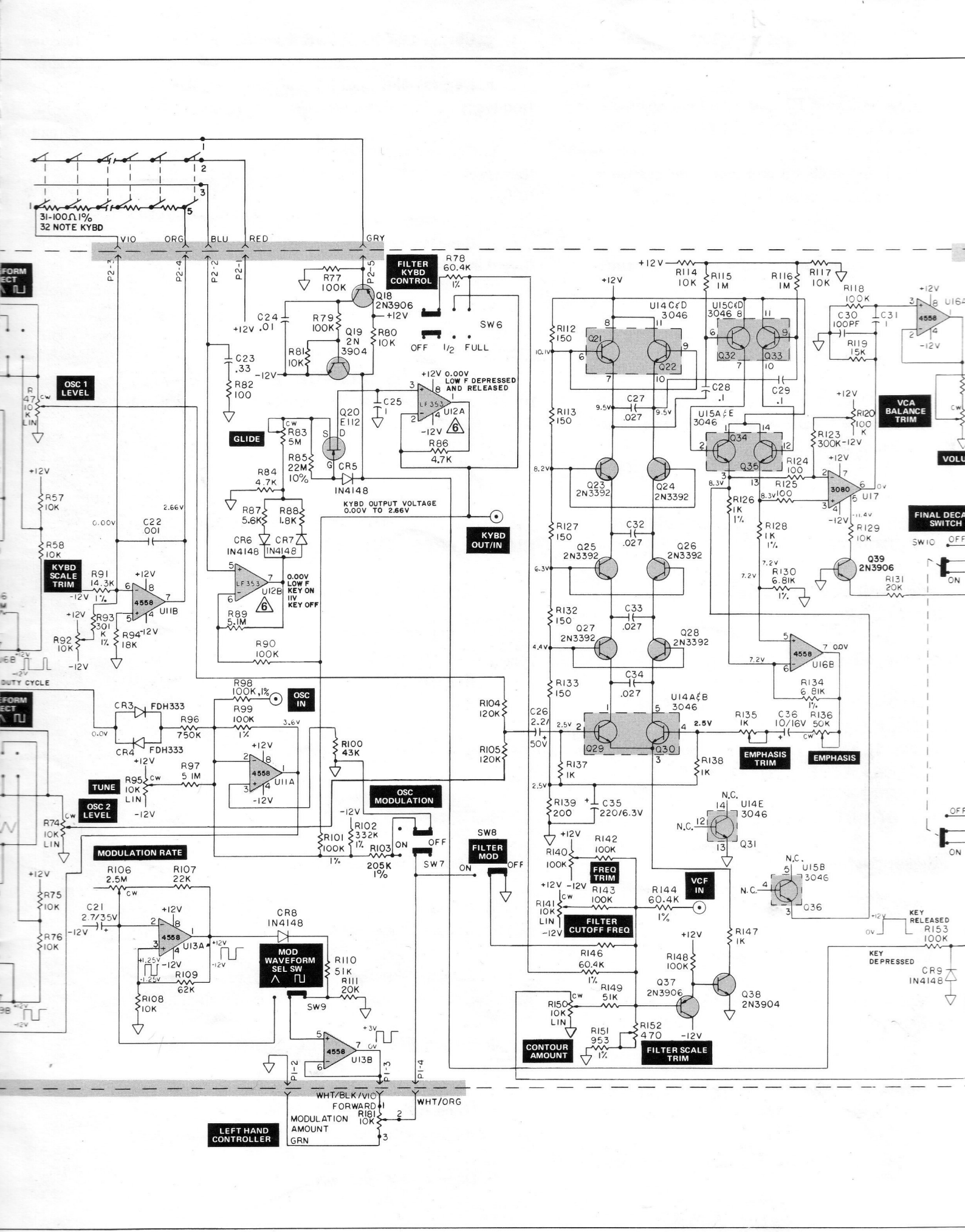
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