

GAME No. 0B42
Form No. 0B42-00300-0200

CYBERNAUT

Electrical Manual



Bally/MIDWAY MFG. CO.
T.M.

10601 W. Belmont Ave. Franklin Park, Illinois 60131
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WARNING

**THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY
RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.**

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally MIDWAY

Invites You To Use

**OUR TOLL FREE NUMBERS FOR
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY
OTHER BALLY MIDWAY GAME YOU NOW HAVE ON LOCATION.**

**CALL US FOR PROMPT, COURTEOUS
ANSWERS TO YOUR PROBLEMS.**

VIDEO ———> Continental U.S. 1-800-323-7182

PINBALL ———> Continental U.S. 1-800-323-3555

Bally MIDWAY

10601 West Belmont Avenue Franklin Park, Illinois, 60131

phone (312) 451-9200

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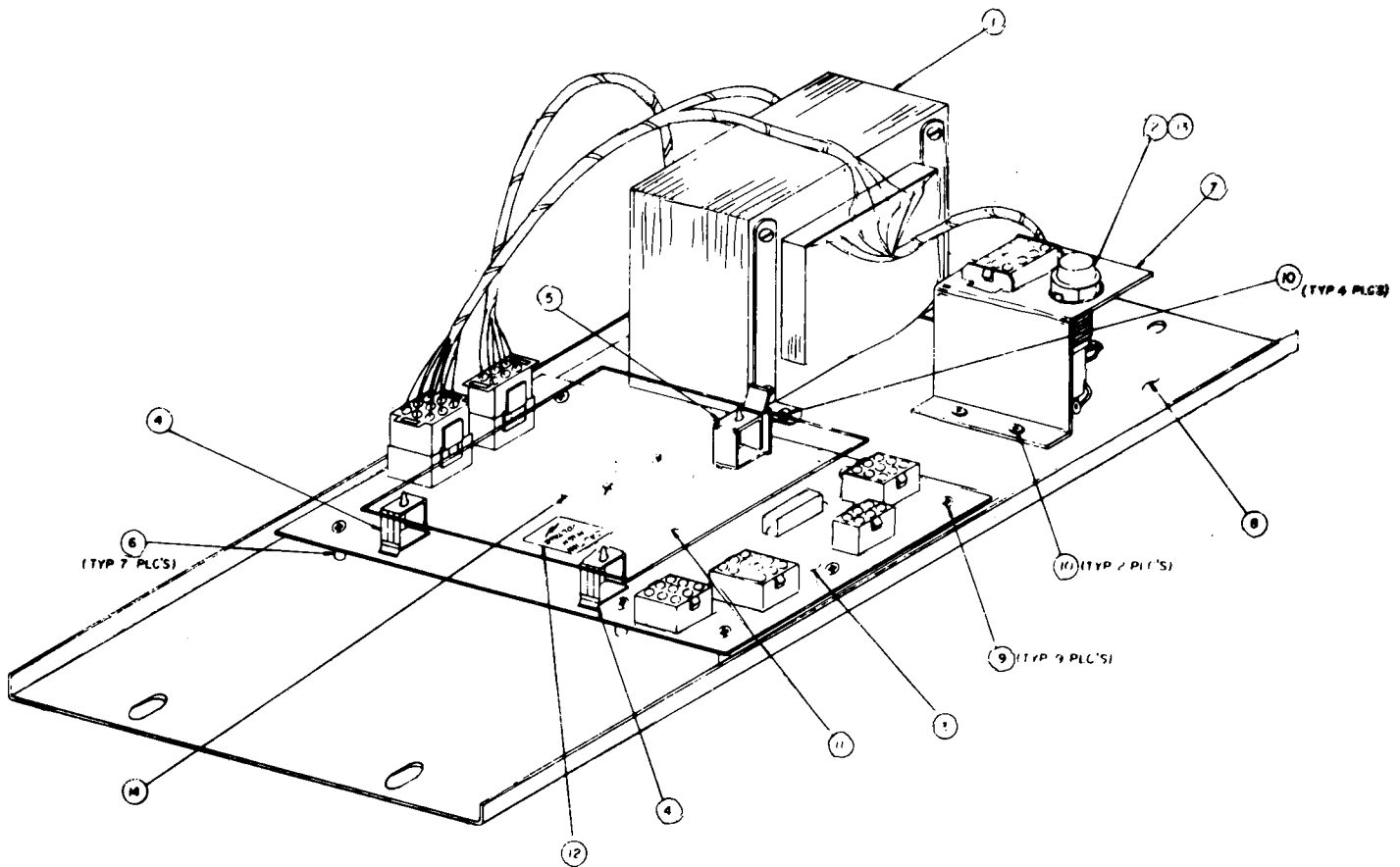
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**CYBERNAUT
ELECTRICAL MANUAL
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EPR0M LIST.....	INSIDE BACK COVER

A2: POWER TRANSFORMER MODULE



A2: POWER TRANSFORMER MODULE COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
0	A2	AB87-00009-0000	POWER TRANSFORMER MODULE, COMPLETE
1		MT00-00115-A000	TRANSFORMER
2		E-148-25	FUSE HOLDER
3	A2	AS-2518-54	POWER MODULE ASSEMBLY
4		M-1829-4	HINGED SUPPORT
5		M-1829-3	EDGE HOLDER
6		M-1829-5	SPACER
7		P-6442-244b	FUSE & CONNECT BRACKET
8		P-6442-246	CHASSIS
9		RLPP-832-1812	SCREW
10		RLPP-1032-1806	SCREW
11		P-2692-2	SHIELD
12		M-469-936a	HIGH VOLTAGE STICKER
13		E-133-24	3 AMP SLOW BLOW FUSE
14		M-1834	H. S. COMPOUND

NOTE 1 - ALL GAMES WITH 4 OR MORE FLIPPERS USE 7A

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
R1	600 OHM 10W 10%
R2	25 OHM 5W 10%
R3	100K OHM 1/4W 5%
VR1	VARISTOR
CR1-CR4	IN4004
CR5-CR8	GP30A/V330
BR1, BR2	KBPC35-02-W BRIDGE
P/O BR1, BR2	SPACER
F1	20 AMP FUSE - NOTE 1
F2	3/4 AMP FUSE
F3	4 AMP FUSE
F4	5 AMP FUSE - NOTE 2
F5, F6	15 AMP FUSE
P/O F1, F5, F6	FUSE CLIP BUSSMAN
P/O F2, F3, F4	FUSE CLIP LITTELFUSE
J1	9 COND. M&L PIN HEADER
J2	6 COND. M&L PIN HEADER
J3	12 COND. M&L PIN HEADER
J4	9 COND. M&L PIN HEADER
J5	9 COND. M&L PIN HEADER
J6	6 COND. M&L PIN HEADER
TP1-TP5, GND	TEST POINTS
PCB	POWER MODULE

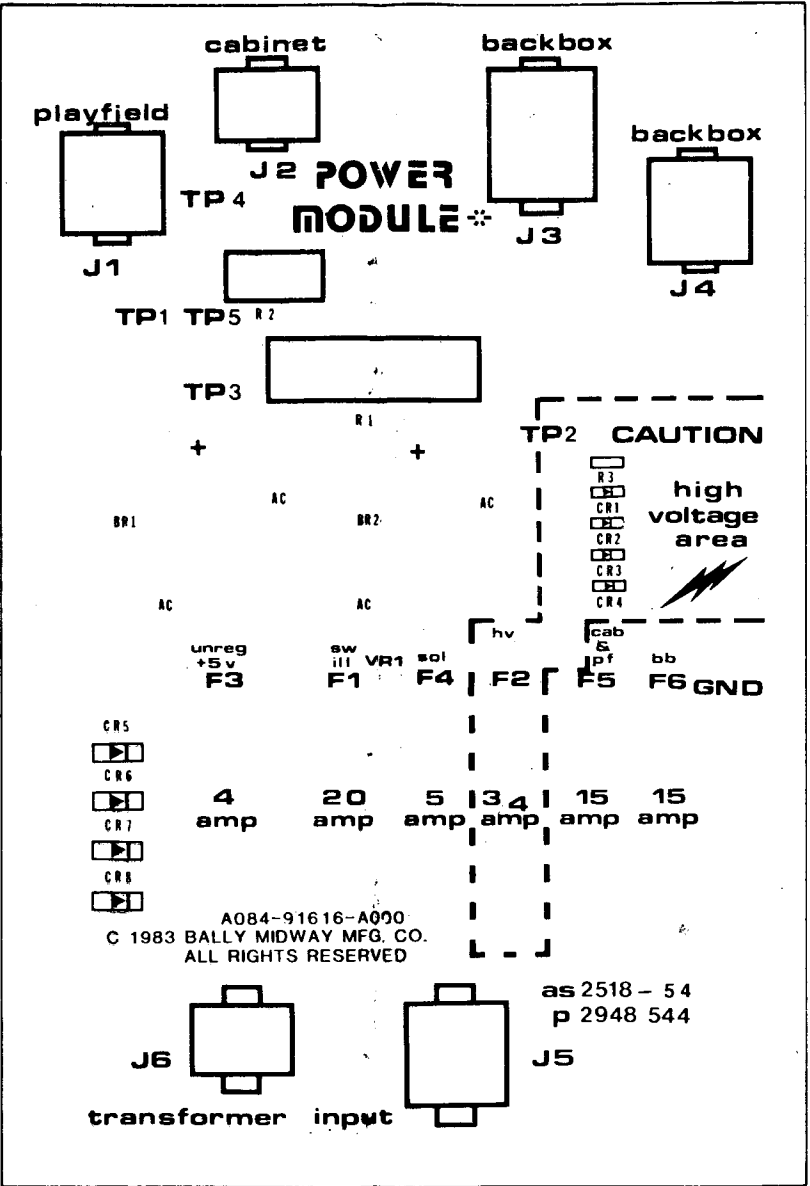
NOTE 1 USE 10AMP FUSE WITH TRANSFORMER
MT00-00114-A000

NOTE 2 USE 6 AMP FUSE WITH 3 FLIPPER GAME
AND 7 AMP FUSE WITH 4 FLIPPER GAME

CROSS REF. LIST

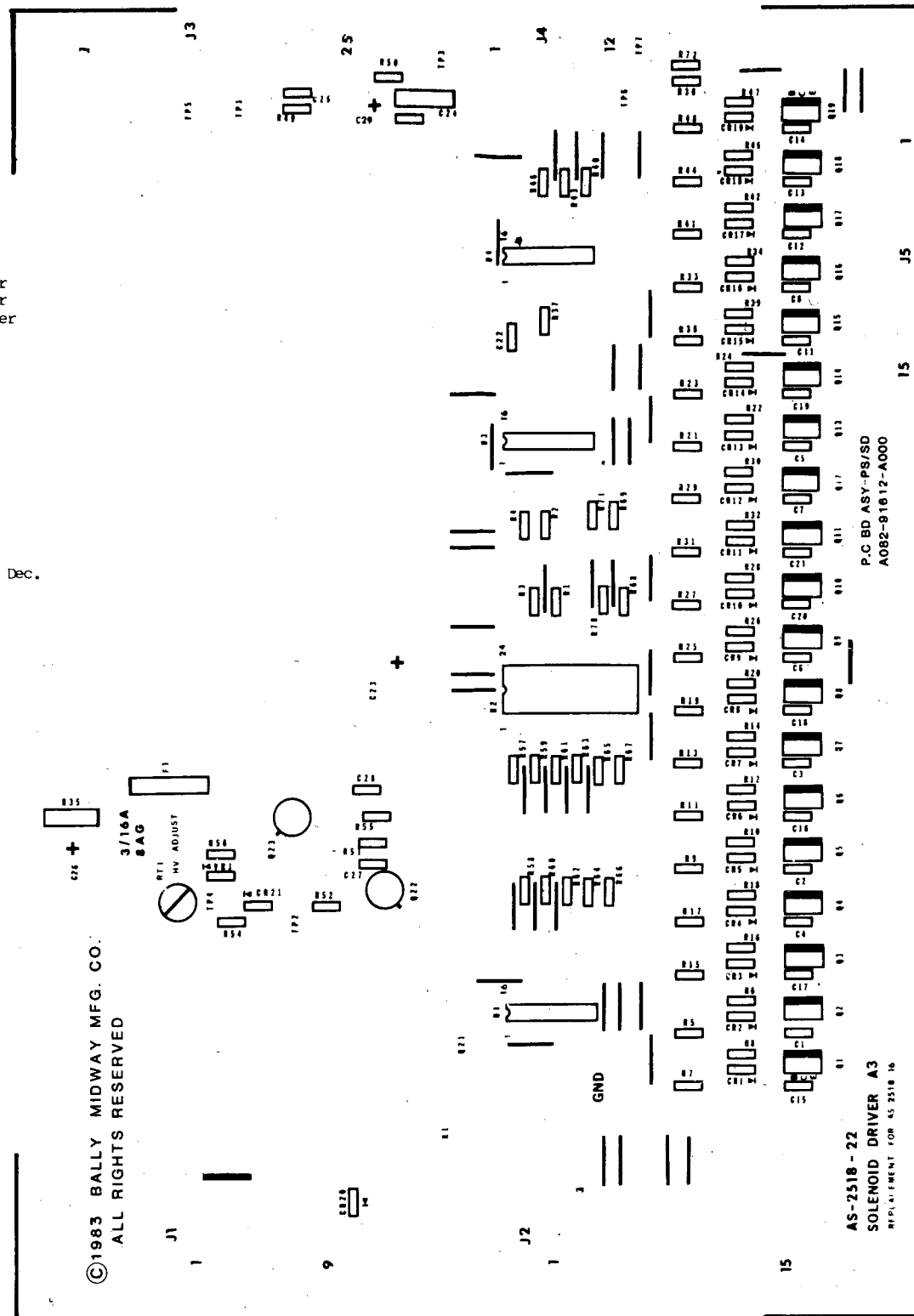
DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
250 OHM 5W 10%	1	R2	100E-00002-0028
600 OHM 10W 10%	1	R1	100E-00002-0049
100K OHM 1/4W 5%	1	R3	100E-00005-0115
VARISTOR	1	VR1	115E-00001-0002
IN4004	4	CR1-CR4	103E-00003-0005
GP30A/V330	4	CR5-CR8	0360-00801-0007
KBPC35-02-W	2	BR1, BR2	103E-00005-0005
SPACER	2	P/O BR1, BR2	118E-00001-0001
3/4 AMP FUSE	1	F2	0017-00003-0177
4 AMP FUSE	1	F3	0017-00003-0176
5 AMP FUSE/LEC	1	F4	0017-00003-0175
15 AMP FUSE	2	F5, F6	0017-00003-0313
20 AMP FUSE	1	F1	0017-00003-0173
FUSE CLIP BUSSMAN	6	P/O F1, F5, F6	0017-00071-0034
FUSE CLIP LITTELFUSE	6	P/O F2, F3, F4	0017-00071-0033
6 COND. M&L PIN HEADER	2	J2, J6	0017-00021-0424
9 COND. M&L PIN HEADER	2	J4, J5	0017-00021-0425
9 COND. M&L SOCKET HEADER	1	J1	0017-00021-0426
12 COND. M&L PIN HEADER	1	J3	0017-00021-0427
TEST POINTS	6	TP1-TP5, GND	0017-00007-0131
POWER MODULE		PCB	A080-91616-A000

High/Low



PROJECT ENG: A. AARSTAD		USED ON		REVISIONS	
DO NOT SCALE DWG		HEAT TREAT	SCALE FULL	NO REQ'D I PER	
DIM TOLERANCES UNLESS SPECIFIED		DRG. BAK	MATERIAL		Bally / MIDWAY MFG. CO. FRANKLIN PK ILL
DATE 11/13/84		CRD.	FINISH		
HOLE DIA + .002 0.00		DATE 11/13/84		PART NO M051- 00114 - A054	
ASSEMBLY DWG. POWER MODULE				A082-91616-A000	

