

BAD CATS

Operator's Handbook

presenting:

Game Audits
Game Adjustments
Game Switches & Locations
Game Lamps & locations
Solenoids/Flashers & Locations
Playfield Parts

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

BAD CATS Audit Table

Audit Item (Lower)	Descriptive Phrase (Upper Display)	Audit Item Value (Lower Display)
AU 01	LEFT COINS [chute next to coin door hinge]	432
02	CENTER COINS	0
03	RIGHT COINS	398
04	PAID CREDITS	830
05	TOTAL PLAYS	
06	TOTAL FREE (Total Free Plays)	
07	PERCENT FREE (% Free Plays)	
08	REPLAY AWARDS	
09	PERCENT REPLAY (% Replay Awards)	
10	SPECIAL AWARDS	
11	PERCENT SPECIAL (% Special Awards)	
12	MATCH AWARDS	
13	HSTD (High Score to Date) CREDITS	
14	PERCENT HSTD (% HSTD Credits)	
15	EXTRA BALLS	
16	PERCENT EX. BALL (% Extra Balls)	
17	AV. BALL TIME (Average Time in Seconds)	
18	MINUTES OF PLAY (Minutes of Play)	
19	BALLS PLAYED	
20	REPLAY1 AWARDS	
21	REPLAY2 AWARDS	
22	REPLAY3 AWARDS	
23	REPLAY4 AWARDS	
24	1 PLAYER GAMES	
25	2 PLAYER GAMES	
26	3 PLAYER GAMES	
27	4 PLAYER GAMES	
28	BURN IN CYCLES	
29	UNLM. MIL. LIT (# of times 'Unlimited Million' was lit)	
30	UNLM. MIL. AWARDED (# of awards of 'Unlimited Million')	
31	TWENTY MIL. LIT (# of times 20 Million was lit)	
32	TWENTY MIL. AWARDED (# of times 20 Million awarded)	
33	TGR. RMP. COMPL. (# of Tiger Ramp Completions)	
34	TGR RAMP MISSED (# of Tiger Ramp Noncompletions)	
35	GOLDFISH RAMPS (# of Center Ramp shots)	
36	JACKPOTS AWARDED (# of times 'JACKPOT' awarded)	
37	TOTAL WHEEL SPINS (# of spins of Seafood Wheel)	
38	CURIOSITY SPINS (# of 'Curiosity' Spins)	
39	H.S.RESET COUNTER	
40	0.0-0.4 MIL. SCORE (# of games <500K)	
41	0.5-0.9 MIL. SCORE (# of games ≥500K, <1M)	
42	1.0-1.4 MIL. SCORE (# of games ≥1M, <1.5M)	
43	1.5-1.9 MIL. SCORE (# of games ≥1.5M, <2.0M)	
44	2.0-2.9 MIL. SCORE (# of games ≥2.0M, <3.0M)	
45	3.0-3.9 MIL. SCORE (# of games ≥3.0M, <4.0M)	
46	4.0-4.9 MIL. SCORE (# of games ≥4.0M, <5.0M)	
47	5.0-5.9 MIL. SCORE (# of games ≥5.0M, <6.0M)	
48	6.0-7.9 MIL. SCORE (# of games ≥6.0M, <8.0M)	
49	8.0-9.9 MIL. SCORE (# of games ≥8.0M, <10.0M)	
50	10M - 99.9MIL. SCORE (# of games ≥10M, <99.9M)	
51	AV. MIN. GAME TIME (Average Game in Minutes)	
52	TOTAL FISH COL.	
53	FISH COL. 10X	
54	FISH 5 MILLION	
55	BONUS MULTIPLIER	
56	LEFT DRAINS	
57	RIGHT DRAINS	
58	CONSOL. EX. BALLS	

NOTE: 1. The numbers shown in this column for Items 1 through 4 are examples. Entries for all items depend on the amount of play; thus, they will vary from location to location.

