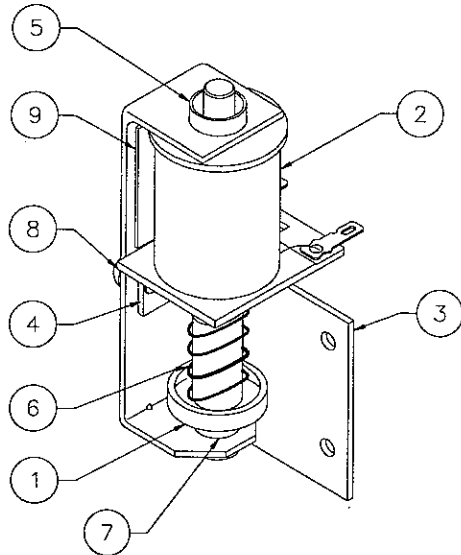
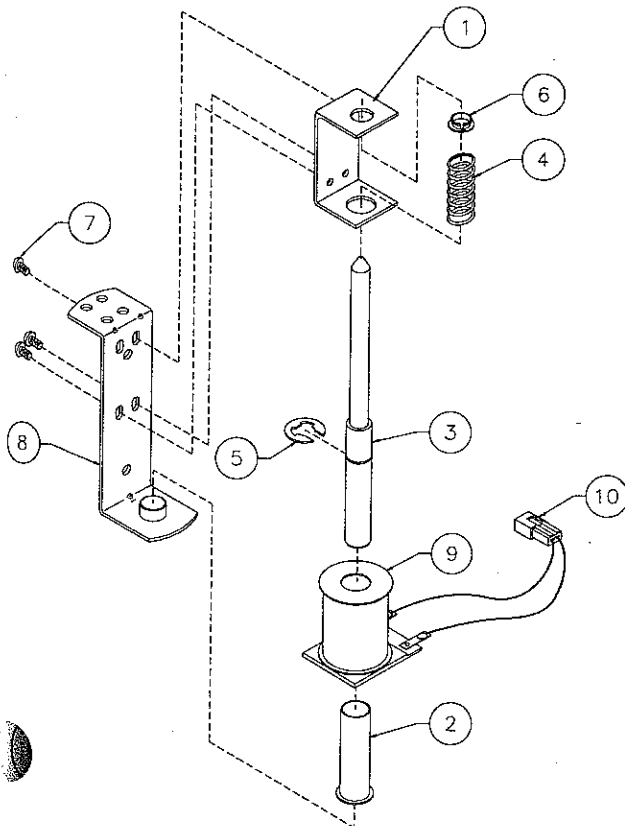


B-11873 Bottom Arch Kicker Assembly



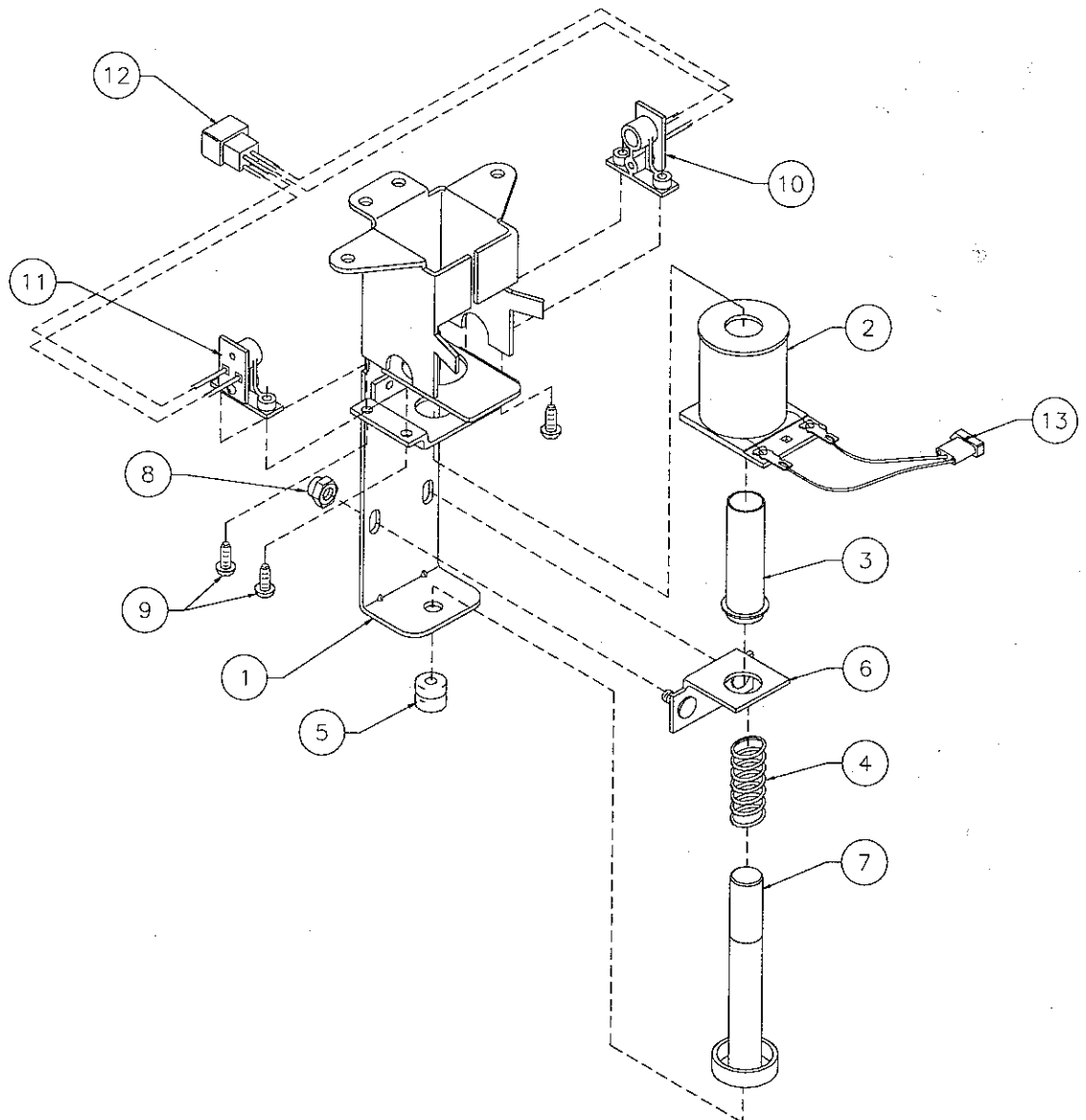
Item	Part Number	Description
1	A-6306-2	Bell Armature Assembly
2	AE-23-800	Coil Sub-Assembly
3	01-11273	Mounting Bracket
4	01-8-508-T	Solenoid Bracket
5	03-7067-5	Coil Tubing
6	10-135	Solenoid Spring
7	23-6420	Rubber Grommet
8	4008-01017-04	Mach. Screw, 8-32 x 1/4"
9	03-8523	Insulator

A-21825 Up/Down Post Assembly



Item	Part Number	Description
1	01-14185	Coil Bracket
2	03-7066	Coil Tubing
3	02-5308.1	Up/Down Plunger
4	10-303	Spring
5	20-8712-43	"E" Retaining Ring
6	20-8790-2	Nyliner Bearing
7	4006-01003-04	Mach. Screw, #6-32 x 1/4"
8	A-17808	Bracket & Stop Assembly
9	AE-26-1500	Coil Assembly
10	H-19523	Cable Assembly

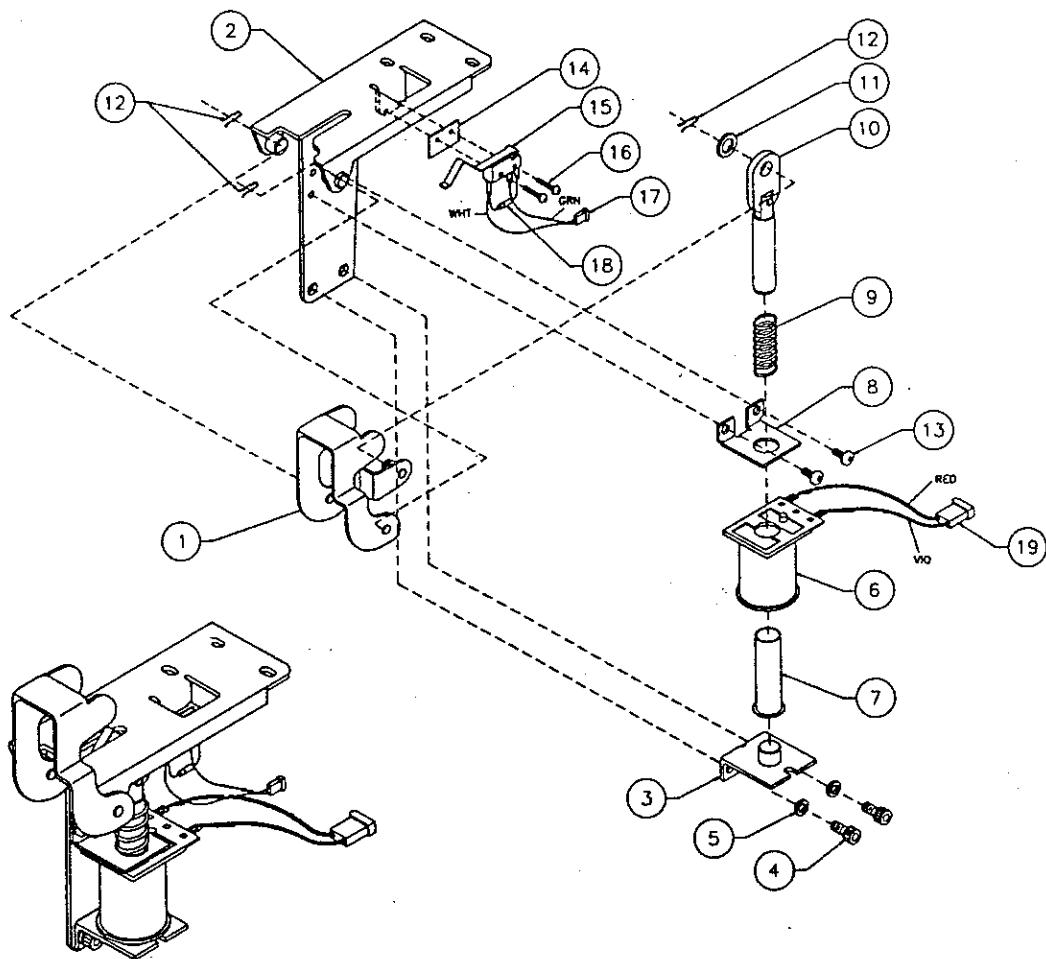
A-21824 Ball Popper Assembly



Item	Part Number	Description
1	04-10930.1	Ball Popper Bracket
2	AL-25-1000	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	04-10910-1	Mounting Bracket
7	A-17767	Bell Armature Assembly
8	4408-01119-01	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 Transistor Assy., RTV
12	H-17609-5	Cable - Gen. Opto
13	H-19523	Cable - Mini Solenoid

A-21022

Shooter Lane Kicker Assembly



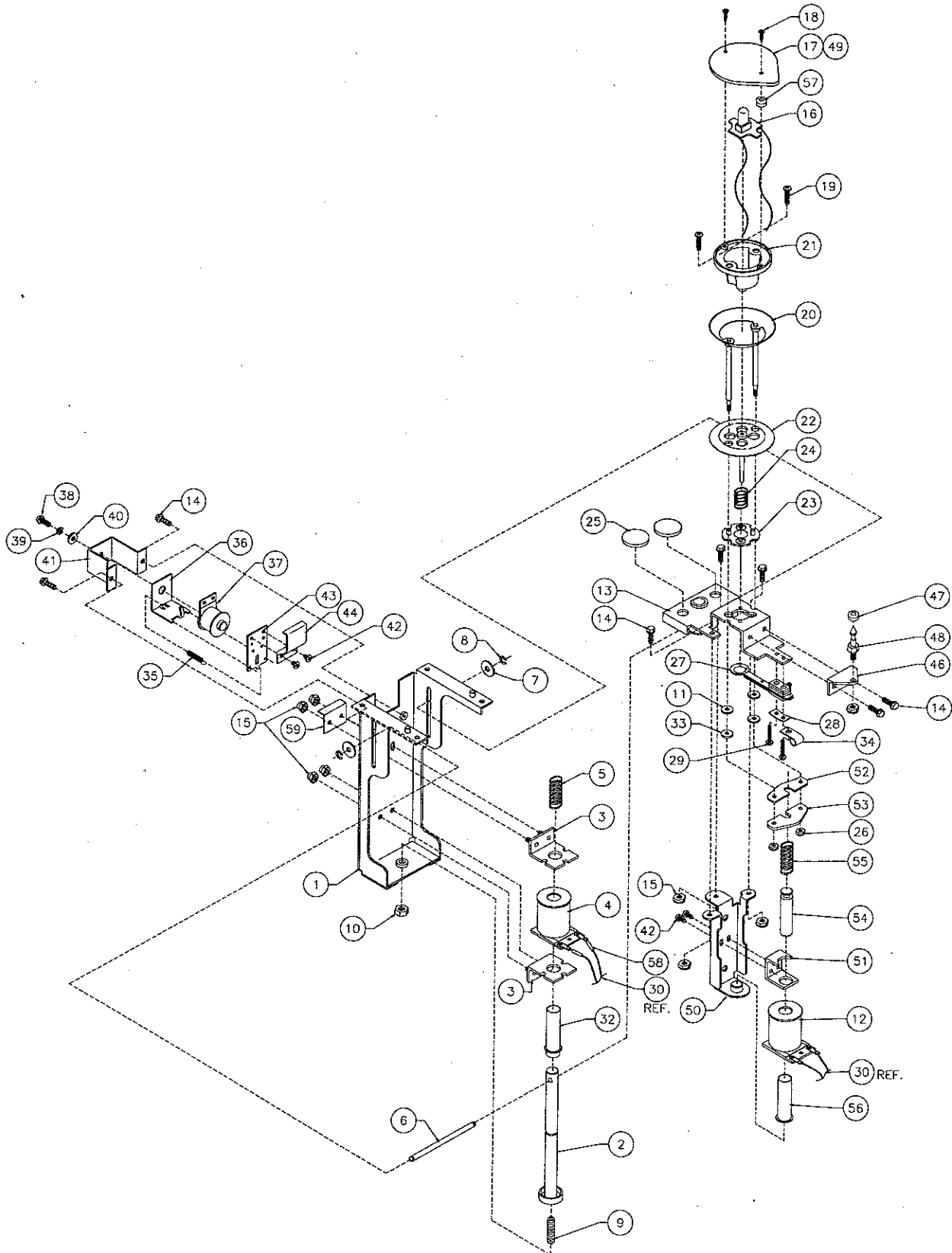
Item	Part Number	Description
1	04-10210.4	Kicker Crank
2	04-10211.5	Coil Mounting Bracket
3	04-10461	Flipper Stop Bracket Assembly
4	4010-01066-06	Cap Screw, #10 x 3/8"
5	4701-00004-00	Lock Washer #10 Split
6	AE-23-800	Coil Assembly
7	03-7066	Coil Tubing
8	01-8413	Coil Mounting Bracket
9	10-128	Spring
10	A-15847	Flipper Link Assembly
11	4700-00104-00	Flat Washer, 23/64 x 1/2 x 16ga.
12	12-6227	Hair Pin Clip
13	4006-01003-05	Mach. Screw, 6-32 x 5/16"
14	01-8600	Insulator
15	5647-12693-68	Mini-Micro Switch
16	4002-01105-08	Mach. Screw, 2-56 x 1/2"
17	H-16437	Cable
18	5070-09054-00	Diode
19	H-19523	Cable

A-21564

Disappear Jet Bump Assembly

Item	Part Number	Description
1	04-10732	Jet Bumper Main Bracket
2	04-10733	Armature Assembly
3	04-10911-1	¾ Coil Centering Bracket
4	FL-11630/50V	Flipper Coil (Red)
5	10-517	Spring
6	02-5297	Guide Shaft
7	4700-00023-00	Flat Washer: 13/64 x 5/8 x 16ga.
8	20-8712-18	Retaining Ring
9	4020-01196-16	Set Screw: #1/4-20 x 1.0
10	4420-01117-00	Hex Nut #1/4-20
11	4700-00005-00	Flat Washer: 9/64 x 7/16 x 21ga.
12	AE-23-800	Coil Assembly (Yellow)
13	04-10731.2	Jet Bumper Mounting Bracket
14	4008-01168-08	Mach. Screw #8-32 x ½"
15	4408-01119-01	Hex Nut #8-32 ESN
16	A-21554	Jet Bumper Lamp PCB Assy.
17	03-9674	Bumper Cap – Flat
18	4104-01042-06	Sh. Metal Screw: #4 x 3/8"
19	4006-01003-10	Mach. Screw: #6-32 x 5/8"
20	A-4754	Bumper Ring Assembly
21	03-9675	Bumper Body – Foremost
22	03-6035-15	Bumper Wafer (Orange)
23	03-6009-A5	Bumper Base (White)
24	10-7	Spring
25	23-6702	Bumper Plug
26	4406-01119-00	Hex Nut #6-32 ESN
27	SW-1A-213	Jet Bumper Switch Assembly
28	01-3670	Switch Plate
29	4005-01005-16	Mach. Screw: #5-40 x 1.0
30	H-21972.1	Cable Assembly
31	03-9454	Cable Tie 4" (Not Shown)
32	03-7067-6	Coil Tubing
33	4700-00007-00	Flat Washer: 5/320x 7/16 x 16ga.
34	03-7655-4	Harness Clip ¼"
35	10-96	Spring
36	A-6892	Frame & Eyelet Assembly
37	SM1-26-600	Coil Assembly
38	4008-01021-07	Mach. Screw: #8-32 x 7/16"
39	4701-00003-00	Lockwasher #8 Split
40	4700-00089-00	Flat Washer: 11/64 x 7/16 x 16ga.
41	01-12348	Ball Gate Coil Bracket
42	4006-01003-04	Mach. Screw: #6-32 x ¼"
43	A-15821	Armature Sub- Assembly
44	01-14677.2	Armature Latch Bracket
45	4410-01132-01	Nut #10-32 ESN
46	01-14678	Jet Bumper Bracket
47	23-6694-1	Rubber Ring 3/32" (Black)
48	02-5303	Jet Bumper Post
49	31-2835-9	Decal
50	04-10888	Jet Bump Bracket/Stop Assy.
51	01-1747	Coil Retainer Bracket
52	01-5492	Link Armature – Steel
53	01-5493	Link Armature – Bakelite
54	02-3406-1	Coil Plunger
55	10-326	Spring
56	03-7066	Coil Tubing
57	23-6626	Rubber Grommet
58	RM-23-01	Heat Shrink 1" Long
59	01-14803	Support Bracket

A-21564 Disappear Jet Bump Assembly



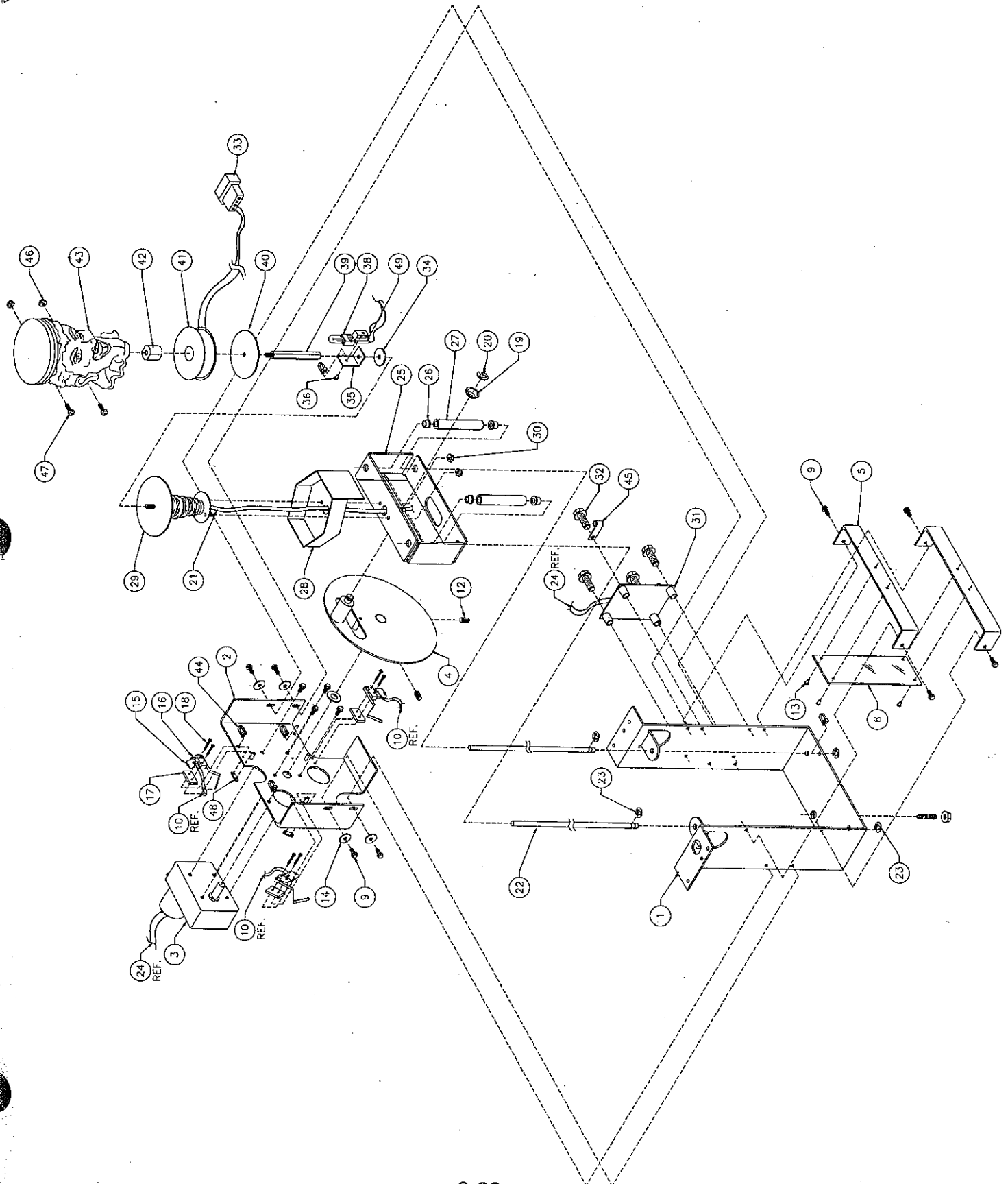
A-21953

Ring Master Assembly

Item	Part Number	Description
1	04-10938	Main Mounting Bracket
2	04-10940.1	Motor & Cam Bracket
3	14-8035	Motor
4	04-10937.1	Cam Assembly
5	01-14709	Shield Bracket
6	31-2952-1	Shield
7	4020-01196-16	Set Screw: #1/4-20 x 1.0
8	4420-01141-00	Nut #1/4-20 Flangrip
9	4008-01168-06	Mach. Screw: #8-32 x 3/8"
10	H-21975	Cable Assembly
11	4700-00080-00	Flat Washer: 5/16 x 3/4 x 16ga.
12	4323-01158-06	Set Screw: #1/4-28 x 3/8"
13	07-6688-19N	Rivet: 1/8 x 7/32" Long
14	4700-00070-00	Flat Washer: 3/16 x 5/8 x 16ga.
15	5070-09054-00	Diode, 1N4004
16	5647-12693-01	Switch
17	03-9822	Switch Spacer
18	4002-01105-10	Mach. Screw: #2-56 x 5/8"
19	02-4576	Roller Cam
20	20-8712-37	Retaining Ring
21	H-21973	Cable Assembly
22	02-5313	Guide Lift Rod
23	20-8712-25	Retaining Ring
24	H-18601-10	Cable Assembly
25	01-14708.1	Lift Bracket
26	20-9610	Bearing - Flange
27	03-9821	Spacer Lift Rod
28	01-14707	Ball Cup Bracket
29	04-10939	Spring Assembly
30	4408-01119-01	Nut #8-32 ESN
31	A-15782	Motor Cir Bd w/Spacers
32	4008-01168-14	Mach. Screw: #8-32 x 7/8"
33	5792-09110-00	Connector
34	31-2833-13	Plastic Washer
35	01-14712	Bulb & Socket Bracket
36	07-6688-17N	Rivet: 1/8 x 5/32" Long
37	4700-00004-00	Flat Washer: 5/32 x 3/8 x 21ga.
38	A-17802	Socket & 906 Bulb Assembly
39	02-5312	Magnet Post
40	01-14710	Magnet Plate (Bottom)
41	20-10197	Magnet w/Breaker
42	01-5311	Magnet Core
43	31-2947.1	Ring Master
44	03-9454	Cable Tie 4"
45	03-7655-4	1/4" Cable Clamp
46	4408-01128-00	Nut #8-32 KEPS
47	4008-01003-08	Mach. Screw: #8-32 x 1/2"
48	01-8240	Nut Plate #2-56
49	RM-23-01	Heat Shrink 1" Long

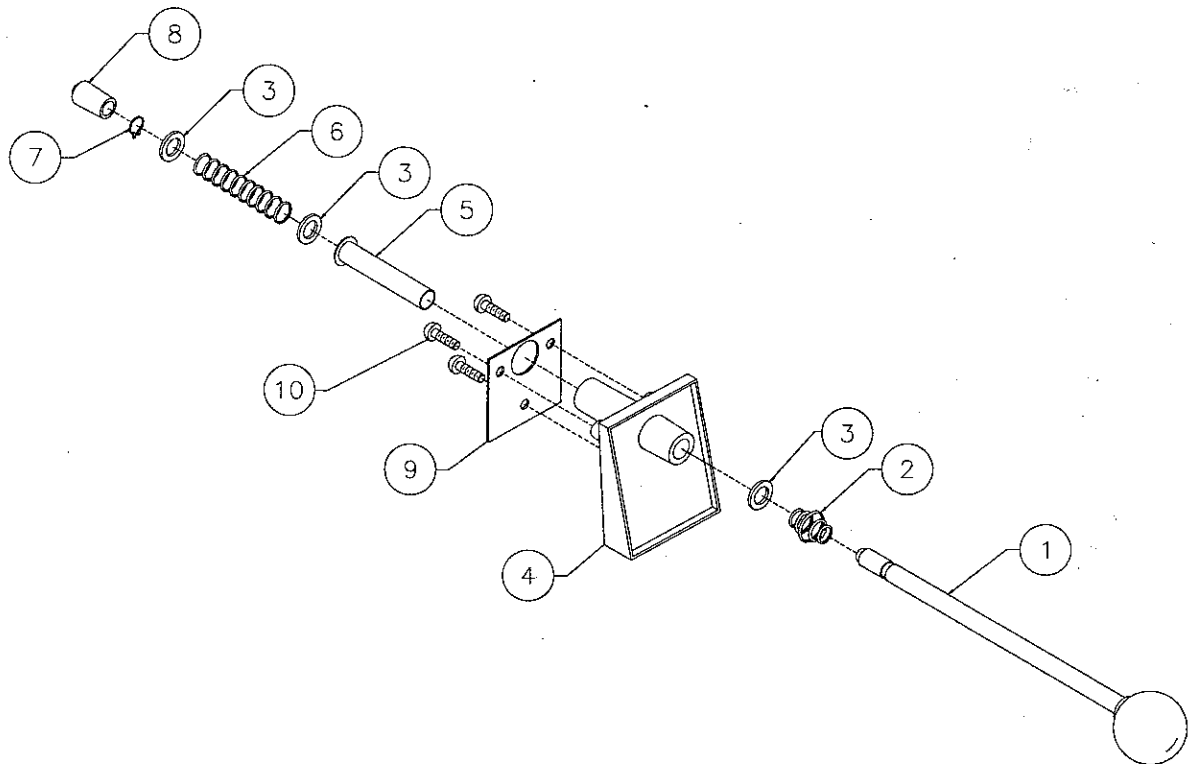
* Not available for individual sale. Order Decal Set 31-2833.

