

MEDIEVAL MADNESS



OPERATIONS MANUAL INCLUDES

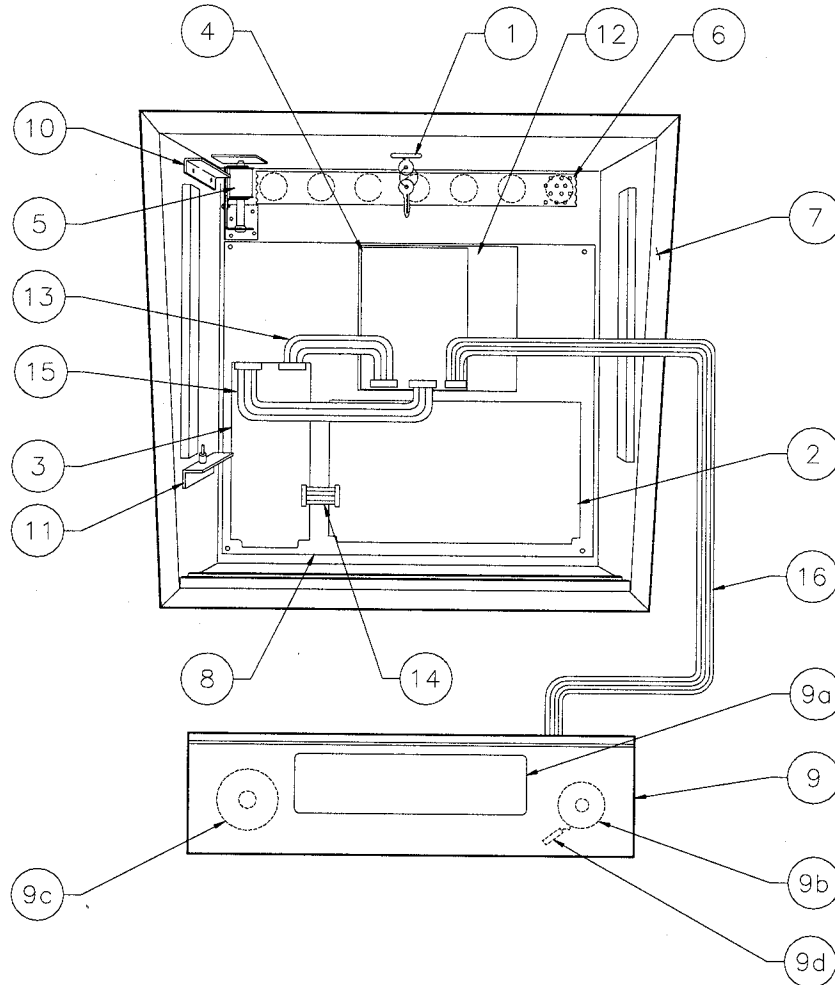
Operations & Adjustments • Testing & Problem Diagnosis • Parts Information • Wiring
Diagrams & Schematics

Williams Electronics Games, Inc., 3401 N. California Avenue, Chicago, IL 60618

SECTION TWO

PARTS INFORMATION

50059-BB Backbox Assembly



Item	Part Number	Description
1	A-13379	Lock & Plate Assembly
a)	20-9637	Lock & Cam Kit
2	A-20028	WPC '95 Power Driver PCB
3	A-21377-50059	WPC '95 CPU/Flipper PCB Assy.
4	A-20516-50059	WPC '95 Audio Visual PCB Assy.
5	B-10686-1	Knocker Assembly
6	01-6645	Vent Screen
7	04-10450-50059	Wood Backbox
8	A-14092-7	Mounting Plate Assembly
9	A-21559	Speaker/Display Assembly
a)	5901-12784-00	Dot Matrix Display/Driver Board
b)	5555-12924-00	Tweeter, 4Ω, 15w
c)	5555-12856-00	Speaker, 5-1/4", 4 Ω, 25w
d)	5045-12914-00	Capacitor, 10mfd, 50v, +/-20%
10	A-12497	Insert Hinge Assy., Upper
11	A-12498	Insert Hinge Assy., Lower
12	01-14480	Audio Visual Shield

Ribbon Cables:

Item	Part Number	Description
13	5795-12653-15	Ribbon Cable, 34-Pin, 2 Conn.
14	5795-12653-03	Ribbon Cable, 34-Pin, 3"
15	5795-10938-19	Ribbon Cable, 26-Pin, 2 Conn.
16	5795-13434-25	Ribbon Cable, 14 Pin w/Ferrite

Miscellaneous Parts:

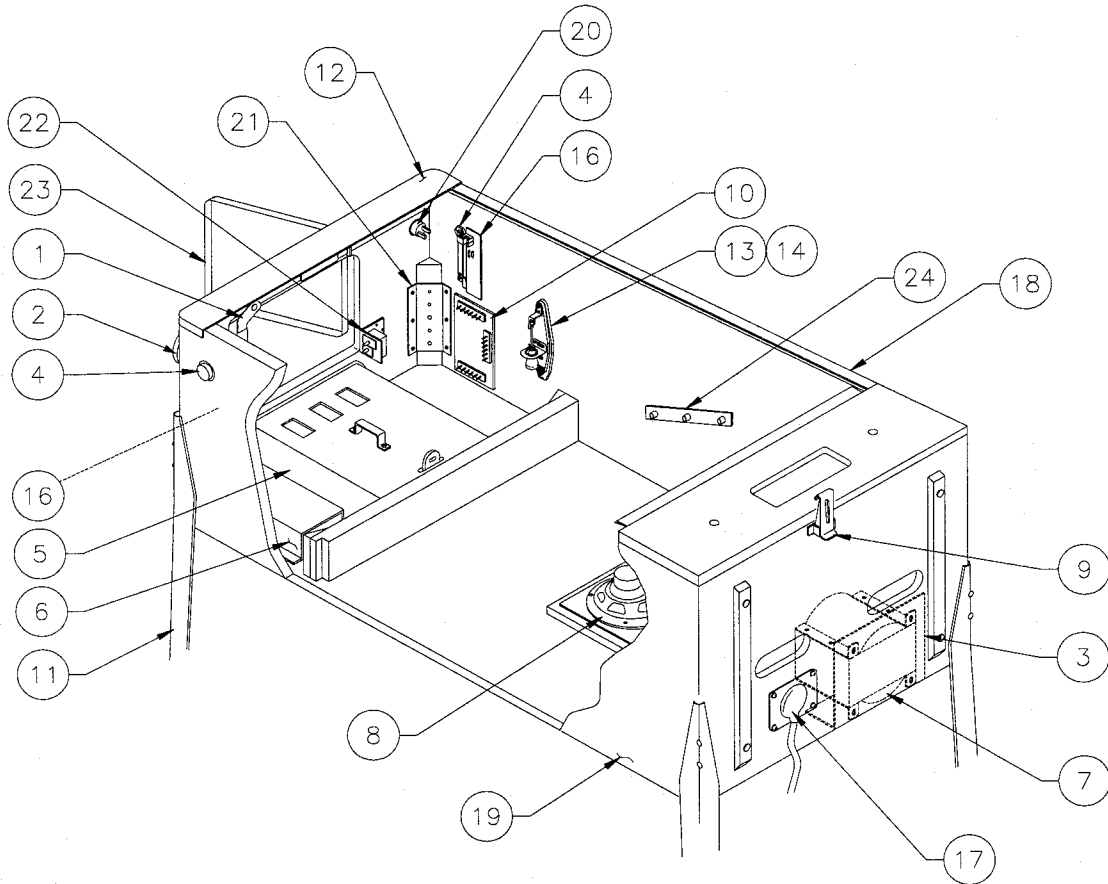
(Not shown)

02-5223	Bushing Button - Speaker Panel
08-7456	Backbox Glass, 27 x 18-7/8"
31-1357-50059	Screened Translite

Cables:

H-20477	Logic Power Cable
H-20478	Secondary Cable
H-20479	Dot Matrix Power Cable

50059-CAB Cabinet Assembly



Miscellaneous Parts (Not Shown)

Item	Part Number	Description	Part Number	Description
1	A-16773	Lever Guide Assembly	A-17195	Tilt Switch Assy. w/Cable
2	20-9663-B-4	Push Button , Round	A-19562.1	Stay Arm Assembly
3	01-13936	Drip Plate - Narrow	01-12352	Clip Bracket
4	A-16883-4	Flipper Button w/Spring (2)	01-9011.1-L	Backbox Mtg. Bracket, Left
5	A-20729-5	4-Ball Cashbox Assembly	01-9011.1-R	Backbox Mtg. Bracket, Right
6	A-20871	Power Interface Assy.	01-6389-1	Cashbox Lock Bracket
7	5610-14515-01	WPC Transformer	08-7028-T	Playfield Glass
8	5555-12929-00	Speaker, 4Ω, 6", 25w	08-7377	Leg Leveler Adjuster, 3"
9	20-9347	Toggle Latch	20-6500	Steel Ball, 1-1/16" (4")
10	A-20580	Coin Door Interface Board		
11	A-19514	Leg Assembly, Chrome (4)		
12	D-12615	Front Molding Assembly		
13	20-6502-A	Plumb Bob		
14	04-10346	Tilt Mechanism Assembly		
15	*	Cordset		
16	A-17316	Opto Flipper Assembly (2)		
17	01-10714	Line Cord Cover		
18	A-12359-3	Side Molding Assembly (2)		
19	11-1347	Wood Cabinet		
20	20-9663-16	Push Button w/Sw., Start (Yellow)		
21	01-11400	Leg Plate (4)		
22	A-18249-3	Cable & Interlock Switch Assy.		
23	09-61000-1	Coin Door-U.S.A.		
24	01-11408	Plate Spacer (2)		

Cabinet Cables:

A-20201	Cable & Jumper Assy., Coin Door
H-17217.1	Plumb/Bob Mech. Protect Cable
H-17837-2	Voltage Program Jumper Cable
H-20599-1.1	WPC '95 Cabinet Cable
H-19601-1	Power Extension Cable
H-21838	Cabinet Switch/Lamp Cable

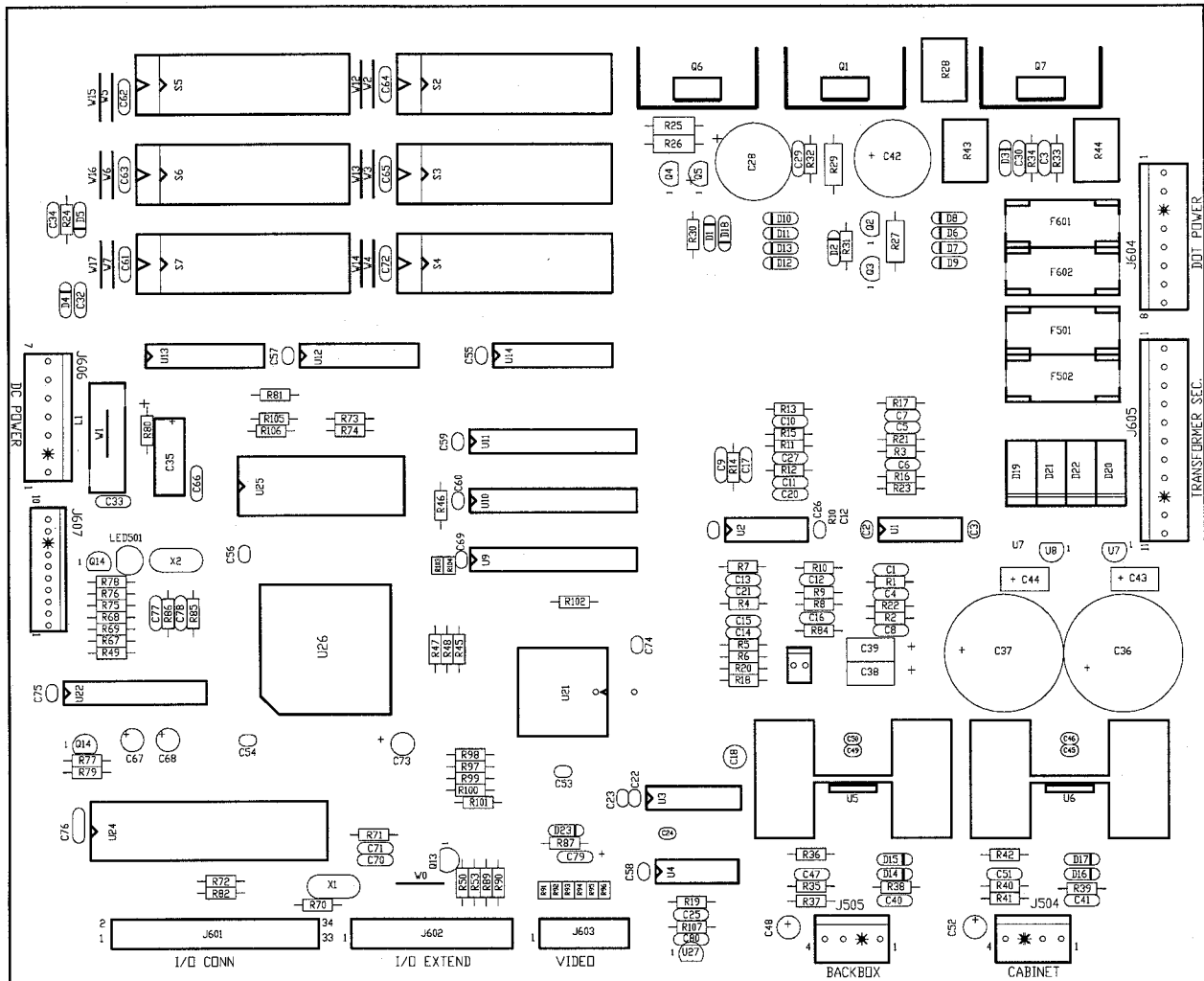
* See Application Chart p.2-39.

A-20516-50059

WPC '95 Audio Visual PCB Assembly

Part Number	Designator	Description	Part Number	Designator	Description
4004-01005-06	-	Mach. Screw, 4-40 x 3/8"	5048-13418-00	C4 - C6	Cap., .047m, 50v, 5% Ax.
4404-01119-00	-	Nut 4-40 ESN	5048-13609-00	C9, C12, C15	Cap., 3900pf, 50v, 5% Ax.
5010-08774-00	R2, R17, R22, R23, R35, R36, R40, R42, R87	Resistor, 22K Ω , 1/4w, 5%	5048-13610-00	C8, C10, C11, C13, C14	Cap., 1000pf, 50v, 5% Ax.
5010-08991-00	R20, R46-R48, R50, R72, R76, R77, R81, R107	Resistor, 4.7K Ω , 1/4w, 5%	5048-13611-00	C16, C17, C20, C21	Cap., 680pf, 50v, 5% Ax.
5010-09034-00	R21	Resistor, 10K Ω , 1/4w, 5%	5048-14563-00	C29-C31, C81, C82	Cap., .01 μ f, 200v, 10% Axial
5010-09036-00	R19	Resistor, 100 Ω , 1/4w, 5%	5070-09045-00	D19-D22	Diode MR501, 3.0A
5010-09134-00	R32-R34	Resistor, 150K Ω , 1/4w, 5%	5070-09054-00	D4, D6-D17, D23	Diode 1N4004, 1.0A
5010-09219-00	R1, R3	Resistor, 8.2K Ω , 1/4w, 5%	5075-12823-00	D1, D18	Zener, 1N4758A 56v, 1w
5010-09416-00	R73, R74, R82, R88, R105, R106	Resistor, 470 Ω , 1/4w, 5%	5075-12824-00	D3, D5	Zener, 1N4742A 12v, 1w
5010-09807-00	R30, R31, R67-R69, R102	Resistor, 120 Ω , 1/4w, 5%	5075-12826-00	D2	Zener, 1N4759, 62v, 1w
5010-10171-00	R24	Resistor, 56 Ω , 1/4w, 5%	5160-08938-00	Q13-Q15	Transistor, 2N4401 NPN
5010-10258-00	R86	Resistor, 1M Ω , 1/4w, 5%	5164-09056-00	Q2, Q3	Transistor, MPSD02 NPN
5010-10983-00	R53, R75, R79, R84, R85, R89, R90	Resistor, 1.8K Ω , 1/4w, 5%	5164-12154-00	Q1, Q7	Transistor, MJE15030 NPN
5010-12832-00	R25, R26, R27, R29	Resistor, 47K Ω , 1/4w, 5%	5194-09055-00	Q4, Q5	Transistor, MPSD52 PNP
5010-13215-00	R78, R97-R101	Resistor, 200K Ω , 1/4w, 5%	5194-12155-00	Q6	Transistor, MJE15031 PNP
5010-13372-00	R91-R96, R103, R104	Resistor, 220 Ω , 1/8w, 5%	5250-13302-00	U7	Reg. 78L05T 5v
5010-13420-00	R37, R41	Resistor, 680 Ω , 1/4w, 5%	5250-13303-00	U8	Reg. 79L05T 5v
5010-13517-00	R38, R39	Resistor, 15 Ω , 1/4w, 5%	5311-12538-00	U4	IC 74HC14 Hex. S-T
5010-13607-00	R4, R5, R7-R15	Resistor, 6.19K Ω , 1/8w, 1%	5317-12211-00	U12-U14	IC Octal Buffer 74ALS541
5012-14558-00	R44	Resistor, 1.8K Ω , 5w vertical	5340-12278-00	U25	S/Ram 2064 150NS
5012-14559-00	R43	Resistor, 4.7K Ω , 5w vertical	5370-12687-00	U27	IC MC 340640Reset Chp
5012-14560-00	R28	Resistor, 120 Ω , 5w vertical	5349-15440-00	U9-U11	SRAM 8Kx8-35ms, 28pd/pf
5013-13661-00	R16	Resistor, 9.09K Ω , 1/4w, 1%	5370-12730-00	U1, U2	IC Op Amp TL084
5013-14456-00	R6, R18	Resistor, 3.32K Ω , 1/4w, 1%	5370-13419-00	U5, U6	IC TDA 2030AV 18w, Audio Amp
5040-14569-00	C35	Cap., 100mf, 25v, Axial	5371-13299-00	U3	IC Ad-1851 16bit mono
5040-09365-00	C38, C39, C43, C44	Cap., 1m, 63v(+50,-10%)Ax.	5520-14561-00	X2	Crystal 20mHz, parallel 20pf
5040-12750-00	C48, C52, C73	Cap., 22m, 35v Radial	5671-14516-00	LED 501	Led-Display Red T 1-3/4
5040-13098-00	C18, C67, C68	Cap., 4.7 μ , 35v (\pm 20%)	5700-08985-00	U24	Socket IC 40-pin .6
5040-15413-00	C36, C37	Cap., 10000 μ f, 35v, 25mm	5700-12047-00	U22	Socket IC 24.3P
5040-14564-00	C28, C42	Cap., 150 μ f, 160v, 20%Rad.	5700-12088-00	S2-S7	Socket Dip 32.6P"
5043-08996-00	C2, C3, C19, C22- C24, C26, C32, C34, C45, C46, C49, C50, C53-C66, C69, C72, C74-C76, C79, C80	Cap., 0.1 μ f, 50v (\pm 20%) Ax.	5705-12638-00	U5, U6	Heatsink 5298B
5048-10992-00	C27	Cap., .0047m, 50v, 10% Ax.	5705-14562-00	Q1, Q6, Q7	Heatsink 10-220 wave sol 287
5048-11028-00	C77	Cap., 22p, 50v, Axial	5733-14528-00	F501, F502, F601, F602	Fuse Holder 5x20mm 10A.
5048-11029-00	C25	Cap., 100p, 50v, 5% Axial	5731-14532-00	F501, F502	Fuse 5x20mm T2.5A., 250V
5048-11030-00	C7	Cap., 470p, 50v, Axial	5731-14840-00	F601, F602	Fuse 5x20mm T0.315A., 250V
5048-11033-00	C1	Cap., .022m, 50v, 10% Ax.	5791-10850-00	J602	Connector, 26-pin Header Str.
5048-12036-00	C40, C41	Cap., .22m, 50v, Axial	5791-10862-04	J504, J505	Connector, 4-pin Header Str.
5048-13172-00	C78	Cap., 47pf, 50v, 20% Ax.	5791-10862-07	J606	Connector, 7-pin Header Str.
			5791-10862-08	J604	Connector, 8-pin Header Str.
			5791-10862-11	J605	Connector, 11-pin Header Str.
			5791-12516-00	J601	Connector, 34 hdr 2 x 17 .100
			5791-12827-00	J603	Connector, 14 Hen 7x2 Str.
			5791-13830-10	J607	Connector, 10-pin Str. Sq.
			5010-09534-00	W0, W1, W12-W17, R49	Resistor, 0 Ω , 0w
			A-5343-50059-S2	S2	ROM Assembly
			5341-15451-SU3	S3	Masked Sound ROM Assembly
			5341-15451-SU4	S4	Masked Sound ROM Assembly
			5341-15451-SU5	S5	Masked Sound ROM Assembly
			5341-15451-SU6	S6	Masked Sound ROM Assembly

