

Gottlieb's Black Hole

Switch Matrix

	RETURN 0 A1J6-10 Blu-Blk-Blk (600)	RETURN 1 A1J6-11 Blu-Brn-Brn (611)	RETURN 2 A1J6-12 Blu-Red-Red (622)	RETURN 3 A1J6-13 Blu-Orn-Orn (633)	RETURN 4 A1J6-14 Blu-Yel-Yel (644)	RETURN 5 A1J6-15 Blu-Grn-Grn (655)	RETURN 6 A1J5-8 / A1J6-16 Blu-Blu-Blu (666)	RETURN 7 A1J5-1 / A1J6-17 Blu-Pur-Pur (677)
STROBE 0 A1J5-2 / A1J6-1 Yel-Blk-Blk (400)	Top #1 Rollover Brn-Brn-Brn (111) SW.00	#1 Spot Target Orn-Yel-Yel (344) SW.01	Right #1 Drop Target "H" Blk-Orn-Orn (033) SW.02	Left #1 Drop Target "B" Brn-Blk-Blk (100) SW.03	Left #4 Drop Target "C" Brn-Blu-Blu (166) SW.04	Ball Kicker Hole Switch Slit-Blk-Blk (800) SW.05	Pop Bumpers (4) Slit-Grn-Grn (855) SW.06	Test Button Grn-Blk-Blk (500) SW.07
STROBE 1 A1J5-3 / A1J6-2 Yel-Brn-Brn (411)	Top #2 Rollover Brn-Orn-Orn (133) SW.10	#2 Spot Target Orn-Grn-Grn (355) SW.11	Right #2 Drop Target "O" Blk-Grn-Grn (055) SW.12	Left #2 Drop Target "L" Brn-Red-Red (122) SW.13	Left #5 Drop Target "K" Brn-Pur-Pur (177) SW.14	Outhole SW.15	Left Spinning Target Slit-Brn-Brn (811) SW.16	Left Coin Chute Grn-Brn-Brn (511) SW.17
STROBE 2 A1J5-4 / A1J6-3 Yel-Red-Red (422)	Top #3 Rollover Brn-Yel-Yel (144) SW.20	#3 Spot Target Orn-Blu-Blu (366) SW.21	Right #3 Drop Target "L" Blk-Blu-Blu (066) SW.22	Left #3 Drop Target "A" (Brn-Grn-Grn (155) SW.23	Top Lane Rollunder Slit-Yel-Yel (844) SW.24	3rd Position Ball Trough Orn-Orn-Orn (333) SW.25	Tilt Grn-Grn-Grn (555) Slit-Blk-Blk (800) SW.26	Right Coin Chute Grn-Red-Red (522) SW.27
STROBE 3 A1J5-5 / A1J6-4 Yel-Orn-Orn (433)	Right Side Rollover Orn-Blk-Blk (300) SW.30	#4 Spot Target Orn-Pur-Pur (377) SW.31	Right #4 Drop Target "E" Blk-Pur-Pur (077) SW.32	Black Hole Rollover Slit-Red-Red (822) SW.33	10 Points Switches (5) Blk-Yel-Yel (044) SW.34	Right Return Rollover Pur-Brn-Brn (711) SW.35	Not Used SW.36	Center Coin Chute Grn-Orn-Orn (533) SW.37
STROBE 4 A1J5-6 / A1J6-5 Yel-Yel-Yel (444)	(lower playfield) Left #1 Drop Target Pur-Blk-Blk (700) SW.40	(lower playfield) Right #1 Drop Target Pur-Yel-Yel (744) SW.41	(lower playfield) Hole Kicker Grn-Orn-Orn (533) SW.42	(lower playfield) Ball Tube Kicker Switch Slit-Yel-Yel (844) SW.43	Not Used SW.44	Not Used SW.45	Not Used SW.46	Replay Button Grn-Yel-Yel (544) SW.47