A-21953 Ring Master Assembly



A-17730-1

Ball Shooter Rod Assembly w/Silver Knob



Item	Part Number	Description
1	20-9927-1	Ball Shooter Knob w/Shaft, Silver
2	10-149	Shooter Rod Spring
3	4700-00051-00	FW, 25/64 x 5/8 x 16ga.
4	21-6645-1	Shooter Housing
5	03-7357	Shooter Sleeve
6	10-148-4	Power Spring (Green)
7	20-8714-37	External Retainer Ring
8	23-6327	Ball Shooter Tip

Associated Assemblies:

9	01-3535	Rod Mounting Bracket
10	4010-01006-10	Mach. Screw: 10-32 x 5/8"

Posts



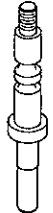
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Post #8-32/#9 SMS (12)



02-4425-1
Post #8-32/#8-32 (5)
02-4425-3
Post #8-32/#8-32 (3)



02-4678
Double Bumper Post (2)



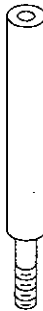
02-5250
Double Bumper 10-32 Post (1)



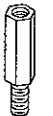
02-4660
Mini-Post Single Bumper (3)



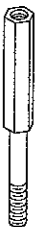
02-5318-43
Extended M-M Post, 2.39" (1)



02-4765-7
Mounting Post (1)
02-4765-12
Mounting Post (1)



02-5295-12
1/4 Hex Post-8M/8F, 3/4" (2)



02-5295-18
1/4 Hex Post-8M/8F, 1.13" (2)

02-5295-20
1/4 Hex Post-8M/8F, 1.25" (1)

02-5295-36
1/4 Hex Post-8M/8F, 2.25" (1)

02-5317-21
Extended M-F Post, 1.31" (1)

02-5317-26
Extended M-F Post 1.63" (1)



02-5107
Adjusting Post (2)

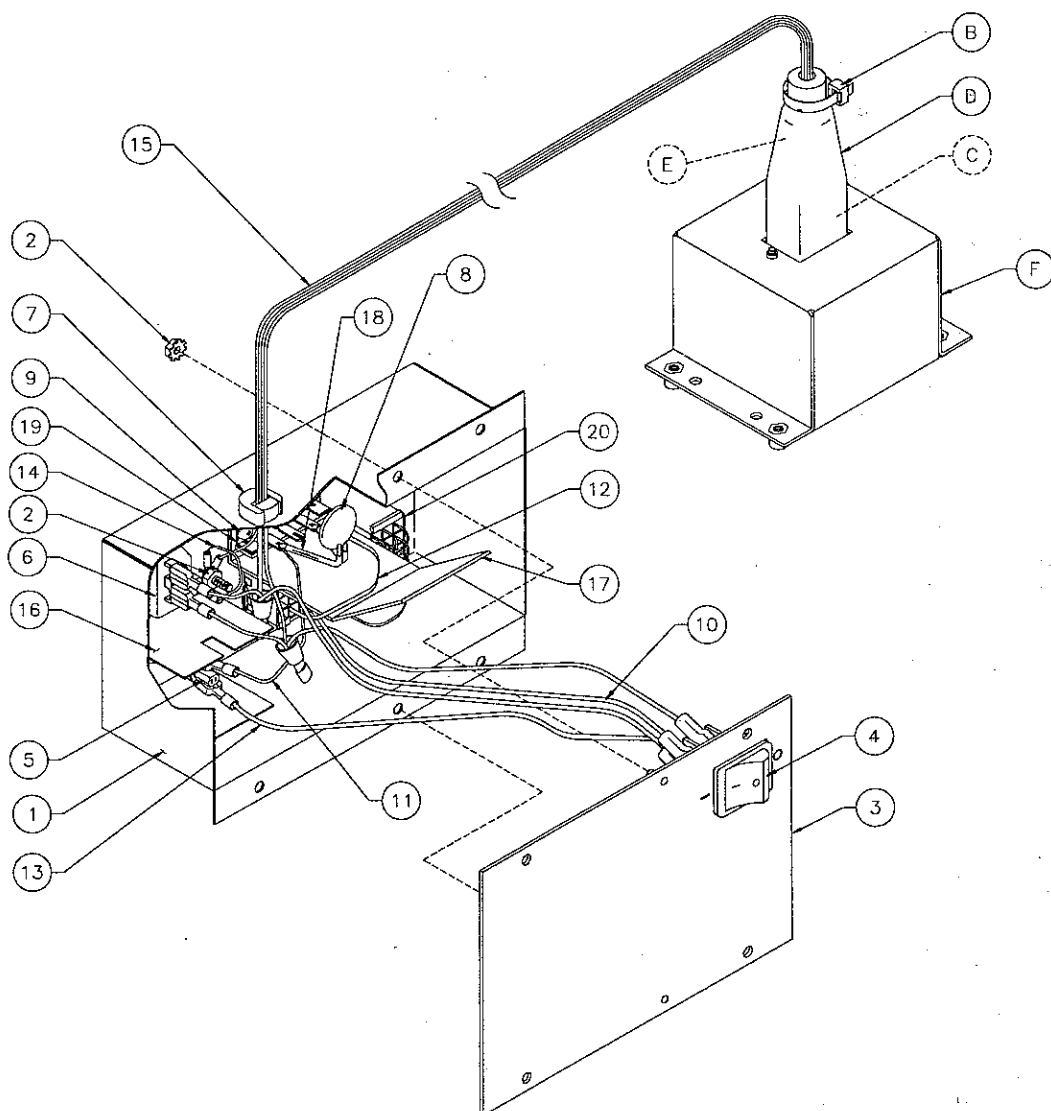


03-8365-8
Post #8, Trans Amber (16)



03-8319-8
Post (22)

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, 1 μ F 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 Chart

COUNTRY	UNIVERSAL PWR. INTERFACE ASSEMBLY	VOLTAGE PROGRAMMING JUMP CABLE				4AMP FUSE/ LABEL	5AMP FUSE/ LABEL	LABEL HIGH/ VOLTAGE CAUTION	POWER ADAPTER CORD	CORDSET										
	A-20871	H-17837-1	H-17837-2	H-17837-3	H-17837-4	5731-14530-00 FUSE	16-10145 LABEL	5731-14046-00 FUSE	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	5850-13278-00	A-17175-2
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		
CROATIA	X			X		X	X		X				X						X	X

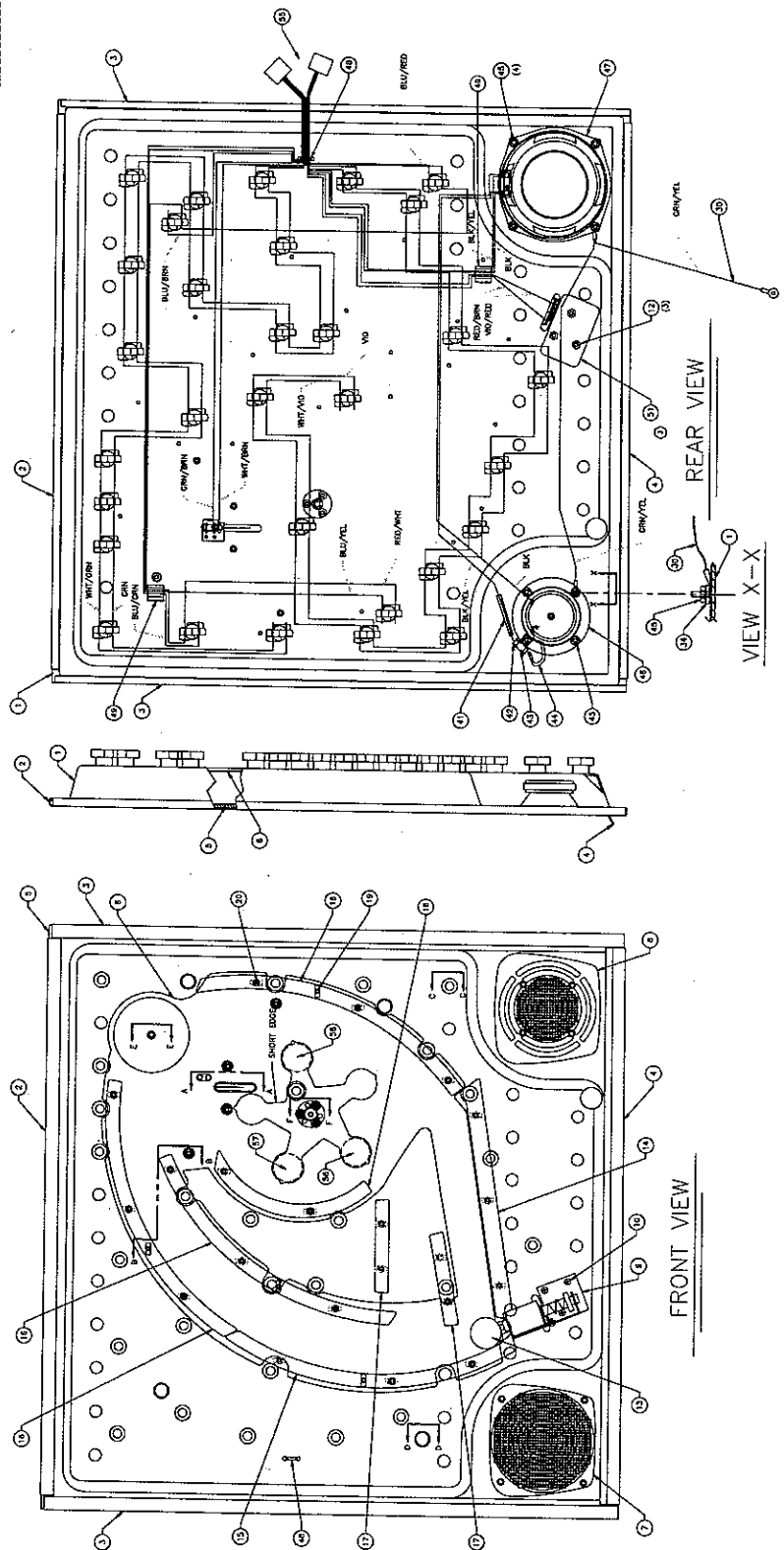
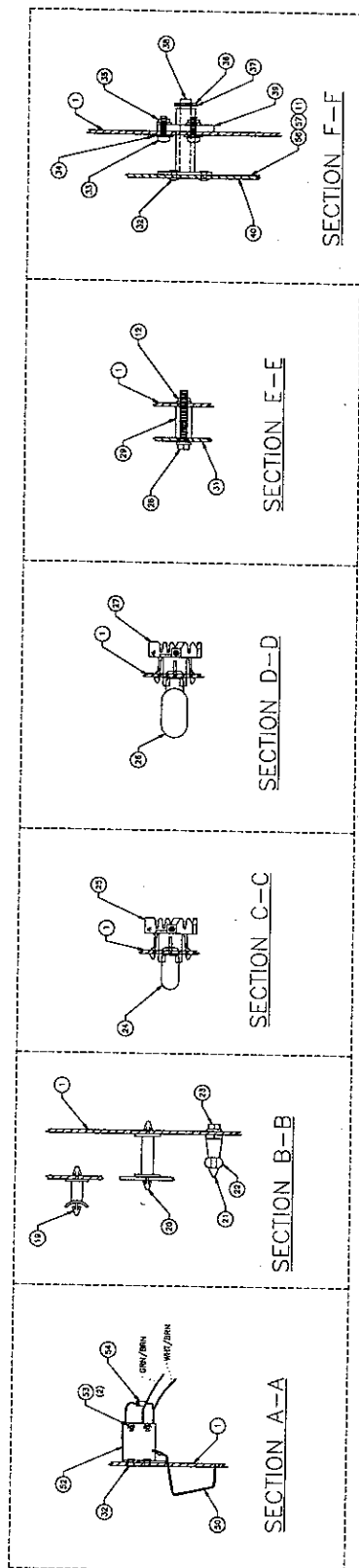
50062-IN

Backbox Insert Assembly

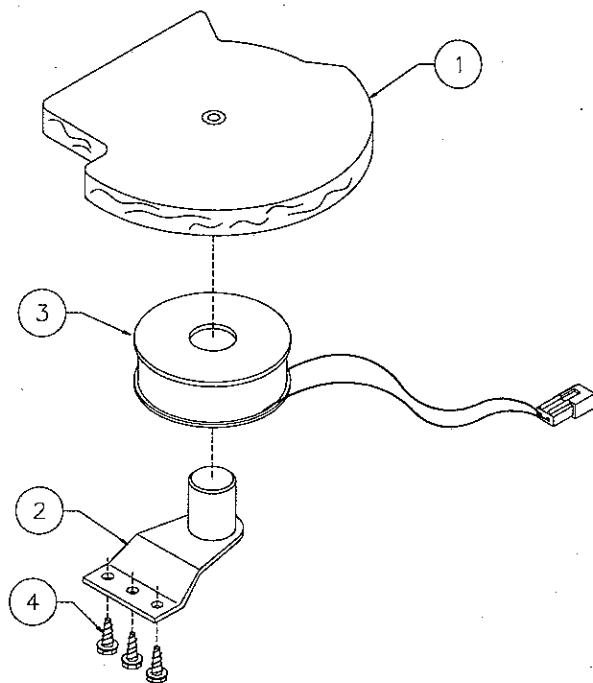
Item	Part Number	Description	Item	Part Number	Description
1	03-9696-1	Insert Body	30	H-22001	Cable Assembly
2	03-9698-1	Channel - Top	31	31-2952-3	Plastic - Clear
3	03-9698-2	Channel - Side	32	07-6688-19N	Rivet: 1/8 x 7/32" Long
4	03-9697	Channel - Lift	33	4006-01003-08	Mach. Screw, #6-32 x 1/2"
5	31-2832	Backglass - Screened	34	4700-00005-00	Flat Washer: 9/64 x 7/16 x 21ga.
*6	31-2836-1	Decal	35	4406-01119-00	Nut #6-32 ESN
7	04-10916	Grille - Large	36	20-8712-25	Retaining Ring 1/4" Dia.
8	04-10917	Grille - Small	37	4700-00072-00	Flat Washer: 17/64 x 1/2 x 21ga.
9	B-11873	Bottom Arch Kick Assy.	38	04-10914	Shaft - Plastic Spinner
10	4008-01003-08	Mach. Screw: #8-32 x 1/2"	39	03-7568	Flipper Bushing
*11	31-2835-2	Decal	40	31-2833-2	Plastic - Clear
12	4408-01119-01	Nut #8-32 ESN	41	RM-23-01	Shrink Tubing
13	20-10451	Ball Plastic, 1-1/4"	42	5045-12914-00	Capacitor, .10MFD, 50V, ±20%
14	31-2833-5	Plastic Clear	43	03-7655-4	Clip Harness 1/4"
15	31-2833-7	Plastic Clear	44	RM-21-06	#18 Vinyl Flgs Sleeve
16	31-2833-8	Plastic Clear	45	4406-01128-00	Nut #6-32 KEPS
17	31-2833-4	Plastic Clear	46	5555-12924-00	Speaker - Tweeter
18	31-2833-1	Plastic Clear	47	5555-12856-00	Speaker - Mid Range
19	20-9658-1	Standoff - PCB Supt. 1/2"	48	03-9454	Cable Tie 4" Long
20	20-9658-2	Standoff - PCB Supt. 3/4"	49	03-7722-4	Quick Clip, 1/4"
21	03-8044-13	Post Clear	50	5647-12693-19	Subminiature Switch
22	23-6694-1	Rubber Ring, Black	51	01-14800	Support Bracket
23	4106-01114-08	TCS #6 x 1/2"	52	01-14659	Rollover Switch Bracket
24	24-8768	Bulb #555 6.3V, .25A.	53	4002-01105-06	Mach. Screw, #2-56 x 3/8"
25	24-8863	Socket G.I. White	54	5070-09054-00	Diode 1N4004
26	24-8802	Bulb #906 13v, 0.69A.	55	H-21985-1.1	Cable Assembly
27	24-8861	Socket - Flasher Black	*56	31-2835-2	Decal
28	4008-01113-20	Mach. Screw, #8-32 x 1-1/4"	*57	31-2835-3	Decal
29	03-9255-5	Spacer, #8, .733 Long			

* Not available for individual sale. Order decal set 31-2835 & 31-2836 respectively.

50062-IN Backbox Insert Assembly

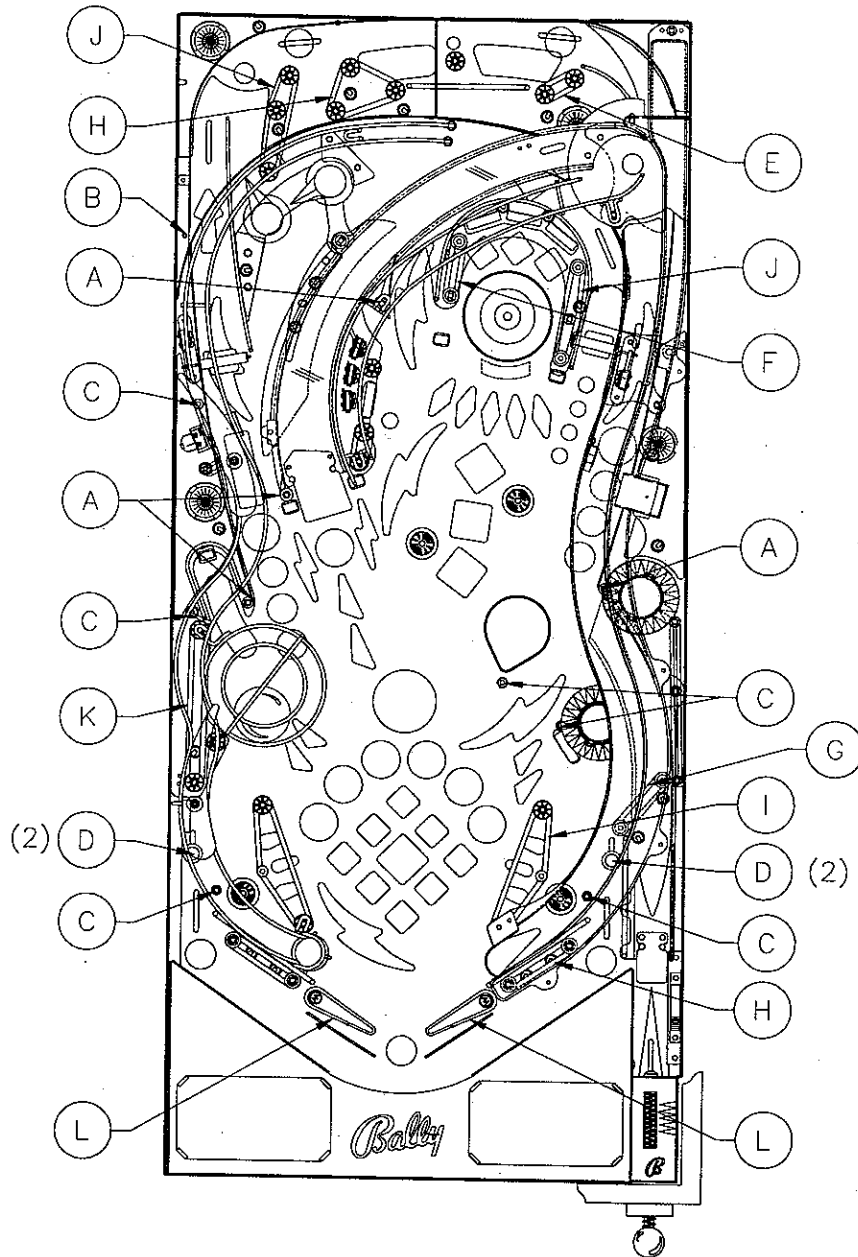


A-21959 Mini Playfield Assembly



Item	Part Number	Description
1	36-50062-1	Mini Plfd. Screened Hardcoat
2	A-18157	Bracket & Pole Piece Assembly
3	20-10197	Magnet
4	4808-01175-08	E-P 8-32 x 1/2" IND PL-HWH

Rubber Rings



Item No.	Part No.	Description	Quantity
A	23-6556	Black Rubber Bumper	4
B	23-6641	Black Rubber Bumper	1
C	23-6694-1	3/32" Black Rubber Ring	6
D	23-6694-3	5/16" Black Rubber Ring	6
E	23-6694-6	1" Black Rubber Ring	2
F	23-6694-7	1-1/4" Black Rubber Ring	1
G	23-6694-8	1-1/2" Black Rubber Ring	1
H	23-6694-9	2" Black Rubber Ring	3
I	23-6694-10	2-1/2" Black Rubber Ring	2
J	23-6694-11	3" Black Rubber Ring	2
K	23-6694-12	3-1/2" Black Rubber Ring	1
L	23-6695	Black Flipper Ring	2

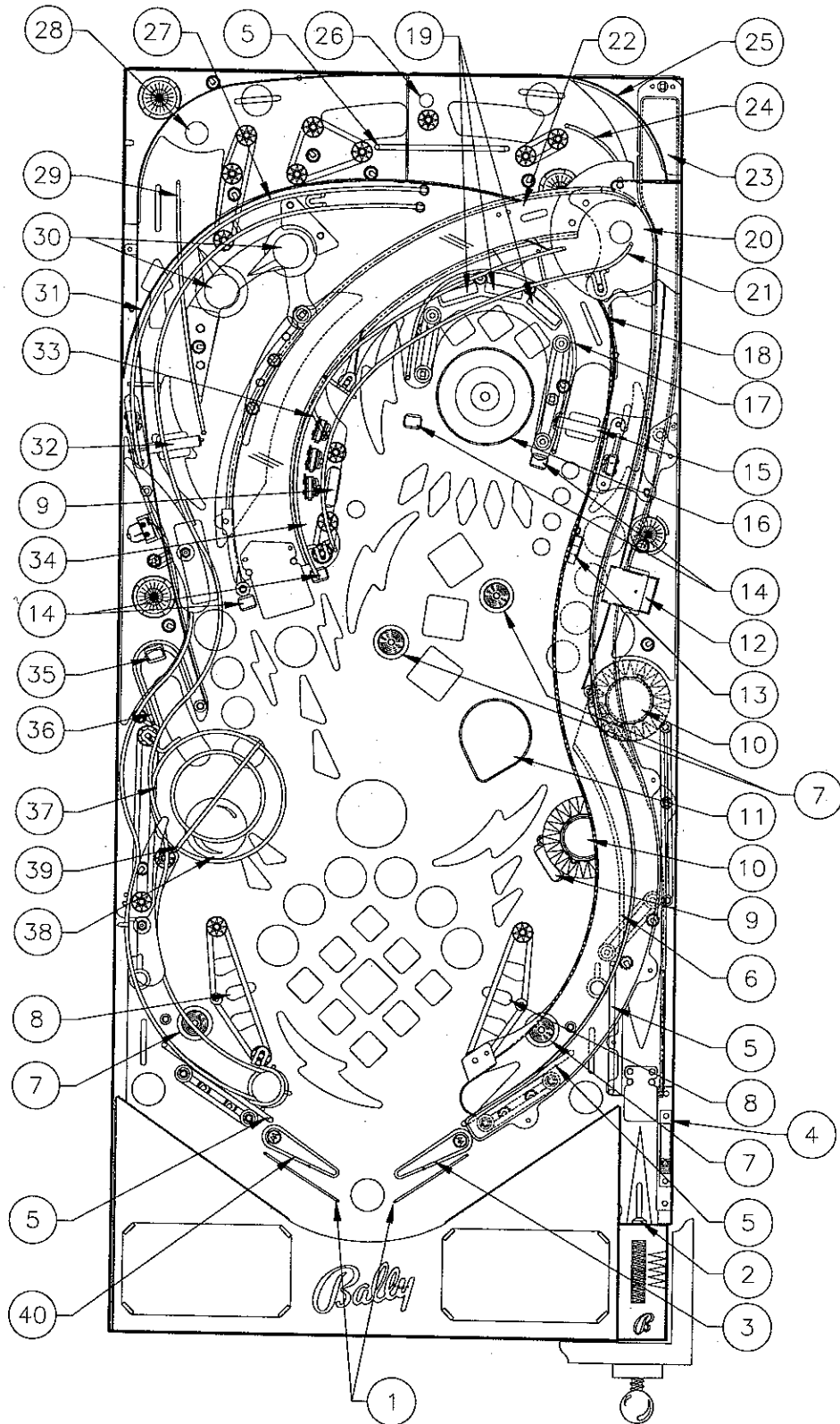
Upper Playfield Parts

Item Number	Part Number	Description	Not Shown: Part Number	Description
1	12-7210	Rebound Wire	A-13204-50062	Bottom Arch Assembly
2	A-21022	Shooter Lane Auto Kicker	A-17730-1	Ball Shooter w/ Silver Knob
3	A-14876-R	Flipper Coil Assembly	A-19514	Chrome Leg Assembly
	20-10110-5	Flipper Bat and Shaft	A-19963-1	Ball Trough Assembly
4	03-8633	Level Mount	A-21788	Trough #1
	20-9691	Level	A-21789	Trough #2
5	12-7386	Wire Ball Guide #1	A-21958	Dot Matrix Panel Assembly
6	A-21790	Shooter Ramp Assembly	01-12624	Lower Arch Mounting Bracket
7	A-18008-1	Rollover Button w/cable	03-9700-1	Full Playfield Mylar*
	01-13204	Spacer	03-9700-2	Mylar
8	A-21527	Slingshot	03-9700-3	Mylar (2)
9	A-20846-9	Red Standup Target	03-9700-4	Mylar
10	A-9415-2	Jet Bumper Coil Assembly	08-7028-T	Playfield Glass
	A-21565-5	Wafer Assembly	20-6500	1-1/16" Steel Ball (4)
	B-12030-2	Leaf Switch Assembly	20-10451	1-1/4" Plastic Ball (insert)
11	A-21564	Disappearing Post		
12	A-21824	Ball Popper Assembly		
	04-10931	Scoop		
13	A-21817	Ball Guide Assembly #2		
14	A-18530-6	Yellow Standup Target		
15	A-21801-2	Right Spinner		
16	A-21953	Ringmaster Assembly		
	14-8035	Motor		
	20-10197	Coil Magnet		
	20-9612	Wave Spring Washer		
17	12-7389	Wire Ball Guide #4		
18	A-21752	Diverter Ball Guide		
	A-22035	Diverter Coil Assembly		
19	A-21960-6	Yellow Standup Trgts (3)		
20	A-21959	Mini Playfield		
	20-10197	Coil Magnet		
	20-9612	Wave Spring Washer		
21	A-21851	Center Wire Ramp		
22	A-21806	Center Ramp (plastic)		
23	A-21577	Neon Ramp Assembly**		
24	12-7397	Wire Ball Guide #6		
25	04-10893.1	Ball Guide #1		
26	A-17932	Disappearing Upper Post		
27	A-21787	Left Wire Ramp Assembly		
28	20-10197	Coil Magnet		
	20-9612	Wave Spring Washer		
29	12-7387	Wire Ball Guide #2		
30	A-21829	Eject Assembly		
31	A-21965	Ball Guide #3		
32	A-21801-1	Left Spinner		
33	12-7388	Wire Ball Guide #3		
34	A-21825	Up/Down Lock Post		
35	A-18530-5	White Standup Target		
36	12-7390	Wire Ball Guide #5		
37	A-17794	Kicker Switch Assembly		
38	20-10454	2" Hollow Ball		
39	12-7394	Wire Basket		
40	A-15849-L	Flipper Coil Assembly		
	20-10110-5	Flipper Bat and Shaft		

*The *CIRQUS VOLTAIRE* hardcoat playfield does not require a full Mylar. However, mylars can be purchased through your local Bally Distributor.