BAD CATS Game Adjustment Table

Adjustment Item (Lower)	Descriptive Phrase (Upper Display)	Factory Setting ^B (Lower)		
		Domestic (US/Can.)	French	W Ger/ European
Ad 01	AUTO REPLAY ¹ or FIXED REPLAY ¹	10 (%)		
02	REPLAY START (or REPLAY LEVEL 1) ¹	SCORES		4,000,000
03	REPLAY LEVELS (or REPLAY LEVEL 2) ¹	5,000,000		
04	(REPLAY LEVEL 3) ¹	01 (or OFF)		02
05	(REPLAY LEVEL 4) ¹	(see text)		
06	REPLAY AWARD	(see text)		
07	SPECIAL AWARD	Credit		
08	MATCH FEATURE	Credit		
09	BALLS / GAME	10 (%)	8%	
10	TILT WARNING	03		
11	MAXIMUM EX. BALL	03	01	
12	MAXIMUM CREDITS	12		
13	HIGHEST SCORES	10	20	30
14	BACKUP HI. SCR.1	On		
15	BACKUP HI. SCR. 2	5,000,000		7,000,000
16	BACKUP HI. SCR. 3	4,500,000		6,500,000
17	BACKUP HI. SCR. 4	4,000,000		6,000,000
18	HI. SCR.1 CREDITS	3,500,000		5,500,000
19	HI. SCR.2 CREDITS	01	03	03
20	HI. SCR.3 CREDITS	01		00
21	HI. SCR.4 CREDITS	01		00
22	H. S. RESET EVERY	01		00
23	FREE PLAY	3,000		1000
24	U.S.A. 2 COINAGE (2 COINS 1 PLAY) ^{2,3,4}	NO		
25	LEFT UNITS	USA 2	French 1	German 2
26	CENTER UNITS	01	02	08
27	RIGHT UNITS	04	10	12
28	UNITS/ CREDIT	01	20	30
29	UNITS/ BONUS	01	05	05
30	MINIMUM UNITS	00	20	00
31 - 58	Game-specific Play / Coinage Adjustments (detailed in text, the Game-specific Adjustments Setting Table and the Difficulty Setting Comparison Table)			
59 ⁵	INSTALL ADDABALL	NO		
60 ⁵	INSTALL 5-BALL	NO		
61 ⁵	INSTALL NOVELTY	NO		
62 ⁵	INSTALL EX. EASY	NO		
63 ⁵	INSTALL EASY	NO		
64 ⁵	INSTALL MEDIUM	NO		
65 ⁵	INSTALL HARD	NO		
66 ⁵	INSTALL EX. HARD	NO		
67	AUTO BURN-IN	NO		
68	CLEAR COINS	NO		
69	CLEAR AUDITS	NO		
70	INSTALL FACTORY	NO		

NOTES:

- Automatic Replay: percentage value range is adjustable from 5 to 25%, via the Credit Button. Item 02 permits changing the factory setting value for Replay Start Level (valid for next 50 games played). Item 03 permits setting up to four replay levels, with values as detailed in text describing Item 03. For Fixed Replay Scores, set Auto Replay value to 1 less than 5(%) via the Credit Button. Go to Items 02, 03, 04, and 05; install their replay level scores. Turn off any replay level by setting 00 as its value.
- Phrase in parentheses is Factory Setting. Phrase appears in player displays. Press Credit Button to change setting of the game pricing of Item 24.
- To change country OR coinage setting, press Credit button to obtain 24 Standard Settings, followed by a Custom Setting. The Custom Setting activates Items 25 through 30. When a Standard Setting is used, Items 25 through 30 are set automatically, and cannot be changed.
- Refer to Pricing Table and text describing these items.
- Special Preset Adjustment, whose effects are noted in the Game Adjustment text.
- Entries in Factory Setting columns for French and W. German games show only differences from entries in first (US / Can.) column.

