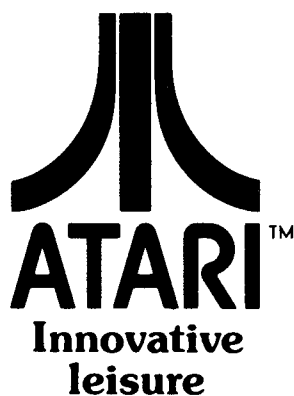
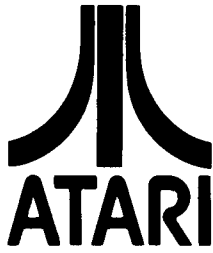


# PIN PONG

## Operation and Maintenance Manual





Job Title P.C. BOARD ASSEMBLY  
PIN PONG - 60 HZ

Dwg. P/L 001660-01

Parts List Specification

sheet 1 of 2

Drawn Cynthia  
Checked  
Proj. Eng. Larry Expert  
Mech. Eng. [Signature]  
Elec. Eng. Larry Expert  
Rev. 5

Rev.	Description	Apprv.	Rev.	Description	Apprv.
C	PROD. REL	[Signature]			
D	REV PER ECN 751,811,812	[Signature]			
E	Rev per ECN 926	[Signature]			
F	Rev per ECN 971	[Signature]			
G	REV PER ECN 1071	[Signature]			

Item	Part. No.	Qty.	Description
1	72062/37-74L00	1	Integrated Circuit, 74L00
2	72000/37-7400	8	" " 7400
3	72001/37-7402	7	" " 7402
4	72002/37-7404	5	" " 7404
5	72027/37-7408	8	" " 7408
6	72003/37-7410	7	" " 7410
7	72061/37-7414	1	" " 7414
8	72004/37-7420	5	" " 7420
9	72006/37-7427	2	" " 7427
10	72007/37-7430	2	" " 7430
11	72064/37-7432	1	" " 7432
12	72008/37-7448	1	" " 7448
13	72010/37-7474	20	" " 7474
14	72059/37-7485	2	" " 7485
15	72012/37-7486	8	" " 7486
16	72013/37-7490	4	" " 7490
17	72014/37-7493	3	" " 7493
18	72015/37-74107	4	" " 74107
19	72016/37-74153	2	" " 74153
20	72060/37-74164	1	" " 74164
21	72035/37-74193	5	" " 74193
22	72024/37-9312	4	" " 9312
23	72036/37-9314	3	" " 9314
24	72017/37-9316	3	" " 9316
25	72031/37-9321	1	" " 9321
26	72025/37-9322	4	" " 9322
27	72026/37-9602	1	" " 9602
28	72057/37-LM323K	1	LM323K
29	72048/37-LM380	1	" " LM380
30	72058/37-MC4024	1	" " MC4024
31	72042/37-MFC6040	1	" " MFC 6040
32	72040/37-CD4016	1	" " CD4016
33	72021/37-NE566	1	" " NE566
34	22103/19-311103	1	Trimpot, 10K
35	22502/19-311502	1	Trimpot, 5K
36	22105/19-311105	1	Trimpot, 1M
37	37000/24-160802	1	Capacitor, Electrolytic, 8,000 uf, 16V

## PARTS LIST SPECIFICATION

Dwg. P/L 001660-01

Title PCB ASSY. - PIN PONG - 60 HZ

sheet 2 of 2

Rev. G

Item	Part No.	Qty.	Description
38	35503/24-250501	3	Capacitor, Electrolytic, 500 uf, 25V
39	35254/24-060251	1	" " 250 uf, 6V
40	39100/29-001	2	" Tantalum, 100 uf, 10V
41	35506/24-250100	2	" Electrolytic, 10 uf, 25V
42	35472/24-100050	2	" " 5 uf, 16V
43	35508/24-250010	1	" " 1 uf, 25V
44	34101/27-101104	16	" Ceramic, Disc, .1 uf
45	32221/27-101224	1	" Mylar, .22 uf
46	30332/28-101471	1	" Mica, 470 pf
47	30101/28-101101	1	" " 100 pf
48	30102/28-101221	6	" " 220 pf
49	71001/31-1N4001	6	Diode, 1N 4001
50	31-1N1612	2	Diode, 1N 1612
51	71000/31-1N914	15	Diode, 1N 914
52	71020/32-1N5237	1	Diode, 1N 712 (or 1N 5237), 8.2V Zener
53	70009/34-2N5190	1	Transistor, 2N 5190
54	70000/34-2N3643	3	Transistor, 2N 3643
55	70001/34-2N3544	1	Transistor, 2N 3644
56	19100/19-808W4PO	1	Resistor, 10 Watt, 4 ohm
57	12103/11-0151	1	" 1/2 Watt, 150 ohm
58	11270/19-839C2P7	1	" Carbon, ±5 %, 1/4 Watt, 2.7 ohm
59	11123/10-5123	1	" " " 12K ohm
60	10101/10-0101	4	" " ±10%, " 100 ohm
61	10151/10-0151	1	" " " 150 ohm
62	10221/10-0221	2	" " " 220 ohm
63	10271/10-0271	3	" " " 270 ohm
64	10331/10-0331	7	" " " 330 ohm
65	10102/10-0102	24	" " " 1K ohm
66	10103/10-0103	2	" " " 10K ohm
67	10153/10-0153	2	" " " 15K ohm
68	10181/10-0181	1	" " " 180 ohm
69	10472/10-0472	4	" " " 4.7K ohm
70	10273/10-0273	1	" " " 27K ohm
71	10473/10-0473	1	" " " 47K ohm
72	75103/75-916S	2	Nut, Hex, H6
73	75100/72-1610C	2	Screw, Pan Head, SS, #6-32 x 5/8
74	75101/75-056	4	Washer, Internal Star, #6
75	75102/75-016C	2	Washer, Flat, #6
76	75188/75-1408C	3	Screw, Machine, Pan Hd., #4-40 x 1/2", SS
77	75164/75-914S	3	Nut, Hex, #4-40
78	75194/75-054	5	Washer, Internal Tooth Lock, #4-40
79	75163/75-014S	2	Washer, Flat, #4-40
80	60000/69-001	3	Switch, DPDT
81	81001/90-101	1	Crystal
82	83014/78-06001	1	Wakefield Heatsink
83	001925	1	Printed Circuit Board, Revision C
84	79-20102	7	Useco 2006B Terminals
85	79-58017	1	6 Pin Polarized Male P.C. Conn.
86	001992	1	Heatsink, Diode
87	78-16002	A/R	Thermal Conductive Compound
88	57-216	2	Buss Wire, #16AWG, 1 1/4" Long
89	75-050	2	Washer, Internal Tooth Lock, #10
90	75-910S	2	Nut, Hex, #10-32
91	24-100105	1	Capacitor, Electrolytic, 1 uf, 10V
92	10-0222	1	RESISTOR, CARBON, 10%, 1/4W, 2.2K OHM