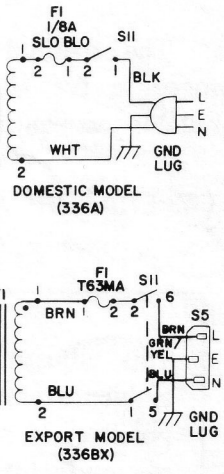
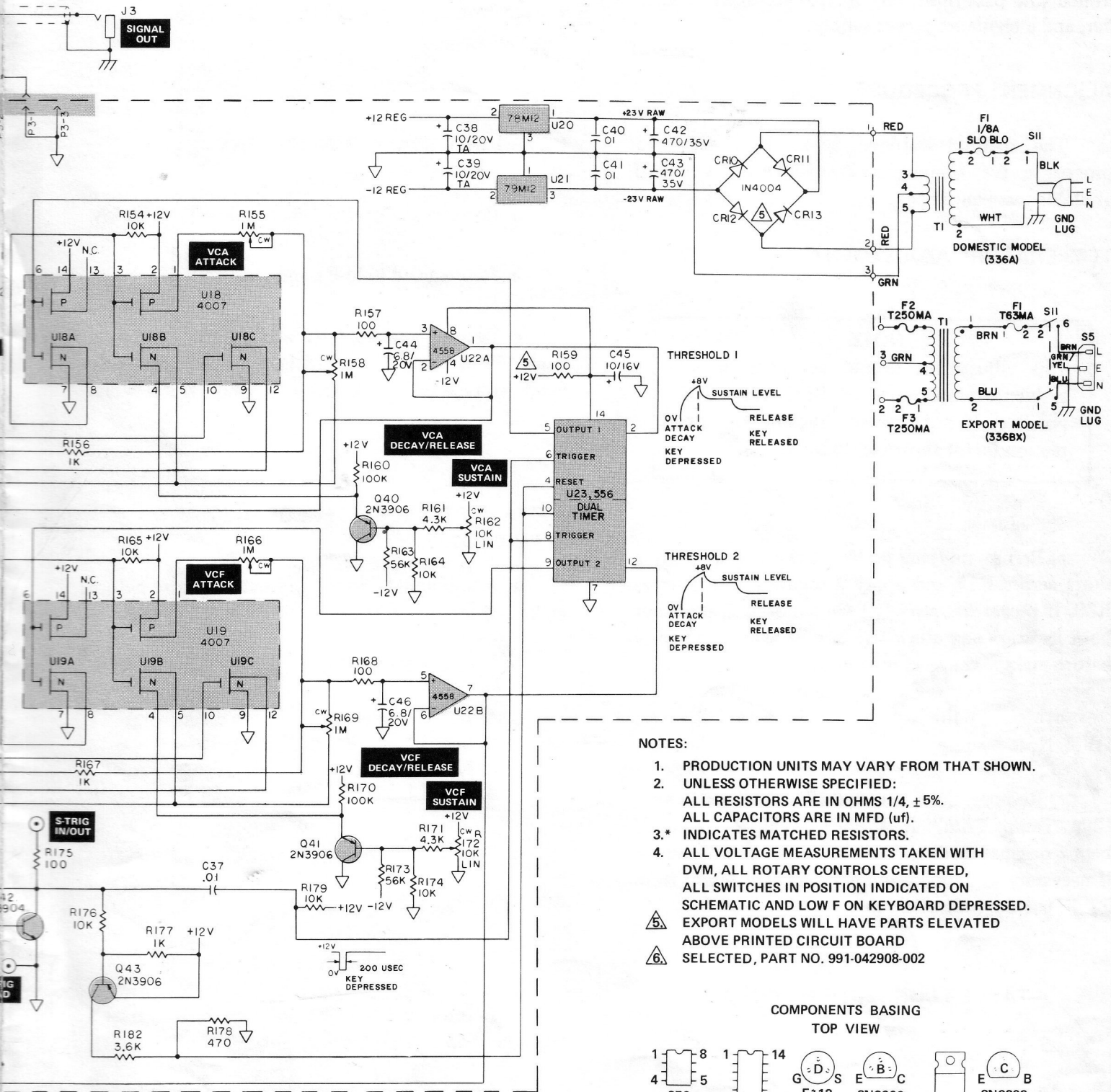


