5v Supply:
An AC voltage of approximately 9v comes into the board at [**J17-**(1-4)] this AC voltage is then *full-wave rectified* by bridge **BRDG 21** and filtered by Capacitor **C203**. The resulting voltage is 11v DC which is inserted into a linear voltage regulator for the output of 5v DC. This 5v regulated voltage can be adjusted by potentiometer **R116** the voltage should be set to 5.00v. Besides powering the I/O Board the regulated 5 volts supplies power to the CPU / Sound Board, Gas Plasma (Dot Matrix) Display and Plasma (Display) Controller Board. Power for these devices comes off the I/O Board on [**J16**-(4-8)].

+5v, +20v, +50v, +18v, & +12v LED Indicators:
These DC voltages are derived on the I/O Board by rectification and filtering. Each has a **LED** indicating that power is being supplied to each of these voltage sources. The **-12v** supply comes from the same transformer winding as the **+12v** thus it does not have a **LED** indicator.

***** Note** that the +50v & +20v power sources are turned off by the Interlock Switches when the Coin Door is OPEN.*

LED	SUPPLY VOLTAGE
L2	+5
L200	+20v
L201	+50v
L202	+18v
L203	+12v

Reset Circuitry:
The I/O will reset in three (3) cases:

1. The CPU is in reset. The CPU's reset signal is fed into the I/O through connector **J1** and forces the I/O into reset.
2. The 5v supply has fallen below 4.75v.
3. The watchdog is not being fed by the scanning of the light matrix. More specifically **Pin-19** of **U6** must be toggling once every ***50ms*** to prevent the watchdog from resetting. The scanning of the light matrix is controlled by the CPU through **J1**.

LED L204 shows the reset state of the I/O Board. If this **LED** is not lit either the 5v DC is below 4.75v or the CPU/Sound Board is holding the I/O in reset. If the **LED** is flashing this means that the watchdog is not being feed by the CPU/Sound Board and the I/O is oscillating into and out of reset. If the **LED** is continuously on the board is out of reset and communication from the CPU to the lamp matrix is confirmed. Testpoint Blanking is the actual reset signal on the I/O Board. A low voltage indicates that it is in reset this will turn off all Solenoid (Coil) Drivers, Flash Lamps, Lamp Matrix Drivers, Auxiliary Outputs and Flipper Outputs. A high voltage indicates that it is out of reset and normal operation can take place.

Address Decoding:
All Address decoding is done by two **74LS138** (3 of 8 decoder). Both of these must be in operation for the I/O Board to function properly.

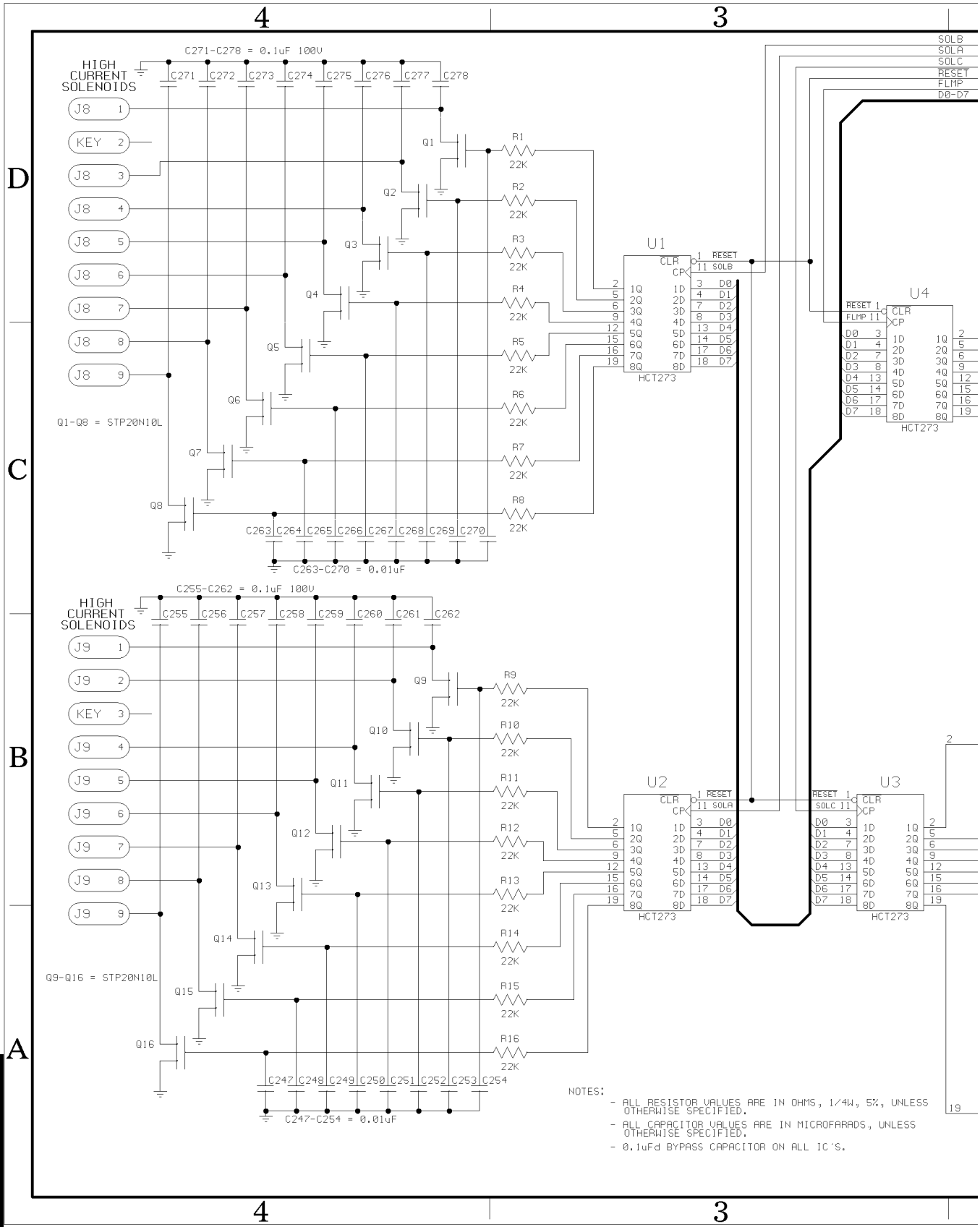
Solenoid (Coil) Drivers & Flash Lamps:
J8 & **J9** are high side drivers for driving solenoids and other heavy loads. Each connector has its own buffer driving 8 drivers. **J8** & **J9** consist of **MOSFET Drivers 20N10L** which can easily & safely be tested by clipping one end of a clip-lead to test point **FET TPL1** and then the other to the corresponding gate resistor **R1-R16** (see *Note 1*). This will apply 3.4v to the gate of the **MOSFET Transistor** thus switching it on. **J7** & **J6** each are a bank of 8 low side driver for driving lamps or other lower current solenoids (coils). They use a Bipolar Power Transistor **TIP122** which can also be tested by using **TEST POINT TIP TPL3** and the corresponding resistors **R17-R32*** *(see Note 1).*