PARTS LIST SPECIFICATION

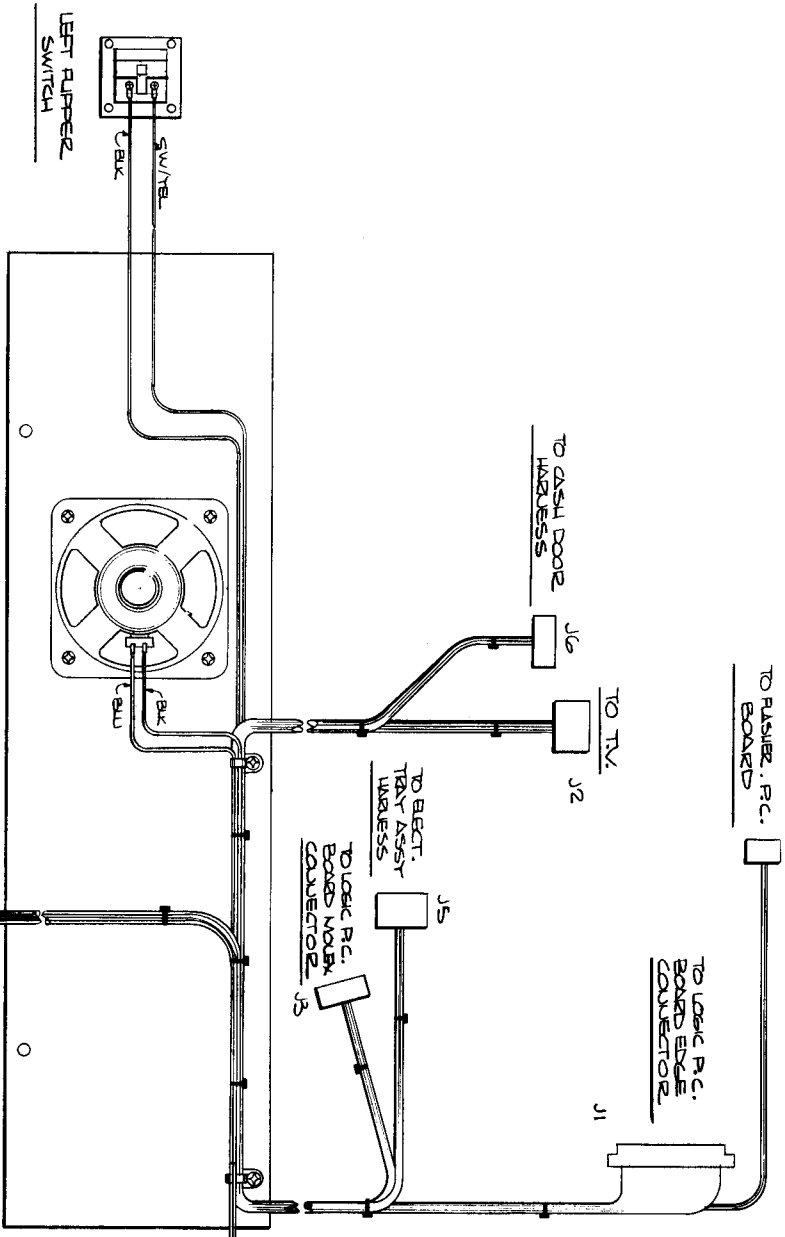
Drawn	
Checked	Mech. Eng. <i>[Signature]</i>
Proj. Eng. <i>[Signature]</i>	Elec. Eng. <i>[Signature]</i>
	REV. B

Rev.	Description	Date	Apprv.	Rev.	Description	Date	Apprv.
A	PROD REL	10/7/74	<i>[Signature]</i>				
B	REV PER ECN 893	10/21/74	<i>[Signature]</i>				

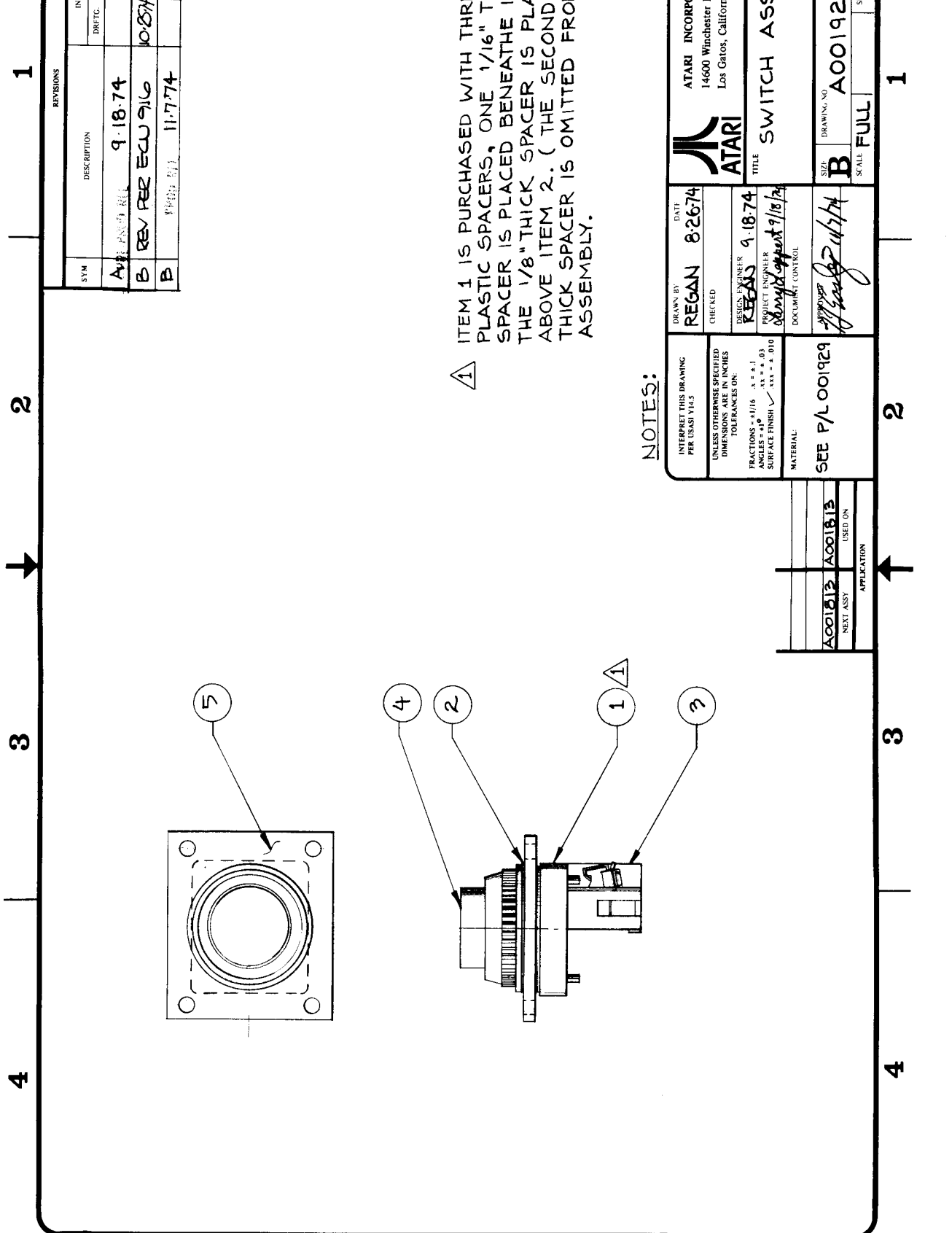
Item	Part Number	Qty.	DESCRIPTION
1	001551	1	Transformer
2	42-70102	1	Transformer
3	90-3001	1	Linefilter
4	79-3201	1	Fuse Holder
5	46-20120	1	Fuse, 2A, Slo-Blo
6	68-001	1	Interlock Switch
7	000268	1	Interlock Switch Bracket
8	72-6608	20	Screw, Sheet Metal, #6, Pan Hd., Phil., 1/2"
9	001998	1	Transformer Cover
10	71-301	1	Staple
11	54-401	1	Line Cord
12	002439	1	Harness
13	47-1001	1	Coin Counter
14	75-2824S	1	Machine Screw, #8 x 1 1/2"
15	75-918S	2	8-32 Nut
16	75-018S	3	Washer, #8
17	A001995	1	Tray, Electronics
18	A001920	1	Harness, Voltage Selection
19*	A001921-01	A/R	Shorting Block, 95V
20*	A001921-02	A/R	Shorting Block, 110V
21*	A001921-03	A/R	Shorting Block, 220V (High Line)
22*	A001921-04	A/R	Shorting Block, 220V (Low Line)
23	75-8808	4	Screw, Wood, Flat Hd., Phil., #8 x 1/2" Lg.
24	78-25001	A/R	Cable Clamp
25	000871	1	Label
26	79-20101	1	Molex Male Pin 02-09-2011
27	79-58019	1	Molex Plug 03-09-2118

