

SYSTEM SCHEMATICS

A500

REVISIONS 5, 6A, 7
INCLUDES A501 REV 6C

AUGUST, 1989

PN-314981-02

INTERNATIONAL EDITION

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TABLE OF CONTENTS

TITLE	PAGE
Parts List PCB Assembly #312510, A500, Rev. 5	1
Board Layout PCB Assembly #312511-02, Rev. 5	3
Schematics #312511-02, Rev. 5.....	4
Parts List PCB Assembly #312510, Amiga 500, Rev. 6A/7	13
Schematics #312511-03, Rev. 6A/7.....	14
Parts List PCB Assembly #312604-04, A501, Rev. 6C	22
Schematics #312605-01, Rev. 6C.....	23

COMPONENT PARTS LIST

PCB ASSEMBLY #321510, A500, REV. 5

321510-05 PCB ASSY, A500 NTSC

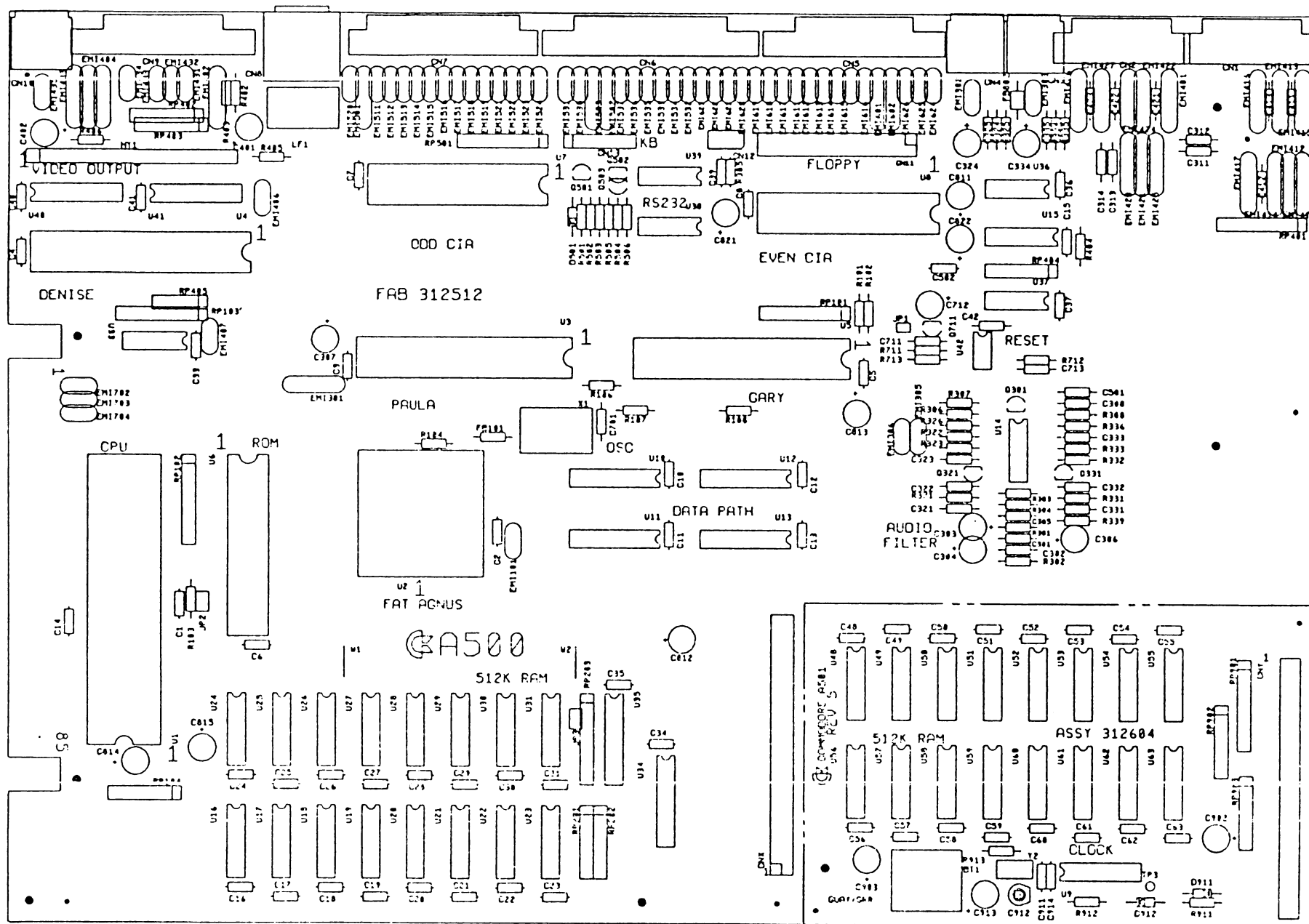
321510-06 PCB ASSY, A500 PAL

Commodore part numbers are provided for reference only and do not indicate the availability of parts from Commodore. Industry standard parts (Resistors, Capacitors, Connectors) should be secured locally. Approved cross-references for TTL chips, Transistors, etc. are available in manual form through the Service Department, order #314000-01.

IC COMPONENTS		
390084-03	M68000, 8 MHz	U1
318070-01	FAT AGNUS, 8370R3 NTSC	U2
318071-01	FAT AGNUS, 8371R1, PAL	U2
252127-02	PAULA, 8364R7	U3
252126-02	DENISE, 8362R8	U4
318072-01	GARY 5719	U5
318029-01	8520R4	U5
315093-01	ROM, KICKSTART V1.3	U5
390226-01	256K X 1 BIT DYNAMIC RAM	U16-U31
380223-01	256K X 1 BIT DYNAMIC RAM	U16-U31
901882-01	1488	U38
901883-01	1489	U39
390086-01	LF347/TL084	U14
390110-01	74F04	U33
901521-31	74LS32	U37
901521-38	74LS38	U36
390081-01	74F74	U32
901521-11	74LS157	U15
318050-01	74F244	U34,U35
901521-13	74LS244	U10,U12
310003-01	74HC245	U40,U41
901521-29	74LK373	U11,U13
901523-01	NE555	U42
252126-01	DENISE, 8362R6	U4
380223-05	DRAM, 256K X 1 BIT, 80ns	U16-U31
CONNECTORS		
252167-01	DIN, 5 PIN, SQUARE, FEMALE	CNB
390242-01	D-SUB, 9 PIN, MALE, RA, SOLDER-IN	CN1,CN2
390242-03	D-SUB, 23 PIN, MALE, RA, SOLDER-IN	CN9
390241-03	D-SUB/23PIN/FEMALE/RA/SOLDER-IN	CN5
390242-05	D-SUB/25PIN/MALE/RA/SOLDER-IN	CN6
390241-05	D-SUB/25PIN/FEMALE/RA/SOLDER-IN	CN7
252122-04	RCA JACK, BLACK	CN3
252122-01	RCA JACK, WHITE	CN4
252122-03	RCA JACK, YELLOW	CN10
390248-01	RCA JACK, METAL	CN3,CN4,CN10
325516-04	HEADER, 4PIN, POLARIZED, SIL	CN12
903326-08	HEADER, 8PIN, SIL	CN13
903345-17	HEADER, 34PIN, DIL	CN11
390224-01	HEADER/DUAL/RA/LONG/56POS/MALE	CNX
RESISTORS		
902410-18	NETWORK, 10K X 9 10PIN	RP501
390227-03	NETWORK, 22 OHM X 5, 10PIN	RP103
902422-05	NETWORK, 47 OHM X 4, 8PIN	RP102,RP403
902422-06	NETWORK, 68 OHM X 4, 8PIN	RP210,RP202
390227-05	NETWORK, 68 OHM X 5, 10PIN	RP203
902441-10	NETWORK, 120 OHM X 5, 6PIN	RP405
902442-17	NETWORK, 470 OHM X 7, 8PIN	RP104
902410-08	NETWORK, 4.7K X 9, 10PIN	RP101,RP102,RP401,RP501
902422-06	NETWORK, 68 OHM X 4, 8PIN	RP404
390186-01	ZERO OHM RESISTOR	W1,W2
901550-118	1 OHM, 5% 1/4W	EM1301,EM1406
901550-129	5.1 OHM, 5% 1/4W	EM1401,R405,R406
901550-64	10 OHM, 5% 1/4W	R301,R302
901550-90	27 OHM, 5% 1/4W	R101,R102
901600-15	47 OHM, 5% 1/2W	EM1501,EM1503
901550-108	360 OHM, 5% 1/4W	R331,4321
901550-57	390 OHM, 5% 1/4W	R325,R335
901550-58	470 OHM, 5% 1/4W	R305
901550-01	1K OHM, 5% 1/4W	R303,R304,R324,R334,R713,R305
901550-17	1.2K OHM, 5% 1/4W	R704
901550-23	2.7K OHM, 5% 1/4W	R701
901550-39	3.9K OHM, 5% 1/4W	R702
901550-19	4.7K OHM, 5% 1/4W	R402,R403,R502-R504
901550-20	10K OHM, 5% 1/4W	R322,R323,R333,R339,R501,R505,R506
901550-15	27K OHM, 5% 1/4W	R703
RESISTORS (Continued)		
901550-22	47K OHM, 5% 1/4W	R712
901550-84	1M OHM, 5% 1/4W	R711
901550-75	120 OHM, 5% 1/4W	R103-R108
901550-20	10K OHM, 5% 1/4W	R306,R308
901550-23	2.7K OHM, 5% 1/4W	R307
901550-82	470K OHM, 5% 1/4W	R326,R336
901550-89	150 OHM, 5% 1/4W	R409
BEADS/FILTERS		
252133-01	FERRITE BEAD	RB801,RB802
903025-01	FERRITE BEAD	FB802,FB801,EMI411-EMI417,EMI421-EMI427
903025-01	FERRITE BEAD	FB802,FB101EMI411-EMI417,EMI421-EMI427,EMI402-EMI431-EMI435
251842-02	EMI FILTER, 100 pf	EMI301-EMI303,EMI401-EMI405,EMI411-EMI417,EMI421-EMI427,EMI431-EMI435,EMI511-EMI538,EMI601-EMI611-EMI626,EMI701-EMI704
251842-02	EMI FILTER, 100 pf	EMI101,EMI302,EMI303,EMI305,EMI306,EMI402-EMI404,EMI407,EMI431-EMI435,EMI511-EMI524,EMI531-EMI538,EMI601,EMI611-EMI626,EMI702-EMI704
251842-02	EMI FILTER, 100 pf	EMI101,EMI302,EMI303,EMI305,EMI306,EMI403-EMI407,EMI511-EMI531-EMI524,EMI531-EMI538,EMI601,EMI611-EMI626,EMI701,EMI702
CAPACITORS		
900462-27	39 pF, MLC, AXIAL, NPO	C703
900462-37	100 pF, MLC, AXIAL, NOP	C704
900463-16	1000 pF MLC AXIAL X7R	C705
900463-16	1000 pF MLC AXIAL X7R	C411-C413,C421-C423
900463-23	3900 pF MLC AXIAL X7R	C323,C333
900463-26	6800 pF MLC AXIAL X7R	C322,C332
390082-02	.01 uF MLC AXIAL Z5U	C410,C412,C801,C713
390082-02	.01 uF MLC AXIAL Z5U	C308,C713
900463-36	.047 uF MLC AXIAL X7R	C311-C314
390082-01	.1 uF MLC AXIAL Z5U	C7,C8,C10,C11-C13,C15,C33-C37,C39,C321,C331,C711,C701(-01 & -02)
390082-05	.22 uF MLC AXIAL Z5U	C1-C6,C16-C32,C14,C40-C42,C301,C302,C305,C501,C502
390082-05	.22 uF MLC AXIAL Z5U	C325,C335
390101-06	10 uF ELECT RADIAL	C306,C712
390101-04	22 uF ELECT RADIAL	C303,C304,C307,C334
390101-01	47 uF ELECT RADIAL	C812-C815,C821,C822
390101-02	100 uF ELECT RADIAL	C307,C811
900100-56	3300 uF 10 V ELECT RADIAL	C401,C402
251029-06	VARIABLE CAP 4.5-45 pf	C702

COMPONENT PARTS LIST **PCB ASSEMBLY #321510, A500, REV. 5 (Continued)**

TRANSISTORS/DIODES			MISCELLANEOUS (Continued)		
390239-01	TRANS 2N5770 NPN OSC.	Q701	904150-06	SOCKET, 40 PIN DIP	U6-U8
902658-01	TRANS 2N3904 NPN GP	Q501,Q711	251313-01	SOCKET, 48 PIN DIP	U3-U5
902707-01	TRANS 2N3906 PNP GP	Q502,Q503,Q301	251313-02	SOCKET, 48 PIN DIP	U3-U5
390254-01	TRANS JFET PN4302 MPF-102	Q321,Q331	390185-01	SOCKET, 84 PIN PLCC	U2
900850-01	DIODE, 1N4148	D501	904150-10	SOCKET, 64 PIN DIP	U1
CRYSTALS			312519-01	WIRE ASSEMBLY JUMPER	
900556-11	28.63636 MHz	Y1	900462-37	CAP 100 pF MLC AXIAL NOP	C101,R106,R107,R108, R103,EMI402
900556-12	28.37516 MHz	Y1	390082-02	CAP 0.01 uF MLC AXIAL Z5U	C801-C803
325566-14	OSCILLATOR, 28.63636 MHz	X1	380223-03	IC, 256K X 1 BIT DYNAMIC RAM	U16-U31
252344-01	OSCILLATOR, 28.37515 MHz	X1	390226-03	IC, 256K X 1 BIT DYNAMIC RAM	U16-U31
MISCELLANEOUS			390226-05	IC, 256K X 1 BIT DYNAMIC RAM	U16-U31
390229-02	VIDEO HYBRID	HY1	901550-94	RES 68 OHM 5% 1/4W	
390229-01	VIDEO HYBRID	HY1	900463-36	CAP .047 uF MLC AXIAL X7R	
251878-02	LINE FILTER, 8PIN	LF1	320481-01	SHRINK TUBING .50 IN. LG.	
901151-19	CHOKE, 3.3 uH	L701	312511-01	SCHEMATIC	



A500 SYSTEM SCHEMATICS

A500 Board Layout #312510, Rev. 5

Jumpers and Stuff

REF	TEST	DESCRIPTION	PASS
001	TEST	Regulator Reset	9
002	TEST	Int. Memory Addr. CO vs Q2	9
003	TEST	Int. Memory Read vs Q2	9
TF1	TEST	RTC Frequency Test	9
0012	TEST	RTC Frequency Adjust	9
W1-2	Q-Q-13	Ground Continuity FCC	8