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1-C8	.002 uf 1KV Cer.	CR1-CR21	1N4004 Diode
C11-C21	.002 uf 1KV Cer.	Q1-Q19	2N6045 NPN Darl.
C22	.01 uf 50V Cer.	Q20	LM323 +5V Reg.
C23	11,000 uf 20V Elec.	Q21	2N3584 NPN
P/O C23	Cable Tie	HEATSINK P/O Q21	Heatsink T066
P/O C23	Jumper Wire 24awg.	INSULATOR P/O Q21	Insulator T066
C24	2 uf 25V Elec.	SCREWS P/O Q20, Q21	6-32 X 12 Screw
C25	.1uf 20V Cer.	SCREWS P/O Q21	6-32 X 5 Screw
C26	160 uf 350V Elec.	NUTS P/O Q20, Q21	6-32 Hex Nut
P/O C26	Cable Tie	WASHERS P/O Q20, Q21	145-.290-019 Lockwasher
C27, C28	.01 uf 500V Cer.	WASHERS P/O Q21	145-.313-019 Lockwasher
C29	.1 uf 20V Cer.	WASHERS P/O Q20, Q21	145-.375-032 Flat washer
R1-R4	33K 1/4 W 5%	HEX SPACERS	6-32 Tapped Hex-Spacer
R5	120 ohm 1/4 W 5%	SHIELD P/O Q21	Plexiglass
R6	330 ohm 1/4 W 5%	HEATSINK P/O Q20	Heatsink T03
R7	120 ohm 1/4 W 5%	INSULATOR P/O Q20	Insulator T03
R8	330 ohm 1/4 W 5%	TAPE LABEL P/O Q21	High Voltage Label
R9	120 ohm 1/4 W 5%	Q22, Q23	2N3440 NPN
R10	330 ohm 1/4 W 5%	HEATSINK P/O Q23	Heatsink T05
R11	120 ohm 1/4 W 5%	INSULATOR P/O Q22, Q23	Insulator T05
R12	330 ohm 1/4 W 5%		
R13	120 ohm 1/4 W 5%		
R14	330 ohm 1/4 W 5%		
R15	120 ohm 1/4 W 5%	FP1-FP7, (GND).	TEST POINTS
R16	330 ohm 1/4 W 5%	VR1	IN5275A Zener
R17	120 ohm 1/4 W 5%	U1	CA3081 Xstr Array
R18	330 ohm 1/4 W 5%	U2	74LS154 Binary To 1/16 Dec.
R19	120 ohm 1/4 W 5%	U3, U4	CA3081 Xstr Array
R20	330 ohm 1/4 W 5%	JW1-JW49	Tin 22awg Jumper
R21	120 ohm 1/4 W 5%	TW1, TW2	Cable Tie 7-5/8"
R22	330 ohm 1/4 W 5%	F1	3/16 A 8AG Fuse
R23	120 ohm 1/4 W 5%	CLIP P/O F1	Fuse Clip
R24	330 ohm 1/4 W 5%	J1, J2	.045 Auto Insert Pins
R25	120 ohm 1/4 W 5%	J3, J4	.025 Auto Insert Pins
R26	330 ohm 1/4 W 5%	J5	.045 Auto Insert Pins
R27	120 ohm 1/4 W 5%	K1	48 VDC Relay
R28	330 ohm 1/4 W 5%		P.C.B.
R29	120 ohm 1/4 W 5%		
R30	330 ohm 1/4 W 5%		
R31	120 ohm 1/4 W 5%		
R32	330 ohm 1/4 W 5%		
R33	120 ohm 1/4 W 5%		
R34	330 ohm 1/4 W 5%		
R35	100K 1W 5%		
R36	120 ohm 1/4 W 5%		
R37	3.9K 1/4 W 5%		
R38	120 ohm 1/4 W 5%		
R39	330 ohm 1/4 W 5%		
R40	3.9K 1/4 W 5%		
R41	120 ohm 1/4 W 5%		
R42	330 ohm 1/4 W 5%		
R43	3.9K 1/4 W 5%		
R44	120 ohm 1/4 W 5%		
R45	330 ohm 1/4 W 5%		
R46	3.9K 1/4 W 5%		
R47	330 ohm 1/4 W 5%		
R48	120 ohm 1/4 W 5%		
R49	100 ohm 1/2 W 5%		
R50	2.2 ohm 1/4 W 5%		
R51	22K 1/2 W 5%		
R52	390 ohm 1/4 W 5%		
R54	8.2K 1/4 W 5%		
R55	1.2K 1/4 W 5%		
R56	82K 1/2 W 5%		
R57-R72	1.2K 1/4 W 5%		
RT1	0-25K Linear Pot 1/4 W		

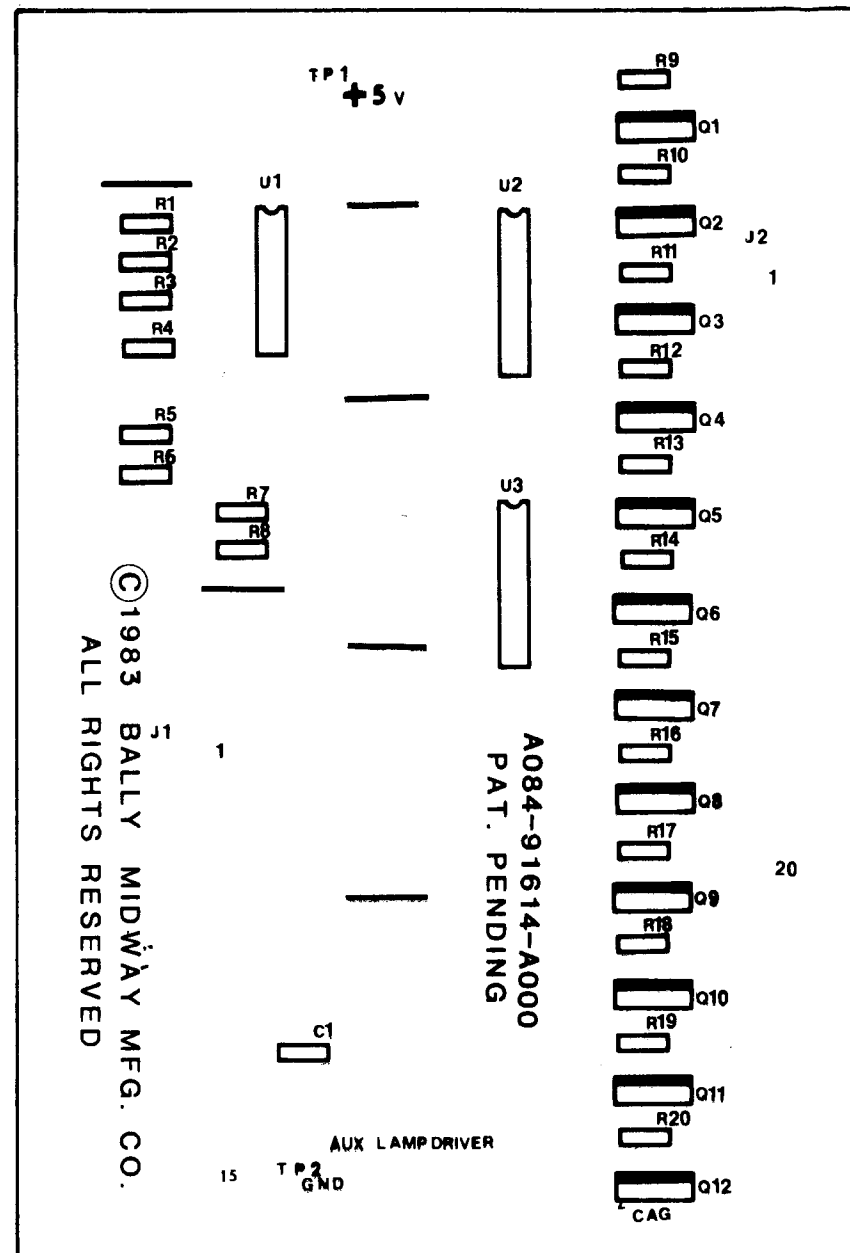


DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
.002 uf 1KV Cer.	19	C1-C8, C11-C21	0360-00800-0012
.01 uf 50V Cer.	1	C22	0360-00800-0005
.01 uf 500V Cer.	2	C27, C28	0360-00800-0013
.1 uf 20V Cer.	2	C25, C29	0360-00800-0026
2 uf 25V Elec.	1	C24	0360-00800-0019
160 uf 350V Elec.	1	C26	0360-00800-0020
11,000 uf 20V Elec.	1	C23	0360-00800-0024
2.2 OHM 1/4W 5%	1	R50	100E-00005-0003
120 OHM 1/4W 5%	20	R5, R7, R9, R11, R13	100E-00005-0035
		R15, R17, R19, R21, R23	
		R25, R27, R29, R31, R33	
		R36, R38, R41, R44, R48	
330 OHM 1/4W 5%	19	R6, R8, R10, R12, R14	100E-00005-0047
		R16, R18, R20, R22, R24	
		R26, R28, R30, R32, R34	
		R39, R42, R45, R47	
390 OHM 1/4W 5%	1	R52	100E-00005-0049
1.2K 1/4W 5%	17	R55, R57-R72	100E-00005-0063
3.9K 1/4W 5%	4	R37, R40, R43, R46	100E-00005-0077
8.2K 1/4W 5%	1	R54	100E-00005-0086
33K 1/4W 5%	4	R1-R4	100E-00005-0100
100 OHM 1/2W 5%	1	R49	100E-00006-0021
22K 1/2W 5%	1	R51	100E-00006-0065
82K 1/2W 5%	1	R56	100E-00006-0072
100K 1W 5%	1	R35	100E-00007-0037
RTL	1	0-25K Linear Pot 1/4W	0360-00804-0004
IN4004	21	CR1-CR21	103E-00003-0005
IN5275A 2 Zener	1	VR1	103E-00001-0027
LM323 +5V Reg.	1	O20	0360-00003-0021
2N3440 NPN	2	O22, Q23	104E-00003-0002
2N3584 NPN	1	Q21	104E-00005-0002
2N6045 NPN Darl.	19	Q1-Q19	0360-00802-0008
CA3081 Xstr Array	3	U1, U3, U4	0360-00803-0007
74LS154 Bin. to 1/16 Dec.	1	U2	0360-00803-0024
TIN 22awg Jumper	49	JW1-JW49	117E-00001-0001
3/16 A 8awg Fuse	1	F1	0017-00003-0206
Fuse Clip	2	P/O F1	0017-00071-0033
.045 Auto Insert Pins	36	J1, J2, J5	0304-00804-0010
.025 Auto Insert Pins	35	J3, J4	0304-00804-0009
TEST POINT	8	TP1-TP7, GND.	0017-00007-0131
Jumper Wire 24awg.	2	P/O C26	0017-00033-0448
Solder Lug	2	P/O C26	0017-00021-0257
Heatsink T05	1	P/O Q23	112E-00001-0004
Insulator T05	2	P/O Q22, Q23	0017-00042-0151
Heatsink T066	1	P/O Q21	112E-00001-0002
Insulator T066	1	P/O Q21	0017-00042-0158
6-32 X 12 Screw	4	P/O Q20, Q21	0017-00101-0132
6-32 X 5 Screw	2	P/O Q21	0017-00101-0767
6-32 Hex Nut	4	P/O Q20, Q21	0017-00103-0005
145-.290-019 Lockwasher	4	P/O Q20, Q21	0017-00104-0008
145-.313-019	4	P/O Q21	0017-00104-0009
145-.375-032 Flat Washer	4	P/O Q20, Q21	0017-00104-0106
6-32 Tapped Hex Spacer	2	Hex Spacer P/O Q21	0017-00042-0248
Heatsink T03	1	Heatsink P/O Q20	112E-00001-0003
Insulator T03	1	Insulator P/O Q20	0017-00042-0119
High Voltage Label	1	Tape Label P/O Q21	M051-00044-0000
48VDC Relay	1	K1	114E-00001-0011
P.C.B.	1	Solenoid Driver/Pwr Sply Bd.	A080-91612-A000

REVISIONS

PROJECT ENG: A. AARSTAD		USED ON		Bally / MIDWAY MFG. CO.	
DO NOT SCALE DWG		HEAT TREAT	SCALE	FRANKLIN PK ILL	
DIM TOLERANCES UNLESS SPECIFIED		NO. REQ'D			
DOR. BAK		ASSEMBLY DWG. SOLENOID DRIVER/ PWR. SUPPLY BD.		PART NO.	
CONCENTRICITY TYP. 0.004		A080-91612-A000		M051 - 00114 - A046	
LOCATIONAL 0.004					
FORMAL 0.004					
HOLE DIA. ± 0.02 0.00					
DATE 11/27/84					
FINISH					

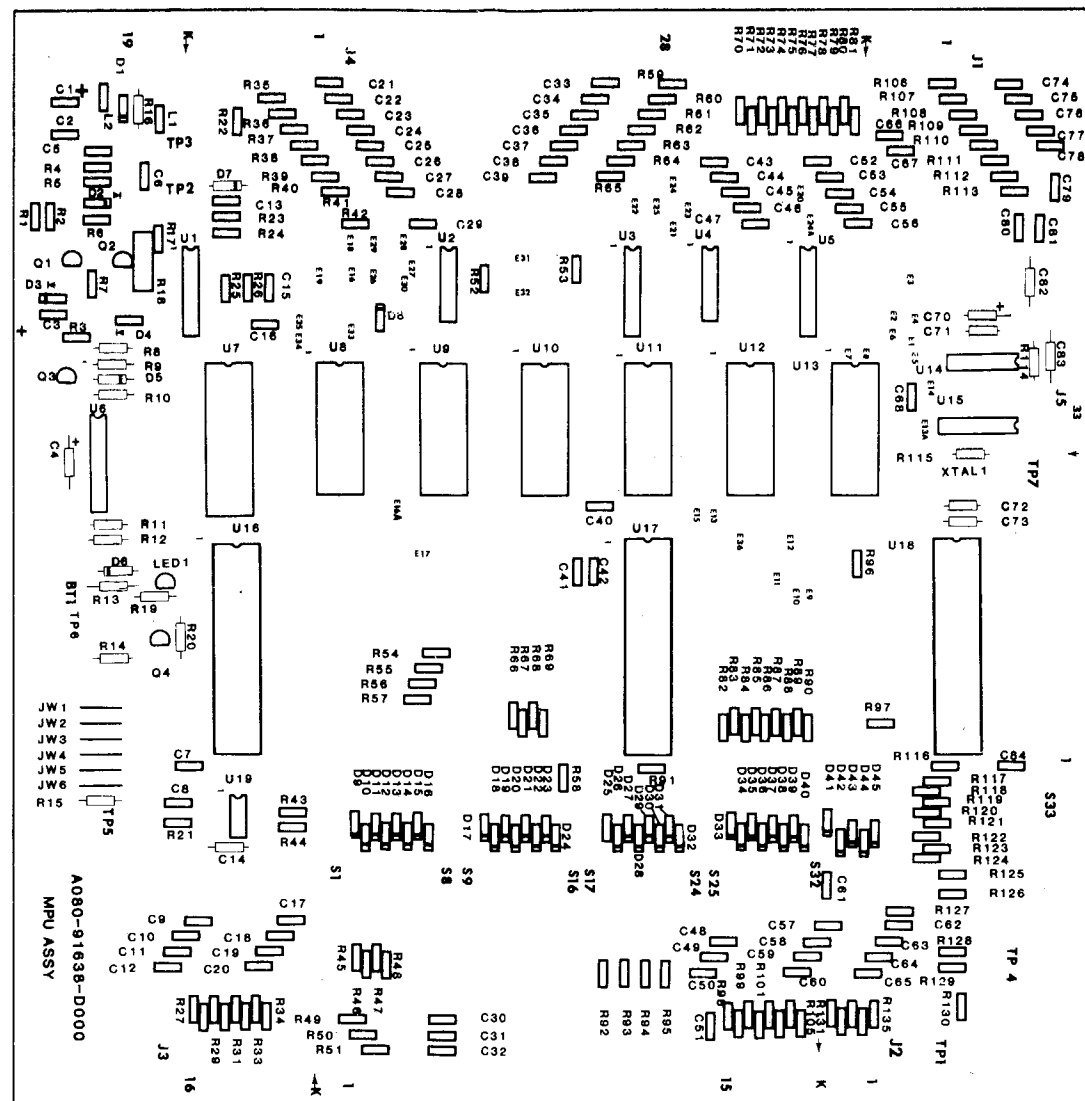
DESIGNATION NO.	DESCRIPTION
C1	.01 UF 500V CER
R1	2.2M 1/4W 10%
R2-R8	20K 1/4W 5%
R9-R20	2K 1/4W 5%
Q1-Q12	MCR 106-1 SCR
U1	4013 DUAL D FLIP FLOP
U2,U3	4555 BINARY 1 TO 4 DECODER
J1,J2	.045 AUTO INSERT PINS
JW1-JW6	JUMPERS
TP1,TP2	TEST POINTS
PCB	AUX. LAMP DRIVER



DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
.01 UF 500V CER	1	C1	0360-00800-0013
2K 1/4W 5%	12	R9-R20	100E-00005-0068
20K 1/4W 5%	7	R2-R8	100E-00005-0095
2.2M 1/4W 10%	1	R1	100E-00005-0148
MCR 106-1 SCR	12	Q1-Q12	0360-00802-0009
4013 DUAL D FLIP FLOP	1	U1	0360-00803-0026
4555 BINARY 1 TO 4 DECODER	2	U2,U3	0360-00803-0025
.045 AUTO INSERT PINS	33	J1,J2	0304-00804-0010
JUMPERS	6	JW1-JW6	0069-230XX-XBKX
TEST POINTS	2	TP1,TP2	0017-00007-0131
PCB	1		A080-91614-A000

PROJECT ENG: A. AARSTAD			USED ON PINBALL		Bally / MIDWAY MFG. CO. FRANKLIN PARK, ILL.
DO NOT SCALE DIMS		HEAT TREAT	SCALE	NO. REQ'D	
DIM TOLERANCES UNLESS SPECIFIED		DRN. J.S.	MAT'L.	AUX. LAMP DRIVER ASSY A084-91614-A000	
CONCENTRICITY .005		CKD.	FINISH		
HOLE DIA. + .002 .000		DATE 9/18/84			
				PART NO. M051- 00114 - A050	