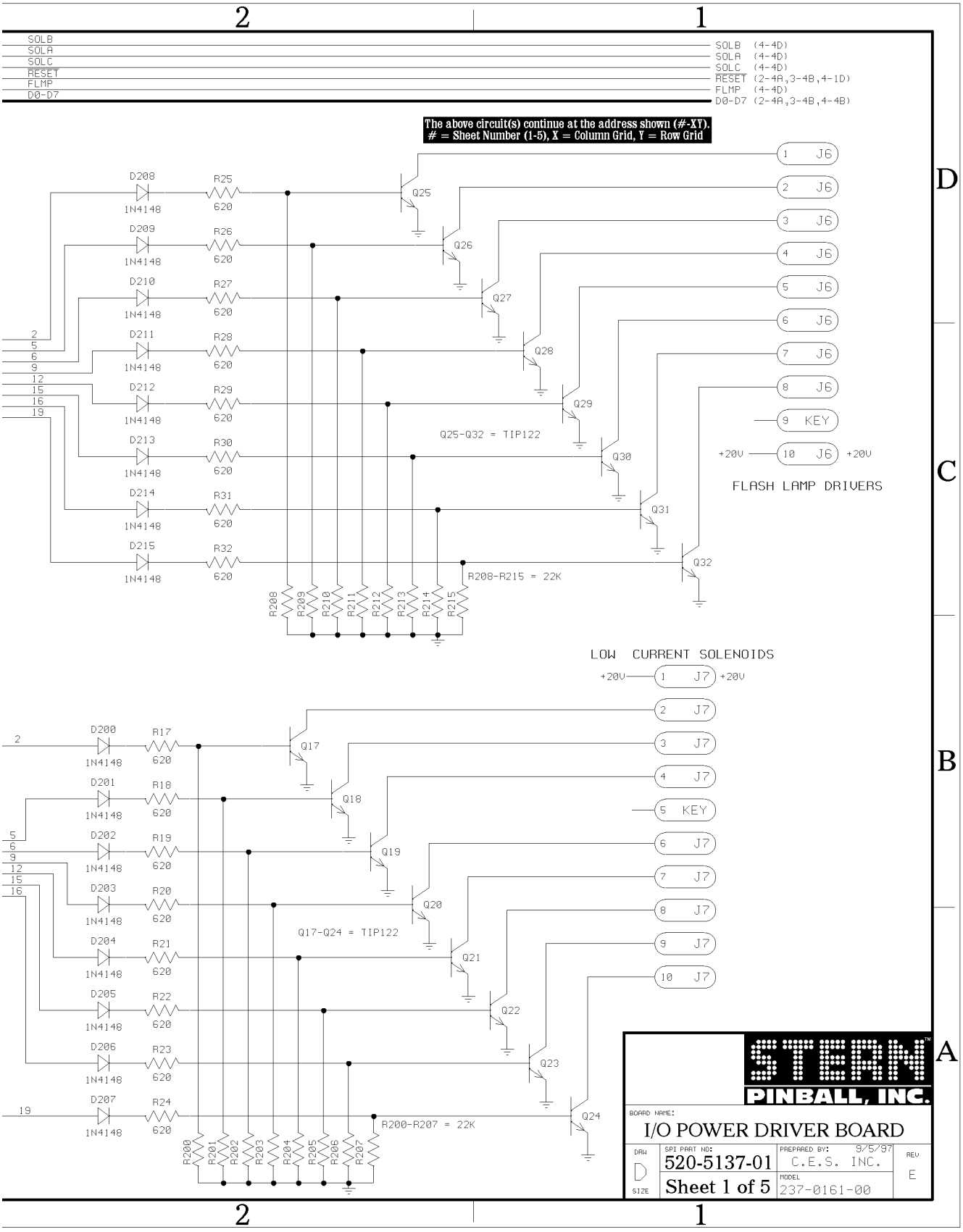
***Note 1** * Clip on the resistor side with the white stripe. ** R1 controls Q1 and R2 controls Q etc...*

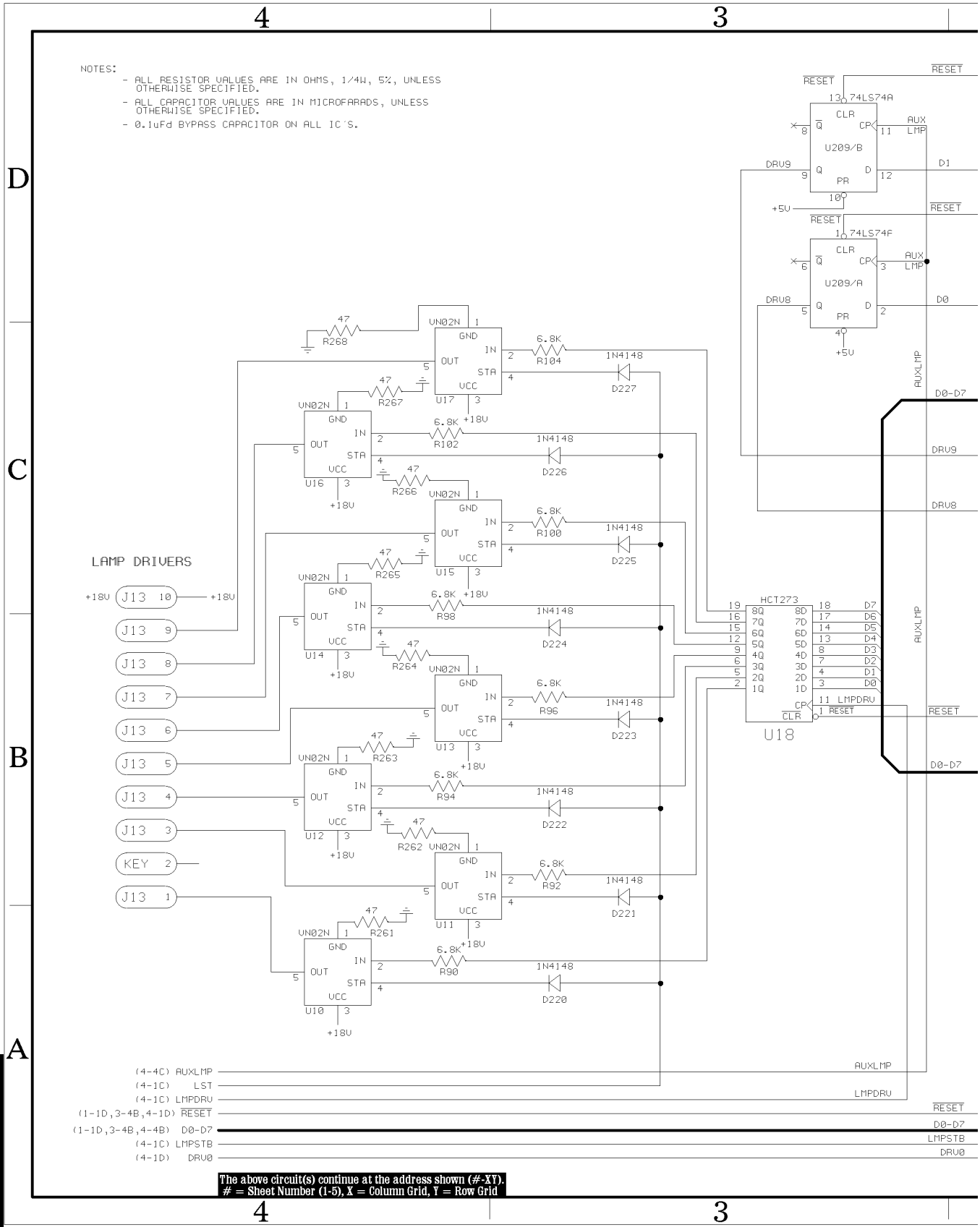
Auxiliary In & Out:
J2-8 CMOS Outputs sometimes used for a printer interface.
J3-8 CMOS Inputs general purpose inputs.

