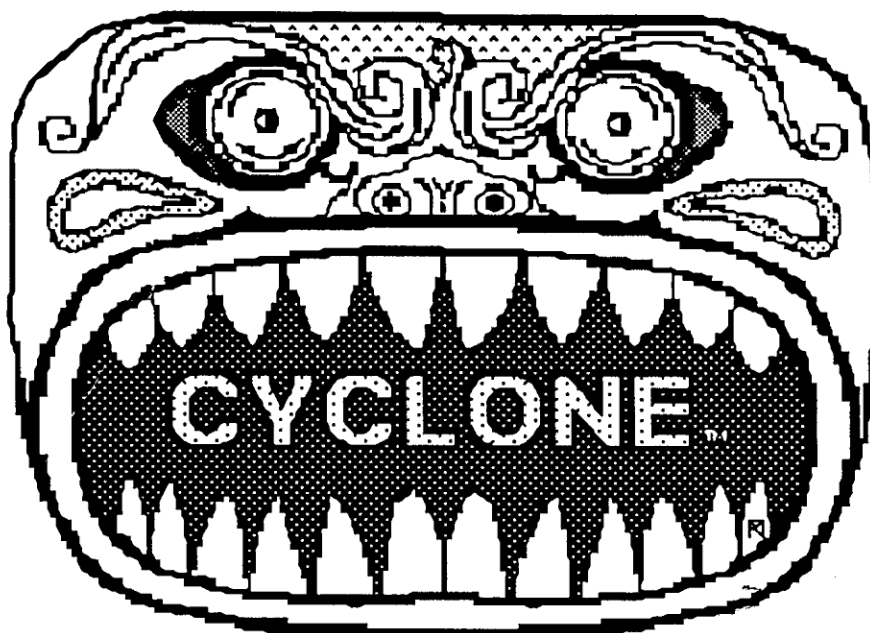


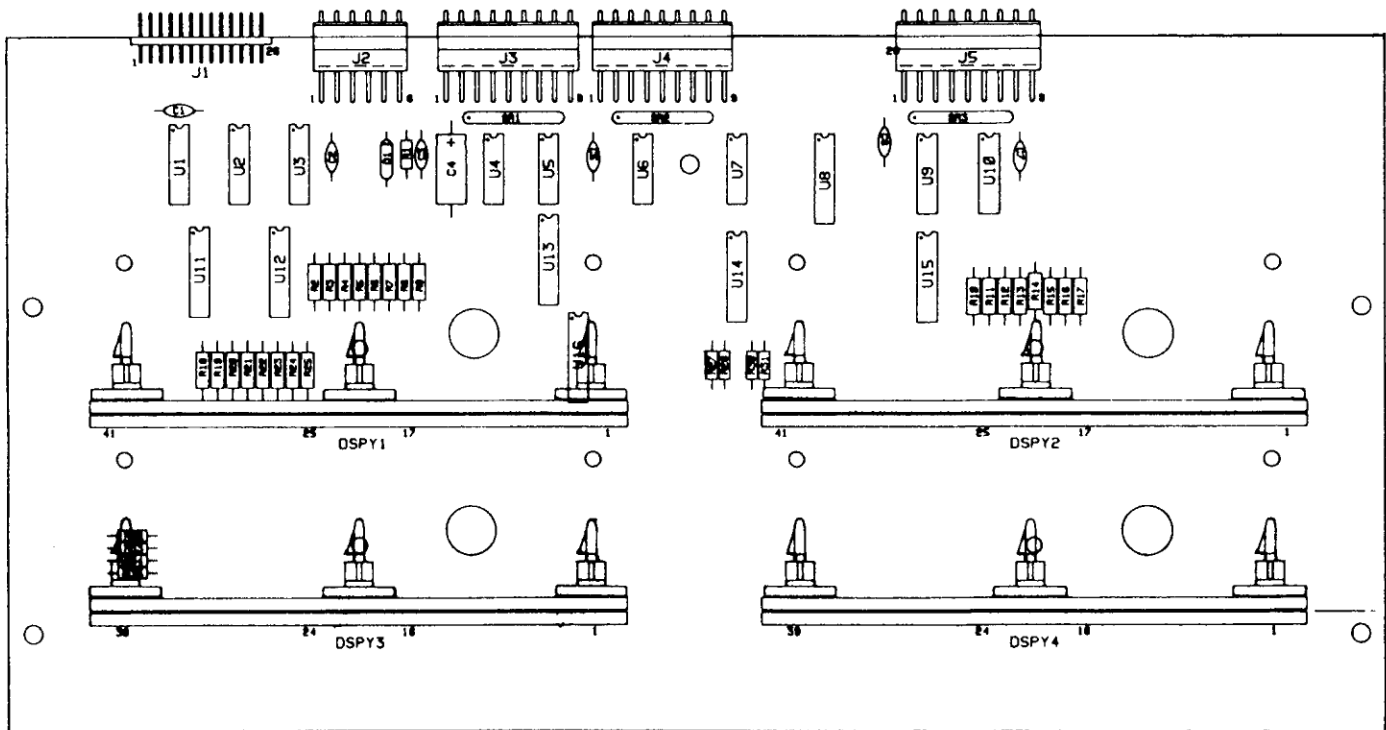


PARTS INFORMATION MANUAL

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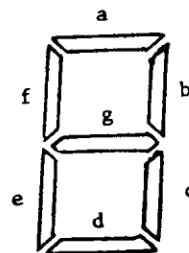
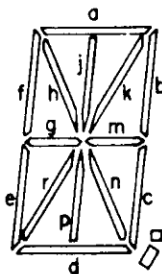
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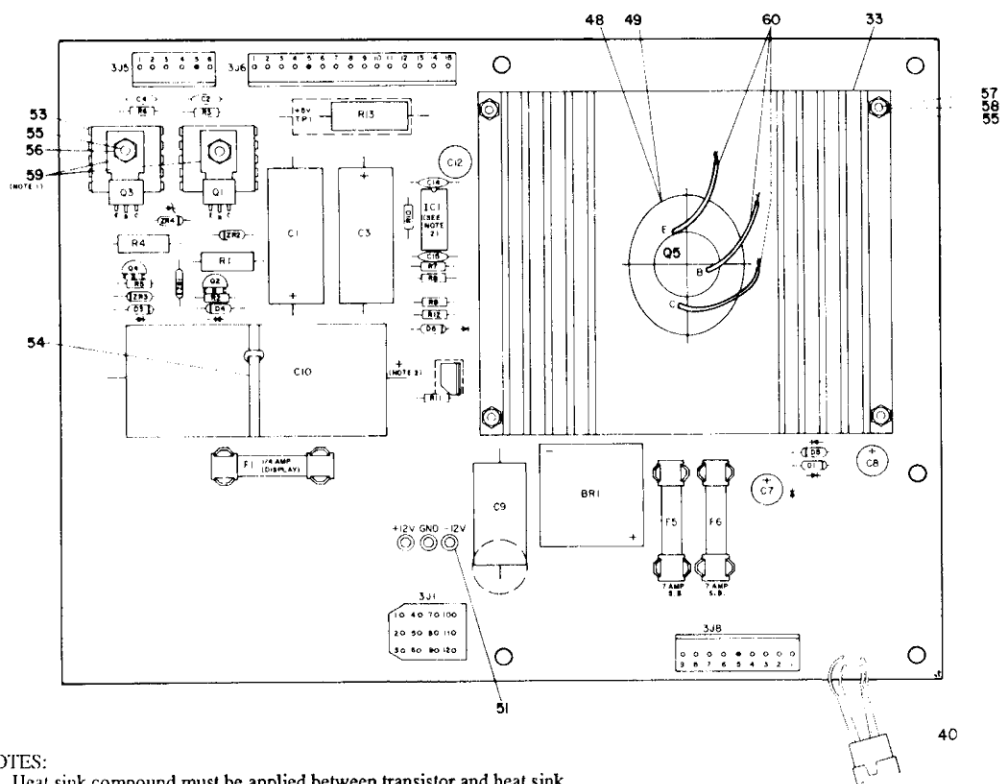
Alphanumeric Display Unit Board

including p/n D-11609 & associated parts

Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5760-12134-00		Bare P. C. Board	5010-08773-00	R1, R2, R8, R20, R23	Resistor, 18 K, 1/4 w, 5%
5680-08968-00	U8, U13, U14, U16	IC, Anode/Digit Driver, UDN6118A or 6184	5010-10927-00	R4, R6, R18, R19, R21, R22, R24, R25	Resistor, 8.2 K, 1/2 w, 5%
5310-09882-00	U4 - U7	IC, Quad NOR, 4001B	5010-10258-00	R27, R28, R30 - R35	Resistor, 1 M, 1/4 w, 5%
5680-08969-00	U11, U12, U15	IC, Cathode Seg. Driver, UDN7180A	5010-08981-00	R3, R5, R7, R9, R10, R12 - R17	Resistor, 10 K, 1/2 w, 5%
5310-09153-00	U1 - U3, U9, U10	IC, Hex Buffer, 4050	5010-08772-00	R11	Resistor, 15 K, 1/4 w, 5%
5075-09135-00	D1	Zener diode, 1N4740A, 10V, 1 w	5670-10873-00	DSPY1, DSPY2	Display, 7-character, A/N
5040-09343-00	C4	Capacitor, 10 μ d., 25v, $\pm$ 5%, Axial	5670-09439-00	DSPY3, DSPY4	Display, 7-character, 7-segment
5043-08996-00	C3	Capacitor, 0.1 μ d., 50v, $\pm$ 20%, Axial	5791-10851-00	J1	Connector, 26 pin (Hdr), Rt. Angle
5043-08980-00	C1, C2, C5 - C7	Capacitor, 0.01 μ d., 50v, Axial	5791-10869-06	J2	Connector, 6 pin (Hdr), Rt. Angle
5019-10387-00	SR1 - SR3	SIP, 18 K, 9R, 10P, 5%	5791-10869-09	J3 - J5	Connector, 9 pin (Hdr), Rt. Angle
			03-8088-1	Support	Support, Display



Display Characters Segment Designations

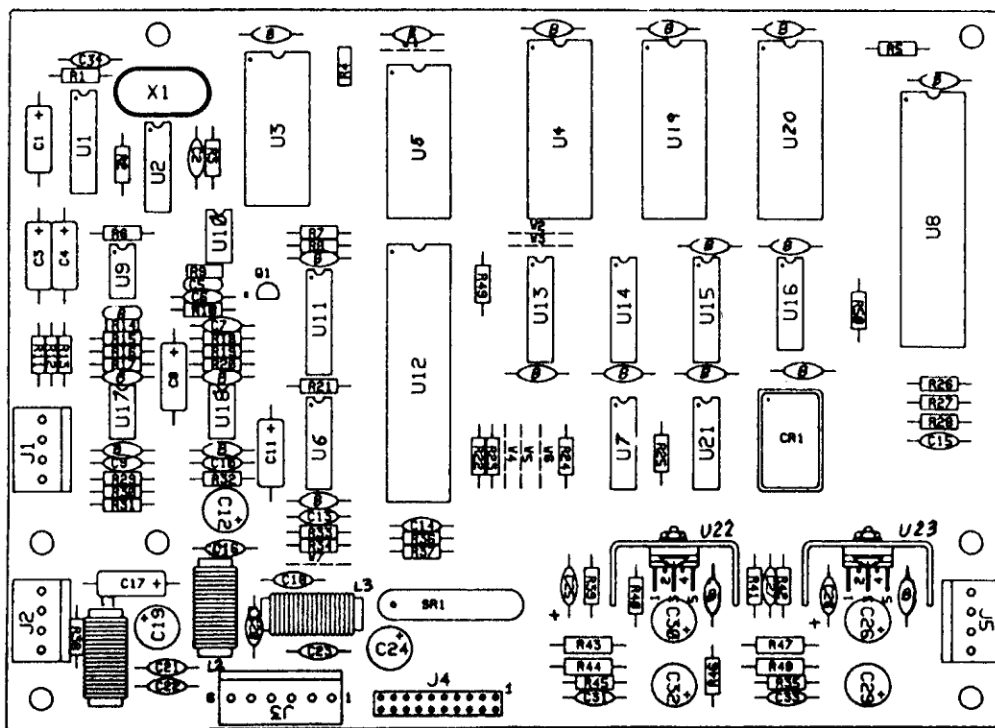


NOTES:

1. Heat sink compound must be applied between transistor and heat sink.
2. Observe index mark on integrated circuit, polarity of capacitors and diodes, and position of transistors.
3. The view of Q5 and its related heat sink and hardware is from the bottom of the heatsink, to clarify installation.

