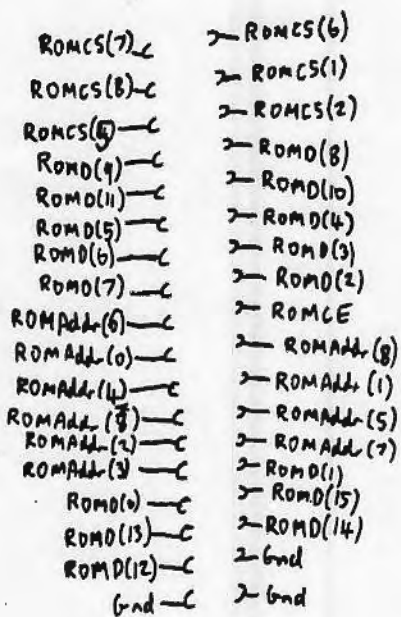
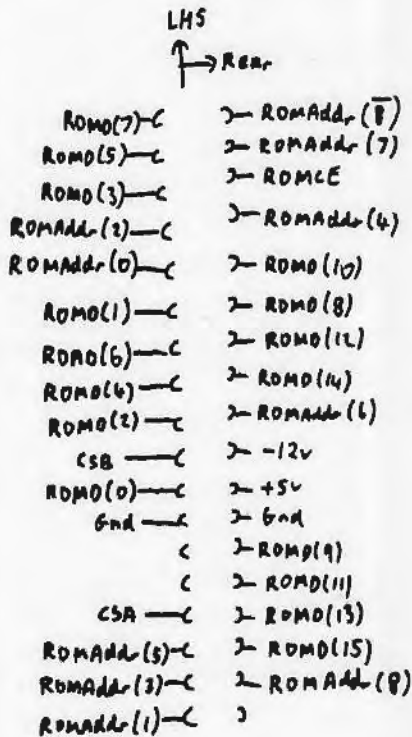


ROM Backplane Connector



Memory box Connector



LHS
?

Front
←

D00-C	→	LED6L
D02-C	→	D01
D04-C	→	D03
D06-C	→	D05
S00-C	→	D07
S02-C	→	S01
C00-C	→	S03
C02-C	→	C01
DispStb	→	C03
+5V-C	→	+5V
Gnd-C	→	Gnd
Gnd-C	→	Gnd
Gnd-C	→	Gnd
+5V-C	→	+5V
+5V-C	→	+5V

Display

LHS
?

Top
←

+5V	→	+5V
Gnd	→	Gnd
S00	→	S01
S02	→	S03
C00	→	C01
C02	→	C03
O26	→	LED6L
O26	→	O25
O22	→	O23
O20	→	O21
STP	→	STP
KeyOn?	→	SIH
N/C	→	N/C
-12V	→	-12V
+12V	→	+12V

Keyboard

-12V-C	→	+12V
O26-C	→	O21
CRDelk?	→	O22
CRSout	→	O26
D01-C	→	D03
D05-C	→	D07
D02-C	→	CRout
Init	→	D04
O25-C	→	+5V
Gnd-C	→	Gnd
O26-C	→	O26
O23-C	→	O23
Gnd-C	→	Gnd
Gnd-C	→	Gnd
Gnd-C	→	Gnd

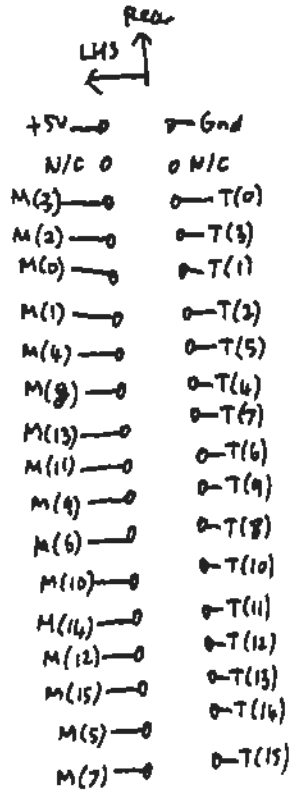
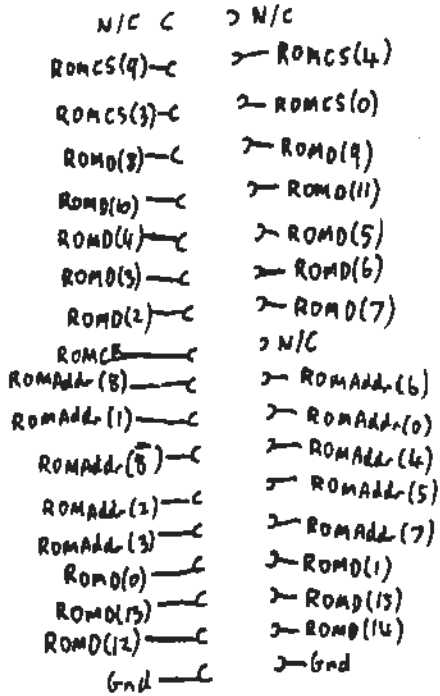
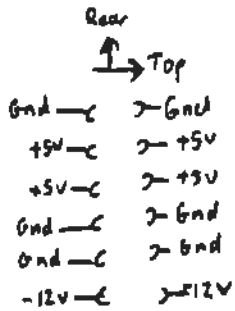
Card Reader

Gnd-C	→	Gnd
Gnd-C	→	Gnd
Gnd-C	→	Gnd
+24V-C	→	+24V
1/01n	→	D01
+24V-C	→	+24V
PrtEn	→	C01
+5V-C	→	+5V
Gnd-C	→	Gnd
S00-C	→	C00
S01-C	→	C02
S03-C	→	C03
S02-C	→	D07
D06-C	→	D00
101h	→	PrtFly

Printer

Q810 Peripheral Connectors
Q9810-66502 Backplane

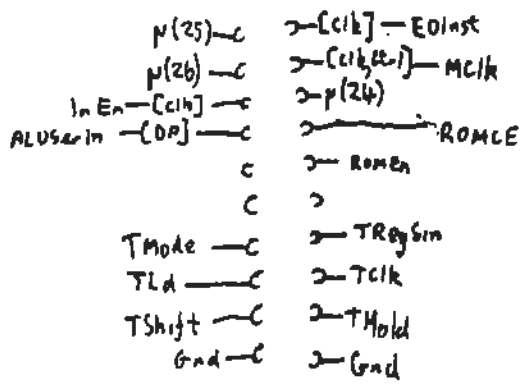
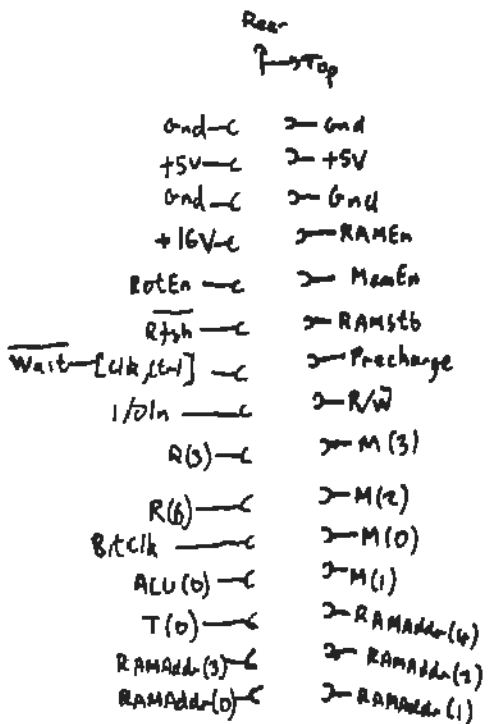
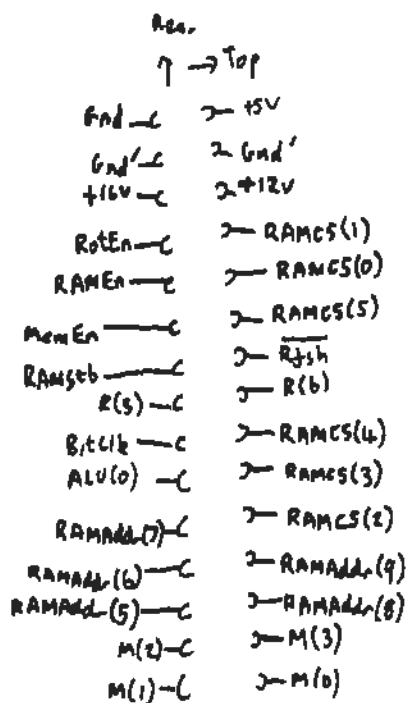
9810



Test Connector
on Memory Box

11216-66521

ROM
(R/B)



09810-66522
Memory Timing
(R/R)

09810-66523
Memory Address
(R/O_r)

9810

R/Y : Data R/R : DRAM Timing
R/On : Address R/Br : Pom



(Gnd) Vdd-C > V66
Vss-C > CEB RAMCS(1)
RAMCS(0) ZEA-C > N/C
N/C-C > Precharge
R/W-C > Din15
Dout11-C > Dout9
Dout13-C > Din13
Dout15-C > Din11
Dout1-C > Din9
Dout3-C > Din7
Dout5-C > Din5
Dout7-C > Din3
A7-C > Din1
A8-C > A9
A5-C > A6
A2-C > A4
A3-E > A1
Vdd(Gnd)-C > A0

Rear
9 → Top

Gnd-C > Gnd
+5V-C > +5V
Gnd'-C > Gnd
(+16V) Vss-C > +12V
-12V-C > RAMDin(15)
RAMEn-C > RAMDout(9)
RAMDin(13)-C > RAMDout(11)
RAMDin(11)-C > RAMDout(13)
RAMDin(9)-C > RAMDout(15)
RAMDin(7)-C > RAMDout(1)
RAMDin(5)-C > RAMDout(3)
RAMDin(3)-C > RAMDout(5)
RAMDin(1)-C > RAMDout(7)
T(7)-C > T(6)
T(6)-C > T(4)

09810-66525
R/Gn RAM



Vdd(Gnd)-C > V66
Vss-C > N/C RAMCS(5)
RAMCS(4) N/C C > N/C RAMCS(3)
RAMCS(2) CEC-C > Precharge
R/W-C > N/C
N/C C > N/C
N/C C > N/C
N/C C > N/C
Dout1-C > N/C
Dout3-C > N/C
Dout5-C > Din5
N/C C > Din3
A7-C > Din1
A8-C > A9
A5-C > A6
A2-C > A4
A3-C > A1
Vdd(Gnd)-C > A0

T(3)-C > T(0)
T(2)-C > T(1)
T(8)-C > T(9)
ROMD(4)-C > T(10)
ROMD(8)-C > T(11)
ROMD(11)-C > T(12)
ROMD(10)-C > T(13)
ROMD(5)-C > T(14)
ROMD(4)-C > T(15)
ROMD(6)-C > ROMD(7)
ROMD(3)-C > ROMD(2)
ROMD(1)-C > TShjt
ROMD(0)-C > THld
ROMD(15)-C > Tld
ROMD(14)-C > T6h
ROMD(13)-C > TMode
ROMD(12)-C > TRegbin
Gnd C > Gnd

09810-66524
R/Y Memory Data

11217-66526
R/Bu RAM

9810 I/O Backplane

09810-66501

Top
←

STP - CZ 22 - Gnd
 CY 21 - CEO
 STH - CX 20
 CO3 - CW 19 - CO2
 CO1 - CV 18 - CO0
 S13 - CU 17 - S03
 S12 - CT 16 - S02
 S11 - CS 15 - S01
 S10 - CR 14 - S00
 DI7 - CP 13 - D07
 DI6 - CN 12 - D06
 DI5 - CM 11 - D05
 DI4 - CL 10 - D04
 DI1 - CK 9 - DI2
 D03 - CJ 8 - DI3
 D02 - CH 7 - D01
 D00 - CF 6 - DI0
 * BitClk - CE 5 - R(3) *
 Gnd - CD 4 - Gnd/MClk
 * BusEn - CC 3 - T(0) *
 +5V - CB 2 - +5V
 Gnd - CA 1 - Gnd

V0 slot

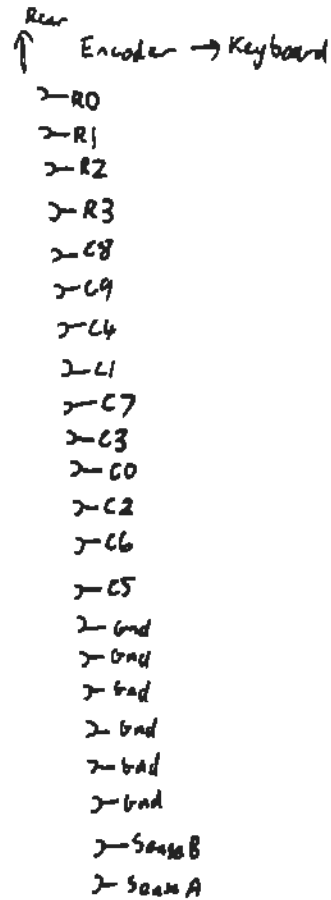
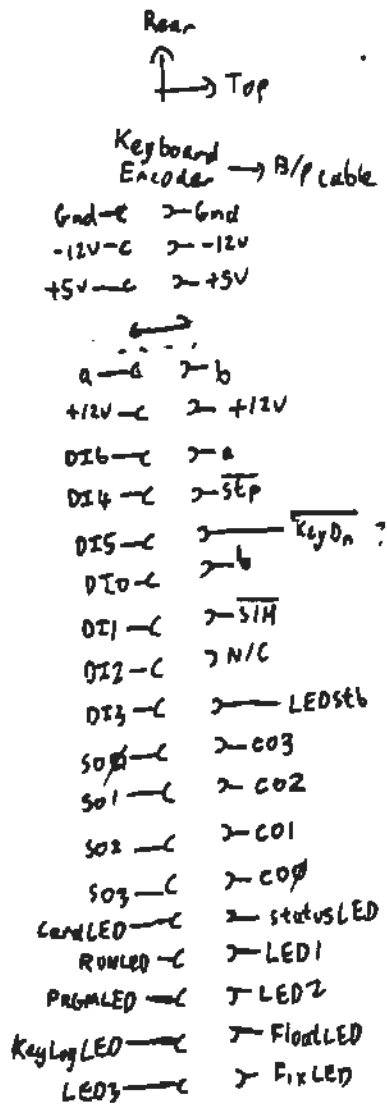
* Only on bottom slot

→ Rear

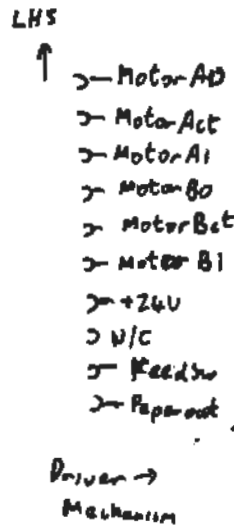
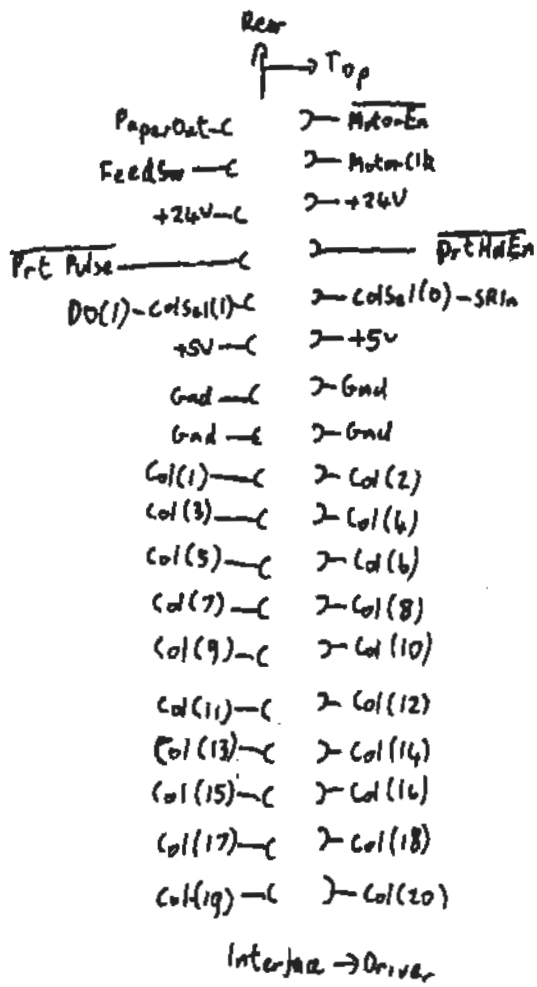
STP - 0 - Gnd
 BusIORd - 0 - CEO
 STH - 0 - KeyDn
 CO3 - 0 - CO2
 CO1 - 0 - CO0
 S13 - 0 - S03
 S12 - 0 - S02
 S11 - 0 - S01
 S10 - 0 - S00
 DI7 - 0 - D07
 DI6 - 0 - D06
 DI5 - 0 - D05
 DI4 - 0 - D04
 DI1 - 0 - DI2
 D03 - 0 - DI3
 D02 - 0 - D01
 D00 - 0 - DI0
 BitClk - 0 - R(3)
 EMB - N/C 0 - MClk
 BusEn - 0 - T(0)
 +5V - 0 - +5V
 Gnd - 0 - Gnd
 BusDataIn - N/C 0 - N/C - M(15)
 ExtSp - N/C 0 - N/C - RotEn
 R(2) - N/C 0 - N/C - R(6)

To main backplane

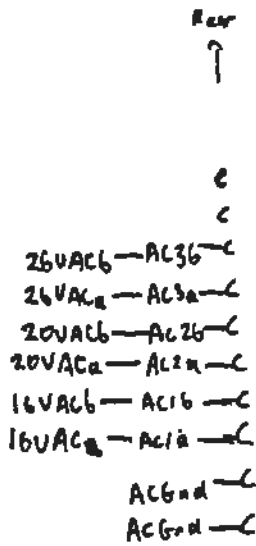
9810



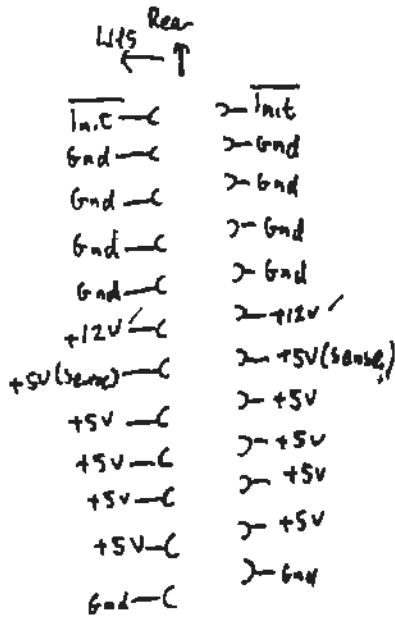
9810 Printer



9810 PSU

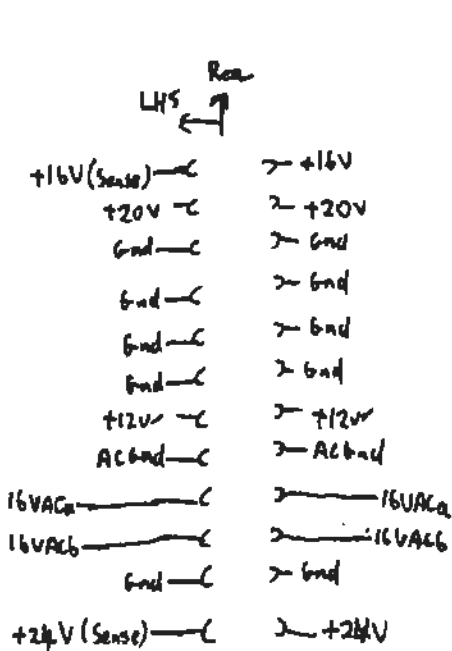


Transformer



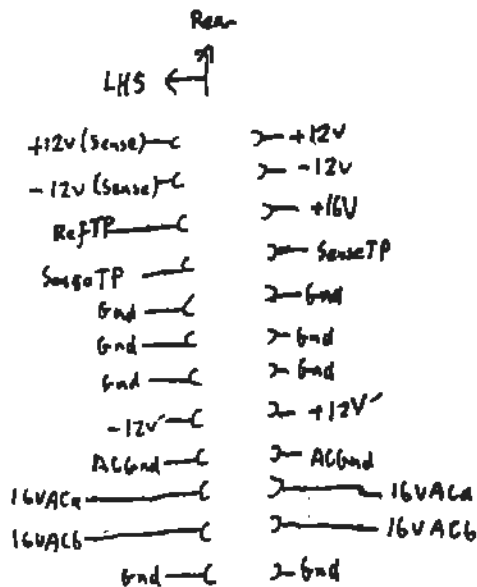
09810-66581

(5V)



09810-66582

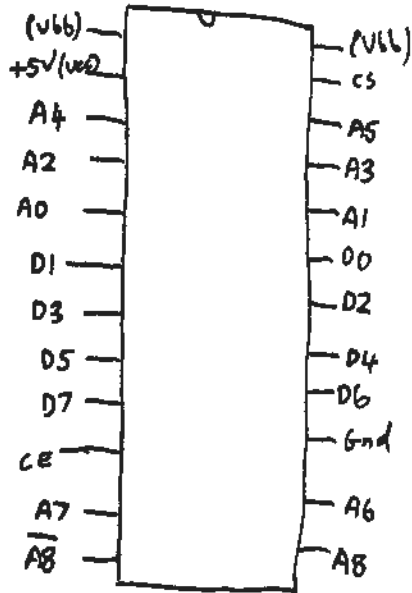
(+16V, +20V, +24V)



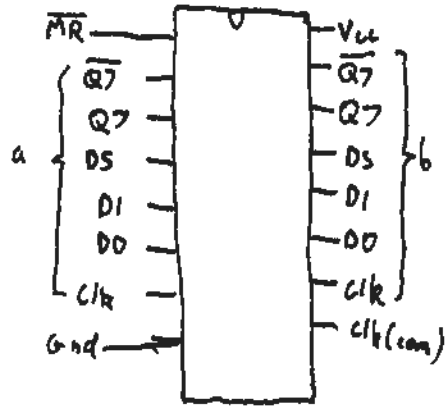
09810-66583

(±12V)

HP ROM (9810)

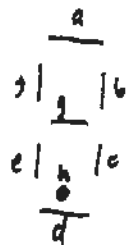
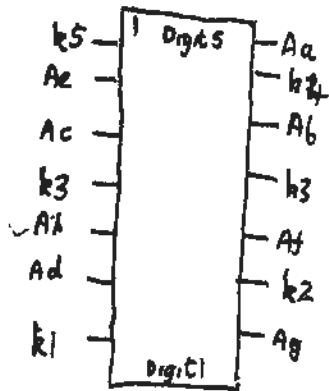


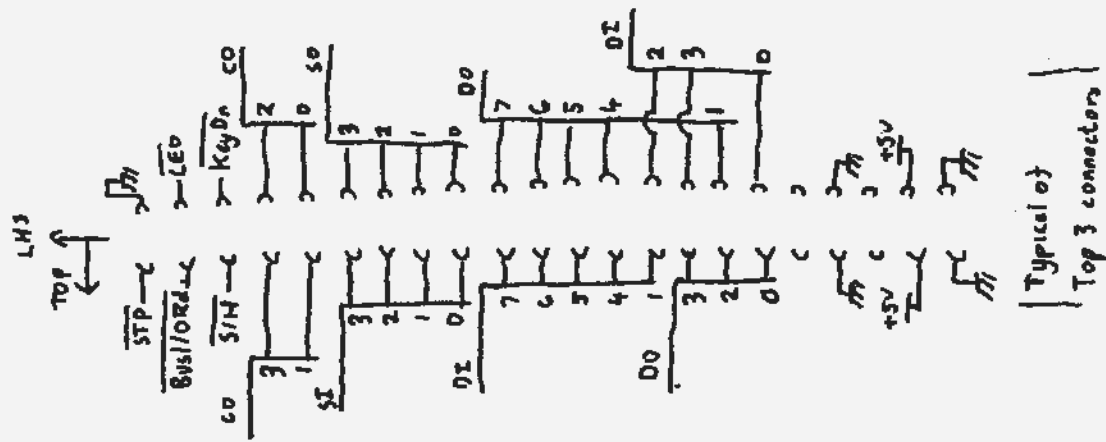
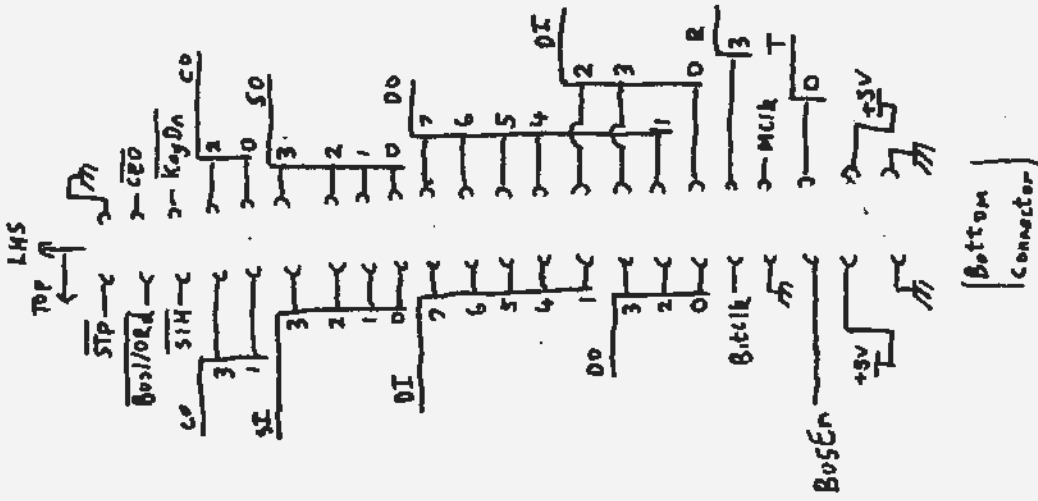
(Dual 8bit 3150 S/R) 9328



HP9810 Display

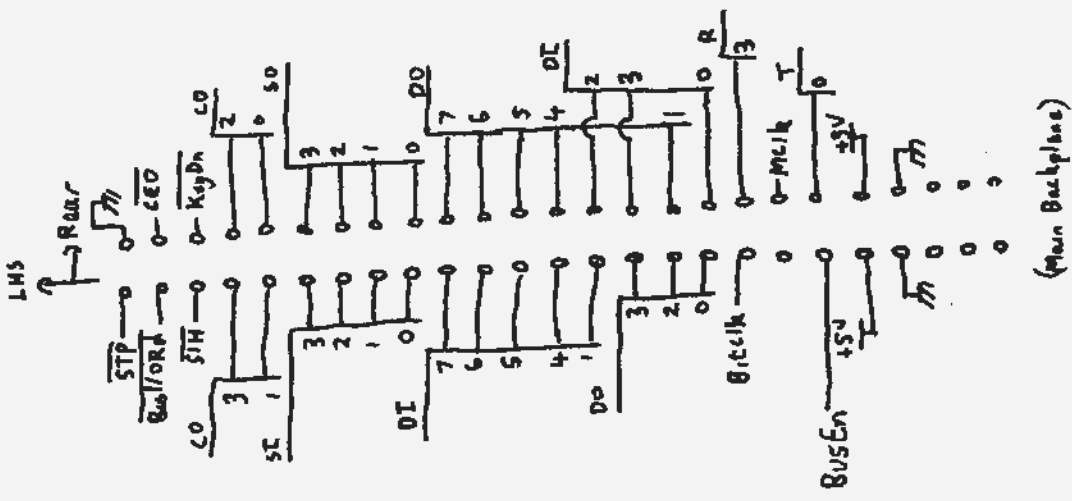
→ Top



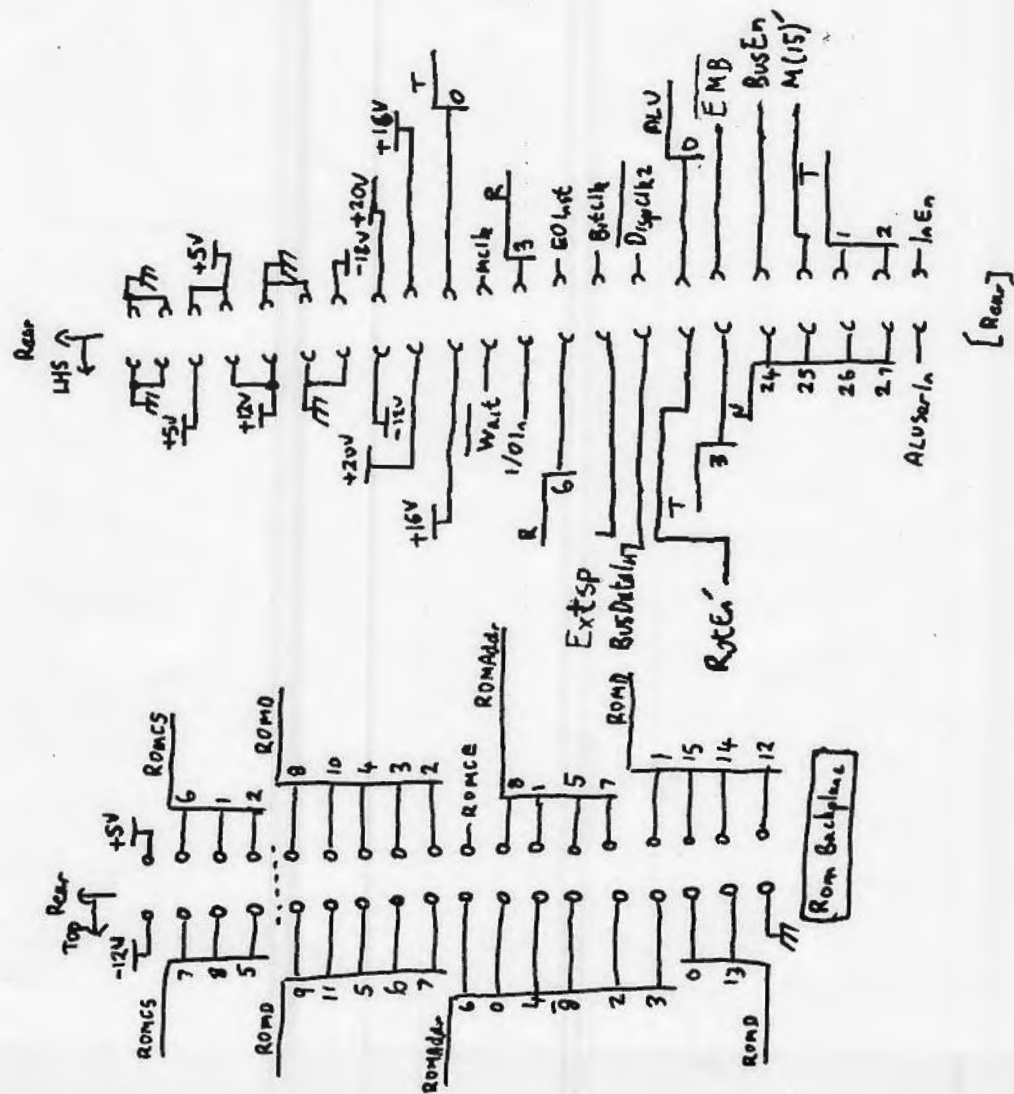
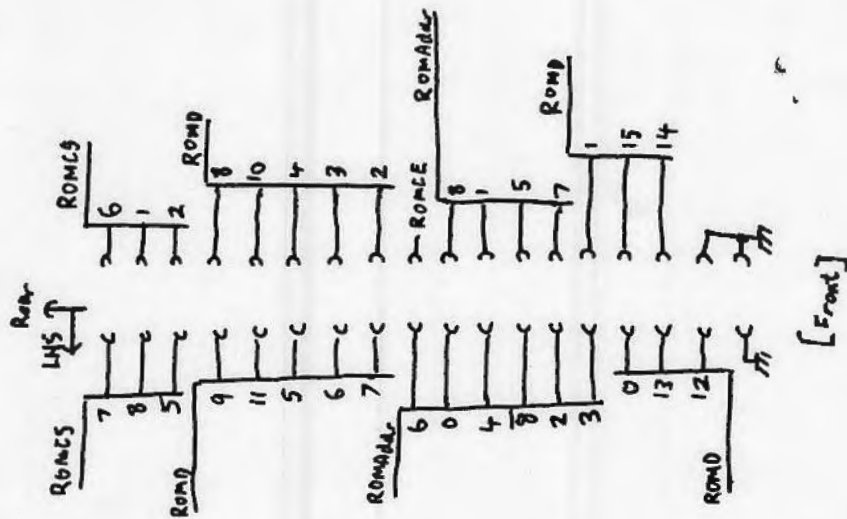


Typical of Top 3 connectors

I/O Connectors

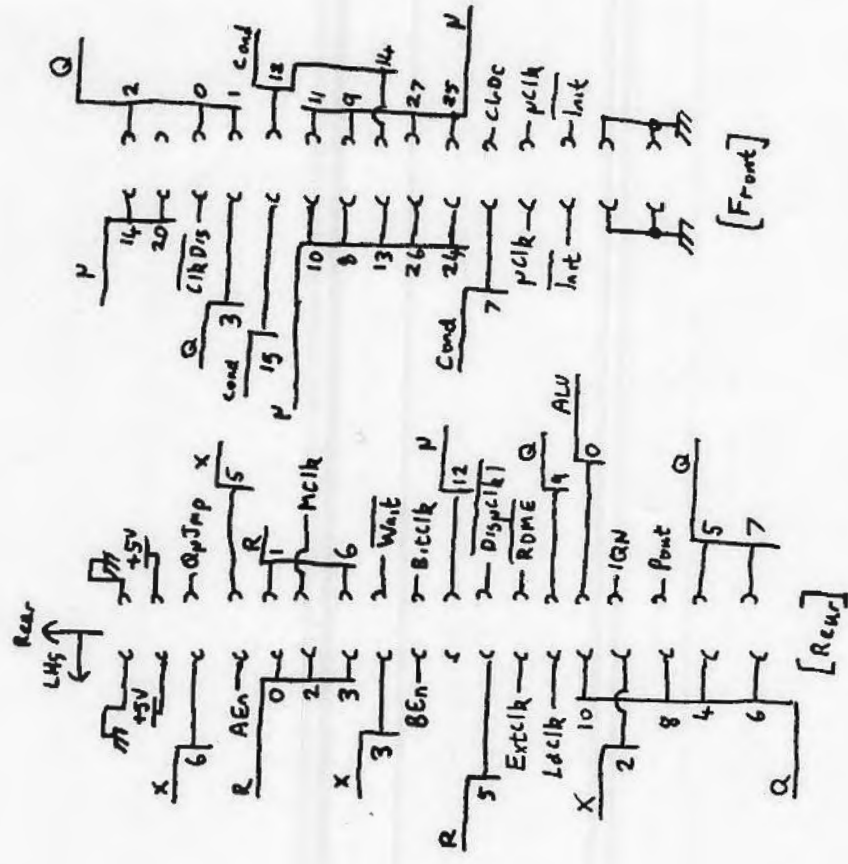


(Main Backplane)



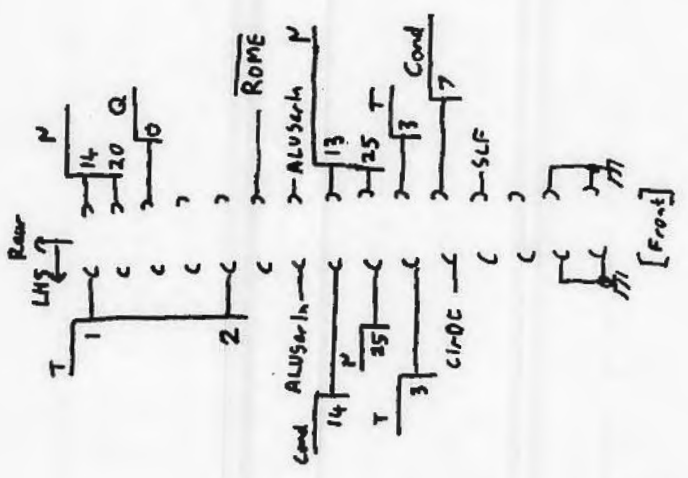
Memory Backplane

(09810-66527)



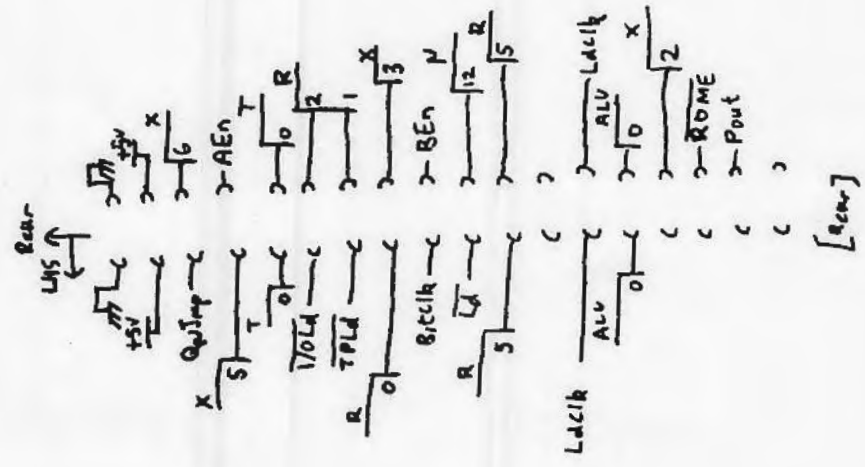
CPU Control

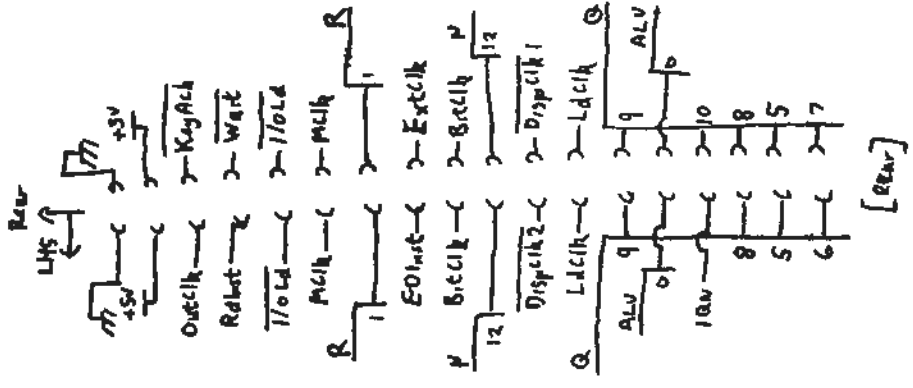
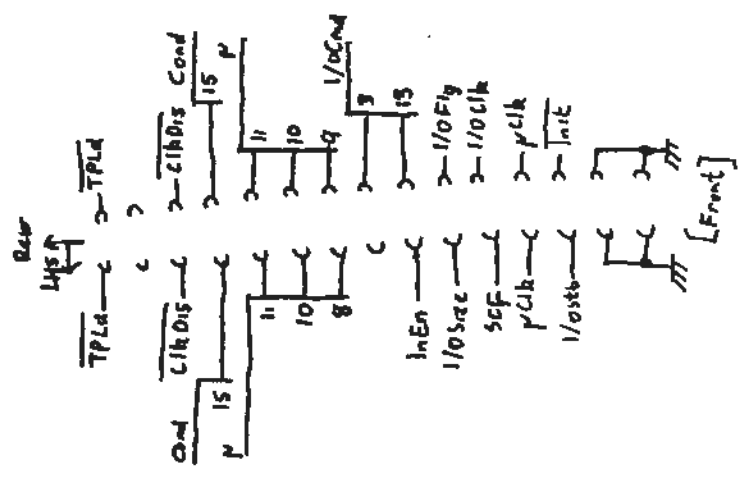
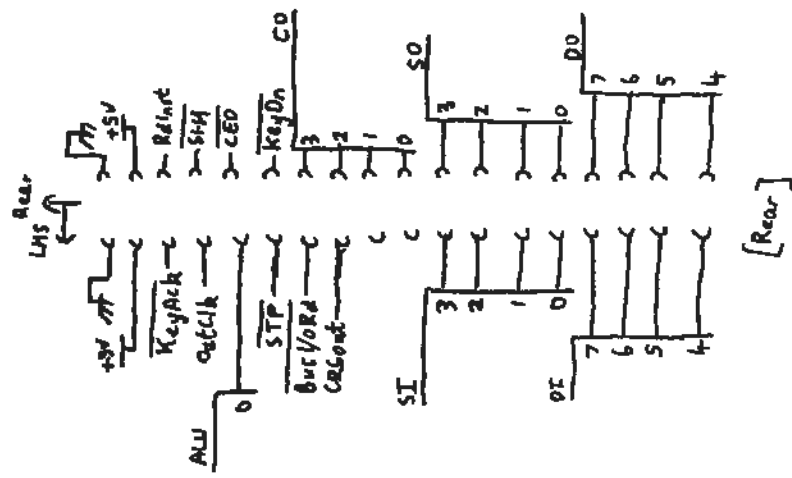
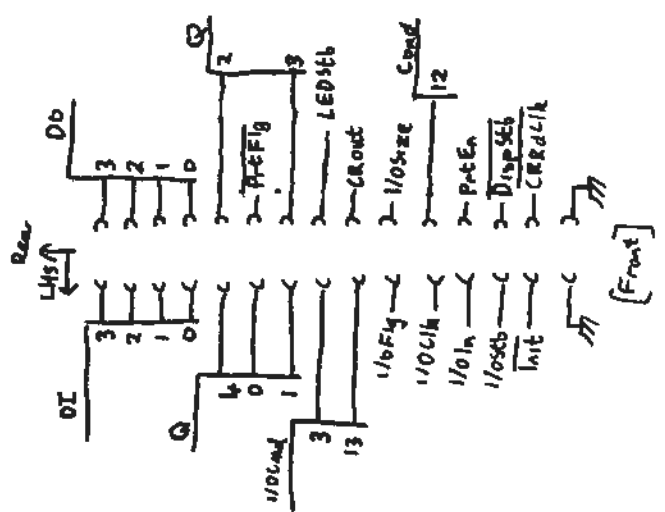
(09810-66513)



