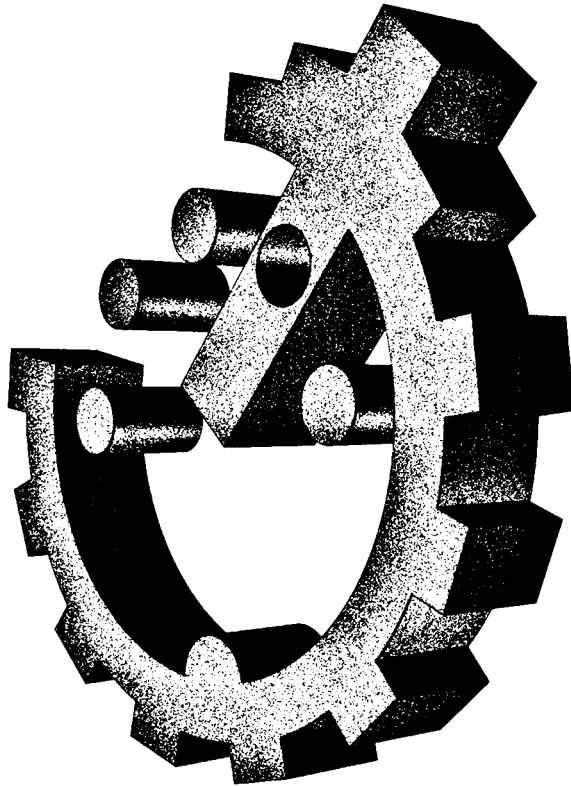


<sup>TM</sup>  
MACKIE

# ULTRA-34 ULTRAPILOT UNIVERSAL AUTOMATION SYSTEM



## SERVICE MANUAL

820-178-00 MACKIE DESIGNS INC.

# ULTRAMIX SELF TEST PROCEDURE

## Setup:

Connect the MIDI OUT jack of the DUT to the MIDI IN jack of the DUT.

Use Control Interface Port test adapter to connect the TX to the RX signal at the CIP<sup>1</sup>.

## RAM Test: (Tests SRAM and EEPROM)

Action:	Response:
Apply power to DUT. <sup>2</sup>	<p><b>PASS:</b> The three LEDs on the front panel will light up sequentially (MIDI first, then Bypass, then Local). All LEDs will then go off and the Bypass LED will come back on, indicating that the DUT is in its default power-on mode and is ready for normal operation.</p> <p><b>FAIL:</b> The bottom two LEDs (Bypass and Local Mode) will flash quickly and the DUT will hold in this failure mode.</p>

## IO Port Test: (Tests MIDI IO and Control Interface Port IO)

Action:	Response:
Simultaneously apply power to DUT and depress Local Mode switch. <sup>3</sup>	<p><b>PASS:</b> All three front panel LEDs should flash at about 4 Hz.<sup>4</sup></p> <p><b>FAIL:</b> One (or more) of the LEDs remain unlit. Bottom (Local Mode) LED = CIP failure Middle (Bypass) LED = MIDI port failure</p>

## Switch Test: ( Tests the front panel switches )

Action:	Response:
<i>This is a continuation of the IO Port Test.</i> Depress each switch, one switch at a time.	When a switch is depressed, its companion LED will go off as long as the switch is engaged. Release the switch and the LED should resume flashing.

<sup>1</sup> Control Interface Port

<sup>2</sup> If DUT is already powered up, remove power then reapply power.

<sup>3</sup> See Note 2

<sup>4</sup> The LEDs will not be flashing in sync, but that's ok.

VCA / DAC and Meter Test:

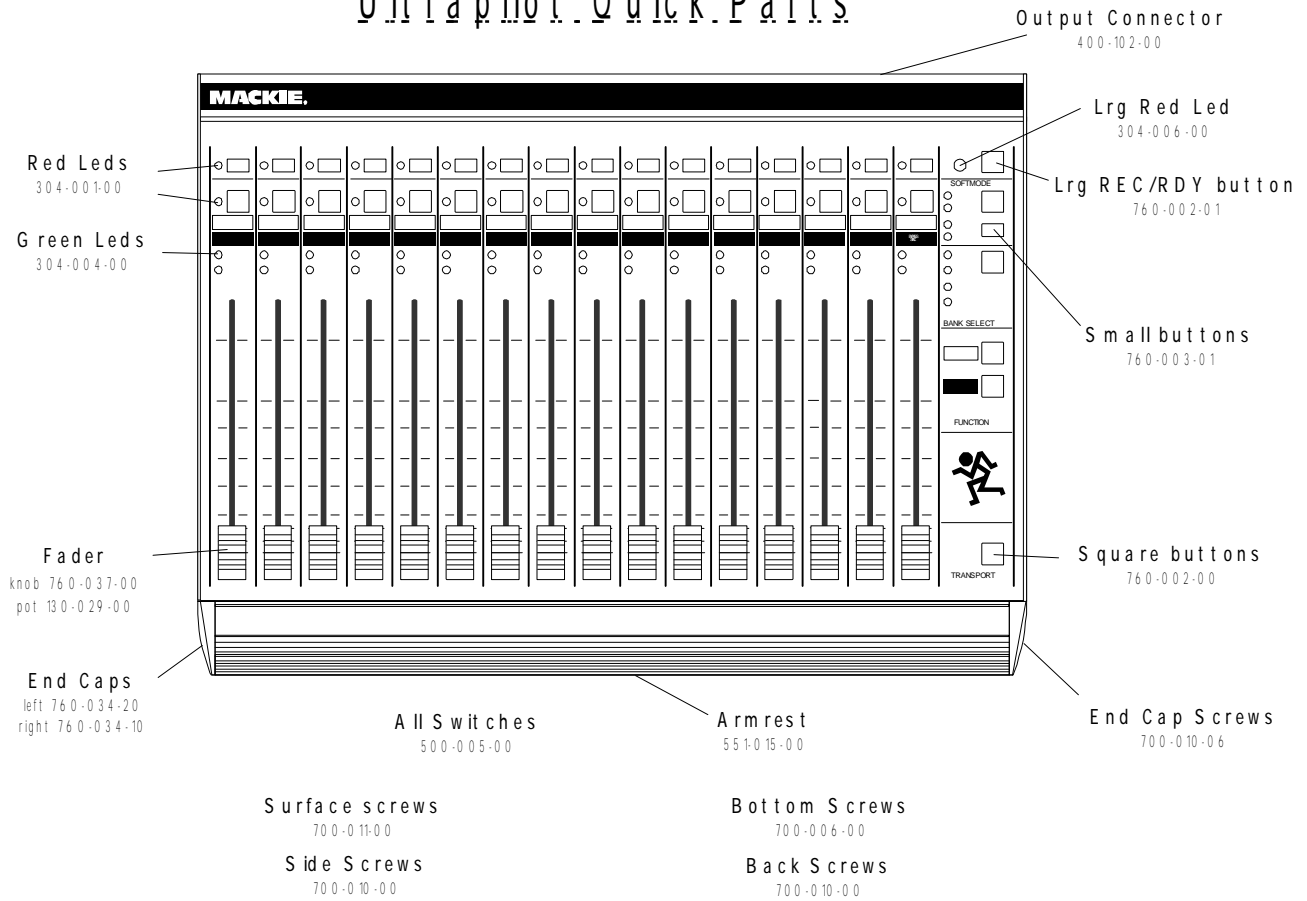
( Tests the voltage controlled amps. , their digital to analog converters and the meter circuitry)