A-20516-50059 WPC '95 Audio Visual PCB Assembly

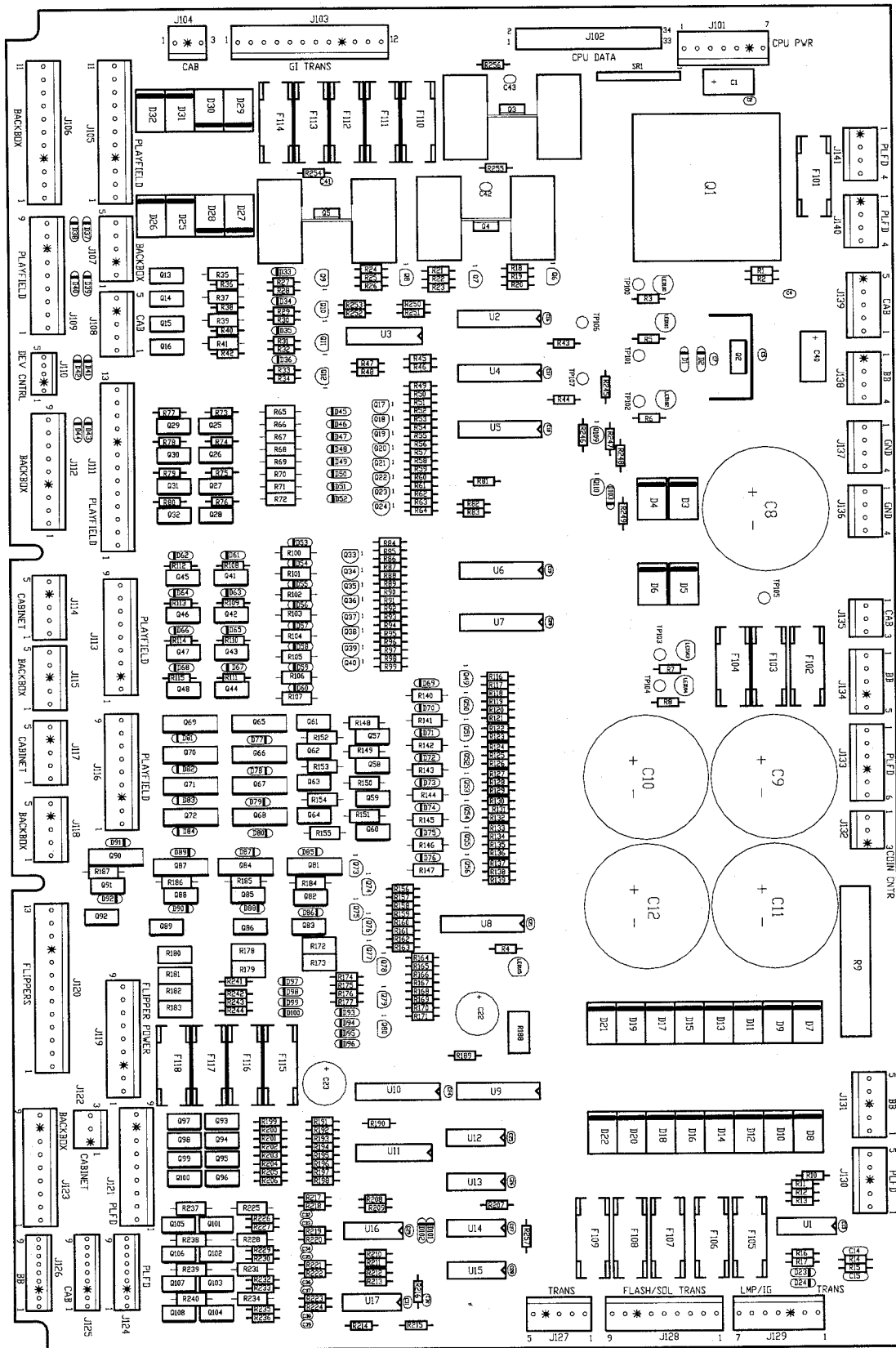


A-20028

WPC '95 Power Driver PCB Assembly

Part Number	Designator	Description	Part Number	Designator	Description
5040-14569-00	C1, C40	Capacitor, 100µF, 25v, Ax.	5010-09999-00	R3, R4, R6-R8, R43, R44, R81-R83, R190	Resistor, 2KΩ, 1/4w, 5%
5043-08996-00	C2, C4, C5, C7, C13, C16-C21, C24-C39, C41-C43	Capacitor, 0.1m, 50v (±20%) Ax.	5012-12632-00	R9	Resistor, .12Ω, 10w, 5%
5040-13417-00	C8 - C12	Capacitor, 10000µf, 35v Radial	5010-09324-00	R10	Resistor, 27KΩ, 1/4w, 5%
5048-11031-00	C14, C15	Capacitor, .001m, 50v, 10% Ax.	5010-09358-00	R11, R157, R159, R161, R163, R165, R167, R169, R171, R216-R224	Resistor, 1KΩ, 1/4w, 5%
5040-09537-00	C22, C23	Capacitor, 100µ, 100v (±20%) Radial	5010-09036-00	R247	Resistor, 100Ω, 1/4w, 5%
5070-09054-00	D1, D2, D23, D24, D33 - D100, D103	Diode 1N4004 1.0A.	5010-09034-00	R12, R13, R189, R208-R215, R248	Resistor, 10KΩ, 1/4w, 5%
5070-14526-00	D3-D22	Diode P600G 6A 400 PIV	5010-08992-00	R18, R21, R24, R192, R194, R196, R198, R200, R202, R204, R206	Resistor, 560Ω, 1/4w, 5%
5070-08919-00	D101, D102	Diode, 1N4148 150mA.	5010-08991-00	R19, R22, R25, R28, R30, R32, R34, R50, R52, R54, R56, R58, R60, R62, R64, R84, R86, R88, R90, R92, R94, R96, R98, R116, R119, R122, R125, R128, R131, R134, R137, R246	Resistor, 4.7KΩ, 1/4w, 5%
5731-14531-00	F101	Fuse 5 x 20mm T.63A., 250V	5010-11079-00	R20, R23, R26, R254-R256	Resistor, 51Ω, 1/4w, 5%
5731-14530-00	F102-F105, F107, F109-F118	Fuse 5 x 20mm T 4A, 250V	5010-09416-00	R27, R29, R31, R33, R45-R49, R51, R53, R55, R57, R59, R61, R63, R85, R87, R89, R91, R93, R95, R97, R99, R117, R120, R123, R126, R129, R132, R135, R138, R156, R158, R160, R162, R164, R166, R168, R170, R245, R250-R253, R257	Resistor, 470Ω, 1/4w, 5%
5731-14046-00	F106	Fuse, 5x20mm T5.0A, 250V	5010-08993-00	R35, R37, R39, R41, R65-R72, R100-R107, R140-R147	Resistor, 68Ω, 1/4w, 5%
5731-14529-00	F108	Fuse 5 x 20mm T6.3A, 250V	5010-08997-00	R36, R38, R40, R42, R73-R80, R108, R109, R110-R115, R118, R121, R124, R127, R130, R133, R136, R139	Resistor, 2.7kΩ, 1/4w, 5%
5733-14528-00	F101-F118	Fuse Holder 5 x 20mm 10A	5010-09361-00	R148-R155, R184-R187	Resistor, 220Ω, 1/4w, 5%
5705-14724-00	Q1	Heat Sink TO-3 5.1DEG/W	5011-12956-00	R172, R173, R178-R183	Resistor, 2.7KΩ, 1/4w, 5%
5701-09652-00	Q1	Thermal Pad TO-3	5010-10171-00	R174-R177, R241-R244	Resistor, 56Ω, 1/4w, 5%
4406-01128-00	Q1	Nut 6-32 KEPS	5010-14711-00	R188	Resistor, 10KΩ, 1/4w, 5%
4006-01005-06	Q1	Mach. Screw, 6-32 x 3/8"	5010-09314-00	R191, R193, R195, R197, R199, R201, R203, R205	Resistor, 1.2kΩ, 1/4w, 5%
5705-14562-00	Q2	Heat Sink 10-220 Wave Sol 287	5010-09086-00	R207	Resistor, 6.8kΩ, 1/4w, 5%
4004-01005-06	Q2-Q5	Mach. Screw, 4-40 x 3/8"	5010-12427-00	R225, R228, R231, R234, R237-R240	Resistor, .22kΩ, 1/4w, 5%
4404-01119-00	Q2-Q5	Nut 4-40 ESN	5010-08998-00	R226, R227, R229, R230, R232, R233, R235, R236	Resistor, 2.2kΩ, 1/4w, 5%
5705-12638-00	Q3-Q5	Heat Sink 5298B	5010-13517-00	R249	Resistor, 150Ω, 1/4w, 5%
5791-10862-07	J101, J129	Connector, 7-pin Header Str.	5010-09534-00	D25-D32	Resistor, 0Ω, 0w
5791-12516-00	J102	Connector, 34 Hdr 2x17	5019-10143-00	SRI	SIP RES 470 x 9R
5791-10862-12	J103	Connector, 12-pin Header Str.	5824-09248-00	TP100-TP107	Test Point #1502-1
5791-10862-03	J104, J122, J132, J135	Connector, 3-pin Header Str.	5370-12272-00	U1, U16, U17	I.C. LM339 Quad Comp
5791-10862-11	J105, J106	Connector, 11-pin Header Str.	5281-09486-00	U2, U4-U8, U10	I.C. 74LS374 8d/f/f
5791-10862-05	J107, J108, J114, J115, J117, J118, J127, J130, J131, J134, J139	Connector, 5-pin Header Str.	5162-12422-00	U3, U11	Trans uln 2803 Oc-drl
5791-10862-09	J109, J112, J113, J116, J119, J121, J123, J128	Connector, 9-pin Header Str.	5281-10182-00	U9	I.C. 74LS240 I/drvr
5791-10862-13	J111, J120	Connector, 13-pin Header Str.	5281-09487-00	U12 - U15	I.C. 74LS74 Dual d f/f
5791-13830-09	J124-J126	Connector, 9-pin Header Str.	5791-13830-05	J110	Connector, 5-pin Header
5791-10862-06	J133	Connector, 6-pin Header Str.			
5791-10862-04	J136-J138, J140, J141	Connector, 4-pin Header Str.			
5671-14516-00	LED100-LED105	LED Dspl Red T-1			
5250-14527-00	Q1	Regulator Voltage LM317K			
5460-12423-00	Q2	I.C. LM7812			
5131-12725-00	Q3-Q5	Triac BT138E			
5194-09055-00	Q6-Q12, Q17-Q24, Q33-Q40, Q49-Q56, Q109	Transistor, MPSD52 PNP			
5162-12635-00	Q13-Q16, Q25-Q32, Q41-Q48, Q57-Q64, Q82, Q83, Q85, Q86, Q88, Q89, Q91, Q92, Q101-Q108	Transistor, TIP102			
5191-12179-00	Q65-Q72, Q81, Q84, Q87, Q90	Transistor, TIP36C			
5190-09016-00	Q73 - Q80	Transistor, 2N4403 PNP			
5192-12428-00	Q93 - Q100	Transistor, TIP107			
5160-10269-00	Q110	Transistor, 2N3904			
5013-14535-00	R1	Resistor, 750Ω, 1/4w, 1%			
5013-14534-00	R2	Resistor, 243Ω, 1/4w, 1%			
5010-09224-00	R5, R14-R17	Resistor, 270Ω, 1/4w, 1%			

A-20028 WPC '95 Power Driver PCB Assembly

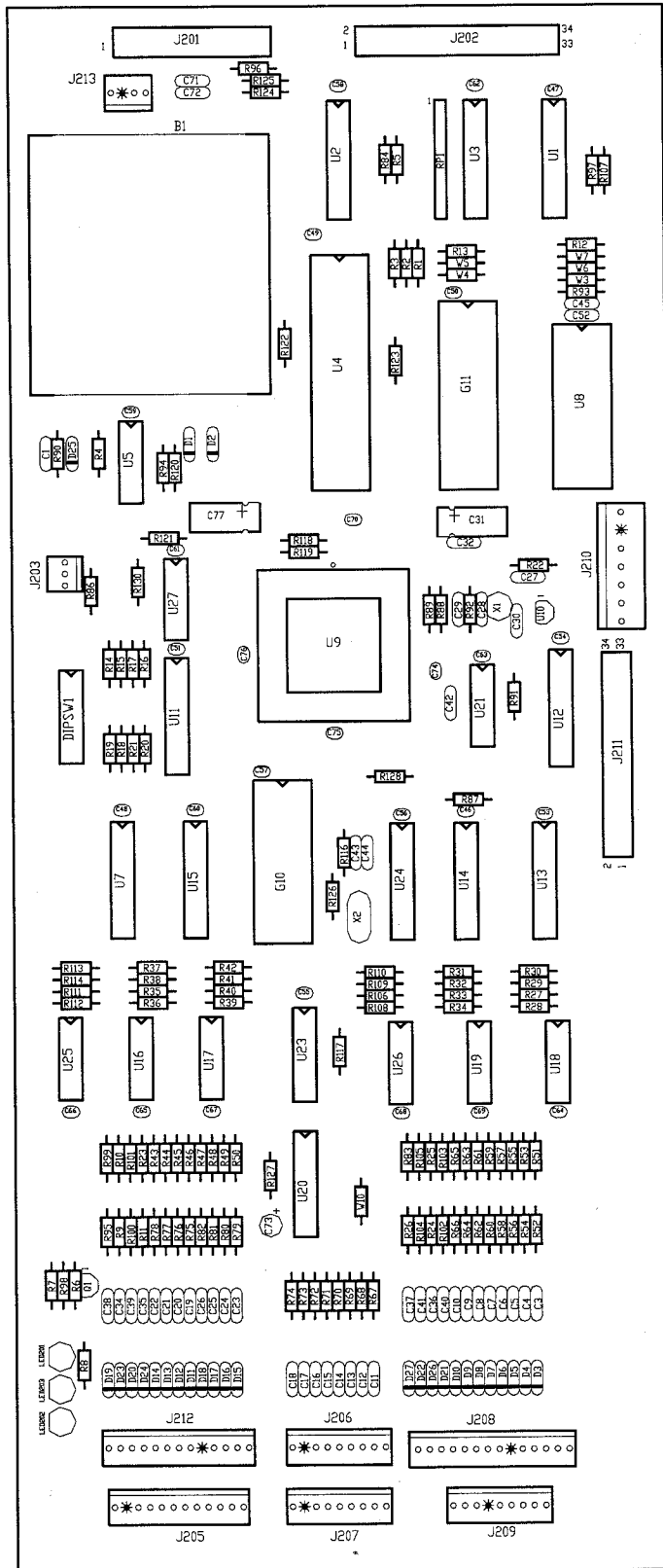


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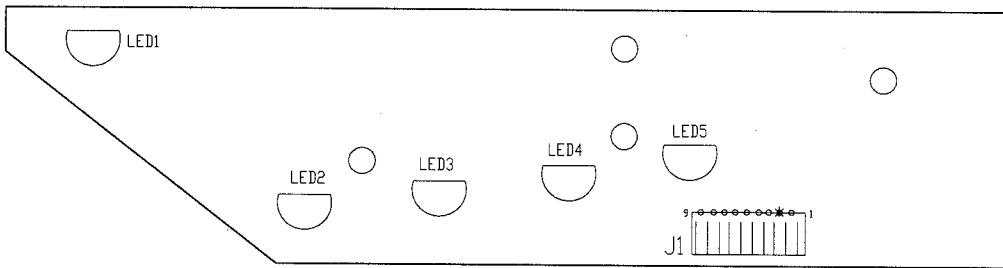
WPC '95 CPU PCB Assembly

Part Number	Designator	Description
A-15814	B1	Battery Holder
5048-11033-00	C1, C42	Capacitor, .022m, 50v, 10% Axial
5048-11030-00	C3-C26, C34-C41	Capacitor, 470p, 50v, Axial
5043-09030-00	C27	Capacitor, .047m, 50v ($\pm 20\%$) Axial
5048-13375-00	C28	Capacitor, 100p, 50v (10%) Axial
5048-11028-00	C29, C30, C43, C44	Capacitor, 22p, 50v Axial
5040-14569-00	C31, C77	Capacitor, 100mf, 25v Axial
5048-11031-00	C32	Capacitor, .001m, 50v, 10% Axial
5043-08996-00	C45-C70, C74-C76	Capacitor, 0.1m, 50v ($\pm 20\%$) Axial
5040-13098-00	C73	Capacitor, 4.7 μ F, @35v ($\pm 20\%$)
5645-09025-00	DIPSW1	Switch Dip 8 Pos
5070-09266-00	D1, D25	Diode 1N5817 1.0A.
5070-08919-00	D2-D24, D26, D27	Diode 1N4148 150ma
5700-10176-00	G10A	Socket Dip 28.6
5700-12088-00	G11	Socket Dip 32.6p"
5700-08985-00	U4	Socket I C 40PI N .6
5700-12424-00	U9	socket 84 PI N PL CC
5700-10389-00	U20	Socket I C 18 PIN 3"
5791-10850-00	J201	26H STR Sq. .100
5791-12516-00	J211, J202	34 HDR 2x17 .100
5791-13830-12	J205	12H STR Sq. Pin .100 Solid Tab
5791-13830-09	J206, J207, J209	9H STR Sq. Pin .100 Solid Tab
5791-13830-14	J208	14H STR Sq. Pin .100 Solid Tab
5791-10862-07	J210	7H STR Sq. Pin .156
5791-13830-13	J212	13H STR Sq. Pin .100 Solid Tab
5671-14516-00	LED201, LED202, LED203	LED DSPL RED T-1 3/4
5160-10269-00	Q1	Trans 2N3904 NPN
5019-09669-00	RP1	SIP 1K 9R 10 5%
5010-09358-00	R1, R2, R3, R4, R9, R10, R11, R23, R24, R25, R26, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R93, R95, R96, R97, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R117	Resistor, 1K Ω , 1/4w, 5%
5010-09416-00	R5, R6, R7, R8, R12, R13, R87, R88, R89	Resistor, 470 Ω , 1/4w, 5%
5010-09034-00	R14, R15, R16, R17, R18, R19, R20, R21, R22, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R86, R90, R94, R98	Resistor, 10K Ω , 1/4w, 5%
5010-12104-00	R91	Resistor, 22M, 1/4w, 5%
5010-10989-00	R92	Resistor, 470K Ω , 1/4w, 5%
5010-09187-00	R118, R119, R120, R121, R122, R123, R128, R130	Resistor, 150 Ω , 1/4w, 5%
5010-09534-00	W3, W4, W7, R124, R125	Resistor, 0 Ω , 0w
5010-10258-00	R126	Resistor, 1M, 1/4w, 5%
5010-09040-00	R127	Resistor, 33 Ω , 1/4w, 5%
5281-09867-00	U1, U2	I C 74LS244 OCT BUF
5281-09308-00	U3	I C 74LS245 TRNC
5281-09851-00	U5	I C 74LS14 SMT/TRG
5315-12031-00	U7	I C 74HCT244
5340-12558-00	U8	I C RAM 8K x8 Static Cmos 100ns
5370-12687-00	U10	I C MC 34064 Reset CHP
5281-10182-00	U11, U12, U13, U15	I C 74LS240 L/DRVR
5311-14068-00	U14, U24	I C 74HC574 OCTAL D-Latch
5370-12272-00	U16, U17, U18, U19, U25, U26	I C LM339 Quad Comp
5284-12651-00	U21	I C 4584 Hex Schmitt
5311-14554-00	U23	I C I C 74HC237 3 to 8 NON I NV DE
5281-09247-00	U27	I C 74LS02 Quad Nor
5520-12084-00	X1	Crystal 32. 768 KHZ
5520-14761-00	X2	XTL 8MHz Anti-Res Parallel Cut
A-5400-50059-1	G10	PIC16C57 Assembly
A-5343-50059-1	G11	Game ROM Assembly
5880-09022-00	B1	Battery 1.5v, AA Alk.
5400-10320-00	U4	IC MPU 68B09E
5410-12426-00	U9	IC WPC-89 ASIC
5162-12422-00	U20	Trans Uln 2803 Oc-Drl

A-21377-50059 WPC '95 CPU PCB Assembly

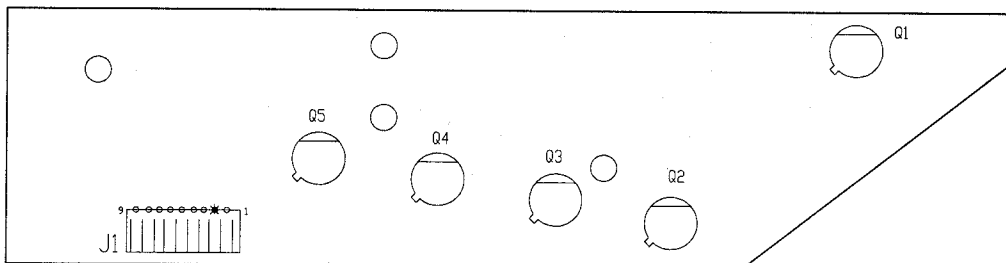


A-18617-1 Trough IR LED PCB Assembly



Part Number	Designator	Description
5671-12731-00	LED1 - LED5	Infra Red Diode
5791-12622-09	J1	Connector, 9-pin Header Sq.

A-18618-1 Trough IR Photo Transistor PCB Assembly

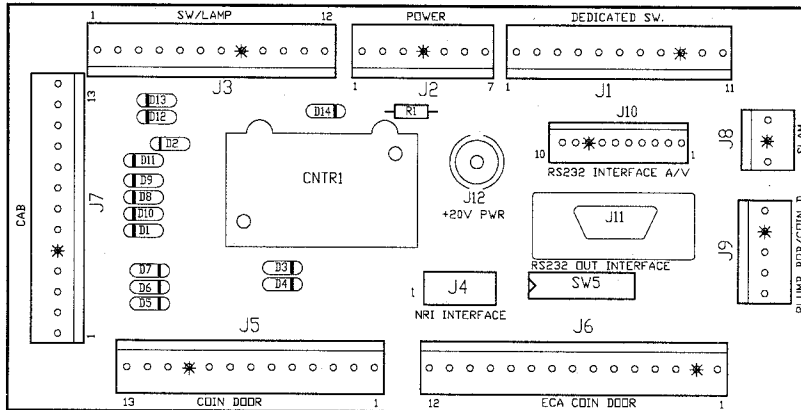


Part Number	Designator	Description
5163-14114-00	Q1 - Q5	Infra Red Photo Transistor
5791-12622-09	J1	Connector, 9-pin Header Sq.

A-20580

Coin Interface PCB Assembly

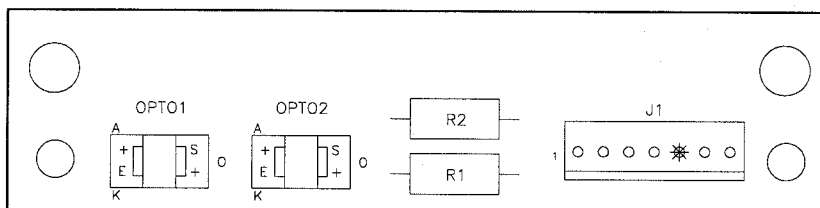
(This board does not contain optional items such as the coin counter and printer interface.)



Part Number	Designator	Description
5070-09054-00	D1-D14	Diode 1N4004 1.0A.
5791-10862-11	J1	Connector, 11-pin Header Str. Sq.
5791-10862-07	J2	Connector, 7-pin Header Str. Sq.
5791-10862-12	J3	Connector, 12-pin Header Str. Sq.
5791-11000-10	J4	Connector, 10-pin Header Str. Sq.
5791-10862-13	J5, J7	Connector, 13-pin Header Str. Sq.
5791-10862-15	J6	Connector, 15-pin Header Str. Sq.
5791-10862-03	J8	Connector, 3-pin Header Str. Sq.
5791-10862-05	J9	Connector, 5-pin Header Str. Sq.
5791-12462-10	J10	Connector, 10-pin Header Str. Sq.
5010-13517-00	R1	Resistor, 15Ω, 1/4w, 5%
5645-09025-00	SW5	Switch DIP 8 Pos.

A-17316

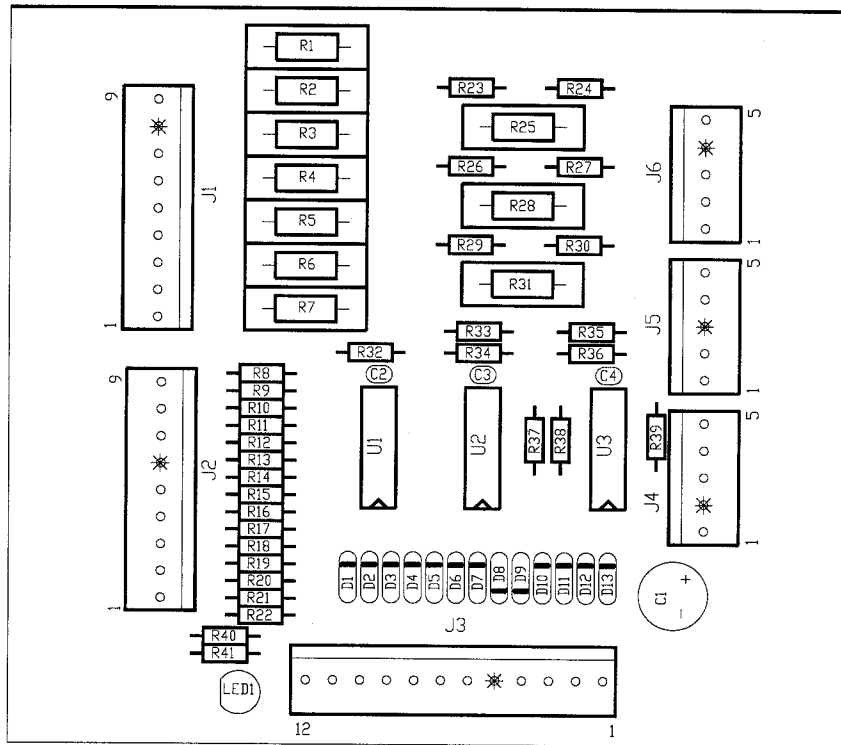
Flipper Opto PCB Assembly



Part Number	Designator	Description
A-20207.1	-	Flipper Opto Switch PCB
5010-09061-00	R1, R2	Resistor, 680Ω, 1/2w, 5%
5490-14575-00	OPTO1, OPTO2	IC Opto Integ Schmitt 10mA.
5791-13830-07	J1	Connector, 7-pin Header Solid Sq.
03-9001.1	-	Interrupter Flip-Opto
01-14348	-	Spring Flipper Switch

A-20246

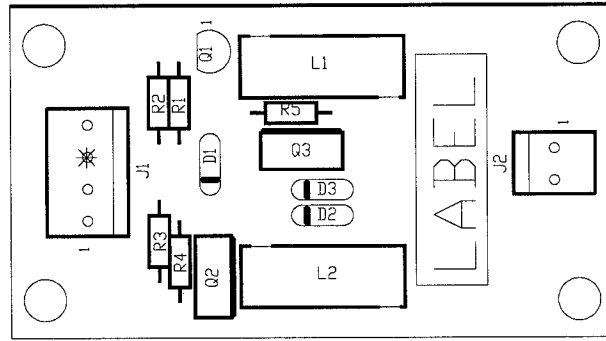
10-Opto PCB Assembly w/Bracket



Part Number	Designator	Description
A-18159.1	-	10-opto PCB Assembly
5040-10974-00	C1	Capacitor, 100M, 35v Radial
5043-08996-00	C2-C4	Capacitor, 0.1M, 50v ±20% Ax.
5070-09054-00	D1-D13	Diode 1N4004, 1.0A.
5791-10862-09	J1, J2	Connector, 9-pin Header
5791-10862-12	J3	Connector, 12-pin Header
5791-10862-05	J4-J6	Connector, 5-pin Header
5671-14516-00	LED1	LED Dspl Red T-1 ¼"
5010-12928-00	R1-R7, R28, R31, R50	Resistor, 270Ω, 2w, 5%
5010-09999-00	R8-R24, R26, R27, R29, R30	Resistor, 2KΩ, 1/4w, 5%
5010-09162-00	R32, R35, R39-R41	Resistor, 100KΩ, 1/4w, 5%
5010-08774-00	R33, R34, R36-R38	Resistor, 22KΩ, 1/4w, 5%
5370-12272-00	U1-U3	IC LM339 Quad Comp
01-10756	-	PCB Mounting Bracket
07-6688-18N	-	Rivet: 1/8 x 3/16"

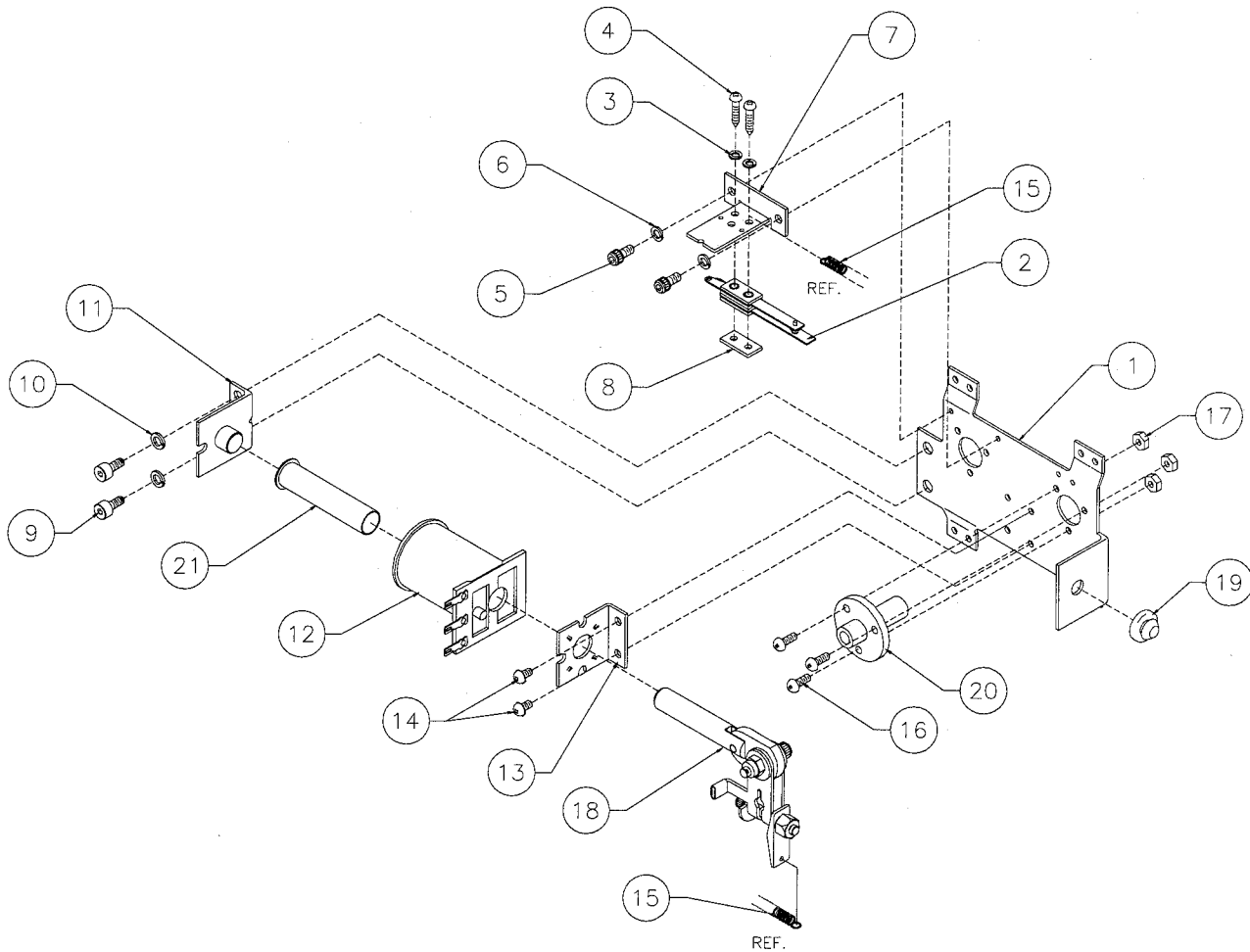
A-21708-1

Motor Driver w/EMI Assembly



Part Number	Designator	Description
5070-09054-00	D1-D3	Diode 1N4004, 1.0A.
5010-09416-00	R1	Resistor, 470Ω, ¼w
5010-08991-00	R2	Resistor, 4.7KΩ, ¼w
5010-08993-00	R3	Resistor, 68Ω, ¼w
5010-08997-00	R4	Resistor, 2.7KΩ, ¼w
5010-08998-00	R5	Resistor, 2.2KΩ, ¼w
5551-09822-00	L1, L2	Ind. 4.7μH, 3A
5194-09055-00	Q1	Trans. MPSD52 PNP
5162-12635-00	Q2, Q3	Trans. TIP102
5791-10862-04	J1	Connector, 4-pin Header
5791-10862-02	J2	Connector, 2-pin Header