STROBE 5 A1J5-7 / A1J6-6 Yel-Grn-Grn (455)	(lower playfield) Left #2 Drop Target Pur-Brn-Brn (711) SW.50	(lower playfield) Right #2 Drop Target Pur-Grn-Grn (755) SW.51	(lower playfield) Rollunder Gate Grn-Blu-Blu (566) SW.52	(lower playfield) Track Switch Slit-Grn-Grn (855) SW.53	Not Used SW.54	Not Used SW.55	Not Used SW.56	Not Used SW.57
STROBE 6 A1J6-7 Yel-Blu-Blu (466)	(lower playfield) Left #3 Drop Target Pur-Red-Red (722) SW.60	(lower playfield) Right #3 Drop Target Pur-Blu-Blu (722) SW.61	(lower playfield) Return Rollover Grn-Pur-Pur (577) SW.62	Not Used SW.63	Not Used SW.64	Not Used SW.65	Not Used SW.66	Not Used SW.67
STROBE 7 A1J5-9 / A1J6-8 Yel-Pur-Pur (477)	(lower playfield) Left #4 Drop Target Pur-Orn-Orn (733) SW.70	(lower playfield) Lower Level Pop Bumpers (2) Pur-Pur-Pur (777) SW.71	(lower playfield) 10 Point Switches & Kicking Target Red-Slit-Slit (288) SW.72	Not Used SW.73	Not Used SW.74	Not Used SW.75	Not Used SW.76	Not Used SW.77

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Driverboard

transistor	connector	code	description	wire code	wire color	transistor type
Q01	A3J3-A	L0	Game Over Relay (Q)	288	Red-Slt-Slt	MPS-U45
Q Relay			Match	011	Blk-Brn-Brn	Q relay n.c.
Q Relay			Ball in Play	033	Blk-Orn-Orn	Q relay n.o.
Q02	A3J3-B	L1	Tilt Relay (T)	277	Red-Pur-Pur	MPS-U45
T Relay			Tilt	022	Brn-Red-Red	T relay n.o.
Q03	A3J5-2	L2	Coin Lockout	877	Slt-Pur-Pur	MPS-U45
Q04	A3J2-1 / A3J3-C	L3	Same Player Shoot Again	588	Grn-Slt-Slt	MPS-U45
Q05	A3J2-2	L4	Three Drop Target Bank Special	500	Grn-Blk-Blk	MPS-A13
Q06	A3J2-3	L5	*+1X* Scoring (Left)	511	Grn-Brn-Brn	MPS-A13
Q07	A3J2-5	L6	*+1X* Scoring (Right)	522	Grn-Red-Red	MPS-A13
Q08	A3J2-4	L7	Left Spinning Target	533	Grn-Orn-Orn	MPS-A13
Q09	A3J2-10	L8	Ball Gate	544	Grn-Yel-Yel	MPS-U45 + UPT
Q10	A3J2-9	L9	Sound 16	555	Grn-Grn-Grn	MPS-A13
Q11	A3J2-7	L10	High Game To Date	577	Grn-Pur-Pur	MPS-A13
Q12	A3J2-8	L11	Game Over	566	Grn-Blu-Blu	MPS-A13
Q13	A3J3-25	L12	Hole Kicker	100	Brn-Blk-Blk	MPS-U45 + UPT
Q14	A3J3-24	L13	Hole Kicker	111	Brn-Brn-Brn	MPS-U45 + UPT
Q15	A3J3-22	L14	Ball Lift Kicker	122	Brn-Red-Red	MPS-U45 + UPT
Q16	A3J3-23	L15	Ball Gate (Cardholder)	133	Brn-Orn-Orn	MPS-U45 + UPT
Q17	A3J3-13	L16	U Relay	144	Brn-Yel-Yel	MPS-U45
Q18	A3J3-14	L17	L Relay	155	Brn-Grn-Grn	MPS-U45
Q19	A3J3-16	L18	Wireform Ball Gate	166	Brn-Blu-Blu	MPS-U45