Action:	Response:
<p><i>This is a continuation of the IO Port Test.</i> Simultaneously depress the Local Mode and Bypass switches.</p>	<p>This test ramps all of the VCAs up and down and runs the meter multiplexer.</p> <p>The local mode and bypass LEDs indicate the direction that the VCAs are being ramped, with the Bypass LED indicating an upward ramp and the Local Mode LED indicating a downward ramp. The VCAs can be held at full gain by depressing the Bypass switch or at full attenuation by depressing the Local Mode switch. The VCAs will return to ramp mode when the switch is disengaged.</p> <p>This test will also allow you to check the meter circuitry by probing pin 3 of any 4051 IC on the VCA board. As long as the VCA test is active, the meter multiplexer is running.</p>

End of Test:  
(Good Bye)

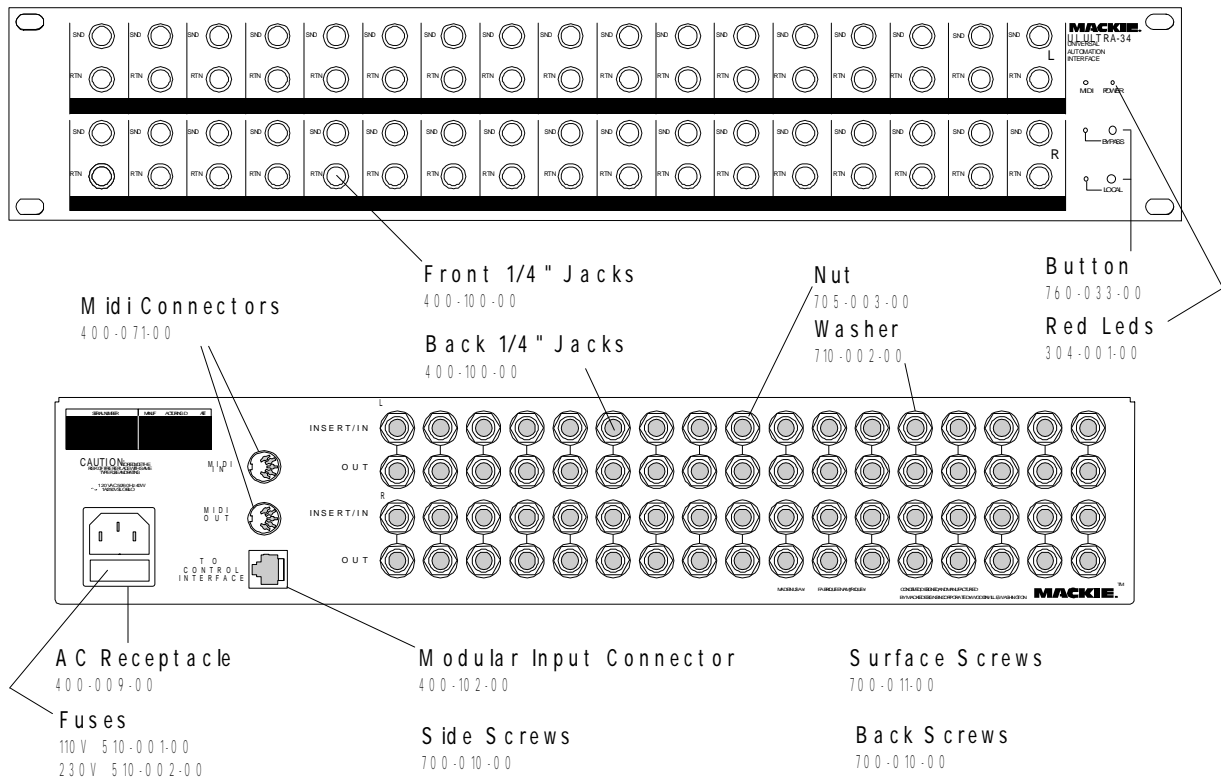
Action:	Response:
<p><i>This is a continuation of the VCA / DAC and Meter Test.</i> Simultaneously depress the Local Mode and Bypass switches.</p>	<p>Ends test and returns DUT to its normal operating mode.</p>

