

SYSTEM SCHEMATICS

A500

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

AUGUST, 1989

PN-314981-02

INTERNATIONAL EDITION

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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			RESISTORS (Continued)		
390084-03	M68000, 8 MHz	U1	901550-22	47K OHM, 5% 1/4W	R712
318070-01	FAT AGNUS, 8370R3 NTSC	U2	901550-84	1M OHM, 5% 1/4W	R711
318071-01	FAT AGNUS, 8371R1, PAL	U2	901550-75	120 OHM, 5% 1/4W	R103-R108
252127-02	PAULA, 8364R7	U3	901550-20	10K OHM, 5% 1/4W	R306,R308
252126-02	DENISE, 8362R8	U4	901550-23	2.7K OHM, 5% 1/4W	R307
318072-01	GARY 5719	U5	901550-82	470K OHM, 5% 1/4W	R326,R336
318029-01	8520R4	U5	901550-89	150 OHM, 5% 1/4W	R409
315093-01	ROM, KICKSTART V1.3	U5	BEADS/FILTERS		
390226-01	256K X 1 BIT DYNAMIC RAM	U16-U31	252133-01	FERRITE BEAD	RB801, RB802
380223-01	256K X 1 BIT DYNAMIC RAM	U16-U31	903025-01	FERRITE BEAD	FB802, FB801,
901882-01	1488	U38			EMI411-EMI417,
901883-01	1489	U39			EMI421-EMI427
390086-01	LF347/TL084	U14	903025-01	FERRITE BEAD	FB802, FB101
390110-01	74F04	U33			EMI411-EMI417,
901521-31	74LS32	U37			EMI421-EMI427,
901521-38	74LS38	U36			EMI402-EMI431-
390081-01	74F74	U32			EMI435
901521-11	74LS157	U15	251842-02	EMI FILTER, 100 pf	EMI301-EMI303,
318050-01	74F244	U34,U35			EMI401-EMI405,
901521-13	74LS244	U10,U12			EMI411-EMI417,
310003-01	74HC245	U40,U41			EMI421-EMI427,
901521-29	74LK373	U11,U13			EMI431-EMI435,
901523-01	NE555	U42			EMI511-EMI538,
252126-01	DENISE, 8362R6	U4	251842-02	EMI FILTER, 100 pf	EMI601-EMI611-
380223-05	DRAM, 256K X 1 BIT, 80ns	U16-U31			EMI626, EMI701-
CONNECTORS					EMI704
252167-01	DIN, 5 PIN, SQUARE, FEMALE	CNB			EMI1101, EMI302,
390242-01	D-SUB, 9 PIN, MALE, RA, SOLDER-IN	CN1,CN2			EMI303, EMI305,
390242-03	D-SUB, 23 PIN, MALE, RA, SOLDER-IN	CN9			EMI306, EMI402-
390241-03	D-SUB/23PIN/FEMALE/RA/SOLDER-IN	CN5			EMI404, EMI407,
390242-05	D-SUB/25PIN/MALE/RA/SOLDER-IN	CN6			EMI431-EMI435,
390241-05	D-SUB/25PIN/FEMALE/RA/SOLDER-IN	CN7			EMI511-EMI524,
252122-04	RCA JACK, BLACK	CN3			EMI531-EMI538,
252122-01	RCA JACK, WHITE	CN4			EMI601, EMI611-
252122-03	RCA JACK, YELLOW	CN10			EMI626, EMI702-
390248-01	RCA JACK, METAL	CN3,CN4,CN10			EMI704
325516-04	HEADER, 4PIN, POLARIZED, SIL	CN12	251842-02	EMI FILTER, 100 pf	EMI1101, EMI302,
903326-08	HEADER, 8PIN, SIL	CN13			EMI303, EMI305,
903345-17	HEADER, 34PIN, DIL	CN11			EMI306, EMI403-
390224-01	HEADER/DUAL/RA/LONG/56POS/MALE	CNX			EMI407, EMI511-
RESISTORS					EMI524, EMI531-
902410-18	NETWORK, 10K X 9 10PIN	RP501			EMI538, EMI601,
390227-03	NETWORK, 22 OHM X 5, 10PIN	RP103			EMI602, EMI611-
902422-05	NETWORK, 47 OHM X 4, 8PIN	RP102, RP403			EMI626, EMI701,
902422-06	NETWORK, 68 OHM X 4, 8PIN	RP210, RP202			EMI702
390227-05	NETWORK, 68 OHM X 5, 10PIN	RP203	CAPACITORS		
902441-10	NETWORK, 120 OHM X 5, 6PIN	RP405	900462-27	39 pF, MLC, AXIAL, NPO	C703
902442-17	NETWORK, 470 OHM X 7, 8PIN	RP104	900462-37	100 pF, MLC, AXIAL, NOP	C704
902410-08	NETWORK, 4.7K X 9, 10PIN	RP101, RP102, RP401,	900463-16	1000 pF MLC AXIAL X7R	C705
		RP501	900463-16	1000 pF MLC AXIAL X7R	C411-C413, C421-C423
902422-06	NETWORK, 68 OHM X 4, 8PIN	RP404	900463-23	3900 pF MLC AXIAL X7R	C323, C333
390186-01	ZERO OHM RESISTOR	W1, W2	900463-26	6800 pF MLC AXIAL X7R	C322, C332
901550-118	1 OHM, 5% 1/4W	EM1301, EM1406	390082-02	.01 uF MLC AXIAL Z5U	C410, C412, C801, C713
901550-129	5.1 OHM, 5% 1/4W	EM1401, R405, R406	390082-02	.01 uF MLC AXIAL Z5U	C308, C713
901550-64	10 OHM, 5% 1/4W	R301, R302	900463-36	.047 uF MLC AXIAL X7R	C311-C314
901550-90	27 OHM, 5% 1/4W	R101, R102	390082-01	.1 uF MLC AXIAL Z5U	C7, C8, C10, C11-C13,
901600-15	47 OHM, 5% 1/2W	EM1501, EM1503			C15, C33-C37, C39,
901550-108	360 OHM, 5% 1/4W	R331, 4321			C321, C331, C711,
901550-57	390 OHM, 5% 1/4W	R325, R335			C701(-01 & -02)
901550-58	470 OHM, 5% 1/4W	R305	390082-05	.22 uF MLC AXIAL Z5U	C1-C6, C16-C32, C14,
901550-01	1K OHM, 5% 1/4W	R303, R304, R324, R334,			C40-C42, C301, C302,
		R713, R305			C305, C501, C502
901550-17	1.2K OHM, 5% 1/4W	R704			C325, C335
901550-23	2.7K OHM, 5% 1/4W	R701	390082-05	.22 uF MLC AXIAL Z5U	C306, C712
901550-39	3.9K OHM, 5% 1/4W	R702	390101-06	10 uF ELECT RADIAL	C303, C304, C307, C334
901550-19	4.7K OHM, 5% 1/4W	R402, R403, R502-R504	390101-04	22 uF ELECT RADIAL	C812-C815, C821, C822
901550-20	10K OHM, 5% 1/4W	R322, R323, R333, R339,	390101-01	47 uF ELECT RADIAL	C307, C811
		R501, R505, R506	390101-02	100 uF ELECT RADIAL	C401, C402
901550-15	27K OHM, 5% 1/4W	R703	900100-56	3300 uF 10 V ELECT RADIAL	C702
			251029-06	VARIABLE CAP 4.5-45 pf	

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	



Jumpers and Stuff

REF	TYPE	DESCRIPTION	PAGE
JP1	BLOB	Keyboard Reset	7
JP2	BLOB	Memory Addr. C0 vs 08	2
JP3	BLOB	Int. Memory Res0 vs 1	3
			4
TP1	POST	RTC Frequency Test	9
C912	TRIM	RTC Frequency Adjust	9
W1-2	0 Ohm	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	6
CN8	SO 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	Mem. Exp. Main-Board	3
CNY	RA56-F	Mem. Exp. Sub-Board	9

Signal Glossary

SIGNAL	DESCRIPTION (AREA)	PAGES
28MHZ	28.63636 MHz Master Clock	2
7MHZ	7.15909 MHz Processor Clock	2,5
AI[23:1]	Processor Address Bus (68000)	2,3,7,9
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
BERR	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)	2,3,9
CCK/CCKQ	Color Clock / Quadrature (Chips)	2,4,7
COAC	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
CTS	Clear to Send (RS232 Port)	6
DI[15:0]	Processor Data Bus (68000)	2,3,6,7,9
DIR	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)	2,3,9
DRD[15:0]	DRAM Data Bus (DRAM)	2,3,4,5,9
DSR	Data Set Ready (RS232 Port)	6
DTRACK	Data Transfer Acknowledge (68000)	2,3,7
DTR	Data Terminal Ready (RS232 Port)	6
E	Peripheral Enable Clock (68000)	2,6,7
EXRAM	Expansion Memory Present	2,3,9
FCI[2:0]	Function Code (68000)	2,7
FIREQ/1	Fire Button 0/1 (Joysticks)	2,5,6
HLI	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)	6
LDS/UDS	Upper / Lower Data Strobes (68000)	2,7
LED	Power On LED / Audio Filter Disable	4,6

SIGNAL	DESCRIPTION (AREA)	PAGES
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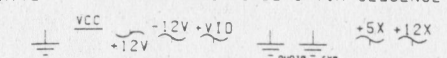
ECO Log

ECO NUMBER	DESCRIPTION	DATE
870152	Additional Parts for FCC	05/12/87
870222	The "Transistor Fix"	06/16/87
870302	Change RI resistor for FTZ	10/09/87
870207	More FCC Changes	09/04/87
880238	Add E Clock Termination	03/03/89

Key Components

REF	CHIP	DESCRIPTION	PAGE
U1	68000	68000 Processor	2
U2	8370	Fat Agnus - NTSC	2
	8371	Fat Agnus - PAL	alt
	8372	Agnus HR	alt
U3	8364	Paula	4
U4	8362	Denise	5
	8373	Denise HR	alt
U5	5719	Gary	2,4
U6	csst	ROM 128Kx16, 200 nS	3
U7-8	8520	Amiga VIA, 1 MHz	6
U9	6242B	OKI Bus RTC	9
U14	LF347	BiMOS Op-Amp	4
	TL084	BiMOS Op-Amp	alt
U38	1488	EIA Line Driver	4
U39	1489	EIA Line Receiver	4
U42	NE555	Timer	7
U16-31	csst	DRAM 256Kx1, 150 nS	3
U48-63	csst	DRAM 256Kx1, 150 nS	9
X1	OSC	TTL 28.63636 MHz NTSC	2
	OSC	TTL 28.37512 MHz PAL	alt
Y2	XTAL	Watch Type 32768 Hz	9
HY1	csst	Video Hybrid	5