** This item comes in many colors. The replacement part may not be the same color as the original item.

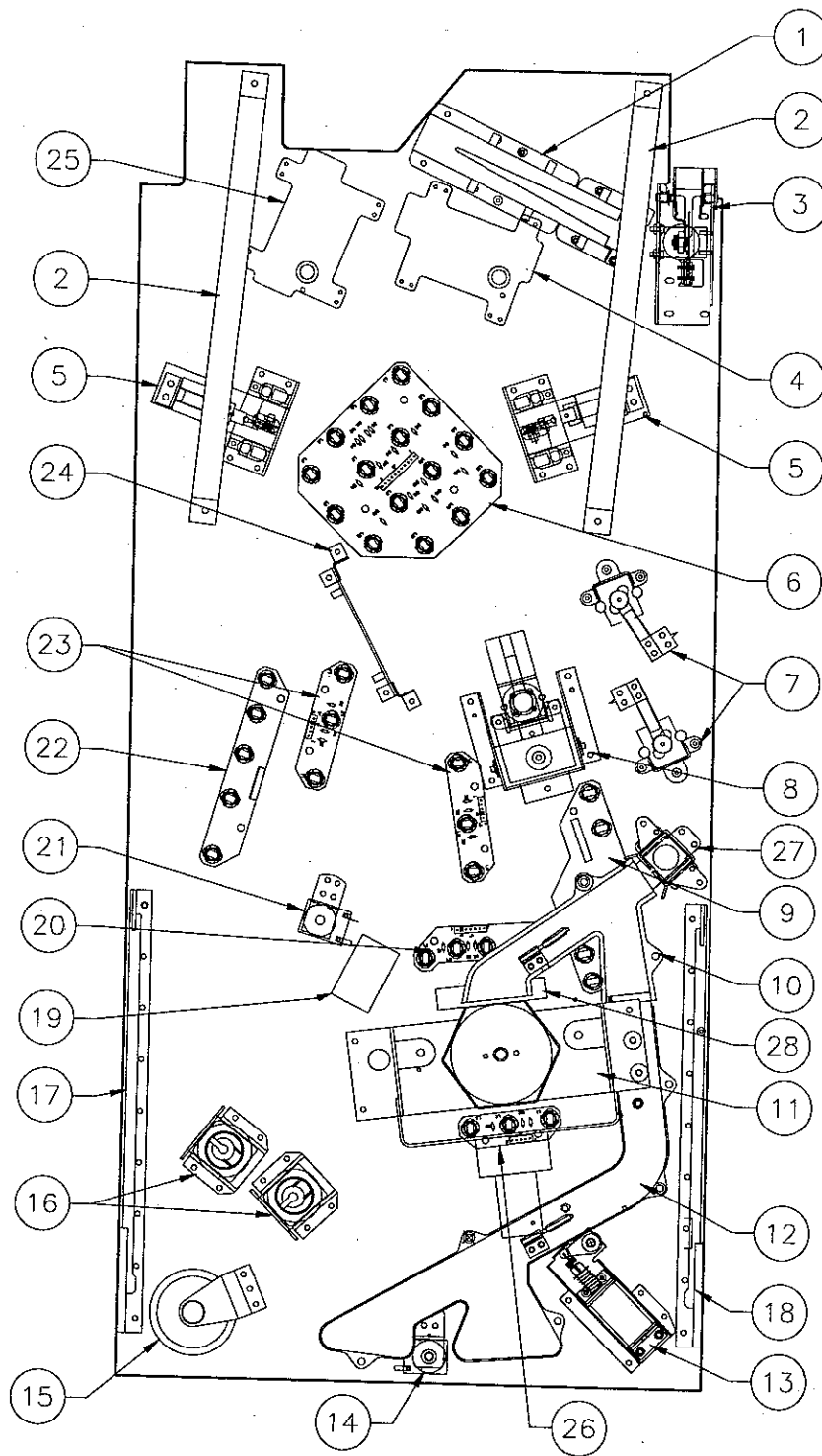
Upper Playfield Parts



Lower Playfield Parts

Item	Part Number	Description
1	A-19963-1	Ball Trough Assembly w/Cable
2	01-11781	Support Bracket (2)
3	A-21022	Shooter Lane Auto kicker
4	A-14876-R	Flipper Assembly
5	A-21527	Slingshot Assembly (2)
6	A-21809	15-Lamp PCB Assembly
7	A-9415-2	Jet Bumper Coil Assembly (2)
8	A-21564	Disappear Jet Bump Assembly
9	A-21813	8-Lamp PCB Assembly
10	A-21789	Trough Assembly #2
11	A-21953	Ring Master Assembly
12	A-21788	Trough Assembly #1
13	A-22035	Diverter Assembly
14	A-17932	Up/Down Post #1
15	A-18157 20-10197	Magnet Bracket & Pole Piece Magnet
16	A-21829	Eject Assembly (2)
17	A-17749.1-1	Playfield Slide Mech. – Left
18	A-17749.1-2	Playfield Slide Mech. – Right
19	A-22149-2	Auto Adjust Eddy Sensor PCB
20	A-20890	5-Lamp PCB Assembly
21	A-21825	Up/Down Post Assembly
22	A-21818	5-Lamp PCB Assembly
23	A-21290	3-Lamp PCB Assembly
24	A-15576	7-Opto PCB Assembly
25	A-15849-L	Flipper Assembly
26	A-21808	3-Lamp PCB Assembly
27	A-21824	Ball Popper Assembly
28	A-20036	Magic Eddy Coil PCB Assembly

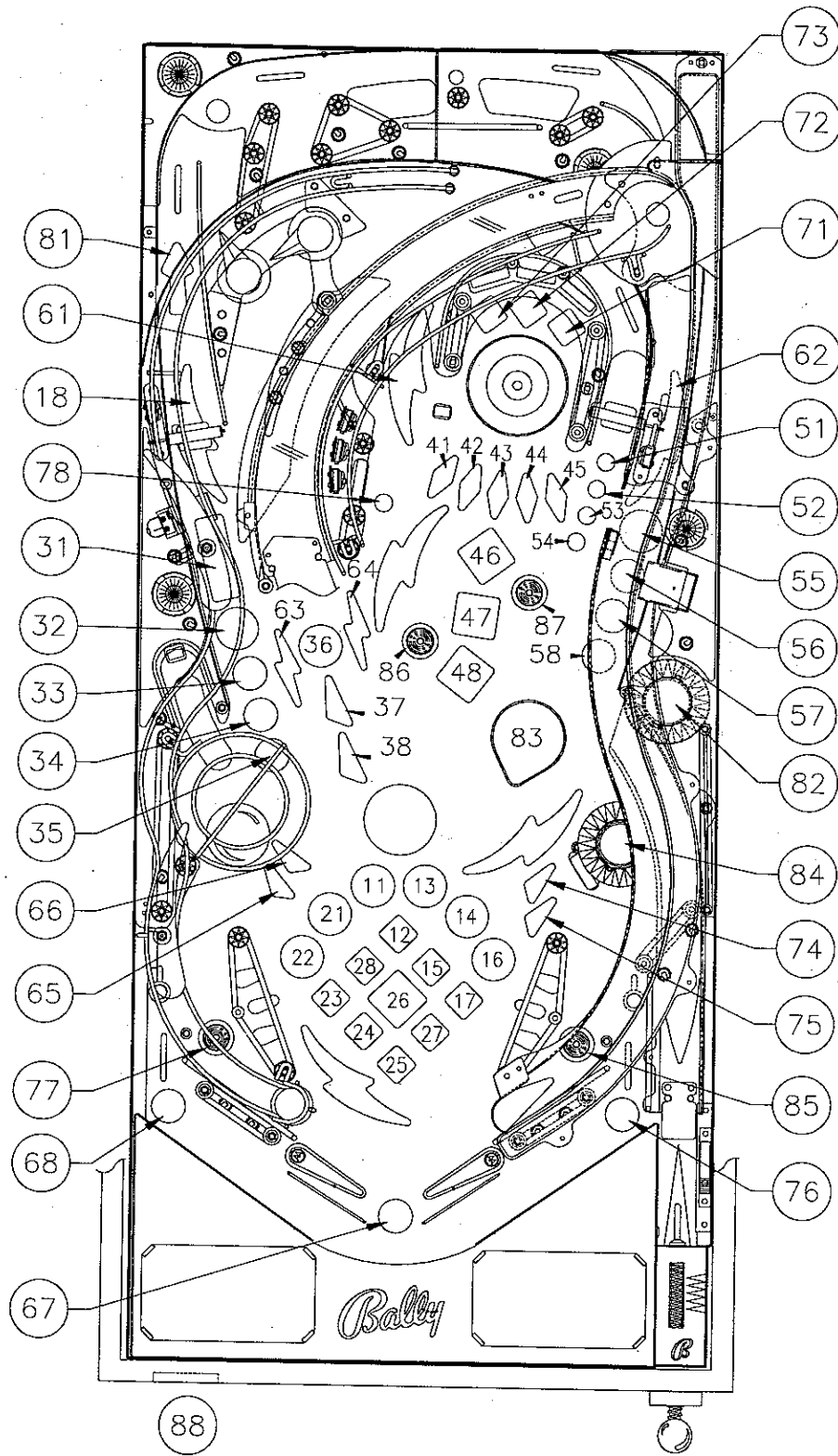
Lower Playfield Parts



Lamp Locations

Item Number	Lamp Assembly Part Number	Bulb Type	Bulb Part Number	Socket Part Number	Description
11	A-21809	#555	24-8768	24-8767	CIRQUE "R"
12	A-21809	#555	24-8768	24-8767	GRID TOP
13	A-21809	#555	24-8768	24-8767	CIRQUE "Q"
14	A-21809	#555	24-8768	24-8767	CIRQUE "U"
15	A-21809	#555	24-8768	24-8767	GRID TOP/RIGHT
16	A-21809	#555	24-8768	24-8767	CIRQUE "S"
17	A-21809	#555	24-8768	24-8767	GRID MIDDLE/RIGHT
18	A-17807	#44	24-6549	Not Sold Separate	LEFT JACKPOT
21	A-21809	#555	24-8768	24-8767	CIRQUE "I"
22	A-21809	#555	24-8768	24-8767	CIRQUE "C"
23	A-21809	#555	24-8768	24-8767	GRID MIDDLE/LEFT
24	A-21809	#555	24-8768	24-8767	GRID BOTTOM/LEFT
25	A-21809	#555	24-8768	24-8767	GRID BOTTOM
26	A-21809	#555	24-8768	24-8767	GRID MIDDLE
27	A-21809	#555	24-8768	24-8767	GRID BOTTOM/RIGHT
28	A-21809	#555	24-8768	24-8767	GRID TOP/LEFT
31	A-21818	#555	24-8768	24-8767	SID SHOW
32	A-21818	#555	24-8768	24-8767	LEFT LOOP TOP
33	A-21818	#555	24-8768	24-8767	LEFT LOOP 3
34	A-21818	#555	24-8768	24-8767	LEFT LOOP 2
35	A-21818	#555	24-8768	24-8767	LEFT LOOP 1
36	A-21290	#555	24-8768	24-8767	MULTIBALL
37	A-21290	#555	24-8768	24-8767	LOCK
38	A-21290	#555	24-8768	24-8767	SPOT MARVEL
41	A-20890	#555	24-8768	24-8767	RING MASTER LEFT
42	A-20890	#555	24-8768	24-8767	RINGMASTER 2
43	A-20890	#555	24-8768	24-8767	RINGMASTER 3
44	A-20890	#555	24-8768	24-8767	RINGMASTER 4
45	A-20890	#555	24-8768	24-8767	RINGMASTER RIGHT
46	A-21290	#555	24-8768	24-8767	SPECIAL
47	A-21290	#555	24-8768	24-8767	RAZZ
48	A-21290	#555	24-8768	24-8767	FRENZY
51	A-21813	#555	24-8768	24-8767	CRANK TOP
52	A-21813	#555	24-8768	24-8767	CRANK 2
53	A-21813	#555	24-8768	24-8767	CRANK 3
54	A-21813	#555	24-8768	24-8767	CRANK BOTTOM
55	A-21813	#555	24-8768	24-8767	RIGHT LOOP TOP
56	A-21813	#555	24-8768	24-8767	RIGHT LOOP 3
57	A-21813	#555	24-8768	24-8767	RIGHT LOOP 2
58	A-21813	#555	24-8768	24-8767	RIGHT LOOP 1
61	A-17807	#44	24-6549	Not Sold Separate	MIDDLE JACKPOT
62	A-17807	#44	24-6549	Not Sold Separate	RIGHT JACKPOT
63	A-17807	#44	24-6549	Not Sold Separate	"LIGHT" STANDUP
64	A-17807	#44	24-6549	Not Sold Separate	"LOCK" STANDUP
65	A-17835	#44	24-6549	Not Sold Separate	RING "R"
66	A-17835	#44	24-6549	Not Sold Separate	RING "I"
67	A-17807	#44	24-6549	Not Sold Separate	SHOOT AGAIN
68	A-17835	#44	24-6549	Not Sold Separate	LEFT OUTLANE
71	A-21808	#555	24-8768	24-8767	WOW RIGHT "W"
72	A-21808	#555	24-8768	24-8767	WOW "O"
73	A-21808	#555	24-8768	24-8767	WOW LEFT "W"
74	A-17835	#44	24-6549	Not Sold Separate	RING "N"
75	A-17835	#44	24-6549	Not Sold Separate	RING "G"
76	A-17835	#44	24-6549	Not Sold Separate	RIGHT OUTLANE
77	A-17807	#44	24-6549	Not Sold Separate	LEFT INLANE
78	A-17807	#44	24-6549	Not Sold Separate	SKILL RING
81	A-17807	#44	24-6549	Not Sold Separate	EXTRA BALL
82	---	#555	24-8768	24-8776	TOP JET
83	A-21554	#555	24-8768	24-8767	MIDDLE JET
84	---	#44	24-6549	Not Sold Separate	LOWER JET
85	A-17807	#44	24-6549	Not Sold Separate	RIGHT INLANE
86	A-17807	#44	24-6549	Not Sold Separate	"VOLT" LEFT
87	A-17807	#44	24-6549	Not Sold Separate	"VOLT" RIGHT
88	20-9663-16	----	----	----	START BUTTON

Lamp Locations



Switch Locations

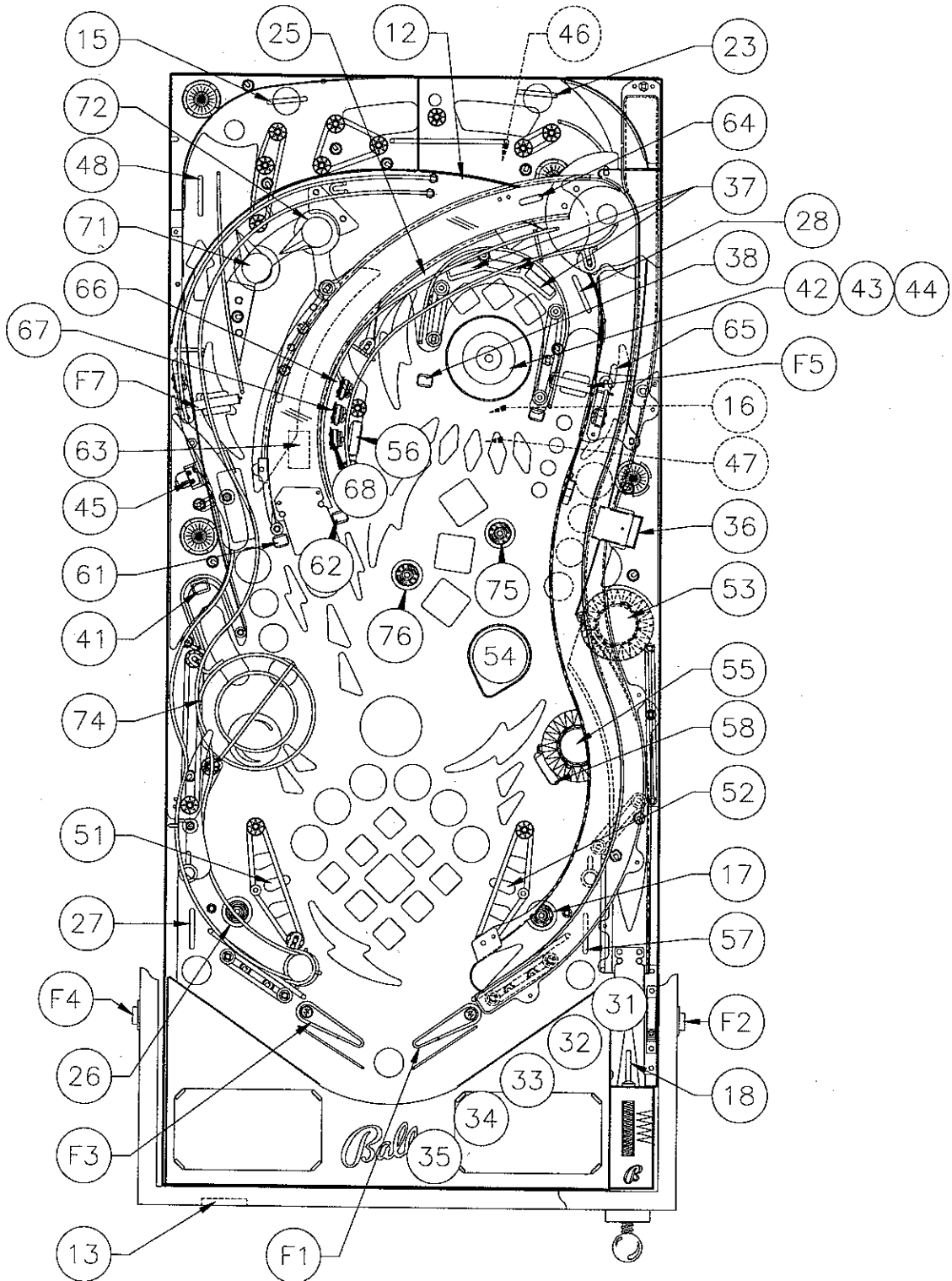
Item Number	Switch Assembly Part Number <i>OR</i> Opto Assembly Part Number	Switch Part Number	Description
F1	---	SW-1A-194	*LOWER RIGHT FLIPPER E.O.S.
F2	A-17316	---	*LOWER RIGHT FLIPPER CABINET
F3	---	SW-1A-194	*LOWER LEFT FLIPPER E.O.S.
F4	A-17316	---	*LOWER LEFT FLIPPER CABINET
F5	A-21801-2	5647-12693-24	RIGHT SPINNER
F6	NOT USED	---	UPPER RIGHT FLIPPER CABINET
F7	A-21801-1	5647-12693-24	LEFT SPINNER
F8	NOT USED	---	UPPER LEFT FLIPPER CABINET
11	---	5647-12693-19	BACKBOX LUCK
12	---	5647-12693-13	WIRE RAMP ENTER
13	20-9663-16	---	START BUTTON
14	---	04-10346	*PLUMB BOB TILT
15	A-17813	5647-12693-19	LEFT LOOP UPPER
16	A-20036	---	TOP EDDY
17	A-18008-1	A-16443	RIGHT INLANE
18	---	5647-12693-68	SHOOTER LANE
21	A-17238	---	*SLAM TILT
22	---	5643-09268-00	*COIN DOOR CLOSED
23	A-17813-1	5647-12693-19	RIGHT LOOP UPPER
24	---	5643-15190-00	*ALWAYS CLOSED
25	A-17813	5647-12693-19	INNER LOOP LEFT
26	A-18008-1	A-16443	LEFT INLANE
27	A-17813-1	5647-12693-19	LEFT OUTLANE
28	A-17813-1	5647-12693-19	INNER LOOP RIGHT
31	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---	TROUGH ELECT
32	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---	TROUGH BALL 1
33	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---	TROUGH BALL 2
34	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---	TROUGH BALL 3
35	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---	TROUGH BALL 4
36	A-16908 (LED) A-16909 (PHOTO TRANS)	---	POPPER
37	A-21960-6	---	"WOW" TARGETS (3)
38	A-18530-6	---	TOP TARGETS (2)
41	A-18530-5	---	LEFT LANE
42	---	5647-12693-01	RINGMASTER UP
43	---	5647-12693-01	RINGMASTER MIDDLE
44	---	5647-12693-01	RINGMASTER DOWN
45	---	5647-12693-21	LEFT RAMP MADE
46	---	5647-12693-13	TROUGH UPPER
47	---	5647-12693-13	TROUGH MIDDLE
48	A-17813-1	5647-12693-19	LEFT LOOP ENTER
51	---	SW-1A-212 (**SCORE)	LEFT SLINGSHOT
52	---	SW-1A-211 (KICK) SW-1A-212 (**SCORE) SW-1A-211 (KICK)	RIGHT SLINGSHOT
53	B-12030-2	A-16443	UPPER JET BUMPER
54	---	SW-1A-213	MIDDLE JET BUMPER
55	B-12030-2	A-16443	LOWER JET BUMPER
56	A-20846-9	---	SKILL SHOT
57	A-17813	5647-12693-19	RIGHT OUTLANE
58	A-20846-9	---	RING "N" & "G"
61	A-18530-6	---	"LIGHT" STANDUP TARGET
62	A-18530-6	---	"LOCK" STANDUP TARGET
63	---	20-10293	RAMP ENTER
64	---	5647-12693-13	RAMP MAGNET
65	---	5647-12693-13	RAMP MADE
66	---	5647-12693-66	RAMP LOCK LOW
67	---	5647-12693-66	RAMP LOCK MIDDLE
68	---	5647-12693-66	RAMP LOCK HIGH
71	---	5647-12693-66	LEFT SAUCER
72	---	5647-12693-66	RIGHT SAUCER
73	---	---	NOT USED

Switch Locations

Item Number	Switch Assembly Part Number <i>OR</i> Opto Assembly Part Number	Switch Part Number	Description
74	A-17794	A-17793	BIG BALL REBOUND
75	A-18008-1	A-16443	"VOLT" RIGHT
76	A-18008-1	A-16443	"VOLT" LEFT
77 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-21022	AE-23-800	AUTO PLUNGER
02	B-11873	AE-23-800	BACKBOX KICKER
03	----	20-10197	LEFT LOOP MAGNET
04	A-21564	AE-23-800	MIDDLE JET BUMPER
05	A-21959	20-10197	RAMP MAGNET
06	A-22035	FL-11753	DIVERTER POWER
07	A-21564	FL-11630	JET UP
08	A-21564	SM1-26-600	JET RELEASE
09	A-19963-1	AE-26-1500	TROUGH EJECT
10	A-21527	AE-26-1200	LEFT SLINGSHOT
11	A-21527	AE-26-1200	RIGHT SLINGSHOT
12	A-9415-2	AE-26-1200	UPPER JET BUMPER
13	A-9415-2	AE-26-1200	LOWER JET BUMPER
14	A-21829	AE-27-1200	LEFT SAUCER
15	A-21829	AE-27-1200	RIGHT SAUCER
16	A-21825	AE-26-1500	LOCK POST
17	A-17802	#906	JOIN FLASHER
18	A-17802	#906	RING 1 FLASHER
19	A-17802	#906	RING 2 FLASHER
20	A-17802	#906	RING 3 FLASHER
21	A-22007-6	#906	RIGHT PLAYFIELD FLASHER
21	---	#906	UPPER RIGHT BACKBOX FLASHER
22	A-21953	A-15680	MOTOR ENABLE
23	A-17802	#906	JET FLASHER
24	A-22007-7	#906	LEFT PLAYFIELD FLASHER
24	----	#906	UPPER LEFT BACKBOX FLASHER
25	A-22007-5	#906	UPPER LEFT PLAYFIELD FLASHER
26	A-22007-4	#906	UPPER RIGHT PLAYFIELD FLASHER
26	----	#906	LOWER LEFT BACKBOX FLASHER
27	A-17802	#906	RINGMASTER FLASHERS (2)
28	A-17802	#906	BEAR PLAYFIELD FLASHER
28	----	#906	LOWER RIGHT BACKBOX FLASHER

Flippers

Item Number	Coil or Flasher Assembly Part Number	Coil or Flasher Part Number	Description
29-30	A-14876-R	FL-11630	LOWER RIGHT FLIPPER
31-32	A-15849-L	FL-11630	LOWER LEFT FLIPPER
33	A-21824	AL-25-1000	POPPER
34	A-22035	FL-11730	DIVERTER HOLD
35	A-21953	20-10197	RINGMASTER MAGNET
36	A-17932	AE-27-1200	UPPER POST