# Ultrapi lot . Q u i c k . P a r t s

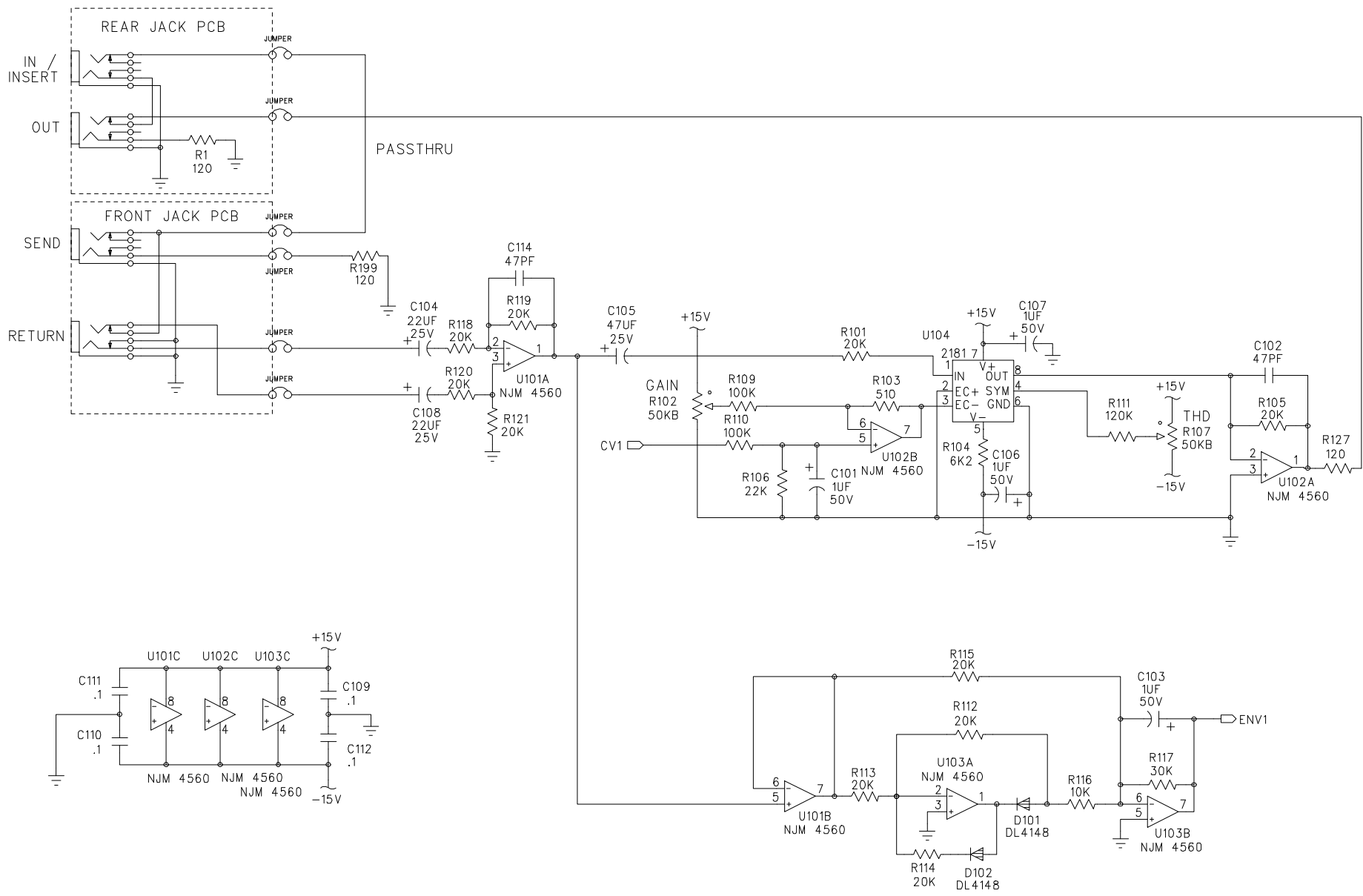


JH III 1/9 6

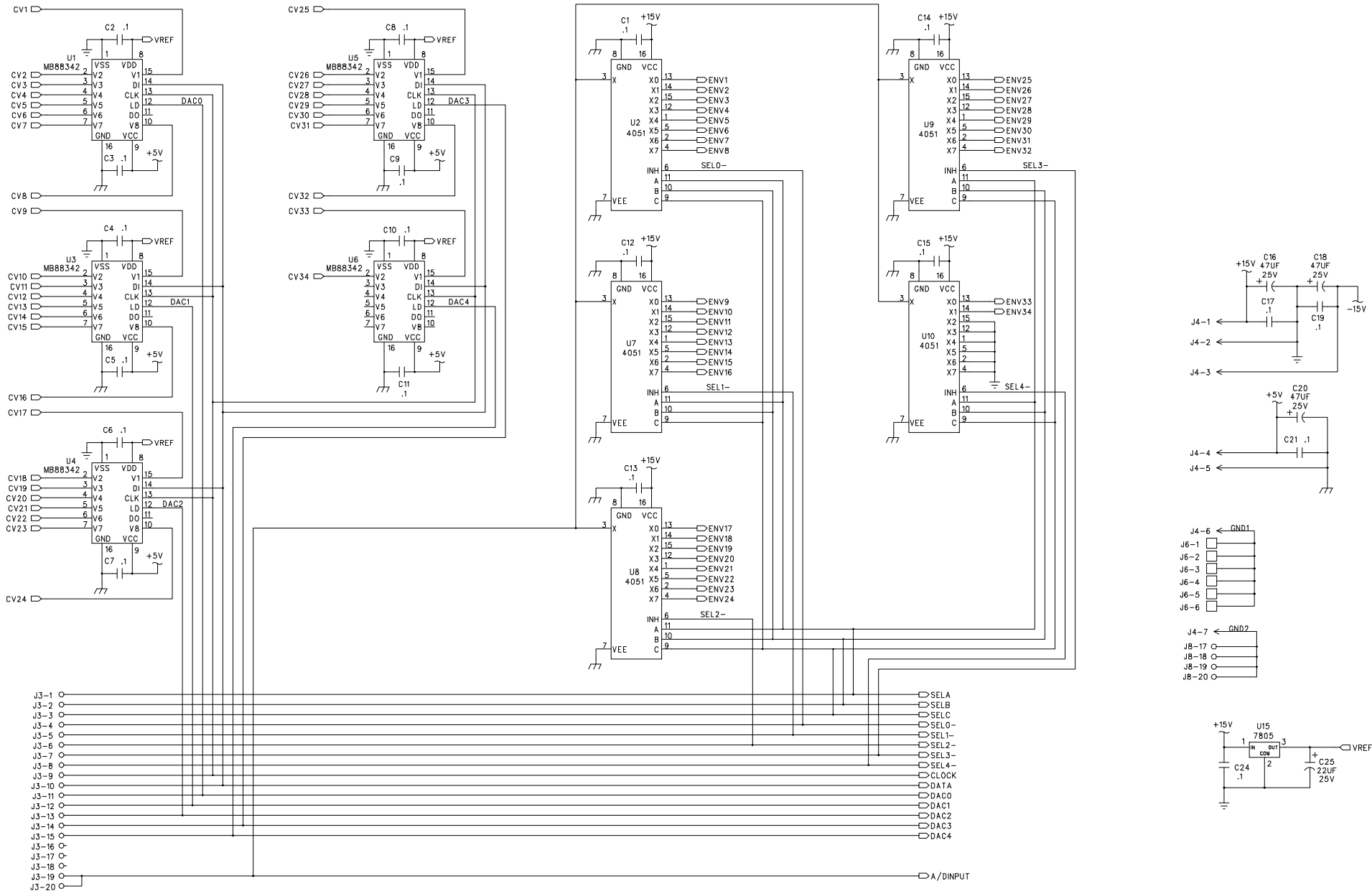
# U l t r a - 3 4 \_ G a i n \_ C e l l \_ Q u i c k \_ P a r t s



JH III 1-9 6



**MACKIE**  
 ULTRAMIX VCA CIRCUIT  
 CHANNEL 1 SHOWN



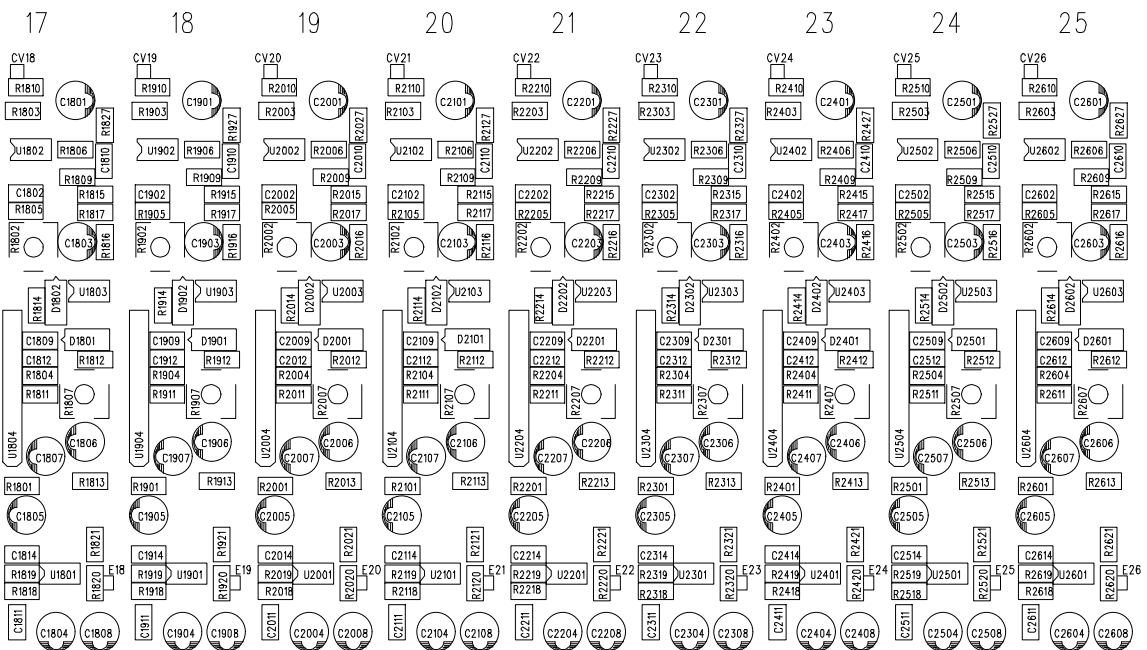
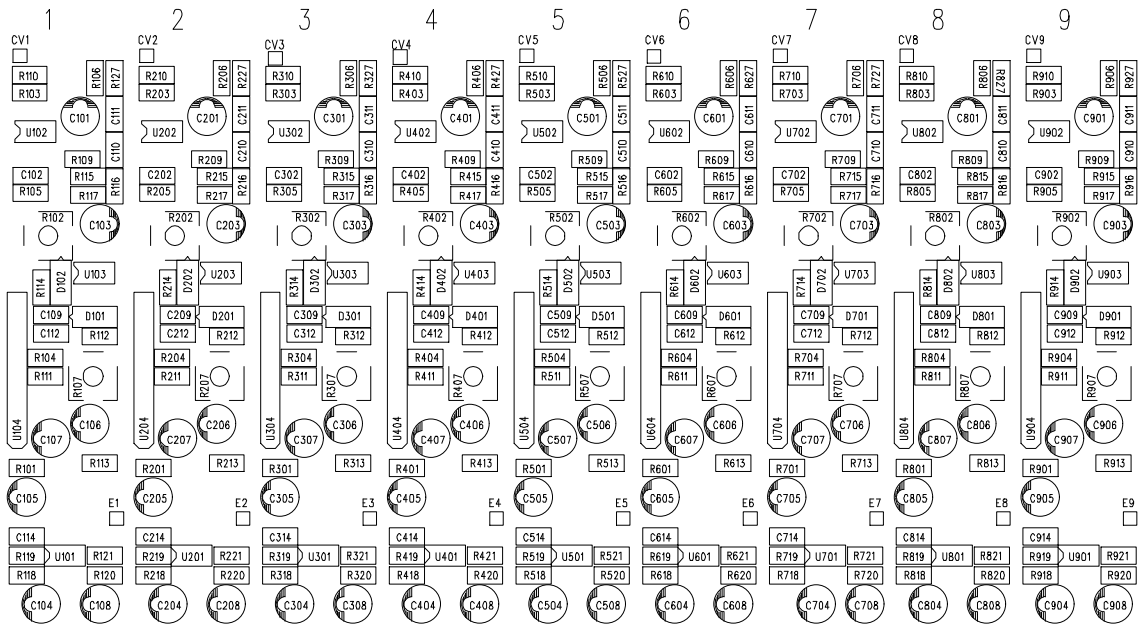
**MACKIE**  
 ULTRAMIX VCA BOARD  
 D/A CIRCUIT