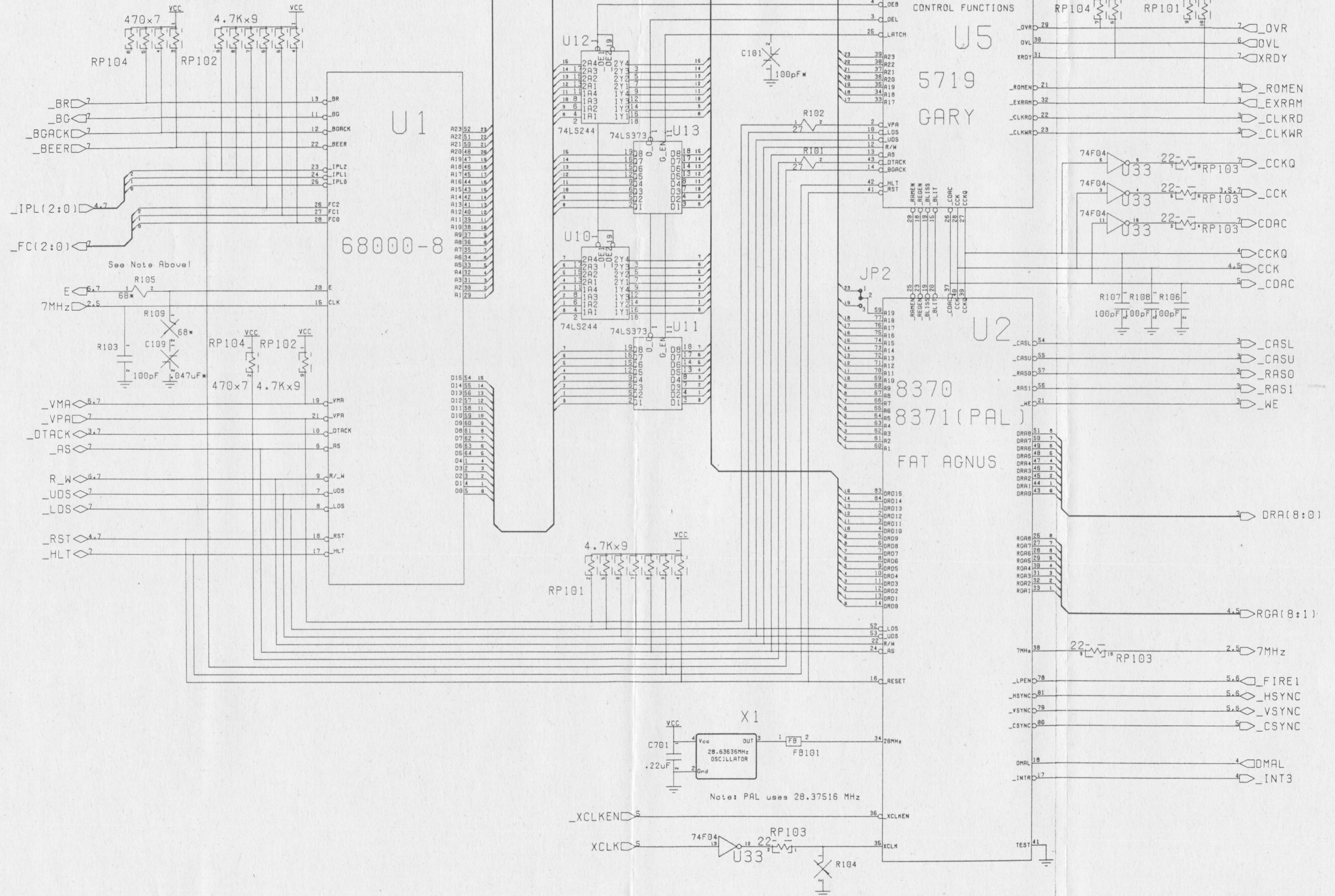
ATTEMPT TO FORCE NODE NUMBERS VIA SEQUENCE

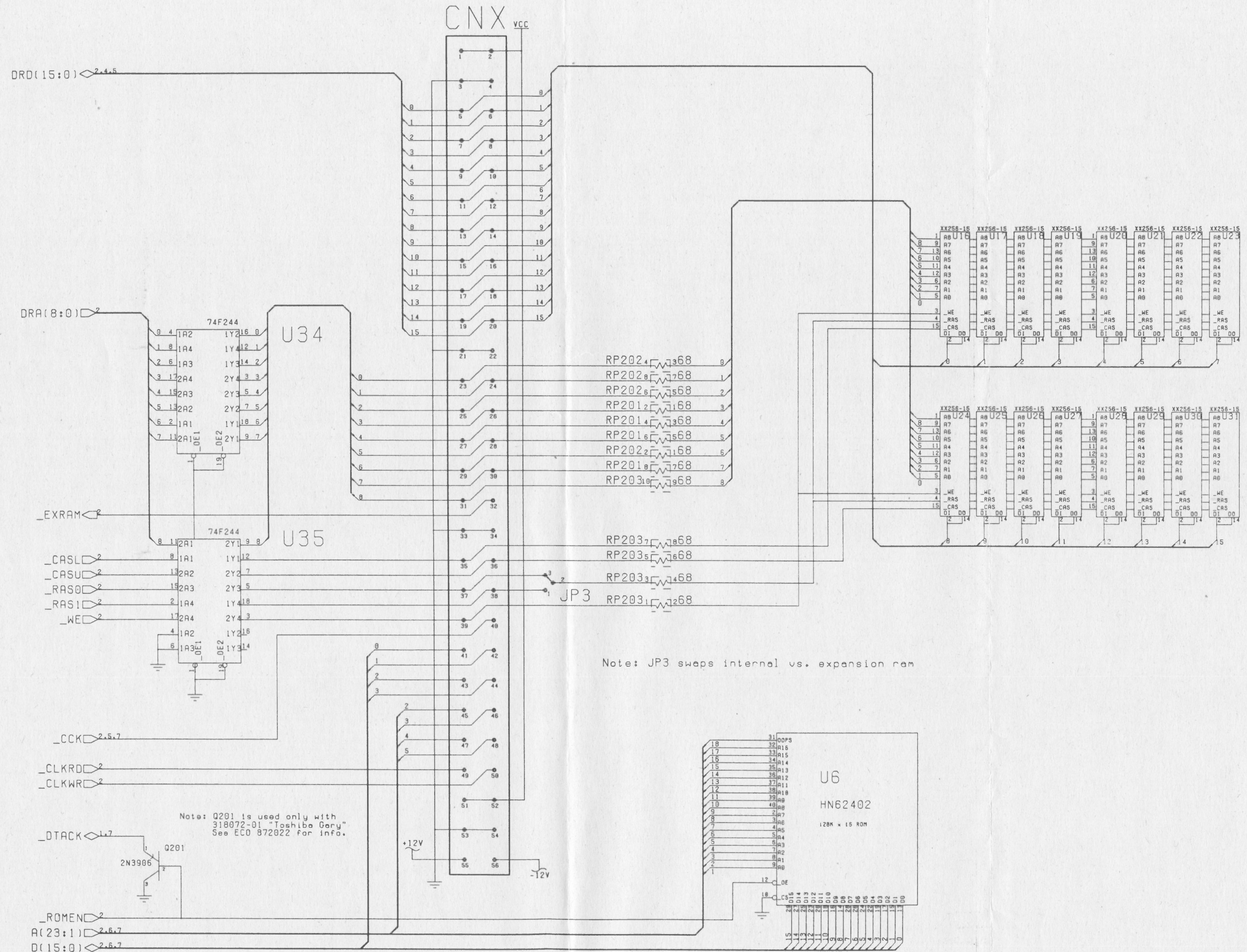


Note: R103-104, 106-108, C101 are for EMI Control and may be loaded with funny things...

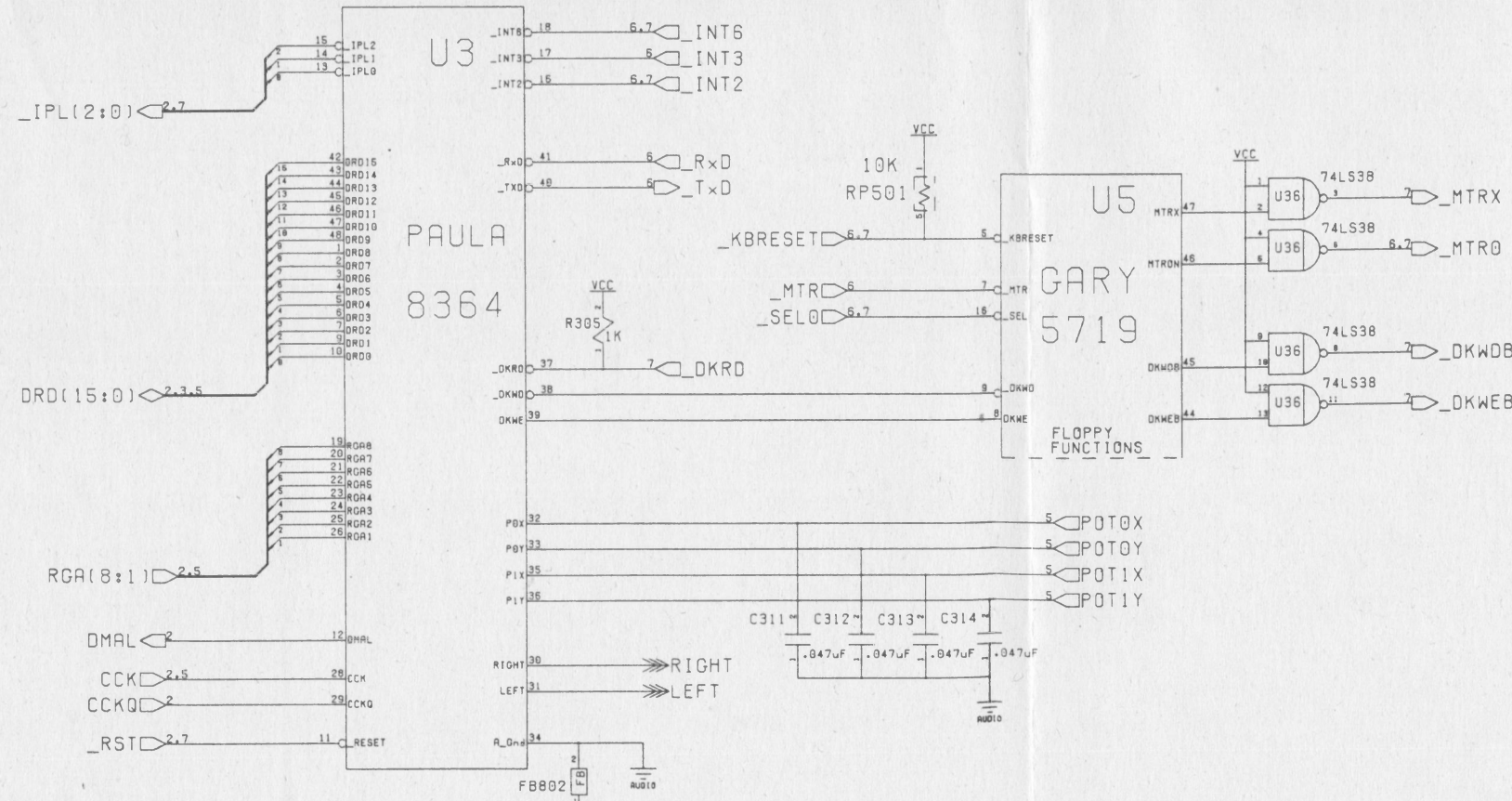
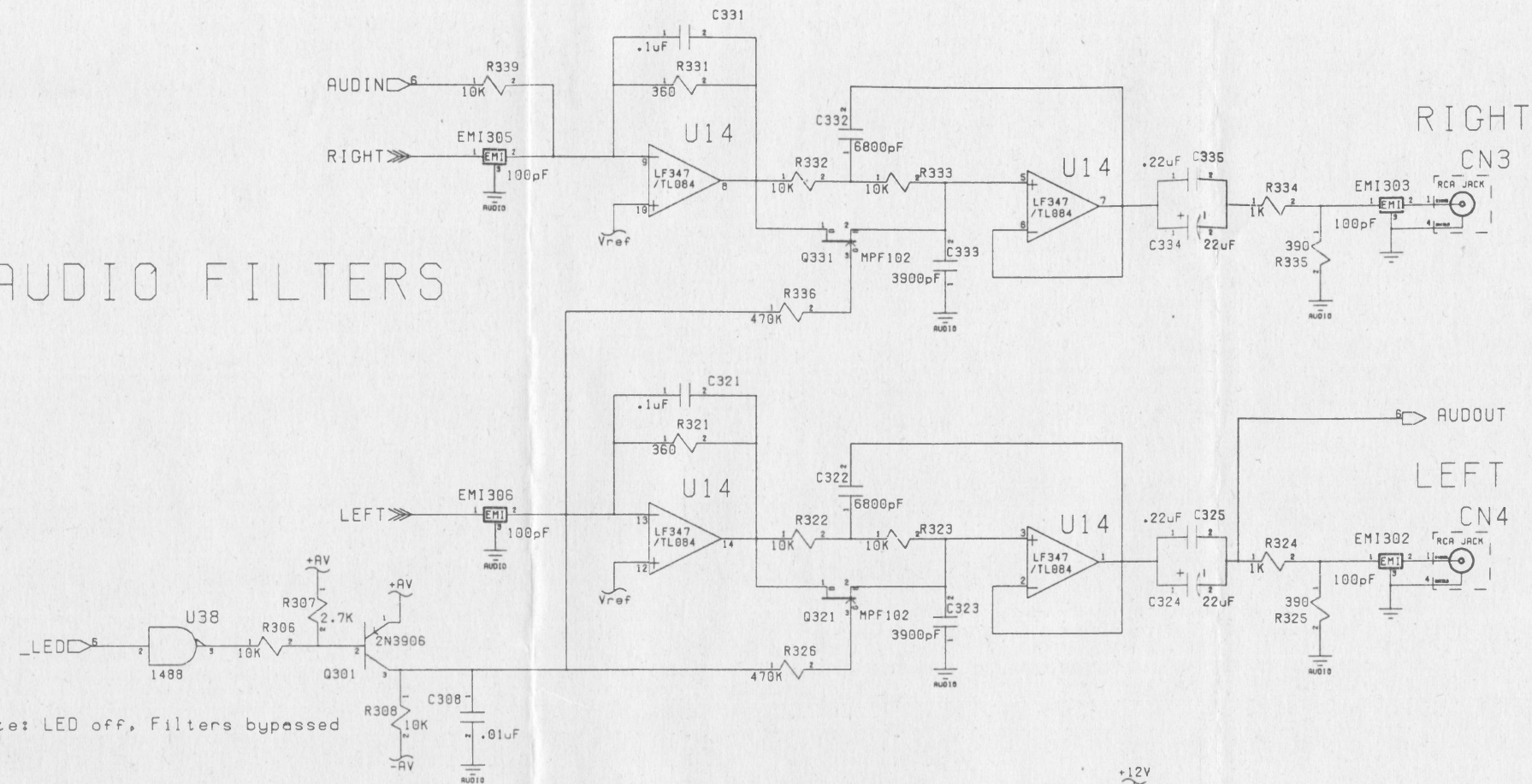
JP2 controls where expansion ram maps to:
A23 -> C00000 (default), A19 -> 080000