Power Supply p/n D-8345-557

Item	Part No.	Ckt Designator	Description	Item	Part No.	Ckt Designator	Description
1	5765-09466-01		Bare P. C. Board	28	5164-12154-00	Q1	Transistor, MJE15030, NPN
2	5013-09426-00	R7	Resistor, 2.15K, 1%, 1/4w, Metal Film	29	5164-09056-00	Q4	Transistor, MPSD02, NPN
3	5013-09427-00	R8	Resistor, 4.99K, 1%, 1/4w, Metal Film	30	5194-12155-00	Q3	Transistor, MJE15031, PNP
4	5010-09428-00	R11	Resistor, 1.5K, 2%, 1/4w, C. Film	31	5194-09055-00	Q2	Transistor, MPSD52, PNP
5	5010-09085-00	R10	Resistor, 1.5K, 5%, 1/4w	32	5162-09425-00	Q5	Transistor, 2N6057, NPN
6	5010-09541-00	R9	Resistor, 2.7K, 2%, 1/4w	33	Not Used		
7	5010-09508-00	R12	Resistor, 270Ω, 2%, 1/4w, C. Film	34	5791-09074-00	3J6	Connector, 15 pin (Hdr)
8	5012-09429-00	R13	Resistor, 0.12Ω, 5%, 5w	35	5791-09027-00	3J8	Connector, 9 pin (Hdr)
9	5010-09536-00	R1, R4	Resistor, 39K, 5%, 1w	36	Not Used		
10	5010-09061-00	R2, R5	Resistor, 680Ω, 2w	37	5791-09067-00	3J5	Connector, 6 pin (Hdr)
11	5010-09069-00	R3, R6	Resistor, 330K, 5%, 1/2w	38	Not Used		
12	5040-09419-00	C10	Capacitor, 18,000 mfd, electr, 20v, axial	39	Not Used		
13	5040-09420-00	C9	Capacitor, 1000 mfd, electr, 25v, axial or radial	40	H-11065	3J9	Cable/Connector Assembly
14	5040-09423-00	C12	Capacitor, 330 mfd, electr, 10v, radial	a)	5791-09400-00		Connector shell
15	5043-09065-00	C15	Capacitor, 470 pfd	b)	5820-09080-00		Connector pin
16	5040-09053-00	C1, C3	Capacitor, 100 mfd, electr, 150v	41	5791-09068-00	3J1	Connector, 12 pin (Hdr)
17	Not Used			42	5321-09178-00		Fuseholder
18	5043-09072-00	C2, C4	Capacitor, 0.1 mfd, 500v, disc	43	5731-08761-00	F1	Fuse, 1/4A, 250v, S-B
19	5043-09446-00	C14	Capacitor, 0.1 mfd, 50v, disc	44	Not Used		
20	5070-06258-00	D1, D5, D6	Diode, 1N4001	45	Not Used		
21	5070-09054-00	D3, D4	Diode, 1N4004	46	Not Used		
22	5075-09059-00	ZR1, ZR3	Zener, 1N5990, 3.9v, 5%	47	Not Used		
23	5075-09060-00	ZR2, ZR4	Zener, 1N4764, 100v, 5%	48	5700-09445-00		Socket
24	5460-09424-00	IC1	IC, Volt. Reg., MC1723C	49	5701-09652-00		Mica Insulator
25	Not Used			50	Not Used		
26	5040-09421-00	C7	Capacitor, 100 mfd, 25v, radial	51	5824-09428-00	TP2 - TP4	Terminal, #1502-1 (Test Post)
27	5040-09422-00	C8	Capacitor, 47 mfd, 50v, radial	52	5100-09418-00	BR1	Bridge Rectifier, 35A, 100V
				53	5705-09042-00		Heat Sink
				54	03-7947		Tie Wrap
				55	4005-01016-07		Mach. Screw, 5-40 x 7/16, RH
				56	Not Used		
				57	4701-00023-00		Lockwasher, #5, split
				58	4405-01117-00		Hex Nut, 5-40
				59	20-9229		Heat sink Thermal Compound
				60	Not Used		
				61	5731-09342-00	F6, F5	Fuse, 7A, 250V, S-B



Audio Board Assembly

p/n D-11581-564

Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5766-12130-00		Bare P. C. Board	5013-09427-00	R13	Resistor, 4.99K, 1/4w, 1%
5731-11087-00	U1	IC, D/A Conv, YM3012	5010-09086-00	R16	Resistor, 6.8K, 1/4w, 5%
a) 5700-09006-00		Socket, IC, 16-pin (U1)	5010-09034-00	R14, R15, R17, R22 - R24, R34	Resistor, 10K, 1/4w, 5%
5730-11086-00	U3	IC, Sound Processor, YM2151	5010-08772-00	R18	Resistor, 15K, 1/4w, 5%
a) 5700-09004-00		Socket, IC, 24-pin (U3)	5010-09324-00	R6, R19 - R21, R38	Resistor, 27K, 1/4w, 5%
5400-10320-00	U8	IC, μ Processor, MC68B09E	5010-09342-00	R30	Resistor, 36K, 1/4w, 5%
a) 5700-08985-00		Socket, IC, 40-pin (U8)	5010-08824-00	R32	Resistor, 43K, 1/4w, 5%
A-5343-564-5	U4	IC, Audio ROM 1	5010-09162-00	R39	Resistor, 100K, 1/4w, 5%
A-5343-564-6	U19	IC, Audio ROM 2	5010-09333-00	R29	Resistor, 180K, 1/4w, 5%
a) 5700-10176-00		Socket, IC, 28-pin (U4, U19, U20)	5010-08846-00	R31	Resistor, 220K, 1/4w, 5%
5371-09152-00	U11	IC, D/A Convtr, MC1408	5010-10258-00	R40	Resistor, 1M, 1/4w, 5%
5430-10322-00	U12	IC, PIA, MC68B21	5010-09179-00	R10	Resistor, 3.3M, 1/4w, 5%
5340-09878-00	U5	IC, RAM, 2016	5040-09365-00	C11	Capacitor, 1 μ fd, 10v; +50, -10%
5281-09487-00	U7, U16	IC, Dual D Flipflop, 74LS74	5040-09343-00	C1, C3, C4, C8, C17	Capacitor, 10 μ fd, 20v, $\pm$ 20%
5281-10043-00	U13	IC, 74LS175	5040-10974-00	C12, C19, C24	Capacitor, 100 μ fd, 35v
5281-09235-00	U21	IC, Triple NAND, 74LS10	5040-09776-00	C26, C30	Capacitor, 470 μ fd, 16v; +50, -10%
5370-09321-00	U9, U10, U17, U18	IC, Op Amp, MC1458	5040-12006-00	C29, C32	Capacitor, 1000 μ fd, 16v, 20%
5281-09215-00	U2	IC, Hex Inv, 74LS04	5041-09243-00	C25, C28	Capacitor, 10 μ fd, 10v, $\pm$ 10%
5281-09246-00	U14	IC, 2-4 Dec, 74LS139	5043-08980-00	C5, B (21)*	Capacitor, 0.01 μ fd, 50v, +80, -20%
5281-09745-00	U15	IC, Dual Mux, 74LS138	5043-08996-00	C31, 33	Capacitor, 0.1 μ fd, 50v, $\pm$ 20%
5370-09156-00	U22, U23	IC, Audio Amp, TDA2002	5043-09065-00	C13 - C15	Capacitor, 470 pfd, 50v, $\pm$ 20%
a) 5705-09199-00		Heatsink, #6030B	5043-09492-00	C2, C34	Capacitor, 100 pfd, 50v, $\pm$ 10%
b) 4006-01003-06		6-32 x 3/8 P-PH-S	5043-09844-00	C6	Capacitor, 47 pfd, 50v, $\pm$ 20%
c) 4406-01117-00		6-32 Hexnut	5043-09845-00	C16, C18, C20 - C23, C27	Capacitor, 1000 pfd, 50v, $\pm$ 20%
d) 4703-00007-00		#6 Ext. Lockwasher	5046-09346-00	C7	Capacitor, 1200 pfd, 50v, $\pm$ 5%
5370-09691-00	U6	IC, CVSD, 55536	5046-09348-00	C10	Capacitor, 4700 pfd, 50v, $\pm$ 5%
5160-10269-00	Q1	Transistor, 2N3904, NPN	5046-09350-00	C9	Capacitor, 180 pfd, 100v, $\pm$ 5%
5060-10396-00	SR1	SIP 4.7K & 470pfd, 8R8C	5520-09020-00	X1	Crystal, 3.58 MHz
5010-09181-00	R44, R48	Resistor, 1.0 Ω , 1/2w, 5%	5521-10931-00	CR1	Oscillator, 8 MHz
5010-09161-00	R35, R45	Resistor, 2.2 Ω , 1/4w, 5%	5551-09822-00	L1 - L3	Inductor, 4.7 μ H, 3A
5010-09361-00	R43, R46, R47	Resistor, 220 Ω , 1/2w, 5%	5791-09437-00	J4	Connector, 20 pin, (Hdr), Ribbon Cable
5010-09358-00	R41, R42	Resistor, 1K, 1/4w, 5%	5791-10862-04	J1, J2, J5	Connector, 4 pin (Hdr)
5010-08998-00	R2, R3, R12	Resistor, 2.2K, 1/4w, 5%	5791-10862-06	J3	Connector, 6 pin (Hdr)
5010-08983-00	R7 - R9	Resistor, 3.3K, 1/4w, 5%			
5010-08991-00	R1, R4, R5, R11, R25 - R28, R33, R36, R37, R49, R50	Resistor, 4.7K, 1/4w, 5%			

Notes: * 21 capacitors (shown on diagram with "B" symbol) provide +5VDC filtering for ICs.

All capacitors are ceramic, 50v, axial, unless otherwise noted.

All resistors are 5%, 1/4w, Carbon Film, unless otherwise noted.