Connectors

REF	TYPE	DESCRIPTION	PAGE
CN1	DB9P	Mouse/Joystick 1	2
CN2	DB9P	Mouse/Joystick 2	2
CN3	RCA-J	Right Audio Output	4
CN4	RCA-J	Left Audio Output	4
CN5	DB25S	External Floppy	7
CN6	DB25P	RS232 Serial Port	6
CN7	DB25S	Parallel Printer Port	5
CN8	SG DIN	Power Supply Connector	8
CN9	DB23P	Video Output	5
CN10	RCA-J	Composite Video	5
CN11	DIL-34	Internal Floppy Signal	7
CN12	SIL-4	Internal Floppy Power	8
CN13	SIL-8	Keyboard Connector	6
P1	EDGE86	Expansion Connector	7
CNX	RA-56H	Men. Exp. Main-Board	3
CNY	RA56-F	Men. Exp. Sub-Board	9

ECO Log

ECO NUMBER	DESCRIPTION	DATE
B70152	Additional Parts for FCC	05/12/8
B70222	The "Transistor Fix"	06/16/8
B70302	Change R1 resistor for FTZ	10/09/8
B70207	More FCC Changes	09/04/8
B80238	Add E Clock Termination	03/03/8

Signal Glossary

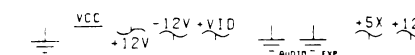
SIGNAL	DESCRIPTION (AREA)	PAGES
28MHZ	28.63636 MHz Master Clock	2
7MHZ	7.15909 MHz Processor Clock	2,5
A[23:1]	Processor Address Bus (SR000)	2,3,7,9
ACK	Data Acknowledge (Parallel Port)	6
AS	Address Strobe (SR000)	2,7
AUDIN	Audio Input (RS232 Port)	4,6
AUDOUT	Audio Output (RS232 Jack)	4,6
BEER	Bus Error (SR000)	2,7
BG	Bus Grant (SR000)	2,7
BGACK	Bus Grant Acknowledge (SR000)	2,7
BLISS	Blitter Slowdown (Chips)	2
BLIT	Chip Memory Access (Chips)	2,7
BR	Bus Request (SR000)	2,7
BUSY	Device Busy (Parallel Port)	6
CASL/U	Column Address Strobe (DRAM)	2,3,9
CLK/CLKQ	Color Clock / Quadrature (Chips)	2,4,7
QDAC	7.15909 MHz Quadrature Clock (Chips)	2,5,7
CHNG	Media Change (Floppy)	6,7
CLKRD/WR	Read-Time Clock Read / Write (RTC)	2,9
COMP	Monochrome Composite Video (Video)	5
CSYNC	Composite Sync (Video)	2,5
CIS	Clear to Send (RS232 Port)	6
D[15:0]	Processor Data Bus (SR000)	2,3,6,7,9
DJR	Step Direction (Floppy)	6,7
DRRD	Disk Read Data (Floppy)	4,7
DRWD	Disk Write Data (Floppy)	4,7
DWE	Disk Write Enable (Floppy)	4,7
DMA	Chip DMA Request Line (Chips)	2,4
DRA[8:0]	DRAM Address Bus (DRAM)	2,3,9
D[15:0]	DRAM Data Bus (DRAM)	2,3,4,5,9
DSR	Data Set Ready (RS232 Port)	6
DTACK	Data Transfer Acknowledge (SR000)	2,3,7
DTR	Data Terminal Ready (RS232 Port)	6
E	Peripheral Enable Clock (SR000)	2,6,7
EXRAM	Expansion Memory Present	2,3,9
FC[2:0]	Function Code (SR000)	2,7
FIREO[1]	Fire Button 0/1 (Joysticks)	2,5,6
HLT	Processor Halt (SR000)	2,7
HSYNC	Horizontal Sync (Video)	2,5,6
INDEX	Index Pulse (Floppy)	6,7
INT[2,3,6]	Interrupt Request (Chips)	2,4,6,7
IORESET	I/O Reset	6,7
IP[12:0]	Interrupt Priority Level (SR000)	2,4,7
KBCLOCK	Keyboard Clock (Keyboard)	6
KBDATA	Keyboard Data (Keyboard)	6
KBRESET	Keyboard Reset (Keyboard)	6
L[15]/D[0]	Upper / Lower Data Strobes (SR000)	2,7
LED	Power On LED / Audio Filter Disable	4,8

[illegible]

Key Components

REF	CHIP	DESCRIPTION	PAGE
U1	68000	68000 Processor	2
U2	8370	Fat Agnus - NTSC	2
	8371	Fat Agnus - PAL	olt
	8372	Agnus HR	olt
U3	8364	Paula	4
U4	8352	Denise	5
	8373	Denise HR	olt
U5	5719	Georg	2,4
U6	osst	ROM 128Kx16, 200 nS	3
U7-8	8520	Amiga VIA, 1 MHz	6
U9	6242B	CK1 Bus RTC	9
U14	LF347	B:MOS Op-Amp	4
	TL084	B:MOS Op-Amp	olt
U38	1488	EIA Line Driver	4
U39	1489	EIA Line Receiver	4
U42	NE555	Timer	7
U16-31	osst	DRAM 256Kx1, 150 nS	3
U48-63	osst	DRAM 256Kx1, 150 nS	9
X1	OSC	ITL 28.63636 MHz NTSC	2
	OSC	ITL 28.37512 MHz PAL	olt
Y2	XIAL	Watch Type 32768 Hz	9
HY1	osst	Video Hybrid	5

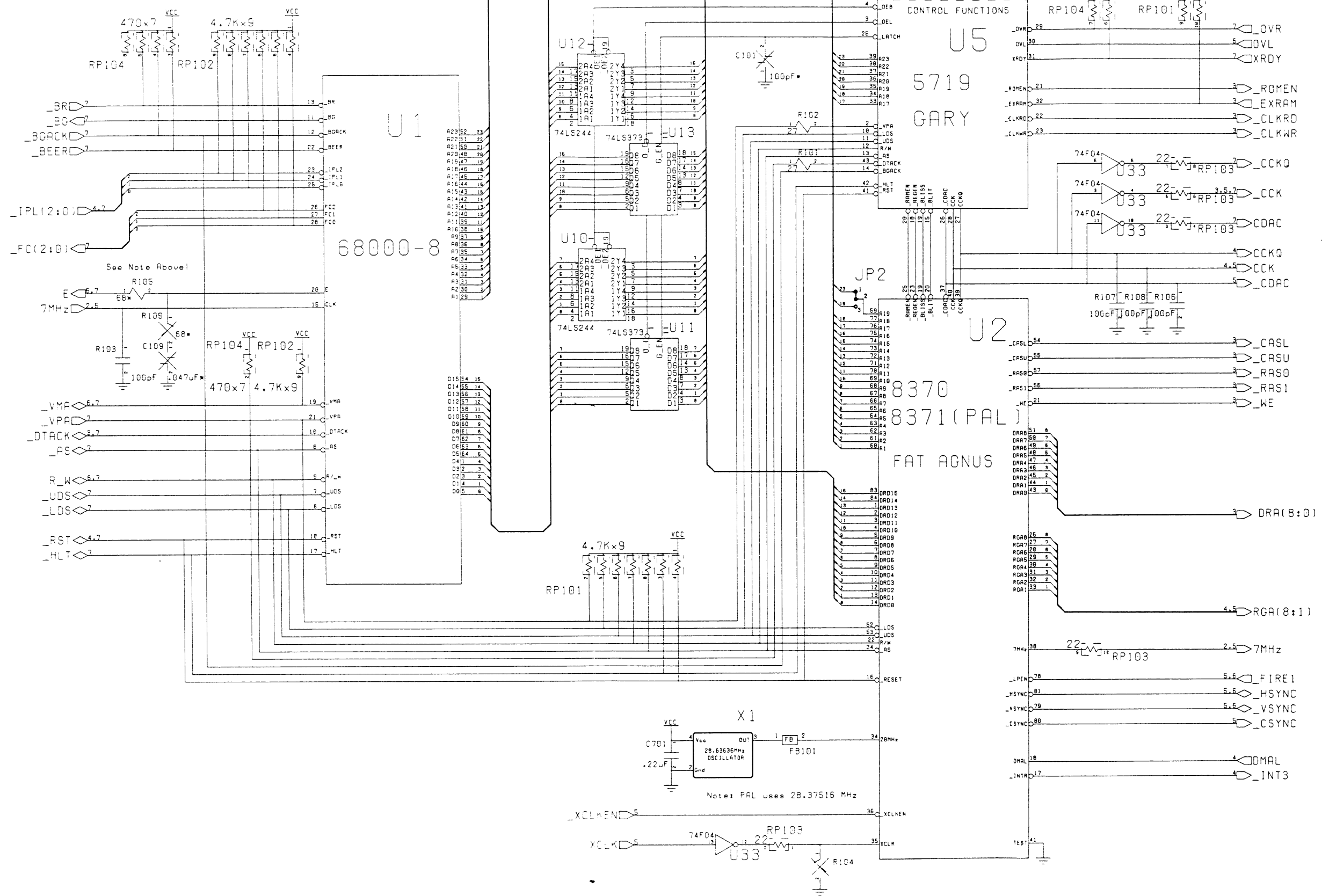
ATTEMPT TO FORCE NODE NUMBERS VIA SEQUENCE

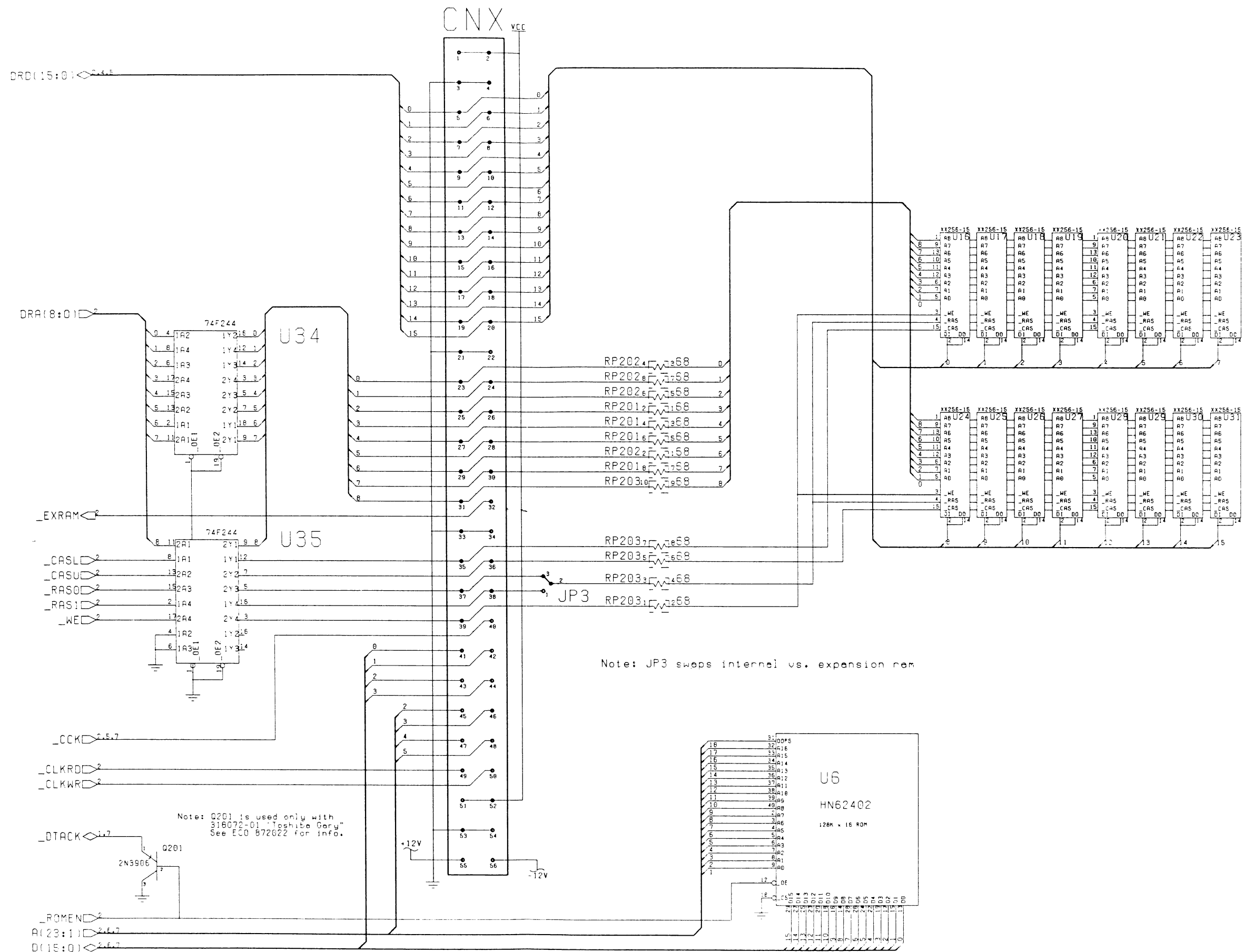


Note: R103-104, 106-108, C101 are for EMI Control
and may be loaded with funny things...