Data Path

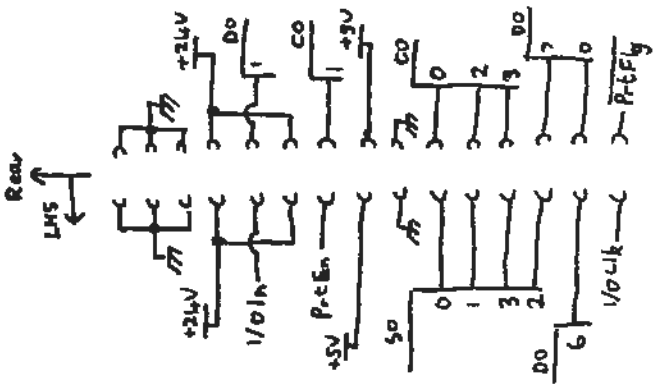
(09810-66514)



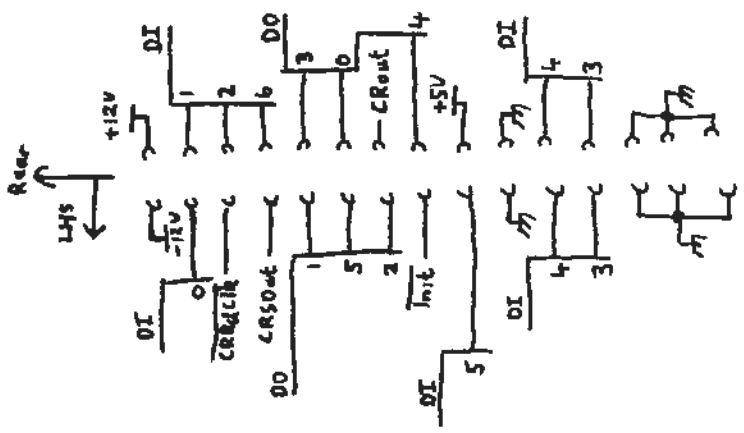


Clock
(09810-66512)

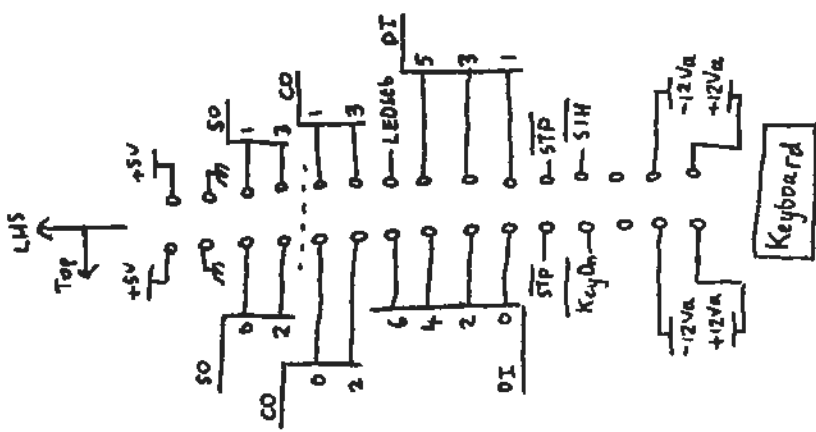
I/O Interface
(09810-66511)



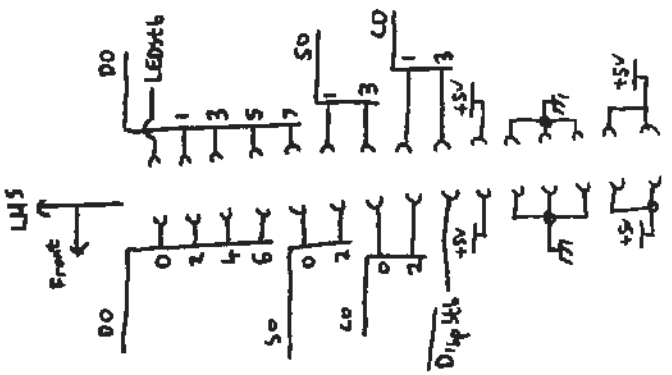
Printer
(11214-66551)



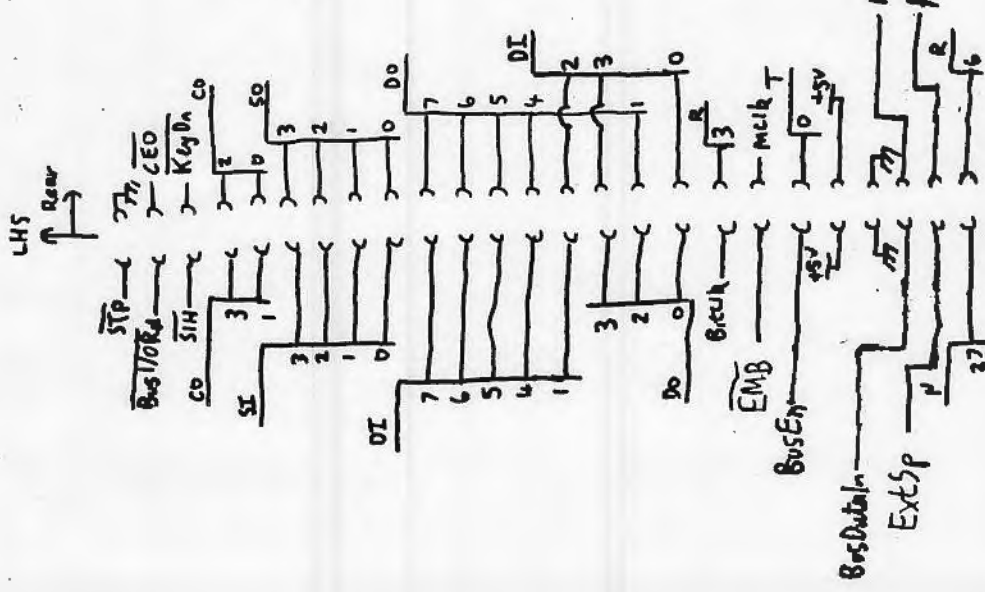
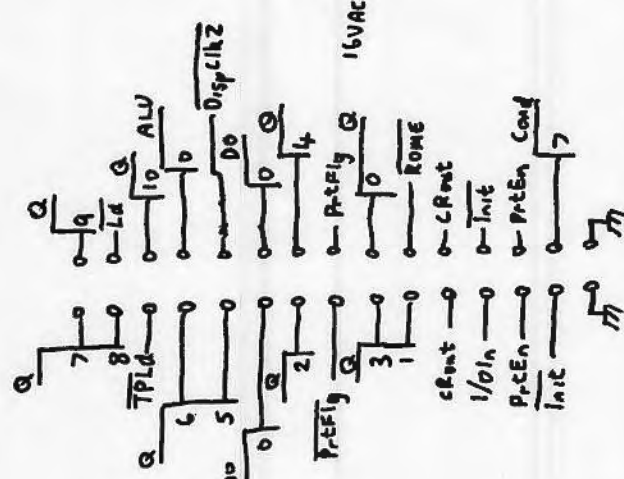
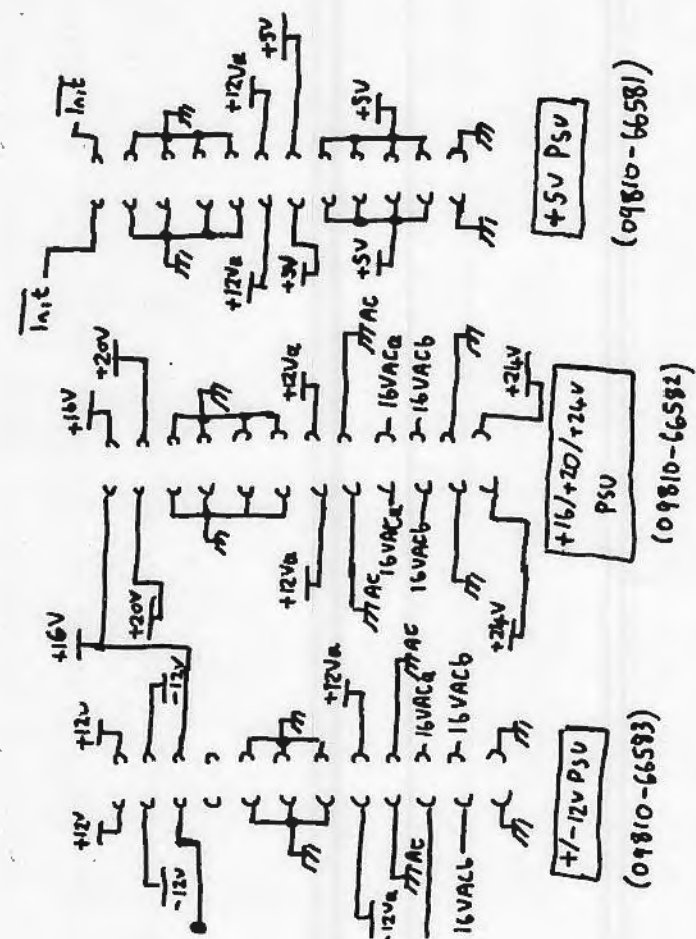
Card Reader Interface
(09810-66562)



Keyboard



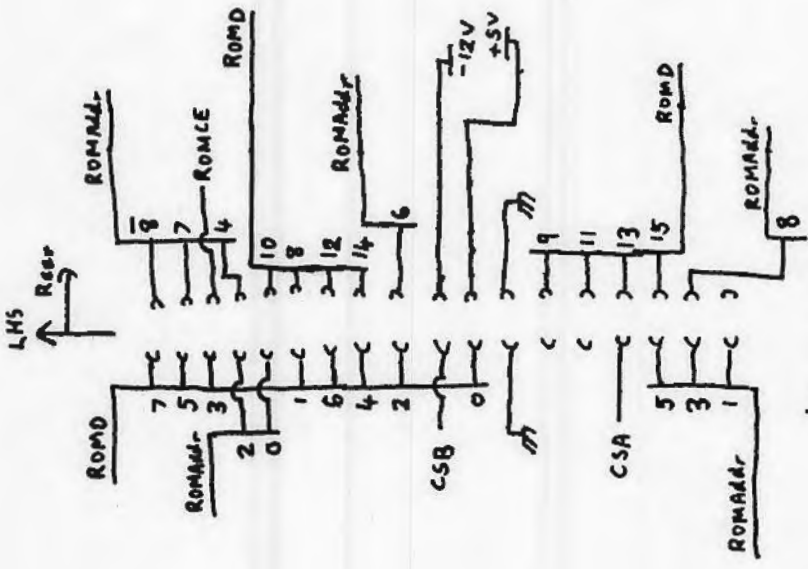
Display
(09810-66562)



Testpoints

I/O Backplane

(09810-66501)

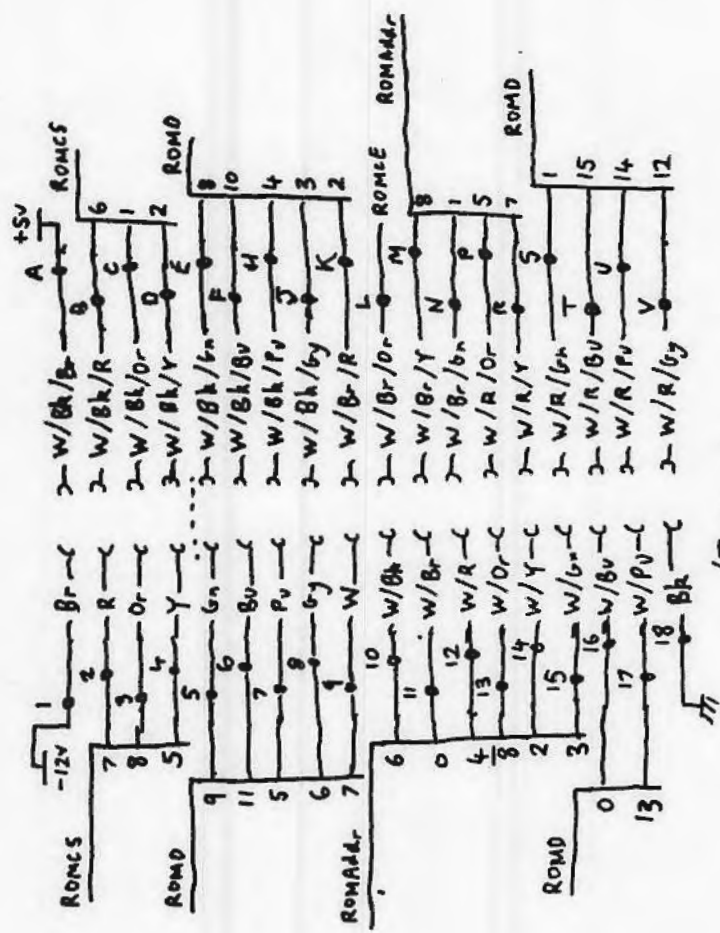


Typical of 3

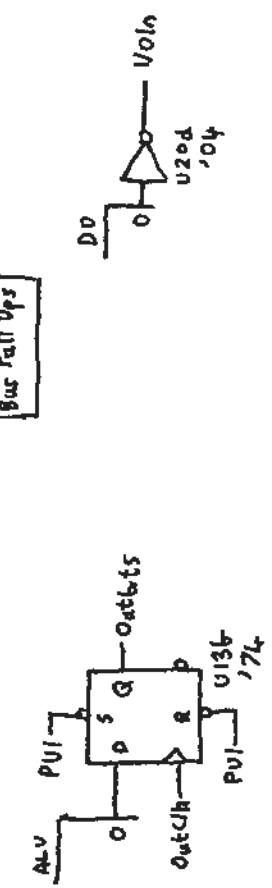
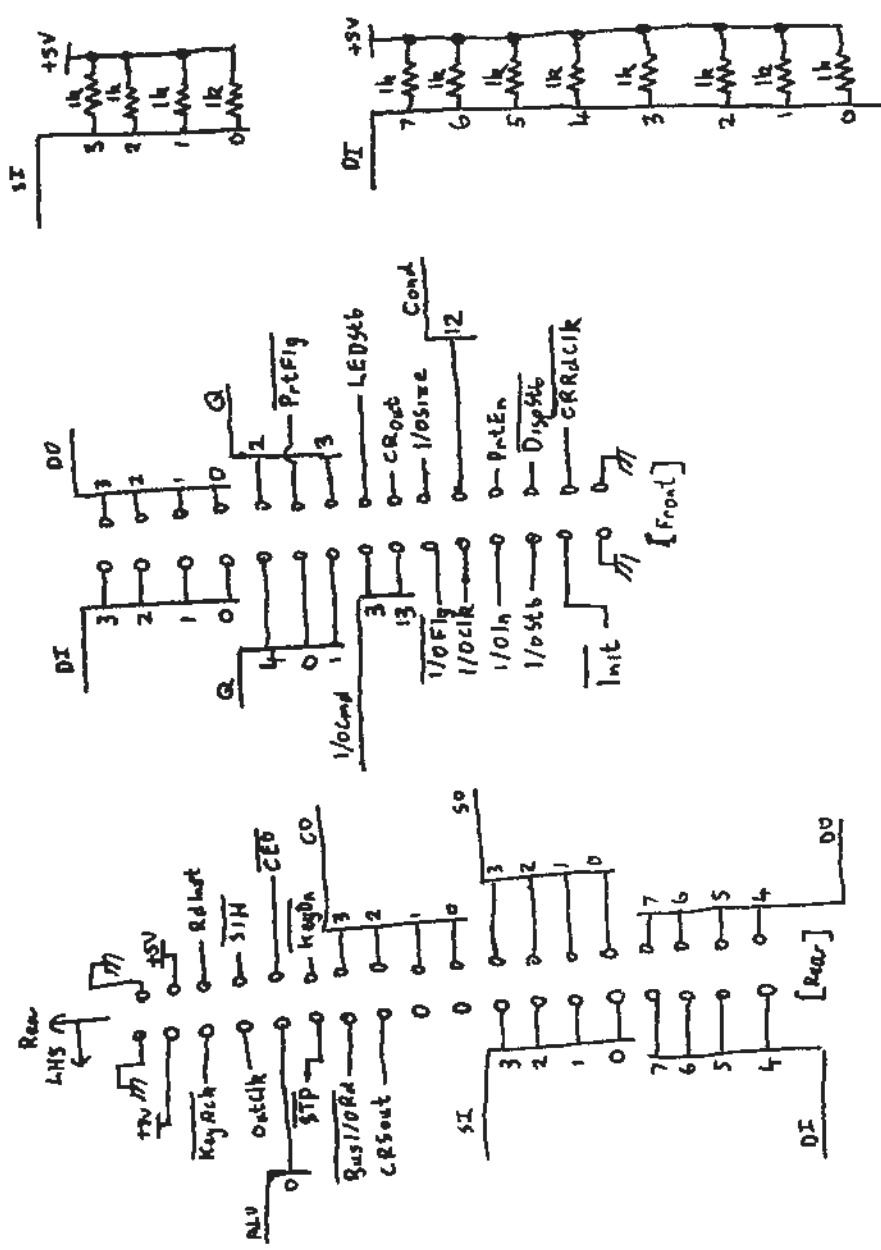
ROM Model

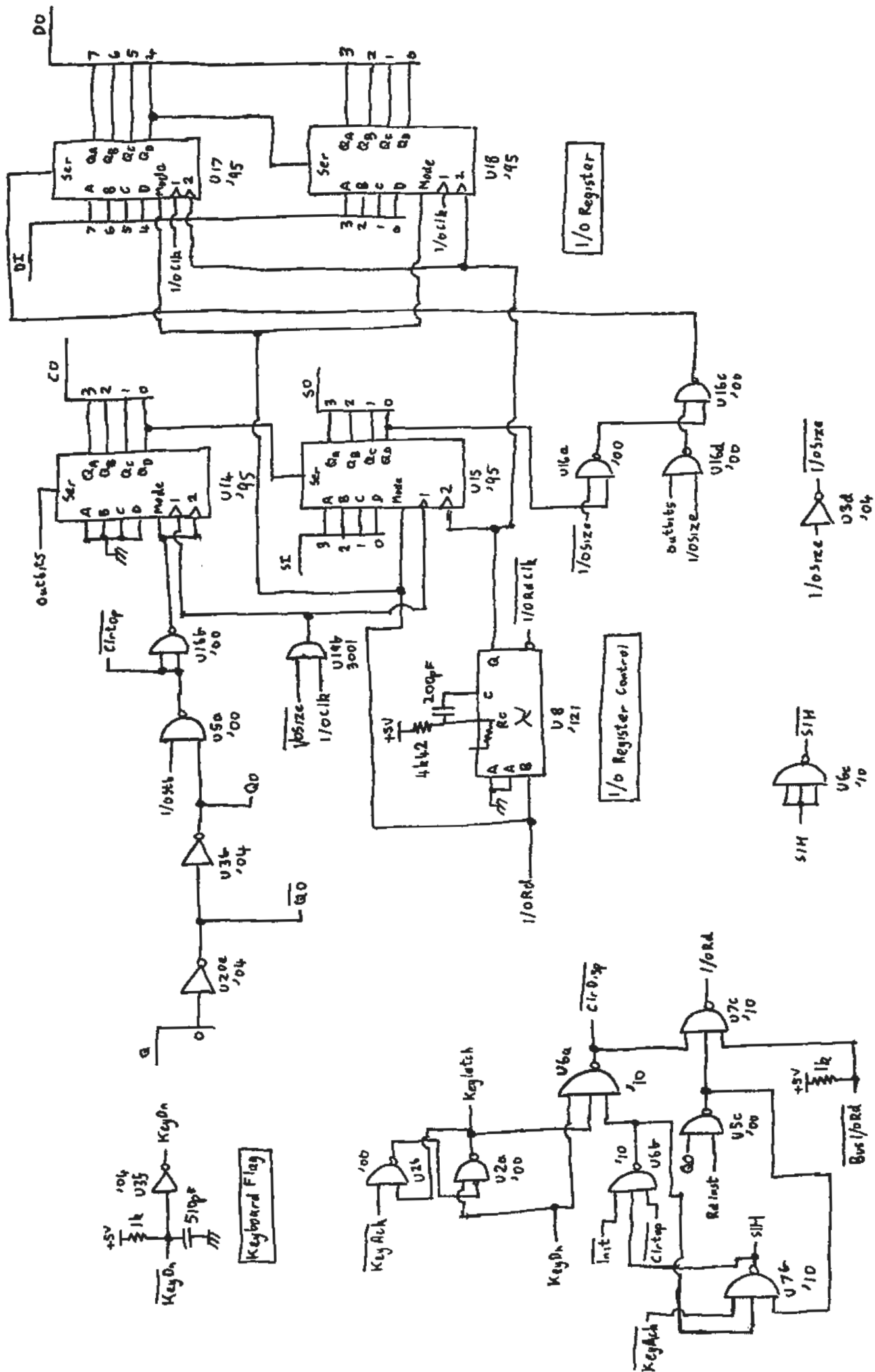
CSA	1	2	3
ROMCS(1)	ROMCS(5)	ROMCS(7)	
CSB	ROMCS(2)	ROMCS(6)	ROMCS(8)

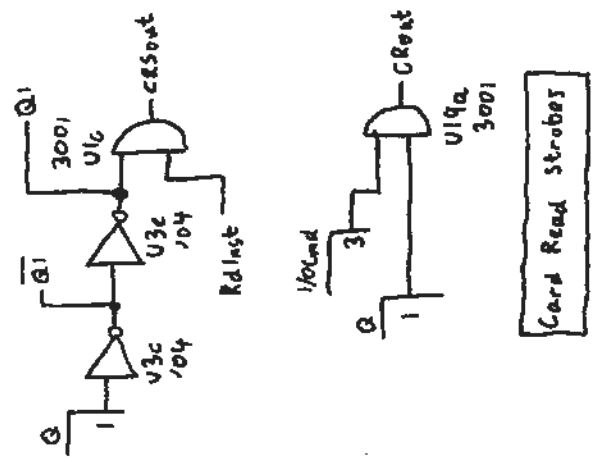
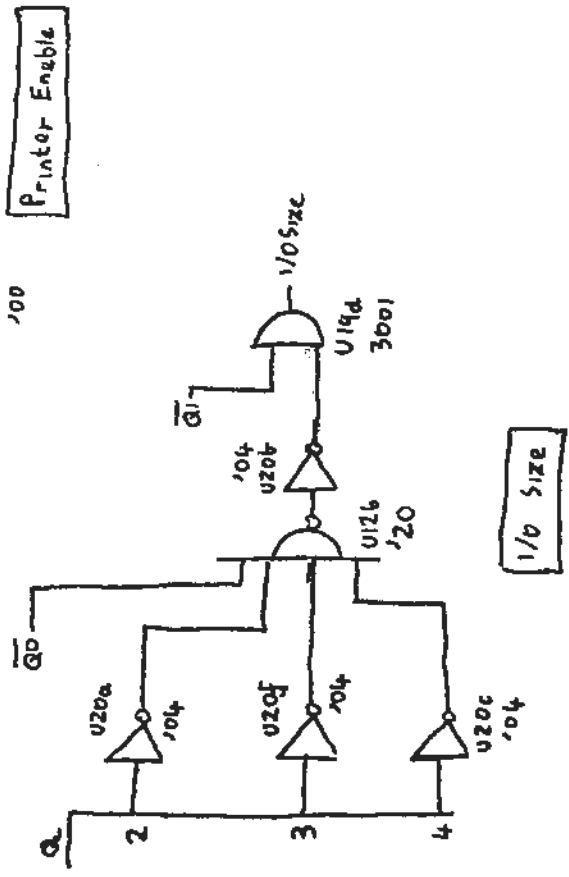
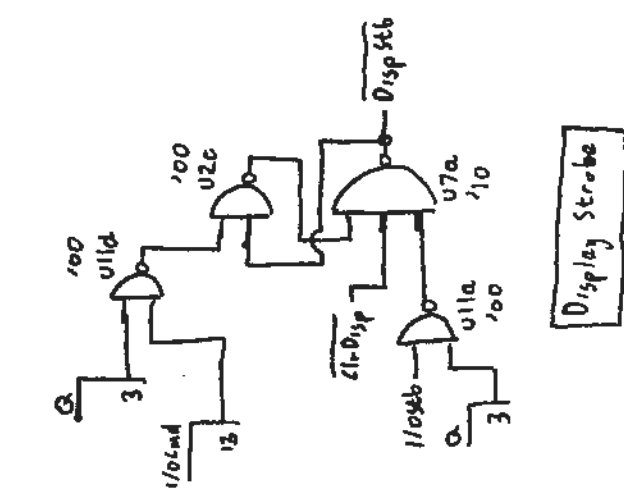
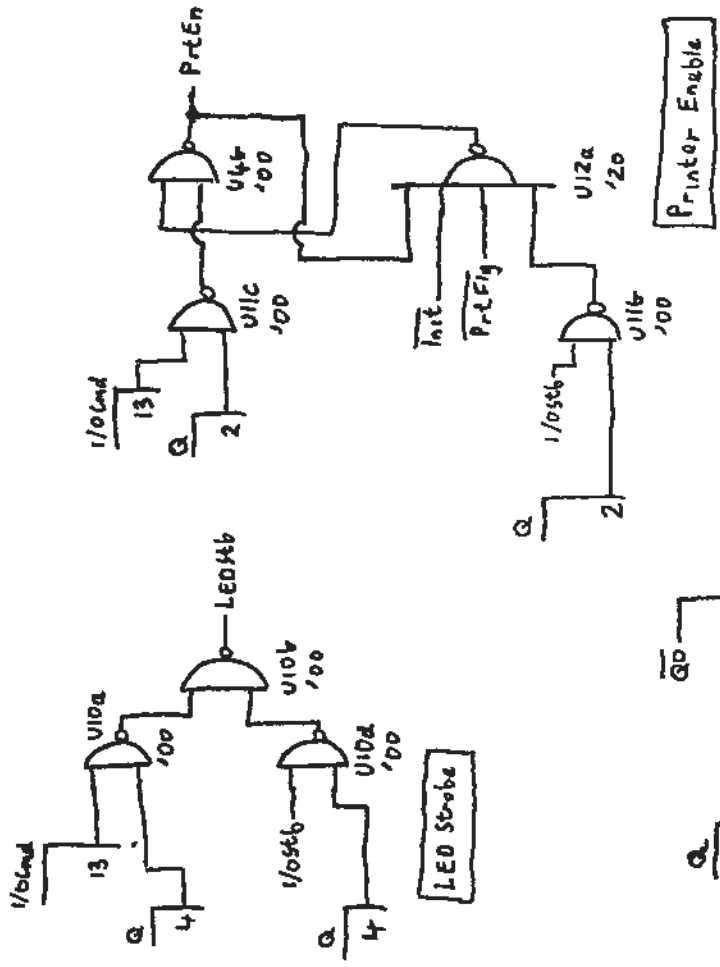
Chip Select Connections

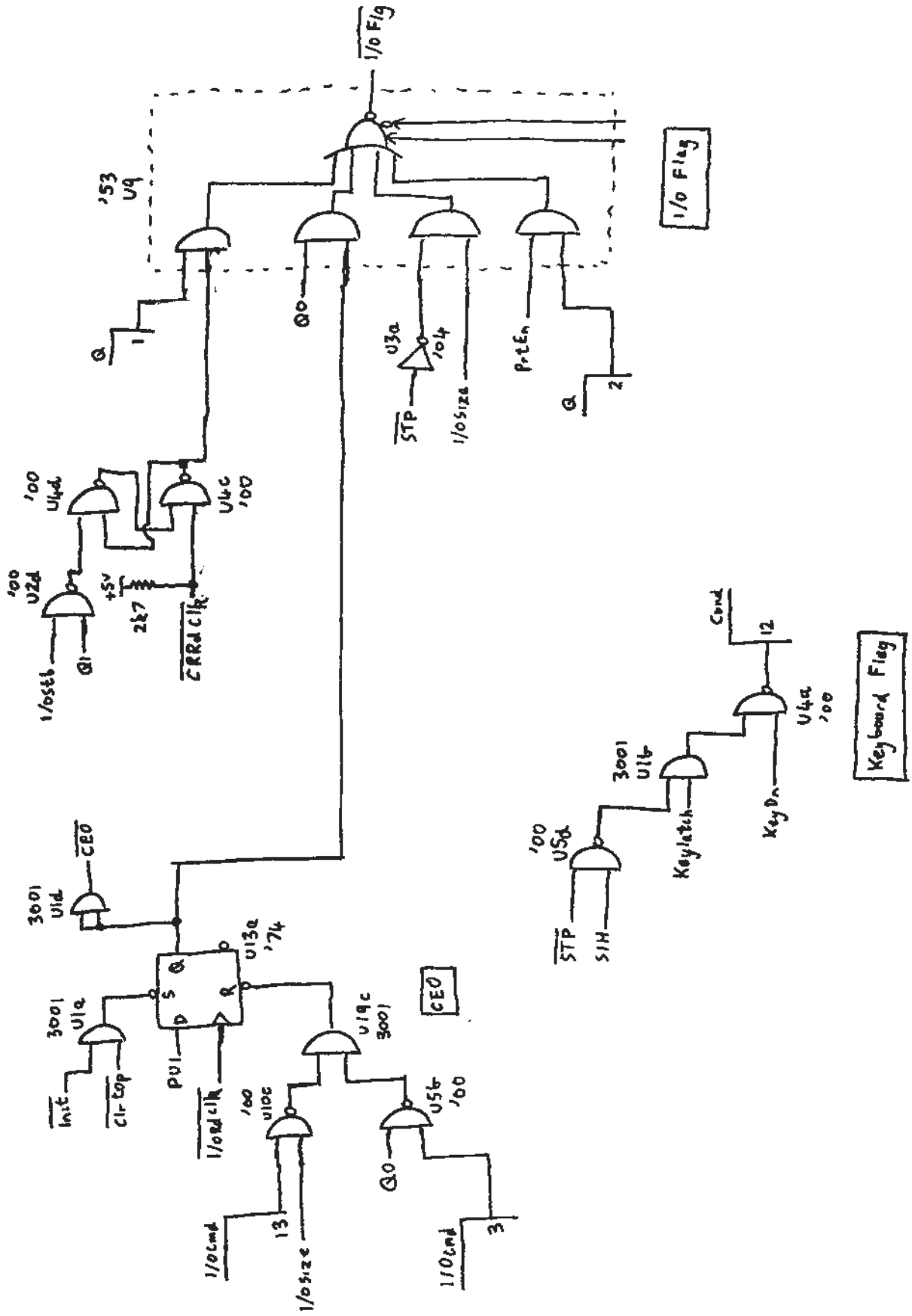


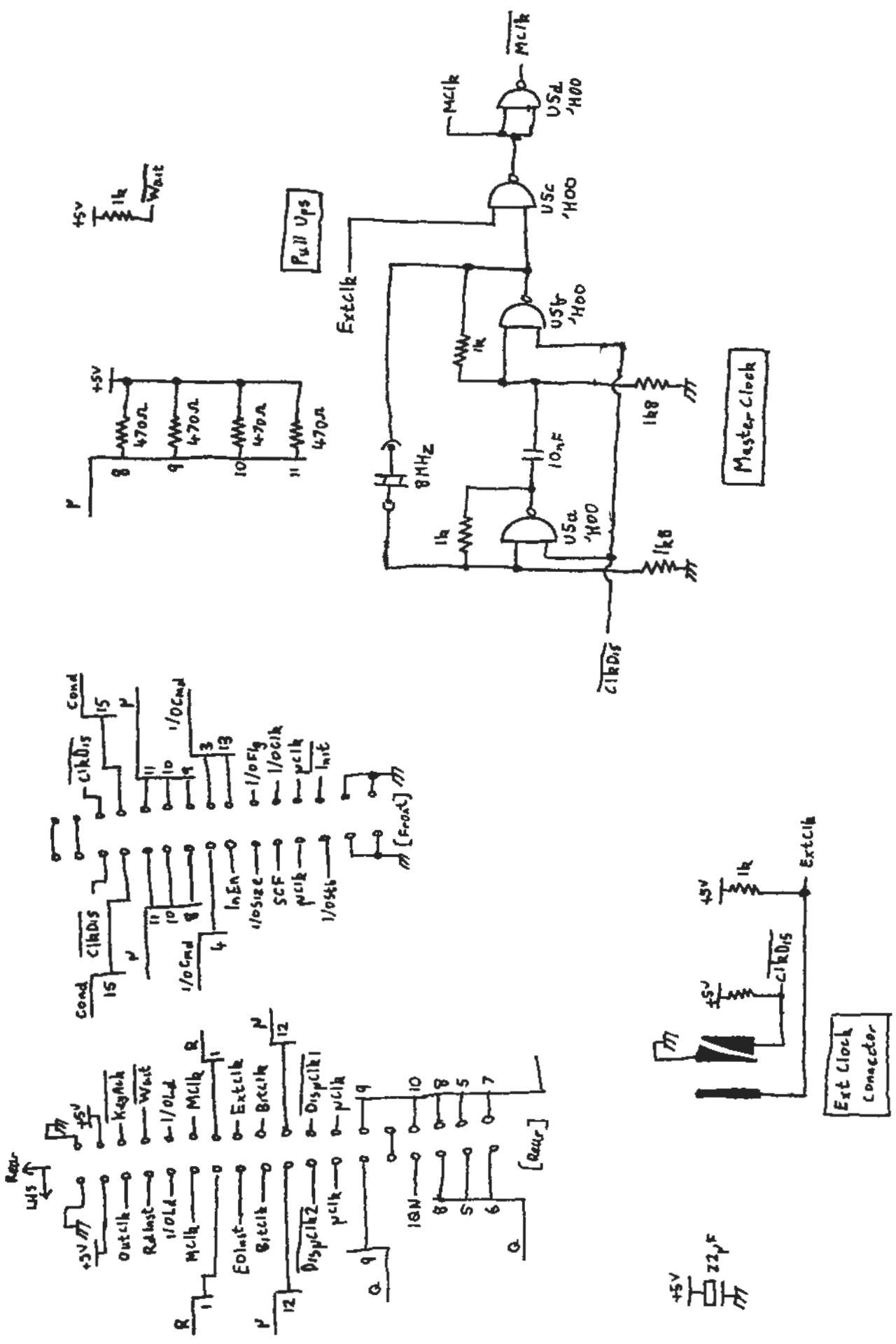
(To Main Backplane)