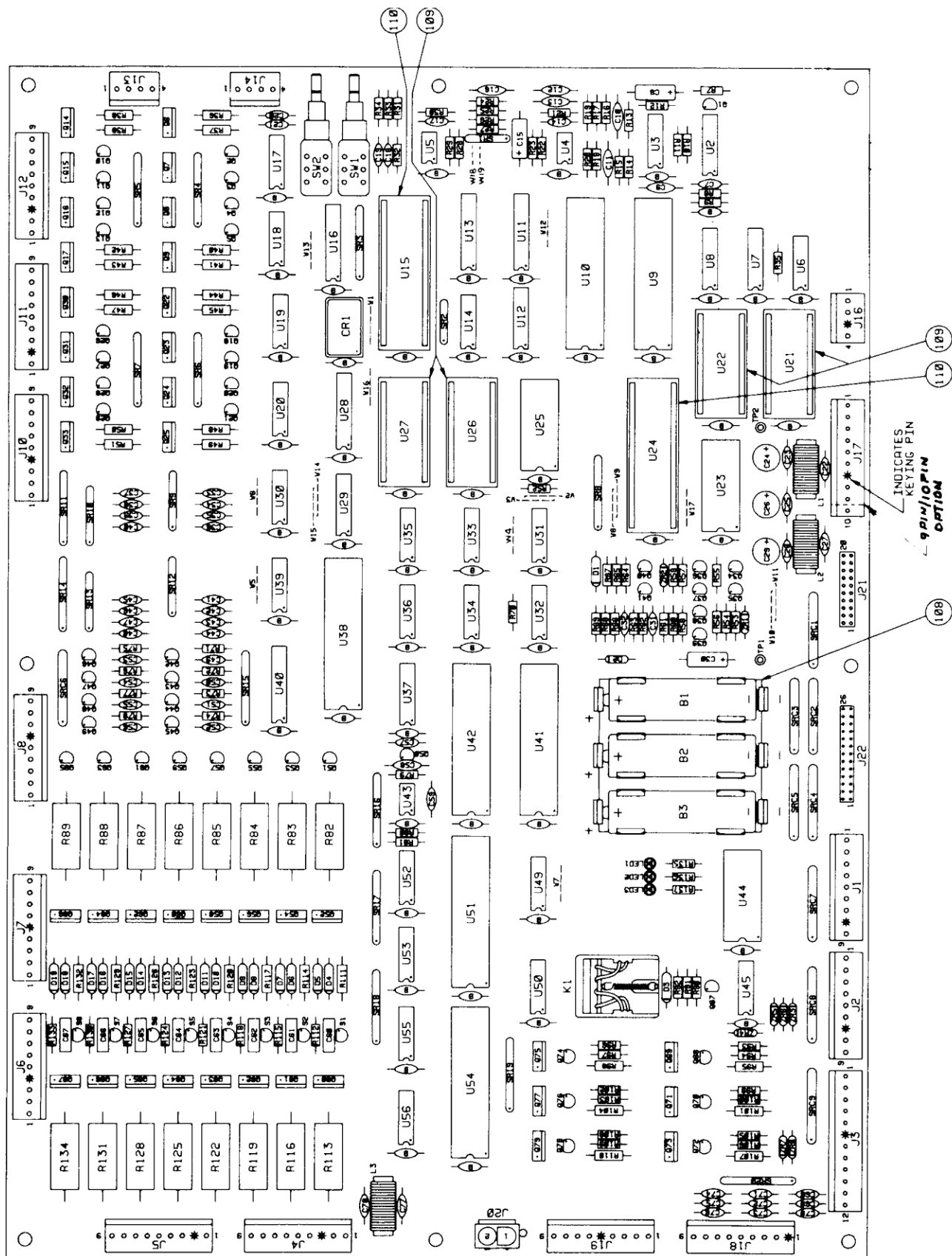
System 11B CPU Board

p/n D-11883-564

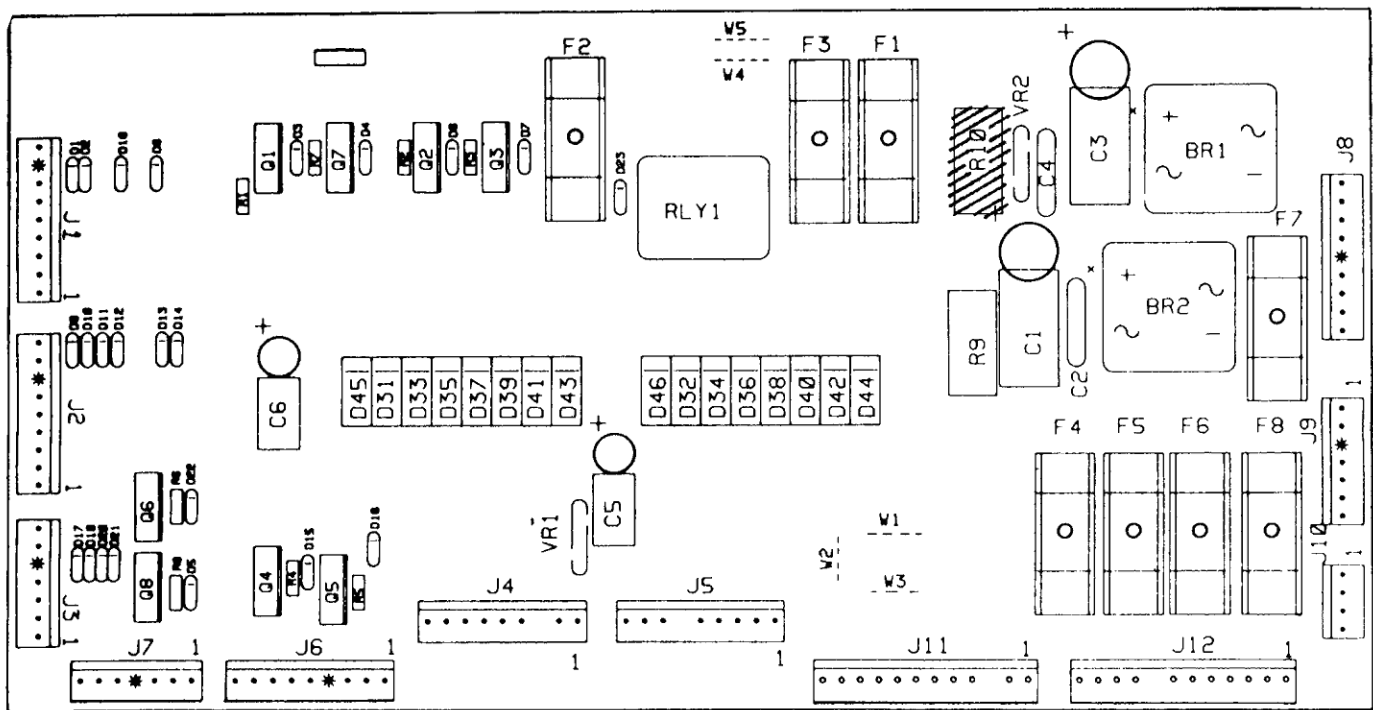
Item	Part No.	Ckt Designator	Description	Item	Part No.	Ckt Designator	Description
1	5764-12206-00		Bare P. C. Board	63	5010-10171-00	R67	Resistor, 56Ω, 5%, 1/4w, C. F.
2	5370-09691-00	U3	IC, CVSD Mod., 55536	64	5010-10170-00	R69	Resistor, 47Ω, 5%, 1/4w, C. F.
3	5370-09321-00	U4, U5	IC, Dual Op Amp, 1458	65	5010-09160-00	R59, R61, W12, W13	Resistor, 220Ω, 5%, 1/4w, C. F.
4	5281-09308-00	U16	IC, Octal Bus Xcvr, 74LS245	66	5010-09416-00	R33, R34, R135-137	Resistor, 470Ω, 5%, 1/4w, C. F.
5	5430-08972-00	U9, U10, U38, U41, U42, U51, U54	IC, PIA, MC6820/6821	67	5010-09179-00	R9	Resistor, 3.3MΩ, 5%, 1/4w, C. F.
6	5340-10139-00	U25	IC, 2K x 8 CMOS Static RAM	68	5010-09085-00	R71-R78	Resistor, 1.5KΩ, 5%, 1/4w, C. F.
7	5280-09010-00	U44	IC, 4-16 Decoder, 74154	69	5010-10361-00	R111, R114, R117, R120, R123, R126, R129, R132	Resistor, 1.2KΩ, 5%, 1/2w, C. F.
8	5281-09246-00	U7, U8, U12	IC, 2-4 Decoder, 74LS139	70	Not Used		
9	5075-09406-00	ZR3 - ZR8	Diode, Zener, 6.2v, 0.5w	71	Not Used		
10	Not Used			72	5010-09120-00	R17	Resistor, 270KΩ, 5%, 1/4w, C. F.
11	5281-09487-00	U6	IC, Dual D Flip-flop, 74LS74	73	5010-09333-00	R15, R16, R18	Resistor, 180KΩ, 5%, 1/4w, C. F.
12	5431-09449-00	U43	IC, Timer, MC1455	74	5010-09324-00	R29, R30	Resistor, 27KΩ, 5%, 1/4w, C. F.
13	5010-09236-00	U29	IC, 14-b Counter, 4020	75	5010-09269-00	R20, R21	Resistor, 12KΩ, 5%, 1/4w, C. F.
14	5281-09743-00	U32	IC, Quad 2-Input AND, 74LS08	76	5010-09356-00	R27, R28	Resistor, 820Ω, 5%, 1/4w, C. F.
15	5281-09247-00	U14	IC, Quad 2-Input NOR, 74LS02	77	5019-09783-00	SR18	SIP, 9R, 10-pin, 6.8KΩ, .125w/R, 5%
16	5281-09235-00	U35	IC, Triple 3-Input NAND, 74LS10	78	5019-09362-00	SR3, SR15, SR17, SR19, SR20	SIP, 9R, 10-pin, 4.7KΩ, .125w/R, 5%
17	5280-09013-00	U36	IC, Hex Inverter, 7404	79	5019-09808-00	SR4, SR6, SR11	SIP, 9R, 10-pin, 560Ω, .125w/R, 5%
18	5281-09499-00	U31, U34	IC, Quad 2-Input NAND, 74LS00	80	5019-09785-00	SR16	SIP, 9R, 10-pin, 2.2KΩ, .125w/R, 5%
19	5281-10014-00	U33	IC, Dual 4-Input NAND, 74LS20	81	5019-10472-00	SR14	SIP, 9R, 10-pin, 3.3KΩ, .125w/R, 5%
20	5281-09486-00	U28	IC, Octal D Flip-flop, 74LS374	82	5019-09669-00	SR8	SIP, 9R, 10-pin, 1.0KΩ, .125w/R, 5%
21	5371-09152-00	U2	IC, D/A Converter, MC1408	83	5019-09780-00	SR9, SR10	SIP, 4R, 8-pin, 1KΩ, 5%
22	5281-09745-00	U37	IC, 3-8 Decoder, 74LS138	84	5019-09786-00	SR1, SR2	SIP, 5R, 6-pin, 4.7KΩ, .125w/R, 5%
23	5340-09878-00	U23	IC, 2K x 8 Static RAM, 2016	85	5019-09792-00	SR5, SR7	SIP, 9R, 10-pin, 2.7KΩ, .125w/R, 5%
24	Not Used			86	5060-10396-00	SRC1 - SRC5, SRC7 - SRC9	SIP, 8R, 8C, 10-pin, 4.7KΩ & 470pfd
25	5281-09867-00	U11, U13, U40	IC, Octal Buffer, 74LS244	87	5010-08774-00	R22	Resistor, 22KΩ, 5%, 1/4w, C. F.
26	5280-08973-00	U17-U20, U52, U53	IC, Quad 2-Input AND, 7408	88	5043-08980-00	C14, C17-C21, C31, C32, C49-C56, C59, + 54 Bypass, marked B	Capacitor, 0.01 μfd, 50v(±80,-20%), Axial
27	5280-08974-00	U55, U56	IC, Hex Inverter, 7406	89	5043-09845-00	C22, C23, C25, C27, C28	Capacitor, 1K pfd, 50v(±20%), Axial
28	5310-09155-00	U30, U39	IC, Quad 2-Input NAND, MC1401	90	5043-08996-00	C9, C70-75, C77, C78	Capacitor, 0.1 μfd, 50v(±20%), Axial
29	5280-08948-00	U45, U50	IC, Quad 2-Input NOR, 7402	91	5040-09343-00	C8, C15	Capacitor, 10 μfd, Electr., 20v(±20%), Axial
30	5280-09309-00	U49	IC, Hex Buffer, 7407	92	5043-09844-00	C7	Capacitor, 47 pfd, 50v(±20%), Axial
31	5671-09019-00	LED1-LED3	LED, Red, Display	93	5040-10974-00	C24, C26, C29	Capacitor, 100 μfd, Electr., 25v(±50,-10%), Axial
32	5521-10506-00	CR1	Oscillator, 4 MHz	94	Not Used		
33	5162-08976-00	Q51, Q53, Q55, Q57, Q59, Q61, Q63, Q65	Transistor, NPN Darl. 2N6427, TO-92	95	5045-09796-00	C60-C67	Capacitor, 0.1 μfd, Polycarbonate Rad., 100v(±10%)
34	5191-08978-00	Q52, Q54, Q56, Q58, Q60, Q62, Q64, Q66	Transistor, PNP, TIP42, TO-220	96	5043-09065-00	C33-C40, C68, C69, C76, C10, C12	Capacitor, 470 pfd, 50v(±20%), Axial
35	5162-09410-00	Q6-Q9, Q14-Q17, Q22-Q25, Q30-Q33, Q69, Q71, Q73, Q75, Q77, Q79, Q80-Q87	Transistor, NPN, TIP122, TO-220	97	5040-09545-00	C30	Capacitor, 22 μfd, Electr., 10v(±50,-10%), Axial
36	5160-08938-00	Q2-Q5, Q10-Q13, Q18-Q21, Q26-Q29, Q34-Q38, Q41, Q67, Q68, Q70, Q72, Q74, Q76, Q78	Transistor, NPN, 2N4401, TO-92	98	5041-09031-00	C58	Capacitor, 1 μfd, Tant., 25v(±20%), Axial
37	5160-10269-00	Q1, Q40, Q42-Q49	Transistor, NPN, 2N3904, TO-92	99	5043-09030-00	C16, C57	Capacitor, 0.047 μfd, 50v(±20%), Axial
38	5190-09016-00	Q39, Q50	Transistor, PNP, 2N4403, TO-92	100	Not Used		
39	5130-09014-00	S1-S8	SCR, 30v, 0.8A, 2N5060	101	5043-09492-00	C11	Capacitor, 100 pfd, ceramic, 100v(±20%)
40	5070-06258-00	D3-D19	Diode, 1N4001	102	Not Used		
41	5070-08919-00	D2	Diode, 1N4148, 150mA	103	5048-10992-00	C13	Capacitor, 4700 pfd, ceramic, 50v(±10%)
42	5070-09266-00	D1	Diode, 1N5817, 1.0A	104	5551-09822-00	L1-L3	Inductor, 4.7 μH, 3A
43	5075-09018-00	ZR1	Diode, Zener, 1N5996A, 6.8v, 0.5w	105	5641-09312-00	SW1, SW2	Switch, Pushbutton, DPDT, 100v, 5A
44	5075-09059-00	ZR2	Diode, Zener, 1N5990, 3.9v, 0.5w	106	5880-09022-00	B1-B3	Battery, Alkaline, 1.5v, AA
45	5010-08992-00	R94, R97, R100, R103, R106, R109	Resistor, 560Ω, 5%, 1/4w, C. F.	107	20-9491	W18, W19	Bus Wire, Jumper
46	5010-09039-00	R56	Resistor, 10Ω, 5%, 1/4w, C. F.	108	5881-09021-00		Battery Holder, #171
47	5010-09534-00	W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, W19	Resistor, 0Ω, 5%, 1/4w, C. F.	109	5700-10176-00		IC Socket, 28 pin
48	5010-08991-00	R31, R32, R35, R52, R55, R68, R92, R146	Resistor, 4.7KΩ, 5%, 1/4w, C. F.	a)	A-5343-565-1	U26	IC, Game ROM 2, 27128
49	5010-09358-00	R54, R57, R58, R64, R66, R112, R115, R118, R121, R124, R127, R130, R133, R138-R145	Resistor, 1.0KΩ, 5%, 1/4w, C. F.	b)	A-5343-564-2	U27	IC, Game ROM 1, 27256
50	5010-09113-00	R79	Resistor, 33KΩ, 5%, 1/4w, C. F.	c)	A-5343-564-4	U21	IC, Sound ROM 1, 27256
51	5010-08983-00	R7, R8, R10, R70, R80	Resistor, 3.3KΩ, 5%, 1/4w, C. F.	d)	A-5343-564-3	U22	IC, Sound ROM 2, 27256
52	5010-09034-00	R11-R14, R25, R26, R53, R60, R65, R90	Resistor, 10KΩ, 5%, 1/4w, C. F.	110	5700-08985-00		IC Socket, 40 pin
53	5010-09086-00	R81	Resistor, 6.8KΩ, 5%, 1/4w, C. F.	a)	5400-09150-00	U15	IC, μProcessor, 6802
54	5010-09363-00	R3	Resistor, 5.6KΩ, 5%, 1/4w, C. F.	b)	5400-09150-00	U24	IC, μProcessor, 6802
55	5010-08997-00	R23, R24, R91, R93, R96, R99, R102, R105, R108	Resistor, 2.7KΩ, 5%, 1/4w, C. F.	111	5824-09248-00	TP1, TP2	Test Point
56	5012-09037-00	R113, R116, R119, R122, R125, R128, R131, R134	Resistor, 0.4Ω, 5%, 3w, Wire-Wnd.	112 - 115	Not Used		
57	5010-08993-00	R36-R51, R95, R98, R101, R104, R107, R110	Resistor, 68Ω, 5%, 1/2w, C. F.	116	Not Used		
58	5012-10860-00	R82-R89	Resistor, 27Ω, 5%, 2w, C. F.	117	5580-08994-01	K1	Relay, 4-pole, 40Ω, 6v
59	Not Used			118	5791-10862-00	1J1, 1J2, 1J4-1J8, 1J10-1J12, 1J17-1J19	Connector, 9 pin (Hdr)
60	Not Used			119	5791-10862-04	1J13, 1J14, 1J16	Connector, 4 pin (Hdr)
61	5010-10987-00	R19	Resistor, 56KΩ, 5%, 1/4w, C. F.	120	5791-10862-12	1J3	Connector, 12 pin (Hdr)
62	5010-10003-00	R62, R63	Resistor, 390Ω, 5%, 1/4w, C. F.	121	Not Used		
				122	5791-10850-00	1J22	Connector, 26 pin Ribbon (Hdr)
				123	5791-09437-00	1J21	Connector, 20 pin Ribbon (Hdr)

NOTES:

- For Schematic, refer to drawing #16-9019.
- Items 56 and 58 (resistors) must be mounted 1/8" above PCB surface.
- Standard Jumper: W1, W2, W4, W5, W7, W8, W11, W14, W16, W17.