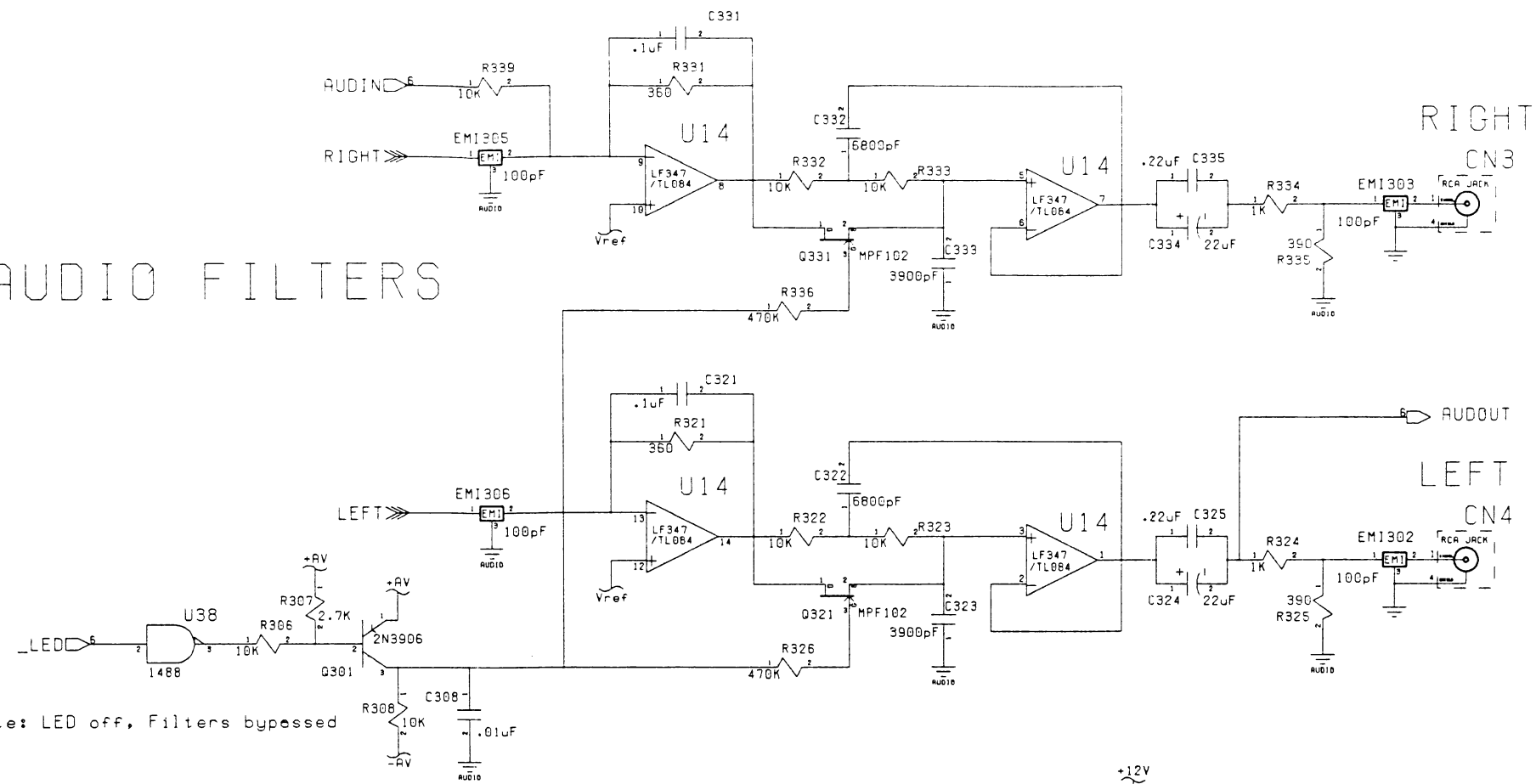
```
JP2 controls where expansion rem maps to:
R25 -> 000000 (default), R19 -> 000000
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R109/C109, R105 Details, see ECO 880283
C101 FCC Filter Capacitor per ECO 870207

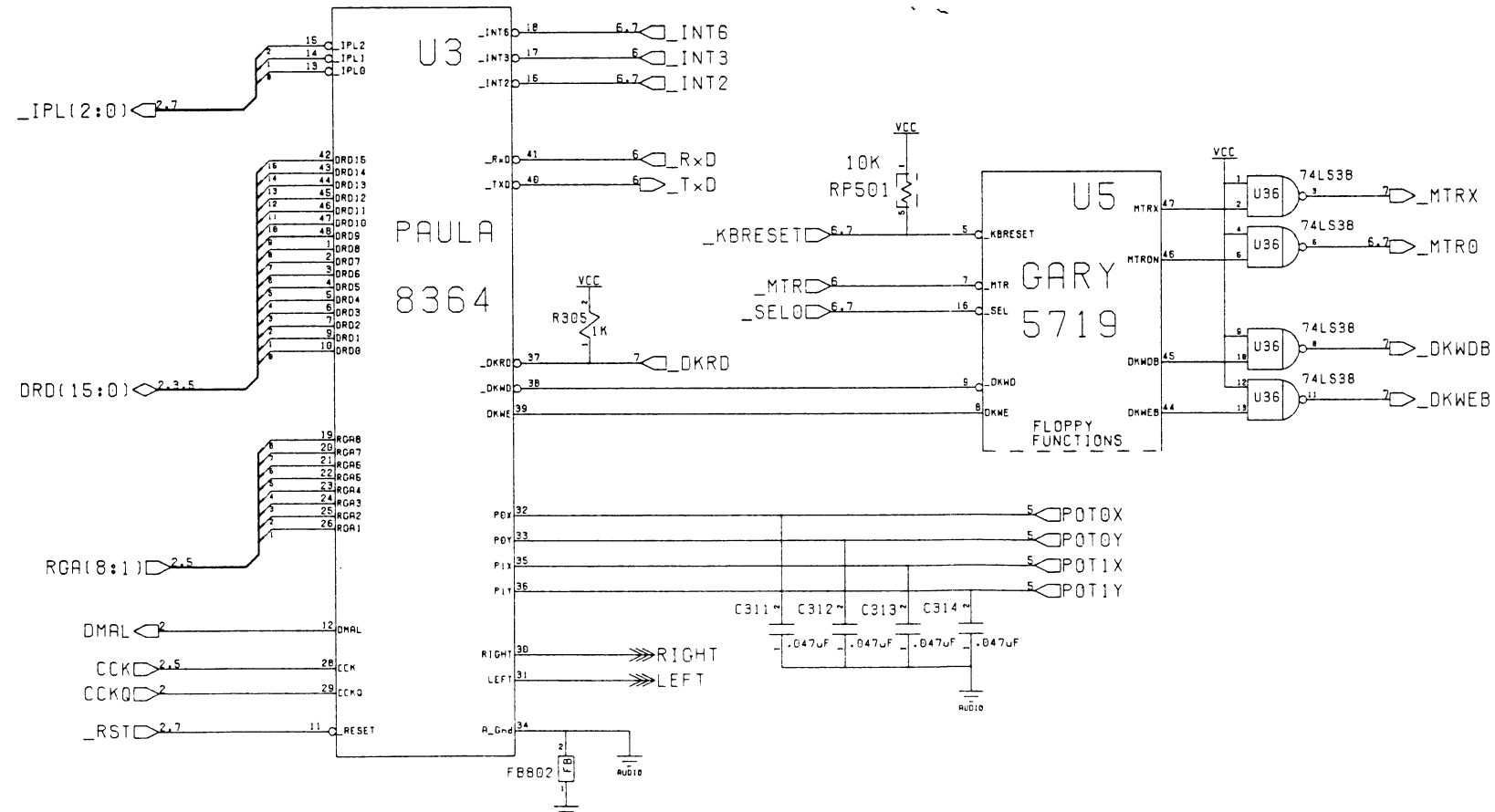




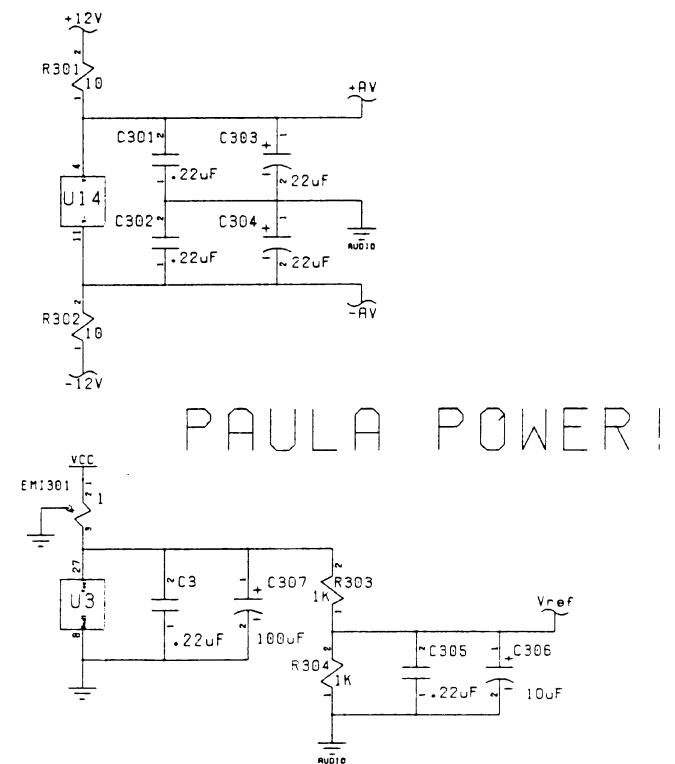
AUDIO FILTERS



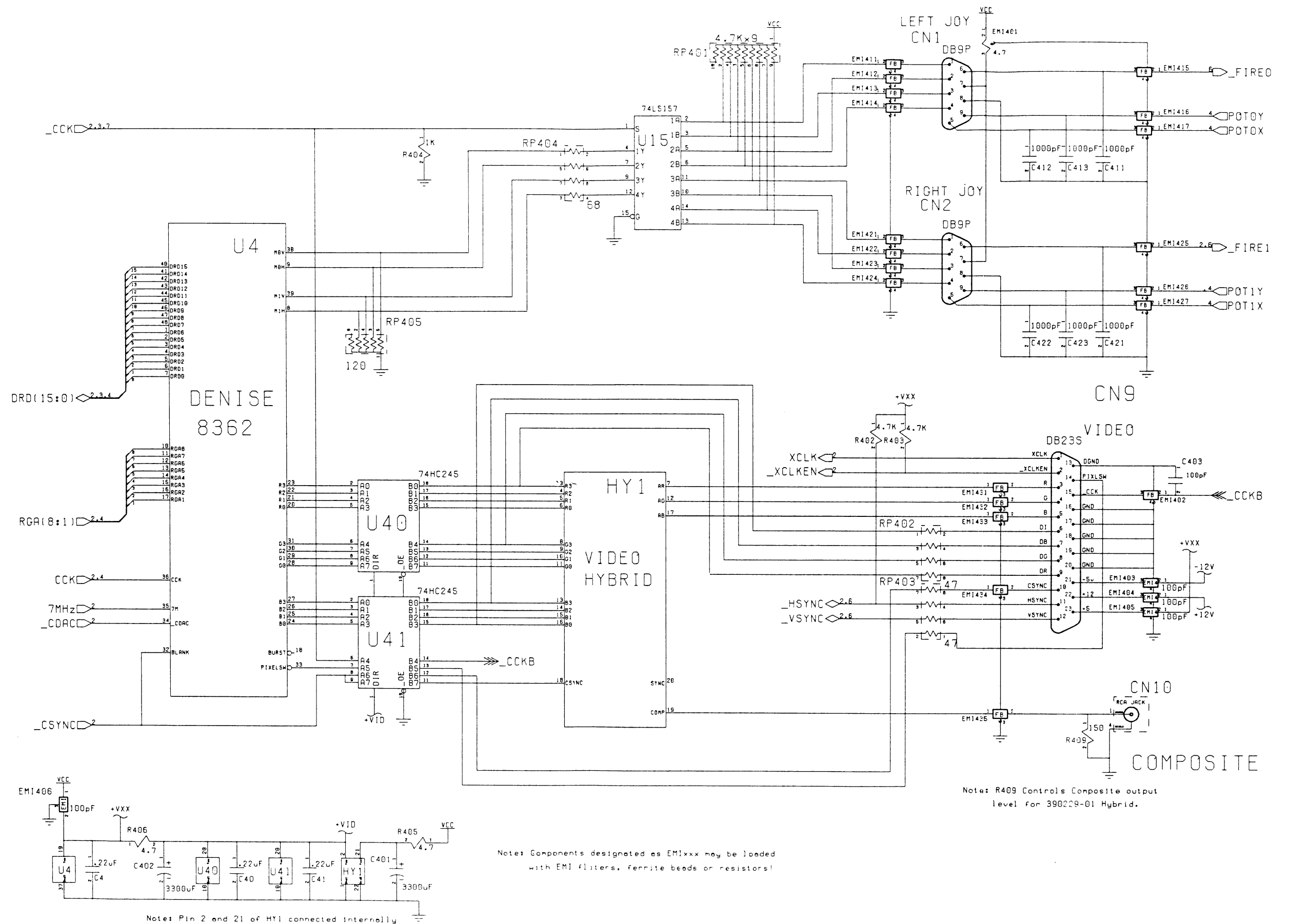
Note: LED off, Filters bypassed

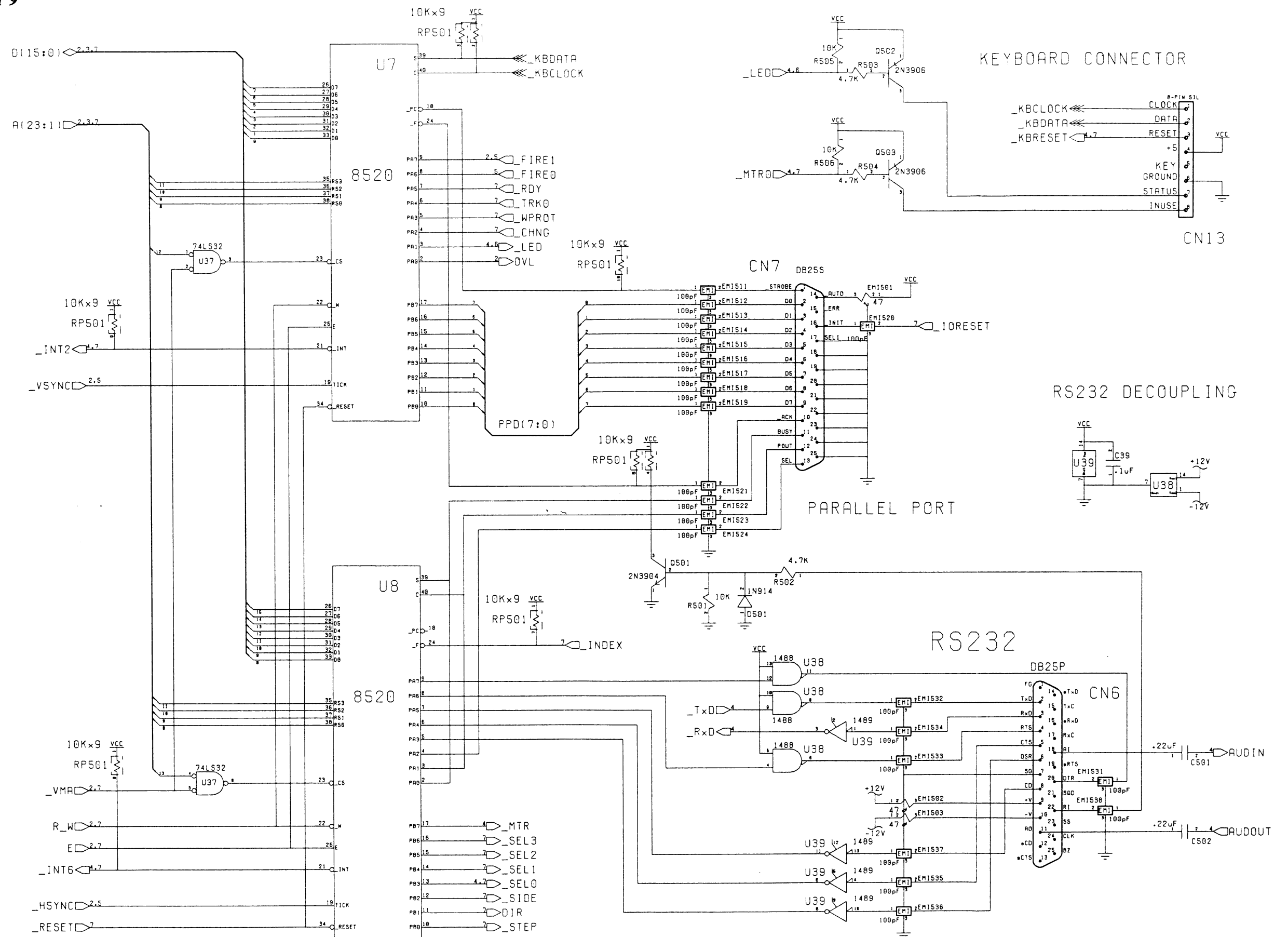


Note: Ground interconnection near audio jacks.

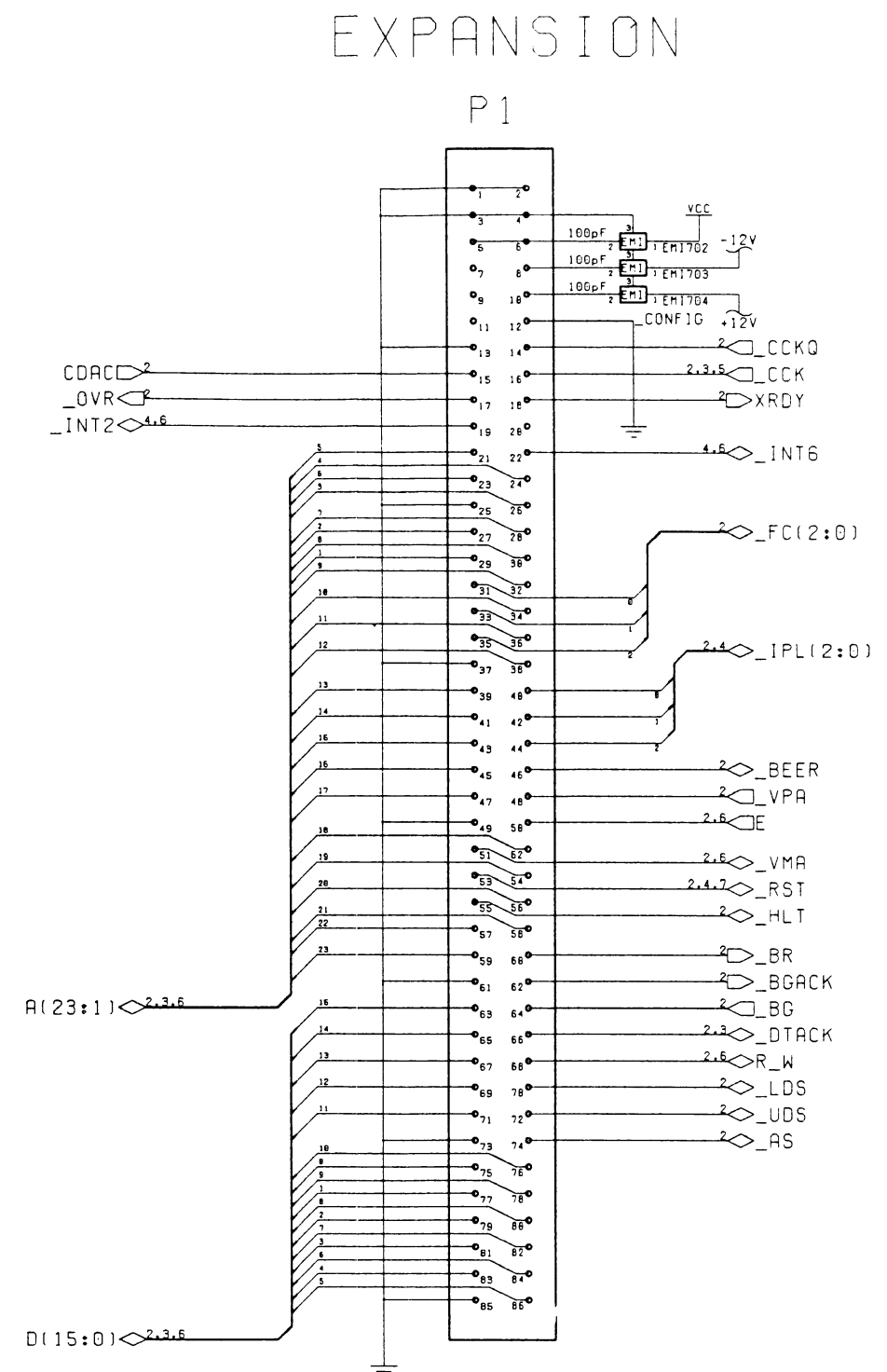
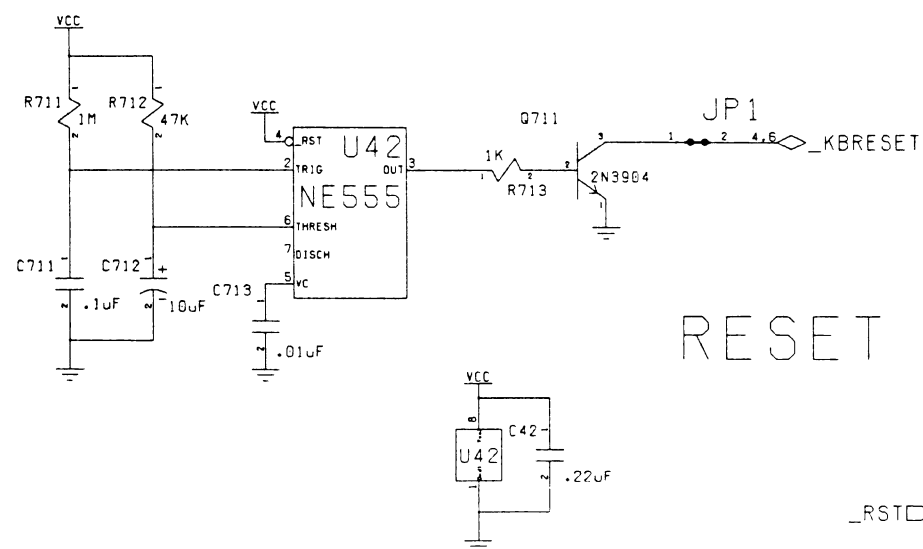
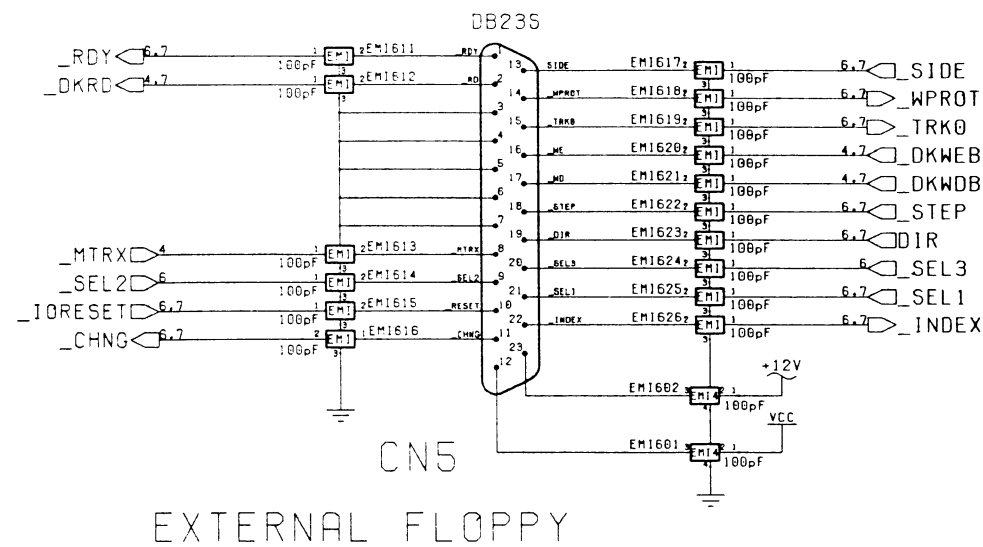


PAULA POWER!

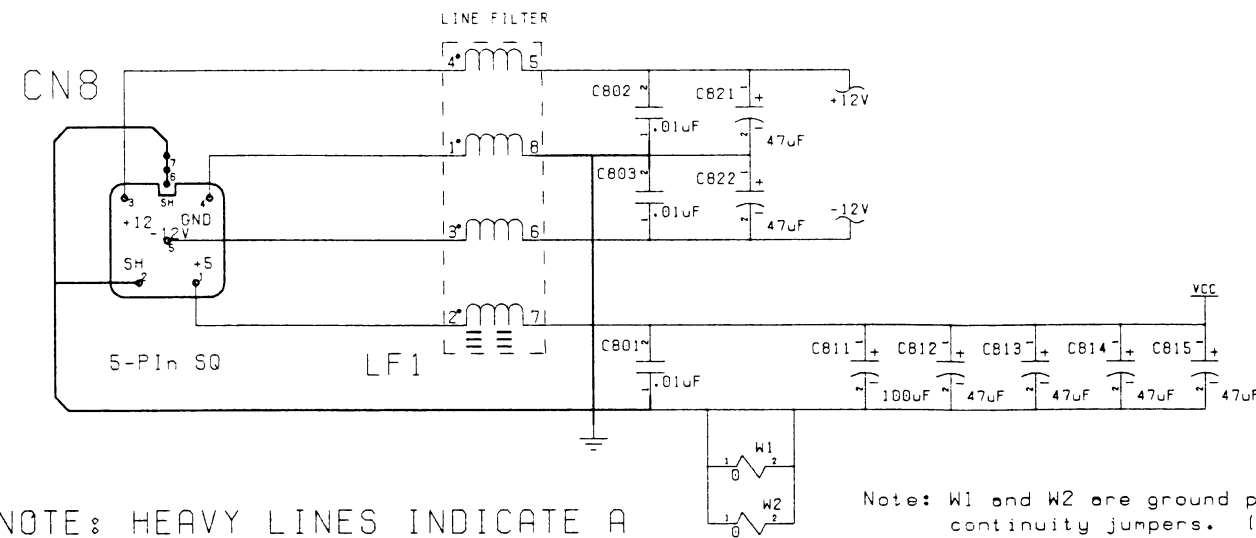




Note: EM1501-503 are loaded with 47 Ohm 1/2 W resistors



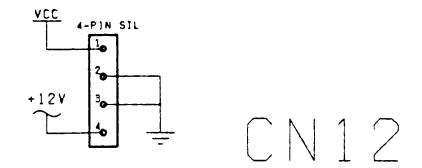
POWER INPUT



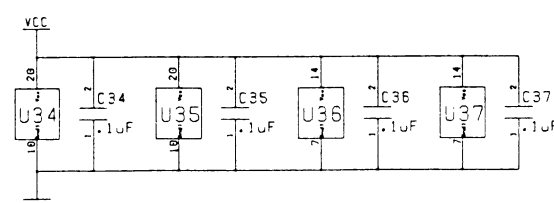
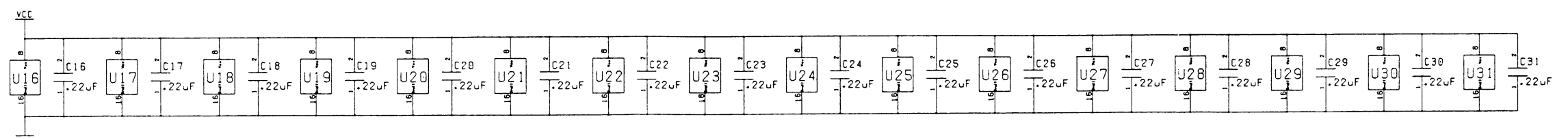
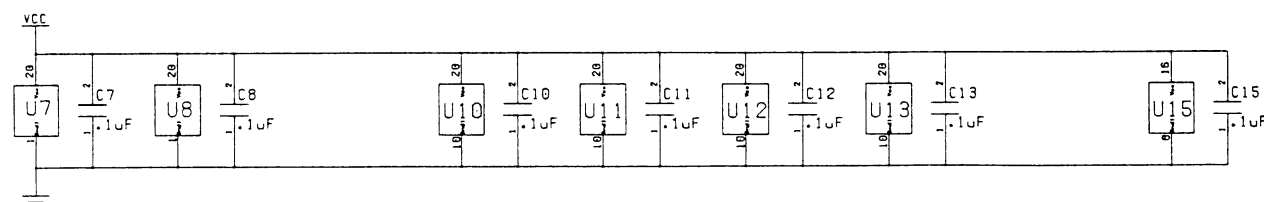
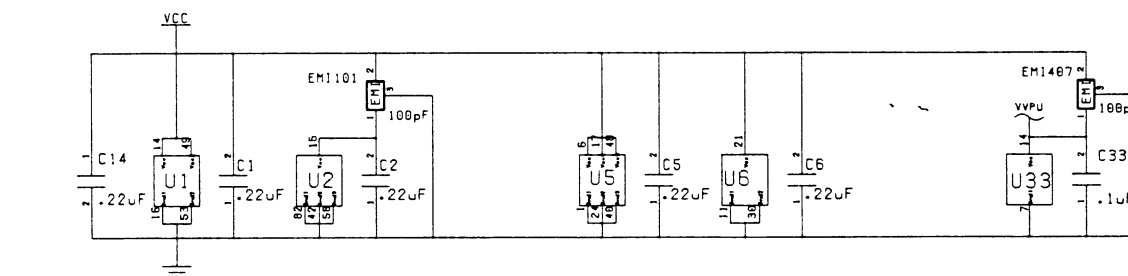
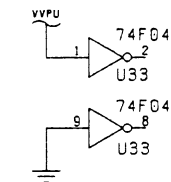
NOTE: HEAVY LINES INDICATE A SINGLE POINT CONNECTION

Note: W1 and W2 are ground plane continuity jumpers. (FCC)

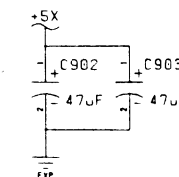
FLOPPY POWER



SPARES



DECOUPLING



COMPONENT PARTS LIST

PCB ASSEMBLY #312510, AMIGA A500, REV6A/7

312510-07 PCB ASSEMBLY, A500 NTSC

312510-08 PCB ASSEMBLY, A500 PAL

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IC COMPONENTS			DIODES		
901882-01	INTERFACE MC1488	U38	900850-01	1N4148	D501
901883-03	INTERFACE MC1489	U39	390017-01	1N914	D501
390086-01	LINEAR LF347/TL084	U14	FILTERS		
901523-01	LINEAR NE555	U42	251842-02	EMI FILTER, 100pF	E511-E519,E421-E524, E611-E626
390084-03	MC68000 OMHz	U1	390275-02	EMI FILTER, 150pF	E402,E434,E532,E534
318072-01	MOS 5719 R2 GARY	U5	390297-01	EMI FILTER, 270pF	E305,E306
252126-02	MOS 8362 R8 DENISE	U4	390297-04	EMI FILTER, 470pF	E415-E417,E425-E427, E441-E444,E520,E531, E533,E535-E538
252127-02	MOS 8364 R7 PAULA	U3	390275-01	EMI FILTER, 6800pF	E302,E303,E411-E414, E421-E424
318069-02	MOS 8372 R3 AGNUS HR	U2	390297-05	EMI FILTER .01uF	E101,E401,E403-E408, E601,E602,E702-E704
318029-02	MOS 8520 R4 AMIGA CIA	U7,U8	252173-01	FERRITE BEAD RADIAL	E431-E433,R435
390110-01	TTL 74F04	U33	251878-02	LINE FILTER	LF1
318050-01	TTL 74F244	U34,U35	252133-01	LONG FERRITE BEAD	FB802