VCA GAIN CELL ASSY

055-036-00 REV: \_\_\_\_\_



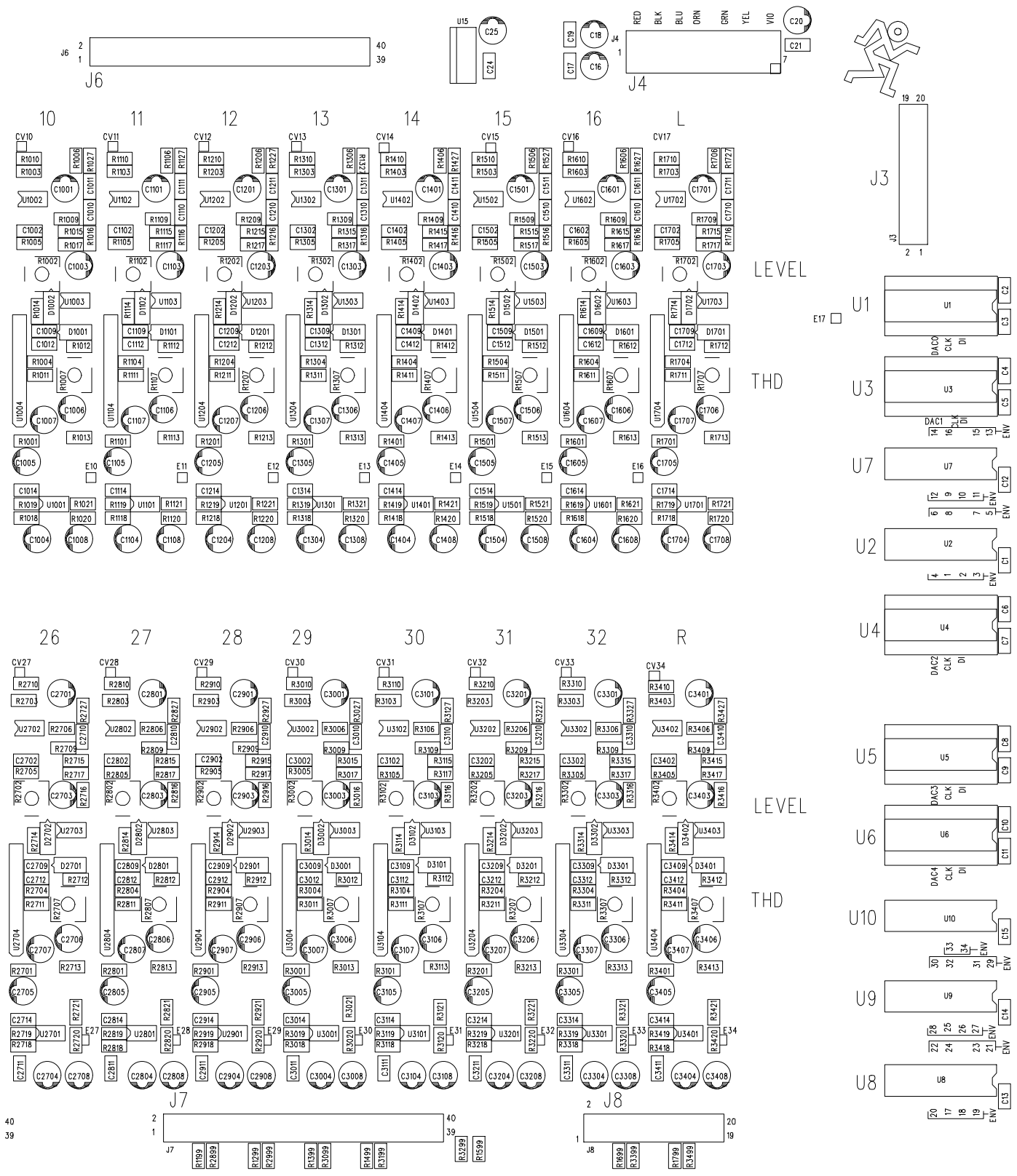
J1



J2



J5





J2 (J38 on front jack PCB)			
CH 17 RETURN -	1	2	CH 17 RETURN +
CH 1 RETURN -	3	4	CH 1 RETURN +
CH 17 SEND	5	6	CH 1 SEND
CH 17 SEND GND	7	8	CH 1 SEND GND
CH 18 RETURN -	9	10	CH 18 RETURN +
CH 2 RETURN -	11	12	CH 2 RETURN +
CH 18 SEND	13	14	CH 2 SEND
CH 18 SEND GND	15	16	CH 2 SEND GND
CH 19 RETURN -	17	18	CH 19 RETURN +
CH 3 RETURN -	19	20	CH 3 RETURN +
CH 19 SEND	21	22	CH 3 SEND
CH 19 SEND GND	23	24	CH 3 SEND GND
CH 20 RETURN -	25	26	CH 20 RETURN +
CH 4 RETURN -	27	28	CH 4 RETURN +
CH 20 SEND	29	30	CH 4 SEND
CH 20 SEND GND	31	32	CH 4 SEND GND
CH 21 RETURN -	33	34	CH 21 RETURN +
CH 5 RETURN -	35	36	CH 5 RETURN +
CH 21 SEND	37	38	CH 5 SEND
CH 21 SEND GND	39	40	CH 5 SEND GND

J1			
CH 1 OUT	1	2	CH 17 OUT
CH 1 IN	3	4	CH 17 IN
CH 2 OUT	5	6	CH 18 OUT
CH 2 IN	7	8	CH 18 IN
CH 3 OUT	9	10	CH 19 OUT
CH 3 IN	11	12	CH 19 IN
CH 4 OUT	13	14	CH 20 OUT
CH 4 IN	15	16	CH 20 IN
CH 5 OUT	17	18	CH 21 OUT
CH 5 IN	19	20	CH 21 IN
CH 6 OUT	21	22	CH 22 OUT
CH 6 IN	23	24	CH 22 IN
CH 7 OUT	25	26	CH 23 OUT
CH 7 IN	27	28	CH 23 IN
CH 8 OUT	29	30	CH 24 OUT
CH 8 IN	31	32	CH 24 IN
CH 9 OUT	33	34	CH 25 OUT