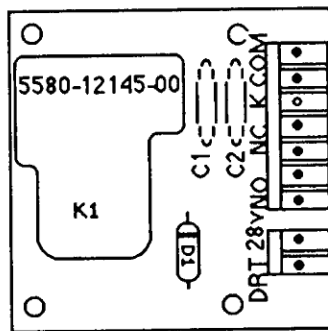


System 11B CPU Board (D-11883) Parts Information



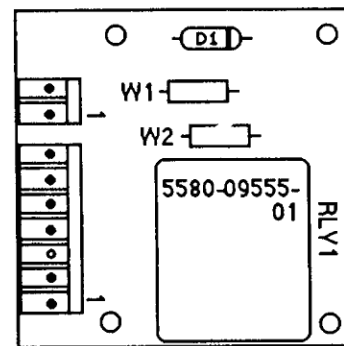
Aux Power Driver Unit Board
p/n D-11813-552

Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5760-12184-00		Bare P. C. Board	5070-09045-00	D31 - D46	Diode, MR501
5040-09537-00	C1, C3	Capacitor, 100 μ fd., 100v, Radial	5191-12179-00	Q1 - Q8	Transistor, TIP36C
5040-12181-00	C5, C6	Capacitor, 10 μ fd., 100v, Radial	5580-09555-01	K1	Relay, DPDT, 13A
5043-09072-00	C2, C4	Capacitor, 0.1 μ fd., 500v	5733-12060-01		Fuseholder
5010-09160-00	R1 - R8	Resistor, 220 Ω , 1/4w C.F., 5%	5733-08665-00	F1, F3 - F6	Fuse, 2A, S-B, 250v
5012-09874-00	R9	Resistor, 3.3K, 5w, 5%	5733-09651-00	F2, F8	Fuse, 5A, S-B, 250v
5010-09534-00	W1, W3, W4	Resistor, 0 Ω , 1/4w	5733-06314-00	F7	Fuse, 4A, S-B, 250v
5017-12180-00	VR1	Varistor, 100v	5791-10862-09	J1, J2, J4 - J6, J8	Connector, 9-pin Hdr, Sq Pin
5017-09064-00	VR2	Varistor, 47v	5791-10862-07	J3, J7, J9	Connector, 7-pin Hdr, Sq Pin
5100-09690-00	BR1, BR2	Bridge Rectifier, 35A, 200v	5791-10862-12	J11, J12	Connector, 12-pin Hdr, Sq Pin
5070-08785-00	D1 - D23	Diode, 1N4003	5791-10862-04	J10	Connector, 4-pin Hdr, Sq Pin



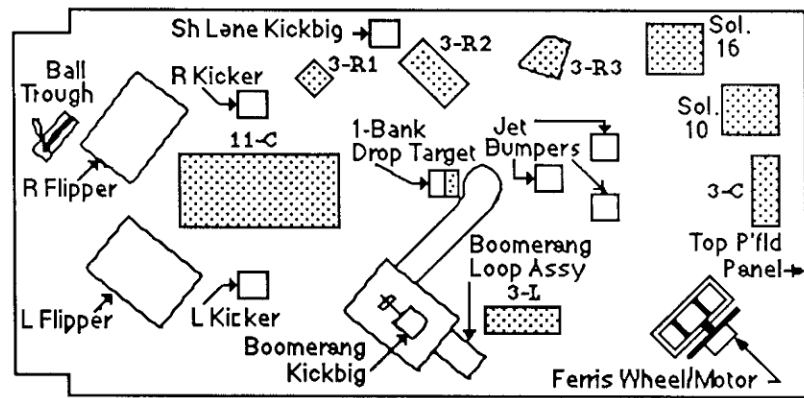
Motor Relay Board Assembly
p/n C-11902-1

Part No.	Description
5768-12221-00	PC Board
5070-09054-00	Diode, 1N4004, 1.0A
5580-12145-00	Relay, 24vdc, 30A
5791-12273-02	Header, 2-pin sq post (J1)
5791-12273-07	Header, 7-pin sq post (J2)



Gen Illum Relay Board Assembly
p/n C-11998-1

Part No.	Description
5768-12243-00	PC Board
5070-09054-00	Diode, 1N4004, 1.0A (D1)
5580-09555-01	Relay, 24vdc, 30A (K1)
5010-09534-00	Resistor, 0 Ω (W1, W2)
5791-12273-02	Header, 2-pin sq post (J1)
5791-12273-07	Header, 7-pin sq post (J2)



(underside of playfield)

Locations: { **Playfield Circuit Boards**  **Major Mechanisms** 

(Left to right from ball trough area)

C-11626-R-4	Lower Right Flipper Assembly	C-11866	3-Lamp PC Bd ("3-R2")
C-11626-L-4	Lower Left Flipper Assembly	C-11212-2	1-Bank Drop Target
B-9463	Right Kicker	C-11903-R	1-b Drop Target Opto Assembly
D-11999	11-Lamp PC Bd ("11-C")	C-11866	3-Lamp PC Bd ("3-L")
B-9463	Left Kicker	C-12004	3-Lamp PC Bd ("3-R3")
C-12005	3-Lamp PC Bd ("3-R1")	B-9414-1/B9415-1	Jet Bumper(s)/Coil(s)
B-11051-R	Shooter Lane Kickbig	C-11902-1	F. Wheel Relay PC Bd (Sol. 16)
B-11052	Kickbig Mounting Assembly	C-11900	Ferris Wheel /Motor Assembly
B-11051-R	Boomerang Kickbig	C-11998-1	Relay PC Bd (Sol. 10)
B-11052	Kickbig Mounting Assembly	C-12000	3-Lamp PC Bd ("3-C")
B-11984	Boomerang Loop Assembly	D-12047	Top Playfield Lamp PC Bd

3-Lamp PC Board (3-R1) Assembly

p/n C-12005

Part No.	Description
5768-12247-00	PC Board
24-8767	Twist Lamp Socket
24-8768	Bulb, #555 (6.3v, .25A)
5070-09054-00	Diode, 1N4004
5791-10871-05	Header, 5-pin sq post

3-Lamp PC Board (3-R2 & 3-L) Assembly

p/n C-11866

Part No.	Description
5768-12200-00	PC Board
24-8767	Twist Lamp Socket
24-8768	Bulb, #555 (6.3v, .25A)
5070-09054-00	Diode, 1N4004
5791-10871-05	Header, 5-pin sq post

3-Lamp PC Board (3-R3) Assembly

p/n C-12004

Part No.	Description
5768-12246-00	PC Board
24-8767	Twist Lamp Socket
24-8768	Bulb, #555 (6.3v, .25A)
5070-09054-00	Diode, 1N4004
5791-10871-05	Header, 9-pin sq post

3-Lamp PC Board (3-C) Assembly

p/n C-12000

Part No.	Description
5768-12245-00	PC Board
24-8767	Twist Lamp Socket
24-8768	Bulb, #555 (6.3v, .25A)
5070-09054-00	Diode, 1N4004
5791-10871-05	Header, 5-pin sq post (J1)

**Top P'fld Panel
PC Board Assembly**
p/n D-12047
(part of B-12038 Back Panel Assy)

Part No.	Description
5768-12271-00	PC Board
24-8767	Twist Lamp (#555) Socket
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
24-8803	Twist Lamp (#906) Socket
24-8802	Flashlamp, #906 (13v, 0.69A)
5791-10871-07	Header, 7-pin sq post (J1)
5791-10871-04	Header, 4-pin sq post (J2)

**11-Lamp PC Board
(11-C) Assembly**
p/n D-11999

Part No.	Description
5768-12244-00	PC Board
24-8767	Twist Lamp Socket
24-8768	Bulb, #555 (6.3v, .25A)
5010-09534-00	Resistor, 0 Ω , 1/4w
5070-09054-00	Diode, 1N4004
5791-10871-10	Header, 10-pin sq post

**Insert Board 14-Lamp
("CYCLONE")
PC Board Assembly**
p/n D-12099

Part No.	Description
5768-12289-00	PC Board
24-8804	V-wedge Lamp (#555) Socket
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-04	Header, 4-pin sq post (J1)

**Insert Board
8-Lamp (Jackpot)
PC Board Assembly**
p/n D-12098

Part No.	Description
5768-12288-00	PC Board
24-8804	V-wedge Lamp (#555) Socket
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-10	Header, 10-pin sq post (J2)

**Insert Board 18-Lamp
(Mystery Wheel)
PC Board Assembly**
p/n D-12093

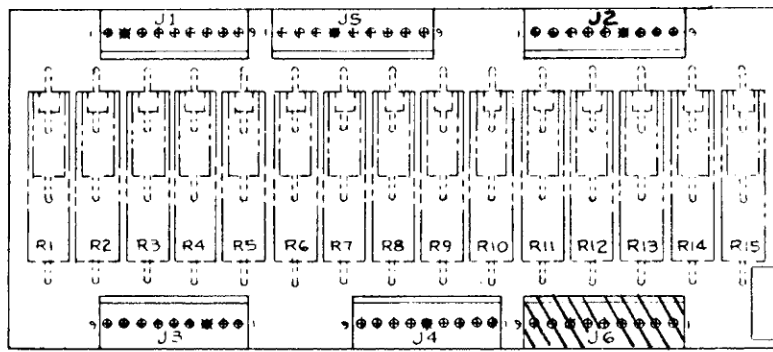
Part No.	Description
5768-12284-00	PC Board
24-8804	V-wedge Lamp (#555) Socket
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-12	Header, 12-pin sq post (J1)

**Backbox Interconnect
PC Board Assembly**
p/n C-11762-564

Part No.	Description
5768-12165-00	PC Board
5791-10862-04	Header, 4-pin (J1, J3, J5)
5791-10862-07	Header, 7-pin (J4)
5791-10862-12	Header, 12-pin (J2, J6)

**Mystery Wheel Opto Positioner
PC Board Assembly**
p/n D-12045

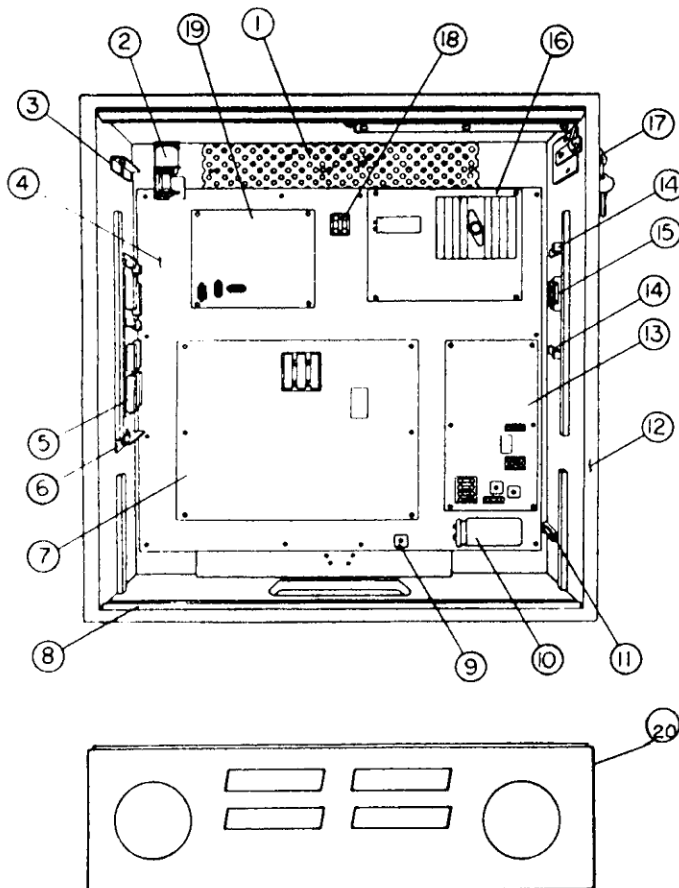
Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5760-12270-00		Bare P. C. Board	5010-08998-00	R1 - R4	Resistor, 2.2K, 1/4w, 5%, CF
5250-09157-00	U1	IC 7805 Voltage Regulator	5010-09034-00	R5, R6, R9	Resistor, 10K, 1/4w, 5%, CF
5370-12272-00	U2	IC LM339 Quad Comp	5010-08991-00	R7, R8	Resistor, 4.7K, 1/4w, 5%, CF
5490-10159-00	Opto 1	Opto Interruptor Module	5010-08930-00	R10	Resistor, 470 Ω , 1/2w, 5%, CF
5160-08938-00	Q1 - Q4	Transistor, 2N4401	5010-09324-00	R11	Resistor, 27K, 1/4w, 5%, CF
5190-09016-00	Q5 - Q8	Transistor, 2N4403	5010-09356-00	R12	Resistor, 820 Ω , 1/4w, 5%, CF
5190-10270-00	Q9	Transistor, 2N3906	5010-09162-00	R13	Resistor, 100K, 1/4w, 5%, CF
5070-06258-00	D1 - D10	Diode, 1N4001	5791-10871-06	P2	Connector, 6 pin (Hdr)
5070-08919-00	D11	Diode, 1N4148	5791-10871-07	P1	Connector, 7 pin (Hdr)
5075-09059-00	Z1	Zener Diode, 3.9V	5705-09042-00		Heat Sink (U1)
5043-12298-00	C1	Capacitor, 100 μ fd, Electr, 40v (+50%,-10%), Axial	20-9229		Heat Sink Compound
5040-09365-00	C2	Capacitor, 1 μ fd, 10v (+50%,-10%), Axial	4005-01016-07		Mach. Screw, 5-40 x 7/16
5043-08980-00	B	Capacitor, 0.01 μ fd, 50v, Axial	4701-00023-00		Lockwasher, #5 split
			4405-01117-00		Hex Nut, 5-40



Flashlamp Resistor PC Board Assembly

p/n D-11814-564

Part No.	Description
5768-12183-00	PC Board
5010-09534-00	Resistor, 0Ω (R9 - R14)
5012-10023-00	Resistor, 4Ω, 5w, 10% (R1, R4, R5)
5012-10865-00	Resistor, 5Ω, 10w, 10% (R2, R3, R6 - R8)
5012-12163-00	Resistor, 11Ω, 5w, 10% (R15)
5791-10862-09	Header, 9-pin (J1 - J5)