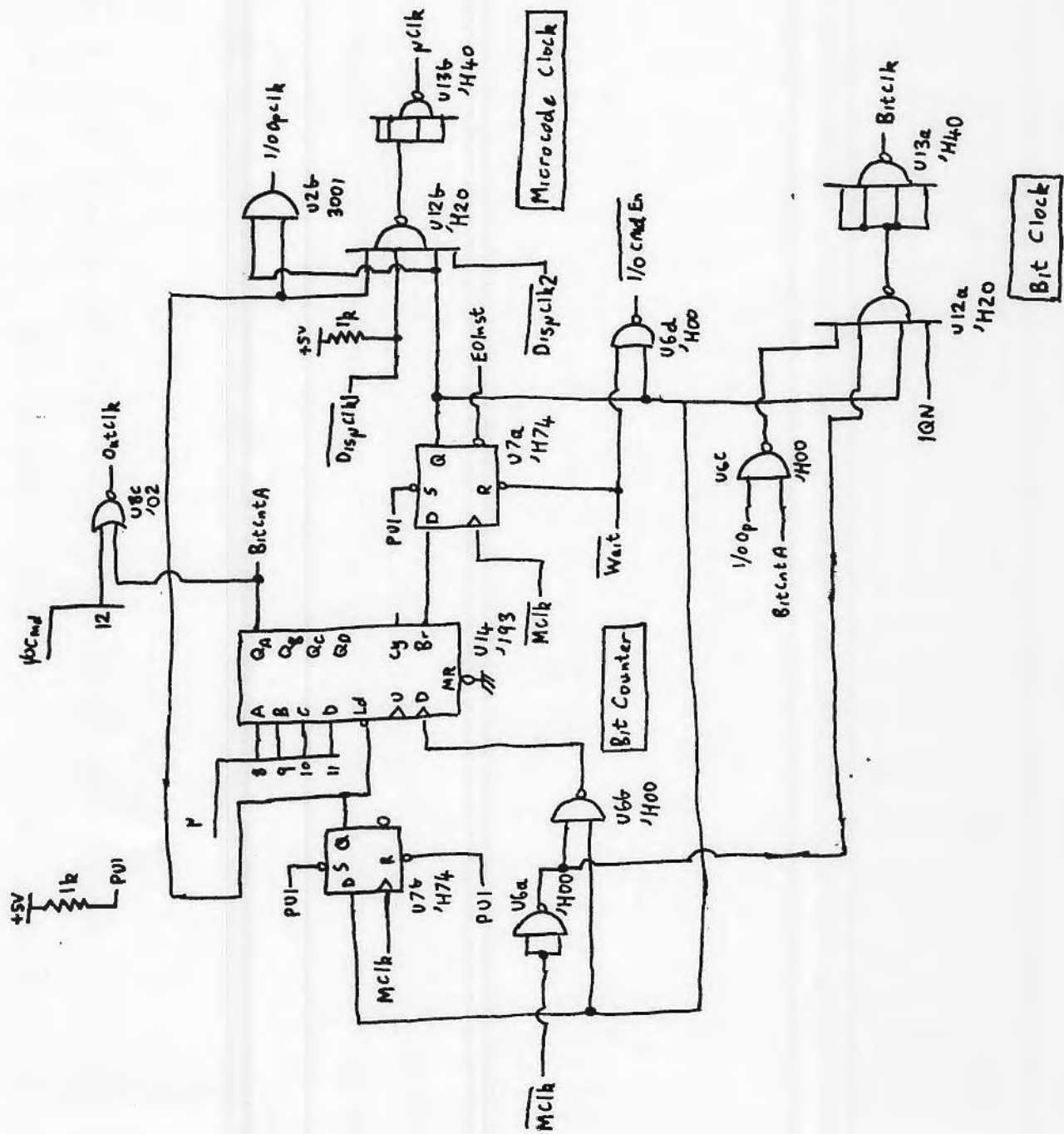


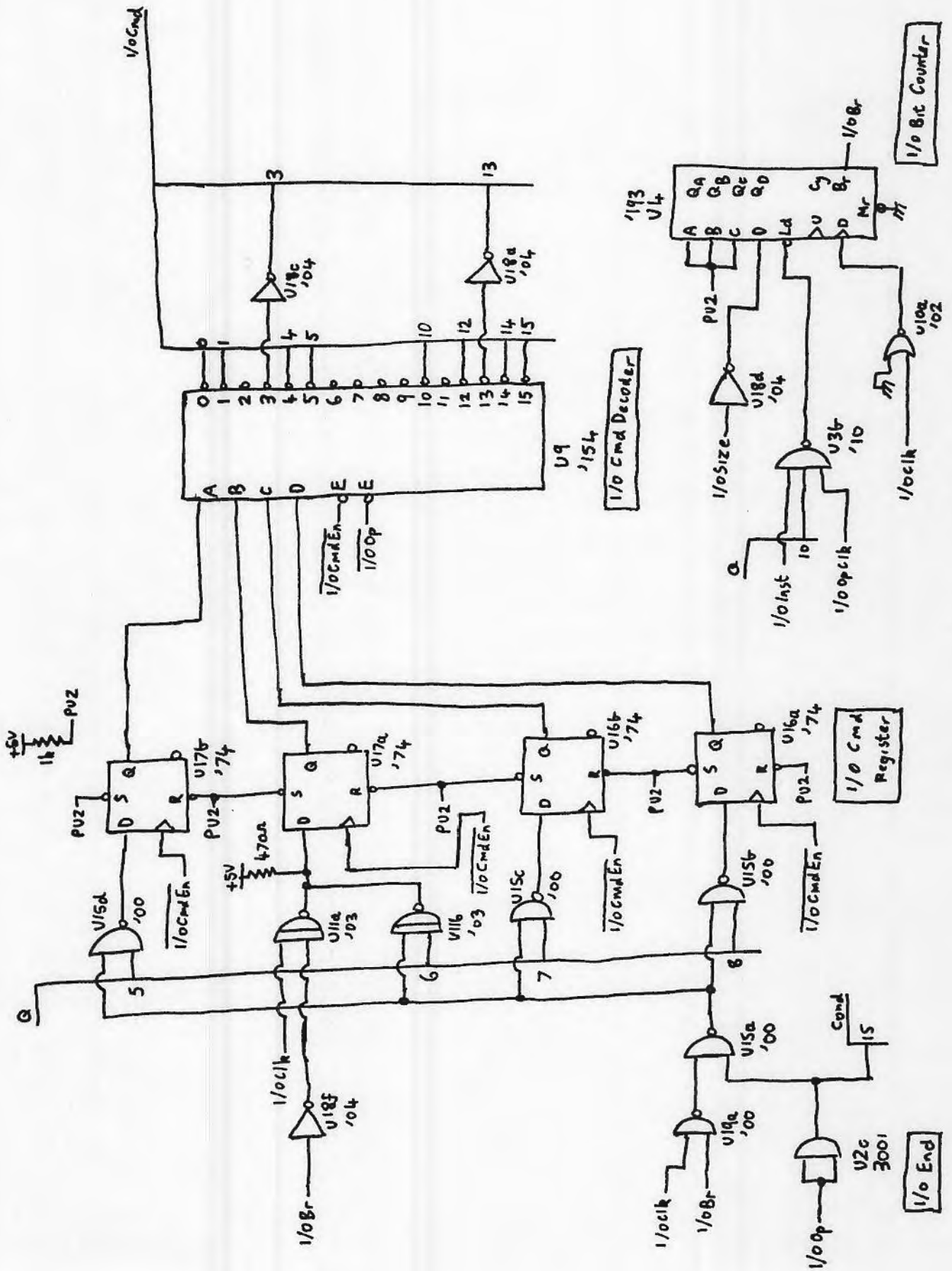


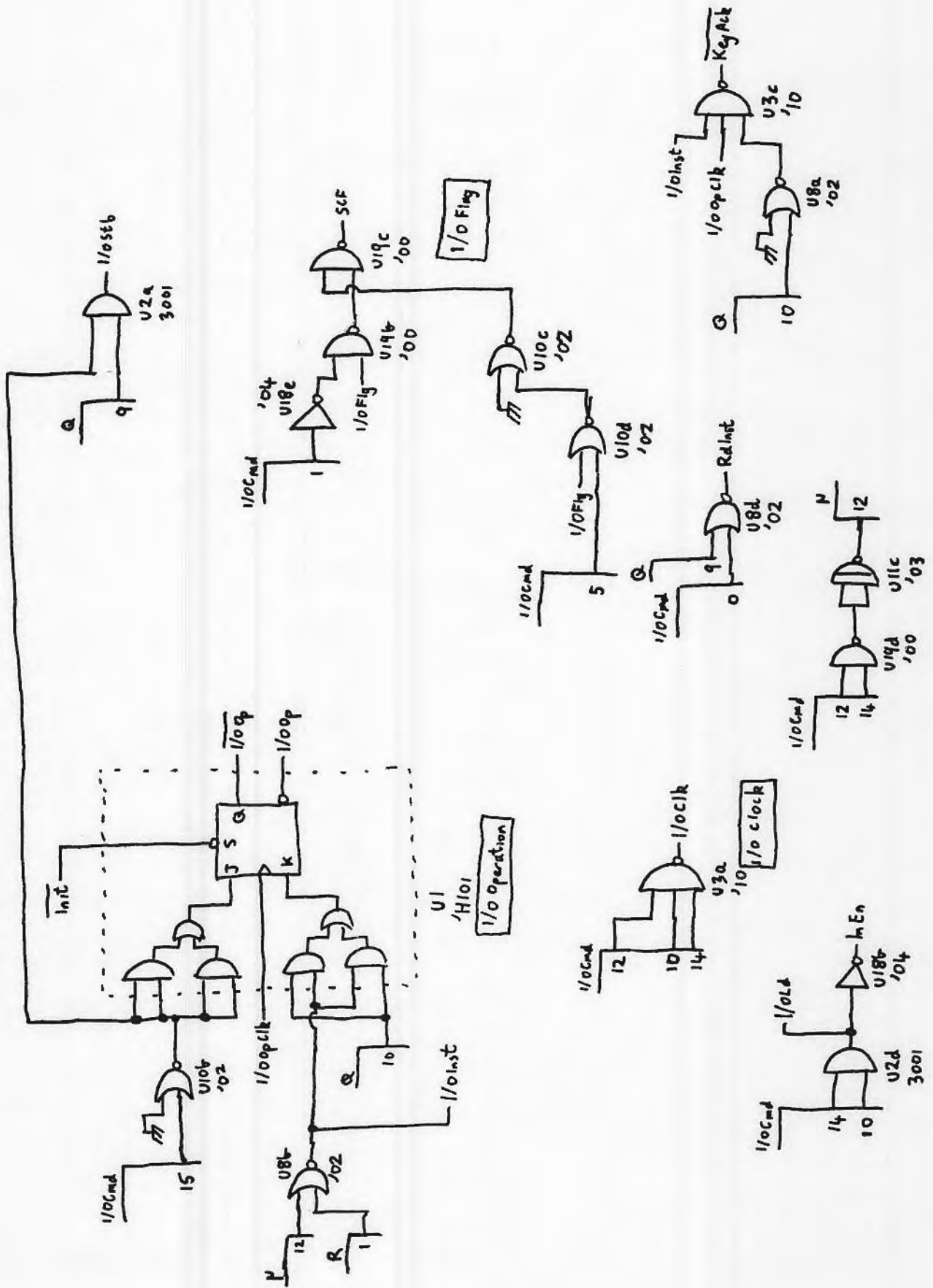


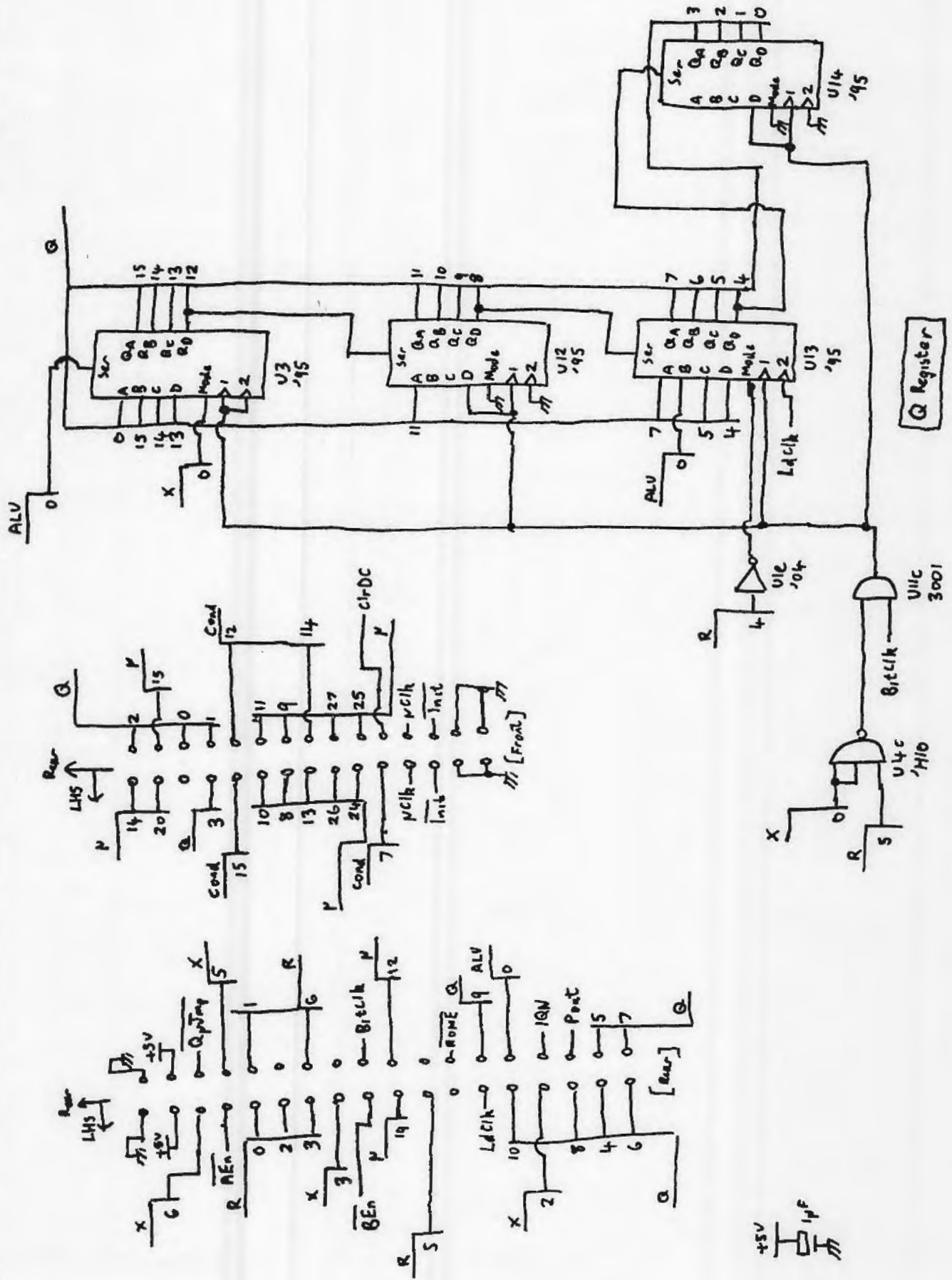


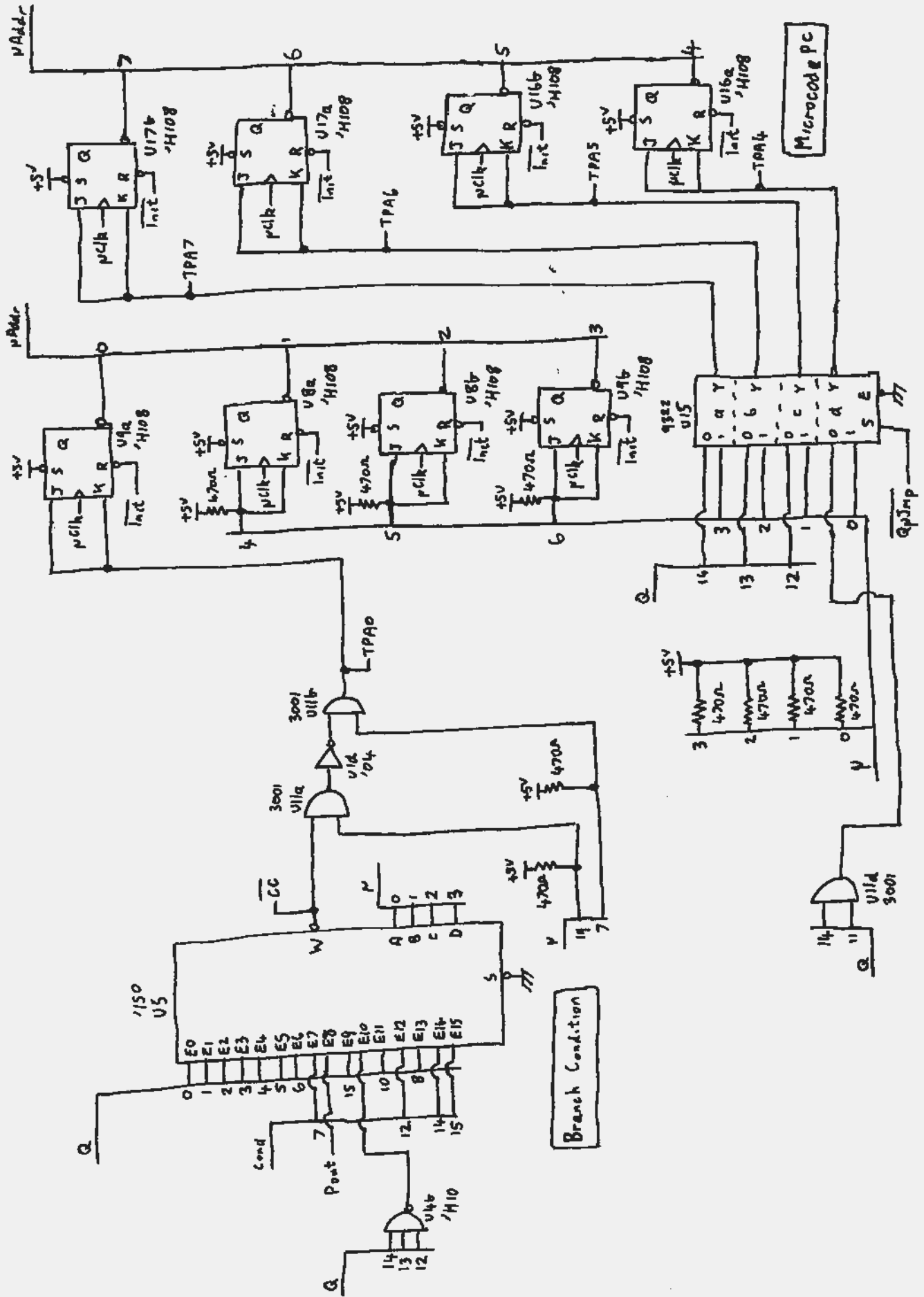


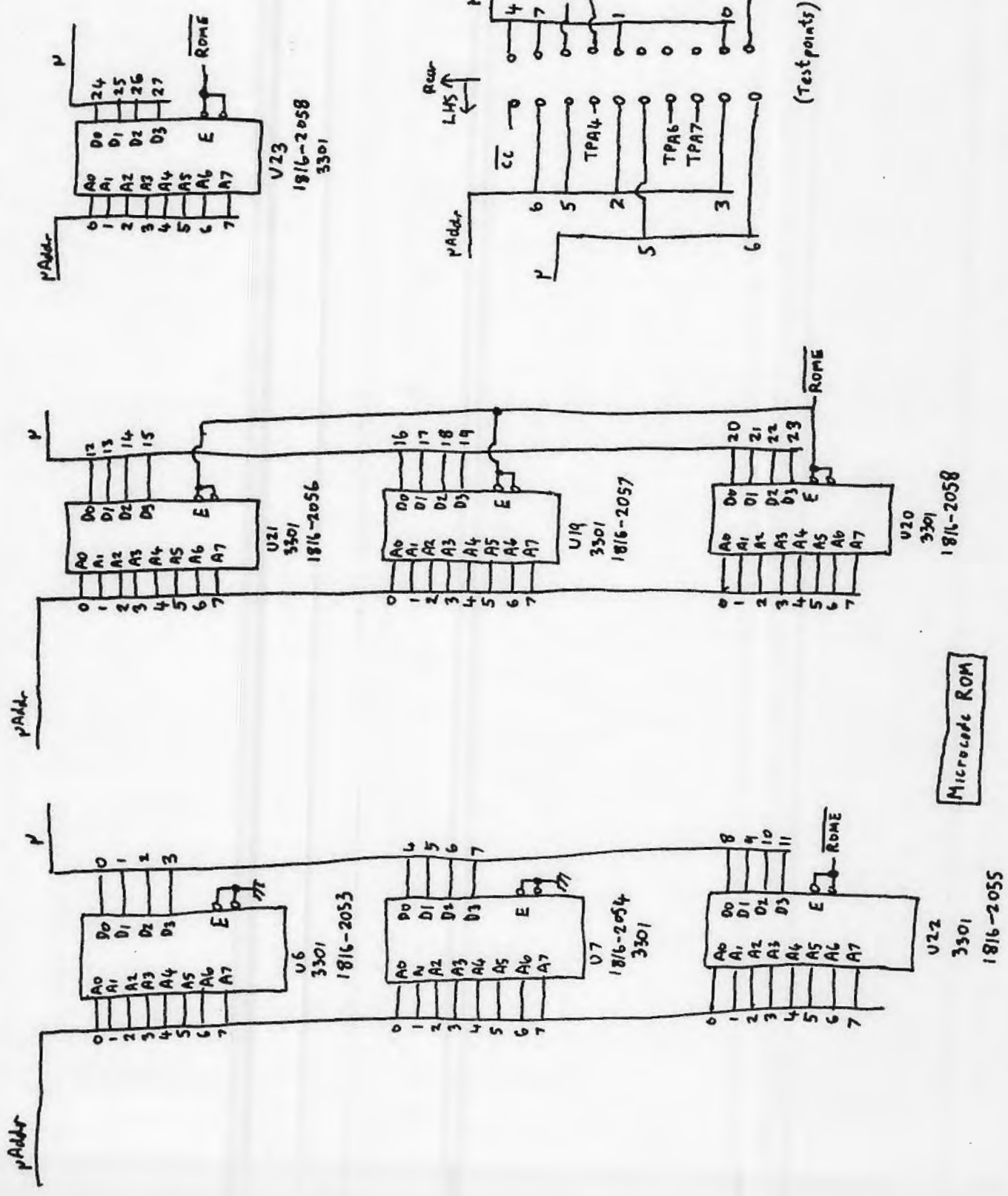


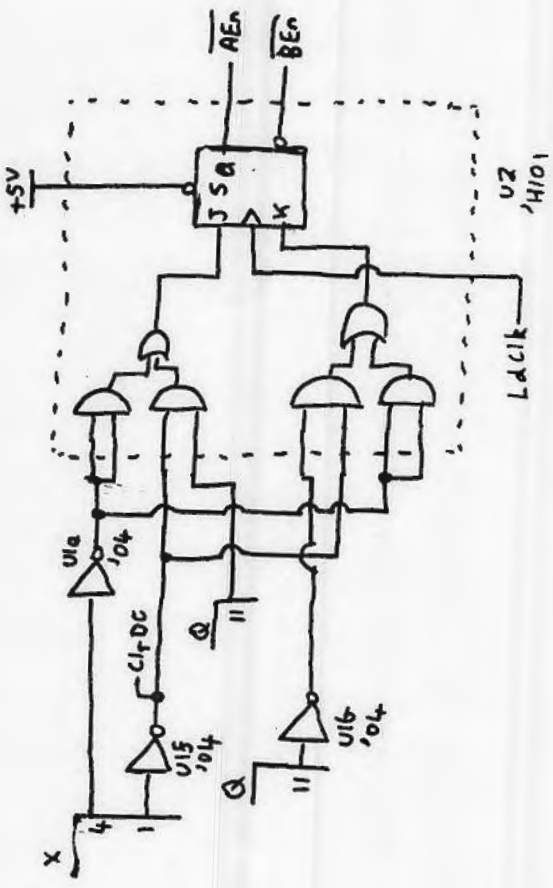




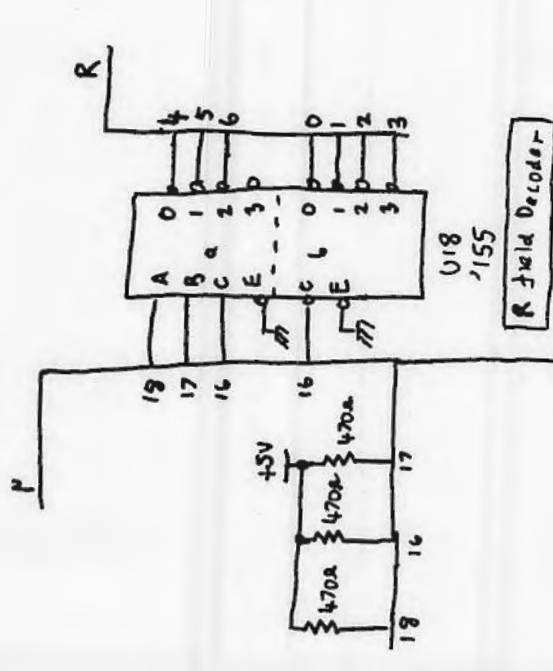
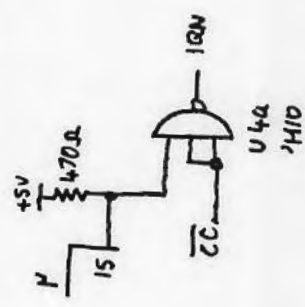




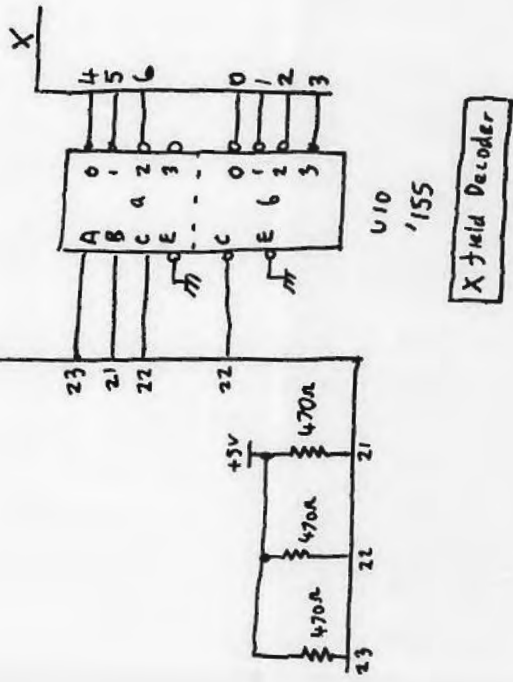




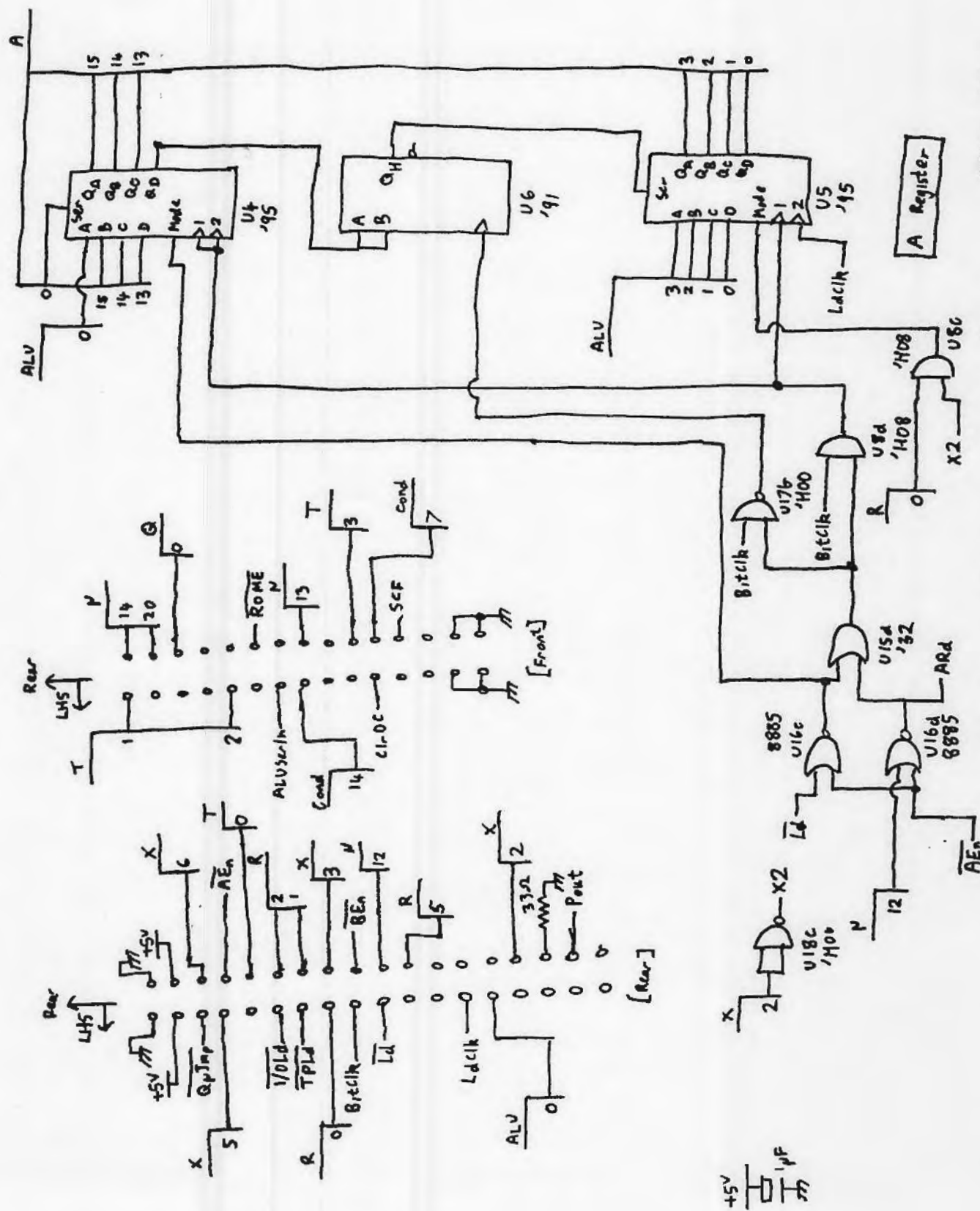
Register Select

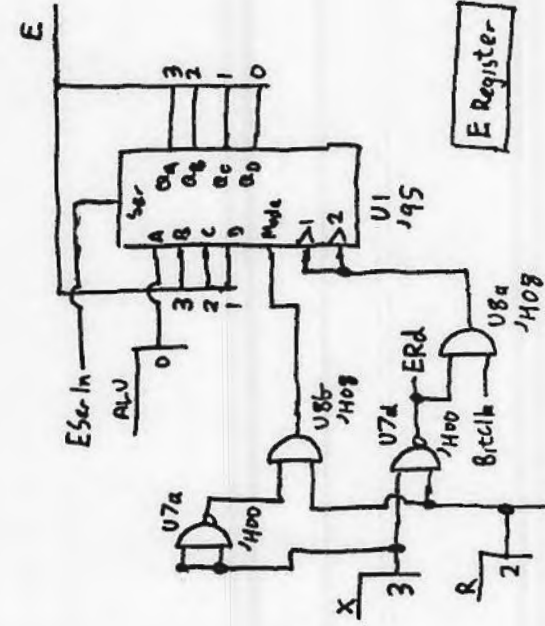


R Field Decoder

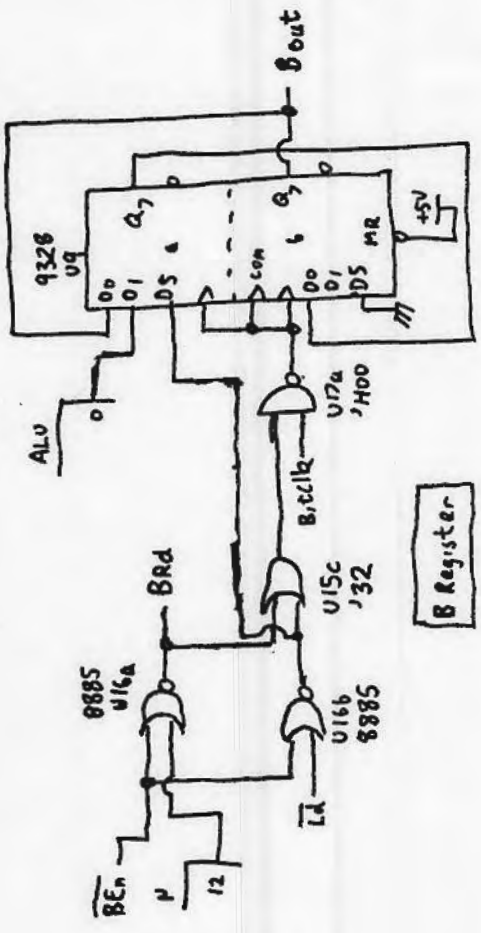


X Field Decoder

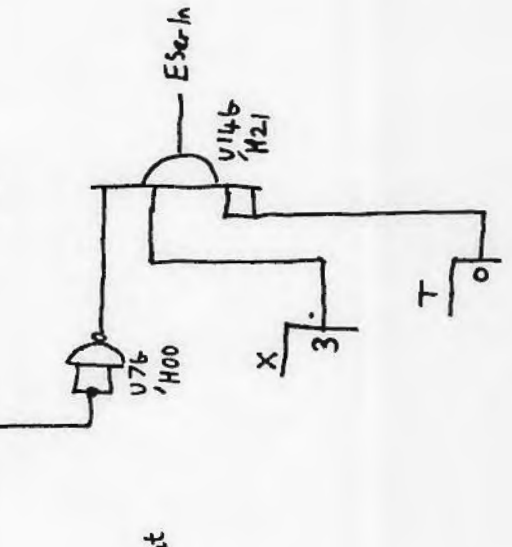




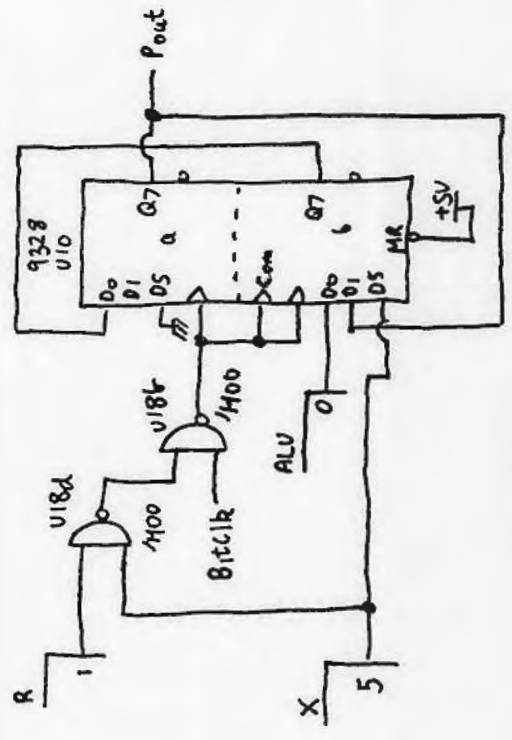
E Register

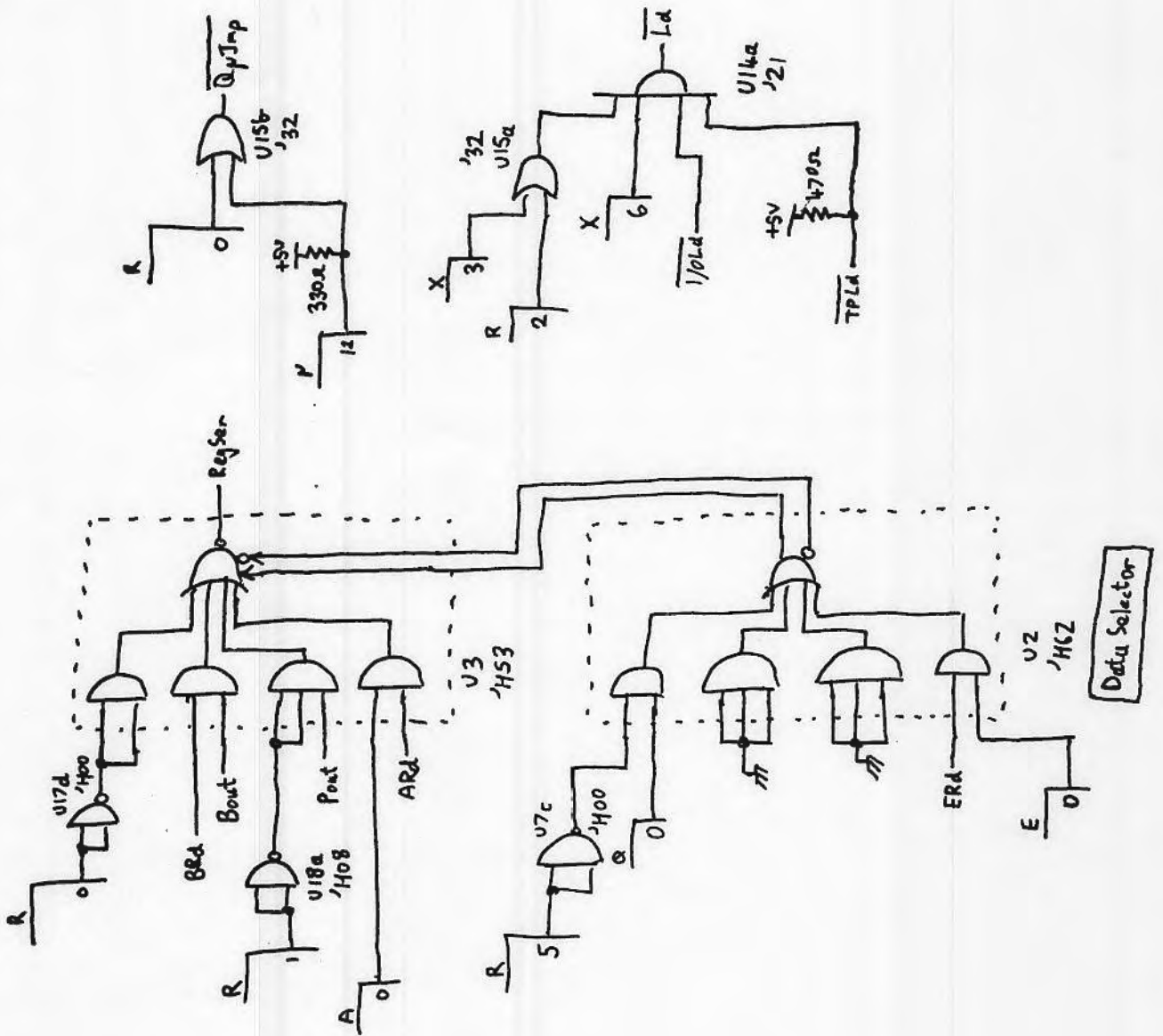


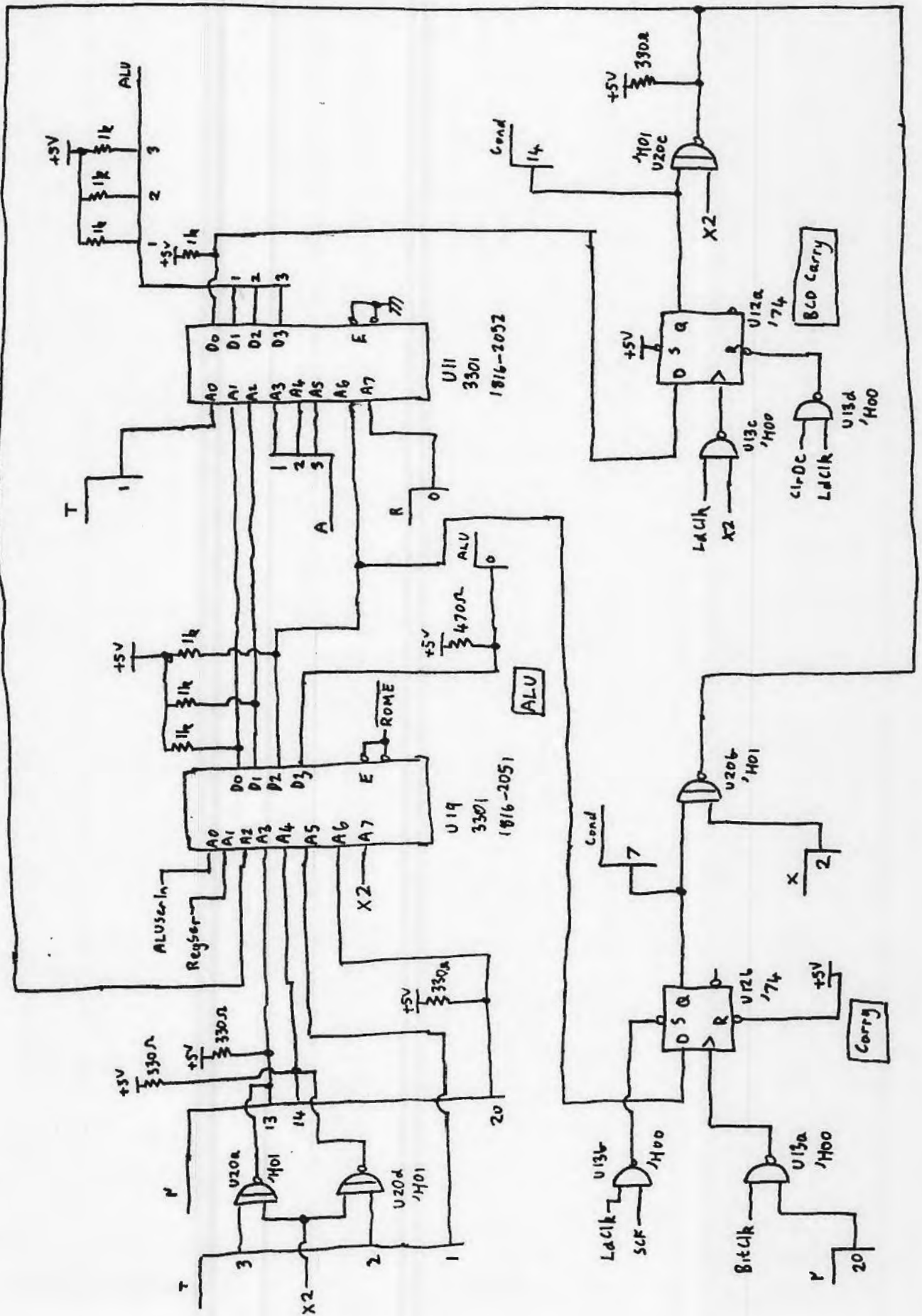
B Register

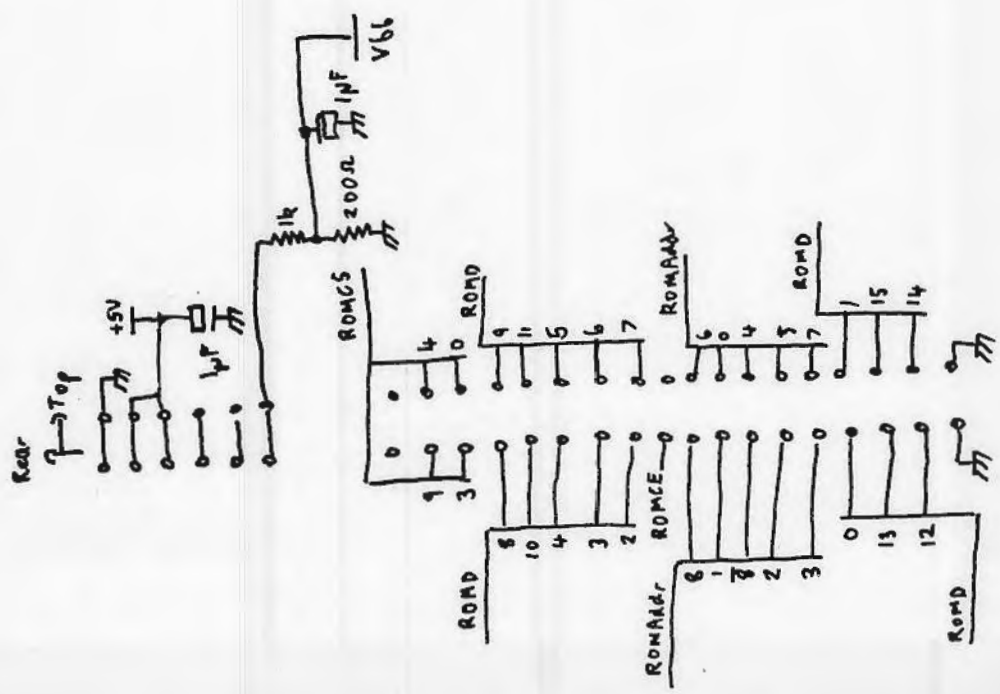
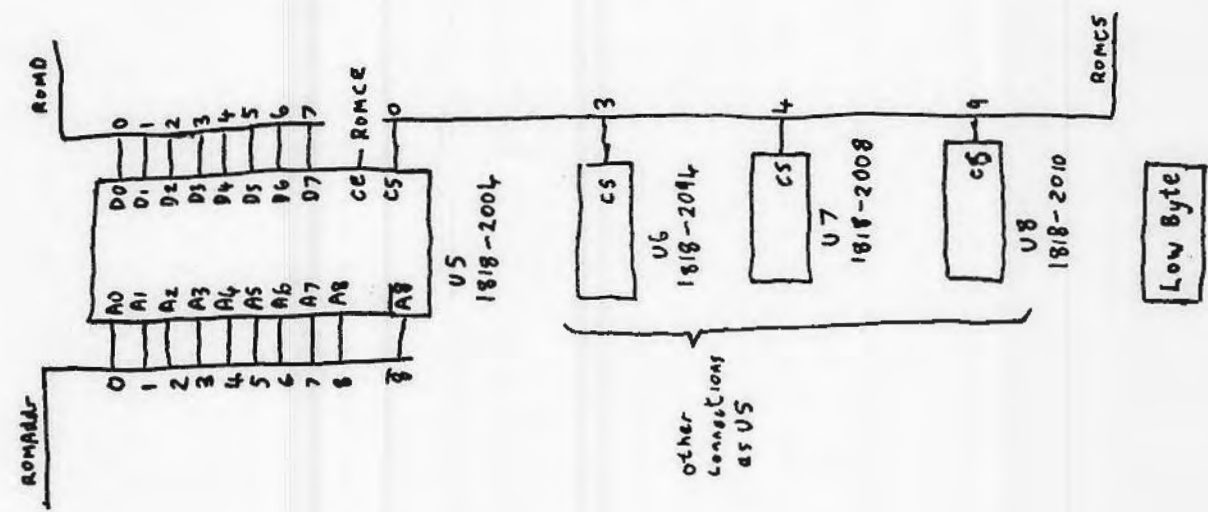
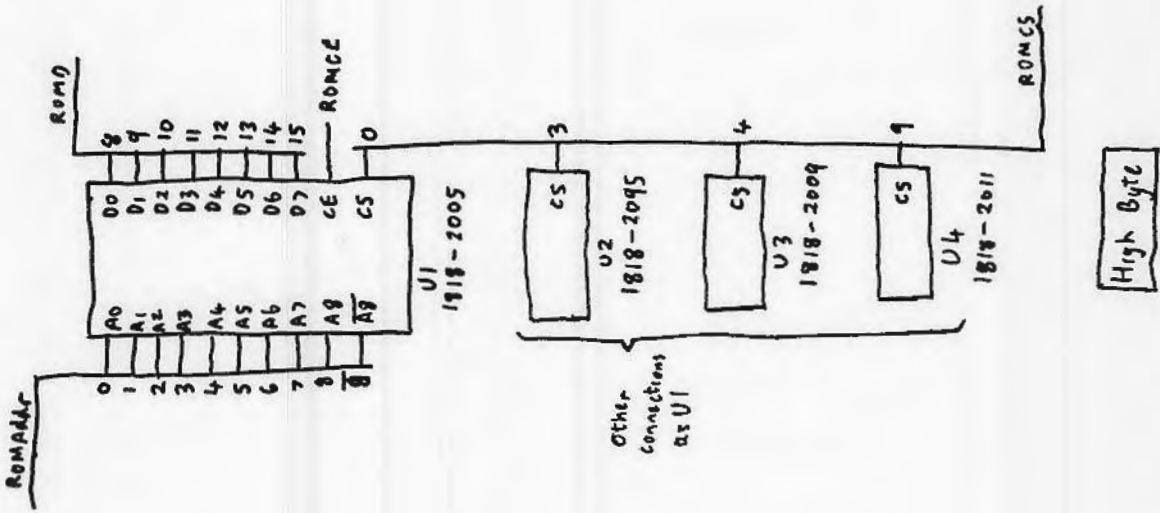