\*Install Shorting Block per voltage required

REVISIONS		INITIALS and DATE	
SYM	DESCRIPTION	DRFTG	CHECK
A	PROD BEL	04/14	EC



INTERPRET THIS DRAWING FOR USA 1743 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FINISHES - 4:116 5:4:1 ANGLES - 4:10 3:3:3 03 SURFACE FINISH - 3:3:3 4:3:10 MATERIAL:		DRAWN BY DC DATE 0-11-74 CHECKED REGION ENGINEER PROJECT ENGINEER DOCUMENT CONTROL	TITLE HARNESS INSTALLATION DRAWING ATARI INCORPORATED 14400 Winchester Boulevard Los Gatos, California 95030
APPROVED 	SIZE D SCALE 1/2	DRAWING NO. 002446 SHEET 1 OF 1	REV A



⚠ ITEM 1 IS PURCHASED WITH THREE PLASTIC SPACERS, ONE 1/16" THICK SPACER IS PLACED BENEATH ITEM 5. THE 1/8" THICK SPACER IS PLACED ABOVE ITEM 2. (THE SECOND 1/16" THICK SPACER IS OMITTED FROM THE ASSEMBLY.)

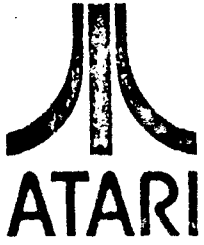
NOTES:

INTERPRET THIS DRAWING PER USASI Y14.5  
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  
 TOLERANCES ON:  
 FRACTIONS = ±1/16 A ±.1  
 ANGLES = ±10  
 SURFACE FINISH = XXX ±.010  
 MATERIAL:  
 SEE P/L 001929

SYM	DESCRIPTION	INITIALS and DATE	
		DRAFT.	ENGR.
A	9-18-74	<i>[Signature]</i>	EC
B	REV PER ECU 9/16	10-25-74	EC
B	REV PER ECU 11-7-74	<i>[Signature]</i>	1/EC

<p>ATARI INCORPORATED          14600 Winchester Boulevard          Los Gatos, California 95030</p>	<p>DATE: 8-26-74          DRAWN BY: REGAN          CHECKED: REGAN          DESIGN ENGINEER: REGAN          PROJECT ENGINEER: <i>[Signature]</i>          DOCUMENT CONTROL: <i>[Signature]</i></p>	<p>ATARI          SWITCH ASSEMBLY</p>
<p>SEE P/L 001929</p>	<p>SCALE: FULL          DRAWING NO: A001929          SHEET 1 OF 1</p>	<p>SIZE: B          RIV: B</p>