A-15849-L-2 Flipper Assembly



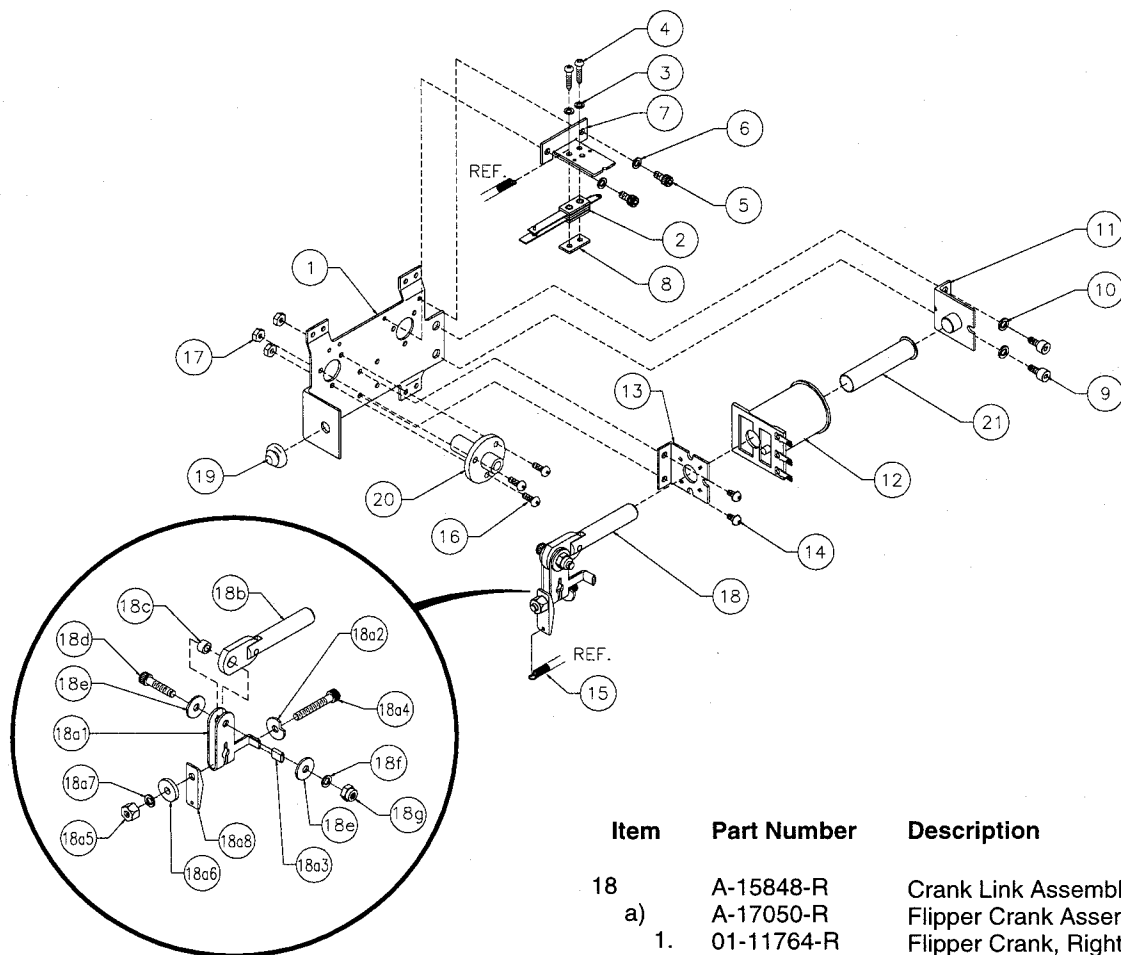
Item	Part Number	Description
1	B-13104-L	Flipper Base Assembly, Left
2	SW-1A-194	Switch Assembly
3	4701-00002-00	Lock Washer #6 Split
4	4105-01019-10	Sh. Metal Screw, #5 x 5/8"
5	4008-01079-05	Mach. Screw, 8-32 x 5/16"
6	4701-00003-00	Lock Washer #8 Split
7	01-9375	Switch Mounting Bracket
8	20-6516	Speednut, Tinnerman
9	4010-01066-06	Cap Screw, 10-32 x 3/8"
10	4701-00004-00	Lock Washer #10 Split
11	A-12390	Flipper Stop Assembly
12	FL-11629	Flipper Coil, Blue
13	01-7695-1	Solenoid Bracket
14	4006-01017-04	Mach. Screw, 6-32 x 1/4"
15	10-364	Spring
16	4006-01005-06	Mach. Screw, 6-32 x 3/8"
17	4406-01117-00	Nut 6-32 Hex.

Item	Part Number	Description
*18	A-15848-L	Crank Link Assembly, Left
a)	A-17050-L	Flipper Crank Assembly, Left
b)	A-15847	Flipper Link Assembly
c)	02-4676	Link Spacer Bushing
d)	4010-01086-14	Cap Screw, 10-32 x 7/8"
e)	4700-00023-00	Flat Washer, 5/8 x 13/64 x 16ga.
f)	4701-00004-00	Lock Washer #10 Split
g)	4410-01132-00	Nut 10-32 ESN
19	23-6577	Bumper Plug, 5/8"
20	03-7568	Flipper Bushing
21	03-7066-5	Coil Tubing

Associated Parts:
(Not Shown)
23-6695 Flipper Ring
20-10110-5 Flipper Bat w/Shaft

* See page 2-15 for assembly detail drawing.

A-15849-R-2 Flipper Assembly



Item	Part Number	Description
1	B-13104-R	Flipper Base Assembly, Right
2	SW-1A-194	Switch Assembly
3	4701-00002-00	Lock Washer #6 Split
4	4105-01019-10	Sh. Metal Screw, #5 x 5/8"
5	4008-01079-05	Mach. Screw, 8-32 x 5/16"
6	4701-00003-00	Lock Washer #8 Split
7	01-9375	Switch Mounting Bracket
8	20-6516	Speednut, Tinnerman
9	4010-01066-06	Cap Screw, 10-32 x 3/8"
10	4701-00004-00	Lock Washer #10 Split
11	A-12390	Flipper Stop Assembly
12	FL-11629	Flipper Coil, Blue
13	01-7695-1	Solenoid Bracket
14	4006-01017-04	Mach. Screw, 6-32 x 1/4"
15	10-364	Spring
16	4006-01005-06	Mach. Screw, 6-32 x 3/8"
17	4406-01117-00	Nut 6-32 Hex.

Item	Part Number	Description
18	A-15848-R	Crank Link Assembly, Right
a)	A-17050-R	Flipper Crank Assembly, Right
1.	01-11764-R	Flipper Crank, Right
2.	4700-00107-01	Mod Crank Washer
3.	RM-23-06	H.S. Tubing, 1/4"
4.	4010-01066-20	MS, 10-32 x 1-1/4"
5.	4410-01127-00	Nut, 10-32 Hex.
6.	4700-00107-00	FW, 13/64 x 5/8 x 12ga.
7.	4701-00004-00	Lockwasher #10 Split
8.	01-9376	Spring Retainer Bracket
b)	A-15847	Flipper Link Assembly
c)	02-4676	Link Spacer Bushing
d)	4010-01086-14	Cap Screw, 10-32 x 7/8"
e)	4700-00023-00	Flat Washer, 5/8 x 13/64 x 16ga.
f)	4701-00004-00	Lock Washer #10 Split
g)	4410-01132-00	Nut 10-32 ESN
19	23-6577	Bumper Plug, 5/8"
20	03-7568	Flipper Bushing
21	03-7066-5	Coil Tubing

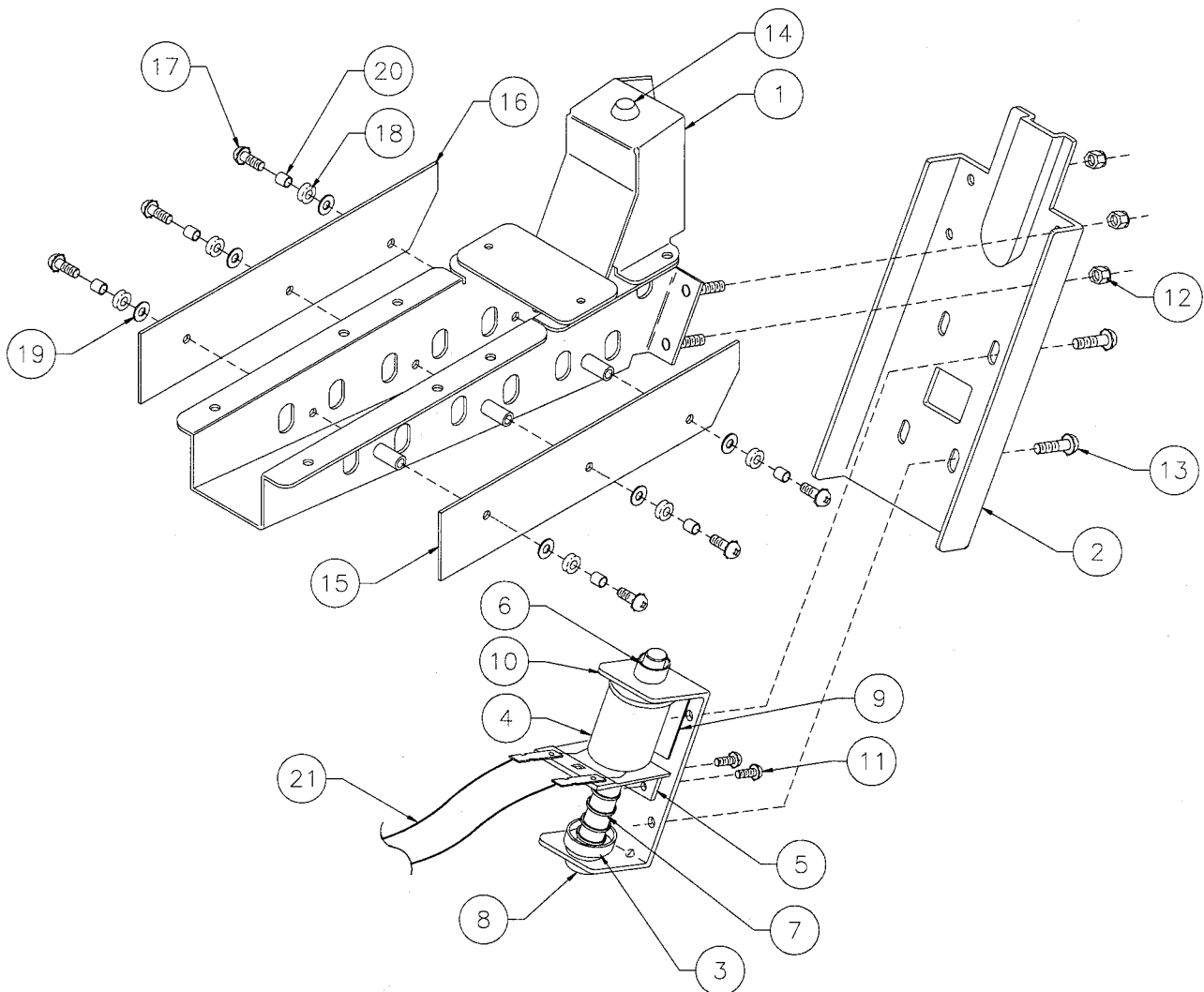
Associated Parts:
(Not Shown)

23-6695	Flipper Ring
20-10110-5	Flipper Bat w/Shaft

Flipper Notes...

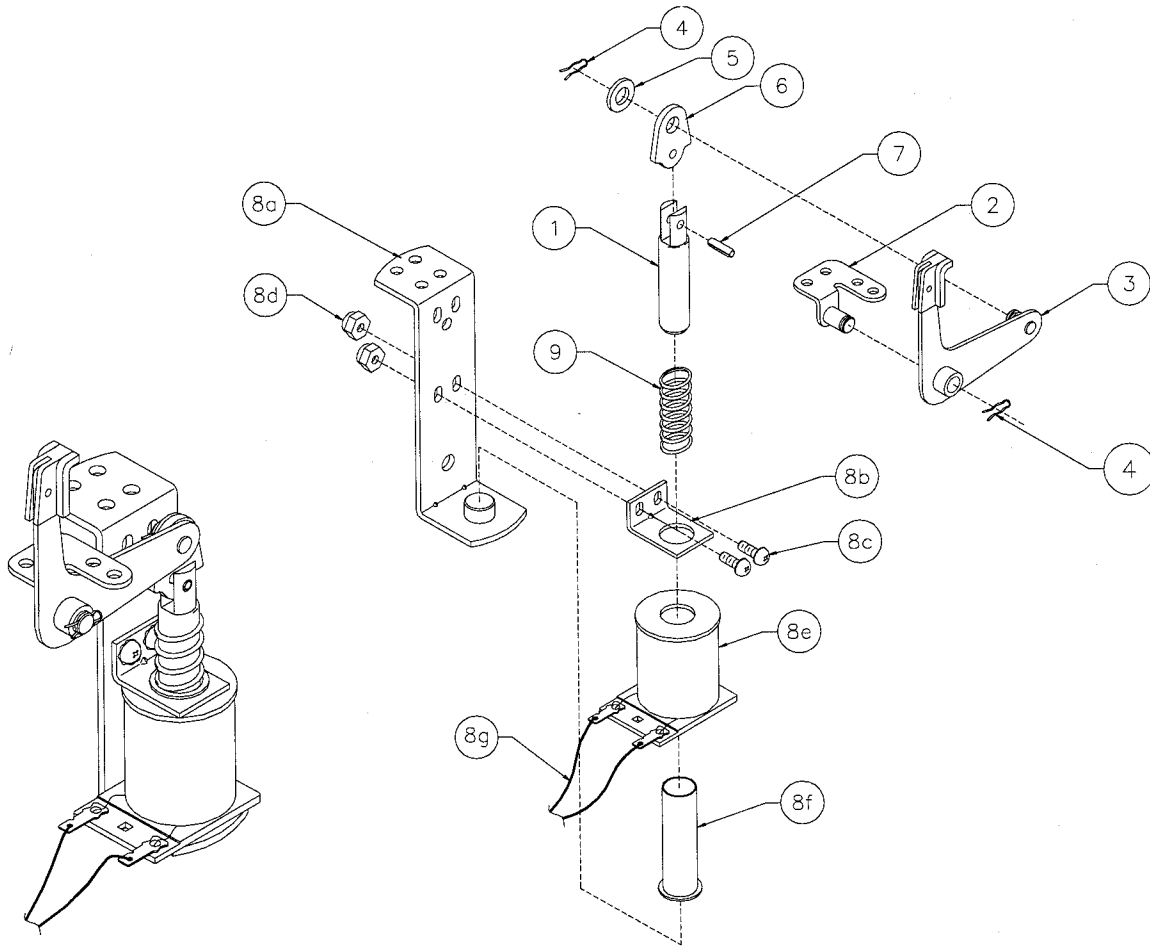
1. Each Flipper Assembly is mounted beneath the playfield, in conjunction with the Plastic Flipper & Shaft, and Flipper Rubber on the upper side of the playfield.
2. With the flipper, in the non-activated position, the E.O.S. Switch contacts must have a gap of .062 (±.015) inch. When flipper is activated switch must close.
3. Any adjustment of the E.O.S. switch must be made at a minimum distance of 0.25 inch from the switch body.
4. Longer blade of E.O.S. switch must be made straight. Gap adjustment is done by adjusting shorter blade.
5. All moving elements of the assembly must operate freely without any evidence of binding.
6. Apply Loctite™ 245 when reattaching screws to the Flipper Stop Assembly, the Solenoid Bracket, and the Flipper Bushing.

A-19963-1 Ball Trough Assembly Complete



Item	Part Number	Description	Item	Part Number	Description
1	A-16809-2	Ball Trough Welded Assy.	12	4408-01119-00	Nut 8-32 ESN
2	01-11587	Ball Trough Front	13	4008-01017-06	Mach. Screw, 8-32 x 3/8"
3	A-6306-2	Bell Armature Assembly	14	23-6702	Bumper Plug
4	AE-26-1500	Coil Assembly	15	A-18617-1	Trough IRED LED PCB Assembly
5	01-8-508-T	Solenoid Assembly	16	A-18618-1	Trough IRED Transistor PCB Assy.
6	03-7067-5	Coil Tubing	17	4006-01003-10	Mach. Screw, 6-32 x 5/8" SEMS
7	10-135	Spring	18	23-6626	Rubber Grommet
8	23-6420	Rubber Grommet	19	4700-00004-00	Flat Washer, 9/64 x 7/16 x 21ga.
9	03-8523	Insulator	20	02-4975	Bushing
10	01-11586	Coil Mounting Bracket	21	H-19523	Mini Solenoid Cable
11	4008-01017-05	Mach. Screw, 8-32 x 5/16"			

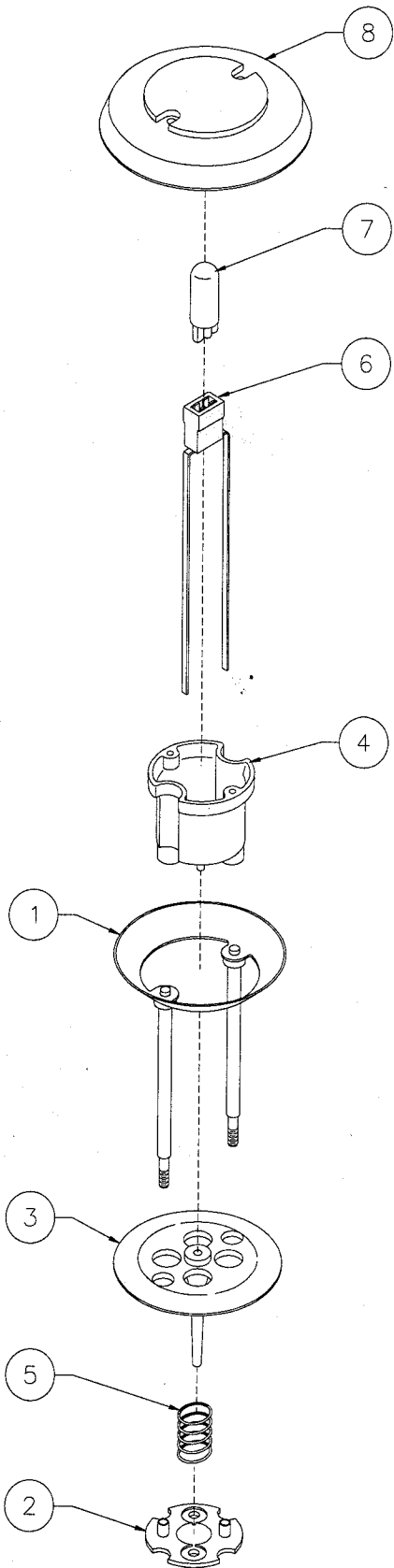
A-17811 Kicker Arm (Slingshot) Assembly



Associated Parts for Right & Left Kickers:

Item	Part Number	Description	Item	Part Number	Description
1	02-2364	Coil Plunger	8	B-9362-R-3	Coil & Bracket Assembly, Right
2	A-17810	Mounting Bracket Assembly		B-9362-L-2	Coil & Bracket Assembly, Left
3	A-12664	Kicker Crank Assembly	a)	A-17808	Bracket & Stop Assembly
4	12-6227	Hairpin Clip	b)	01-8-508-S	Coil Retaining Bracket
5	4700-00030-00	FW, 17/64 x 1/2 x 15ga.	c)	4006-01017-06	Mach. Screw, 6-32 x 3/8"
6	03-8085	Armature Link	d)	4406-01119-00	Nut, 6-32 ESN
7	20-8716-5	Roll Pin, 1/8 x 7/16"	e)	AE-26-1200	Coil Assembly
			f)	03-7066	Coil Tubing
			g)	H-19523	Mini Solenoid Cable
			9	10-128	Spring

B-9414-6 Jet Bumper Assembly

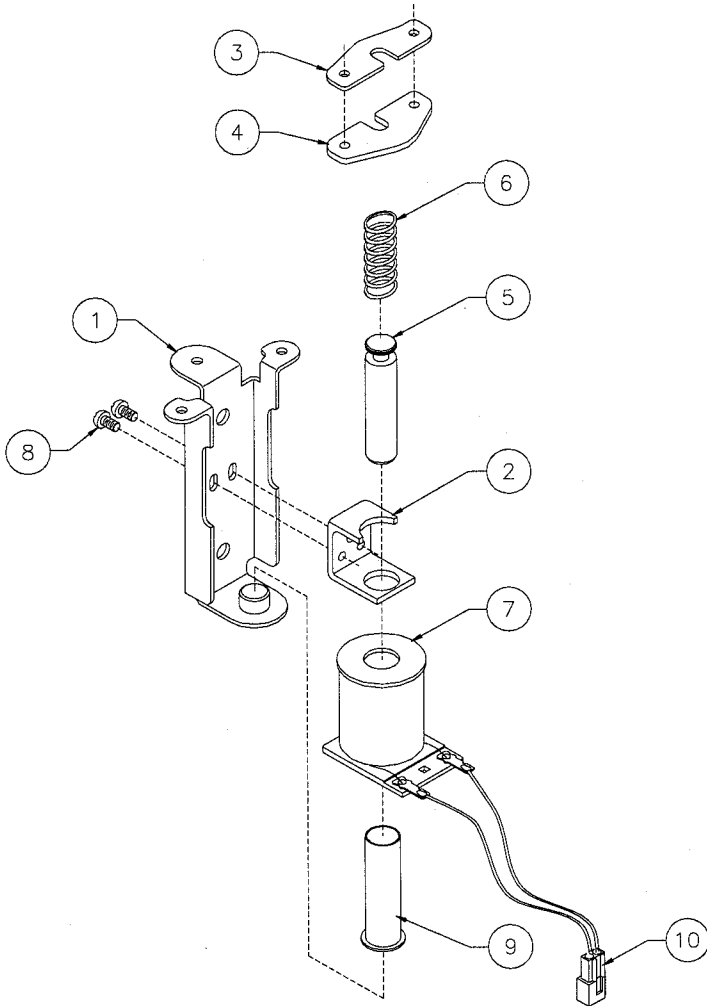


Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base, White
3	03-6035-7	Bumper Wafer, Black
4	03-7443-5	Bumper Body, White
5	10-7	Spring
6	24-8776	Socket-Wedge Base
7	24-8768	Bulb #555(6.5v., 0.25A.)