Backbox Parts Listing

Item	Part No.	Description
1	01-6645	Venting Screen
2	B-10686-2	Knocker Assembly
3	A-7984	Upr Insert Bd Hinge Assy
4	D-11825	PCB Plate Assembly
5	C-11762-564*	B'box Interconnect Board
6	A-10815	Lwr Insert Bd Hinge Assy
7	D-11883-564*	System 11B CPU Board
8	01-8569	Lwr Spkr Panel Bracket
9	5100-09418-00	Bridge Rectifier, 100v, 35A
10	5040-09051-00	Capacitor, 30,000 μFd, 25V
11	5733-10702-01	Fuse Holder, 1-Pos
a)	5730-09071-00	Fuse, 8A., N-B, 32v
12	11-858-564	Backbox
13	D-11813-564*	Aux. Pwr Driver Board
14	01-8084	Insert Stop Bracket
15	5733-10702-04	Fuse Holder, 4-Pos
a)	5731-09631-00	Fuse, 5A., S-B, 250v
16	D-8345-557*	Power Supply Assembly
17	20-9549	Cam Lock
18	5733-10702-02	Fuse Holder, 2-Pos
a)	5730-12203-00	Fuse, 1/10A., N-B, 250v
19	D-11581-564*	Audio Board Assembly
20	D-11611-564	Display/Speaker Panel Assy
a)	31-1420-564	Cover, Displ/Spkr Pnl Assy
b)	31-1422-554	Speaker Grill
c)	D-11609*	4-Display PC Board Assy

* - Refer to individual unit's parts list

Miscellaneous *CYCLONE* Parts

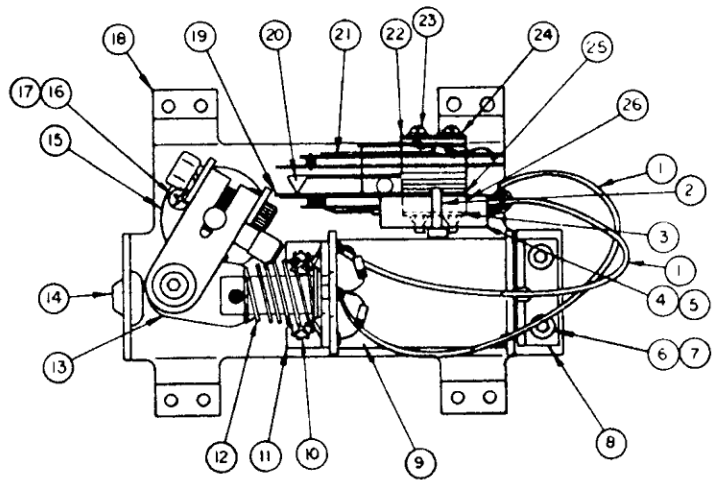
Part No.	Description	Part No.	Description
31-1002-564	Playfield, <i>CYCLONE</i>	11-564-IN	Insert Board (Backbox)
31-1357-564	Backglass, <i>CYCLONE</i>	01-6571	Hinge Mtg Bracket, Insert Bd
31-1006-564	Plastics Set, <i>CYCLONE</i>	01-6655	Latch - Insert Board
5795-10937-09	Ribbon Cable, 20-conductor, 9"	01-6652	Stop Bracket
5795-10938-27	Ribbon Cable, 26-conductor, 27"	03-7960-564	Playfield Mylar

Flipper Assembly

p/n C-11626-R-4

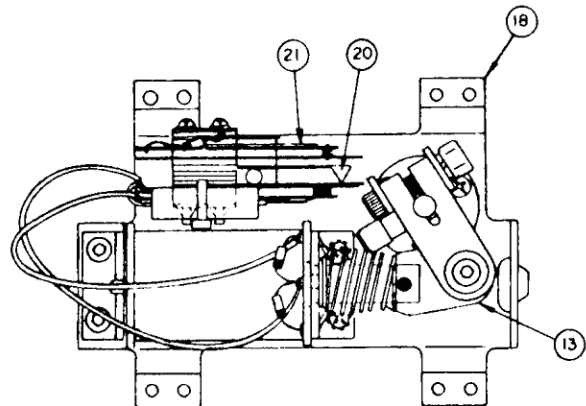
Item	Part No.	Description
1	HW-30018-6	Wire, 18 AWG, Blue
2	03-7520-2	Ty-Wrap, Nylon
3	20-6516	Speednut, Tinnerman
4	5045-12098-00	Capacitor, 2.2 μ Fd, 250V, 20%
5	RM-21-06	Sleeve, Vinyl (Cap. leads)
6	4010-01066-06	Cap Screw, 10-32 x 3/8, SH
7	4701-00004-00	Lockwasher, #10 split
8	A-12111	Flipper Stop Assembly
9	FL-11630/50V	Flipper Coil
10	4006-01017-04	Mach. Screw, 6-32 x 1/4, P-RH-S
11	01-7695	Solenoid Bracket
12	10-404	Coil Plunger Spring
13	B-10655-R	Crank Link Assembly
a)	02-4179	Link Spacer Bushing
b)	4010-01086-14	Cap Screw, 10-32 x 7/8, SH
c)	4700-00023-00	Washer, 5/8 o.d. x 13/64 i. d. x 16 ga.
d)	4701-00004-00	Lockwasher, #10 split
e)	4410-01132-00	Nut, 10-32 ESNA
f)	A-10656*	Flipper Link Assembly
1.)	02-4219	Coil Plunger
2.)	20-9370-1	Spring Pin, 5/32 dia. x 7/16
3.)	03-8050-1	Flipper Link
g)	B-10657-R	Flipper Crank Assembly, Right
1.)	01-8073-R	Flipper Crank, Right
2.)	17-1037	Crank Washer
3.)	4010-01066-18	Cap Screw, 10-32 x 1-1/8, HCS
4.)	4410-01127-00	Nut, 10-32 Hex Hd.
5.)	4700-00107-00	Washer, 5/8 o.d. x 13/64 i. d. x 12 ga.
6.)	4701-00004-00	Lockwasher, #10 split
7.)	RM-23-06	Tubing, H. S. 1/4 DWP
14	23-6577	Bumper Plug
15	03-7568	Flipper Bushing
16	4006-01005-06	Mach. Screw, 6-32 x 3/8, P-PH
17	4406-01117-00	Nut, 6-32 Hex
18	C-11627-R	Flipper Base Assembly, R.
19	06-14G	Insulating Blade
20	03-7834	Lifter Blade (p/o SW-1A-150)
21	B-9951	Switch & Diode Assembly
a)	SW-1A-150	Switch, Lane Change
b)	5070-06258-00	Diode, 1N4001
22	01-3670-1	Plate, Switch
23	4105-01001-20	Sh. Metal Screw, #5 x 1-1/4, P-PH-A
24	4701-00002-00	Lockwasher, #6 split
25	23-6622	Tape, Double-sided
26	03-7811	End of Stroke (EOS) Switch

* - also see separate diagram



Flipper Assembly Notes

- Each Flipper Assembly is mounted beneath the playfield, in conjunction with the plastic Flipper Paddle and Shaft (20-9250-5) and flipper Rubber (23-6519-4) on the upper side of the playfield.
- The tip of the EOS Switch must travel 0.0150 (+ .010, - .000) inch, before the contacts fully open, with the flipper in the actuated position. The EOS Switch contacts must have a gap of 0.062 ($\pm$.015) inch. Adjustment of the EOS Switch must be made at a minimum distance of 0.25 inch from the switch body.
- The Lane Change Switch must have a gap of 0.046 ($\pm$.015) inch, when fully open.
- All moving elements of the assembly must operate freely, with no evidence of binding.
- The large end of the Coil Plunger Spring (item 12) must fit within the four lugs of the Solenoid Bracket.
- For coil replacement, remove the Solenoid Bracket (item 11) to prevent screw damage.
- Use Loctite™ 242 when reattaching screws to the Flipper Stop Assembly, the Solenoid Bracket, and the Flipper Bushing.
- When using the Bumper Plug (item 14) on older flipper assemblies, readjust the flipper paddle and shaft position.
- Solid color blue wire connects to the banded end of the diode, mounted on the connector end of the Flipper Coil (item 9). Trace color wire, connects to the unbanded end of the diode.



Flipper Link Assembly, p/n A-10656

(Items listed refer to items listed for C-11626-R-4)

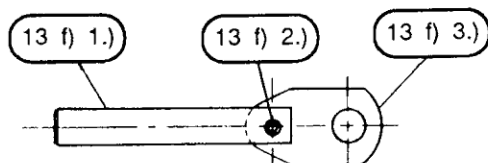
Item	Part No.	Description
13 f) 1.)	02-4219	Coil Plunger
13 f) 2.)	20-9370-1	Spring Pin, 5/32 dia. x 7/16
13 f) 3.)	03-8050-1	Flipper Link

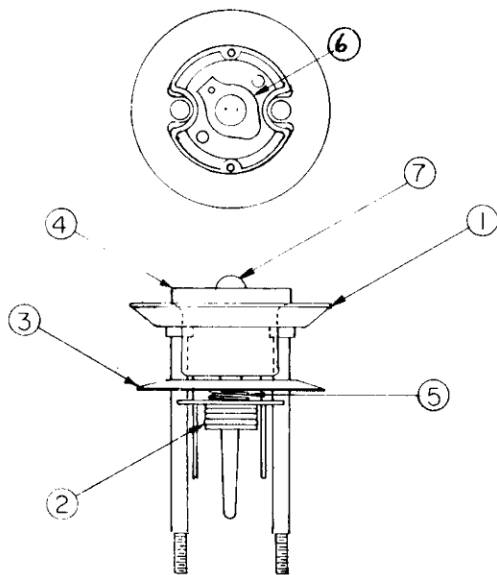
Flipper Assembly

p/n C-11626-L-4

(Parts listed replace same Items of C-11626-R-4)

Item	Part No.	Description
13	B-10655-L	Crank Link Assembly
g)	B-10657-L	Flipper Crank Assembly, Left
1.)	01-8073-L	Flipper Crank, Left
18	C-11627-L	Flipper Base Assy, L.
20	03-7834	Lifter Blade (p/o SW-1A-150-1)
21	B-9951-1	Switch & Diode Assembly
a)	SW-1A-150-1	Switch, Lane Change





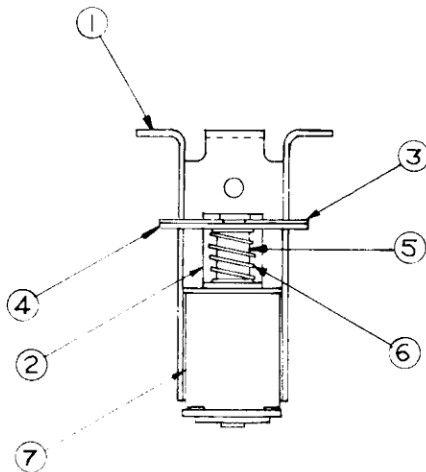
Jet Bumper Assembly

p/n B-9414-1 (Above the playfield)

Item	Part No.	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base, White
3	03-6035-1	Bumper Wafer, Blue
4	03-7443-5	Bumper Body, White
5	10-7	Spring
6	A-11199	Socket & Bulb Assembly
a)	24-8776	Lamp Socket
b)	24-8768	Bulb, #555
Not Shown	03-7444-9	Cap, Jet Bumper (3)

Jet Bumper Coil Assembly

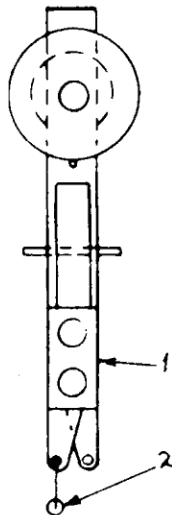
p/n B-9415-1 (Beneath the playfield)



Item	Part No.	Description
1	B-7417	Bracket and Stop Assembly
2	01-1747	Coil Retaining Bracket
3	4006-01017-04	Mach. Screw, 6-32 x 1/4
4	01-5492	Armature Link, Steel
5	01-5493	Armature Link, Bakelite
6	02-3406-1	Coil Plunger
7	10-326	Armature Spring
8	AE-23-800	Coil
	03-7066	Coil Tubing

Associated Parts

C-12044-7	Jet Bumpers Switches & Cable Assy
B-12030-2	Switch & Diode Assy, J. Bumper (3)
B-12029-2	Switch & Bracket Assembly
5070-06258-00	Diode, 1N4001
H-12028-7	Cable Assembly, J. Bumper Switches
5791-12235-04	Connector, 4-pin



Standup Target Assemblies

Item	Part No.	Description
1	B-11696-5	"Cats", Ball Toss (3 wht, p/f left mid)
1	B-12039-5	"Ducks" (3 wht, p/f right mid)
1	B-12001-4	"Score Ball Toss" (red sq. tgt, p/f cntr)
2	5070-06258-00	1N4001 Diode

Shuttle (Shooter Lane) Ramp Assembly

p/n D-11985

Part No.	Description	Part No.	Description
03-8133	Ramp, Shuttle	01-8800	Ramp Support
A-9465-R	Ball Gate Assembly	4006-01003-04	Mach. Screw, 6-32 x 1/4
12-6565	Gate Wire	4106-01004-06	Sh Mtl Screw, #6 x 3/8

Cyclone Ramp Assembly

p/n D-11983 (replaceable parts only)

Part No.	Description	Part No.	Description
A-7438-1	Terminal Strip Assy	31-1443-2	Cyclone Ramp Decal
5647-12133-07	μSwitch	5070-06258-00	Diode, 1N4001
4004-01003-10	Mach. Screw, 4-40 x 5/8	H-12089	Cable, Cyclone Ramp

Comet Ramp Assembly

p/n R-11986 (listing replaceable parts only)

