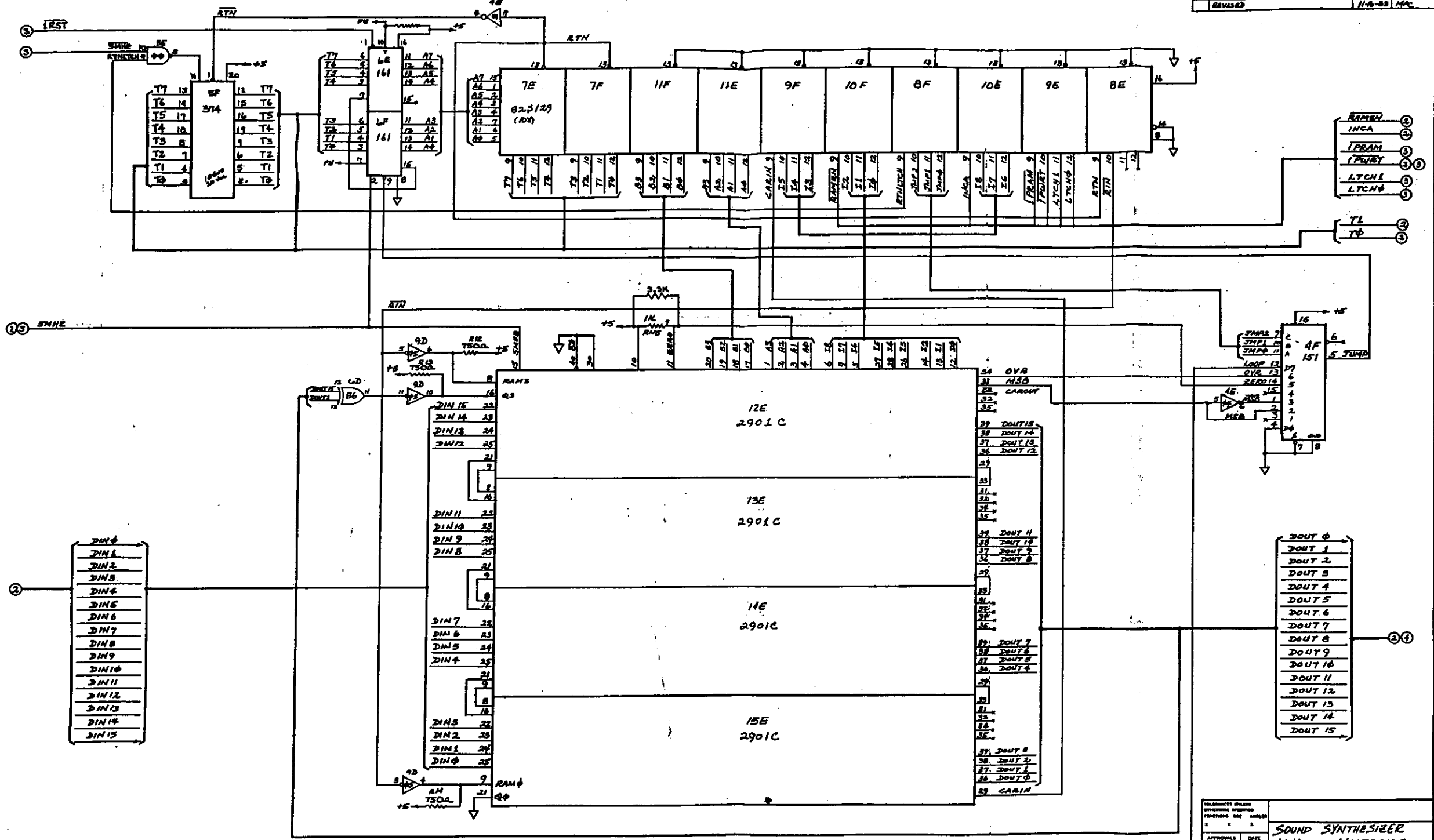
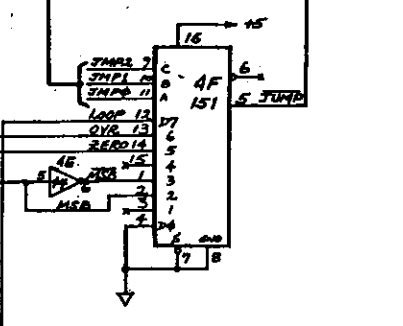


REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1	REVISED	11-6-83	MAL



- RAMEN ②
- INCA ②
- IPRAM ③
- IPWRT ③
- LTCN1 ④
- LTCN2 ④
- TL ③
- TP ③



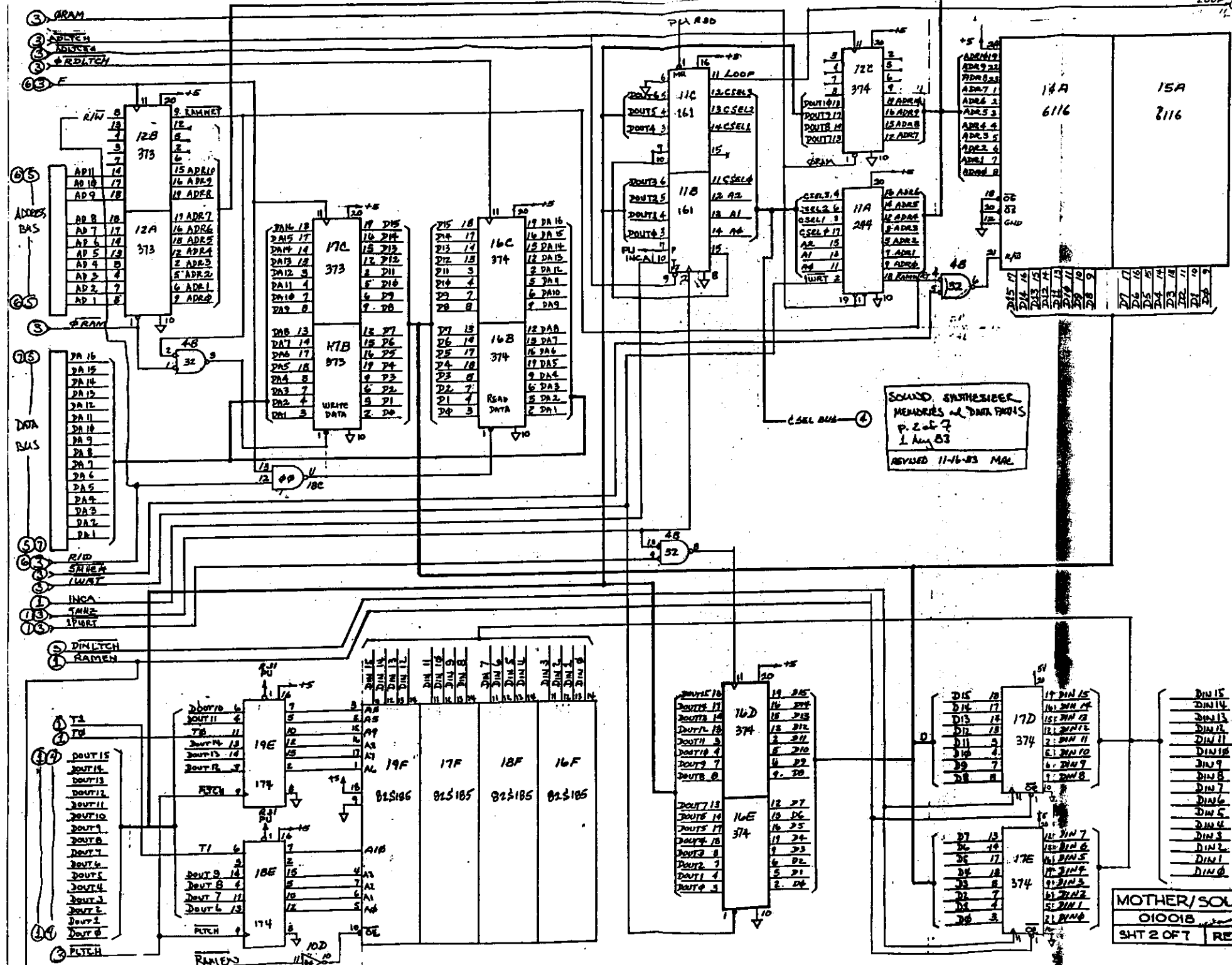
- DOUT 0
- DOUT 1
- DOUT 2
- DOUT 3
- DOUT 4
- DOUT 5
- DOUT 6
- DOUT 7
- DOUT 8
- DOUT 9
- DOUT 10
- DOUT 11
- DOUT 12
- DOUT 13
- DOUT 14
- DOUT 15

APPROVALS			
DATE	BY	DATE	BY
11/6/83	MAL		

**SOUND SYNTHESIZER
ALU AND MICROCODE**

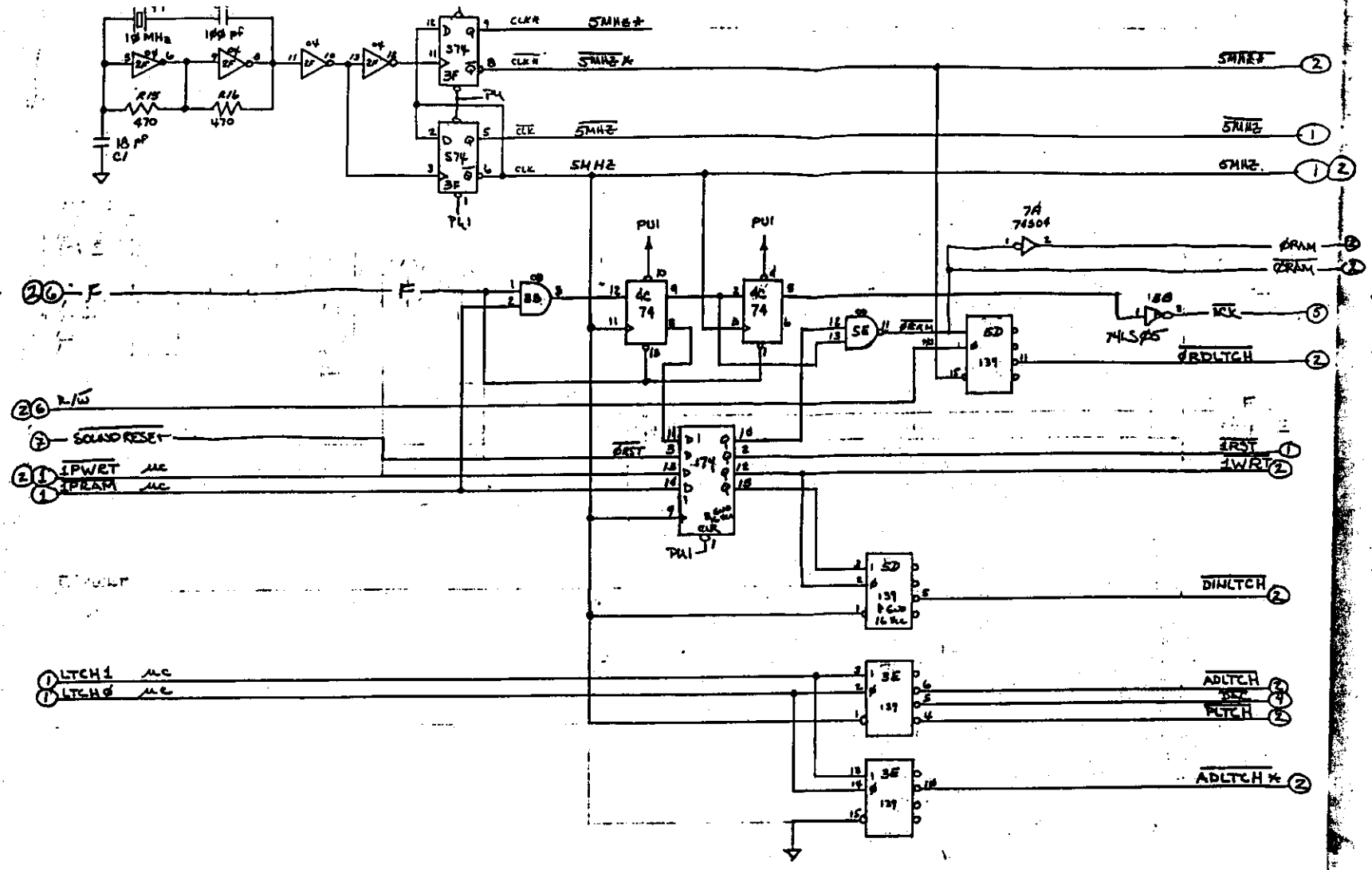
SCALE	D	DRAWING NO.	010018	REV.	8
DO NOT SCALE DRAWING					

SHEET 1 OF 7



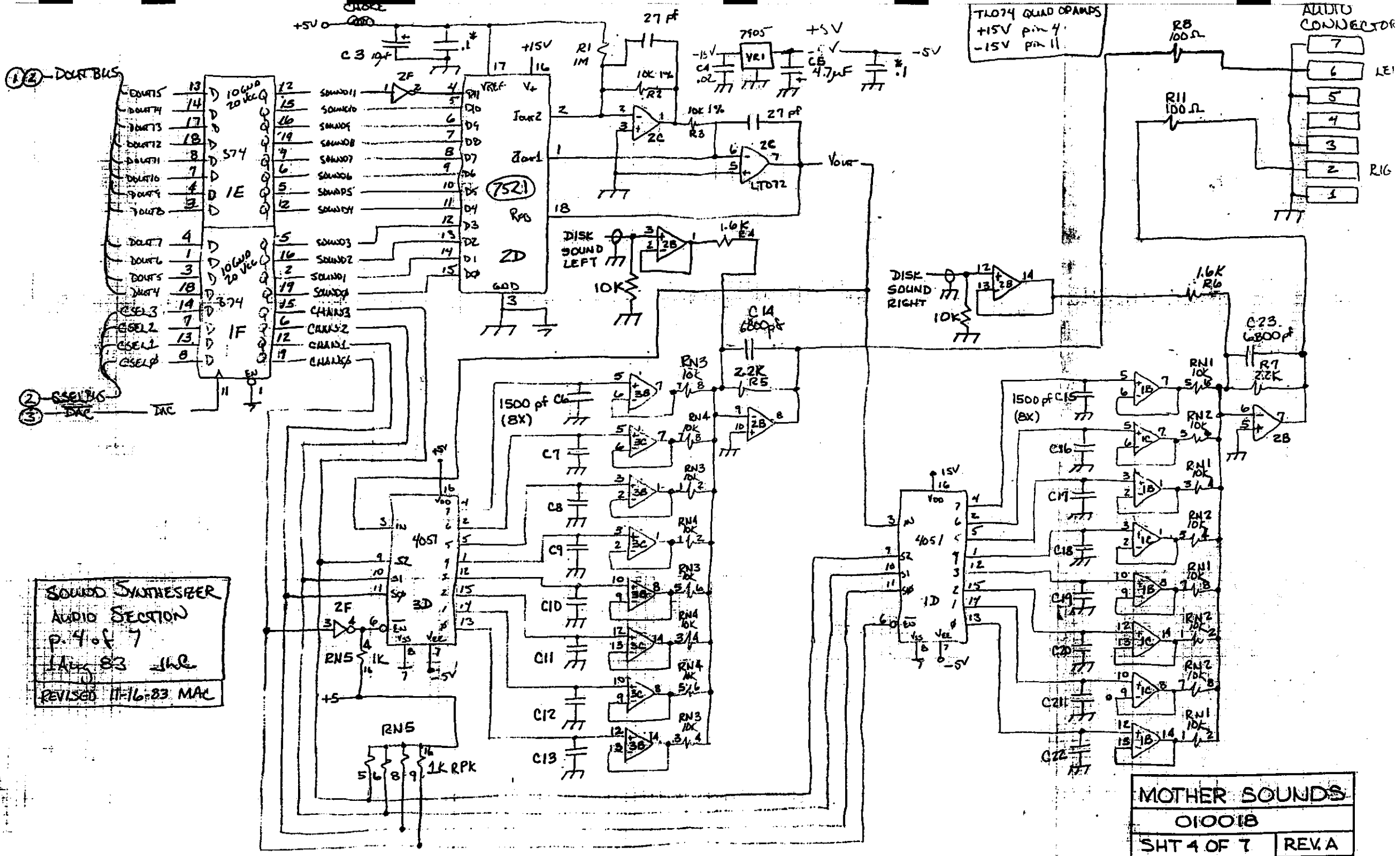
SOUND SYNTHESIZER
MEMORIES & DATA PARTS
p. 2 of 7
1 Aug 83
REVISED 11-16-83 MAC

MOTHER/SOUNDS
010018
SHT 2 OF 7 REV. A



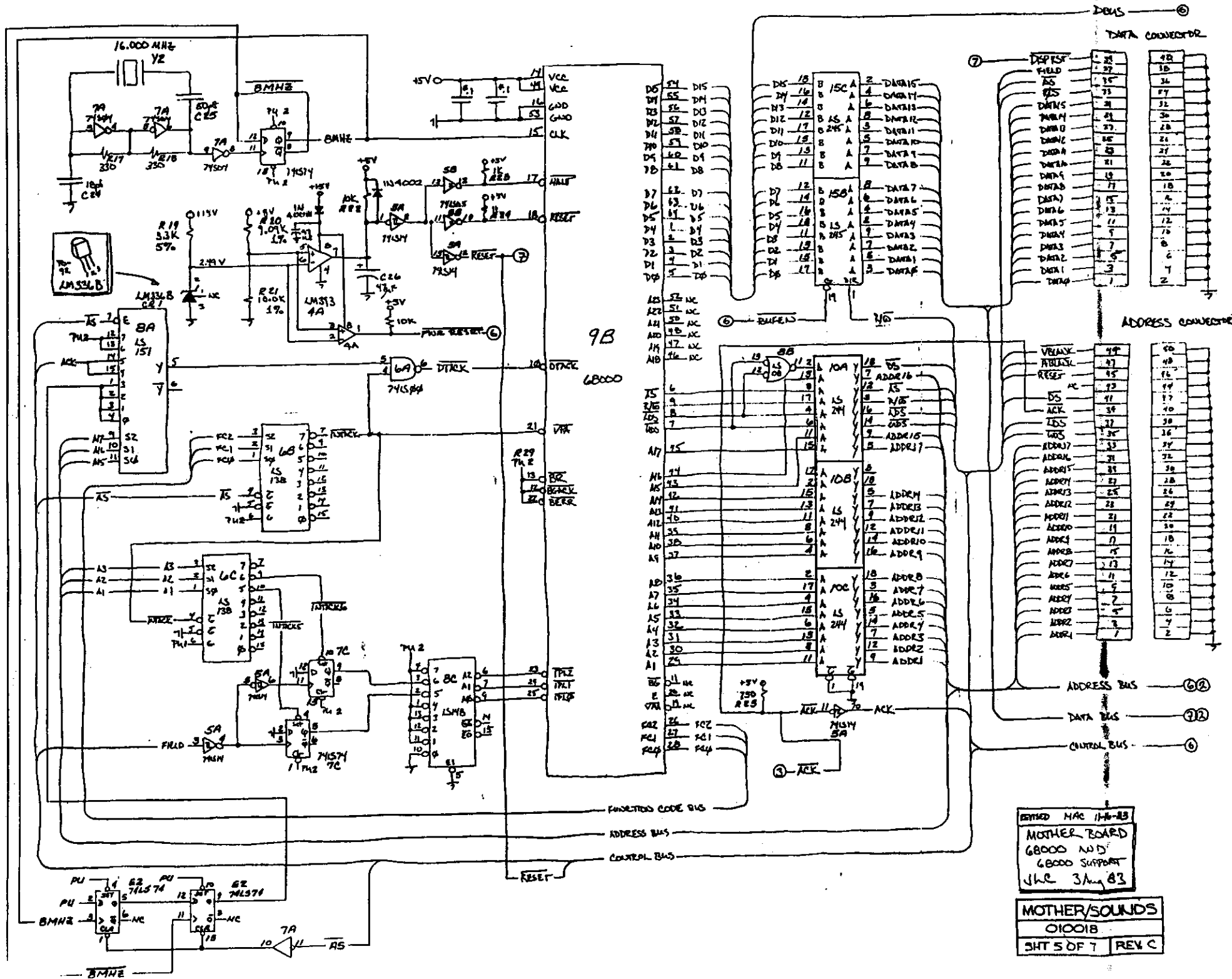
SOUND SYNTHESIZER
 CONTROLLER
 P. 3 of 7
 1 Aug 83
 REVISED 11-16-83 MAZ

MOTHER/SOUNDS
 010018
 SHT 3 OF 7 REV. A



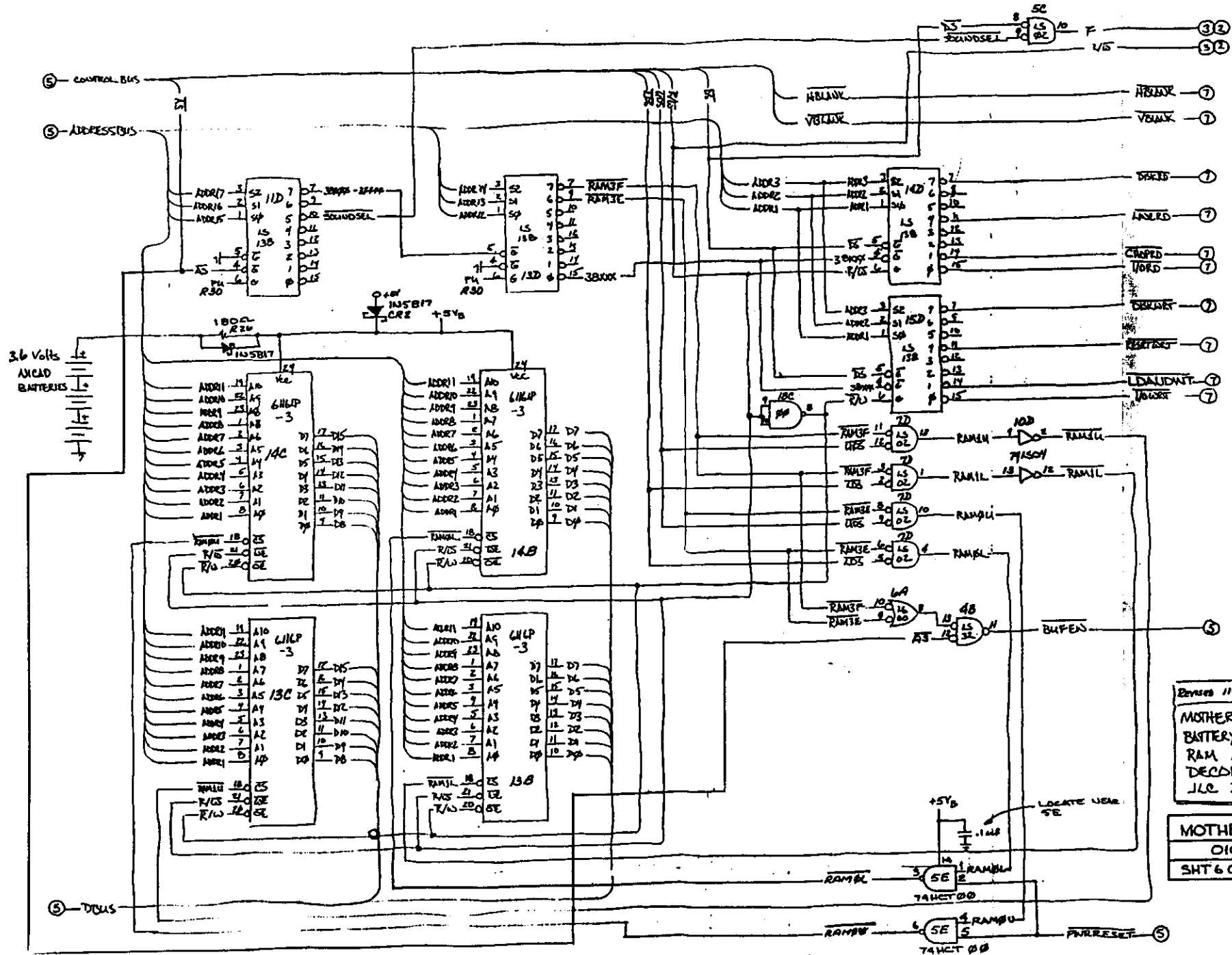
SOUND SYNTHESIZER
 AUDIO SECTION
 P. 4 of 7
 Aug 83 Jhe
 REVISED 11-16-83 MAC

MOTHER SOUNDS
 010018
 SHT 4 OF 7 REV. A



REVISED MAC 11-16-83
 MOTHER BOARD
 68000 AND
 68000 SUPPORT
 JHE 3 Aug 83

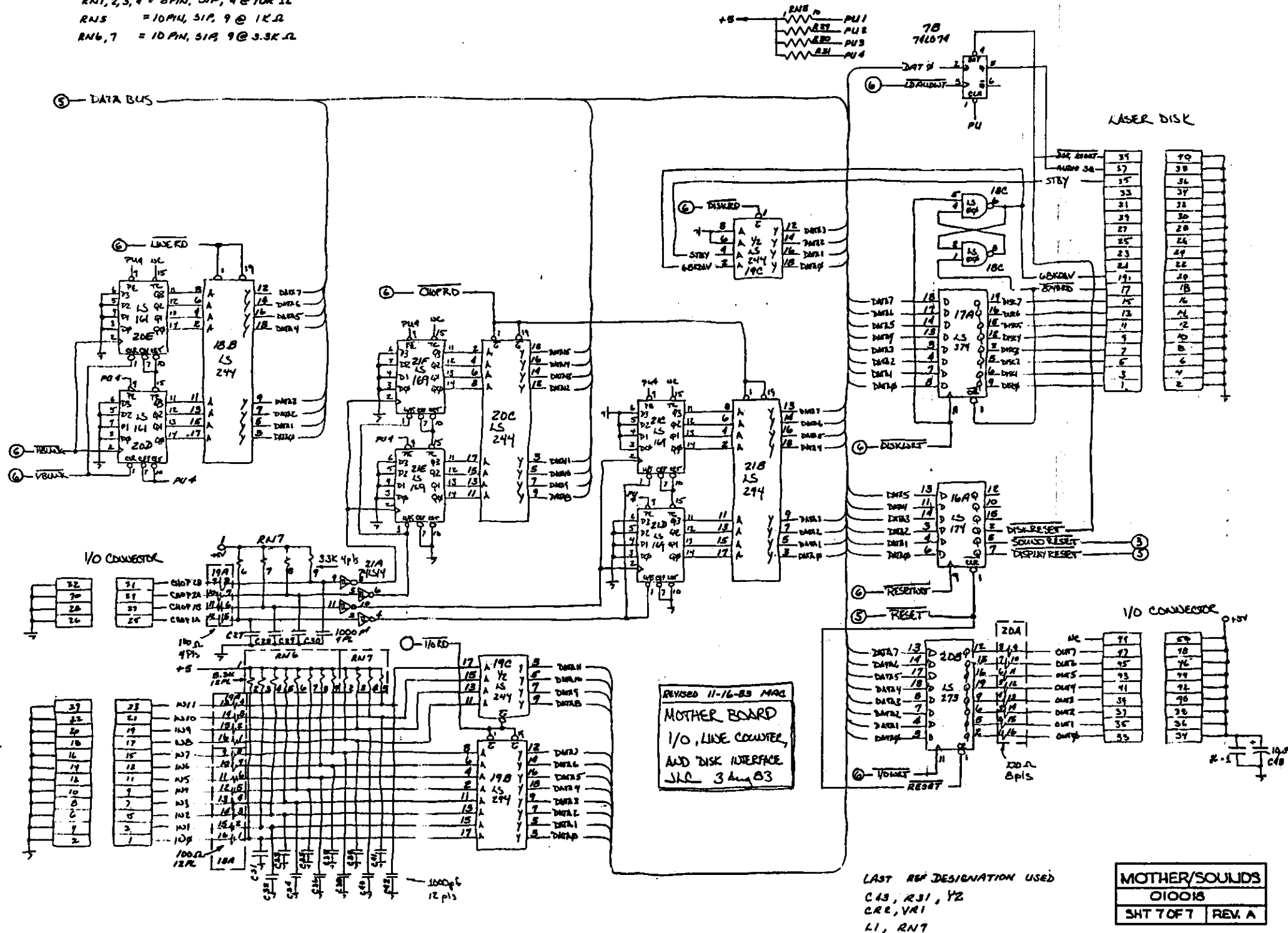
MOTHER/SOUNDS
 010018
 SHEET 5 OF 7 REV C