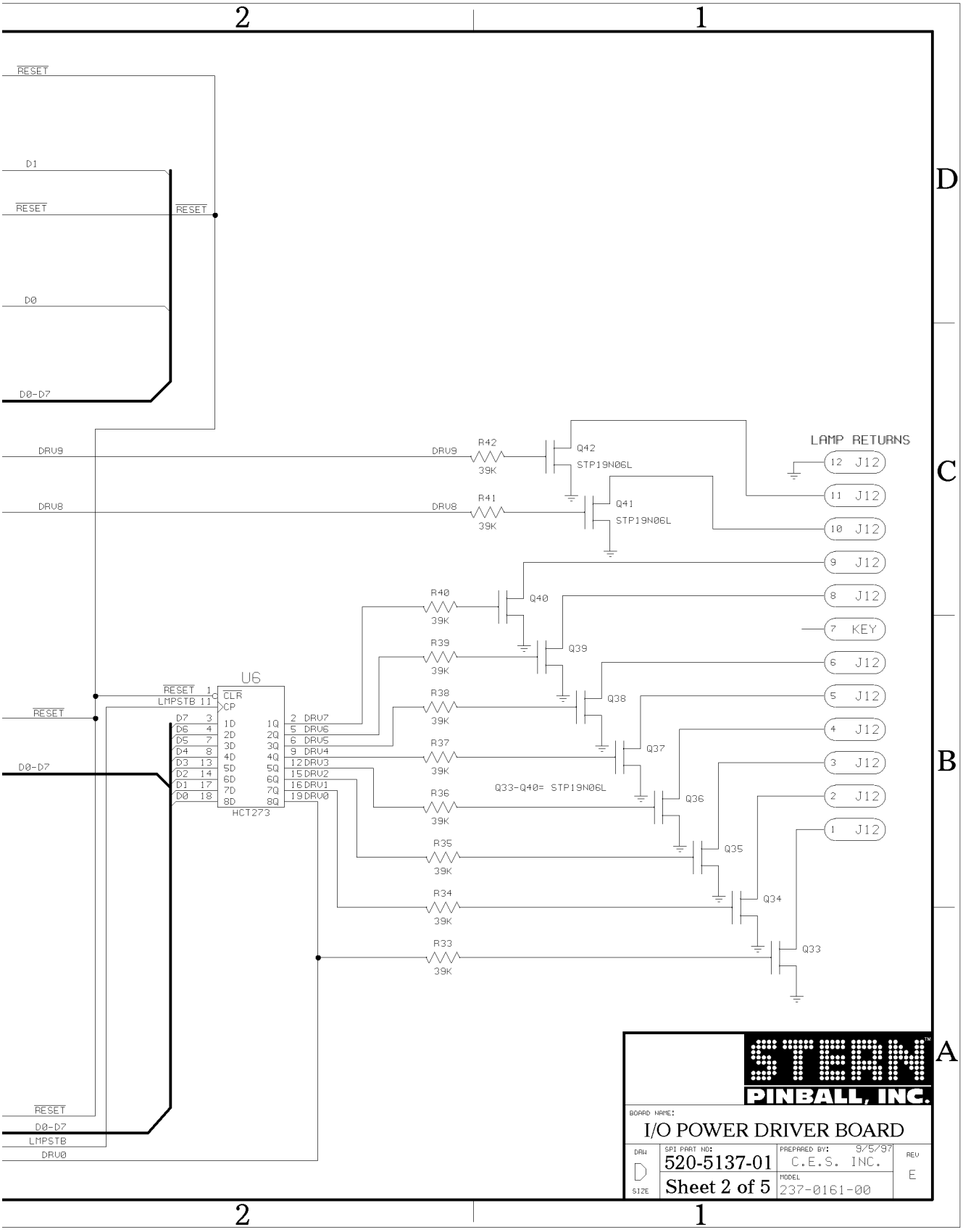
Lamp Matrix:
J12 has 10 low side drivers for the lamp strobes which consist of **19N06L MOSFETS**. Only one lamp strobe should be low at any time. Again the scanning of the lamp strobes keeps the I/O from resetting. **J13** has 8 high side drivers with each having a status indicator. All the status indicators are logically 'OR'ed together and fed back to the CPU/Sound Board. The status can identify open loads (for example open lamp filaments or intermittent connections) and short circuits. These drivers are also short-circuit protected.

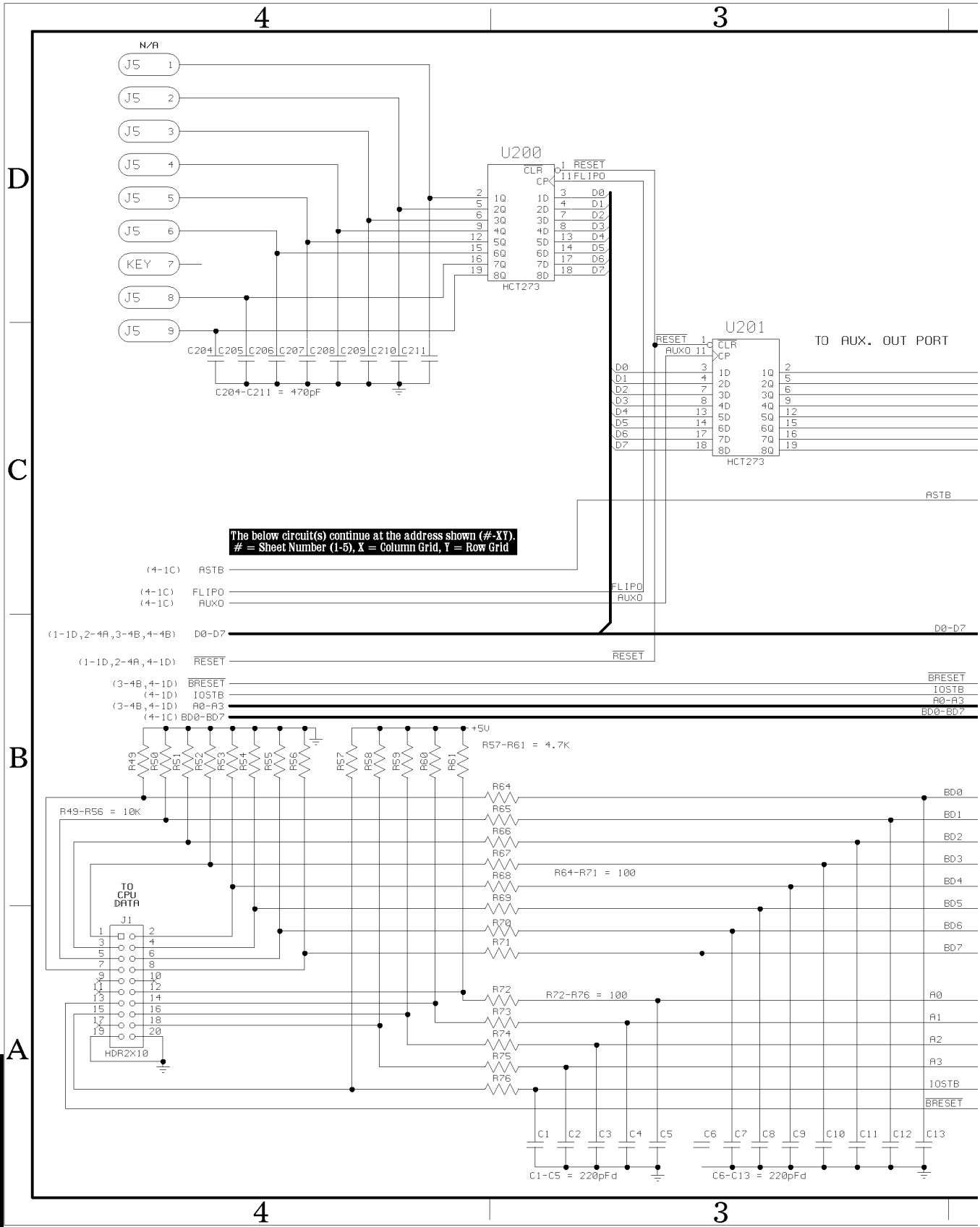
General Illumination (G.I.) Lights:
J15 has 6v AC switched on & off by a relay on the I/O Board. The relay is controlled by **Q200** which supplies power to the 24v coil winding to activate the relay. There are 4 taps on **J15** each fused at 5A for this 6v AC source.

