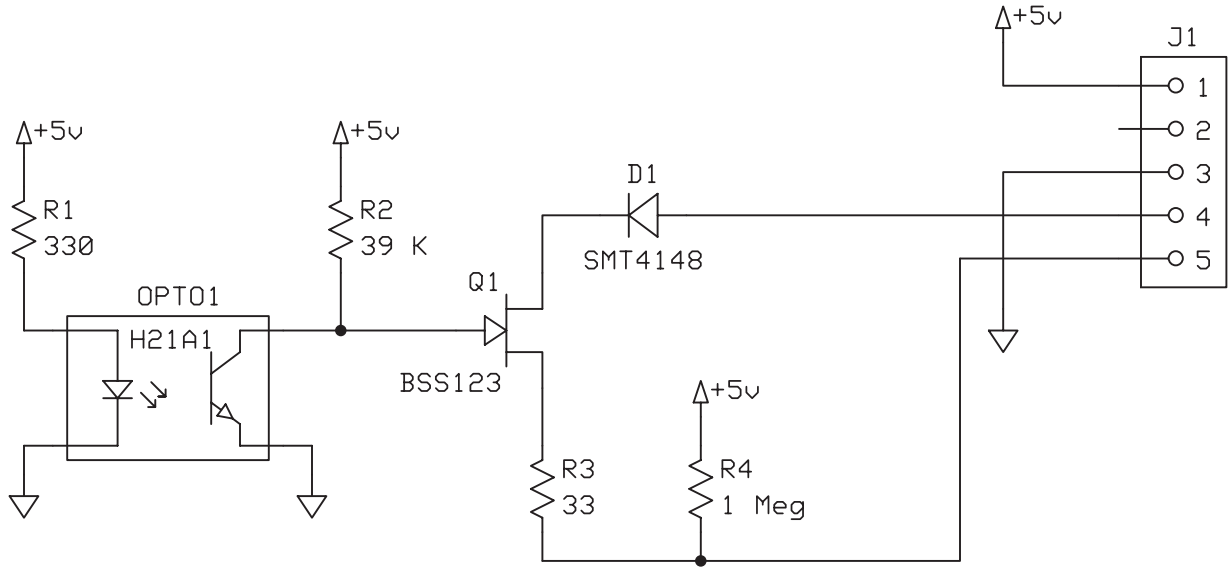
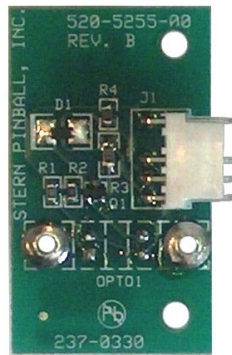
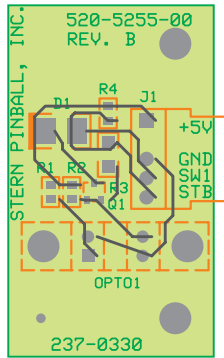


In-Line OPTO PCB (520-5255-00) for 1-Bank Drop Target Module (515-7565-00) Schematic

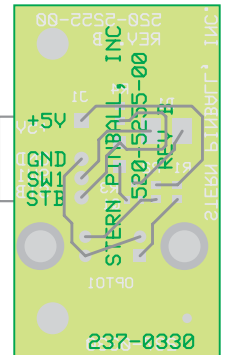
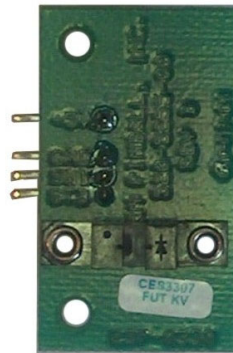


In-Line OPTO PCB (520-5255-00) Component Layout & Parts

Connector Side



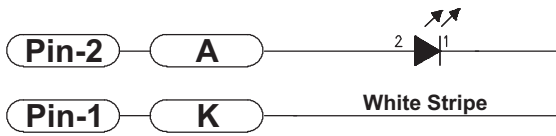
OPTO Side



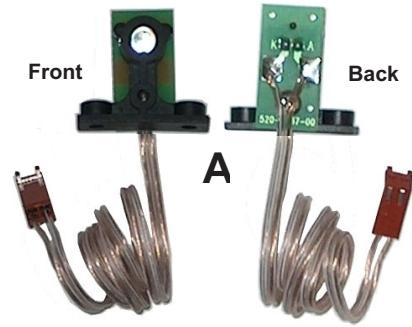
ITEM	QTY.	SPI PART NR.	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
—	1	520-5255-00	Ref. Only 237-0330	In-Line OPTO PCB	Complete PCB Assembly
1	1	121-6006-00	(101-0002012)	R1	Resistor SMT 0805, 330 Ω 1/10W 5%
2	1	121-6013-00	(101-0002035)	R2	Resistor SMT 0805, 39K Ω 1/10W 5%
3	1	121-6024-01	(101-0002350)	R3	Resistor SMT 1206, 33 Ω 1/10W 5%
4	1		(101-0001907)	R4	Resistor SMT 0805, 1M Ω 1/10W 5%
5	1		(181-0004888)	D1	Diode SMT4148, 1N4148W 100V 350MW SOD123
6	1	110-6002-00	(211-0011181)	Q1	Transistor BSS123, 100V 6 Ω N-CHAN SOT-23
7	1		(315-0003439)	J1	Conn., Hdr., 5-PIN, 1-ROW KEY PIN-2 CON-THT
8	1	112-6002-00	(430-0011146)	OPTO1	SLOTTED OPTO, FI-23FF, H21A1 LEDO-THT

If a part is required where a part number is not provided, call Technical Support (see back of cover).

Playfield Switches OPTO Transceiver PCBs (500-6775-01) Schematic



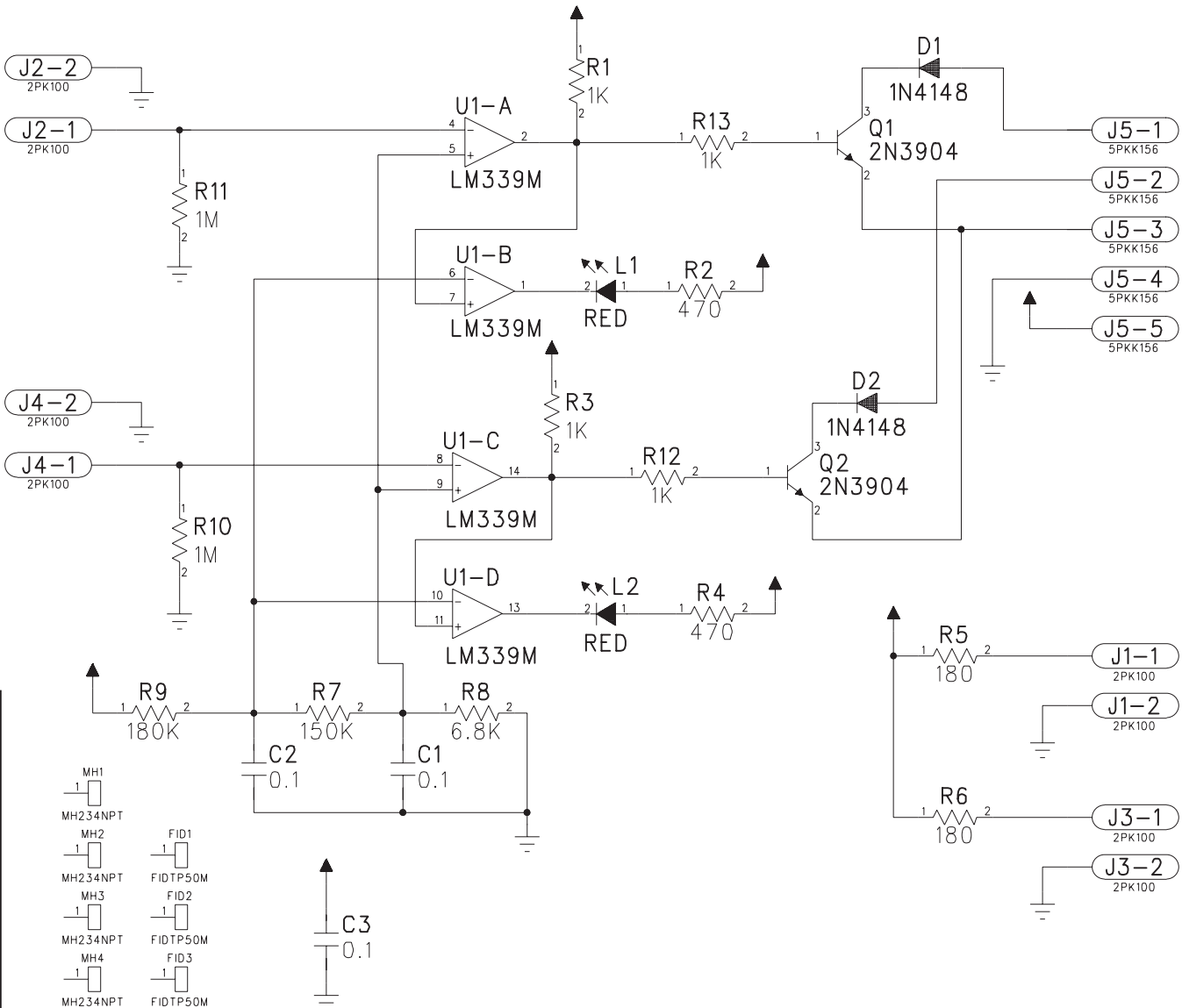
**Mini PCB
OPTO 15" Lead
(Black Bracket)
500-6775-01**