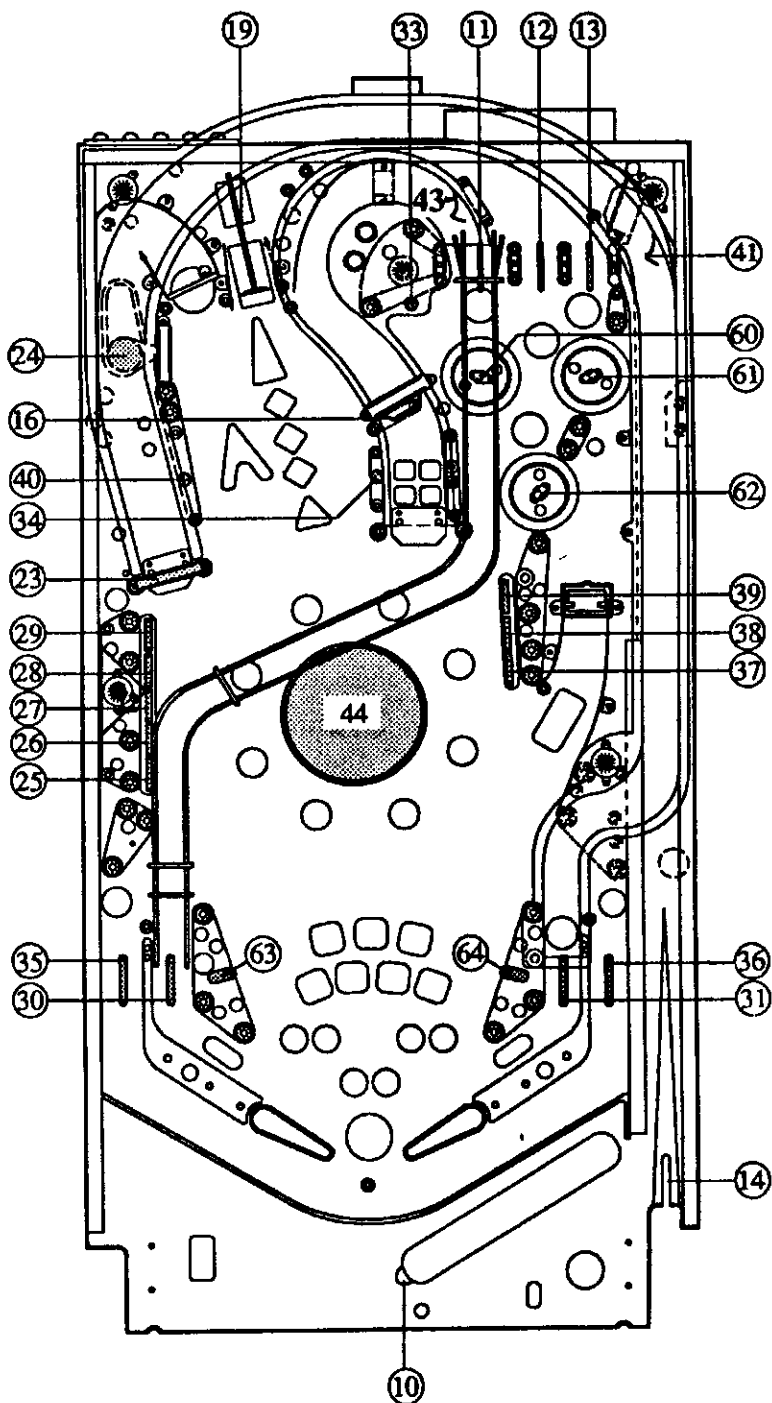
Game Switches Matrix

BAD CATS Switch-Matrix Table

COLUMN ROW	1 Q45 GRN-BRN 1J8-1	2 Q49 GRN-RED 1J8-2	3 Q44 GRN-ORN 1J8-3	4 Q48 GRN-YEL 1J8-4	5 Q43 GRN-BLK 1J8-5	6 Q47 GRN-BLU 1J8-7	7 Q42 GRN-VIO 1J8-8	8 Q46 GRN-GRY 1J8-9
1 WHT- BRN 1J10-9	Plumb Bob Tilt 1	Playfield Tilt 9		Bird Target 1 25	Rubber 1 33	Exit Tiger Ramp 41		Flipper Right 57
2 WHT- RED 1J10-8	C Side Power A/C Relay 2	Outhole 10		Bird Target 2 26	Rubber 2 34			Flipper Left 58
3 WHT- ORN 1J10-7	Credit Button 3	T 11	In-line Fish Target 19	Bird Target 3 27	Left Drain Lane 35	Exit Cntr Ramp 43		
4 WHT- YEL 1J10-6	Right Coin Chute 4	O 12		Bird Target 4 28	Right Drain Lane 36	Seafood Wheel 44		Left Jet Bumper 60
5 WHT- GRN 1J10-5	Center Coin Chute 5	Y 13		Bird Target 5 29	Milk Target 1 37			Right Jet Bumper 61
6 WHT- BLU 1J10-3	Left Coin Chute 6	Ball Shooter 14	Doghouse Kickbig 22	Left Return Lane 30	Milk Target 2 38			Lwr Jet Bumper 62
7 WHT- VIO 1J10-2	Slam Tilt 7		Enter Tiger Ramp 23	Right Return Lane 31	Milk Target 3 39			BL Kicker ("sling") 63
8 WHT- GRY 1J10-1	High Score Reset 8	Enter Cntr Ramp 16	Fish Collect 24		Rubber 3 40			BR Kicker ("sling") 64