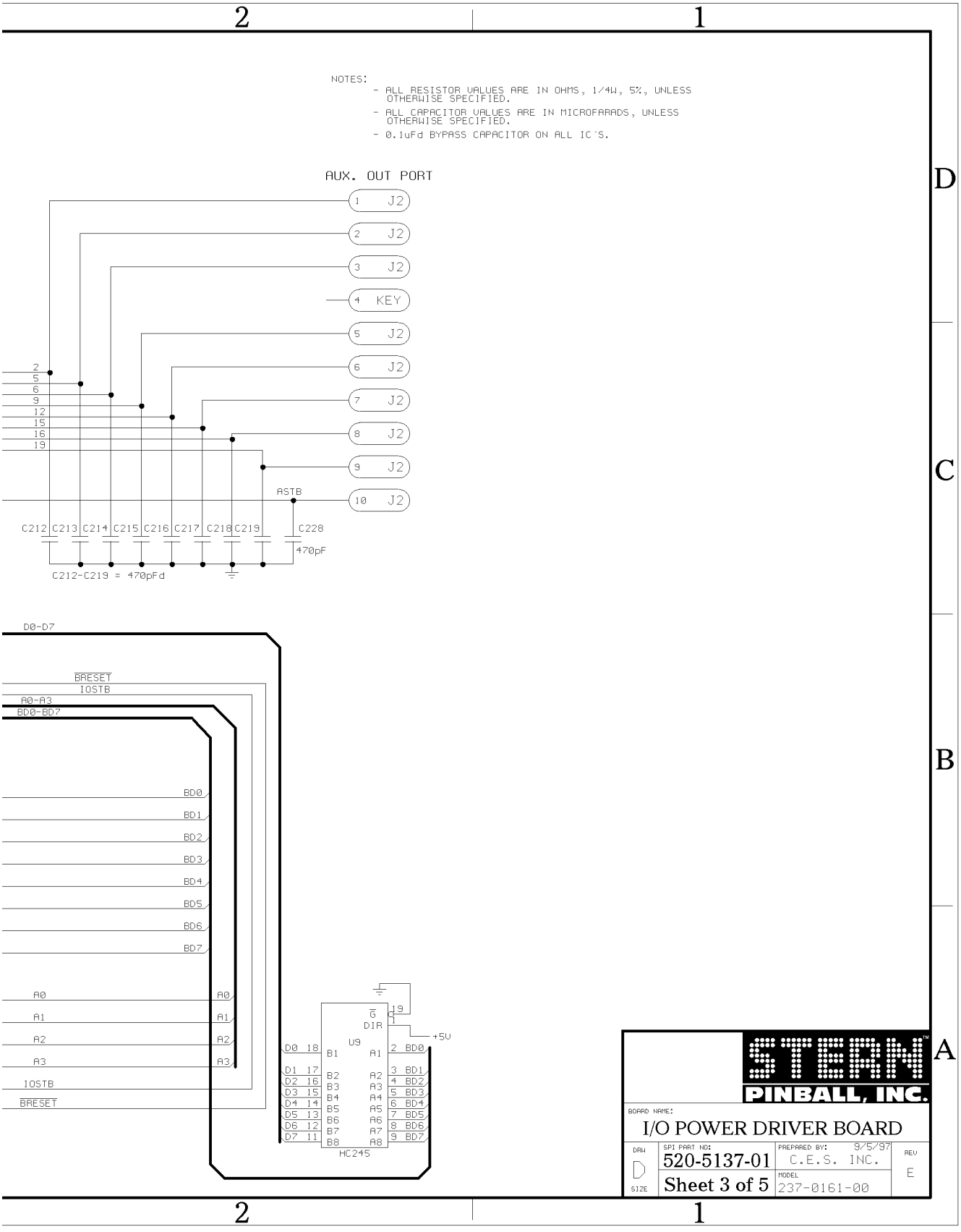

4
3
D
C
B
A
C271-C278 = 0.1uF 100V
HIGH CURRENT SOLENOIDS
J8 1
KEY 2
J8 3
J8 4
J8 5
J8 6
J8 7
J8 8
J8 9
C271 C272 C273 C274 C275 C276 C277 C278
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
R1 R2 R3 R4 R5 R6 R7 R8
22K
Q1-Q8 = STP20N10L
C263 C264 C265 C266 C267 C268 C269 C270
C263-C270 = 0.01uF
U1
HCT273
SOLB
SOLA
SOLC
RESET
FLMP
D0-D7
U4
HCT273
C255-C262 = 0.1uF 100V
HIGH CURRENT SOLENOIDS
J9 1
J9 2
KEY 3
J9 4
J9 5
J9 6
J9 7
J9 8
J9 9
C255 C256 C257 C258 C259 C260 C261 C262
Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
R9 R10 R11 R12 R13 R14 R15 R16
22K
Q9-Q16 = STP20N10L
C247 C248 C249 C250 C251 C252 C253 C254
C247-C254 = 0.01uF
U2
HCT273
U3
HCT273
NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
- 0.1uFd BYPASS CAPACITOR ON ALL IC'S.

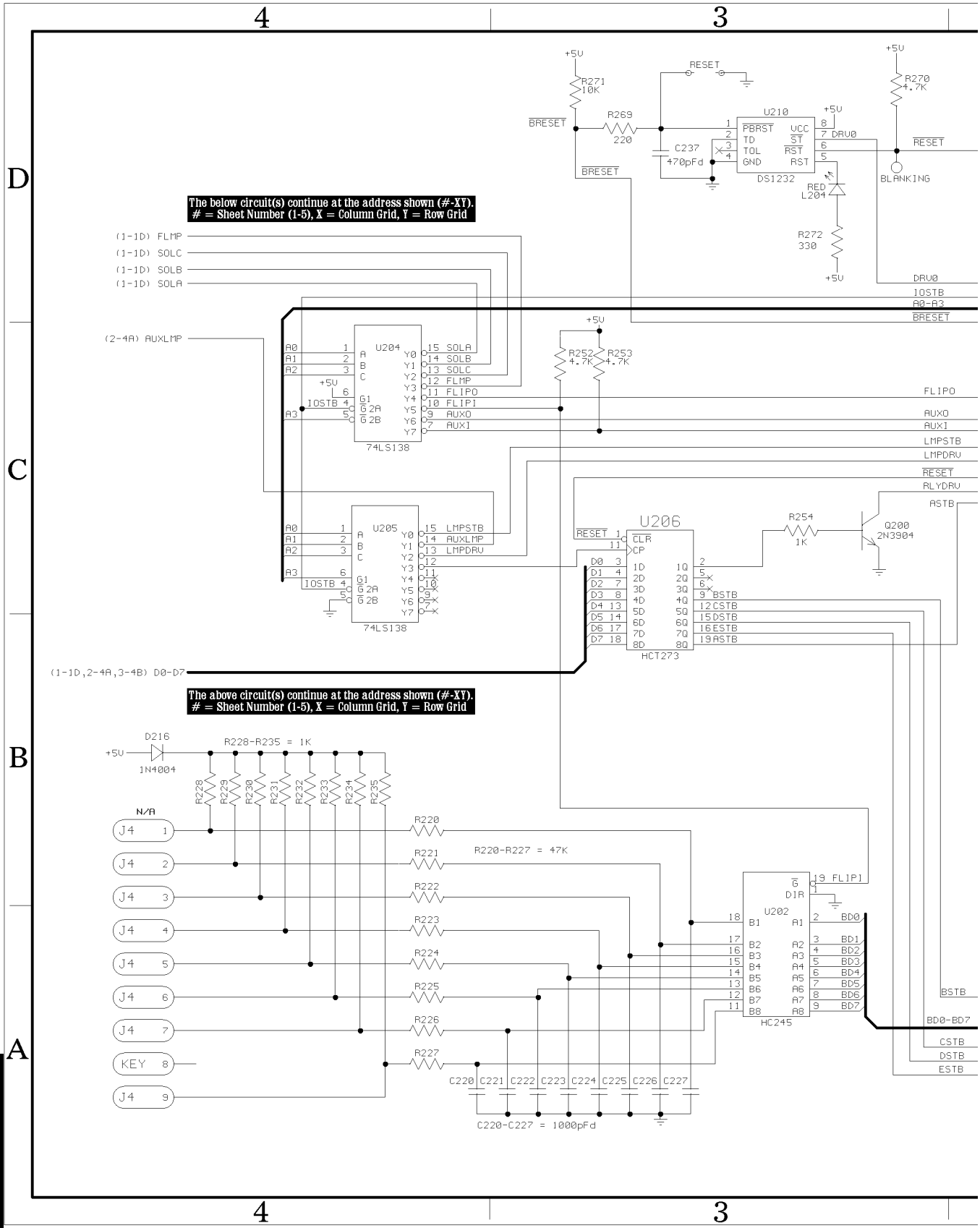

SOLB
SOLA
SOLC
RESET
FLMP
D0-D7
SOLB (4-4D)
SOLA (4-4D)
SOLC (4-4D)
RESET (2-4A,3-4B,4-1D)
FLMP (4-4D)
D0-D7 (2-4A,3-4B,4-4B)
The above circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
D208 D209 D210 D211 D212 D213 D214 D215
1N4148
R25 R26 R27 R28 R29 R30 R31 R32
620
Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32
Q25-Q32 = TIP122
R208 R209 R210 R211 R212 R213 R214 R215
R208-R215 = 22K
1 J6
2 J6
3 J6
4 J6
5 J6
6 J6
7 J6
8 J6
9 KEY
+20V 10 J6 +20V
FLASH LAMP DRIVERS
LOW CURRENT SOLENOIDS
+20V 1 J7 +20V
2 J7
3 J7
4 J7
5 KEY
6 J7
7 J7
8 J7
9 J7
10 J7
D200 D201 D202 D203 D204 D205 D206 D207
R17 R18 R19 R20 R21 R22 R23 R24
Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24
Q17-Q24 = TIP122
R200 R201 R202 R203 R204 R205 R206 R207
R200-R207 = 22K
STERN PINBALL, INC.
BOARD NAME:
I/O POWER DRIVER BOARD
DRW D SIZE
SPI PART NO: 520-5137-01
Sheet 1 of 5
PREPARED BY: C.E.S. INC. 9/5/97
MODEL 237-0161-00
REV E