J5 (J125 on front jack PCB)			
CH 22 RETURN -	1	2	CH 22 RETURN +
CH 6 RETURN -	3	4	CH 6 RETURN +
CH 22 SEND	5	6	CH 6 SEND
CH 22 SEND GND	7	8	CH 6 SEND GND
CH 23 RETURN -	9	10	CH 23 RETURN +
CH 7 RETURN -	11	12	CH 7 RETURN +
CH 23 SEND	13	14	CH 7 SEND
CH 23 SEND GND	15	16	CH 7 SEND GND
CH 24 RETURN -	17	18	CH 24 RETURN +
CH 8 RETURN -	19	20	CH 8 RETURN +
CH 24 SEND	21	22	CH 8 SEND
CH 24 SEND GND	23	24	CH 8 SEND GND
CH 25 RETURN -	25	26	CH 25 RETURN +
CH 9 RETURN -	27	28	CH 9 RETURN +
CH 25 SEND	29	30	CH 9 SEND
CH 25 SEND GND	31	32	CH 9 SEND GND
CH 26 RETURN -	33	34	CH 26 RETURN +
CH 10 RETURN -	35	36	CH 10 RETURN +
CH 26 SEND	37	38	CH 10 SEND
CH 26 SEND GND	39	40	CH 10 SEND GND

J6			
GND	1	2	GND
GND	3	4	GND
GND	5	6	GND
CH 9 IN	7	8	CH 25 IN
CH 10 OUT	9	10	CH 26 OUT
CH 10 IN	11	12	CH 26 IN
CH 11 OUT	13	14	CH 27 OUT
CH 11 IN	15	16	CH 27 IN
CH 12 OUT	17	18	CH 28 OUT
CH 12 IN	19	20	CH 28 IN
CH 13 OUT	21	22	CH 29 OUT
CH 13 IN	23	24	CH 29 IN
CH 14 OUT	25	26	CH 30 OUT
CH 14 IN	27	28	CH 30 IN
CH 15 OUT	29	30	CH 31 OUT
CH 15 IN	31	32	CH 31 IN
CH 16 OUT	33	34	CH 32 OUT
CH 16 IN	35	36	CH 32 IN
LEFT OUT	37	38	RIGHT OUT
LEFT IN	39	40	RIGHT IN

J7 (J60 on front PCB)			
CH 27 RETURN -	1	2	CH 27 RETURN +
CH 11 RETURN -	3	4	CH 11 RETURN +
CH 27 SEND	5	6	CH 11 SEND
CH 27 SEND GND	7	8	CH 11 SEND GND
CH 28 RETURN -	9	10	CH 28 RETURN +
CH 12 RETURN -	11	12	CH 12 RETURN +
CH 28 SEND	13	14	CH 12 SEND
CH 28 SEND GND	15	16	CH 12 SEND GND
CH 29 RETURN -	17	18	CH 29 RETURN +
CH 13 RETURN -	19	20	CH 13 RETURN +
CH 29 SEND	21	22	CH 13 SEND
CH 29 SEND GND	23	24	CH 13 SEND GND
CH 30 RETURN -	25	26	CH 30 RETURN +
CH 14 RETURN -	27	28	CH 14 RETURN +
CH 30 SEND	29	30	CH 14 SEND
CH 30 SEND GND	31	32	CH 14 SEND GND
CH 31 RETURN -	33	34	CH 31 RETURN +
CH 15 RETURN -	35	36	CH 15 RETURN +
CH 31 SEND	37	38	CH 15 SEND
CH 31 SEND GND	39	40	CH 15 SEND GND

J4	
+15 VDC	1
GND	2
-15 VDC	3
+5 VDC	4
DGND	5
GND	6
GND	7

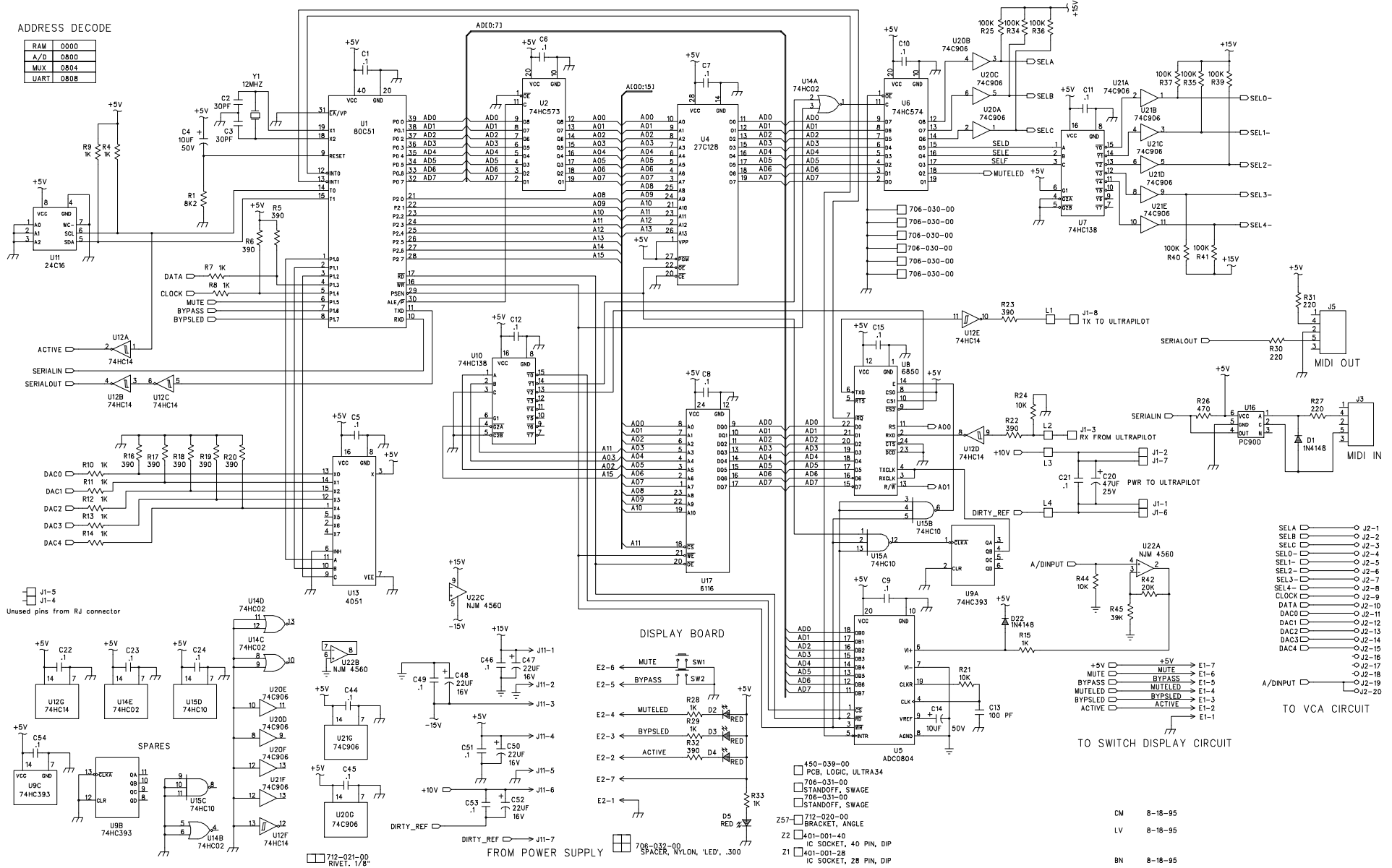
J8 (J82 on front PCB)			
CH 32 RETURN -	1	2	CH 32 RETURN +
CH 16 RETURN -	3	4	CH 16 RETURN +
CH 32 SEND	5	6	CH 16 SEND
CH 32 SEND GND	7	8	CH 16 SEND GND
RIGHT RETURN -	9	10	RIGHT RETURN +
LEFT RETURN -	11	12	LEFT RETURN +
RIGHT SEND	13	14	LEFT SEND
RIGHT SEND GND	15	16	LEFT SEND GND
GND	17	18	GND
GND	19	20	GND