BL = Bottom Left BR = Bottom Right

Game Switches Playfield Locations

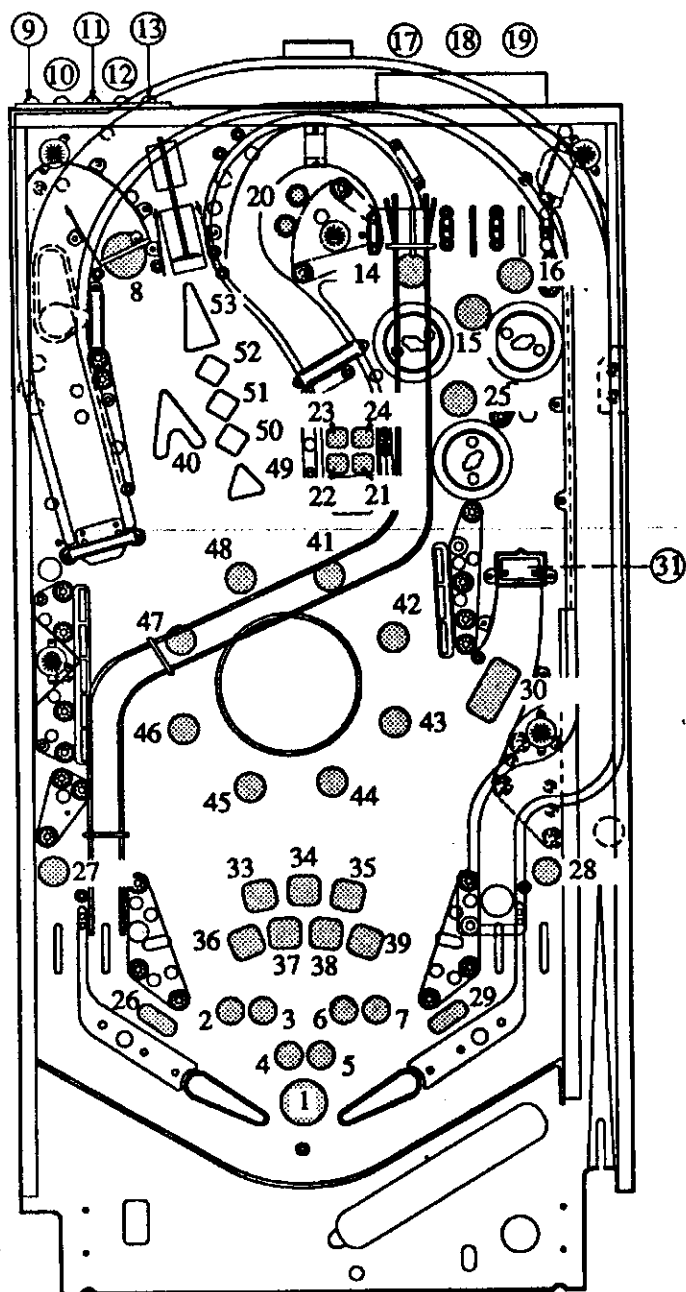


Game Lamps Matrix

BAD CATS Lamp-Matrix Table

COLUMN ROW	1 Q66 YEL-BRN 1J7-1	2 Q64 YEL-RED 1J7-2	3 Q62 YEL-ORN 1J7-3	4 Q60 YEL-BLK 1J7-4	5 Q58 YEL-GRN 1J7-6	6 Q56 YEL-BLU 1J7-7	7 Q54 YEL-VIO 1J7-8	8 Q52 YEL-GRY 1J7-9
Q80 RED- BRN 1J6-1	Meow Again 1	50K (Tiger Ramp) 9	T (Back Panel) 17	5,000 (Jet Bumpers) 25	B 33	Seafood Wheel 1 41	25K (Fishbone) 49	1,000,000 JACKPOT (Backglass) 57
Q81 RED- BLK 1J6-2	2X 2	100K (Tiger Ramp) 10	O (Back Panel) 18	Left Return Lane 26	A 34	Seafood Wheel 2 42	50K (Fishbone) 50	2,000,000 JACKPOT (Backglass) 58
Q82 RED- ORN 1J6-3	3X 3	200K (Tiger Ramp) 11	Y (Back Panel) 19	SPECIAL (Left Outlane) 27	D 35	Seafood Wheel 3 43	75K (Fishbone) 51	3,000,000 JACKPOT (Backglass) 59
Q83 RED- VEL 1J6-5	4X 4	Unlimited Million (Tiger Ramp) 12	JACKPOT (Cntr Ramp) 20	SPECIAL (Right Outlane) 28	C 36	Seafood Wheel 4 44	100K (Fishbone) 52	4,000,000 JACKPOT (Backglass) 60
Q84 RED- GRN 1J6-6	5X 5	20,000,000 (Tiger Ramp) 13	30K (Cntr Ramp) 21	Right Return Lane 29	A 37	Seafood Wheel 5 45	500K (Fishbone) 53	5,000,000 JACKPOT (Backglass) 61
Q85 RED- BLU 1J6-7	6X 6	T (Playfield) 14	50K (Cntr Ramp) 22	SPIN (Sealod Wheel) 30	T 38	Seafood Wheel 6 46	Lamp (Shed) (Backglass) 54	6,000,000 JACKPOT (Backglass) 62
Q86 RED- VIO 1J6-8	7X 7	O (Playfield) 15	100K (Cntr Ramp) 23	Doghouse 31	S 39	Seafood Wheel 7 47	Barbecue (Backglass) 55	7,000,000 JACKPOT (Backglass) 63
Q87 RED- GRY 1J6-9	Collect Fish 8	Y (Playfield) 16	EX. BALL (Cntr Ramp) 24		Collect 10X (Fish Bone-us) 40	Seafood Wheel 8 48	Candle (Backglass) 56	8,00,000 JACKPOT (Backglass) 64