Q20	A3J3-15	L19	Hole Lights (Arrows)	177	Brn-Pur-Pur	MPS-U45
Q21	A3J3-21	L20	Loop Lights (Arrows)	300	Orn-Blk-Blk	MPS-U45
Q22	A3J3-20	L21	*B* Drop Target Light	311	Orn-Brn-Brn	MPS-U45
Q23	A3J3-18	L22	*L* Drop Target Light	322	Orn-Red-Red	MPS-U45
Q24	A3J3-19	L23	*A* Drop Target Light	333	Orn-Orn-Orn	MPS-U45
Q25	A3J3-9	L24	*C* Drop Target Light	344	Orn-Yel-Yel	MPS-U45
Q26	A3J3-10	L25	*K* Drop Target Light	355	Orn-Grn-Grn	MPS-U45
Q27	A3J3-12	L26	*H* Drop Target Light	366	Orn-Blu-Blu	MPS-U45
Q28	A3J3-11	L27	*O* Drop Target Light	377	Orn-Pur-Pur	MPS-U45
Q29	A3J3-Y	L28	*L* Drop Target Light	500	Grn-Blk-Blk	MPS-U45
Q30	A3J3-X	L29	*E* Drop Target Light	511	Grn-Brn-Brn	MPS-U45
Q31	A3J3-V	L30	2X Multiplier	522	Grn-Red-Red	MPS-U45
Q32	A3J3-W	L31	3X Multiplier	533	Grn-Orn-Orn	MPS-U45
Q33	A3J3-5	L32	4X Multiplier	544	Grn-Yel-Yel	MPS-A13
Q34	A3J3-6	L33	5X Multiplier	555	Grn-Grn-Grn	MPS-A13
Q35	A3J3-K	L34	Top Lane #1 (10,000)	566	Grn-Blu-Blu	MPS-A13
Q36	A3J3-7	L35	Top Lane #2 (Extra Ball)	577	Grn-Pur-Pur	MPS-A13
Q37	A3J4-1	L36	Top Lane #3 (Special)	700	Pur-Blk-Blk	MPS-A13
Q38	A3J4-2	L37	Top Hole #1 (Captive)	711	Pur-Brn-Brn	MPS-A13
Q39	A3J4-4	L38	Top Hole #2 (Extra Ball)	722	Pur-Red-Red	MPS-A13
Q40	A3J4-3	L39	Right Return Rollover	733	Pur-Orn-Orn	MPS-A13
Q41	A3J3-4	L40	Right Side Rollover	744	Grn-Yel-Yel	MPS-A13
Q42	A3J3-3	L41	#1 Top Rollover	755	Grn-Grn-Grn	MPS-A13
Q43	A3J3-T	L42	#2 Top Rollover	766	Grn-Blu-Blu	MPS-A13
Q44	A3J3-2	L43	#3 Top Rollover	777	Grn-Pur-Pur	MPS-A13
Q45	A3J3-D	L44	#1 Drop Target Light	800	Slt-Blk-Blk	MPS-U45
Q46	A3J3-F	L45	#2 Drop Target Light	811	Slt-Brn-Brn	MPS-U45
Q47	A3J3-P	L46	#3 Drop Target Light	822	Slt-Red-Red	MPS-U45
Q48	A3J3-M	L47	#4 Drop Target Light	833	Slt-Orn-Orn	MPS-U45
Q49	A3J3-E	L48	#1 Spot Target Light	844	Slt-Yel-Yel	MPS-U45
Q50	A3J3-H	L49	#2 Spot Target Light	855	Slt-Grn-Grn	MPS-U45
Q51	A3J3-R	L50	#3 Spot Target Light	866	Slt-Blu-Blu	MPS-U45
Q52	A3J3-N	L51	#4 Spot Target Light	877	Slt-Pur-Pur	MPS-U45
Q53	A3J5-8	Solenoid 8	Knocker	888	Slt-Slt-Slt	2N6043
Q54	A3J6-3	Solenoid 3	Coin Counter 1	655	Blu-Grn-Grn	MPS-U45
Q55	A3J6-2	Solenoid 4	Coin Counter 2	644	Blu-Yel-Yel	MPS-U45
Q56	A3J6-1	Solenoid 7	Coin Counter 3	633	Blu-Orn-Orn	MPS-U45
Q57-Q58	A3J4-13	Solenoid 2	Five Drop Target Bank Reset (U)	200	Red-Blk-Blk	MPS-U45 - 2N3055