SEE ADJUSTMENT PROCEDURE FOR VOLTAGE

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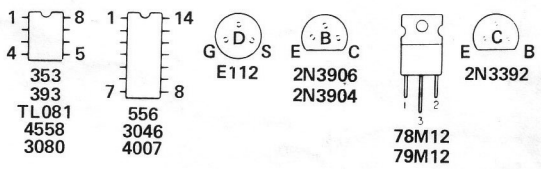






- NOTES:**
1. PRODUCTION UNITS MAY VARY FROM THAT SHOWN.
 2. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS 1/4, ± 5%.
ALL CAPACITORS ARE IN MFD (µf).
 - 3.* INDICATES MATCHED RESISTORS.
 4. ALL VOLTAGE MEASUREMENTS TAKEN WITH DVM, ALL ROTARY CONTROLS CENTERED, ALL SWITCHES IN POSITION INDICATED ON SCHEMATIC AND LOW F ON KEYBOARD DEPRESSED.
- ⚠️ 5. EXPORT MODELS WILL HAVE PARTS ELEVATED ABOVE PRINTED CIRCUIT BOARD
- ⚠️ 6. SELECTED, PART NO. 991-042908-002

COMPONENTS BASING TOP VIEW



INTRODUCTION

The Moog Prodigy Synthesizer, Domestic Model 336A and Export Model 336BX, consists of a 32 note F to C keyboard, two voltage controlled oscillators, two envelope generators, one voltage controlled low pass filter, one voltage controlled amplifier, and a regulated power supply.

ALIGNMENT PROCEDURE

The method outlined below is a suggested procedure for aligning a Prodigy using standard available test equipment.

TEMPERATURE ADJUSTMENT

NOTE

This adjustment should be made at an ambient temperature of 72°F (22°C) if possible. If not, use the appropriate correction factor shown in Table 1.

a) Before applying power to the board, apply a short across R17 and apply a separate short across R38. If power has already been connected, short out both resistors and allow five minute warm-up period before making the next measurement.

b) Measure the voltage at pin 5 of U2B with DVM. Note reading.

c) Remove short across R17 and adjust "Osc 1 Chip Temp Trim" R14 until DVM reads 60mV below original reading. Wait 30 seconds and readjust if necessary. If ambient temperature is different from 72°F, use the following table:

TABLE 1 CORRECTION FACTOR

<u>°F</u>	<u>°C</u>	<u>mV DROP</u>
62	16	70
67	19	65
72	22	60
77	25	55
82	28	50

d) Repeat procedure for Osc 2 Temp adjustment except:

1. Use pin 5 of U4B for voltage adjustment.

2. Remove short on R38 and adjust for correct voltage drop using "Osc 2 Temp Trim" R35.

KEYBOARD SCALE ADJUSTMENT

a. Connect a Digital Voltmeter to pin 1 of U12A.

b. Depress and hold F1 and note voltage.

c. Depress and hold F2 and adjust "Keyboard Scale Trim" R192 until Digital Voltmeter indicates voltage noted in step b plus 1.000 volts.