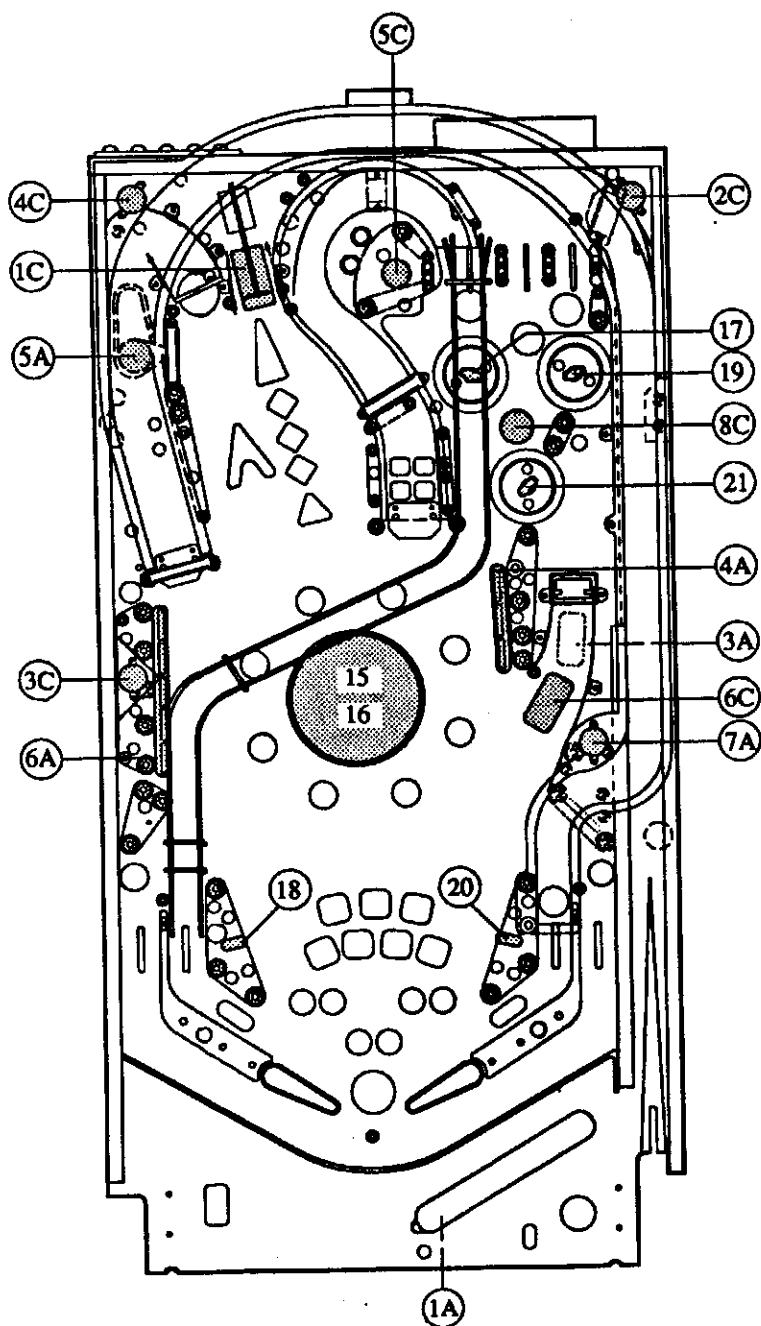
Game Lamps Playfield Locations



BAD CATS Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections		Driver Trmr	Solenoid Part Number Flashlamp Type b= Backbox; p=PIfield
				CPU Bd	Playfield/ Cabinet		
01A ³	Outhole Kicker	Switched	Vio-Brn	1P11-1	5J1-9: 5J4-9 (A)	Q33	AE-23-800
01C ³	Flair/Trash Flashers	Switched	Blk-Brn	(Gry-Brn)	5J5-9 (C)	Q33	#906/#89 flashlamps 1p,1b
02A ³	Knocker	Switched	Vio-Red	1P11-3	5J1-7: 5J4-8 (A)	Q25	AE-23-800
02C ³	Tiger Flasher	Switched	Blk-Red	(Gry-Red)	5J5-8 (C)	Q25	#906/#89 flashlamps 1p,1b
03A ³	Doghous Kickbig	Switched	Vio-Orn	1P11-4	5J1-8: 5J4-7 (A)	Q32	AE-23-800
03C ³	Bird Bank Flashers	Switched	Blk-Orn	(Gry-Orn)	5J5-7 (C)	Q32	#906/#89 flashlamps 1p,1b
04A ³	Milk Bottle Bank (3-Dr Tgt)	Switched	Vio-Yel	1P11-5	5J1-5: 5J4-6 (A)	Q24	AE-28-1200
04C ³	Left Tiger Flashers	Switched	Blk-Yel	(Gry-Yel)	5J5-5 (C)	Q24	#906/#89 flashlamps 1p,1b
05A ³	Garbage Can (Eject)	Switched	Vio-Gm	1P11-6	5J1-4: 5J4-5 (A)	Q31	AE-23-800
05C ³	Jackpot Flashers	Switched	Blk-Gm	(Gry-Gm)	5J5-4 (C)	Q31	#906/#89 flashlamps 1p,1b
06A ³	Bird Cage Bank (5-Dr Tgt)	Switched	Vio-Blu	1P11-7	5J1-3: 5J4-4 (A)	Q23	AE-24-900
06C ³	Sealfood Flasher	Switched	Blk-Blu	(Gry-Blu)	5J5-3 (C)	Q23	#906 flashlamps 3p
07A ³	(Not Used)	Switched	Vio-Blk	1P11-8	5J1-2: 5J4-2 (A)	Q30	
07C ³	Doghous Flashers	Switched	Blk-Vio	(Gry-Vio)	5J5-2 (C)	Q30	#906/#89 flashlamps 1p,1b