Playfield Switches OPTO Transceiver PCBs (500-6775-01) Component Layout & Parts

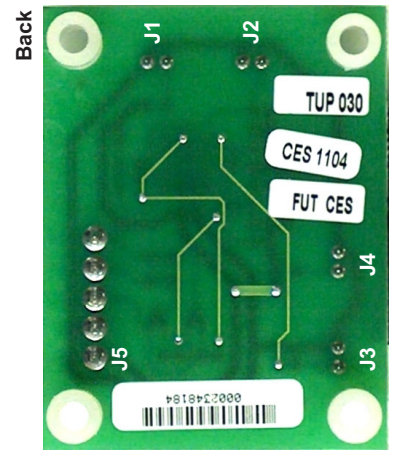
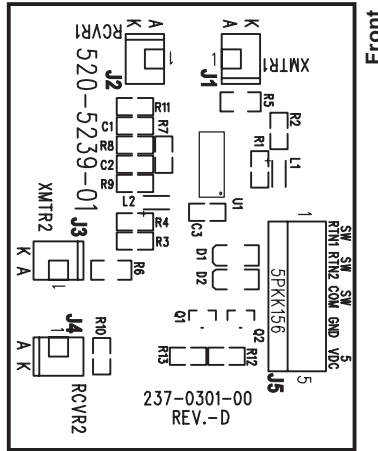
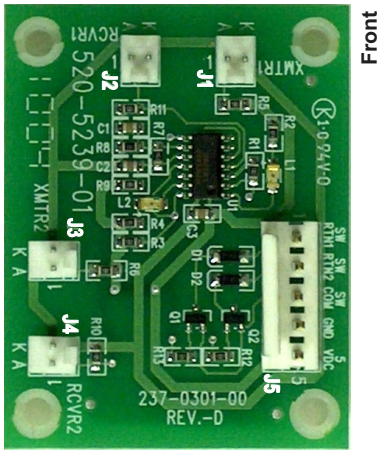
ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION
A, B & D	2 pair	500-6775-01	Mini OPTO Transceiver PCB Assembly (Items A PCB + B + C)	
A	1	520-5237-00	Mini OPTO Transceiver PCB	(includes Items A-1 – A-3)
A-1	1	545-6092-00		Black Bracket (Plastic) Holder
A-2	1	237-5909-00		#4-40 X 1/4 PPH Screw
A-3	1	165-5052-00		LED (Ultra Bright Red)
B	1	601-5023-15	K, A	15" Speaker Wire (1-Side White Stripe)
D	1	045-5020-02	Note White Strip to Pin-1	2-Pin Cn., .100 KK Cmp Trm Molex 08-50-0113

Playfield OPTO Transmitter / Receiver Amplifier PCB (520-5239-01) Schematic



Playfield OPTO Transmitter/Receiver Amplifier PCB (520-5239-01-ASY) Component Layout & Parts

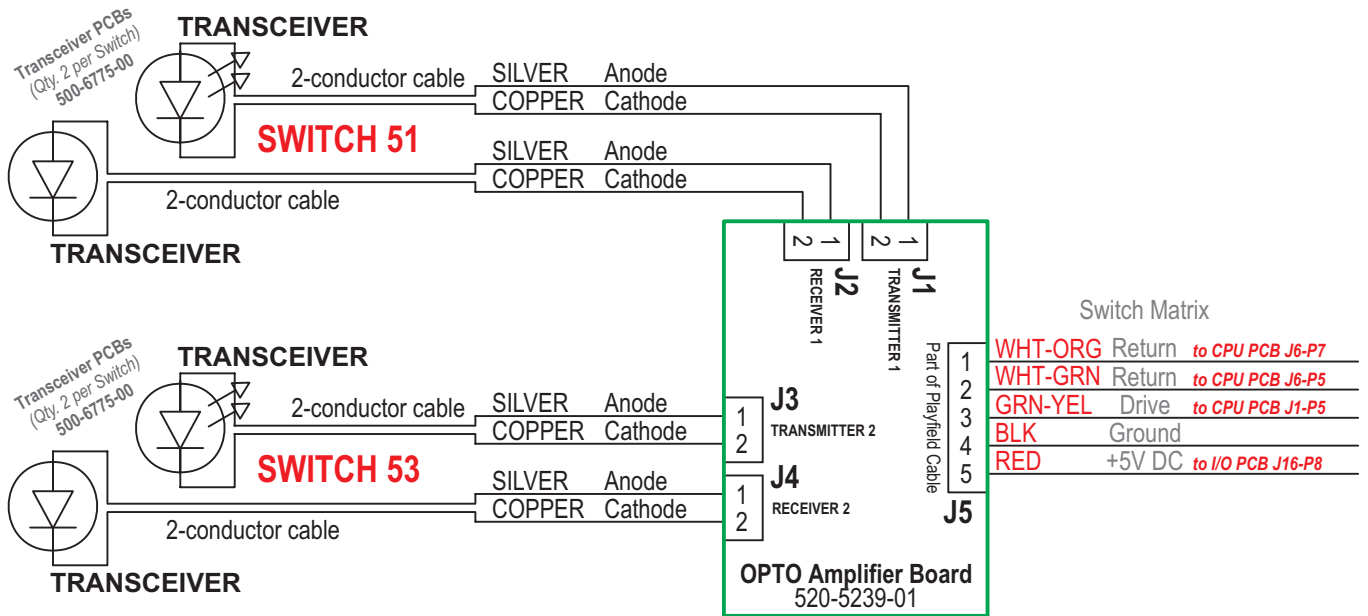
(for OPTO Switches 51 & 53)



ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
1	1	520-5239-01-ASY	OPTO Transmitter/Receiver Amplifier PCB	(incl. Items 1-14 + Item 15 spacers) Resistor SMT 805, 150K Ω 1/10W 5%
2	2		R7	Resistor SMT 805, 180 Ω 1/10W 5%
3	1		R5, R6	Resistor SMT 805, 180K Ω 1/10W 5%
4	4		R9	Resistor SMT 805, 180K Ω 1/10W 5%
5	4		R1, R3, R12, R13	Resistor SMT 805, 1K Ω 1/10W 5%
6	2		R10, R11	Resistor SMT 805, 1M Ω 1/10W 5%
7	2		R2, R4	Resistor SMT 805, 470 Ω 1/10W 5%
8	1		R8	SResistor SMT 805, 6.8K Ω 1/10W 5%
9	3		C1, C2, C3	Cap.-SMT Cer. .1uF 50v 10% X7R
10	2		D1, D2	Diode, 1N4148W, 100v, 350MW
11	2		Q1, Q2	Transistor, MMST3904, NPN, 40v, .02A
12	1		U1	LM339M, Low Power Offset QUA
13	4	Mfg. 22-23-2021	J1, J2, J3, J4	Conn. 2-Pin, 0.1 Header (1 Row, VT, Tin)
14	1	Mfg. 640445-5	J5	Conn. 5-Pin, .156 Header (1 Row, VT, Tin)
15	2	Mfg. APT3216SURC	L1, L2	LEDD-SMT, Red 1206
	4	254-5007-02	corners	Spacer, 1/4" Sif. Rtn. (.153" ID X 9/32" OD X 3/8")

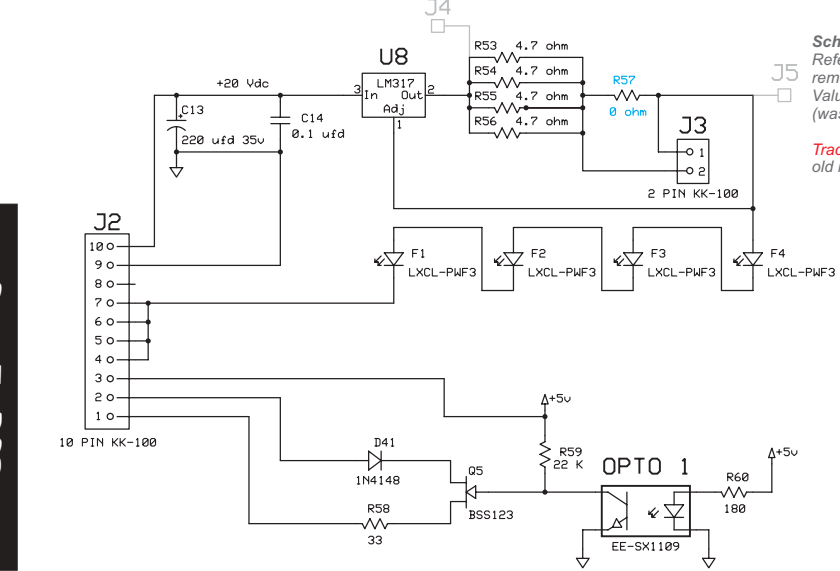
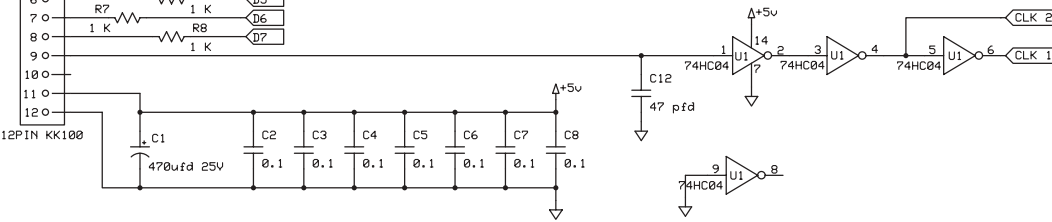
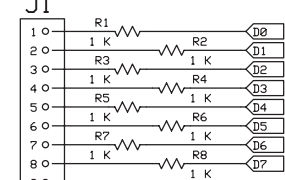
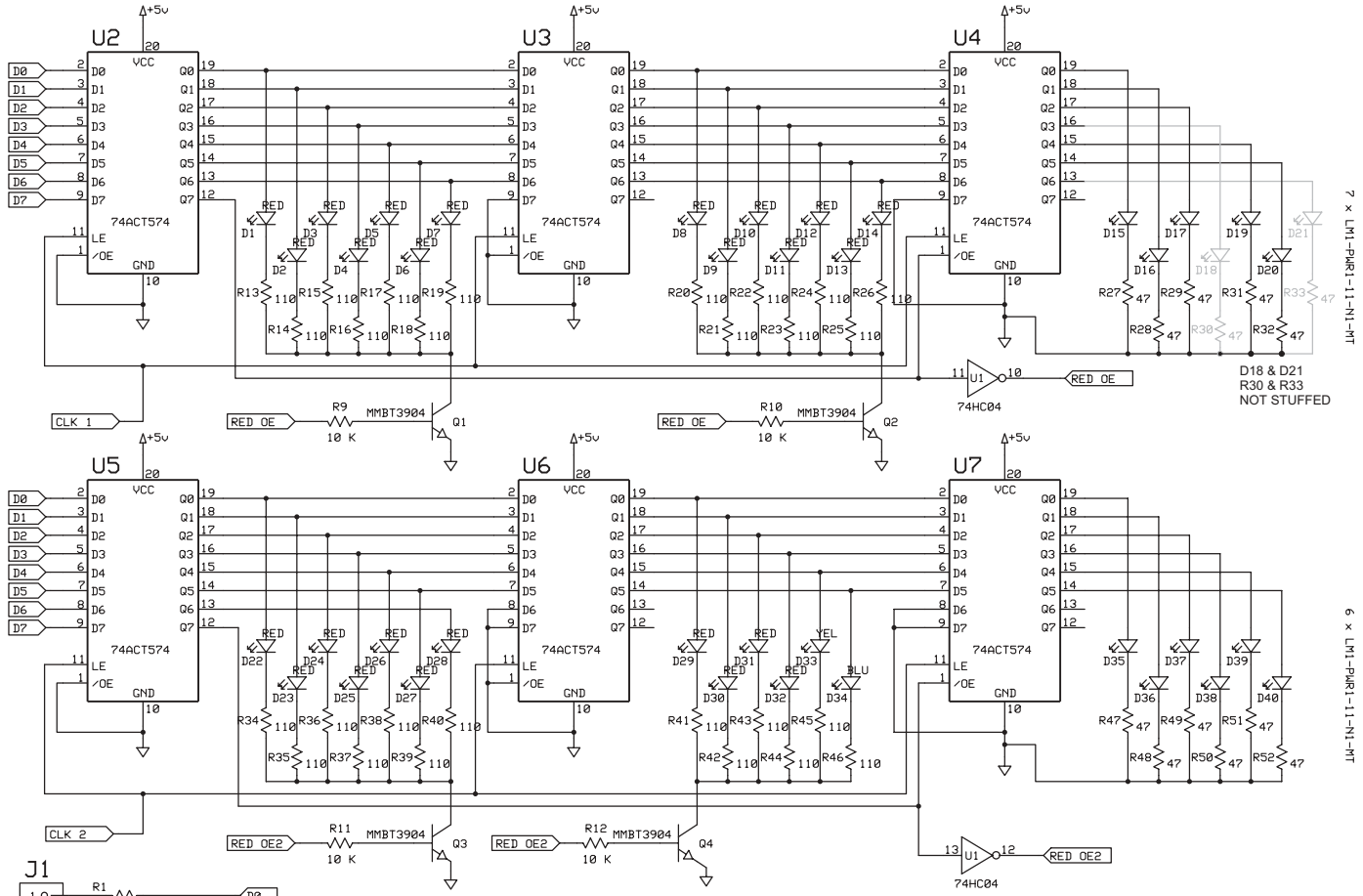
Playfield OPTO Transmitter/Receiver Amplifier PCB (520-5239-01) Wiring (General)

(OPTO Switches 51 & 53)



Sec. 5: PCBs

Wheel LED & OPTO PCB (520-5283-00) Schematic



AUXILLARY OUTPUTS

STROBE DATA	BRN/WHT	GRN/WHT
ORG/BRN	WHEEL PCB DATA 0 B1	DISPLAY PCB DATA 0 C1
ORG/RED	WHEEL PCB DATA 1 B1	DISPLAY PCB DATA 1 C1
ORG/BLK	WHEEL PCB DATA 2 B2	DISPLAY PCB DATA 2 C2
ORG/YEL	WHEEL PCB DATA 3 B3	DISPLAY PCB DATA 3 C3
ORG/GRN	WHEEL PCB DATA 4 B4	DISPLAY PCB DATA 4 C4
ORG/BLU	WHEEL PCB DATA 5 B5	DISPLAY PCB DATA 5 C5
ORG/IO	WHEEL PCB DATA 6 B6	DISPLAY PCB DATA 6 C6
ORG/GRY	WHEEL PCB DATA 7 B7	DISPLAY PCB DATA 7 C7

Schematic Only Update
 Reference to J4 & J5 Test Pads removed.
 Value changed to R57 0 ohm (was 10 ohm).
 Trace line removed between old reference points (J4 & J5).