Q59	A3J4-8	Solenoid 9	Outhole	244	Red-Yel-Yel	2N6043
Q60	A3J4-7	Solenoid 1	Four Drop Target Bank Reset (U)	266	Red-Blu-Blu	2N6043
Q61-Q62	A3J4-6	Solenoid 5	Four Drop Target Bank Reset (L)	211	Red-Brn-Brn	MPS-U45 - 2N3055
Q63-Q64	A3J4-12	Solenoid 6	Three Drop Target Bank Reset (L)	233	Red-Orn-Orn	MPS-U45 - 2N3055

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Fuse List

designation	Wire in	Value	Wire out	description	location
F1	Orn-Red-Red (322)	½ Amp Slo-Blo	Orn-Orn-Orn (333)	12VAC Sound Board	Bottom Board
F2	Red-Brn-Brn (211)	5 Amp Slo-Blo	Red-Orn-Orn (233)	10VAC Power Supply	Bottom Board
F3	Brn-Slt-Slt (188)	¼ Amp Slo-Blo	Brn-Blk-Blk (100)	60VAC Score Displays	Bottom Board
F4	Red-Blu-Blu (266)	8 Amp Slo-Blo	Red-Pur-Pur (277)	25VAC Solenoids	Bottom Board
F5	Orn-Blk-Blk (300)	10 Amp	Orn-Brn-Brn (311)	8VAC Controlled Lamps	Bottom Board
F6	Blk-Slt-Slt (088)	10 Amp Slo-Blo	Blk-Pur-Pur (077)	6.3VAC Playboard Illumination	Bottom Board
F7		15 Amp Slo-Blo	Blk-Blu-Blu (066)	6.3VAC Lightbox Illumination	Bottom Board
F8	Red-Red-Red (222)	1 Amp Slo-Blo	Grn-Blu-Blu (566)	24VDC Sound / Speech Power Supply	Bottom Board
F9	Pur-Blu-Blu (766)	5 Amp Slo-Blo	Pur-Yel-Yel (744)	115VAC Primary Fuse	Bottom Board
		2½ Amp Slo-Blo		230VAC Primary Fuse	Bottom Board
F10	Red-Blu-Blu (266)	2½ Amp Slo-Blo	Red-Pur-Pur (277)	Right Pop Bumper	Upper Playfield
F11	Red-Blu-Blu (266)	2½ Amp Slo-Blo	Red-Slt-Slt (288)	Left Bottom Pop Bumper	Upper Playfield
F12	Red-Blu-Blu (266)	2½ Amp Slo-Blo	Red-Yel-Yel (244)	Upper Center Pop Bumper	Upper Playfield
F13	Red-Blu-Blu (266)	2½ Amp Slo-Blo	Red-Grn-Grn (255)	Lower Center Pop Bumper	Upper Playfield
F14	Red-Red-Red (222)	2 Amp Slo-Blo	Pur-Slt-Slt (788)	Five Drop Target Bank Reset	Upper Playfield
				Four Drop Target Bank Reset	
F15	Red-Red-Red (222)	1 Amp Slo-Blo	Red-Brn-Brn (211)	Outhole	Upper Playfield
				Hole Kicker	
F16	Red-Red-Red (222)	1 Amp Slo-Blo	Red-Orn-Orn (233)	Trough Ball Gate	Upper Playfield
F17	Red-Red-Red (222)	6¼ Amp Slo-Blo	Orn-Yel-Yel (344)	Kicker (to upper playfield)	Lower Playfield
F18	Red-Red-Red (222)	2 Amp Slo-Blo	Yel-Slt-Slt (488)	Four Drop Target Bank Reset	Lower Playfield
F19	Red-Red-Red (222)	1 Amp Slo-Blo	Grn-Slt-Slt (588)	Ball Return Gate	Lower Playfield