08A ³	(Not Used)	Switched	Vio-Gry	1P11-9	5J1-1: 5J4-1 (A)	Q22	
08C ³	Barbeque Flashers	Switched	Blk-Gry	(Gry-Blk)	5J5-1 (C)	Q22	#906/#89 flashlamps 1p,1b
09	Cat (Backbox) Motor	Controlled	Bm-Blk	1P12-1	5J2-9: 5J8-9: 2J4-3	Q17	14-7954
10	Playfield Gnt Flrm Relay	Controlled	Bm-Red	1P12-2	5J2-8: 5J8-8: 2J4-5	Q9	5580-09555-01 4a
11	Backbox Gnt Flrm Relay	Controlled	Bm-Orn	1P12-4	5J2-6: 5J8-7: 2J4-6	Q18	5580-09555-01 4a
12	AVC Select Relay	Controlled	Bm-Yel	1P12-5	5J2-5	Q8	5580-09555-01 5
13	Woman (Backbox) Motor	Controlled	Bm-Gm	1P12-6	5J2-4: 5J8-5	Q15	14-7954
14	BAD CATS Flashers (Backbox)	Controlled	Bm-Blu	1P12-7	5J2-4: 5J8-3	Q7	#89 flashlamps 4b
15	Sealfood Wheel Coil 2	Controlled	Bm-Vio	1P12-8	5J2-2: 5J8-2	Q14	14-7948
16	Sealfood Wheel Coil 1	Controlled	Bm-Gry	1P12-9	5J2-1: 5J8-1	Q6	14-7948
17	Left Jet Bumper	Special #1	Blu-Brn	1P19-7	5J3-7: 5J7-7	Q75	AE-23-800
18	Left Kicker ("aling")	Special #2	Blu-Red	1P19-4	5J3-6: 5J7-6	Q71	AE-26-1500
19	Right Jet Bumper	Special #3	Blu-Orn	1P19-3	5J3-3: 5J7-3	Q73	AE-23-800
20	Right Kicker ("aling")	Special #4	Blu-Yel	1P19-6	5J3-4: 5J7-5	Q69	AE-26-1500
21	Lower Jet Bumper	Special #5	Blu-Gm	1P19-8	5J3-2: 5J7-2	Q77	AE-23-800
22	(Not Used)	Special #6	Blu-Blk	1P19-9	5J3-1: 5J7-1	Q79	
-	Right Flipper	-	Orn-Vio	1P19-1	2J5-5: 2J10-7	-	
-	Lower Right Flipper	-	[Blu-Vio] ²	-	[2J10-1: 2J8-15]	-	FL11630/50VDC
-	Left Flipper	-	Orn-Gry	1P19-2	2J5-4: 2J10-6	-	
-	Lower Left Flipper	-	[Blu-Gry] ²	-	[2J10-2: 2J8-4]	-	FL11630/50VDC