J3			
SEL A	1	2	SEL B
SEL C	3	4	SEL 0-
SEL 1-	5	6	SEL 2-
SEL 3-	7	8	SEL 4-
CLOCK	9	10	DATA
DAC 0	11	12	DAC 1
DAC 2	13	14	DAC 3
DAC 4	15	16	N/C
N/C	17	18	N/C
A/D INPUT	19	20	A/D INPUT

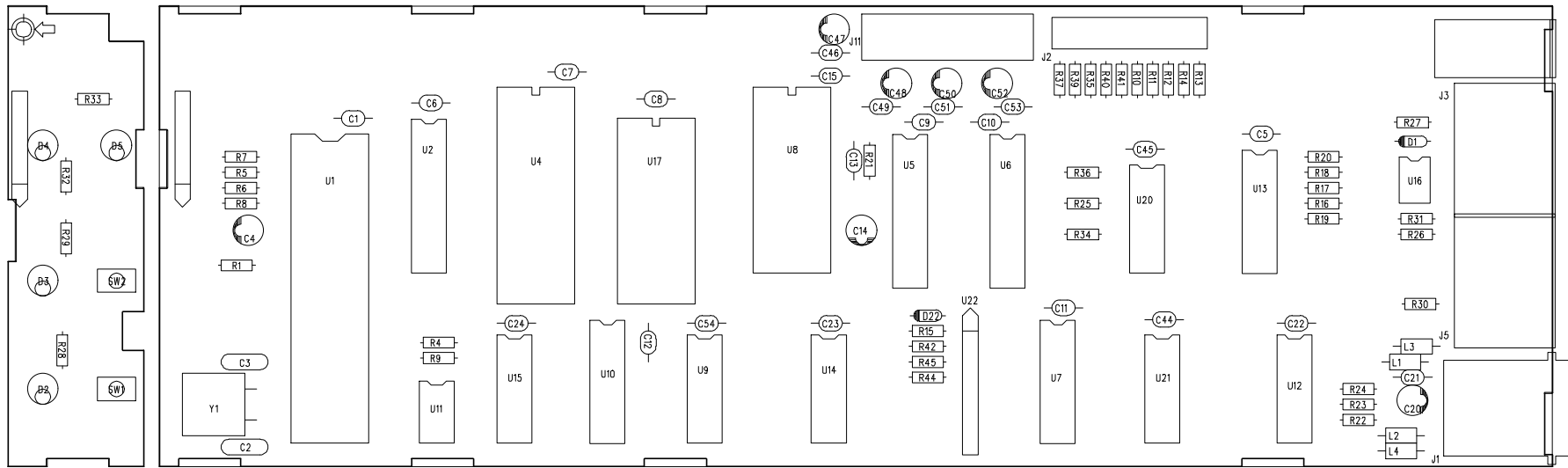
**MACKIE**  
ULTRAMIX VCA BOARD  
JUMPER PINOUT

ADDRESS DECODE

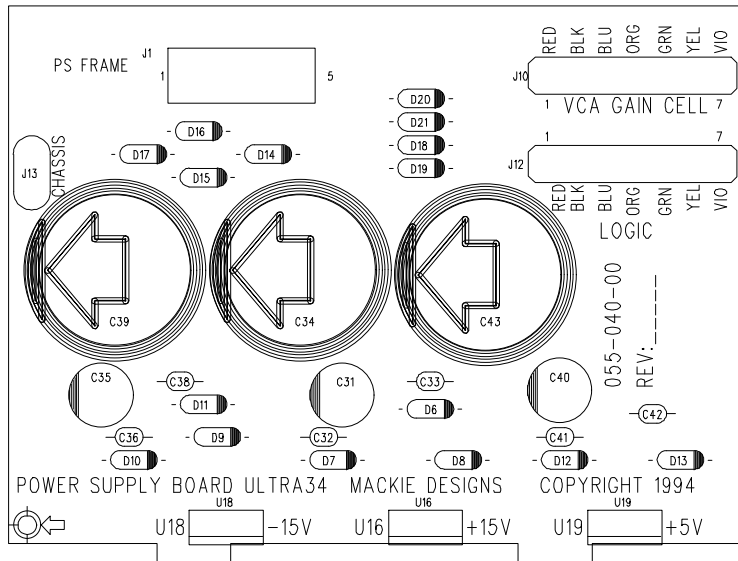
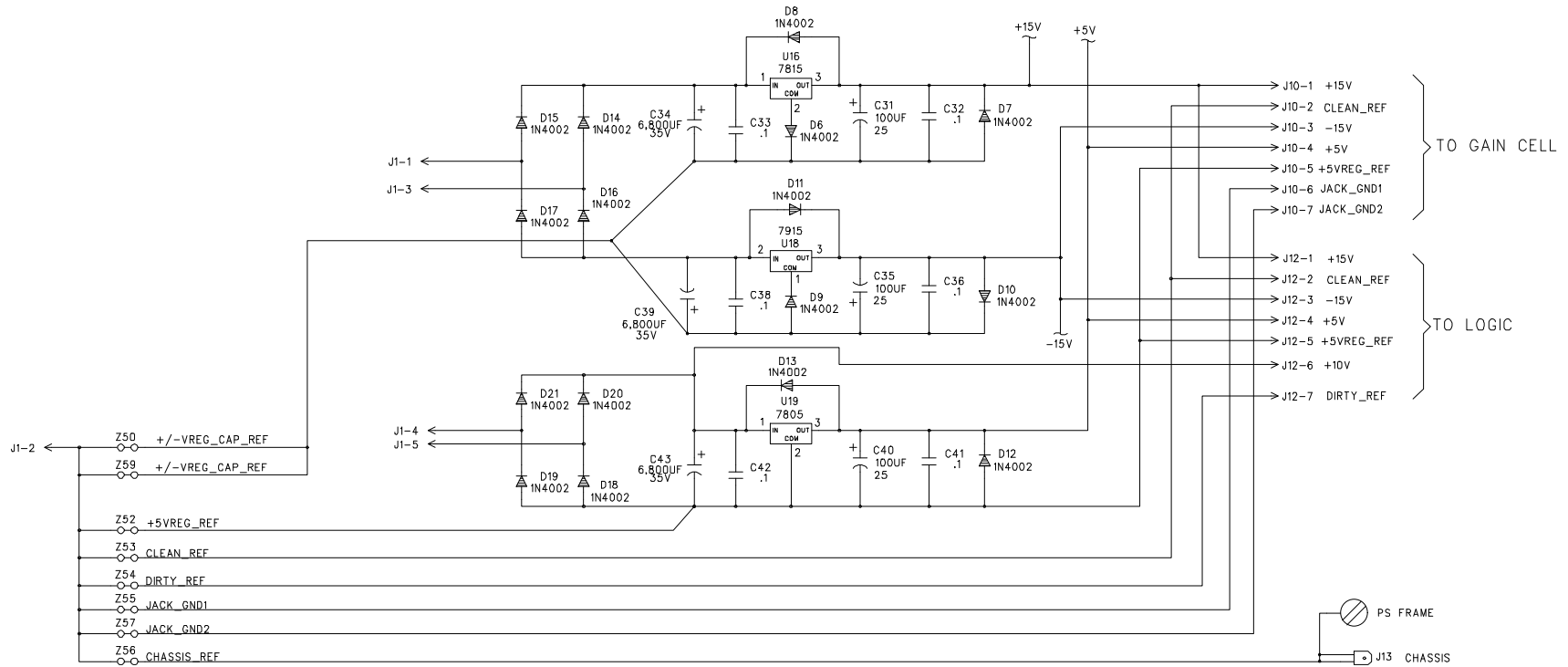
RAM	0000
A/D	0800
MUX	0804
UART	0808