Revised 11-11-83 AM
MOTHERBOARD
 BATTERY-BACKED
 RAM AND
 DECODING
 JLC 3 Aug 83

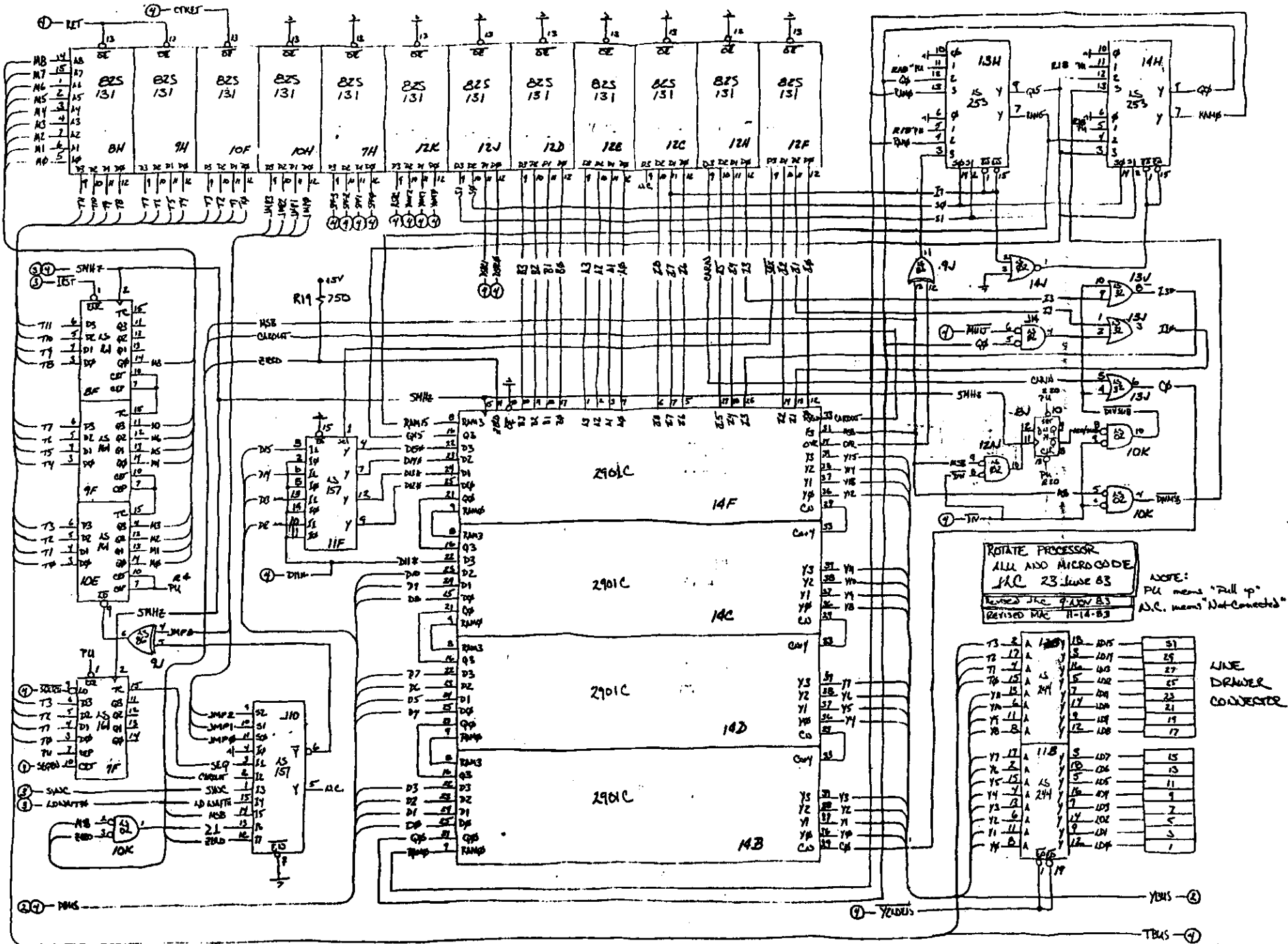
MOTHER SOUNDS
 01001B
 SHT 6 OF 7 REV. B

RN1, 2, 3, 4 = 8PIN, 51P, 4 @ 10K Ω
 RN5 = 10PIN, 51P, 9 @ 1K Ω
 RN6, 7 = 10PIN, 51P, 9 @ 3.3K Ω

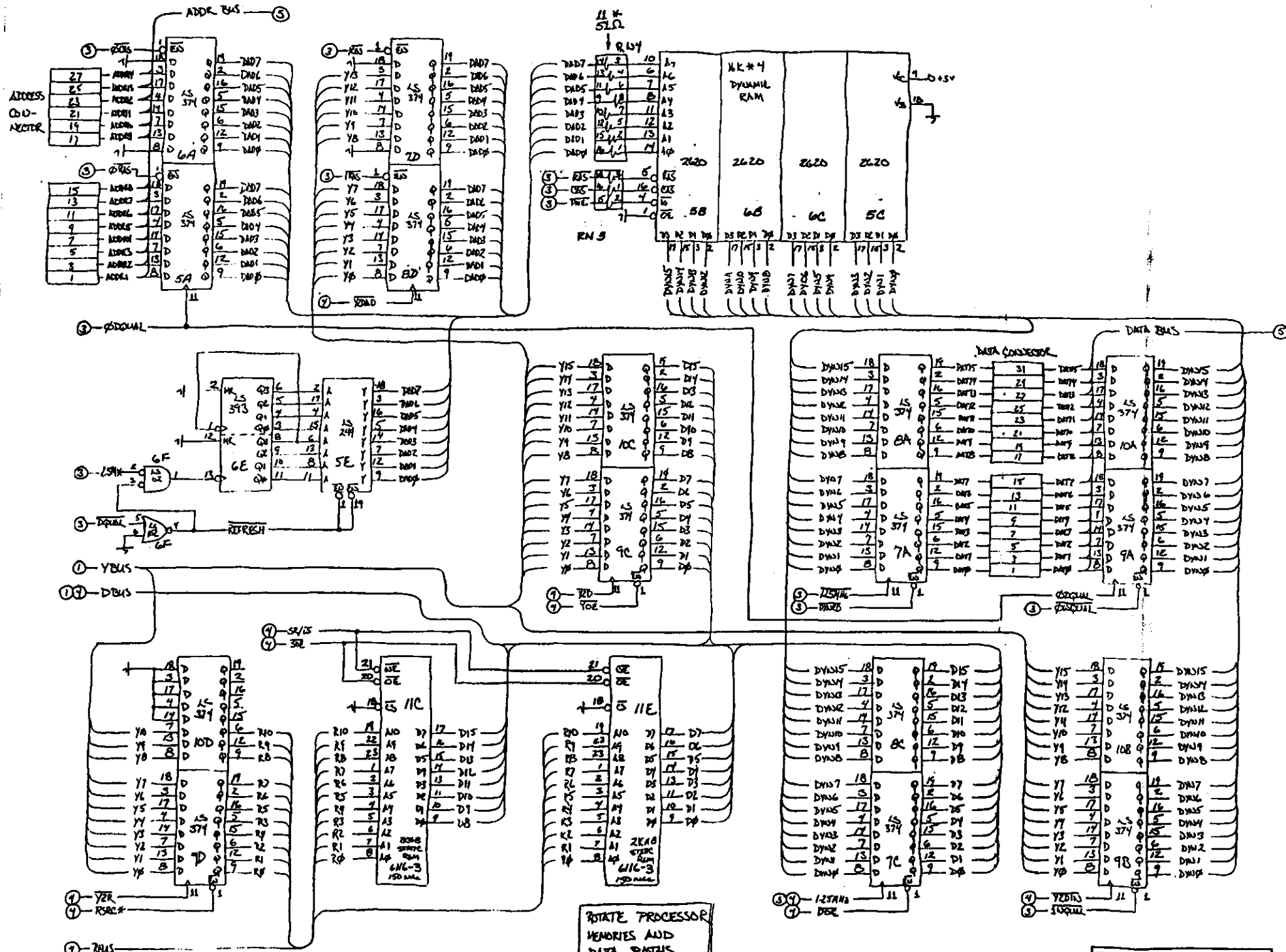


LAST REF DESIGNATION USED
 C43, R31, Y2
 C42, V41
 L1, R47

MOTHER/SOUNDS	
010018	
SMT 70FT	REV. A

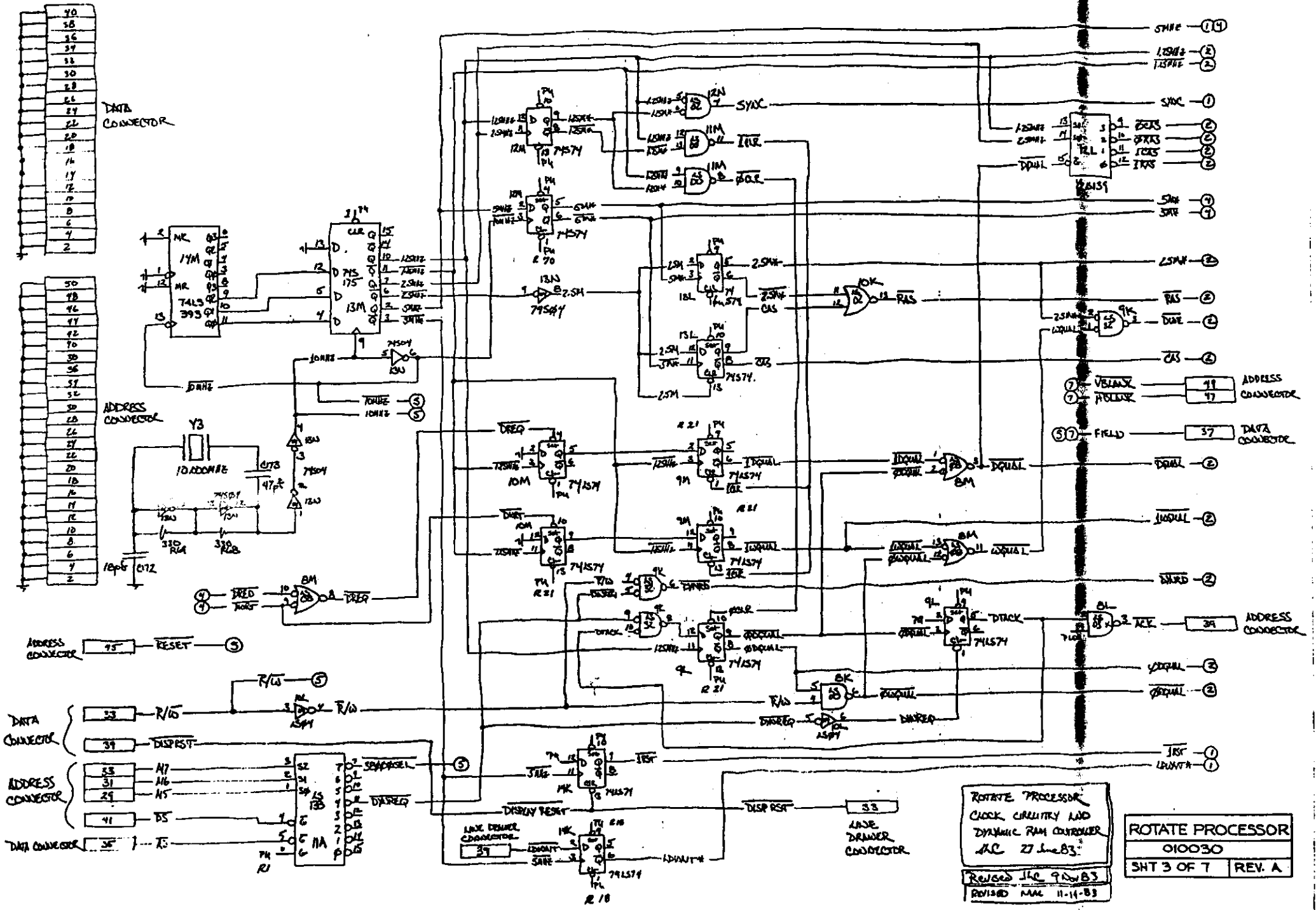


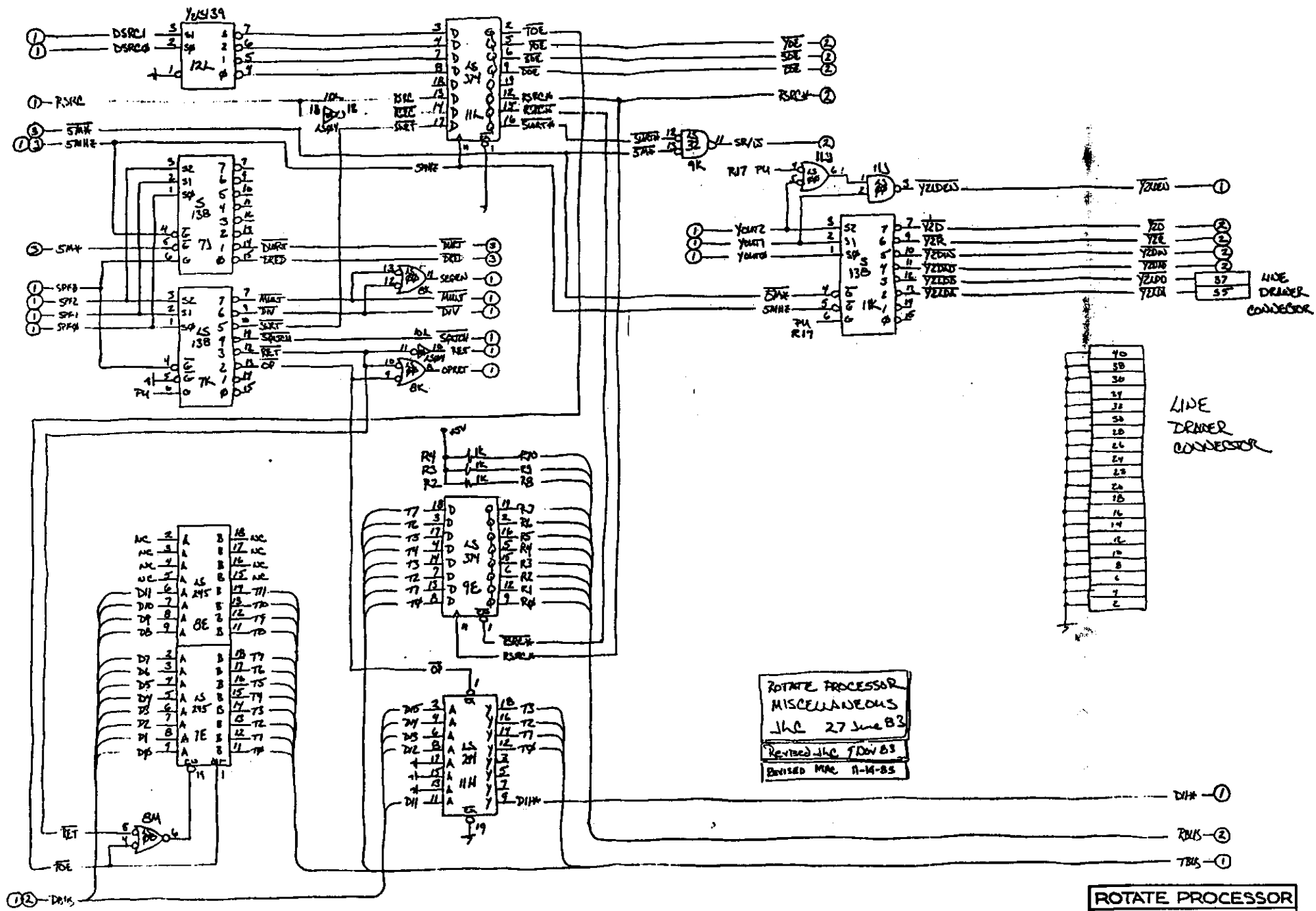
ROTATE PROCESSOR
 010030
 SHEET 1 OF 7 REV. A



ROTATE PROCESSOR
 MEMORIES AND
 DATA PATHS
 JLC 22 Jun 83
 Revised JLC 9 Dec 83
 Revised MAC 11-11-83

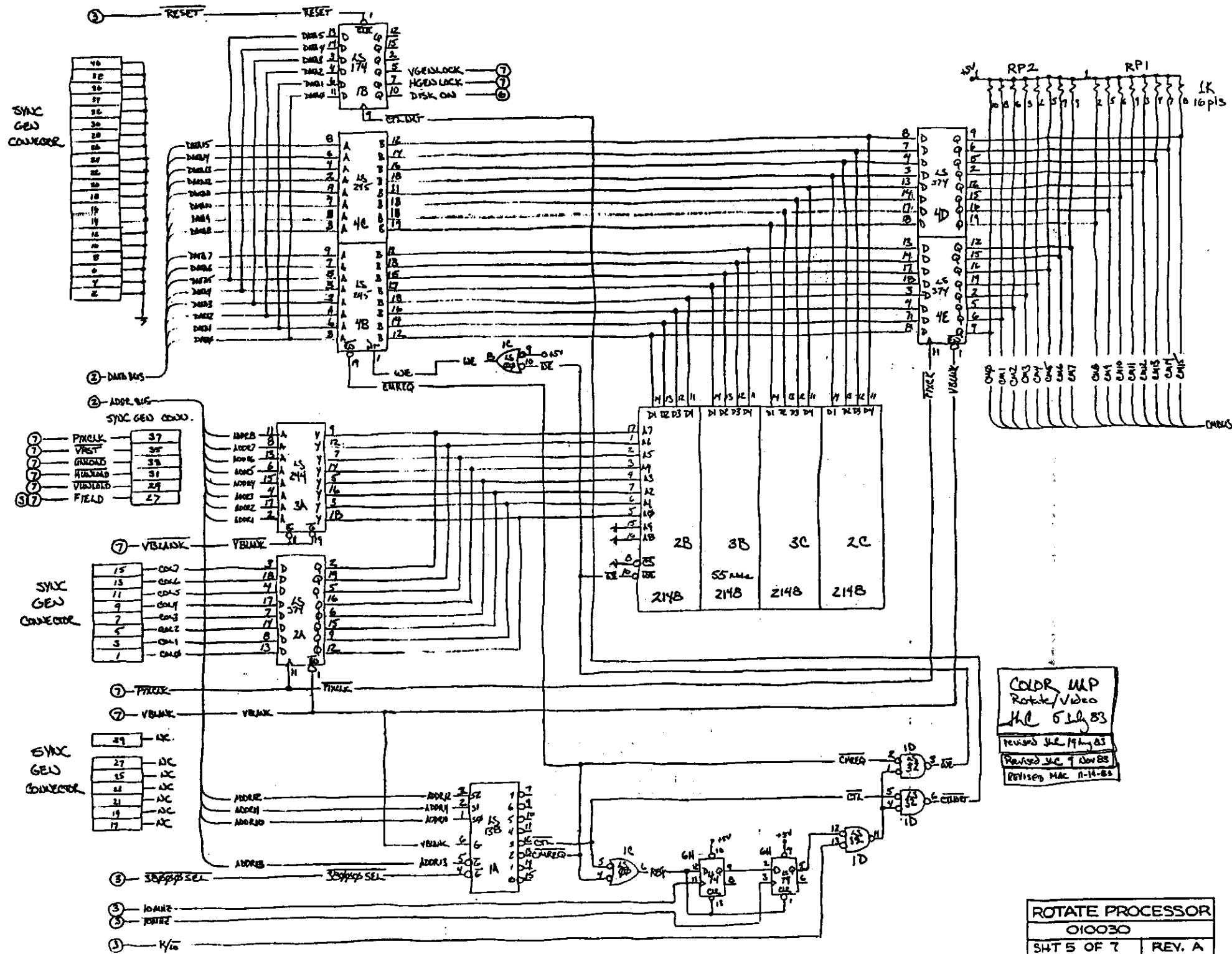
ROTATE PROCESSOR
 010030
 SHT 2 OF 7 REV. A





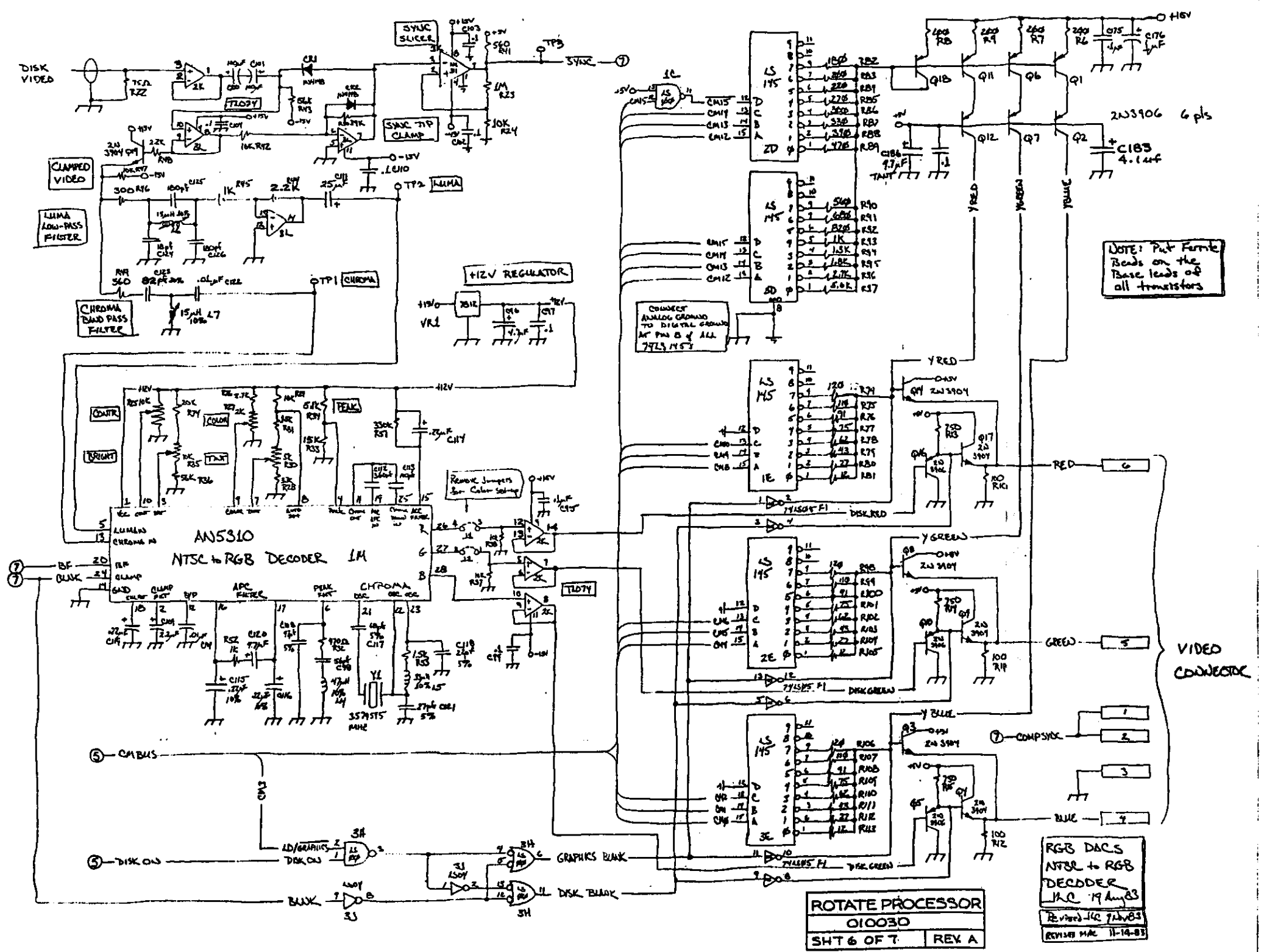
ROTATE PROCESSOR
 MISCELLANEOUS
 JHC 27 June 83
 Revised JHC F00V 83
 Revised MAC 11-11-85

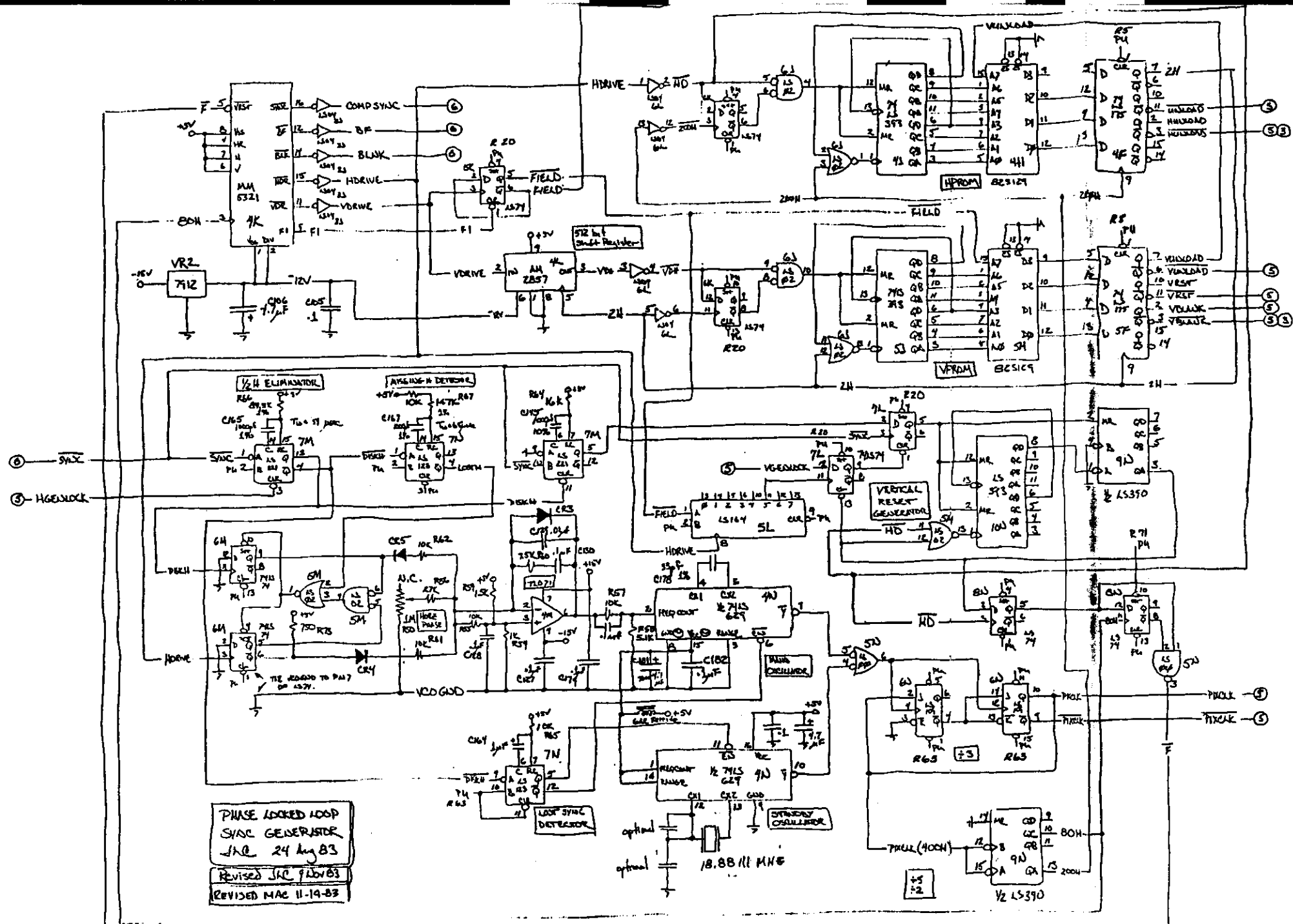
ROTATE PROCESSOR
 010030
 SHT 4 OF 7 REV. A