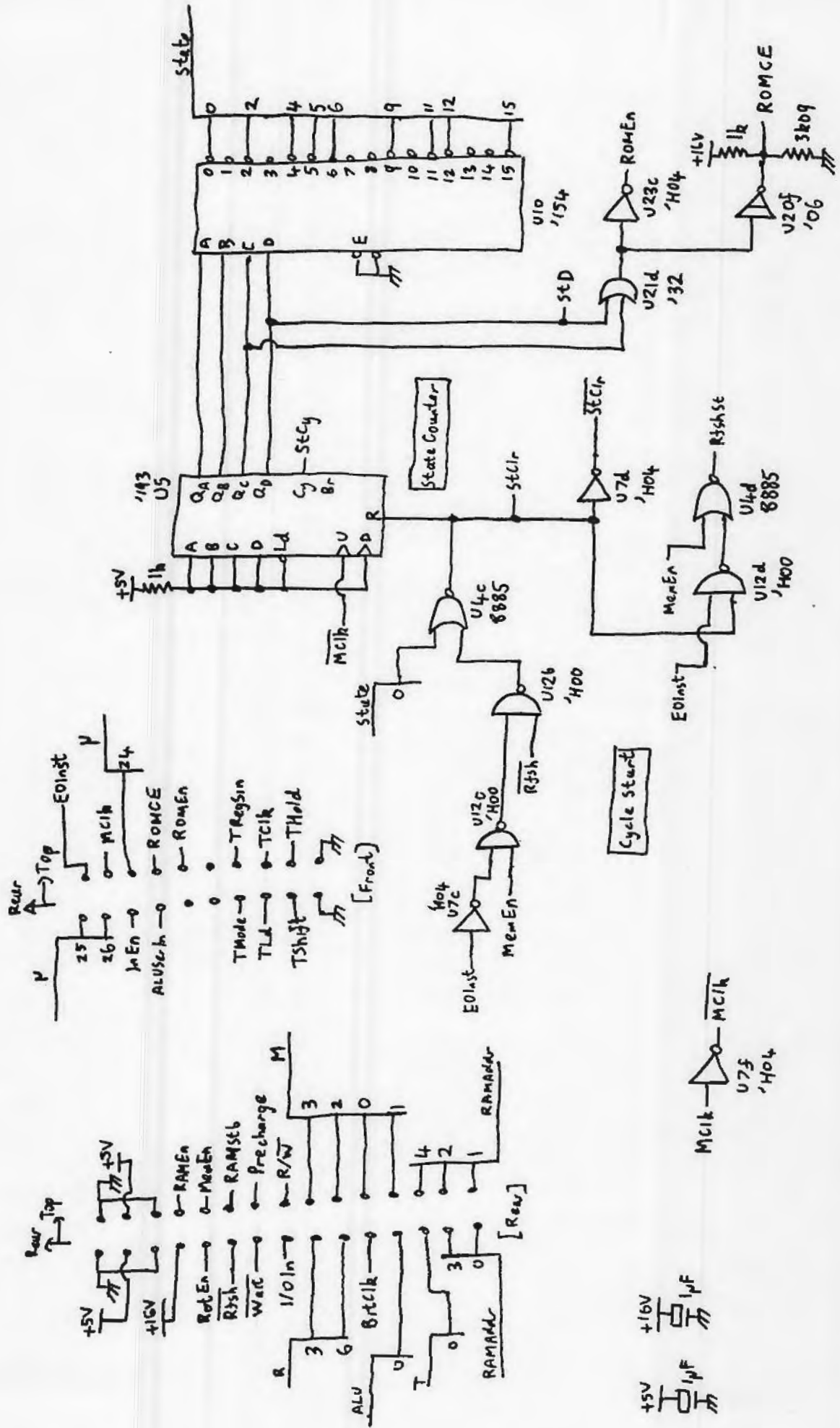
P Register

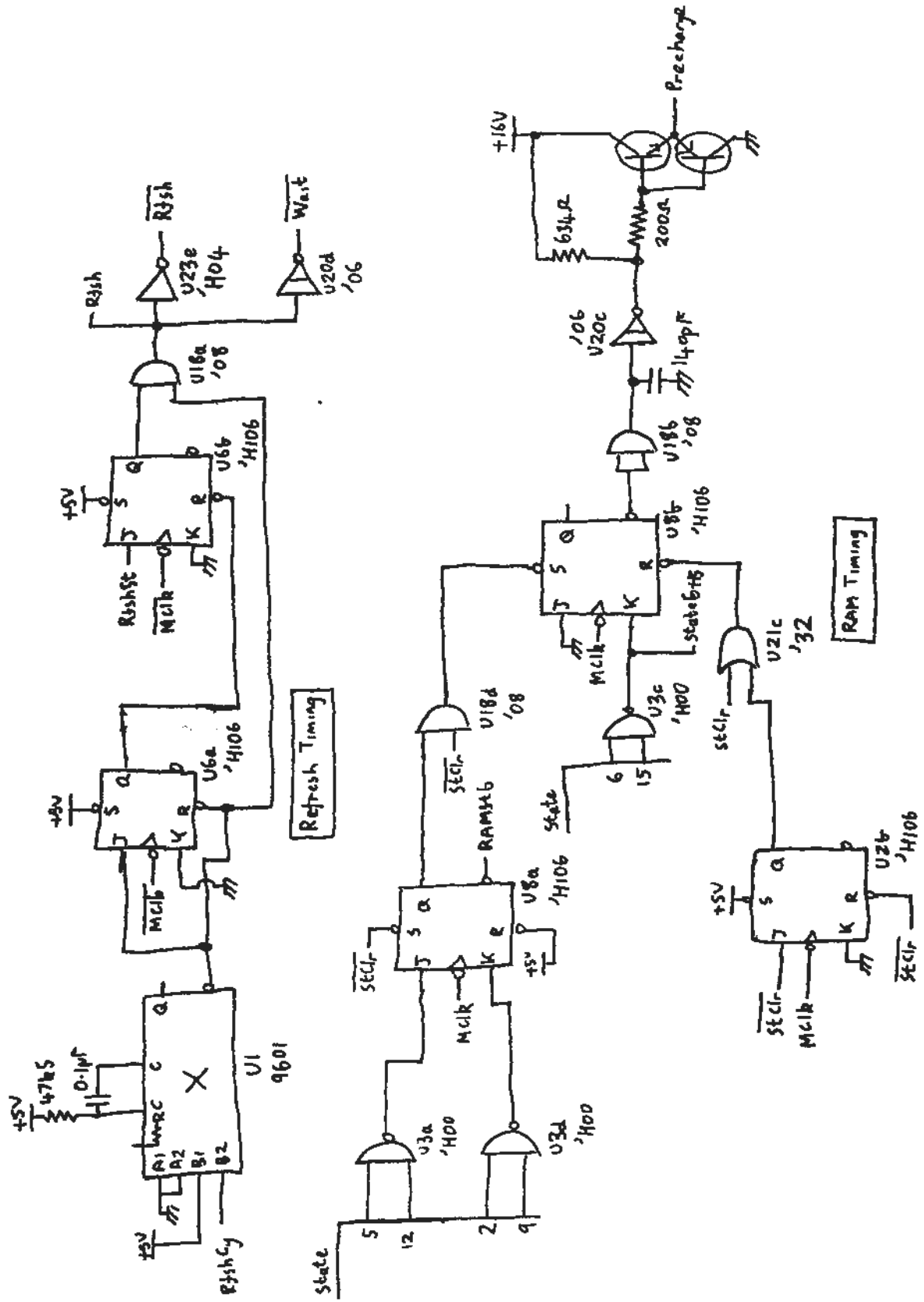


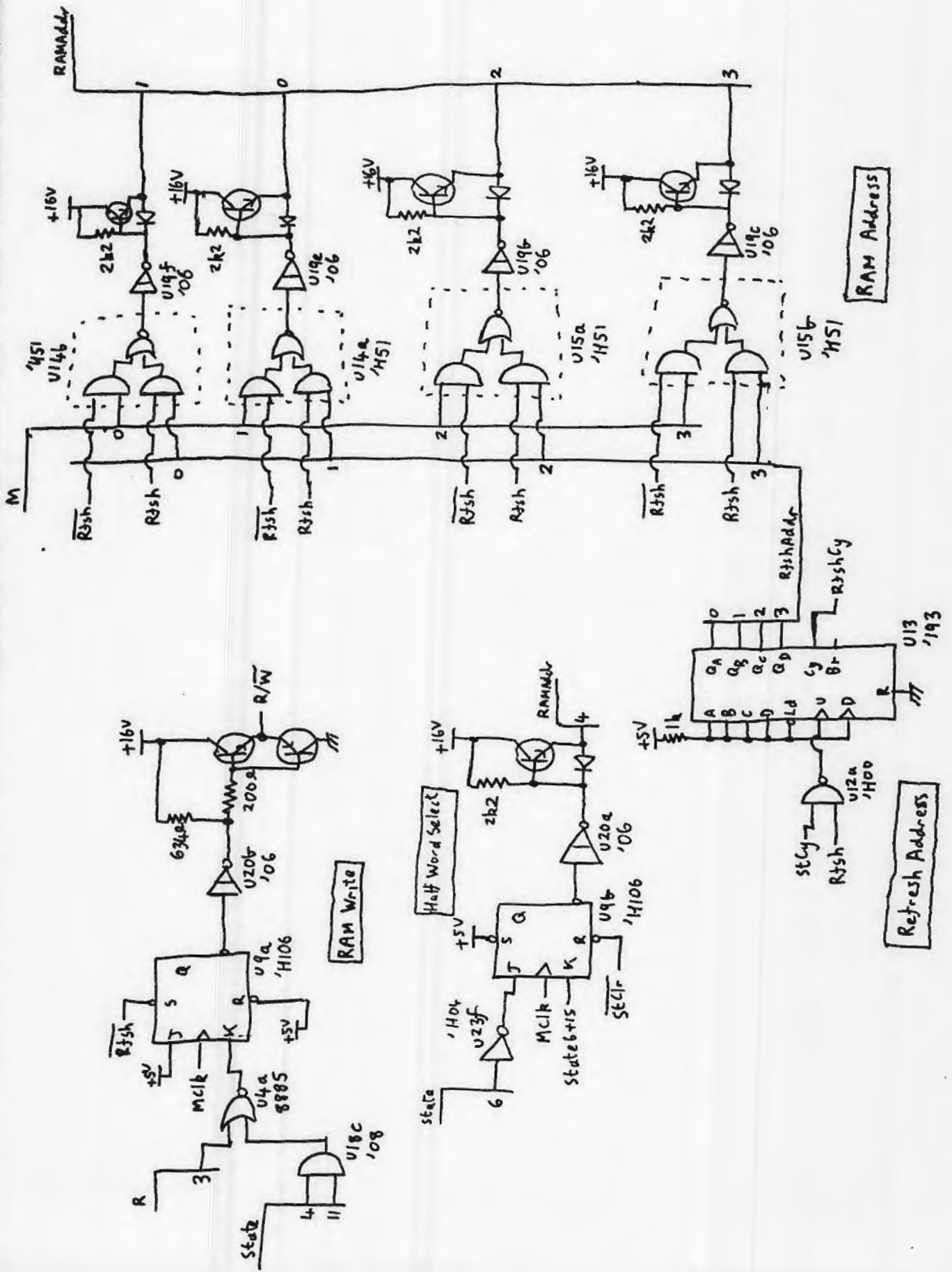




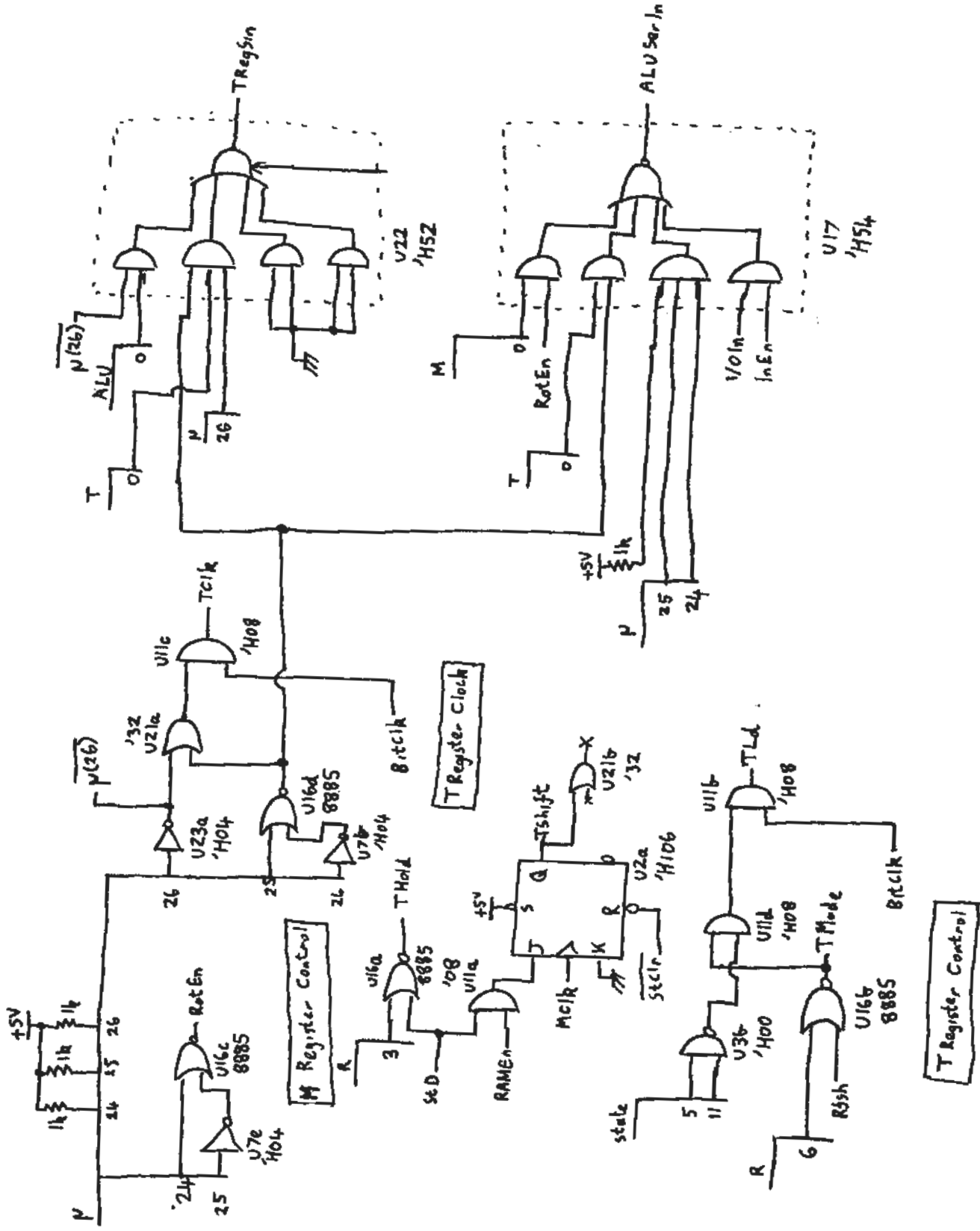


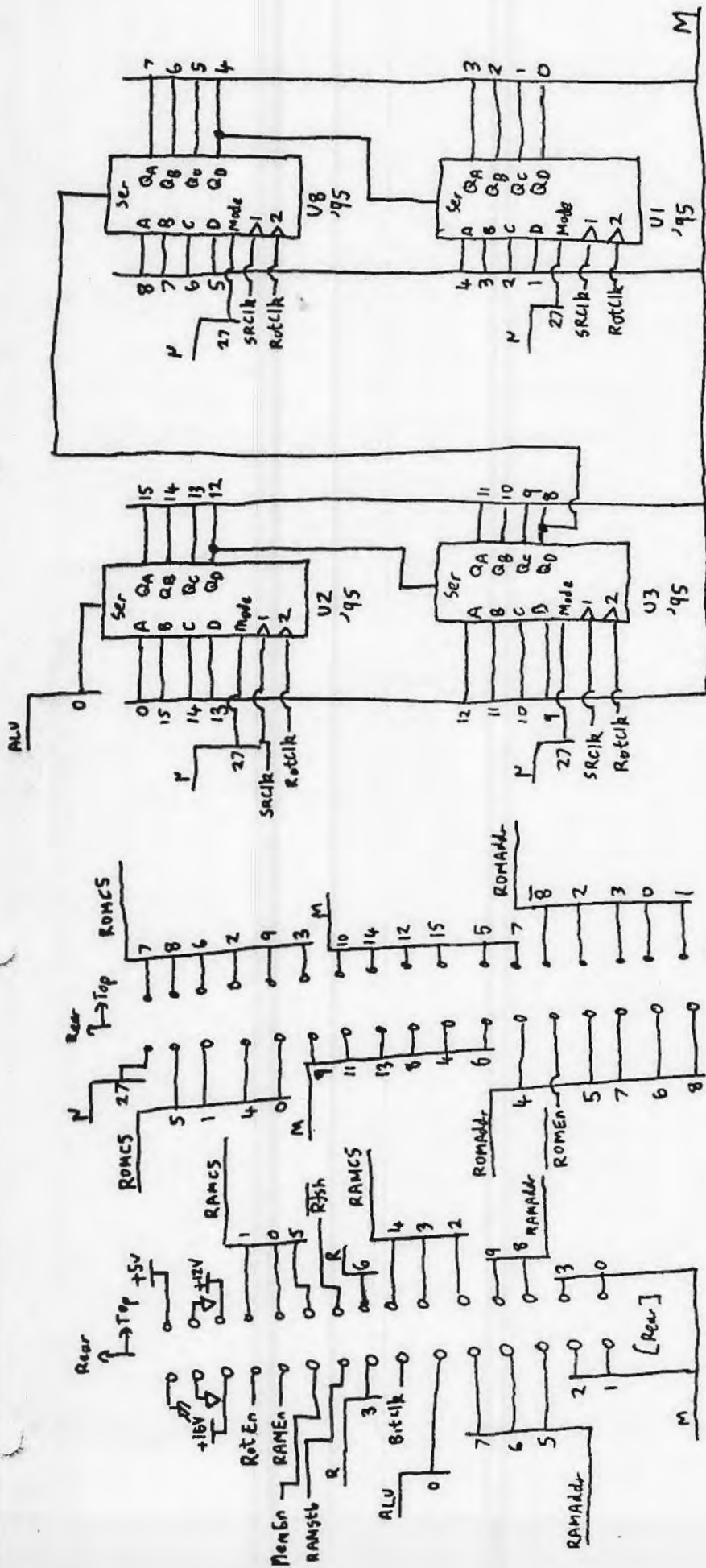




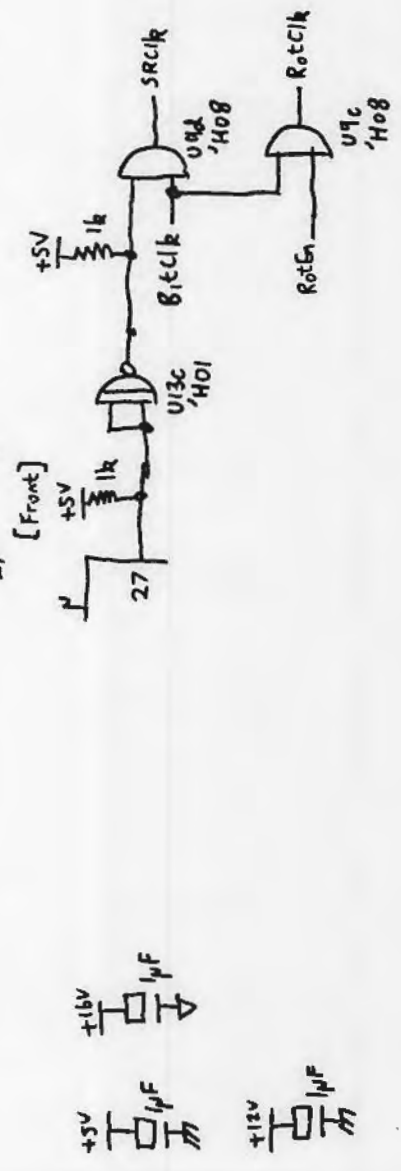


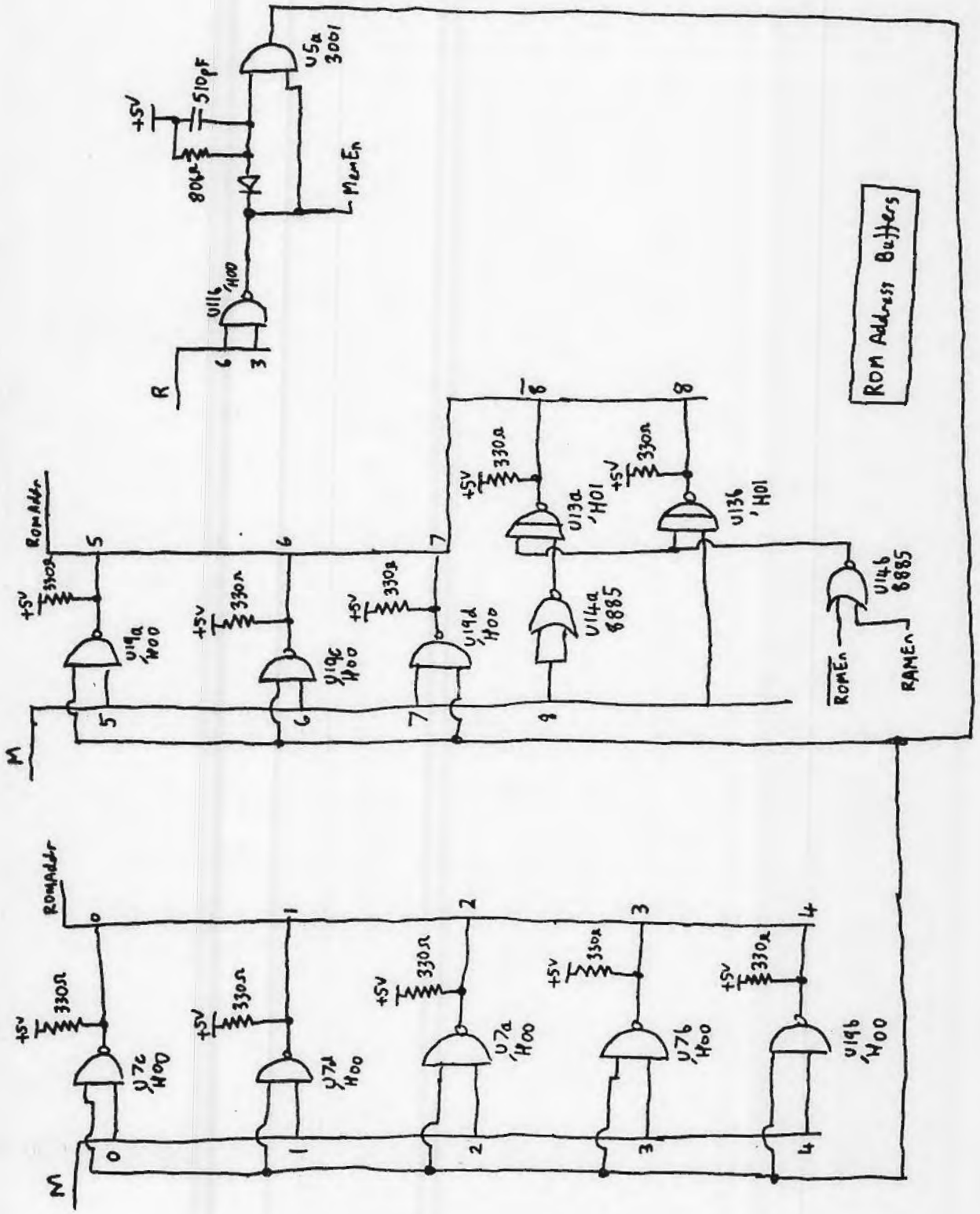
HP9810 Memory Timing PCB sheet ③ (R/R) 09810-66522

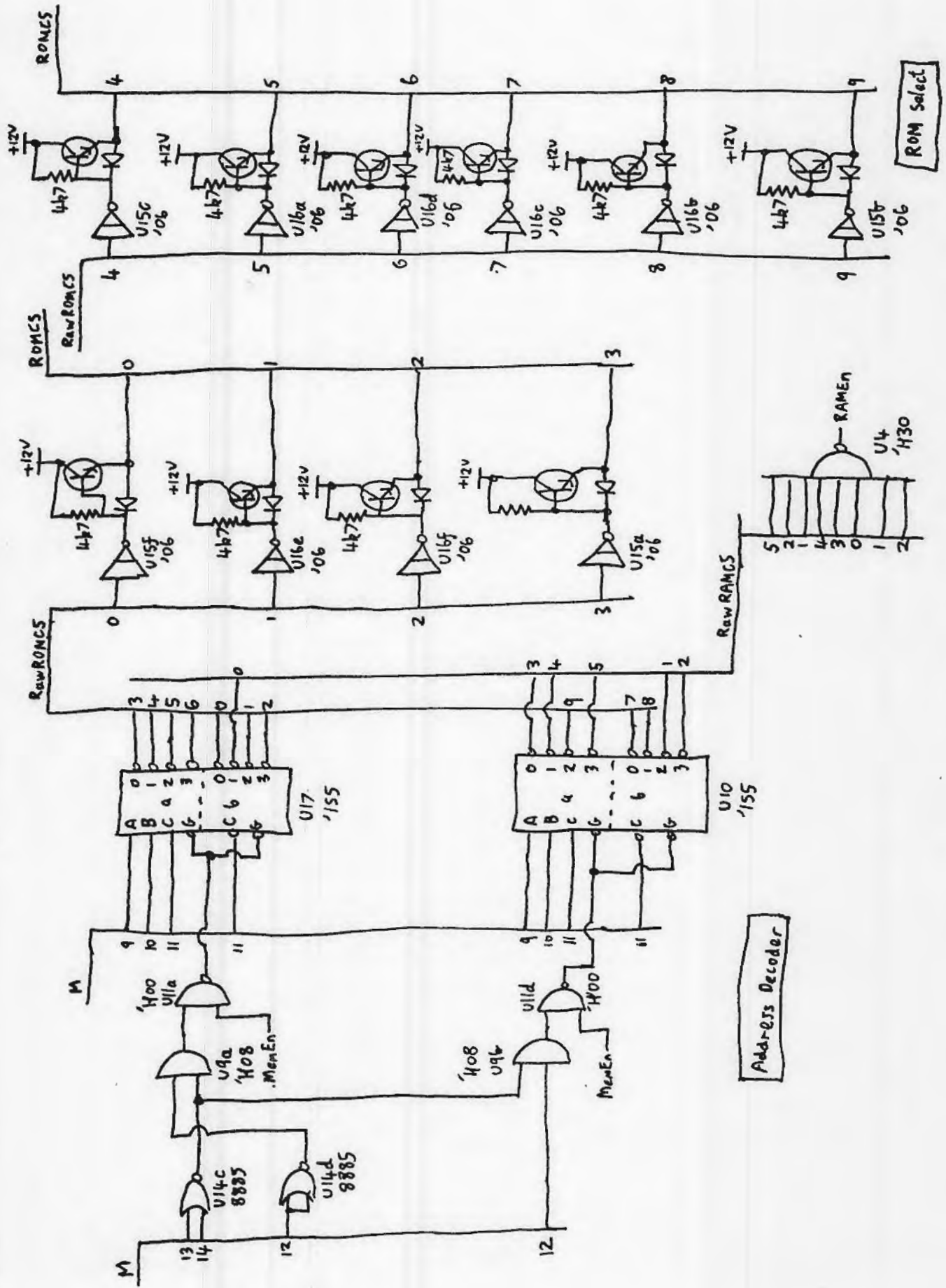




M Register





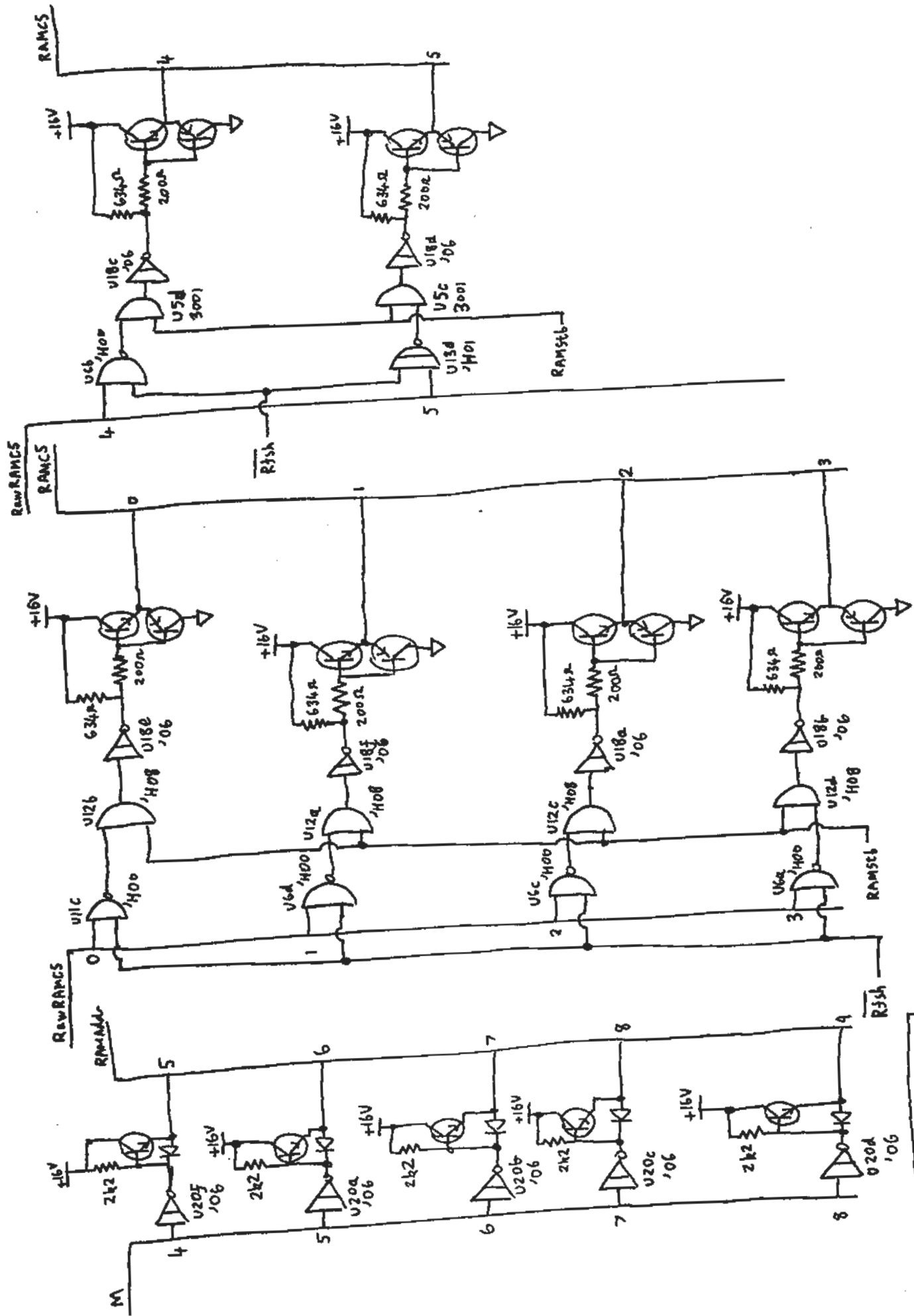


09810-66523

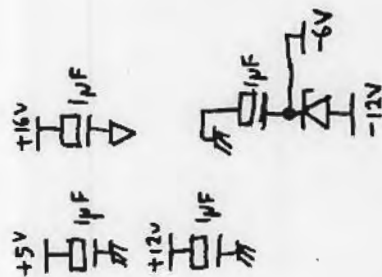
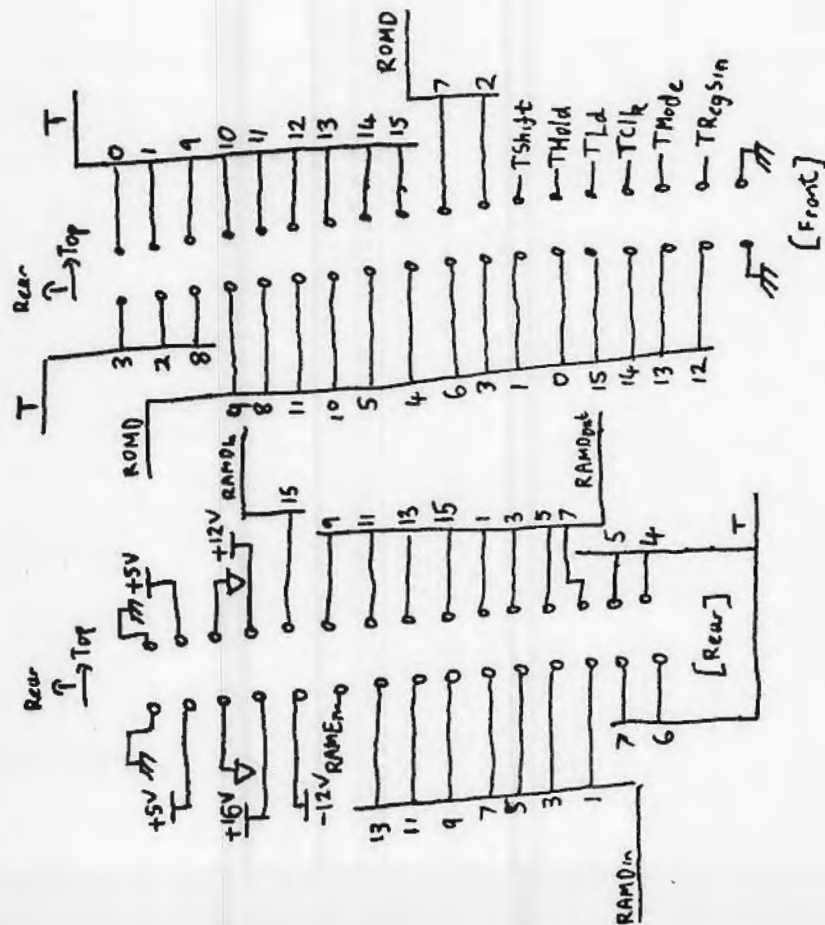
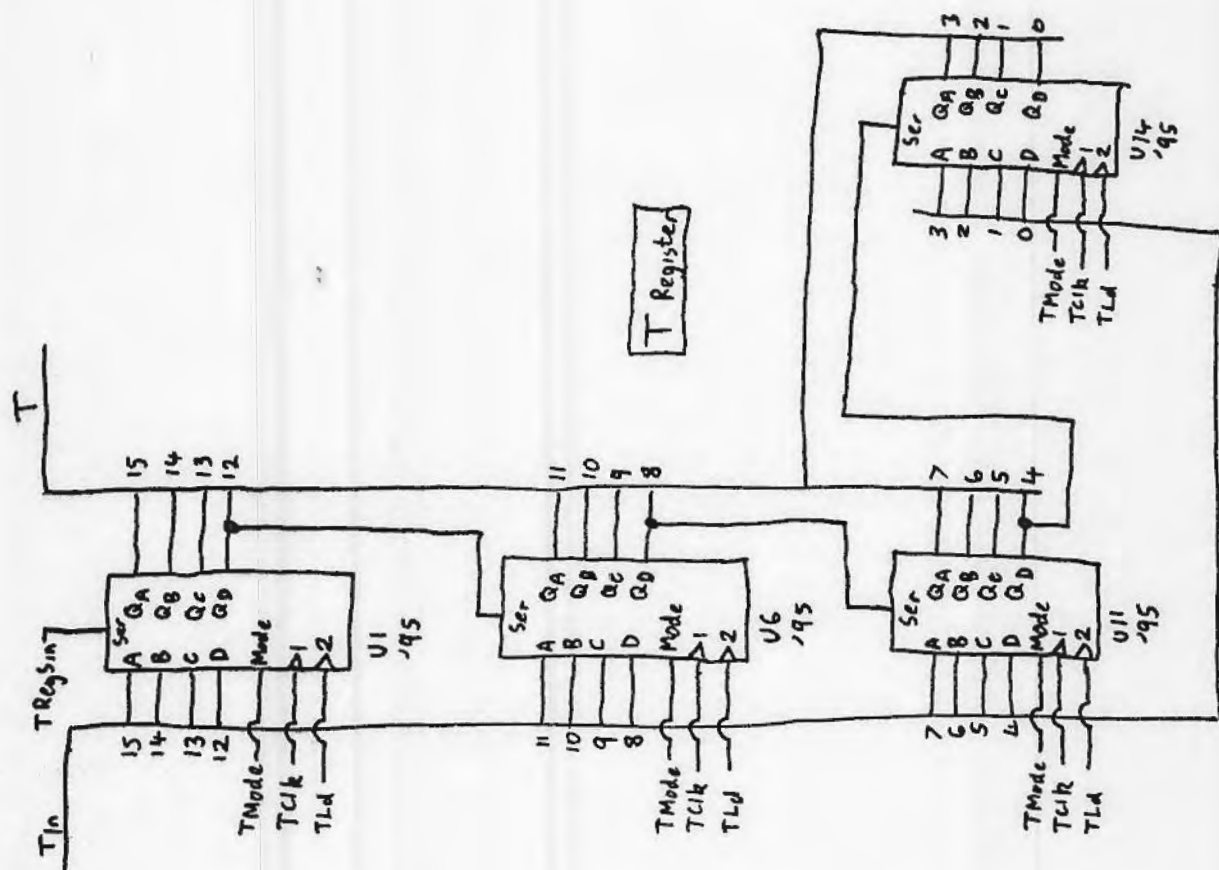
HP 9810 Memory Address PCB sheet 3 (R/O)

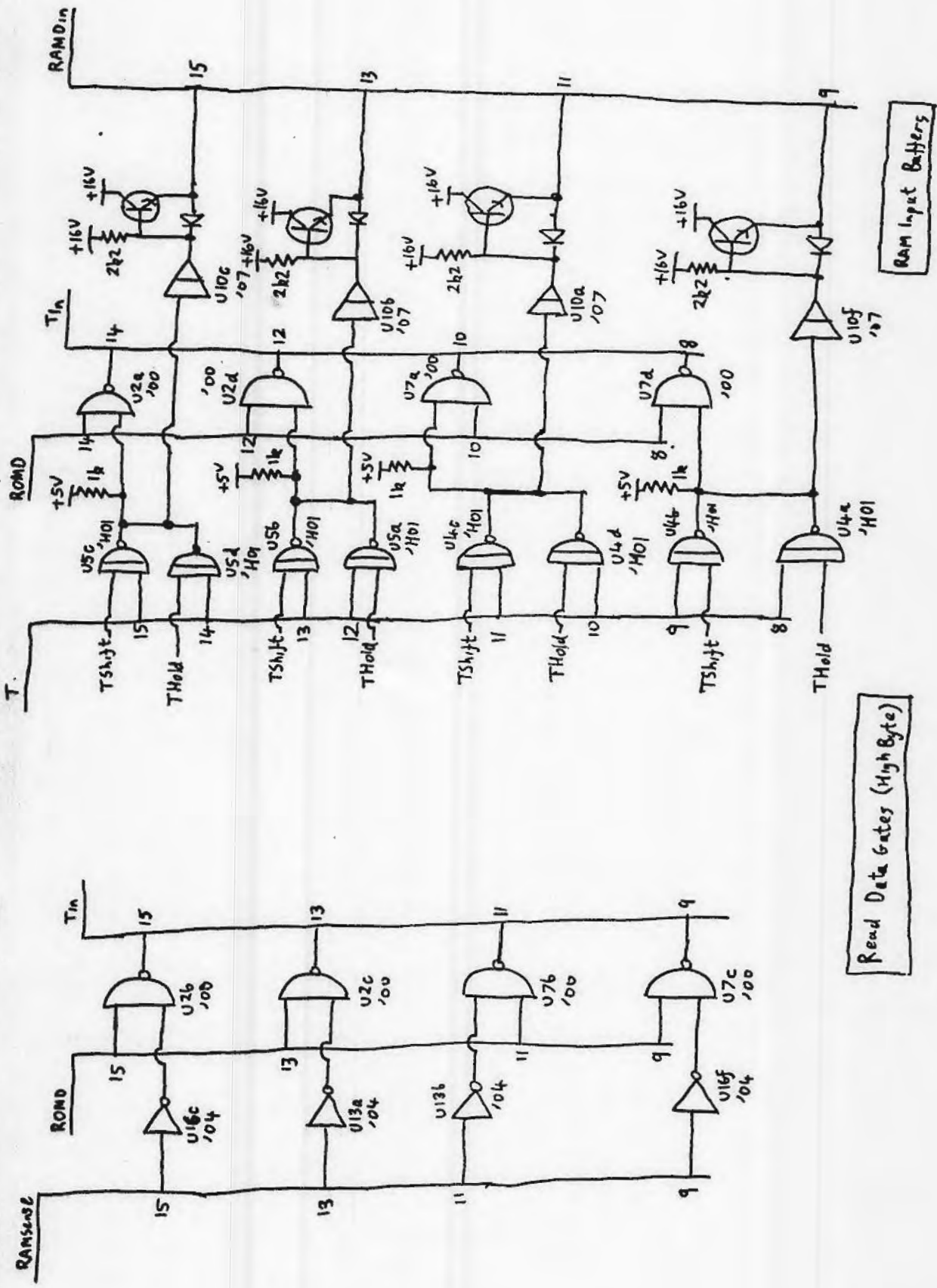
Address Decoder

ROM Select



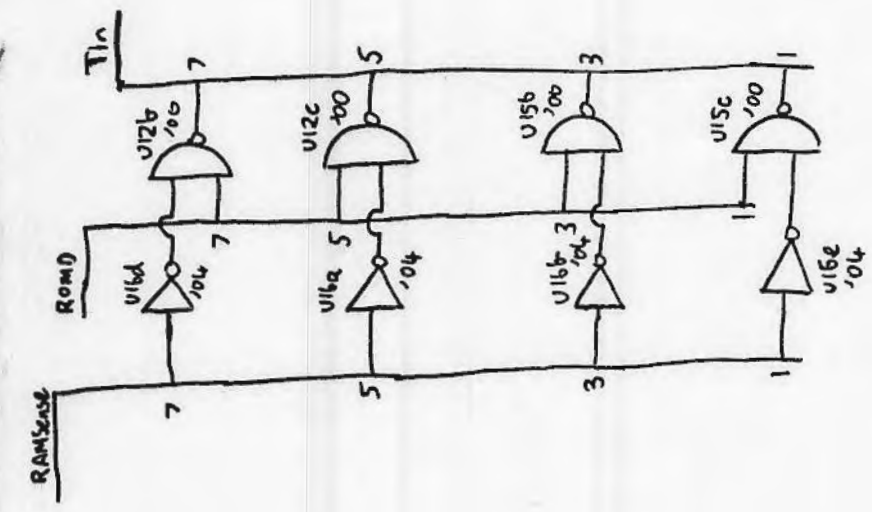
RAM Address Buffers



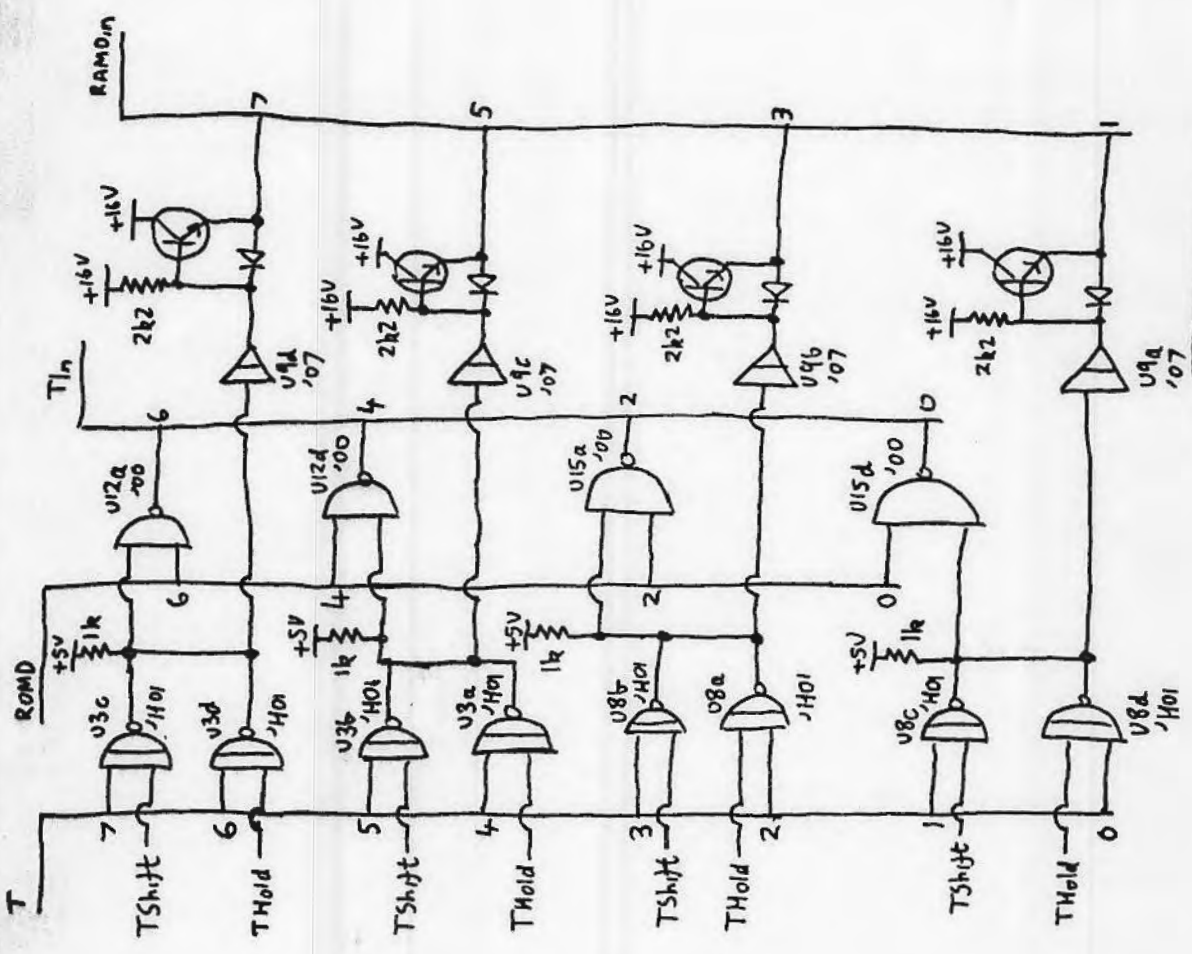


Read Data Gates (High Byte)

