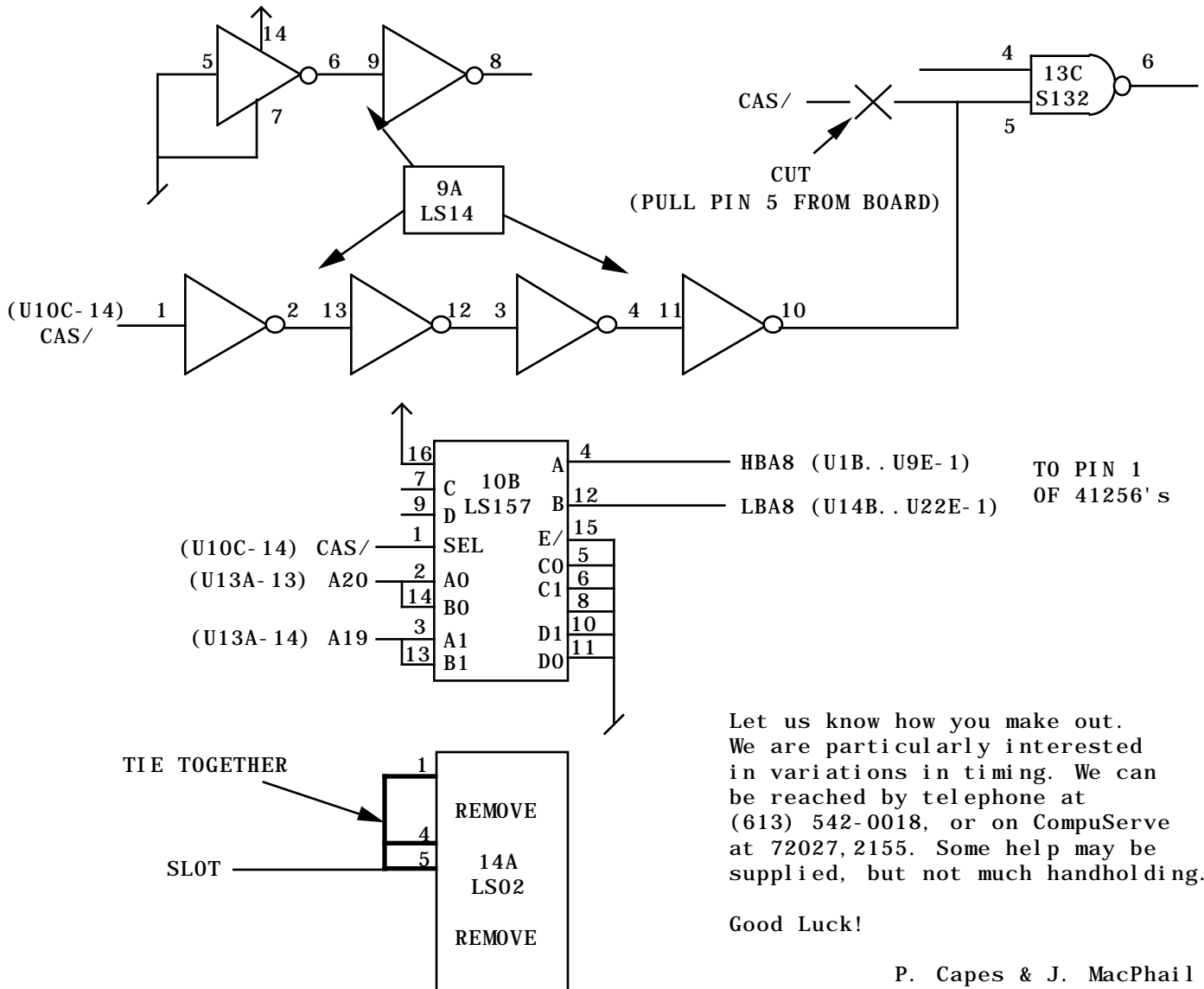


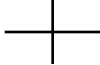



## Lisa 512K Ram board - Upgrading to 2M.

1. Desolder 72 4564 Ram chips. Board is easily damaged by pointy instruments. You will need LOTS of heat for the power supply pins. Find someone with a desoldering station.
2. Desolder U14A - 74LS02 and pin 5 of U13C - 74S132.
3. Solder in 72 41256 Ram Chips. Use sockets if you care to. Only 150ns chips have been tried. 200ns will probably work. Solder in a 74LS14 as U9A, and a 74LS157 as U10B.
4. Wire all the High Byte pin 1's together, all the Low Byte Pin 1's together.
5. Connect the rest of the circuitry as shown below. Pull pin 5 of U13C out of the board so you can connect to the chip only. The hole is a feedthrough, so hacking the traces is inadvisable.
6. Jumper pins 1,4, and 5 of the missing U14A. This enables BDSL (Board select) always when in the Mem1 slot, never in the Mem2 slot, hence the board only works in Mem1.
7. It will probably be useful to know that pulling pin 118 of the I/O board low generates a level 7 interrupt, and there is a service mode which is entered with Control-S from the boot-error mode. (Where you are after you try to boot a floppy with none in the drive)
8. (JDM 90/01/10) Note that you can save some ram chips by disabling the parity. This would require 64 chips to give 2Mb.



Lisa Memory Card Connector Assignment

Slot	RAM Card	Slot
+12 V	1	+12 V
GND	2	GND
UDS/	3	LDS/
VR8	4	RFSH/
-5 V	5	VR9
MD0	6	MD1
MD2	7	MD3
MD4	8	MD5
MD6	9	MD7
MD8	10	MD9
MDA	11	MDB
MDC	12	MDD
MDE	13	MDF
GND	14	GND
+5 V	15	+5 V
MA0	16	MA1
MA2	17	MA3
MA4	18	MA5
MA6	19	MA7
SLOT	20	A16
A17	21	A18
A19	22	DOTCK
MREAD	23	CAS/
RAS/	24	A20
HDER/	25	SFER/
GND	26	NC
GND	27	NC
GND	28	NC
GND	29	GND
+5 V	30	+5 V

NOTES	
Example	Meaning
	Indicates no connection. There are <u>NO FOUR WAY CONNECTIONS</u> on these dwgs.
	Indicates connection to Vcc (+5 V).
	Indicates connection to logic ground.
RESET/	Trailing slash indicates signal is active low.
	Power supply connections and decoupling not shown.
	Nothing is ever what it seems. Use these drawings at your own risk!

j dm

Li sa 512K Dynami c RAM Board	
Notes	
NTS	Dwg. 3 of 3
pc/j dm	June 23, 1986