R109/C109, R105 Details, see ECO 880283
C101 FCC Filter Capacitor per ECO 870207

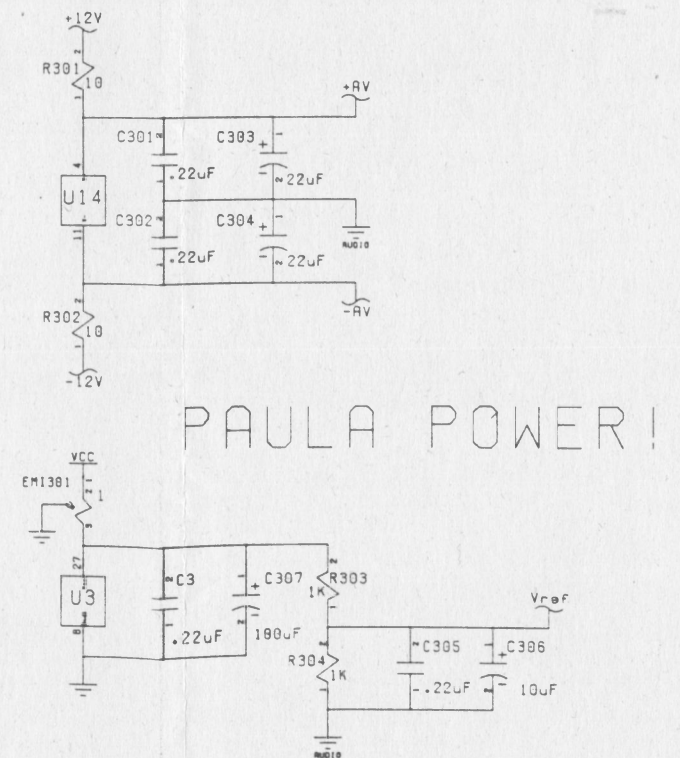


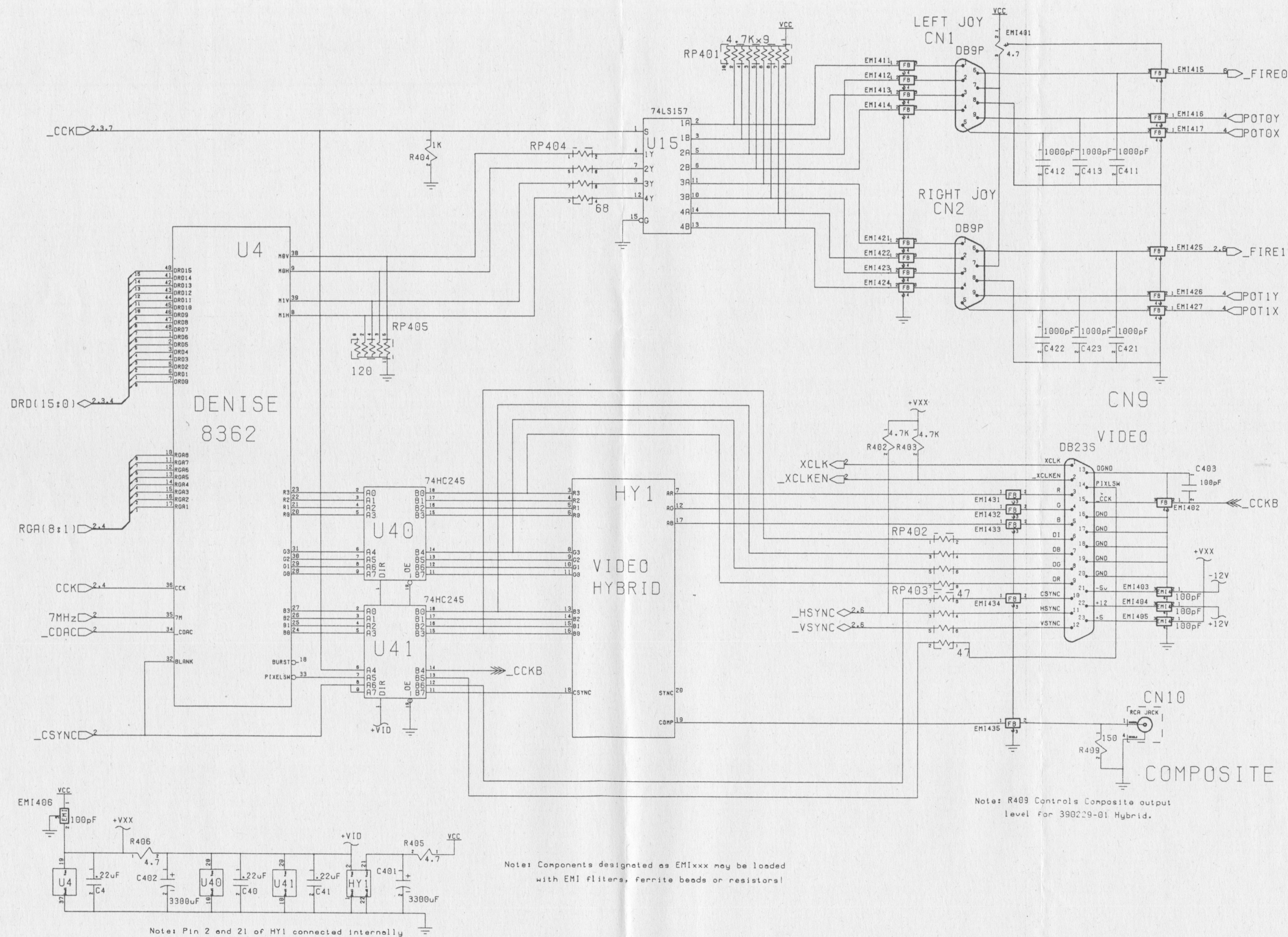


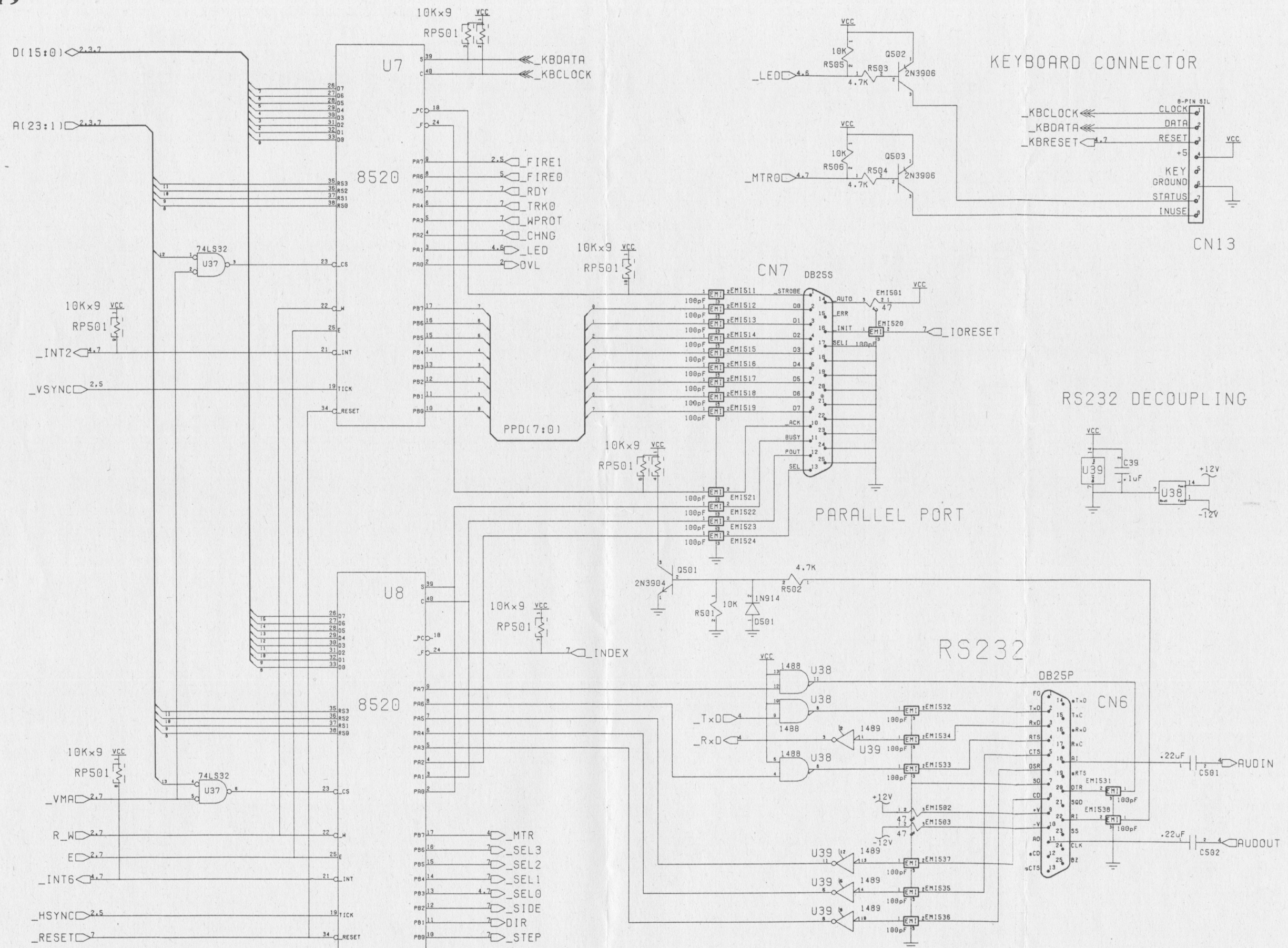