A001929	USED ON
NEXT ASSY	APPLICATION



Job Title SWITCH ASSEMBLY  
PIN PONG

Dwg. P/L 001929

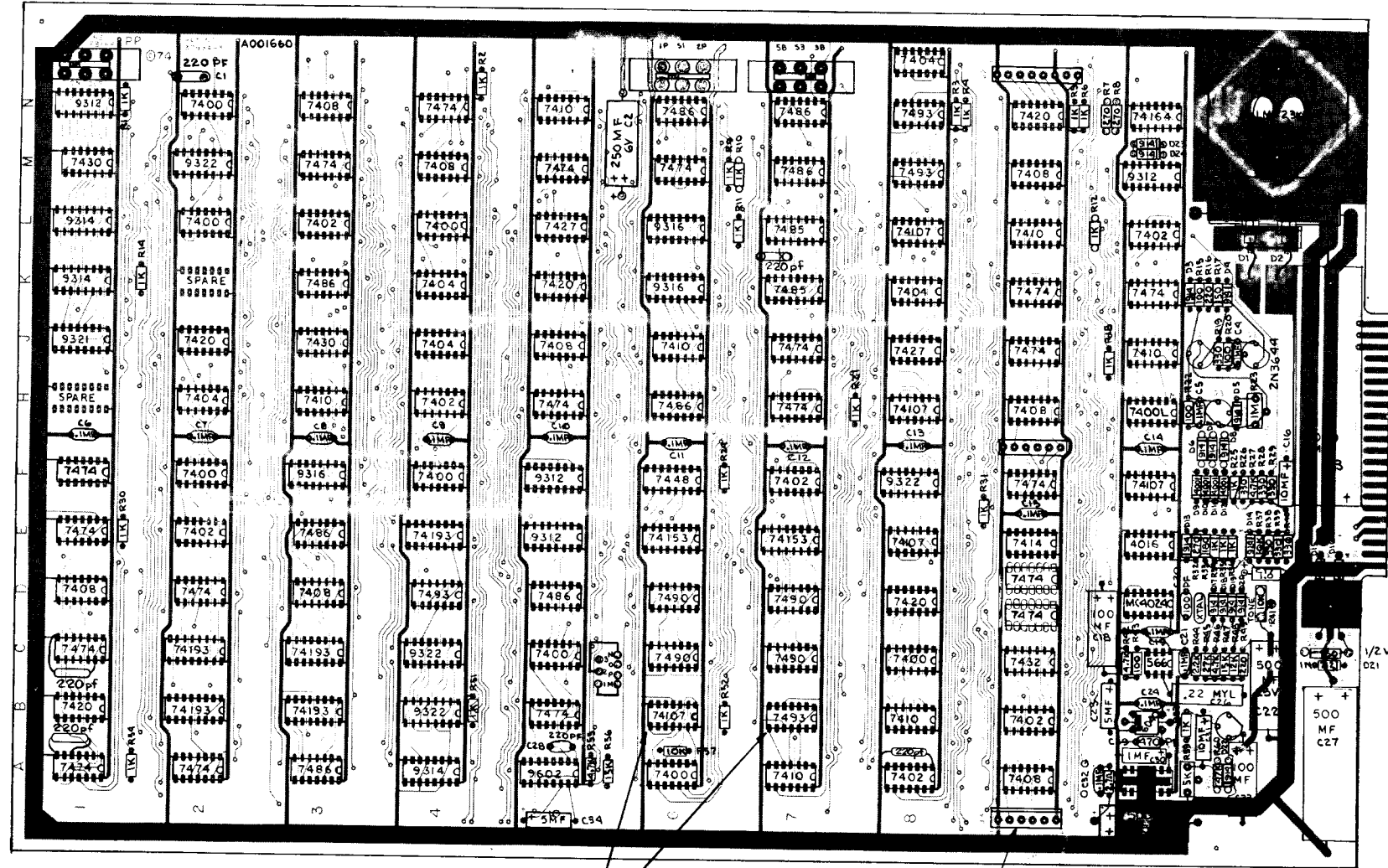
*Parts List Specification* sheet 1 of 1

Drawn Cynthia		
Checked	Mech. Eng. <i>BEN CHEN</i>	Rev.
Proj. Eng.	Elec. Eng. <i>Larry Leppert</i>	B

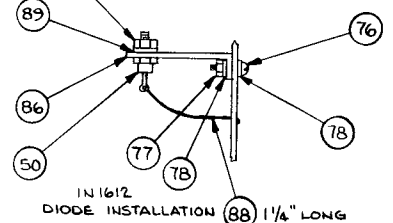
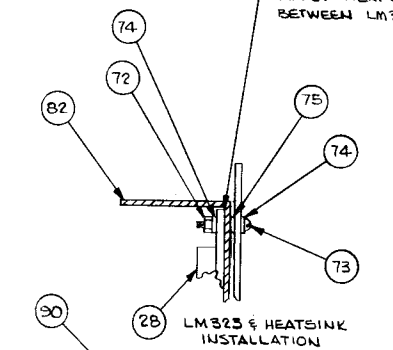
Rev.	Description	Apprv.	Rev.	Description	Apprv.
A	PREPROD REL 9/23/74	<i>RC</i>			
B	Rev per ECN 916 10/25/74	<i>RC</i>			
B	PROD REL 11/7/74	<i>RC</i>			

Item	Part. No.	Qty.	Description
1	60013/60-0102	1	Switch, Push-button, Rundel (#R2)
2	60011/60-0301	1	Ring, Anti-Rotation (#SA 19)
3	60012/60-0401	1	Contact Block, SPST, N.O.
4	60014/60-0202	1	Cap, Switch (Yellow), #AY 1
5	001819	1	Bracket, Mounting, Control

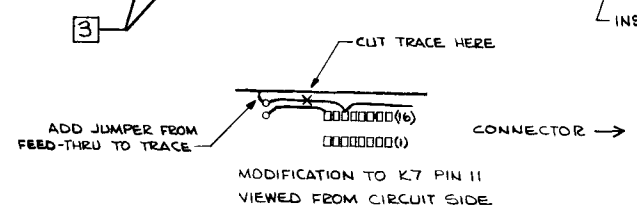
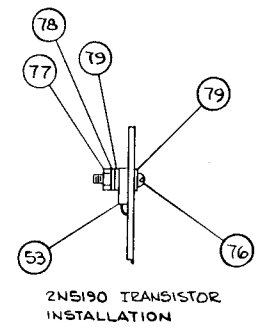
REVISIONS		INITIALS AND DATE	
SYM	DESCRIPTION	DEPT	ENGR
C	PRODUCTION RELEASE	9/2	[Signature]
D	REV. PER ECN 751, 811, 812	9/23	[Signature]
E	REV. PER ECN 826	11/24	[Signature]
F	REV. PER ECN 871	11/24	[Signature]
G	REV. PER ECN 1071	1/15	[Signature]



APPLY ITEM 87 (THERMAL COMPOUND) BETWEEN LM323 AND HEATSINK

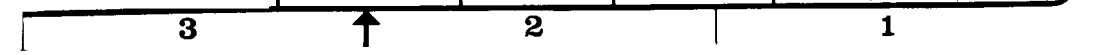


- MODIFICATION LIST**
1. ADD 220 pf CAPACITOR BETWEEN PINS 5 AND 7 OF A1.
  2. ADD 220pf CAPACITOR BETWEEN PINS 7 AND 13 OF C1.
  3. ON CIRCUIT SIDE OF BOARD, CUT TRACE TO K7 PIN 11 AND JUMPER TO ADJACENT TRACE AS SHOWN.
  4. ADD 220pf CAPACITOR BETWEEN PIN 1 OF A8 AND GND BUSS.



4. FOR 60HZ, SEE P/L 001660-01.  
FOR 50HZ, SEE P/L 001660-02.
3. INTEGRATED CIRCUITS B6 (74107) AND B7 (7493) ARE LOADED FOR 50HZ OPERATION ONLY.
2. ALL TRANSISTORS ARE 2N3643.
1. ALL DIODE ARE IN14.
- NOTES: UNLESS OTHERWISE SPECIFIED.