Associated Parts:

8	03-8254-18	Jet Bumper Cap (2)
	03-9831	Jet Bumper Cap, Modified (1)

A-9415-2 Jet Bumper Coil Assembly



Item	Part Number	Description
1	04-10888	Bracket & Stop Assembly
2	01-1747	Coil Retaining Bracket
3	01-5492	Armature Link, Steel
4	01-5493	Armature Link, Bakelite
5	02-3406-1	Coil Plunger
6	10-326	Armature Spring
7	AE-26-1200	Coil Assembly
8	4006-01017-04	Mach. Screw, 6-32 x 1/4"
9	03-7066	Coil Tubing
10	H-19523	Cable

Associated Parts: (Not Shown)

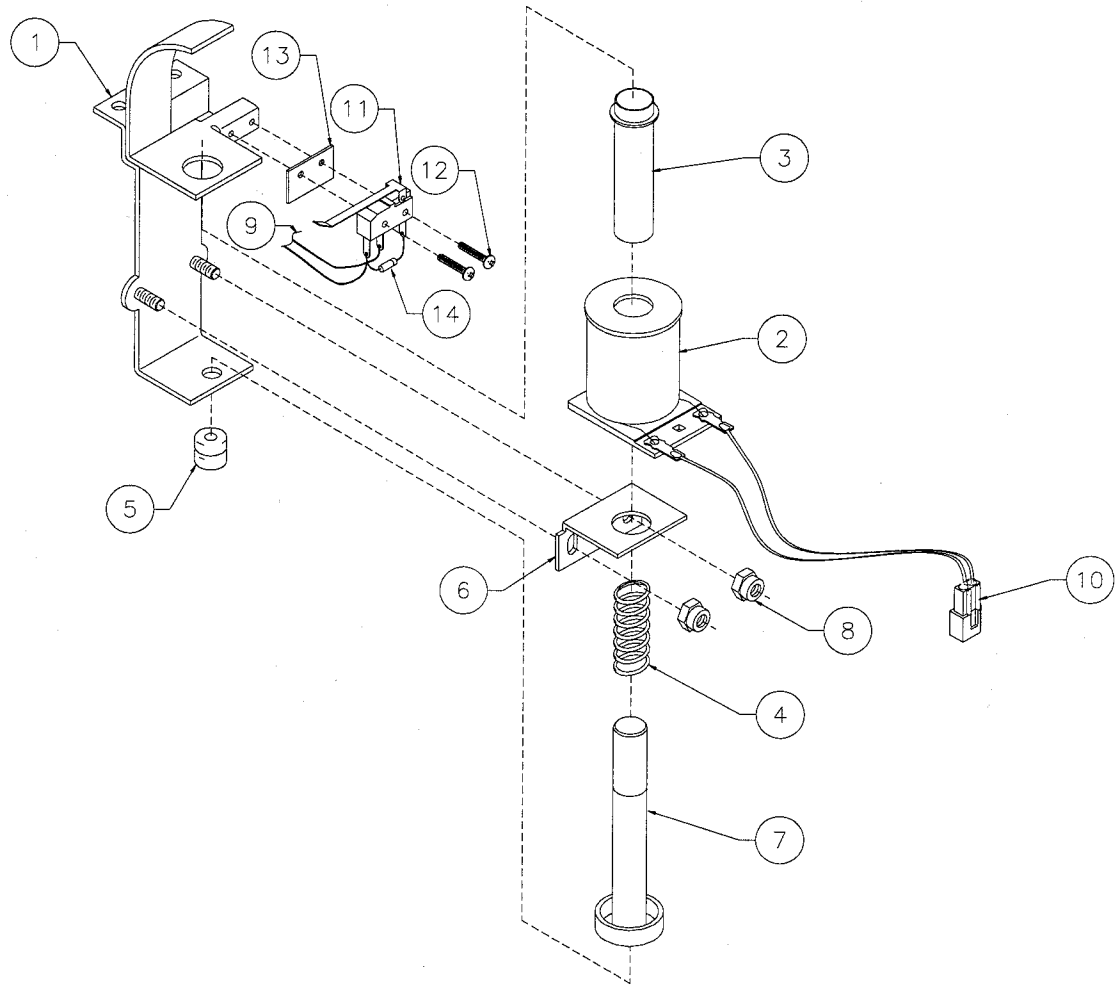
11	B-12030-2	Leaf Switch Assembly
a)	A-16443	Switch & Diode Assembly
b)	01-1168	Switch Mounting Bracket
c)	01-3670	Switch Plate
d)	03-7395	Switch Actuator
e)	4005-01003-12	Mach. Screw, 5-40 x 3/4"
f)	4405-01117-00	Nut 5-40 Hex.

A-9415-3 Jet Bumper Coil Assembly

(Same as A-9415-2 except for the following item):

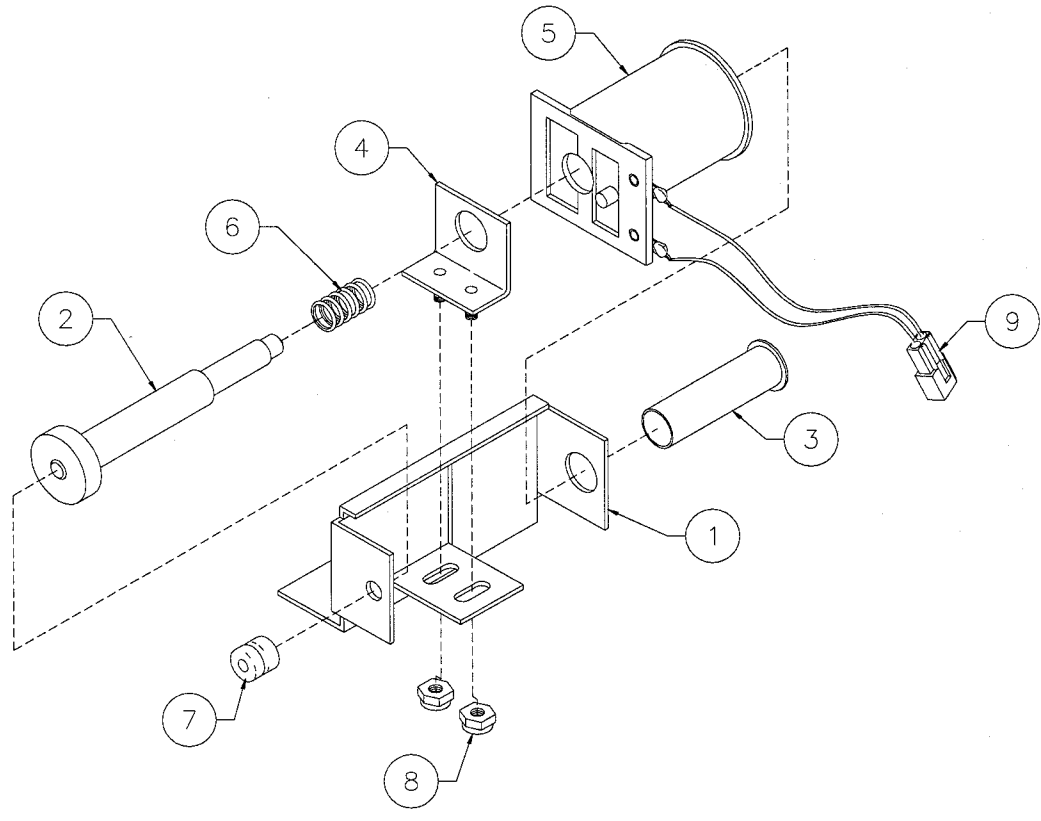
Item	Part Number	Description
10	H-19523-1	Cable

A-21970 Popper Assembly (Right)



Item	Part Number	Description
1	04-10948.1	Popper Bracket
2	AE-27-1200	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	01-9784	Coil Bracket
7	A-17767	Bell Armature Assembly
8	4408-01119-00	Nut #8-32 ESN
9	H-16437	Switch Cable
10	H-19523	Mini Coil Switch Cable
11	5647-12693-43	Micro Switch
12	4002-01105-08	Mach. Screw: 2-56 x 1/2"
13	01-8600	Switch Insulator
14	5070-09054-00	Diode 1N4004

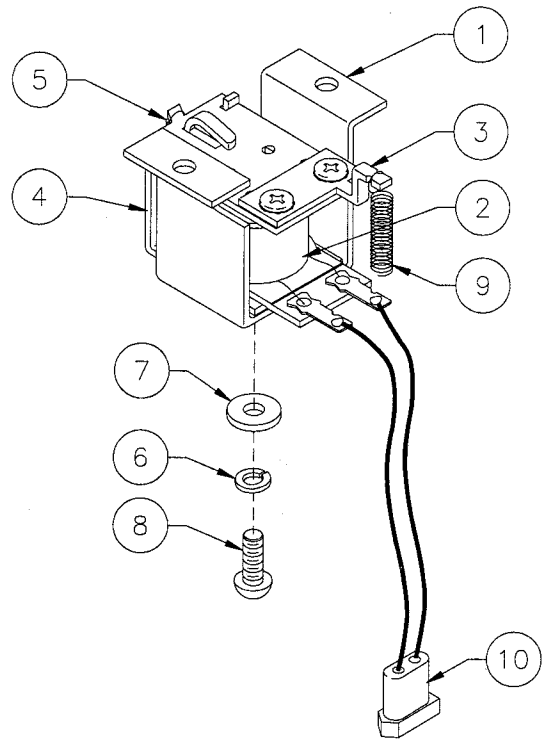
A-21553-1 Auto-Fire Assembly



Item	Part Number	Description
1	01-14618	Bracket Assembly
2	A-6306-2	Plunger Assembly
3	03-7067	Coil Tubing
4	04-10322-2	Coil Bracket
5	AE-23-800	Coil Sub-Assembly
6	10-135	Spring
7	23-6420	Rubber Grommet
8	4408-01119-00	Nut 8-32 ESN
9	H-19523	Mini Solenoid Cable

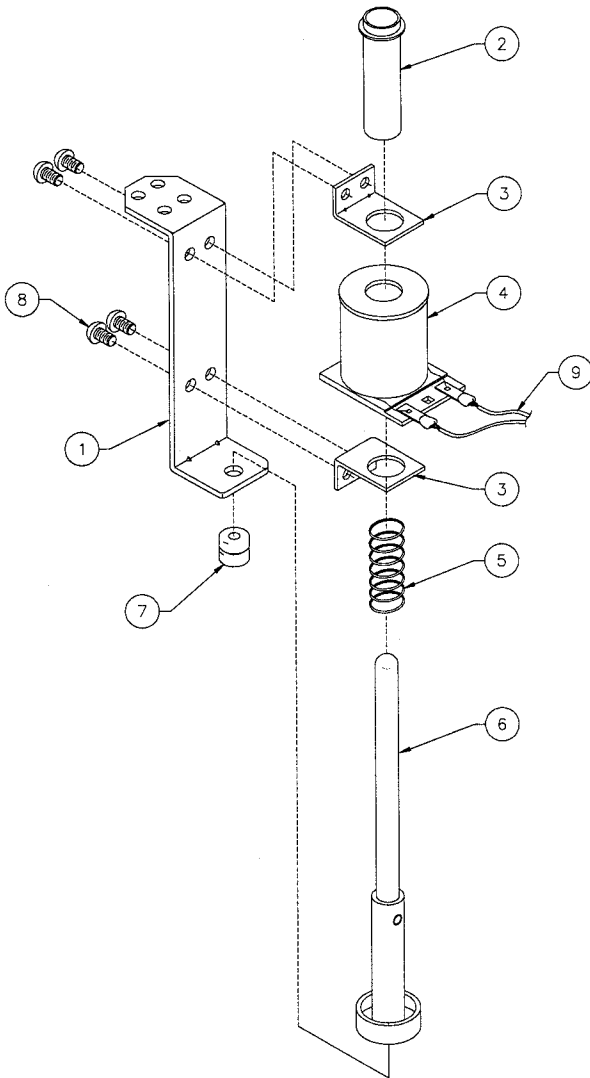
A-17796-1 Ball Gate Actuator Assembly

Item	Part Number	Description
1	01-12348	Ball Gate Coil Bracket
2	A-14406	Coil Assembly
3	A-11146	Armature Assembly
4	A-6892	Frame & Eyelet Assy.
5	10-120	Spring
6	4701-00003-00	Lockwasher #18 Split
7	4700-00089-00	Flat Washer: 11/64 x 7/16 x 16ga.
8	4008-01021-07	Mach. Screw, 8-32 x 7/16"
9	10-194	Extension Spring
10	H-19523-1	Cable



A-21712-2 Up Down Post Assembly

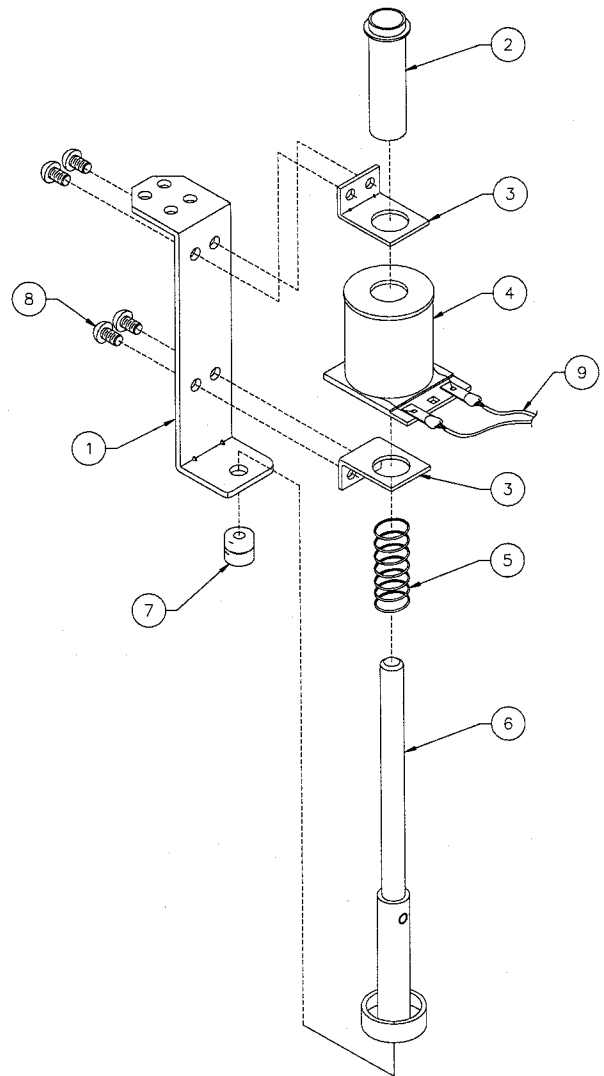
This assembly is used in games produced before July 21, 1997.



Item	Part Number	Description
1	01-12441	Diverter Post Bracket
2	03-7067-5	Coil Tubing
3	01-8-508-T	Coil Retainer Bracket
4	AE-27-1200	Coil Assembly
5	10-135	Spring
6	04-10772	Armature Assembly, Tower
7	23-6420	Rubber Grommet
8	4008-01017-04	Mach. Screw, 8-32 x 1/4"
9	H-19523	Mini Solenoid Cable

A-21712-5 Up Down Post Assembly

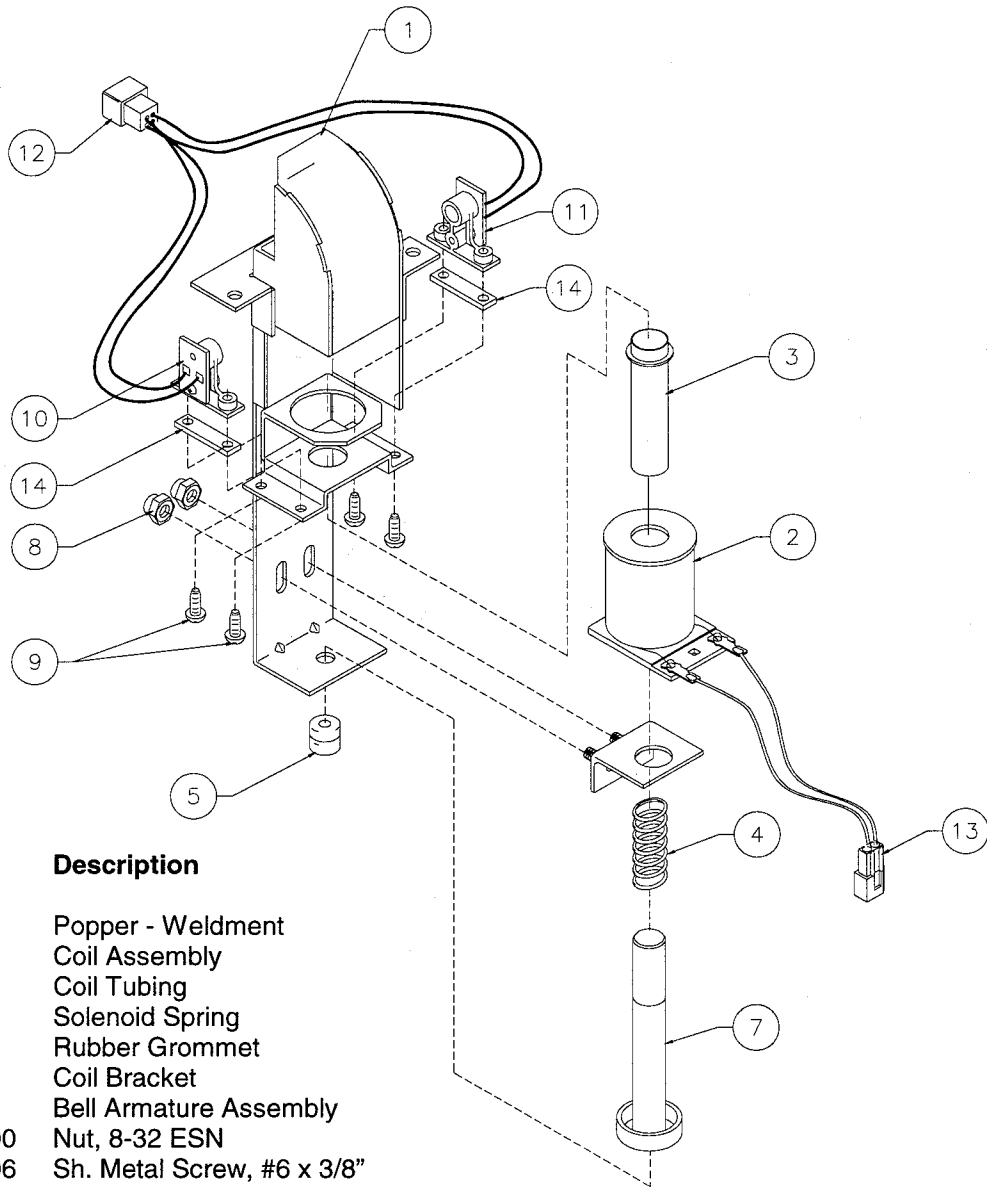
This assembly is used in games produced after July 21, 1997.



Item	Part Number	Description
1	01-12441	Diverter Post Bracket
2	03-7067-5	Coil Tubing
3	01-8-508-T	Coil Retainer Bracket
4	AE-27-1200	Coil Assembly
5	10-135	Spring
6	04-10996	Armature Assembly, Tower
7	23-6420	Rubber Grommet
8	4008-01017-04	Mach. Screw, 8-32 x 1/4"
9	H-19523	Mini Solenoid Cable

A-21733 Popper Assembly

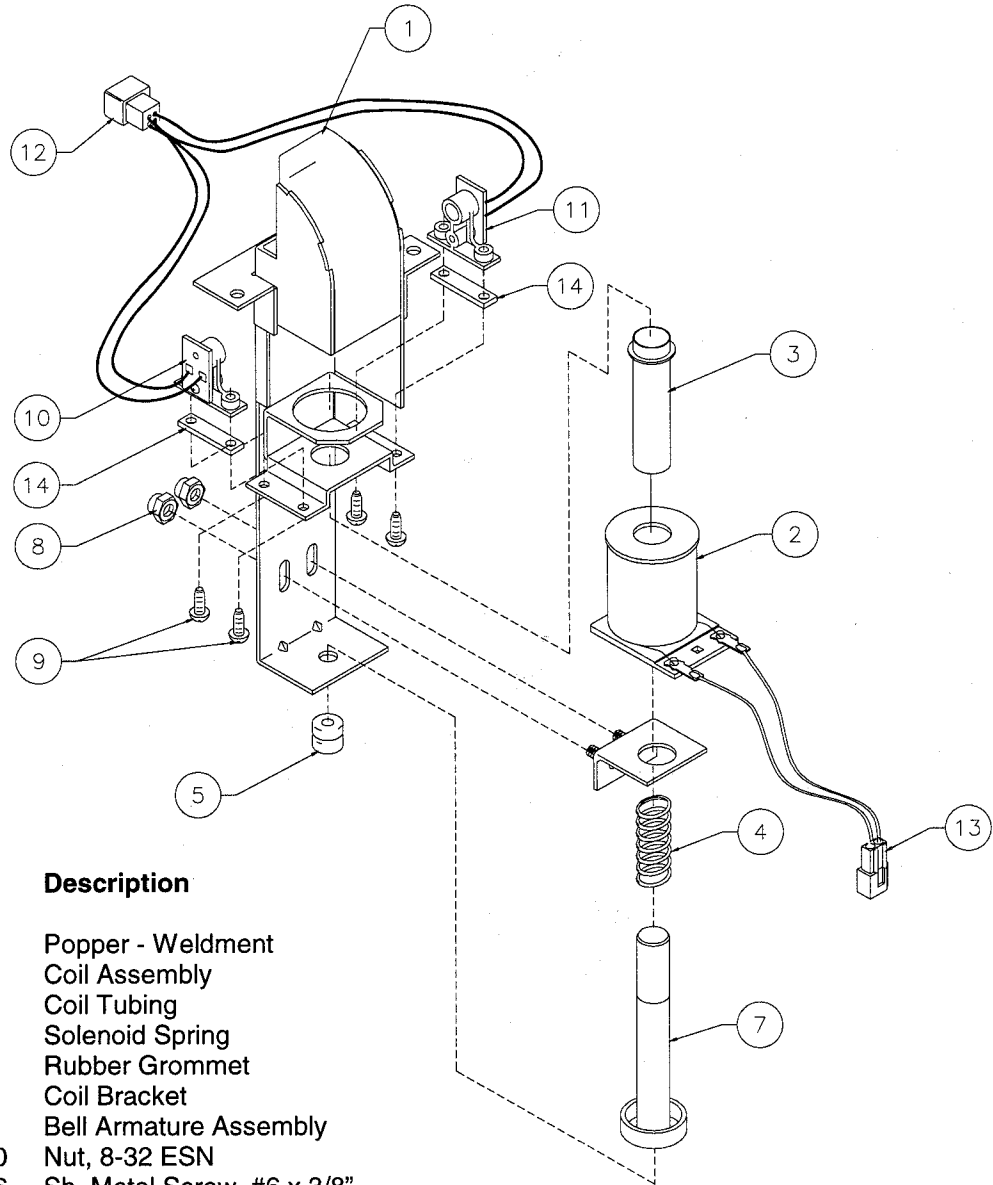
*This assembly is used in games produced **before July 21, 1997.***



Item	Part Number	Description
1	04-10745.2	Popper - Weldment
2	AE-26-1200	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	04-10322-2	Coil Bracket
7	A-17767	Bell Armature Assembly
8	4408-01119-00	Nut, 8-32 ESN
9	4106-01013-06	Sh. Metal Screw, #6 x 3/8"
10	A-16908	LED Assembly, RTV
11	A-16909	Photo Trans. Assembly, RTV
12	H-17609-5	Gen. Opto Cable
13	H-19523	Cable Assembly
14	03-9832	Playfield Plastic Spacer

A-22027 Popper Assembly

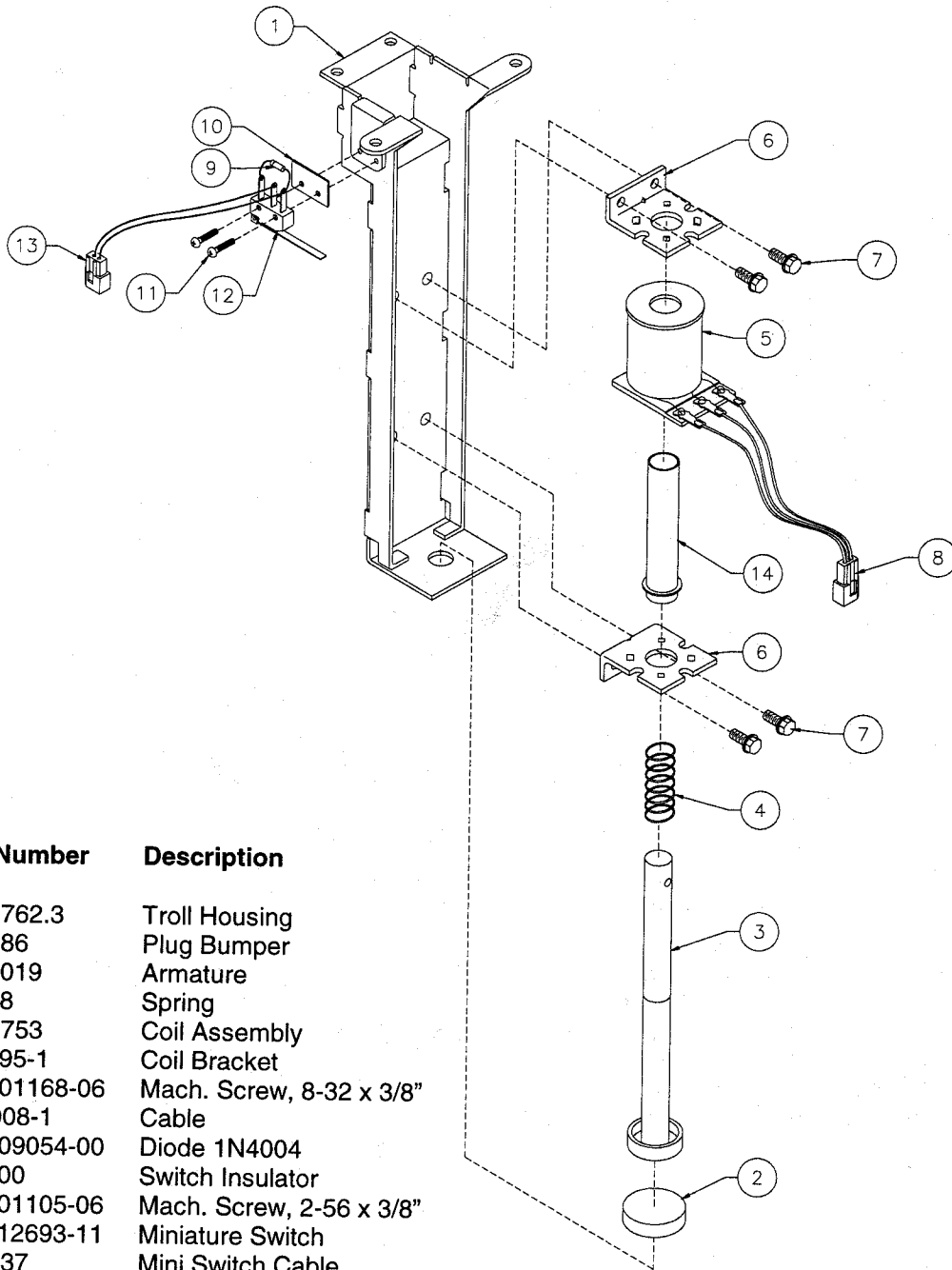
This assembly is used in games produced after July 21, 1997.