OSCILLATOR 1 SCALE, FREQUENCY AND HI END ADJUSTMENTS

a. Allow unit to warm up for 15 minutes before making these adjustments.

b. Set the following controls:

- | | |
|------------------------|---------------|
| 1. TUNE | electrical 0 |
| 2. OSCILLATOR 1 OCTAVE | 32' |
| 3. PITCH wheel | center detent |
| 4. OSCILLATOR MOD | OFF |

c. Center the following trim pots:

1. "Osc 1 Freq Trim" R1
2. "Osc 1 Scale Trim" R7
3. "Osc 1 Hi End Trim" R42

d. Depress and hold F3 and zero beat against a frequency of 174.6Hz using "Osc 1 Freq Trim" R1.

e. Depress and hold F1 and zero beat against a frequency of 43.6Hz using "Osc 1 Scale Trim" R7.

f. Repeat steps d and e until perfect 2 octave spread is obtained.

g. Change OSCILLATOR ¹ 2 OCTAVE switch to 8' range.

h. Depress and hold F1 and zero beat against a frequency of 174.6Hz using "Osc 1 Freq Trim" R1.

i. Depress and hold F3 and zero beat against a frequency of 698.4Hz using "Osc 1 Hi End Trim" R42.

j. Repeat steps h and i until a perfect 2 octave spread is obtained.

k. Repeat steps d through j until tuning is satisfactory on all ranges.

l. Change OSCILLATOR 1 OCTAVE switch to 32' range. Depress F1 and tune "Osc 1 Freq Trim" R1 for a frequency of 43.6Hz.

OSCILLATOR 2 SCALE, FREQUENCY, AND HI END ADJUSTMENTS

a. Allow unit to warm up for 15 minutes before making these adjustments.

b. Set the following controls:

- | | |
|--------------------------|---------------|
| 1. TUNE | electrical 0 |
| 2. OSCILLATOR 2 OCTAVE | 16' |
| 3. PITCH wheel | center detent |
| 4. OSCILLATOR MOD | OFF |
| 5. OSCILLATOR 2 INTERVAL | 0 |

c. Center the following trimpots:

1. "Osc 2 Freq Trim" R20
2. "Osc 2 Scale Trim" R28
3. "Osc 2 Hi End Trim" R60

d. Depress and hold F3 and zero beat against a frequency of 349.2Hz using "Osc 2 Freq Trim" R20.

e. Depress and hold F1 and zero beat against a frequency of 88.8Hz using "Osc 2 Scale Trim" R28.

f. Repeat steps d and e until a perfect 2 octave spread is obtained.

g. Change OSCILLATOR 2 switch to 4' range.

h. Depress and hold F1 and zero beat against a frequency of 349.2Hz using "Osc 2 Freq Trim" R20.

i. Depress and hold F3 and zero beat against a frequency of 1396.5Hz using "Osc 2 Hi End Trim" R60.

j. Repeat steps h and i until a perfect 2 octave spread is obtained.

k. Repeat steps d through j until tuning is satisfactory on all ranges.

l. Change OSCILLATOR 2 OCTAVE switch to 16' range. Depress F1 and tune "Osc 2 Freq Trim" R20 for a frequency of 82.4Hz.

FILTER SCALE, EMPHASIS, AND FILTER CUTOFF FREQUENCY ADJUSTMENTS

a. Set the following controls:

- | | |
|----------------------------|-----------------|
| 1. FILTER KYBD TRACKING | OFF |
| 2. EMPHASIS | fully clockwise |
| 3. Filter CUTOFF FREQUENCY | 0 |
| 4. CONTOUR AMOUNT | 0 |

b. Depress and hold F1.

c. Verify filter is oscillating.

d. Adjust "Filter Freq Trim" R140 until frequency of oscillator is $660\text{Hz} \pm 50\text{Hz}$.

e. Adjust "Emphasis Trim" R135 until sine wave oscillation at output of U16B is $-23\text{dB} \pm 3\text{dB}$.

f. Switch FILTER KYBD TRACKING control to FULL.

g. Using Filter CUTOFF FREQUENCY control R141, zero beat filter against a frequency of 349.2Hz.

h. Depress F3 and zero beat filter against a

frequency of 1396.5Hz using "Filter Scale Trim" R152.


i. Repeat steps g and h until perfect 2 octave spread is obtained.

j. Reset Filter CUTOFF FREQUENCY control R141 to 0 and FILTER KYBD TRACKING control to OFF.

k. Using "Filter Freq Trim" R140, reset filter frequency to $666\text{Hz} \pm 10\text{Hz}$.