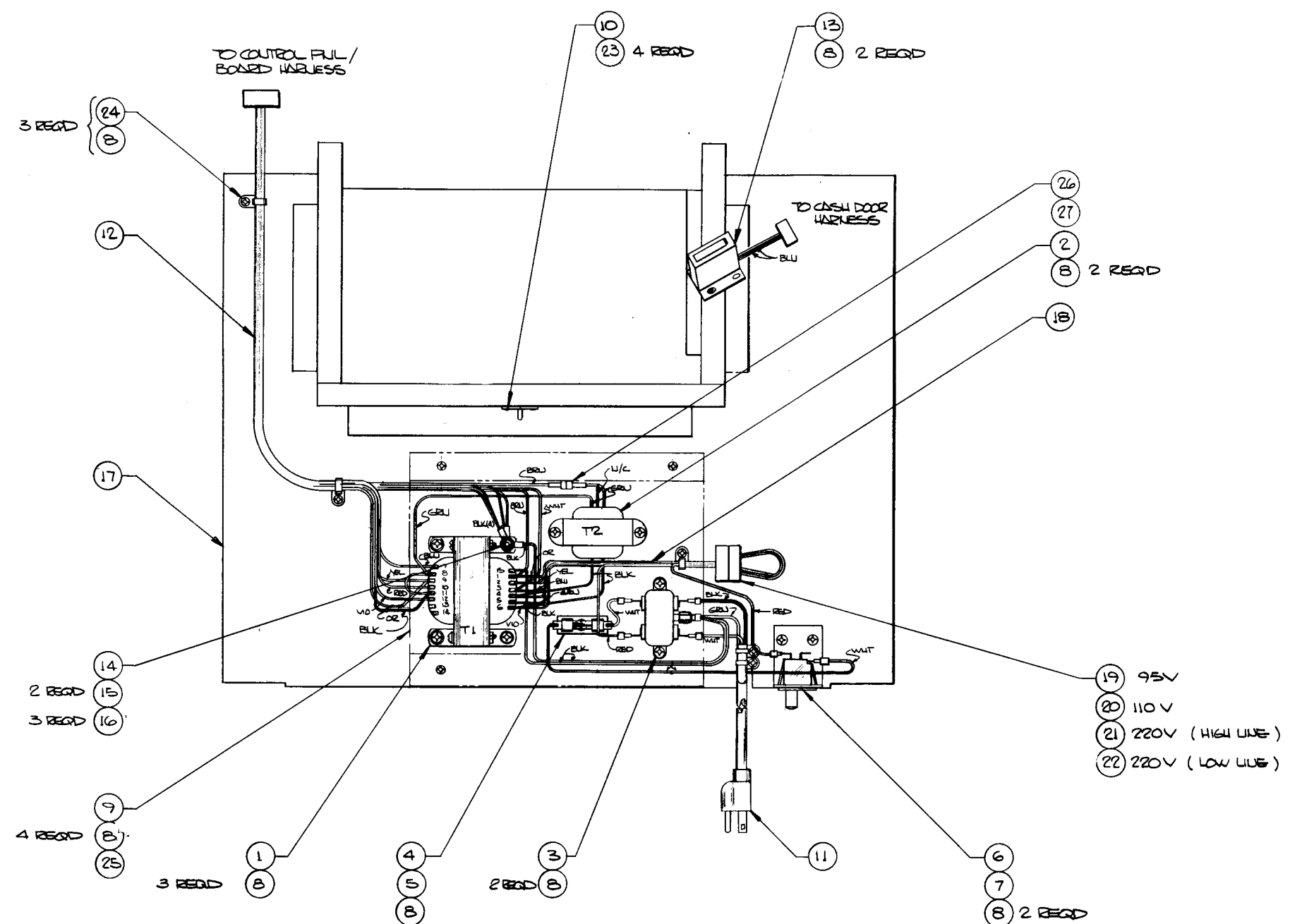
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:	CHECKED:	DESIGN NUMBER:	
FRACTIONS: 1/16, 1/8, 1/4, 1/2, 3/4	PROJ. ENGR.:	DOC. CONTROL:	TITLE: ASSEMBLY PIN PONG (50HZ/60HZ)
MATERIAL:	APPROVED:	SCALE: 1/1	SHEET: 1 OF 1
P/L 001660-01			
50 HZ			
P/L 001660-02			





8 7 6 5 4 3 2 1

REVISIONS				
SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG	CHECK	ENGRG
A	PROD REL	10/9/74	[Signature]	[Signature]
B	REVISED PER ECN 893	11/9/74	[Signature]	[Signature]