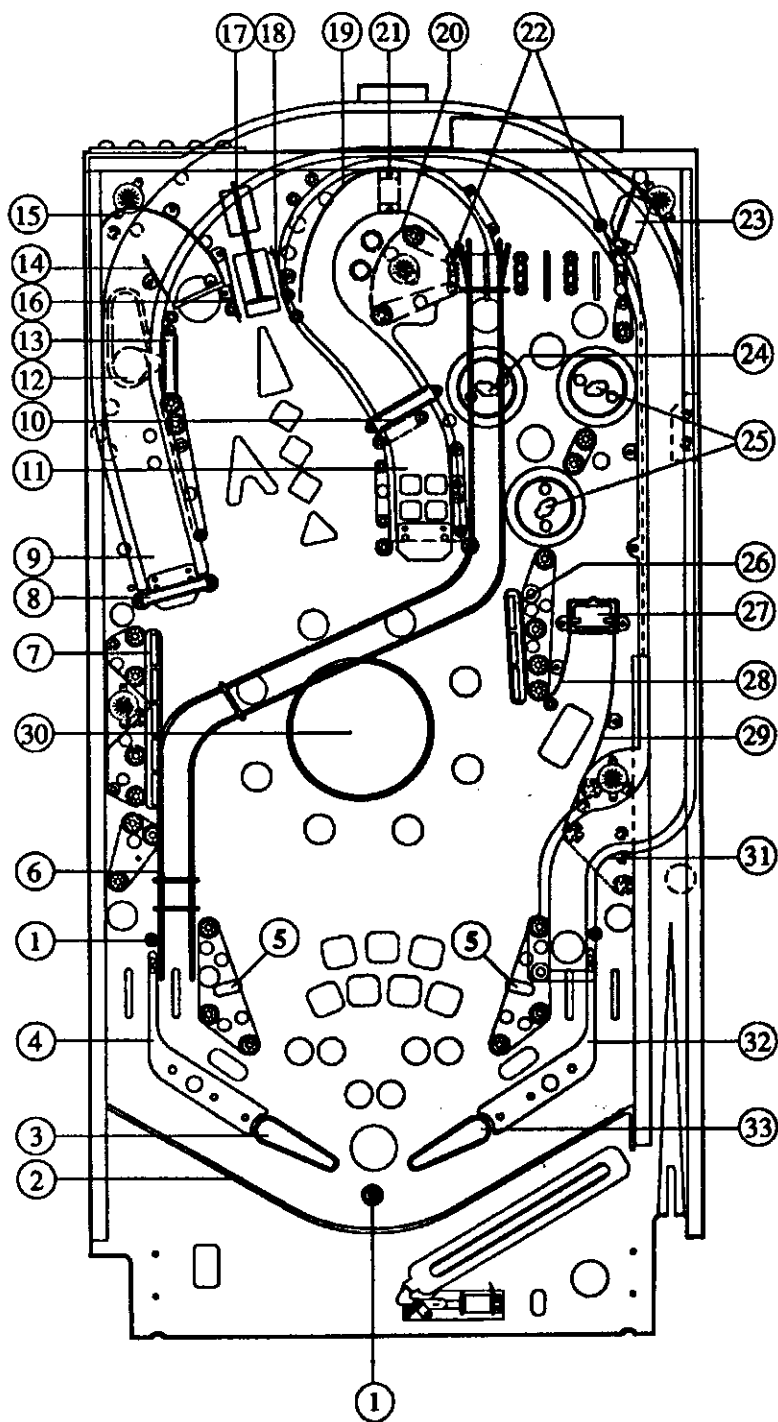
Notes 1. Wire colors, except flipper Orn-Vio and Orn-Gry, are ground connections (to coil terminal with unbanded end of diode). Flipper Orn-Vio and Orn-Gry wires connect from CPU Board to flipper switch. 2. Flipper connections shown in braces are from flipper switch to flipper coil. 3. "A" circuits are pulsed, when Sol. 12 is de-energized; "C" circuits are pulsed, with Sol. 12 energized. Wire colors in brackets are those from respective A and C terminals corresponding to the J1-terminal connection listed for the Aux Power Driver Bd, which controls the device pulsing by Sol. 12. 4. Relay is mounted on Relay Bd, (4a) p/n C-11908-1; (4b) C-11902-1. 5. Relay is mounted on Aux Power Driver Bd, C-12247 in the backbox.