Motor

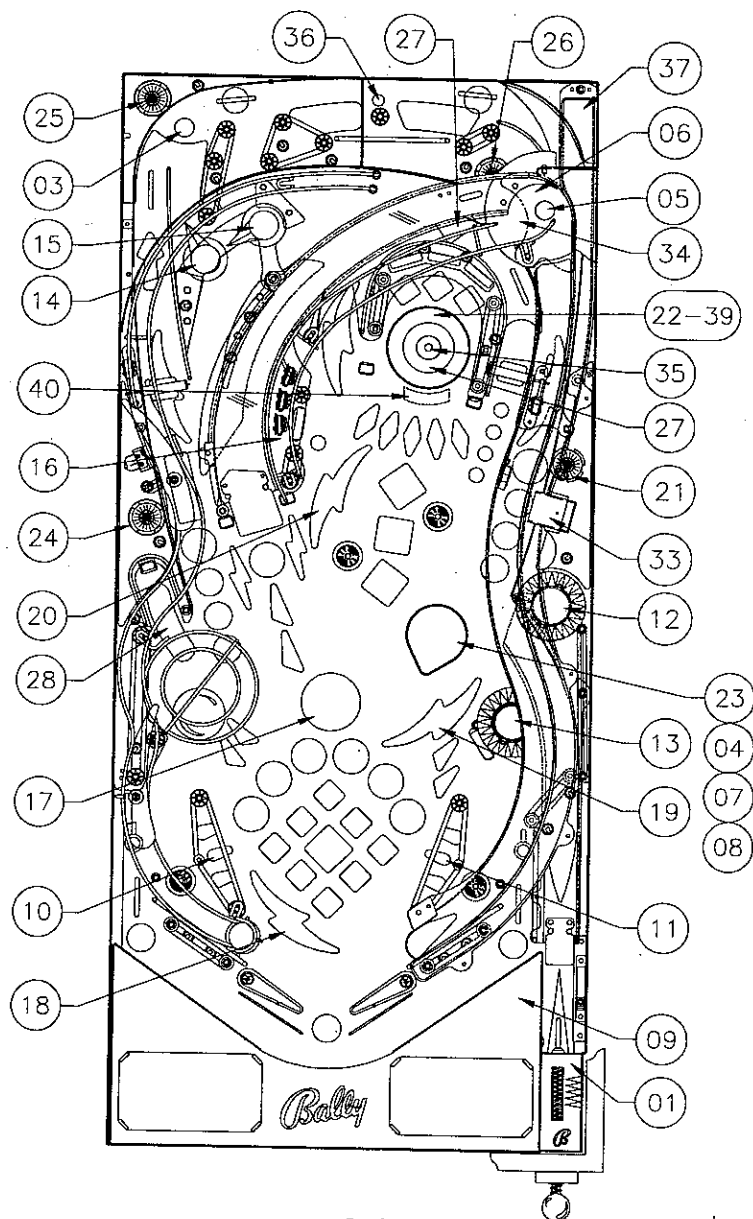
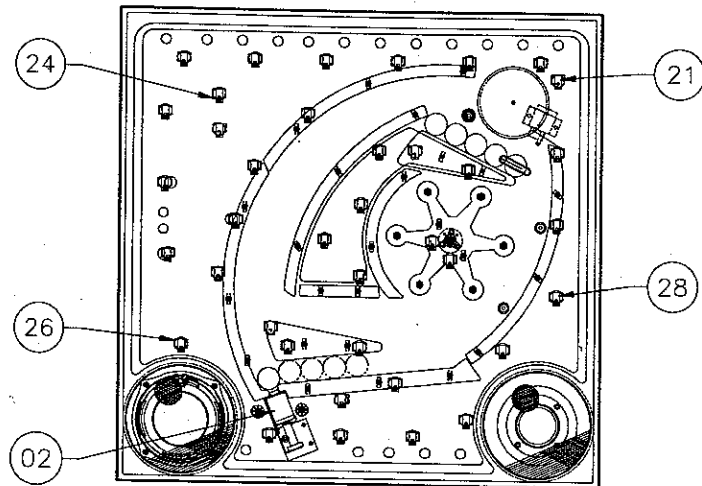
Item Number	Assembly Part Number	PC Board Part Number	Device Part Number	Description
37	A-21577	----	----	NEON
38				NOT USED
39	A-21953	A-15680	----	MOTOR DIRECTION
40	---	A-22151-2	----	EDDY BOARD

General Illumination

Item Number	Bulb Number	Bulb Type	Description
01	24-6549	#44	PLAYFIELD RIGHT
02	24-6549	#44	PLAYFIELD MIDDLE
03	24-6549	#44	PLAYFIELD LEFT
04	24-8768	#555	BACKBOX 1
05	24-8768	#555	BACKBOX 2

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

Solenoid/Flashlamp Locations



LAMP MATRIX

Yellow (B+) 0

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	CIRQUE "R" 11	CIRQUE "I" 21	SIDE SHOW 31	RING- MASTER LEFT 41	CRANK TOP 51	MIDDLE JACKPOT 61	WOW RIGHT "W" TARGET 71	EXTRA BALL 81
2 Red-Black J125-2 Q108	GRID TOP 12	CIRQUE "C" 22	LEFT LOOP TOP 32	RING- MASTER 2 42	CRANK 2 52	RIGHT JACKPOT 62	WOW "O" TARGET 72	TOP JET BUMPER 82
3 Red-Orange J125-4 Q103	CIRQUE "Q" 13	GRID MIDDLE/ LEFT 23	LEFT LOOP 3 33	RING- MASTER 3 43	CRANK 3 53	LIGHT STANDUP TARGET 63	WOW LEFT "W" TARGET 73	MIDDLE JET BUMPER 83
4 Red-Yellow J125-5 Q107	CIRQUE "U" 14	GRID BOTTOM/ LEFT 24	LEFT LOOP 2 34	RING- MASTER 4 44	CRANK BOTTOM 54	LOCK STANDUP TARGET 64	RING "N" 74	LOWER JET BUMPER 84
5 Red-Green J125-6 Q102	GRID TOP/RIGHT 15	GRID BOTTOM 25	LEFT LOOP 1 35	RING- MASTER RIGHT 45	RIGHT LOOP TOP 55	RING "R" 65	RING "G" 75	RIGHT IN-LANE 85
6 Red-Blue J125-7 Q106	CIRQUE "S" 16	GRID MIDDLE 26	MULTIBALL 36	SPECIAL 46	RIGHT LOOP 3 56	RING "I" 66	RIGHT OUTLANE 76	VOLT LEFT 86
7 Red-Violet J125-8 Q101	GRID MIDDLE/ RIGHT 17	GRID BOTTOM/ RIGHT 27	LOCK 37	RAZZ 47	RIGHT LOOP 2 57	SHOOT AGAIN 67	LEFT IN-LANE 77	VOLT RIGHT 87
8 Red-Gray J125-9 Q105	LEFT JACKPOT 18	GRID TOP/LEFT 28	SPOT MARVEL 38	FRENZY 48	RIGHT LOOP 1 58	LEFT OUTLANE 68	SKILL RING 78	START BUTTON 88

J1XX = Power Driver Board

SWITCH MATRIX

White  Green

DEDICATED GROUNDED SWITCHES	Column	1 Green-Brown J206-1 U20-18	2 Green-Red J206-2 U20-17	3 Green-Orange J206-3 U20-16	4 Green-White J206-4 U20-15	5 Green-Black J206-5 U20-14	6 Green-Blue J206-6 U20-13	7 Green-Violet J206-7 U20-12	8 Green-Gray J206-9 U20-11	FLIPPER GROUNDED SWITCHES
	Row									
Orange-Brown J205-1 LEFT COIN CHUTE U17-5 D1	1 White-Brown J208-1 U18-11	BACKBOX LUCK 11	SLAM TILT 21	TROUGH EJECT 31	LEFT LANE 41	LEFT SLINGSHOT 51	LIGHT STANDUP TARGET 61	LEFT SAUCER 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	WIRE RAMP ENTER 12	COIN DOOR CLOSED 22	TROUGH BALL 1 32	RING- MASTER UP 42	RIGHT SLINGSHOT 52	LOCK STANDUP TARGET 62	RIGHT SAUCER 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	RIGHT LOOP UPPER 23	TROUGH BALL 2 33	RING- MASTER MIDDLE 43	UPPER JET BUMPER 53	RAMP ENTER 63	NOT USED 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	RING- MASTER DOWN 44	MIDDLE JET BUMPER 54	RAMP MAGNET 64	BIG BALL REBOUND 74	NOT USED 84	BLUE-GRAY J212-11 LOWER LEFT FLIPPER OPTO F4
Orange-Green J205-6 U16-9 Normal Function Srv Crdts D5	5 White-Green J208-5 U19-11	LEFT LOOP UPPER 15	INNER LOOP LEFT 25	TROUGH BALL 4 35	LEFT RAMP MADE 45	LOWER JET BUMPER 55	RAMP MADE 65	VOLT RIGHT 75	NOT USED 85	BLACK-VIOLET J208-11 RIGHT SPINNER F5
Orange-Blue J205-7 U16-11 Normal Function Volume Dn D6	6 White-Blue J208-7 U19-9	TOP EDDY 16	LEFT IN-LANE 26	POPPER OPTO 36	TROUGH UPPER 46	SKILL SHOT 56	RAMP LOCK LOW 66	VOLT LEFT 76	NOT USED 86	BLACK-YELLOW J212-10 UPPER RIGHT FLIPPER OPTO F6
Orange-Violet J205-8 U16-7 Normal Function Volume Up D7	7 White-Violet J208-8 U19-5	RIGHT IN-LANE 17	LEFT OUTLANE 27	"WOW" TARGETS 37	TROUGH MIDDLE 47	RIGHT OUTLANE 57	RAMP LOCK MIDDLE 67	NOT USED 77	NOT USED 87	BLACK-GRAY J208-10 LEFT SPINNER F7
Orange-Gray J205-9 U16-5 Normal Function Begin Test D8	8 White-Gray J208-9 U19-7	SHOOTER LANE 18	INNER LOOP RIGHT 28	TOP TARGETS 38	LEFT LOOP ENTER 48	RING 'N', 'G' 58	RAMP LOCK 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

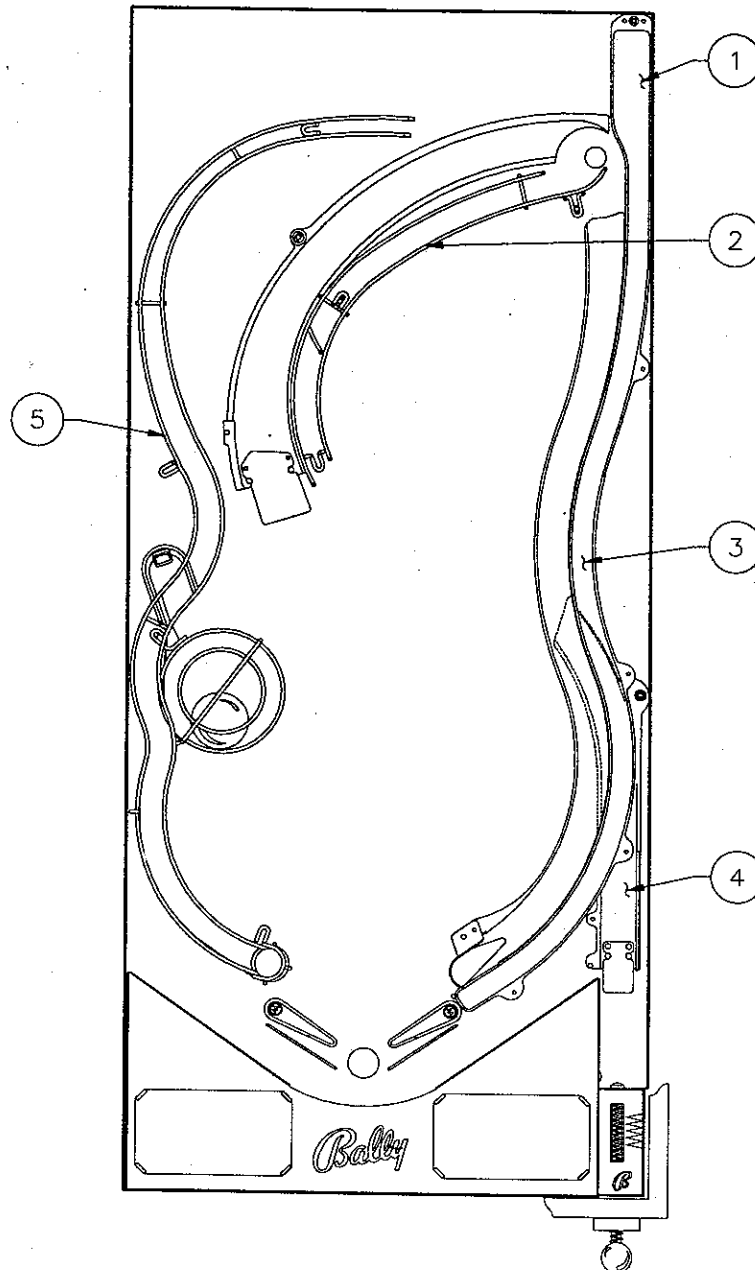
Sol. No.	Function	Solenoid Type	Voltage Connections			Drive Xistor	Drive Connections			Drive Wire Color	Solenoid Part Number	
			Playfield	Backbox	Cabinet		Playfield	Backbox	Cabinet		Flashlamp Type	Insert
01	PLUNGER	High Power	J133-2			Q72	J116-1			VIO-BRN	AE-23-800	
02	BACKBOX KICK	High Power		J134-3		Q68		J118-2		VIO-RED	AE-23-800	
03	LEFT LOOP MAGNET	High Power	J133-2			Q71	J116-4			VIO-ORG	20-10197	
04	MIDDLE JET BUMPER	High Power	J133-2			Q67	J116-5			VIO-YEL	AE-23-800	
05	RAMP MAGNET	High Power	J133-2			Q70	J116-6			VIO-GRN	20-10197	
06	DIVERTER POWER	High Power	J133-2			Q66	J116-7			VIO-BLU	FL-11753	
07	JET UP	High Power	J133-2			Q69	J116-8			VIO-BLK	FL-11630	
08	JET RELEASE	High Power	J133-2			Q65	J116-9			VIO-GRY	SM1-26-600	
09	TROUGH EJECT	Low Power	J133-3			Q44	J114-1			BRN-BLK	AE-26-1500	
10	LEFT SLINGSHOT	Low Power	J133-3			Q48	J114-3			BRN-RED	AE-26-1200	
11	RIGHT SLINGSHOT	Low Power	J133-3			Q43	J114-4			BRN-ORG	AE-26-1200	
12	UPPER JET BUMPER	Low Power	J133-3			Q47	J114-5			BRN-YEL	AE-26-1200	
13	LOWER JET BUMPER	Low Power	J133-3			Q42	J114-6			BRN-GRN	AE-26-1200	
14	LEFT SAUCER	Low Power	J133-3			Q46	J114-7			BRN-BLU	AE-27-1200	
15	RIGHT SAUCER	Low Power	J133-3			Q41	J114-8			BRN-VIO	AE-27-1200	
16	LOCK POST	Low Power	J133-3			Q45	J114-9			BRN-GRY	AE-26-1500	
17	JOIN FLASHERS	Flasher	J133-6			Q28	J111-1			BLK-BRN	#906	
18	RING #1 FLASHERS	Flasher	J133-6			Q32	J111-2			BLK-RED	#906	
19	RING #2 FLASHERS	Flasher	J133-6			Q27	J111-3			BLK-ORG	#906	
20	RING #3 FLASHERS	Flasher	J133-6			Q31	J111-4			BLK-YEL	#906	
21	RIGHT PLAYFIELD FLASHER	Flasher	J133-6			Q26	J111-5			BLU-GRN	#906	
22	UPPER RIGHT BACKBOX FLS	Flasher		J134-5		Q26		J112-6		BLU-GRN		#906
23	MOTOR ENABLE	Flasher	J133-6			Q30	J111-6			BLU-BLK	A-15680	
24	JET FLASHER	Flasher	J133-6			Q25	J111-7			BLU-VIO	#906	
25	LEFT PLAYFIELD FLASHER	Flasher	J133-6			Q29	J111-8			BLU-GRY	#906	
26	UPPER LEFT BACKBOX FLS	Flasher		J134-5		Q29		J112-9		BLU-GRY		#906
27	UPPER LEFT FLASHER	Gen. Purpose	J133-6			Q16	J109-1			BLU-BRN	#906	
28	UP, RIGHT PLAYFIELD FLS	Gen. Purpose	J133-6			Q15	J109-2			BLU-RED	#906	
29	LOWER LEFT BACKBOX FLS	Gen. Purpose		J134-5		Q15		J107-3		BLU-RED		#906
30	RINGMASTER FLASHERS (2)	Gen. Purpose	J133-6			Q14	J109-3			BLU-ORG	#906	
31	BEAR PLAYFIELD FLASHER	Gen. Purpose	J133-6			Q13	J109-4			BLU-YEL	#906	
32	LOWER RIGHT BACKBOX FLS	Gen. Purpose		J134-5		Q13		J107-5		BLU-YEL		#906
General Illumination												
01	PLAYFIELD RIGHT	G.I.	J105-1			Q5	J105-7			WHT-BRN	#44	
02	PLAYFIELD MIDDLE	G.I.	J105-2			Q4	J105-8			WHT-ORG	#44	
03	PLAYFIELD LEFT	G.I.	J105-3			Q3	J105-9			WHT-YEL	#44	
04	**BACKBOX 2	G.I.		J106-5		Q2		J106-10		WHT-GRN		#555
05	**BACKBOX 1	G.I.		J106-6	J104-3	Q1		J106-11	J104-1	WHT-VIO		#555
Flipper Circuits												
		Solenoid Type	Voltage Connection	Playfield	Drive Xistors	Power	Hold	Drive Connections	Playfield	Drive Wire Colors	Power	Hold
29	LOWER RIGHT FLIPPER	Power	J119-1 (RED-GRN)		Q90			J120-13		YEL-GRN		
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		
32		Hold	J119-4 (RED-BLU)			Q89		J120-7		ORG-BLU		
33	POPPER	Power	J119-6 (RED-VIO)		Q84			J120-6		YEL-VIO		
34	DIVERTER HOLD	Hold	J119-6 (RED-VIO)			Q86		J120-4		ORG-VIO		
35	RINGMASTER MAGNET	Power	J119-8 (RED-GRY)		Q81			J120-3		YEL-GRY		
36	UPPER POST	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	NEON	Low Power	J139-2		U3A, U3B		J110-1	BRN-WHT	A-21577			
38	NOT USED											
39	MOTOR DIRECTION	Low Power	J133-6		U3G, U3H		J110-4	YEL-WHT	A-15680			
40	EDDY BOARD	Low Power	J139-2		U3E, U3F		J110-5	BLU-WHT	A-22151-2			

J1XX = POWER DRIVER BOARD

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

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

Ramps



Item	Part Number	Description
1	A-21577	Neon Ramp Assembly
2	A-21851	Center Wire Ramp Assy.
3	A-21806	Center Ramp Assembly
4	A-21790	Shooter Ramp Assembly
5	A-21787	Left Wire Ramp Assembly

[illegible]

SECTION THREE

GAME WIRING AND SCHEMATICS

CONNECTOR & COMPONENT IDENTIFICATION

Each plug or jack receives a number that identifies the circuit board and the position on that board that it connects to. J-designations refer to a male connector. P-designations refer to a female connector. For example, J101 designates jack 1 of board 1 (a Power Driver board jack); P206 designates plug 6 of board 2 (a CPU board plug). Identifying the specific pin number of a connector involves a hyphen, which separates the pin number from the plug or jack designation. For example, J101-3 refers to pin 3 of jack 1 on board 1.

Other game components may also have similar numbers to clarify their locations or related circuits. For example, F501 is a fuse on the Audio Video board.

Prefix numbers for WPC circuit boards are listed below.

J1XX - Power Driver board jacks; F1XX - Power Driver board fuses

J2XX - CPU Board (There are no fuses on the CPU board.)

J5XX and J6XX - Audio Video board (AV board) jacks; F5XX and F6XX - Audio Video board fuses

Schematics for standard WPC backbox boards are found in the WPC Schematics Manual. Playfield, cabinet and all other backbox board schematics are found in this section.

SWITCH MATRIX

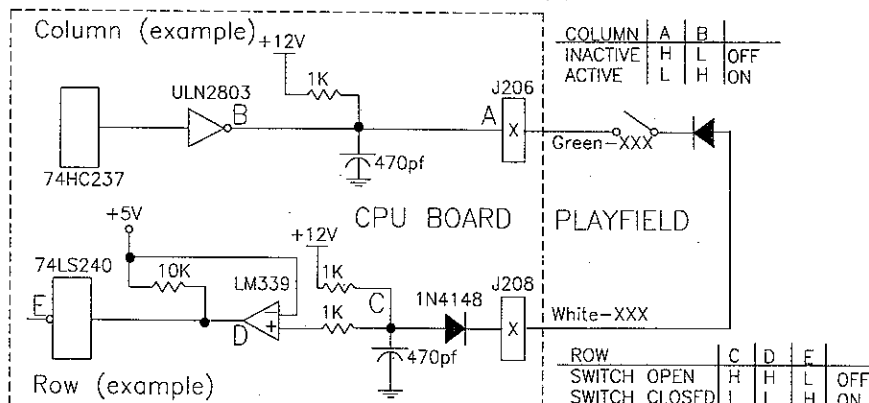
White →  → Green

DEDICATED GROUNDED SWITCHES	Column Row	1 Green-Brown J206-1 U20-18	2 Green-Red J206-2 U20-17	3 Green-Orange J206-3 U20-16	4 Green-White J206-4 U20-15	5 Green-Black J206-5 U20-14	6 Green-Blue J206-6 U20-13	7 Green-Violet J206-7 U20-12	8 Green-Gray J206-9 U20-11	FLIPPER GROUNDED SWITCHES
Orange-Brown J205-1 LEFT COIN CHUTE U17-5 D1	1 White-Brown J208-1 U18-11	BACKBOX LUCK 11	SLAM TILT 21	TROUGH EJECT 31	LEFT LANE 41	LEFT SLINGSHOT 51	LIGHT STANDUP TARGET 61	LEFT SAUCER 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	WIRE RAMP ENTER 12	COIN DOOR CLOSED 22	TROUGH BALL 1 32	RING-MASTER UP 42	RIGHT SLINGSHOT 52	LOCK STANDUP TARGET 62	RIGHT SAUCER 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	RIGHT LOOP UPPER 23	TROUGH BALL 2 33	RING-MASTER MIDDLE 43	UPPER JET BUMPER 53	RAMP ENTER 63	NOT USED 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	RING-MASTER DOWN 44	MIDDLE JET BUMPER 54	RAMP MAGNET 64	BIG BALL REBOUND 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 LOOP UPPER 15	INNER LOOP LEFT 25	TROUGH BALL 4 35	LEFT RAMP MADE 45	LOWER JET BUMPER 55	RAMP MADE 65	VOLT RIGHT 75	NOT USED 85	BLACK-VIOLET J208-11 RIGHT SPINNER F5
Orange-Blue J205-7 Normal Function U16-11 Test Function Volume Dn Down D6	6 White-Blue J208-6 U19-9	TOP EDDY 16	LEFT IN-LANE 26	POPPER OPTO 36	TROUGH UPPER 46	SKILL SHOT 56	RAMP LOCK LOW 66	VOLT LEFT 76	NOT USED 86	BLACK-YELLOW J212-10 UPPER RIGHT FLIPPER OPTO F6
Orange-Violet J205-8 Normal Function U16-7 Test Function Volume Up Up D7	7 White-Violet J208-7 U19-5	RIGHT IN-LANE 17	LEFT OUTLANE 27	"WOW" TARGETS 37	TROUGH MIDDLE 47	RIGHT OUTLANE 57	RAMP LOCK MIDDLE 67	NOT USED 77	NOT USED 87	BLACK-GRAY J208-10 LEFT SPINNER F7
Orange-Gray J205-9 Normal Function U16-5 Test Function Begin Test Enter D8	8 White-Gray J208-8 U19-7	SHOOTER LANE 18	INNER LOOP RIGHT 28	TOP TARGETS 38	LEFT LOOP ENTER 48	RING 'N', 'G' 58	RAMP LOCK HIGH 68	NOT USED 78	NOT USED 88	BLACK-BLUE J212-9 UPPER LEFT FLIPPER OPTO F8

J2XX = CPU BOARD

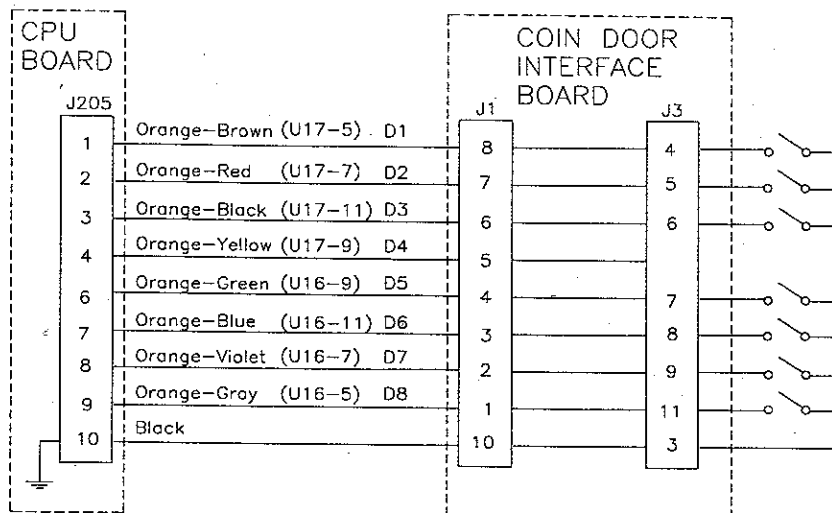
 = OPTO, TYPICALLY CLOSED

SWITCH MATRIX CIRCUIT



The microprocessor is constantly strobing the column side of the switch. When point "A" on the column circuit toggles low, the column side is active. When a switch closes, the row side of the circuit activates. The "+" input to the LM339 drops below +5V, therefore, its output is low. Corresponding row and column switches must be low at the same time for the switch to be considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row is inactive.

DEDICATED SWITCHES



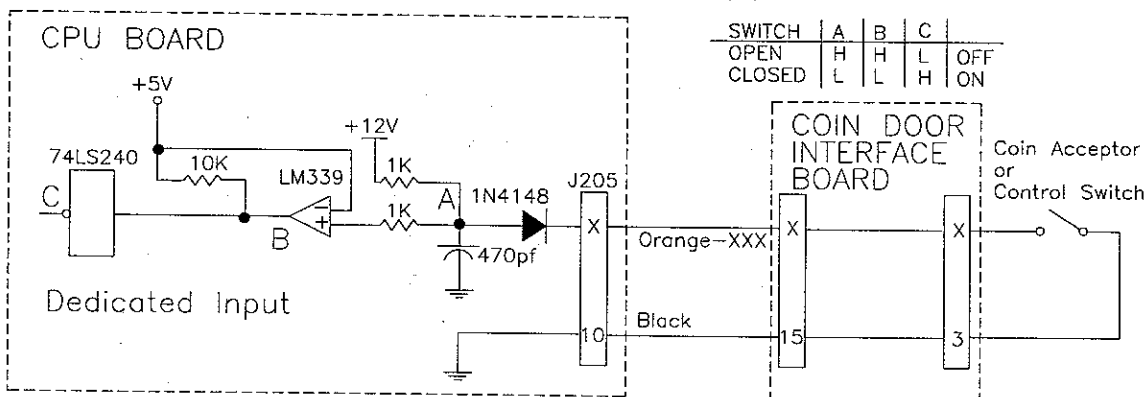
Coin Acceptor Switches

D1 - Left Coin Chute
D2 - Center Coin Chute
D3 - Right Coin Chute
D4 - Fourth Coin Chute

Control Switches

D5 - Normal Function, Service Credits; Test Function, Escape
D6 - Normal Function, Volume Down; Test Function, Down
D7 - Normal Function, Volume Up; Test Function, Up
D8 - Normal Function, Begin Test; Test Function, Enter

DEDICATED SWITCH CIRCUIT



The dedicated switches operate similar in the matrix, except that instead of a column circuit there is a direct tie to ground. Therefore, the column side is constantly active (low).