Item	Part Number	Description
1	04-10979	Popper - Weldment
2	AE-26-1200	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	04-10322-2	Coil Bracket
7	A-17767	Bell Armature Assembly
8	4408-01119-00	Nut, 8-32 ESN
9	4106-01013-06	Sh. Metal Screw, #6 x 3/8"
10	A-16908	LED Assembly, RTV
11	A-16909	Photo Trans. Assembly, RTV
12	H-17609-5	Gen. Opto Cable
13	H-19523	Cable Assembly
14	03-9832	Playfield Plastic Spacer

A-21719 Troll Assembly

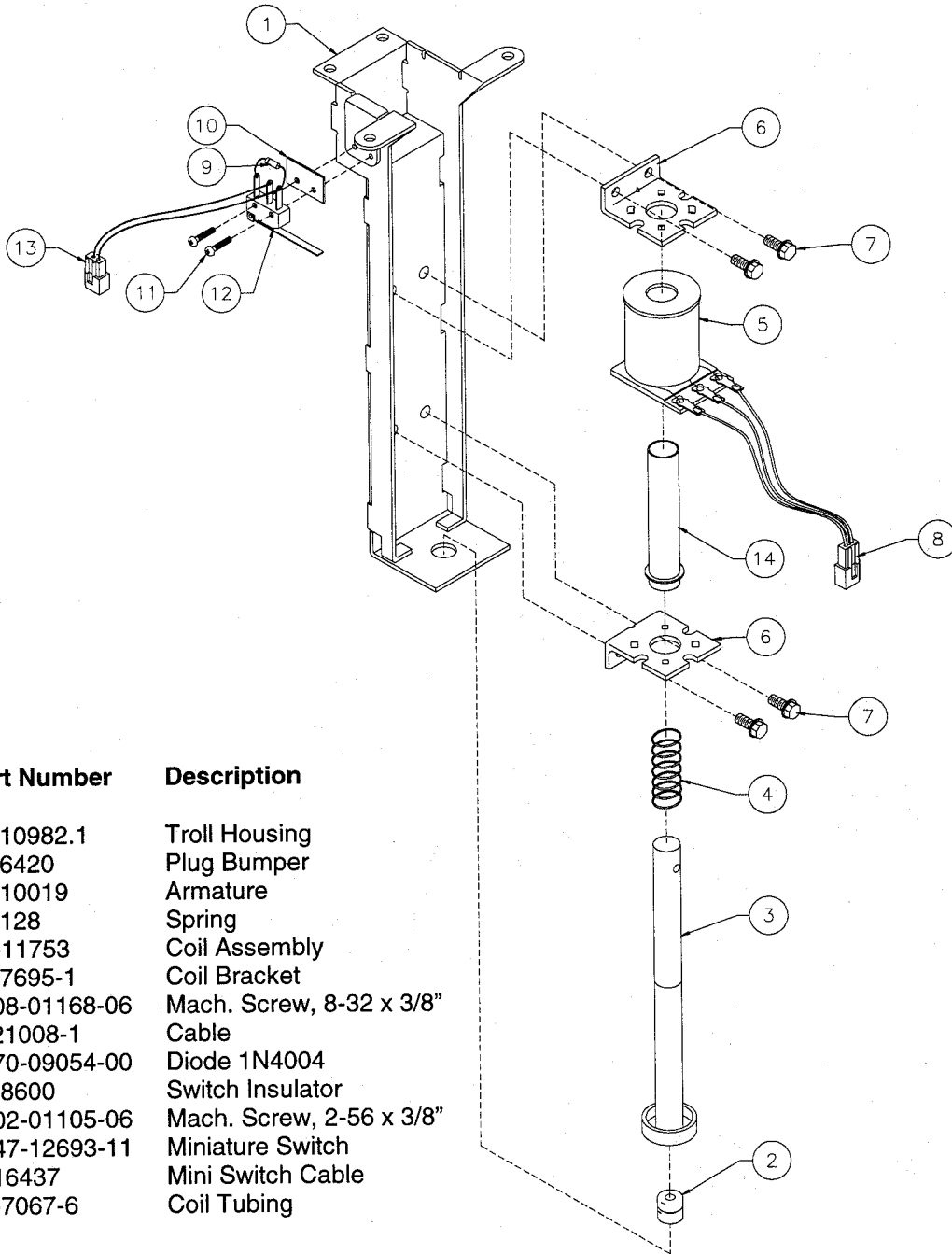
This assembly is used in games produced before July 21, 1997.



Item	Part Number	Description
1	04-10762.3	Troll Housing
2	23-6686	Plug Bumper
3	04-10019	Armature
4	10-128	Spring
5	FL-11753	Coil Assembly
6	01-7695-1	Coil Bracket
7	4008-01168-06	Mach. Screw, 8-32 x 3/8"
8	H-21008-1	Cable
9	5070-09054-00	Diode 1N4004
10	01-8600	Switch Insulator
11	4002-01105-06	Mach. Screw, 2-56 x 3/8"
12	5647-12693-11	Miniature Switch
13	H-16437	Mini Switch Cable
14	03-7067-6	Coil Tubing

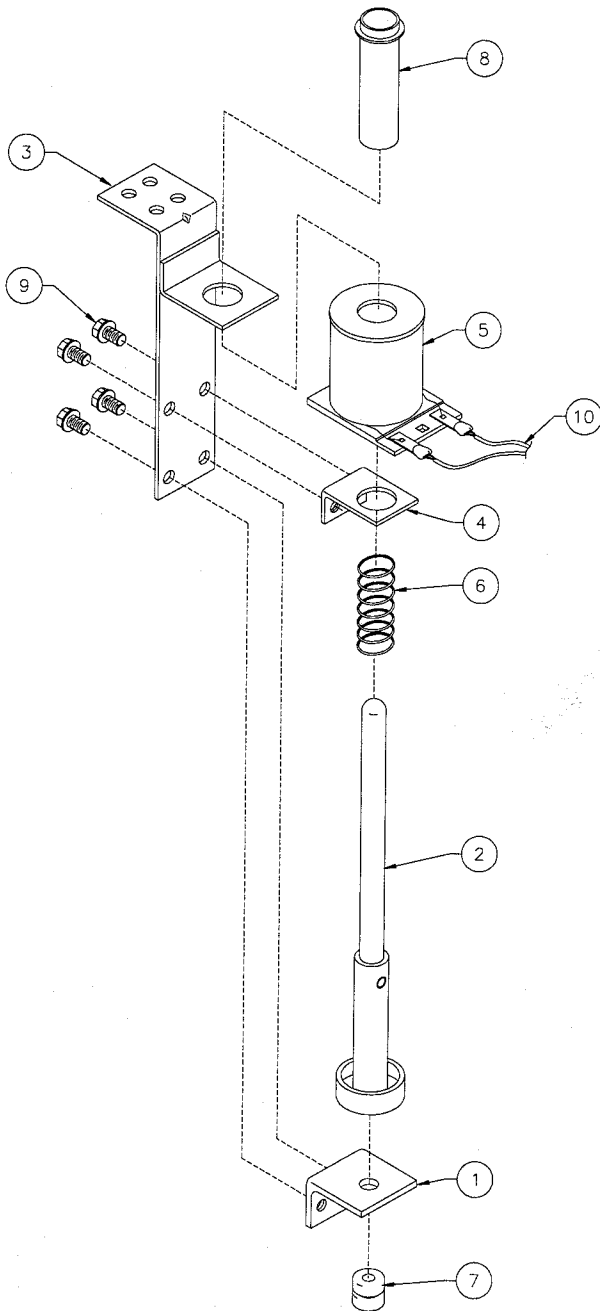
A-22034 Troll Assembly

This assembly is used in games produced after July 21, 1997.



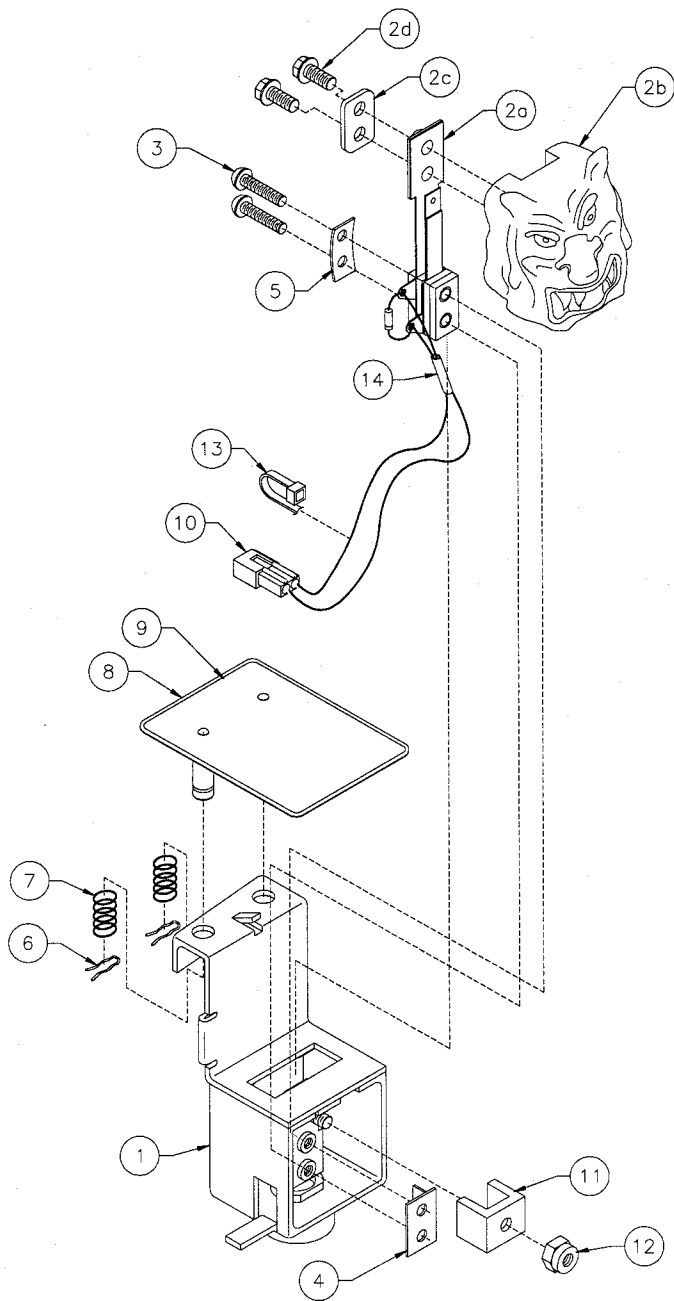
Item	Part Number	Description
1	04-10982.1	Troll Housing
2	23-6420	Plug Bumper
3	04-10019	Armature
4	10-128	Spring
5	FL-11753	Coil Assembly
6	01-7695-1	Coil Bracket
7	4008-01168-06	Mach. Screw, 8-32 x 3/8"
8	H-21008-1	Cable
9	5070-09054-00	Diode 1N4004
10	01-8600	Switch Insulator
11	4002-01105-06	Mach. Screw, 2-56 x 3/8"
12	5647-12693-11	Miniature Switch
13	H-16437	Mini Switch Cable
14	03-7067-6	Coil Tubing

A-21718 Castle Actuator Assembly



Item	Part Number	Description
1	01-14172	Coil Stop Bracket
2	04-10878.3	Armature Assembly
3	04-10933	Castle Actuator Bracket
4	01-8-508-T	Coil Retainer Bracket
5	AE-26-1500	Coil Assembly
6	10-135	Plunger Spring
7	23-6420	Rubber Grommet
8	03-7067	Coil Tubing
9	4008-01168-04	Mach. Screw: 8-32 x 1/4"
10	H-19523-1	Cable Assy.

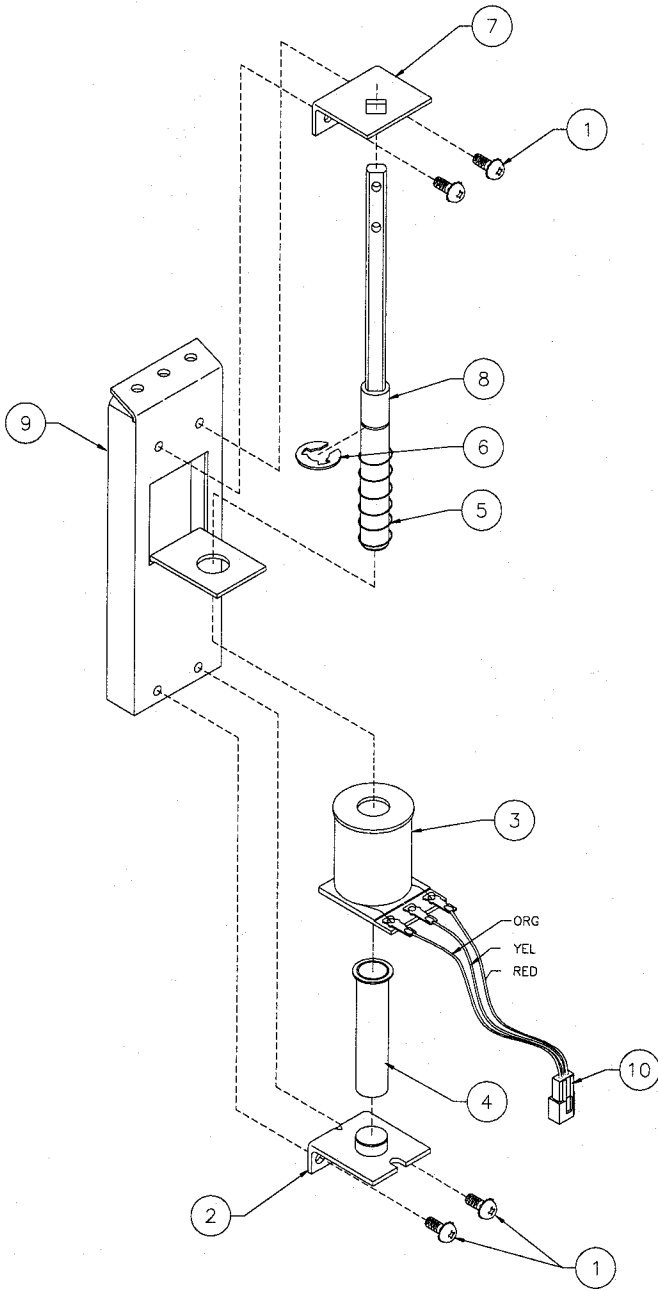
A-21744 Troll Carriage Assembly



Item	Part Number	Description
1	04-10763.1	Troll Carriage
2	A-21724	Troll Target Assembly
a)	A-21743	Troll Target Switch Assy.
b)	31-2824	Troll Head
c)	01-14672	Washer-Troll
d)	4008-01168-06	Mach. Screw: 8-32 x 3/8"
3	4006-01003-10	Mach. Screw, 6-32 x 5/8"
4	01-14680.1	Troll Switch Bracket Assy.-Guard
5	01-3670	Curved Switch Plate
6	12-6227	Hairpin Clip
7	10-392-1	Spring
8	04-10761.2	Troll Flap
9	31-2840-2A	Decal
10	H-18214-1	Cable
11	03-9808	Troll Locator
12	4408-01119-00	Nut 8-32 ESNA
13	03-9454	Ty-Wrap
14	RM-21-03	Vinyl Tubing: .106 x 1.0" Long

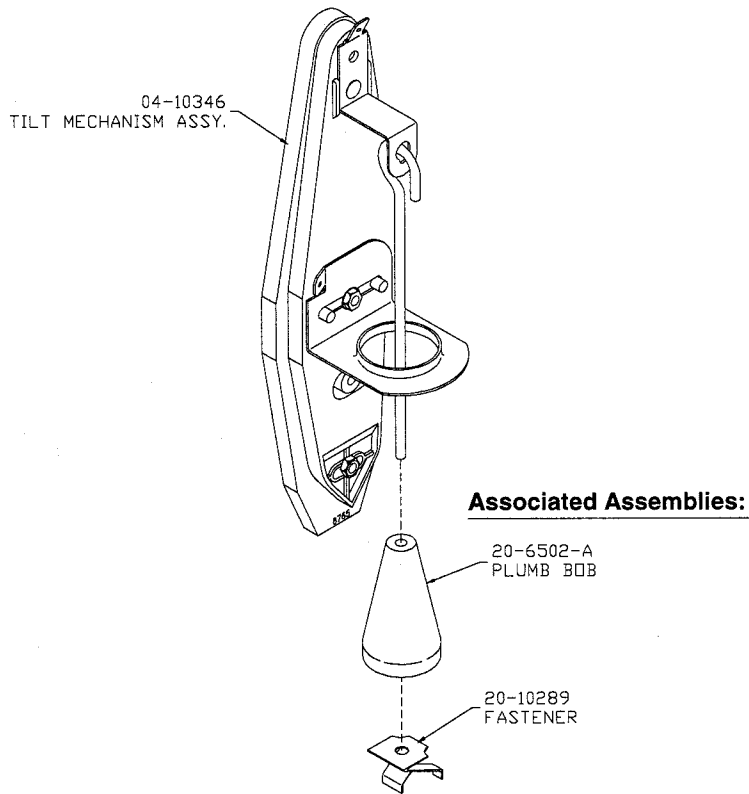
* Not available for individual sale. Order Decal Set 31-2840.

A-21706 Divertor Assembly

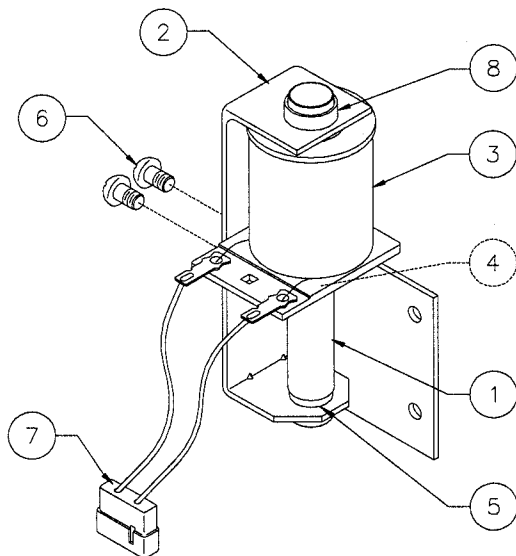


Item	Part Number	Description
1	4008-01017-06	Mach. Screw, 8-32 x 3/8"
2	A-12390	Coil Stop Bracket
3	A-20099	Coil Assembly
4	03-7066-5	Coil Tubing, 2-7/8"
5	10-437	Spring
6	20-8712-43	E-Ring
7	01-14655	Divertor Bracket
8	02-5298	Divertor Shaft
9	04-10748	Divertor Main Bracket
10	H-21008	Mini Divertor Cable

04-10346 Tilt Mechanism Assembly



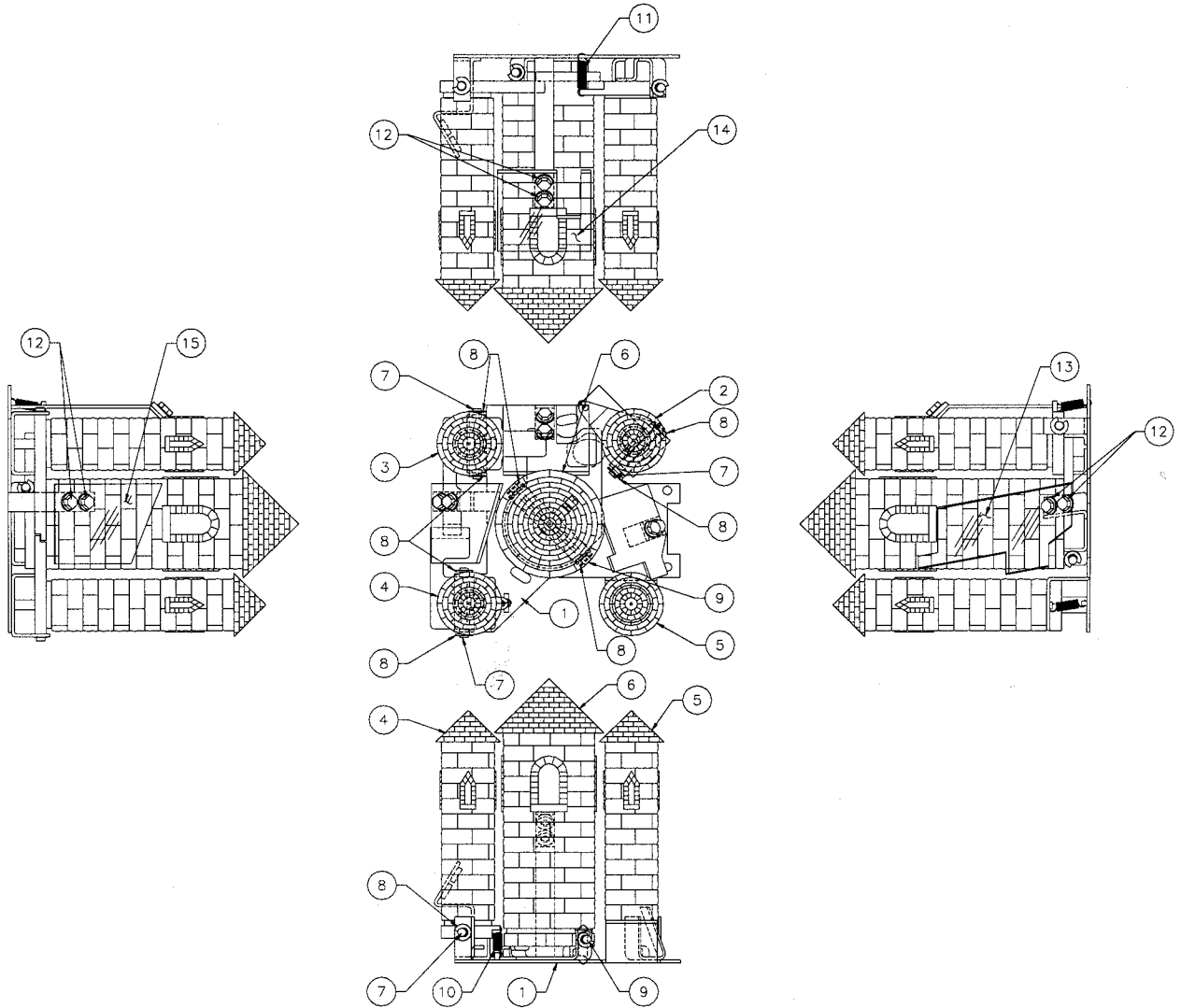
B-10686-1 Knocker Assembly



Item	Part Number	Description
1	A-5387	Coil Plunger Assembly
2	01-11273	Mounting Bracket Assembly
3	AE-23-800	Coil Sub-Assembly
4	01-8-508-T	Coil Retaining Bracket
5	23-6420	Rubber Grommet
6	40008-01017-04	Mach. Screw, 8-32 x 1/4"
7	H-11835	Knocker Cable
8	03-7067-5	Coil Tubing

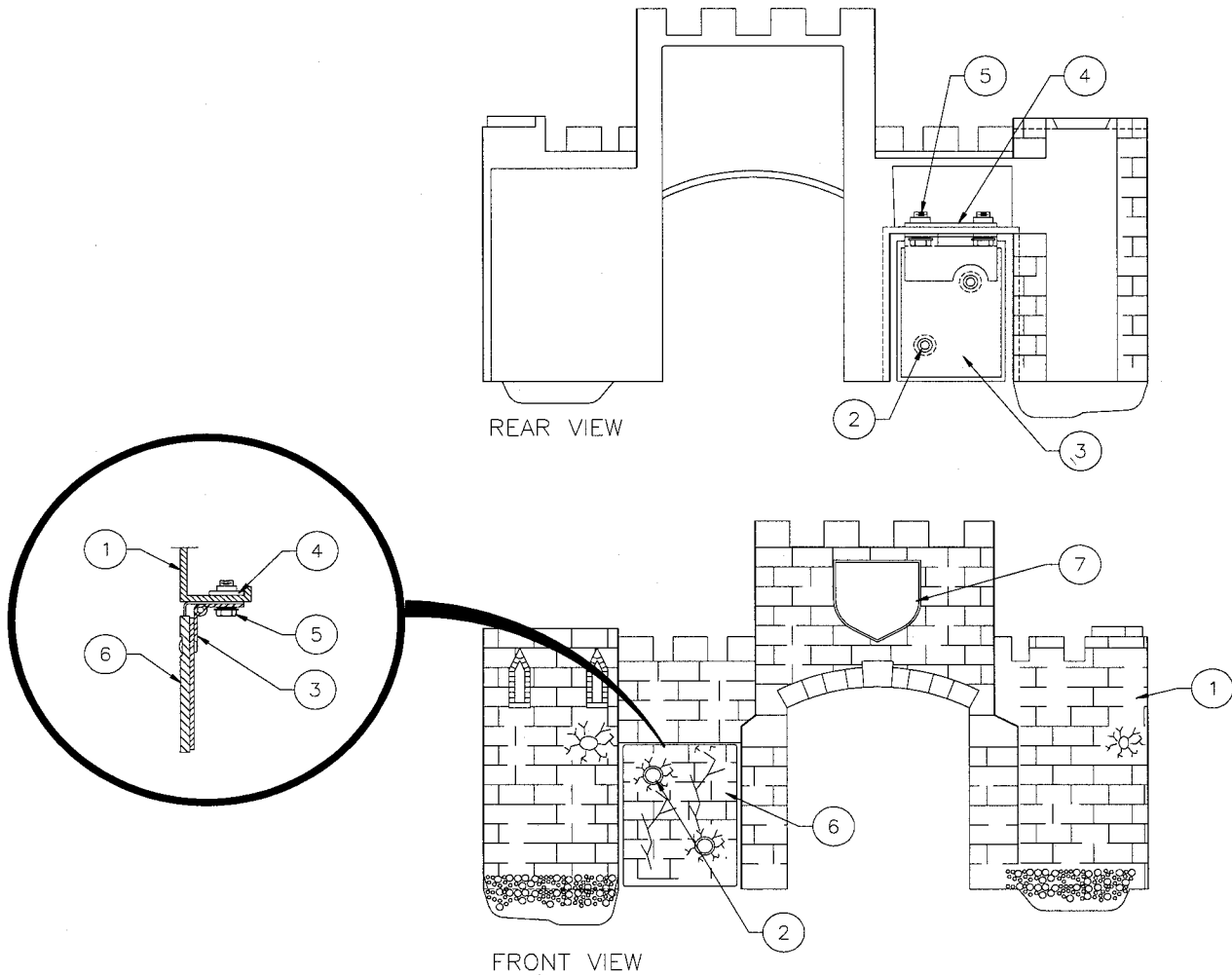
A-21728

Exploding Castle Assembly



Item	Part Number	Description
1	04-10879.2	Bracket-Castle
2	04-10942.2	Up/Right Tower Sub-Assembly
3	04-10941.2	Up/Left Tower Sub-Assembly
4	04-10943.2	Lo/Left Tower Sub Assembly
5	31-2827	Tower
6	04-10944.2	Center Tower Sub-Assembly
7	02-5309.1	Pivot Shaft Short
8	20-8712-18	E-Ring: 3/16" Shaft
9	02-5310.1	Pivot Shaft Long
10	10-520	Spring
11	10-521	Spring (Red)
12	4008-01168-06	Mach. Screw: #8-32 x 3/8"
13	31-2949-3	Playfield Plastic
14	31-2949-2	Playfield Plastic
15	31-2949-1	Playfield Plastic

A-21755 Castle Assembly



Item	Part Number	Description
1	31-2826-4A	Castle Front
2	07-6697-8	Rivet-Black Oval Hd.
3	04-10889.3	Hinge Flap Sub-Assembly
4	04-10897	Washer Flap
5	4008-01168-06	Mach. Screw, 8-32 x 3/8"
6	31-2826-3B	Hinge - Flap
*7	31-2841-2	Decal

*Not available for individual sale. Order Decal Set 31-2842.