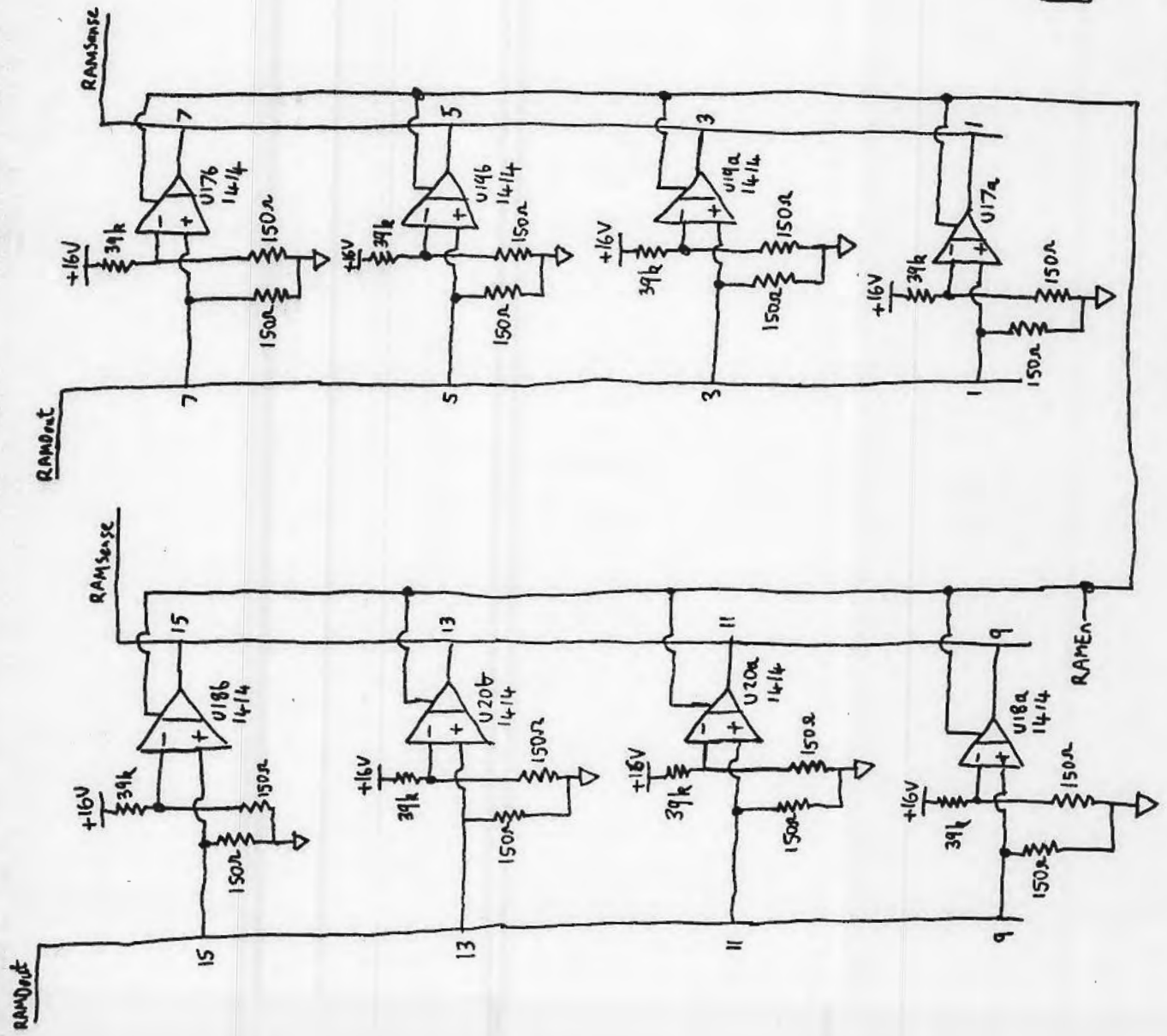
RAM Input Buffers



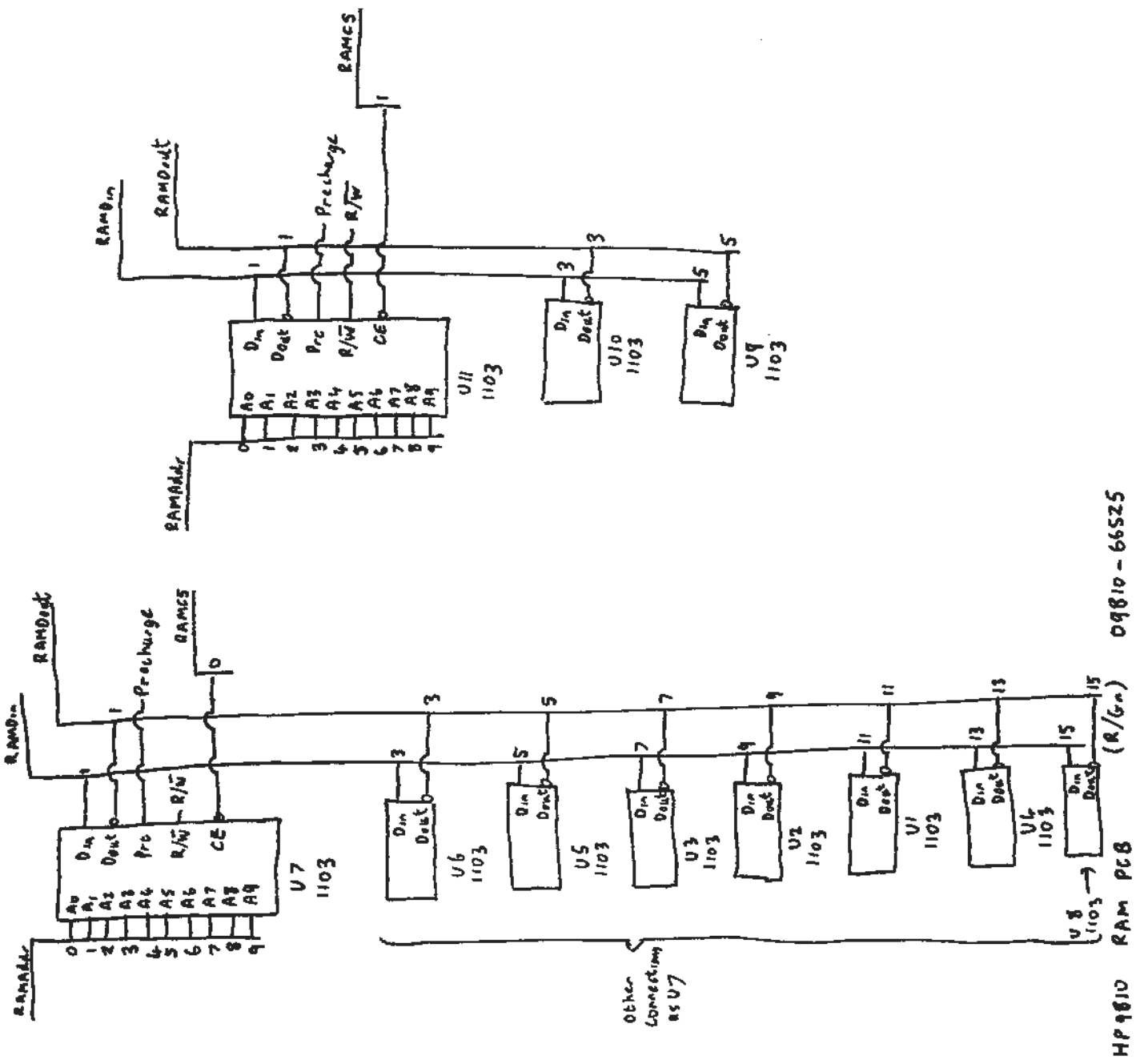
Read Data Gates (Low Byte)



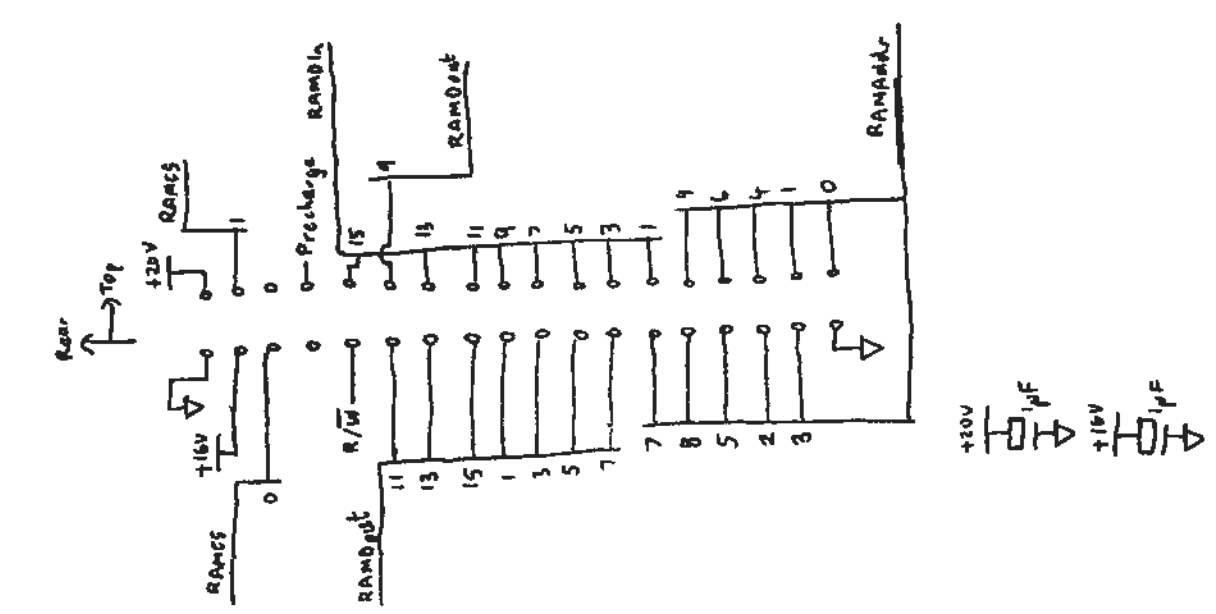
RAM Input Buffers

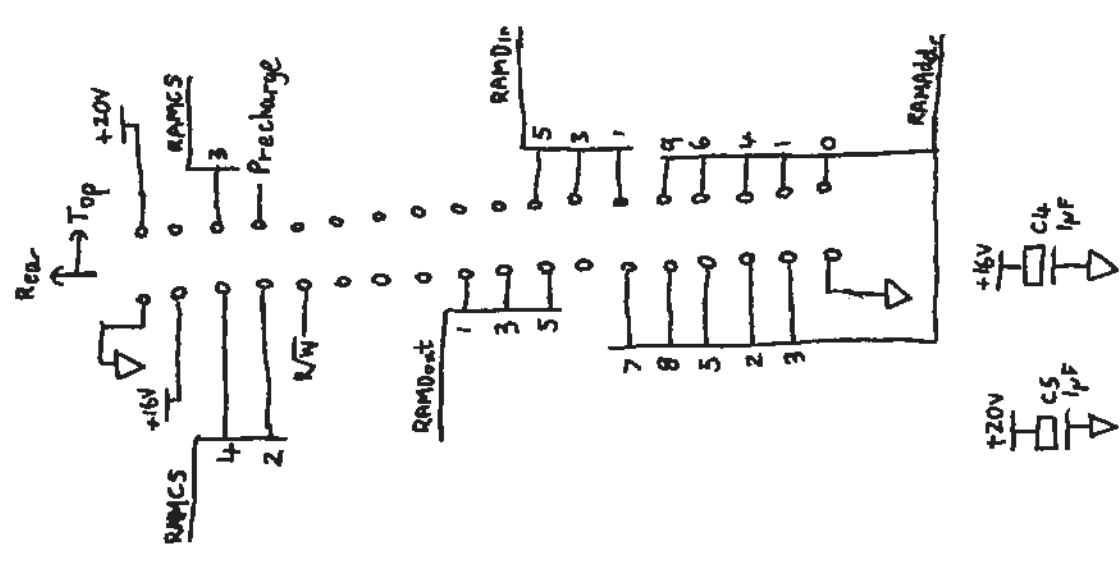
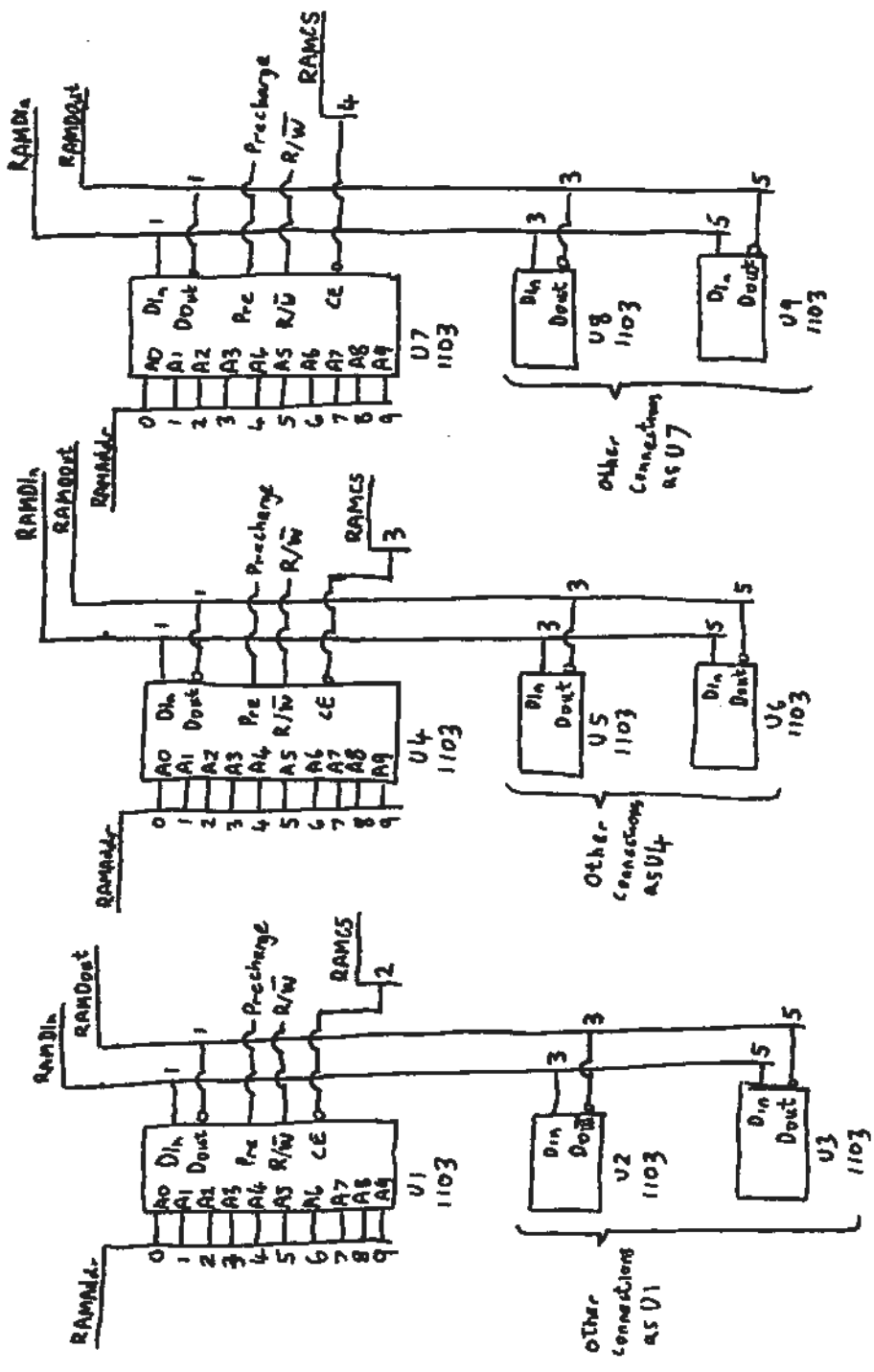


RAM Read Buffers

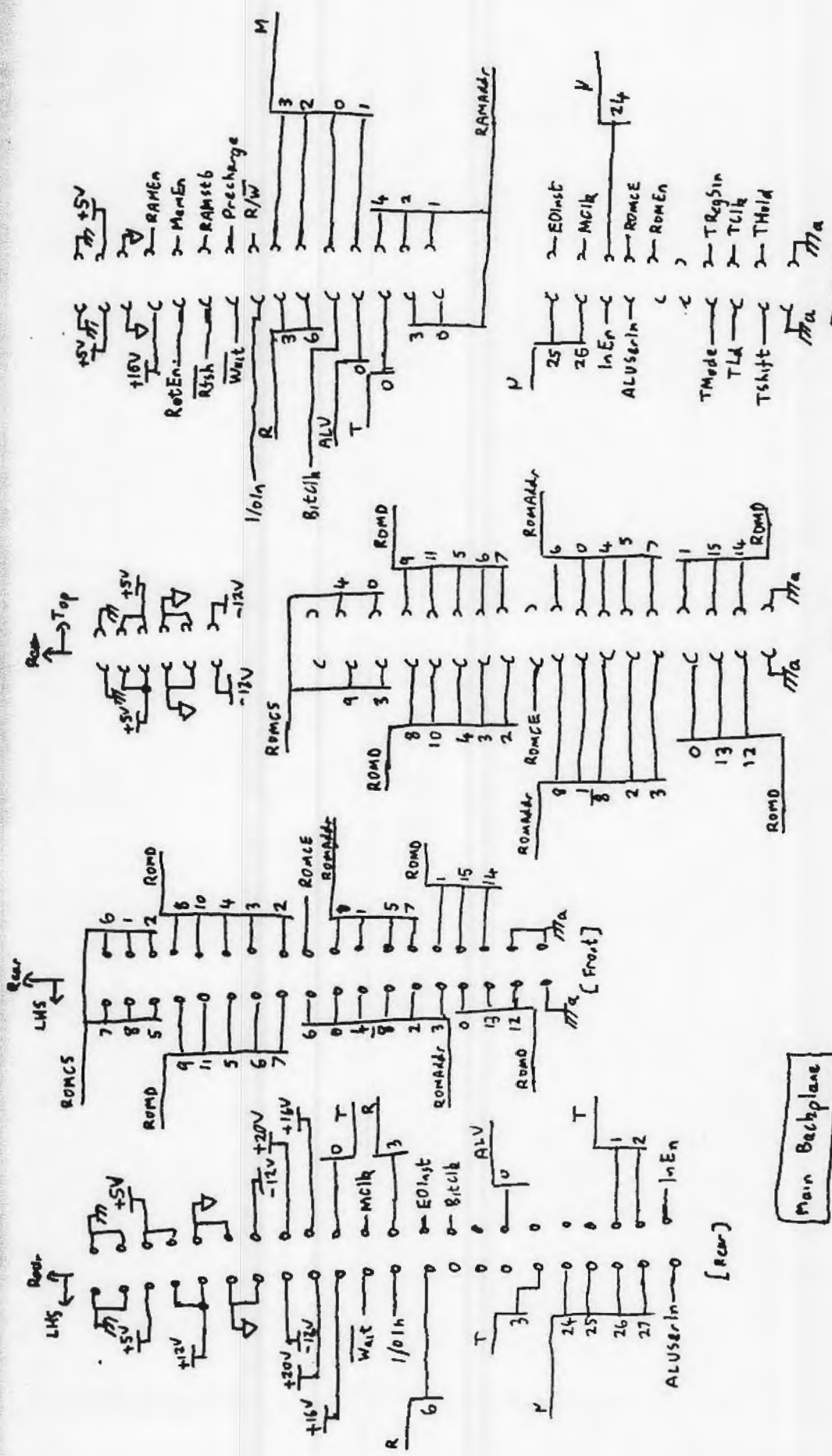


HP 9810 RAM PCB (R/Gn) 09810-66S25



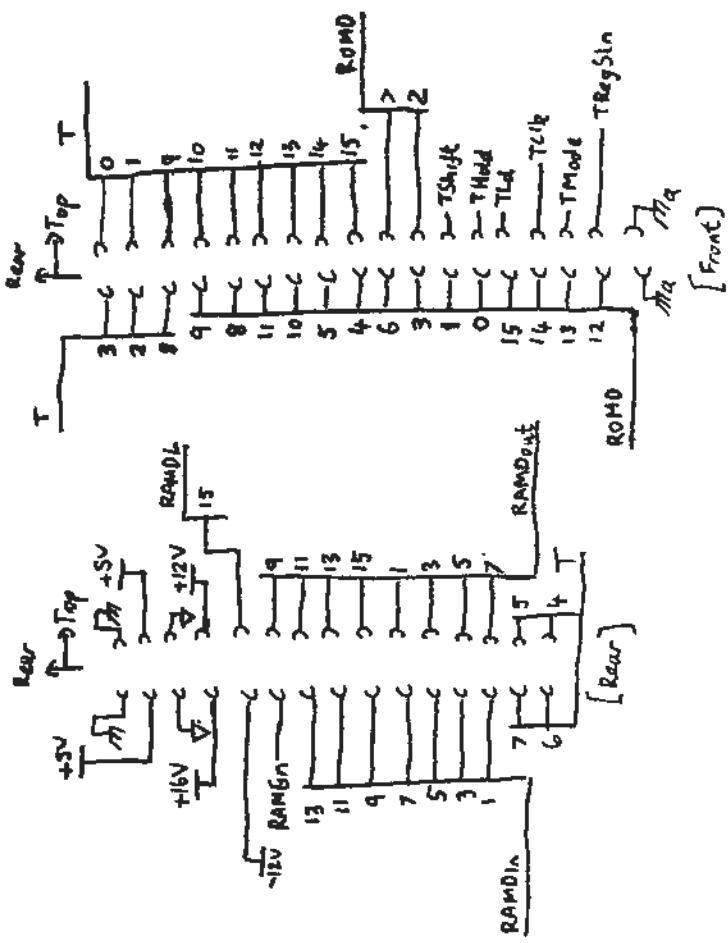


HP9810 RAM PCB 11218-66526 (R/BU)



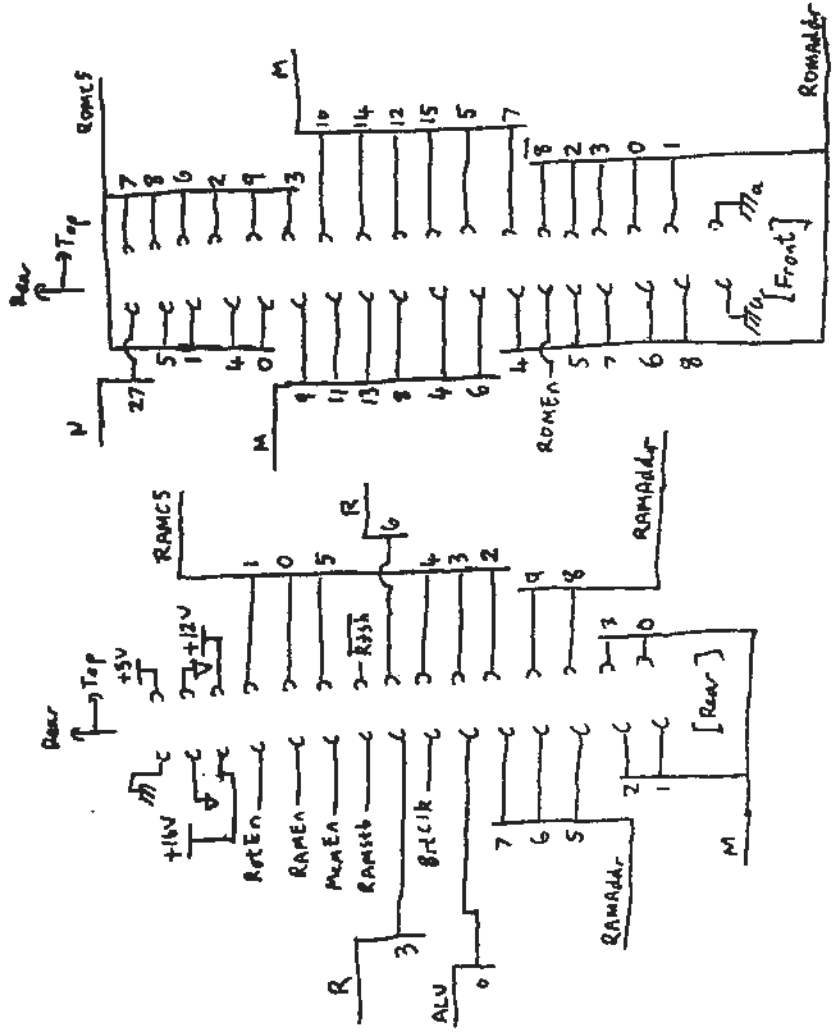
(09810-66522)

(11216-66521)



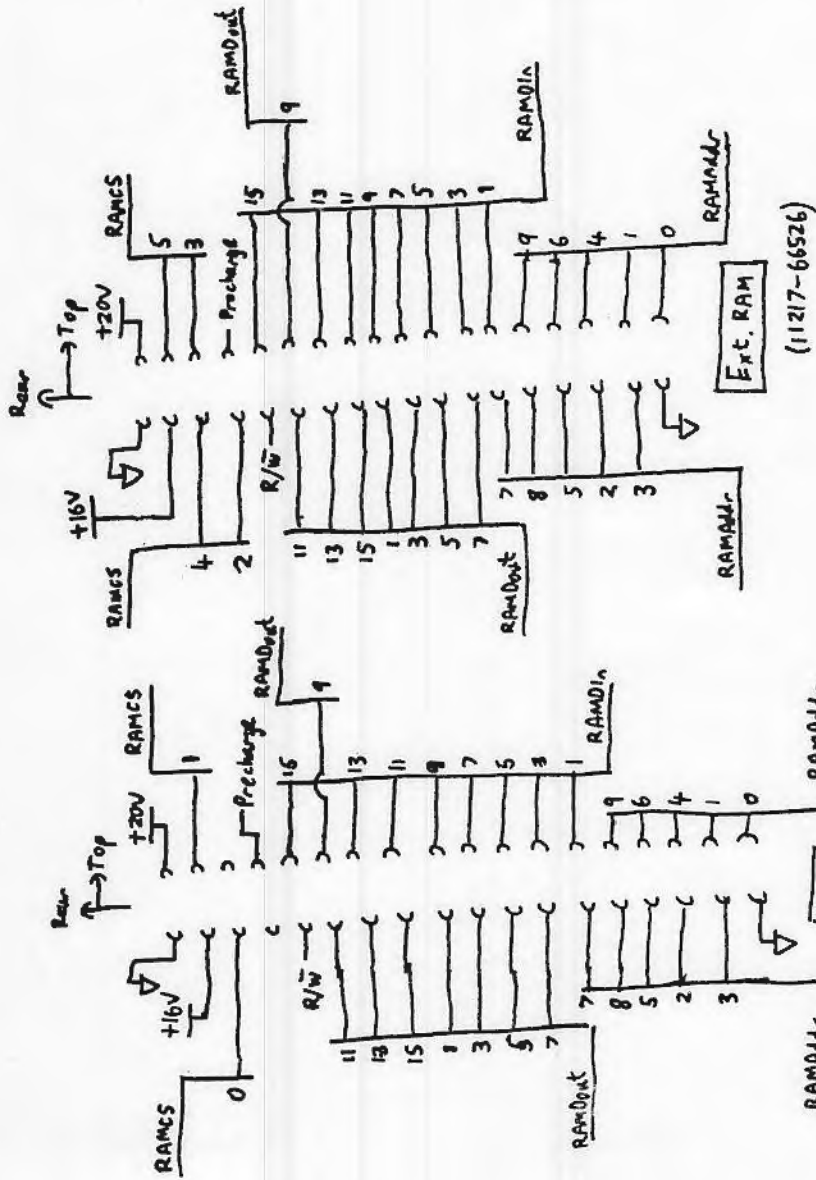
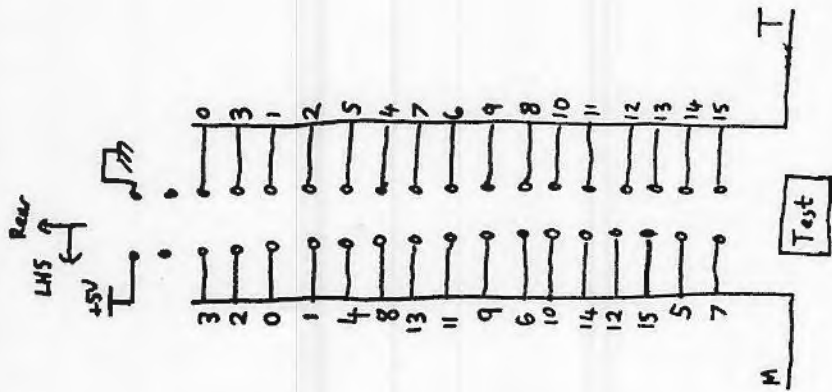
Data

(09810-66524)



Address

(09810-66523)



A	F	K
B	G	L
C	H	M
D	I	N
E	J	O

Record

Load

Keylog List

Run Prgm

Float Fix()

Set Flag	if Flag	End
Label	if x < y	Pause
Font	if x = y	Stop
Print space	if x > y	Back Stop
Sub Return	GoTo	Stop Bgm

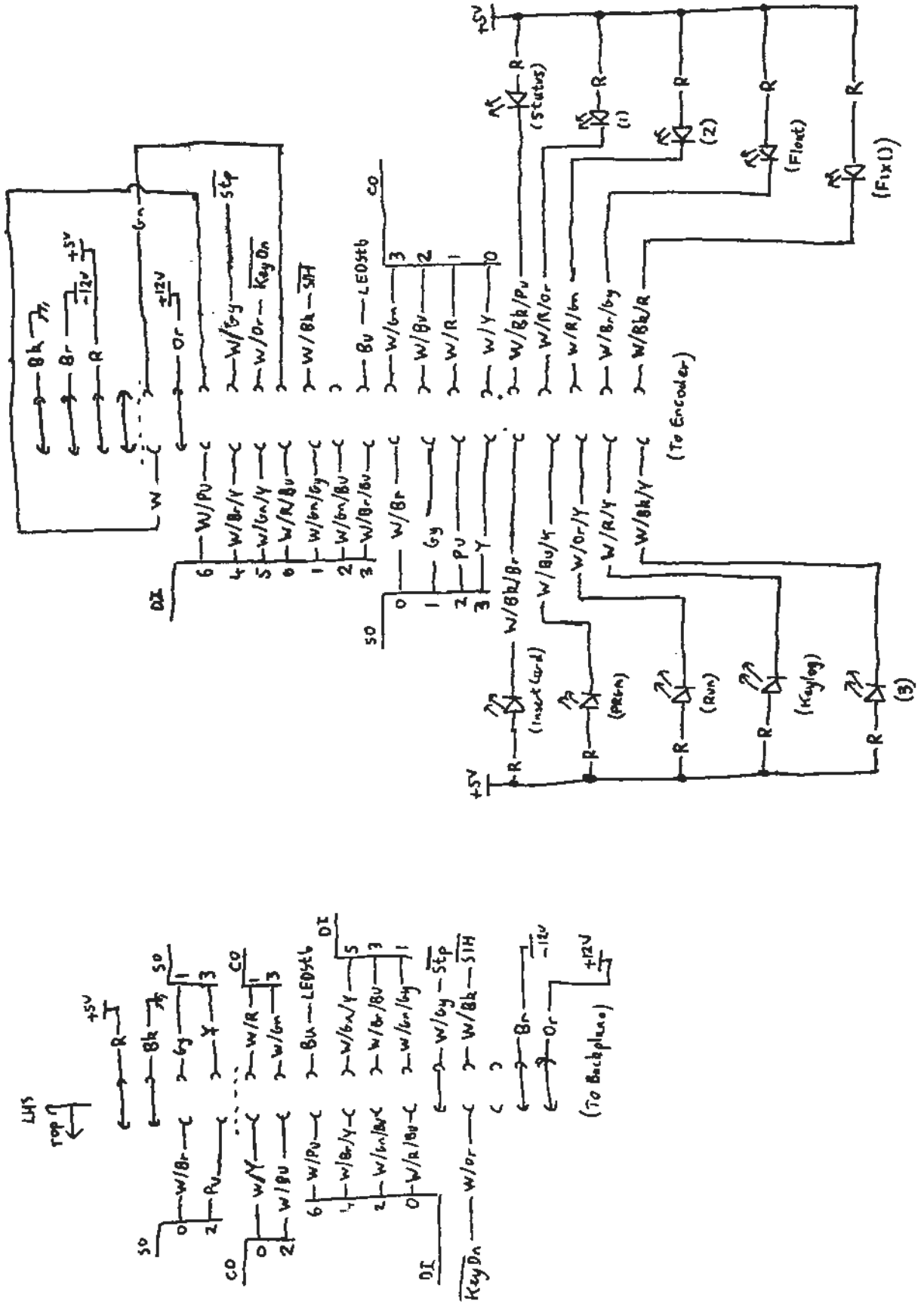
CLEAR

COPY
RT - N V E

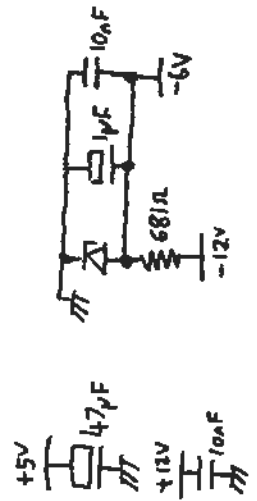
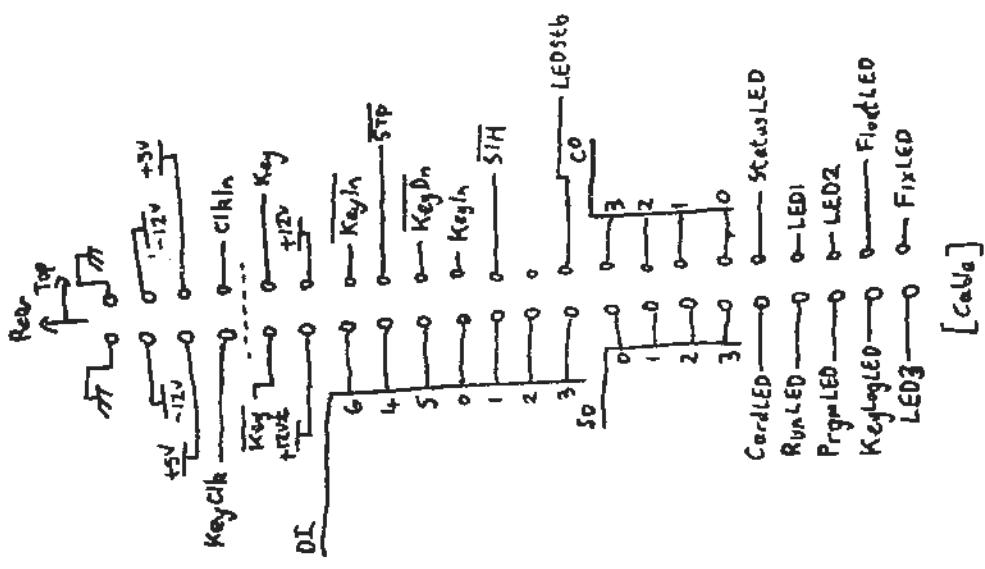
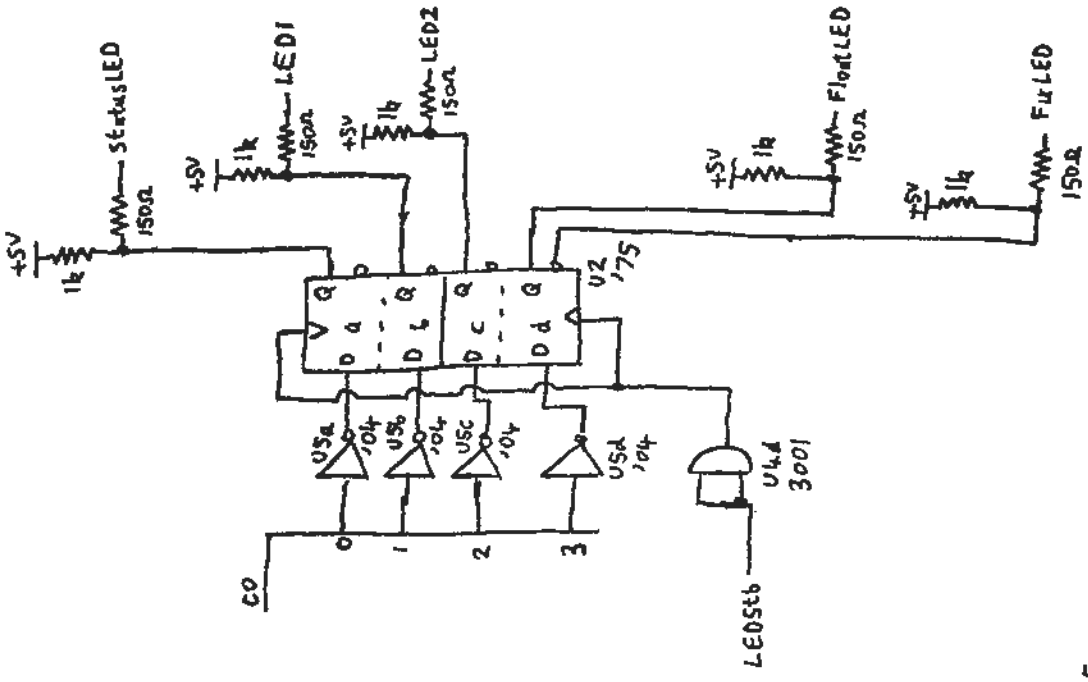
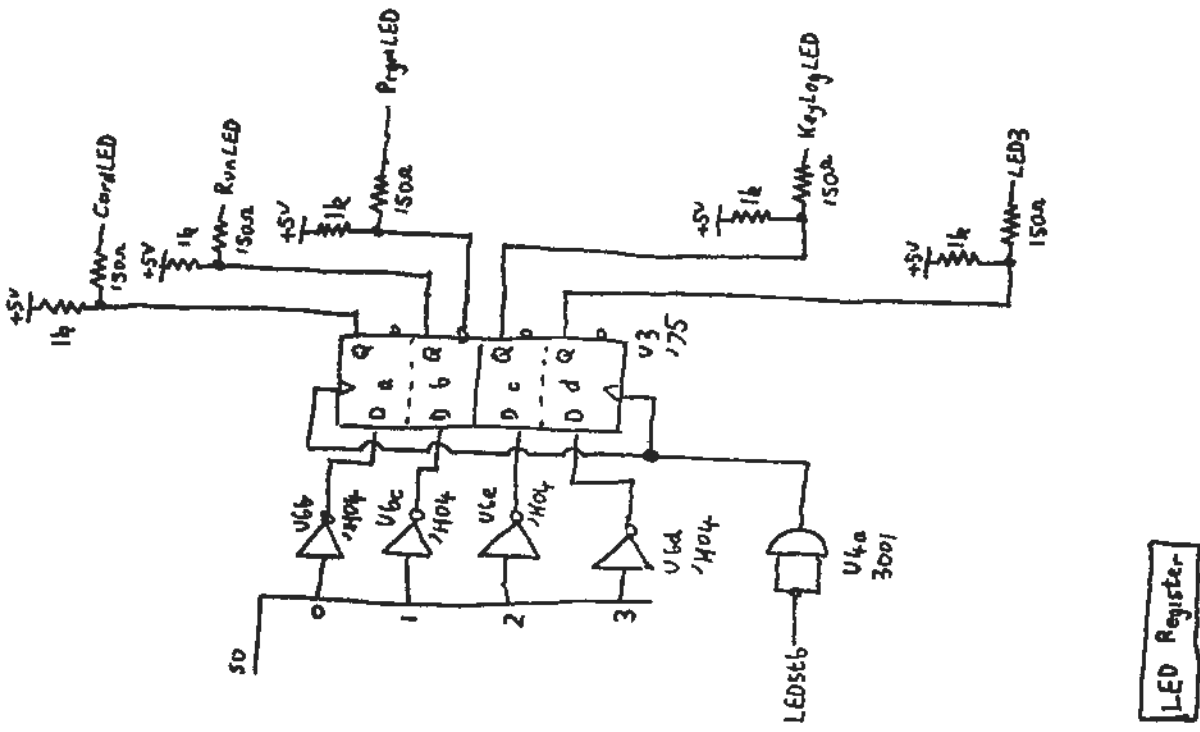
CHG SIGN	ENTER EXP	CLEAR X
7	8	9
4	5	6
1	2	3
0		.