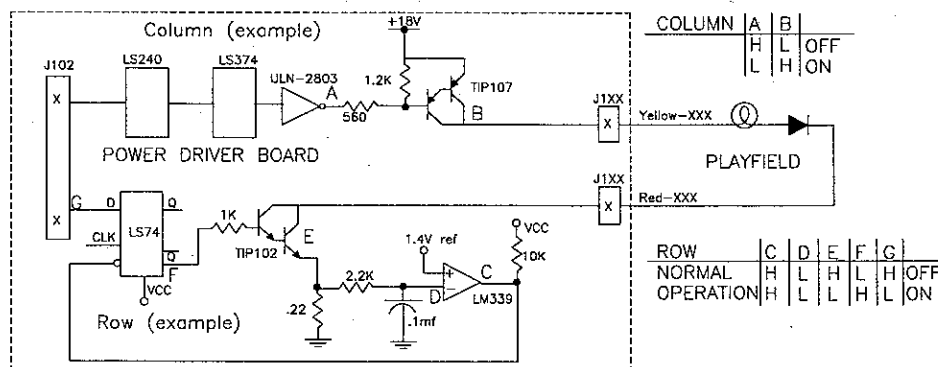
When a switch closes, the row side (dedicated input) of the circuit activates. The "+" input to the LM339 drops below +5V, therefore the output is low. Since the row circuit (dedicated input) is tied directly to ground through the switch, the switch is considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row is inactive.

LAMP MATRIX

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	CIRQUS "R" 11	CIRQUS "I" 21	SIDE SHOW 31	RING- MASTER LEFT 41	CRANK TOP 51	MIDDLE JACKPOT 61	WOW RIGHT "W" TARGET 71	EXTRA BALL 81
2 Red-Black J125-2 Q108	GRID TOP 12	CIRQUS "C" 22	LEFT LOOP TOP 32	RING- MASTER 2 42	CRANK 2 52	RIGHT JACKPOT 62	WOW "O" TARGET 72	TOP JET BUMPER 82
3 Red-Orange J125-4 Q103	CIRQUS "Q" 13	GRID MIDDLE/ LEFT 23	LEFT LOOP 3 33	RING- MASTER 3 43	CRANK 3 53	LIGHT STANDUP TARGET 63	WOW LEFT "W" TARGET 73	MIDDLE JET BUMPER 83
4 Red-Yellow J125-5 Q107	CIRQUS "U" 14	GRID BOTTOM/ LEFT 24	LEFT LOOP 2 34	RING- MASTER 4 44	CRANK BOTTOM 54	LOCK STANDUP TARGET 64	RING "N" 74	LOWER JET BUMPER 84
5 Red-Green J125-6 Q102	GRID TOP/RIGHT 15	GRID BOTTOM 25	LEFT LOOP 1 35	RING- MASTER RIGHT 45	RIGHT LOOP TOP 55	RING "R" 65	RING "G" 75	RIGHT IN-LANE 85
6 Red-Blue J125-7 Q106	CIRQUS "S" 16	GRID MIDDLE 26	MULTIBALL 36	SPECIAL 46	RIGHT LOOP 3 56	RING "I" 66	RIGHT OUTLANE 76	VOLT LEFT 86
7 Red-Violet J125-8 Q101	GRID MIDDLE/ RIGHT 17	GRID BOTTOM/ RIGHT 27	LOCK 37	RAZZ 47	RIGHT LOOP 2 57	SHOOT AGAIN 67	LEFT IN-LANE 77	VOLT RIGHT 87
8 Red-Gray J125-9 Q105	LEFT JACKPOT 18	GRID TOP/LEFT 28	SPOT MARVEL 38	FRENZY 48	RIGHT LOOP 1 58	LEFT OUTLANE 68	SKILL RING 78	START BUTTON 88

J1XX = Power Driver Board

LAMP MATRIX CIRCUIT



The microprocessor sends a signal to the column circuit causing the output of the UNL-2803 to toggle. When point "A" drops low, the TIP107 transistor conducts and point "B" changes to a high state. At the same time, the microprocessor drives the input of the 74LS74 low, causing a high at output "F". A high state at the base of the TIP102 causes the transistor to conduct, bringing the row circuit to ground and turning the lamp on. The microprocessor changes the input of the 74LS74 to a high state to turn the lamp off. In overcurrent conditions, the lamp is shut off through the comparator. If the voltage at the negative input of the LM339 rises above 1.4V, the output changes to a low, which is fed back to the 74LS74 and shuts the circuit off.

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	Insert
01	PLUNGER	High Power	J133-2			Q72	J116-1			VIO-BRN	AE-23-800	
02	BACKBOX KICK	High Power		J134-3		Q68		J118-2		VIO-RED	AE-23-800	
03	LEFT LOOP MAGNET	High Power	J133-2			Q71	J116-4			VIO-ORG	20-10197	
04	MIDDLE JET BUMPER	High Power	J133-2			Q67	J116-5			VIO-YEL	AE-23-800	
05	RAMP MAGNET	High Power	J133-2			Q70	J116-6			VIO-GRN	20-10197	
06	DIVERTER POWER	High Power	J133-2			Q66	J116-7			VIO-BLU	FL-11753	
07	JET UP	High Power	J133-2			Q69	J116-8			VIO-BLK	FL-11630	
08	JET RELEASE	High Power	J133-2			Q65	J116-9			VIO-GRY	SM1-26-600	
09	TROUGH EJECT	Low Power	J133-3			Q44	J114-1			BRN-BLK	AE-26-1500	
10	LEFT SLINGSHOT	Low Power	J133-3			Q48	J114-3			BRN-RED	AE-26-1200	
11	RIGHT SLINGSHOT	Low Power	J133-3			Q43	J114-4			BRN-ORG	AE-26-1200	
12	UPPER JET BUMPER	Low Power	J133-3			Q47	J114-5			BRN-YEL	AE-26-1200	
13	LOWER JET BUMPER	Low Power	J133-3			Q42	J114-6			BRN-GRN	AE-26-1200	
14	LEFT SAUCER	Low Power	J133-3			Q46	J114-7			BRN-BLU	AE-27-1200	
15	RIGHT SAUCER	Low Power	J133-3			Q41	J114-8			BRN-VIO	AE-27-1200	
16	LOCK POST	Low Power	J133-3			Q45	J114-9			BRN-GRY	AE-26-1500	
17	JOIN FLASHERS	Flasher	J133-6			Q28	J111-1			BLK-BRN	#906	
18	RING #1 FLASHERS	Flasher	J133-6			Q32	J111-2			BLK-RED	#906	
19	RING #2 FLASHERS	Flasher	J133-6			Q27	J111-3			BLK-ORG	#906	
20	RING #3 FLASHERS	Flasher	J133-6			Q31	J111-4			BLK-YEL	#906	
21	RIGHT PLAYFIELD FLASHER	Flasher	J133-6			Q26	J111-5			BLU-GRN	#906	
21	UPPER RIGHT BACKBOX FLS	Flasher		J134-5		Q26		J112-6		BLU-GRN		#906
22	MOTOR ENABLE	Flasher	J133-6			Q30	J111-6			BLU-BLK	A-15680	
23	JET FLASHER	Flasher	J133-6			Q25	J111-7			BLU-VIO	#906	
24	LEFT PLAYFIELD FLASHER	Flasher	J133-6			Q29	J111-8			BLU-GRY	#906	
24	UPPER LEFT BACKBOX FLS	Flasher		J134-5		Q29		J112-9		BLU-GRY		#906
25	UPPER LEFT FLASHER	Gen. Purpose	J133-6			Q16	J109-1			BLU-BRN	#906	
26	UP. RIGHT PLAYFIELD FLS	Gen. Purpose	J133-6			Q15	J109-2			BLU-RED	#906	
26	LOWER LEFT BACKBOX FLS	Gen. Purpose		J134-5		Q15		J107-3		BLU-RED		#906
27	RINGMASTER FLASHERS (2)	Gen. Purpose	J133-6			Q14	J109-3			BLU-ORG	#906	
28	BEAR PLAYFIELD FLASHER	Gen. Purpose	J133-6			Q13	J109-4			BLU-YEL	#906	
28	LOWER RIGHT BACKBOX FLS	Gen. Purpose		J134-5		Q13		J107-5		BLU-YEL		#906
General Illumination												
01	PLAYFIELD RIGHT	G.I.	J105-1			Q5	J105-7			WHT-BRN	#44	
02	PLAYFIELD MIDDLE	G.I.	J105-2			Q4	J105-8			WHT-ORG	#44	
03	PLAYFIELD LEFT	G.I.	J105-3			Q3	J105-9			WHT-YEL	#44	
04	**BACKBOX 2	G.I.		J106-5		Q2		J106-10		WHT-GRN		#555
05	**BACKBOX 1	G.I.		J106-6	J104-3	Q1		J106-11	J104-1	WHT-VIO		#555
Flipper Circuits												
29	LOWER RIGHT FLIPPER	Power	J119-1 (RED-GRN)		Q90		J120-13		YEL-GRN	FL-11630	RED	
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-11630	RED	
32		Hold	J119-4 (RED-BLU)		Q89		J120-7		ORG-BLU			
33	POPPER	Power	J119-6 (RED-VIO)		Q84		J120-6		YEL-VIO	AL-25-1000	BROWN	
34	DIVERTER HOLD	Hold	J119-6 (RED-VIO)		Q86		J120-4		ORG-VIO	FL-11730	YELLOW	
35	RINGMASTER MAGNET	Power	J119-8 (RED-GRY)		Q81		J120-3		YEL-GRY	20-10197		
36	UPPER POST	Hold	J119-8 (RED-GRY)		Q83		J120-1		ORG-GRY	AE-27-1200	WHITE	
Motor Circuit												
37	NEON	Low Power	J139-2		U3A, U3B		J110-1		BRN-WHT	A-21577		
38	NOT USED											
39	MOTOR DIRECTION	Low Power	J133-6		U3G, U3H		J110-4		YEL-WHT	A-15680		
40	EDDY BOARD	Low Power	J139-2		U3E, U3F		J110-5		BLU-WHT	A-21745-2		

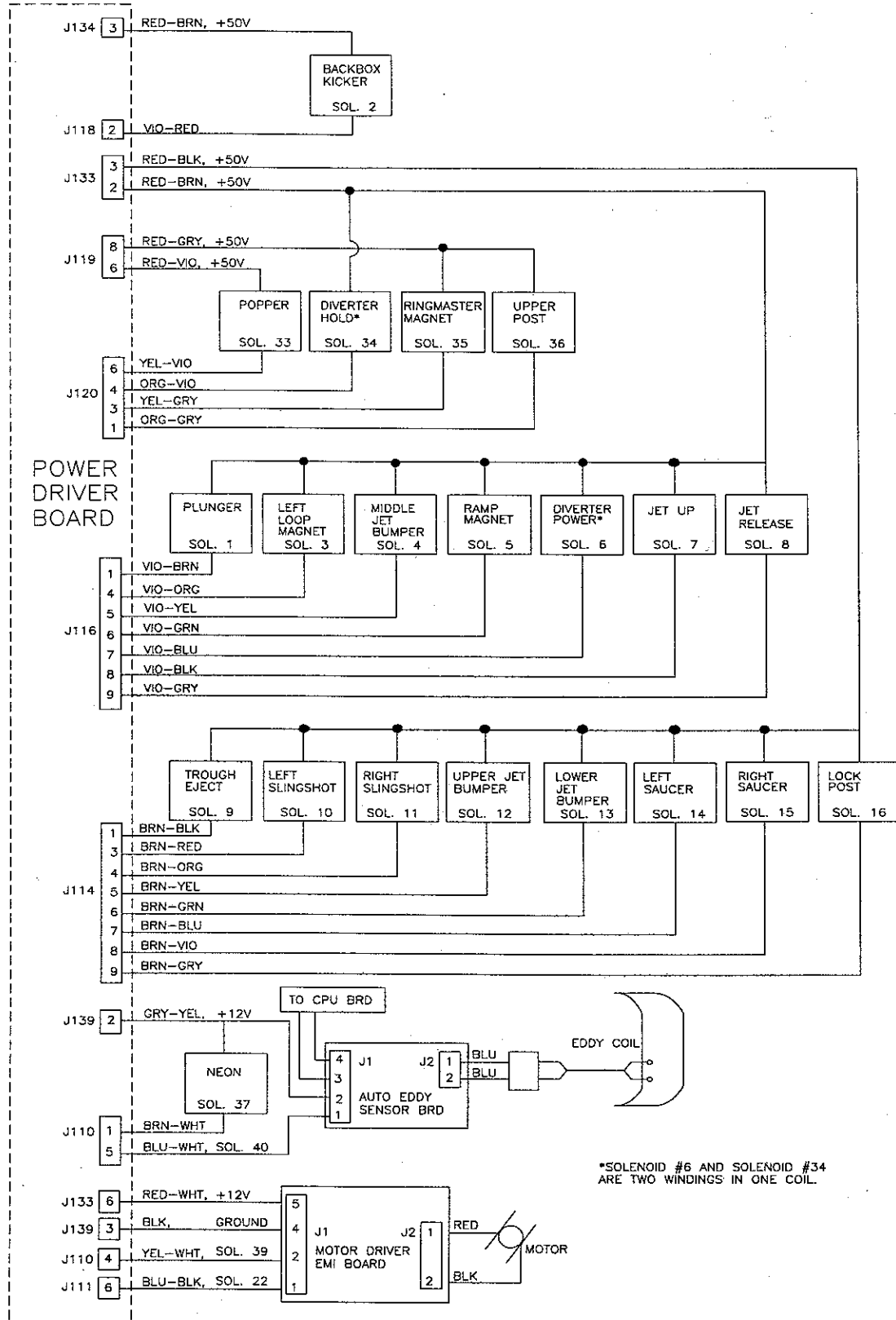
J1XX = POWER DRIVER BOARD

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

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

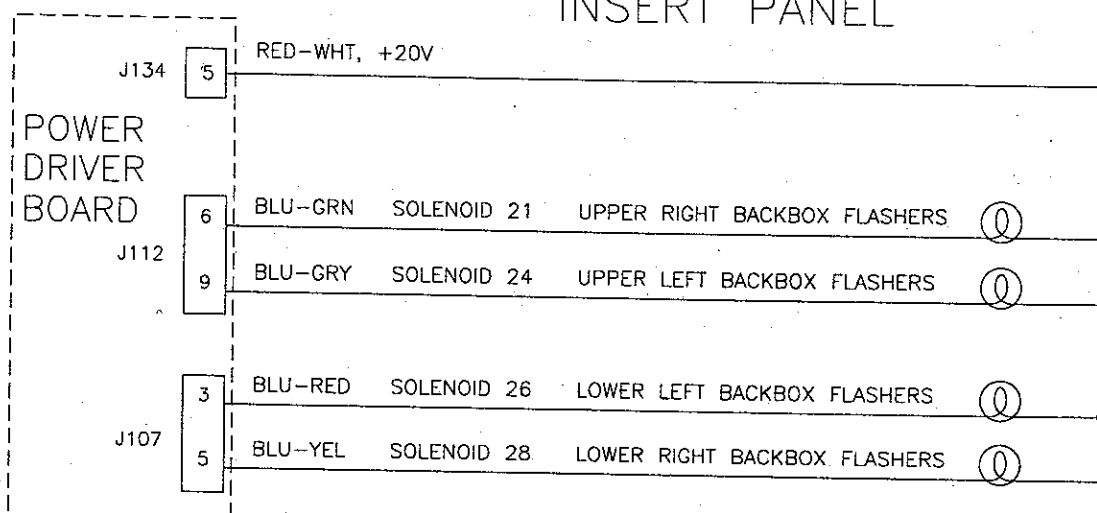
SOLENOID WIRING

COILS & MOTORS

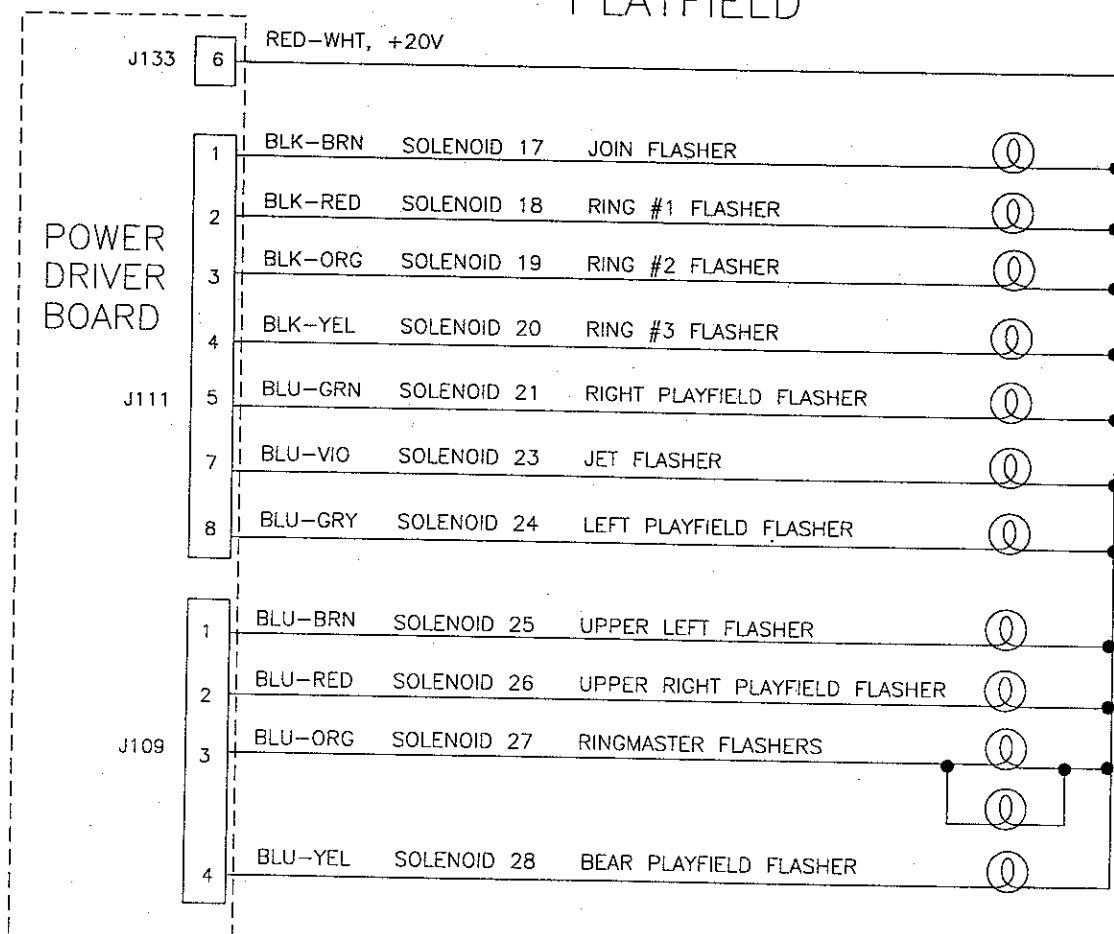


FLASHLAMPS

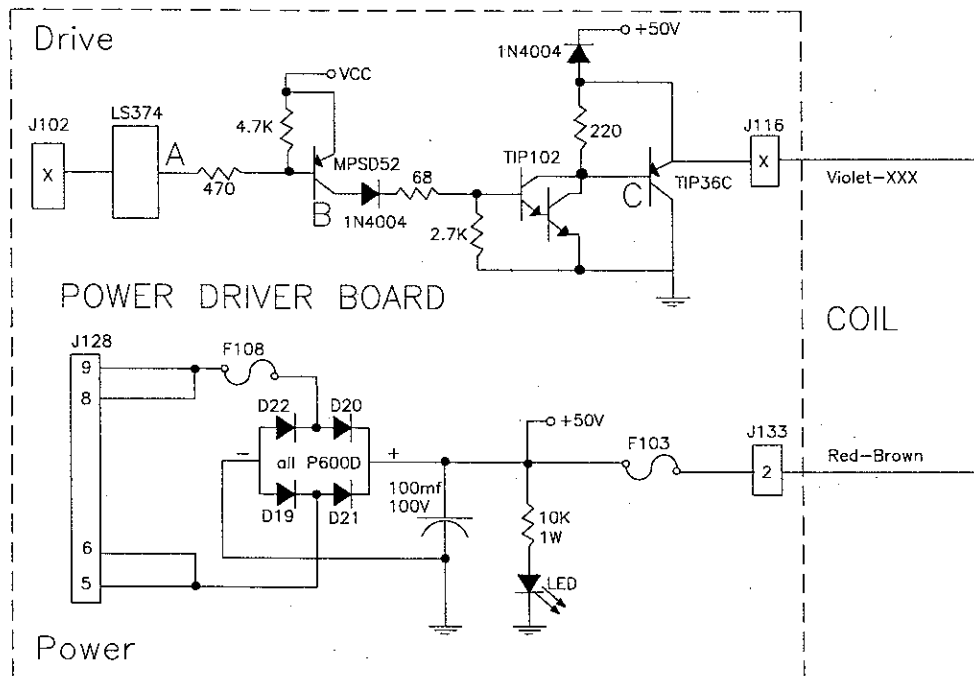
INSERT PANEL



PLAYFIELD

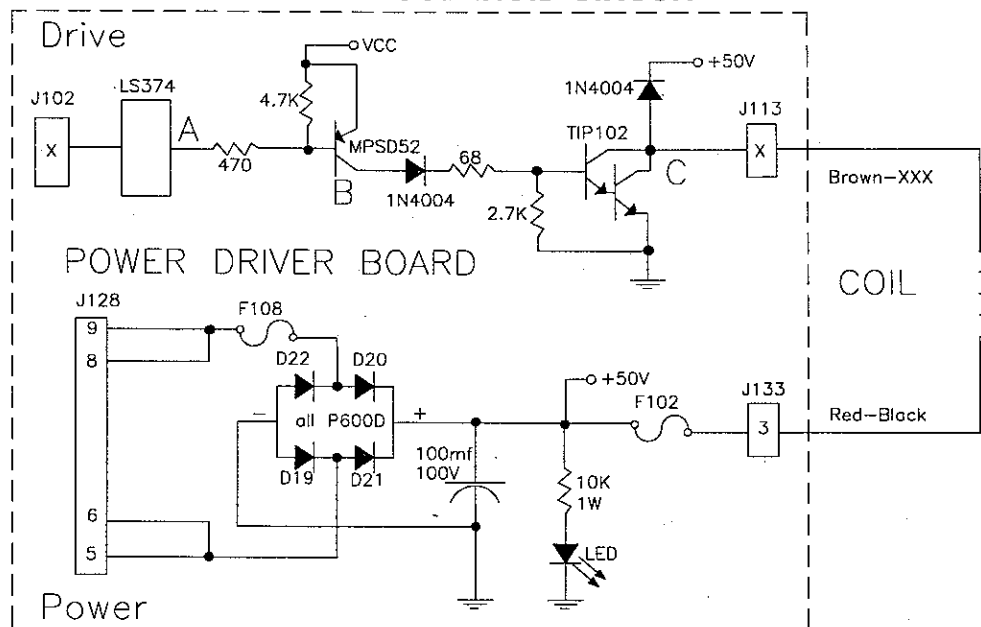


HIGH POWER SOLENOID CIRCUIT



The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" causes point "C", the collector of the TIP102 transistor and point "D", the emitter of the TIP36C transistor, to drop low. When point "D" is low, the coil is grounded through the transistor and turns on. The coil shuts off when point "A" toggles high.

LOW POWER SOLENOID CIRCUIT



The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" turns on the TIP102 transistor and causes point "C" to drop low. When point "C" is low the coil is grounded through the transistor and turns on. The coil shuts off when point "A" toggles high.

* Tieback diode is not used for flashlamp circuit.