310003-01	TTL 74HC245	U40,U41	903025-01	FERRITE BEAD AXIAL	E431-E433,E435
901521-11	TTL 74LS157	U15	TRANSISTORS		
901521-13	TTL 74LS244	U10,U12	390254-01	JFET MPF102/PN4302	Q321,Q331
901521-31	TTL 74LS32	U37	902658-01	NPN 2N3904	Q501,Q711
901521-29	TTL 74LS373	U11,U13	902707-01	PNP 2N3906	Q301,Q502,Q503
901521-38	TTL 74LS38	U36	RESISTORS		
390229-01	VIDEO HYBRID	HY1	901600-36	1/2W CF, 1	R309
318070-01	MOS 8370 R3 FAT AGNUS (NTSC)	U2	901600-50	1/2W CF, 4.7	R401,R405,R406,R408
318071-01	MOS 8371 R1 FAT AGNUS (PAL)	U2	901600-15	1/2W CF, 47	E501-E503
390433-01	MOS 8373 R2 DENISE HR	U4	901550-64	1/4W CF, 10	R301,R302
381099-04	DRAM 256K X 4 120 nS	U16-U19	901550-90	1/4W CF, 27	R101,R102
381099-02	DRAM 256K X 4 100 nS	U16-U19	901550-56	1/4W CF, 47	R103-R107,R113
	NOT LOADED	U20-U23	901550-94	1/4W CF, 68	E104,E105
395093-02	ROM 256K X 16 KICKSTART 1.3	U6	901550-94	1/4W CF, 68	R111,R112,R114
CAPACITORS			901550-94	1/4W CF, 68	XR1
900462-29	MLC AXIAL NOP 47pF	C403	901550-49	1/4W CF, 100	R507
900462-29	MLC AXIAL NOP 47pF	E102,E103,E106-3109	901550-89	1/4W CF, 150	FB101
900462-29	MLC AXIAL NOP 47pF	XC1-XC3	901550-89	1/4W CF, 150	R409
900463-16	MLC AXIAL X7R 1000pF	C411-C413,C421-C423	901550-108	1/4W CF, 360	R321,R331
900463-23	MLC AXIAL X7R 3900pF	C323,C333	901550-57	1/4W CF, 390	R325,R335
900463-26	MLC AXIAL X7R 6800pF	C322,C332	901550-01	1/4W CF, 1K	R303-R305,R324,R334, R713
900463-36	MLC AXIAL X7R .047pF	C311-C314	901550-23	1/4W CF, 2.7K	R307,R502
900463-37	MLC AXIAL X7R .1uF	C321,C331	901550-19	1/4W CF, 4.7K	R201,R202,R402,R403, R503,R504
390082-01	MLC AXIAL Z5U .01uF	C308,C713,C800-C803	901550-20	1/4W CF, 10K	R306,R308,R322,R323, R332,R333,R339,R501, R505,R506
390082-02	MLC AXIAL Z5U .1uF	C711	901550-22	1/4W CF, 47K	R712
390082-04	MLC AXIAL Z5U .33uF	C1-C8,C10-C19,C33- C37,C39-C42,C301, C302,C305,C325,C335, C501,C502,C701,C804 C20-C23	901550-82	1/4W CF, 470K	R326,R336
	NOT LOADED	C306,C712	901550-84	1/4W CF, 1M	R711
390101-06	ELECT ALUM RADIAL, 10uF 16V	C303,C304,C324,C334	902410-11	RES PACK SIP PULLUP, 470 X 9	RP104
390101-04	ELECT ALUM RADIAL, 22uF 35V	C821,C822	902410-08	RES PACK SIP PULLUP, 4.7K X 9	RP101,RP102,RP401
390101-02	ELECT ALUM RADIAL, 47uF 35V	C811-C816	902410-07	RES PACK SIP PULLUP, 10K X 9	RP501
390101-03	ELECT ALUM RADIAL 470uF 16V	C307	390227-03	RES PACK SIP SERIES, 22 X 5	RP103
900100-56	ELECT ALUM RADIAL 3300uF 10V	C401,C402	390227-05	RES PACK SIP SERIES, 68 X 5	RP201,RP203