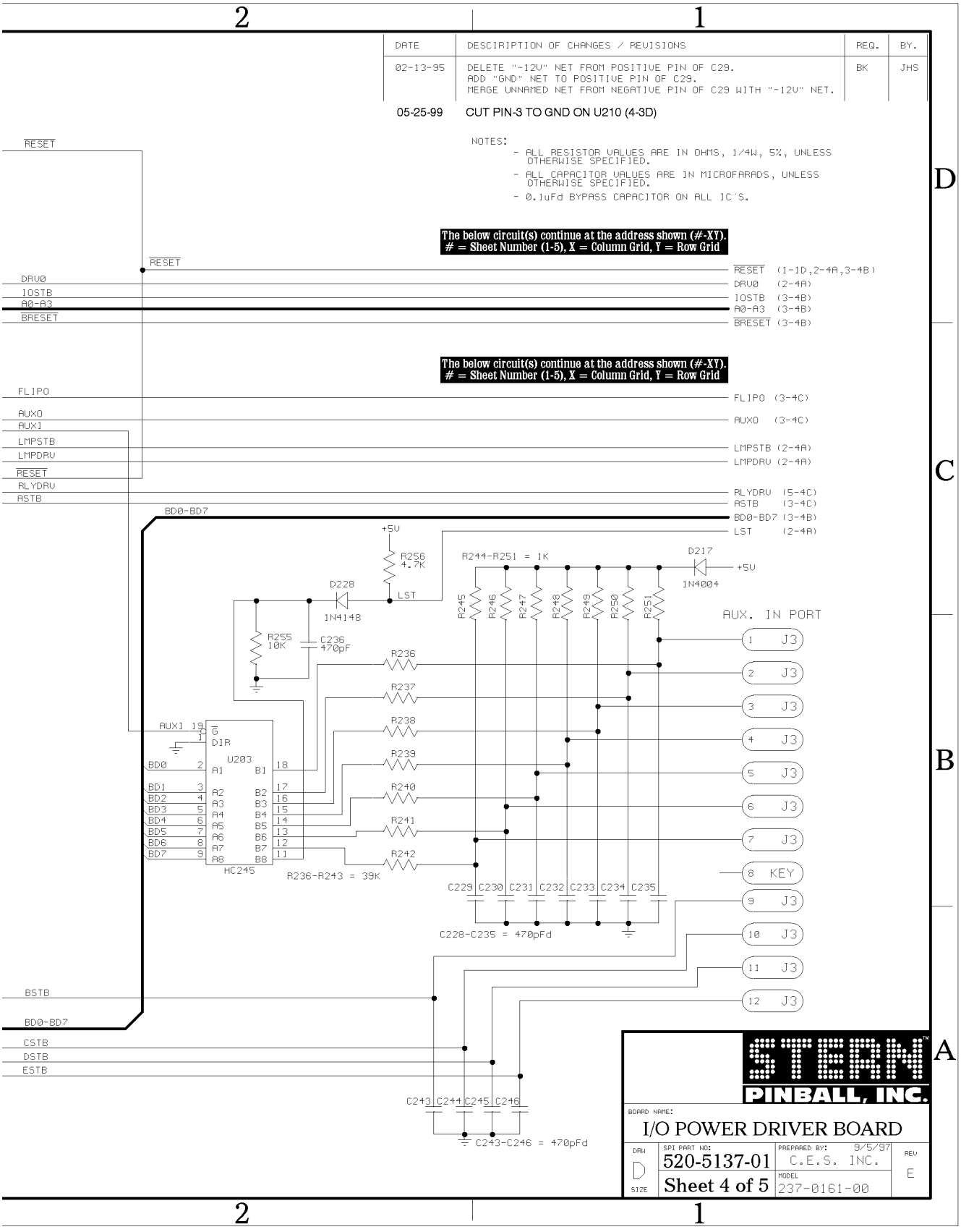

NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
- 0.1uFd BYPASS CAPACITOR ON ALL IC'S.
LAMP DRIVERS
U18
HCT273
74LS74A
74LS74F
U209/B
U209/A
AUXLMP
LMPDRU
LMPSTB
RESET
D0-D7
DRV0
DRV8
DRV9
(4-4C) AUXLMP
(4-1C) LST
(4-1C) LMPDRU
(1-1D,3-4B,4-1D) RESET
(1-1D,3-4B,4-4B) D0-D7
(4-1C) LMPSTB
(4-1D) DRV0
The above circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid


2
1
D
C
B
A
RESET
D1
RESET
RESET
D0
D0-D7
DRV9
DRV8
R42
39K
R41
39K
Q42
STP19N06L
Q41
STP19N06L
LAMP RETURNS
12 J12
11 J12
10 J12
9 J12
8 J12
7 KEY
6 J12
5 J12
4 J12
3 J12
2 J12
1 J12
R40
39K
R39
39K
R38
39K
R37
39K
R36
39K
R35
39K
R34
39K
R33
39K
Q40
Q39
Q38
Q37
Q36
Q35
Q34
Q33
Q33-Q40= STP19N06L
U6
HCT273
RESET
LMPSTB
D7
D6
D5
D4
D3
D2
D1
D0
DRV7
DRV6
DRV5
DRV4
DRV3
DRV2
DRV1
DRV0
RESET
D0-D7
LMPSTB
DRV0
STERN
PINBALL, INC.
BOARD NAME:
I/O POWER DRIVER BOARD
DRW
D
SIZE
SPI PART NO:
520-5137-01
Sheet 2 of 5
PREPARED BY:
9/5/97
C.E.S. INC.
MODEL
237-0161-00
REV
E


4
3
D
C
B
A
N/A
J5 1
J5 2
J5 3
J5 4
J5 5
J5 6
KEY 7
J5 8
J5 9
C204 C205 C206 C207 C208 C209 C210 C211
C204-C211 = 470pF
U200
CLR
CP
1 RESET
11 FLIPO
3 D0
4 D1
7 D2
8 D3
13 D4
14 D5
17 D6
18 D7
1Q 2Q 3Q 4Q 5Q 6Q 7Q 8Q
1D 2D 3D 4D 5D 6D 7D 8D
2 5 6 9 12 15 16 19
HCT273
U201
RESET 1
AUXO 11
TO AUX. OUT PORT
D0 D1 D2 D3 D4 D5 D6 D7
3 4 7 8 13 14 17 18
1Q 2Q 3Q 4Q 5Q 6Q 7Q 8Q
2 5 6 9 12 15 16 19
HCT273
ASTB
The below circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
(4-1C) ASTB
(4-1C) FLIPO
(4-1C) AUXO
FLIPO
AUXO
(1-1D,2-4A,3-4B,4-4B) D0-D7
D0-D7
(1-1D,2-4A,4-1D) RESET
RESET
(3-4B,4-1D) BRESET
(4-1D) IOSTB
(3-4B,4-1D) A0-A3
(4-1C) BD0-BD7
BRESET
IOSTB
A0-A3
BD0-BD7
+5V
R49 R50 R51 R52 R53 R54 R55 R56
R57 R58 R59 R60 R61
R57-R61 = 4.7K
R49-R56 = 10K
R64 R65 R66 R67 R68 R69 R70 R71
R64-R71 = 100
R72 R73 R74 R75 R76
R72-R76 = 100
BD0 BD1 BD2 BD3 BD4 BD5 BD6 BD7
A0 A1 A2 A3 IOSTB BRESET
TO CPU DATA
J1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
HDR2X10
C1 C2 C3 C4 C5
C1-C5 = 220pFd
C6 C7 C8 C9 C10 C11 C12 C13
C6-C13 = 220pFd