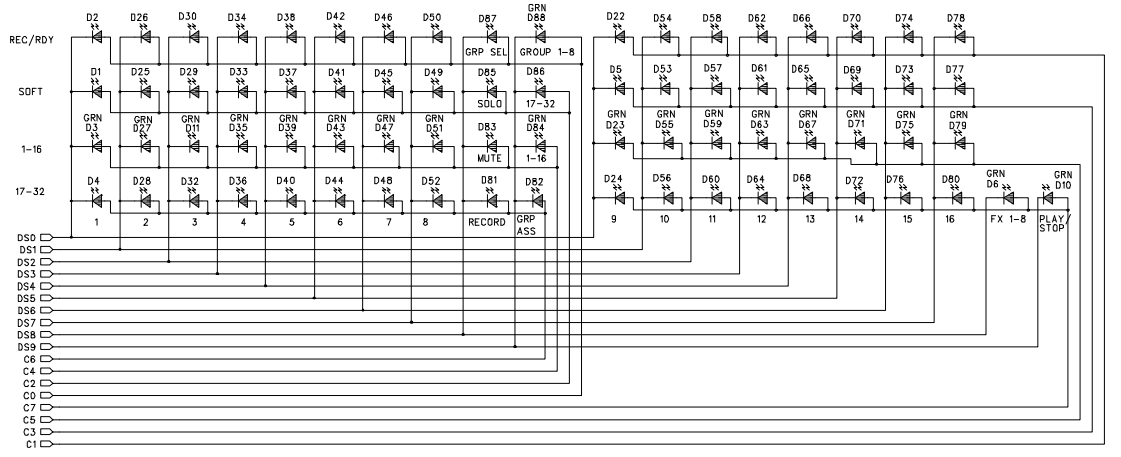
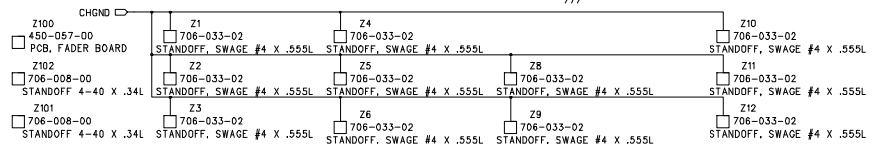
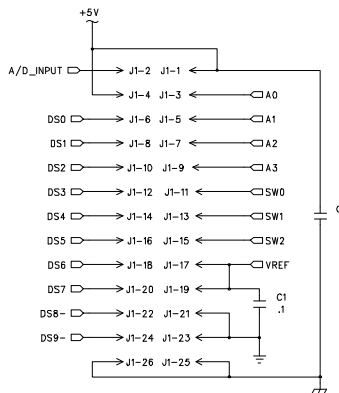
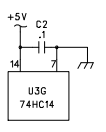
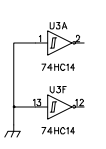
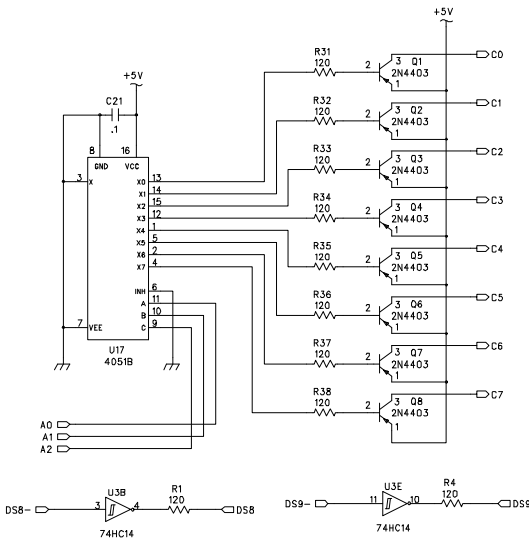
**MACKIE**  
ULTRAMIX LOGIC BOARD SCHEMATIC