FLASHER CIRCUT

Drive

J102 LS374 A 470 4.7K MPD52 1N4004 68 2.7K TIP102 J111 X Black-XXX

POWER DRIVER BOARD

J128 F107 D16 D15 all P600D D18 D17 10,000mf 35V +20V 0.12 10W J133 6 Red-White

Flasher

2K LED

Power

3-9

GENERAL ILLUMINATION CIRCUIT

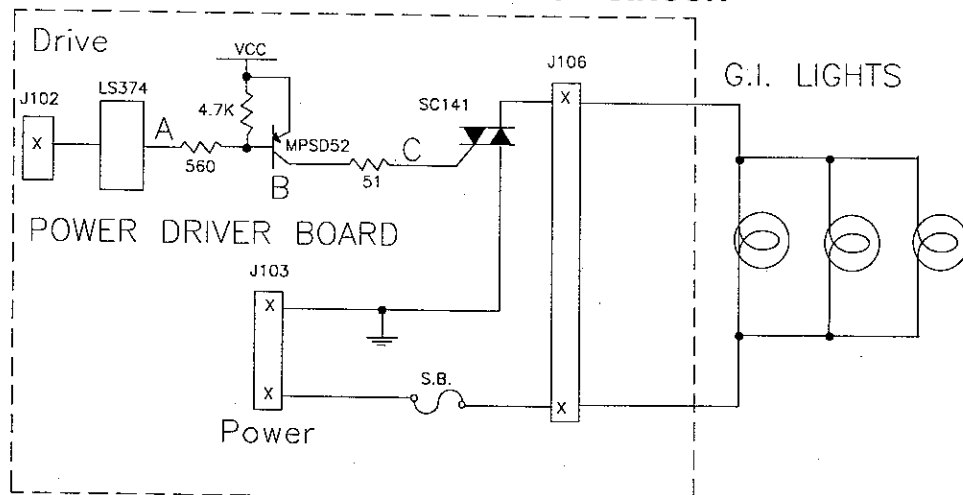


Figure #1

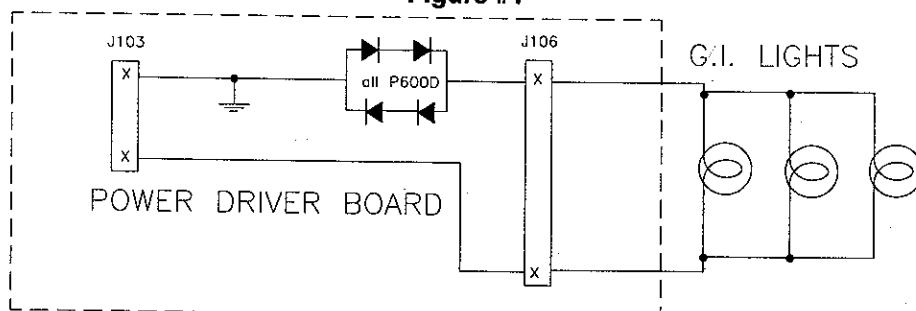
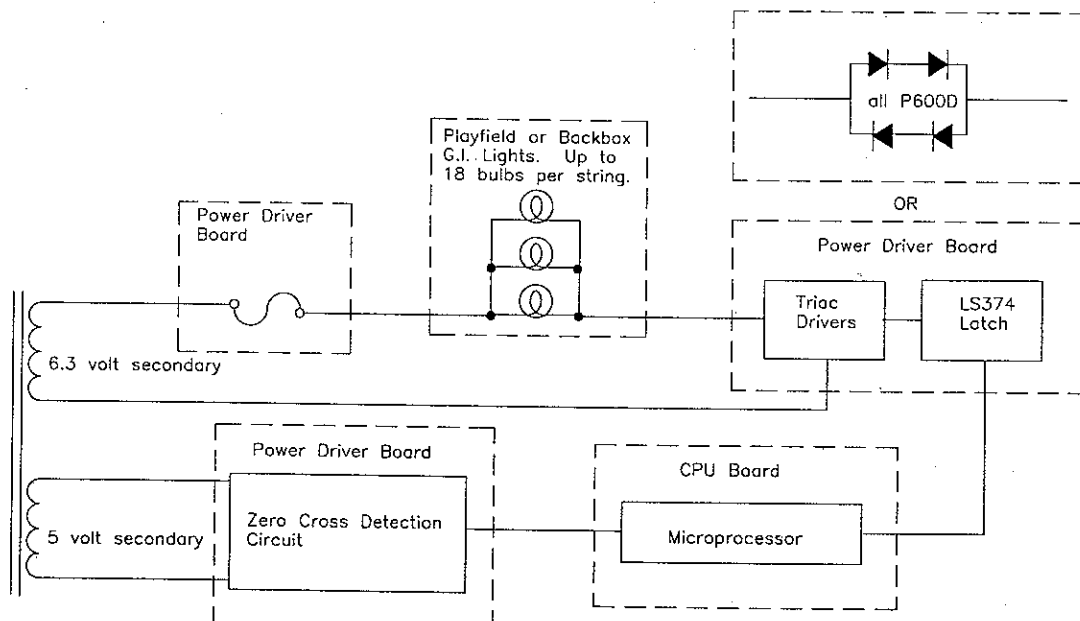


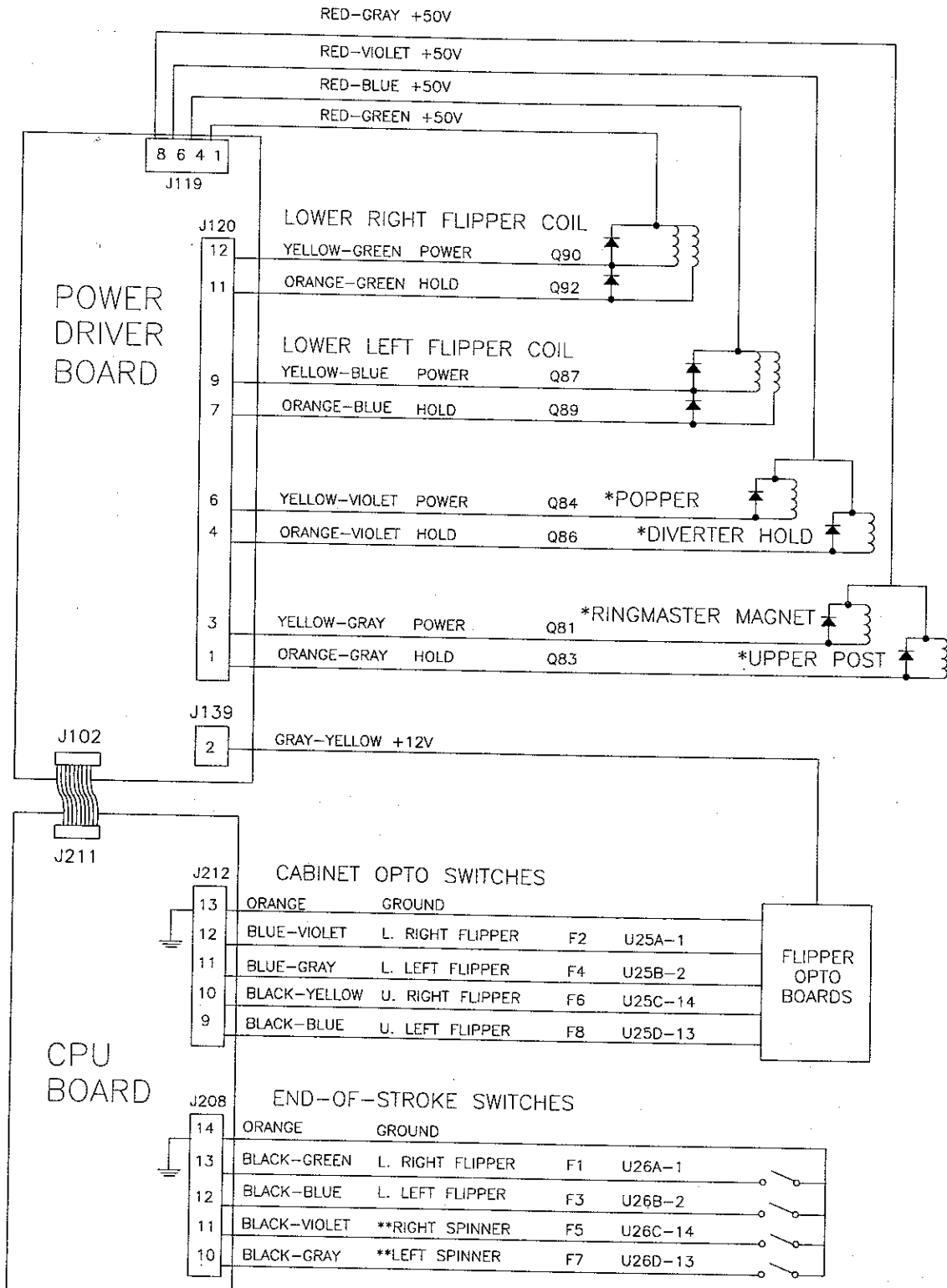
Figure #2

There are five general illumination strings; three like figure #1 and two like figure #2. When point "A" toggles low, points, "B" and "C" are high. This turns on the triac and the desired general illumination string of lights.

BLOCK DIAGRAM OF GENERAL ILLUMINATION CIRCUIT



FLIPPER CIRCUIT DIAGRAM

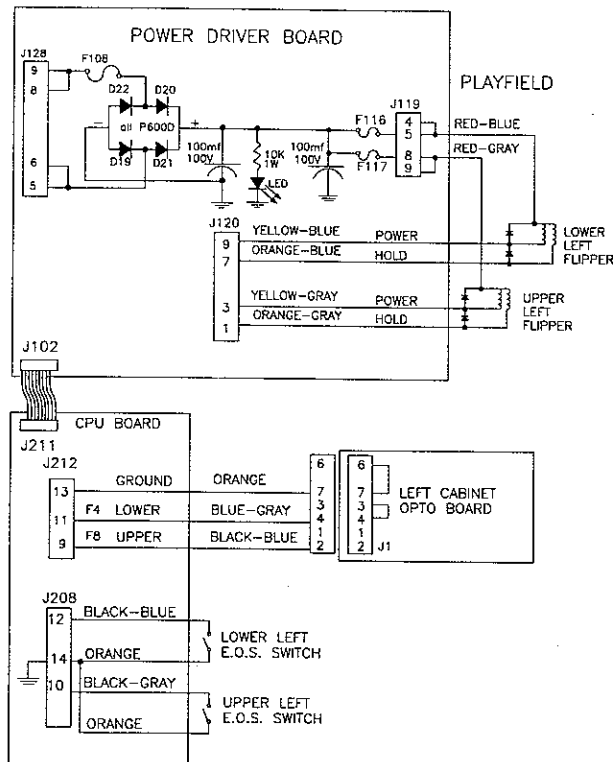


* The UPPER RIGHT FLIPPER circuit is used for the POPPER and for DIVERTER HOLD. The UPPER LEFT FLIPPER circuit is used for the RINGMASTER MAGNET and the UPPER POST.

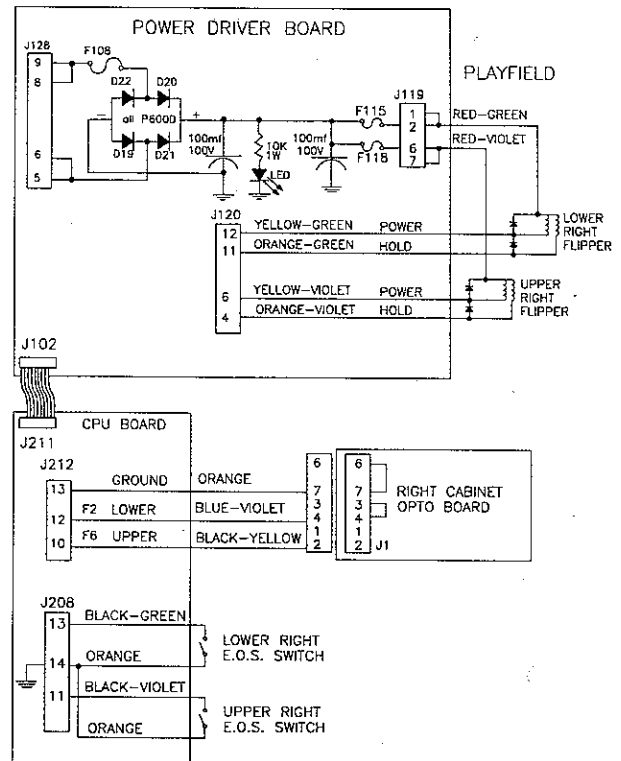
**The UPPER RIGHT E.O.S. circuit is used for the RIGHT SPINNER and the UPPER LEFT E.O.S. circuit is used for the LEFT SPINNER.

FLIPPER COIL CIRCUITS

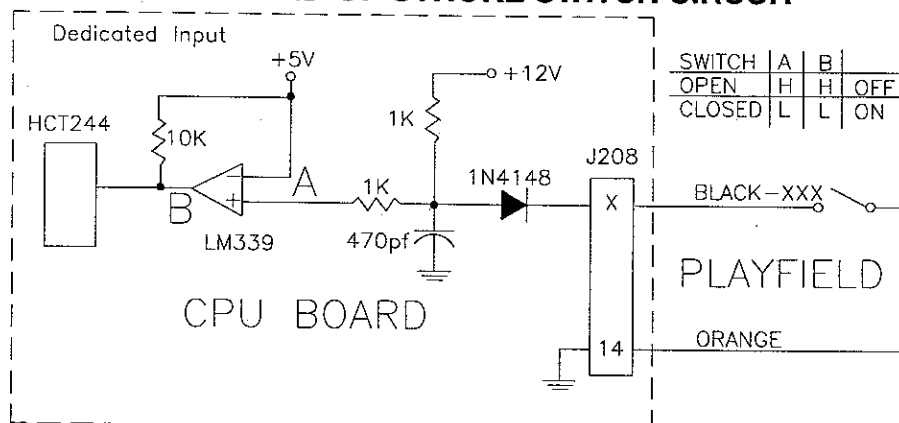
LEFT FLIPPER CIRCUIT



RIGHT FLIPPER CIRCUIT



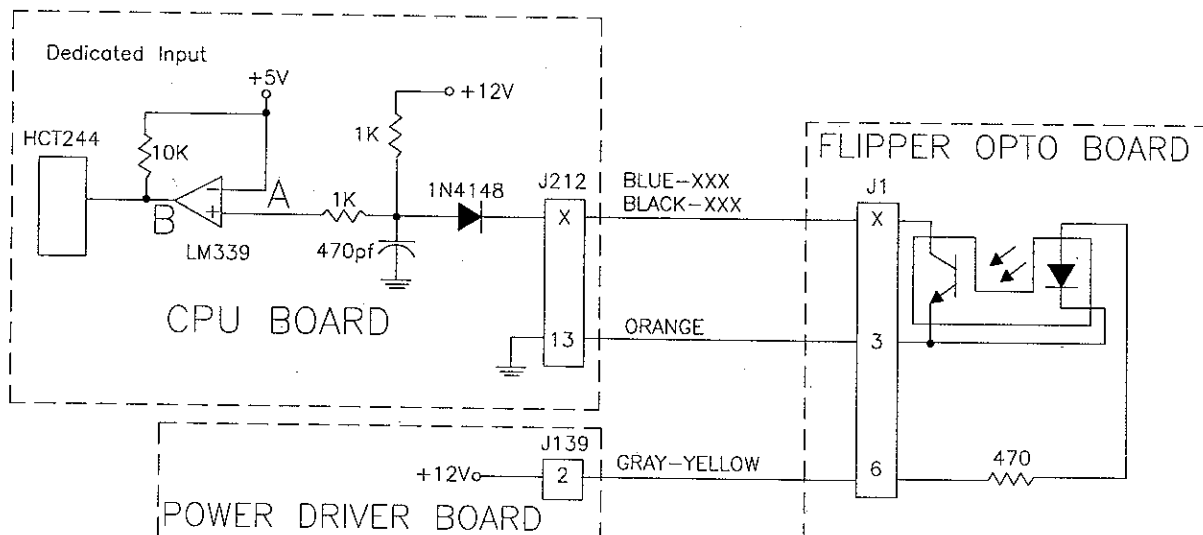
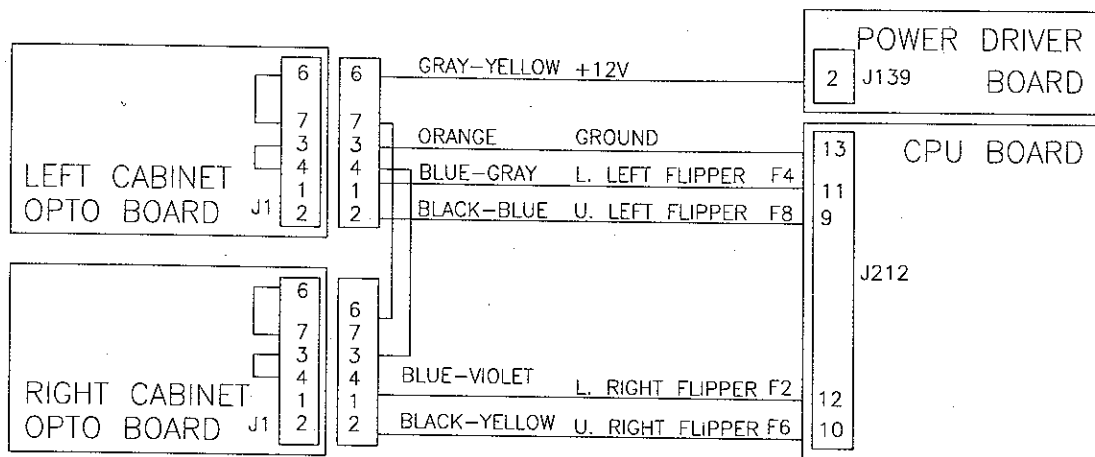
FLIPPER END-OF-STROKE SWITCH CIRCUIT



The flipper E.O.S. circuits operate similar to the dedicated switch circuit. The circuits are active low and tied to ground through the switch.

When a switch closes, the row side, (dedicated input), of the circuit activates. The "+" input of the LM339 drops below +5V therefore its output is low. Since the row (dedicated input), circuit is tied directly to ground through the switch, the switch is considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row (dedicated input) is inactive.

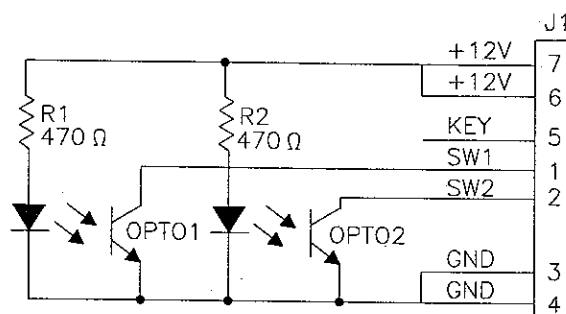
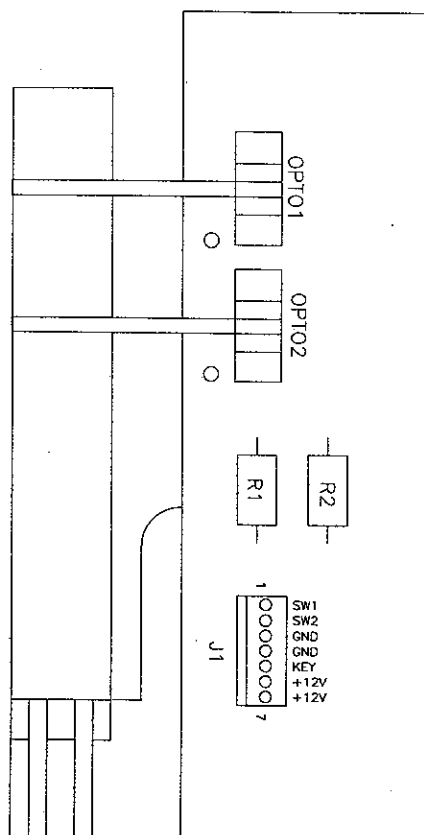
FLIPPER CABINET SWITCH CIRCUITS



The flipper switch circuits operate similar to the dedicated switch circuit. The circuits are active low and tied to ground through the switch circuit.

When a switch closes, the row side (dedicated input) of the circuit activates. The "+" input to the LM339 drops below +5V, therefore, its output is low. Since the row, (dedicated input) circuit is tied directly to ground through the switch, the switch is considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row, (dedicated Input) is inactive.

FLIPPER OPTO BOARD ASSEMBLY **A-17316**



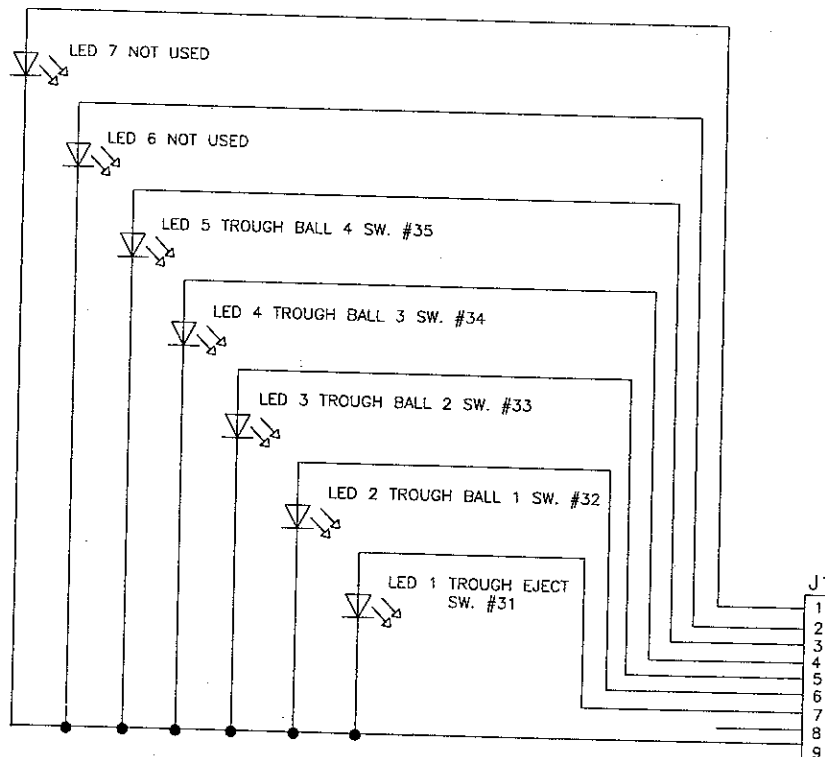
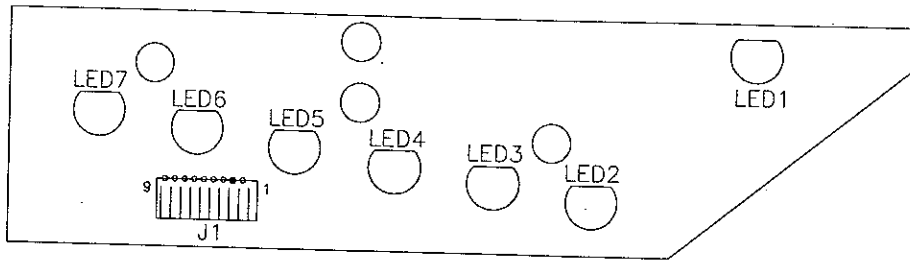
Left Flipper Opto Board Assembly

J1-1 Black-Blue from CPU board J212-9
 J1-2 Blue-Gray from CPU board J212-11
 J1-3 N/C
 J1-4 Orange from CPU board J212-13
 J1-5 N/C
 J1-6 Gray-Yellow from Power Driver Board J139-2
 J1-7 Gray-Yellow from Power Driver Board J139-2

Right Flipper Opto Board Assembly

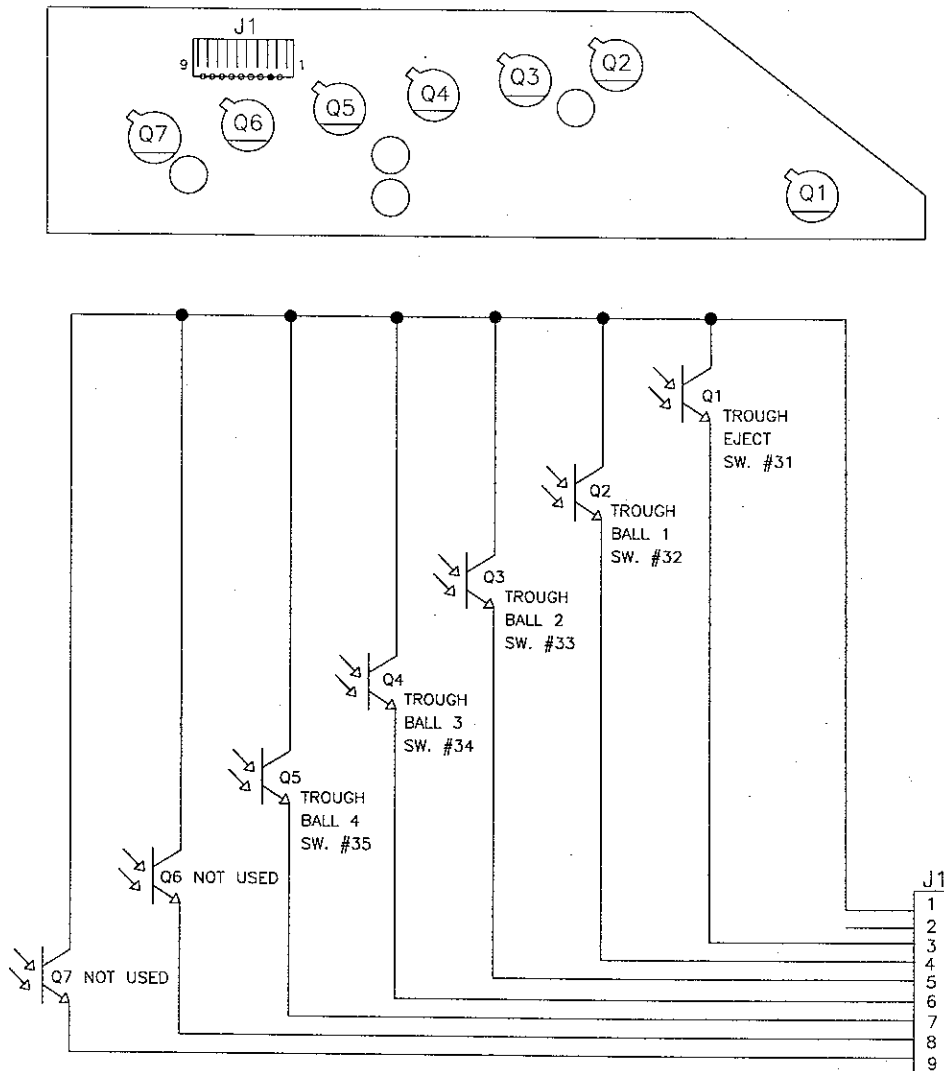
J1-1 Black-Yellow from CPU board J212-10
 J1-2 Blue-Violet from CPU board J212-12
 J1-3 Orange from CPU board J212-13
 J1-4 Orange from Left Flipper Opto Board Assy J1-4
 J1-5 N/C
 J1-6 Gray-Yellow from Left Flipper Opto Board Assy J1-6
 J1-7 N/C

**Trough IR LED Board Assembly
(transmitter - green board)
A-18617-1**



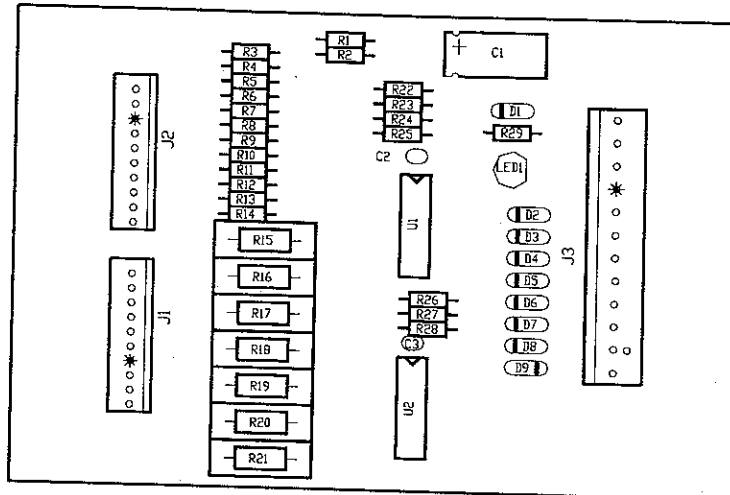
- | | | |
|-------------|----------|--|
| J1-1 | N/C | |
| J1-2 | N/C | |
| J1-3 | GRY-GRN, | For TROUGH BALL 4 switch #35 from 7-Opto Switch Board J1-3 |
| J1-4 | GRY-BLK, | For TROUGH BALL 3 switch #34 from 7-Opto Switch Board J1-5 |
| J1-5 | GRY-ORG, | For TROUGH BALL 2 switch #33 from 7-Opto Switch Board J1-6 |
| J1-6 | GRY-RED, | For TROUGH BALL 1 switch #32 from 7-Opto Switch Board J1-7 |
| J1-7 | GRY-BRN, | For TROUGH EJECT switch #31 from 7-Opto Switch Board J1-8 |
| J1-8 | KEY | |
| J1-9 | BLK, | Ground from 7-Opto Switch Board J1-9 |