COLOR MAP
 Rotate/Video
 MC 51283
 Revised JCL 1/14/83
 Revised JCL 9 Nov 83
 Revised MAC 11-14-83

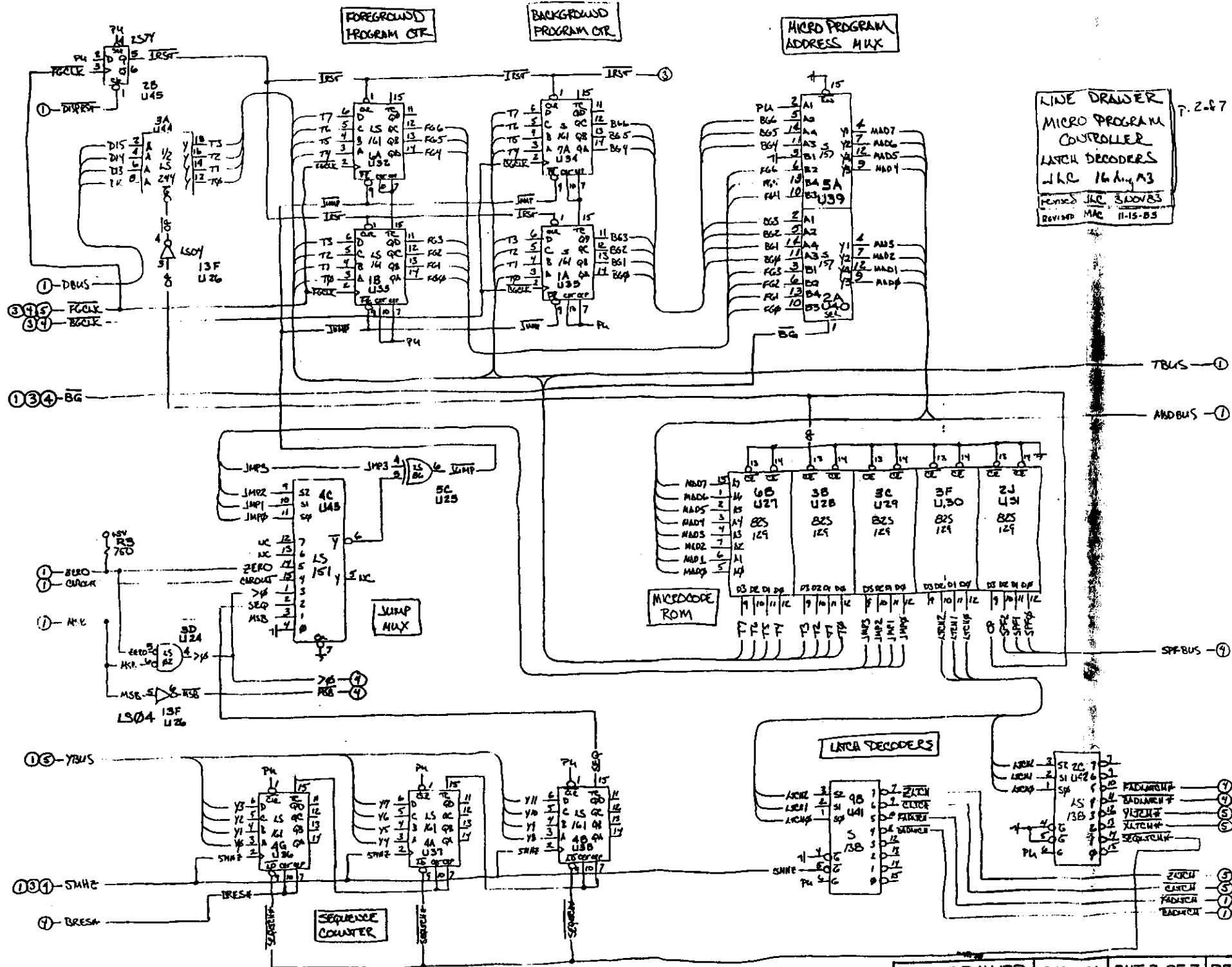
ROTATE PROCESSOR
 010030
 SHT 5 OF 7 REV. A

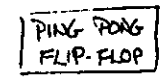
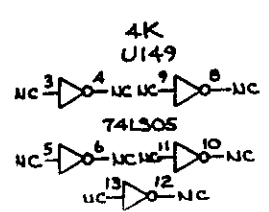
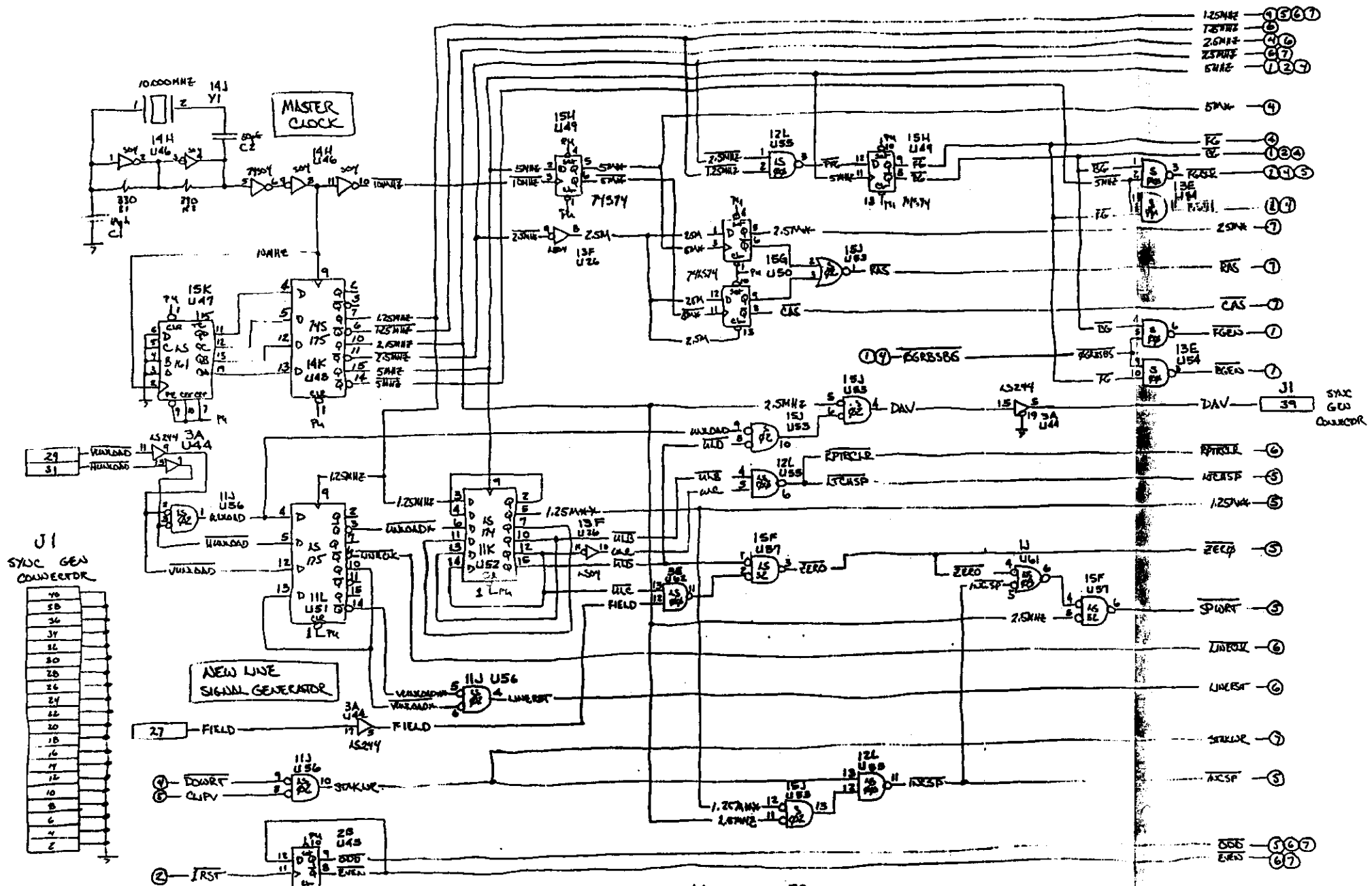




PHASE LOCKED LOOP
 SYNC GENERATOR
 JAC 24 Aug 83
 REVISED JAC 9/20/83
 REVISED MAC 11-19-83

ROTATE PROCESSOR
 010030
 SHT 7 OF 7 REV. B

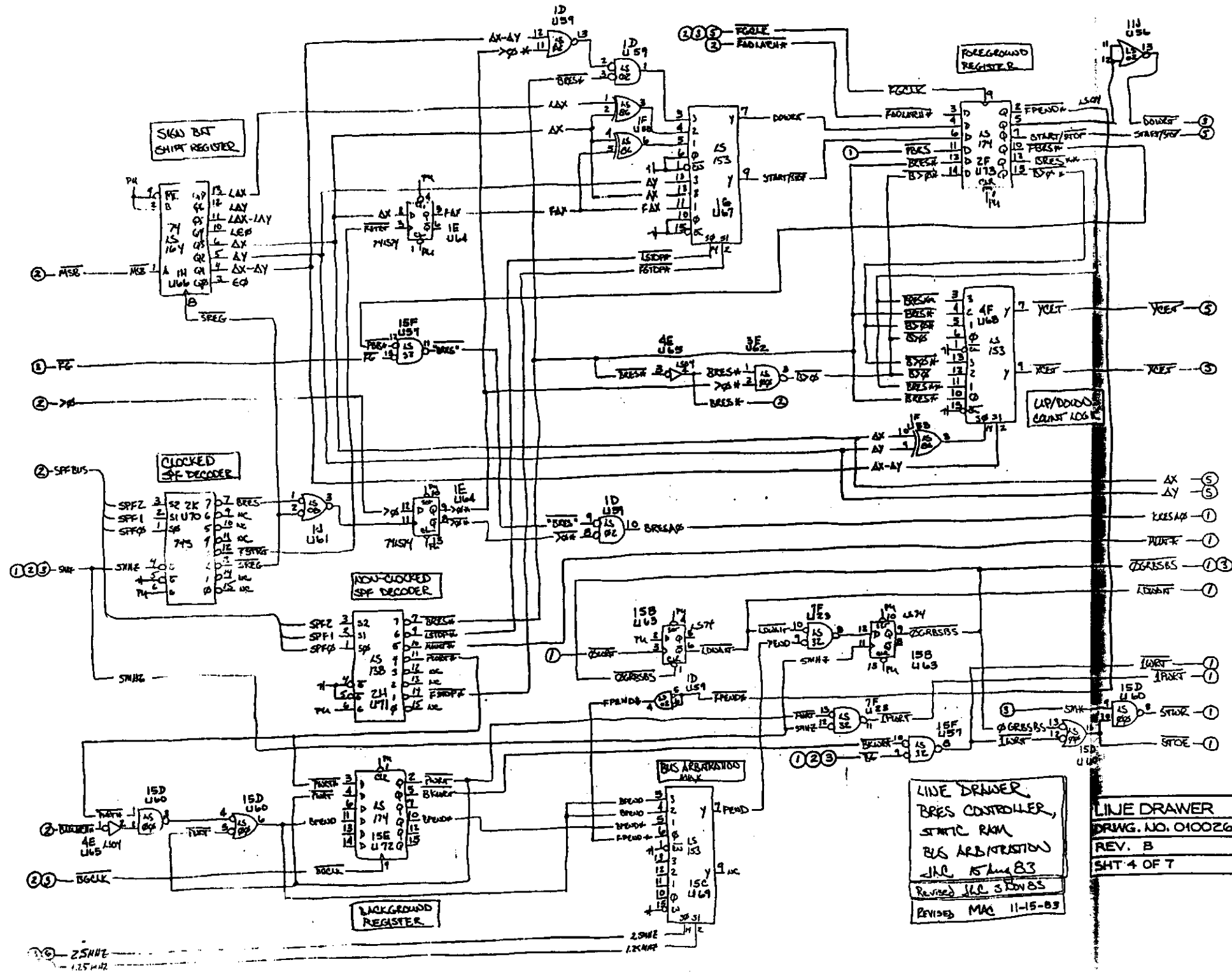




SPARES

LINE DRAWER
 CLOCKS AND
 DYNAMIC RAM
 CONTROLLER
 LNC 11 Aug 83
 REVISED LNC 30005
 REVISED MAR 11-13-83

LINE DRAWER
 DRWG. NO. 010026
 REV. B
 SHEET 3 OF 7

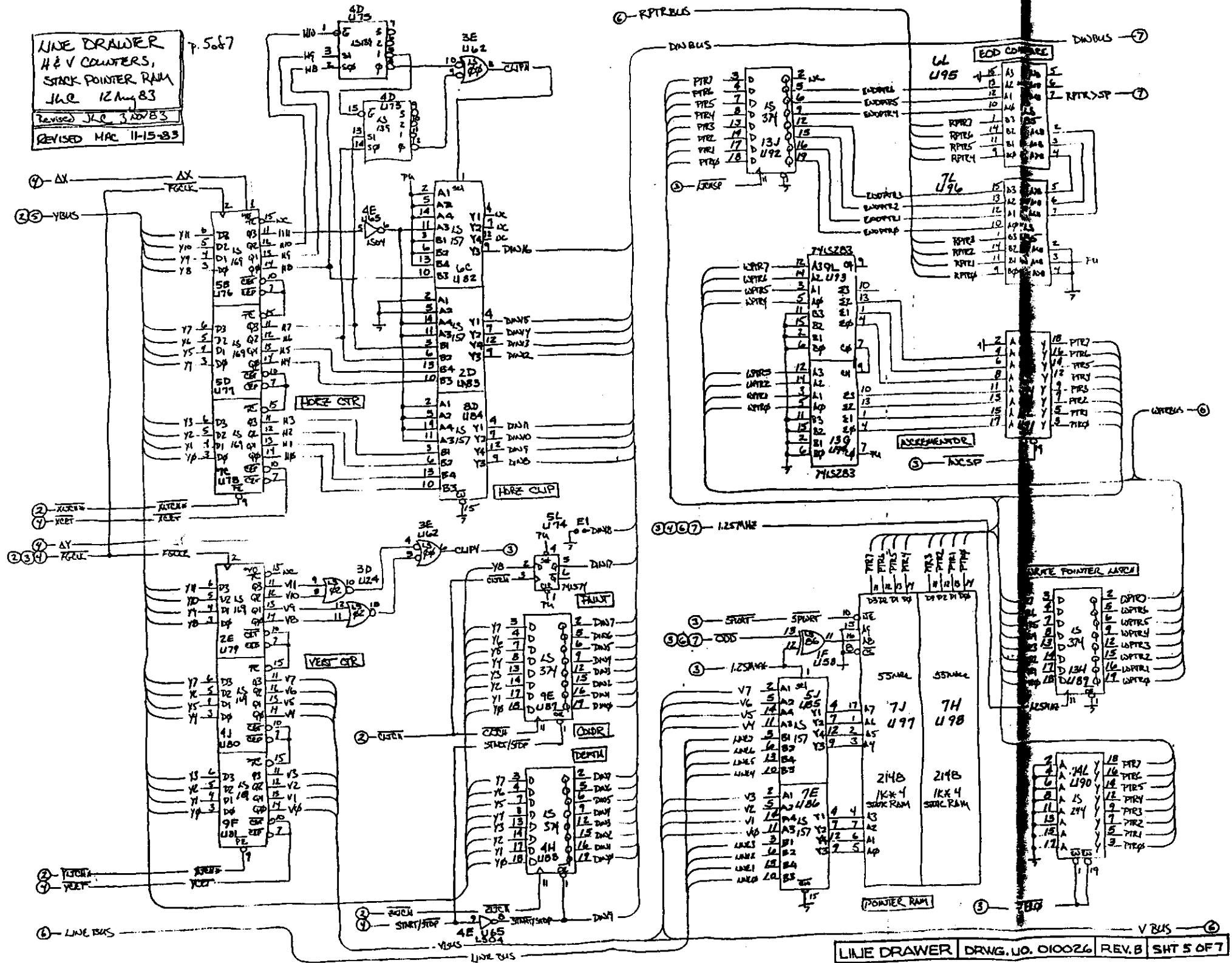


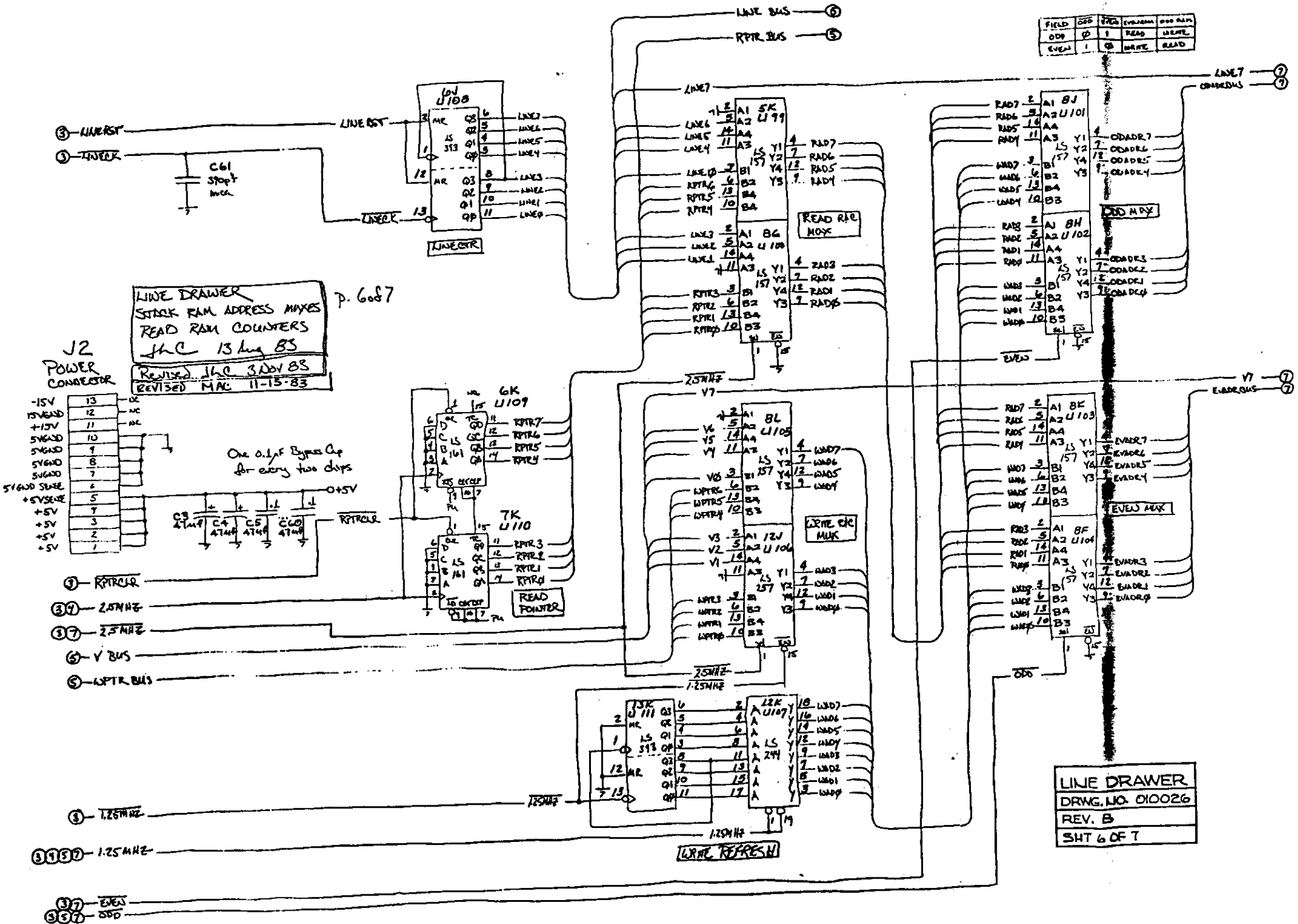
LINE DRAWER
 BRES CONTROLLER,
 STATIC RAM
 BUS ARBITRATION
 JRC 1548B3
 REVISED JRC 1548B3
 REVISED MAC 11-15-83

LINE DRAWER
 DRWG. NO. 0100Z6
 REV. B
 SHT 4 OF 7

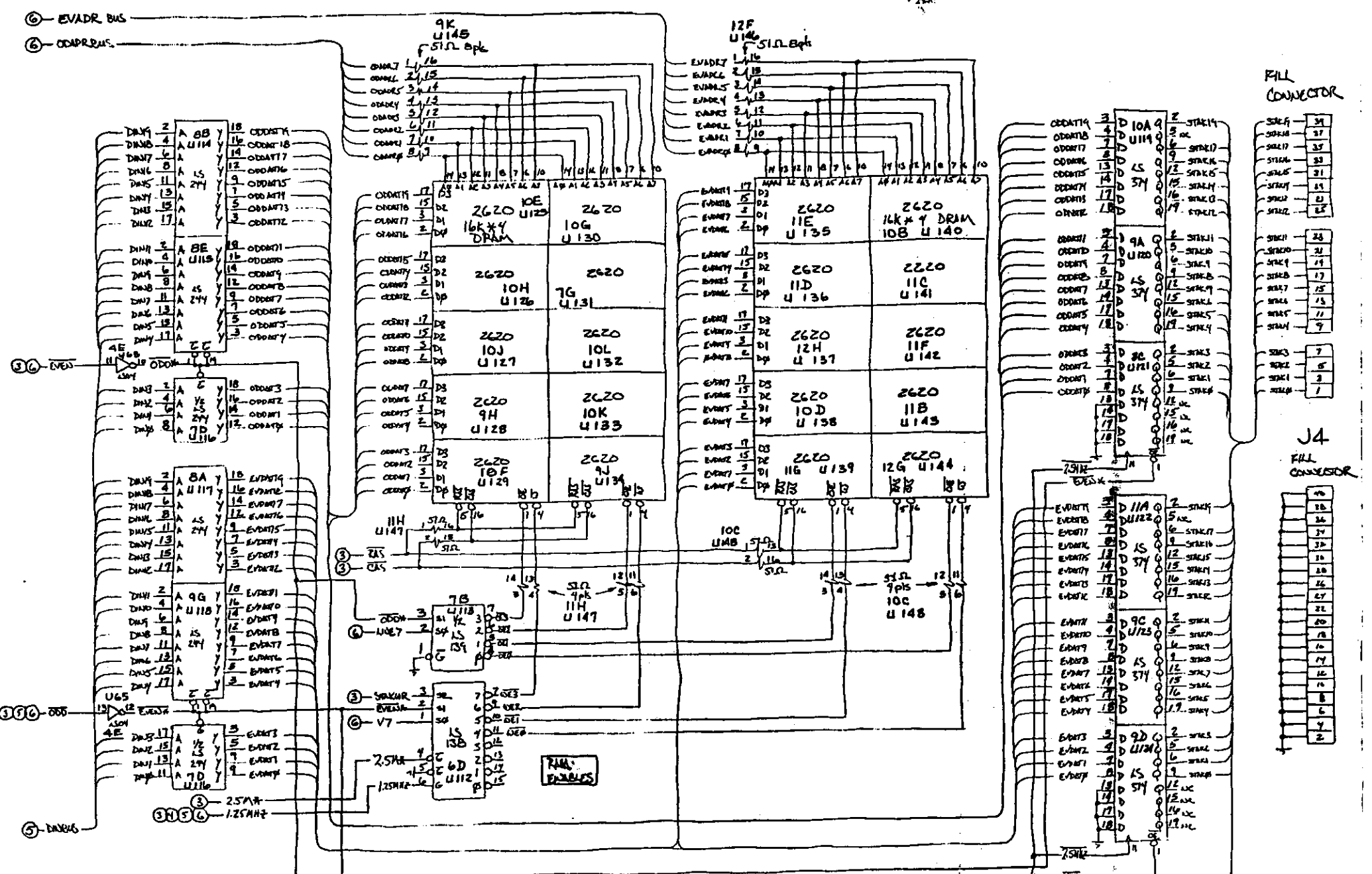
2.5MHz
 - 1.25 MHz

LINE DRAWER
H & V COUNTERS,
STACK POINTER RAM
JLR 12 Aug 83
Revised JLR 3 Nov 83
Revised MAC 11-15-83





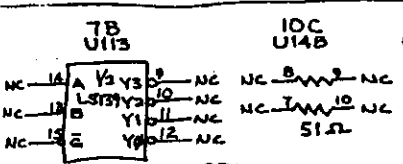
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ODD	0	1	READ	WRITE
EVEN	1	0	WRITE	READ