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	4.7 UF TANT	R49,R50	1.2K
C2,C3	.01 UF	R51	110
C4	4.7 UF TANT	R52	30K
C5,C6	820 PF	R53	10K
C7	.01 UF	R54-R57	5.1K
C8	.1 UF	R58-R65	1.2K
C9-C12	390 PF	R66-R69	5.1K
C13	.015 UF	R70-R81	1.2K
C14	.01 UF	R82-R90	47K
C15	.05 UF	R91	3.3K
C16	.01 UF	R92-R95	56K
C17-C20	390 PF	R96	3.3K
C21-C29	820 PF	R97	30K
C30,C31	390 PF	R98-R113	1.2K
C32	3000 PF	R114	1.5M
C33-C39	470 PF	R115	750K
C40-C42	.01 UF	R116-R124	3.3K
C43-C47	470 PF	R125-R129	56K
C48-C51	390 PF	R130	1K
C52-C56	470 PF	R131-R135	1.2K
C57-C65	390 PF		
C66,C67	470 PF	D1	1N4148 *
C68	.01 UF	D2	1N958B ZENER
C70	4.7 UF TANT	D3-D5	1N4148
C71	.01 UF	D6	1N4004
C72,C73	33 PF	D7-D45	1N4148
C74-C81	470 PF	LED 1	LED (GREEN)
C82	.22 JF		
C83,C84	.01 UF		
R1,R2	3K	Q1	2N3904
R3	270	Q2	2N4403
R4	2K	Q3,Q4	2N3904
R5	150K	U1	4049B
R6	1K	U2	4011
R7	9.1K	U3	4049B
R8	680	U4	74LS00
R9	100K	U5	4502
R10	1.5K	U6	5114 RAM
R11	3K	U14	74LS00
R12	750	U15	74HC4538
R13	470 1/2W	U16,U17	6821
R14	4.7K	U18	6802
R15	8.2K	U19	555
R16	2K *		
R17	33K	BT 1	BATTERY 3.6VDC
R18	82 1W		
R19	3.3K	S1-S32	DIP SWITCH
R20	8.2K	S33	PUSH BUTTON SW
R21	1K	U6	18 PIN SOCKET
R22	470	U7	28 PIN SOCKET
R23	7.5K	U8,U12	24 PIN SOCKET
R24	2K	U16-U18	40 PIN SOCKET
R25	1.5M		
R26	270K	J1-J5	.025 SQ PIN
R27-R34	1.2K		
R35-R37	470	TP1-TP7	TEST POINT LOOP
R38-R41	330		TY-WRAP JUMPR WIRE
R42	470		
R43	24K	L1,L2	.22 UH INDUCTOR
R44	4.7K	XTAL 1	CRYSTAL 2.000 MHZ
R45-R48	56K		
		P.C.B	A084-91638-D000



DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
33 PF AX CER	2	C72,C73	0395-00800-0002
390 PF AX CER	23	C9-C12,C17-C20, C30,C31,C48-C51, C57-C65	0360-00800-0001
470 PF AX CER	27	C33-C39,C43-C47 C52-C56,C66,C67 C74-C81	0360-00800-0002
820 PF AX CER	11	C5,C6,C21-C29	0360-00800-0004
3000 PF	1	C32	0360-00800-0025
.01 UF	12	C2,C3,C7,C14, C16,C40-C42,C68, C71,C83,C84	0360-00800-0005
.015 UF	1	C13	0395-00800-0001
.05 UF	1	C15	0360-00800-0006
.1 UF	1	C8	0360-00800-0007
.22	1	C82	0360-00800-0057
4.7 UF TANT	3	C1,C70,C4	0360-00800-0008
82,1W	1	R18	100E-00007-0014
110	1	R51	100E-00005-0034
270	1	R3	100E-00005-0044
330	4	R38-R41	100E-00005-0047
470,1/2W	1	R13	100E-00006-0034
470	5	R22,R35-R37,R42	100E-00005-0051
680	1	R8	100E-00005-0056
750	1	R12	100E-00005-0057
1K	3	R6,R21,R130	100E-00005-0061
1.2K	51	R27-R34,R49,R50 R58-R65,R70-R81, R98-R113,R131- R135	100E-00005-0063
1.5K	1	R10	100E-00005-0065
2K	3	R4,R24(R16 OPT.)	100E-00005-0068
3K	3	R1,R2,R11	100E-00005-0073
3.3K	12	R19,R91,R96,R116- R124	100E-00005-0074
4.7K	2	R14,R44	100E-00005-0079
5.1K	8	R54-R57,R66-R69	100E-00005-0080
7.5K	1	R23	100E-00005-0085
8.2K	2	R15,R20	100E-00005-0086
9.1K	1	R7	100E-00005-0087
10K	1	R53	100E-00005-0088
24K	1	R43	100E-00005-0097
30K	2	R52,R97	100E-00005-0099
33K	1	R17	100E-00005-0100
47K	9	R82-R90	100E-00005-0104
56K	13	R45-R48,R92-R95 R125-R129	100E-00005-0106
100K	1	R9	100E-00005-0115
150K	1	R5	100E-00005-0120
270K	1	R26	100E-00005-0126
750K	1	R115	100E-00005-0137
1.5M	2	R25,R114	100E-00005-0143

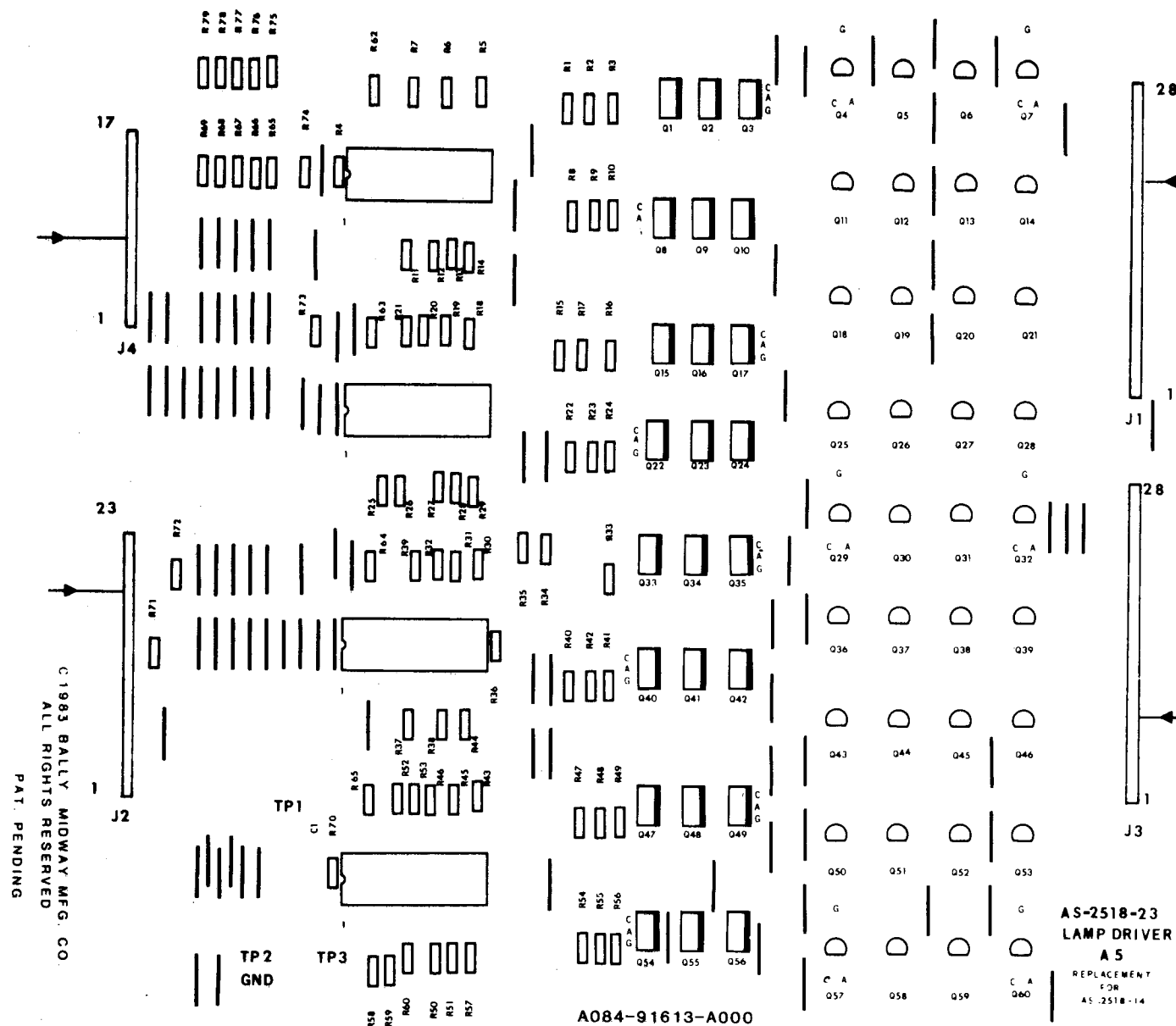
DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
1N4004	1	D6	103E-00003-0005
1N4148	43	D1,D3-D5,D7-D45	103E-00002-0005
D1 OPT			
1N958B ZENER	1	D2	103E-00001-0002
LED	1	LED 1	119E-00001-0001
2N3904	3	Q1,Q3,Q4	104E-00001-0006
2N4403	1	Q2	104E-00002-0006
555	1	U19	0360-00803-0001
4011	1	U2	0360-00803-0010
4049B	2	U1,U3	0360-00803-0011
4502	1	U5	0360-00803-0005
5114 RAM	1	U6	0395-00803-0003
6802	1	U18	0395-00803-0002
6821	2	U16,U17	0360-00803-0017
74LS00	2	U4,U14	0360-00803-0052
74HC4538	1	U15	0395-00803-0001
BATTERY 3.6VDC	1	BT 1	0017-00003-0172
DIP SWITCH	4	S1-S32	113E-00001-0003
PUSH BUTTON SW	1	S33	0017-00032-0038
18 PIN SOCKET	1	U6	110E-00001-0004
24 PIN SOCKET	2	U8,U12	110E-00001-0007
40 PIN SOCKET	3	U16,U17,U18	110E-00001-0011
28 PIN SOCKET	1	U7	110E-00001-0010
.025 SQ PIN	14	J2	0304-00804-0009
	15	J3	
	32	J5	
	18	J4	
	27	J1	
TEST POINT	7	TP1-TP7	0017-00007-0131
TY-RAP	1		0017-00042-0105
INDUCTOR .22 UH	2	L1,L2	0360-00804-0007
CRYSTAL 2.000 MHZ	1	Y1	0395-00804-0002

A084-91638-D000

PROJECT ENG: A. AARSTAD		USED ON PINBALL		REVISIONS	
DO NOT SCALE Dwg		HEAT TREAT	SCALE	NO. REQ'D	
DIM TOLERANCES UNLESS SPECIFIED		DATE	BY	PART NO	
DATE 3/26/85		6802 MPU ASSY DRAWING A080-91638-D000		M051 - 00114 - D076	

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1	.01 MF 500V
R1-R60	2K 5% 1/4W
R61-R69	2.2M 5% 1/4W
R70	2K 5% 1/4W
R71-R79	20K 5% 1/4W
Q1-Q3	MCR106-1
Q4-Q7	2N5060
Q8-Q10	MCR106-1
Q11-Q14	2N5060
Q15-Q17	MCR106-1
Q18-Q21	2N5060
Q22-Q24	MCR106-1
Q25-Q32	2N5060
Q33-Q35	MCR106-1
Q36-Q39	2N5060
Q40-Q42	MCR106-1
Q43-Q46	2N5060
Q47-Q49	MCR106-1
Q50-Q53	2N5060
Q54-Q56	MCR106-1
Q57-Q60	2N5060
U1-U4	MC14514B
J1	28 PIN WAFER CONN.
J2	23 PIN WAFER CONN.
J3	28 PIN WAFER CONN.
J4	17 PIN WAFER CONN.
TP1-TP3	TEST CLIP LABEL JUMPER, 22 AWG P.C. BOARD



CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	BALLY'S PART NOS.	MIDWAY'S PART NOS.
.01 MF 500V	1	C1	E-00586-0065	0360-00800-0013
2.2M 5% 1/4W	9	R61-R69	E-00105-0256	0062-339B3-1XXX
2K 5% 1/4W	61	R1-R60, R70	E-00105-0237	0062-193B3-1XXX
20K 5% 1/4W	9	R71-R79	E-00105-0242	0062-241B3-1XXX
MCR106-1	24	Q1-Q3, Q8-Q10, Q15-Q17, Q22-Q24, Q33-Q35, Q40-Q42, Q47-Q49, Q54-Q56	E-00585-0029	0360-00802-0009
2N5060	36	Q4-Q7, Q11-Q14, Q18-Q21, Q25-Q32, Q36-Q39, Q43-Q46, Q50-Q53, Q57-Q60	E-00585-0014	0360-00802-0005
MC14514B	4	U1-U4	E-00620-0037	0360-00803-0013
17 PIN WAFER CONN.	1	J4	E-00715-0013	0151-00030-17XB
23 PIN WAFER CONN.	1	J2	E-00715-0014	0151-00030-23XB
28 PIN WAFER CONN.	2	J1, J3	E-00715-0004	0151-00030-28XB
TEST CLIP	3	TP1-TP3	P-05399	0017-00007-0131
LABEL	1			0017-00081-0097
JUMPER, 22 AWG	99		M-1777-126	0069-230XX-XBXX
P.C. BOARD	1		P-02948-0301	A080-91613-A000

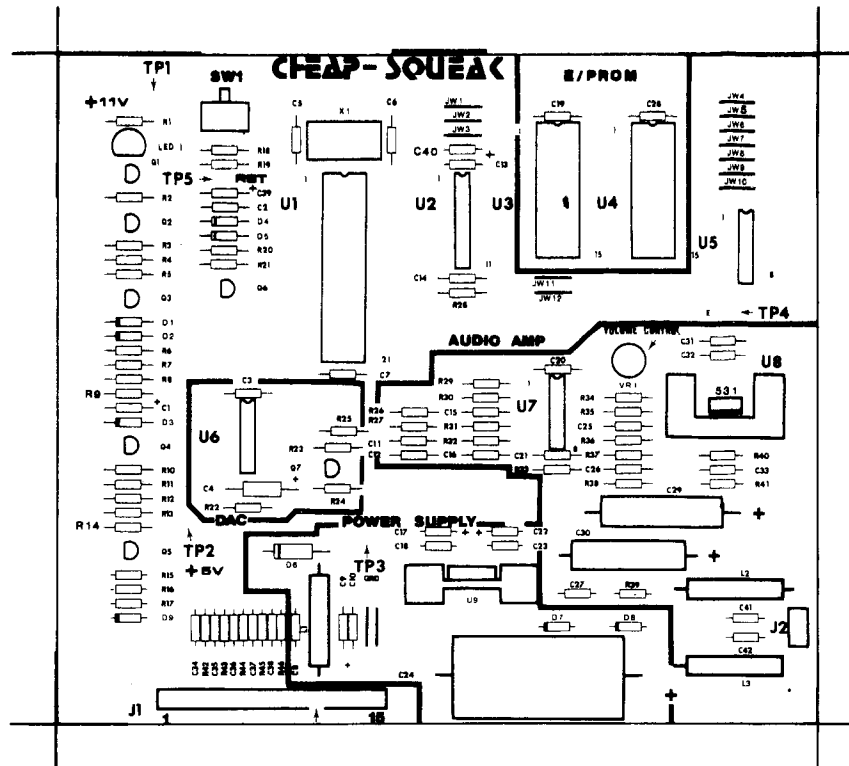
AS-2518-23
LAMP DRIVER
A 5
REPLACEMENT
FOR
AS-2518-14

PROJECT ENG.		USED ON		REVISIONS	
DO NOT SCALE DVS		HEAT TREAT	SCALE	FULL NO REQ'D I PER	
DIM TOLERANCE UNLESS SPECIFIED		DATE	LAMP DRIVER ASSY DWG A084-91613-A000		PART NO. M051-00114-A048
DATE 05/31/83					

Bally / MIDWAY MFG. CO.
FRANKLIN PK ILL

DESCRIPTION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	6.8 UF @ 25V,	D1-D3	1N4006
C2,C3	TANT	D4,D5	1N4004
C4	.01 UF	D6	VR330
C5,C6	47 UF @ 16V	D7,D8	1N4004
C7-C9	27 PF,5%	D9	1N9588
C10	.01 UF		
	4.7 UF @ 25V,	Q1	2N5305
	TANT	Q2	2N4403
C11	1000 PF	Q3	2N3904 NPN
C12,C13	0.1 UF	Q4	2N4403 PNP
C14	47 PF	Q5	2N3904 NPN
C15	150 PF	Q6	2N4403 PNP
C16	220 PF	Q7	2N5305 NPN
C17	4.7 UF @ 25V,		
	TANT	U1	MC 6803
C18,C19	.01 UF	U2	LS373
C20,C21	0.1 UF	U3,U4	EPROM
C22	4.7 UF @ 25V,	U5	LS10
	TANT	U6	2N429E-8
C23	.01 UF	U7	LM 3900
C24	4700 UF @ 25V	U8	TDA 2002
C25	100 PF	U9	MC 7805
C26	300 PF		
C27	0.1 UF	L1,L2,L3	10 UH CHOKE
C28	.01 UF		
C29	470 UF @ 6V	XU1	40 PIN SOCKET
C30	1000 UF @ 16V	XU3,XU4	28 PIN SOCKET
C31	.33 UF		
C32	0.1 UF	J1	.045 PIN
C33	.05 UF	J2	.045 PIN
C34-C38	820 PF	TP1-TP5	TEST POINT
C39,C40	4.7 UF @ 25V		
	TANT	LED 1	MV5254
C41,C42	.22 UF		
R1	560 OHM	HEATSINK P/O U8	6030B-TT
R2	47K OHM	HEATSINK P/O U9	6100B
R3	910 OHM	SCREW P/O U8	SCREW 6-32
R4	5.6K OHM	NUT P/O U8	NUT 6-32
R5	62K OHM	SCREW P/O U9	SCREW 4-40
R6	10K OHM	NUT P/O U9	NUT 4-40
R7	82K OHM		
R8	10K OHM	STAR WASHER P/O U9	
R9	47K OHM		
R10	100 OHM	P/O U8,U9	INSULATOR
R11	82 OHM		
R12	9.1K OHM	SW1	SWITCH P.C.B.
R13	7.5K OHM		
R14	39K OHM	X1	3.579 MHZ
R15,R16	2.7K OHM		
R17	1K OHM		
R18,R19	3.3K OHM		
R20	10K OHM		
R21	16K OHM		
R22	2.7K OHM		
R23	68 OHM		
R24	180 OHM		
R25,R26	100K OHM		
R27	47K OHM		
R28	120 OHM		
R29	120K OHM		
R30	130K OHM		
R31	100K OHM		
R32	200K OHM		
R33	390K OHM		
R34	470K OHM		
R35	24K OHM		
R36	180K OHM		
R37	390K OHM		
R38	2.2 OHM		
R39	1 OHM		
R40	430 OHM		
R41	220 OHM		
R42-R46	470 OHM		
VR 1	PHAN. POT 0-1K 1/2W		