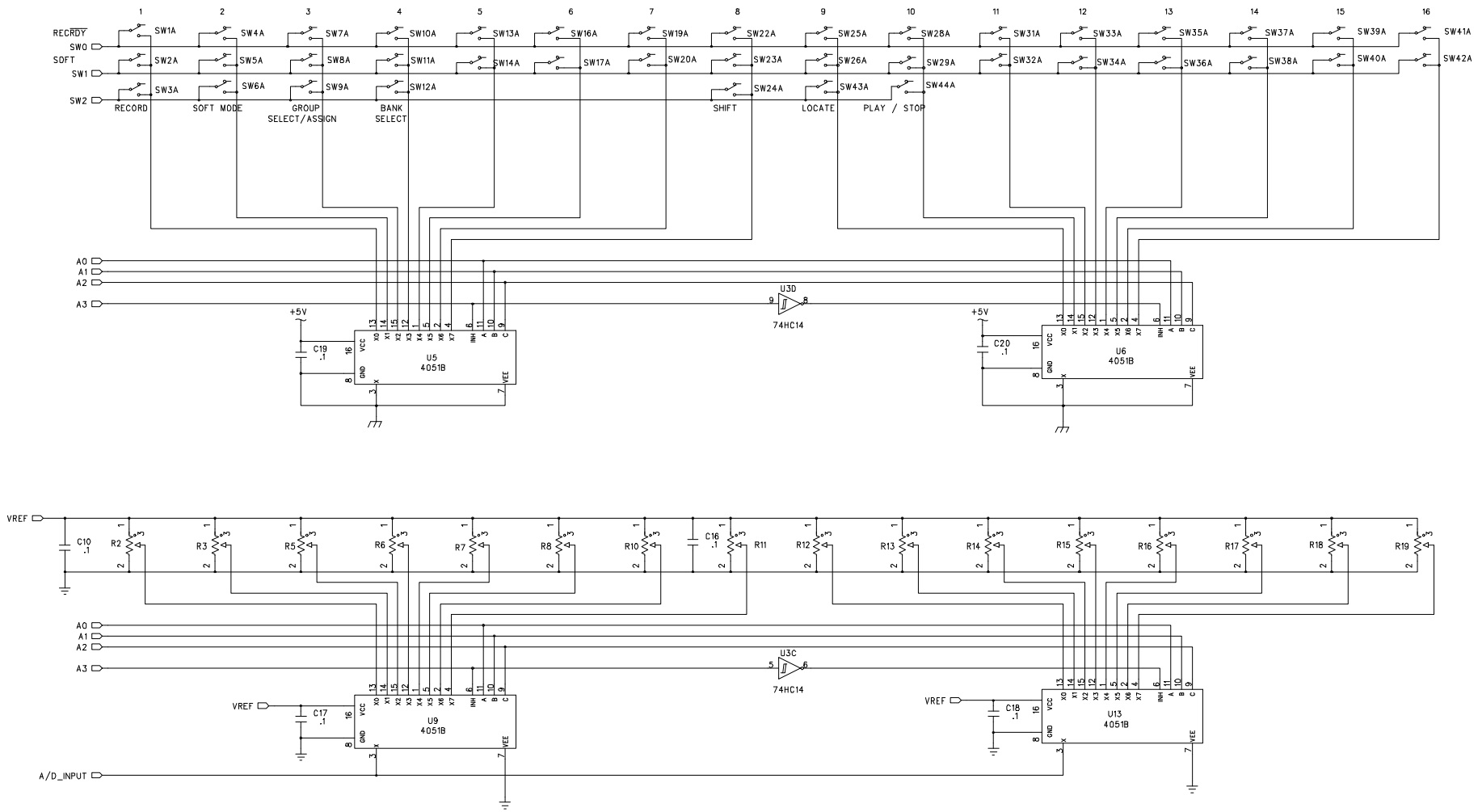


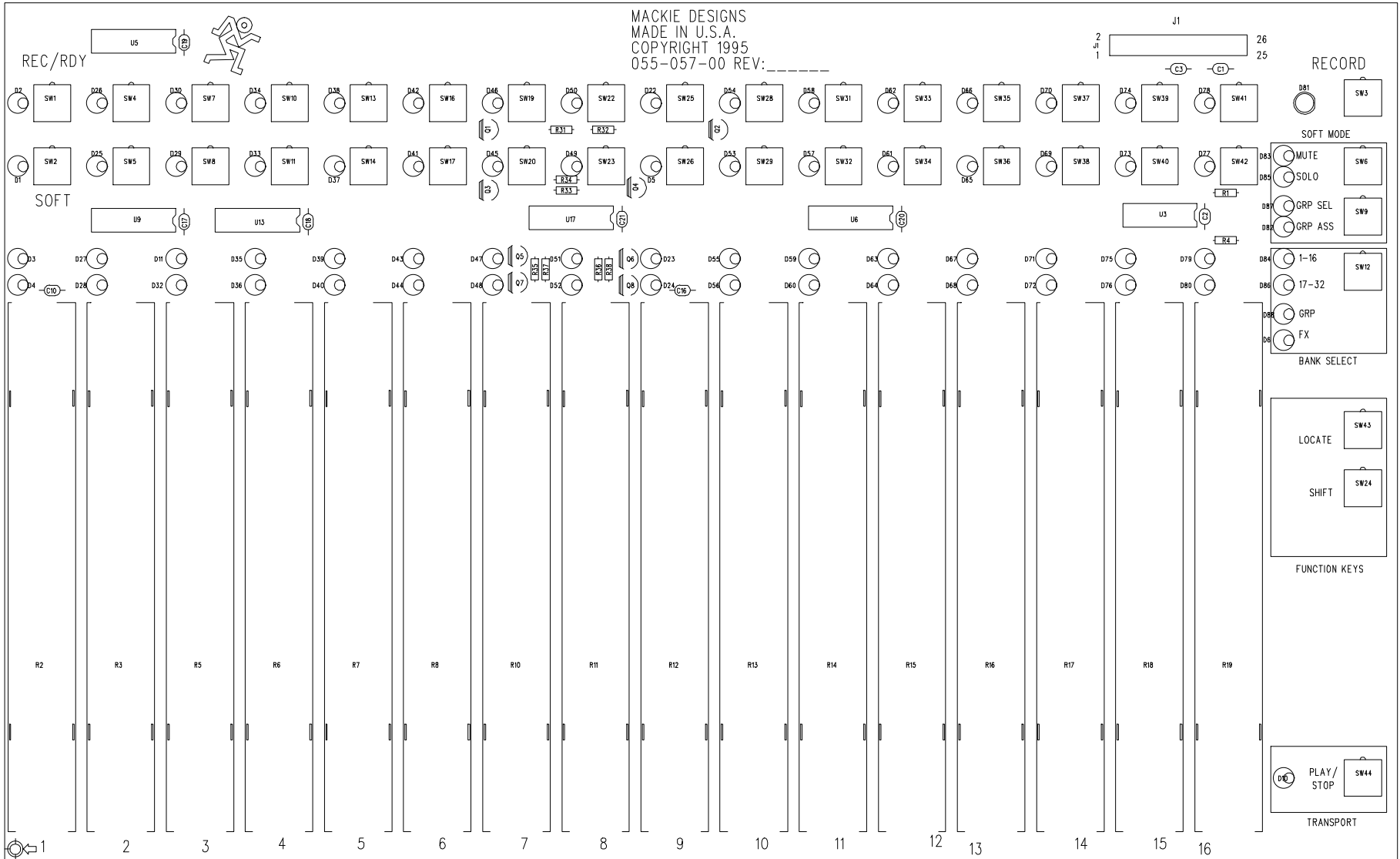
**MACKIE.**  
ULTRAMIX LOGIC PCB LAYOUT



**MACKIE.**  
 ULTRAMIX POWER SUPPLY  
 SCHEMATIC AND PCB LAYOUT



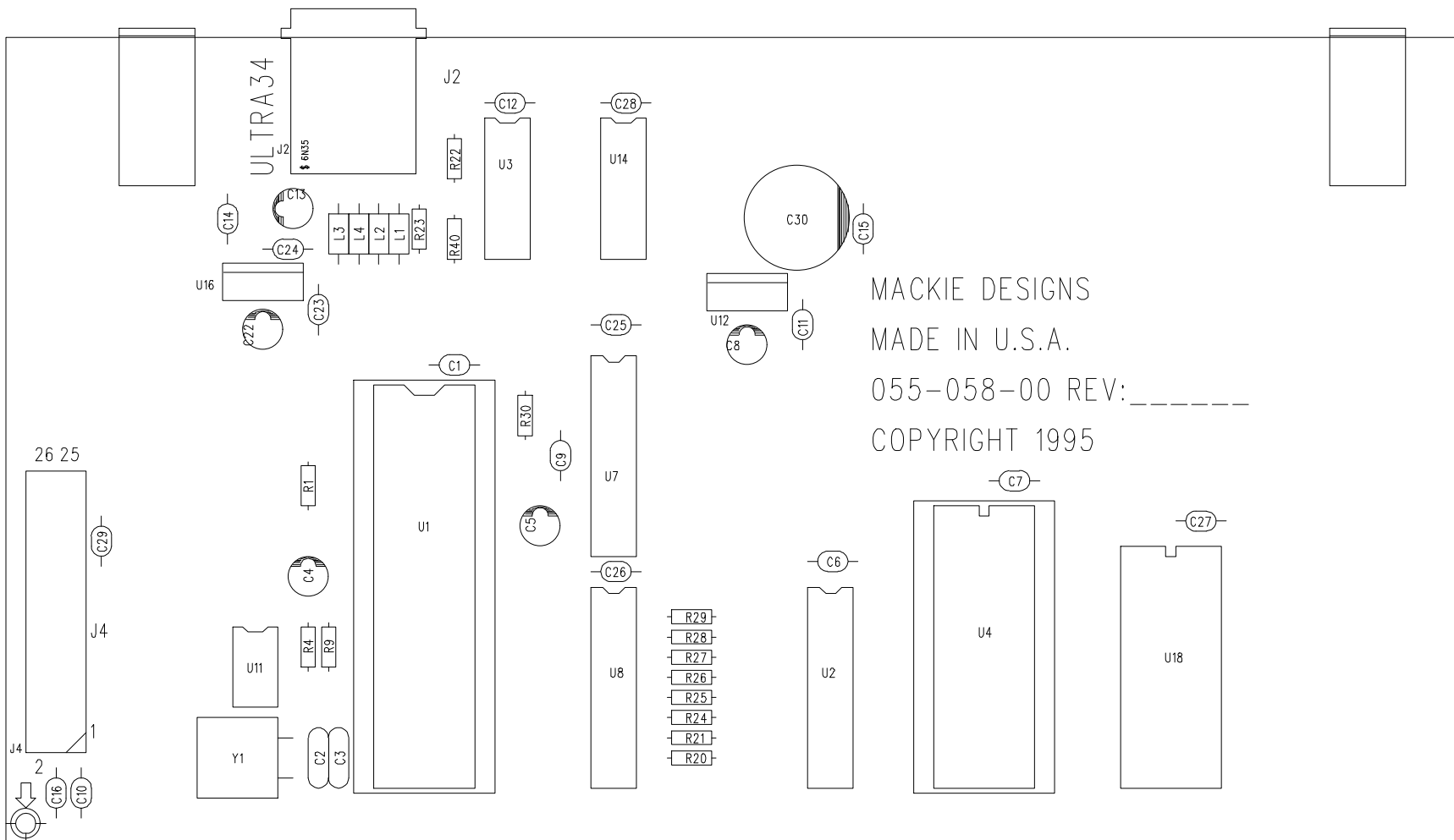




**MACKIE.**  
ULTRAPILOT FADER BOARD  
PCB LAYOUT







**MACKIE**  
ULTRAPILOT CONTROL BOARD  
PCB LAYOUT