A-21723

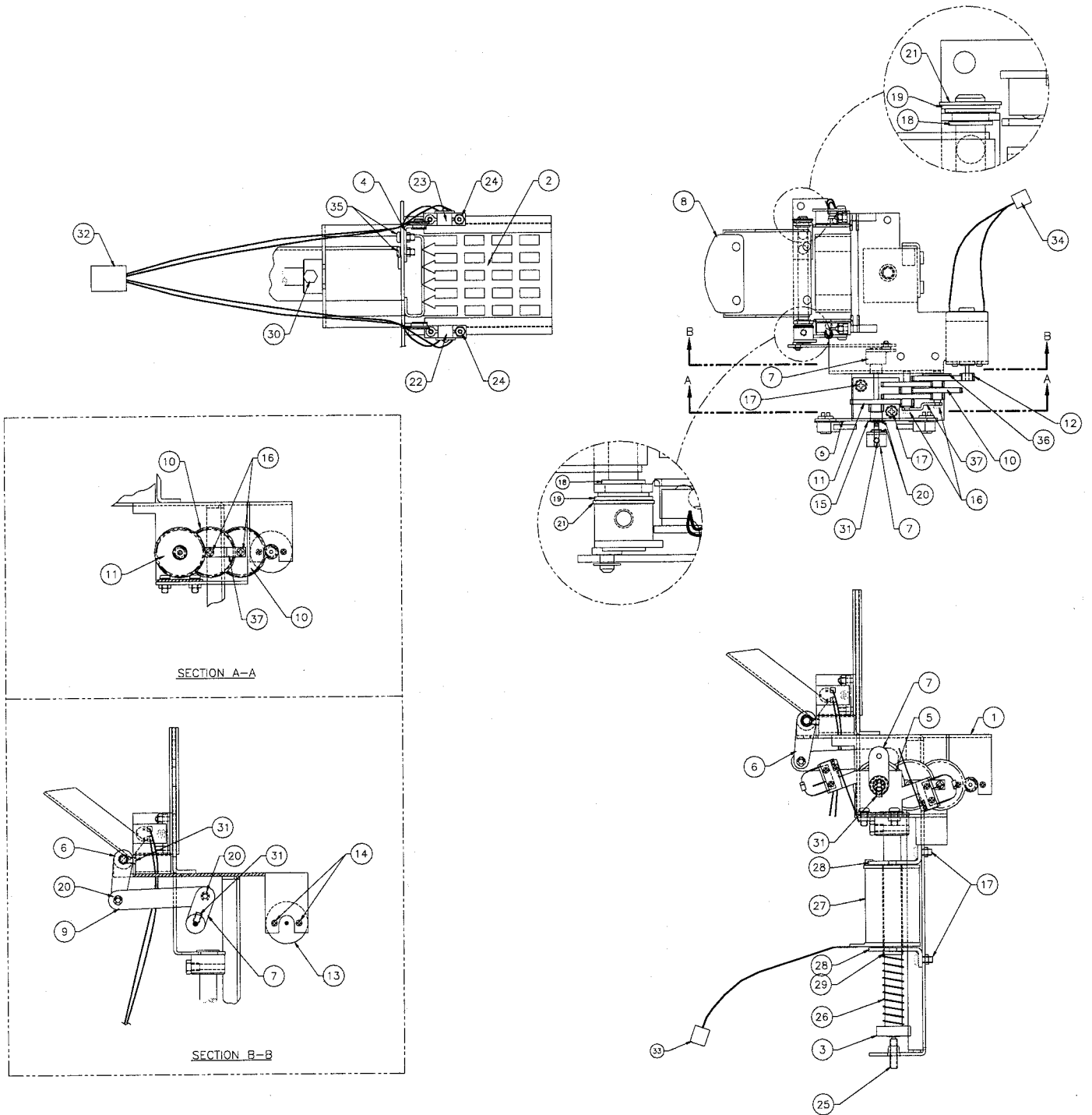
Drawbridge Gate Assembly

This assembly is used in games produced before July 21, 1997.

Item	Part Number	Description
1	04-10774.1	Drawbridge Gate Bracket
2	04-10773.1	Gate-Castle
3	04-10019	Armature Assembly
4	04-10771	Pivot Bracket
5	A-21976	Switch/Bracket Assembly
6	04-10768	Link 2
7	04-10767	Link 1
8	A-21722	Bridge Sub-Assembly
9	01-14674	Linkage
10	03-9219-1	Gear - Cluster
11	04-10886	Gear & Shaft Assembly
12	03-9222	Pinion Gear
13	14-8015	Motor - Gear Box
14	20-10131-07Y	Metric Screw, M2.6 x 8
15	4700-00005-00	Flat Washer: 9/64 x 7/16 x 21ga.
16	4004-01003-03	Mach. Screw, 4-40 x 3/16"
17	4008-01157-06	Mach. Screw, 8-32 x 3/8"
18	20-8790	Nyliner Bearing
19	4700-00072-00	Flat Washer, 17/64 x 1/2 x 21ga.
20	20-8712-12	E-Ring, 1/8" Shaft
21	20-8712-25	E-Ring, 1/4" Shaft
22	A-16908	Opto LED Assembly
23	A-16909	Opto Photo/Transistor Assembly
24	4404-01119-00	Nut 4-40 ESN
25	4010-01196-12	SS 10-32 x 3/4"
26	10-128	Spring Kicker
27	A-20099	Coil Assembly
28	01-7695-1	Solenoid Bracket
29	03-7067-6	Coil Tubing
30	02-5161	Screw Pin Scoop
31	4008-01083-04	SS 8-32 x 1/4"
32	H-22011	Opto Cable - Square
33	H-21008-1	Solenoid Cable
34	H-22008-10	2P Reverse Motor Cable
35	4008-01157-04	Mach. Screw, 8-32 x 3/8"
36	03-9823	Spacer
37	01-14746	Z-Bracket

A-21723 Drawbridge Gate Assembly

This assembly is used in games produced before July 21, 1997.



A-22033

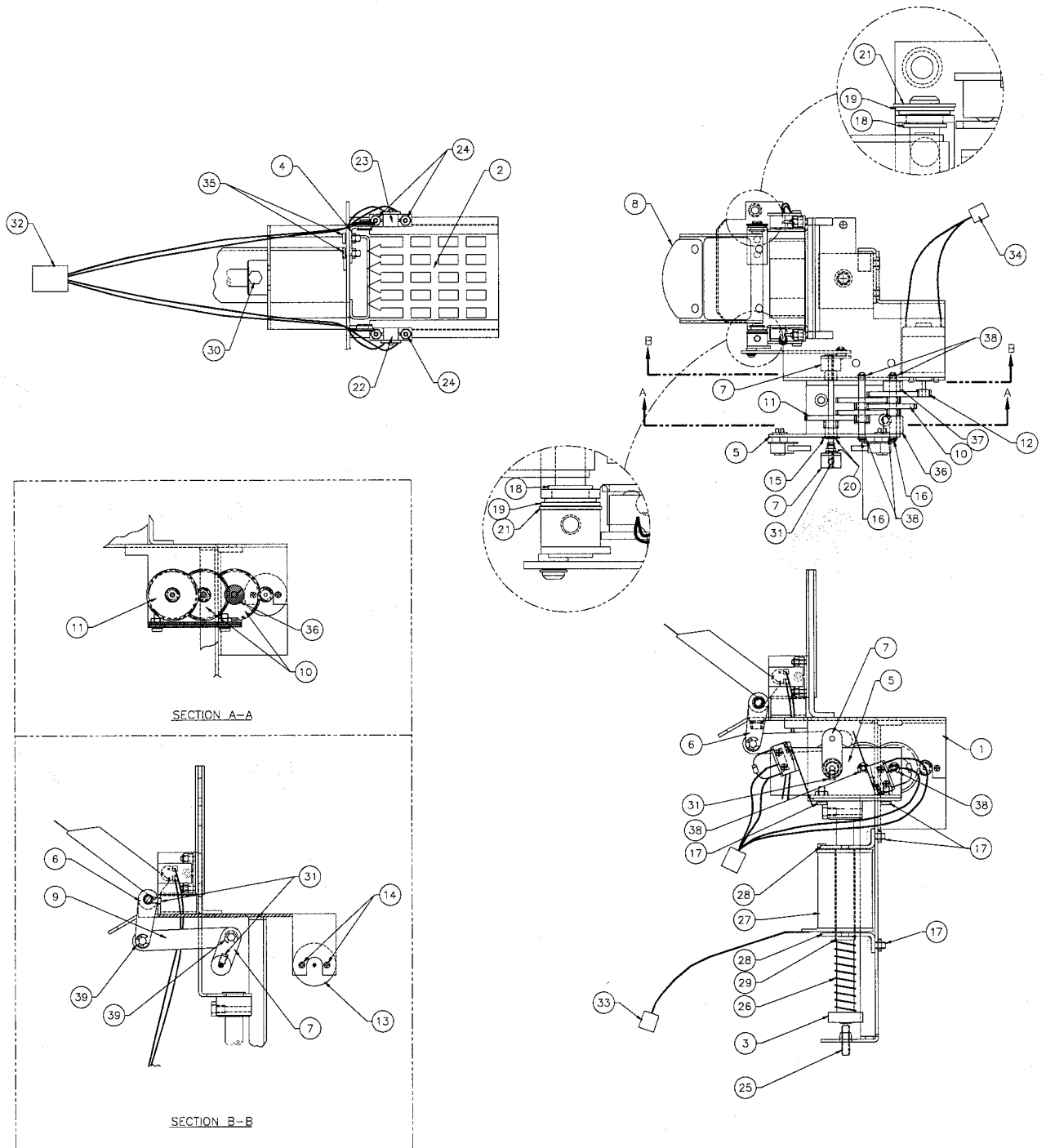
Drawbridge Gate Assembly

This assembly is used in games produced after July 21, 1997.

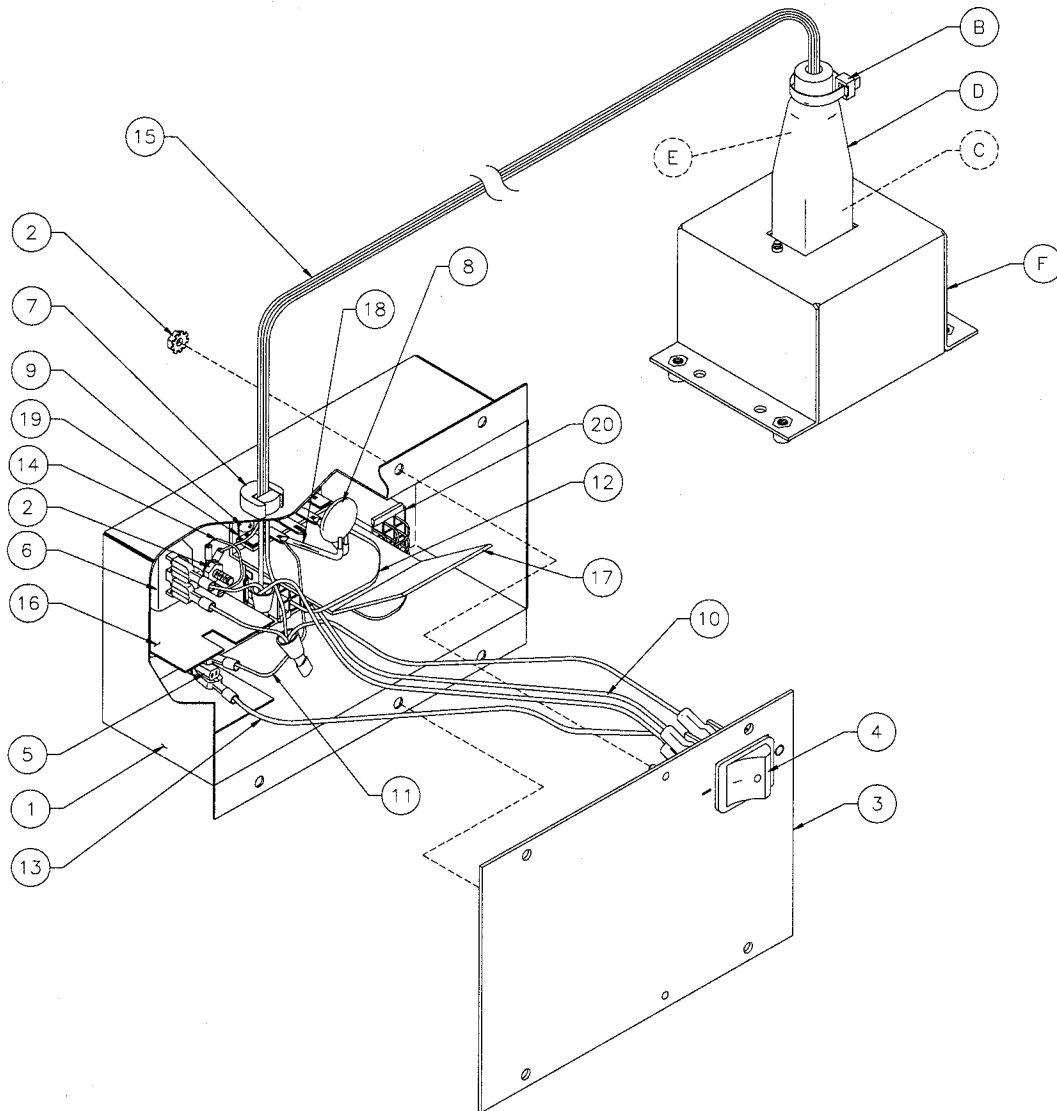
Item	Part Number	Description
1	04-10989	Drawbridge Gate Bracket
2	04-10773.1	Gate-Castle
3	04-10019	Armature Assembly
4	04-10771	Pivot Bracket
5	A-22036	Switch/Bracket Assembly
6	04-10986	Link 2
7	04-10985	Link 1
8	A-21722	Bridge Sub-Assembly
9	01-14748	Linkage
10	03-9219-1	Gear - Cluster
11	04-10988.1	Gear & Shaft Assembly
12	03-9222	Pinion Gear
13	14-8015	Motor - Gear Box
14	20-10131-07Y	Metric Screw, M2.6 x 8
15	4700-00005-00	Flat Washer: 9/64 x 7/16 x 21ga.
16	02-5324	Gear Shaft
17	4008-01157-06	Mach. Screw, 8-32 x 3/8"
18	20-8790	Nyliner Bearing
19	4700-00072-00	Flat Washer, 17/64 x 1/2 x 21ga.
20	20-8712-12	E-Ring, 1/8" Shaft
21	20-8712-25	E-Ring, 1/4" Shaft
22	A-16908	Opto LED Assembly
23	A-16909	Opto Photo/Transistor Assembly
24	4404-01119-00	Nut 4-40 ESN
25	4010-01196-12	SS 10-32 x 3/4"
26	10-128	Spring Kicker
27	A-20099	Coil Assembly
28	01-7695-1	Solenoid Bracket
29	03-7067-6	Coil Tubing
30	02-5161	Screw Pin Scoop
31	4008-01083-04	SS 8-32 x 1/4"
32	H-22011	Opto Cable - Square
33	H-21008-1	Solenoid Cable
34	H-22008-10	2P Reverse Motor Cable
35	4008-01157-04	Mach. Screw, 8-32 x 3/8"
36	03-9834-1	Spacer, 31/64" Long
37	03-9834-2	Spacer, 1/4" Long
38	20-8712-15	E-Ring, 5/32" Shaft
39	20-8712-18	E-Ring, 3/16" Shaft

A-22033 Drawbridge Gate Assembly

This assembly is used in games produced after July 21, 1997.



A-20871 Power Interface Assembly

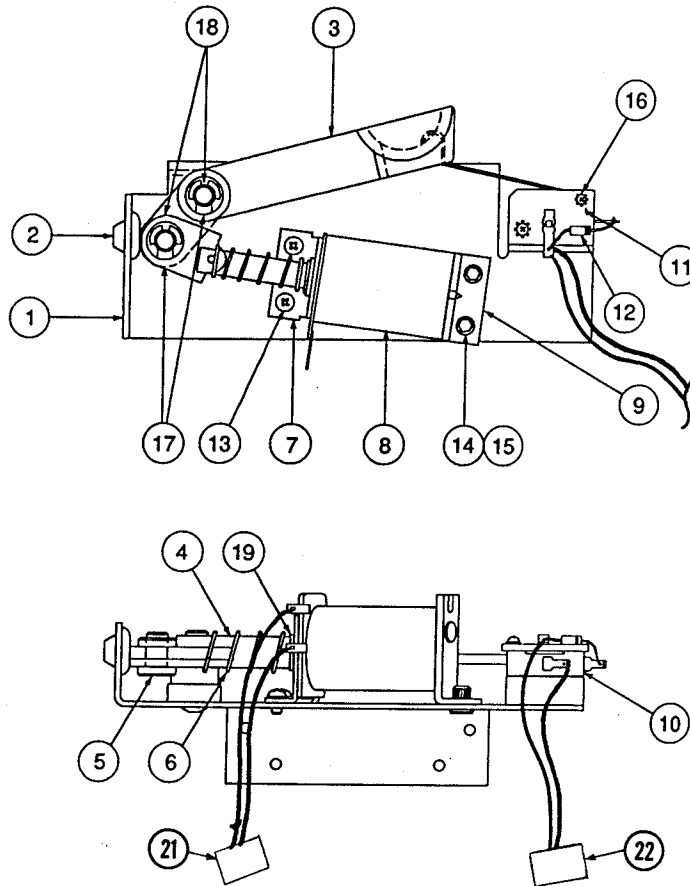


Item	Part Number	Description	Item	Part Number	Description
A	A-20872	Power Control Chassis Assembly	14)	H-17542	Ground Jumper Grn/Yel Cable
1)	04-10292	Power Control Chassis Box	15)	5797-13940-01	Jumper Cable
2)	4406-01128-00	Nut #6-32 KEPS (3)	16)	01-10623	Insulator, Thermistor
3)	01-12294	Switch Mounting Plate Assembly	17)	01-12299	Insulator, Terminal Strip
4)	5642-13935-00	Power Switch	18)	RM-21-06	#18 Vinyl Fgls
5)	5733-14734-00	Fuse Holder Panel (5x20mm)	19)	5822-13865-00	Terminal Strip 3-CKT 2-Mtg.
6)	5851-13867-00	Outlet-IEC Conn. 237 Socket	20)	H-18050	Jumper Cable, Transformer Prog.
7)	03-8712	Strain Relief Bushing	B	03-7933	Ty-Wrap Nylon
8)	5016-12978-00	Thermistor 8A., 2.5R25	C	5045-14007-00	Capacitor, 1µF 275v
9)	4006-01003-10	Mach. Screw, #6-32 x 5/8"	D	23-6776-4	Heat Shrink
10)	H-17992	Jumper Cable Neutral Sw/1FC	E	RM-21-06	#18 Vinyl Sleeving
11)	H-17543	Hot Jumper Black Cable	F	A-20873	Line Filter Entry Chassis
12)	H-17546	Jumper Interface Hot Black Cable			
13)	H-17545	Jumper Switch/Fuse Black Cable			

Power Interface/Cordset Application

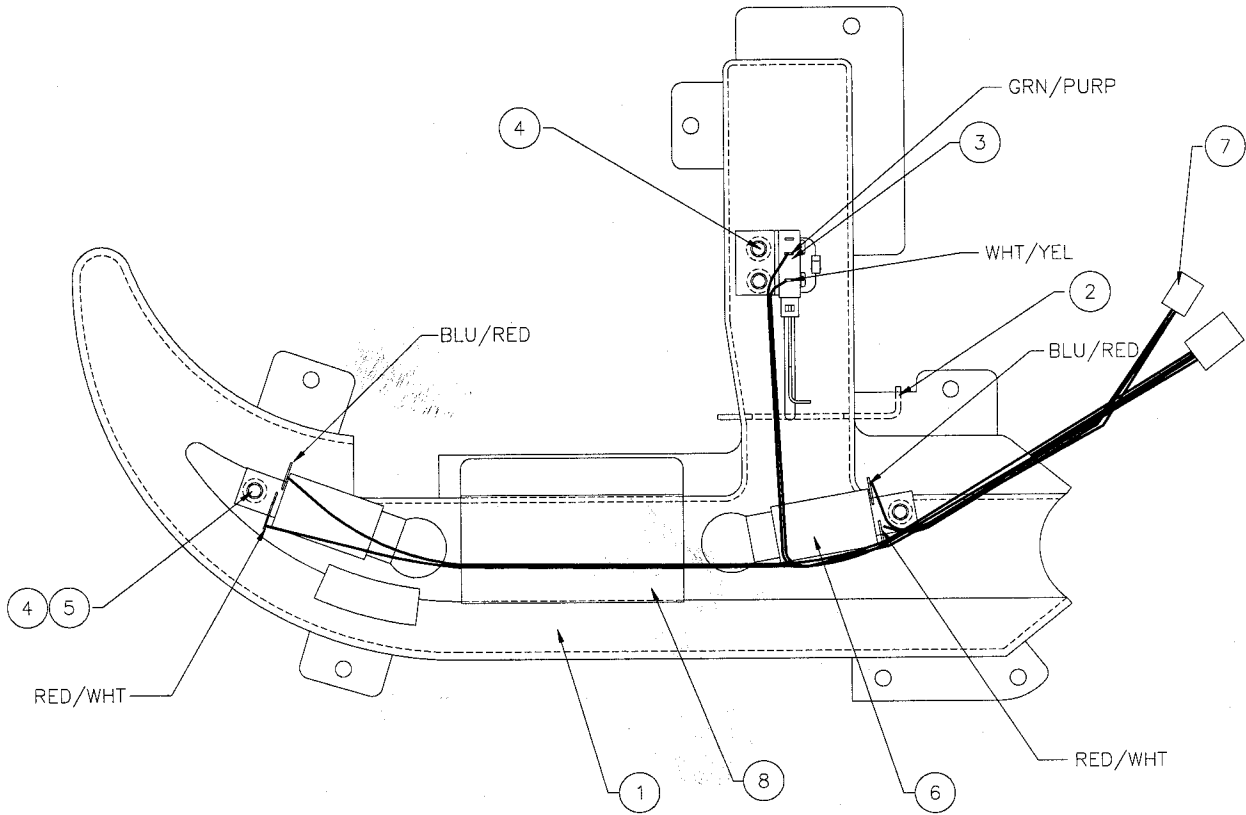
COUNTRY	UNIVERSAL PWR. INTERFACE ASSEMBLY	VOLTAGE PROGRAMMING JUMP CABLE				4AMP FUSE/LABEL	5AMP FUSE/LABEL	LABEL HIGH/VOLTAGE CAUTION	POWER ADAPTER CORD	CORDSET												
		H-17837-1	H-17837-2	H-17837-3	H-17837-4					5731-14530-00 FUSE LABEL	16-10145 LABEL	5731-14046-00 FUSE LABEL	16-9698 LABEL	16-9669	5850-14052-00	5850-13271-00	5850-13272-00	5850-13273-00	5850-13274-00	5850-13275-00	5850-13276-00	5850-13277-00
UNITED STATES	X		X				X	X		X	X											
CANADA	X	X					X	X				X										
TAIWAN	X		X				X	X				X										
MEXICO	X		X				X	X				X										
CENTRAL AMERICA	X		X				X	X				X										
SOUTH KOREA	X		X				X	X				X										
PUERTO RICO	X		X				X	X				X										
AUSTRIA	X			X		X	X		X			X										
BELGIUM	X			X		X	X		X			X										
FINLAND	X			X		X	X		X			X										
FRANCE	X			X		X	X		X			X										
GREECE	X			X		X	X		X			X										
HOLLAND	X			X		X	X		X			X										
HUNGARY	X			X		X	X		X			X										
NETHERLANDS	X			X		X	X		X			X										
NETH. ANTILLES	X			X		X	X		X			X										
NORWAY	X			X		X	X		X			X										
POLAND	X			X		X	X		X			X										
PORTUGAL	X			X		X	X		X			X										
SPAIN	X			X		X	X		X			X										
SWEDEN	X			X		X	X		X			X										
TURKEY	X			X		X	X		X			X										
WEST GERMANY	X			X		X	X		X			X										
UNITED KINGDOM	X			X		X	X		X				X									
IRELAND	X			X		X	X		X				X									
HONG KONG	X			X		X	X		X				X									
DENMARK	X			X		X	X		X					X								
ITALY	X			X		X	X		X						X							
CHILE	X			X		X	X		X							X						
PEOPLE'S REP. OF CHINA	X			X		X	X		X							X						
SWITZERLAND	X			X		X	X		X								X					
AUSTRALIA	X			X		X	X		X											X		
NEW ZEALAND	X			X		X	X		X											X		
ARGENTINA	X			X		X	X		X											X		
JAPAN	X				X			X	X												X	X
CROATIA	X			X		X	X		X			X										