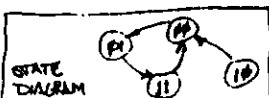
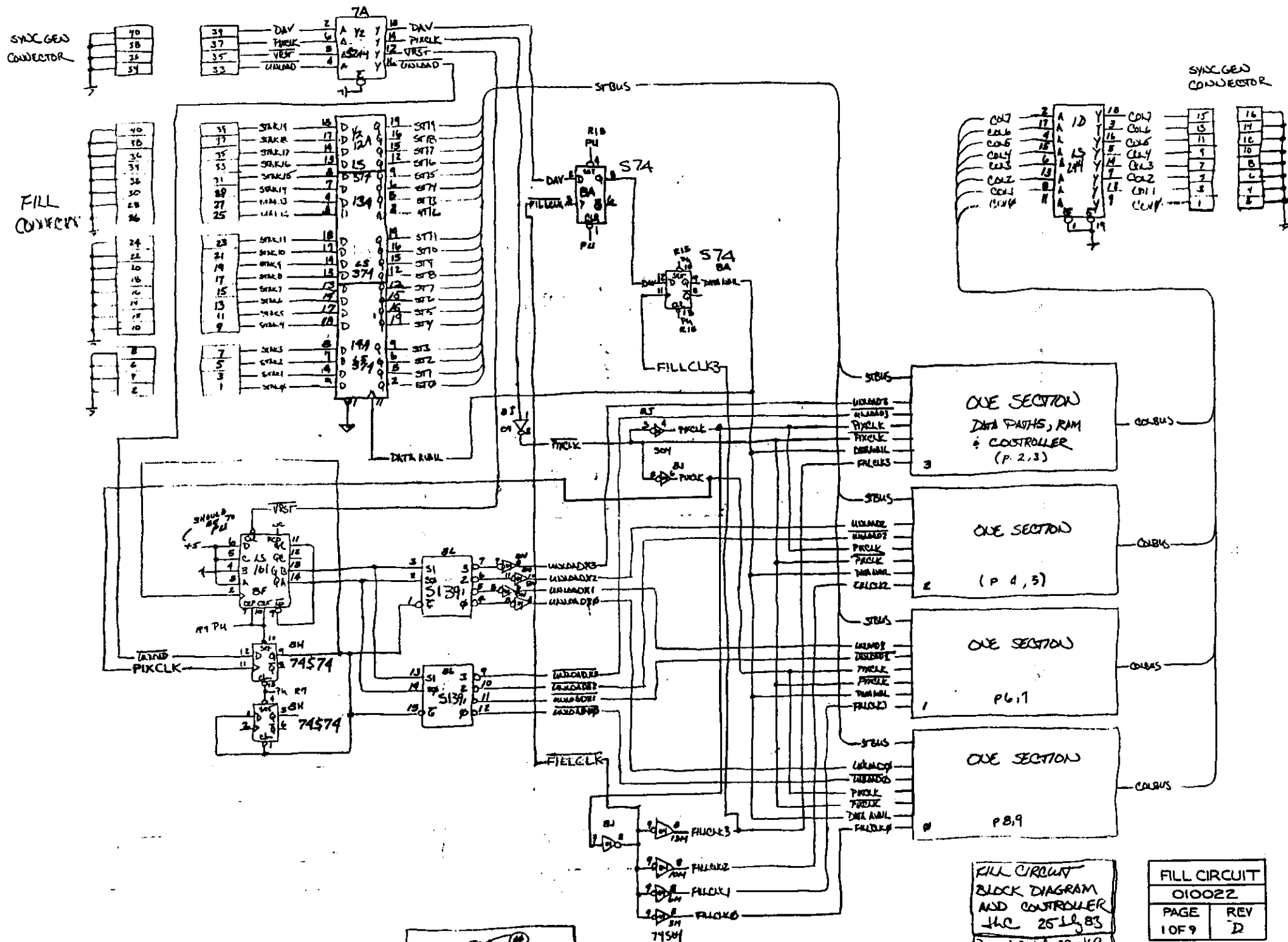


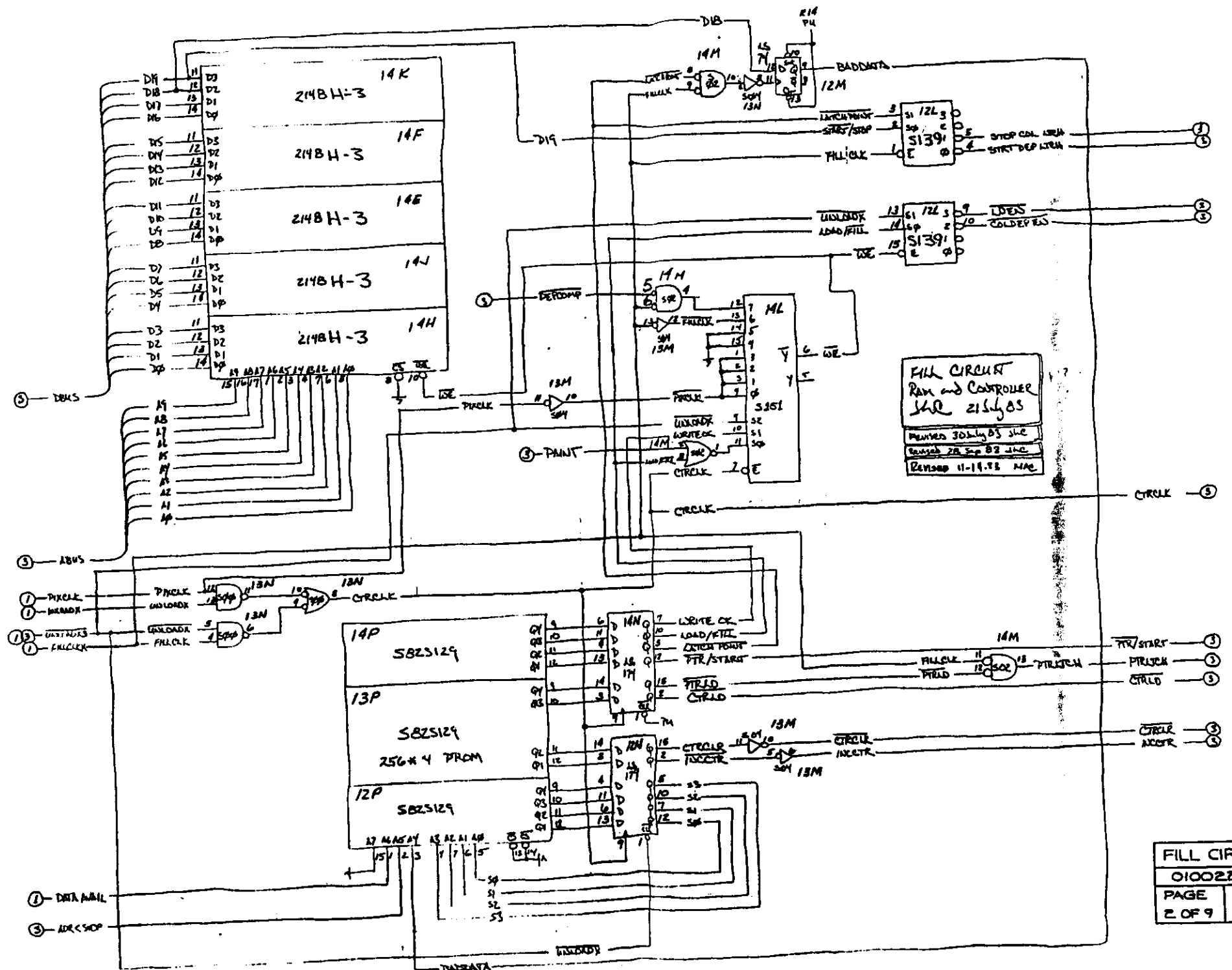
FIELD	OPD	OPD	OPD	OPD	OPD
OPD	0	1	READ	WRITE	READ
OPD	1	0	WRITE	READ	WRITE

11H U147
 NC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
 NC 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
 51.0

LINE DRAWER
 STACK RAM
 DATA PATHS
 JHC 11 Aug 83
 REVISED 11C 30083
 REVISED MAR 11-15-83

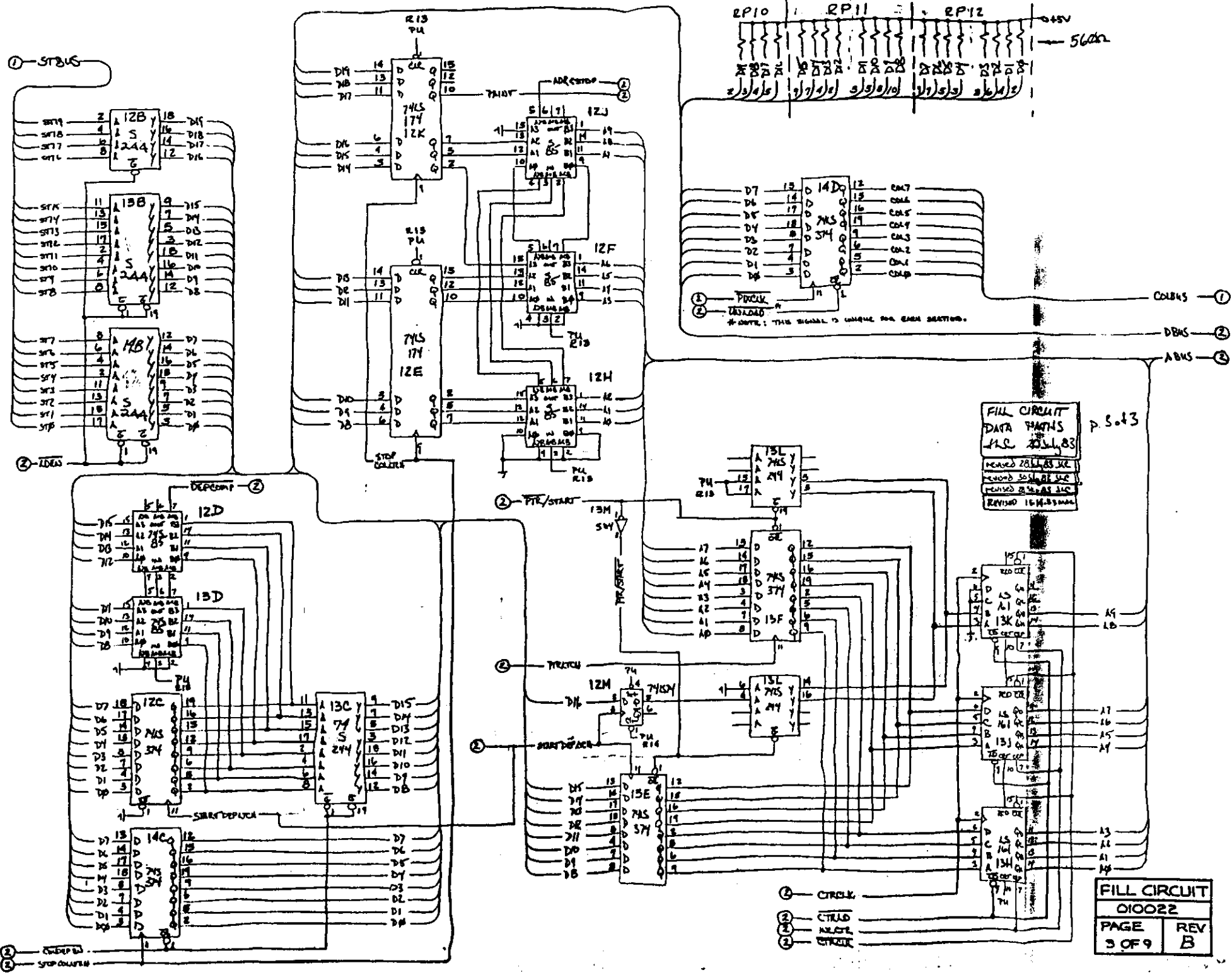


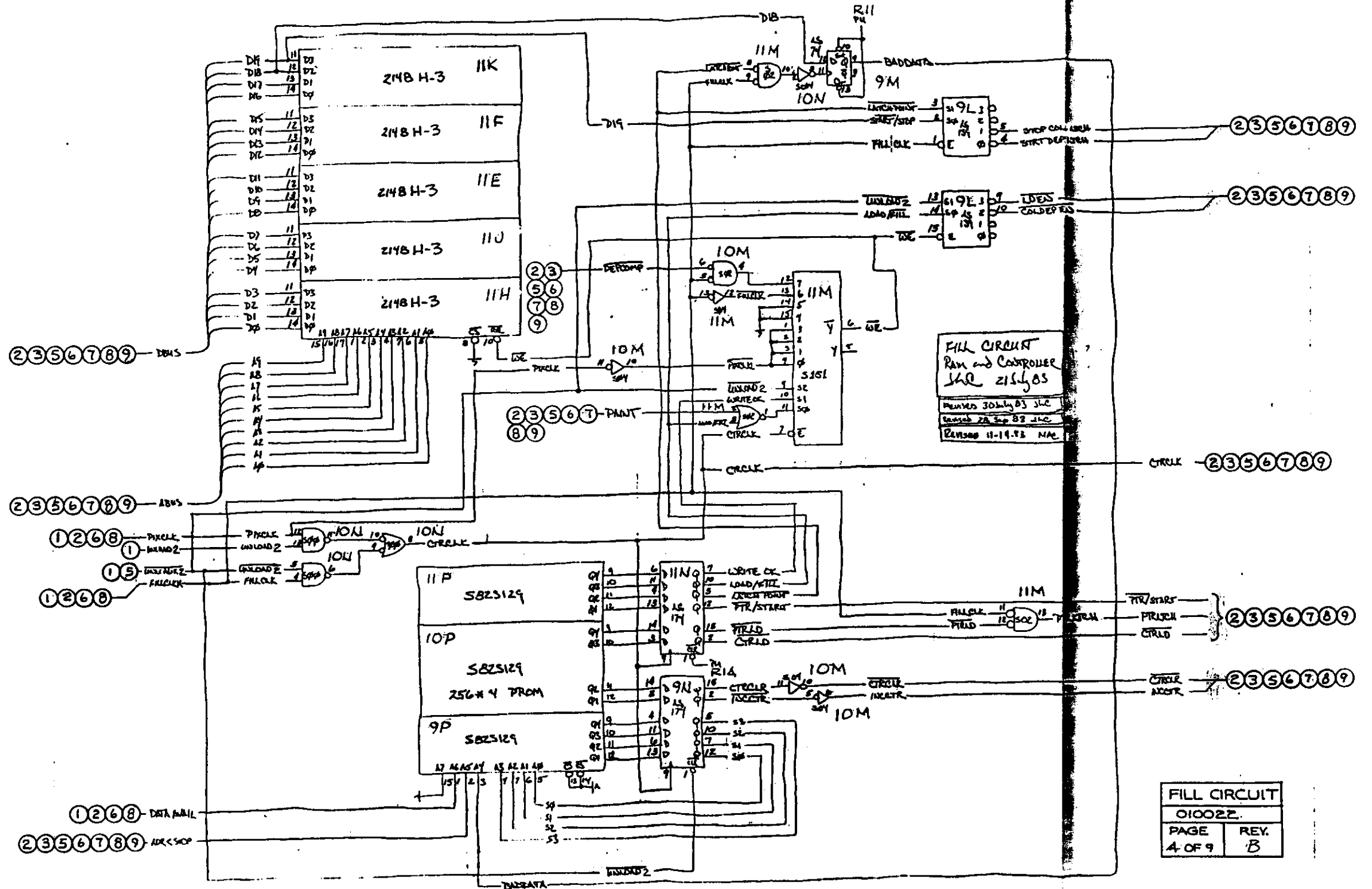


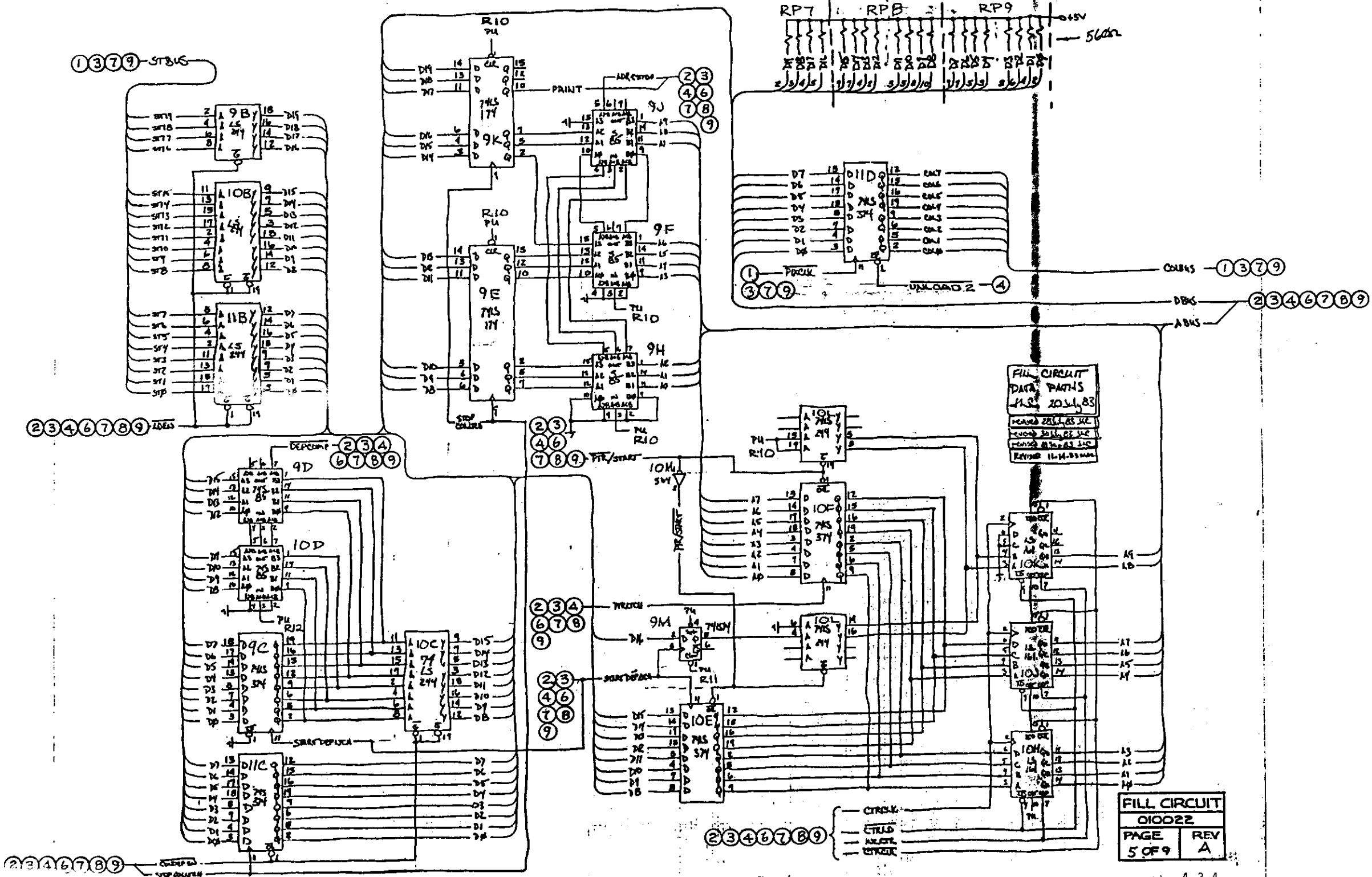


FILL CIRCUIT
RAM and CONTROLLER
SICR 215405
PRINTED 30JUN85 JMC
REVISED 28 SEP 82 JMC
REVISED 11-14-78 MAC

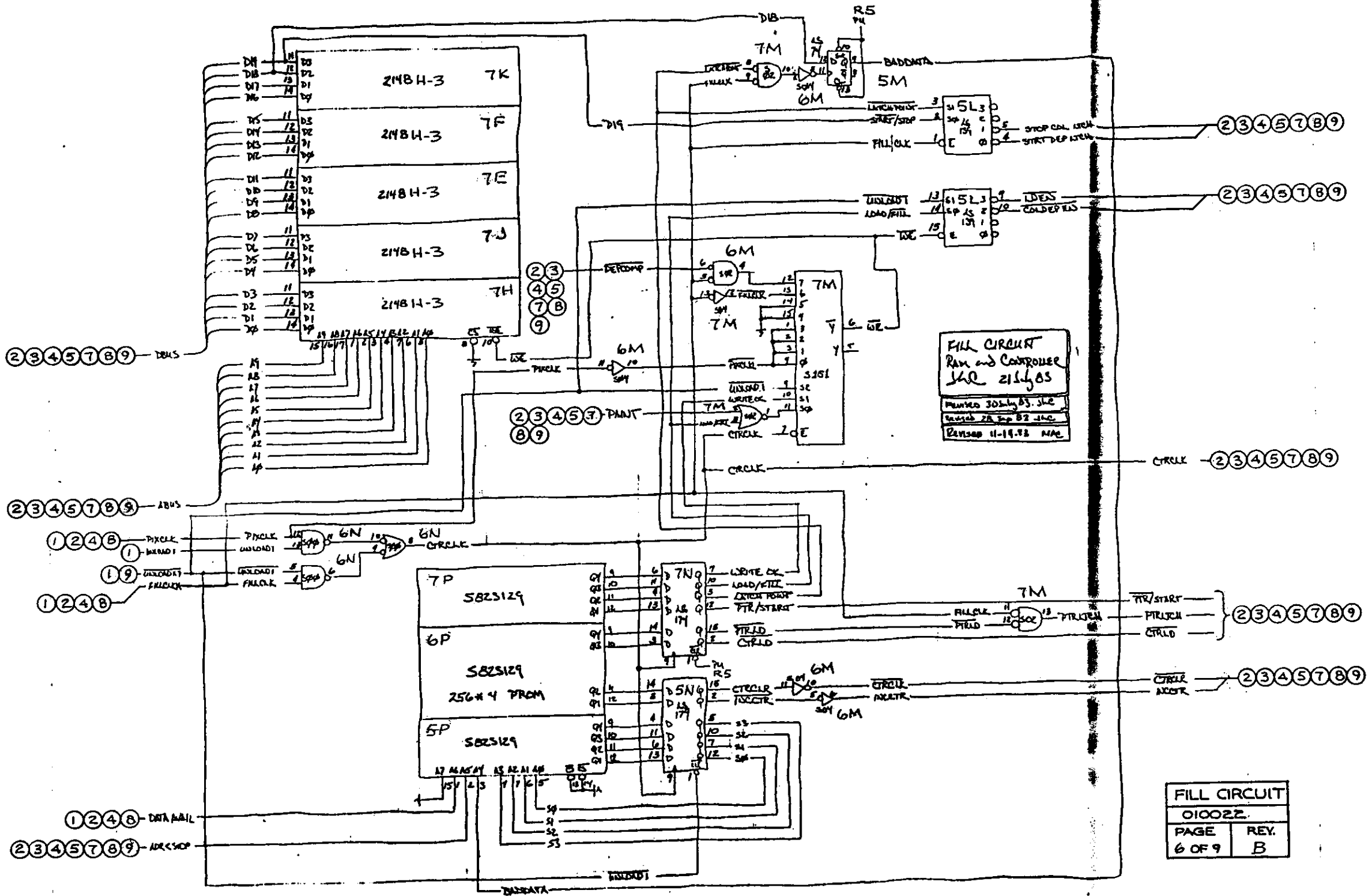
FILL CIRCUIT
010022
PAGE 2 OF 9
REV. C



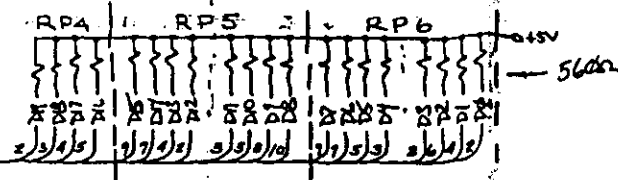
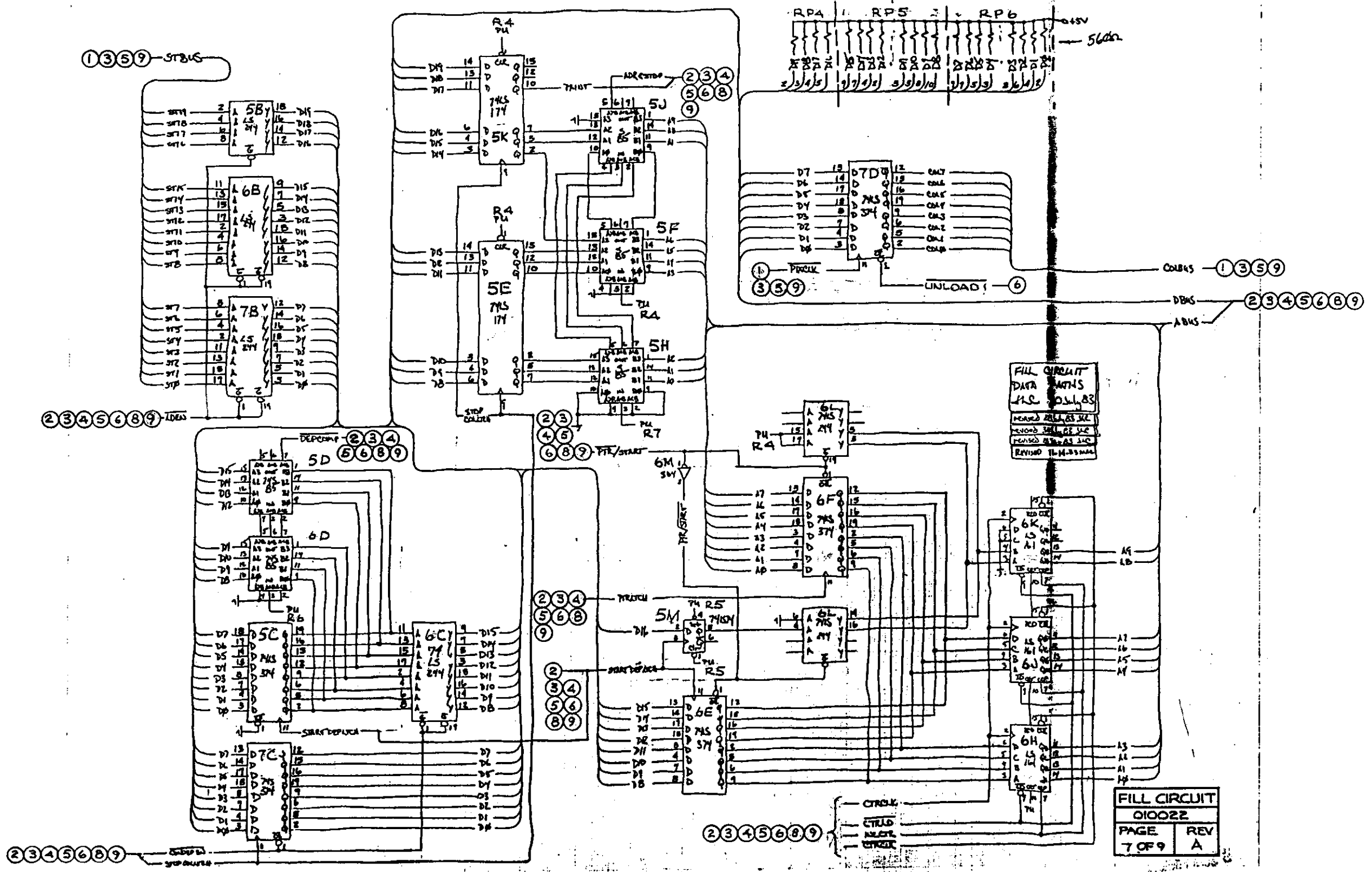