Sec. 5: PCBs



Wheel LED & OPTO PCB (520-5283-00) Wiring

Connects to Coil cable	1	ORG	+18V DC
	2	BLK-BRN	Coil Drive 25

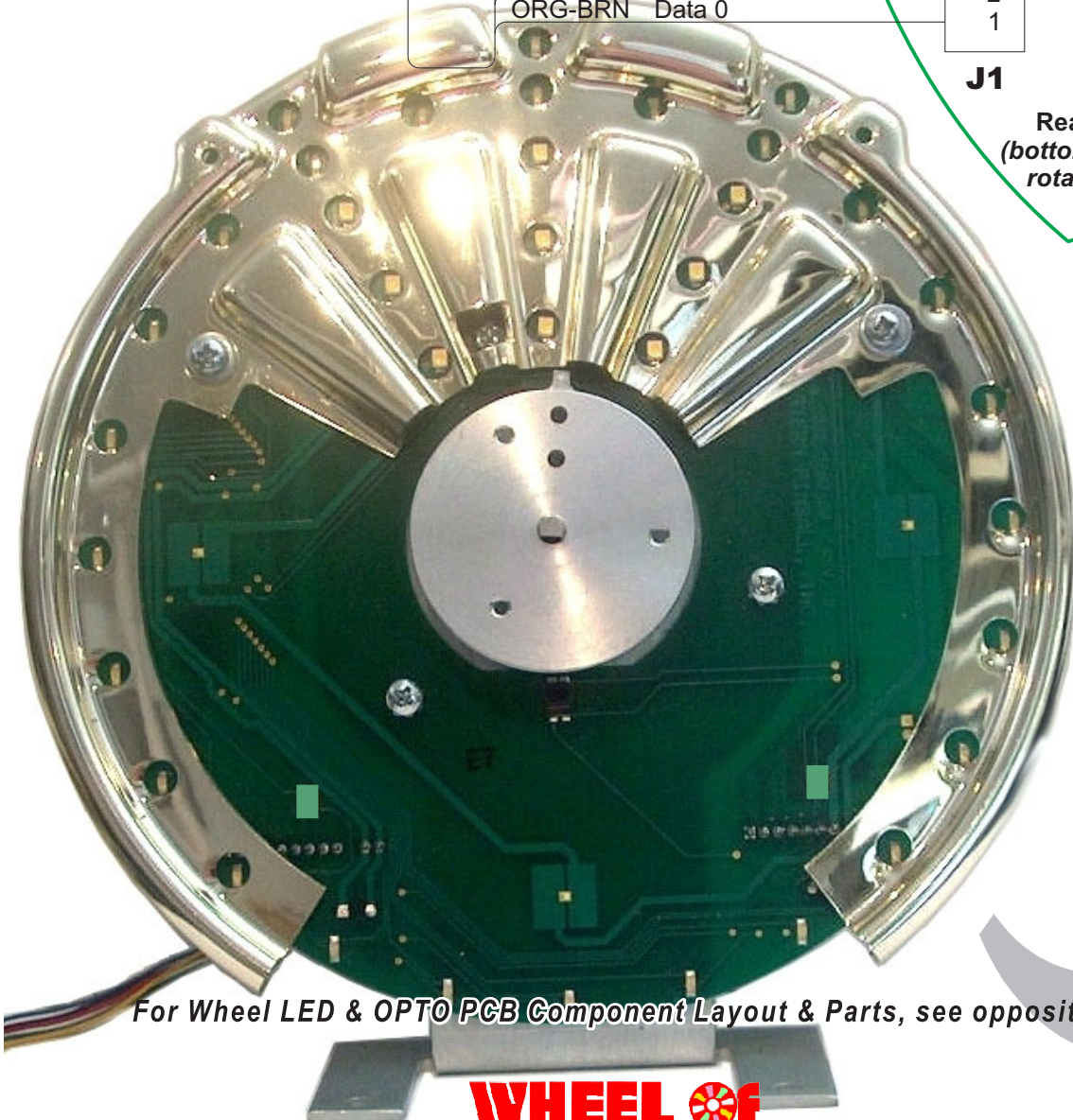
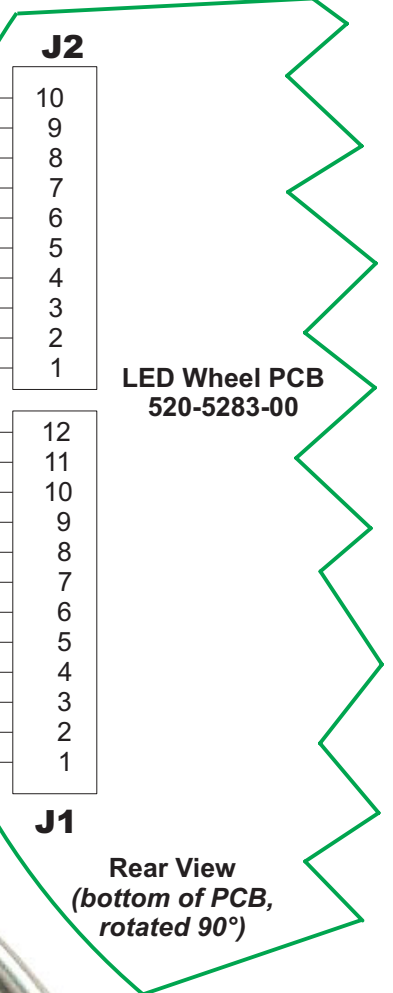
Connects to Switch cable	1	RED	+5V DC
	2	BLK	Ground
	3	BRN-WHT	Clock 2
	4	KEY	
	5	TAN-VIO	Switch +
	6	GRN-ORG	Switch -

Connects to Switch cable	1	ORG-BRN	Data 0
	2	ORG-RED	Data 1
	3	ORG-BLK	Data 2
	4	ORG-YEL	ORG-YEL
	5	ORG-GRN	ORG-GRN
	6	ORG-BLU	ORG-BLU
	7	ORG-VIO	ORG-VIO
	8	ORG-GRY	ORG-GRY
	9	KEY	