CONNECTORS			390227-06	RES PACK SIP SERIES, 47 X 5	RP402,RP403
325516-04	4PIN FLOPPY POWER	CN12	901600-129	RES 1/2W CF, 5.1	R401,R405,R406,R408
252167-01	5PIN SQ DIN	CN8	390227-08	RES PACK SIP SERIES, 39 X 5	RP103
903335-08	8PIN SIL W/KEY	CN13		NOT LOADED	RP105-RP111,RP405
390241-03	D-SUB/23PIN/FEMALE/DB23S	CN5	MISCELLANEOUS		
390242-03	D-SUB/23PIN/MALE/DB23P	CN9	904150-06	SOCKET, 40PIN DIP	U6-U8
290241-05	D-SUB/25PIN/FEMALE/DE25S	CN7	251313-01	SOCKET, 48PIN DIP	U3-U5
290242-05	D-SUB/25PIN/MALE/DB25P	CN6	904150-10	SOCKET, 64PIN DIP	U1
390242-01	D-SUB/9PIN/MALE/DB9P	CN1,CN2	390185-01	SOCKET, 84PIN PLCC	U2
350903-01	HEADER 34PIN W/KEY	CN11	251313-02	SOCKET, 48PIN DIP	U3-U5
390224-07	HEADER 56PIN MALE RA	CNX	252344-01	OSCILLATOR, 28.37516MHz (PAL)	X1
252122-03	RCA JACK, YELLOW	CN10	325566-14	OSCILLATOR, 28.63636MHz (NTSC)	X1
252122-01	RCA JACK, WHITE	CN4	312511-03	SCHEMATIC	
252122-04	RCA JACK, BLACK	CN3			
903326-08	8PIN SIL W/KEY	CN13			
903345-17	HEADER 34PIN W/KEY	CN11			
390248-01	RCA JACK, METAL	CN10			
390248-01	RCA JACK, METAL	CN3,CN4			

Jumpers and Stuff

REF	TYPE	DESCRIPTION	PAGE
JP1	BLOB	Keyboard Reset	7
JP2	BLOB	Memory Addr. C0 vs C8	2
JP3	BLOB	Expansion RAS Select	3
JP4	BLOB	NTSC/PAL Selection	2
JP5	BLOB	Genlock Clock Select	2
JP6	BLOB	7MHz Clock Option	7
JP7	BLOB	Expansion/Tick Option	3/6
JP8	BLOB	Light Pen Port Select	6
JP10	BLOB	RS232 Audio I/O Cutout	4
JP11	BLOB	TTL vs RS170 Comp Sync	5

Connections

REF	TYPE	DESCRIPTION	PAGE
CN1	DB9F	Mouse/Joystick 1	2
CN2	DB9F	Mouse/Joystick 2	2
CN3	RCA-J	Right Audio Output	4
CN4	RCA-J	Left Audio Output	4
CN5	DB25S	External Floppy	7
CN6	DB25P	RS232 Serial Port	6
CN7	DB25S	Parallel Printer Port	6
CN8	50 DIN	Power Supply Connector	8
CN9	DB25F	Video Output	5
CN10	RCA-J	Composite Video	5
CN11	DIL-34	Internal Floppy Signal	7
CN12	SIL-4	Internal Floppy Power	8
CN13	SIL-8	Keyboard Connector	6
P1	EDGE86	Expansion Connector	7
CNX	RA-56H	Mem. Exp. Main-Board	3

ECO Log

ECO NUMBER	DESCRIPTION	DATE
880283	Add E Clock Termination	03/03/89

Signal Glossary

SIGNAL	DESCRIPTION (AREA)	PAGES
28MHZ	28.63636 MHz Master Clock	2
7MHz	7.15909 MHz Processor Clock	2,5
A[23:1]	Processor Address Bus (68000)	2,3,7
ACK	Data Acknowledge (Parallel Port)	6
AS	Address Strobe (68000)	2,7
AUDIN	Audio Input (RS232 Port)	4,6
AUDOUT	Audio Output (RS232 Jack)	4,6