Part No.	Description	Part No.	Description
A-7438-1	Terminal Strip Assy	31-1443-1	Comet Ramp Decal
4004-01003-10	Mach. Screw, 4-40 x 5/8	31-1444-1	Corner Decal, Comet Ramp
5647-12133-04	μSwitch	03-8149-10	Dome, Lamp, Tr Blue
5070-06258-00	Diode, 1N4001	4006-01003-16	Mach. Screw, 6-32 x 1
H-12090	Cable, Ramp Switch	4406-01119-00	Nut, 6-32 ESNA
H-12097	Cable, Ramp Flash	24-8704	Flashlamp, #89

Ferris Wheel Ramp Assembly

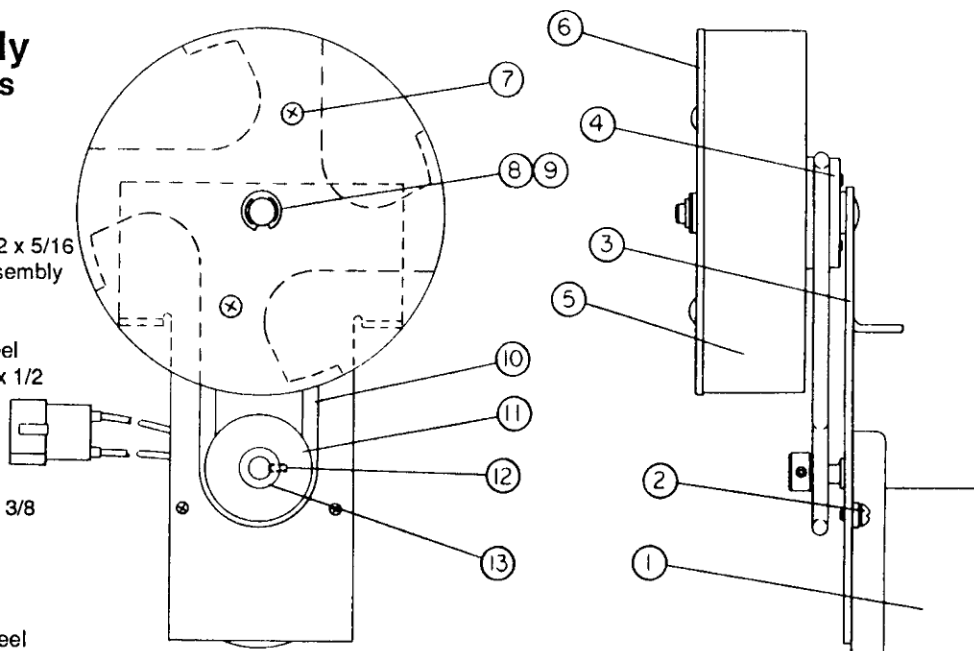
Part No.	Description
D-11957	Ramp Assembly, Ferris Wheel
03-8022-3	Spacer Post

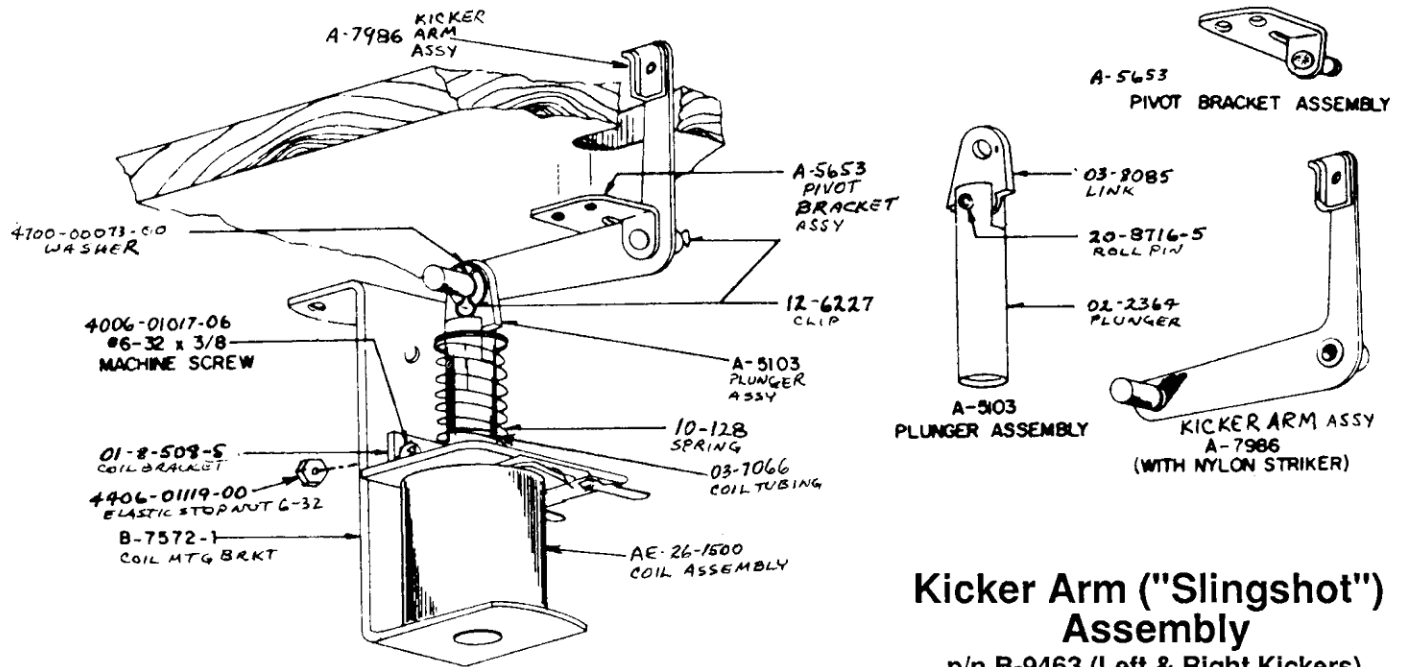
Ferris Wheel Assembly C-11900 & Associated Parts

Item	Part No.	Description
1	B-11571-2	Motor Assembly
a)	14-7941-3	Motor
2	4006-01003-05	Mach. Screw, 6-32 x 5/16
3	B-11899	Motor Bracket Assembly
4	03-8126	Washer
5	03-8124	Ferris Wheel
6	03-8125	Cover, Ferris Wheel
7	4106-01033-08	Sh Mtl Screw, #6 x 1/2
8	4700-00072-00	Flatwasher
9	20-8712-25	E-Ring Clip, 1/4"
10	03-8145	Drive Belt
11	03-8086	Pulley
12	4008-01076-06	Set Screw, 8-32 x 3/8
13	02-4290	Collar

Associated Parts

31-1444-4 thru 31-1444-7	Decals, Ferris Wheel
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Part No.	Description	Associated Parts	
12-6227	Clip, Hair Pin	B-11203-L-1	Coil & Bracket Assembly
A-7986	Kicker Arm Assembly	B-7572-1	Bracket & Stop Assembly
A-5103	Plunger Assembly	01-8-508-S	Coil Retaining Bracket
02-2364	Coil Plunger	4006-01017-06	Mach. Screw, 6-32 x 3/8
20-8716-5	Roll Pin	*4406-01119-00	Nut, 6-32 ESN
03-8085	Armature Link	AE-26-1500	Coil Assembly
4700-00073-00	Washer, 1/2 o.d. x 9/32 i.d. x 15 ga.	03-7066	Coil Tubing
A-5653	Mounting Bracket Assy		

Shooter Lane (under Shuttle Ramp) & Boomerang Kickbig Arm Assembly

p/n B-11051-R

Part No.	Description
12-6227	Clip, Hair Pin
A-5652-1	Kickbig Arm Assembly
A-5103	Plunger Assembly
02-2364	Coil Plunger
20-8716-5	Roll Pin
03-8085	Armature Link
4700-00030-00	Washer, 1/2 o.d. x 17/64 i.d. x 15 ga.
B-11052	Mounting Bracket Assy

Associated Parts for Boomerang

B-11203-L-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assembly
03-7066	Coil Tubing

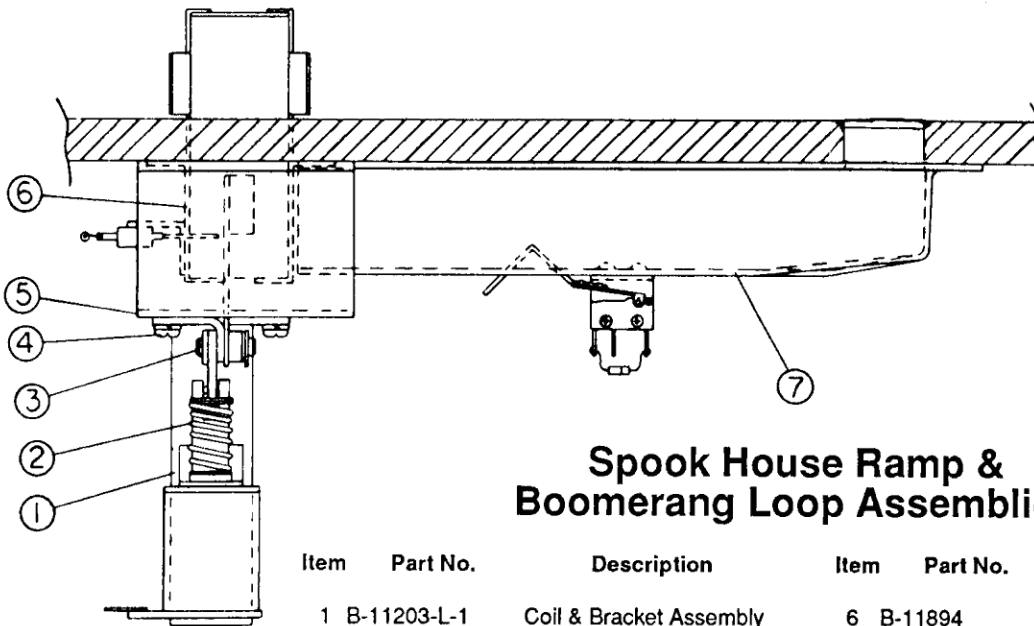
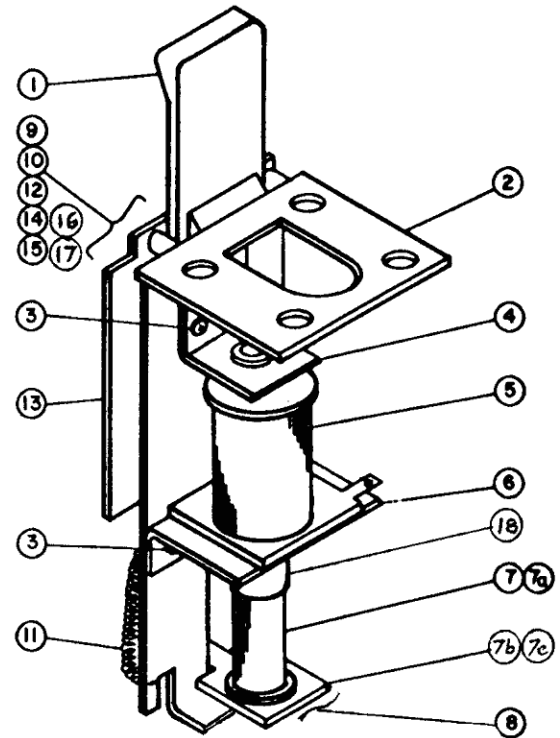
Associated Parts for Shooter Lane

B-11064-R-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-24-900	Coil Assembly
03-7066	Coil Tubing

Single-Bank Drop Target Assembly

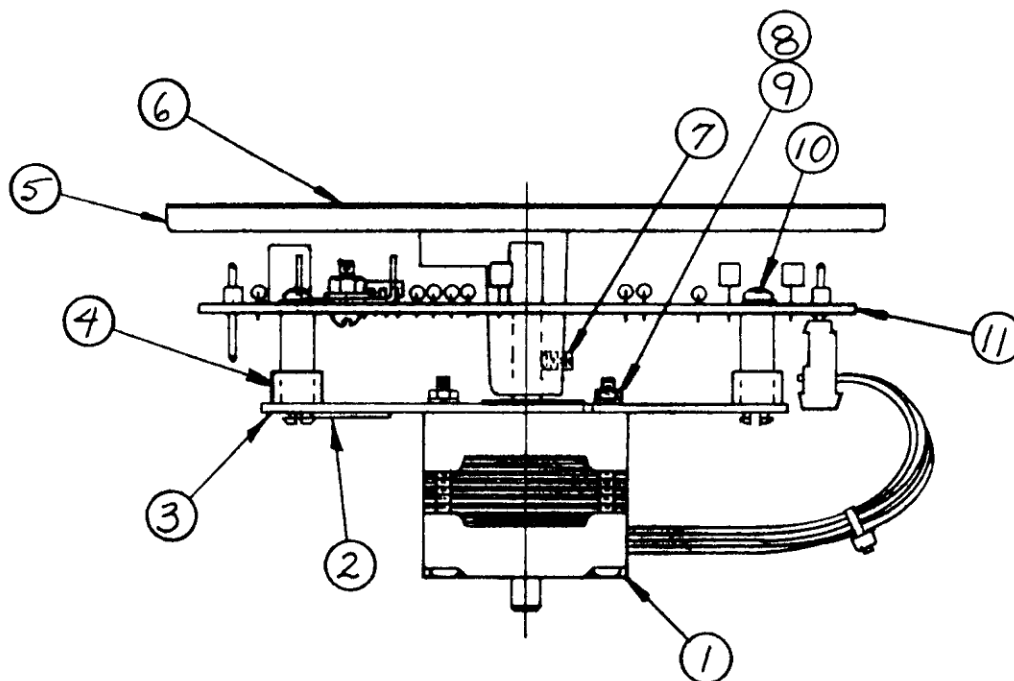
p/n C-11212-2

Item	Part No.	Description
1	03-8033	Target
2	B-11213	Drop Target Subassembly
3	4408-01119-00	Nut, 8-32 ESNA
4	A-11397	Stop Bracket Assembly
5	AE-23-800	Coil Assembly
6	01-8413	Bracket, Coil Mounting
7	A-11388	Plunger & Reset Plate Assy
a)	02-3972-1	Plunger
b)	01-8414	Reset Plate
c)	4410-01132-01	Nut 10-32 ESNA, Thin
8	4008-01016-10	Mach. Screw, 8-32 x 5/8, P-RH
9	4700-00027-00	Washer, 1/2 o.d. x 1/4 i.d., 21 ga.
10	20-8712-25	E-Ring, 1/4" shaft
11	10-364	Spring, Retractor
12	4700-00016-00	Washer, .437 o.d. x .187 i.d., 16 ga.
13	C-11903-R	Opto Switch Assembly
a)	5768-12222-00	PC Board
b)	5490-10159-00	Opto Interruptor, Mdl, S/G
c)	5070-08919-00	Diode, 1N4148, 150 mA (D1)
d)	5010-09162-00	Resistor, 100K, 5%, 1/4w (R4)
e)	5010-09536-00	Resistor, 820Ω, 5%, 1/4w (R3)
f)	5010-09324-00	Resistor, 27K, 5%, 1/4w (R1)
g)	5010-08930-00	Resistor, 470Ω, 5%, 1/2w (R2)
h)	5190-10270-00	Transistor, 2N3906, PNP, TO-92
i)	16-8850-190	Label, PC Identification
j)	EI-124	Cement, RTV Silicone
k)	5791-10869-06	Header, 6-pin R/A sq pin (J2)
14	10-392	Spring, Compression
15	4700-00072-00	Washer, 1/2 o.d. x .265 i.d., 16 ga.
16	20-8712-18	E-Ring, 3/16" shaft
17	23-6626	Grommet
18	03-7066-4	Tubing, Coil Sleeve