FILL CIRCUIT
O10022
PAGE 5 OF 9
REV A

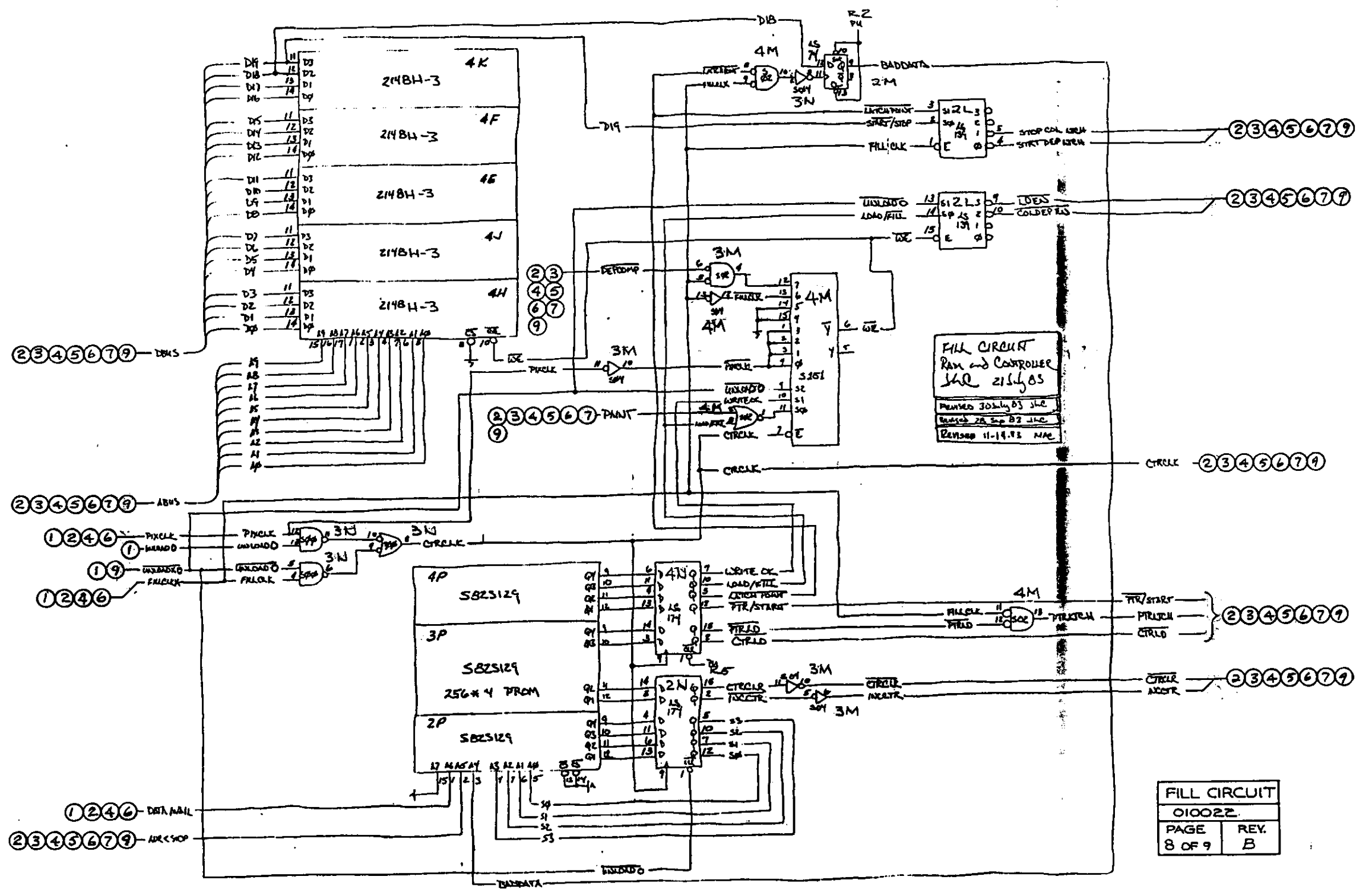


FILL CIRCUIT
010022
PAGE 6 OF 9 REV. B



FILL CIRCUIT
DATA
MS
REVISED 11-14-83

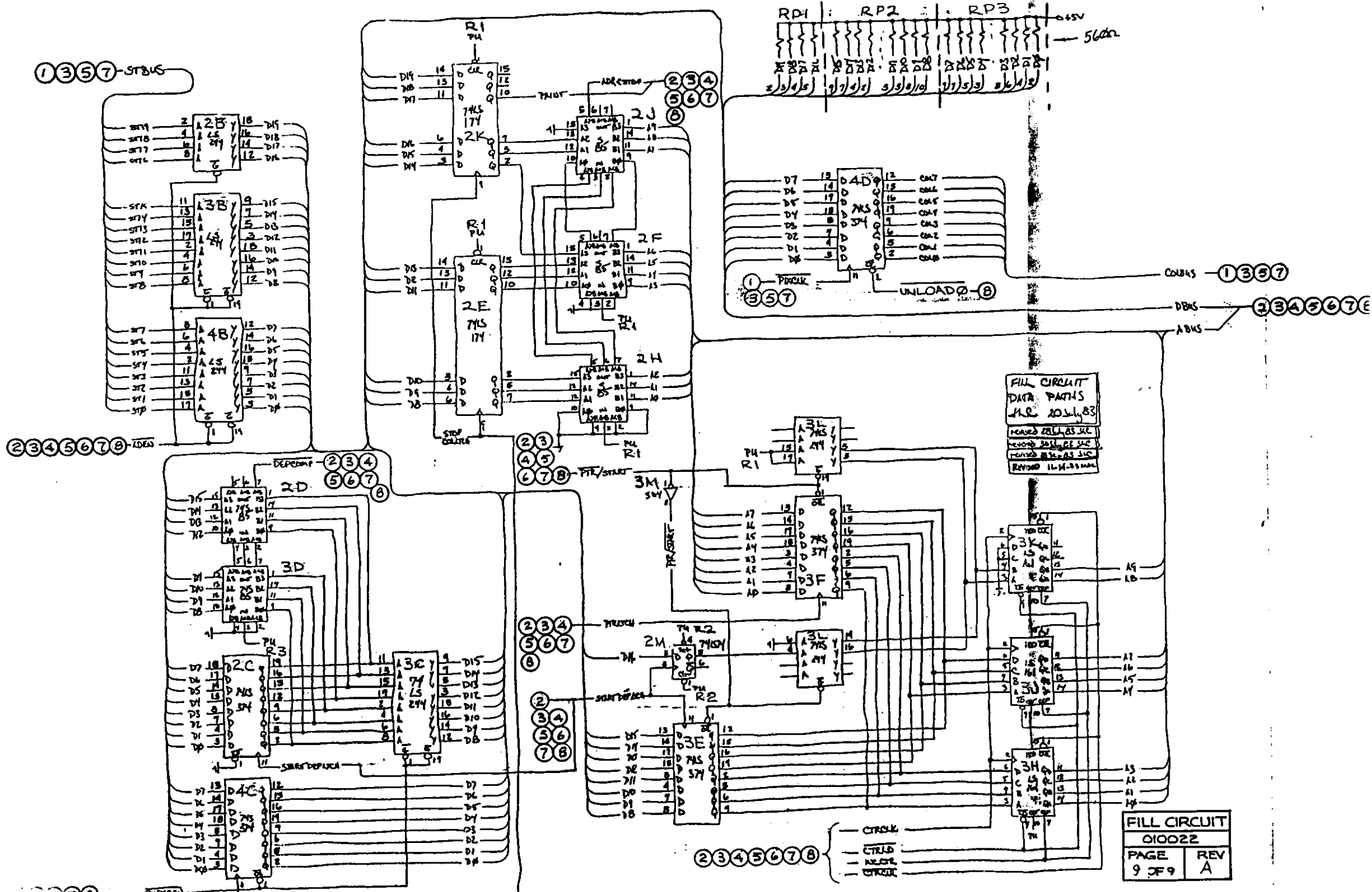
FILL CIRCUIT
010022
PAGE 7 OF 9
REV A



FILL CIRCUIT
RAM and CONTROLLER
Intel 215403

PRINTED 30 July 83 JLC
BOARDS 2A Sep 82 JLC
REVISION 11-14-78 MAC

FILL CIRCUIT
010022
PAGE 8 OF 9 REV. B

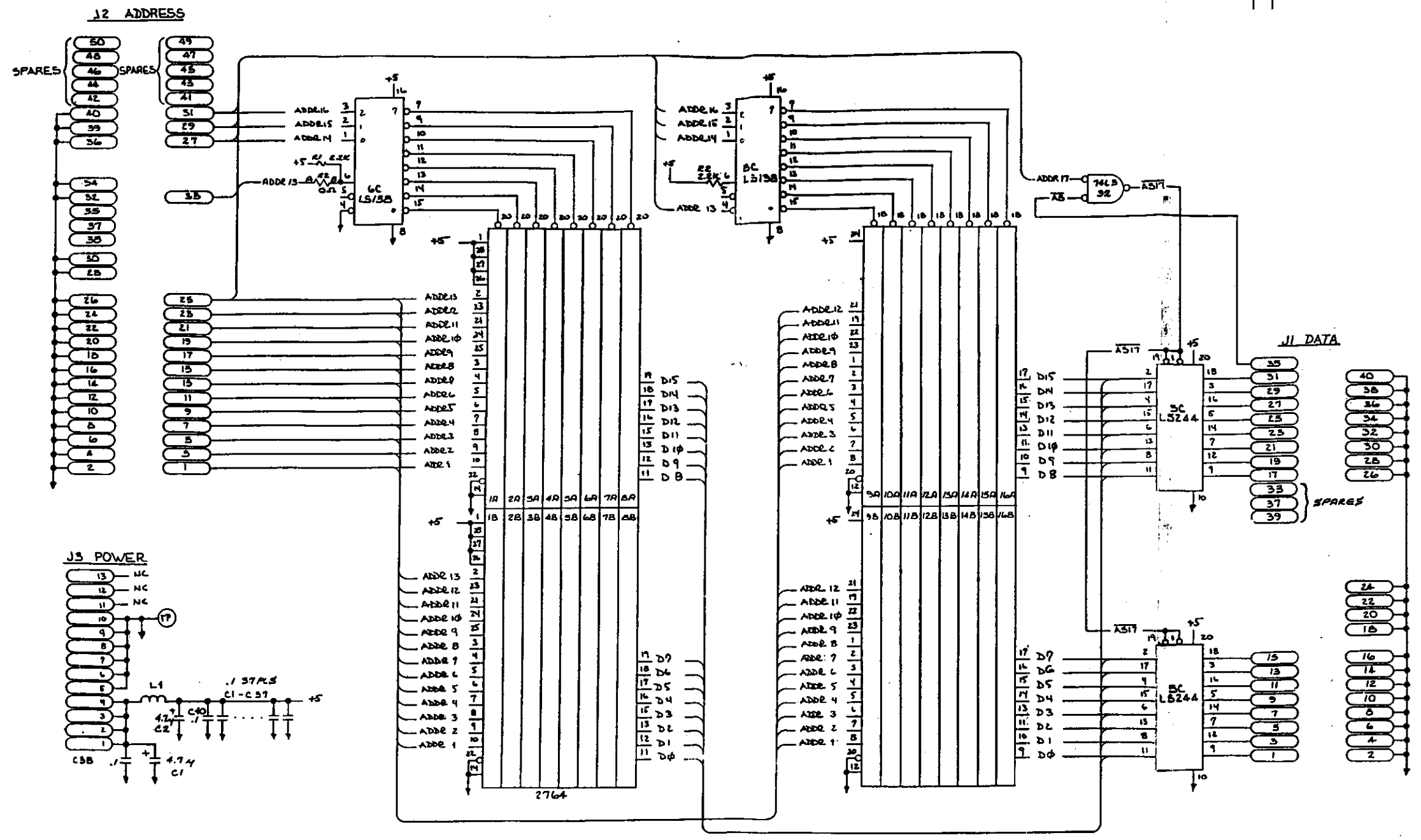


RDI : RP2 : RP3
 5620
 5621

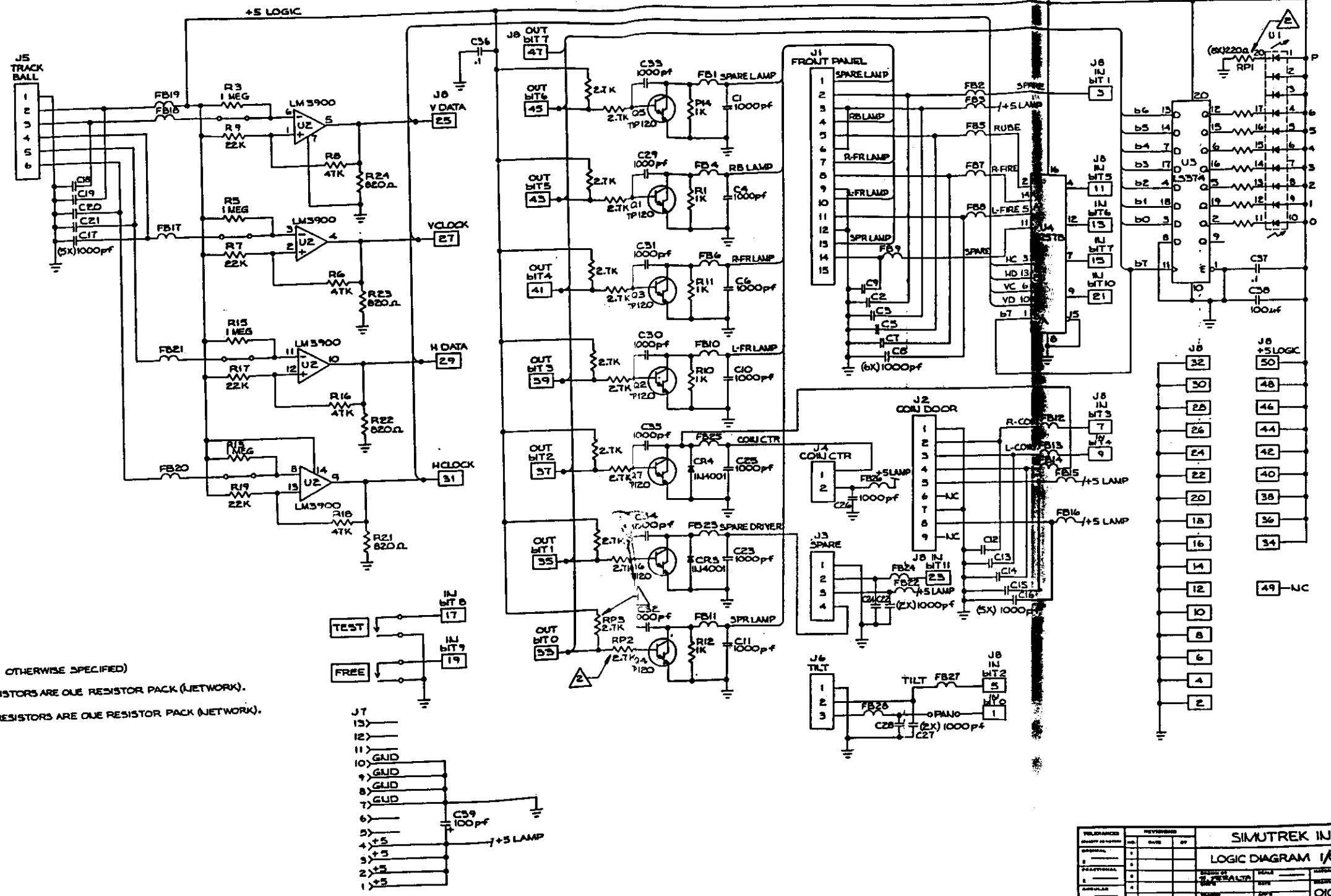
FILL CIRCUIT
 DATA PATH'S
 MR 20 July 83
 REVISED 08/11/83 JIC
 REVISED 08/11/83 JIC
 REVISED 11-11-83 JIC

FILL CIRCUIT
 010022
 PAGE 9 OF 9
 REV A

REV	DESCRIPTION	DATE
A	PRODUCTION RELEASE	7-21-83



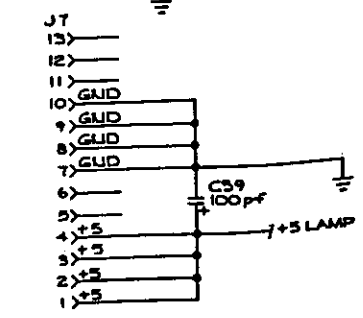
REVISIONS			
LTR	DESCRIPTION	DATE	APPO
A	PRODUCTION RELEASE		



NOTES: (UNLESS OTHERWISE SPECIFIED)

1 VERTICAL RESISTORS ARE ONE RESISTOR PACK (JNETWORK).

2 HORIZONTAL RESISTORS ARE ONE RESISTOR PACK (JNETWORK).



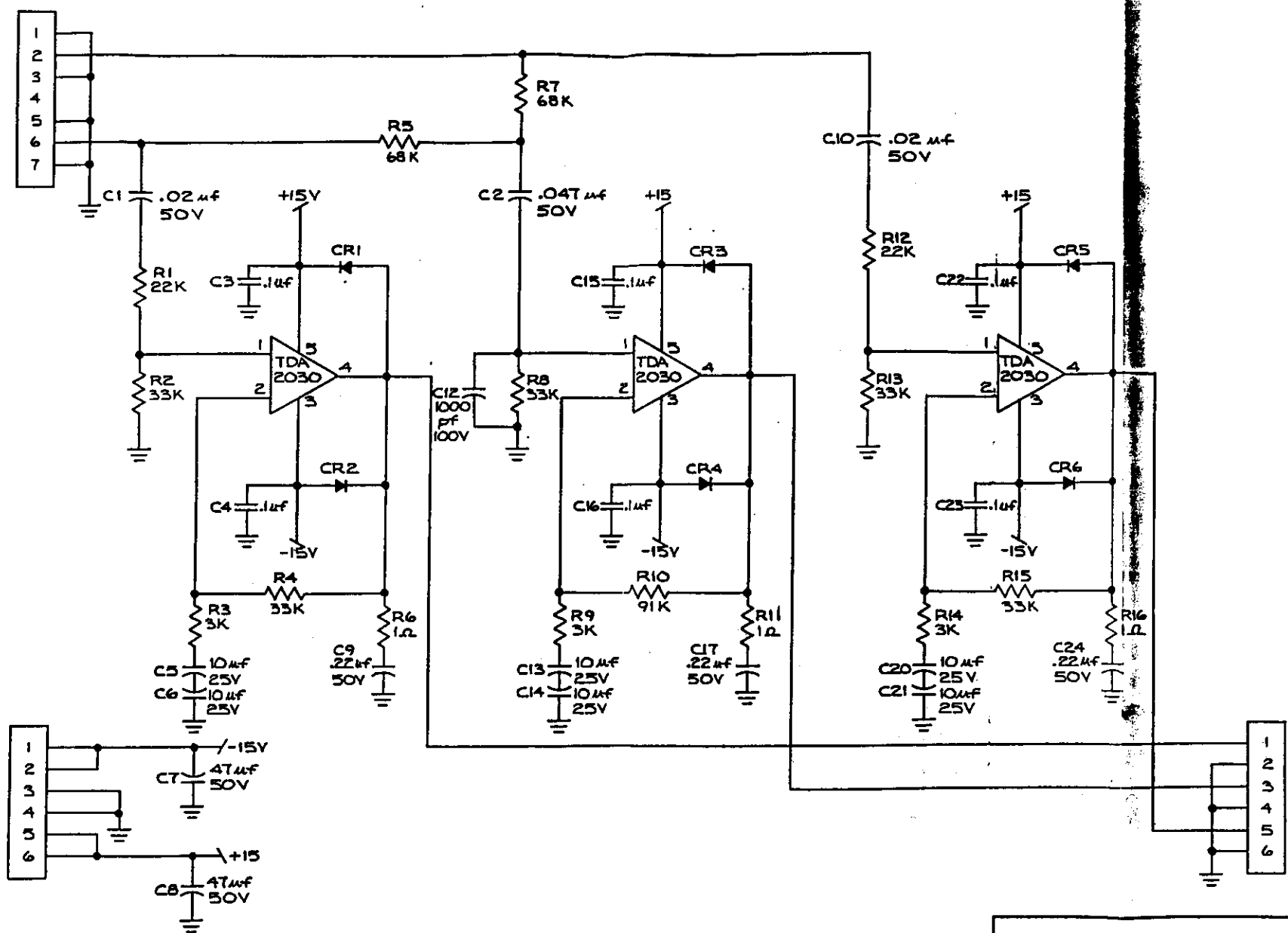
REVISIONS		REVISIONS		REVISIONS	
NO.	DATE	BY	DATE	BY	DATE
1					
2					
3					
4					
5					

SIMUTREK INC.

LOGIC DIAGRAM 1/0

OIO233

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	PRODUCTION RELEASE		
B	REVISED PER EUG INSTRUCTION		



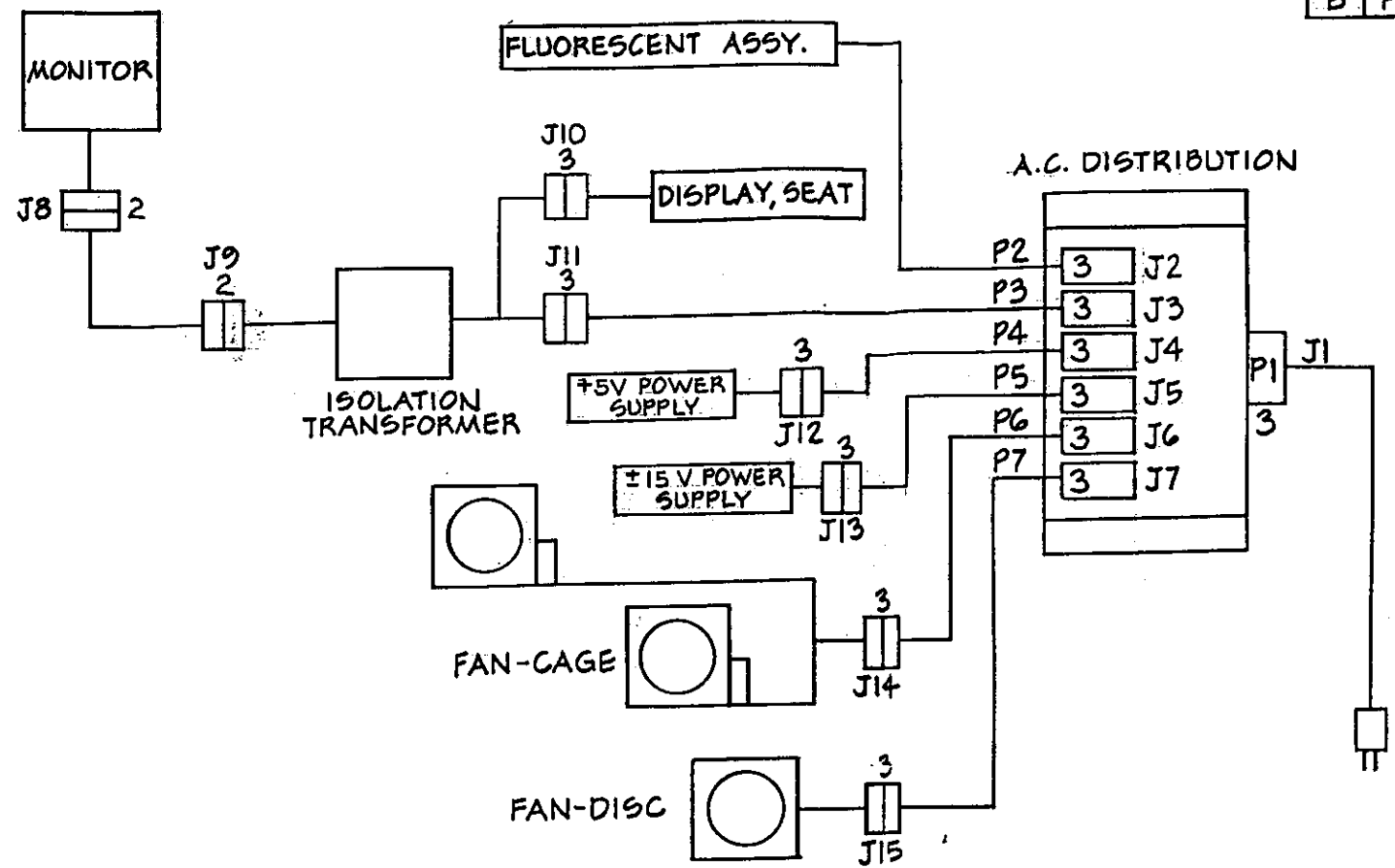
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. ALL RESISTORS ARE 1/4W AND 5%.
2. ALL DIODES ARE 1N4002.
3. LM1875T MAYBE INTERCHANGE WITH TDA2030.