BEER	Bus Error (68000)	2,7
BG	Bus Grant (68000)	2,7
BGACK	Bus Grant Acknowledge (68000)	2,7
BLISS	Blitter Slowdown (Chips)	2
BLIT	Chip Memory Access (Chips)	2,7
BR	Bus Request (68000)	2,7
BUSY	Device Busy (Parallel Port)	6
CASL/U	Column Address Strobe (DRAM)	2,3
CCK/CCKQ	Color Clock / Quadrature (Chips)	2,4,7
CDAC	7.15909 MHz Quadrature Clock (Chips)	2,5,7
CHNG	Media Change (Floppy)	6,7
CLKRD/WR	Read/Write Clock Read / Write (RTC)	2,9
COMP	Monochrome Composite Video (Video)	5
CSYNC	Composite Sync (Video)	2,5
CTS	Clear to Send (RS232 Port)	6
D[15:0]	Processor Data Bus (68000)	2,3,6,7
DJR	Step Direction (Floppy)	6,7
DKRD	Disk Read Data (Floppy)	4,7
DKWD	Disk Write Data (Floppy)	4,7
DKWE	Disk Write Enable (Floppy)	4,7
DMAL	Chip DMA Request Line (Chips)	2,4
DRA[8:0]	DRAM Address Bus (DRAM)	2,3
DRD[15:0]	DRAM Data Bus (DRAM)	2,3,4,5
DSR	Data Set Ready (RS232 Port)	6
DTACK	Data Transfer Acknowledge (68000)	2,3,7
DIR	Data Terminal Ready (RS232 Port)	6
E	Peripheral Enable Clock (68000)	2,6,7
EXTICK	Expansion Present / RTC Tick	2,3
FC[2:0]	Function Code (68000)	2,7
FIRE0/1	Fire Button 0/1 (Joysticks)	2,5,6
HLT	Processor Halt (68000)	2,7
HSYNC	Horizontal Sync (Video)	2,5,6
INDEX	Index Pulse (Floppy)	6,7
INT[2,3,6]	Interrupt Request (Chips)	2,4,6,7
IORESET	I/O Reset	6,7
IPL[2:0]	Interrupt Priority Level (68000)	2,4,7
KBCLK	Keyboard Clock (Keyboard)	6
KBDATA	Keyboard Data (Keyboard)	6
KBRESET	Keyboard Reset (Keyboard)	5
LDS/UDS	Upper / Lower Data Strobes (68000)	2,7
LED	Power On LED / Audio Filter Disable	4,6
LEFT/RIGHT	Left Right Audio (Audio)	4

SIGNAL	DESCRIPTION (AREA)	PAGES
LPEN	Light Pen Trigger (Joysticks)	2,6
MTR	Motor On (Floppy)	4,6
MTR0	Motor On - Drive 0 (Floppy)	4,6,7
MOV/MQH	Mouse 0 Quadrature V/H (Joysticks)	5
MIV/M1H	Mouse 1 Quadrature V/H (Joysticks)	5
OVL	Overlay ROM over RAM	2,6
OVR	Override System Decoding	2,7
PIXELSW	Genlock Pixel Switch (Video)	5
POTX/OY	Pot Lines 0 X/Y (Joysticks)	4,5
POTIX/IY	Pot Lines 1 X/Y (Joysticks)	4,5
POUT	Paper Out (Parallel Port)	6
PPD[7:0]	Parallel Port Data (Parallel Port)	6
RAMEN	RAM Enable (Chips)	2
REGEN	Chip Register Enable (Chips)	2
RAS0/1	Row Address Strobe (DRAM)	2,3
RDY	Drive Ready (Floppy)	6,7
RESET	General Reset	6,7
RGA[8:1]	Register Address Bus (Chips)	2,4,5
R/G/B	Red / Green / Blue (Video)	5
RI	Ring Indicate (RS232 Port)	6
ROMEN	ROM Enable (ROM)	2,3