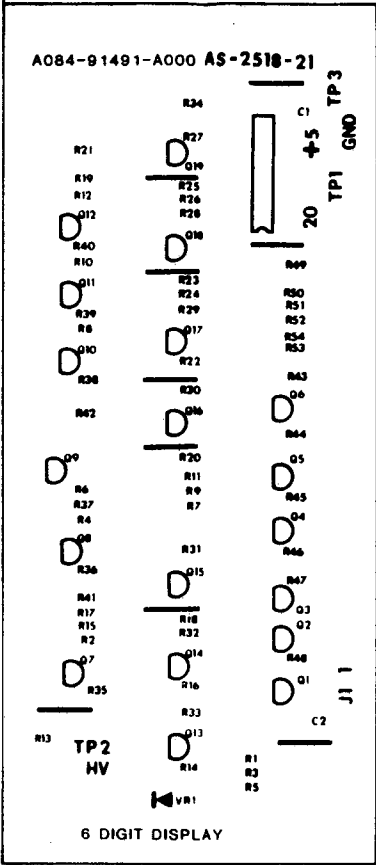
CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.	DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
27 PF,5%	2	C5,C6	0360-00800-0052	PHAN. POT 0-1K 1/2W	1	VR1	0360-00804-0003
47 PF	1	C14	0360-00800-0027				
100 PF	1	C25	0360-00800-0046				
150 PF	1	C15	0360-00800-0053	1N4006	3	D1-D3	103E-00002-0006
220 PF	1	C16	0360-00800-0054	1N4004	4	D4,D5,D7,D8	103E-00003-0005
300 PF	1	C26	0360-00800-0055	VR 330	1	D6	0360-00801-0007
820 PF	5	C34-C38	0360-00800-0004	1N9588 ZENER	1	D9	103E-00001-0002
3000 PF	1	C11	0360-00800-0056				
.01 UF	9	C2,C3,C7-C9,	0360-00800-0005	2N3904 NPN	2	Q3,Q5	104E-00001-0006
.05 UF	1	C18,C19,C23,		2N4403 PNP	3	Q2,Q4,Q6	104E-00002-0006
0.1 UF	6	C28	0360-00800-0006	2N5305 DARL NPN	2	Q1,Q7	104E-00007-0003
.22 UF	2	C33	0360-00800-0006				
.33 UF	1	C12,C13,C20,	0360-00800-0058	74LS10	1	U5	0360-00803-0046
4.7 UF @ 25V,	5	C21,C27,C32		74LS373	1	U2	0360-00803-0059
TANT	1	C41,C42	0360-00800-0057	MC 6803,MPU	1	U1	0360-00803-0048
6.8 UF @ 25V,	1	C31	0360-00800-0059	2N429E-8,DAC	1	U6	0360-00803-0049
TANT	1	C10,C17,C22,	0360-00800-0008	LM 3900,OP AMP	1	U7	0360-00803-0002
47 UF @ 16V	1	C39,C40		TDA 2002,AUD AMP	1	U8	0360-00803-0009
470 UF @ 6V	1	C1	0360-00800-0048	MC 7805,+5V REG.	1	U9	0360-00803-0050
1000 UF @ 16V	1	C4	0360-00800-0042				
4700 UF @ 25V	1	C29	0360-00800-0021	INDUCTOR 10 UH	3	L1,L2,L3	0360-00804-0031
		C30	0360-00800-0044				
		C24	0360-00800-0023	28 PIN IC SOCKET	2	XU3,XU4	0360-00804-0028
				40 PIN IC SOCKET	1	XU1	0360-00804-0018
1 OHM	1	R39	100E-00005-0002	.045 SQ. PIN	15	J1	0017-00033-0480
2.2 OHM	1	R38	100E-00005-0003	.045 SQ. PIN	2	J2	0017-00033-0480
68 OHM	1	R23	100E-00005-0029				
82 OHM	1	R11	100E-00005-0031	TEST POINTS	5	TP1-TP5	0017-00007-0131
100 OHM	1	R10	100E-00005-0033				
120 OHM	1	R28	100E-00005-0035	LED MV5254	1	LED 1	0360-00804-0015
180 OHM	1	R24	100E-00005-0039				
220 OHM	1	R41	100E-00005-0041	HEATSINK,6030B-TT	1	P/O U8	0360-00804-0010
430 OHM	1	R40	100E-00005-0050	HEATSINK,6100B	1	P/O U9	0360-00804-0032
470 OHM	5	R42-R46	100E-00005-0051				
910 OHM	1	R1	100E-00005-0054	NUT 6 X 32	1	P/O U8	0017-00103-0005
1K OHM	1	R3	100E-00005-0059	SCREW 6 X 32	1	P/O U8	0017-00101-0339
2.7K OHM	3	R17	100E-00005-0061	NUT 4-40	1	P/O U9	0017-00103-0002
3.3K OHM	2	R15,R16,R22	100E-00005-0071	SCREW 4-40	1	P/O U9	0017-00101-0731
5.6K OHM	1	R18,R19	100E-00005-0074				
7.5K OHM	1	R4	100E-00005-0082	STAR WASHER	1	P/O U9	0017-00104-0071
9.1K OHM	1	R13	100E-00005-0085				
10K OHM	3	R12	100E-00005-0087				
16K OHM	1	R6,R8,R20	100E-00005-0088	INSULATOR,THERMAL	2	P/O U8,U9	0017-00042-0319
24K OHM	1	R21	100E-00005-0165	SWITCH	1	SW1	0017-00032-0038
39K OHM	1	R35	100E-00005-0097				
47K OHM	3	R14	100E-00005-0102	CRYSTAL,3.579 MHZ	1	X1	0360-00804-0019
62K OHM	1	R2,R9,R27	100E-00005-0104	P.C.B.	1		A080-91603-C000
82K OHM	1	R5	100E-00005-0107				
100K OHM	3	R7	100E-00005-0112				
120K OHM	1	R25,R26,R31	100E-00005-0115				
130K	1	R29	100E-00005-0118				
180K	1	R30	100E-00005-0119				
200K	1	R36	100E-00005-0122				
390K	2	R32	100E-00005-0123				
470K	1	R33,R37	100E-00005-0130				
		R34	100E-00005-0132				

PROJECT ENG: D. MACDONALD		USED ON		REVISIONS	
DO NOT SCALE DWG		SCALE FULL		NO. REQ'D 1 PER	
DIM TOLERANCES UNLESS SPECIFIED		CHEAP SQUEAK PC BD. ASSY.		PART NO.	
DATE 01/18/84		A080-91603-C000		M081 - 00114 - C044	

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	.01 MF 25V	DS1MH	TACK-SCREW RPLCMNT
C2	.01 MF 500V		DISPLAY MTG. TOP
			DISPLAY MTG. BOTTOM
			PRESSURE SENSITIVE
			TAPE
R1	100K OHM 1/4W 5%		
R2	2.2K OHM 1/4W 5%		
R3	100K OHM 1/4W 5%		
R4	2.2K OHM 1/4W 5%		BUMPER
R5	100K OHM 1/4W 5%		
R6	2.2K OHM 1/4W 5%	J1	.045 SQ. PIN
R7	100K OHM 1/4W 5%		
R8	2.2K OHM 1/4W 5%	TP1-TP3	TEST POINTS
R9	100K OHM 1/4W 5%		
R10	2.2K OHM 1/4W 5%		JUMPER TIN 22 AWC
R11	100K OHM 1/4W 5%		
R12	2.2K OHM 1/4W 5%	A080-91491-A000	6 DIGIT DISPLAY
R13	1.5K OHM 1/4W 5%		
R14	300K OHM 1/4W 5%		
R15	1.5K OHM 1/4W 5%		
R16	300K OHM 1/4W 5%		
R17	1.5K OHM 1/4W 5%		
R18	300K OHM 1/4W 5%		
R19	1.5K OHM 1/4W 5%		
R20	300K OHM 1/4W 5%		
R21	1.5K OHM 1/4W 5%		
R22	300K OHM 1/4W 5%		
R23	1.5K OHM 1/4W 5%		
R24	300K OHM 1/4W 5%		
R25	1.5K OHM 1/4W 5%		
R26	300K OHM 1/4W 5%		
R27-P33	1.2K OHM 1/4W 5%		
P34	100K OHM 1/4W 5%		
R35-P40	300K OHM 1/4W 5%		
R41	39K OHM 1/4W 5%		
R42	240K OHM 1/4W 5%		
R43-R48	9.1K OHM 1/4W 5%		
R49-R54	20K OHM 1/4W 5%		
VR1	IN3045A		
Q1-Q6	MPS-A42		
Q7-Q12	2N5401		
Q13-Q20	MPS-A42		
U1	MC14543		
DS1	6 DIGIT DISPLAY		PANEL



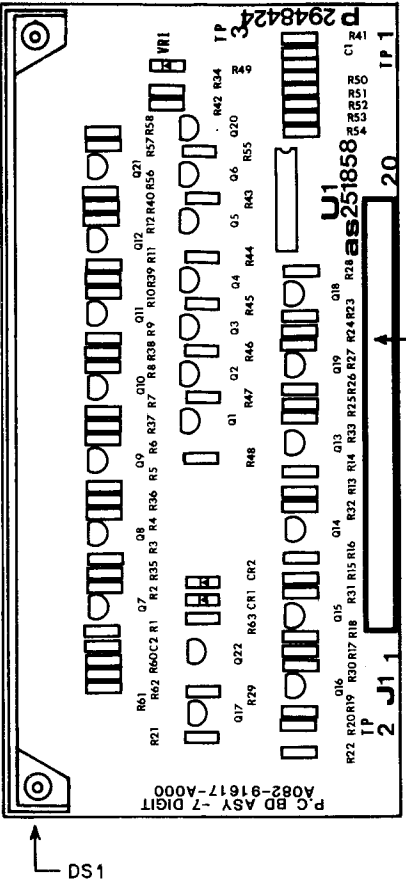
CROSS REF. LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NUMBER
.01 MF 25V	1	C1	0360-00800-0005
.01 MF 500V	1	C2	0360-00800-0013
1.2K 1/4W 5%	7	R27-R33	100E-00005-0063
1.5K 1/4W 5%	7	R13, R15, R17, R19	100E-00005-0065
2.2K 1/4W 5%	6	R21, R23, R25	100E-00005-0069
9.1K 1/4W 5%	6	R2, R4, R6, R8, R10	100E-00005-0087
20K 1/4W 5%	6	R43-R48	100E-00005-0095
39K 1/4W 5%	1	R49-R54	100E-00005-0102
100K 1/4W 5%	7	R41	100E-00001-0011
METAL FILM	1	R1, R3, R5, R7, R9	100E-00005-0125
240K 1/4W 5%	13	R11, R34	100E-00005-0127
300K 1/4W 5%		R42	100E-00005-0127
IN3045A		R14, R16, R18, R20, R22, R24, R26, R35-R40	103E-00001-0028
2N5401	6	VR1	104E-00002-0007
MPS-A42	13	Q7-Q12	104E-00001-0016
MC14543	1	Q1-Q6 Q13-Q20	0360-00803-0014
6 DIGIT DISPLAY	1	U1	0360-00804-0016
DS1 MTG. HDW	2	DS1	0095-00900-0000
TACK-SCREW RPLCMNT	1		0017-00042-0155
DISPLAY MTG. TOP	1		0017-00042-0156
DISPLAY MTG. BOTTOM			0017-0081-0095
PRESSURE SENSITIVE TAPE			0017-00041-0598
BUMPER	1		0304-00804-0010
.045 SQ. PIN	1	J1	0017-00007-0131
TEST POINTS	3	TP1-TP3	117E-00001-0001
JUMPER TIN 22 AWC	9		A080-91491-A000
6 DIGIT DISPLAY PCB.	1		

PROJECT ENG: A. AARSTAD				USED ON		REVISIONS	
DO NOT SCALE DWG				HEAT TREAT		SCALE	
DIM TOLERANCES UNLESS SPECIFIED				NO. REQ'D		PER	
DNR. BAK				FULL		PART NO.	
CHKD.				ASSEMBLY DWG. SIX DIGIT DISPLAY		M051 - 00114 -A028	
DATE 11/14/84				A082-91491-A000			

DESIGNATION LIST

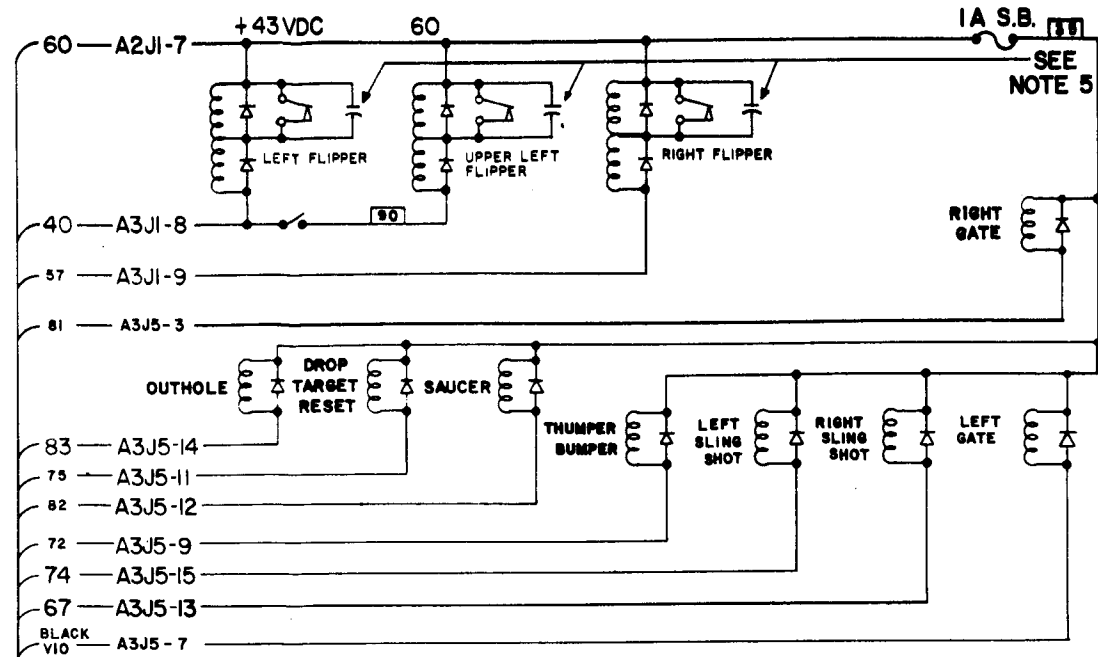
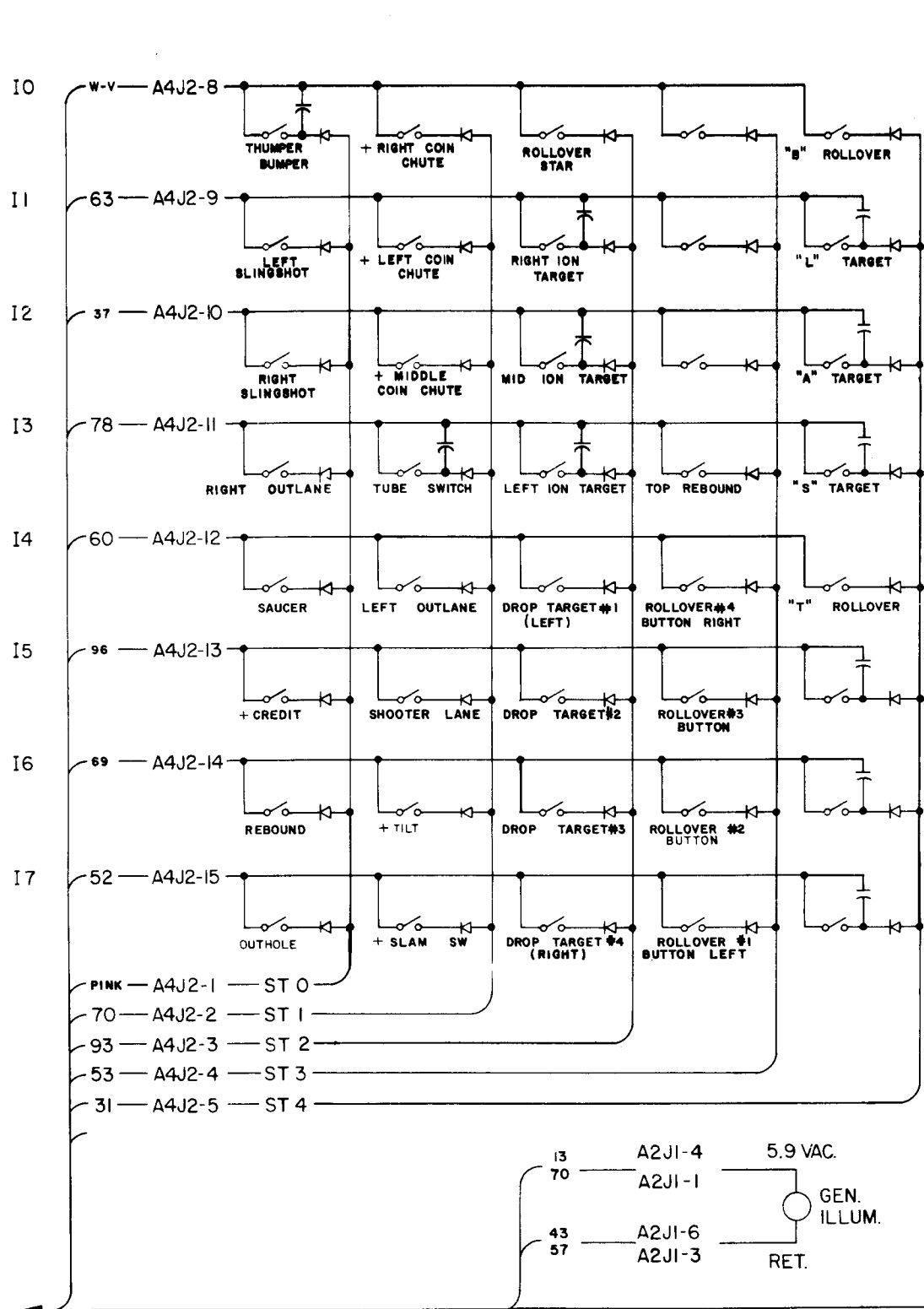
DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	.01 MF 25V	CR1,CR2	1N4148
C2	.01 MF 500V	VR1	1N3045A/110V ZENER
R1	100K OHM 1/4W 5%	Q1-Q6	MPS-A42
R2	2.2K OHM 1/4W 5%	Q7-Q12	2N5401
R3	100K OHM 1/4W 5%	Q13-Q20	MPS-A42
R4	2.2K OHM 1/4W 5%	Q21	2N5401
R5	100K OHM 1/4W 5%	Q22	MPS-A42
R6	2.2K OHM 1/4W 5%	U1	MC14543
R7	100K OHM 1/4W 5%	DS1	DISPLAY ASSY
R8	2.2K OHM 1/4W 5%	J1	10 PIN WAFER KK-156 (2)
R9	100K OHM 1/4W 5%	TP1-TP3	TEST LOOPS
R10	2.2K OHM 1/4W 5%		7 DIGIT DISPLAY PCB
R11	100K OHM 1/4W 5%		BUMPER
R12	2.2K OHM 1/4W 5%		
R13	1.5K OHM 1/4W 5%		
R14	300K OHM 1/4W 5%		
R15	1.5K OHM 1/4W 5%		
R16	300K OHM 1/4W 5%		
R17	1.5K OHM 1/4W 5%		
R18	300K OHM 1/4W 5%		
R19	1.5K OHM 1/4W 5%		
R20	300K OHM 1/4W 5%		
R21	1.5K OHM 1/4W 5%		
R22	300K OHM 1/4W 5%		
R23	1.5K OHM 1/4W 5%		
R24	300K OHM 1/4W 5%		
R25	1.5K OHM 1/4W 5%		
R26	300K OHM 1/4W 5%		
R27-R33	1.2K OHM 1/4W 5%		
R34	100K OHM 1/4W 5%		
R35-R40	300K OHM 1/4W 5%		
R41	39K OHM 1/4W 5%		
R42	240K OHM 1/4W 5%		
R43-R48	9.1K OHM 1/4W 5%		
R49-R54	20K OHM 1/4W 5%		
R55	9.1K OHM 1/4W 5%		
R56	100K OHM 1/4W 5%		
R57	2.2K OHM 1/4W 5%		
R58	300K OHM 1/4W 5%		
R59	NOT USED		
R60,R61	1.5K OHM 1/4W 5%		
R62	300K OHM 1/4W 5%		
R63	150K OHM 1/4W 5%		