AUDIO FILTERS



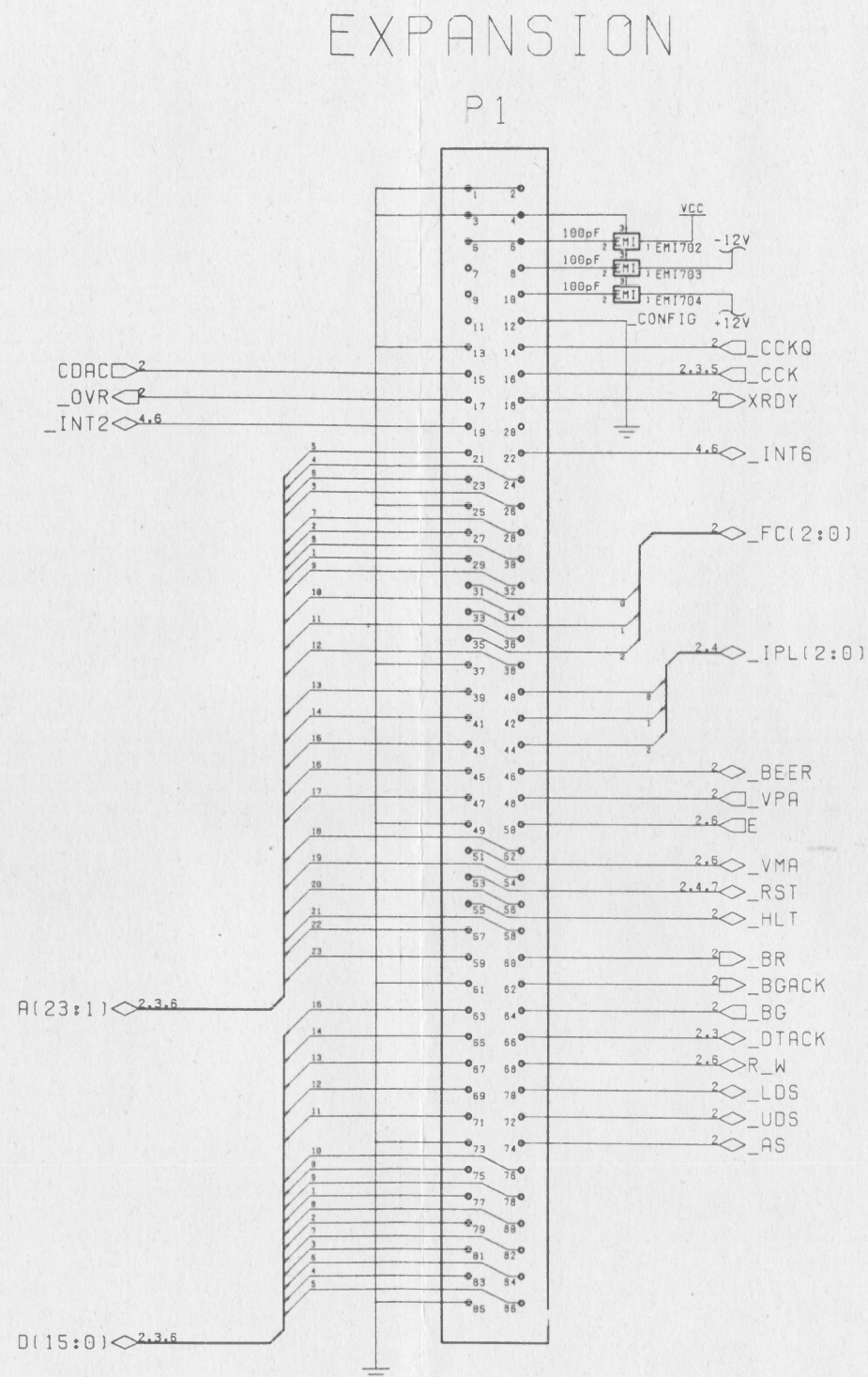
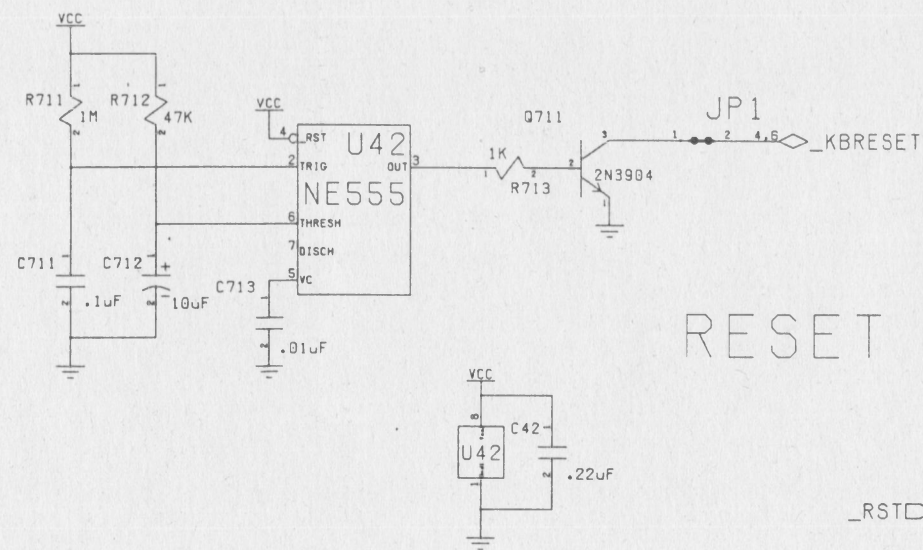
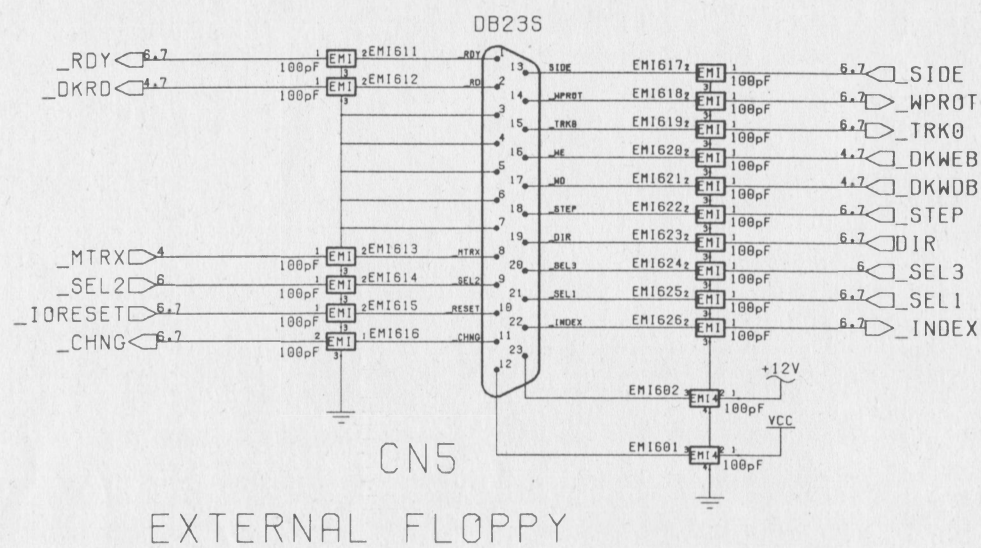
Note: Ground interconnection near audio jacks.