2
1
NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
- 0.1uFd BYPASS CAPACITOR ON ALL IC'S.
AUX. OUT PORT
1 J2
2 J2
3 J2
4 KEY
5 J2
6 J2
7 J2
8 J2
9 J2
10 J2
ASTB
C212 C213 C214 C215 C216 C217 C218 C219
C228
470pF
C212-C219 = 470pFd
D0-D7
BRESET
IOSTB
A0-A3
BD0-BD7
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
A0
A1
A2
A3
IOSTB
BRESET
U9
HC245
G
DIR
+5V
D
C
B
A
STERN PINBALL, INC.
BOARD NAME:
I/O POWER DRIVER BOARD
DRW
SIZE
SPI PART NO:
520-5137-01
Sheet 3 of 5
PREPARED BY:
9/5/97
C.E.S. INC.
MODEL
237-0161-00
REV
E


4
3
D
C
B
A
+5V
R271 10K
RESET
BRESET
R269 220
C237 470pFd
U210
DS1232
PBRST
TD
TOL
GND
VCC
ST
RST
DRV0
R270 4.7K
BLANKING
RED L204
R272 330
The below circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
(1-1D) FLMP
(1-1D) SOLC
(1-1D) SOLB
(1-1D) SOLA
IOSTB
A0-A3
(2-4A) AUXLMP
U204
74LS138
SOLA
SOLB
SOLC
FLMP
FLIPO
FLIPI
AUXO
AUXI
R252 4.7K
R253 4.7K
LMPSTB
LMPDRV
U205
AUXLMP
U206
HCT273
RLYDRV
ASTB
R254 1K
Q200 2N3904
BSTB
CSTB
DSTB
ESTB
(1-1D,2-4A,3-4B) D0-D7
The above circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
D216
1N4004
R228-R235 = 1K
R220-R227 = 47K
N/A
J4
KEY
U202
HC245
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
BD0-BD7
C220 C221 C222 C223 C224 C225 C226 C227
C220-C227 = 1000pFd


2
1
DATE
DESCRIPTION OF CHANGES / REVISIONS
REQ.
BY.
02-13-95
DELETE "-12V" NET FROM POSITIVE PIN OF C29.
ADD "GND" NET TO POSITIVE PIN OF C29.
MERGE UNNAMED NET FROM NEGATIVE PIN OF C29 WITH "-12V" NET.
BK
JHS
05-25-99
CUT PIN-3 TO GND ON U210 (4-3D)
NOTES:
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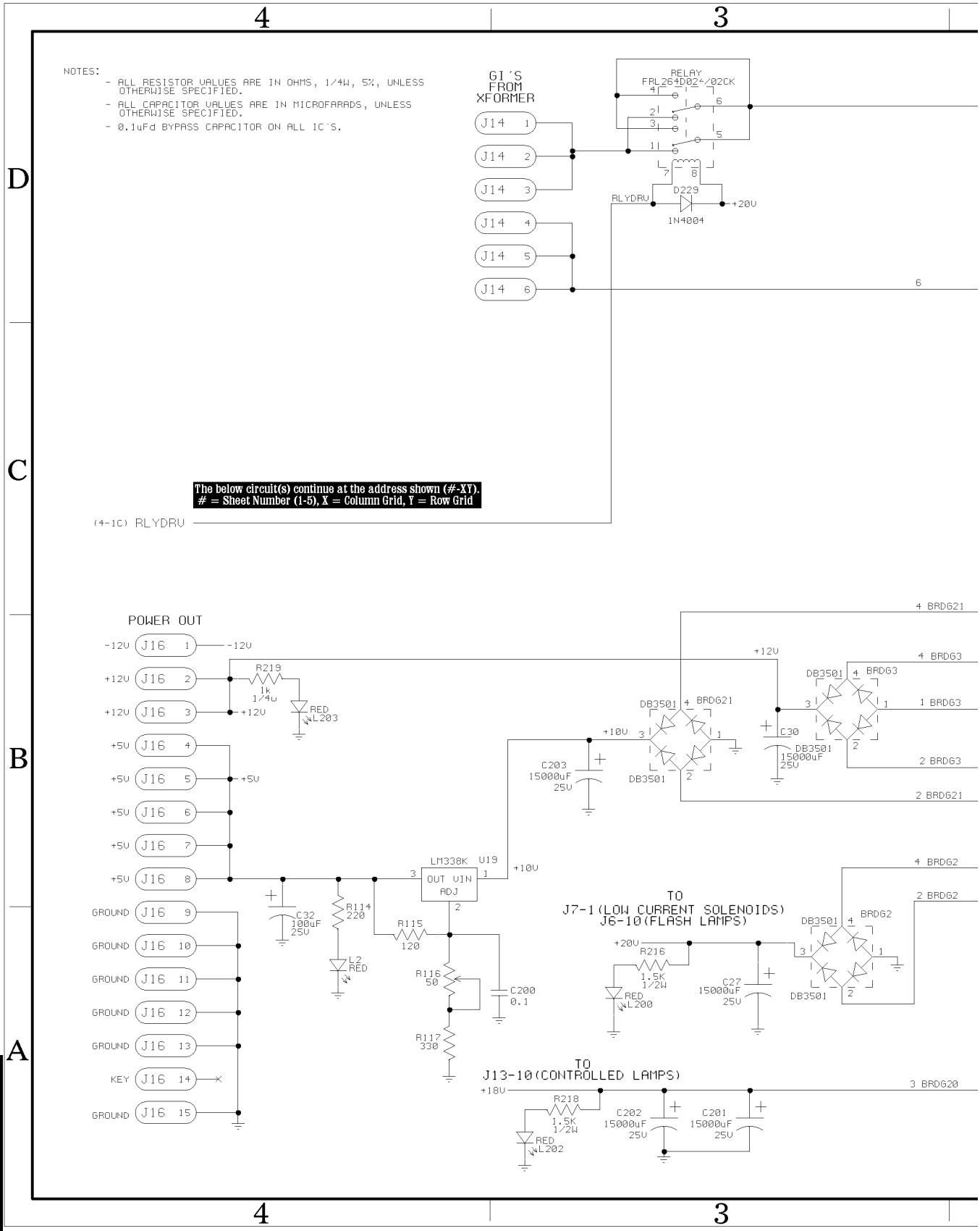
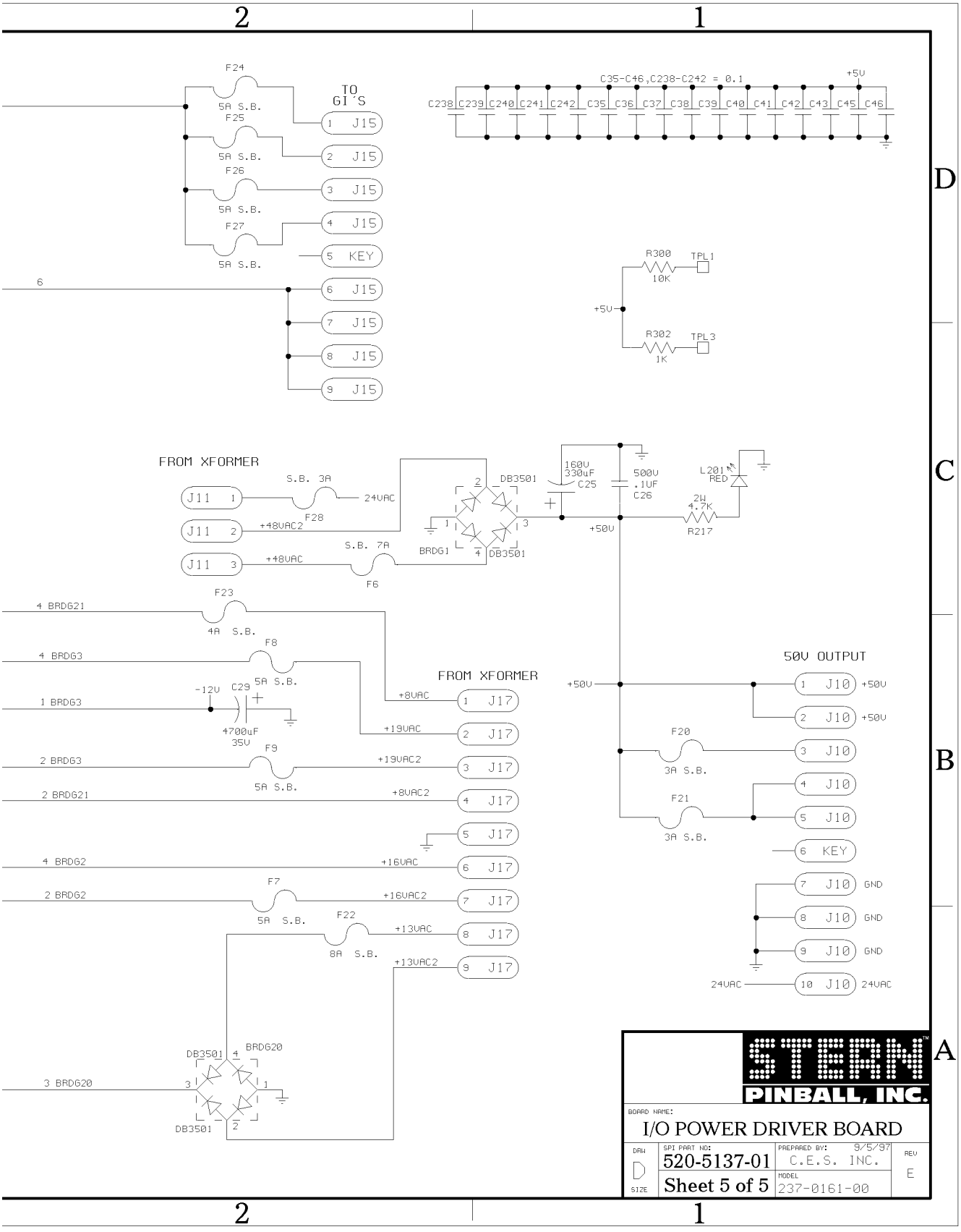
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
- 0.1uFd BYPASS CAPACITOR ON ALL IC'S.
The below circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
RESET
DRV0
IOSTB
A0-A3
BRESET
RESET (1-1D,2-4A,3-4B)
DRV0 (2-4A)
IOSTB (3-4B)
A0-A3 (3-4B)
BRESET (3-4B)
FLIP0
AUX0
AUX1
LMPSTB
LMPDRV
RLYDRV
ASTB
BD0-BD7
FLIP0 (3-4C)
AUX0 (3-4C)
LMPSTB (2-4A)
LMPDRV (2-4A)
RLYDRV (5-4C)
ASTB (3-4C)
BD0-BD7 (3-4B)
LST (2-4A)
+5V
R256 4.7K
LST
D228
1N4148
R255 10K
C236 470pF
R244-R251 = 1K
D217
1N4004
+5V
R245
R246
R247
R248
R249
R250
R251
AUX. IN PORT
J3
KEY
R236
R237
R238
R239
R240
R241
R242
R236-R243 = 39K
AUX1
G
DIR
U203
HC245
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
A1
A2
A3
A4
A5
A6
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
C229 C230 C231 C232 C233 C234 C235
C228-C235 = 470pFd
BSTB
BD0-BD7
CSTB
DSTB
ESTB
C243 C244 C245 C246
C243-C246 = 470pFd
STERN
PINBALL, INC.
BOARD NAME:
I/O POWER DRIVER BOARD
DRW
D
SIZE
SPI PART NO:
520-5137-01
Sheet 4 of 5
PREPARED BY:
9/5/97
C.E.S. INC.
MODEL
237-0161-00
REV
E
2
1