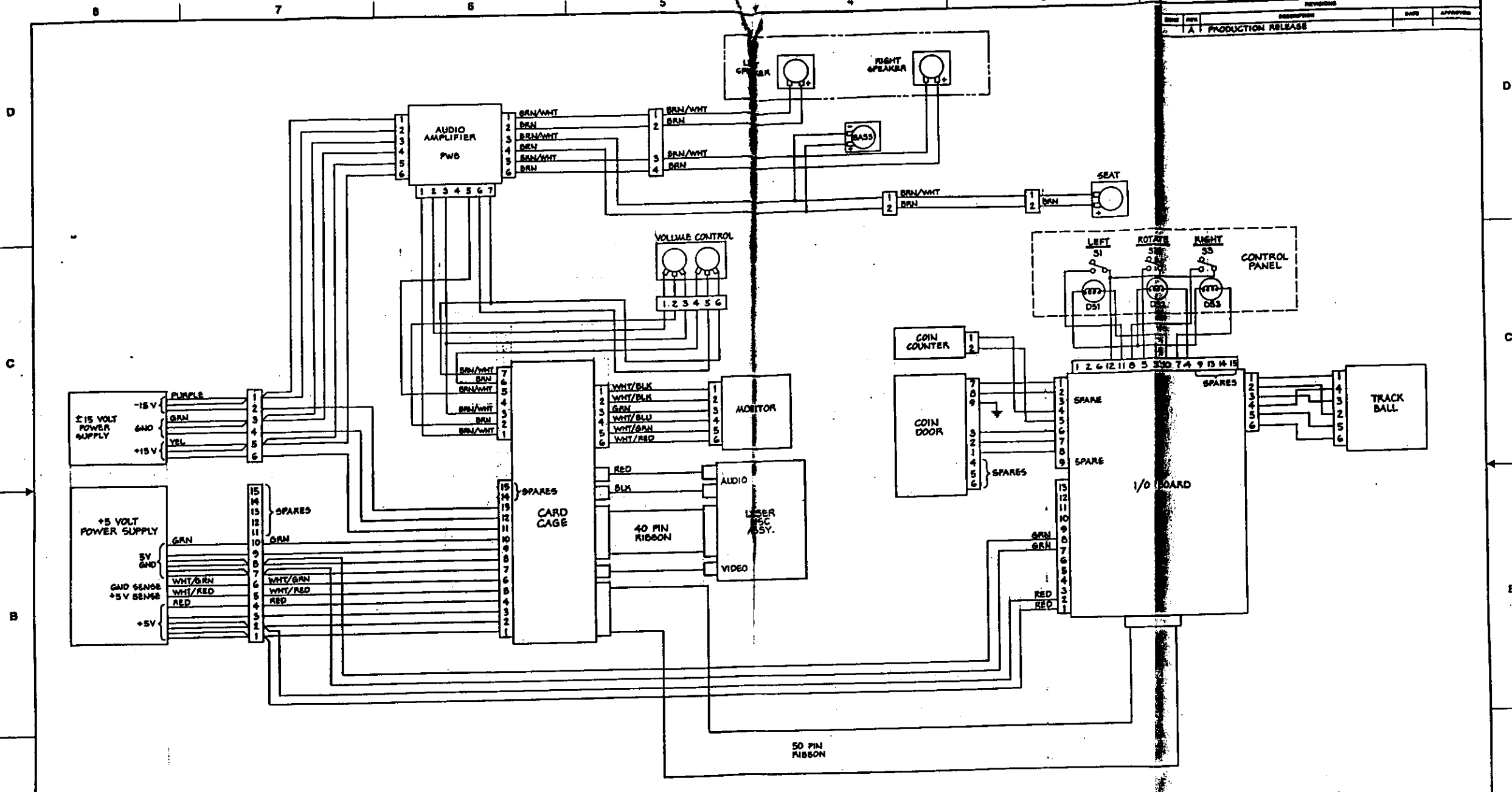
PRINTED WIRING MASTER 010031
 PRINTED WIRING ASSEMBLY 010033
 PRINTED WIRING BOARD 010032

SIMUTREK, INC.			
SCALE: _____	APPROVED BY _____	DRAWN BY _____	
DATE: 11-27-83		N. PERALTA	
AUDIO AMPLIFIER			
N/A 010033		DRAWING NUMBER	REV
		010034	B

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
B	PRODUCTION RELEASE		

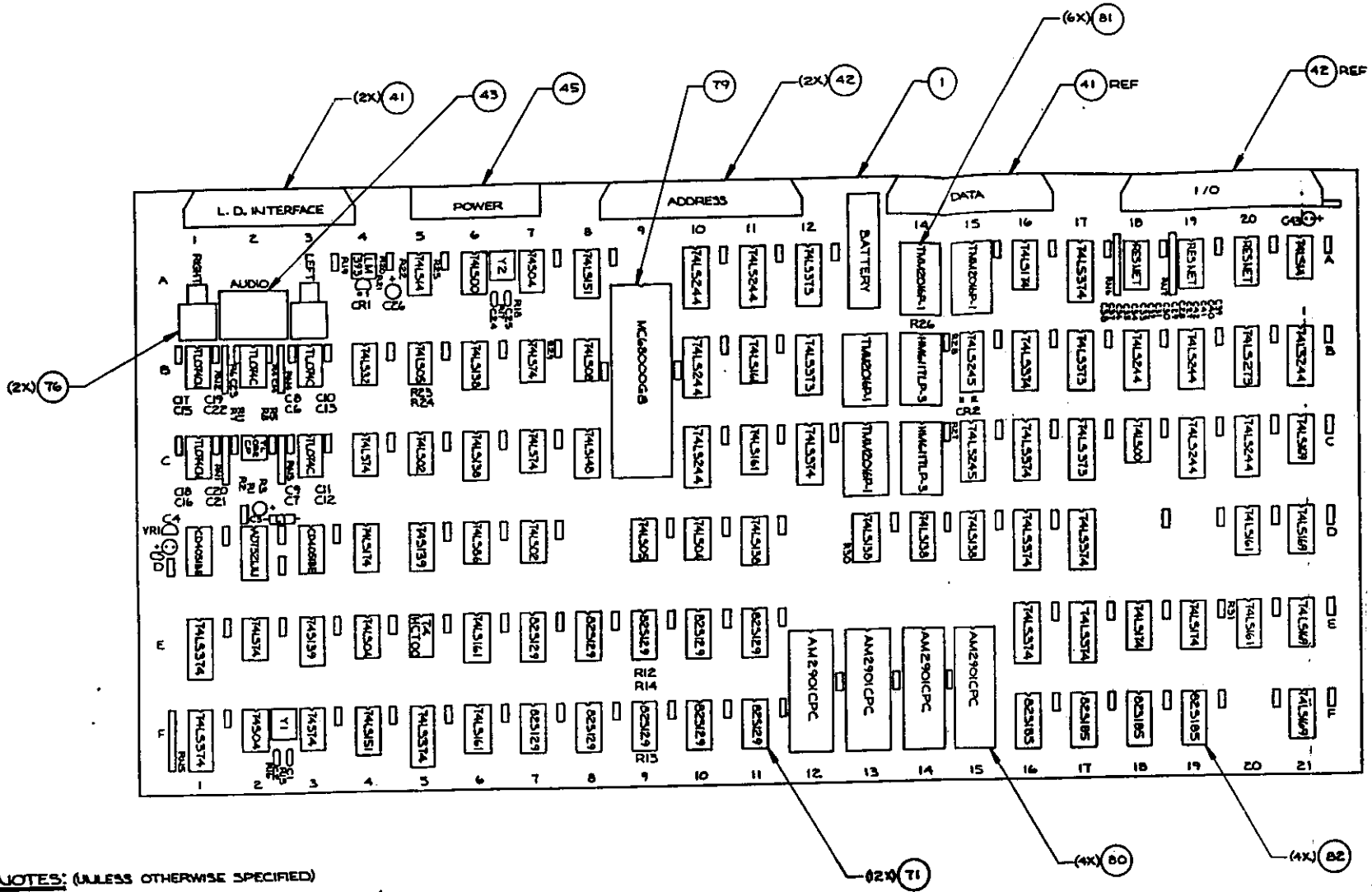


QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONTRACT NO.	
FRACTIONS DECIMALS ANGLES			APPROVALS DATE	
± / .XX ± / ± /			DRAWN <i>C & M</i> 11-25-83	
MATERIAL			CHECKED	
FINISH			ISSUED	
01002			SIZE B FSCM NO. DWG. NO. 010149 REV. B	
NEXT ASSY USED ON			SCALE NONE SHEET 1 OF 1	
APPLICATION			DO NOT SCALE DRAWING	



QTY		FROM		PART OR IDENTIFYING NO.		DESCRIPTION		MATERIAL SPECIFICATION	
REQD	DEL	DEL	DEL	NO.	REV.	DESCRIPTION	DATE	APPROVED	DATE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE DECIMALS UNLESS OTHERWISE SPECIFIED									
CONTRACT NO.									
APPROVALS									
DRAWN: C & M									
DATE: 11-22-53									
CHECKED:									
FOUND:									
MATERIAL:									
PARTS LIST									
SIMUTREK, INC.									
WIRING DIAGRAM DC POWER									
REV. NO. D		FROM NO.		QTY. NO. 010199		REV. NO. A		SHEET 1 OF 1	
APPLICATION									
DO NOT SCALE DRAWING									

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	PRODUCTION RELEASE		
B	REVISED PER ENGINEERING INSTRUCTION		
C	REVISED PER ENGINEERING INSTRUCTION		
D	REVISED PER ENGINEERING INSTRUCTION		



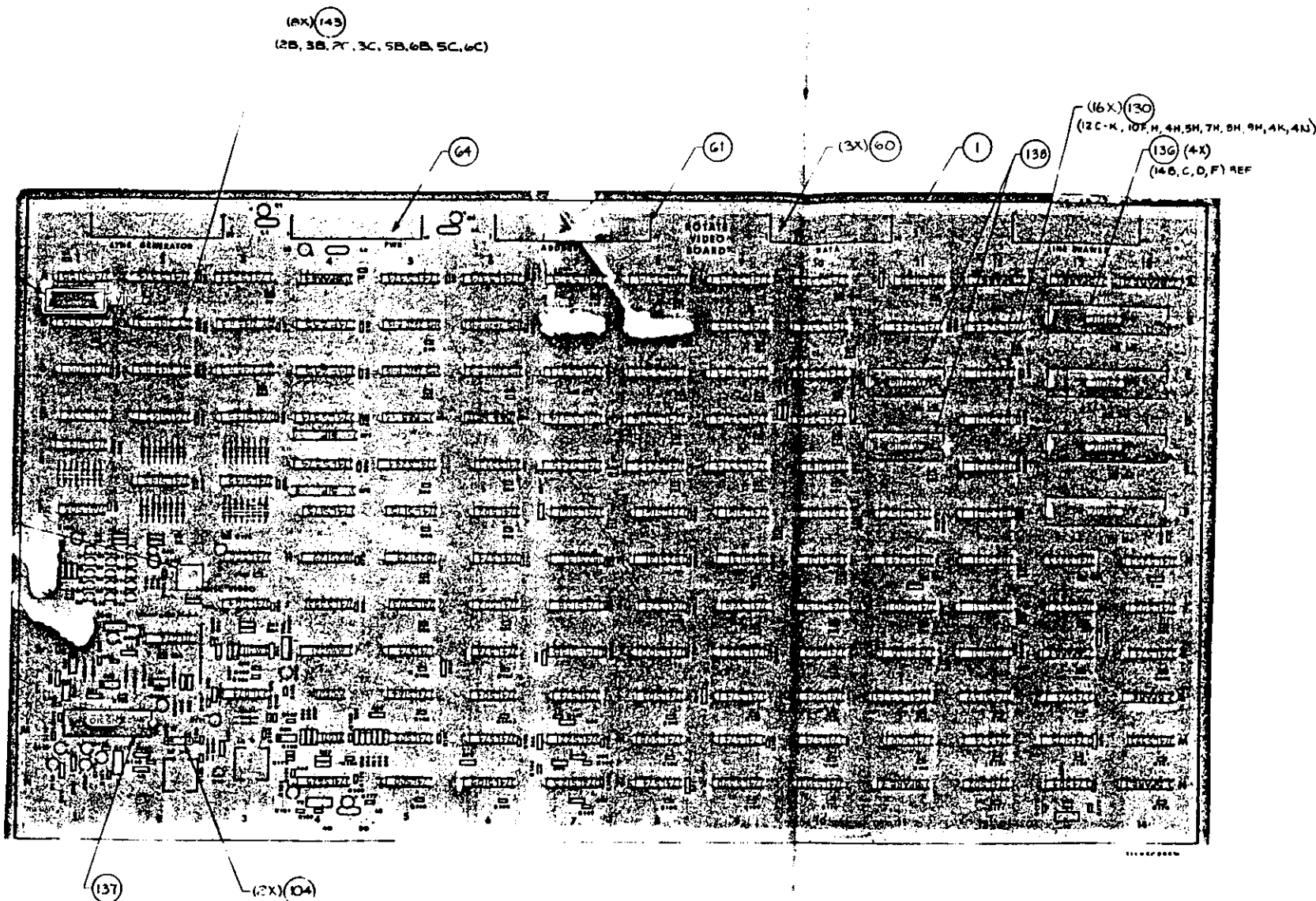
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. RELATED DOCUMENTS ARE: 1. COMPONENT REFERENCE LIST 010017
 2. PARTS LIST 010017
 3. PRINTED WIRING MASTER 010015
 4. PRINTED WIRING BOARD 010016
 5. LOGIC DIAGRAM 010018
2. "DRILLS" ARE TO BE DONE PRIOR TO ANY ASSEMBLY.

FOR LIST OF MATERIAL SEE PL 010017

DATE: 11-25-83 BY: J. J. [Signature] CHECKED BY: [Signature]		APPROVED BY: [Signature] TITLE: PERALIA
MOTHER / SOUNDS		
N/A 010014	REV A00017	REV D
		SHT 1 OF 3

REV NO		A010029		1	
REVISIONS					
REV	DESCRIPTION	DATE	APPROVED		
A	PRODUCTION RELEASE				
B	REVISED PER ENGINEERING INSTRUCTION				
C	REVISED PER ENGINEERING INSTRUCTION				

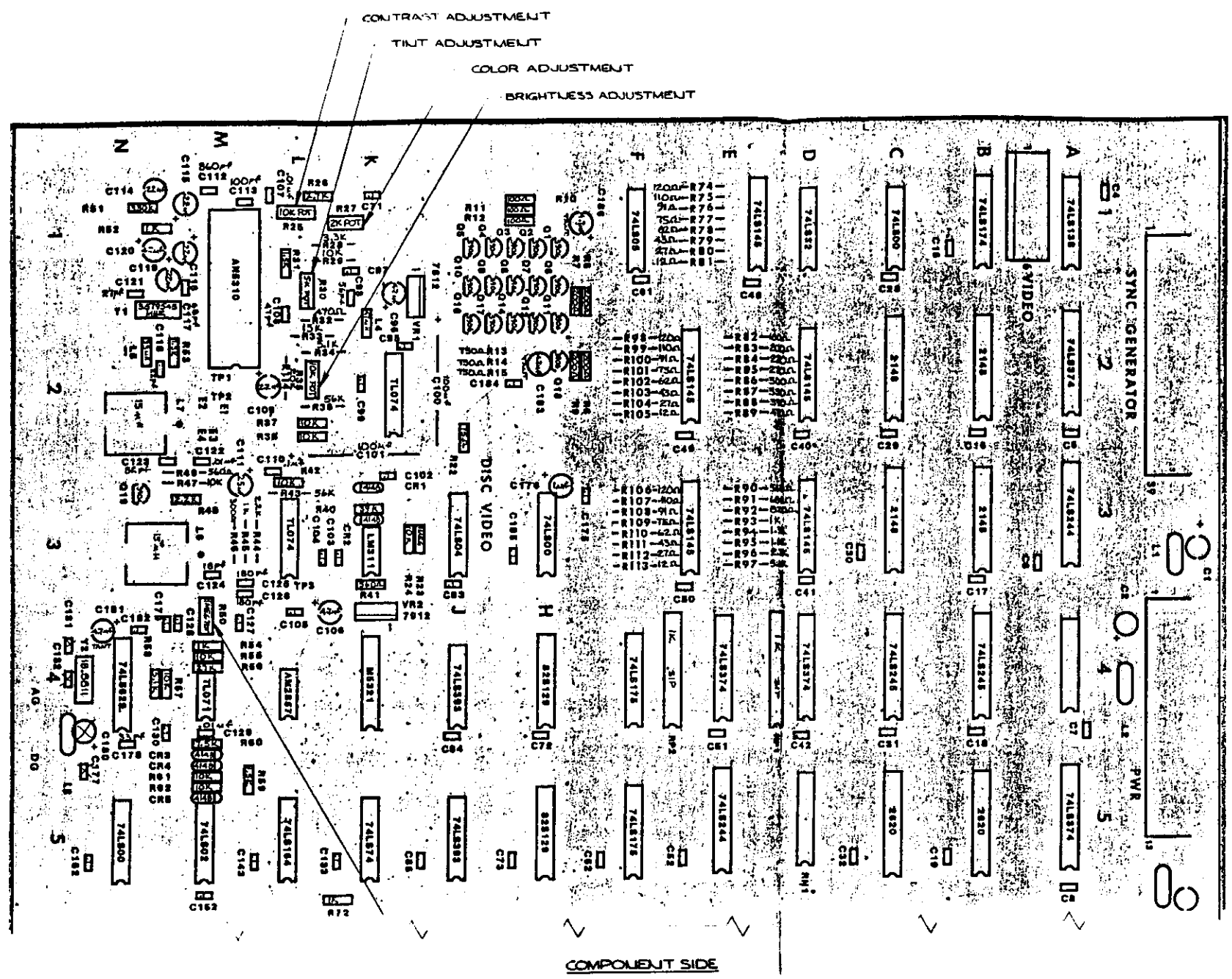


NOTES: (UNLESS OTHERWISE SPECIFIED)

1. RELATED DOCUMENTS ARE:
 1. COMPONENT REFERENCE LIST 010029
 2. PARTS LIST 010029
 3. PRINTED WIRING BOARD 010029
 4. LOGIC DIAGRAM 010029

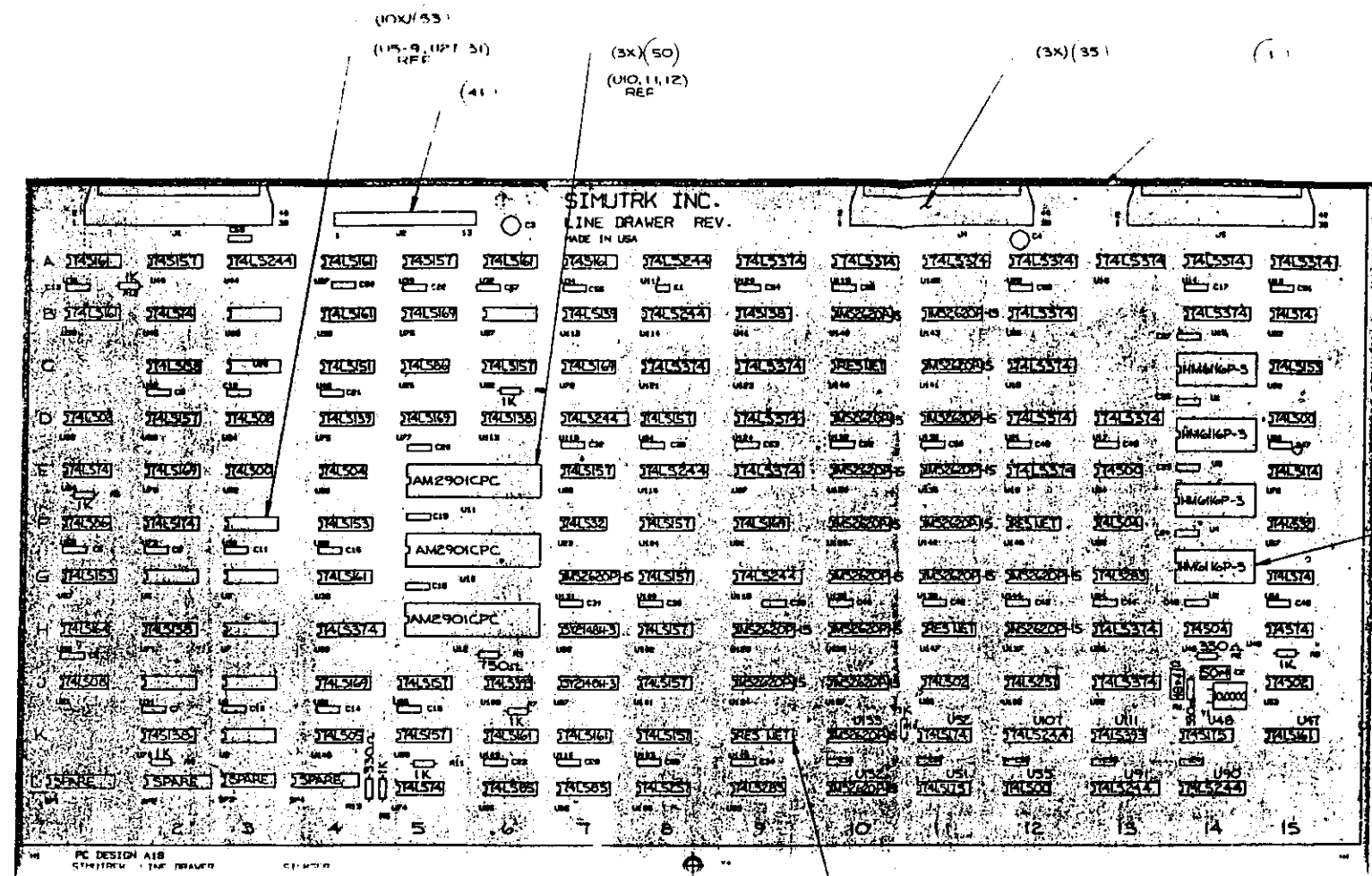
QUANTITY	UNIT	DESCRIPTION	REVISIONS	DATE	APPROVED
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES AND FRACTIONS DECIMALS ANGLES SEE SEE			CONTRACT NO.	DATE	
MATERIAL			APPROVALS	DATE	
SEE PARTS LIST			DATE	11-26-69	
FORM			DATE	11-26-69	
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING		
SIMUTREK, INC.			PRINTED WIRING AS 1 ROTATE VIDEO		
			A010029		
			PAGE 1 OF 3		

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
X	FOR REVISION STATUS SEE SHEET 1	---	---



DRAWING		REVISIONS		SIMUTREK, INC.	
NO.	DATE	NO.	DATE	REV.	BY
				PRINTED WIRING ASSY. ROTATE VIDEO	
				REV. C	
				SHT 2 OF 3	

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	PRODUCTION RELEASE	4/1/83	JF
B	REVISED PER ENGINEERING INSTRUCTION		



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. RELATED DOCUMENTS ARE: 1. COMPONENT REFERENCE LIST 01002; 2. PARTS LIST 010025; 3. LOGIC DIAGRAM 010026; 4. PRINTED WIRING MASTER 010023; 5. PRINTED WIRING BOARD 010024

(4X) (51)
(U1-4)
REF

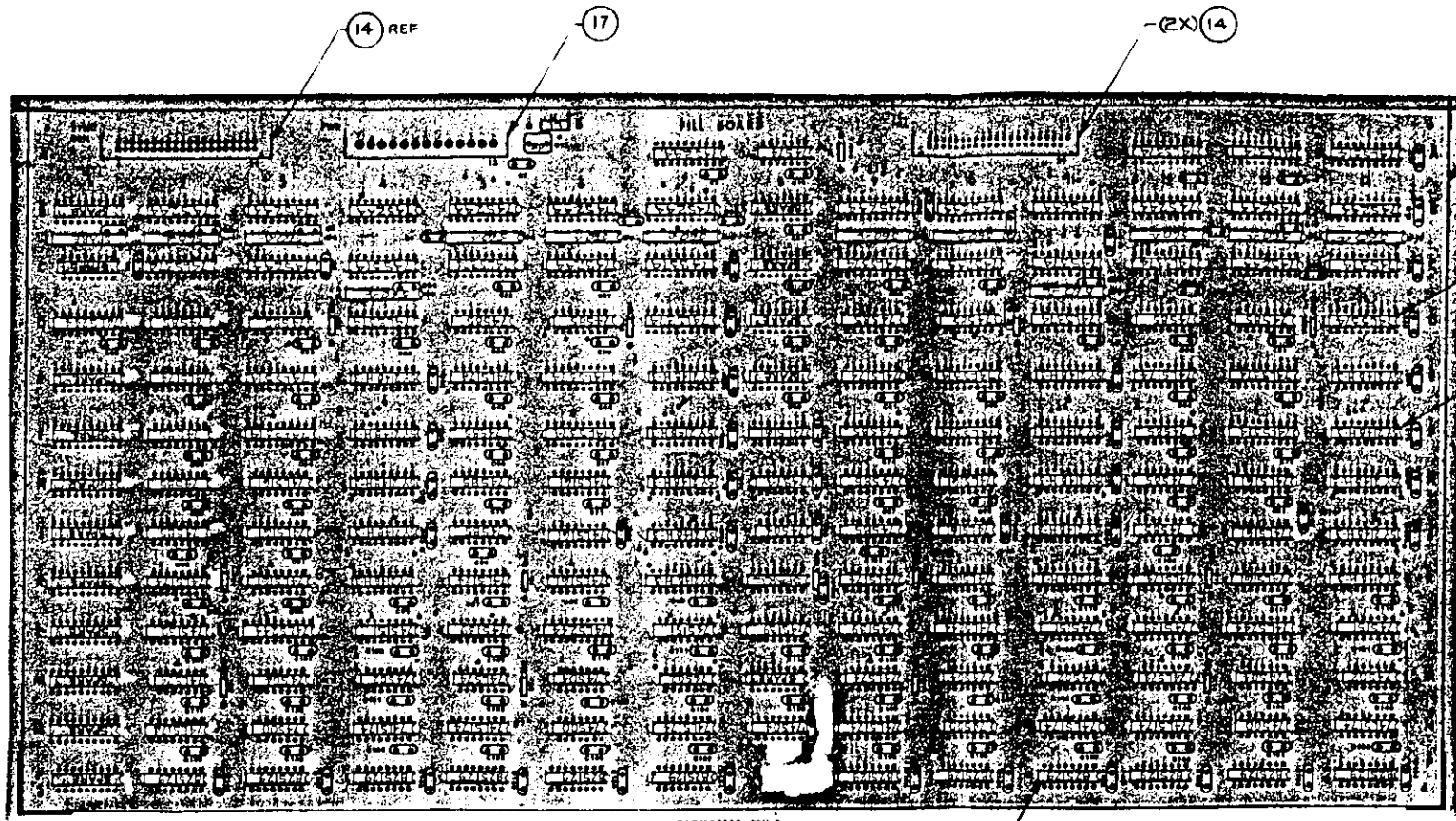
FOR LIST OF MATERIAL SEE PL 010025

PART NUMBER	REVISIONS		DATE	BY
	NO.	DESCRIPTION		

SIMUTREK INC.
PRINTED WIRING ASSEMBLY
LINE DRAWER

U. PERALTA AW7088	REV. FULL 12-14-83	DATE	REV
			AO10025 (A)

REV NO		REV		REV	
A010021		1	D		
REV	NO	DESCRIPTION	DATE	APPROVED	
X	A	PRODUCTION RELEASE			
X	B	REVISED PER ENGINEERING INSTRUCTION			
X	C	REVISED PER ENGINEERING INSTRUCTION			
X	D	REVISED PER ENGINEERING INSTRUCTION			



NOTES: (UNLESS OTHERWISE SPECIFIED)

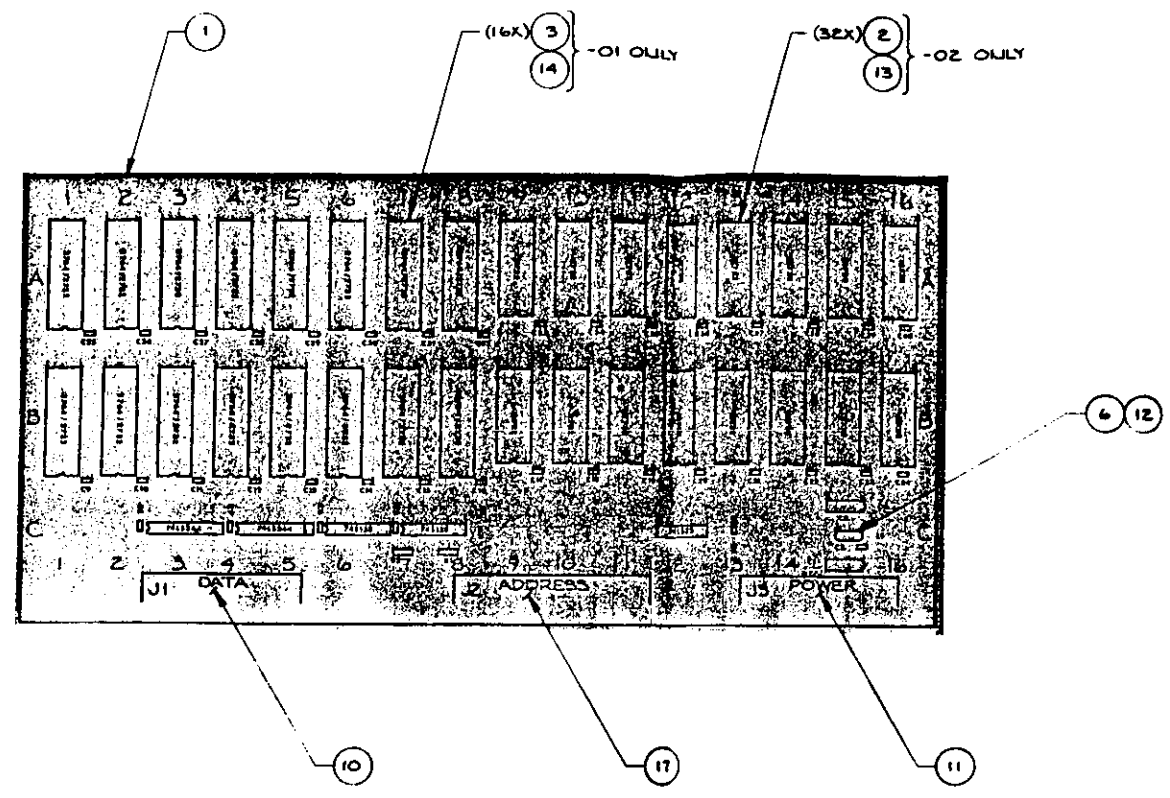
1. RELATED DOCUMENTS ARE: 1. COMPONENT REFERENCE LIST 010021
2. PARTS LIST 010021
3. PRINTED WIRING MASTER 010019
4. PRINTED WIRING BOARD 010020
5. LOGIC DIAGRAM 010022