Playfield Parts Listing

Item	Part No.	Description
1	03-7542-9	Post
a)	23-6300	Rubber
2	12-6842	Bottom Arch Fence
3	C-11626-L-3	Lwr Left Flipper Assy
a)	20-9250-6	Lg Flipper Paddle & Shaft
4	B-12363-L	Left Flipper Return Frame
5	B-12665	Kicker Arm ("Sling") Assy
a)	B-11203-R-1	Coil & Bracket Assy
6	12-6865	Wire Ramp
7	C-13116	5-Bank Drop Target Assy
8	A-13109	Left Ramp Ball Gate (Entry)
a)	12-6874	Gate Wire
b)	12-6853-1	Switch Actuating Wire
9	R-12974	Left Ramp Assembly
10	A-12846	Cntr Ramp Ball Gate (Entry)
a)	12-6847	Gate Wire
b)	12-6873-1	Switch Actuating Wire
11	D-12975	Center Ramp Assembly
12	B-9361-R-5	Top Left Eject Hole
a)	B-9362-R-1	Coil & Bracket Assembly
b)	03-7351-1-9	Tr Red Plastic Ball Seat
13	A-9465-L	Ball Gate Assembly
a)	12-6565	Gate Wire
14	A-13161	Ball Guide Assy
15	B-13110	Ball Guide Assy
16	A-13019	Ball Guide Assembly
17	B-13016	Linear Target Arm Assy
18	A-13019	Ball Guide Assembly
19	C-13021	Ball Guide Assembly
20	12-6868	Wireform
21	A-12511	1-Way Ball Gate
22	12-6466-3	Wireform, 3/4" (2 ea, 4 sites)
23	A-12511	1-Way Ball Gate
24	B-13123	Jet Bumper Assy
a)	B-9415-1	Bmpr Coil/Bracket Assy
25	B-9414	Jet Bumper Assy (2)
a)	B-9415-1	Bmpr Coil/Bracket Assy
26	C-11223-1	3-Bank Drop Target Assy
27	C-11987-1	Doghouse Kickbig Assembly
28	A-13249	Ball Guide Assy
29	B-13248	Ball Guide Assy
30	C-12036-2	Seafood Wheel Assembly
31	12-6466-5	Wireform, 1-1/4"
32	B-12363-R	Right Flipper Return Frame
33	C-11626-R-3	Lwr Right Flipper Assy
a)	20-9250-6	Flipper Arm on Shaft
34	Parts below are located beneath Bottom Arch:	
a)	01-3569	Ball Trough (runway)
b)	01-3570-3	Upper Ball Trough Guide
c)	01-3571-3	Lower Ball Trough Guide
d)	12-6557	Baffle Wire
e)	B-8039-2	Outhole Kicker

Playfield Parts Locations



WARNINGS & NOTICES

WARNING

FOR SAFETY AND RELIABILITY, **WILLIAMS ELECTRONICS GAMES** does not recommend or authorize any substitute parts or modifications of **WILLIAMS'** equipment. Use of Non-**WILLIAMS'** parts, or modifications of game circuitry, may adversely affect game play, or may cause injuries.

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THIS 'CONVERSION' PRINCIPLE ALSO APPLIES to unauthorized facsimiles of **WILLIAMS'** equipment, logos, designs, publications, assemblies, and games (or game features not deemed to be in the public domain), whether manufactured with **WILLIAMS'** components or not.

WARNING

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

WARNING

FCC STICKER. Check the back of your **BAD CATS** game to verify that an FCC-certification sticker was attached to your game at the factory.

All games that leave **WILLIAMS'** plants have been tested and found to comply with FCC Rules. Because the sticker is proof of this fact, legal repercussions to the owner and distributor of the game may result, if the sticker is missing. If you receive any **WILLIAMS** game, manufactured after December 1982, that has no FCC sticker, call **WILLIAMS** for advice or write us a note on your Game Registration Card. Be sure that the card bears your game's serial number.

RF Interference Notice

CABLE HARNESS PLACEMENTS and ground strap routing on this game have been designed to keep RF radiation and conduction within levels accepted by the FCC Rules.

TO MAINTAIN THESE LEVELS, reposition harnesses and reconnect ground straps to their original placements, if they become disconnected during maintenance.

Notice

BAD CATS is a trademark of **WILLIAMS ELECTRONICS GAMES, INC.**

FOR SERVICE...

CALL your authorized
WILLIAMS' Distributor.

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ELECTRONICS GAMES, INC.

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Chicago, IL 60618

WARNING:

Transport this game **ONLY**
with hinged backbox **DOWN!**