F20	Red-Red-Red (222)	1 Amp Slo-Blo	Orn-Pur-Pur (377)	Three Drop Target Bank Reset	Lower Playfield
				Hole Kicker	
F21	Orn-Slt-Slt (388)	2 Amp Slo-Blo	Brn-Orn-Orn (133)	Right Pop Bumper	Lower Playfield
F22	Orn-Slt-Slt (388)	2 Amp Slo-Blo	Brn-Yel-Yel (144)	Center Pop Bumper	Lower Playfield

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Solenoids

	Solenoid description	Solenoid Type	Power Wire	Fuse	Transfer Wire	Coil Wire Color	Connector	Driver Tr.	Transistor Type	Coil Type
L0	Game Over Relay	controlled	Red-Red-Red (222)			Red-Slt-Slt (288)	A3J3-A	Q1	MPS-U45	A-16890
L1	Tilt Relay	controlled	Red-Red-Red (222)			Red-Pur-Pur (277)	A3J3-B	Q2	MPS-U45	A-16890
L2	Lockout	controlled	Red-Red-Red (222)			Slt-Pur-Pur (877)	A3J5-2	Q3	MPS-U45	A-16890
L8	Ball Gate (L)	controlled	Red-Red-Red (222)	F19	Grn-Slt-Slt (588)	Grn-Yel-Yel (544)	A3J2-10	Q9 + UTP (Q3)	MPS-U45 - 2N5875	A-16570
L12	Hole Kicker (L)	controlled	Red-Red-Red (222)	F20	Orn-Pur-Pur (377)	Brn-Blk-Blk (100)	A3J3-25	Q13 + UTP (Q4)	MPS-U45 - 2N5875	A-16570
L13	Hole Kicker (U)	controlled	Red-Red-Red (222)	F15	Red-Brn-Brn (211)	Brn-Brn-Brn (111)	A3J3-24	Q14 + UTP (Q1)	MPS-U45 - 2N5875	A-16570
L14	Ball Lift Kicker (L)	controlled	Red-Red-Red (222)	F17	Orn-Yel-Yel (344)	Brn-Red-Red (122)	A3J3-22	Q15 + UTP (Q5)	MPS-U45 - 2N5875	A-4893
L15	Ball Release Gate (Cardholder)	controlled	Red-Red-Red (222)	F16	Red-Orn-Orn (233)	Brn-Orn-Orn (133)	A3J3-23	Q16 + UTP (Q2)	MPS-U45 - 2N5875	A-16570
L16	U (Upper) Relay	controlled	Red-Red-Red (222)			Brn-Yel-Yel (144)	A3J3-13	Q17	MPS-U45	A-16890
L17	L (Lower) Relay	controlled	Red-Red-Red (222)			Brn-Blu-Blu (166)	A3J3-14	Q18	MPS-U45	A-16890
L18	Wireform Ball Gate	controlled	Red-Red-Red (222)			Brn-Blu-Blu (166)	A3J3-16	Q19	MPS-U45	A-17564
Sol. 1	Four Drop Target Bank Reset (U)	controlled	Red-Red-Red (222)	F14	Pur-Slt-Slt (788)	Red-Blu-Blu (266)	A3J4-7	Q60	2N6043	A-18318
Sol. 2	Five Drop Target Bank Reset (U)	controlled	Red-Red-Red (222)	F14	Pur-Slt-Slt (788)	Red-Blk-Blk (200)	A3J4-13	Q57 + Q58	MPS-U45 + 2N3055	A-17891
Sol. 3	Coin Counter #1	controlled	Red-Red-Red (222)			Blu-Grn-Grn (655)	A3J6-3	Q54	MPS-U45	
Sol. 4	Coin Counter #2	controlled	Red-Red-Red (222)			Blu-Yel-Yel (644)	A3J6-2	Q55	MPS-U45	
Sol. 5	Four Drop Target Bank Reset (L)	controlled	Red-Red-Red (222)	F18	Yel-Slt-Slt (488)	Red-Brn-Brn (211)	A3J4-6	Q61 + Q62	MPS-U45 + 2N3055	A-18318