Spook House Ramp & Boomerang Loop Assemblies

Item	Part No.	Description	Item	Part No.	Description
1	B-11203-L-1	Coil & Bracket Assembly	6	B-11894	Boomerang Loop Assembly
	AE-26-1500	Coil Assembly		5647-12073-09	μSwitch
2	10-128	Spring		5070-06258-00	Diode, 1N4001
3	B-11051-R	Kickbig Assembly	7	C-11892	Sp. House Ramp Assembly
4	4008-01003-05	Mach. Screw, 8-32 x 5/16		5647-12073-01	μSwitch
5	01-8790	Boomerang Kickbig Mtg Brkt		5070-06258-00	Diode, 1N4001



Mystery Wheel Carousel Assembly

p/n C-12036

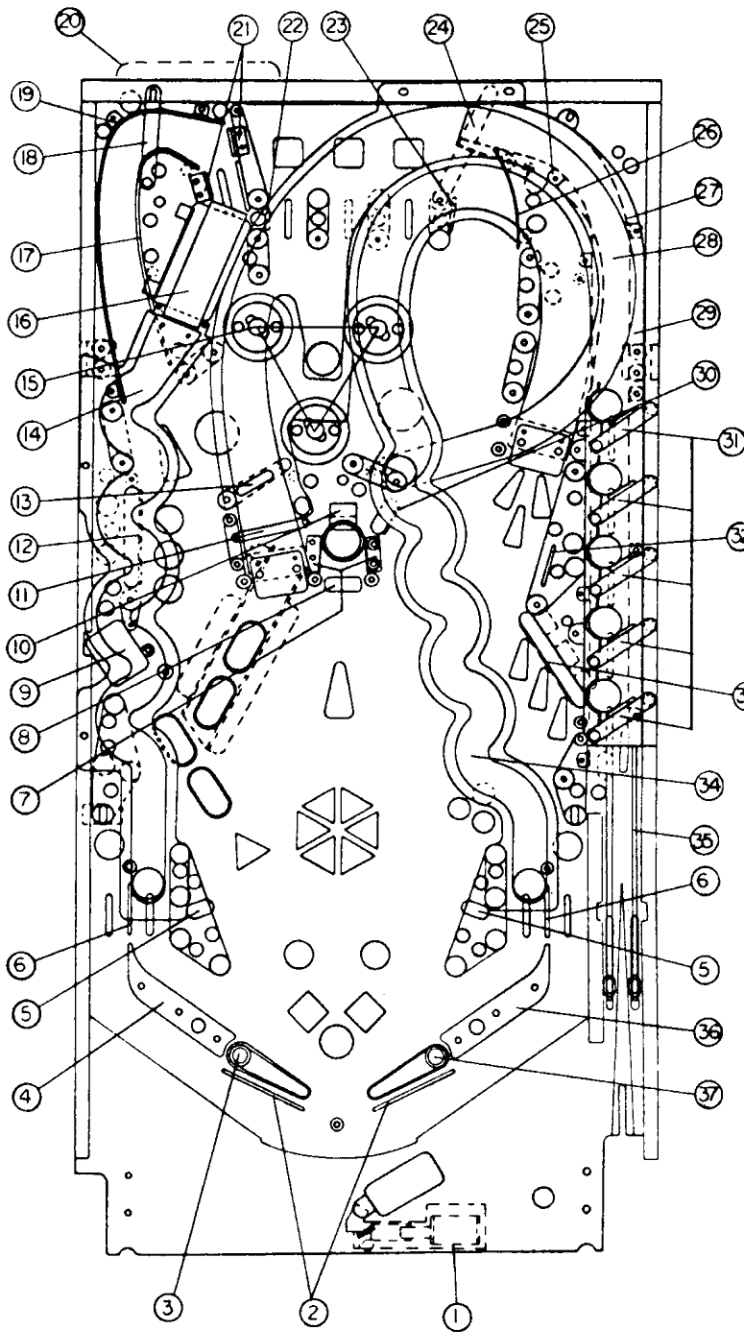
Item	Part No.	Description	Item	Part No.	Description
1	B-12088	Motor & Connector Assy	7	4006-01076-04	Set Screw, 6-32
2	16-8587-932	Label, Carousel Adjust.	8	4701-00023-00	Lockwasher, #5
3	B-12035	Mounting Plate Assy, Motor	9	20-9570	Hex Nut, M3x .5
4	03-8022-1	Spacer	10	4006-01003-06	Mach. Screw, 6-32 x 3/8
5	03-8161	Carousel Wheel	11	D-12045	Control Assy, Stepper Motor
6	31-1444-3	Decal, Carousel Wheel			

Outhole Kicker Assembly

p/n B-8039-2

Part No.	Description	Part No.	Description
A-6378	Mounting Plate Assembly	A-8038	Coil Stop Assembly
AE-23-800	Coil Assembly	4006-01003-03	Mach. Screw, 6-32 x 3/16
03-7066	Coil Tubing	A-6889	Kicker Lever Assembly
A-8335	Coil Plunger Assembly	20-8712-25	E-Ring Clip, 1/4"
02-2364	Plunger	03-7176-1	Striker Ring
20-8716-5	Roll Pin	10-101-4	Spring, Reset
01-4251	Ball Return Link		

Playfield Parts



Item	Part No.	Description
1	B-8039-2	Outhole Kicker Assy
2	12-6468	Anti-Rebound Wireform
3	C-11626-L-4	Left Flipper Assembly
a)	20-9250-5	Flipper Arm on Shaft
4	A-8108-L	Left Flipper Return Frame
5	B-9463	Kicker (Slingshot) Assy
6	12-6466-8	Wireform, 2"
7	01-8803	Sp House Ball Guide
8	C-11212-2	Drop Target
9	B-11974	Boomerang Loop Assy
10	01-8806	Sp House Ball Deflector
11	A-11993	Ball Gate Assembly
a)	12-6775	Gate Wire
b)	12-6776	Switch Actuator Wire
12	C-12044-3	3-unit Standup Tgt Assy
a)	B-11696-5	Standup Target
b)	H-12028-3	Cable Assembly
13	12-6466-6	Wireform, 1-1/2"
14	D-11957	Ferris Wheel Ramp Assy
15	B-9414-1	Jet Bumper Assembly
a)	B-9415-1	Coil & Bracket Assembly
b)	C-12044-7	Switch & Cable Assy
1)	B-12030-2	Switch Assembly
16	C-11900	Ferris Wheel Assembly
17	12-6774	Wireform or
	B-12180	Ball Guide
18	A-12160	Ball Gate
a)	12-6690	Gate Wire
19	C-11977	Ball Guide Assembly
20	B-12038	Top P'fld Lamp Assy
21	01-8626	Ball Deflector
22	12-6466-3	Wireform, 3/4"
23	12-6466-5	Wireform, 1-1/4"
24	A-10563	Ball Gate Assembly
a)	12-6648	Gate Wire
25	D-11978	Ball Guide Assembly
26	B-11976	Ball Guide Assembly
27	D-11979	Ball Guide Assembly
28	R-11986	COMET Ramp Assy
29	D-11985	SHUTTLE Ramp Assy
30	B-12001-4	Standup Tgt (red sq)
31	A-9465-R	Ball Gate Assembly
a)	12-6565	Gate Wire
32	12-6466-6	Wireform
33	C-12044-4	3-unit Standup Tgt Assy
a)	B-12039-5	Standup Target
b)	H-12028-4	Cable Assembly
34	D-11983	CYCLONE Ramp Assy
35	12-6772	Shooter Lane Wire Ramp
36	A-8108-R	Right Flipper Lane Frame
37	C-11626-R-4	Right Flipper Assembly
a)	20-9250-5	Flipper Arm on Shaft

SYSTEM 11B CPU INTERBOARD SIGNALS

<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>	<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>
1J1-1	BRN-GRY	ST-8: Display Digit Strobe / 4J3-1	1J2-1	VIO-GRY	ST-16: Display Digit Strobe / 4J4-1
1J1-2	BRN-VIO	ST-7: Display Digit Strobe / 4J3-2	1J2-2	VIO-BLK	ST-15: Display Digit Strobe / 4J4-2
1J1-3	BRN-BLU	ST-6: Display Digit Strobe / 4J3-3	1J2-3	VIO-BLU	ST-14: Display Digit Strobe / 4J4-3
1J1-4	BRN-GRN	ST-5: Display Digit Strobe / 4J3-4	1J2-4	VIO-GRN	ST-13: Display Digit Strobe / 4J4-4
1J1-5	BRN-YEL	ST-4: Display Digit Strobe / 4J3-5	1J2-5	VIO-YEL	ST-12: Display Digit Strobe / 4J4-5
1J1-6	BRN-ORG	ST-3: Display Digit Strobe / 4J3-6	1J2-6	VIO-ORG	ST-11: Display Digit Strobe / 4J4-6
1J1-7	BRN-RED	ST-2: Display Digit Strobe / 4J3-7	1J2-7	Key Pin	No Connection
1J1-8	Key Pin	No Connection	1J2-8	VIO-RED	ST-10: Display Digit Strobe / 4J4-8
1J1-9	BRN-BLK	ST-1: Display Digit Strobe / 4J3-9	1J2-9	VIO-BRN	ST-9: Display Digit Strobe / 4J4-9
1J3-1	BLU-BRN	D1 / Display BCD / 4J5-1	1J4-1	VIO	Lamp +18V dc Power
1J3-2	BLU-RED	C1 / Display BCD / 4J5-2	1J4-2	VIO	"
1J3-3	BLU-ORG	B1 / Display BCD / 4J5-3	1J4-3	Key Pin	No Connection
1J3-4	BLU-YEL	A1 / Display BCD / 4J5-4	1J4-4	---	No Connection
1J3-5	BLU-GRN	D2 / Display BCD / 4J5-5	1J4-5	---	No Connection
1J3-6	Key Pin	No Connection	1J4-6	---	No Connection
1J3-7	BLU-BLK	C2 / Display BCD / 4J5-7	1J4-7	---	No Connection
1J3-8	BLU-VIO	B2 / Display BCD / 4J5-8	1J4-8	VIO	Lamp +18V dc Power
1J3-9	BLU-GRY	A2 / Display BCD / 4J5-9	1J4-9	VIO	"
1J3-10	---	No Connection	1J6-1	RED-BRN	Lamp Row 1 (Q80)
1J3-11	---	No Connection	1J6-2	RED-BLK	Lamp Row 2 (Q81)
1J3-12	---	No Connection	1J6-3	RED-ORG	Lamp Row 3 (Q82)
1J5-1	---	No Connection	1J6-4	Key Pin	No Connection
1J5-2	Key Pin	No Connection	1J6-5	RED-YEL	Lamp Row 4 (Q83)
1J5-3	BLK	Ground (Lamp Ckt)	1J6-6	RED-GRN	Lamp Row 5 (Q84)
1J5-4	BLK	Ground (Lamp Ckt)	1J6-7	RED-BLU	Lamp Row 6 (Q85)
1J5-5	---	No Connection	1J6-8	RED-VIO	Lamp Row 7 (Q86)
1J5-6	---	No Connection	1J6-9	RED-GRY	Lamp Row 8 (Q87)
1J5-7	---	No Connection	1J8-1	GRN-BRN	Switch Col 1 (Q45)
1J5-8	BLK	Ground (Lamp Ckt)	1J8-2	GRN-RED	Switch Col 2 (Q49)
1J5-9	BLK	Ground (Lamp Ckt)	1J8-3	GRN-ORG	Switch Col 3 (Q44)
1J7-1	YEL-BRN	Lamp Col 1 (Q65/66)	1J8-4	GRN-YEL	Switch Col 4 (Q48)
1J7-2	YEL-RED	Lamp Col 2 (Q63/64)	1J8-5	GRN-BLK	Switch Col 5 (Q43)
1J7-3	YEL-ORG	Lamp Col 3 (Q61/62)	1J8-6	Key Pin	No Connection
1J7-4	YEL-BLK	Lamp Col 4 (Q59/60)	1J8-7	GRN-BLU	Switch Col 6 (Q47)
1J7-5	Key Pin	No Connection	1J8-8	GRN-VIO	Switch Col 7 (Q42)
1J7-6	YEL-GRN	Lamp Col 5 (Q57/58)	1J8-9	GRN-GRY	Switch Col 8 (Q46)
1J7-7	YEL-BLU	Lamp Col 6 (Q55/56)	1J9	Not Applicable	
1J7-8	YEL-VIO	Lamp Col 7 (Q53/54)	1J11-1	GRY-BRN	Solenoid 1 (Q33) / 5J1-9
1J7-9	YEL-GRY	Lamp Col 8 (Q51/52)	1J11-2	Key Pin	No Connection
1J10-1	WHT-GRY	Switch Row 8	1J11-3	GRY-RED	Solenoid 2 (Q25) / 5J1-7
1J10-2	WHT-VIO	Switch Row 7	1J11-4	GRY-ORG	Solenoid 3 (Q32) / 5J1-6
1J10-3	WHT-BLU	Switch Row 6	1J11-5	GRY-YEL	Solenoid 4 (Q24) / 5J1-5
1J10-4	Key Pin	No Connection	1J11-6	GRY-GRN	Solenoid 5 (Q31) / 5J1-4
1J10-5	WHT-GRN	Switch Row 5	1J11-7	GRY-BLU	Solenoid 6 (Q23) / 5J1-3
1J10-6	WHT-YEL	Switch Row 4	1J11-8	GRY-VIO	Solenoid 7 (Q30) / 5J1-2
1J10-7	WHT-ORG	Switch Row 3	1J11-9	GRY-BLK	Solenoid 8 (Q22) / 5J1-1
1J10-8	WHT-RED	Switch Row 2	1J13-1	BLK	Solenoid Ground / 5J10-1
1J11-9	WHT-BRN	Switch Row 1	1J13-2	BLK	" / 5J10-2
1J12-1	BRN-BLK	Solenoid 9 (Q17) / 5J2-9	1J13-3	BLK	" / 5J10-3
1J12-2	BRN-RED	Solenoid 10 (Q9) / 5J2-8	1J13-4	BLK	" / 5J10-4
1J12-3	Key Pin	No Connection	1J14-1	BLK-RED	Memory Protect / 7J1-4
1J12-4	BRN-ORG	Solenoid 11 (Q16) / 5J2-6	1J14-2	WHT	Ground / 7J1-3
1J12-5	BRN-YEL	Solenoid 12 (Q8) / 5J2-5	1J14-3	GRN	ADVANCE Switch / 7J1-1
1J12-6	BRN-GRN	Solenoid 13 (Q15) / Mys. Whl Mtr Cntrl	1J14-4	BLU	AUTO/MANUAL Switch / 7J1-2
1J12-7	BRN-BLU	Solenoid 14 (Q7) / Mys. Whl Mtr Cntrl	1J17-1	BLK	Ground / 3J6-11
1J12-8	BRN-VIO	Solenoid 15 (Q14) / 5J2-2	1J17-2	BLK	" / 3J6-12
1J12-9	BRN-GRY	Solenoid 16 (Q6) / 5J2-1	1J17-3	BLK	" / 3J6-13
1J16-1	RED	Volume Control Input / 11J1-1	1J17-4	GRY	Power: +5V dc / 3J6-7
1J16-2	BLK	Volume Control Output / 11J1-2	1J17-5	GRY	" / 3J6-8
1J16-3	Key Pin	No Connection	1J17-6	GRY	" / 3J6-9
1J16-4	White	Signal Ground - CPU / 11J1-4	1J17-7	Key Pin	No Connection
1J18-1	---	No Connection	1J17-8	BLK-WHT	Power: -12V dc Unreg / 3J6-2
1J18-2	ORN-BLK	Spl Solnd Sw 3	1J17-9	WHT-GRY	Power: +12V dc Unreg / 3J6-6
1J18-3	ORN-RED	Spl Solnd Sw 2	1J19-1	ORN-VIO	Flipper Ground
1J18-4	ORN-YEL	Spl Solnd Sw 4	1J19-2	ORN-GRY	Flipper Ground
1J18-5	ORN-BRN	Spl Solnd Sw 1	1J19-3	BLU-ORN	Spl Solnd 3 (Q73) / 5J3-3
1J18-6	Key Pin	No Connection	1J19-4	BLU-RED	Spl Solnd 2 (Q71) / 5J3-6
1J18-7	WHT	Spl Solnd Sw Ground	1J19-5	Key Pin	No Connection
1J18-8	ORN-GRN	Spl Solnd Sw 5	1J19-6	BLU-YEL	Spl Solnd 4 (Q69) / 5J3-4
1J18-9	ORN-BLU	Spl Solnd Sw 6	1J19-7	BLU-BRN	Spl Solnd 1 (Q75) / 5J3-7
1J21	Ribbon Cable to Audio Board 11J4		1J19-8	BLU-GRN	Spl Solnd 5 (Q77) / 5J3-2
1J22	Ribbon Cable to Master Display Board 4J1		1J19-9	BLU-BLK	Spl Solnd 6 (Q79) / 5J3-1