VCA BALANCE ADJUSTMENT

a. Set the following controls:

- | | |
|---|---|
| 1. MOD RATE | 30Hz |
| 2. MOD SHAPE |  |
| 3. MIXER OSCILLATOR 2
and OSCILLATOR 2 | fully counter-
clockwise |

b. Connect a 20K ohm resistor between output of U13A and emitter of Q39.

c. Adjust "VCA Balance Trim" R120 for minimum level at output of U16A.

SELECTED REPLACEMENT PARTS LIST

REF DESIG	PART NUMBER	DESCRIPTION	QTY
C1,C3 C2,C4 thru C7, C10,C13,C16, C17,C18,C24, C37,C40,C41 C8 C9,C15,C30 C11,C19 C12,C20 C14 C21 C22 C23 C25 C26 C27,C32,C33, C34 C28,C29,C31 C35 C36,C45 C38,C39 C42,C43 C44,C46 CR1,CR2,CR5 thru CR9 CR3,CR4 CR10 thru CR13 CR14 F1 F1* F2,F3* J1 Q6,Q12,Q15, Q17,Q19,Q38, Q42 Q13,Q14,Q16, Q20 Q18,Q37,Q39 Q40,Q41,Q43 Q23 thru Q28 R1 R7,R28 R14,R35 R19,R47,R74, R95,R141,R150, R162,R172 R20 R42,R60 R83 R92 R106	947-044464-470 947-044499-103 946-040229-222 947-044464-101 947-044464-501 947-044464-100 947-044346-102 946-040231-003 947-044464-102 946-041978-334 946-041978-105 945-040209-005 946-041978-273 946-041978-104 945-040209-003 945-040209-015 946-040231-002 945-040209-007 946-040231-004 919-041075-001 919-044466-001 919-042019-001 939-041850-001 939-041620-001 939-044094-007 939-044094-006 910-041306-001 991-041051-001 991-041055-001 991-041052-001 991-042017-001 925-042526-003 925-042526-006 925-042389-004 925-042550-002 925-042526-003 925-040275-004 925-042550-007 925-042389-002 925-042550-005	Capacitor, Tubular, 47pf Capacitor, Tubular, .01uf Capacitor, Polyester, .0022uf Capacitor, Tubular, 100pf Capacitor, Tubular, 500pf Capacitor, Tubular, 10pf Capacitor, Polypropylene, .001uf Capacitor, Tantalum, 2.7uf/35V Capacitor, Tubular, .001uf Capacitor, Polyester, .33uf Capacitor, Polyester, 1uf Capacitor, Aluminum Electrolytic Capacitor, Polyester, .027uf Capacitor, Polyester, .1uf Capacitor, Aluminum Electrolytic, 220uf/6.3V Capacitor, Aluminum Electrolytic, 10uf/16V Capacitor, Tantalum, 10uf/20V Capacitor, Aluminum Electrolytic, 470uf/35V Capacitor, Tantalum, 6.8uf/20V Diode, Signal, 1N4148 Diode, Low Leakage, FDH333 Diode, Rectifier, 1N4004 LED, 15mA, Red, Hi Intensity, Power Fuse, Slo Blo, 125mA, 250V Fuse, 5mm x 20mm, 63mA Fuse, 5mm x 20mm, 250mA Phone Jack, 1 Circuit, .250 dia Transistor, NPN, 2N3904 Transistor, FET, N-Chan, E112 Transistor, PNP, 2N3906 Transistor, NPN, 2N3392 Resistor, Trim Pot, 10K Ohm, Cermet Resistor, Trim Pot, 500 Ohm, Cermet Resistor, Trim Pot, 500 Ohm, Cermet Resistor, Rotary, 10K Ohm, Linear Resistor, Trim Pot, 10K, Cermet Resistor, Trim Pot, 10K Ohm, Carbon Resistor, Rotary, Audio, 10% LOG Resistor, Trim Pot, 10K Ohm, Cermet Resistor, Rotary, 2.5 Megohm, Audio, 10% CCW LOG	2 14 1 3 2 2 1 1 1 1 1 1 4 3 1 2 2 2 2 2 7 2 4 1 1 2 1 7 4 6 6 1 2 2 8 1 2 1 1 1