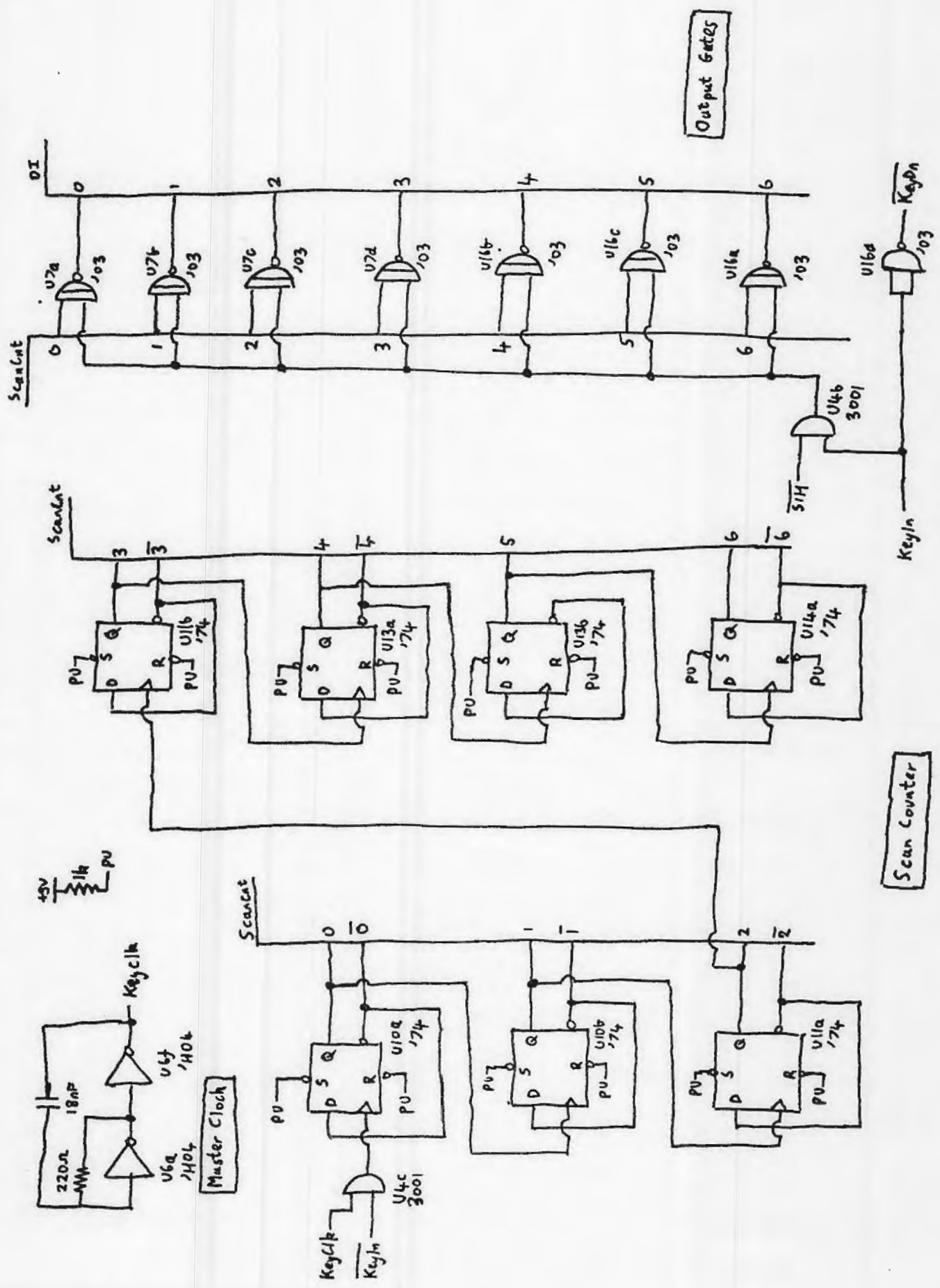
π	$1/x$	x^2
b	int x	ROLL
a	int - out	↓
y>() y<()	y>() y<()	x^y
x>() x<()	x>() x<()	↑

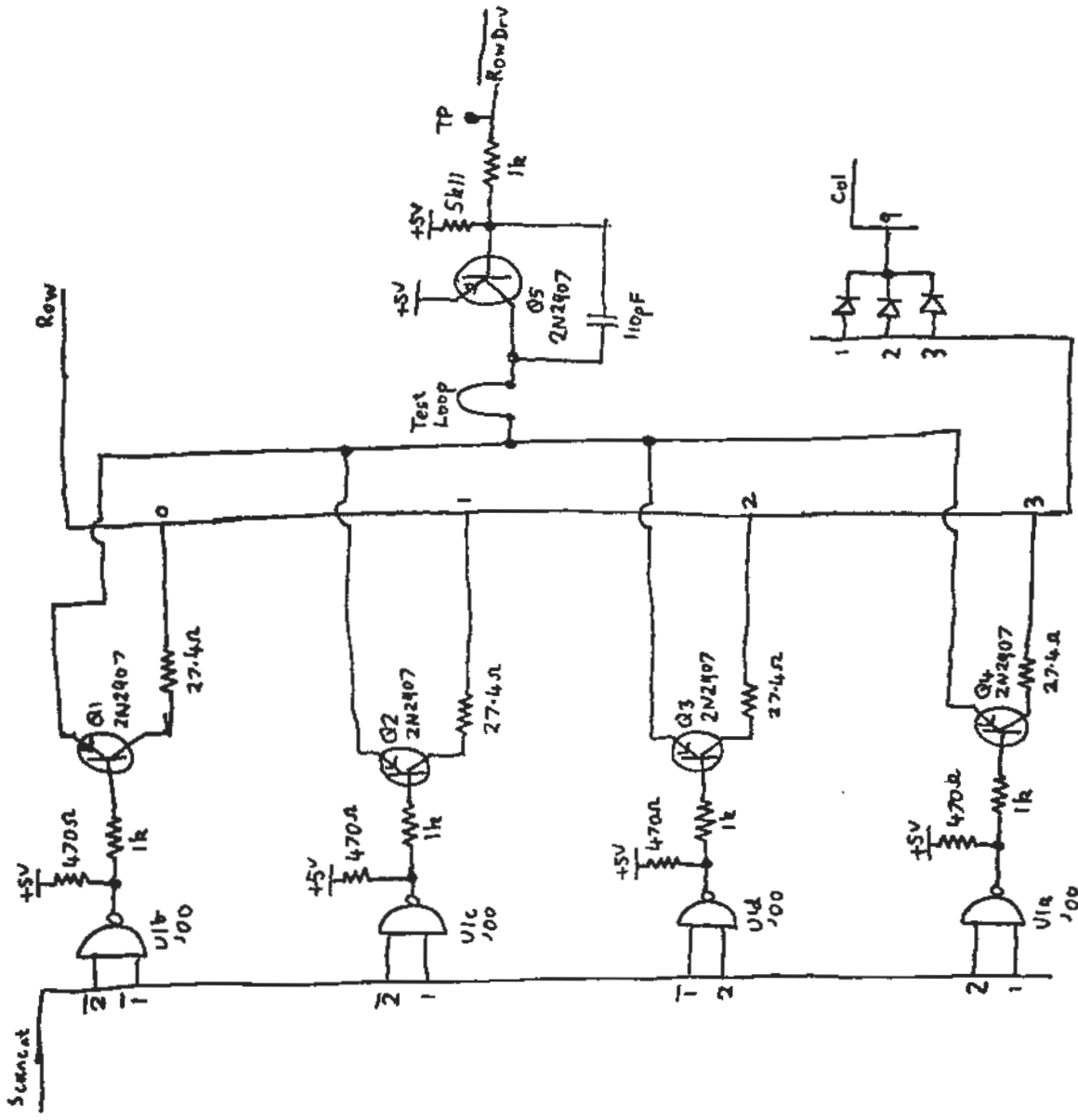
HP 9810 Keypads



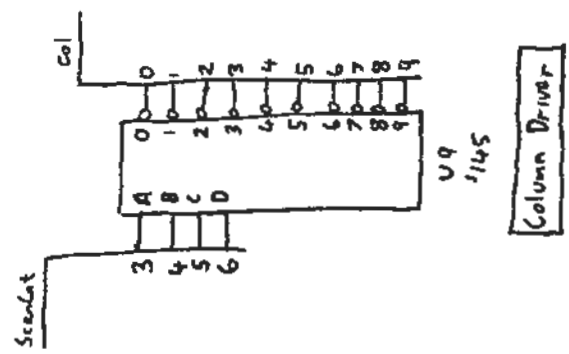
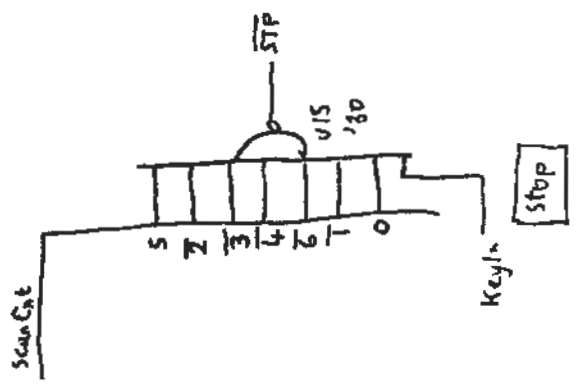
HP 9810 Keyboard Cable

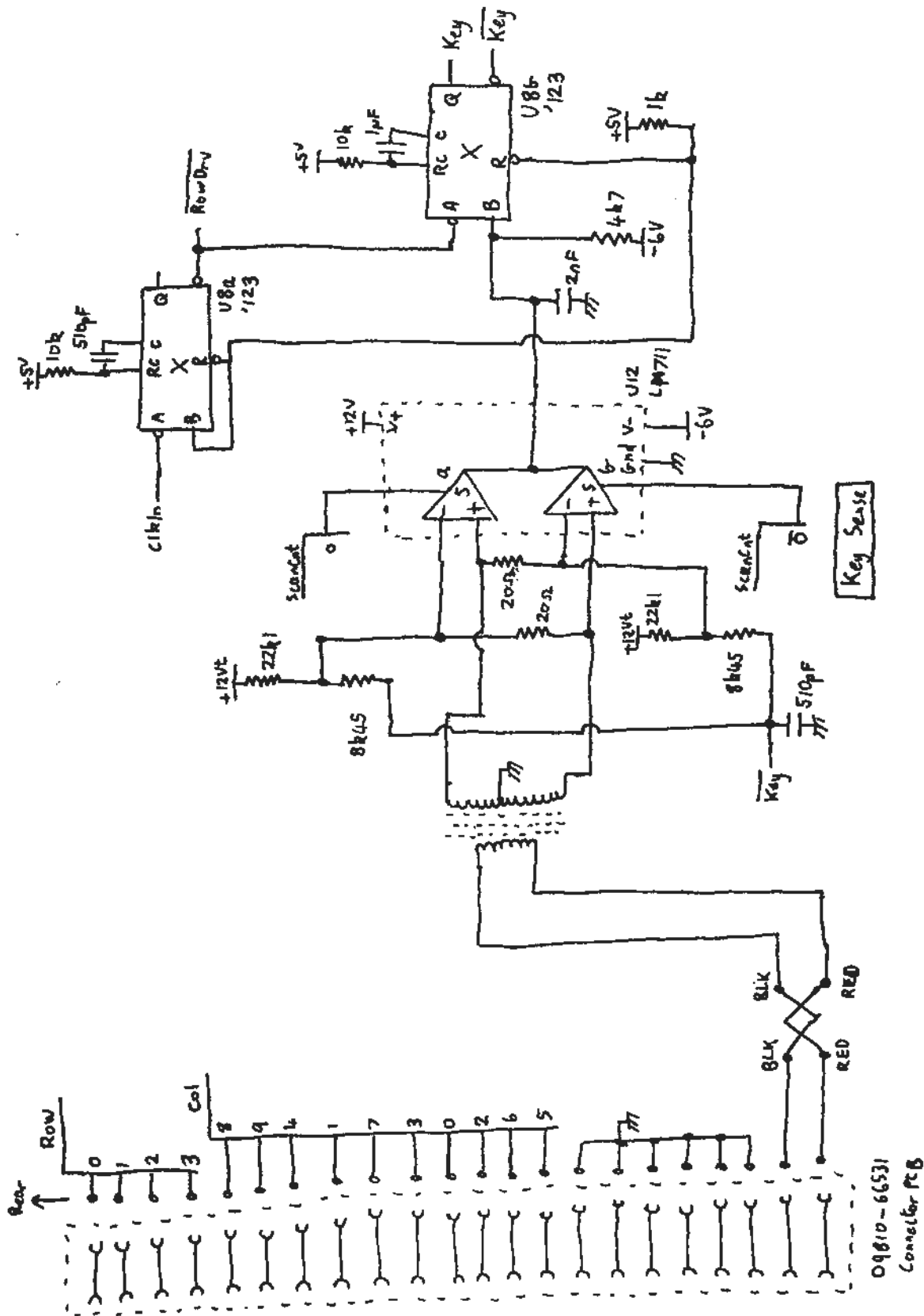






Row Driver





09810-66531
Connector PCB

LSB

← Rear

R3 → C6 — B, x←()

R1 → C6 — A, D

R0 → C6 — C, E

R2 → C7 — H, J

R3 → C1 — F, √x

R1 → C7 — L, N

R0 → C7 — M, O

R2 → C5 — K, Set Flag

R2 → C1 — G, b

R2 → C6 — I, Int(x)

R3 → C5 — π, Pause

R0 → C6 — y → (), stop

R1 → C1 — a, x²

R0 → C3 — x² y, Indirect

R2 → C2 — ↓, y²()

R1 → C2 — Roll ↑, x → ()

R3 → C2 — ↑, Enter Exp

R0 → C0 — 0, 1

R2 → C0 — 4, 5

R2 → C3 — ;, —

R3 → C7 — √x, SUB
Return

R1 → C3 — +, Change Sign

R3 → C3 — X, Clear x

R0 → C1 — 8, 9

R3 → C0 — 6, 7

R1 → C0 — 2, 3

R0 → C2 — Clear, 0

R3 → C4 — End, Continue

R2 → C4 — Goto, Print
Space

R1 → C4 — IF Eq, FMT

R0 → C5 — IF x=y, Label

R1 → C5 — IF x<y, IF x>y

R0 → C8 — Back Step, Step Prgm

R1 → C8 — Load, Record

R2 → C8 — List, Keylog

R3 → C8 — Run, Prgm

R0 → C9 — Float, F.x()

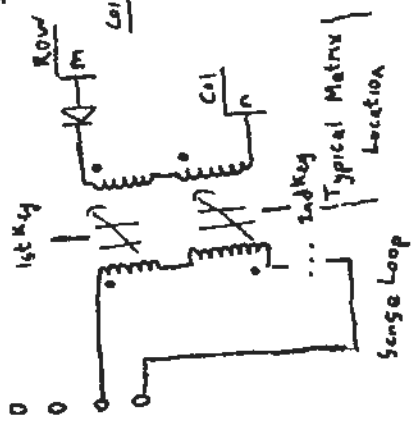
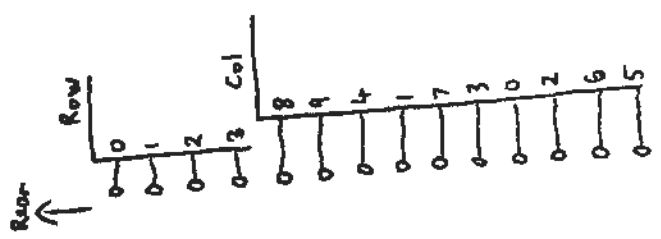
HP4810 Keyboard

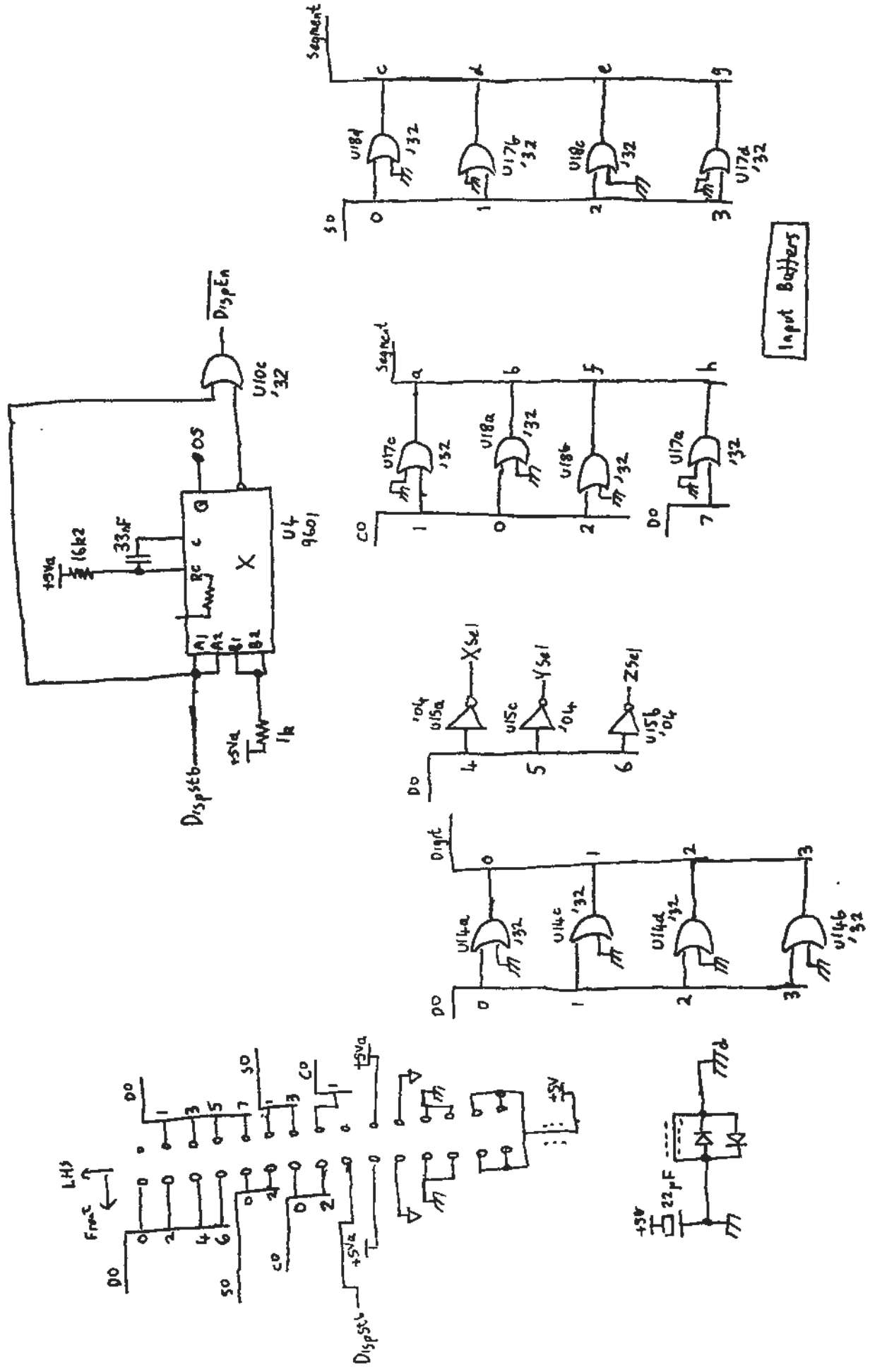
(04810-66533)

Diodes

Underlined names → LSB Set

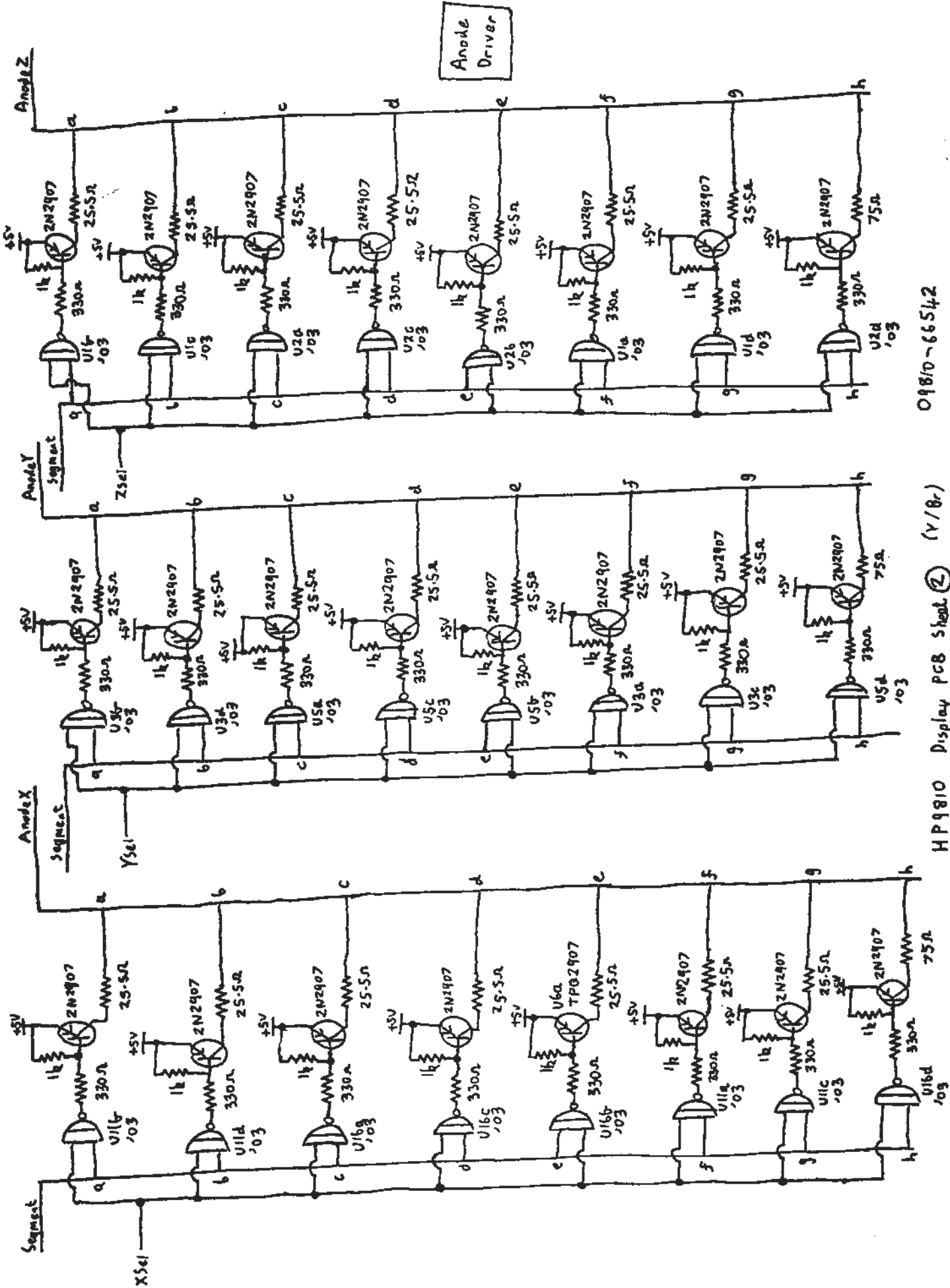
	0	1	2	3	4	5	6	7	8	9
Row	0	1	2	3	4	5	6	7	8	9
0	8 9	Clear •	Indirect x ₂ y	y _x (Stop	if x=y Label	E C	M O	Stop Prgm Each Stop	Fix(?) Float	
1	2 3	RollP x→()	Change Sign +	Fmt if Flag	if x<y if x>y	A D	L N	Record Load		
2	4 5	y20 ↓	- ÷	GoTo Print Space	Set Flag K	Int(x) I	H J	List KeyLog		
3	6 7	Enter Exp ↑	X Clear X	End Continue	π Pause	B x←()	√x sub Return	Prgm R/DN		





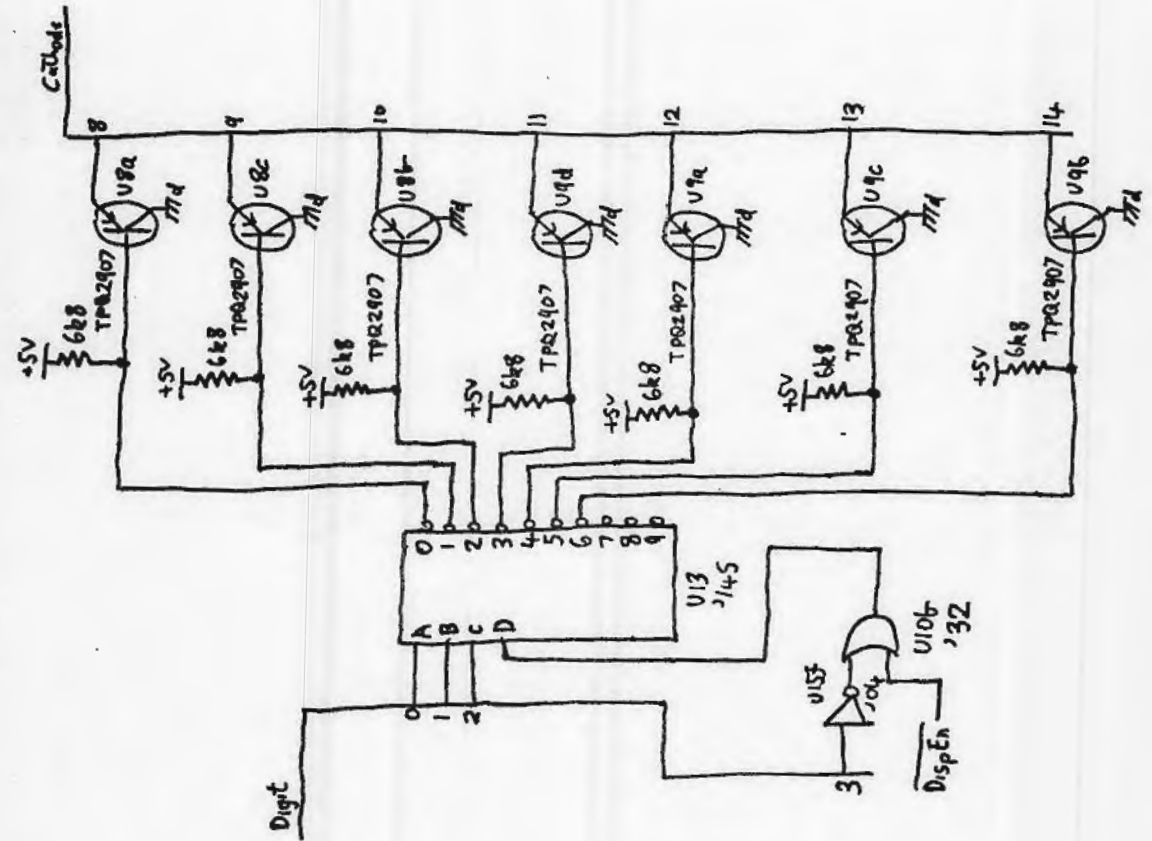
09810-66542

HP 9810 Display PCB Sheet ① (Y/B)

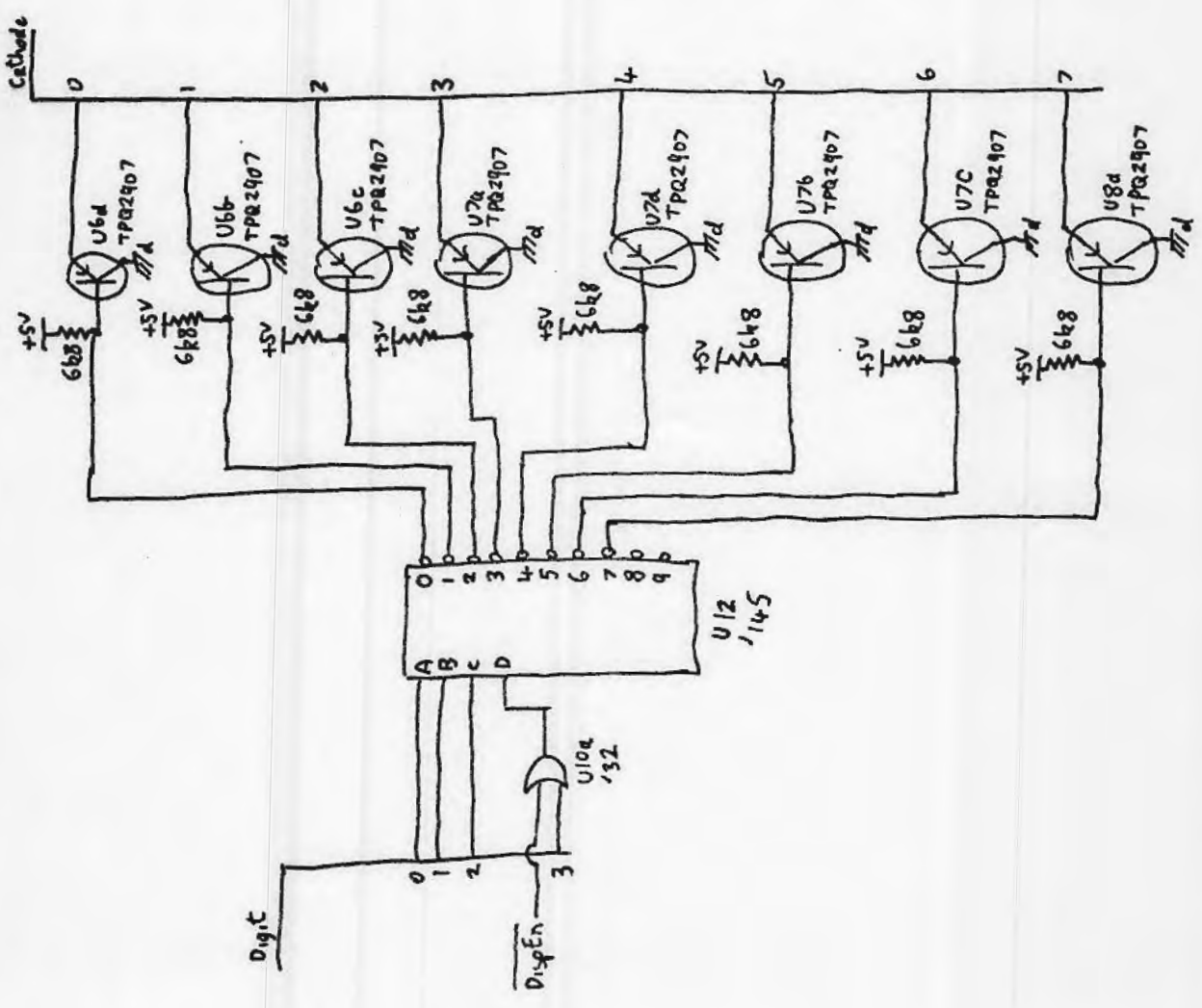


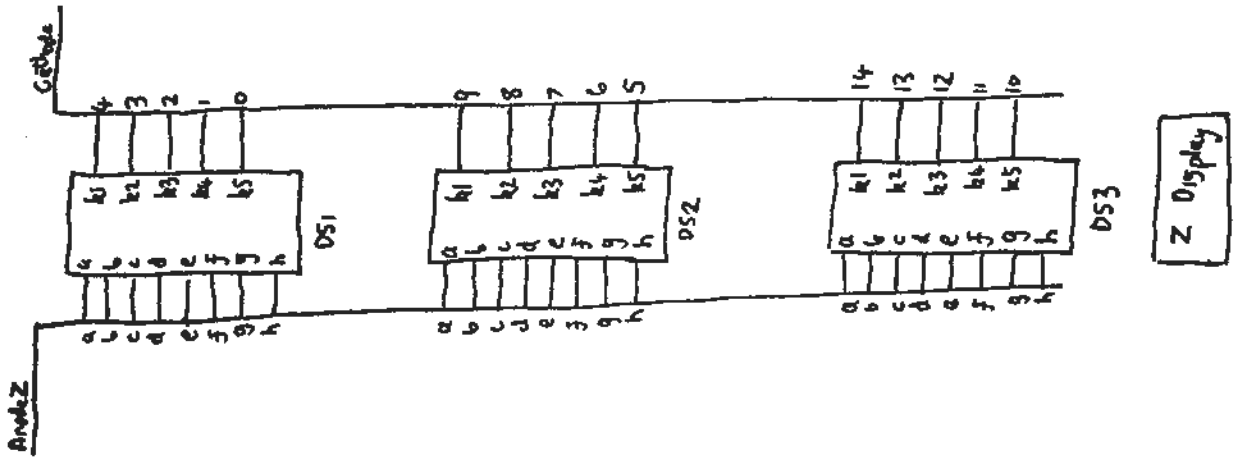
01810-66542

HP 9810 Display PCB Sheet 2 (V18.1)

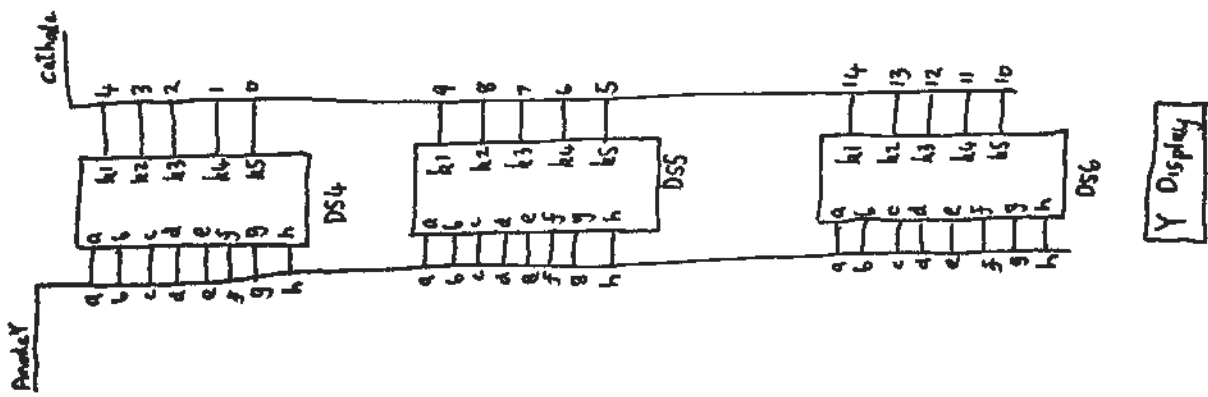


Cathode Driver

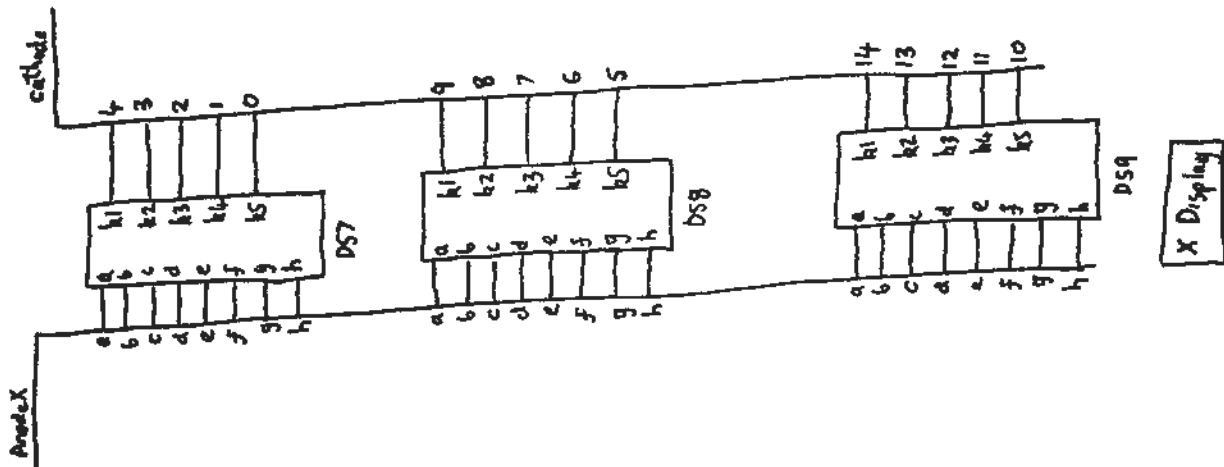




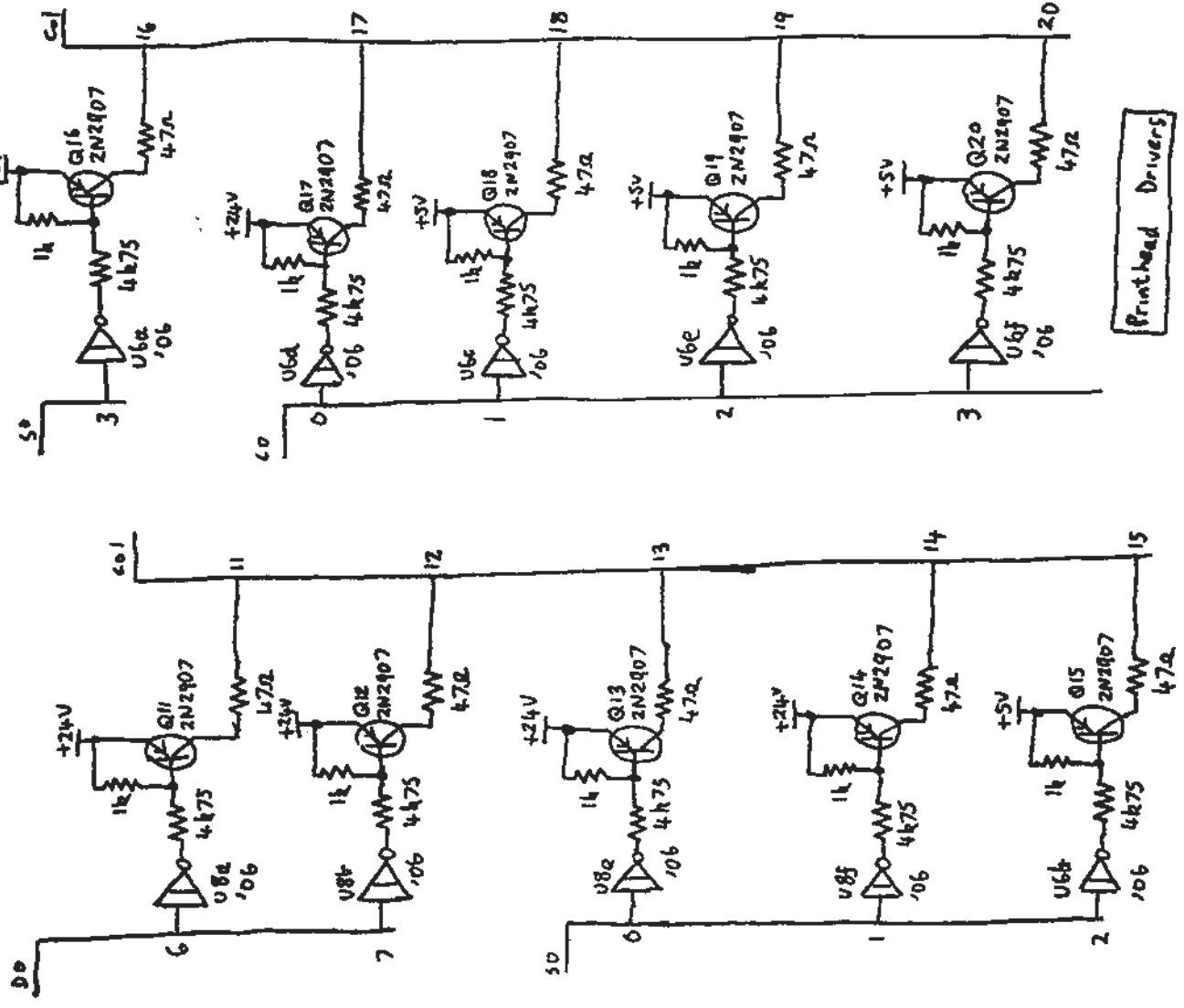
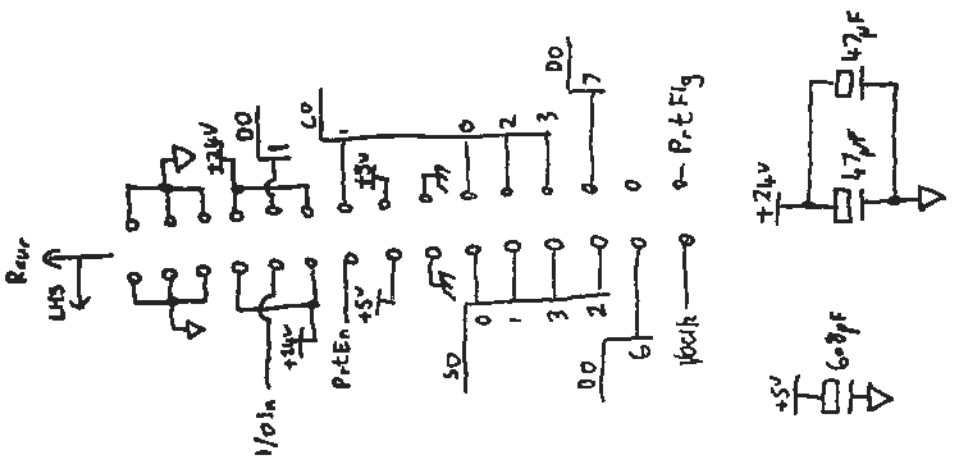
Z Display