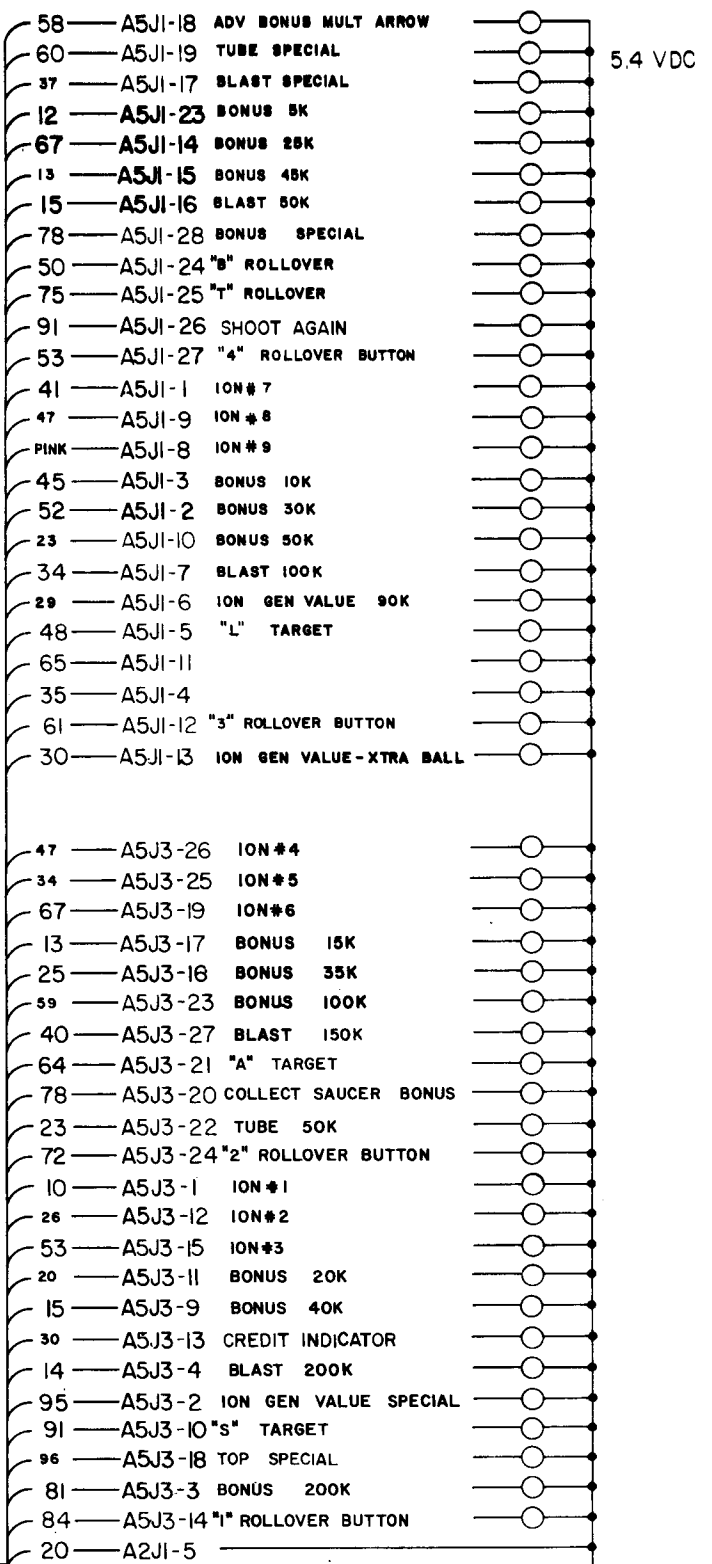
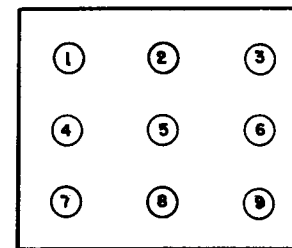
CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	BALLY'S PART NOS.	MIDWAY'S PART NOS.
.01 MF 25V	1	C1	E-586-85	0360-00800-0005
.01 MF 500V	1	C2	E-586-65	0360-00800-0013
1.2K 1/4W 5%	7	R27-R33	E-105-222	100E-00005-0063
1.5K 1/4W 5%	9	R13,R15,R17,R19 R21,R23,R25,R60 R61	E-105-229	100E-00005-0065
2.2K 1/4W 5%	7	R2,R4,R6,R8,R10 R12,R57	E-105-287	100E-00005-0069
9.1K 1/4W 5%	7	R43-R48,R55	E-105-228	100E-00005-0087
20K 1/4W 5%	6	R49-R54	E-105-242	100E-00005-0095
39K 1/4W 5%	1	R41	E-105-231	100E-00005-0102
100K 1/4W 5%	8	R1,R3,R5,R7,R9, R11,R34,R56	E-105-331	100E-00001-0011
150K 1/4W 5%	1	R63	E-105-248	100E-00001-0120
240K 1/4W 5%	1	R42	E-105-271	100E-00001-0125
300K 1/4W 5%	15	R14,R16,R18,R20, R22,R24,R26,R35- R40,R58,R62	E-105-227	100E-00001-0127
1N3045A/110V ZENER	1	VR1	E-598-7	103E-00001-0028
1N4148	2	CR1,CR2	E-587-14	103E-00002-0005
2N5401	7	Q7-Q12,Q21	E-585-32	0360-00802-0006
MPS-A42	15	Q1-Q6,Q13-Q20,Q22	E-585-33	0360-00802-0007
MC14543	1	U1	E-620-38	0360-00803-0014
7 DIGIT DISPLAY DS1 MTG. HDW	1	DS1	E-680-7	0360-00804-0022
TACK-SCREW REPLACEMENT	2			0095-00900-0000
DISPLAY MTG. TOP	1		P-2399	0017-00042-0155
DISPLAY MTG. BOTTOM	1		P-2399-1	0017-00042-0156
PRESSURE SENSITIVE TAPE				0017-00081-0095
BUMPER	1		R-206-9	0017-00041-0598
10 PIN WAFER KK156	2	J1	E-736-10	0151-00031-10XB
TEST LOOPS	3	TP1-TP3	P-5399	0017-00007-0131
7 DIGIT DISPLAY PCB.	1		P-2948-424	A080-91617-A000

PROJECT ENG: D. MACDONALD			USED ON		REVISIONS
DO NOT SCALE DWG			NO. REQ'D 1 PER		
DIM. TOLERANCE: UNLESS SPECIFIED		DRN. TDB	HEAT TREAT		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL
CONCENTRICITY: 0.001		CKD.	SCALE FULL		
HOLE DIA. 4.000		DATE 12 09 83	SEVEN DIGIT DISPLAY ASSY DWG. A082-91617-A000		PART NO. M051 - 00114 - A056



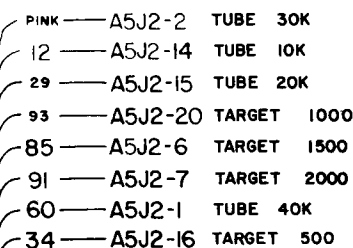
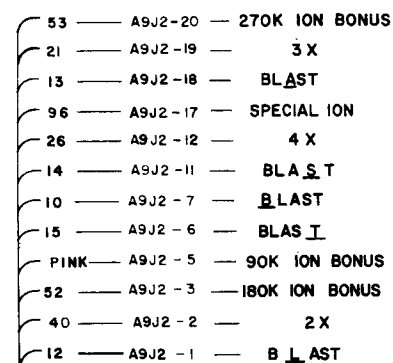
WIRE COLOR CODE	
1 = RED	6 = BROWN
2 = BLUE	7 = ORANGE
3 = YELLOW	8 = BLACK
4 = GREEN	9 = GRAY
5 = WHITE	0 = NO TRACE
1. FIRST NUMBER = BODY COLOR	
2. SECOND NUMBER = TRACE COLOR	
EXAMPLE	
50 = WHITE	
51 = WHITE / RED	



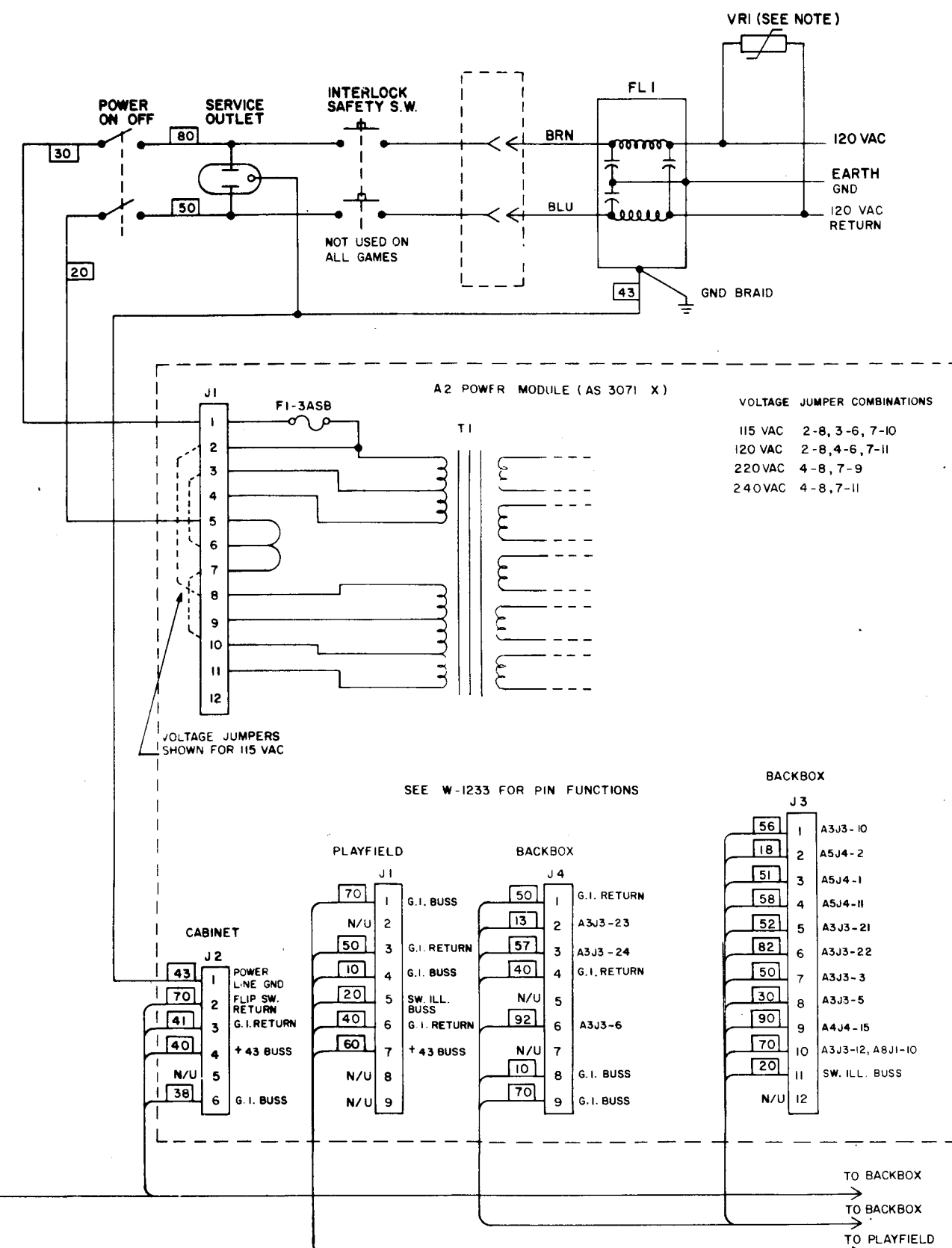
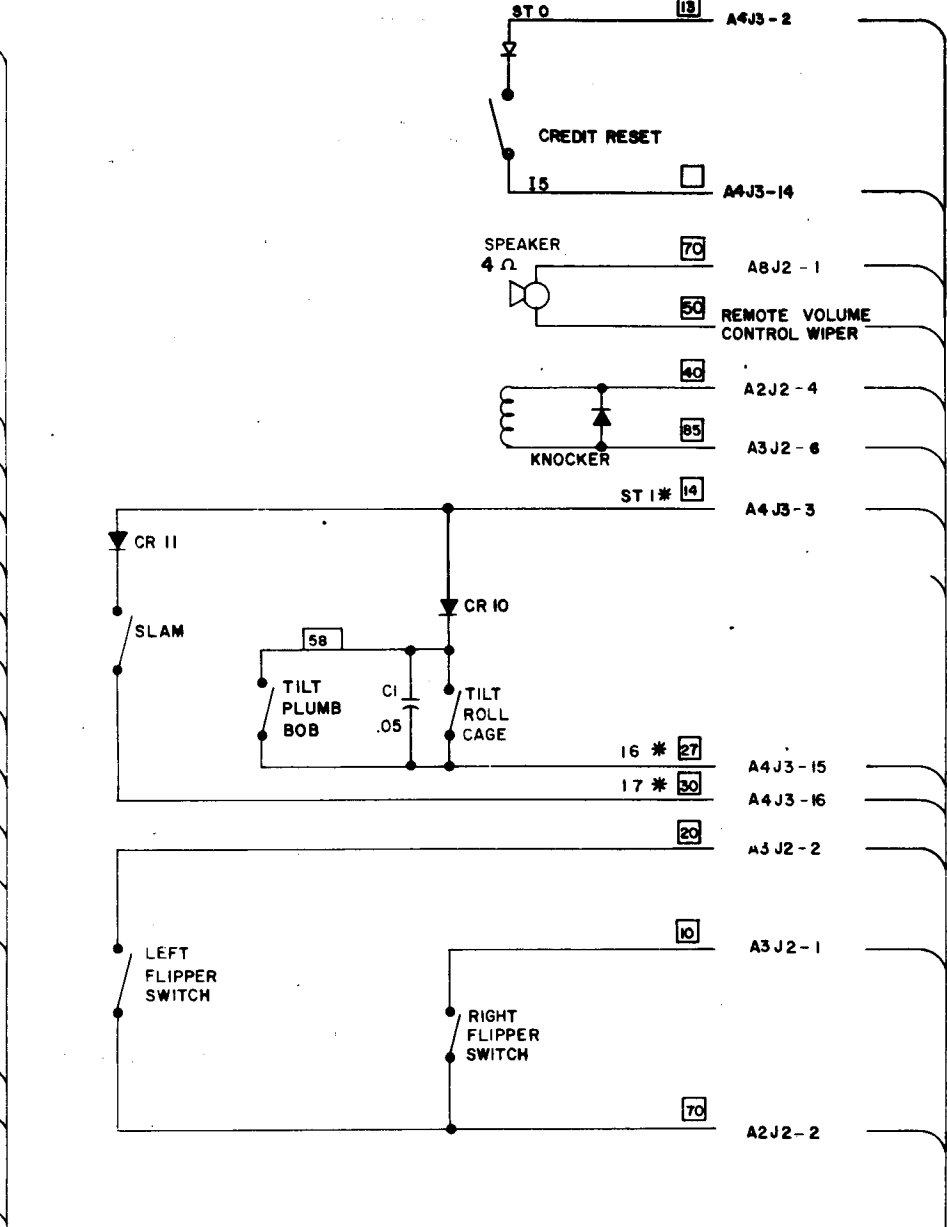
PLAYFIELD A6