SELECTED REPLACEMENT PARTS LIST (Continued)

REF DESIG	PART NUMBER	DESCRIPTION	QTY
R120,R140	925-040275-001	Resistor, Trim Pot, 100K Ohm, Carbon	2
R122	925-042550-001	Resistor, Rotary, 5K Ohm, Audio LOG	1
R135	925-040275-002	Resistor, Trim Pot, 1K Ohm, Carbon	1
R136	925-042550-003	Resistor, Rotary, 50K Ohm, 10% CCW LOG	1
R152	925-040275-011	Resistor, Trim Pot, 470 Ohm, Carbon	1
R155,R158, R166,R169	925-042550-004	Resistor, Rotary, 1 Megohm, Audio	4
SW1,2,4,5,6,	960-041752-001	Switch, Slide, 2P3T, UID	6
SW3, 7 thru 10	960-041751-001	Switch, Slide, 2P2T, UID	4
U1,U3	991-041104-002	Integrated Circuit, Trans Array, CA3046	2
U2,U4,U12**	991-042908-001	Integrated Circuit, Dual Operational Amplifier, LF353	3
U5,U8,U11, U13,U16,U22	991-041146-001	Integrated Circuit, Dual Operational Amplifier, 4558	6
U6,U9	991-042388-001	Integrated Circuit, Dual Voltage Comparator, LM393	2
U7,U10	991-042386-001	Integrated Circuit, Operational Amplifier, TL081C	2
U14,U15	991-041104-001	Integrated Circuit, Trans Array, CA3046	2
U17	991-041089-003	Integrated Circuit, Operational Trans Amplifier, LM3080AN	1
U18,U19	991-041086-001	Integrated Circuit, CMOS, Dual Comp, Pair Invert, 4007	2
U20	991-041112-002	Integrated Circuit, + 12V Voltage Regulator, 78M12	1
U21	991-044316-001	Integrated Circuit, - 12V Voltage Regulator, 79M12	1
U23	991-041109-001	Integrated Circuit, Dual Timer, 556	1
T1	954-044309-001	Transformer, Domestic Model	1
T1*	954-044334-001	Transformer, 220V	1
	967-044089-001	Cabinet and Chassis	1
	915-040922-001	Cap, Glamor, Slide Switch, White	10
	932-041642-002	Carton, Shipping	1
	967-044093-001	Base	1
	961-041178-001	Detent, Spring	1
	962-041179-001	Detent, Teflon	1
	916-042584-001	Foot, 7/8 in. Dia. x 33/8 in., Black Rubber	4
	967-040935-001	Heat Sink	2
	997-041305-002	Knob Assembly	16
	979-044123-001	Keyboard, 32 Note	1
	997-044314-001	Owner's Manual	Ref
	997-041597-001	Wheel Assembly	2
	964-044471-001	White Key C	2
	964-044471-002	White Key D	2
	964-044471-003	White Key E	2
	964-044471-004	White Key F	3
	964-044471-005	White Key G	3
	964-044471-006	White Key A	3
	964-044471-007	White Key B	3
	964-044471-008	White Key, High C	1
	964-044472-001	Black Key	13
	975-044473-001	Spring No. 7	32
	960-044474-001	Switch Unit No. 6	3
	960-044474-002	Switch Unit No. 7	2
	914-044475-001	Damper 9B	1
	914-044475-002	Damper, 8B	1

* Used on Export Models Only

** On Later Versions Change Part Number of U12 to -002