AUX POWER DRIVER INTERBOARD SIGNALS

<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>		<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>
5J1-1	GRY-BLK	CPU: Solenoid 8 (Q22) / 1J11-9		5J2-1	BRN-GRY	CPU: Solenoid 16 (Q6) / 1J12-9
5J1-2	GRY-VIO	CPU: Solenoid 7 (Q30) / 1J11-8		5J2-2	BRN-VIO	CPU: Solenoid 15 (Q14) / 1J12-8
5J1-3	GRY-BLU	CPU: Solenoid 6 (Q23) / 1J11-7		5J2-3	---	No Connection
5J1-4	GRY-GRN	CPU: Solenoid 5 (Q31) / 1J11-6		5J2-4	---	No Connection
5J1-5	GRY-YEL	CPU: Solenoid 4 (Q24) / 1J11-5		5J2-5	BRN-YEL	CPU: Solenoid 12 (Q15) / 1J12-5
5J1-6	GRY-ORG	CPU: Solenoid 3 (Q32) / 1J11-4		5J2-6	BRN-ORG	CPU: Solenoid 11 (Q16) / 1J12-4
5J1-7	GRY-RED	CPU: Solenoid 2 (Q25) / 1J11-3		5J2-7	Key Pin	No Connection
5J1-8	Key Pin	No Connection		5J2-8	BRN-RED	CPU: Solenoid 10 (Q9) / 1J12-2
5J1-9	GRY-BRN	CPU: Solenoid 1 (Q33) / 1J11-1		5J2-9	BRN-BLK	CPU: Solenoid 9 (Q17) / 1J12-1
5J3-1	BLU-BLK	CPU: Spl Solnd 6 (Q79) / 1J19-9		5J4-1	VIO-GRY	Solenoid 08A
5J3-2	BLU-GRN	CPU: Spl Solnd 5 (Q77) / 1J19-8		5J4-2	VIO-BLK	Solenoid 07A
5J3-3	BLU-ORN	CPU: Spl Solnd 3 (Q73) / 1J19-3		5J4-3	Key Pin	No Connection
5J3-4	BLU-YEL	CPU: Spl Solnd 4 (Q69) / 1J19-6		5J4-4	VIO-BLU	Solenoid 06A
5J3-5	Key Pin	No Connection		5J4-5	VIO-GRN	Solenoid 05A
5J3-6	BLU-RED	CPU: Spl Solnd 2 (Q71) / 1J19-4		5J4-6	VIO-YEL	Solenoid 04A
5J3-7	BLU-BRN	CPU: Spl Solnd 1 (Q75) / 1J19-7		5J4-7	VIO-ORN	Solenoid 03A
				5J4-8	VIO-RED	Solenoid 02A
				5J4-9	VIO-BRN	Solenoid 01A
5J5-1	WHT-GRY	Solenoid 08C		5J6-1	BRN-GRY	Solenoid 16
5J5-2	WHT-VIO	Solenoid 07C		5J6-2	BRN-VIO	Solenoid 15
5J5-3	WHT-BLU	Solenoid 06C		5J6-3	---	Solenoid 14
5J5-4	WHT-GRN	Solenoid 05C		5J6-4	Key Pin	No Connection
5J5-5	WHT-YEL	Solenoid 04C		5J6-5	---	Solenoid 13
5J5-6	Key Pin	No Connection		5J6-6	---	Solenoid 12
5J5-7	WHT-ORN	Solenoid 03C		5J6-7	BRN-ORN	Solenoid 11
5J5-8	WHT-RED	Solenoid 02C		5J6-8	BRN-RED	Solenoid 10
5J5-9	WHT-BRN	Solenoid 01C		5J6-9	BRN-BLK	Solenoid 9
5J7-1	BLU-BLK	Spl Solnd 6		5J8-1	WHT-RED	Transformer: 26V ac / 7J2-6
5J7-2	BLU-GRN	Spl Solnd 5		5J8-2	WHT-RED	Transformer: 26V ac / 7J2-6
5J7-3	BLU-ORN	Spl Solnd 4		5J8-3	WHT-RED	Transformer: 26V ac / 7J2-7
5J7-4	Key Pin	No Connection		5J8-4	WHT-RED	Transformer: 26V ac / 7J2-7
5J7-5	BLU-YEL	Spl Solnd 3		5J8-5	Key Pin	No Connection
5J7-6	BLU-RED	Spl Solnd 2		5J8-6	BLK-YEL	Transformer: 48V ac / 7J2-11
5J7-7	BLU-BRN	Spl Solnd 1		5J8-7	BLK-YEL	Transformer: 48V ac / 7J2-11
				5J8-8	BLK-YEL	Transformer: 48V ac / 7J2-12
				5J8-9	BLK-YEL	Transformer: 48V ac / 7J2-12
5J9-1	---	No Connection		5J10-1	BLK	Solnd Gnd / 1J13-1
5J9-2	---	No Connection		5J10-2	BLK	Solnd Gnd / 1J13-2
5J9-3	Key Pin	No Connection		5J10-3	BLK	Solnd Gnd / 1J13-3
5J9-4	---	No Connection		5J10-4	BLK	Solnd Gnd / 1J13-4
5J9-5	WHT-BLU	25 Vac: Ferris Wheel Motor				
5J9-6	---	No Connection				
5J9-7	WHT-BLU	25 Vac: Ferris Wheel Motor				
5J12-1	---	No Connection		5J11-1	ORN	+25 Vdc (C solnd) / Sol. 01C thru
5J12-2	GRY-YEL	+50 Vdc / Flippers		5J11-2	ORN	+25 Vdc (C solnd) / Sol. 08C
5J12-3	---	No Connection		5J11-3	Key Pin	No Connection
5J12-4	BLU-YEL	+50 Vdc / Flippers		5J11-4	---	No Connection
5J12-5	---	No Connection		5J11-5	BRN	+25 Vdc (A solnd)/Sol. 01A, 05A
5J12-6	---	No Connection		5J11-6	---	No Connection
5J12-7	VIO-YEL	+50 Vdc / Sol. 18 & 20		5J11-7	---	No Connection
5J12-8	Key Pin	No Connection		5J11-8	RED	+25 Vdc / 7P4-3
5J12-9	---	No Connection		5J11-9	RED	+25 Vdc / Sol. 9,10,11, &
5J12-10	---	No Connection		5J11-10	RED	+25 Vdc / Sol. 15,16
5J12-11	YEL-VIO	+50 Vdc (A solnd) / Sol. 03A, 04A, &		5J11-11	---	No Connection
5J12-12	YEL-VIO	+50 Vdc (A solnd) / Sol. 07A		5J11-12	RED-WHT	+50 Vdc / Sol. 17, 19, 21

MASTER DISPLAY INTERBOARD SIGNALS

<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>		<u>Connector</u>	<u>Wire Color</u>	<u>Signal Designation/Description</u>
4J1	Ribbon Cable from CPU 1J22			4J3-1	BRN-GRY	ST-8: Digit Display Strobe / 1J1-1
4J2-1	ORG	Display Power: -100V dc / 3J5-3		4J3-2	BRN-VIO	ST-7: Display Digit Strobe / 1J1-2
4J2-2	---	No Connection		4J3-3	BRN-BLU	ST-6: Display Digit Strobe / 1J1-3
4J2-3	BRN	Display Power: +100V dc / 3J5-4		4J3-4	BRN-GRN	ST-5: Display Digit Strobe / 1J1-4
4J2-4	Key Pin	No Connection		4J3-5	BRN-YEL	ST-4: Display Digit Strobe / 1J1-5
4J2-5	BLK	Ground / 3J5-1		4J3-6	BRN-ORG	ST-3: Display Digit Strobe / 1J1-6
4J2-6	GRY	Power: +5V dc / 3J5-6		4J3-7	BRN-RED	ST-2: Display Digit Strobe / 1J1-7
				4J3-8	Key Pin	No Connection
				4J3-9	BRN-BLK	ST-1: Display Digit Strobe / 1J1-9
4J4-1	VIO-GRY	ST-16: Digit Display Strobe / 1J2-1		4J5-1	BLU-BRN	D1 / Display BCD / 1J3-1
4J4-2	VIO-BLK	ST-15: Display Digit Strobe / 1J2-2		4J5-2	BLU-RED	C1 / Display BCD / 1J3-2
4J4-3	VIO-BLU	ST-14: Display Digit Strobe / 1J2-3		4J5-3	BLU-ORG	B1 / Display BCD / 1J3-3
4J4-4	VIO-GRN	ST-13: Display Digit Strobe / 1J2-4		4J5-4	BLU-YEL	A1 / Display BCD / 1J3-4
4J4-5	VIO-YEL	ST-12: Display Digit Strobe / 1J2-5		4J5-5	BLU-GRN	D2 / Display BCD / 1J3-5
4J4-6	VIO-ORG	ST-11: Display Digit Strobe / 1J2-6		4J5-6	Key Pin	No Connection
4J4-7	Key Pin	No Connection		4J5-7	BLU-BLK	C2 / Display BCD / 1J3-7
4J4-8	VIO-RED	ST-8: Display Digit Strobe / 1J2-8		4J5-8	BLU-VIO	B2 / Display BCD / 1J3-8
4J4-9	VIO-BRN	ST-9: Display Digit Strobe / 1J2-9		4J5-9	BLU-GRY	A2 / Display BCD / 1J3-9

WARNINGS & NOTICES

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