Trough IR Photo Transistor Board Assembly
(receiver - blue board)
A-18618-1



J1-1	GRY-YEL,	+12V from 7-Opto Switch Board J2-9
J1-2	KEY	
J1-3	ORG-BRN,	For TROUGH EJECT switch #31 from 7-Opto Switch Board J2-7
J1-4	ORG-RED,	For TROUGH BALL 1 switch #32 from 7-Opto Switch Board J2-6
J1-5	ORG-BLK,	For TROUGH BALL 2 switch #33 from 7-Opto Switch Board J2-5
J1-6	ORG-YEL,	For TROUGH BALL 3 switch #34 from 7-Opto Switch Board J2-4
J1-7	ORG-GRN,	For TROUGH BALL 4 switch #35 from 7-Opto Switch Board J2-3
J1-8	N/C	
J1-9	N/C	

7-Opto Switch Board Assembly **A-15576.1** **(FOR BALL TROUGH AND POPPER SWITCHES)**



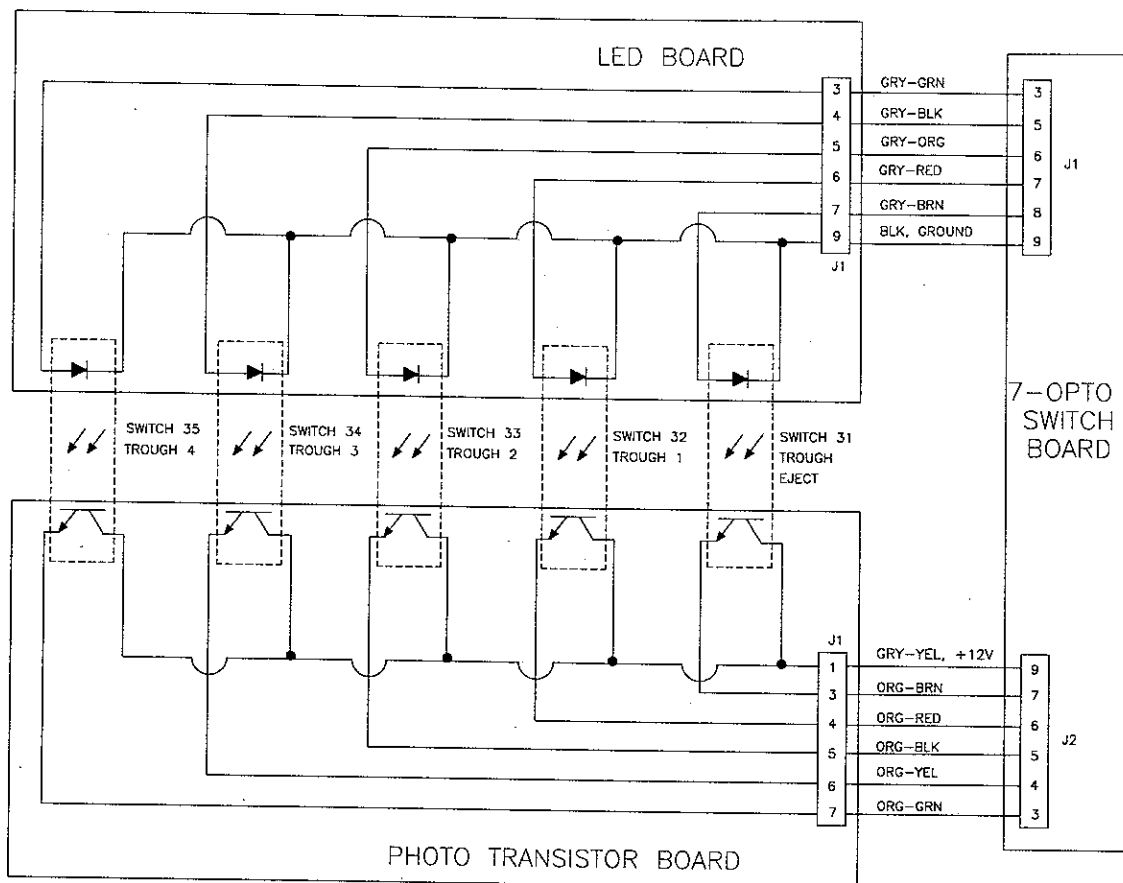
- | | | |
|-------|---------|---|
| J1-1 | N/C | |
| J1-2 | GRY-BLU | To switch #36, POPPER OPTO LED board |
| J1-3 | GRY-GRN | To switch #35, BALL TROUGH, LED board |
| J1-4 | N/C | |
| J1-5 | GRY-BLK | To switch #34, BALL TROUGH LED board |
| J1-6 | GRY-ORG | To switch #33, BALL TROUGH LED board |
| J1-7 | GRY-RED | To switch #32, BALL TROUGH LED board |
| J1-8 | GRY-BRN | To switch #31, BALL TROUGH LED board |
| J1-9 | BLK | Ground to LED boards |
| J1-10 | BLK | Ground to LED boards |
| | | |
| J2-1 | N/C | |
| J2-2 | ORG-BLU | To switch #36, POPPER OPTO PHOTO TRANS. board |
| J2-3 | ORG-GRN | To switch #35, BALL TROUGH PHOTO TRANS. board |
| J2-4 | ORG-YEL | To switch #34, BALL TROUGH PHOTO TRANS. board |
| J2-5 | ORG-BLK | To switch #33, BALL TROUGH PHOTO TRANS. board |
| J2-6 | ORG-RED | To switch #32, BALL TROUGH PHOTO TRANS. board |
| J2-7 | ORG-BRN | To switch #31, BALL TROUGH PHOTO TRANS. board |
| J2-8 | N/C | |
| J2-9 | GRY-YEL | +12V to PHOTO TRANS. boards |
| J2-10 | GRY-YEL | +12V to PHOTO TRANS. boards |
| | | |
| J3-1 | N/C | |
| J3-2 | GRY-YEL | +12V from POWER DRIVER board J139-2 |
| J3-3 | BLK | Ground from POWER DRIVER board J139-3 |
| J3-4 | N/C | |
| J3-5 | WHT-BRN | Switch Row 1, from CPU board J208-1 |
| J3-6 | WHT-RED | Switch Row 2, from CPU board J208-2 |
| J3-7 | WHT-ORG | Switch Row 3, from CPU board J208-3 |
| J3-8 | WHT-YEL | Switch Row 4, from CPU board J208-4 |
| J3-9 | WHT-GRN | Switch Row 5, from CPU board J208-5 |
| J3-10 | WHT-BLU | Switch Row 6, from CPU board J208-7 |
| J3-11 | N/C | |
| J3-12 | GRN-ORG | Switch Column 3, from CPU board J206-3 |



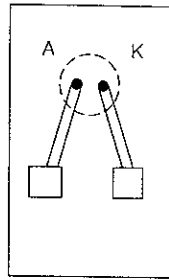
OPTO SWITCH OPERATION:

The Ball Rolls Between The LED Board And The Photo Transistor Board And Breaks The Beam.
The Broken Beam 'Makes' the Switch.

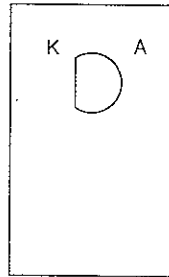
Ball Trough Opto Switches Wiring Diagram



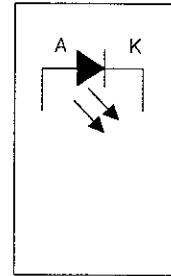
LED BOARD ASSEMBLY A-16908 (TRANSMITTER-GREEN BOARD)



solder side

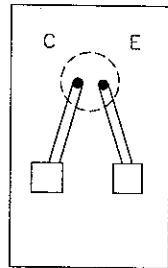


component side

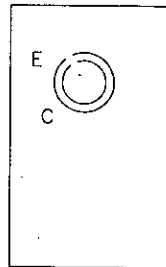


schematic

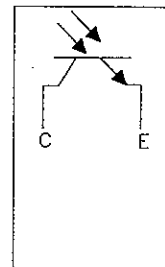
PHOTO TRANSISTOR BOARD ASSEMBLY A-16909 (RECEIVER-BLUE BOARD)



solder side



component side



schematic

TYPICAL CIRCUIT DIAGRAM

LED BOARD
Transmitter
1.0-1.4 volts

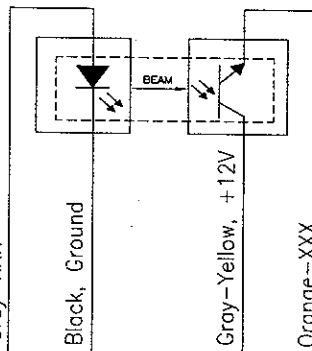
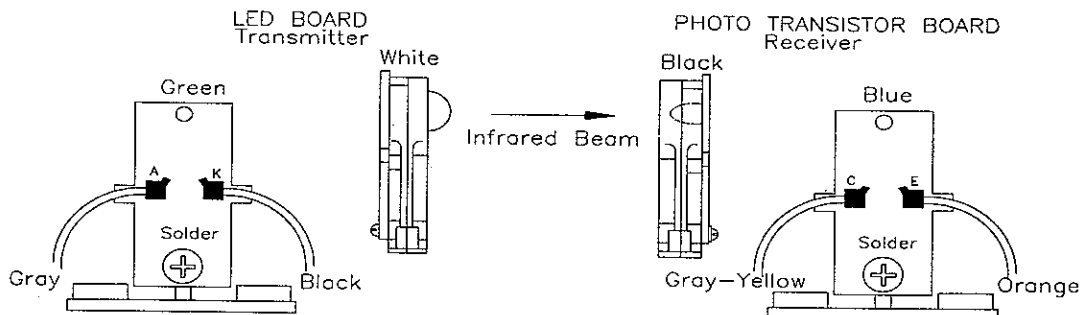
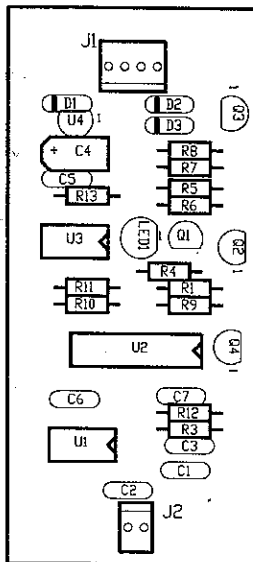


PHOTO TRANSISTOR BOARD
Receiver
0.1-0.7 volts unblocked
11-13 volts blocked

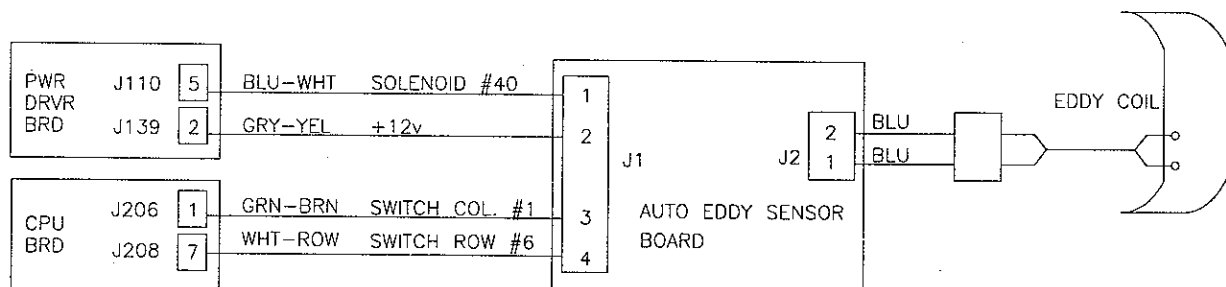
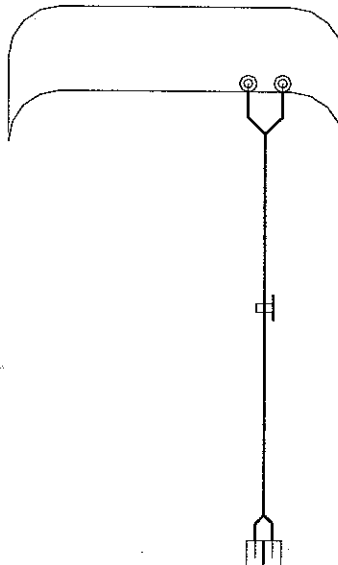


Auto Eddy Sensor Board A-21745-2

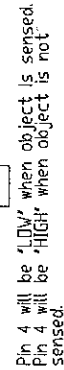


J1-1	BLU WHT	Solenoid #40 Drive	J2-1	BLU	To Eddy Coil
J1-2	GRY-YEL	+12V	J2-2	BLU	To Eddy Coil
J1-3	GRN-BRN	Switch Column #1			
J1-4	WHT-BLU	Switch Row #6			

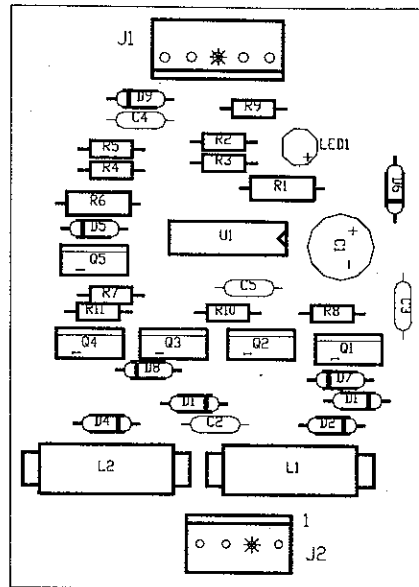
Eddy Coil Board A-20036



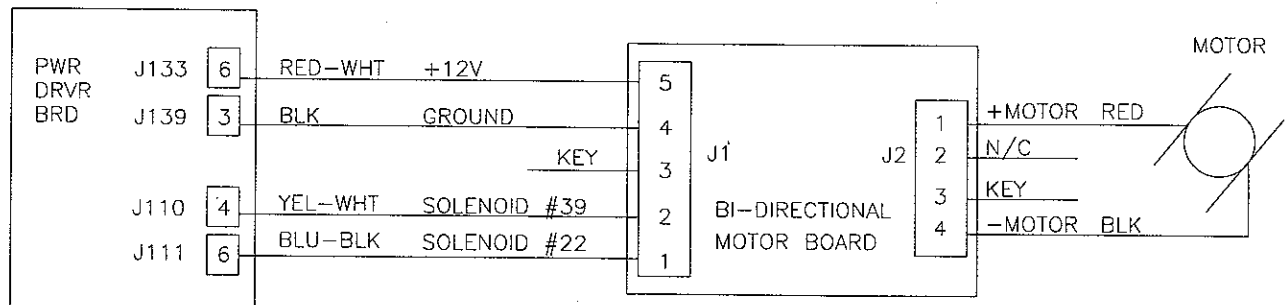
A-21745-2



Bi-directional Motor Driver Board A-15680



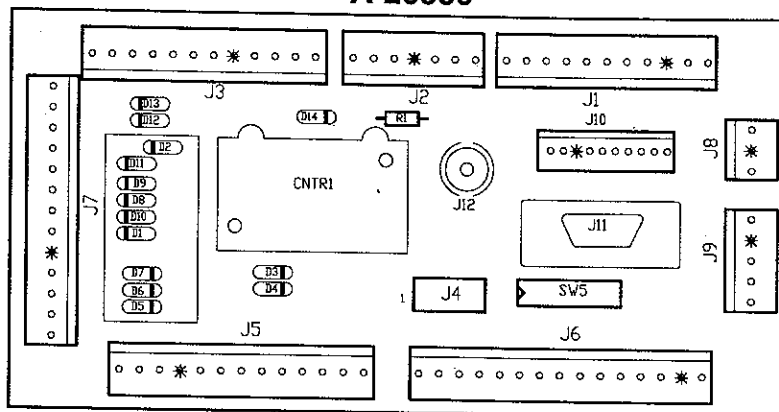
J1-1	RED-WHT	+12V	J2-1	RED	+MOTOR
J1-2	BLK	Ground	J2-2	N/C	
J1-3	KEY		J2-3	KEY	
J1-4	YEL-WHT	Solenoid #39 Drive	J2-4	BLK	-MOTOR
J1-5	BLU-BLK	Solenoid #22 Drive			



A-15680

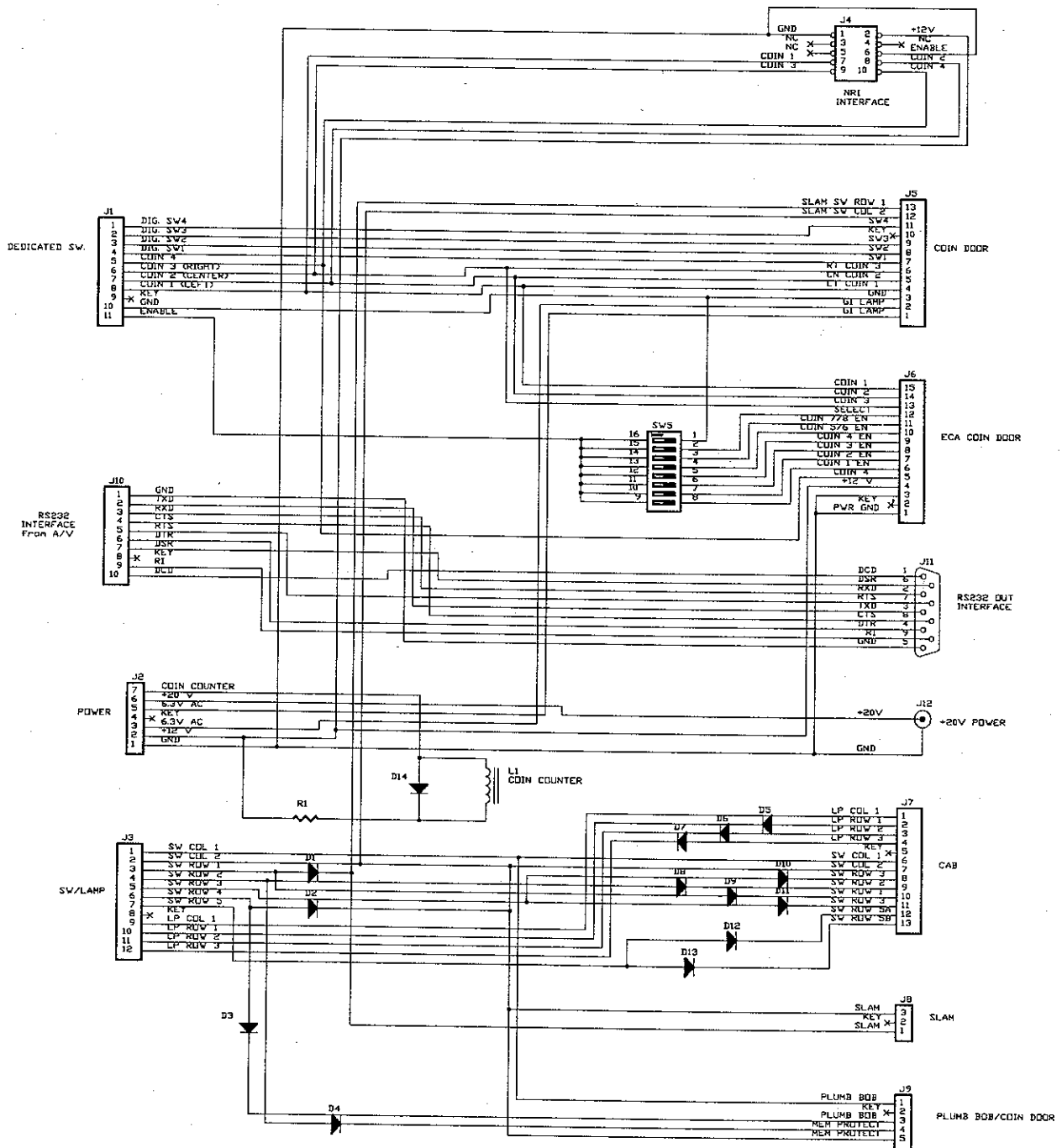


Coin Door Interface Board A-20580

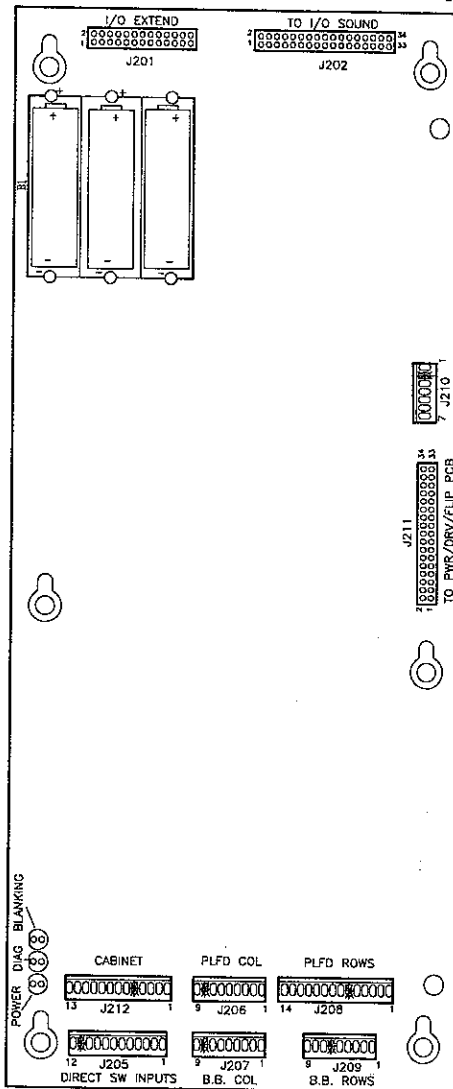


J1-1	ORG-GRY	Dedicated sw row #8 from CPU J205-9.	J6	NOT USED	
J1-2	ORG-VIO	Dedicated sw row #7 from CPU J205-8.	J7-1	YEL-GRY	Lamp column #8 to cabinet.
J1-3	ORG-BLU	Dedicated sw row #6 from CPU J205-7.	J7-2	N/C	
J1-4	ORG-GRN	Dedicated sw row #5 from CPU J205-6.	J7-3	RED-BLU	Lamp row #6 to cabinet.
J1-5	ORG-YEL	Dedicated sw row #4 from CPU J205-4.	J7-4	RED-GRY	Lamp row #8 to cabinet.
J1-6	ORG-BLK	Dedicated sw row #3 from CPU J205-3.	J7-5	KEY	
J1-7	ORG-RED	Dedicated sw row #2 from CPU J205-2.	J7-6	GRN-BRN	Switch column #1 to cabinet.
J1-8	ORG-BRN	Dedicated sw row #1 from CPU J205-1.	J7-7	N/C	
J1-9	KEY		J7-8	N/C	
J1-10	BLK	Ground from CPU J205-10	J7-9	N/C	
J1-11	ORG-WHT	Switch enable from CPU J205-12.	J7-10	WHT-BRN	Switch row #1 to cabinet.
J2-1	BLK	Ground from Power Driver board J141-3.	J7-11	WHT-ORG	Switch row #3 to cabinet.
J2-2	GRY-YEL	+12VAC from Power Driver board J141-2.	J7-12	N/C	
J2-3	WHT-VIO	6.8VAC from Power Driver board J104-1.	J7-13	N/C	
J2-4	KEY		J8-1	WHT	Switch row to cabinet for Slam tilt.
J2-5	VIO	For G.I. from Power Driver board J104-3.	J8-2	KEY	
J2-6	N/C		J8-3	GRN	Switch column to cabinet for Slam Tilt.
J2-7	BLK-WHT	Signal for coin meter from Power Driver board J139-5.	J9-1	WHT-YEL	Switch row #4 to Plumb Bob Tilt.
J3-1	GRN-BRN	Switch column #1 from CPU J212-1.	J9-2	KEY	
J3-2	GRN-RED	Switch column #2 from CPU J212-2.	J9-3	GRN-BRN	Switch column #1 to Plumb Bob Tilt.
J3-3	WHT-BRN	Switch row #1 from CPU J212-4.	J9-4	WHT-RED	Switch row #2 to Interlock Switch.
J3-4	WHT-RED	Switch row #2 from CPU J212-5.	J7-5	GRN-RED	Switch column #2 to Interlock Switch.
J3-5	WHT-ORG	Switch row #3 from CPU J212-6.	J10	Ribbon cable	To cash flow mechanism (if used).
J3-6	WHT-YEL	Switch row #4 from CPU J212-7.			
J3-7	KEY				
J3-8	YEL-GRY	Lamp col #8 from Pwr Drvr brd J122-3.			
J3-9	RED-BLU	Lamp row #6 from Pwr Drvr brd J125-7.			
J3-10	RED-VIO	Lamp row #7 from Pwr Drvr brd J125-8.			
J3-11	RED-GRY	Lamp row #8 from Pwr Drvr brd J125-9.			
J4	NOT USED				
J5-1	VIO	Return to coin door.			
J5-2	WHT-VIO	6.8VAC for G.I. to coin door.			
J5-3	BLK	Ground to coin door.			
J5-4	ORG-BRN	Dedicated switch row #1 to coin door.			
J5-5	ORG-RED	Dedicated switch row #2 to coin door.			
J5-6	ORG-BLK	Dedicated switch row #3 to coin door.			
J5-7	ORG-GRN	Dedicated switch row #5 to coin door.			
J5-8	ORG-BLU	Dedicated switch row #6 to coin door.			
J5-9	ORG-VIO	Dedicated switch row #7 to coin door.			
J5-10	KEY				
J5-11	ORG-GRY	Dedicated switch row #8 to coin door.			
J5-12	GRN-RED	Switch column #2 to coin door Slam Tilt.			
J5-13	WHT-BRN	Switch row #1 to coin door Slam Tilt.			

Coin Door Interface Board Schematic A-20580



Security CPU Board Assembly A-21377-50062



J201 26-pin ribbon cable Data to/from J602.

J202 34-pin ribbon cable Data to/from J601.

J203 & J204 NOT USED

J205-1 ORG-BRN Dedicate sw row #1 to Coin Door brd J1-8.
 J205-2 ORG-RED Dedicate sw row #2 to Coin Door brd J1-7.
 J205-3 ORG-BLK Dedicate sw row #3 to Coin Door brd J1-6.
 J205-4 ORG-YEL Dedicate sw row #4 to Coin Door brd J1-5.
 J205-5 N/C
 J205-6 ORG-GRN Dedicate sw row #5 to Coin Door brd J1-4.
 J205-7 ORG-BLU Dedicate sw row #6 to Coin Door brd J1-3.
 J205-8 ORG-VIO Dedicate sw row #7 to Coin Door brd J1-2.
 J205-9 ORG-GRY Dedicate sw row #8 to Coin Door brd J1-1.
 J205-10 BLK Ground to Coin Door board J1-10.
 J205-11 KEY
 J205-12 ORG-WHT Switch enable to Coin Door brd J1-11.