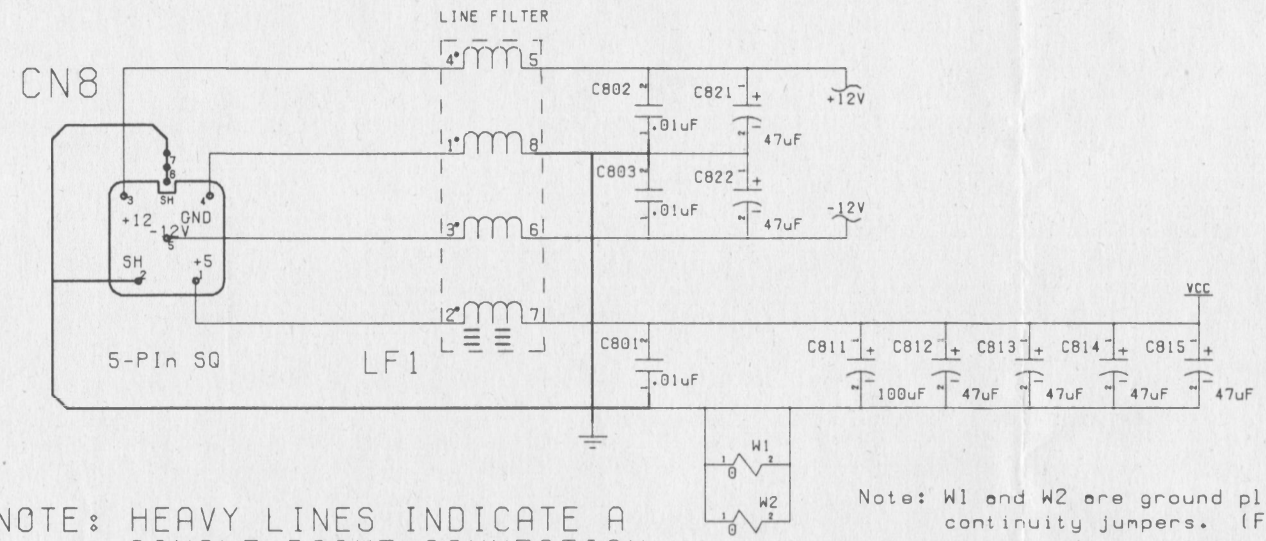




Note: EMI501-503 are loaded with 47 Ohm 1/2 W resistors

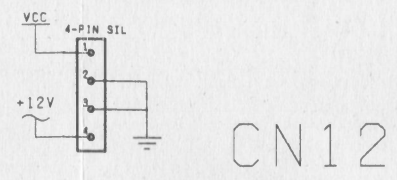


POWER INPUT

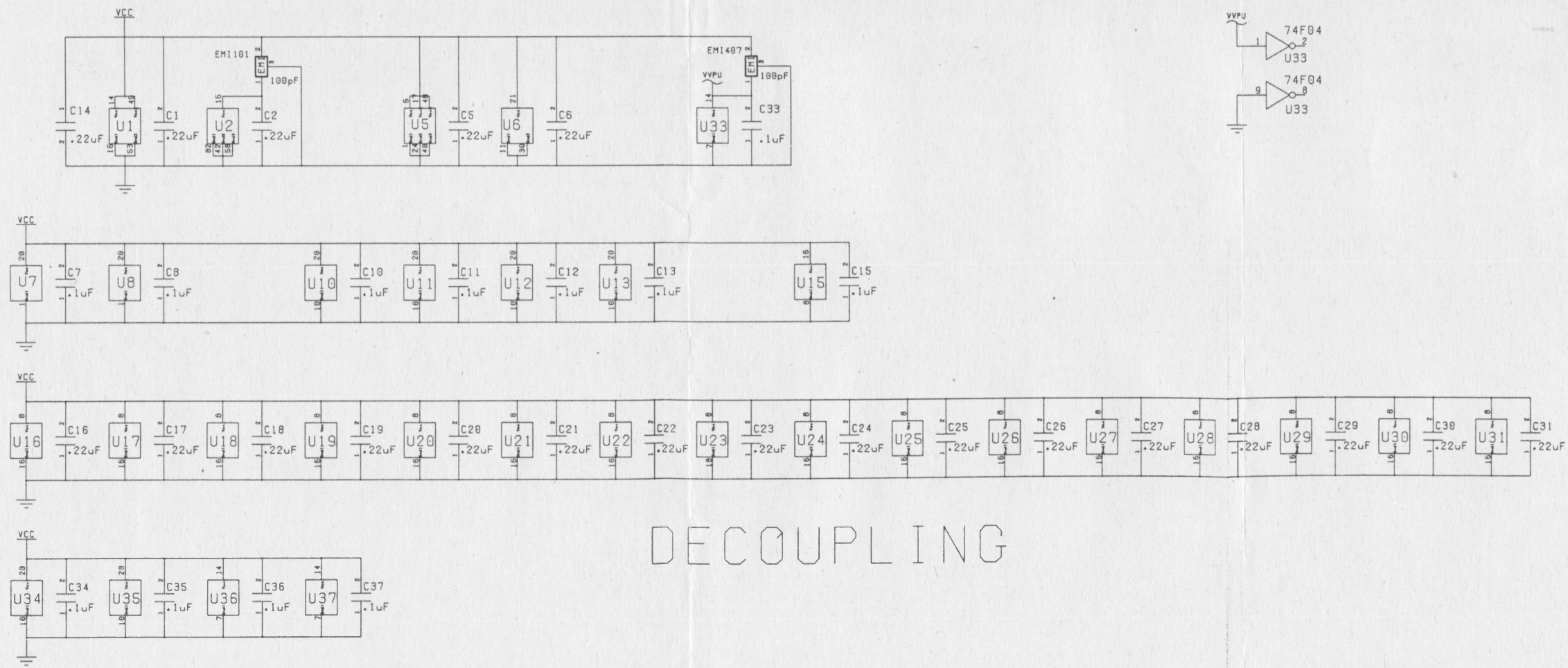
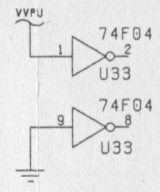


NOTE: HEAVY LINES INDICATE A SINGLE POINT CONNECTION

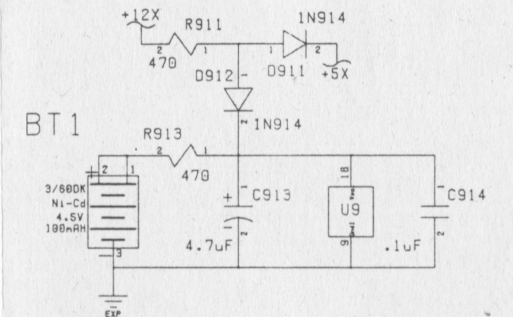
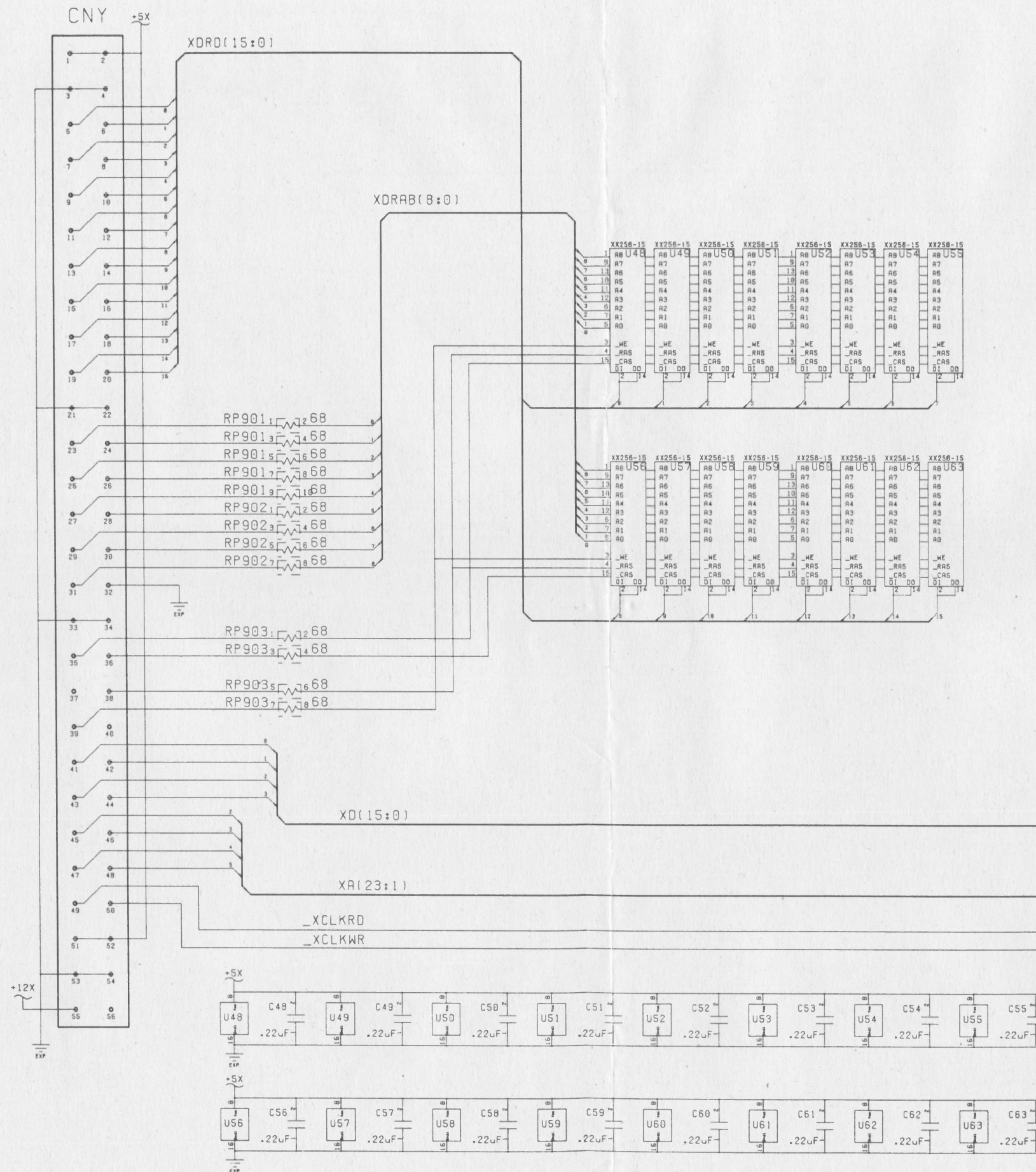
FLOPPY POWER



SPARES

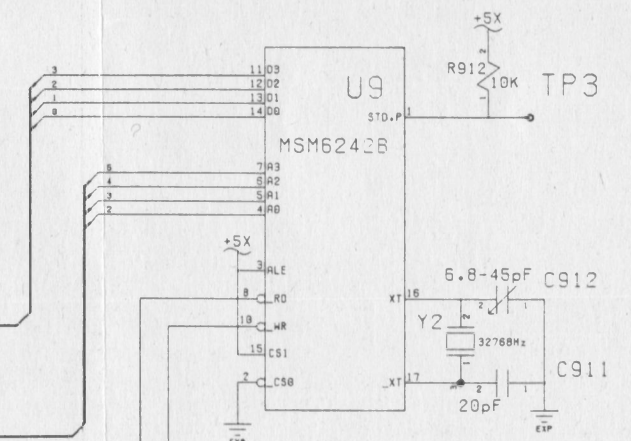


DECOUPLING



Real Time Power

Real Time Clock



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	U10,U12	TRANSISTORS		
901521-13	TTL 74LS244	U37	390254-01	JFET MPF102/PN4302	Q321,Q331
901521-31	TTL 74LS32	U11,U13	902658-01	NPN 2N3904	Q501,Q711
901521-29	TTL 74LS373	U36	902707-01	PNP 2N3906	Q301,Q502,Q503
901521-38	TTL 74LS38	HY1	RESISTORS		
390229-01	VIDEO HYBRID	U2	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)	U4	901600-15	1/2W CF, 47	E501-E503
390433-01	MOS 8373 R2 DENISE HR	U16-U19	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	U20-U23	901550-56	1/4W CF, 47	R103-R107,R113
395093-02	ROM 256K X 16 KICKSTART 1.3	U6	901550-94	1/4W CF, 68	E104,E105
NOT LOADED			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	901550-22	1/4W CF, 47K	R306,R308,R322,R323, R332,R333,R339,R501, R505,R506
390082-02	MLC AXIAL Z5U .1uF	C711	901550-82	1/4W CF, 470K	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	901550-84	1/4W CF, 1M	R326,R336
NOT LOADED			902410-11	RES PACK SIP PULLUP, 470 X 9	R711
390101-06	ELECT ALUM RADIAL, 10uF 16V	C306,C712	902410-08	RES PACK SIP PULLUP, 4.7K X 9	RP104
390101-04	ELECT ALUM RADIAL, 22uF 35V	C303,C304,C324,C334	902410-07	RES PACK SIP PULLUP, 10K X 9	RP101,RP102,RP401
390101-01	ELECT ALUM RADIAL, 47uF 35V	C821,C822	390227-03	RES PACK SIP SERIES, 22 X 5	RP501
390101-02	ELECT ALUM RADIAL, 100uF 16V	C811-C816	390227-05	RES PACK SIP SERIES, 68 X 5	RP103
390101-03	ELECT ALUM RADIAL 470uF 16V	C307	390227-06	RES PACK SIP SERIES, 47 X 5	RP201,RP203
900100-56	ELECT ALUM RADIAL 3300uF 10V	C401,C402	901600-129	RES 1/2W CF, 5.1	RP402,RP403
CONNECTORS			390227-08	RES PACK SIP SERIES, 39 X 5	R401,R405,R406,R408
325516-04	4PIN FLOPPY POWER	CN12	NOT LOADED		
252167-01	5PIN SQ DIN	CN8	MISCELLANEOUS		
903335-08	8PIN SIL W/KEY	CN13	904150-06	SOCKET, 40PIN DIP	U6-U8
390241-03	D-SUB/23PIN/FEMALE/DB23S	CN5	251313-01	SOCKET, 48PIN DIP	U3-U5
390242-03	D-SUB/23PIN/MALE/DB23P	CN9	904150-10	SOCKET, 64PIN DIP	U1
290241-05	D-SUB/25PIN/FEMALE/DE25S	CN7	390185-01	SOCKET, 84PIN PLCC	U2
290242-05	D-SUB/25PIN/MALE/DB25P	CN6	251313-02	SOCKET, 48PIN DIP	U3-U5
390242-01	D-SUB/9PIN/MALE/DB9P	CN1,CN2	252344-01	OSCILLATOR, 28.37516MHz (PAL)	X1
350903-01	HEADER 34PIN W/KEY	CN11	325566-14	OSCILLATOR, 28.63636MHz (NTSC)	X1
390224-07	HEADER 56PIN MALE RA	CNX	312511-03	SCHEMATIC	
252122-03	RCA JACK, YELLOW	CN10			
252122-01	RCA JACK, WHITE	CN4			
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. CO vs 08	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