D  
C  
B  
A

D  
C  
B  
A

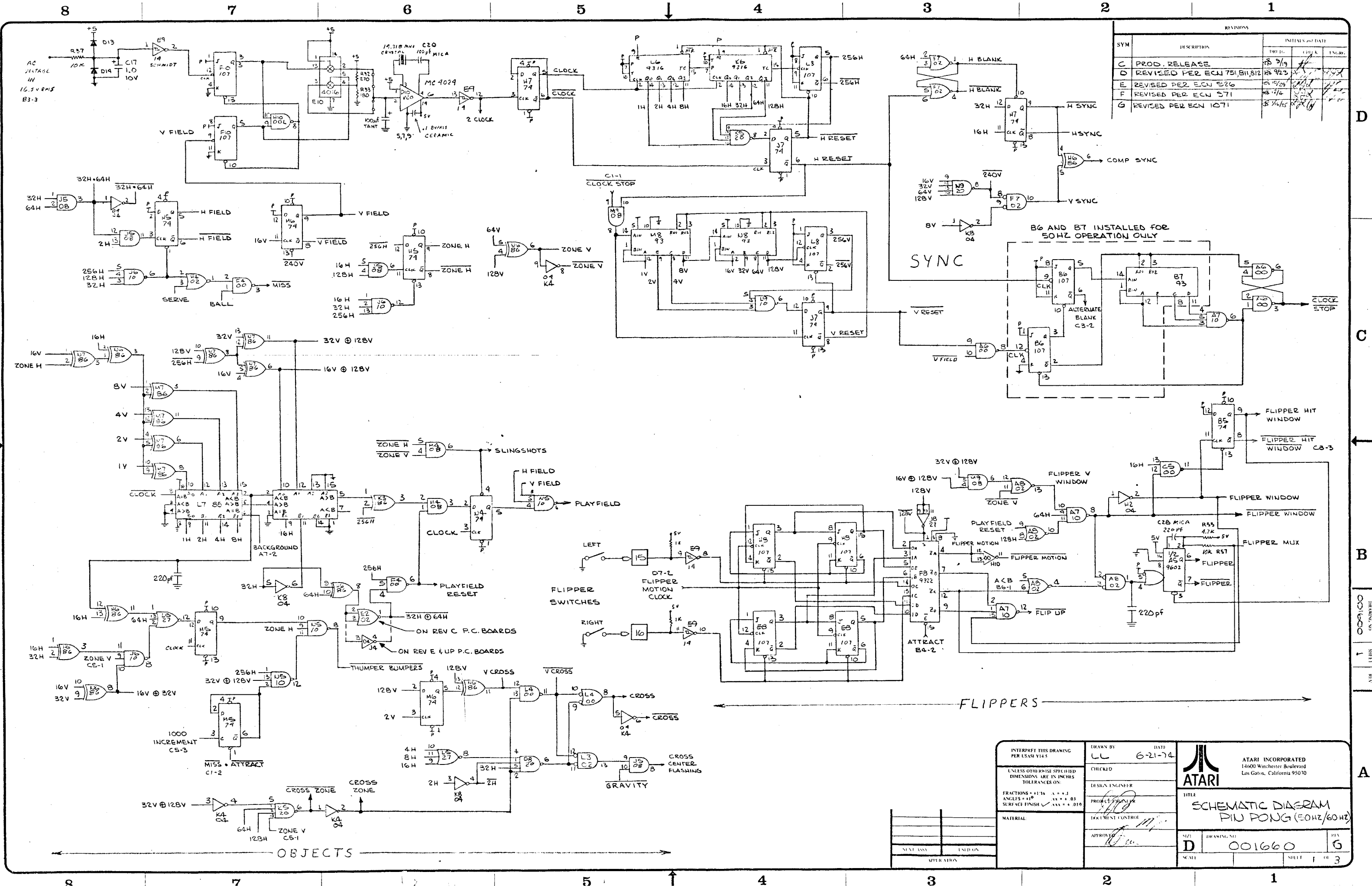
DRAWING NO. A001927  
SHEET 1 OF 1

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APPROVED	DATE
[Signature]	10/16/74

INTERPRET THIS DRAWING PER USASI Y14.5	DRAWN BY DC DATE 10/9/74	<p>ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030</p>
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:	CHECKED RC	
FRACTIONS = +.1/16 X = .1 ANGLES = 45° SURFACE FINISH ✓ .25 X = .010	DESIGN ENGINEER RC PROJECT ENGINEER [Signature] 10/16/74 DOCUMENT CONTROL	TITLE ASSEMBLY ELECTRONICS TRAY
MATERIAL: SEE PL 001927	APPROVED [Signature] 10/16/74	SIZE D DRAWING NO. A001927
NEXT ASSY USED ON	APPLICATION	SCALE 1/2 SHEET 1 OF 1

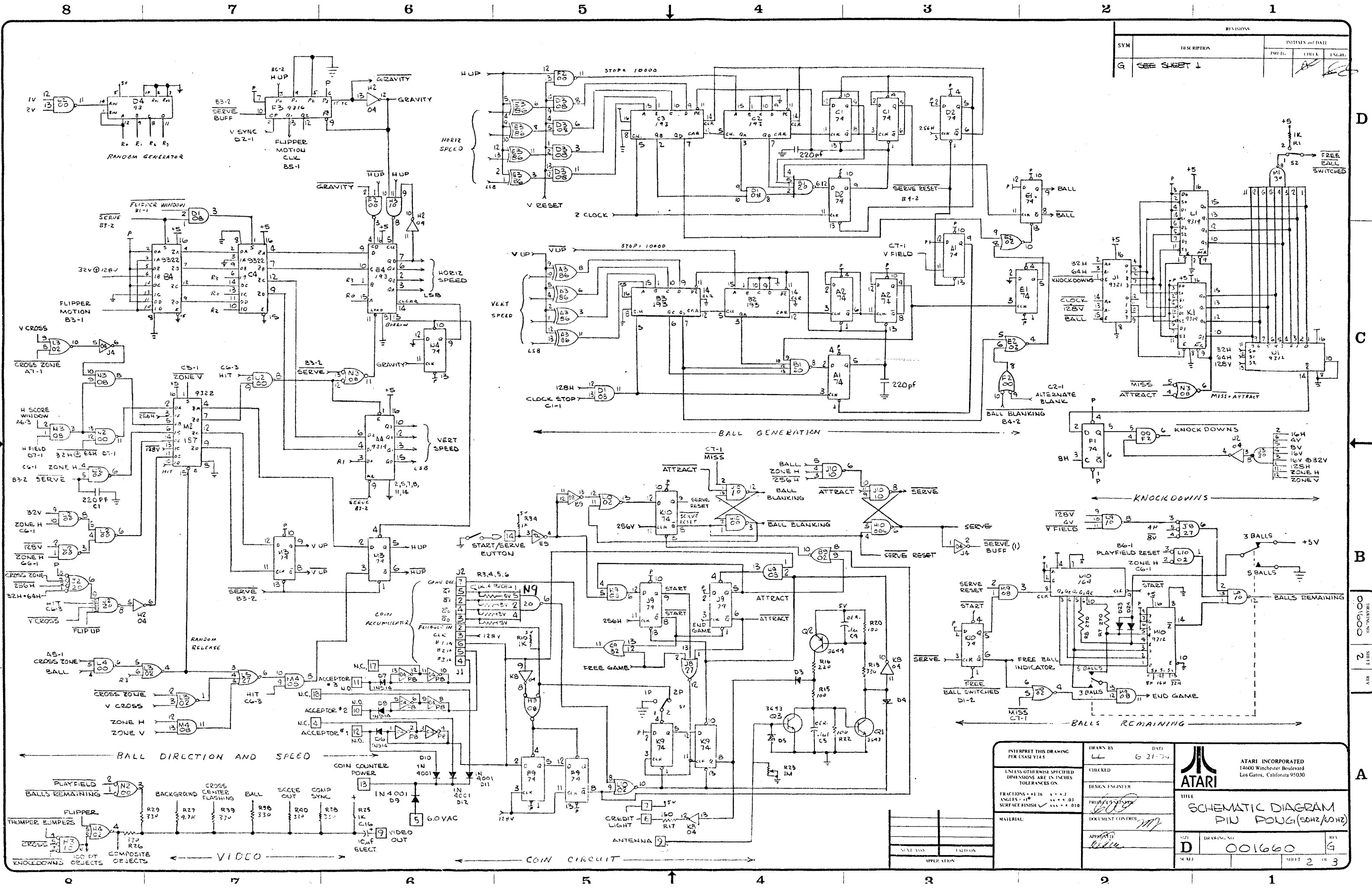
8 7 6 5 4 3 2 1



REVISIONS			
SYM	DESCRIPTION	DATE	INITIALS and DATE
C	PROD. RELEASE	8/9/74	
D	REVISED PER ECN 751, 811, 812	8/9/74	
E	REVISED PER ECN 826	8/14/74	
F	REVISED PER ECN 871	8/14/74	
G	REVISED PER ECN 1071	8/14/74	