(12X) 30
(2P-7P, 9P-14P)
REF

FOR LIST OF MATERIAL SEE PL 010021

REV NO 010006	FILE NO	PART OR IDENTIFYING NO	QUANTITY 1	UNIT OF MEASUREMENT PCB	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS AND/EE					
APPROVALS					
DATE		DATE			
11-26-53		12-14-53			
C & M		11/22/53			
D		D			
CONTRACT NO		PARTS LIST			
SIMUTREK, INC.		PRINTED WIRING ASSEMBLY			
FILL		REV D			
A010021		REV D			
SCALE NONE		SHEET 1 OF 3			

REV	DESCRIPTION	DATE	APPROVED
A	PRODUCTION RELEASE		

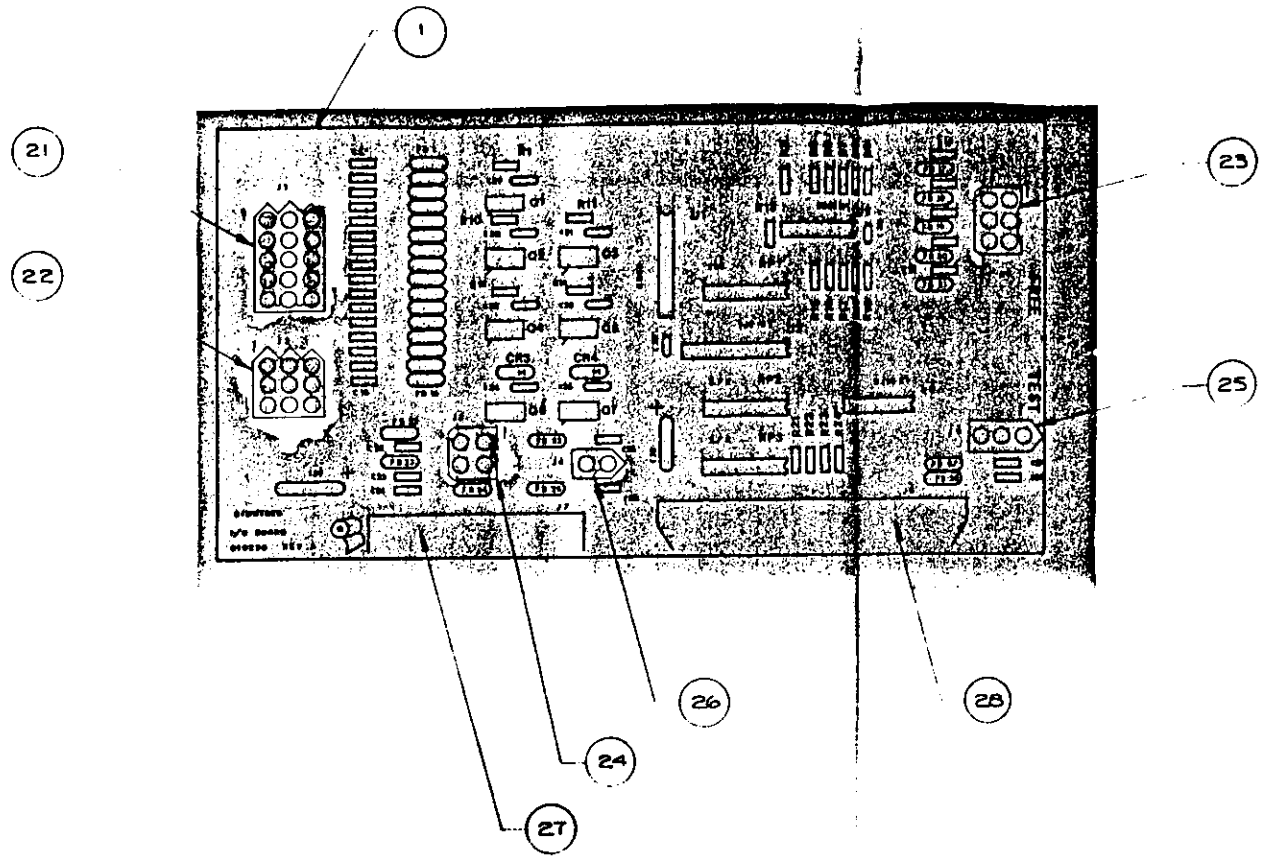


NOTES: (UNLESS OTHERWISE SPECIFIED)

- 1. RELATED DOCUMENTS ARE:
 - 1. RELATED WIRING MASTER 010010
 - 2. RELATED WIRING BOARD 010011
 - 3. LOGIC DIAGRAM 010013
 - 4. PARTS LIST 010012

VERIFICATION <input type="checkbox"/> TEST ASBY <input type="checkbox"/> THREE ANGLE PROJECTION <input type="checkbox"/> DIM <input type="checkbox"/> DIM		PARTS LIST UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN DECIMALS TOLERANCES FRACTIONS DECIMALS FRACTIONS MATERIAL SEE PL 010012		APPROVALS DATE 12-23-85 J. PERALTA PROJECT ENGINEER		DESCRIPTION PRINTED WIRING ASSEMBLY EPROM BOARD		ITEM NO. DRAWING NO. A010012 SCALE FULL SHEET 1 OF 3	
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REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	PRODUCTION RELEASE		



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. RELATED DOCUMENTS ARE:
 1. PRINTED WIRING MASTER 010230
 2. PRINTED WIRING BOARD 010231
 3. LOGIC DIAGRAM 010233
 4. PARTS LIST 010232
2. DO NOT STUFF C1 THRU C35

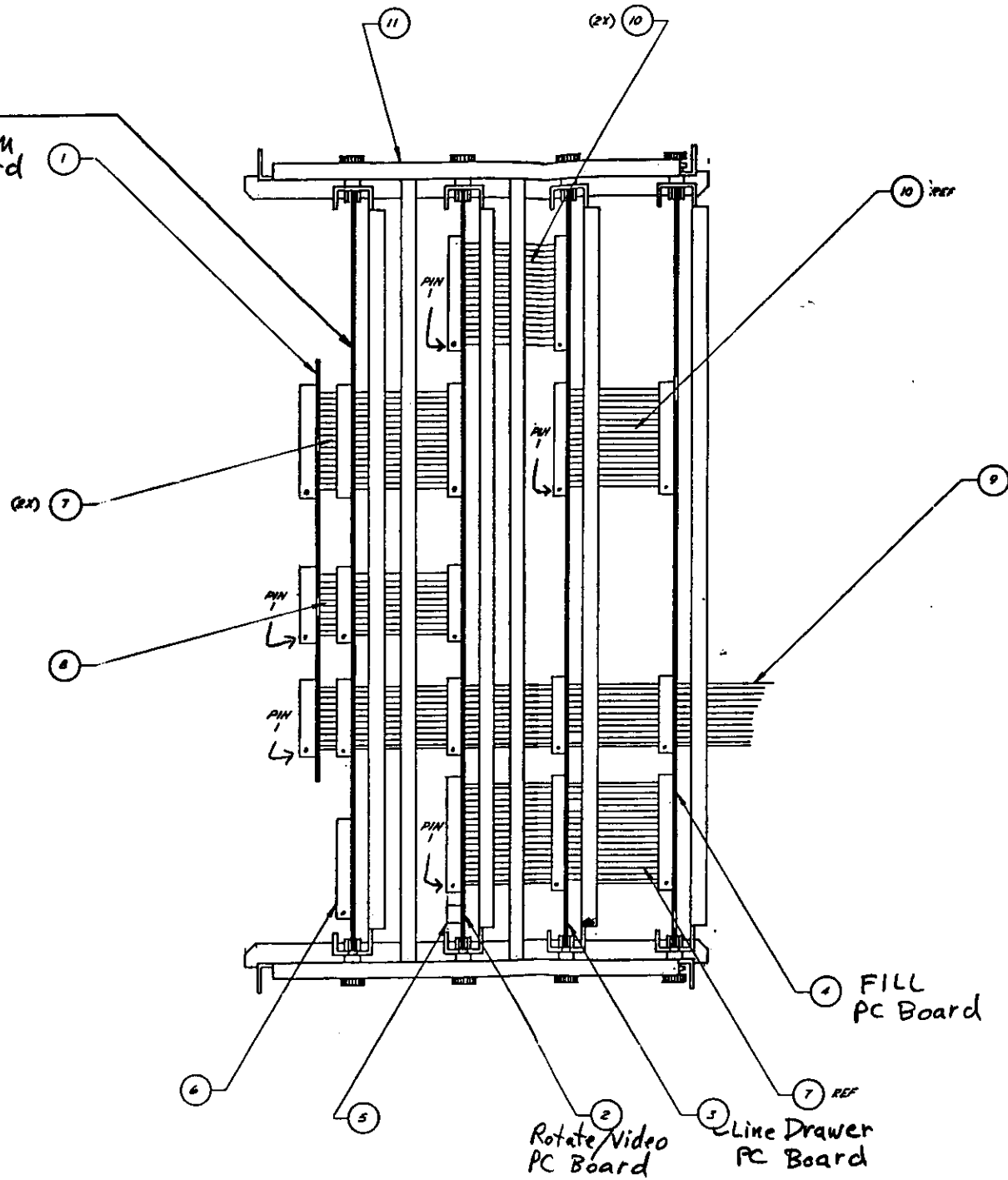
FOR LIST OF MATERIAL SEE PL 010232

SIMUTREK, INC.

SCALE: FULL	APPROVED BY	DRAWN BY
DATE: 11-30-83		N. PERALTA
PRINTED WIRING ASSEMBLY <i>ip</i>		
SHT 1 OF 1	DRAWING NUMBER	REV
	A010232	A

Mother/Sounds
PC Board

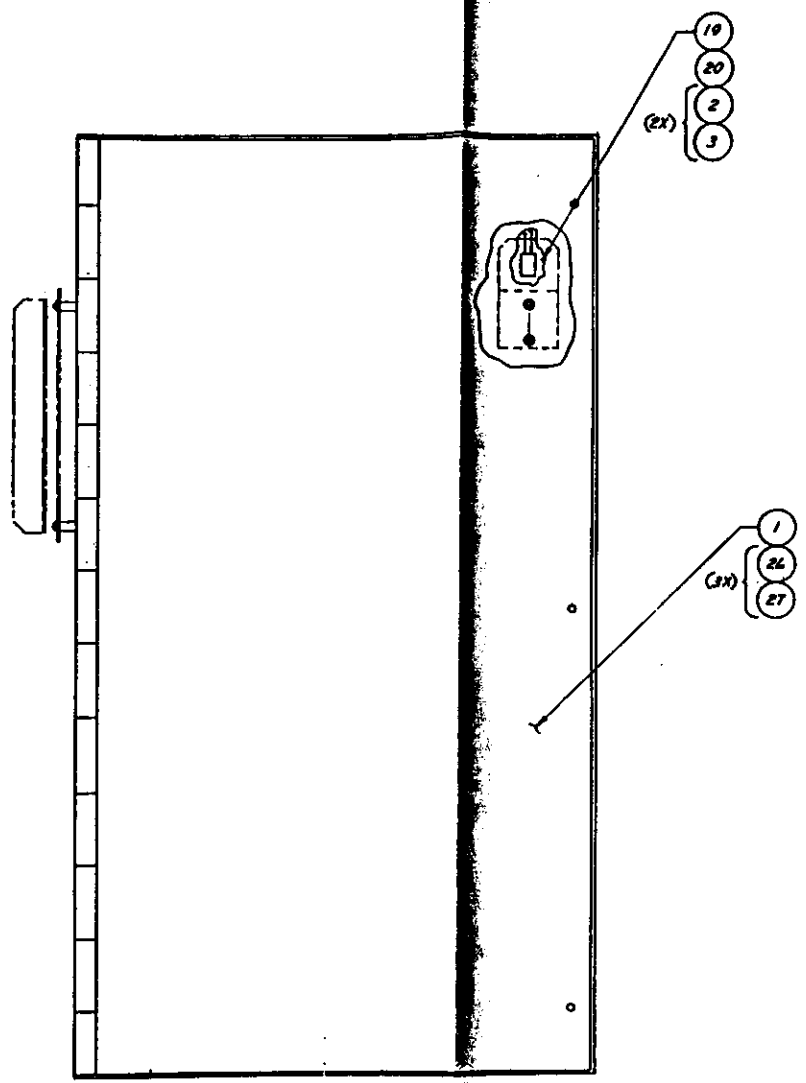
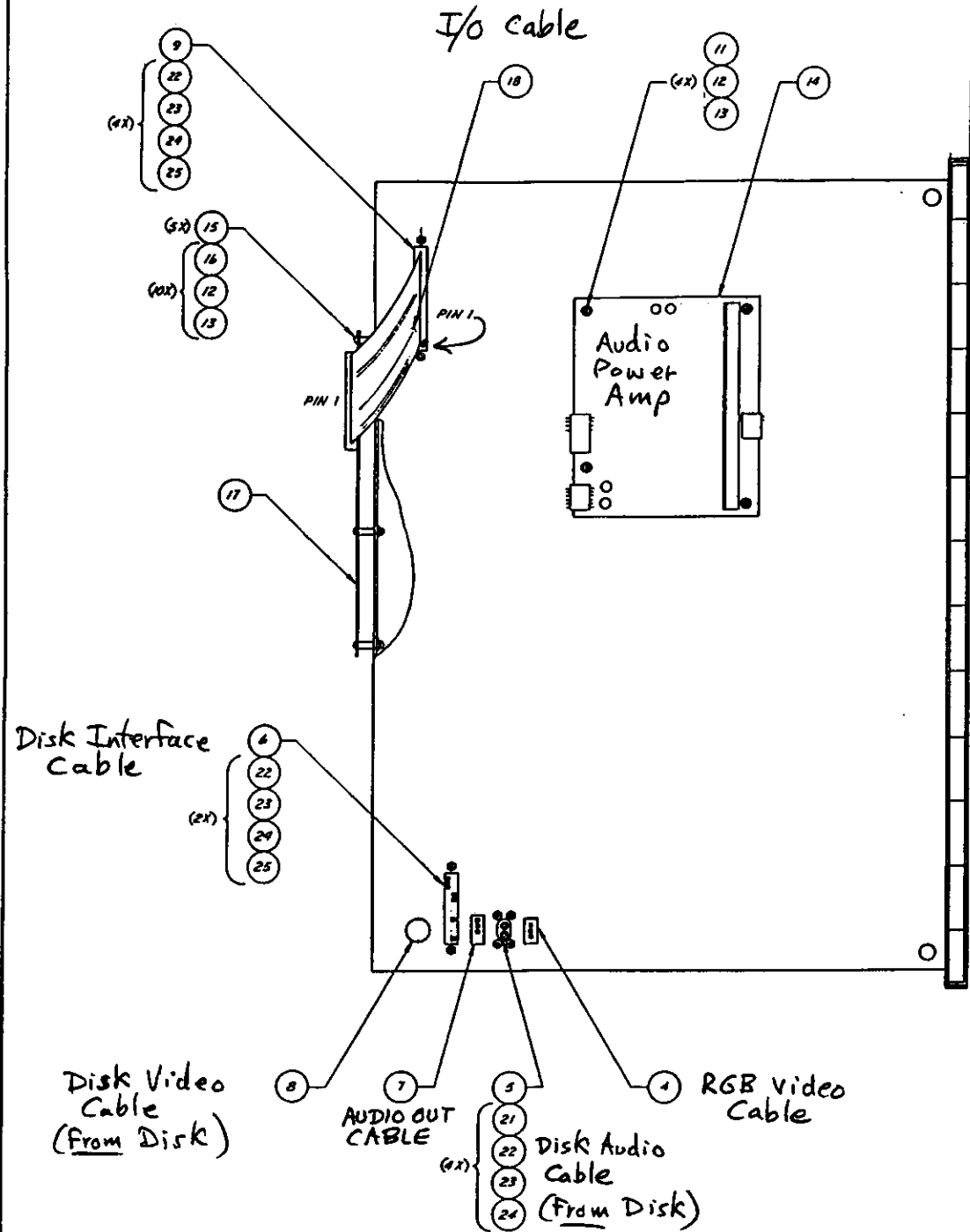
EPROM
PC Board



FOR LIST OF MATERIAL SEE PL 010006

TOLERANCES	AS SHOWN		UNLESS OTHERWISE SPECIFIED	
	FR	DR	FR	DR
GENERAL	A			
FUNCTIONAL	B			
FINISH	C			
POSITION	D			
FORM	E			

ELECTRONICS ASSY			
DATE	BY	DATE	BY
16-88		16-88	
PL 010006		PL 010006	



FOR LIST OF MATERIAL SEE PL 010253

REVISED	REVISIONS			DATE	BY
	NO.	DATE	BY		
1	A				
ENCLOSURE ASSY					
DESIGNED BY	TD	SCALE		DATE	12-8-83
DRAWN BY					010253

TITLE: Mother SoundsDWG. NO.: 010017 Rev BSHEET 1 OF 3

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
2	74LS00	6A, 18C
3	74LS02	5C, 7D
4	74LS04	4E, 10D
5	74LS08	8B
6	74LS32	4B
7	74LS74	2E, 4C, 7B, 7C,
8	74LS86	6D
9	74LS139	3E, 5D
10	74LS148	8C
11	74LS151	4F, 8A,
12	74LS161	6E, 6F, 11B, 11C, 20D, 20E
13	74LS169	21C, 21D, 21E, 21F
14	74LS174	16A, 18E, 19E, 4D
15	74LS244	10A, 10B, 10C, 11A, 18B, 19B, 19C, 20C, 21B
16	74LS245	15B, 15C
17	74LS374	1E, 1F, 5F, 12C, 16B, 16C, 16D, 16E, 17A, 17D, 17E,
18	TMM2016P-1	15A, 14A 13B, 13C
19	MC68000G8	9B
20	10.00000 MHZ	Y1
21	LM393	4A
22	AM2901CPC	12F, 13F, 14F, 15F
23	79L05	VR1
24	CD4051BE	1D, 3D
25	16.00000 MHZ	Y2
27	BATTERY	13A

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
26	74S74	3F
28	330 OHMS	R17, 18
29	RES. NETWORK 1K	RN5
30	RES. NETWORK 10 K	RN1-4
31	100 PF	C2
32	.1 MF	ALL LOCATIONS MARKED BY *
33	47 MF	C26
34	1500 PF	C6-13, C15-22
35	470 OHM	R15, 16
36	1 K	R23, 24, 29, 30, 31
37	1 MEG	R1
38	2.2 K	R5, 7
39	3.3 K	R19, 4, 6 (SEE REWORK INSTRUCTION)
40	10 K	R22 SEE REWORK INSTRUCTIONS
46	HM6117LP-3 (OR EQUIV. HM6116LP-3)	14B, 14C
47	10 MF	C3, 43
48	.02 MF	C4
49	4.7 MF	C5
50	6800 PF	C14, 23
51	1000 PF	C27, -42
52	18 PF	C1, 24
53	TL074CN (OR EQUIV. LF347N)	1B, 1C, 2B, 3B, 3C
54	74LS373	12A, 12B, 17B, 17C
55	82S185	16F, 17F, 18F, 19F
56	74LS138	6B, 6C, 11D, 13D, 14D, 15D
57	74LS05	5B, 9D 6, 0, 1

TITLE: Mother SoundsDWG. NO.: 010017 Rev. DSHEET 3 OF 3

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
58	82S129	7E, 7F, 8E, 8F, 9E, 9F, 10E, 10F, 11E, 11F
59	AD752LJN	2D
60	SOCKET 18 PIN	16F, 17F, 18F, 19F
61	9.09 K \pm 1%	R20
62	10K \pm 1%	R2, 3, 21
63	LM336B	CR1
64	750 OHM	R25, R12, R13, R14
65	1N4002	(SEE REWORK INSTRUCTIONS)
66	RES NETWORK 100 OHM	A18, 19
67	RES NETWORK 220 OHM	A20
69	74LS14	5A, 21A
* 71	SOCKET 16 PIN	7E, 7F, 8E, 8F, 9E, 9F, 10E, 10F, 11E, 11F, D1, D3
72	TL072CP (OR EQUIV. LF353)	2C
73	100 OHMS	R8, 11
74	RES. NETWORK 3.3K	RN6, 7
75	FERRITE BEAD	L1
77	47 PF	C25
78	27 PF	SEE REWORK INSTRUCTIONS
**70	74S04	2F, 7A
79	SOCKET 64 PIN	9 B
80	SOCKET 40 PIN	12E, 13E, 14E, 15E
81	SOCKET 24 PIN	14A, 15A, 13B, 13C, 14B, 14C
82	74LS273	20B
83	10 K	(SEE REWORK INSTRUCTIONS)
84	74HC100	5E
85	180 OHM	R26
86	1N5817	CR2 (SEE REWORK INSTRUCTIONS)

TITLE: Rotate Video

DWG. NO.: 010029

Rev C

SHEET 1 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
2	74LS00	11J, 11M, 8K, 5N, 3H, 1C
3	74LS02	14J, 12N, 10K, 6F, 6J, 5M
4	74LS04	10L, 6L, 3J
5	74LS08	8M
6	74LS32	13J, 9K, 1D
7	74LS74	14K, 10M, 9L, 9M, 8N, 7L, 6H, 6K, 6M, 5K, 8J
8	74LS86	9J
9	74LS123	7N
10	74LS138	11A, 1A, 7K
11	74S139	12L
12	74LS145	3D, 3E, 2D, 2E, 1E
13	74LS151	10J
14	74LS157	11F
15	74LS161	10E, 9F, 8F, 7F
16	82S129	5H, 4H
17	74S175	13M
18	74LS175	4F, 5F
19	74LS244	12B, 11B, 11H, 5E, 3A
20	74LS245	8E, 7E
21	74LS253	14H, 13H
22	74LS629	4N
23	74LS374	11L, 10A, 10B, 10C, 10D, 9A, 9B, 9C, 9D, 9E, 8A, 8C, 8D, 7A, 7C, 7D, 6A, 5A, 4D, 4E, 2A
24	82S131	12C, 12D, 12E, 12F, 12H, 12J, 12K, 10F, 10H, 9H, 8H, 7H
25	TL071	4M

TITLE: Rotate/Video

DWG. NO.: 010029 Rev B

SHEET 2 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
26	TL074	3L, 2K
27	LM311	3K
28	POTENTIOMETER 2K	R27
29	3,579545 MHZ	Y1
30	2N3904	Q3, 4, 8, 9, 14, 17, 19
31	2N3906	Q1, 2, 5, 6, 7, 10, 11, 12, 16, 18
32	1N4148	CR1-5
33	TMM2016P-1	11C, 11D
34	AM2901CPC	14B, 14C, 14D, 14F
35	1MS2620P-15	6B, 6C, 5B, 5C
36	74LS393	14M, 10N, 6E, 5J, 4J
37	74LS05	1F
38	10.00000 MHZ	Y3
39	18PF	C124, 172
40	56PF	C98
41	.01MF	C107, 122, 129
42	1000 PF 5%	C145
43	4.7 MF TANTALUM	C181, 183, 186
44	22PF	C118
45	75 OHMS	R22, 77, 101, 109
46	560 OHMS	R41, 49, 90
47	330 OHMS	R68, 69, 87
48	390 OHMS	R88
49	1 MEG	R23
50	100 OHMS	R10-12
51	1K	R1-5, R21, R45, R52, R54, R63, R70-72, R93, R16-20

TITLE: Rotate/VideoDWG. NO.: 010029 Rev BSHEET 3 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
52	330K	R51
53	1.5K	R31, 53, 59
54	1.8K	R95
55	39K	R40
56	2.7K	R26, 96
57	10K	R24, 29, 37, 38, 42, 47, 55, 57, 61, 62, 65 (SEE REWORK INSTRUCTION)
58	27K	R56
59	56K	R36, 43
63	POTENTIOMETER 10K	R25, 35
66	74LS109	6N
67	74LS164	5L
68	74LS174	1B
69	SY2148H-3	3B, 3C, 2B, 2C
70	74LS221	7M
71	MM5321	4K
72	74LS390	9N
74	AM2857DC	4L
75	AN5310 (OR CN5310)	1M
76	33PF	C178
77	1000PF \pm 1%	C165, 167
78	4.7MF	C96, 106, 120
79	25MF	C111
80	.22MF	C114-116, 119
81	1MF	C164, 176
82	180PF	C125, 126
83	360PF	C112

TITLE: Rotate/VideoDWG. NO.: 010029 Rev BSHEET 4 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
84	68PF	C117
85	27PF	C121
86	47PF	C108, 173
87	100PF	C113
88	82PF	C123
89	15 MH	L6, L7
90	33 MH	L5
91	47 MH	L4
92	2.2K	R48, 44
93	5.1K	R34, 58
94	84.5K \pm 1%	R66
95	147K \pm 1%	R67 (SEE REWORK INSTRUCTION)
96	16K	R64
97	3.3K	R28
98	20K	R114
99	POTENTIOMETER 5K	R30
100	POTENTIOMETER 1 MEG	R50
101	12 OHMS	R81, 105, 113
102	27 OHMS	R80, 104, 112
103	43 OHMS	R79, 103, 111
105	62 OHMS	R78, 102, 110
106	91 OHMS	R76, 100, 108
107	110 OHMS	R75, 99, 107
108	120 OHMS	R74, 98, 106
109	180 OHMS	R82
110	200 OHMS	R6-9, 83

TITLE: Rotate/Video

DWG. NO.: 010029 Rev C

SHEET 5 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
111	220 OHMS	R84
112	270 OHMS	R85
113	300 OHMS	R46, 86
114	470 OHMS	R32, 89
115	680 OHMS	R91
116	750 OHMS	R13-15, 73
117	820 OHMS	R92
118	1.3K	R94
119	5.6 K	R97
120	7.5K	R60
121	1K SIP	RPI, 2
122	2.2 MF	C109
123	18.88111 MHZ	Y2
124	7812	VRI
125	7912	VR2
127	74LS03	8L
128	74S74	13L, 12M
129	74S138	11K, 7J,
130	SOCKET 16 PIN	4H, 5H, 7H, 8H, 9H, 10F, 10H, 12C-12K, 4K, 4N
131	74S04	13N
132	100 MF	C100, 101
133	FERRITE BEAD	L1-3
134	FERRITE BEAD	BASE OF ALL TRANSISTORS
135	51 OHM DIP	RN3, 4
139	.1 MF	C4-95, 97, 99, 102-105, 110, 114-116, 119, 127, 128, 130, 133-144, 146-163, 166, 168-171, 174, 175, 179, 183, 185 (SEE REWORK INSTRUCTION)

TITLE: Rotate/Video

DWG. NO.: 010029 Rev B

SHEET 6 OF 6

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
141	47 MF	C1-3
142	15K	R33
136	SOCKET 40 PIN	14B, 14C, 14D, 14F
137	SOCKET 28 PIN	1 M
138	SOCKET 24 PIN	11C, 11 D
143	SOCKET 18 PIN	2B,3B,2C,3C,5B,5C,6B,6C
144	74F245	4B,4C