A-14947-1 Catapult Unit Assembly



Item	Part Number	Description
1	A-14946	Catapult Bracket Assembly
2	23-6577	Plug Bumper, 5/8"
3	03-8089	Catapult Arm
4	04-10952.1	Plunger Assembly
5	02-4301	Catapult Arm Pin
6	10-135	Thumper Bumper Spring
7	01-8413	Coil Mounting Bracket
8	AL-23-800	Coil Sub-Assembly
9	A-10821	Flipper Stop Bracket Assembly
10	5647-12133-12	Miniature Switch
11	A-7438-1	Terminal Strip Assembly
12	5070-09054-00	Diode 1N4004 1.0A.
13	4008-01017-04	Mach. Screw, #8-32 x 1/4"
14	4010-01066-06	Cap Screw, #10-32 x 3/8"
15	4701-00004-00	Lockwasher #10 Split
16	4004-01003-10	Mach. Screw, #4-40 x 5/8"
17	4700-00104-00	FW, 5/16 x 1/2 x 16ga.
18	20-8712-31	Retaining Ring
19	03-7066	Coil Tubing
20	23-6622	Foam Tape Double Sided
21	H-19523	Cable
22	H-16437	Cable- Gen. Switch

A-21703 Moat Assembly

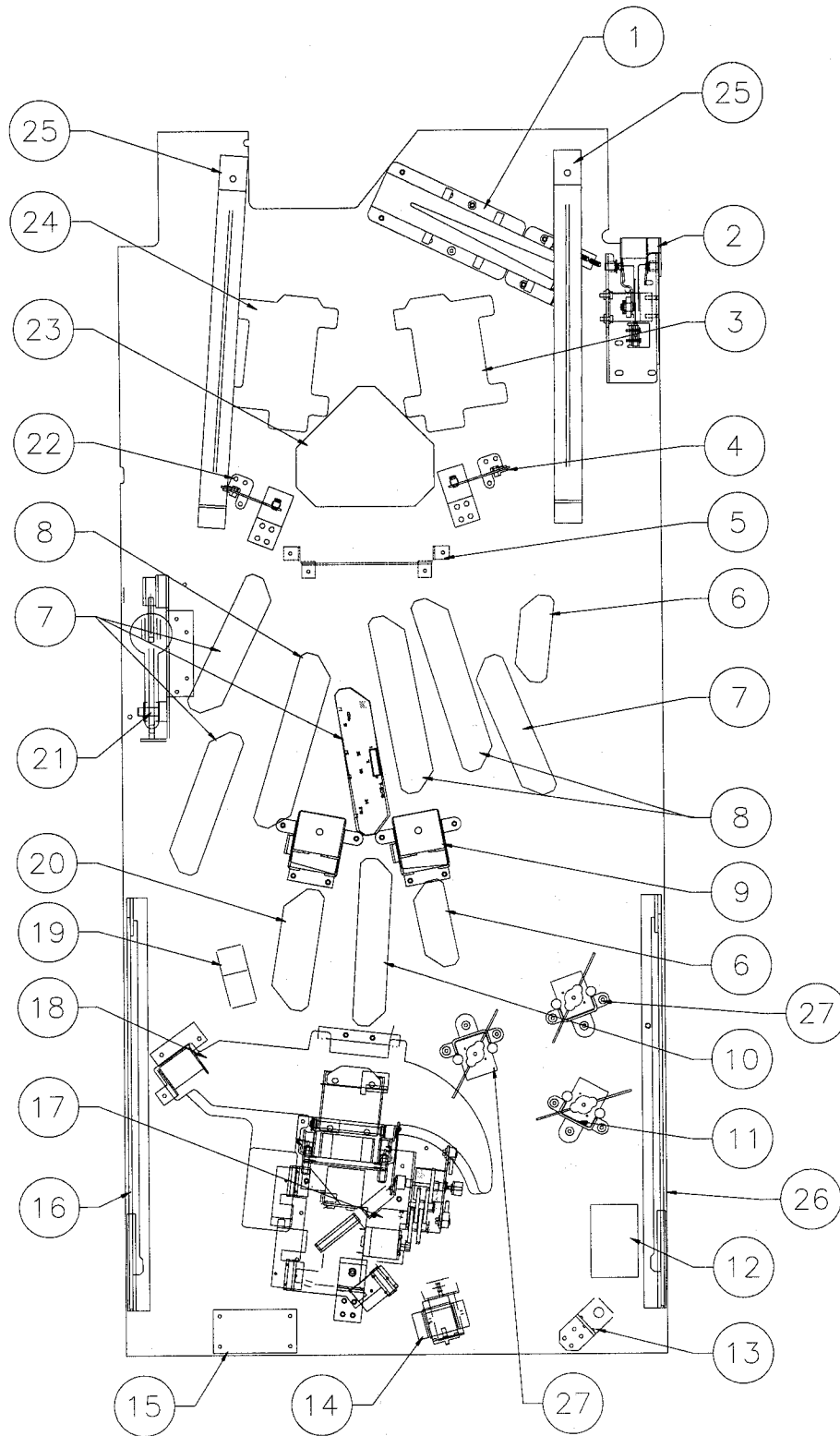


Item	Part Number	Description
1	03-9681.6	Moat
2	12-7380	Wire
3	A-21800	Switch Assembly
4	07-6688-19N	Rivet: 1/8 x 7/32"
5	4700-00003-00	Flat Washer: 1/8 x 9/32 x 21ga.
6	A-17803	Flasher Lay-Down
7	H-21767	Moat Cable Assembly
8	03-9804	Playfield Mylar

Lower Playfield Parts

Item	Part Number	Description
1	A-19963-1	Ball Trough Assembly Complete
2	A-21553-1	Auto Fire Assembly
3	A-15849-R-2	Flipper Assembly
4	B-9362-R-3	Coil & Bracket Assembly
5	A-20246	10-Opto PCB Assembly
6	A-21322	3-Lamp PCB (2)
7	A-21740	4-Lamp PCB (4)
8	A-21738	5-Lamp PCB (3)
9	A-22034	Troll Assembly
10	A-21741	4-Lamp PCB Assembly
11	A-9415-2	Jet Bumper Coil Assembly
12	A-21706	Divertor Assembly
13	A-21712-5	Up Down Post Assembly
14	A-17796-1	Ball Gate Actuator Assembly
15	A-21708-1	Motor Driver w/EMI Assembly
16	A-17749.1-1	Playfield Slide Assembly, Left
17	A-22033	Drawbridge /Gate Assembly
18	A-21703	Moat Assembly
19	A-22027	Popper Assembly
20	A-21551	4-Lamp PCB Assembly
21	A-14947-1	Catapult Assembly
22	B-9362-L-2	Coil & Bracket Assembly
23	A-21739	7-Lamp PCB Assembly
24	A-15849-L-2	Flipper Assembly
25	01-11781	Support Bracket (2)
26	A-17749.1-2	Slide Playfield Assembly, Right
27	B-9415-3	Jet Bumper Coil Assembly (2)

Lower Playfield Parts



Underside of playfield, viewed in raised position.

Upper Playfield Parts

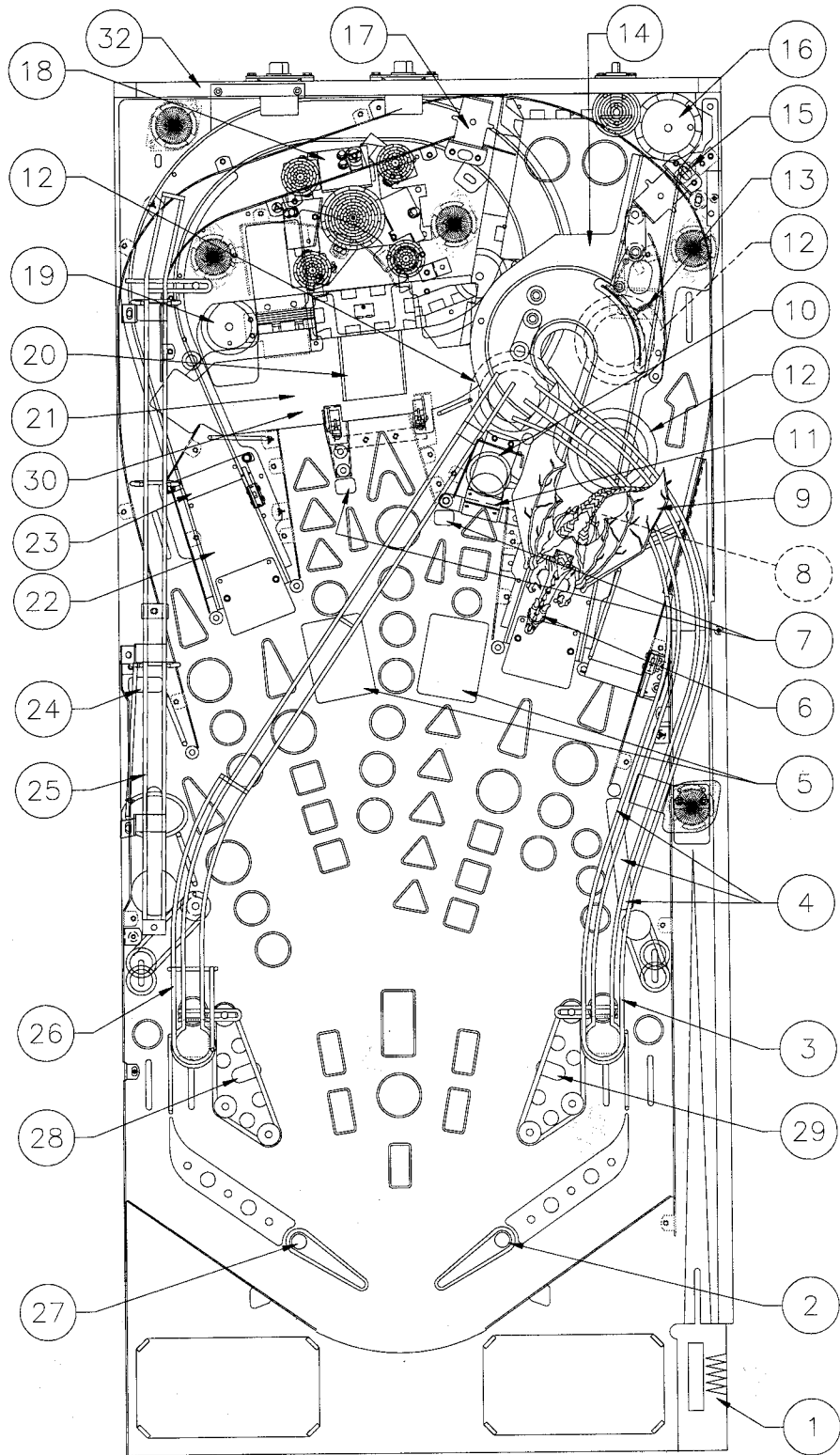
Item No.	Part Number	Description
1	A-21553-1	Auto Fire Plunger Assembly
2a	A-21805-15	Right Flipper Ball Guide
2b	A-15849-R-2	Flipper Coil & Bracket Assembly
2c	20-10110-5	Flipper Bat & Shaft - White
3	A-21697	Right Ramp Assembly
4	A-21576-4	Red Standup Targets
5a	A-22034	Troll Assembly
5b	A-21744	Troll Carriage Assembly
5c	31-2824	Troll Head
6	31-2818	Dragon Body
7	A-18530-6	Yellow Troll Standup Target s
8	A-21777	Dragon Switch Gate Assembly
9	31-2819	Dragon Wings
10	A-21970	Right Troll Eject Popper Assembly
11	A-21714	Gate Assembly w/Spring
12a	A-9415-2	Jet Bumper Coil Assembly
12b	B-9414-6	Jet Bumper Assembly
13	A-21706	Tower Diverter Assembly
14	A-21702	Right Plastic Ramp Assembly
15a	A-17797-1	Right Gate Assembly
15b	A-17796	Ball Gate Actuator
16	A-21712-5	Up/Down Tower Lock Post
17a	A-17797-1	Left Gate Assembly
17b	A-17796-1	Ball Gate Actuator
18a	A-21718	Castle Actuator Assembly
18b	A-21728	Exploding Castle Assembly
19	A-21755	Castle Assembly
20	A-22033	Drawbridge/Gate Assembly
21	A-21703	Moat Assembly
22	A-21701	Left Plastic Ramp Assembly
23	A-21799	Switch Gate Assembly
24	A-21990-4	Red Catapult Standup Target
25	A-21751	Catapult Ramp
26	12-7377.1	Left Wire Ramp
27a	A-21805-15	Right Flipper Ball Guide
27b	A-15849-R-2	Flipper Coil & Bracket Assembly
27c	20-10110-5	Flipper Bat & Shaft - White
28a	A-17811	Kicker Assembly
28b	B-9362-L-2	Coil & Bracket Assembly
29a	A-17811	Kicker Assembly
29b	B-9362-R-3	Coil & Bracket Assembly
30	A-22027	Popper
31a	A-9415-3	Jet Bumper Coil Assembly
31b	B-9414-6	Jet Bumper Assembly
32	A-21750	Back Panel Assembly

Not Shown:

A-13204-50059	Bottom Arch Assembly
31-2820.2	Screened Bottom Arch
A-14265-13	Receptacle & Skirt - clear
A-19514	Chrome Leg Assembly
03-8633	Level Mount
08-7028-T	Playfield Glass
08-7377	Leg Adjuster Leveler
20-6500	Steel Balls (4)
20-6502-A	Plumb Bob
20-9045	Clear Plastic Card Cover
20-9691	Level
31-1357-50059	Backglass Translite
36-50059	Screened Hardcoat Playfield

*The *MEDIEVAL MADNESS* hardcoat playfield does not require a full Mylar. However, mylars can be purchased through your local Williams Distributor.

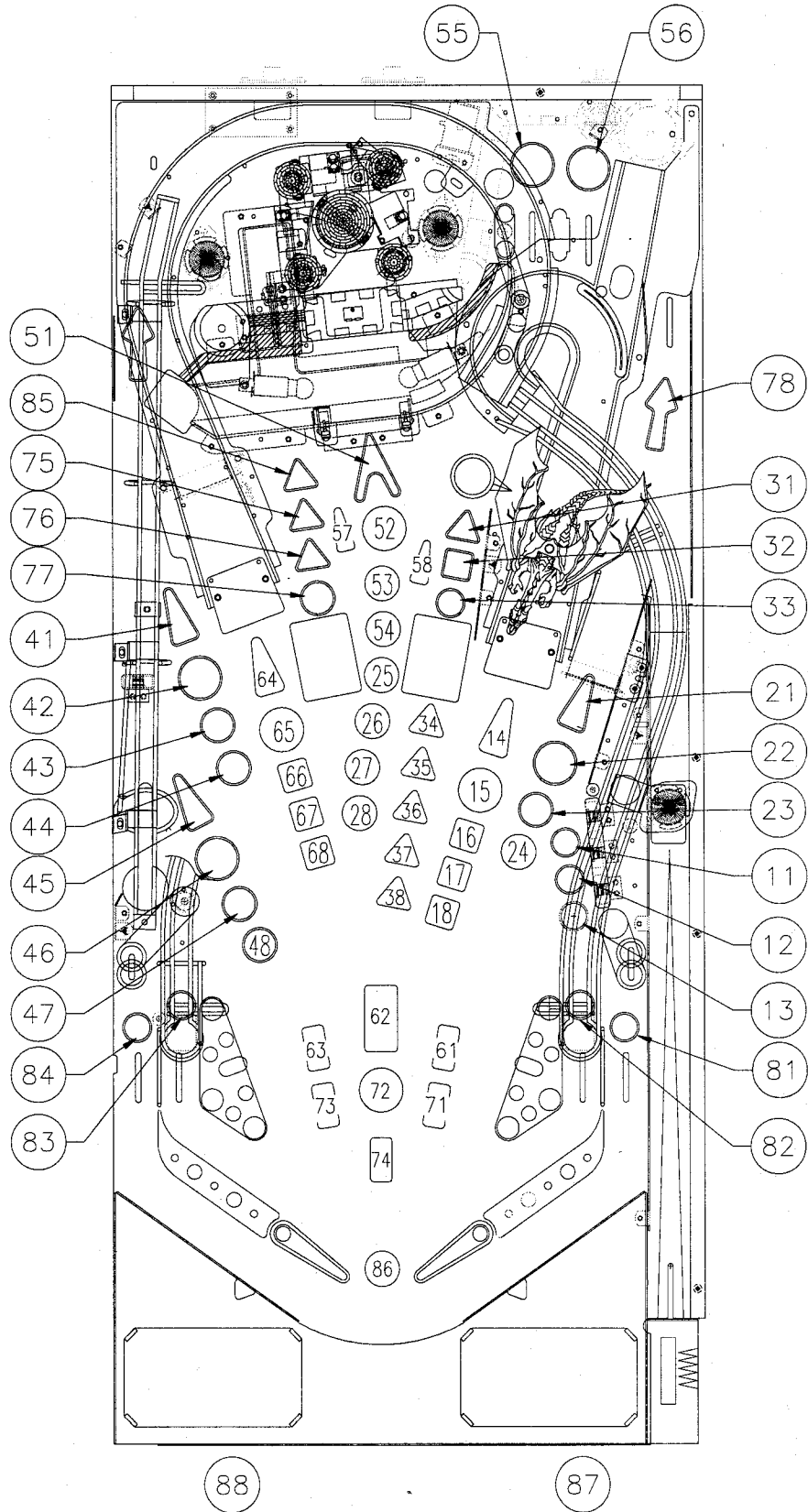
Upper Playfield Parts



Lamp Locations

Item Number	Lamp Assembly Part Number	Bulb Type	Bulb Part Number	Socket Part Number	Description
11	A-21322	#555	24-8768	24-8767	RIGHT BANK TOP
12	A-21322	#555	24-8768	24-8767	RIGHT BANK MIDDLE
13	A-21322	#555	24-8768	24-8767	RIGHT BANK BOTTOM
14	A-21738	#555	24-8768	24-8767	RIGHT RAMP JACKPOT
15	A-21738	#555	24-8768	24-8767	SAVE THE DAMSEL! (2)
16	A-21738	#555	24-8768	24-8767	DRAGON DEATH
17	A-21738	#555	24-8768	24-8767	DRAGON SNACK
18	A-21738	#555	24-8768	24-8767	DRAGON BREATH
21	A-21740	#555	24-8768	24-8767	RIGHT LOOP JACKPOT
22	A-21740	#555	24-8768	24-8767	RIGHT JOUST VICTORY!
23	A-21740	#555	24-8768	24-8767	RIGHT CLASH!
24	A-21740	#555	24-8768	24-8767	RIGHT CHARGE!
25	A-21740	#555	24-8768	24-8767	PATRON OF THE PEASANTS
26	A-21740	#555	24-8768	24-8767	CATAPULT ACE
27	A-21740	#555	24-8768	24-8767	JOUST CHAMPION
28	A-21740	#555	24-8768	24-8767	CASTLE CRUSHER
31	A-21322	#555	24-8768	24-8767	TROLLS!
32	A-21322	#555	24-8768	24-8767	EXTRA BALL
33	A-21322	#555	24-8768	24-8767	MERLIN'S MAGIC
34	A-21738	#555	24-8768	24-8767	TROLL MADNESS
35	A-21738	#555	24-8768	24-8767	DAMSEL MADNESS
36	A-21738	#555	24-8768	24-8767	PEASANT MADNESS
37	A-21738	#555	24-8768	24-8767	CATAPULT MADNESS
38	A-21738	#555	24-8768	24-8767	JOUST MADNESS
41	A-21740	#555	24-8768	24-8767	LEFT LOOP JACKPOT
42	A-21740	#555	24-8768	24-8767	LEFT JOUST VICTORY!
43	A-21740	#555	24-8768	24-8767	LEFT CLASH!
44	A-21740	#555	24-8768	24-8767	LEFT CHARGE!
45	A-21740	#555	24-8768	24-8767	CATAPULT JACKPOT
46	A-21740	#555	24-8768	24-8767	CATAPULT SLAM!
47	A-21740	#555	24-8768	24-8767	BAM!
48	A-21740	#555	24-8768	24-8767	WAM!
51	A-21741	#555	24-8768	24-8767	CENTER ARROW
52	A-21741	#555	24-8768	24-8767	BATTLE FOR THE KINGDOM
53	A-21741	#555	24-8768	24-8767	MASTER OF TROLLS
54	A-21741	#555	24-8768	24-8767	DEFENDER OF DAMSELS
55	A-17807	#44	24-6549	Not Sold Separate	LEFT TOP LANE
56	A-17807	#44	24-6549	Not Sold Separate	RIGHT TOP LANE
57	A-17835	#44	24-6549	Not Sold Separate	LEFT TROLL TARGET
58	A-17835	#44	24-6549	Not Sold Separate	RIGHT TROLL TARGET
61	A-21739	#555	24-8768	24-8767	FRANCOIS D'GRIMM
62	A-21739	#555	24-8768	24-8767	KING OF PAYNE
63	A-21739	#555	24-8768	24-8767	EARL OF EGO
64	A-21738	#555	24-8768	24-8767	LEFT RAMP JACKPOT
65	A-21738	#555	24-8768	24-8767	REVOLTING PEASANTS!
66	A-21738	#555	24-8768	24-8767	UGLY ROIT!
67	A-21738	#555	24-8768	24-8767	ANGRY MOBI
68	A-21738	#555	24-8768	24-8767	RABBLE ROUSER
71	A-21739	#555	24-8768	24-8767	HOWARD HURTZ
72	A-21739	#555	24-8768	24-8767	BALL SAVE
73	A-21739	#555	24-8768	24-8767	SIR PSYCHO
74	A-21739	#555	24-8768	24-8767	DUKE OF BOURBON
75	A-21551	#555	24-8768	24-8767	CASTLE LOCK 2
76	A-21551	#555	24-8768	24-8767	CASTLE LOCK 1
77	A-21551	#555	24-8768	24-8767	SUPER JACKPOT
78	A-17807	#44	24-6549	Not Sold Separate	SUPER JETS (2)
81	A-17835	#44	24-6549	Not Sold Separate	RIGHT OUTLANE
82	A-17807	#44	24-6549	Not Sold Separate	RIGHT RETURN
83	A-17835	#44	24-6549	Not Sold Separate	LEFT RETURN
84	A-17807	#44	24-6549	Not Sold Separate	LEFT OUTLANE
85	A-21551	#555	24-8768	24-8767	CASTLE LOCK 3
86	A-17087	#44	24-6549	Not Sold Separate	SHOOT AGAIN
87	20-9663-B-4		----	Not Sold Separate	LAUNCH BUTTON
88	20-9663-16		----	Not Sold Separate	START BUTTON