INTERPRET THIS DRAWING PER IAS 914.5 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS ±.125 ANGLES ±1° SURFACE FINISH ✓ ALL +.010	DRAWN BY <b>LL</b>	DATE <b>6-21-74</b>	ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95070
	CHECKED DESIGN ENGINEER PROJECT MANAGER DOCUMENT CONTROL APPROVED NAME AND SIGNATURE	TITLE <b>SCHEMATIC DIAGRAM PING PONG (50HZ/60HZ)</b>	
MATERIAL PARTS LIST OPERATION	SIZE <b>D</b>	DRAWING NO <b>001660</b>	REV <b>G</b>
SCALE		SHEET <b>1</b>	OF <b>3</b>

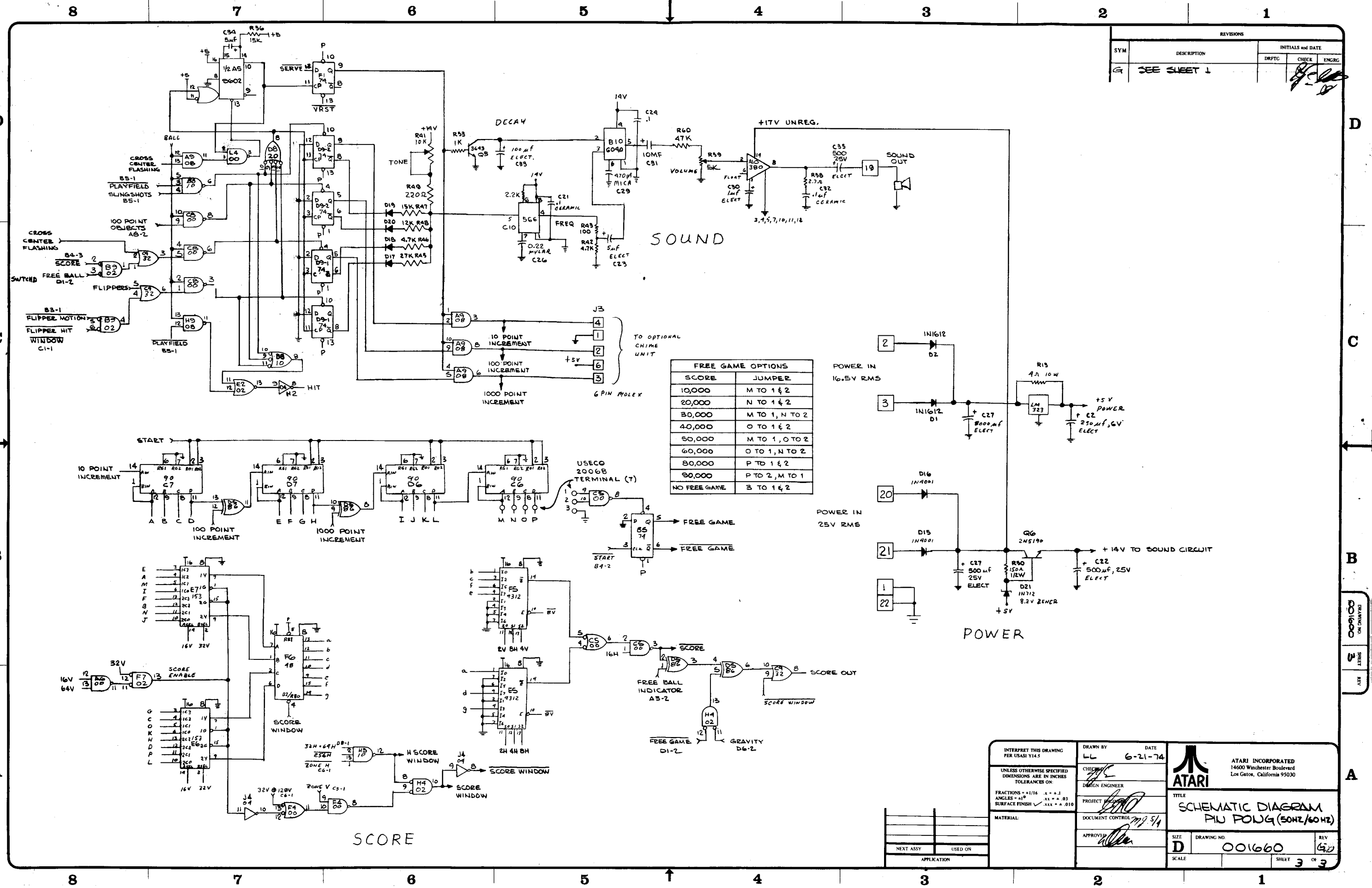
D  
 C  
 B  
 A



REVISIONS			INITIALS and DATE	
SYM	DESCRIPTION	PREP. BY	CHECK	ENGR.
G	SEE SHEET 1			

INTERPRET THIS DRAWING PER CSAS1 Y14.5 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:	DRAWN BY: LL DATE: 6-21-74	ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030
	CHECKED: [Signature] DESIGN ENGINEER: [Signature] PROJECT MANAGER: [Signature] DOCUMENT CONTROL: [Signature]	
MATERIAL:	APPROVED: [Signature]	SIZE: D DRAWING NO: 001660 REV: 4 SHEET: 2 OF 3