RTS	Request to Send (RS232 Port)	6
RST	Processor Reset (68000)	2,4,7
RXD	Receive Data (RS232 Port)	4,6
RW	Processor Read/Write (68000)	2,6,7
SEL	Select (Parallel Port)	6
SEL[3:0]	Drive Select (Floppy)	4,6,7
SIDE	Side Select (Floppy)	6,7
STEP	Step In/Out Command (Floppy)	6,7
TRK0	Track Zero Sense (Floppy)	6,7
TXD	Transmit Data (RS232 Port)	4,6
VMA	Valid Memory Address (68000)	2,6,7
VPA	Valid Peripheral Address (68000)	2,7
VSYNC	Vertical Sync (Video)	2,5,6
WE	Write Enable (DRAM)	2,3
WPROT	Write Protect Sense (Floppy)	6,7
XCLK	External Genlock Clock (Video)	2,5
XCLKEN	External Clock Enable (Video)	2,5
XRDY	External Data Ready	2,5

Key Components

REF	CHIP	DESCRIPTION	PAGE
U1	68000	68000 Processor	2
U2	8370	Fat Agnus - NTSC	2
	8371	Fat Agnus - PAL	olt
	8372	Agnus HR	olt
U3	8364	Paula	4
U4	8362	Denise	5
	8373	Denise HR	olt
U5	5719	Cony	2,4
U6	esst	ROM 128Kx16, 200 nS	3
U7-8	8520	Amigo VIA, 1 MHz	6
U14	LF347	BiMOS Op-Amp	4
	TL084	BiMOS Op-Amp	olt
U38	1488	EIA Line Driver	4
U39	1489	EIA Line Receiver	4
U42	NE555	Timer	7
U16-19	esst	DRAM 1Mx1, 150 nS	3
U20-23	esst	DRAM 1Mx1, 150 nS	9
X1	OSC	TTL 28.63636 MHz NTSC	2
	OSC	TTL 28.37512 MHz PAL	olt
HY1	esst	Video Hybrid	5

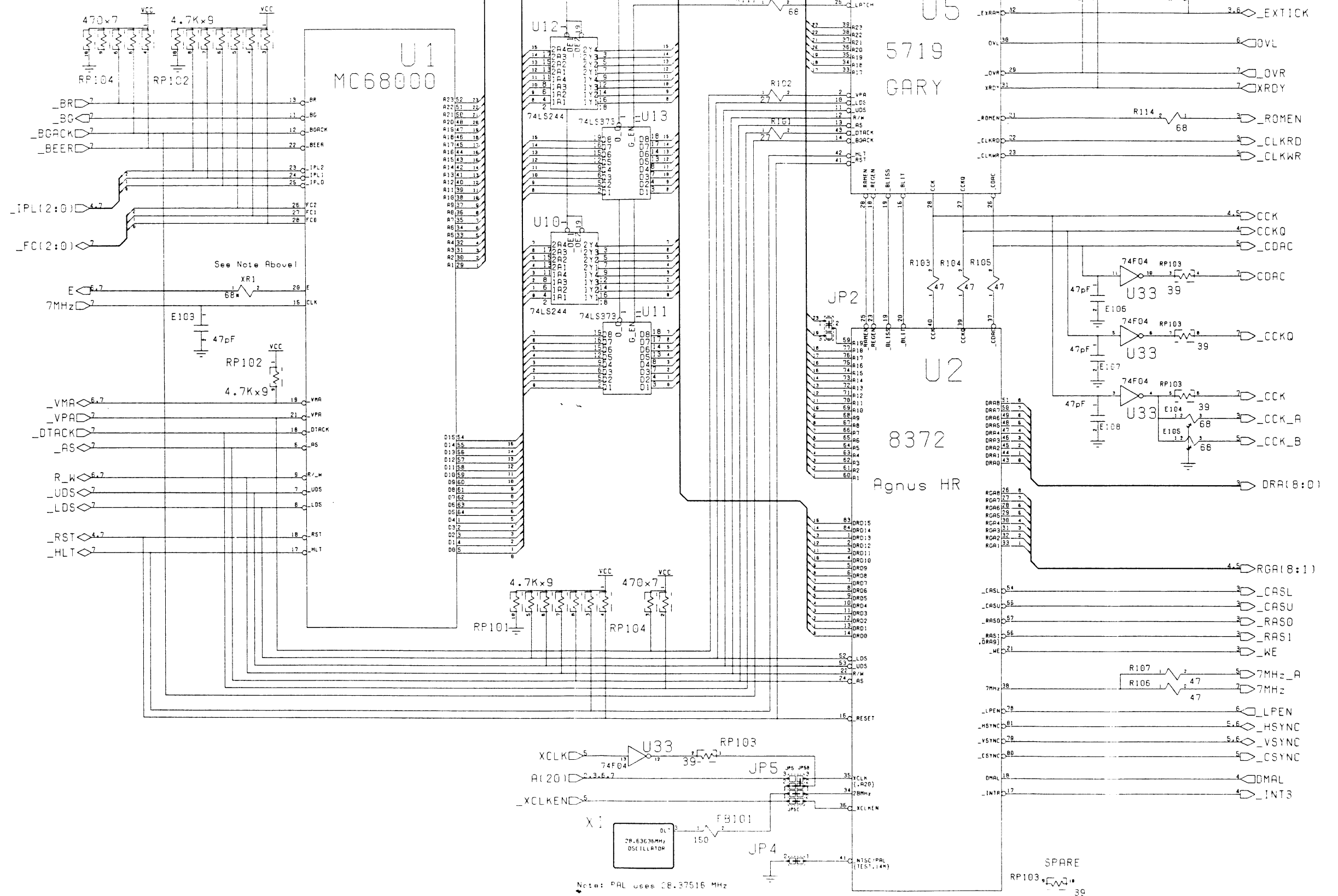
ATTEMPT TO FORCE NODE NUMBERS VIA SEQUENCE

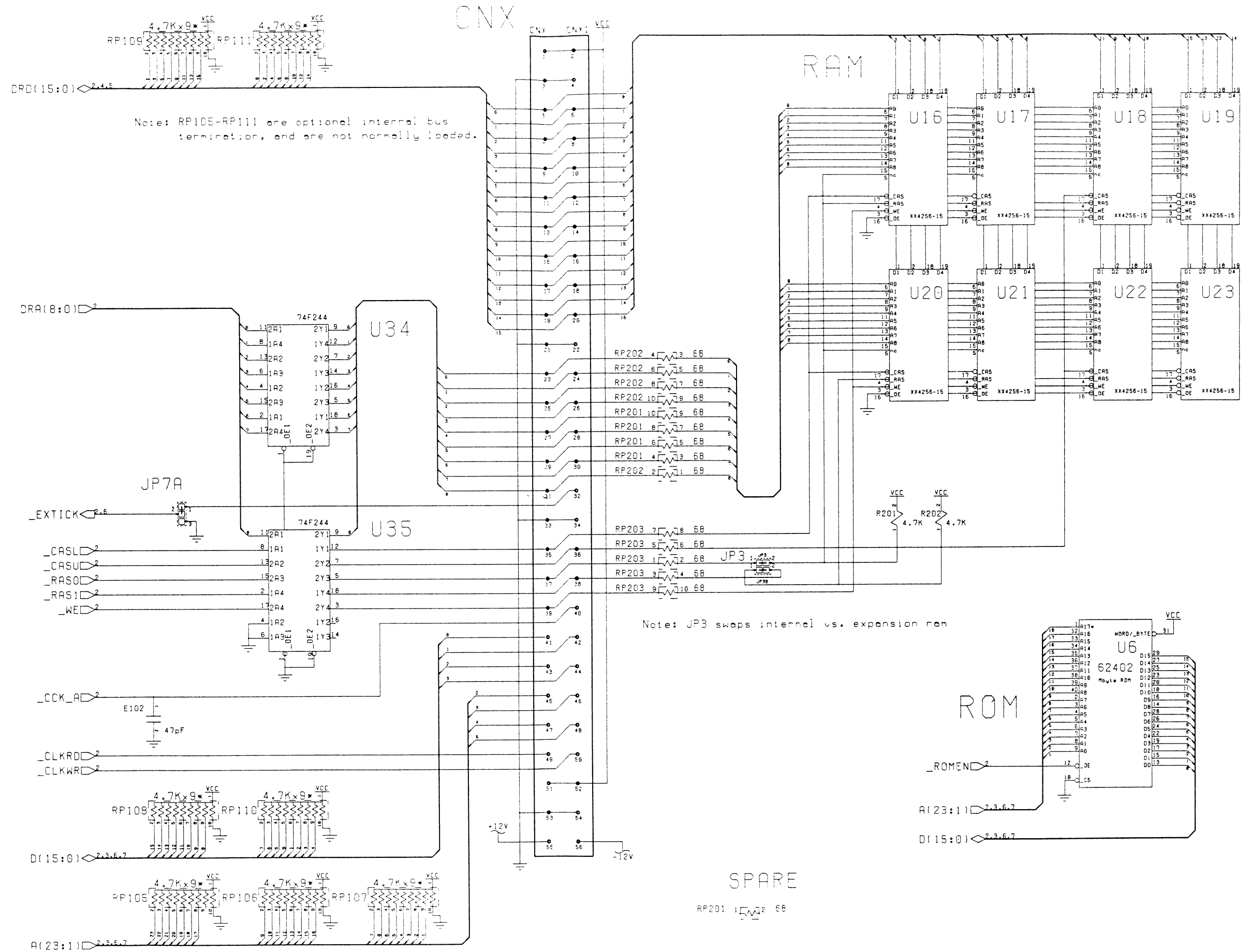


Note: Various components are for EMI Control
and may be loaded with funny things...

JP2 controls where expansion rom maps to:
A23 -> 000000 (default), A19 -> 080000

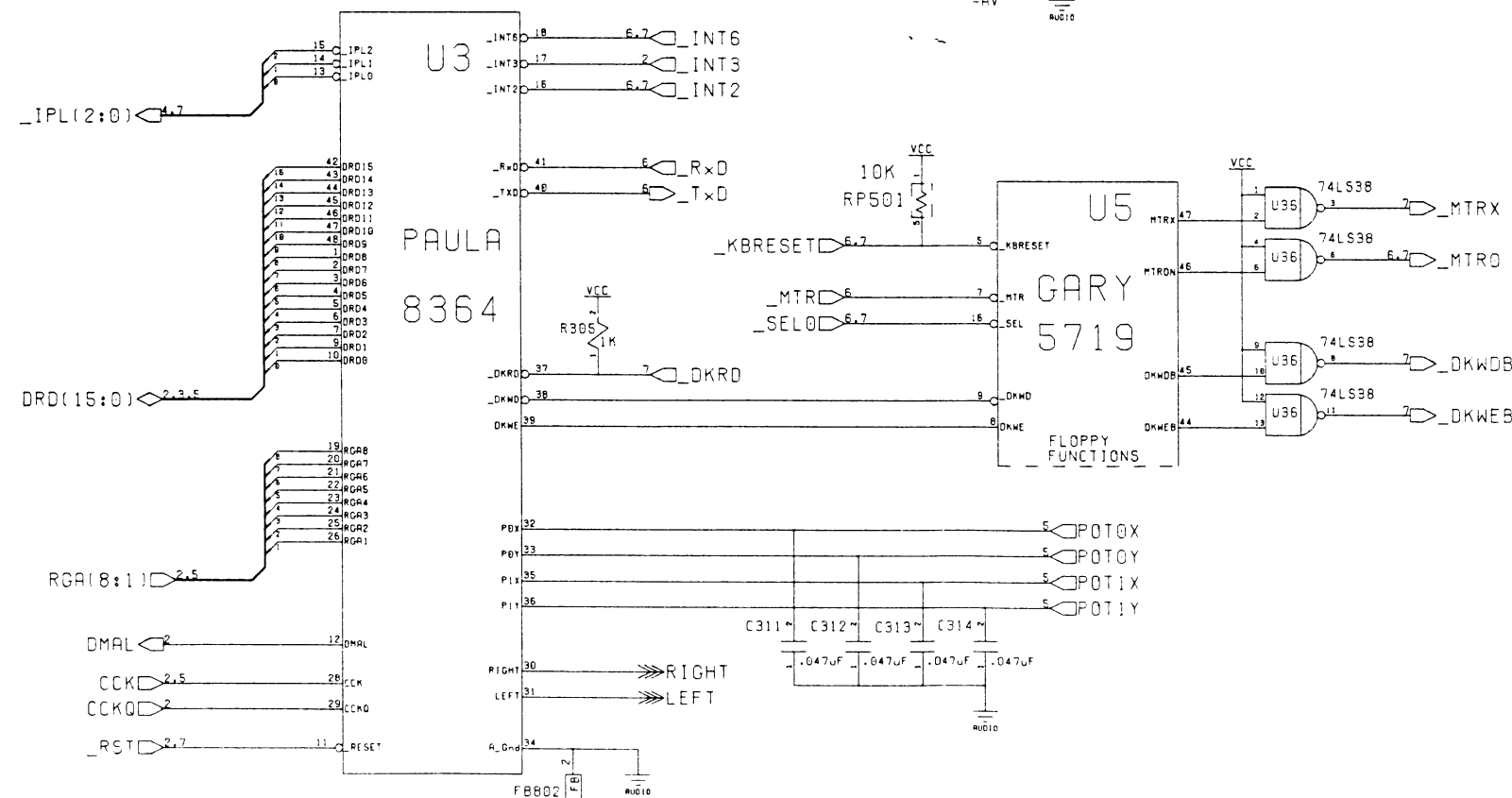
XR1 is added to some boards per ECO 860283



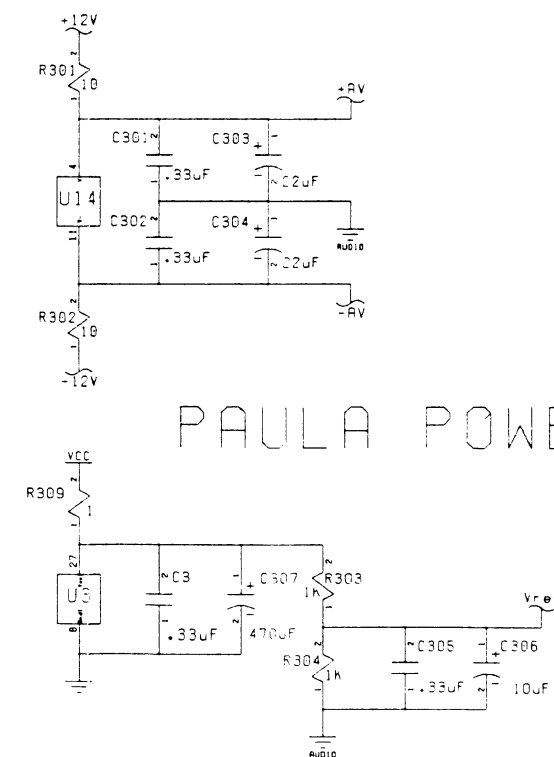


AUDIO FILTERS

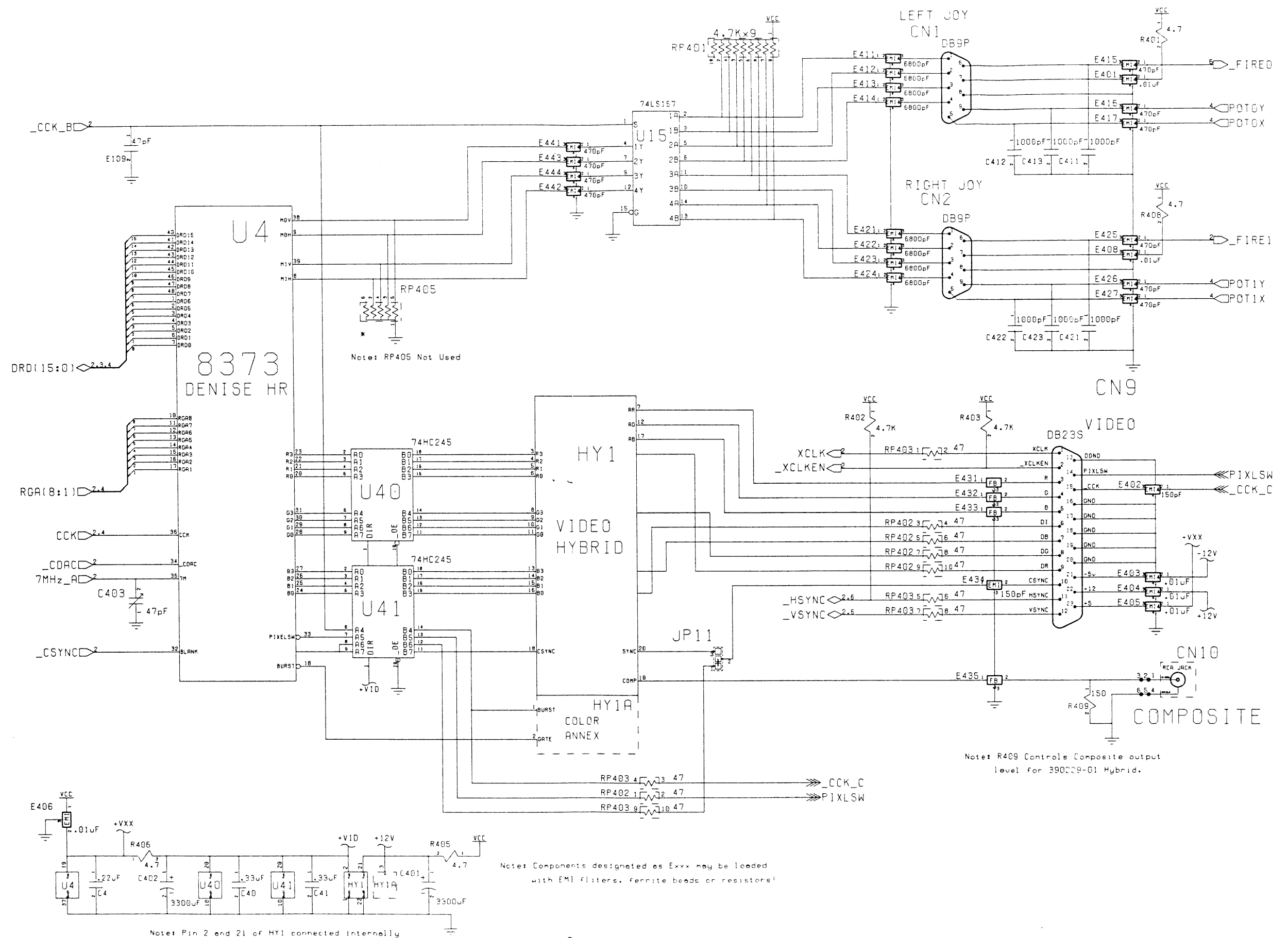
Note: LED off, Filters bypassed

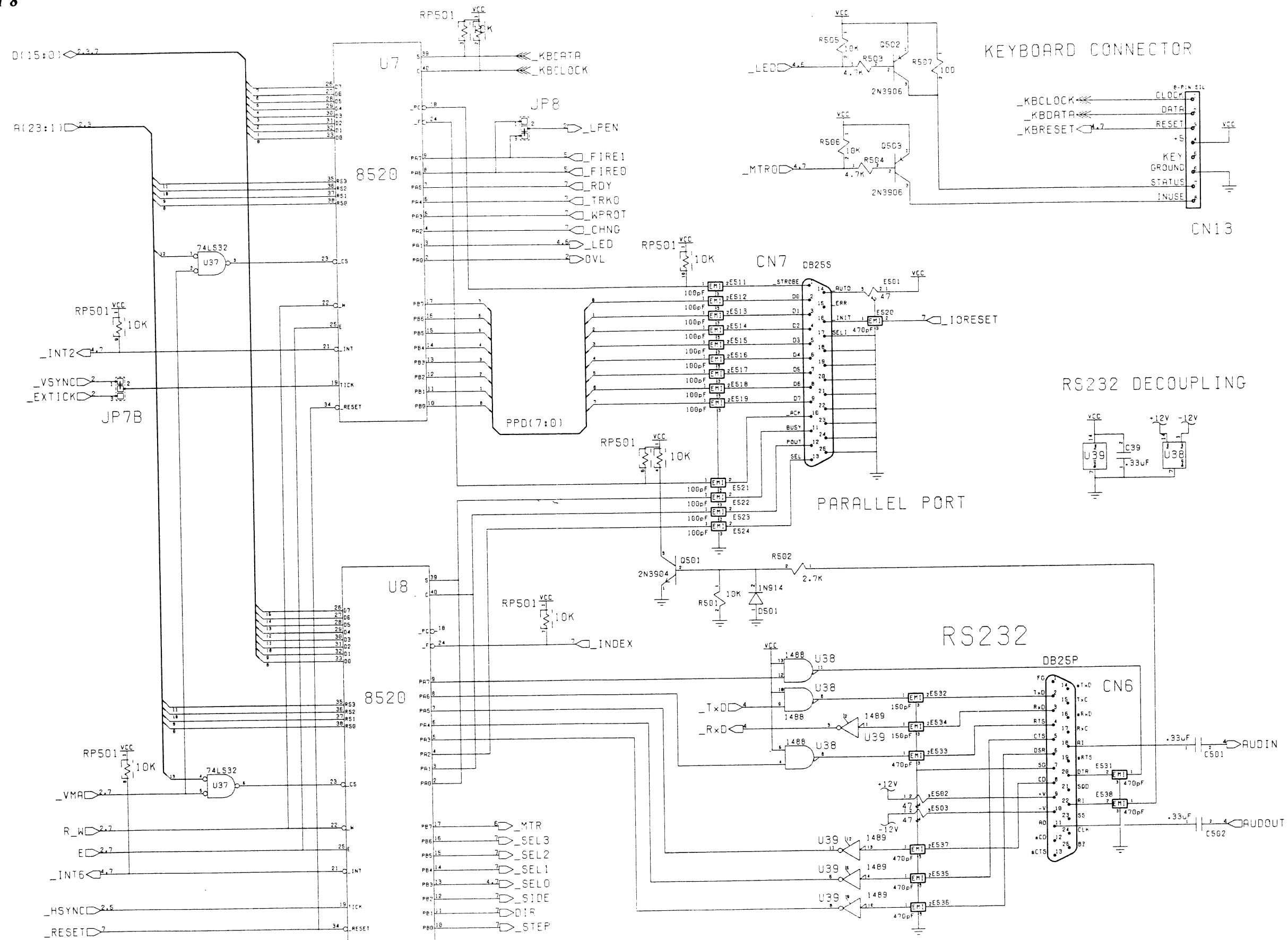


Note: Ground interconnection near audio jacks.

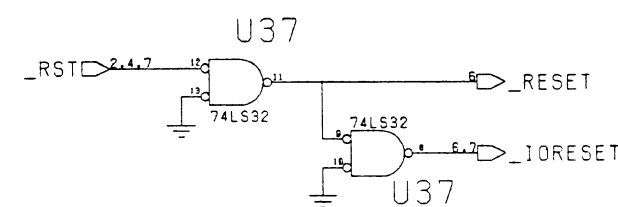
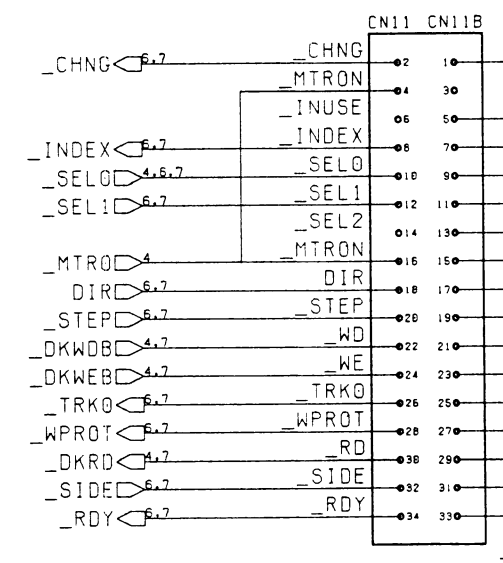
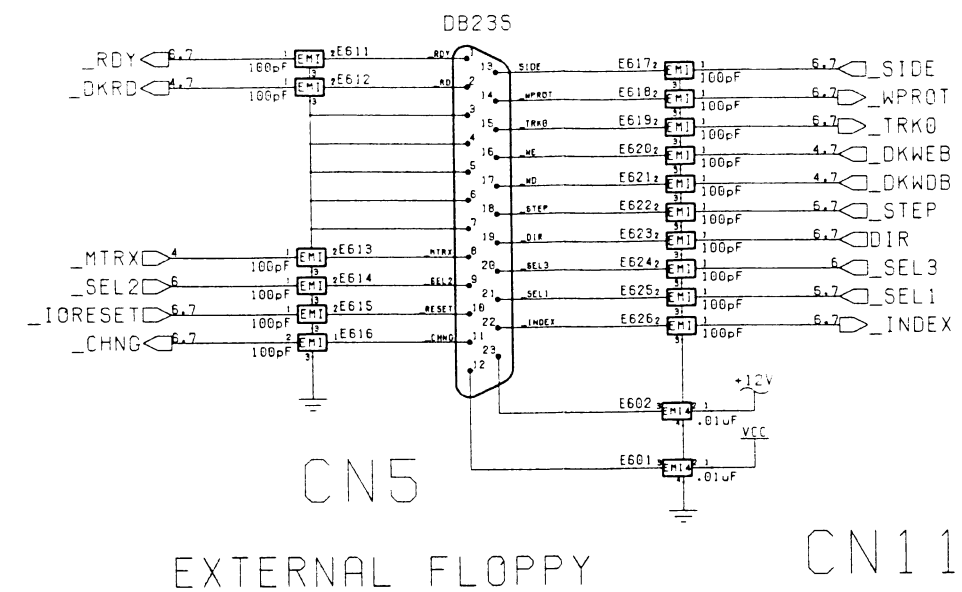
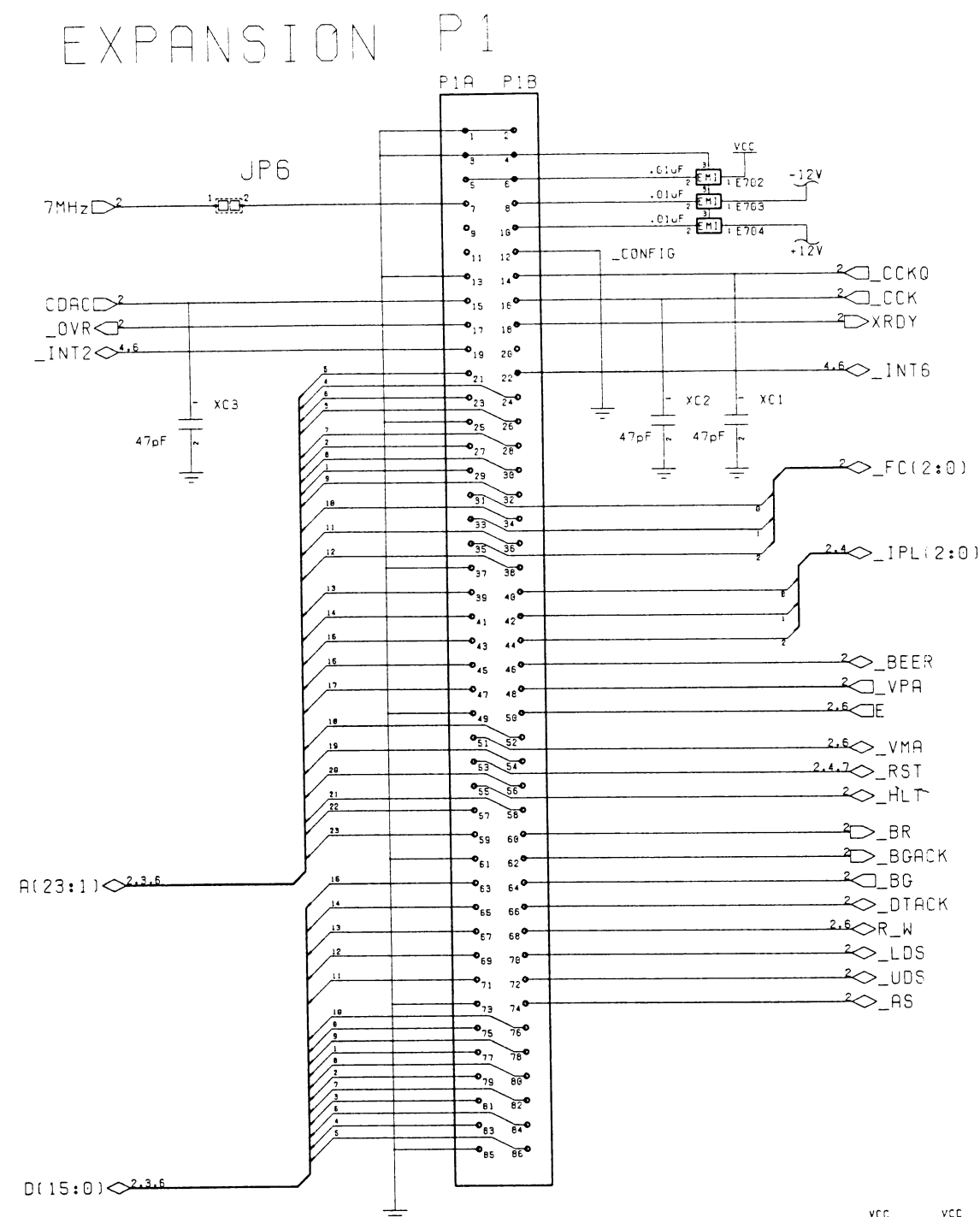


PAULA POWER!

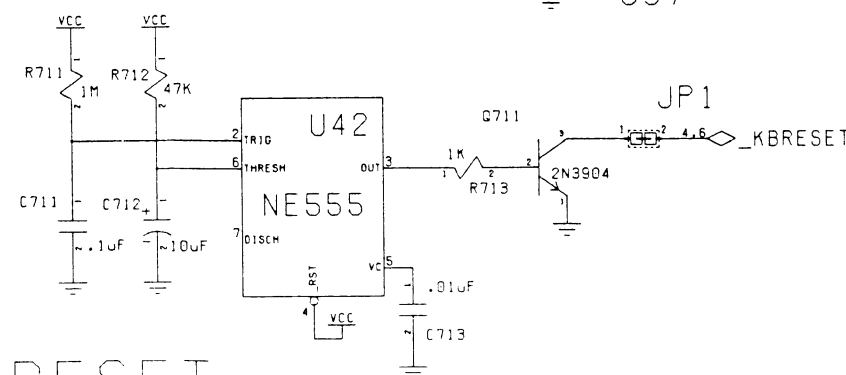




Note: ES01-503 are loaded with 47 Ohm 1/2 W resistors

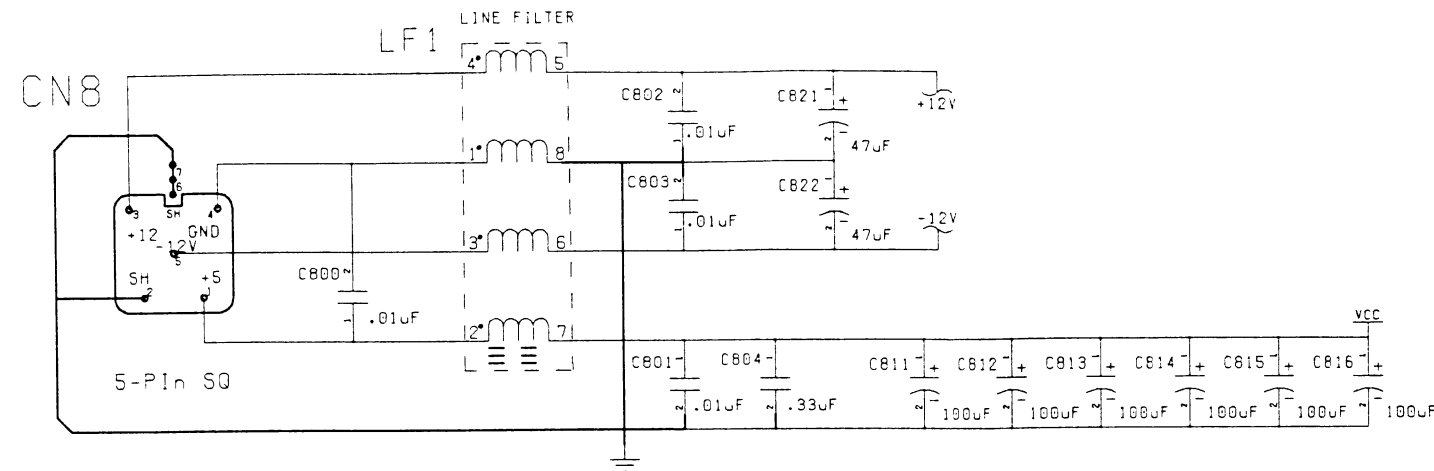


POWER UP RESET

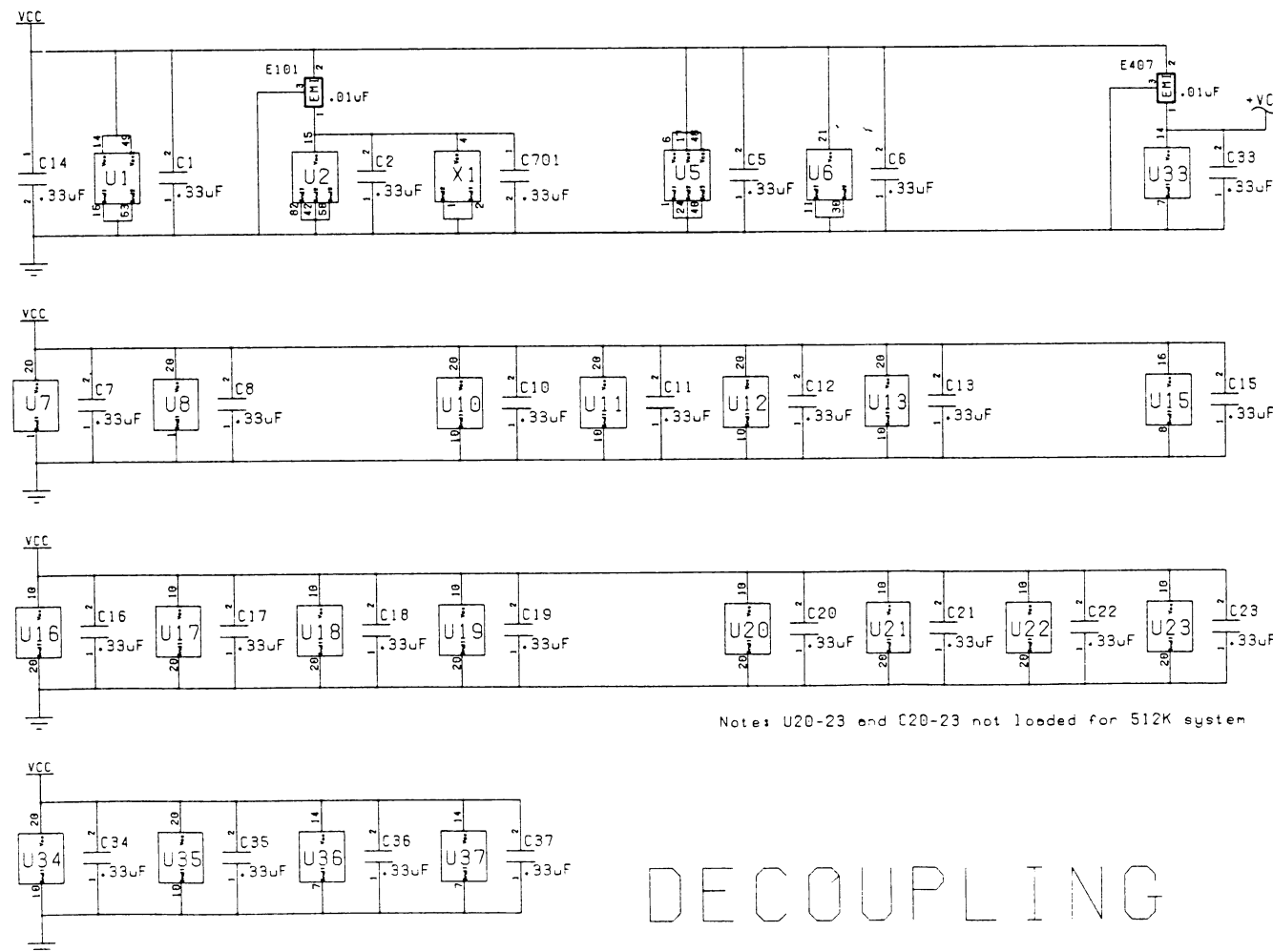


INTERNAL FLOPPY

POWER INPUT



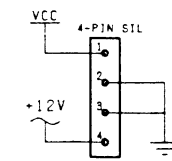
NOTE: HEAVY LINES INDICATE A SINGLE POINT CONNECTION



Note: U20-23 and C20-23 not loaded for 512K system

DECOUPLING