Sol. 6	Three Drop Target Bank Reset (L)	controlled	Red-Red-Red (222)	F20	Orn-Pur-Pur (377)	Red-Orn-Orn (233)	A3J4-12	Q63 + Q64	MPS-U45 + 2N3055	A-18102
Sol. 7	Coin Counter #3	controlled	Red-Red-Red (222)			Blu-Orn-Orn (633)	A3J6-1	Q56	MPS-U45	
Sol. 8	Knocker	controlled	Red-Red-Red (222)			Slt-Slt-Slt (888)	A3J5-8	Q53	2N6043	A-5195
Sol. 9	Outhole	controlled	Red-Red-Red (222)	F15	Red-Brn-Brn (211)	Red-Yel-Yel (244)	A3J4-8	Q59	2N6043	A-16570
	Upper Center Pop Bumper	Pop Bumper Board	Red-Blu-Blu (266)	F12	Red-Yel-Yel (244)	Brn-Slt-Slt (188)	1A8J1-1	board 1 - Q1	2N6057	A-1496
	Lower Center Pop Bumper	Pop Bumper Board	Red-Blu-Blu (266)	F13	Red-Grn-Grn (255)	Yel-Slt-Slt (488)	2A8J1-1	board 2 - Q1	2N6057	A-1496
	Right Pop Bumper	Pop Bumper Board	Red-Blu-Blu (266)	F10	Red-Pur-Pur (277)	Slt-Slt-Slt (888)	3A8J1-1	board 3 - Q1	2N6057	A-1496
	Bottom Pop Bumper	Pop Bumper Board	Red-Blu-Blu (266)	F11	Red-Slt-Slt (288)	Red-Blu-Blu (266)	4A8J1-1	board 4 - Q1	2N6057	A-1496
	Right Pop Bumper (L)	Pop Bumper Board	Orn-Slt-Slt (388)	F21	Brn-Orn-Orn (133)	Brn-Slt-Slt (188)	5A8J1-1	board 5 - Q1	2N6057	A-1496
	Center Pop Bumper (L)	Pop Bumper Board	Orn-Slt-Slt (388)	F22	Brn-Yel-Yel (144)	Brn-Blu-Blu (166)	6A8J1-1	board 6 - Q1	2N6057	A-1496
	Left Kicking Rubber	directly	Red-Blu-Blu (266)					switch		A-1496
	Right Kicking Rubber	directly	Red-Blu-Blu (266)					switch		A-1496
	Kicking Rubber (L)	directly	Orn-Slt-Slt (388)					switch		A-1496
	Kicking Target (L)	directly	Orn-Slt-Slt (388)					switch		A-5194
	Left Flipper (L)	directly	Red-Blu-Blu (266)	to button,	Blk-Grn-Grn (055)	Brn-Brn-Brn (111)	A9P8-6	button		A-17875
	Right Flipper (L)	directly	Red-Blu-Blu (266)	to button,	Blk-Yel-Yel (044)	Orn-Orn-Orn (333)	A9P8-5	button		A-17875
	Top Left Flipper	directly	Red-Blu-Blu (266)	to button,	Blk-Pur-Pur (077)	to coil	A9J8-6	button		A-17875
	Bottom Left Flipper	directly	Red-Blu-Blu (266)	to button,	Blk-Pur-Pur (077)	to coil	A9J8-6	button		A-17875
	Top Right Flipper	directly	Red-Blu-Blu (266)	to button,	Blk-Orn-Orn (033)	to coil	A9J8-5	button		A-17875
	Bottom Right Flipper	directly	Red-Blu-Blu (266)	to button,	Blk-Orn-Orn (033)	to coil	A9J8-5	button		A-17875

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UPT = Under Playfield Transistor