NOTES

- INDICATES NOT USED
- N/U = NOT USED ON PLAYFIELD
- * INDICATES AID TEST POINT
- COIL DIODES ARE IN4004 (E-587-6) SWITCH DIODES ARE IN4148 (E-587-14) ALL CAPACITORS ARE .05 MFD. (E-586-80)
- GERMANY ONLY - CAPACITOR .01 MFD. @ 500 V. (E-586-65)
- + = NOT ON THE PLAYFIELD



PROJECT ENG.		USED ON OB42		Bally / MIDWAY MFG. CO.	
DO NOT SCALE BY G		SCALE		NO REQ'D PER	
DIM TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE		PART NO	
DESIGNED BY M. KONOPA		DATE		MO51 - 00B42-A019	
CHECKED BY		DATE		CYBERNAUT PLAYFIELD WIRING SCHEMATIC	



12

AI INSERT

9 PIN PLUG		
FROM	PIN	WIRE
A5J2-14	1	12
A5J2-2	2	PINK
A5J2-15	3	23
A5J2-16	4	34
A5J2-1	5	60
A5J2-6	6	85
A5J2-7	7	91
A5J2-20	8	98
	9	

PANEL TO BACKBOX

A4JI-21 A4JI-22 A4JI-23 A4JI-24

→ SEE
TABLE A



1. THESE PINS ARE RESERVED FOR FUTURE USE.
2. WIRE COLOR ARE SHOWN FOR ALL CONNECTOR PINS, SOME WIRE MAY NOT BE USED IN ALL GAMES.
3. * INDICATES AID TEST POINT.

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE

1. FIRST NUMBER = BODY COLOR

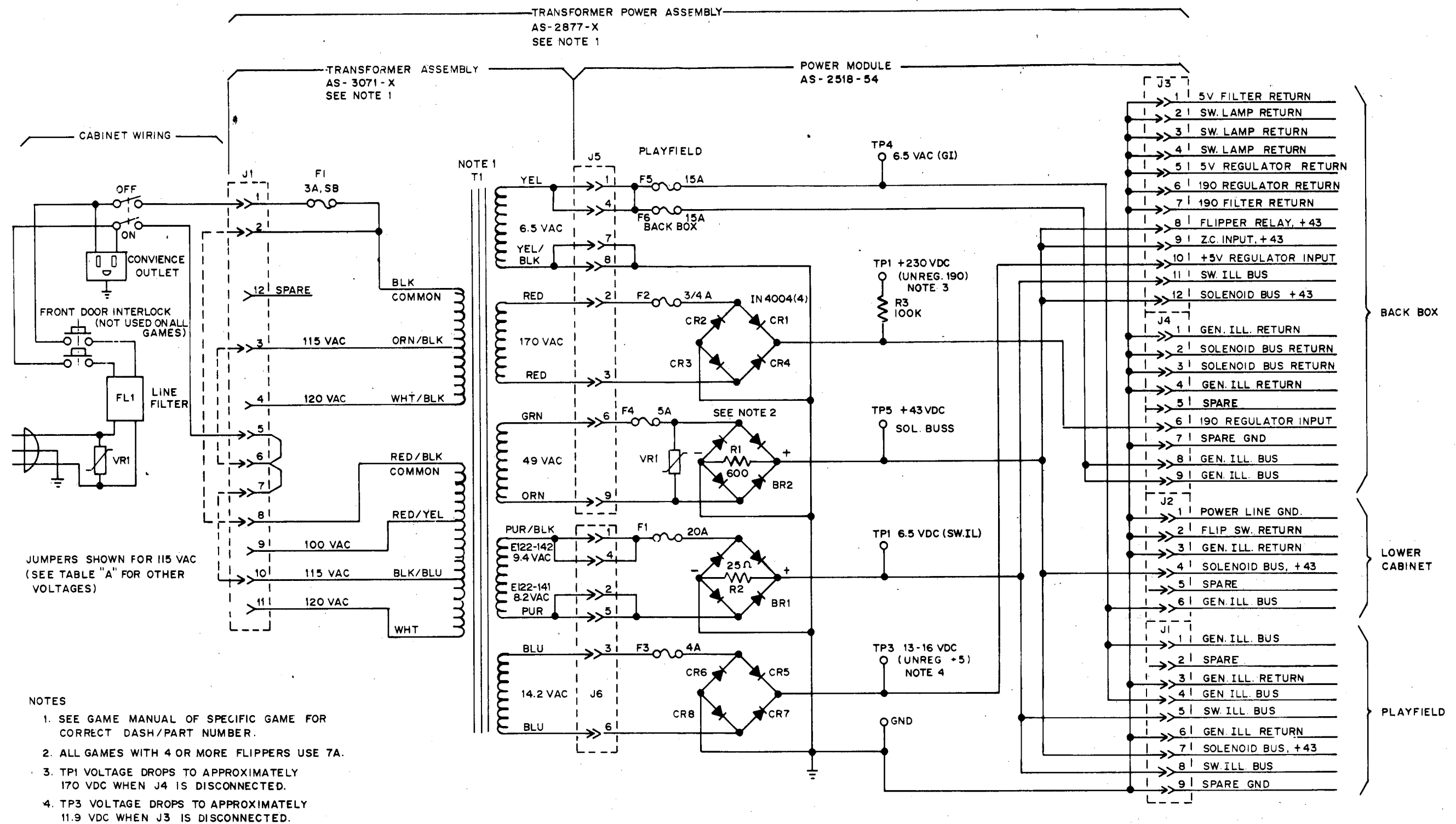
2. SECOND NUMBER =
TRACER COLOR

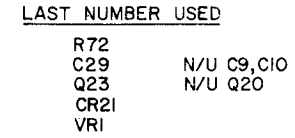
EXAMPLE:
50 = WHITE
51 = WHITE RED

EXAMPLE:

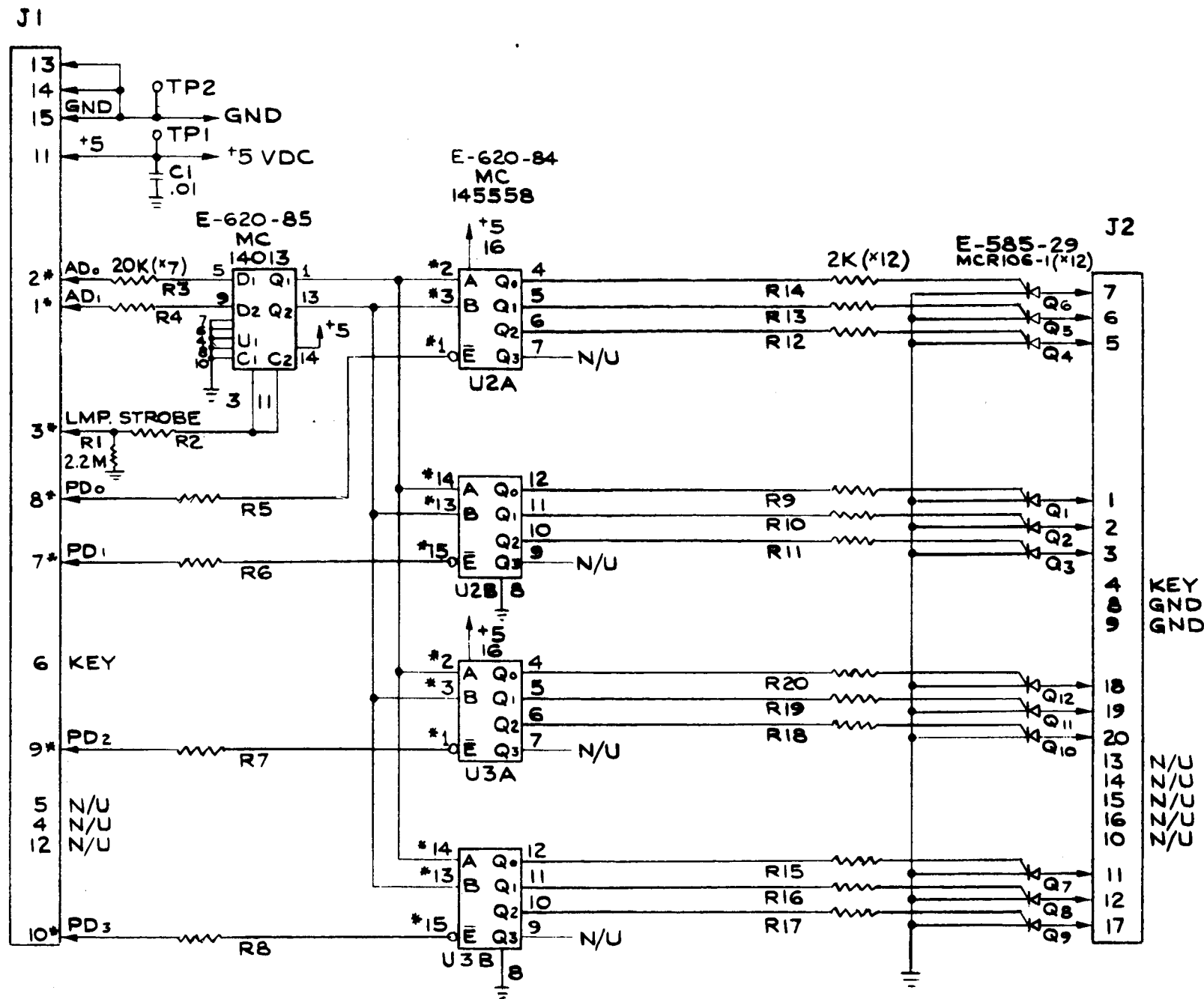
50= WHITE
51= WHITE RED

PROJECT ENG:						USED ON QB42	REVISIONS	
DOWNOTHALL OFFICE				HEAT TREAT	NO REQ'D		<i>Betty</i> / MIDWAY MFG. CO. FRANKLIN PARK ILL.	
QIM TOLERANCES UNLESS SPECIFIED		CDS M. KONOPA	MATERIAL	WIRING DIAGRAM BACK BOX CYBERNAUT				PART NO
QCS		CDS	FINISH					MC051 - QOB42-A017
QMS		DATE / /						13





PROJECT ENG:		USED ON		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.
DO NOT SCALE DWG.		REAR VIEW	SCALE	
DIM. TOLERANCES UNLESS SPECIFIED		DATE	PART NO.	
CONCENTRICITY ± 1.0 003 FRACTIONAL ± 1/16 DECIMAL ± .003 HOLE DIA. ± .002 - .010		7/23/88	M051-00114- A047	
SOLENOID DRIVER VOLTAGE REGULATOR SCHEMATIC				



NOTES:

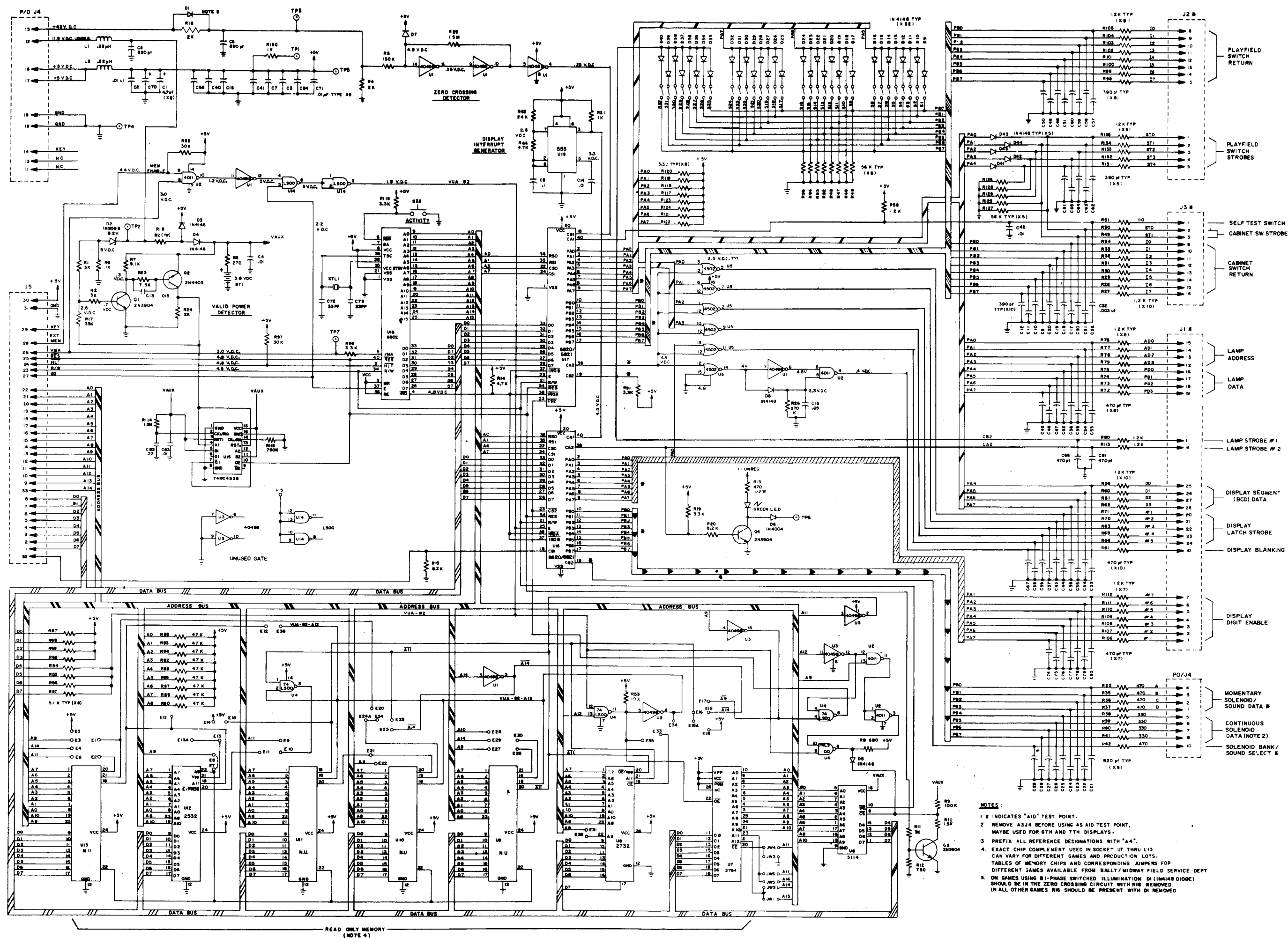
1. * INDICATES "AID" TEST POINT.
2. ALL RESISTORS ARE 1/4 W, ± 5%.
3. VOLTAGES SHOWN ARE FOR A GAME UP CONDITION.
4. SCR'S ARE MCR-106-1, (E-585-29)
5. PREFIX ALL REFERENCE DESIGNATION WITH "A9"