Wheel Mech Cable
036-5525-09-98

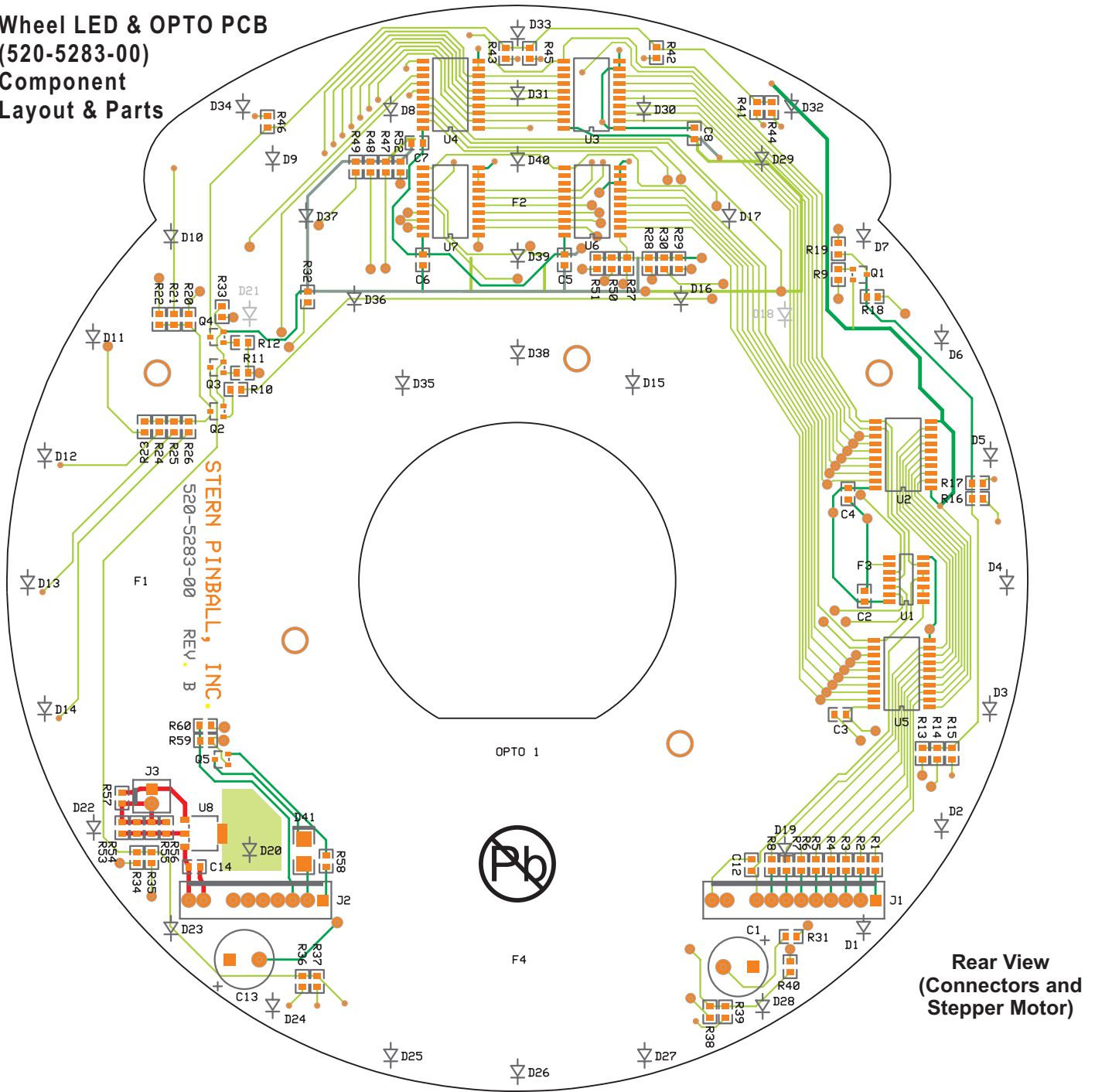
ORG	+18V DC
BLK	Ground
	KEY
BLK-BRN	Coil Drive 25
BLK-BRN	Coil Drive 25
BLK-BRN	Coil Drive 25
BLK-BRN	Coil Drive 25
RED	+5V DC
TAN-VIO	Switch +
GRN-ORG	Switch -

BLK	Ground
RED	+5V DC
	KEY
BRN WHT	Clock 2
ORG-GRY	Data 7
ORG-VIO	Data 6
ORG-BLU	Data 5
ORG-GRN	Data 4
ORG-YEL	Data 3
ORG-BLK	Data 2
ORG-RED	Data 1
ORG-BRN	Data 0



For Wheel LED & OPTO PCB Component Layout & Parts, see opposite pages.

**Wheel LED & OPTO PCB
(520-5283-00)
Component
Layout & Parts**



**Rear View
(Connectors and
Stepper Motor)**

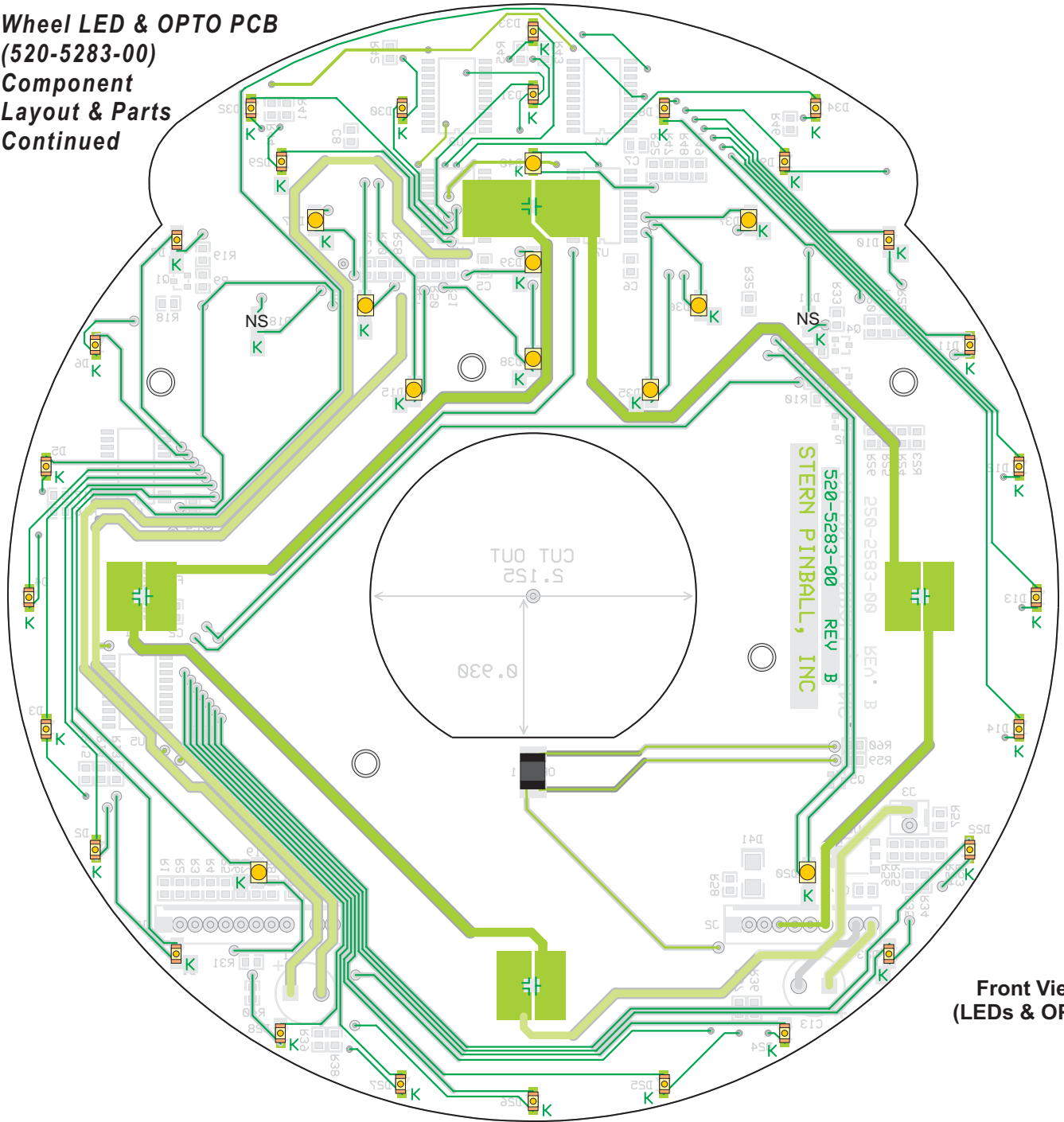
ITEM	QTY.	SPI PART NR.	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
>>>15-30					
1	1	520-5283-00		Wheel LED & OPTO PCB	Complete PCB Assembly
1	1	121-6017-00	(101-0001790)	R57	Resistor SMT 0805, 0.0 Ω 5%
2	4	121-6020-00	(101-0001827)	R9, R10, R11, R12	Resistor SMT 0805, 10K 5%
3	27		(101-0001833)	R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46	Resistor SMT 0805, 110 Ω 5%
4	1		(101-0001897)	R60	Resistor SMT 0805, 180 Ω 5%
5	8	121-6022-00	(101-0001905)	R1, R2, R3, R4, R5, R6, R7, R8	Resistor SMT 0805, 1K Ω 5%
6	1		(101-0001949)	R59	Resistor SMT 0805, 22K Ω 5%
7	1	121-6024-00	(101-0002009)	R58	Resistor SMT 0805, 33 Ω 5%
8	4		(101-0002044)	R53, R54, R55, R56	Resistor SMT 0805, 4.7 Ω 5%
9	13	121-6014-00	(101-0002065)	R27, R28, R29, R30, R31, R32, R33, R47, R48, R49, R50, R51, R52	Resistor SMT 0805, 47 Ω 5%
10	7	125-6001-00	(121-0000056)	C2, C3, C4, C5, C6, C7, C8	Capacitor SMT 0805, CER .1uF 50V 10% X7R
11	1	125-6016-00	(121-0004245)	C12	Capacitor SMT 0805, CER 47pF 50V 5% NPO
12	1		(131-0003867)	C1	Cap.-THT Radial Alum 470uF 25V 20% 85
13	1		(134-0005898)	C13	Cap.-THT Radial Alum 220uF 35V 20% 105C
14	1		(181-0004347)	D41	Diode SMT Miniflex DL/LL4148 100V 500mW