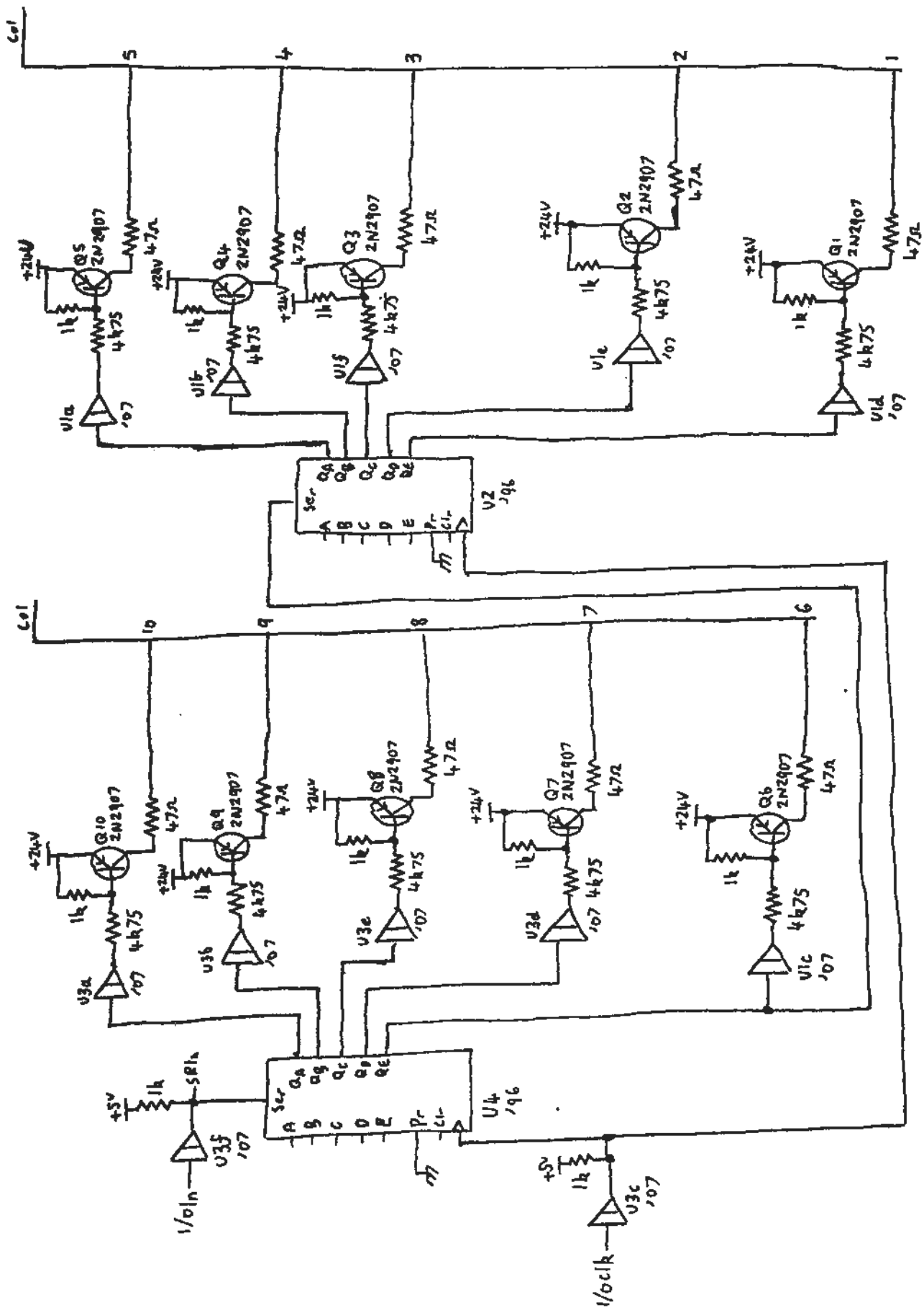
Y Display



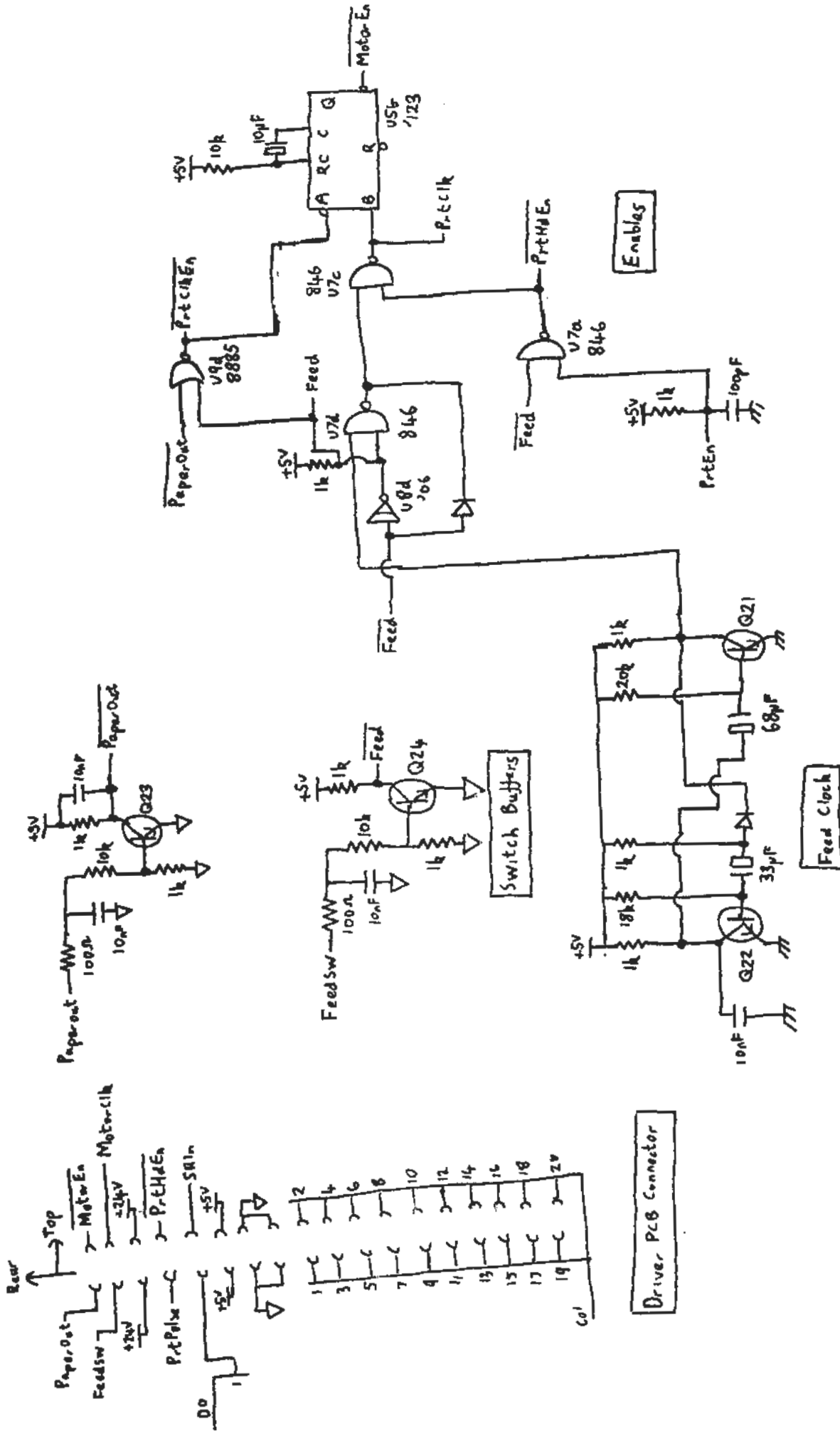
X Display

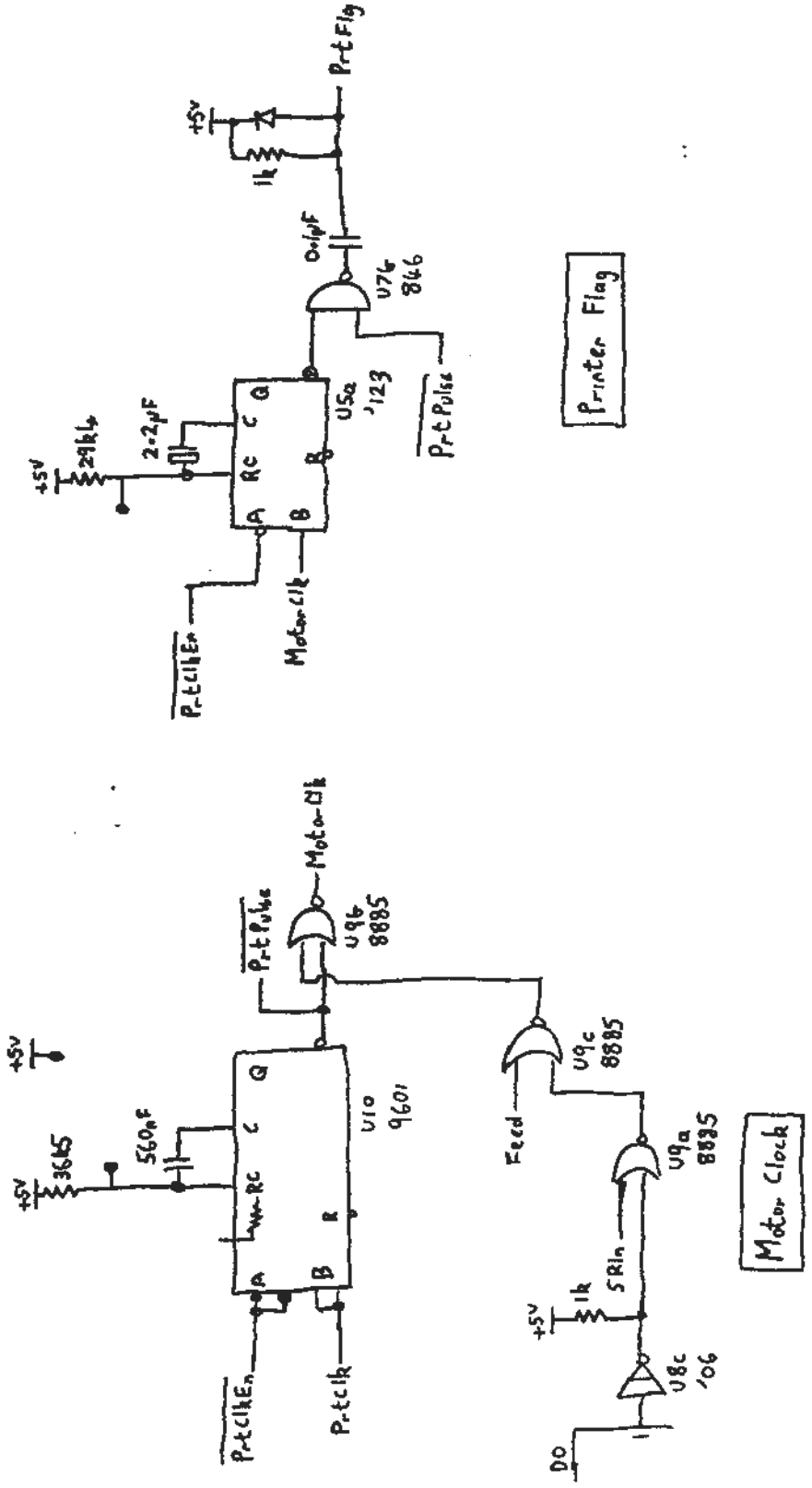


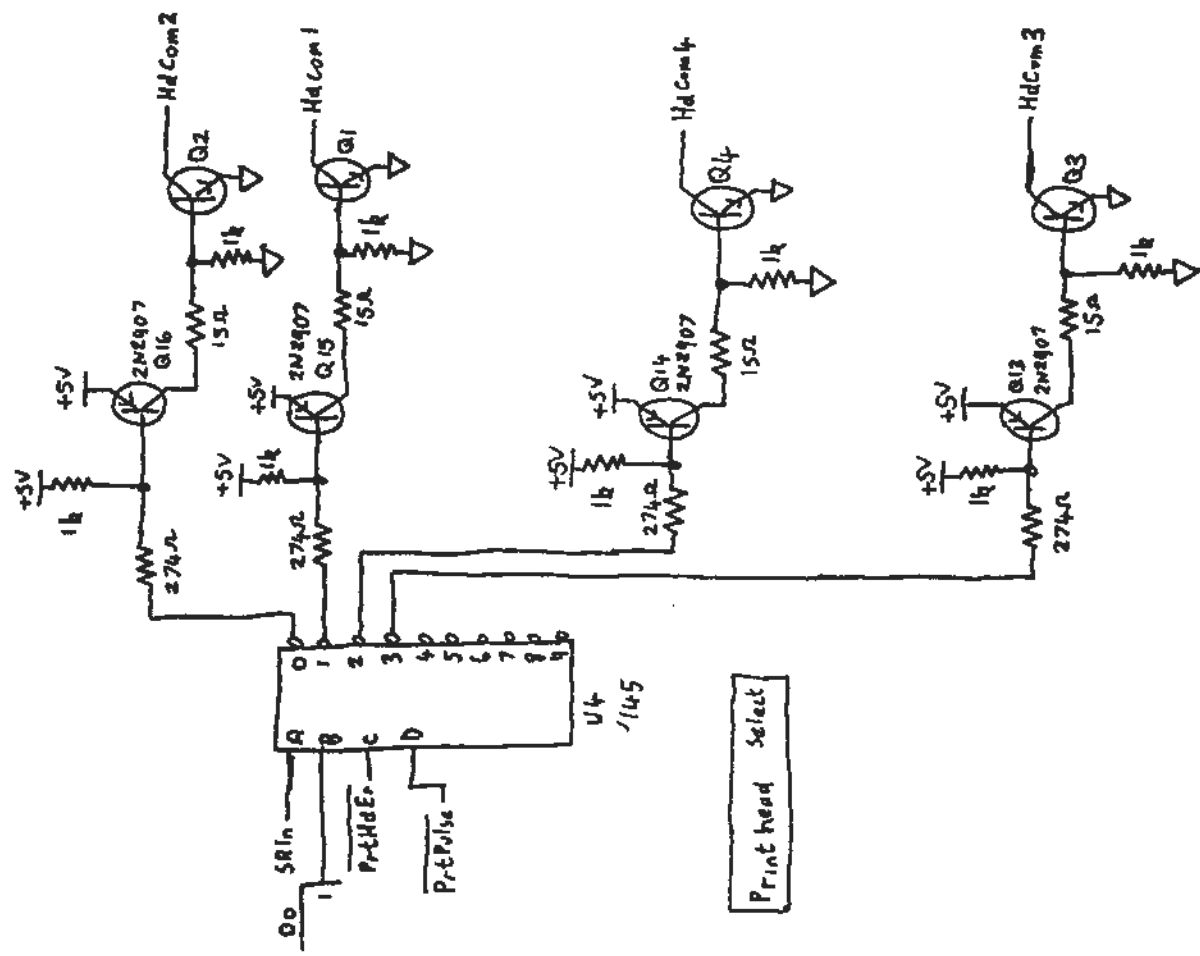
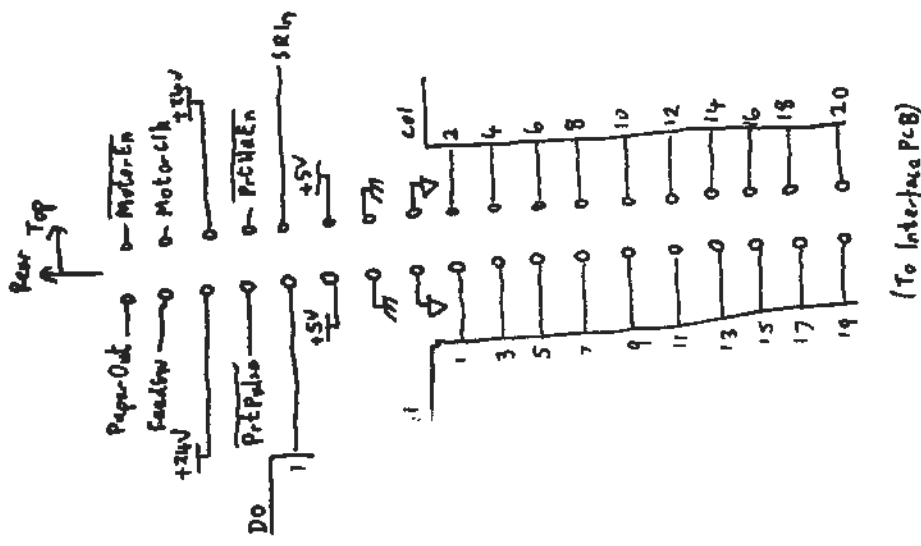
Printer Drivers

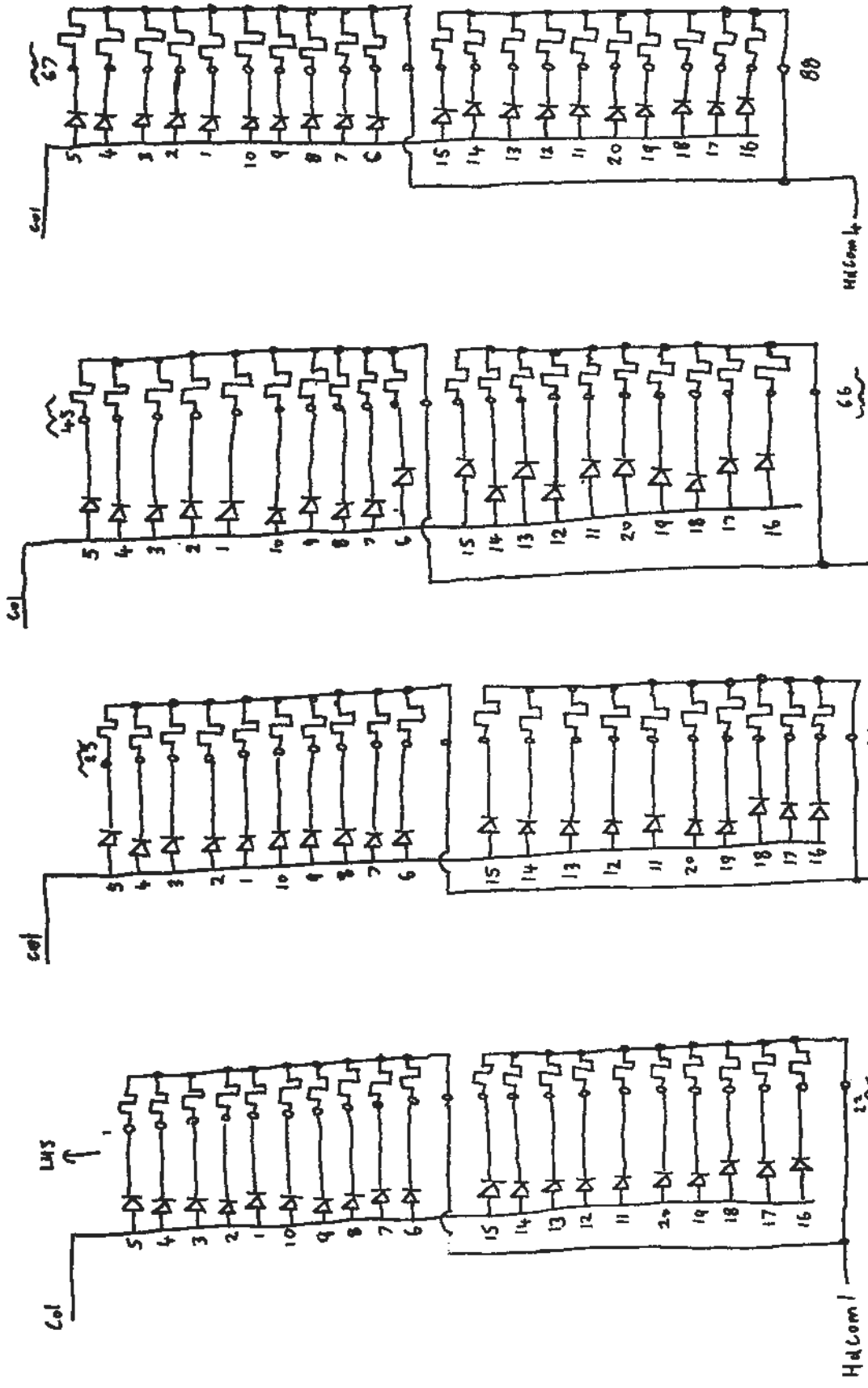


Print head Drivers



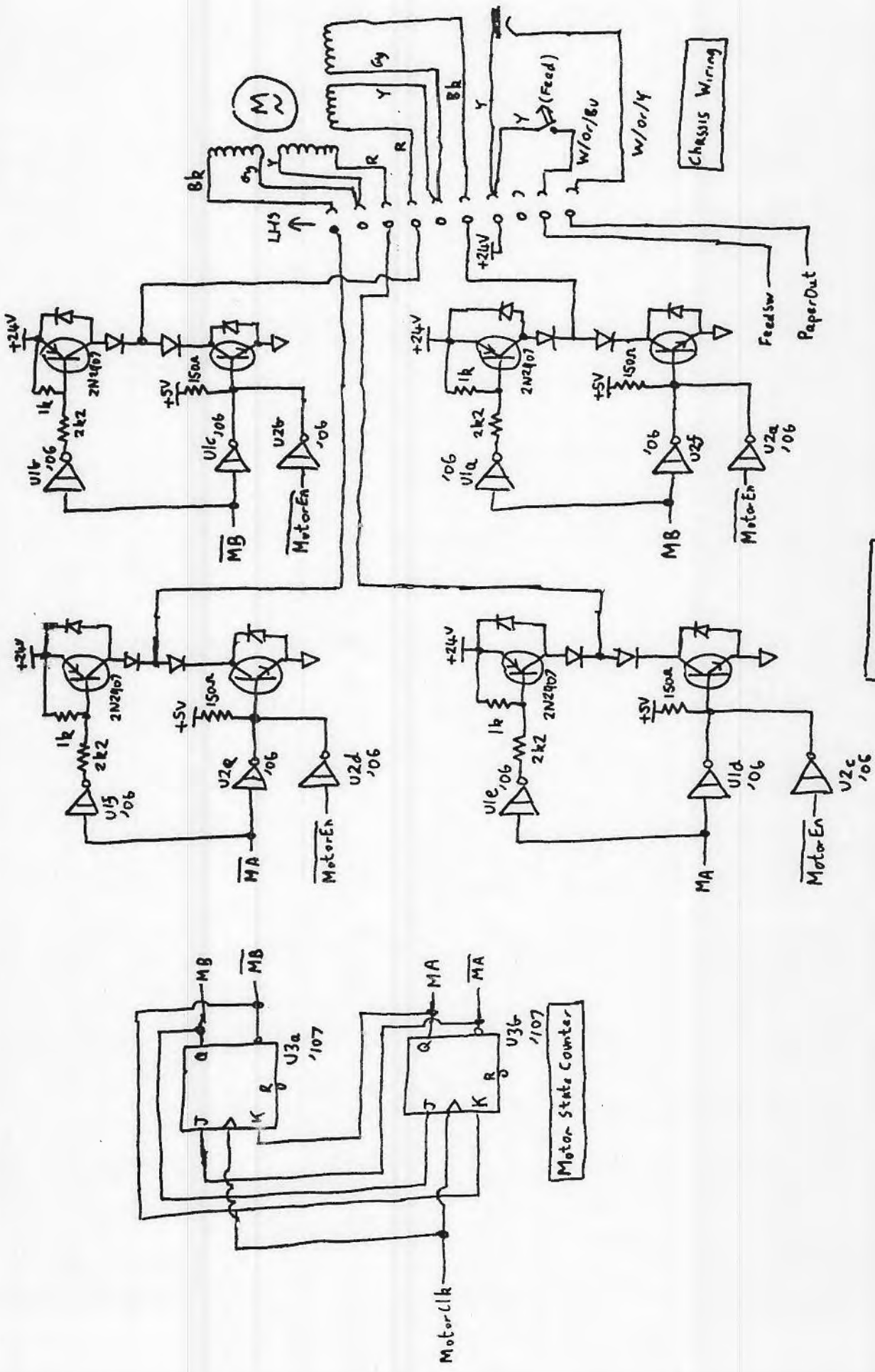






Print head

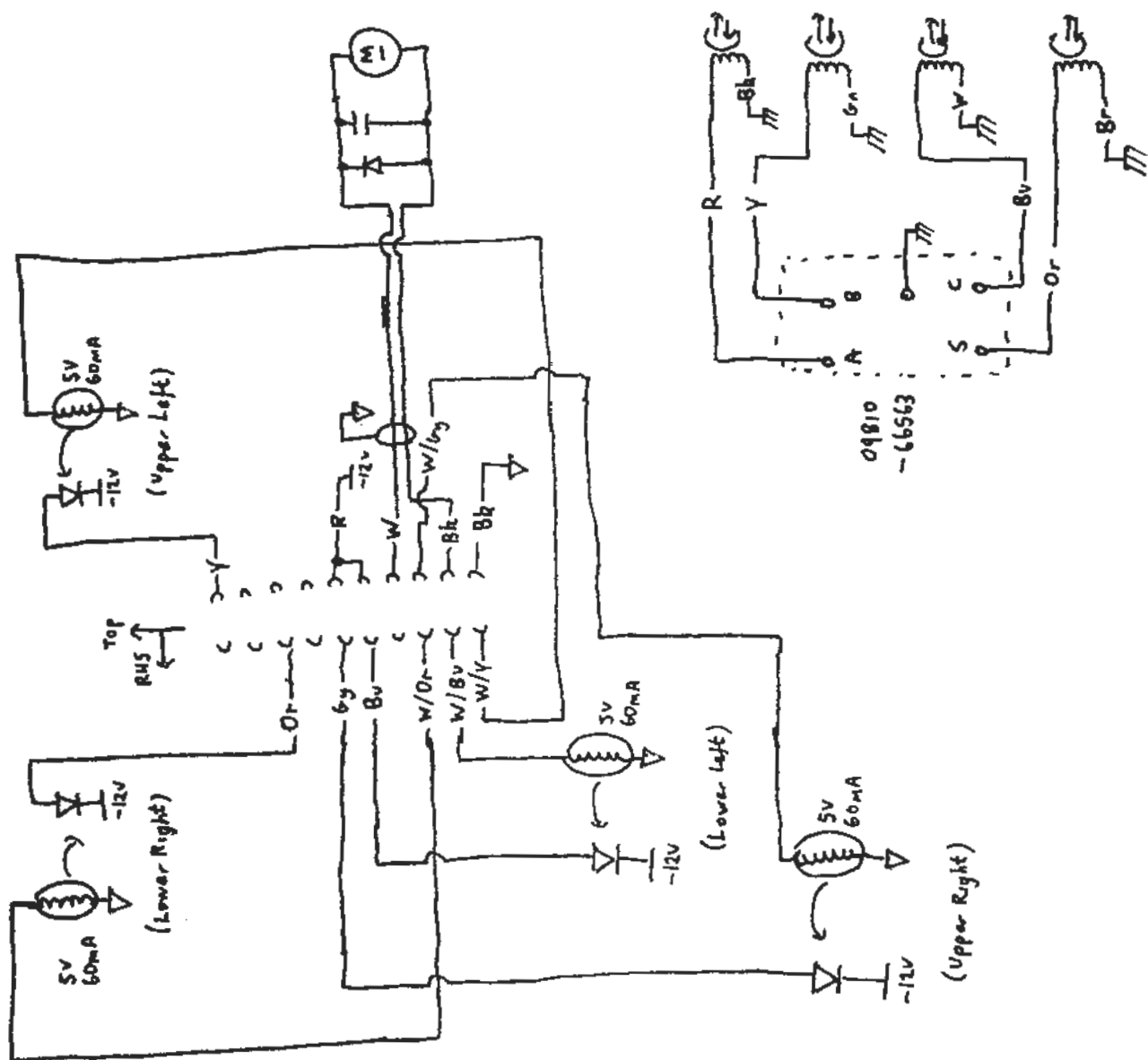
(1810-082
Print head)



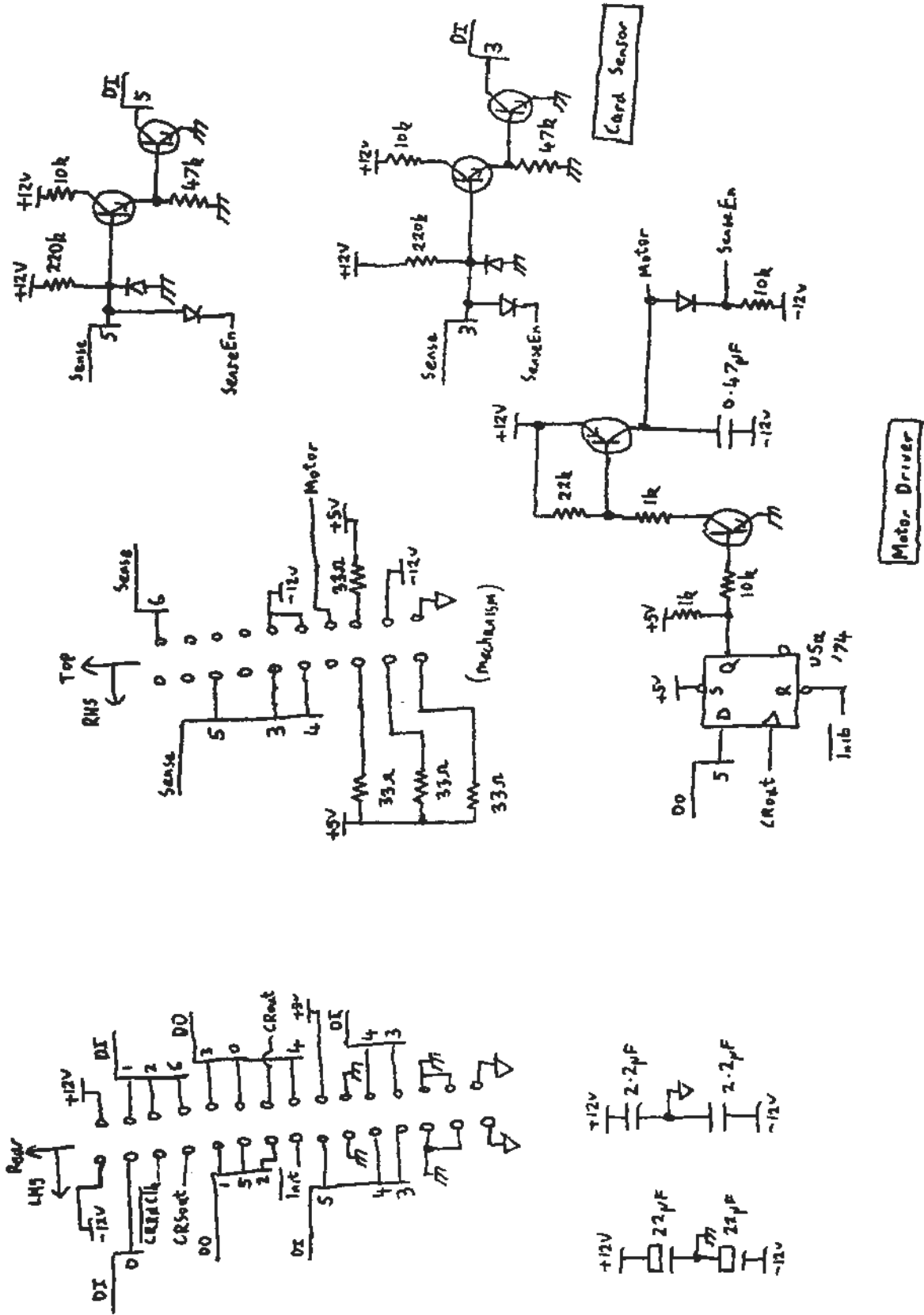
Motor Drivers

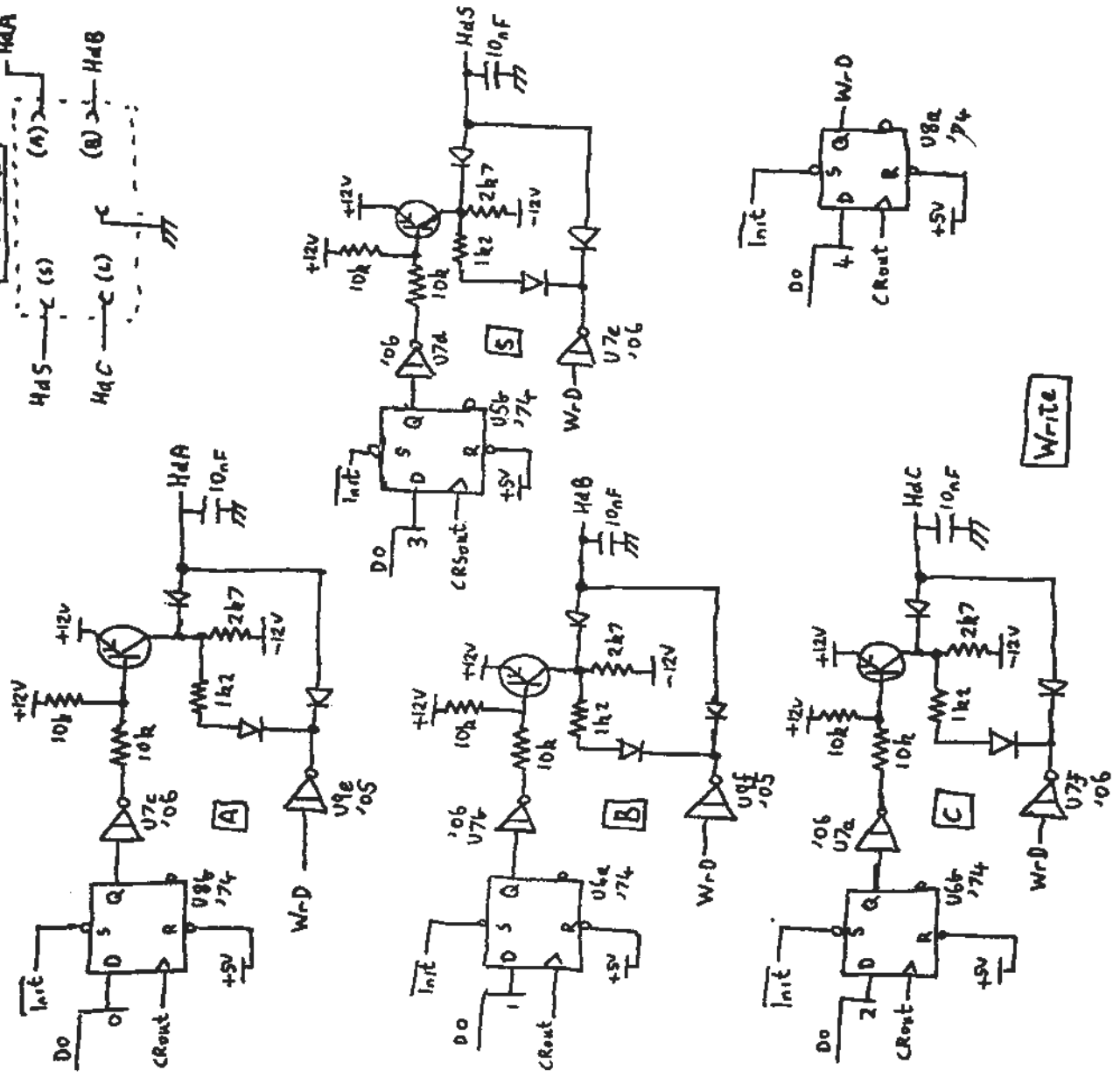
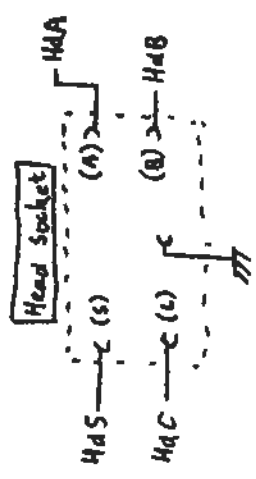
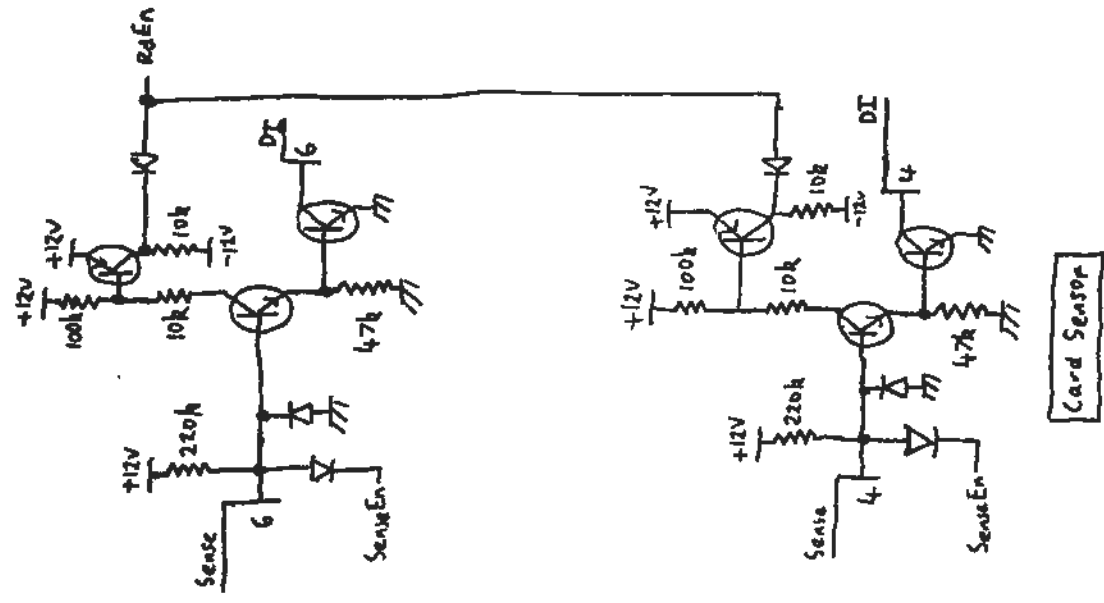
Chassis Wiring