REVISIONS		
SYM	DESCRIPTION	INITIALS and DATE
G	SEE SHEET J	

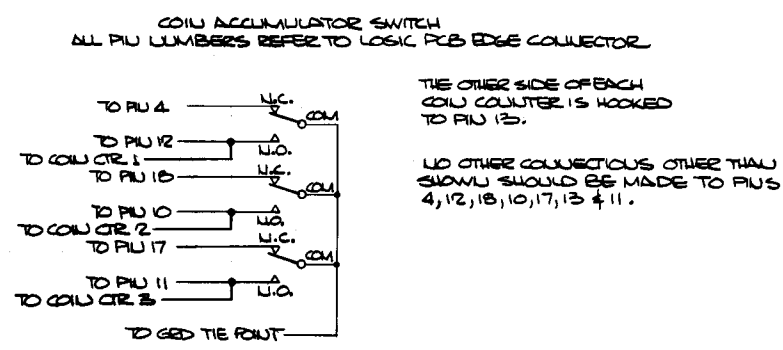
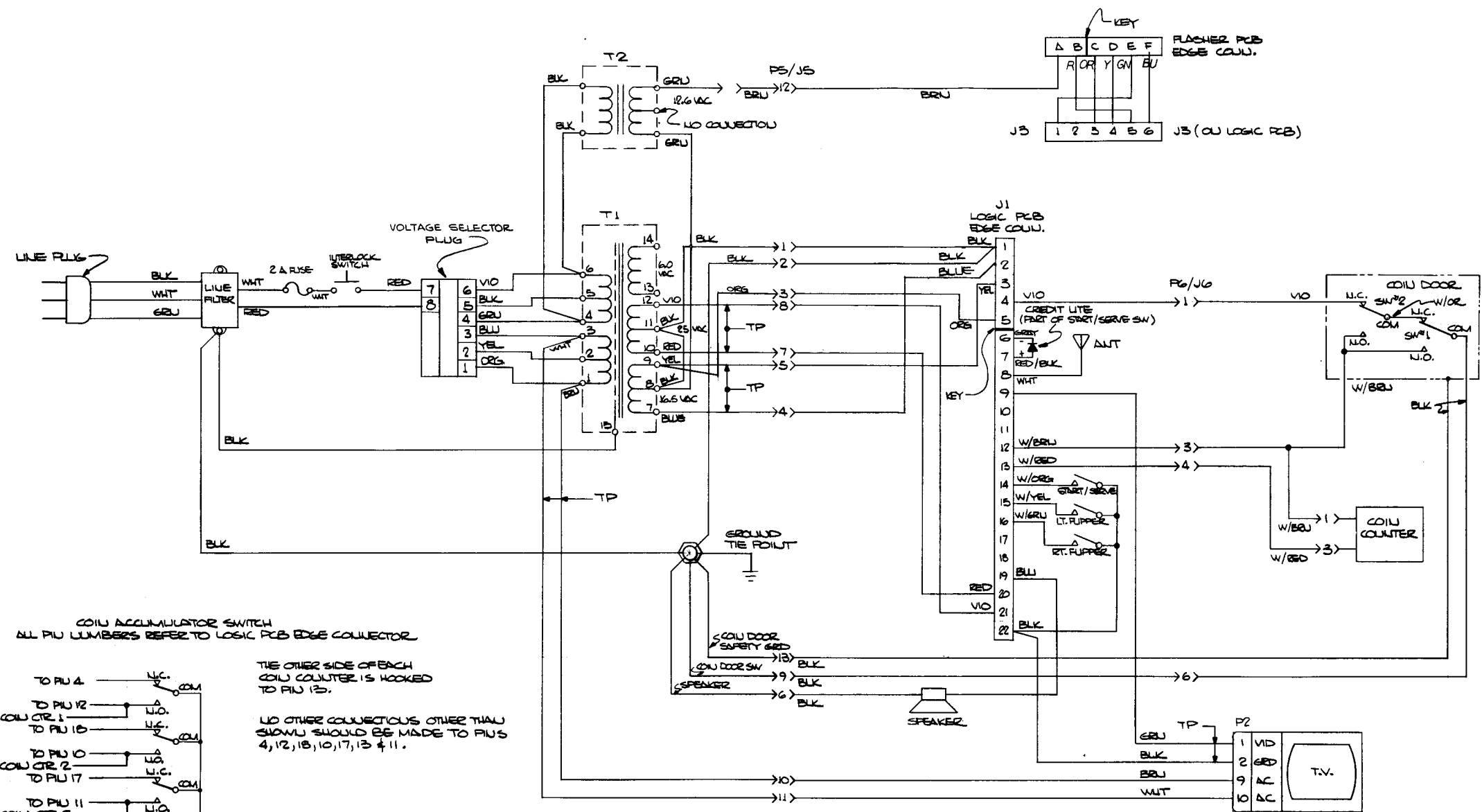


SCORE	JUMPER
10,000	M TO 1 & 2
20,000	N TO 1 & 2
30,000	M TO 1, N TO 2
40,000	O TO 1 & 2
50,000	M TO 1, O TO 2
60,000	O TO 1, N TO 2
80,000	P TO 1 & 2
90,000	P TO 2, M TO 1
NO FREE GAME	3 TO 1 & 2

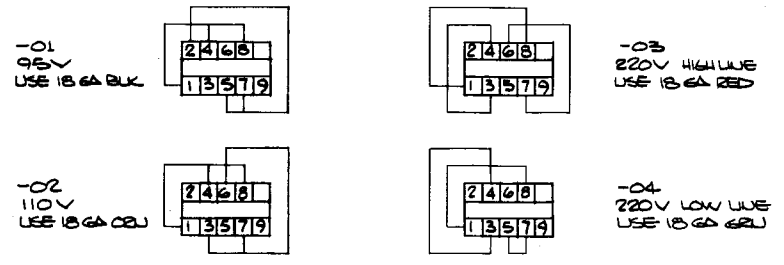
INTERPRET THIS DRAWING PER USASI Y14.5 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS = ±1/16 DECIMALS = ±.03 SURFACE FINISH = XXX = A .010	DRAWN BY: LL CHECKED BY: [Signature] DESIGN ENGINEER	DATE: 6-21-74 PROJECT: [Signature] DOCUMENT CONTROL: [Signature]	ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030
	MATERIAL:	APPROVED BY: [Signature]	
NEXT ASSY: [Blank] USED ON: [Blank] APPLICATION: [Blank]	SIZE: D SCALE: [Blank]	DRAWING NO: 001660 SHEET 3 OF 3	REV: (4)

DRAWING NO: 001660  
 SHEET 3 OF 3

REVISIONS			
SYM	DESCRIPTION	INITIALS and DATE	
		DRFTG	CHECK ENGRG
B	PROD BEL REVISIONS PER ECN 874	10/15/74	RC
C	REVISED PER ECN 892	10/21/74	RC
D	REV PER ECN 1425	5/2/75	RC



10 PU MOLEX VOLTAGE SELECTOR PLUGS



\* SEE DRAWING 0001921 FOR FULL DETAIL

APPROVED	DATE
COOK	10/15/74

INTERPRET THIS DRAWING PER USASI Y14.3	DRWN BY <b>COOK</b>	DATE 10/15/74	<p>ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030</p>
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:	CHECKED	DESIGN ENGINEER <b>RE</b>	
FRACTIONS = 1/16 .5 = .5 ANGLES = 10° .25 = .25 SURFACE FINISH = .25x = .25x	PROJECT ENGINEER <i>[Signature]</i>	DOCUMENT CONTROL	TITLE <b>WIRING DIAGRAM PING PONG</b>
MATERIAL:	APPROVED <i>[Signature]</i>	DATE	SIZE <b>D</b>
NEXT ASSY	USED ON	APPLICATION	DRAWING NO. <b>001982</b>
			REV <b>0</b>
			SHEET 1 OF 1

DRAWING NO. 001982

D  
C  
B  
A

D  
C  
B  
A