If a part is required where a part number is not provided, call Technical Support (see back of cover).

Parts List Continued Next Page.



**Wheel LED & OPTO PCB
(520-5283-00)
Component
Layout & Parts
Continued**

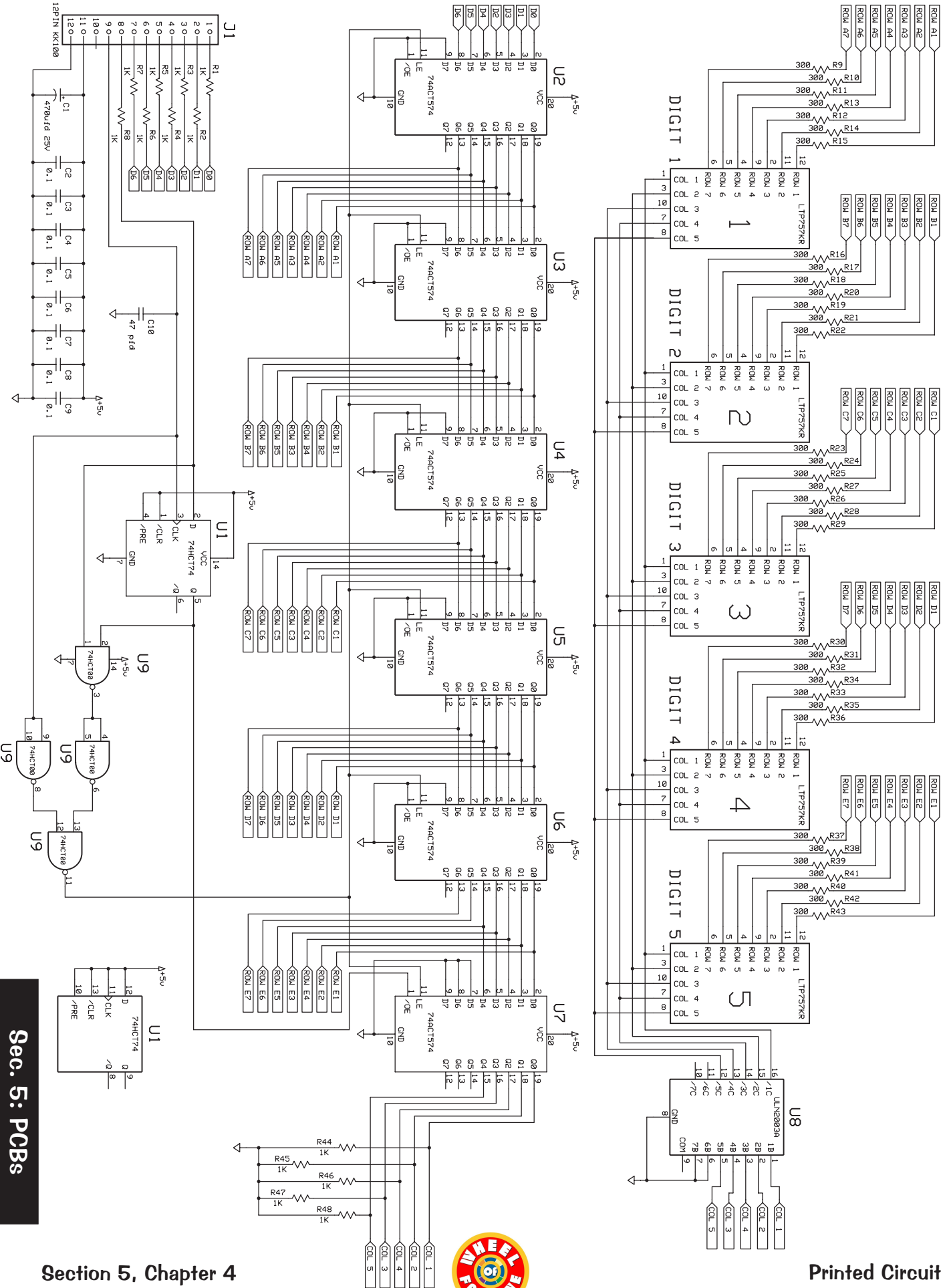


**Front View
(LEDs & OPTO)**

ITEM	QTY.	SPI PART NR.	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
<<< 1-14					
15	4	520-5283-00		Wheel LED & OPTO PCB	Complete PCB Assembly
16	1	110-6002-00	(211-0003589)	Q1, Q2, Q3, Q4	Trans.-SMT MMST/B3904, NPN, 40V, 0.2A SOT-23
17	1		(211-0011181)	Q5	Trans.-SMT BSS123, 100V 6 Ω N-CHAN SOT-23
18	6		(221-0000956)	U1	IC-SMT 74HC04 Hex Inverter SO
19	1		(221-0006048)	U2, U3, U4, U5, U6, U7	IC-SMT 74ACT574 Octal D-Type W/3 SOIC
22	25		(221-0009595)	U8	IC-SMT LM317EMP, 1A 40V Linear SOT-223
			(425-0007678)	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D33	LEDD-SMT Red, 1206, Top
23	1		(425-0010706)	D34	LEDD-SMT Ultrabright Yellow, 1206
24	1		(425-0010805)	D35	LEDD-SMT Blue, 1206, Top
25	4		(425-0015679)	F1, F2, F3, F4	LEDD-SMT Superbright LXCL-PWF3
26	11		(425-0015681)	D15, D16, D17, D19, D20, D21, D35, D36, D37, D38, D39, D40 (NS=NOT STUFFED D18, D21)	LEDD-SMT White 1210, LM1-PWR1-11-N1-MT
27	1	112-6004-00	(429-0015680)	OPTO1	LEDO-SMT 3mm Horz. Slotted opto EE-SX11091
21	1		(315-0004125)	J1	Connector, 12-Pin KK100 Hdr. 1-Row, VT, Tin, .1"
20	1		(315-0003429)	J2	Connector, 10-Pin Kk100 Hdr. 1-Row, VT, Tin, .1"
29	1			J3	Connector, 2-Pin KK-100

If a part is required where a part number is not provided, call Technical Support (see back of cover).