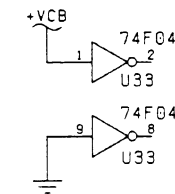
FLOPPY POWER



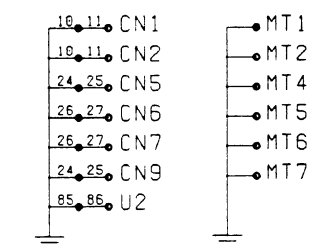
CN12

Note: Some drives are +5 only...

SPARES



GROUNDING HOLES, &c.



COMPONENT PARTS LIST **PCB ASSEMBLY RAM EXPANSION/CLOCK** **PCB ASSEMBLY #312604-04, A501, REV. 6C**

Commodore part numbers are provided for reference only and do not indicate the availability of parts from Commodore. Industry standard parts (Resistors, Capacitors, Connectors) should be secured locally. Approved cross-references for TTL chips, Transistors, etc. are available in manual form through the Service Department, order #314000-01.

IC COMPONENTS			CONNECTORS		
318099-04	DRAM 256K X 4 120nS	U1-U4	380311-05	HEADER 56PIN FEMALE RA	CNY
318099-02	DRAM 256K X 4 100nS	U1-U4	DIODES		
318073-01	OKI MSM6242B REAL TIME CLOCK	U9	900850-01	SWITCHING 1N4148	D912
390392-01	TTL 74F27 TRIPLE 3-IN NOR	U13	390017-01	SWITCHING 1N914	D911
390198-01	TTL 74F86 QUAD 2-IN XOR	U12	MISCELLANEOUS		
901521-33	TTL 74LS163 BINARY COUNTER	U11	380393-01	BATTERY NICD VARTA 3/60DK, 3.6V 60MAH	BT9
RESISTORS			900560-01	CRYSTAL WATCH STYLE, 32768Hz	Y9
901550-58	1/4W CF, 470	R911,R913	312606-03	FABRICATION DRAWING	
901550-20	1/4W CF, 10K	R912,R914,R915	312578-03	PCB ARTWORK	
390227-05	RES PACK SIP SERIES, 68 X 5 NOT LOADED	RP901-RP903,RP911 RP912	312605-03	SCHEMATIC	
CAPACITORS					
900462-21	MLC AXIAL NPO 22pF	C911			
390082-01	MLC AXIAL Z5U .1uF	C9			
390082-04	MLC AXIAL Z5U .33uF	C1-C4,C11-C13			
251029-06	TRIMMER (YELLOW) 6.8-45pF NOT LOADED	TC9			
390101-02	ELECT ALUM RADIAL 100uF 16V	C10			
900410-13	ELECT TANTALUM RADIAL 4.7uF 16V	C902,C903			
390101-05	ELECT ALUM RADIAL 4.7uF 16V	C913			

CNY

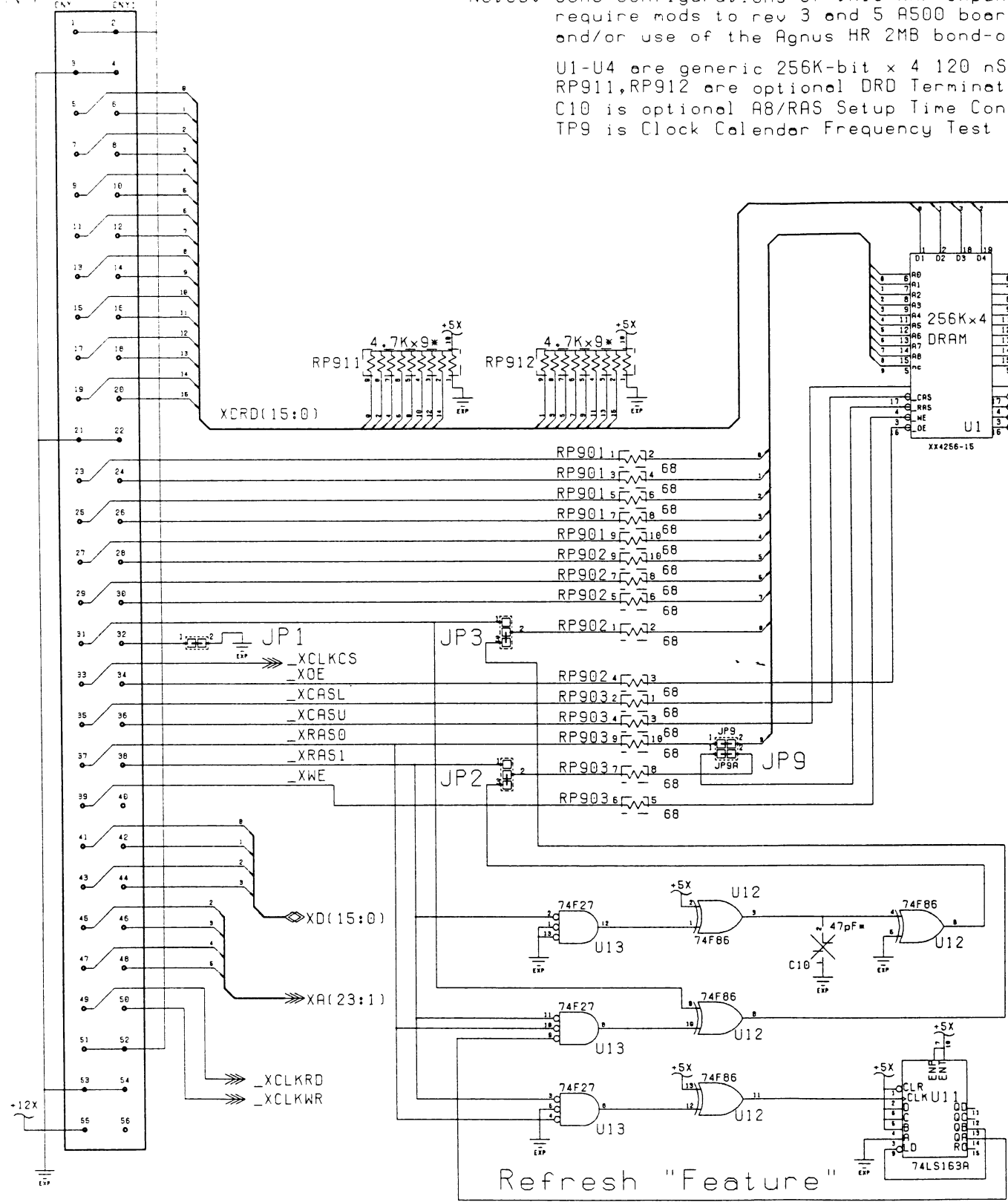
Notes: Some configurations of this RAM expansion require mods to rev 3 and 5 A500 boards and/or use of the Agnus HR 2MB bond-out.
U1-U4 are generic 256K-bit x 4 120 nS DRAM
RP911,RP912 are optional DRD Termination
C10 is optional A8/RAS Setup Time Control
TP9 is Clock Calendar Frequency Test Point

ECO History

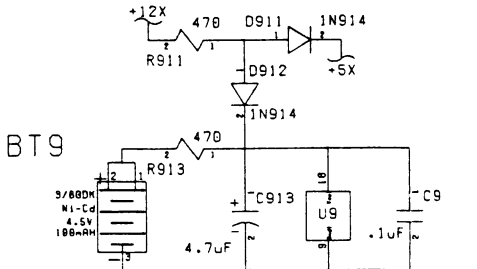
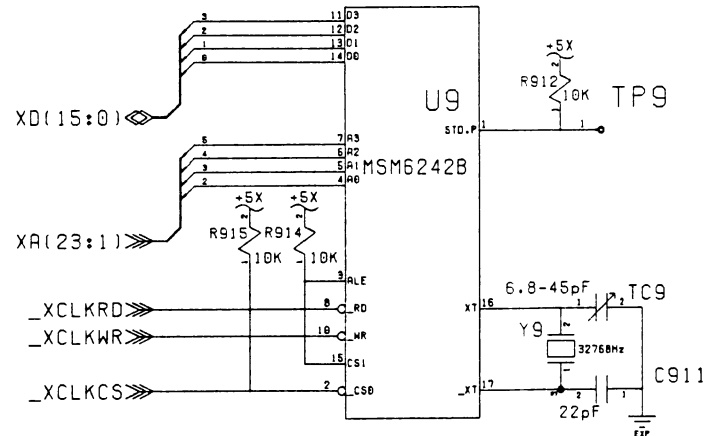
ECO NUMBER	DESCRIPTION	DATE

Configuration Options

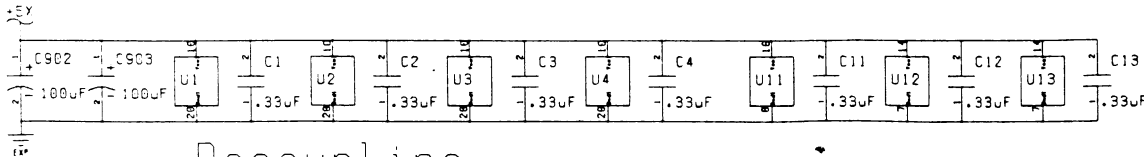
	A	B
on-board	512K	2M
on A501	512K	-
U1-U4	256Kx4	1Mx4
Agnus	Fat/HR	HR (2M)
JP1	1-2	-
JP9	1-2,1-2	1-1,2-2



Real Time Clock



Real Time Power



Decoupling...