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	6
CN8	SO DIN	Power Supply Connector	8
CN9	DB25P	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-Time 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
DIR	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
DTRACK	Data Transfer Acknowledge (68000)	2,3,7
DTR	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
KBLOCK	Keyboard Clock (Keyboard)	6
KBDATA	Keyboard Data (Keyboard)	6
KBRESET	Keyboard Reset (Keyboard)	6
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
MTRQ	Motor On - Drive 0 (Floppy)	4,6,7
MOV/MOH	Mouse 0 Quadrature V/H (Joysticks)	5
MIV/MIH	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	8870	Fat Agnus - NTSC	2
	8871	Fat Agnus - PAL	alt
	8872	Agnus HR	alt
U3	8364	Paula	4
U4	8362	Denise	5
	8373	Denise HR	alt
U5	5719	Gary	2,4
U6	asst	ROM 128Kx16, 200 nS	3
U7-8	8520	Amiga VIA, 1 MHz	6
U14	LF347	BiMOS Op-Amp	4
	TL084	BiMOS Op-Amp	alt
U38	1488	EIA Line Driver	4
U39	1489	EIA Line Receiver	4
U42	NE555	Timer	7
U16-19	asst	DRAM 1Mx1, 150 nS	3
U20-23	asst	DRAM 1Mx1, 150 nS	9
X1	05C	TTL 28.63636 MHz NTSC	2
	05C	TTL 28.37512 MHz PAL	alt
HY1	asst	Video Hybrid	5

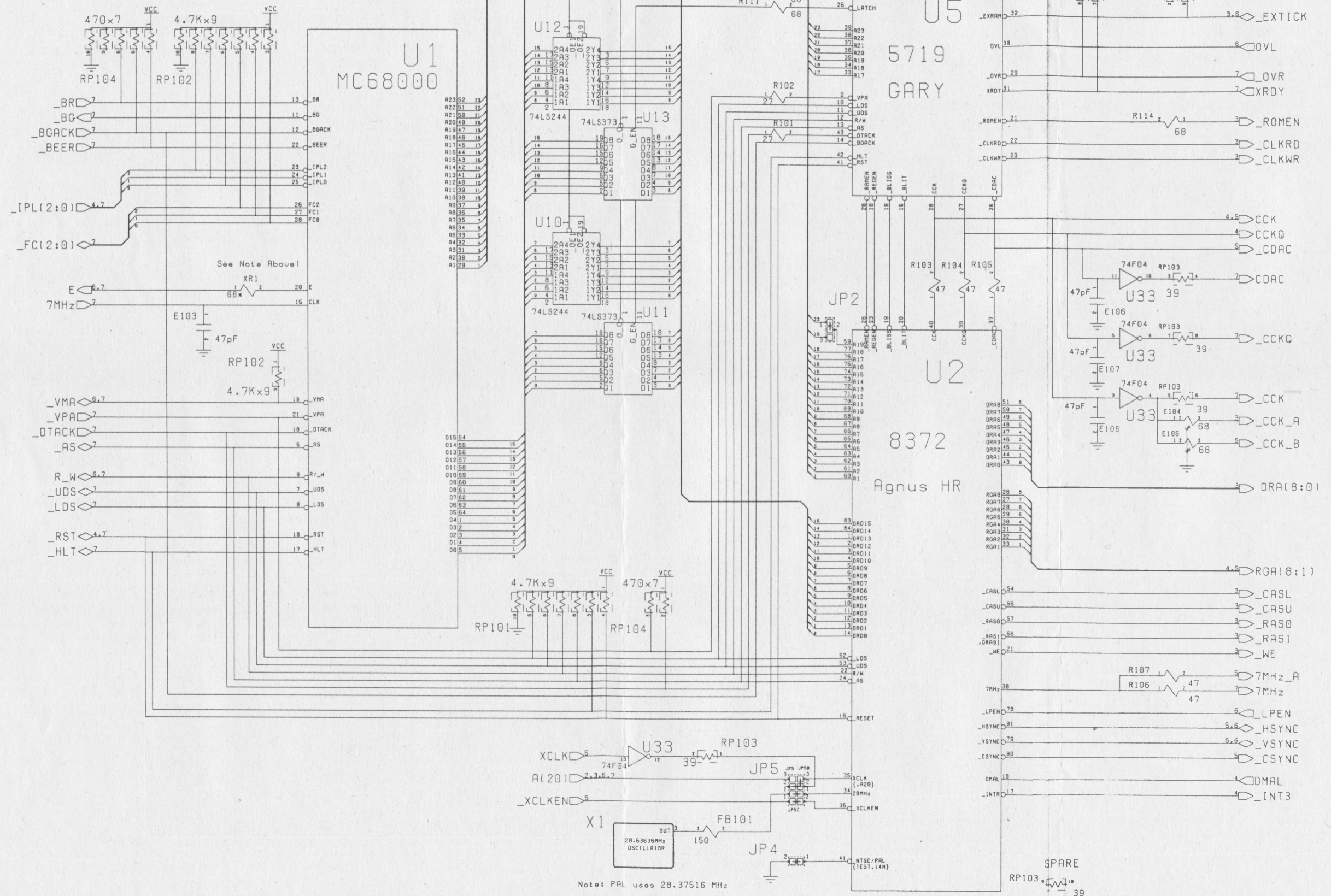
ATTEMPT TO FORCE NODE NUMBERS VIA SEQUENCE

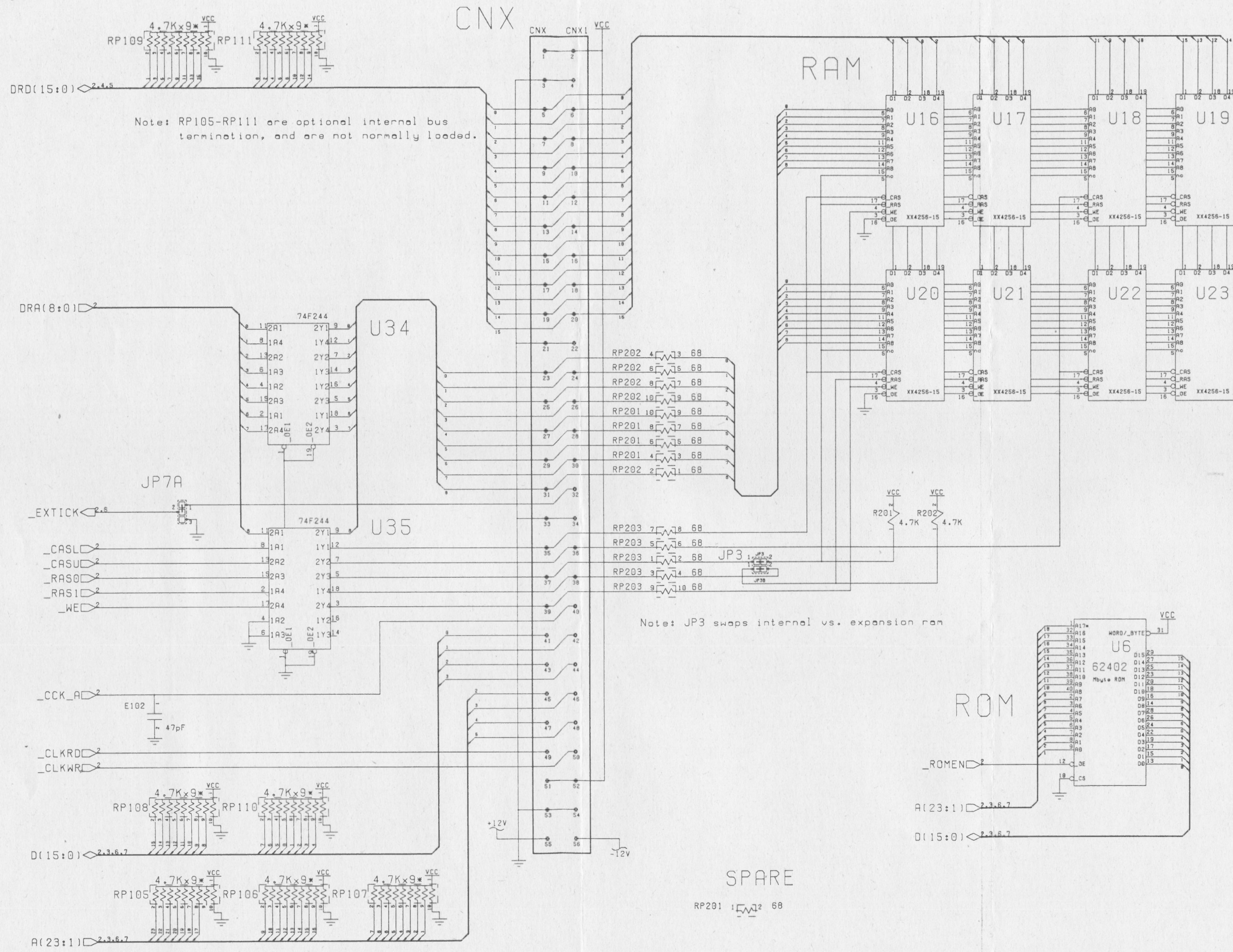


Note: Various components are for EMI Control
and may be loaded with funny things...

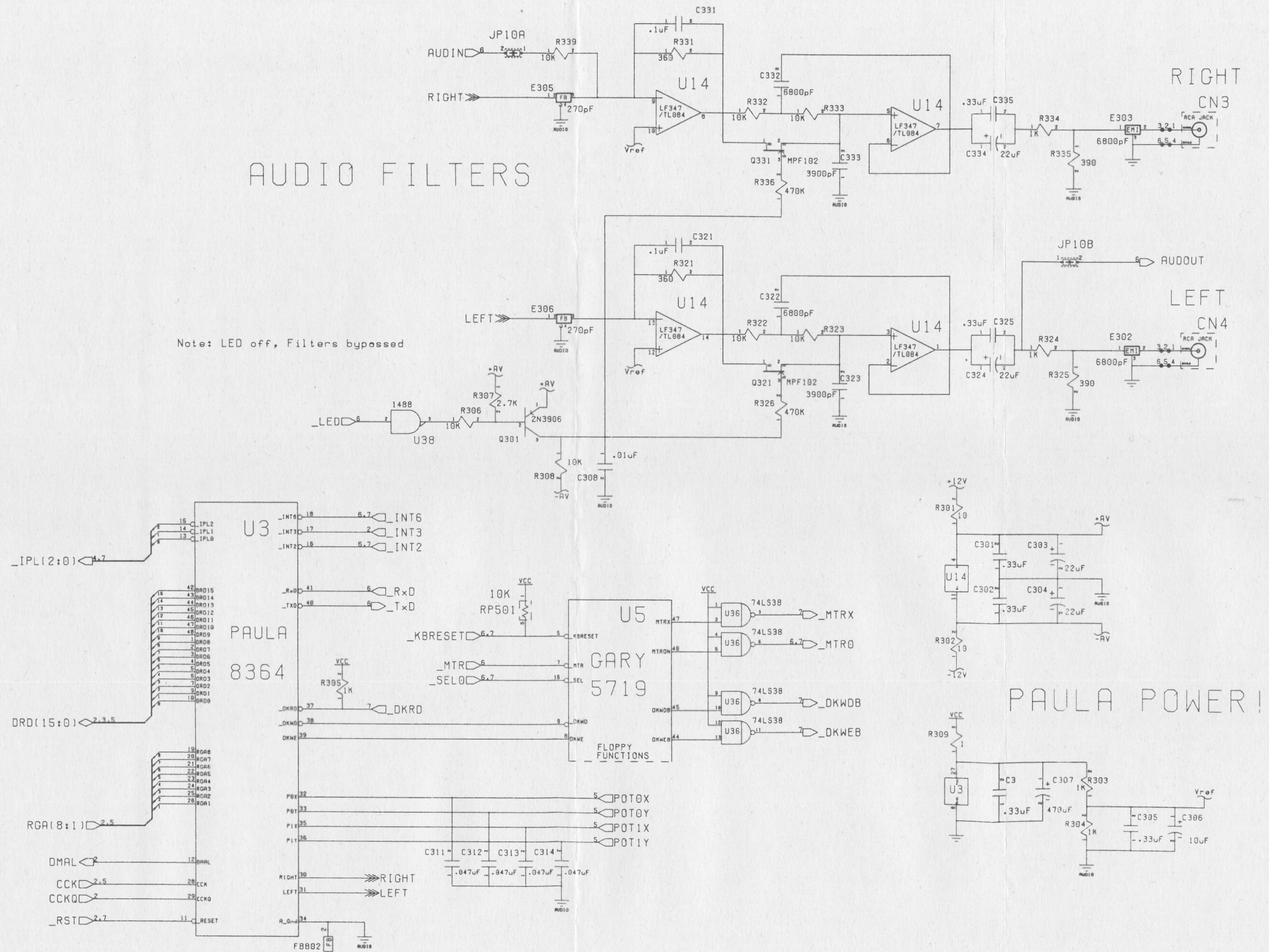
JP2 controls where expansion ram maps to:
A23 -> C00000 (default), A19 -> 080000