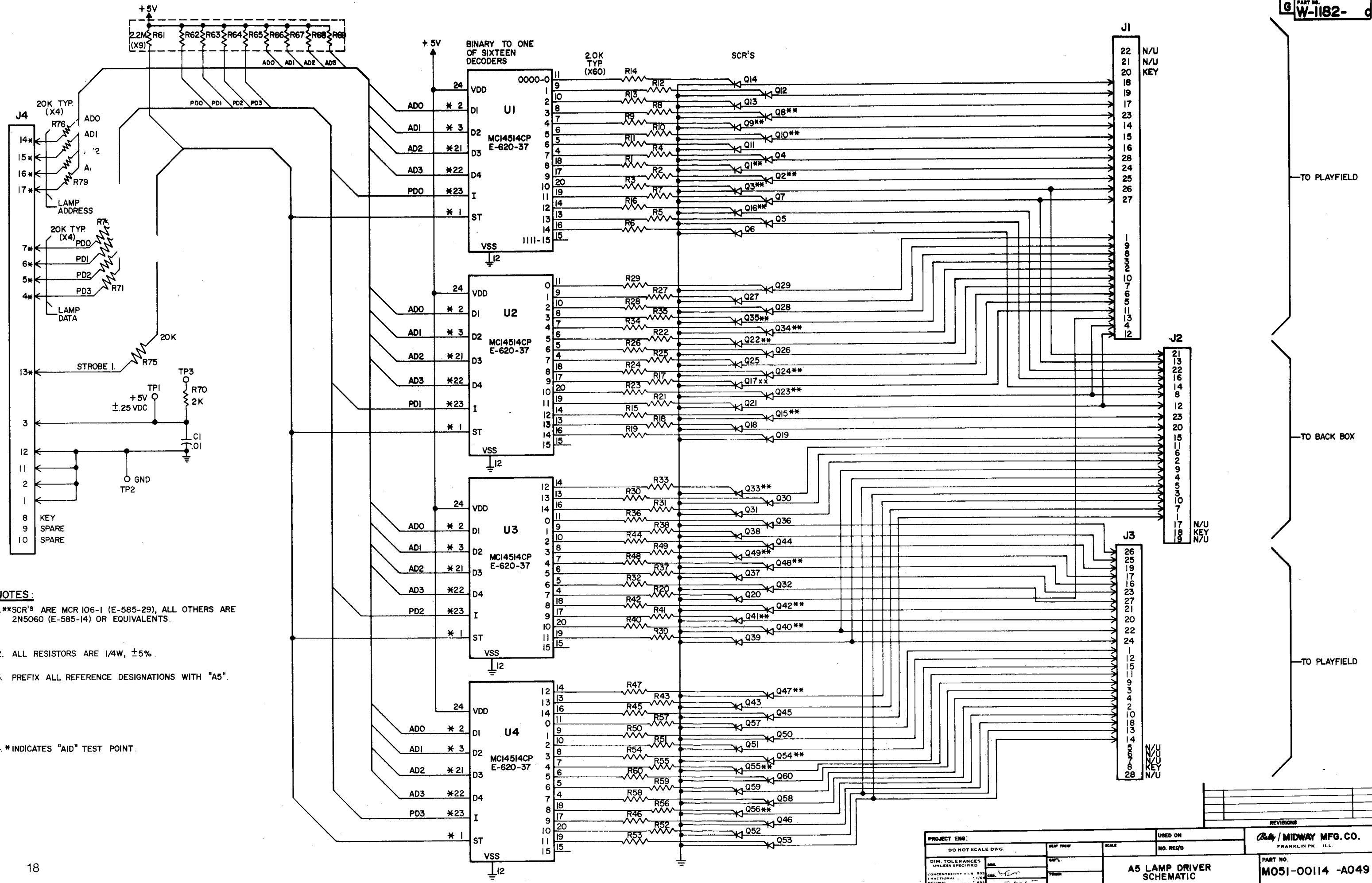
A080-9/6/4-A000

ALL DESIGN, OPERATIVE AND PROCESS DATA PERTAINING TO THE ARTICLE SHOWN ON THIS SHEET IS THE PROPERTY OF BALLY MFG. CORP. AND SHALL BE KEPT IN CONFIDENCE AND NOT TO BE LOANED, REPRODUCED, REVEALED TO OR APPROPRIATED BY OTHERS IN PART OR IN WHOLE WITHOUT THE EXPRESS CONSENT OF THE OWNERS. THE PRINT IS LOANED AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE INTEREST OF THE OWNERS AND MUST BE RETURNED ON DEMAND.

REMOVE ALL BURRS		DR BY		DATE		Bally MANUFACTURING CORP. 2640 BELMONT AVENUE CHICAGO, ILLINOIS	
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS . . . DECIMALS . . . EXCEPT HOLE DIA S ANGLES . . .		CK BY		DATE			
DO NOT SCALE DRAWING		AP'D BY		DATE		PRINT CONTROL	
		AP'D BY		DATE		NAME (A9) AUXILIARY LAMP DRIVER BOARD	
		FINISH:				ASSEM NO USED	
		HARDENING:				SCALE	
						MATERIAL	
						CODE	

M051-00114-A051





CYBERNAUT LAMP DRIVER LOCATIONS A5

SCR	DESCRIPTION	JACK	PIN NO.	WIRE COLOR
Q14	ADV MULT ARROW	J1	18	58
Q16	BALL IN PLAY	J2	22	62
Q11	BLAST 50K	J1	16	15
Q26	BLAST 100K	J1	7	34
Q32	BLAST 150K	J3	27	40
Q59	BLAST 200K	J3	4	14
Q13	BLAST SPECIAL	J1	17	37
Q8**	BONUS 5K	J1	23	12
Q35**	BONUS 10K	J1	3	45
Q49	BONUS 15K	J3	17	13
Q54	BONUS 20K	J3	11	20
Q9**	BONUS 25K	J1	14	67
Q34**	BONUS 30K	J1	2	52
Q48	BONUS 35K	J3	16	25
Q55	BONUS 40K	J3	9	15
Q10	BONUS 45K	J1	15	13
Q22**	BONUS 50K	J1	10	23
Q37	BONUS 100K	J3	23	59
Q60	BONUS 200K	J3	3	81
Q4	BONUS SPECIAL	J1	28	78
Q52	CREDIT INDICATOR	J3	13	30
Q33	GAME OVER BACK BOX	J2	11	95
Q15	HIGH SCORE TO DATE BACK BOX	J2	23	97
Q25	ION 90K	J1	6	29
Q57	ION #1	J3	1	10
Q50	ION #2	J3	12	26
Q51	ION #3	J3	15	53
Q36	ION #4	J3	26	47
Q38	ION #5	J3	25	34
Q44	ION #6	J3	19	67
Q29	ION #7	J1	1	41
Q27	ION #8	J1	9	47
Q28	ION #9	J1	8	PINK
Q20	ION XTRA BALL	J1	13	30
Q58	ION SPECIAL	J3	2	95
Q23	MATCH	J2	8	82
Q53	#1 ROLLOVER	J3	14	84
Q39	#2 ROLLOVER	J3	24	72
Q21	#3 ROLLOVER	J1	12	61
Q7	#4 ROLLOVER	J1	27	53
Q1	"B" ROLLOVER	J1	24	50
Q2**	"T" ROLLOVER	J1	25	75
Q41	SAUCER BONUS	J3	20	78
Q3	SHOOT AGAIN BACK BOX	J2	21	47
Q3	SHOOT AGAIN PLAYFIELD	J1	26	91
Q5	TARGET 500	J2	16	34
Q18	TARGET 1000	J2	20	93
Q30	TARGET 1500	J2	6	85
Q43	TARGET 2000	J2	7	97
Q42	"A" TARGET	J3	21	64
Q24	"L" TARGET	J1	5	48
Q56	"S" TARGET	J3	10	91
Q47	TILT	J2	10	37
Q6	TUBE 10K	J2	14	12

CYBERNAUT LAMP DRIVER LOCATIONS A5

SCR	DESCRIPTION	JACK	PIN NO.	WIRE COLOR
Q19	TUBE 20K	J2	15	29
Q31	TUBE 30K	J2	2	PINK
Q45	TUBE 40K	J2	1	60
Q40**	TUBE 50K	J3	22	23
A12	TUBE SPECIAL	J1	19	60

NOTE: **INDICATES MCR 106-1 ALL OTHERS ARE 2N5060 OR EQUIVALENT.

CYBERNAUT AUXILIARY LAMP DRIVER LOCATIONS A9

SCR	DESCRIPTION	JACK	PIN NO.	WIRE COLOR
Q2	2 X	J2	2	40
Q11	3 X	J2	19	20
Q8	4 X	J2	12	26
Q6	BLAST	J2	7	10
Q1	BLAST	J2	1	12
Q12	BLAST	J2	18	13
Q7	BLAST	J2	11	14
Q5	BLAST	J2	6	15
Q3	180K ION BONUS	J2	3	52
Q4	190K ION BONUS	J2	5	PINK
Q10	270K ION BONUS	J2	20	53
Q9	SPECIAL ION BONUS	J2	17	96

NOTE: SCR'S ARE MCR 106-1.

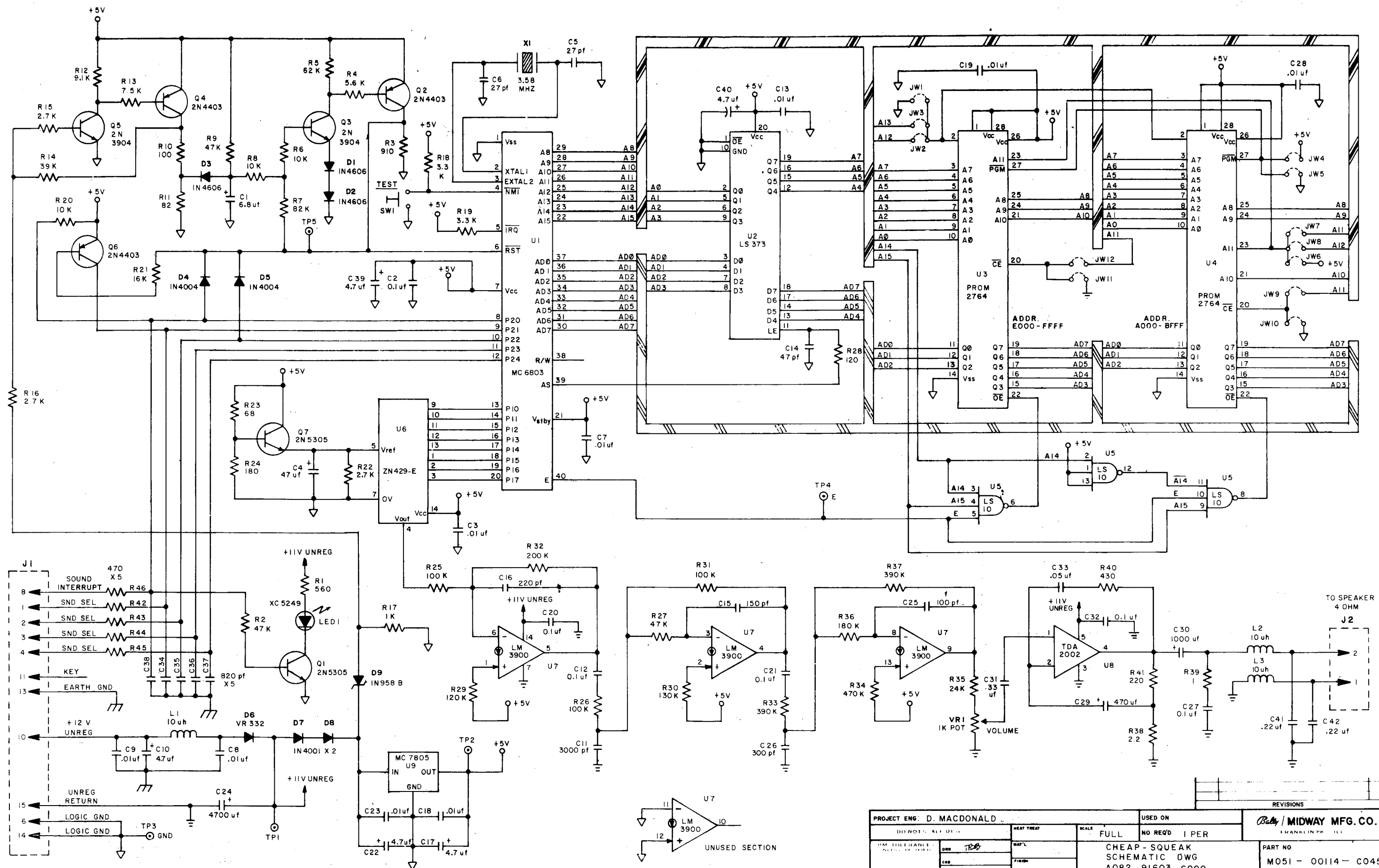
CYBERNAUT SOLENOID DRIVER LOCATIONS A3

TRANSISTOR	DESCRIPTION	JACK	PIN NO.	WIRE COLOR
Q9	BUMPER	J5	9	72
Q14	DROP TARGET RESET	J5	11	75
Q15	FLIPPER LEFT	J1	8	40
Q18	FLIPPER RIGHT	J1	9	57
Q17	GATE LEFT	J5	7	87
Q18	GATE RIGHT	J5	3	BLK-V10
Q16	KNOCKER	J2	6	85
Q13	SAUCER	J5	12	82
Q11	OUTHOLE	J5	14	83
Q10	SLINGSHOT LEFT	J5	15	74
Q12	SLINGSHOT RIGHT	J5	13	67
Q1	NOT USED	J1	2	-
Q2	NOT USED	J1	3	-
Q4	NOT USED	J1	5	-
Q8	NOT USED	J5	10	-
Q19	NOT USED	J2	8	-

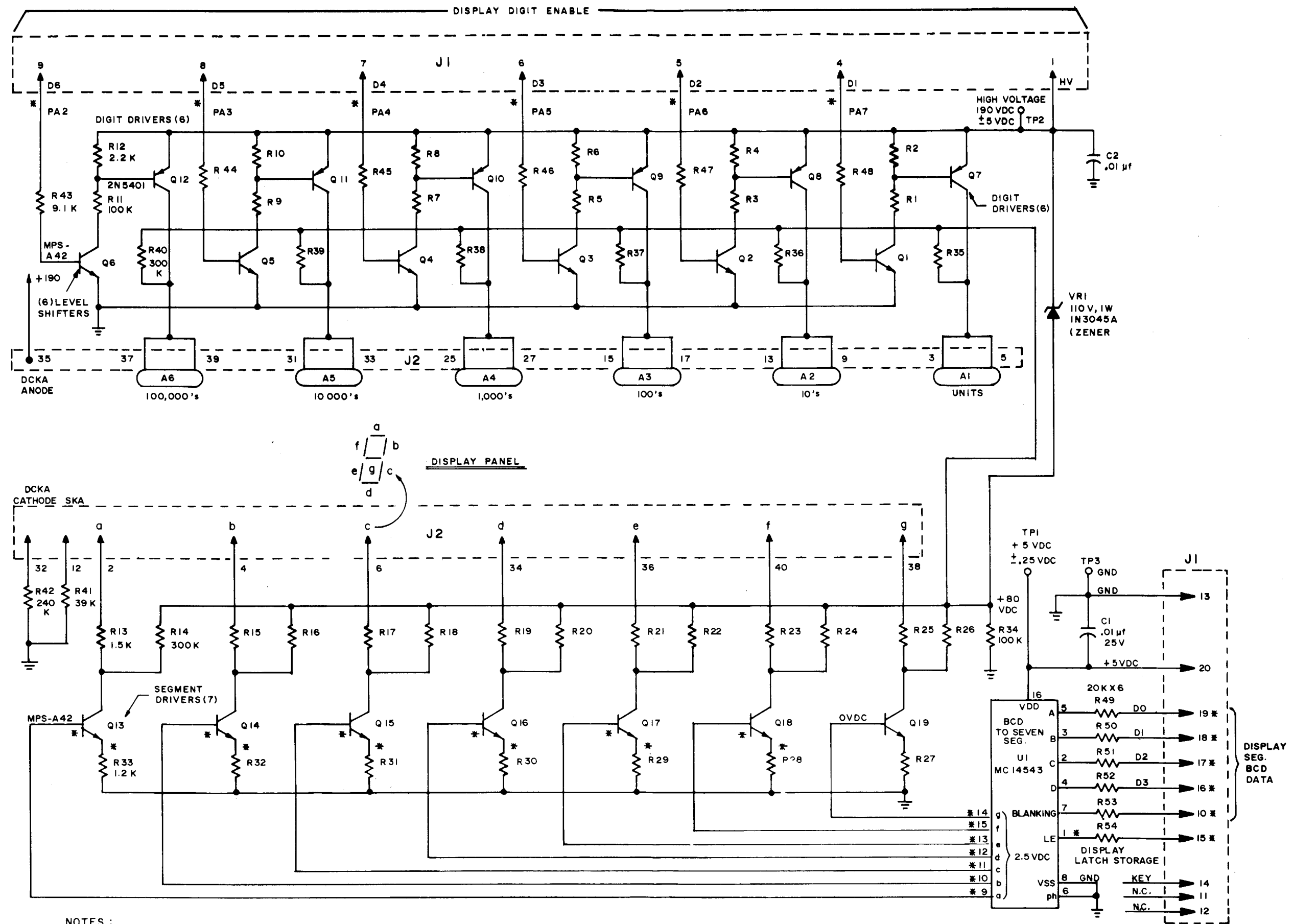
NOTE: TRANSISTORS ARE SE 9302 OR EQUIVALENT.