Lamp Locations



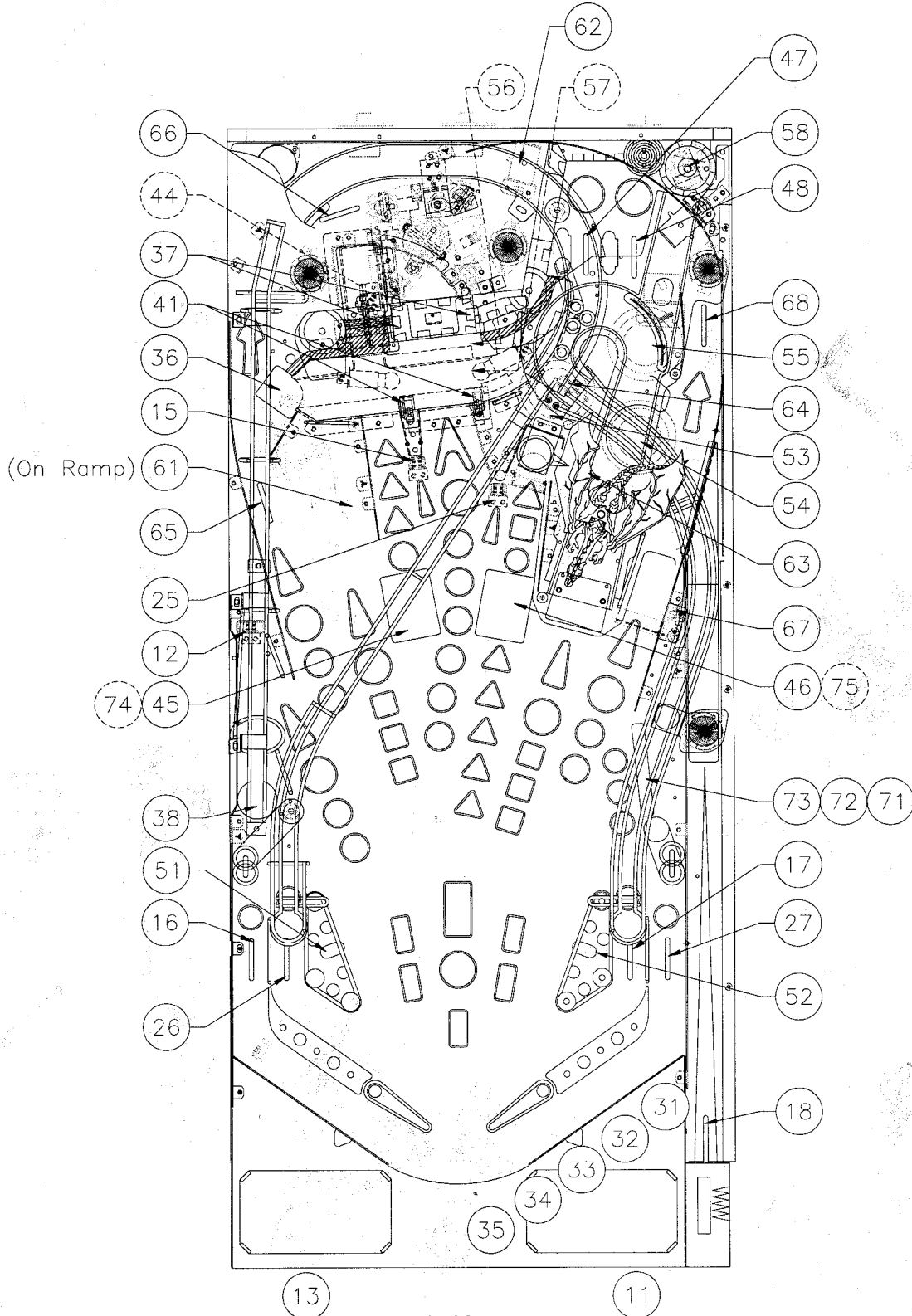
Switch Locations

Item Number	Switch Assembly Part Number <i>OR</i> Opto Assembly Part Number	Switch Part Number	Description
F1	----	SW-1A-194	*LOWER RIGHT FLIPPER E.O.S.
F2	A-17316	----	*LOWER RIGHT FLIPPER CABINET
F3	----	SW-1A-194	*LOWER LEFT FLIPPER E.O.S.
F4	A-17316	----	*LOWER LEFT FLIPPER CABINET
F5	NOT USED		UPPER RIGHT FLIPPER E.O.S.
F6	NOT USED		UPPER RIGHT FLIPPER CABINET
F7	NOT USED		UPPER LEFT FLIPPER E.O.S.
F8	NOT USED		UPPER LEFT FLIPPER CABINET
11	20-9663-B-4	----	BALL LAUNCH
12	A-21990-4	----	CATAPULT TARGET
13	20-9663-16	----	START BUTTON
14	----	04-10346	*PLUMB BOB TILT
15	A-18530-6	----	LEFT TROLL TARGET
16	A-17813	5647-12693-19	LEFT OUTLANE
17	A-17813	5647-12693-19	RIGHT RETURN LANE
18	A-17791	5647-12693-32	SHOOTER LANE
21	A-17238	----	*SLAM TILT
22	----	5643-09268-00	*COIN DOOR CLOSED
23	NOT USED		
24	----	5643-15190-00	*ALWAYS CLOSED
25	A-18530-6	----	RIGHT TROLL TARGET
26	A-17813	5647-12693-19	LEFT RETURN LANE
27	A-17813	5647-12693-19	RIGHT OUTLANE
28	A-21970 (SEE NOTE 1)	5647-12693-43	RIGHT EJECT
31	A-18617-1 (LED)	----	TROUGH ELECT
	A-18618-1 (PHOTO TRANS)	----	
32	A-18617-1 (LED)	----	TROUGH BALL 1
	A-18618-1 (PHOTO TRANS)	----	
33	A-18617-1 (LED)	----	TROUGH BALL 2
	A-18618-1 (PHOTO TRANS)	----	
34	A-18617-1 (LED)	----	TROUGH BALL 3
	A-18618-1 (PHOTO TRANS)	----	
35	A-18617-1 (LED)	----	TROUGH BALL 4
	A-18618-1 (PHOTO TRANS)	----	
36	A-16908 (LED)	----	LEFT POPPER
	A-16909 (PHOTO TRANS)	----	
37	A-16908 (LED)	----	CASTLE GATE
	A-16909 (PHOTO TRANS)	----	
38	A-14947-1 (SEE NOTE 1)	5647-12133-12	CATAPULT
41	A-16908 (LED)	----	MOAT ENTER
	A-16909 (PHOTO TRANS)	----	
42	NOT USED		
43	NOT USED		
44	A-21800	5647-12693-67	CASTLE LOCK
45	A-21724	A-21743	LEFT TROLL (UNDER PLAYFIELD)
46	A-21724	A-21743	RIGHT TROLL (UNDER PLAYFIELD)
47	A-17813	5647-12693-19	LEFT TOP LANE
48	A-17813	5647-12693-19	RIGHT TOP LANE
51	A-17800 (KICK)	SW-1A-114	LEFT SLINGSHOT
	A-17794 (**SCORE)	SW-1A-120	
52	A-17800 (KICK)	SW-1A-114	RIGHT SLINGSHOT
	A-17794 (**SCORE)	SW-1A-120	
53	A-12030-3	A-16443-1	LEFT JET BUMPER
54	A-12030-3	A-16443-1	BOTTOM JET BUMPER
55	A-12030-3	A-16443-1	RIGHT JET BUMPER
56	A-22036 (SEE NOTE 1)	5647-12693-11	DRAWBRIDGE UP
57		5647-12693-11	DRAWBRIDGE DOWN
58	A-21734 (SEE NOTE 1)	5647-12693-06	TOWER EXIT
61	A-21799	5647-12693-11	LEFT RAMP ENTER
62	A-21821	5647-12693-13	LEFT RAMP EXIT
63	A-21777	5647-12693-11	RIGHT RAMP ENTER
64	A-21820	5647-12693-13	RIGHT RAMP EXIT
65	A-17813	5647-12693-19	LEFT LOOP LOW
66	A-17813	5647-12693-19	LEFT LOOP HIGH
67	A-21737	5647-12693-36	RIGHT LOOP LOW
68	A-17813	5647-12693-19	RIGHT LOOP HIGH
71	A-21576-4	----	RIGHT BANK TOP
72	A-21576-4	----	RIGHT BANK MIDDLE

Switch Locations

Item Number	Switch Assembly Part Number <i>OR</i> Opto Assembly Part Number	Switch Part Number	Description
73	A-21576-4	----	RIGHT BANK BOTTOM
74	A-22034	5647-12693-11	LEFT TROLL UP
75	A-22034	5647-12693-11	RIGHT TROLL UP
76 to 88	NOT USED		

***NOT SHOWN. **SCORE SWITCHES HAVE DIODES ATTACHED.**
NOTE 1 - THIS IS A COMPLETE ASSEMBLY, NOT JUST A SWITCH ASSEMBLY.



Solenoid/Flashlamp Locations

Item Number	Coil or Flasher Assembly Part Number	Coil or Flasher Part Number	Description
01	A-21553-1	AE-23-800	Auto Plunger
02	A-19963-1	AE-26-1500	Trough Eject
03	A-22027	AE-26-1200	Left Popper
04	A-21718	AE-26-1500	Castle
05	A-22033	A-20099	Castle Gate Power
06			Castle Gate Hold
07	B-10686-1	AE-23-800	Knocker
08	A-14947-1	AL-23-800	Catapult
09	A-21970	AE-27-1200	Right Eject
10	B-9362-L-2	AE-26-1200	Left Slingshot
11	B-9362-R-3	AE-26-1200	Right Slingshot
12	A-9415-3	AE-26-1200	Left Jet Bumper
13	A-9415-3	AE-26-1200	Bottom Jet Bumper
14	A-9415-2	AE-26-1200	Right Jet Bumper
15	A-21706	A-20099	Tower Diverter Power
16			Tower Diverter Hold
17	SEE NOTE 1	#906 (1)	Left Side Low Flasher
17	----	#906 (1)	Insert Panel Flasher
18	A-17983	#89 (1)	Left Ramp Flasher
18	----	#906 (1)	Insert Panel Flasher
19	SEE NOTE 1	#906 (1)	Left Side High Flasher
19	----	#906 (1)	Insert Panel Flasher
20	SEE NOTE 1	#906 (1)	Right Side High Flasher
20	----	#906 (1)	Insert Panel Flasher
21	A-17802	#906 (1)	Right Ramp Flashers
	A-17983	#89 (1)	
22	SEE NOTES 1 AND 2	#906 (2)	Castle Right Side Flashers
23	SEE NOTE 1	#906 (1)	Right Side Low Flashers
	A-17983	#89 (1)	
24	A-17803	#89 (2)	Moat Flashers
25	SEE NOTES 1 AND 2	#906 (2)	Castle Left Side Flashers
26	A-21712-5	AE-27-1200	Tower Lock Post
27	A-17796	A-14406	Right Gate
28	A-17796-1	A-14406	Left Gate

Flippers

Item Number	Coil or Flasher Assembly Part Number	Coil or Flasher Part Number	Description
29-30	A-15849-R-2	FL-11629	Lower Right Flipper
31-32	A-15849-L-2	FL-11629	Lower Left Flipper
33-34	A-22034	FL-11753	Left Troll
35-36	A-22034	FL-11753	Right Troll

Motor

Item Number	Assembly Part Number	PC Board Part Number	Device Part Number	Description
37	A-22033	A-21708-1	14-8015	Drawbridge Motor

General Illumination

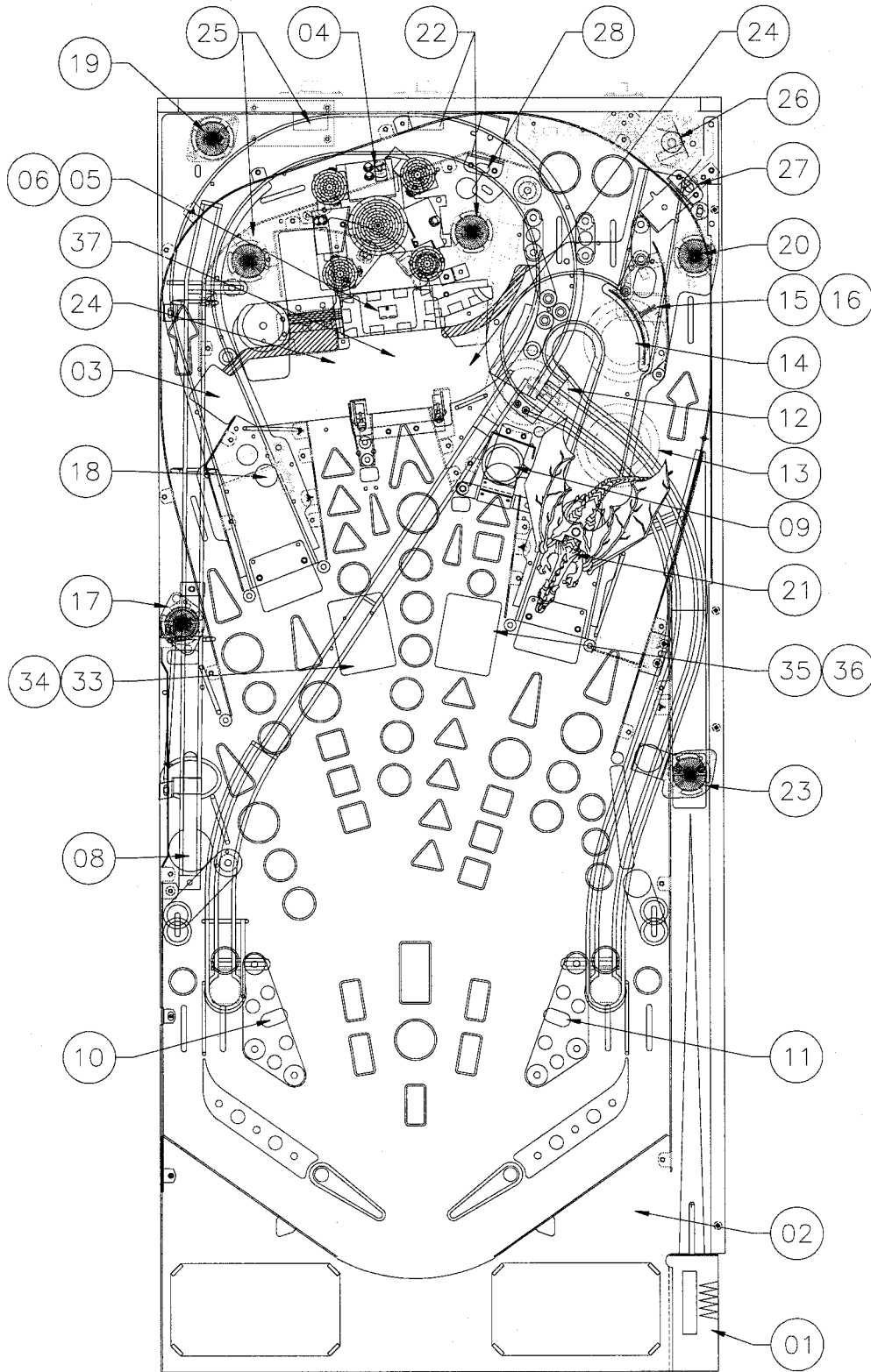
Item Number	Bulb Number	Description
01	#44 / #555	Bottom Playfield
02	#555	Middle Playfield
03	#555	Top Playfield
04	#44	Top Insert Panel
05	#44	Bottom Insert Panel

24-6549 = #44 BULB; 24-8768 = #555 BULB; 24-8802 = #906 BULB

NOTE 1 - Located on the playfield. The playfield assembly consists of three parts: a receptacle and skirt #A-14265-13; a red dome #03-8171-9, and a #906 bulb #24-8802.

NOTE 2: - There is one bulb located on the playfield and one located on the back panel. The back panel assembly consists of one part, #A-20158.

Solenoid/Flashlamp Locations



LAMP MATRIX


Yellow (B+)

Red

Column \ Row	1 Yellow-Brown J121-1 Q96	2 Yellow-Red J121-2 Q100	3 Yellow-Orange J121-3 Q95	4 Yellow-Black J121-4 Q99	5 Yellow-Green J121-5 Q94	6 Yellow-Blue J121-6 Q98	7 Yellow-Violet J121-7 Q93	8 Yellow-Gray J121-9 Q97
1 Red-Brown J125-1 Q104	RIGHT BANK TOP 11	RIGHT LOOP JACKPOT 21	TROLLS! 31	LEFT LOOP JACKPOT 41	CENTER ARROW 51	FRANCOIS D'GRIMM 61	HOWARD HURTZ 71	RIGHT OUTLANE 81
2 Red-Black J125-2 Q108	RIGHT BANK MIDDLE 12	RIGHT JOUST VICTORY! 22	EXTRA BALL 32	LEFT JOUST VICTORY! 42	BATTLE FOR THE KINGDOM 52	KING OF PAYNE 62	MAGIC SHIELD 72	RIGHT RETURN 82
3 Red-Orange J125-4 Q103	RIGHT BANK BOTTOM 13	RIGHT CLASH! 23	MERLIN'S MAGIC 33	LEFT CLASH! 43	MASTER OF TROLLS 53	EARL OF EGO 63	SIR PSYCHO 73	LEFT RETURN 83
4 Red-Yellow J125-5 Q107	RIGHT RAMP JACKPOT 14	RIGHT CHARGE! 24	TROLL MADNESS 34	LEFT CHARGE! 44	DEFENDER OF DAMSELS 54	LEFT RAMP JACKPOT 64	DUKE OF BOURBON 74	LEFT OUTLANE 84
5 Red-Green J125-6 Q102	SAVE THE DAMSEL! (2) 15	PATRON OF THE PEASANTS 25	DAMSEL MADNESS 35	CATAPULT JACKPOT 45	LEFT TOP LANE 55	REVOLTING PEASANTS! 65	CASTLE LOCK 2 75	CASTLE LOCK 3 85
6 Red-Blue J125-7 Q106	DRAGON DEATH 16	CATAPULT ACE 26	PEASANT MADNESS 36	CATAPULT SLAM! 46	RIGHT TOP LANE 56	UGLY RIOT! 66	CASTLE LOCK 1 76	SHOOT AGAIN 86
7 Red-Violet J125-8 Q101	DRAGON SNACK 17	JOUST CHAMPION 27	CATAPULT MADNESS 37	BAM! 47	LEFT TROLL TARGET 57	ANGRY MOB! 67	SUPER JACKPOT 77	LAUNCH BUTTON 87
8 Red-Gray J125-9 Q105	DRAGON BREATH 18	CASTLE CRUSHER 28	JOUST MADNESS 38	WAM! 48	RIGHT TROLL TARGET 58	RABBLE ROUSER 68	SUPER JETS (2) 78	START BUTTON 88

J1XX = Power Driver Board

SWITCH MATRIX

White  Green

Dedicated Grounded Switches	Column	1	2	3	4	5	6	7	8	Flipper Grounded Switches
	Row	Green-Brown J206-1 U20-18	Green-Red J206-2 U20-17	Green-Orange J206-3 U20-16	Green-White J206-4 U20-15	Green-Black J206-5 U20-14	Green-Blue J206-6 U20-13	Green-Violet J206-7 U20-12	Green-Gray J206-9 U20-11	
Orange-Brown J205-1 Left Coin Chute U17-5 D1	1 White-Brown J208-1 U18-11	LAUNCH BALL 11	SLAM TILT 21	TROUGH EJECT 31	MOAT ENTER 41	LEFT SLINGSHOT 51	LEFT RAMP ENTER 61	RIGHT BANK TOP 71	NOT USED 81	Black-Green J208-13 Lower Right Flipper E.O.S. F1
Orange-Red J205-2 Center Coin Chute U17-7 D2	2 White-Red J208-2 U18-9	CATAPULT TARGET 12	COIN DOOR CLOSED 22	TROUGH BALL 1 32	NOT USED 42	RIGHT SLINGSHOT 52	LEFT RAMP EXIT 62	RIGHT BANK MIDDLE 72	NOT USED 82	Blue-Violet J212-12 Lower Right Flipper Opto F2
Orange-Black J205-3 Right Coin Chute U17-11 D3	3 White-Orange J208-3 U18-5	START BUTTON 13	NOT USED 23	TROUGH BALL 2 33	NOT USED 43	LEFT JET BUMPER 53	RIGHT RAMP ENTER 63	RIGHT BANK BOTTOM 73	NOT USED 83	Black-Blue J208-12 Lower Left Flipper E.O.S. F3
Orange-Yellow J205-4 4th Coin Chute U17-9 D4	4 White-Yellow J208-4 U18-7	PLUMB BOB TILT 14	ALWAYS CLOSED 24	TROUGH BALL 3 34	CASTLE LOCK 44	BOTTOM JET BUMPER 54	RIGHT RAMP EXIT 64	LEFT TROLL UP 74	NOT USED 84	Blue-Gray J212-11 Lower Left Flipper Opto F4
Orange-Green J205-6 Normal Function U16-9 Test Function Srv Crdts Escape D5	5 White-Green J208-5 U19-11	LEFT TROLL TARGET 15	RIGHT TROLL TARGET 25	TROUGH BALL 4 35	LEFT TROLL (UNDER PLAYFIELD) 45	RIGHT JET BUMPER 55	LEFT LOOP LOW 65	RIGHT TROLL UP 75	NOT USED 85	Black-Violet J208-11 Upper Right Flipper E.O.S. F5
Orange-Blue J205-7 Normal Function Volume Dn U16-11 Test Function Down D6	6 White-Blue J208-7 U19-9	LEFT OUTLANE 16	LEFT RETURN LANE 26	LEFT POPPER 36	RIGHT TROLL (UNDER PLAYFIELD) 46	DRAW-BRIDGE UP 56	LEFT LOOP HIGH 66	NOT USED 76	NOT USED 86	Black-Yellow J212-10 Upper Right Flipper Opto F6
Orange-Violet J205-8 Normal Function Volume Up U16-7 Test Function Up D7	7 White-Violet J208-8 U19-5	RIGHT RETURN LANE 17	RIGHT OUTLANE 27	CASTLE GATE 37	LEFT TOP LANE 47	DRAW-BRIDGE DOWN 57	RIGHT LOOP LOW 67	NOT USED 77	NOT USED 87	Black-Gray J208-10 Upper Left Flipper E.O.S. F7
Orange-Gray J205-9 Normal Function Begin Test U16-5 Test Function Enter D8	8 White-Gray J208-9 U19-7	SHOOTER LANE 18	RIGHT EJECT 28	CATAPULT 38	RIGHT TOP LANE 48	TOWER EXIT 58	RIGHT LOOP HIGH 68	NOT USED 78	NOT USED 88	Black-Blue J212-9 Upper Left Flipper Opto F8

J2XX = CPU BOARD  = OPTO, TYPICALLY CLOSED

SOLENOID/FLASHER TABLE

Sol. No.	Function	Solenoid Type	Voltage Connections			Drive Xistor	Drive Connections			Drive Wire Color	Solenoid Part Number	
			Playfield Backbox Cabinet				Playfield Backbox Cabinet				Flashlamp Type	Playfield Insert
01	AUTO PLUNGER	High Power	J133-2			Q72	J116-1			VIO-BRN	AE-23-800	
02	TROUGH EJECT	High Power	J133-2			Q68	J116-2			VIO-RED	AE-26-1500	
03	LEFT POPPER	High Power	J133-2			Q71	J116-4			VIO-ORG	AE-26-1200	
04	CASTLE	High Power	J133-2			Q67	J116-5			VIO-YEL	AE-26-1500	
05	CASTLE GATE POWER	High Power	J133-2			Q70	J116-6			VIO-GRN	A-20099	
06	CASTLE GATE HOLD	High Power				Q66	J116-7			VIO-BLU		
07	KNOCKER	High Power		J133-2		Q69		J116-8		VIO-BLK	AE-23-800	
08	CATAPULT	High Power	J133-2			Q65	J116-9			VIO-GRY	AL-23-800	
09	RIGHT EJECT	Low Power	J133-3			Q44	J113-1			BRN-BLK	AE-27-1200	
10	LEFT SLINGSHOT	Low Power	J133-3			Q48	J113-3			BRN-RED	AE-26-1200	
11	RIGHT SLINGSHOT	Low Power	J133-3			Q43	J113-4			BRN-ORG	AE-26-1200	
12	LEFT JET BUMPER	Low Power	J133-3			Q47	J113-5			BRN-YEL	AE-26-1200	
13	BOTTOM JET BUMPER	Low Power	J133-3			Q42	J113-6			BRN-GRN	AE-26-1200	
14	RIGHT JET BUMPER	Low Power	J133-3			Q46	J113-7			BRN-BLU	AE-26-1200	
15	TOWER DIVERTER PWR	Low Power	J133-3			Q41	J113-8			BRN-VIO	A-20099	
16	TOWER DIVERTER HOLD	Low Power				Q45	J113-9			BRN-GRY		
17	LEFT SIDE LOW FLSHRS	Flasher	J133-6	J134-5		Q28	J111-1	J112-1		BLK-BRN	#906 (1)	#906 (1)
18	LEFT RAMP FLASHERS	Flasher	J133-6	J134-5		Q32	J111-2	J112-2		BLK-RED	#89 (1)	#906 (1)
19	LEFT SIDE HIGH FLSHRS	Flasher	J133-6	J134-5		Q27	J111-3	J112-3		BLK-ORG	#906 (1)	#906 (1)
20	RIGHT SIDE HIGH FLSHRS	Flasher	J133-6	J134-5		Q31	J111-4	J112-4		BLK-YEL	#906 (1)	#906 (1)
21	RIGHT RAMP FLASHERS	Flasher	J133-6			Q26	J111-5			BLU-GRN	#906 (1), #89 (1)	
22	CASTLE RIGHT SIDE FLSHRS	Flasher	J133-6			Q30	J111-6			BLU-BLK	#906 (2)	
23	RIGHT SIDE LOW FLSHRS	Flasher	J133-6			Q25	J111-7			BLU-VIO	#906 (1), #89 (1)	
24	MOAT FLASHERS	Flasher	J133-6			Q29	J111-8			BLU-GRY	#89 (2)	
25	CASTLE LEFT SIDE FLSHRS	Gen. Purpose	J133-6			Q16	J109-1			BLU-BRN	#906 (2)	
26	*TOWER LOCK POST	Gen. Purpose	J133-1			Q15	J109-2			BLU-RED	AE-27-1200	
27	*RIGHT GATE	Gen. Purpose	J133-1			Q14	J109-3			BLU-ORG	A-14406	
28	*LEFT GATE	Gen. Purpose	J133-1			Q13	J109-4			BLU-YEL	A-14406	
General Illumination												
01	BOTTOM PLAYFIELD	G.I.	J106-1	J105-1		Q5	J106-7	J105-7		WHT-BRN	#44	#555
02	MIDDLE PLAYFIELD	G.I.		J105-2		Q4		J105-8		WHT-ORG		#555
03	TOP PLAYFIELD	G.I.		J105-3		Q3		J105-9		WHT-YEL		#555
04	**TOP INSERT	G.I.	J106-5			Q2	J106-10			WHT-GRN	#44	
05	**BOTTOM INSERT	G.I.	J106-6		J104-3	Q1	J106-11		J104-1	WHT-VIO	#44	
Flipper Circuits												
	Solenoid Type	Voltage Connection Playfield	Drive Xistors Power	Hold	Drive Connections Playfield	Drive Wire Colors Power	Hold	Coil Part No.	Coil Colors			
29	LOWER RIGHT FLIPPER	Power	J119-1 (RED-GRN)	Q90	J120-13	YEL-GRN		FL-11629	BLUE			
30		Hold	J119-1 (RED-GRN)		Q92	J120-11	ORG-GRN					
31	LOWER LEFT FLIPPER	Power	J119-4 (RED-BLU)	Q87	J120-9	YEL-BLU		FL-11629	BLUE			
32		Hold	J119-4 (RED-BLU)		Q89	J120-7	ORG-BLU					
33	LEFT TROLL	Power	J119-6 (RED-VIO)	Q84	J120-6	YEL-VIO		FL-11753	YELLOW			
34		Hold	J119-6 (RED-VIO)		Q86	J120-4	ORG-VIO					
35	RIGHT TROLL	Power	J119-8 (RED-GRY)	Q81	J120-3	YEL-GRY		FL-11753	YELLOW			
36		Hold	J119-8 (RED-GRY)		Q83	J120-1	ORG-GRY					
Motor Circuit												
	Solenoid Type	Voltage Connections Playfield	Drive Gates	Drive Connections Playfield	Drive Wire Color	Device Part Number Playfield						
37	DRAWBRIDGE MOTOR	Low Power	J139-2	U3A, U3B	J110-1	BRN-WHT	14-8015					

J1XX = POWER DRIVER BOARD

24-6549 = #44 BULB; 24-8704 = #89 BULB; 24-8768 = #555 BULB; 24-8802 = #906 BULB

*TIEBACK DIODES FOR SOLENOIDS 26 THROUGH 28 ARE AT J109-6, J109-8, AND J109-9 RESPECTIVELY.

**THESE G.I. STRINGS DO NOT BRIGHTEN AND DIM, THEY ARE ALWAYS ON.

Medieval Madness Rubber Ring Chart

- 2 Flipper rubbers
- 8 Black bumper covers
- 8 3/16" rings
- 2 3/16" rings
- 2 mini-post rubbers
- 2 mini-post rubbers
- 2 2-1/2" slingshot rubbers
- 1 5/16" ring
- 1 3/4" ring
- 2 1" ring
- 1 1-1/2" ring
- 1 2" ring