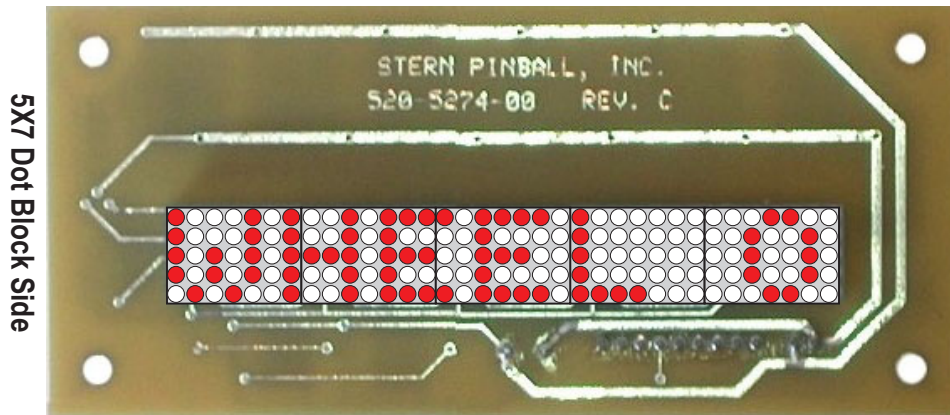
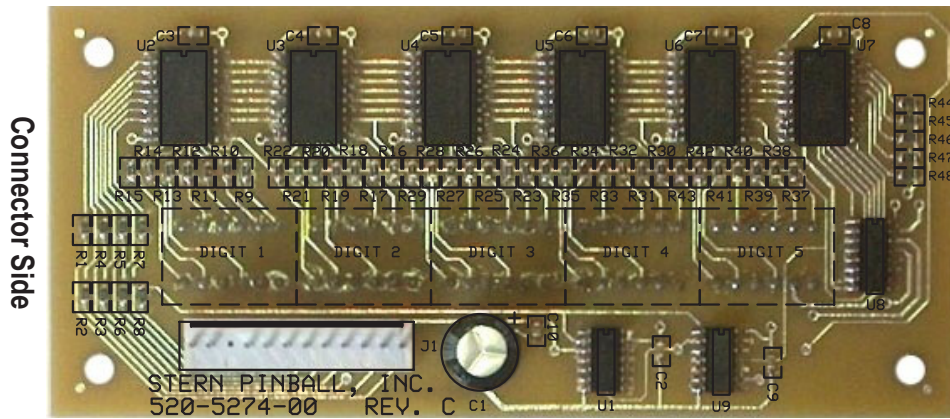
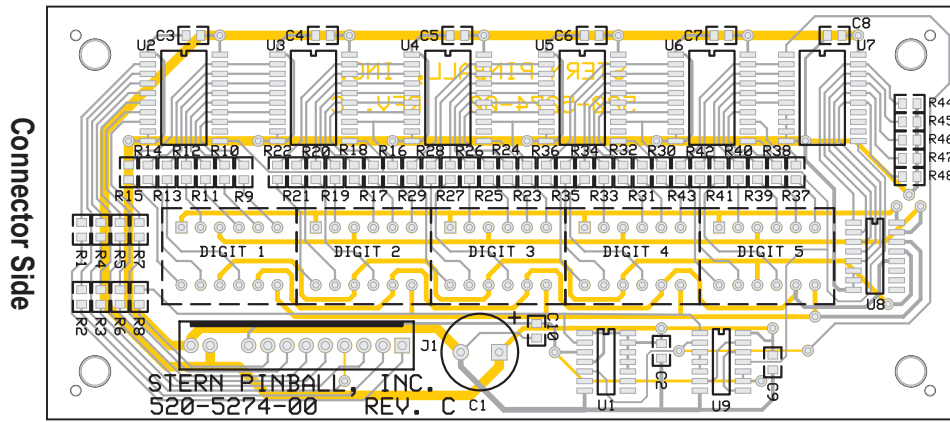
Playfield Mini-Dot Display (5X7) X5 PCB (520-5274-00) Schematic



Sec. 5: PCBs



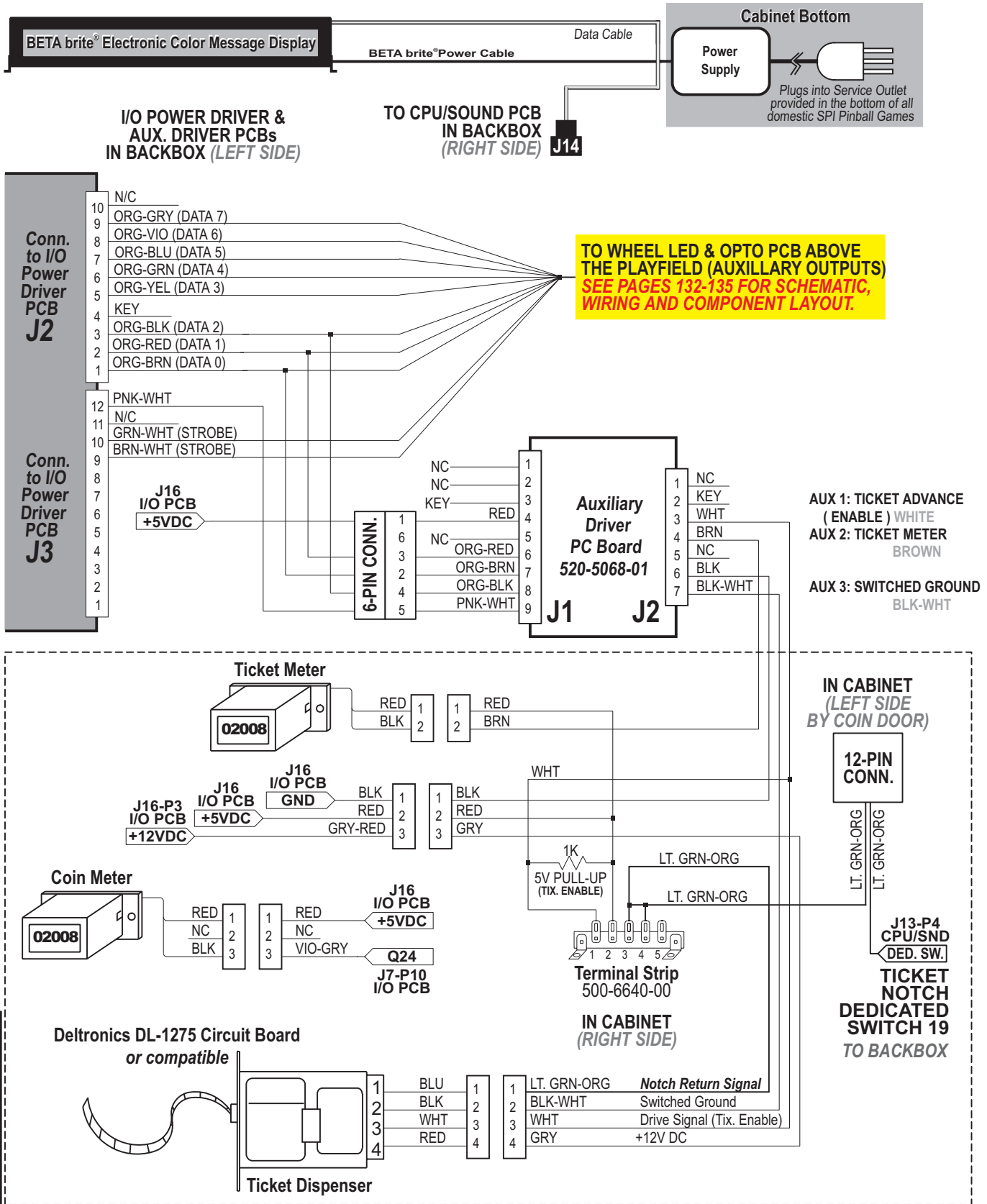
Playfield Mini-Dot Display (5X7) X5 PCB (520-5274-00) Component Layout & Parts