XR1 is added to some boards per ECO 880283

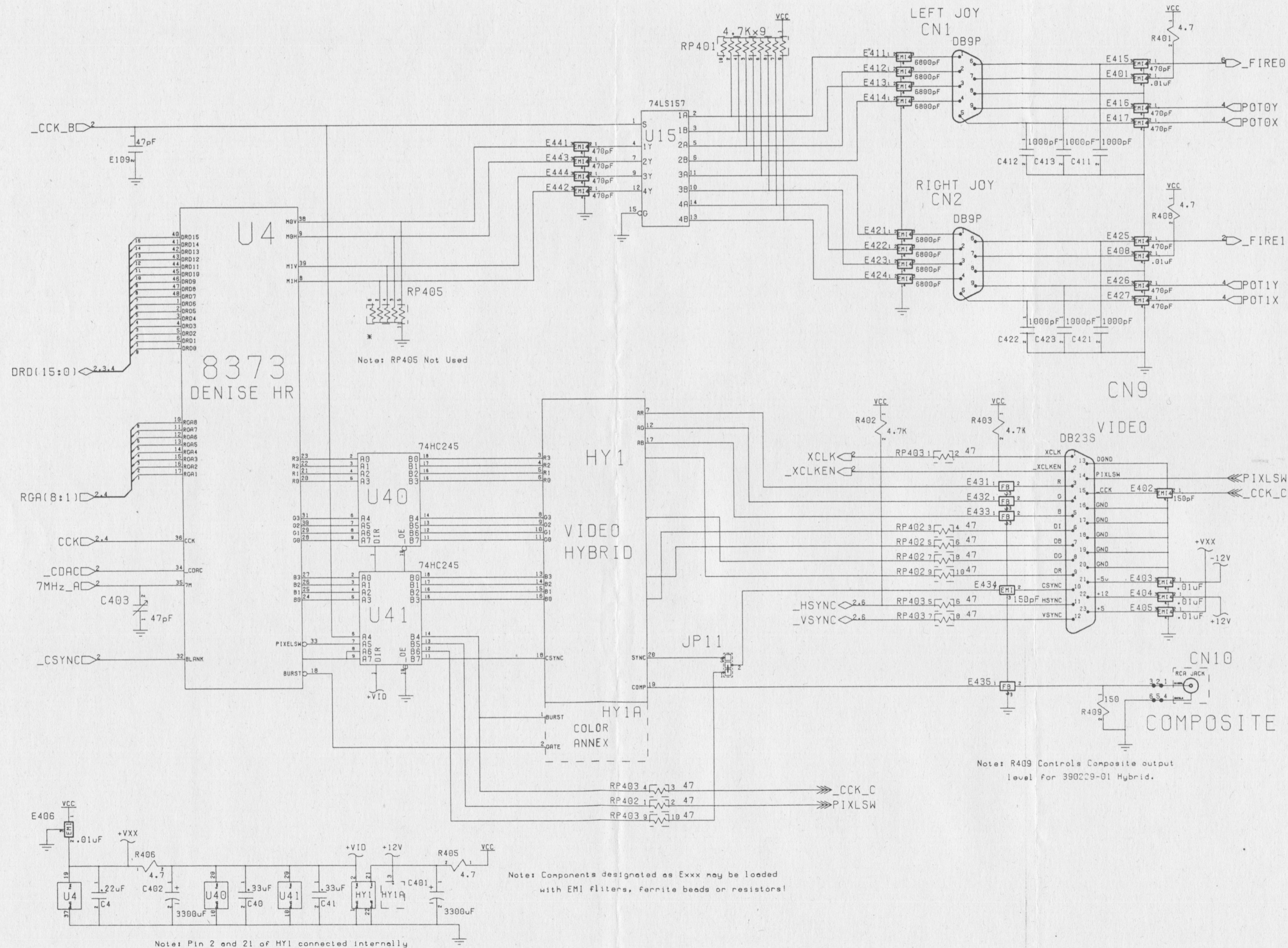


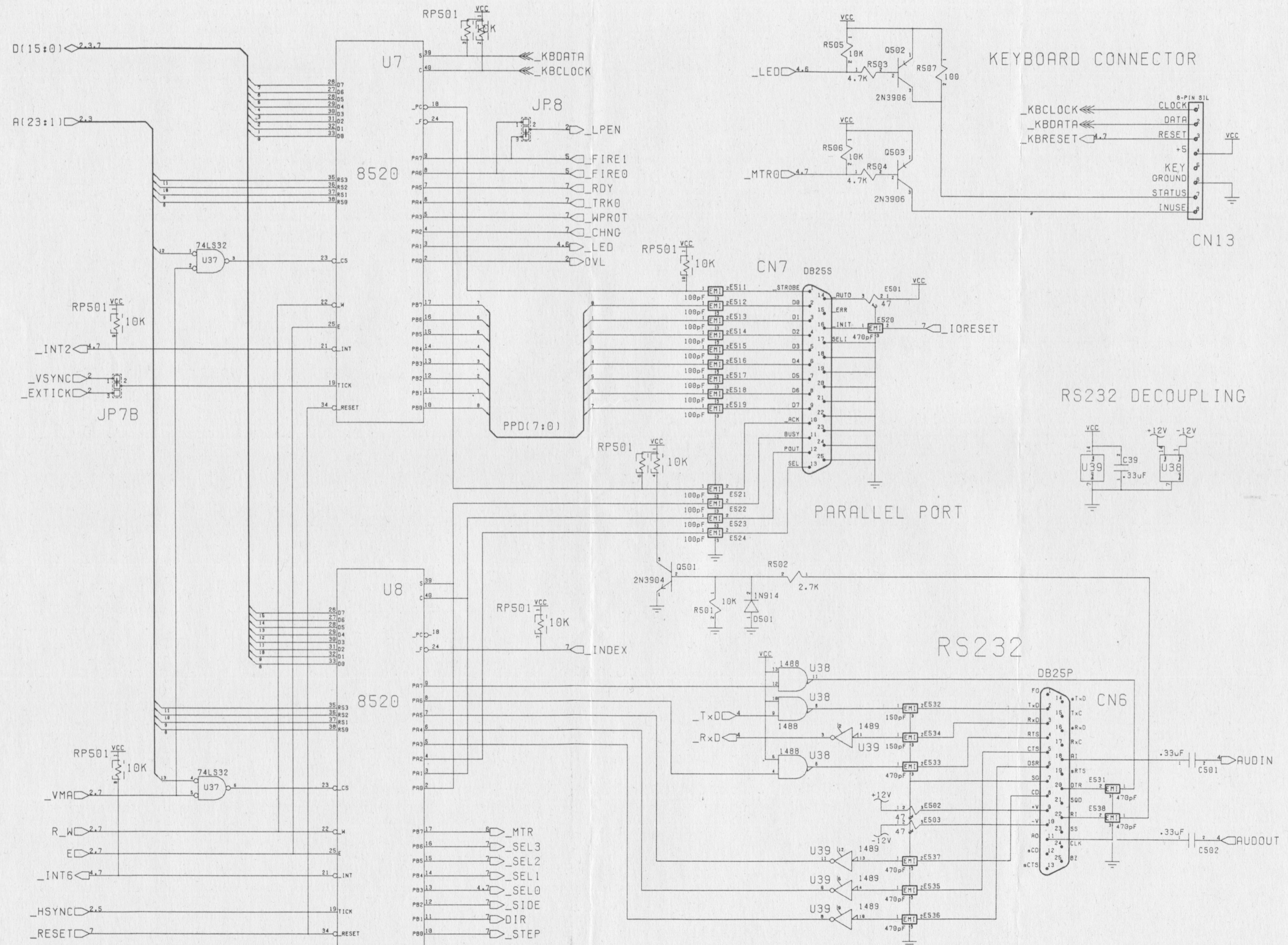


AUDIO FILTERS



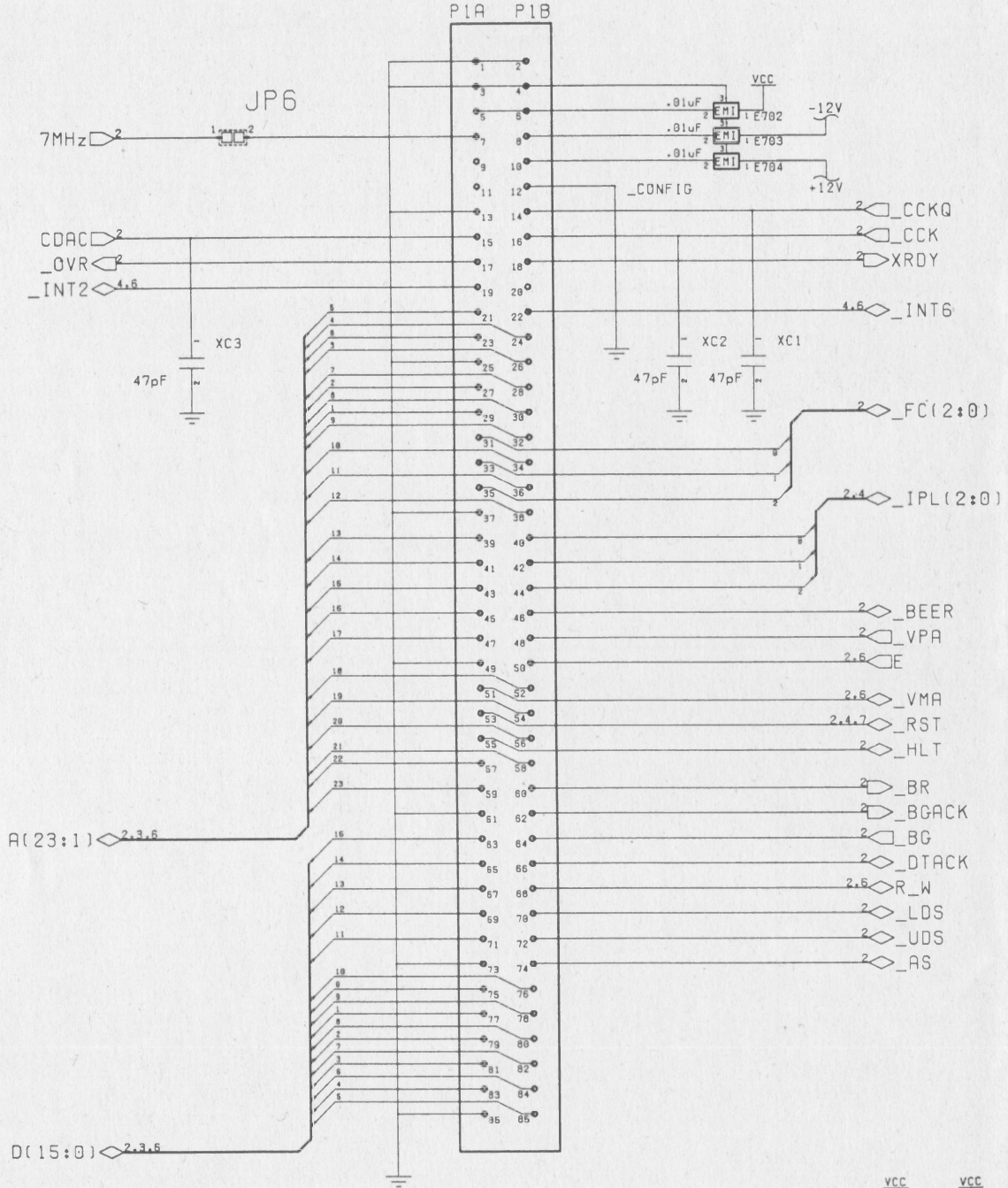
Note: Ground interconnection near audio jacks.