TITLE: Line DrawerDWG. NO.: 010025 Rev BSHEET 1 OF 3

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION IN ()
2	74LS00	U60, U55, U62, (15D, 12L, 3E)
3	74LS02	U56, U24, U59, (11J, 3D, 1D)
4	74LS04	U26, U65, (13F, 4E)
5	74LS08	U61, (1J)
6	74LS257	U106, U105, (12J, 8L)
7	74LS32	U57, U23, (15F, 7F)
8	74LS74	U63, U50, U74, U45, U64, (15B, 15G, 5L, 2B, 1E)
9	74LS174	U72, U52, U73, (15E, 11K, 2F)
10	74LS85	U96, U95, (7L, 6L)
11	74LS86	U25, U58, (5C, 1F)
12	74LS283	U94, U93, (13G, 9L)
13	74LS138	U112, U42, U71, (6D, 2C, 2H)
14	74LS139	U113, U75, (7B, 4D)
15	74LS151	U43, (4C)
16	74LS153	U69, U68, U67, (15C, 4F, 1G)
17	74S04	U46, (14H)
18	74LS157	U84, U104, U100, U102, U101, U103, U86, U82, U85, U99, U83, (8D, 8F, 8G, 8H, 8J, 8K, 7E, 6C, 5J, 5I, 2D)
19	74LS161	U110, U32, U109, U37, U38, U47, U36, U33, (7K, 6K, 4A, 4B, 15K, 4G, 1B)
20	74LS164	U66 (1H)
21	74LS159	U81, U78, U76, U77, U80, U79, (9F, 7C, 5B, 5D, 4E, 2E)
22	74LS175	U51, (11L)
23	74S00	U54, (13E)
24	74LS244	U90, U91, U107, U118, U117, U114, U115, U116, U4 (14L, 13L, 12K, 9G, 8A, 8B, 8E, 7D, 3A)

TITLE: Line DrawerDWG. NO.: 010025 Rev BSHEET 2 OF 3

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
25	74S74	U49 (15H)
26	74S138	U41, U70, (9B, 2K)
27	74LS374	U13, U14, U15, U16, U17, U89, U92, U22, U20, U18 U21, U19, U122, U119, U120, U123, U124, U87, U12 U88, (15A, 14A, 14B, 13A, 13D, 13H, 13J, 12A, 12 12C, 12D, 12E, 11A, 10A, 9A, 9C, 9D, 9E, 8C, 4H)
28	74LS393	U111, U108, (13K, 6J)
29	74S157	U39, U40, (5A, 2A)
30	HM6116P-3	U1, U3, U4, U2, (14C, 14D, 14E, 14G)
31	AM2901CPC	U11, U10, U12, (5E, 5G, 5H)
32	330 OHMS	R1, 2, 13
33	51 OHM DIP	U146-148, (12F, 11H, 10C)
34	750 OHM	R3
36	74S161	U35, U34, (1A, 7A)
37	.01 MF	C5-60
38	18PF	C1
39	50PF	C2
42	10.00000 MHZ	Y1
43	74S175	U48, (14K)
44	82S129	U5-9, U27-31, (3G, 2G, 3H, 3J, 3K, 6B, 3B, 3C, 2J)
45	1MS2620P-15	U144, U137, U143, U141, U135, U142, U139, U13, U138, U125, U129, U130, U126, U127, U133, U12, U131, (12G, 12H, 11B, 11C, 11D, 11E, 11F, 11G, 1 10B, 10D, 10E, 10F, 10G, 10H, 10J, 10K, 9H, 9J,
46	SY2148H-3	U98, U97, (7H, 7J)
47	74LS05	U149, (4K)
48	1K	R4-12
49	47MF	C3, C4

TITLE: Line Drawer

DWG. NO.: 010025 Rev B

SHEET 3 OF 3

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
50	SOCKET 40 PIN	(5E, 5G, 5H)
51	SOCKET 24 PIN	(14C, 14D, 14E, 14G)
52	74S02	U53, (15J)
53	SOCKET 16 PIN	(3G, 2G, 3H, 3J, 3K, 6B, 3B, 3C, 3F, 2J)
54	390 PF	C61
55	010300 (HEADER ASSY-18 PIN)	U145

TITLE: F111

DWG. NO.: 010021 Rev: D

SHEET 1 OF 2

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
2	74LS74	2M, 5M, 9M, 12M
3	74S151	4L, 7L, 11L, 14L
4	74LS161	3H, 3J, 3K, 6H, 6J, 6K, 8F, 10H, 10J, 10K, 13H, 13K
5	74LS244	1D, 3L, 6L, 10L, 13L
6	74LS374	2C, 3E, 3F, 4D, 5C, 6E, 6F, 7D, 9C, 10E, 10F, 11D, 12A, 12C, 13A, 13E, 13F, 14A, 14D
7	74S00	3N, 6N, 10N, 13N
8	74S85	2D, 2F, 2H, 2J, 3D, 5D, 5F, 5H, 5J, 6D, 9D, 9F, 9J, 10D, 12D, 12F, 12H, 12J, 13D
9	74S139	2L, 5L, 9L, 12L, 8L
10	82S129 (PROGRAMMED ROMS)	2P, 3P, 4P, 5P, 6P, 7P, 9P, 10P, 11P, 12P, 13P,
11	SY2148H-3	4E-4K, 7E-7K, 11E-11K, 14E-14K
12	74LS174	2E, 2K, 2N, 4N, 5E, 5K, 5N, 7N, 9E, 9K, 9N, 11N, 12E, 12K, 12N, 14N
13	.1MF	C1-10, C12-137, C139-151, C153-164
15	74S244	7A, 13C, 10C, 6C, 3C, 14B, 11B, 7B, 4B, 13B, 10E, 6B, 3B, 12B, 9B, 5B, 2B
19	74S04	3M, 6M, 8J, 8N, 10M, 13M
20	74S02	4M, 7M, 11M, 14M
21	1K, $\frac{1}{2}W \pm 5\%$	R1-7, R10-16
23	47MF, 35VDC	C11
25	560 OHM SIP	RP1-12

TITLE: F111

DWG. NO.: 010021 Rev D

SHEET 2 OF 2

COMPONENT REFERENCE LIST

ITEM NO.	DEVICE DESIGNATION	LOCATION
28	FERRITE BEAD	L1
29	74S74	8A, 8H
30	SOCKET 16 PIN	2P-7P, 9P-14P
31	74S374	4C, 7C, 11C, 14C
32	SOCKET 18 PIN	4E-4K, 7E-7K, 11E-11K, 14E-14K
33	SOCKET 20 PIN	4D, 7D, 11D, 14D



TITLE PWA EPROM BOARD

DWG. NO. 010012
 SHEET 1 OF 1

ITEM NO.	QTY	DRAWING NUMBER	DESCRIPTION	REMARKS
1		010011	PWB EPROM BOARD	
2		2732 250NSEC	MEMORY 4K X 8	1A-16A, 1B-16B
3		2764 250NSEC	MEMORY 8K X 8	1A-8A, 1B-8B
4		745138	INTEGRATED CIRCUIT	-01 6C / -02 8C
5		74LS244	INTEGRATED CIRCUIT	3C, 5C
6			WIRE, BUSS #22 AWG	
7			RES, FXD 2.2K 1/4W ±5%	R1, Z
8			CAP. CERAMIC .1MF 50V	SEE NOTE #
9			CAP. ELEC. 4.7MF 35V	C1, C3
10			CONN, 40PIN (3M 3432-1302)	J1
11			CONN. 13 PIN (HOLEX 09-75-1138)	J3
12			FERRITE, BEAD (STACKPOLE 87-1423)	L1
13			DIP SOCKET 24 PIN (ICB-246-587)	1A-16A 1B-16B
14			DIP SOCKET 28 PIN (ICB-286-587)	1A-8A 1B-8B
15		74LS32	INTEGRATED CIRCUIT	12C
16		010013	LOGIC DIAGRAM	
17			CONN 50PIN (3M 3433-1302)	J2
			NOTE #	
			-01	C2, C4-16, C25-F
			-02	C2, C4-4D



TITLE PRINTED WIRING BOARD
1/0 INTERFACE

DWG. NO. 010232

SHEET 1 OF 2

REV

A

ITEM NO.	QTY	DRAWING NUMBER	DESCRIPTION	REMARKS
1	1	010231	PWB - 1/0 INTERFACE	
2	2	CAK 8121-V3	SWITCH, PUSH BUTTON	51, 52
3	28	STACKPOLE 57-3425	FERRITE BEAD (OR 57-1423)	FBI THRU FB22
4	2		CAPACITOR, 100MFD	C38, 39
5	2		CAPACITOR, CERAMIC, 50V	C36, 37
6	35	MURATA ELECTRIC REPRODUCIBLES	CAPACITOR, MONO. 1000PF AKLD	C1 THRU C35
7	4		RESISTOR, FXD, 1 MEG 1/4W ±5%	R3, R5, R13, R15
8	4		RES, FXD, 22K, 1/4W ±5%	R7, R9, R17, R19
9	4		RES, FXD, 47K, 1/4W ±5%	R6, R8, R16, R18
10	4		RES, FXD, 820-Ω, 1/4W ±5%	R21 THRU R24
11	5		RES, FXD, 1K, 1/4W ±5%	R1, R10, R11, R12, R1
12	2	41162-001-272	RES. NETWORK 2.7K X 5 DIP	RP2, RP3
13	1	41162-001-221	RES. NETWORK 220-Ω X 5 DIP	RP1
14	2	1N4001	DIODE, 50V	CR3, CR4
15	7	TIP-120	TRANSISTOR, POWER, NPN DARLINGTON	Q1 THRU Q5
16	1	HP HDSP4830	LED, DISPLAY	U1
17	1	LM3900	QUAD NOTON OP AMP	U2
18	1	74LS374	INTEGRATED CIRCUIT	U3
19	1	74LS257B	INTEGRATED CIRCUIT	U4
20	39	FOZ-09-1133	CONTACT, FEMALE P.C.	
21	1	03-09-1152	CONNECTOR, RECEPT. 15 PIN	J1
22	1	03-09-1094	CONNECTOR, RECEPT 9 PIN	J2
23	1	03-09-1064	CONNECTOR, RECEPT 6 PIN	J5
24	1	03-09-1049	CONNECTOR, RECEPT 4 PIN SQ.	J3
25	1	03-09-1032	CONNECTOR, RECEPT 3 PIN	J6
26	1	03-09-1022	CONNECTOR, RECEPT. 2 PIN	J4
27	1	09-75-1138	CONNECTOR, R.A. 13 PIN	J7

TITLE FINISHED WIKING HOOT -
I/O INTERFACE

DWG. NO. 010232

SHEET 2 OF 2

A



ITEM NO.	QTY	DRAWING NUMBER	DESCRIPTION	REMARKS
	1	3M 3433-1303 ^{OR EQUIV}	CONNECTOR, R.A. 50 PIN RIBBON	✓B
	REF	D 010233	LOGIC DIAGRAM - I/O INTERFACE	
	REF	later	SPECIFICATION, TEST.	



TITLE PWA AUDIO AMPLIFIER

DWG. NO. A010033
 SHEET 1 OF 1

RE Z

ITEM NO.	QTY	DRAWING NUMBER	DESCRIPTION	REMARKS
1	1	010032	PWB AUDIO AMPLIFIER	
2	2		CAP, ELECTROLYTIC .47MF, 25WVDC ±10%	
3	6		CAP, ELECTROLYTIC 10MF, 25WVDC ±10%	
4	1		CAP, CERAMIC, .047MF, 50V	
5	6		CAP, CERAMIC .1MF, 25WVDC ±10%	
6	5		RES, FXD, 33K 1/4W, ±5%	
7	3		RES, FXD, 33K 1/4W ±5%	
8	2		RES, FXD, 22K 1/4W ±5%	
9	3		CAP, CERAMIC .22 MF, 25WVDC ±10%	
10	3		RES, FXD 1 Ω 1/4W ±5%	
11	6	1N4002	DIODE	
12	2		CONNECTOR, 6 PIN (MOLEX 09-75-1068)	
13	1		CONNECTOR, 7 PIN (MOLEX 09-75-1078)	
14	1	010139	HEAT SINK	
15	REF	010034	ELECTRICAL SCHEMATIC - AUDIO AMP	
16	1		CAP, CERAMIC 500PF-1000PF, 50V	
17	3	LM1875T	POWER AUDIO AMPLIFIER 20WATT	
18	3	TDA 2030V	POWER AUDIO AMPLIFIER 20WATT	
19	2		SCREW, PAN HD, PHIL. #6-32 X 1/2 LG	STAINLESS STEEL
20	2		SPACER, 1/4 DIA, #6 CLEAR X 1/4 LG.	
21	4		SPACER, NYLON	(RICHCO SR56-BN)
22	2		RES, FXD, 68K, 1/4W ±5%	
23	1		RES, FXD, 91K, 1/4W ±5%	
24	3		SCREW, PAN HD, PHIL. #6-32 X 1/4 LG	
25	2		CAPACITOR, CERAMIC, .02MF 50V	

SPECIFICATIONS

INPUT: 105 to 125 VAC or 210 to 250 VAC at 47 to 63 Hz. Derate output current 10% for 50 Hz operation.

DC OUTPUT RATINGS: See Voltage/Current Rating Chart.

REGULATION: Line regulation is rated at 0.05% for a 10% input voltage change and load regulation is rated at 0.1% for a zero to full load change.

OUTPUT RIPPLE: Better than 1 mV RMS; 3 mV peak to peak typical.

OVERLOAD PROTECTION: Self restoring current limiting (foldback type) is standard.

OVERVOLTAGE PROTECTION: All 5-Volt output models with a V suffix are provided with built-in OVP as a standard feature. The OVP circuit is preset at 6.2 ± 0.4 Volts.

TEMPERATURE COEFFICIENT: ± 0.005%/°C typical. ± 0.02%/°C maximum.

COOLING: Convection cooled. Moving air is recommended when mounting in a confined area.

MOUNTING: The open frame mounts on any one of four surfaces.

OUTPUT VOLTAGE ADJUSTMENT: The output of all EconoMate II power supplies may be adjusted by means of a potentiometer located on the printed circuit board. The potentiometer is labeled "EO ADJ.". During the adjustment procedure, monitor the DC output voltage by connecting a meter across the output terminals.

INPUT CONNECTIONS: When operating with 115 VAC input, place a jumper between transformer terminals one (1) and two (2) and also between three (3) and four (4). Then connect the AC primary leads to terminals one (1) and four (4) as shown in Fig. 1. When operating with 230 VAC input, place a jumper between transformer terminals two (2) and three (3) and connect the AC primary leads to terminals one (1) and four (4) as shown in Fig. 2.

SECONDARY TRANSFORMER CONNECTIONS: On certain models it will be necessary to connect the transformer secondary to the PC board before adjusting the output voltage. This is accomplished by soldering the loose wire attached to the PC board to the appropriate tap on the transformer.

LOCAL SENSING: ECONOMATE II power supplies are factory wired for local sensing. Sensing terminals are located on the PC board. A jumper connecting the DC output and sensing terminals provides local sensing as shown in Fig. 3.

REMOTE SENSING: Remote sensing is a standard feature. To sense the output voltage directly at the load, disconnect the jumpers between the DC output terminals and sensing terminals. Connect the load to the DC output terminals. Then wire the (+) and (-) sensing terminals respectively across the load as shown in Fig. 4. This permits sensing directly at the load.

DUAL OUTPUT POWER MODELS

MODEL	OUTPUT "A"	SCHEM. FIG.#	OUTPUT "B"	SCHEM. FIG.#	*PARTS LIST COLUMNS
ETA-5DV	5V-6.0A	5	5V-6.0A	5	A and A
ETA-515DV	5V-6.0A	5	15V-2.8A or 12V-3.0A	6	A and B
ETA-12/15D	12V-3.0A or 15V-2.8A	6	12V-3.0A or 15V-2.8A	6	B and B
ETA-524DV	5V-6.0A	5	24V-2.3A	6	A and C

*Reference Parts List below for separate PCB components.

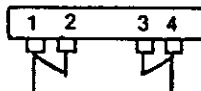


Fig. 1

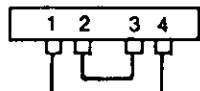


Fig. 2

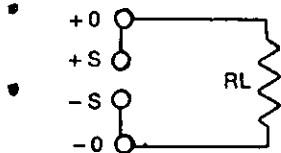


Fig. 3

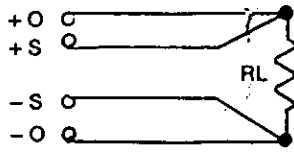


Fig. 4

OUTPUT CONNECTIONS

Positive and negative output terminals are marked and located on printed circuit boards. No connection is necessary for 5/6 or 24-volt outputs. 12/15 volt outputs have secondary leads which must be soldered to the appropriate transformer taps according to the output voltage required, as indicated in the following table:

SERIES	OUTPUT VOLTAGE	OUTPUT A TAP NO.	OUTPUT B TAP NO.
ETA-D	12V	6	9
	15V	7	10

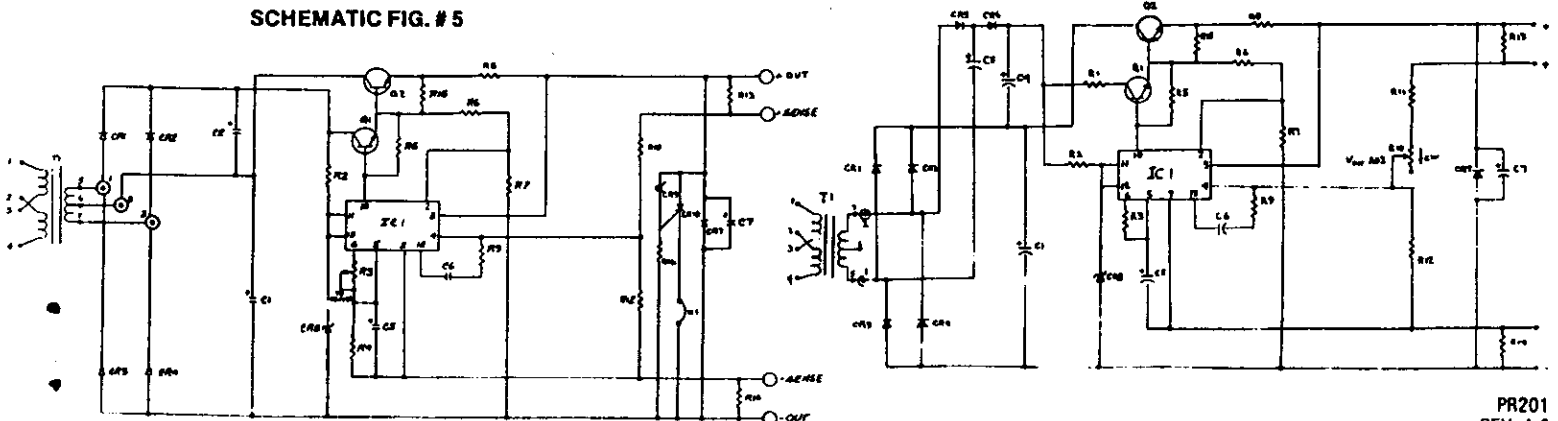
No connection is necessary for 5/6 or 24-volt outputs.

SCM. REF.	PMC PART NO.	A	B	C	DESCRIPTION	SCM. REF.	PMC PART NO.	A	B	C	DESCRIPTION
C1	CE223015	1			CAP. 22000 MFD, 15V	R4	RC334800	1			RES 3.48K OHMS, 1/4
C1	CE682035	1			CAP. 6800 MFD, 35V	R5	RB227200	1	1	1	RES 2.7K OHMS, 1/4W
C1	CE147263		1		CAP. 4700 MFD, 50V	R6	RB212100	1			RES 120 OHMS, 1/4W
C2, 7	CE410800	2			CAP. 1000 MFD, 16V	R6	RB210100	1			RES 100 OHMS, 1/4W
C3, 4, 7	CE233700		3		CAP. 330 MFD, 35V	R6	RB262100	1		1	RES 620 OHMS, 1/4W
C3, 4, 7	CE825700		3		CAP. 220 MFD, 50V	R7	RB243100	1			RES 430 OHMS, 1/4W
C5	CE047350	1	1	1	CAP. 4.7 MFD, 35V	R7	RB210200	1			RES 1K OHMS, 1/4W
C6	CD310200	1	1	1	CAP. 0.001 MFD, 500V	R7	RB212300	1		1	RES 12K OHMS, 1/4W
CR1, 2	DR003000	2			DIODE 1 AMP 200V	R8	RF050000	1			RES 0.05 OHM, 3W
CR1-4	DR039000		4	4	DIODE 5 AMPS 100V	R8	RF200150	1		1	RES 0.15 OHM, 3W
CR3, 4	DR085000	2			DIODE 1 AMP 240V	R8	RE200240	1		1	RES 0.24 OHM, 2W
CR5, 6	DR003000	2	2		DIODE 1 AMP 240V	R9	RB233200	1	1	1	RES 3.3K OHMS, 1/4W
CR7	DR039000	1	1	1	DIODE 5 AMPS 100V	R10	RC386600	1			RES 866 OHMS, 1/4W
CR8	DZ211600	1	1		DIODE 1N4752A	R10	RF220201	1	1	1	POT. 2K OHMS, 20%
CR9	DZ231000	1			DIODE 1N752A	R11	RC310200	1			RES 1K OHMS, 1/4W
CR10	DS048000	1			SCR 2N4441	R11	RC315001	1		1	RES 1.5K OHMS, 1/4W
IC1	QK026300	1	1	1	INT-CIR 723	R12	RC320500	1			RES 2.05K OHMS, 1/2
Q1	QP001300	1			XTOR 2N3055	R12	RC311500	1		1	RES 1.15K OHMS, 1/2
Q1	QS055000	1	1	1	XTOR 2N2102	R13, 14	RB210000	1	1	1	RES 10 OHMS, 1/4W
Q2	QP001300	1	1	1	XTOR 2N3055	R15	RB210100	1			RES 100 OHMS, 1/4W
R1	RF210100	1			RES 100 OHMS, 3W, 5%	R15	RB216100	1			RES 180 OHMS, 1/4W
R1	RE222100	1	1	1	RES 220 OHMS, 2W, 10%	R15	RB222100	1		1	RES 220 OHMS, 1/4W
R2	RC215100	1			RES 150 OHMS, 1/4W, 10%	T1	TA2826602				TRANSFORMER ETA
R2	RC227100	1			RES 270 OHMS, 1/4W, 10%	T1	TA2826601				TRANSFORMER ETA
R2	RF215200	1	1	1	RES 1.5K OHMS, 3W, 5%	T1	TA2826603				TRANSFORMER ETA
R3	PF220201	1			POT. 2K OHMS, 20%	T1	TA2826604				TRANSFORMER ETA
R3	RC311500	1	1	1	RES 1.15K OHMS, 1/4W, 1%						

NOTE: Reference "Dual Output Power Models" chart above for appropriate combination of two PCB's for each ETA-D model.

SCHEMATIC FIG. # 6

SCHEMATIC FIG. # 5





SPECIFICATIONS

- AC Input:** 85-to-132 or 170-to-264 VAC, at 47-440 Hz.
- DC Output:** See voltage and current rating chart.
- DC Output Adjustment:** ± 10 percent.
- Regulation:** Line, ± 0.1 percent, +1mV within the specified AC limits. Load, ± 0.1 percent, +1mV from no-load to full-load conditions.
- Noise and Ripple:** 50mV peak-to-peak maximum, 20Hz to 20MHz
- Efficiency:** 70-to-80 percent.
- Transient Response:** Recovery to 1.0 percent in 300 microseconds for a 50-to-100 percent load change.
- Remote or Local Sensing:** A provision is included for improved overall regulation.
- Overload and Short-Circuit Protection:** Solid-state short-circuit protection is a standard feature. An automatic current-limiting circuit limits the output current which provides protection for the load and supply. Units cannot be damaged by prolonged short circuits.
- Overshoot:** No voltage spikes on turn-on, turn-off, or during power failure.
- Logic Inhibit Function:** A 4.5 to 5.5. VDC command signal, referenced to the negative sense terminal, will inhibit the DC output. It may be used for control, sequencing, or maintenance.
- Enable Function (optional):** A command signal less than 0.8 VDC will turn supply off. A command signal greater than 2.5 VDC will turn supply on.
- Over-Voltage Protection:** Built-in, fixed.
- Energy-Storage Time:** The output voltage will remain within the regulation range for a minimum of 16 ms after the loss of AC power (from nominal line voltage).
- Polarity:** Positive, negative, or floating up to 300VDC.
- Soft Start:** Provides input current limiting at turn on.
- Parallel Operation:** Units may be paralleled for increased output current. Consult the factory for the proper procedures.
- Long-Term Stability:** 0.1 percent for 8 hours after a 20 minute warm up.

- Ambient Operating Temperature:** Continuous duty from 0 to +71°C, full rating from 0 to +50°C. Derate linearly to 60 percent of full rating at +71°C.
- Storage Temperature:** -55°C to +85°C.
- Quality Control:** In accordance with MIL-I-45208.

OPERATING INSTRUCTIONS

AC INPUT

Normally, the unit is shipped for 115 VAC input operation. If 230 VAC input is desired, cut jumper W1 on PC board shown in Fig. 1.

SENSING TERMINALS

For local sensing the supply can be used as delivered. For remote sensing, connect the load to the DC output terminals. Then wire the (+) and (-) sensing terminals respectively across the load. This permits sensing directly at the load. See Fig. 2.

VOLTAGE AND CURRENT ADJUSTMENTS

The voltage adjustment (VR2) is a precision multi-turn potentiometer which is accessible from the terminal end of the unit. The current adjustment potentiometer is factory set and no further adjustment is required.

COVERS

Covers for the ES units are included.

Power/Mate power supplies are designed for convection cooling, therefore, it's important not to impede the air flow across or through the power supply's case. Impeding the flow of air through your power supply may shorten its life. If there is doubt about the convection air flow through your Power/Mate supply's heat generating components, it's recommended that you use a small fan to insure satisfactory air flow.

CAUTION: High-voltage circuits present an electrical shock hazard. Do not handle the unit while it is operating.

ES-G Series

MODEL	VOLTAGE	CURRENT
ES-5G	5 VOLTS	30 AMPS
ES-12G	12 VOLTS	15 AMPS
ES-15G	15 VOLTS	12 AMPS
ES-24G	24 VOLTS	8 AMPS
ES-28G	28 VOLTS	7 AMPS
ES-36G	36 VOLTS	5 AMPS



FIG. 2

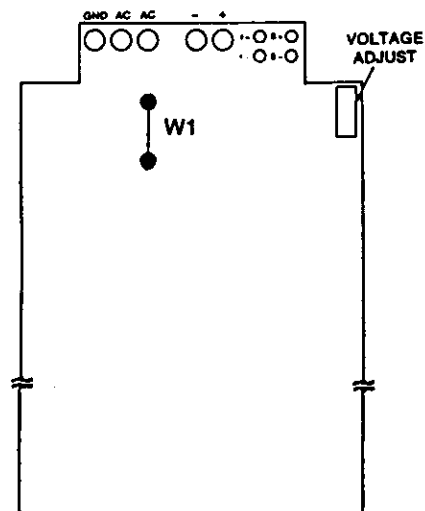


FIG. 1