ITEM	QTY.	SPI PART NR.	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
—	1	520-5274-00		P/F Mini-Dot Display (5X7) X5 PCB	Complete PCB Assembly
1	13	121-6022-00	(101-0001905)	R1, R2, R3, R4, R5, R6, R7, R8, R44, R45, R46, R47, R48	Resistor SMT 0805, 1K Ω 5%
2	35		(101-0001997)	R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43	Resistor SMT 0805, 300 Ω 5%
3	8	125-6001-00	(121-0000056)	C2, C3, C4, C5, C6, C7, C8, C9	Capacitor SMT 0805, CER .1UF 50V 10% X7R
4	1	125-6016-00	(121-0004245)	C10	Capacitor SMT 0805, CER 47PF 50V 5% NPO
5	1		(131-0003867)	C1	Cap.-THT Radial Alum 470uF 25V 20% 85
6	1		(221-0005340)	U8	IC-SMT, ULN2003, 16-Pin SO
7	6		(221-0006048)	U2, U3, U4, U5, U6, U7	IC-SMT, 74ACT574 Octal D-Type W/3 SOIC
8	1		(221-0006853)	U1	IC-SMT, 74HCT74D, Dual D FLIP/FLOP SOIC
9	1		(221-0010245)	U9	IC-SMT, 74HCT00 SO
10	5	100-5040-01	(428-0015692)	DIGIT1, DIGIT2, DIGIT3, DIGIT4, DIGIT5	LEDA-THT, 5X7 Super Red Dot Block
11	1		(315-0004125)	J1	Connector, 12-Pin KK100 Hdr. 1-Row, VT, Tin, .1"

If a part is required where a part number is not provided, call Technical Support (see back of cover).

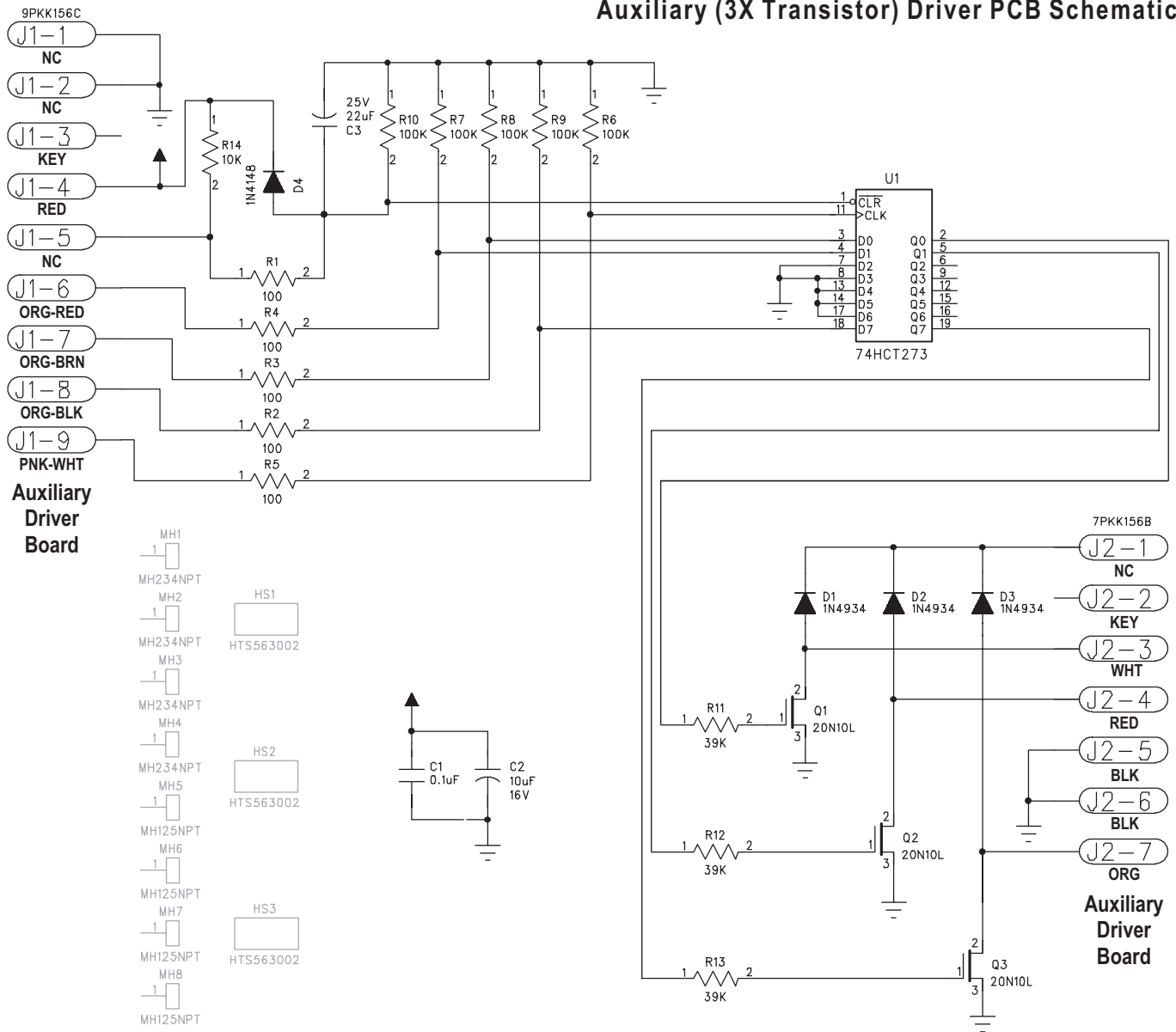
Auxiliary (3X Transistor) Driver PCB (in Backbox) with the Coin/Ticket Meter and Ticket Dispenser Wiring Diagram



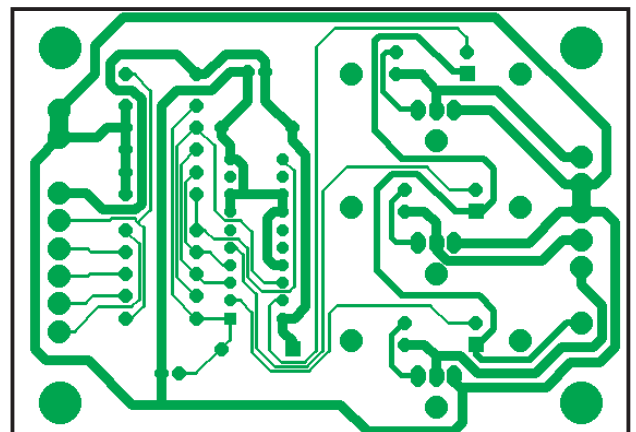
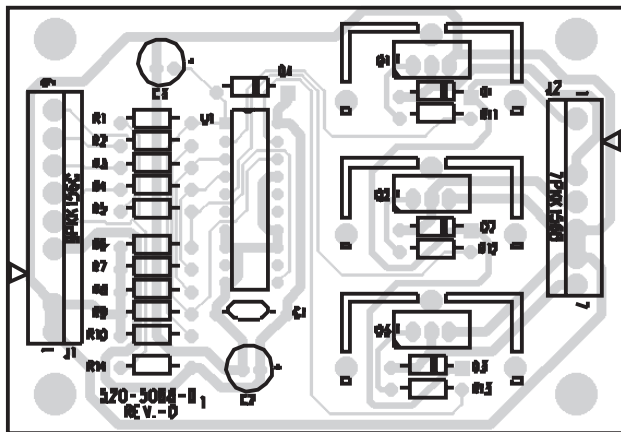
Sec. 5: PCBs



Auxiliary (3X Transistor) Driver PCB Schematic



Auxiliary (3X Transistor) Driver PCB Component Layout



ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION
—	1	520-5068-01	Aux. / Solenoid Expander PCB (x3 Transistor)	Complete PCB Assembly