4
3
D
C
B
A
NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
- 0.1uFd BYPASS CAPACITOR ON ALL IC'S.
GI'S FROM XFORMER
J14 1
J14 2
J14 3
J14 4
J14 5
J14 6
RELAY FRL26HD02/02CK
RLYDRV
D229
1N4004
+20V
6
The below circuit(s) continue at the address shown (#-XY).
= Sheet Number (1-5), X = Column Grid, Y = Row Grid
(4-1C) RLYDRV
POWER OUT
-12V J16 1
+12V J16 2
+12V J16 3
+5V J16 4
+5V J16 5
+5V J16 6
+5V J16 7
+5V J16 8
GROUND J16 9
GROUND J16 10
GROUND J16 11
GROUND J16 12
GROUND J16 13
KEY J16 14
GROUND J16 15
R219 1k 1/4w
RED L203
LM338K U19
OUT VIN ADJ
+10V
C32 100uF 25V
R114 220
R115 120
R116 50
R117 330
C200 0.1
L2 RED
C203 15000uF 25V
DB3501 BRDG21
DB3501 BRDG3
C30 15000uF 25V
4 BRDG21
4 BRDG3
1 BRDG3
2 BRDG3
2 BRDG21
TO J7-1(LOW CURRENT SOLENOIDS) J6-10(FLASH LAMPS)
R216 1.5K 1/2W
RED L200
C27 15000uF 25V
DB3501 BRDG2
4 BRDG2
2 BRDG2
TO J13-10(CONTROLLED LAMPS)
+18V
R218 1.5K 1/2W
RED L202
C202 15000uF 25V
C201 15000uF 25V
3 BRDG20


2
1
D
C
B
A
F24
5A S.B.
TO GI'S
F25
5A S.B.
F26
5A S.B.
F27
5A S.B.
1 J15
2 J15
3 J15
4 J15
5 KEY
6 J15
7 J15
8 J15
9 J15
6
C35-C46,C238-C242 = 0.1
+5V
C238 C239 C240 C241 C242 C35 C36 C37 C38 C39 C40 C41 C42 C43 C45 C46
R300
10K
TPL1
+5V
R302
1K
TPL3
FROM XFORMER
J11 1
J11 2
J11 3
S.B. 3A
F28
24VAC
+48VAC2
S.B. 7A
F6
+48VAC
DB3501
BRDG1
160V 330uF C25
500V .1UF C26
+50V
L201 RED
2W 4.7K
R217
4 BRDG21
F23
4A S.B.
4 BRDG3
F8
5A S.B.
1 BRDG3
-12V
C29
4700uF 35V
2 BRDG3
F9
5A S.B.
2 BRDG21
4 BRDG2
2 BRDG2
F7
5A S.B.
F22
8A S.B.
3 BRDG20
DB3501
BRDG20
FROM XFORMER
+8VAC
+19VAC
+19VAC2
+8VAC2
+16VAC
+16VAC2
+13VAC
+13VAC2
J17
50V OUTPUT
+50V
F20
3A S.B.
F21
3A S.B.
J10 +50V
J10 +50V
J10
J10
J10
J10
6 KEY
J10 GND
J10 GND
J10 GND
24VAC
J10 24VAC
STERN PINBALL, INC.
BOARD NAME:
I/O POWER DRIVER BOARD
DRW
D
SIZE
SPI PART NO:
520-5137-01
Sheet 5 of 5
PREPARED BY:
C.E.S. INC.
9/5/97
MODEL
237-0161-00
REV
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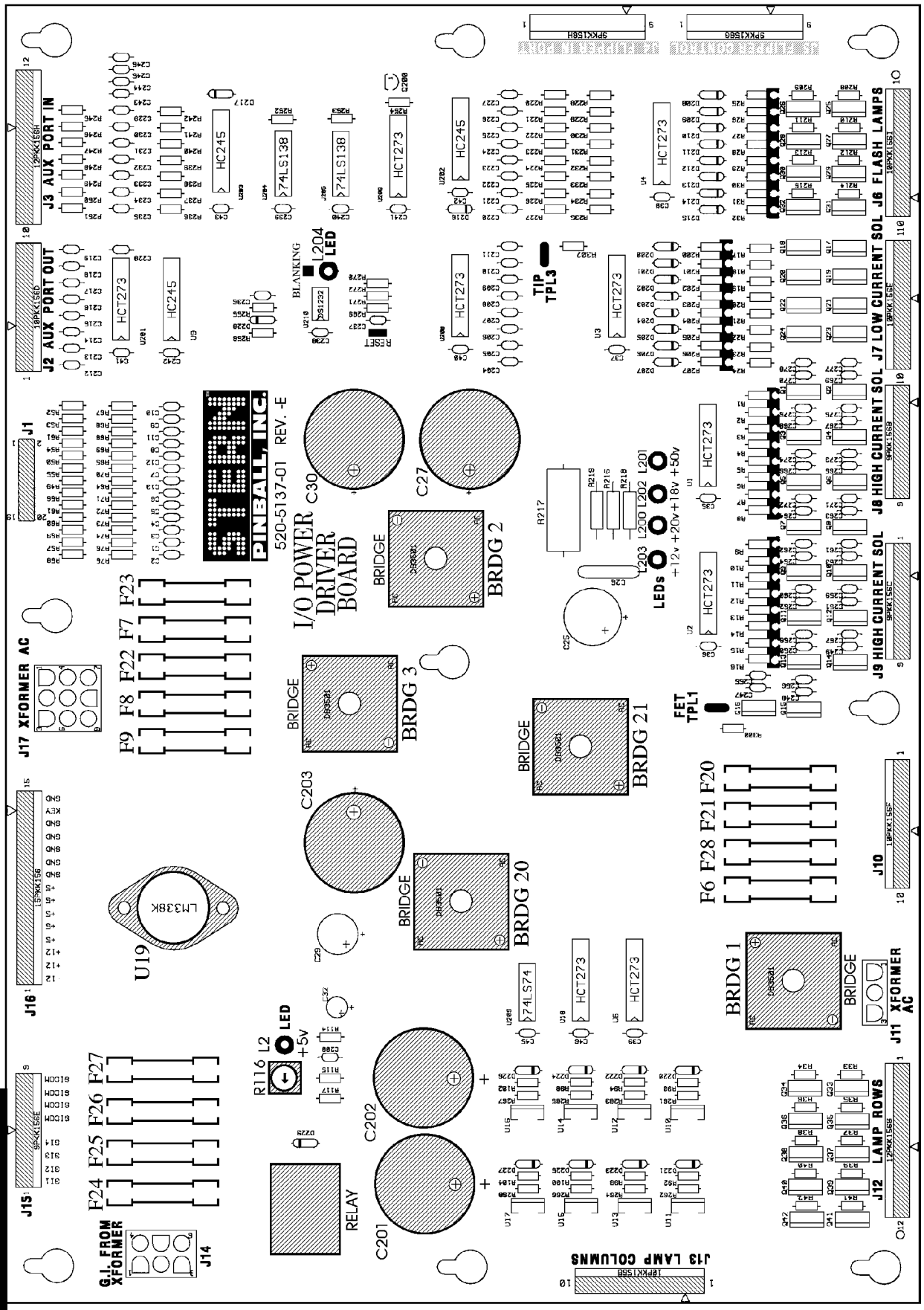
I/O Power Driver Board Component Layout