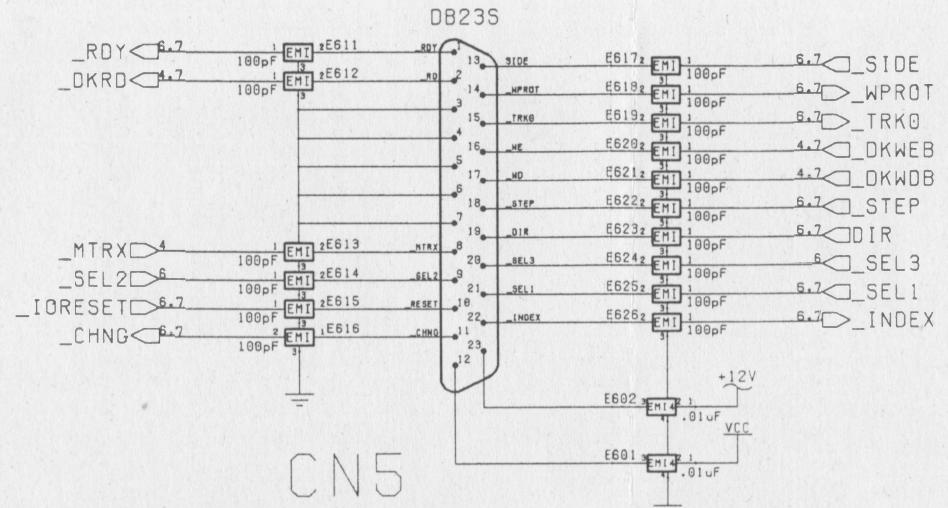
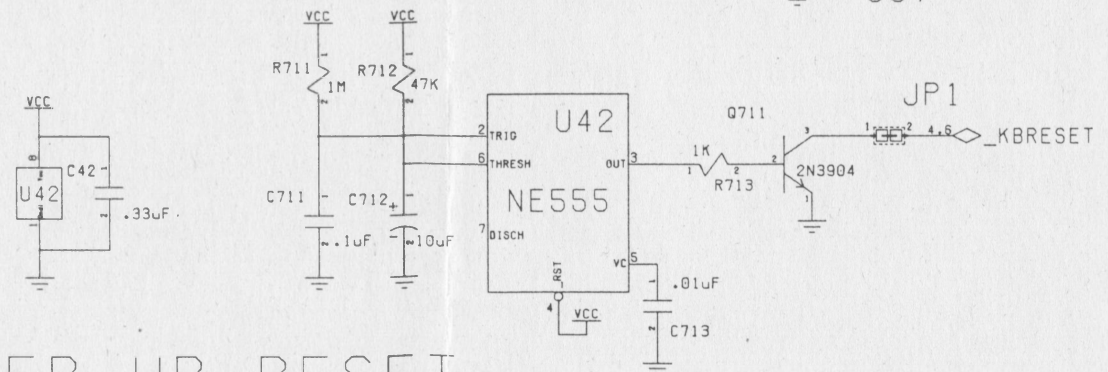


Note: E501-503 are loaded with 47 Ohm 1/2 W resistors

EXPANSION P1

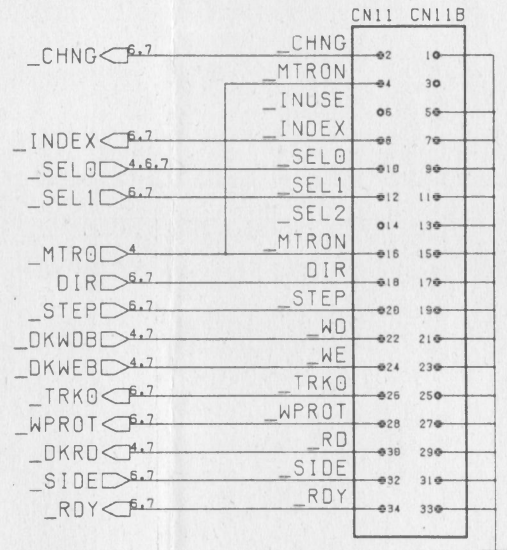


POWER UP RESET

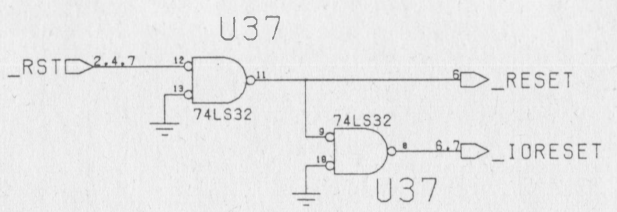


EXTERNAL FLOPPY

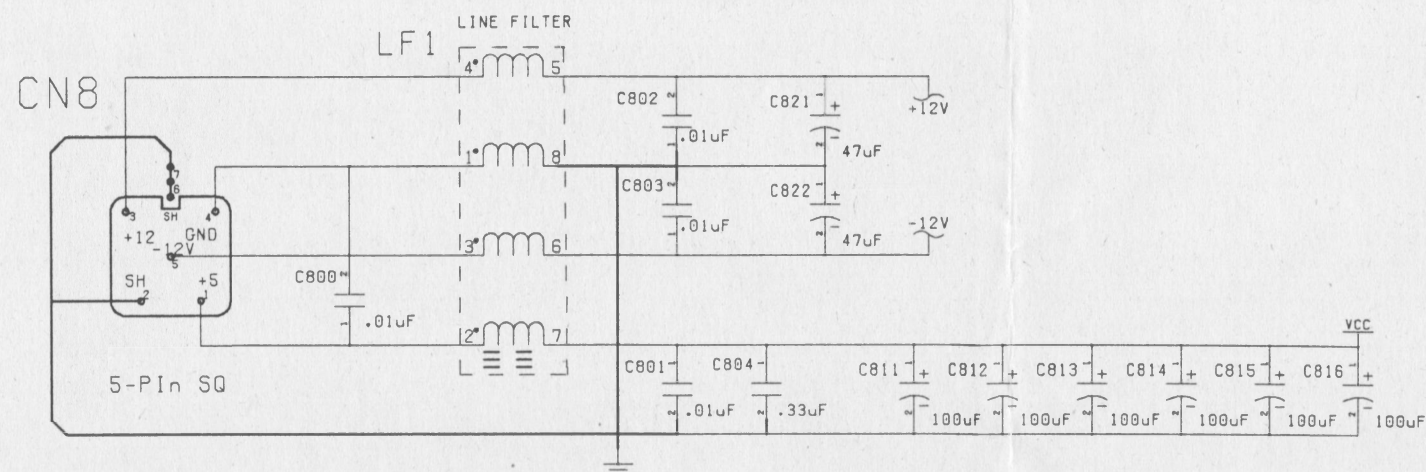
CN11



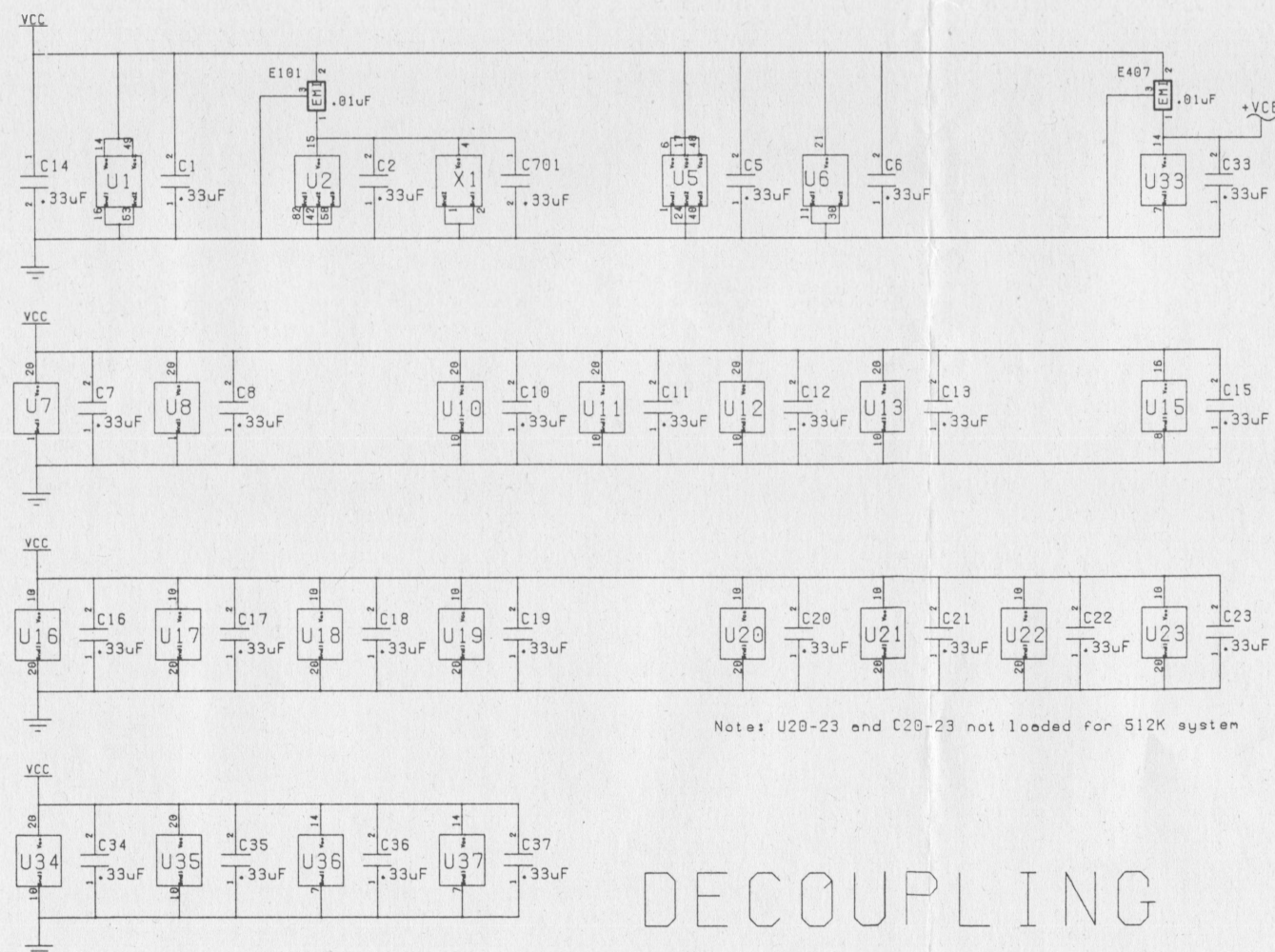
INTERNAL FLOPPY



POWER INPUT



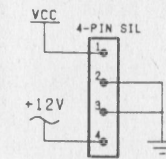
NOTE: HEAVY LINES INDICATE A SINGLE POINT CONNECTION



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

DECOUPLING

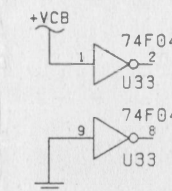
FLOPPY POWER



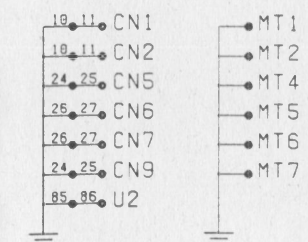
CN12

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			