WIRE COLOR CODE

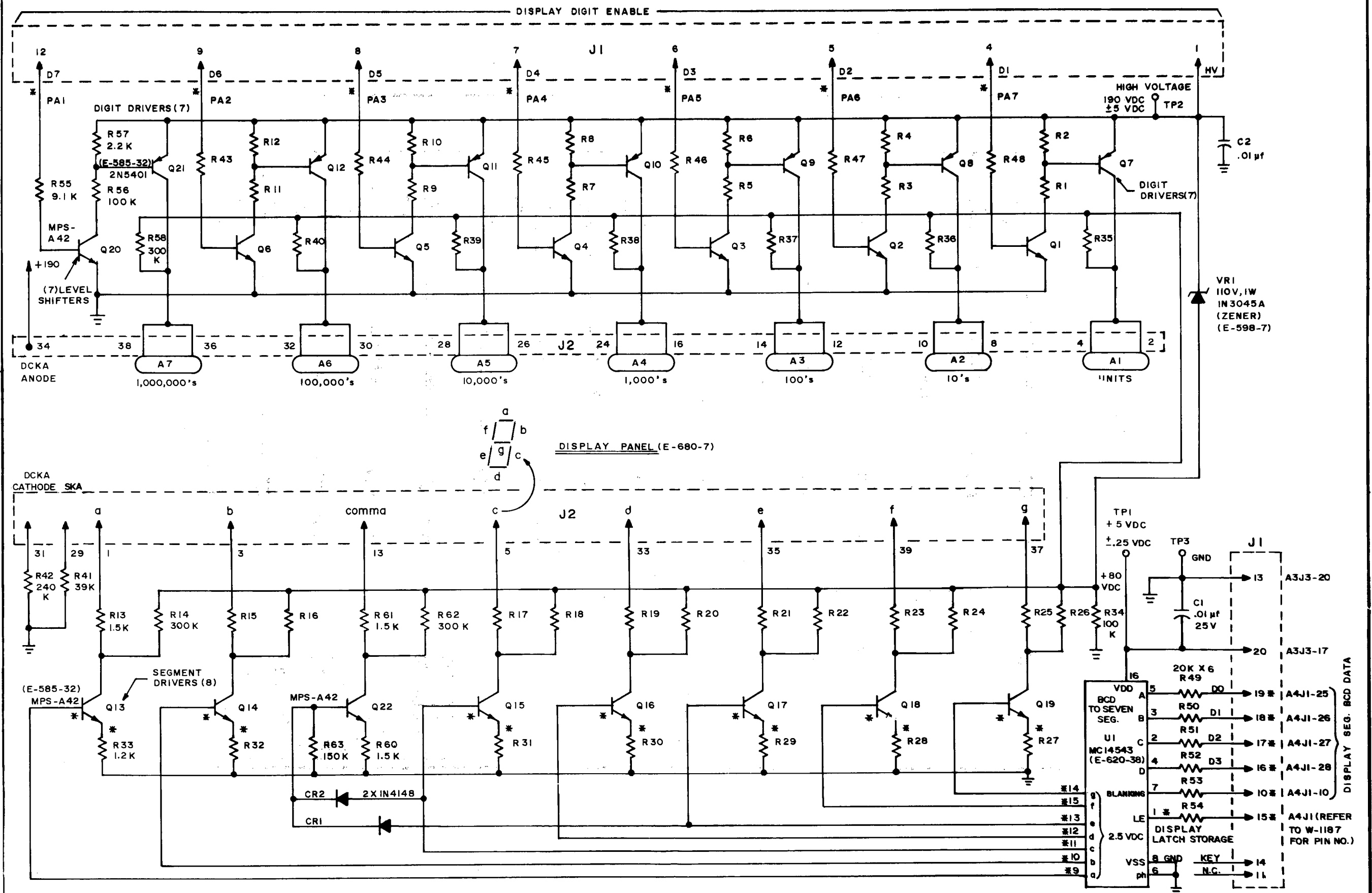
1-RED -R-	6-BROWN -BR-
2-BLUE -BLU-	7-ORANGE -O-
3-YELLOW -Y-	8-BLACK -B-
4-GREEN	9-GRAY
5-WHITE -W-	0-NO TRACER
J-JUMPER	
1-FIRST NUMBER-BODY COLOR	
2-SECOND NUMBER-TRACER COLOR	
EXAMPLE: 50 -WHITE	
51 -WHITE-RED	



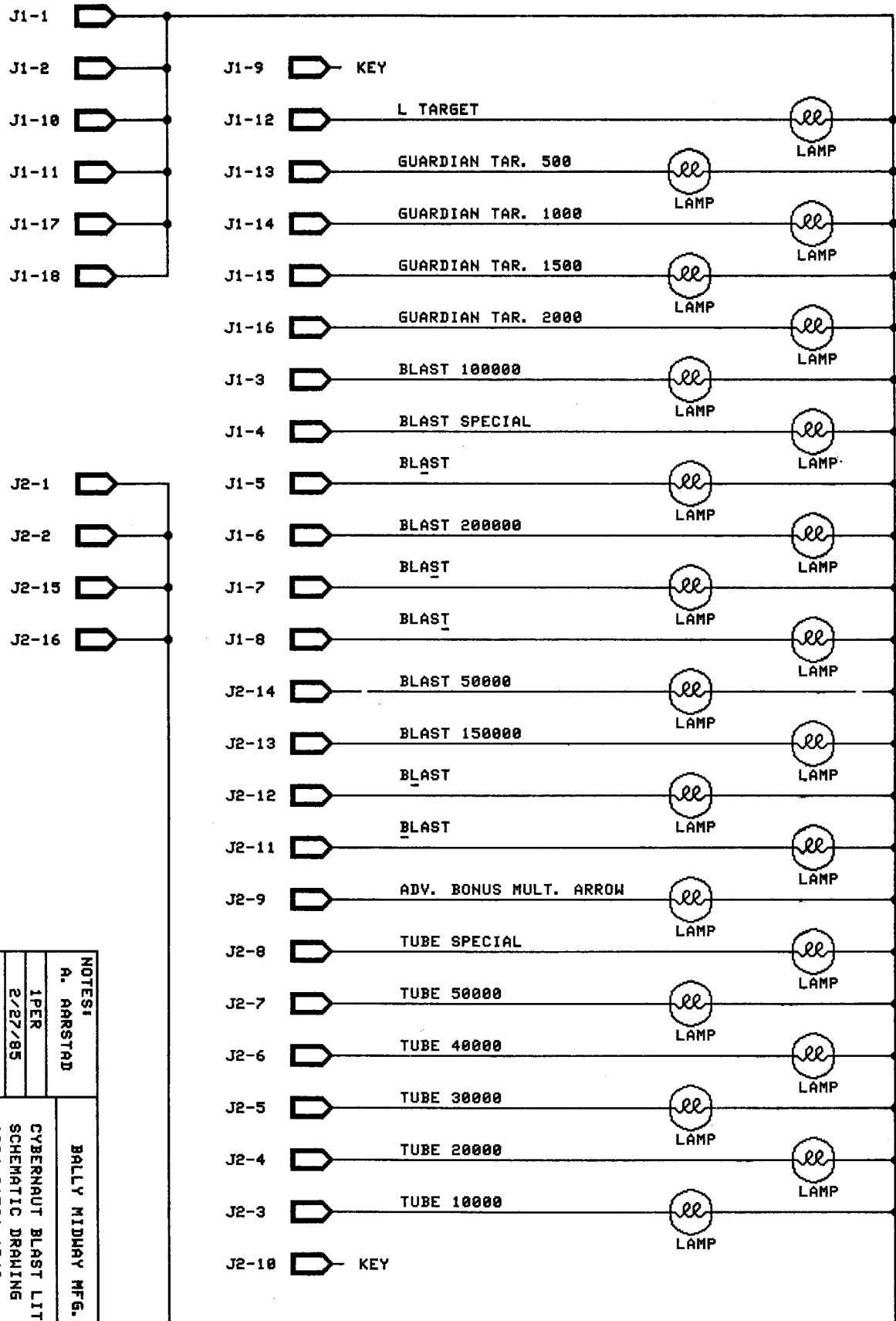
PROJECT ENG. D. MACDONALD		USED ON		REVISIONS	
DIAGRAM NO. 00114		SCALE		FULL	
TOLERANCE		NO REQ'D		1 PER	
CHEAP-SQUEAK		SCHEMATIC DWG		PART NO	
A082-91603-C000		DATE: 9/84		M051-00114-C045	



PROJECT ENG: D. MACDONALD			USED ON PINBALL		REVISIONS	
DO NOT SCALE DWG			HEAT TREAT		SCALE FULL	
DIM TOLERANCES UNLESS SPECIFIED			NO. REQ'D 1 PER		PART NO.	
CONTINUED FOR 10			SIX DIGIT DISPLAY BOARD		MO51- 00114 -A029	
FRACTIONAL 1/16			SCHEMATIC "A1"		FRANKLIN PK ILL	
DECIMAL .001			A0R4-Q14Q1-A000			
C.D. 5/18/93						
E 1/7/92						

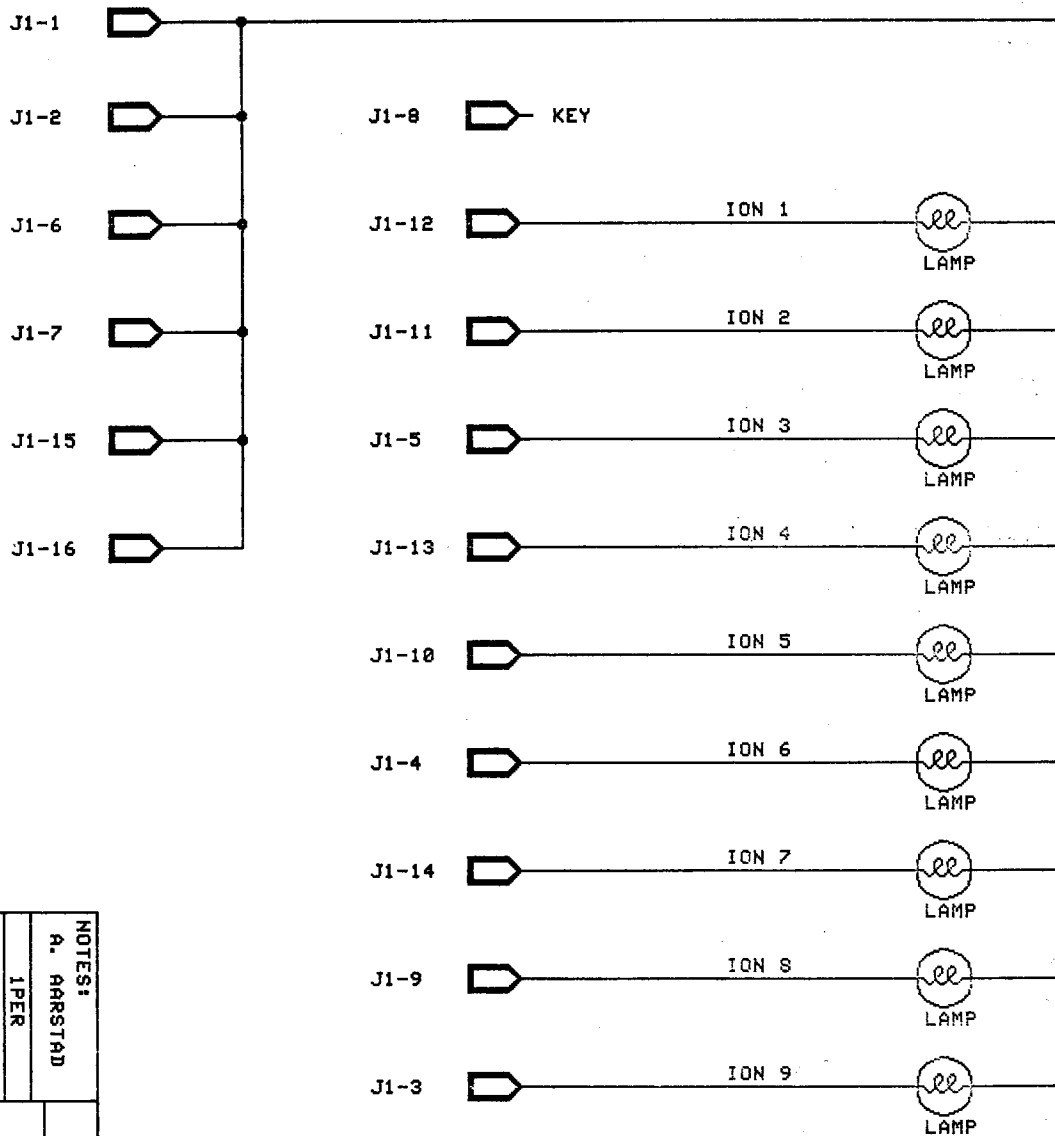


PROJECT ENG: D. MACDONALD			USED ON PINBALL		REVISIONS	
DO NOT SCALE DWG.			NO. REQ'D 1 PER		Bally / MIDWAY MFG. CO.	
DIM. TOLERANCES UNLESS SPECIFIED			FULL		FRANKLIN PK. ILL.	
CONCENTRICITY F.T.R. .001			SEVEN DIGIT DISPLAY BOARD		PART NO.	
FRACTIONAL .1/64			SCHEMATIC "A1"		M051 - 00114 - A057	
DECIMAL .005			A084-91617-A000			
HOLE DIA. $\pm .002$ -.000						
DATE 5/13/83						



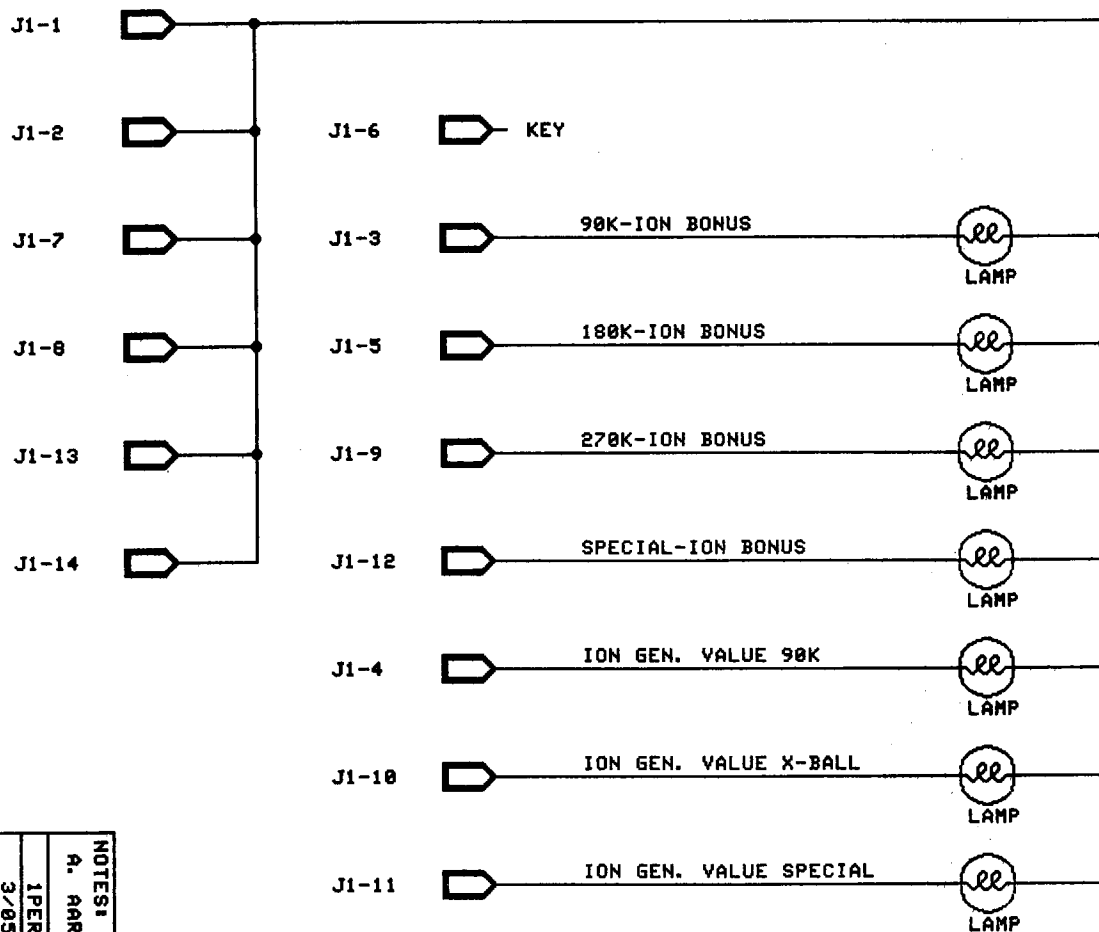
NOTES:	
A. ARSTAD	
1 PER	
2/27/85	
CYBERNAUT BLAST LITE BD.	
SCHEMATIC DRAWING	
A084-91791-AB42	
M051-00B42-A016	
SHEET	REV
OF	

40/M-F



NOTES:	
A. AARSTAD	BALLY MIDWAY MFG. CO.
1 PER	ION MATRIX LITE BD
2/27/85	SCHEMATIC DRAWING
	A084-91790-A042
	M051-00B42-A014
SHEET	REV
OF	

A-1/M-F



NOTES:	
A. ARSTAD	BALLY MIDWAY MFG. CO.
1PER	ION VALUE LITE BD.
3/05/85	SCHEMATIC DRAWING
	A084-91738-AB42
	M051-00842-A010
SHEET	REV
OF	

A-1/M-F

BALLY/MIDWAY'S CYBERNAUT PIN

#B42

ROM/EPROM PART NUMBERS

UNPROGRAMMED MPU A084-91638-D000

PROGRAMMED MPU A084-91638-AB42

POS.	MIDWAY PART NUMBER
U12	0B42-00803-0001
U8	0B42-00803-0002

JUMPERS	IN	OUT
E4 -E12	**	
E7 -E8	**	
E10 -E11	**	
E13A-E14	**	
E29 -E33	**	
E31 -E32	**	
E16A-E34	**	

UNPROGRAMMED CHEAP SQUEAK A084-91603-C000

PROGRAMMED CHEAP SQUEAK A084-91603-AA40

POS.	MIDWAY PART NUMBER
U3	0B42-00803-0003

JUMPERS	IN	OUT
JW1		**
JW2	**	
JW3		**
JW4	**	
JW5		**
JW6		**
JW7	**	
JW8		**
JW9		**
JW10	**	
JW11	**	
JW12		**

REVISIONS

02/22/85	RELEASE FOR PRODUCTION	

M051-00B42-A008