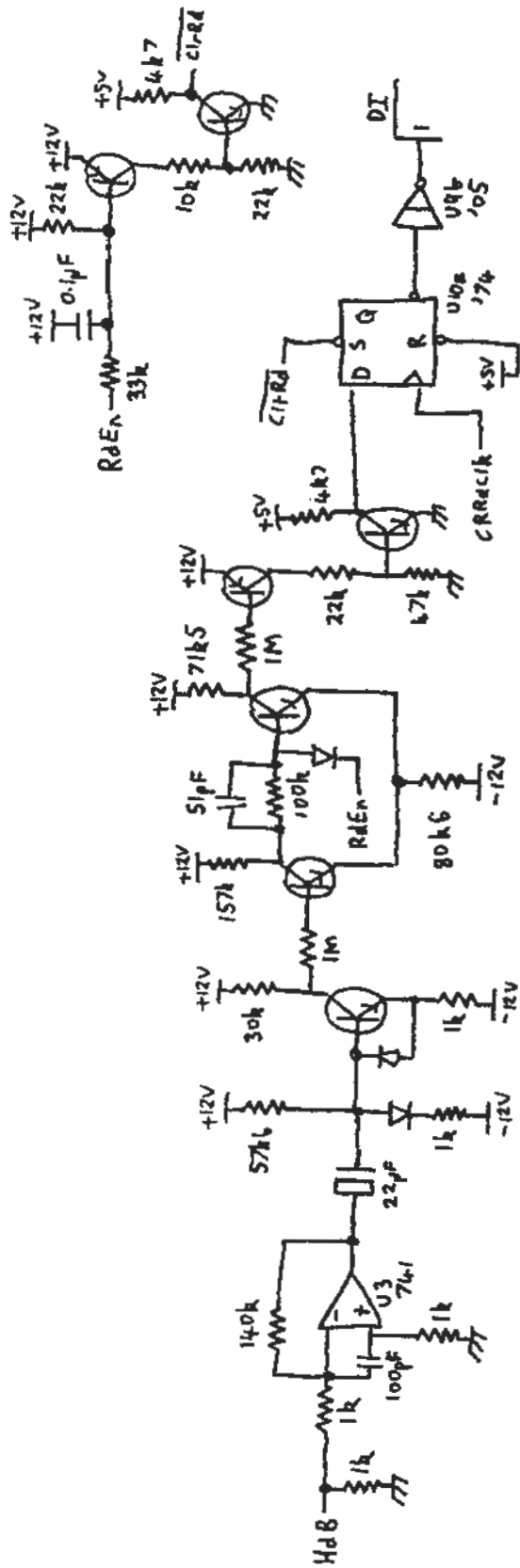
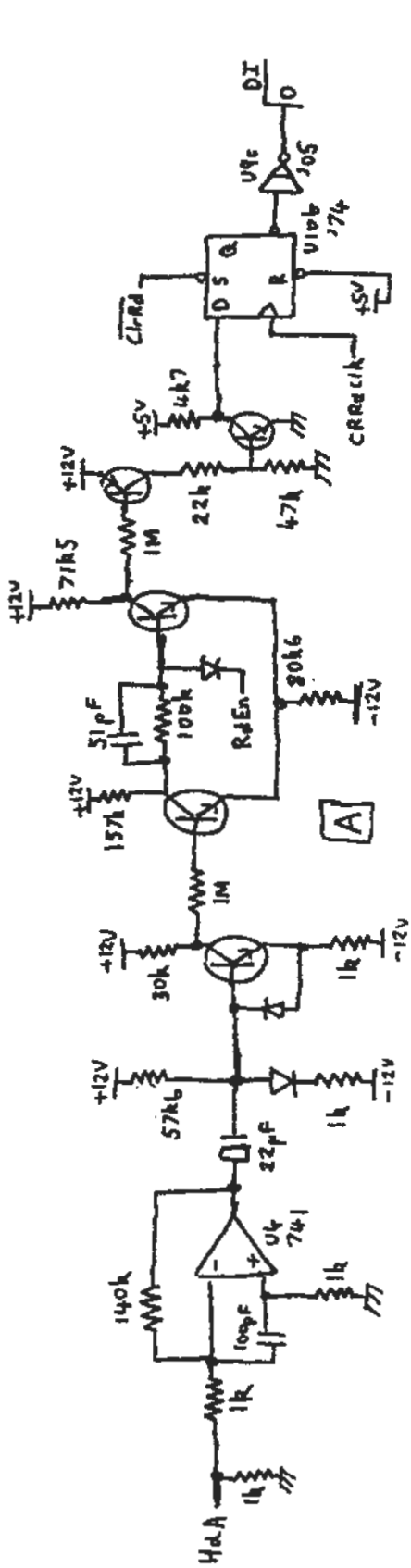
Motor State Counter



HP 9810 Card Reader Wiring

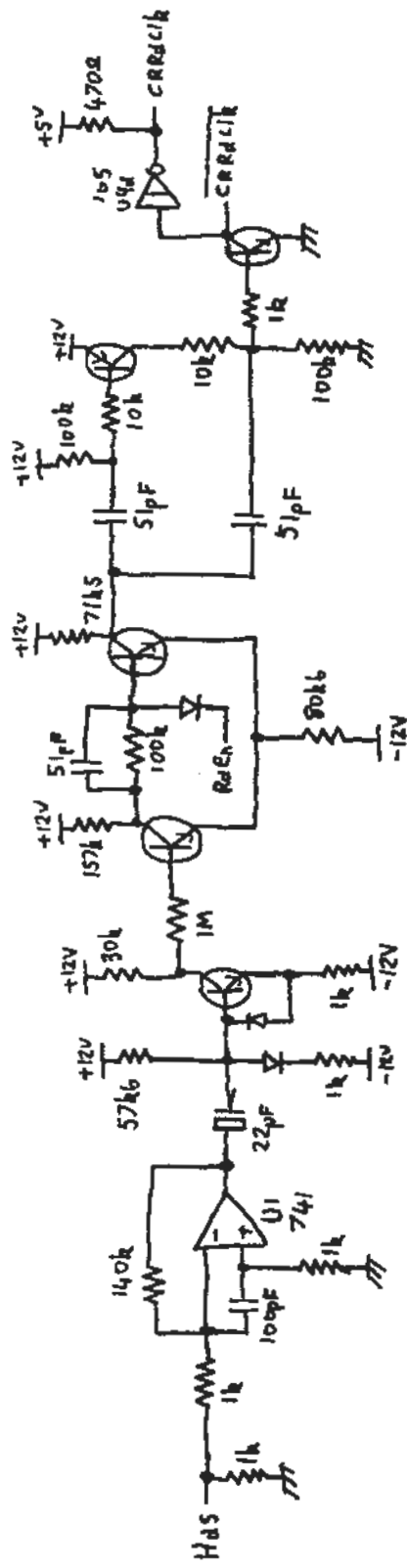
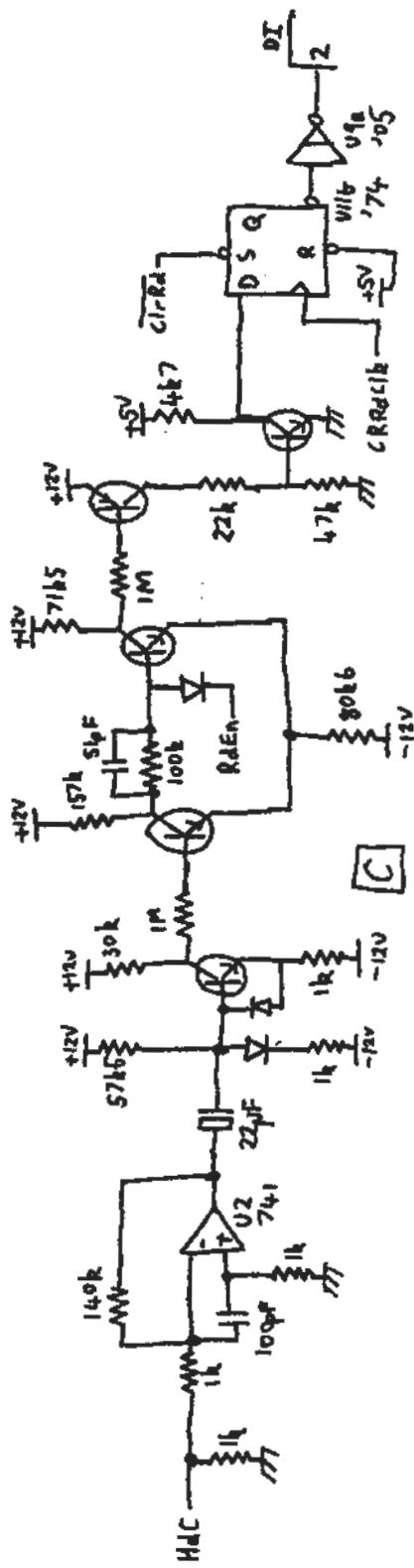




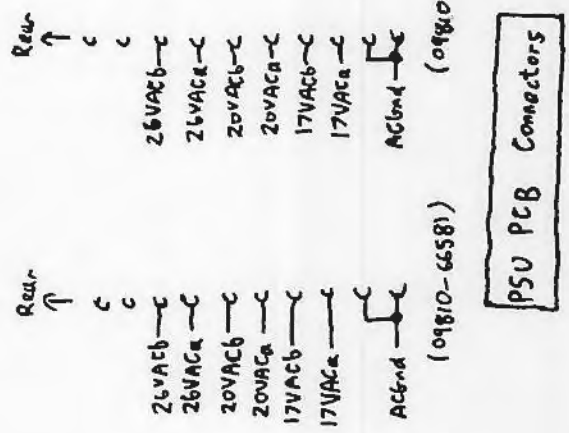
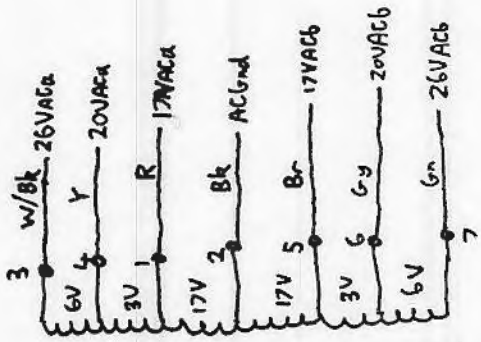
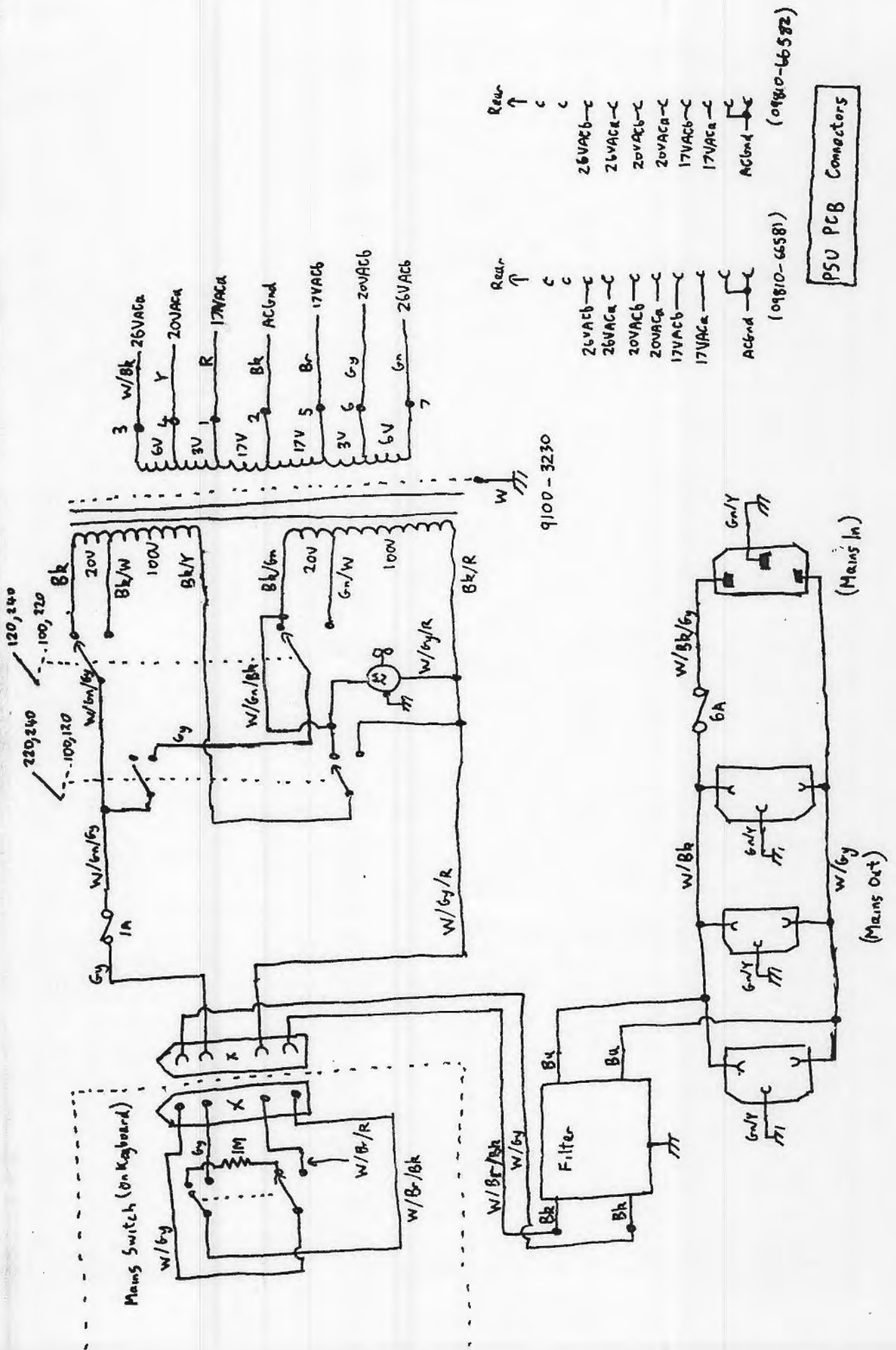


B

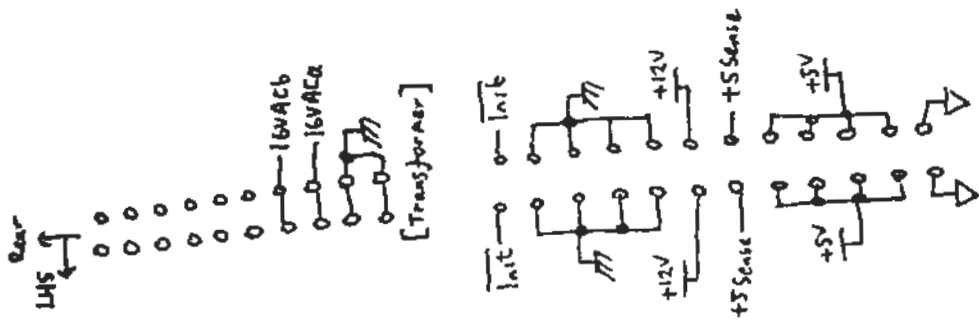
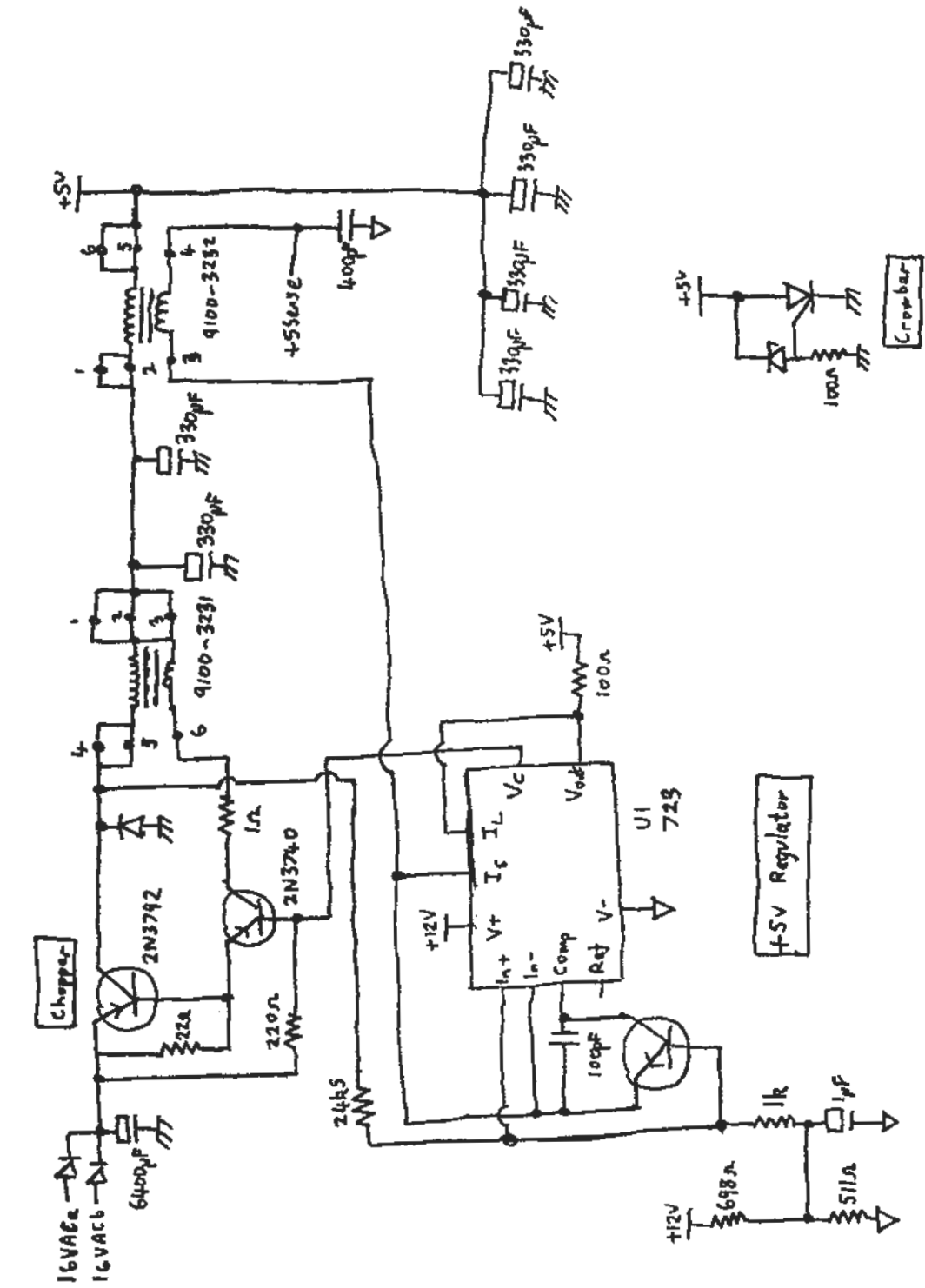
Read



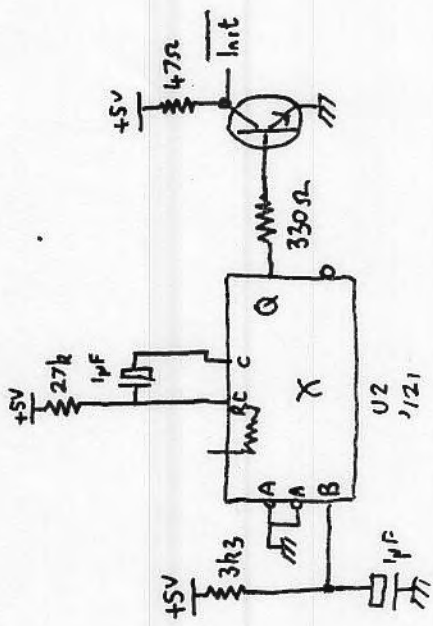
Note: CRADC1K pulled up on I/O Interface PCB (09810-66511)



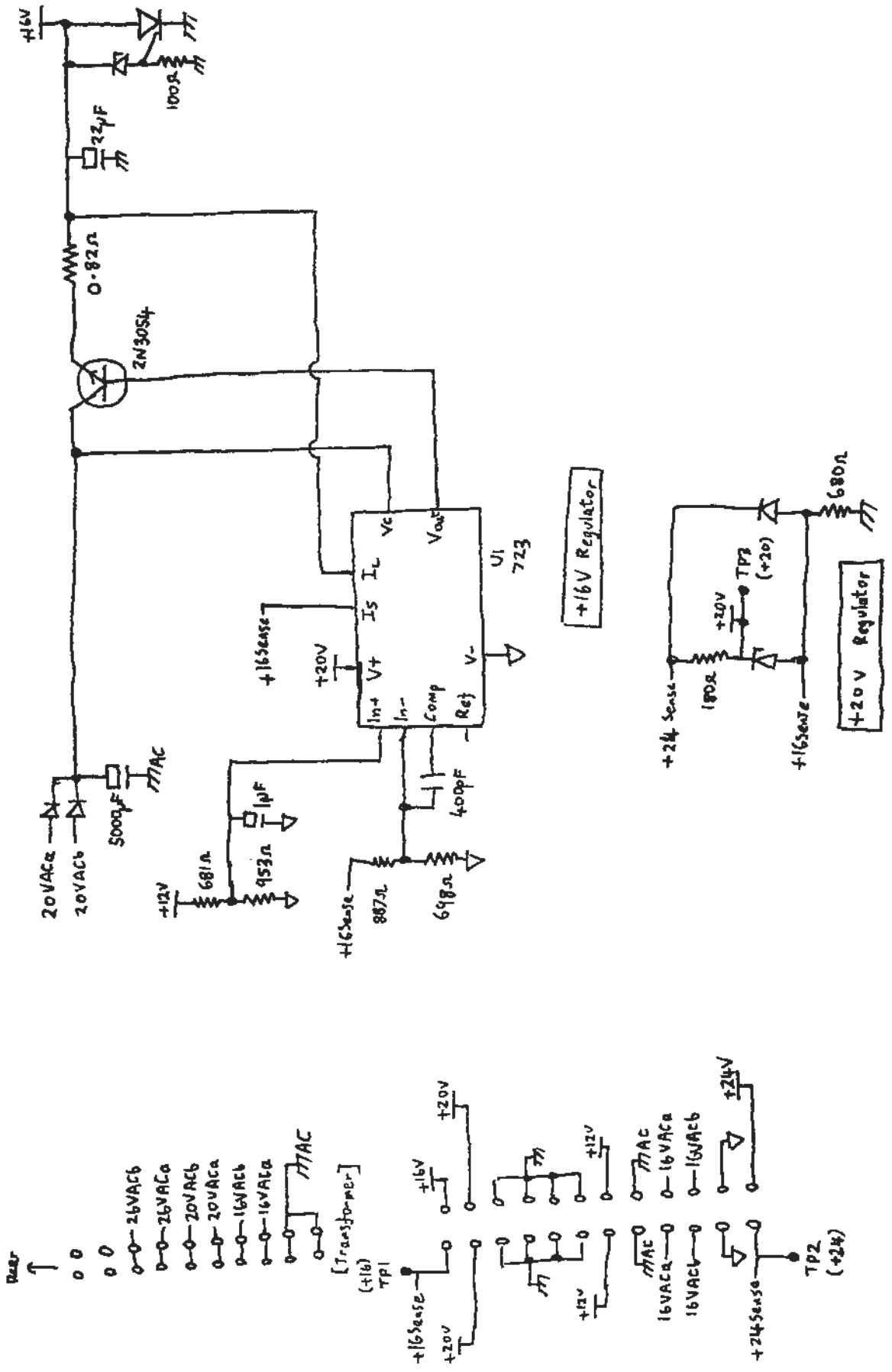
HP9810 Transformer Wiring

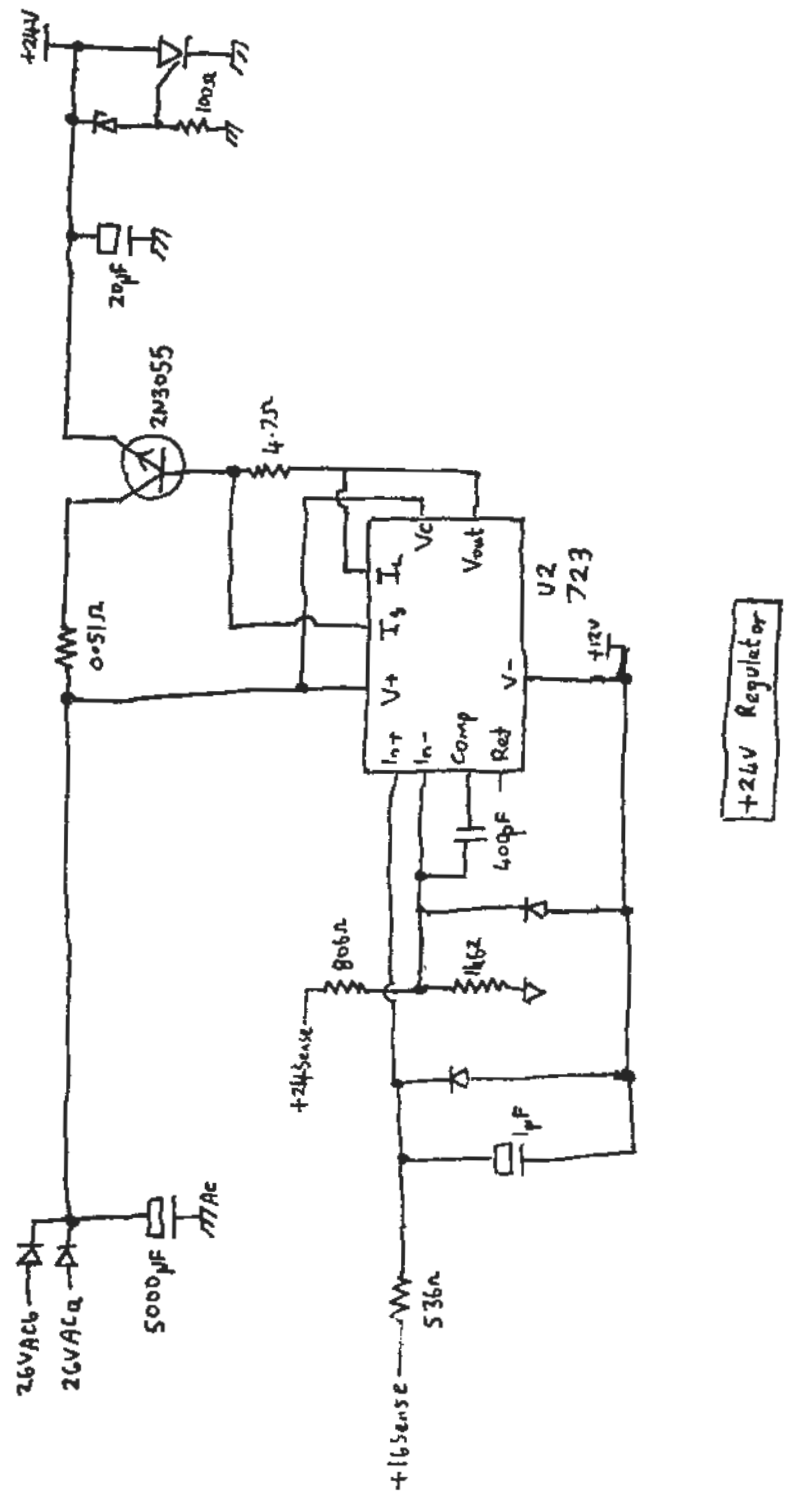


HP 9810 7.5V PSU Sheet 1
(5y/8r) 09810-66581

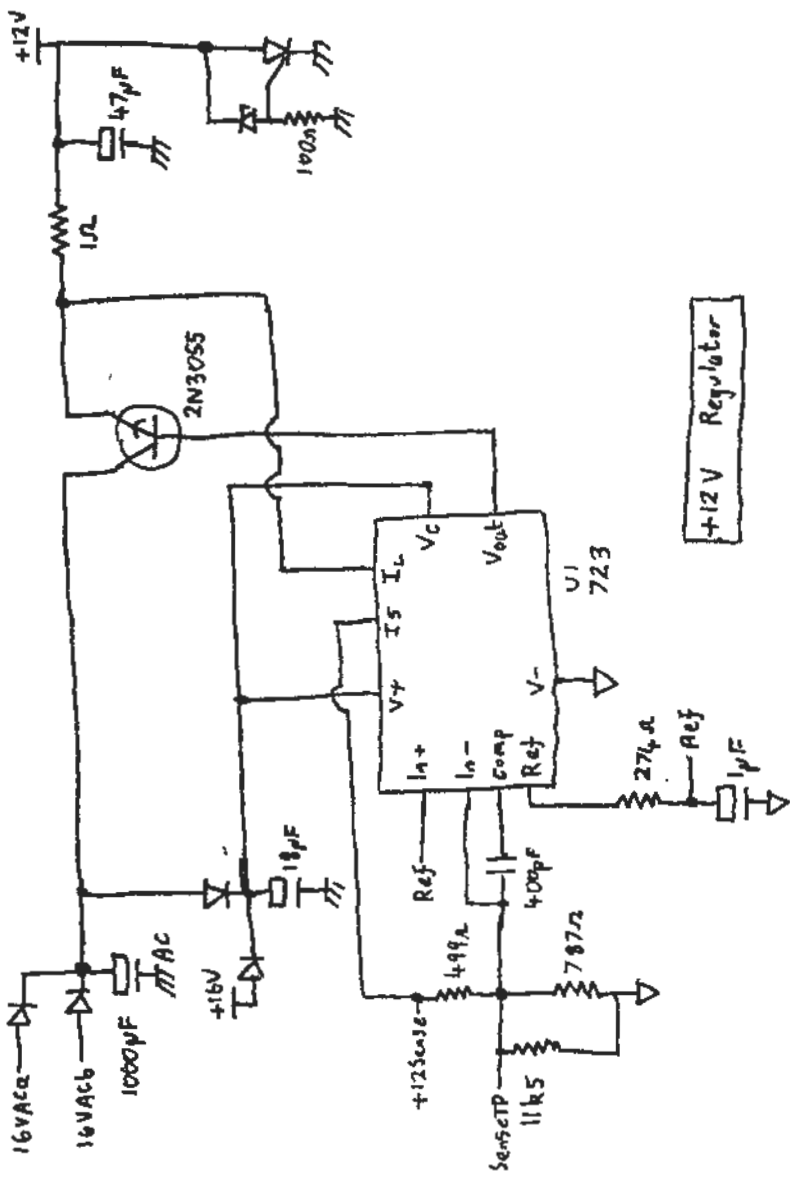


Power On Reset

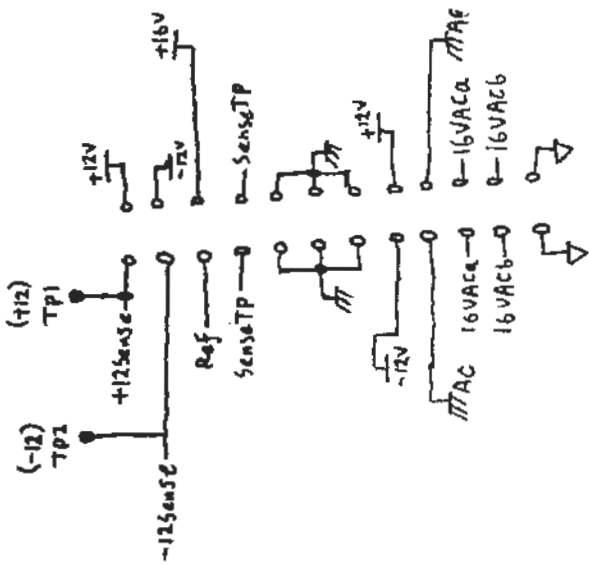


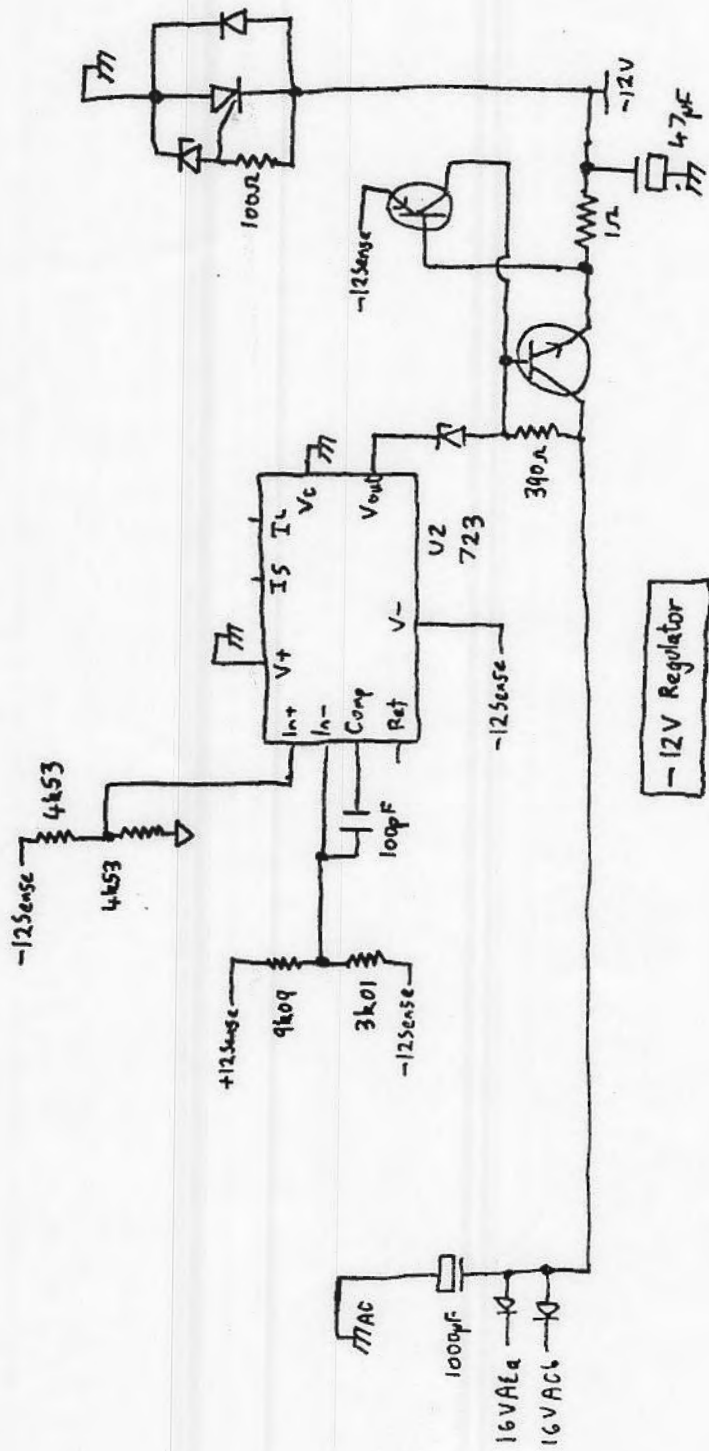


+24V Regulator

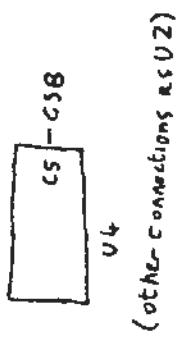
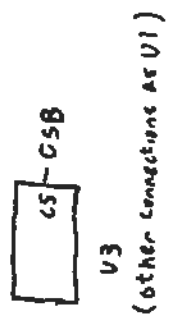
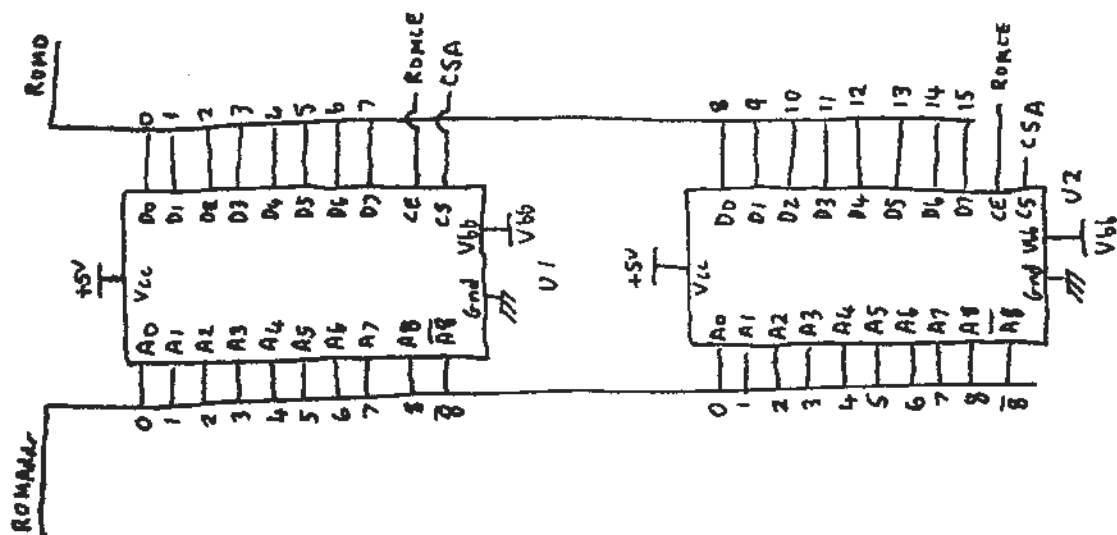


+12V Regulator

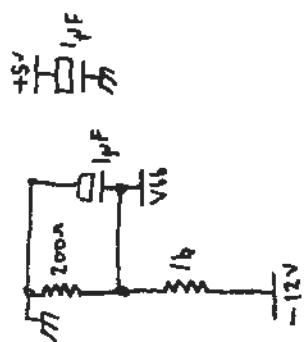
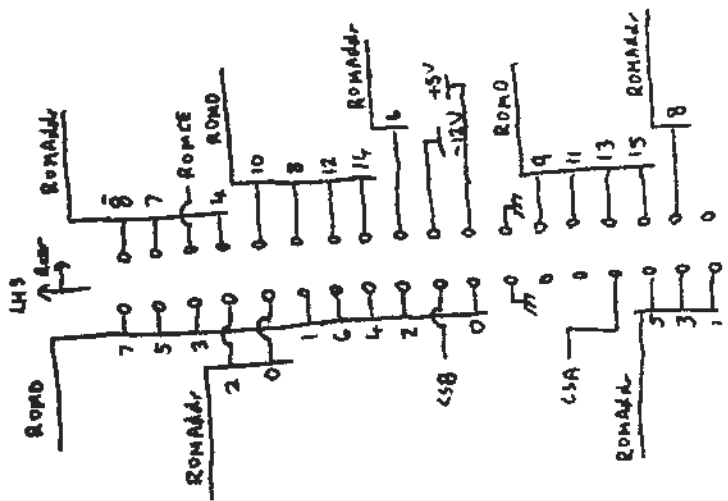




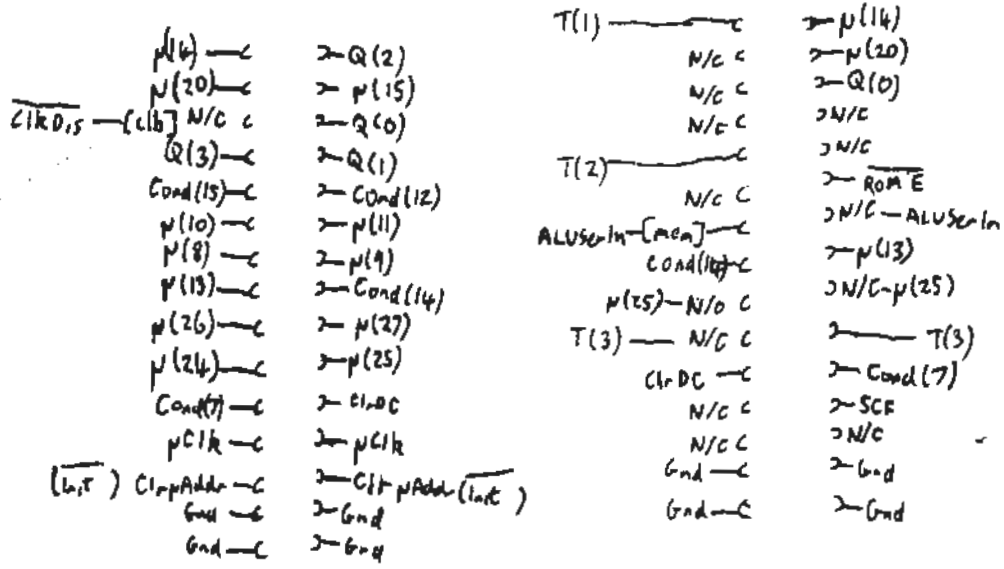
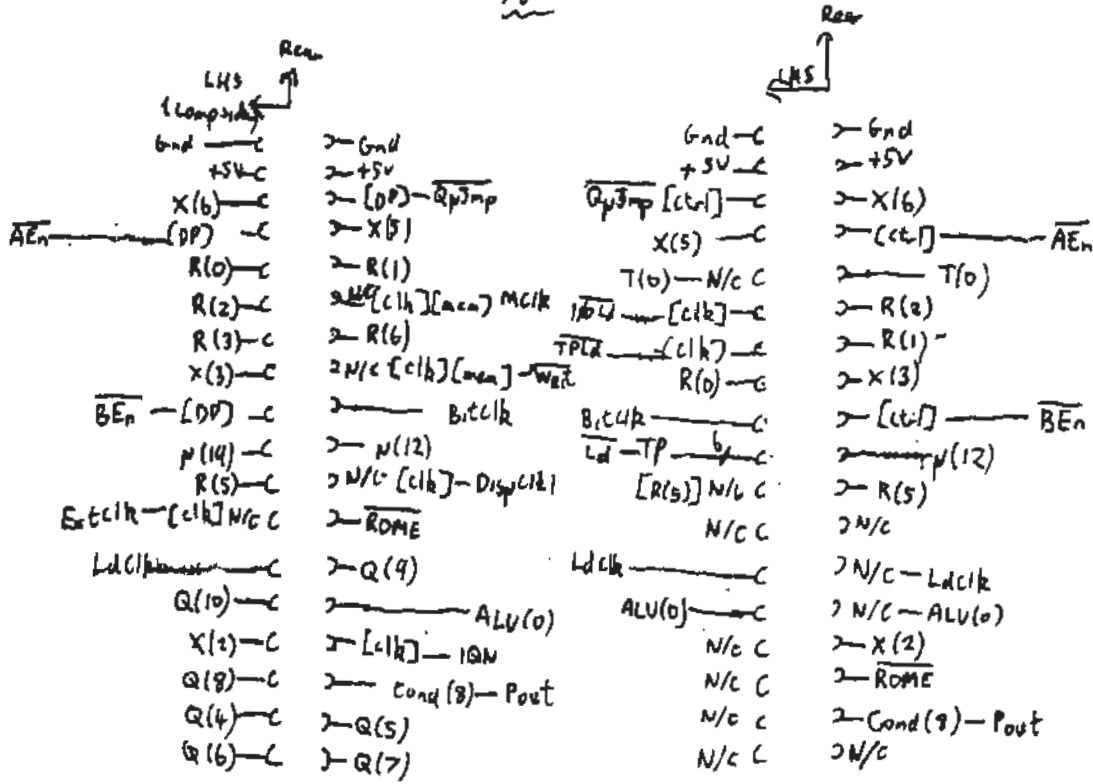
-12V Regulator



U1-U4: HP 512x8 ROMs.



9810



9810-66513
Connectors
(CPU Control)

9810-66514
Connectors
(CPU Data Path)

- ROM
- 2053 0:3
 - 2054 4:7
 - 2055 8:11
 - 2056 12:15
 - 2057 16:19
 - 2058 20:23
 - 2059 24:27