I/O Power Driver Board Parts

ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION (NS = Not Stuffed)
—	**1**	**520-5137-01**	**I/O Power Driver Board**	**Complete PCB Assembly**
1	16	125-5027-00	C255>C262, C271>C278	0.1uF, (104), 100v, Cap.
2	22	125-5028-00	C204>C219, C228>C237, C243>C246	470pF, (471), Axial Cap. (C204>C211: NS)
3	16	125-5029-00	C247>C254, C263>C270	0.01uF, (103), 100v Cap.
4	13	125-5030-00	C7 C8 C9 C10 C11 C12 C13 C1 C2 C3 C4 C5 C6	220pF, (221), Cap.
5	0	n/a	C220>C227	(C220>C227: NS)
6	17	125-5031-00	C35>C43, C45, C46, C200, C238>C242	0.1uF, (104), Cap.
7	16	110-0106-00	Q1>Q16	20N10L STP, Transistor
8	32	121-5042-00	R1>R16, R200>R215	22K Ω 1/4W Res.
9	16	121-5003-00	R17>R32	620 Ω 1/4W Res.
10	17	121-5045-00	R33>R42, R236>R242	39K Ω 1/4W Res.
11	13	121-5007-00	R64>R76	100 Ω 1/4W Res.
12	8	121-5029-00	R90, R92, R94, R96, R98, R100, R102, R104	6.8K Ω 1/4W Res.
13	1	121-5030-00	R115	120 Ω 1/4W Res.
14	0	n/a	R220>R227	(R220>R227: NS)
15	9	121-5009-00	R228>R235, R245>R251, R254, R302	1K Ω 1/4W Res. (R228>R235: NS)
16	8	121-5032-00	R261>R268	47K Ω 1/4W Res.
17	2	121-5033-00	R114, R269	220 Ω 1/4W Res.
18	8	121-5021-00	R49, R57>R61, R252, R253, R256, R270	4.7K Ω 1/4W Res. (R252: NS)
19	11	121-5011-00	R50>R56, R255, R271, R300	10K Ω 1/4W Res.
20	2	121-5036-00	R117, R272	330 Ω 1/4W Res.
21	8	100-5012-00	U1>U4, U6, U18, U200, U201, U206	74HCT273 (U200: NS)
22	1	n/a	RESET	(RESET: NS)
23	1	121-5009-00	R219	1K Ω 1/4W Res.
24	2	121-5038-00	R216, R218	1.5K Ω 1/2W Res.
25	7	200-5000-01	F7>F9, F24>F27	5A 250v S.B. Fuse
26	1	200-5000-03	F6	7A 250v S.B. Fuse
27	1	200-5000-06	F23	4A 250v S.B. Fuse
28	1	200-5000-05	F22	8A 250v S.B. Fuse
29	3	200-5000-08	F20, F21, F28	3A 250v S.B. Fuse
30	1	045-5013-00	J15	9PKK156 (PIN 5=KEY)
31	1	045-5016-00	J16	15PKK156
32	1	100-5023-00	U210	DS1232
33	1	110-0069-00	Q200	2N3904, Transistor.
34	1	125-5032-00	C32	100uF, 25v, Radial Lytic Cap.
35	1	045-5015-01	J1	20-Pin, 0.1 Dual Row Header
36	1	100-0338-00	U202, U203	74HC245 (U202: NS)
37	10	110-0088-00	Q33>Q42	19N06L STP, Transistor
38	6	165-5099-00	**L2, L200>L204**	**LED T1-3/4 DIFFUSER LED**
39	1	045-5014-01	J2	10PKK156 (PIN 4=KEY)
40	1	121-5039-00	R116	50 Ω Pot
41	16	110-0067-00	Q17>Q32	TIP122
42	1	125-5033-00	C25	100uF, 150v, Radial Lytic Cap.
43	1	110-0058-00	U9	74LS245
44	1	125-5034-00	C29	4700uF, 35v, Radial Lytic Cap.
45	1	190-5002-00	RELAY	FRL264D024/02CK Relay
46	0	n/a	J5	(J5: NS)
47	1	100-0037-00	U209	74LS74
48	0	n/a	J4	(J4: NS)
49	2	100-0148-00	U204, U205	74LS138
50	1	125-5035-00	C26	.1UF, 500v, Ceramic Disk Cap.
51	1	100-0356-00	U19	LM338K
52	5	112-5000-00	BRDG1, BRDG2, BRDG3, BRDG20, BRDG21	DB3501
53	5	125-5036-00	C27, C30, C201>C203	15000uF, 25v, Radial Lytic Cap.
54	25	112-0054-00	D200>D215, D220>D227	1N4148, Diode
55	2	112-5003-00	D216, D217, D229	1N4004, Diode (D216: NS)
56	2	n/a	TPL1, TPL3	*Test Point Wire (24ga.) Loops*
57	1	045-5014-01	J7	10PKK156 (PIN 5=KEY)
58	1	045-5014-01	J6	10PKK156 (PIN 9=KEY)
59	8	110-0089-00	U10>U17	VN02N
60	1	045-0014-03	J11	10-84-4030 (3 PIN MOLEX)
61	1	045-5015-00	J12	12PKK156 (PIN 7=KEY)
62	1	045-0014-09	J17	10-84-4090 (9 PIN MOLEX)
63	1	n/a	BLANKING	*Test Point - Do Not Stuff*
64	1	121-5050-00	R217	4.7K Ω 2W Res. (SANDBAR)
65	1	045-5014-01	J13	10PKK156 (PIN 2=KEY)
66	1	045-0014-06	J14	10-84-4060 (6 PIN MOLEX)
67	1	045-5014-01	J10	10PKK156 (PIN 6=KEY)
68	1	045-5015-00	J3	12PKK156 (PIN 8=KEY)
69	1	045-5013-00	J9	9PKK156 (PIN 3=KEY)
70	1	045-5013-00	J8	9PKK156 (PIN 2=KEY)
71	26	205-0004-00	F6>F9, F20>F28	Fuse Clips
72	1	n/a	U19	Heatsink (5v Reg.)