J206-1 GRN-BRN Switch column #1 to playfield switches.
 J206-2 GRN-RED Switch column #2 to playfield switches.
 J206-3 GRN-ORG Switch column #3 to playfield switches.

J206-4 GRN-WHT Switch column #4 to playfield switches.
 J206-5 GRN-BLK Switch column #5 to playfield switches.
 J206-6 GRN-BLU Switch column #6 to playfield switches.
 J206-7 GRN-VIO Switch column #7 to playfield switches.
 J206-8 KEY
 J206-9 N/C

J207-1 GRN-BRN Switch column #1 to insert panel switch
 J207-2 N/C
 J207-3 N/C
 J207-4 N/C
 J207-5 N/C
 J207-6 N/C
 J207-7 N/C
 J207-8 KEY
 J207-9 N/C

J208-1 WHT-BRN Switch row #1 to playfield switches.
 J208-2 WHT-RED Switch row #2 to playfield switches.
 J208-3 WHT-ORG Switch row #3 to playfield switches.
 J208-4 WHT-YEL Switch row #4 to playfield switches.
 J208-5 WHT-GRN Switch row #5 to playfield switches.
 J208-6 KEY
 J208-7 WHT-BLU Switch row #6 to playfield switches.
 J208-8 WHT-VIO Switch row #7 to playfield switches.
 J208-9 WHT-GRY Switch row #8 to playfield switches.
 J208-10 BLK-GRY To Left Spinner switch #F7
 J208-11 BLK-VIO To Right Spinner switch #F5
 J208-12 BLK-BLU To lower left E.O.S. switch #F3.
 J208-13 BLK-GRN To lower right E.O.S. switch #F1.
 J208-14 ORG E.O.S. switch ground.

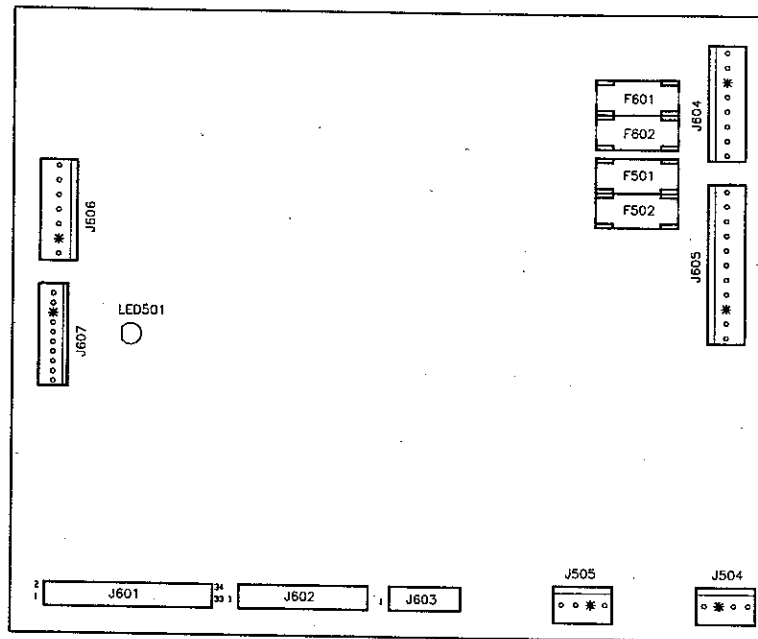
J209-1 WHT-BRN Switch row #1 to insert panel switch
 J209-2 N/C
 J209-3 N/C
 J209-4 N/C
 J209-5 N/C
 J209-6 KEY
 J209-7 N/C
 J209-8 N/C
 J209-9 N/C

J210-1 BLK Ground from Power Driver brd J101-5, 7.
 J210-2 KEY
 J210-3 BLK Ground from Power Driver brd J101-5, 7.
 J210-4 GRY +5V from Power Driver board J101-3, 4.
 J210-5 GRY +5V from Power Driver board J101-3, 4.
 J210-6 GRY-GRN +12V from Power Driver board J101-1, 2.
 J210-7 GRY-GRN +12V from Power Driver board J101-1, 2.

J211 34-pin ribbon cable Data to/from J102.

J212-1 GRN-BRN Switch col. #1 to Coin Door board J3-1.
 J212-2 GRN-RED Switch col. #2 to Coin Door board J3-2.
 J212-3 N/C
 J212-4 WHT-BRN Switch row #1 to Coin Door board J3-3.
 J212-5 KEY
 J212-6 WHT-RED Switch row #2 to Coin Door board J3-4.
 J212-7 WHT-ORG Switch row #3 to Coin Door board J3-5.
 J212-8 WHT-YEL Switch row #4 to Coin Door board J3-6.
 J212-9 BLK-BLU To switch #F8 left flipper opto brd J1-1.
 J212-10 BLK-YEL To switch #F6 right flipper opto brd J1-1.
 J212-11 BLU-GRY To switch #F4 left flipper opto brd J1-2.
 J212-12 BLU-VIO To switch #F2 right flipper opto brd J1-2.
 J212-13 ORG Ground to left flipper opto board J1-4.

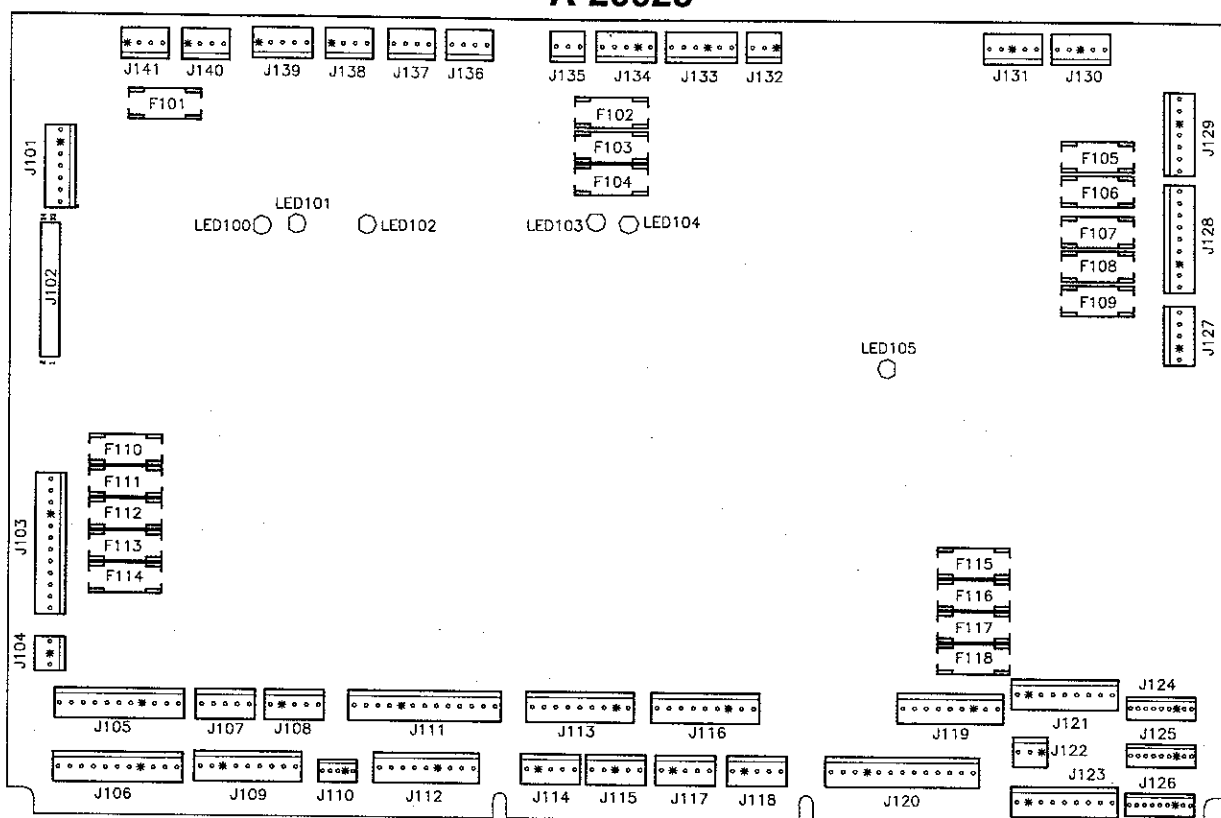
Audio Visual Board Assembly A-20516-50062



J601	34-pin ribbon cable	Data to/from CPU J202.	J504-1	BLK-YEL	Signal to speaker.
J602	26-pin ribbon cable	Data to/from CPU J201.	J504-2	KEY	
J603	14-pin ribbon cable	Data to/from Dot Matrix Display Driver board.	J504-3	N/C	
			J504-4	BLK	Signal to speaker.
J604-1	GRN		J505-1	BLK-YEL	Signal to speaker.
J604-2	BRN		J505-2	KEY	
J604-3	KEY		J505-3	N/C	
J604-4	ORG		J505-4	BLK	Signal to speaker.
J604-5	BLK				
J604-6	RED				
J604-7	WHT				
J604-8	BLU				
J605-1	WHT	80VAC from transformer secondary.			
J605-2	WHT	80VAC from transformer secondary.			
J605-3	VIO	100VAC from transformer secondary.			
J605-4	VIO	100VAC from transformer secondary.			
J605-5	GRY-WHT	18VAC from transformer secondary.			
J605-6	GRY-WHT	Loop from J605-7.			
J605-7	GRY	18VAC from transformer secondary.			
J605-8	GRY	Loop from J605-7.			
J605-9	KEY				
J605-10	GRY-GRN	18VAC from transformer secondary.			
J605-11	GRY-GRN	Loop from J605-10.			
J606-1	BLK	Ground from Power Driver brd J101-7.			
J606-2	KEY				
J606-3	BLK	Ground from Power Driver brd J101-5.			
J606-4	GRY	+5V from Power Driver board J101-4.			
J606-5	GRY	+5V from Power Driver board J101-3.			
J606-6	GRY-GRN	+12V from Power Driver board J101-2.			
J606-7	GRY-GRN	+12V from Power Driver board J101-1.			
J607	NOT USED				

Power Driver Board Assembly

A-20028



J101-1	GRY-GRN	+12V to J210-6, 7; J606-1.	J105-1	BRN	Return for G.I. to insert panel.
J101-2	GRY-GRN	+12V to J210-6, 7; J606-2.	J105-2	ORG	Return for G.I. to insert panel.
J101-3	GRY	+5V to J210-4, 5; J3-1, 3; J606-3.	J105-3	YEL	Return for G.I. to insert panel.
J101-4	GRY	+5V to J210-4, 5; J3-1, 3; J606-4.	J105-4	KEY	
J101-5	BLK	Ground to J210-1, 3; J606-5.	J105-5	N/C	
J101-6	KEY		J105-6	N/C	
J101-7	BLK	Ground to J210-1,3; J606-7.	J105-7	WHT-BRN	6.8VAC for G.I. to insert panel.
J102	34-pin ribbon cable	Data to/from CPU J211.	J105-8	WHT-ORG	6.8VAC for G.I. to insert panel.
J103-1	YEL-WHT	6.8Vac from transformer secondary.	J105-9	WHT-YEL	6.8VAC for G.I. to insert panel.
J103-2	WHT-BRN	6.8Vac from transformer secondary.	J105-10	N/C	
J103-3	WHT-BRN	6.8Vac from transformer secondary.	J105-11	N/C	
J103-4	WHT-ORG	6.8Vac from transformer secondary.	J106-1	N/C	
J103-5	WHT-YEL	6.8Vac from transformer secondary.	J106-2	N/C	
J103-6	WHT-YEL	6.8Vac from transformer secondary.	J106-3	N/C	
J103-7	ORG	6.8Vac from transformer secondary.	J106-4	KEY	
J103-8	ORG	6.8Vac from transformer secondary.	J106-5	GRN	Return for G.I. to playfield.
J103-9	KEY		J106-6	VIO	Return for G.I. to playfield.
J103-10	GRN	6.8Vac from transformer secondary.	J106-7	N/C	
J103-11	BRN	6.8Vac from transformer secondary.	J106-8	N/C	
J103-12	BRN	6.8Vac from transformer secondary.	J106-9	N/C	
J104-1	VIO	Return for G.I. to Coin Door board J2-3.	J106-10	WHT-GRN	6.8VAC for G.I. to playfield.
J104-2	KEY		J106-11	WHT-VIO	6.8VAC for G.I. to playfield.
J104-3	WHT-VIO	6.8VAC for G.I. to Coin Door brd J2-5.	J107-1	N/C	
			J107-2	KEY	
			J107-3	BLU-RED	For solenoid #26 drive to insert flasher
			J107-4	N/C	
			J107-5	BLU-YEL	For solenoid #28 drive to insert flasher
			J108	NOT USED	

Power Driver Board Continued...

J109-1	BLU-BRN	For solenoid #25 drive to plyfld flasher	J118-1	N/C	
J109-2	BLU-RED	For solenoid #26 drive to plyfld flasher	J118-2	VIO-RED	For solenoid #2 to insert coil
J109-3	BLU-ORG	For solenoid #27 drive to plyfld flasher	J118-3	N/C	
J109-4	BLU-YEL	For solenoid #28 drive to plyfld flasher	J118-4	KEY	
J109-5	N/C		J118-5	N/C	
J109-6	N/C		J119-1	RED-GRN	+50V to lower right flipper coil.
J109-7	KEY		J119-2	RED-GRN	Loop from J119-1.
J109-8	N/C		J119-3	KEY	
J109-9	N/C		J119-4	RED-BLU	Loop from J119-5.
J110-1	BRN-WHT	For solenoid #37 drive to Neon	J119-5	RED-BLU	+50V to lower left flipper coil.
J110-2	KEY		J119-6	RED-VIO	+50V to solenoid #33 for Popper
J110-3	ORG-WHT	N/C	J119-7	RED-VIO	+50V to solenoid #34 for Diverter Hold
J110-4	YEL-WHT	For solenoid #38 drive to Motor PC Board	J119-8	RED-GRY	+50V to solenoid #35 for Ringmaster Mgt
J110-5	BLU-WHT	For solenoid #39 drive Eddy Sensor Brd	J119-9	RED-GRY	+50 V to solenoid #36 for Upper Post
J111-1	BLK-BRN	For solenoid #17 drive to playfield flasher.	J120-1	ORG-GRY	For sol. #36 hold drive to Upper Post
J111-2	BLK-RED	For solenoid #18 drive to playfield flasher.	J120-2	N/C	
J111-3	BLK-ORG	For solenoid #19 drive to playfield flasher.	J120-3	YEL-GRY	For sol. #35 power drive to Ringmaster Mgt
J111-4	BLK-YEL	For solenoid #20 drive to playfield flasher.	J120-4	N/C	
J111-5	BLU-GRN	For solenoid #21 drive to playfield flasher.	J120-5	ORG-VIO	For sol. #34 hold drive to Diverter Hold
J111-6	BLU-BLK	For solenoid #22 drive to playfield flasher.	J120-6	YEL-VIO	For sol. #33 power drive to Popper
J111-7	BLU-VIO	For solenoid #23 drive to playfield flasher.	J120-7	ORG-BLU	For sol. #32 hold drive to low left flipper.
J111-8	BLU-GRY	For solenoid #24 drive to playfield flasher.	J120-8	N/C	
J111-9	KEY		J120-9	YEL-BLU	For sol. #31 power drive to low left flipper.
J111-10	N/C		J120-10	KEY	
J111-11	N/C		J120-11	ORG-GRN	For sol. #30 hold drive to low right flipper.
J111-12	N/C		J120-12	N/C	
J111-13	N/C		J120-13	YEL-GRN	For sol. #29 power drive to low right flipper.
J112-1	N/C		J121	NOT USED	
J112-2	N/C		J122-1	KEY	
J112-3	N/C		J122-2	N/C	
J112-4	KEY		J122-3	YEL-GRY	For lamp column #8 to cabinet.
J112-5	N/C		J123-1	YEL-BRN	For lamp column #1 to playfield.
J112-6	BLU-GRN	For solenoid #21 drive to insert flasher.	J123-2	YEL-RED	For lamp column #2 to playfield.
J112-7	N/C		J123-3	YEL-ORG	For lamp column #3 to playfield.
J112-8	N/C		J123-4	YEL-BLK	For lamp column #4 to playfield.
J112-9	BLU-GRY	For solenoid #24 drive to insert flasher.	J123-5	YEL-GRN	For lamp column #5 to playfield.
J113	NOT USED		J123-6	YEL-BLU	For lamp column #6 to playfield.
J114-1	BRN-BLK	For solenoid #9 drive to playfield coil.	J123-7	YEL-VIO	For lamp column #7 to playfield.
J114-2	KEY		J123-8	KEY	
J114-3	BRN-RED	For solenoid #10 drive to playfield coil.	J123-9	YEL-GRY	For lamp column #8 to playfield.
J114-4	BRN-ORG	For solenoid #11 drive to playfield coil.	J124	NOT USED	
J114-5	BRN-YEL	For solenoid #12 drive to playfield coil.	J125-1	N/C	
J114-6	BRN-GRN	For solenoid #13 drive to playfield coil.	J125-2	N/C	
J114-7	BRN-BLU	For solenoid #14 drive to playfield coil.	J125-3	KEY	
J114-8	BRN-VIO	For solenoid #15 drive to playfield coil.	J125-4	N/C	
J114-9	BRN-GRY	For solenoid #16 drive to playfield coil.	J125-5	N/C	
J115	NOT USED		J125-6	N/C	
J116-1	VIO-BRN	For solenoid #1 drive to playfield coil.	J125-7	RED-BLU	For lamp row #6 to coin door board J3-9.
J116-2	N/C		J125-8	RED-VIO	For lamp row #7 to coin door brd J3-10.
J116-3	KEY		J125-9	RED-GRY	For lamp row #8 to coin door brd J3-11.
J116-4	VIO-ORG	For solenoid #3 drive to playfield coil.	J126-1	RED-BRN	For lamp row #1 to playfield.
J116-5	VIO-YEL	For solenoid #4 drive to playfield coil.	J126-2	RED-BLK	For lamp row #2 to playfield.
J116-6	VIO-GRN	For solenoid #5 drive to playfield coil.	J126-3	KEY	
J116-7	VIO-BLU	For solenoid #6 drive to playfield coil.	J126-4	RED-ORG	For lamp row #3 to playfield.
J116-8	VIO-BLK	For solenoid #7 drive to playfield coil.	J126-5	RED-YEL	For lamp row #4 to playfield.
J116-9	VIO-GRY	For solenoid #8 drive to playfield coil.	J126-6	RED-GRN	For lamp row #5 to playfield.
J117	NOT USED		J126-7	RED-BLU	For lamp row #6 to playfield.
			J126-8	RED-VIO	For lamp row #7 to playfield.
			J126-9	RED-GRY	For lamp row #8 to playfield.

Power Driver Board Continued...

J127-1	WHT-GRN	9.8VAC from transformer secondary.
J127-2	WHT-GRN	9.8VAC loop from J127-1.
J127-3	WHT-GRN	9.8VAC from transformer secondary.
J127-4	KEY	
J127-5	WHT-GRN	9.8VAC loop from J127-3.
J128-1	WHT-RED	16VAC loop from J128-2.
J128-2	WHT-RED	16VAC from transformer secondary.
J128-3	WHT-RED	16VAC loop from J128-4.
J128-4	WHT-RED	16VAC from transformer secondary.
J128-5	BLK-YEL	16VAC loop from J128-6
J128-6	BLK-YEL	16VAC from transformer secondary.
J128-7	KEY	
J128-8	BLK-YEL	16VAC loop from J128-9.
J128-9	BLK-YEL	16VAC from transformer secondary.
J129-1	RED	9VAC from transformer secondary.
J129-2	RED	9VAC from transformer secondary.
J129-3	KEY	
J129-4	BLU-WHT	13VAC from transformer secondary.
J129-5	BLU-WHT	13VAC loop from J129-4.
J129-6	BLU-WHT	13VAC from transformer secondary.
J129-7	BLU-WHT	13VAC loop from J129-6.
J130	NOT USED	
J131	NOT USED	
J132	NOT USED	
J133-1	N/C	
J133-2	RED-BRN	+50V to coils.
J133-3	RED-BLK	+50V to coils.
J133-4	KEY	
J133-5	N/C	
J133-6	RED-WHT	+20V to playfield flashers.
J134-1	N/C	
J134-2	N/C	
J134-3	RED-BLK	+50V to insert panel coil
J134-4	KEY	
J134-5	RED-WHT	+20V to insert panel flashers.
J135	NOT USED	
J136	NOT USED	
J137	NOT USED	
J138	NOT USED	
J139-1	KEY	
J139-2	GRY-YEL	+12V to playfield PC boards.
J139-3	BLK	Ground to playfield PC boards.
J139-4	N/C	
J139-5	BLK-WHT	Signal for coin meter to coin door brd J2-7.
J140-1	KEY	
J140-2	GRY-YEL	+12V
J140-3	BLK	Ground
J140-4	N/C	
J141-1	KEY	
J141-2	GRY-YEL	+12V to Coin Door board J2-2.
J141-3	BLK	Ground to Coin Door board J2-1.
J141-4	N/C	

CIRQUE NOTES

[illegible]

LAMP MATRIX

Column Row	Yellow (B+) 								Red	
	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	CIRQUE "R" 11	CIRQUE "I" 21	SIDE SHOW 31	RING- MASTER LEFT 41	CRANK TOP 51	MIDDLE JACKPOT 61	WOW RIGHT "W" TARGET 71	EXTRA BALL 81		
2 Red-Black J125-2 Q108	GRID TOP 12	CIRQUE "C" 22	LEFT LOOP TOP 32	RING- MASTER 2 42	CRANK 2 52	RIGHT JACKPOT 62	WOW "O" TARGET 72	TOP JET BUMPER 82		
3 Red-Orange J125-4 Q103	CIRQUE "Q" 13	GRID MIDDLE/ LEFT 23	LEFT LOOP 3 33	RING- MASTER 3 43	CRANK 3 53	LIGHT STANDUP TARGET 63	WOW LEFT "W" TARGET 73	MIDDLE JET BUMPER 83		
4 Red-Yellow J125-5 Q107	CIRQUE "U" 14	GRID BOTTOM/ LEFT 24	LEFT LOOP 2 34	RING- MASTER 4 44	CRANK BOTTOM 54	LOCK STANDUP TARGET 64	RING "N" 74	LOWER JET BUMPER 84		
5 Red-Green J125-6 Q102	GRID TOP/RIGHT 15	GRID BOTTOM 25	LEFT LOOP 1 35	RING- MASTER RIGHT 45	RIGHT LOOP TOP 55	RING "R" 65	RING "G" 75	RIGHT IN-LANE 85		
6 Red-Blue J125-7 Q106	CIRQUE "S" 16	GRID MIDDLE 26	MULTIBALL 36	SPECIAL 46	RIGHT LOOP 3 56	RING "I" 66	RIGHT OUTLANE 76	VOLT LEFT 86		
7 Red-Violet J125-8 Q101	GRID MIDDLE/ RIGHT 17	GRID BOTTOM/ RIGHT 27	LOCK 37	RAZZ 47	RIGHT LOOP 2 57	SHOOT AGAIN 67	LEFT IN-LANE 77	VOLT RIGHT 87		
8 Red-Gray J125-9 Q105	LEFT JACKPOT 18	GRID TOP/LEFT 28	SPOT MARVEL 38	FRENZY 48	RIGHT LOOP 1 58	LEFT OUTLANE 68	SKILL RING 78	START BUTTON 88		

SWITCH MATRIX

DEDICATED GROUNDED SWITCHES	Column Row	White  Green 								FLIPPER GROUNDED SWITCHES
		1 Green-Brown J206-1 U20-18	2 Green-Red J206-2 U20-17	3 Green-Orange J206-3 U20-16	4 Green-White J206-4 U20-15	5 Green-Black J206-5 U20-14	6 Green-Blue J206-6 U20-13	7 Green-Violet J206-7 U20-12	8 Green-Gray J206-9 U20-11	
Orange-Brown J205-1 LEFT COIN CHUTE U17-5 D1	1 White-Brown J208-1 U18-11	BACKBOX LUCK 11	SLAM TILT 21	TROUGH EJECT 31	LEFT LANE 41	LEFT SLINGSHOT 51	LIGHT STANDUP TARGET 61	LEFT SAUCER 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	WIRE RAMP ENTER 12	COIN DOOR CLOSED 22	TROUGH BALL 32	RING- MASTER UP 42	RIGHT SLINGSHOT 52	LOCK STANDUP TARGET 62	RIGHT SAUCER 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	RIGHT LOOP UPPER 23	TROUGH BALL 33	RING- MASTER MIDDLE 43	UPPER JET BUMPER 53	RAMP ENTER 63	NOT USED 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 34	RING- MASTER DOWN 44	MIDDLE JET BUMPER 54	RAMP MAGNET 64	BIG BALL REBOUND 74	NOT USED 84	BLUE-GRAY J212-11 LOWER LEFT FLIPPER OPTO F4
Orange-Green J205-6 U16-9 Normal Function Test Function Escape D5	5 White-Green J208-5 U19-11	LEFT LOOP UPPER 15	INNER LOOP LEFT 25	TROUGH BALL 35	LEFT RAMP MADE 45	LOWER JET BUMPER 55	RAMP MADE 65	VOLT RIGHT 75	NOT USED 85	BLACK-VIOLET J208-11 RIGHT SPINNER F5
Orange-Blue J205-7 U16-11 Normal Function Test Function Volume Down D6	6 White-Blue J208-7 U19-9	TOP EDDY 16	LEFT IN-LANE 26	POPPER OPTO 36	TROUGH UPPER 46	SKILL SHOT 56	RAMP LOCK LOW 66	VOLT LEFT 76	NOT USED 86	BLACK-YELLOW J212-10 UPPER RIGHT FLIPPER OPTO F6
Orange-Violet J205-8 U16-7 Normal Function Test Function Volume Up D7	7 White-Violet J208-8 U19-5	RIGHT IN-LANE 17	LEFT OUTLANE 27	"WOW" TARGETS 37	TROUGH MIDDLE 47	RIGHT OUTLANE 57	RAMP LOCK MIDDLE 67	NOT USED 77	NOT USED 87	BLACK-GRAY J208-10 LEFT SPINNER F7
Orange-Gray J205-9 U16-5 Normal Function Test Function Begin Test D8	8 White-Gray J208-9 U19-7	SHOOTER LANE 18	INNER LOOP RIGHT 28	TOP TARGETS 38	LEFT LOOP ENTER 48	RING "N", "G" 58	RAMP LOCK HIGH 68	NOT USED 78	NOT USED 88	BLACK-BLUE J212-9 UPPER LEFT FLIPPER OPTO F8

WARNINGS & NOTICES

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***CAUTION: Transport this game ONLY
With the hinged backbox DOWN!***