

FISH TALES



OPERATIONS MANUAL

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

Jumper Charts

Display	W1	W2
1M/2M/4M ROM	In	Out
512K/1M ROM	Out	In

Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections			Driver Trnstr	Solenoid Part Number Flashlamp Type	
				Playfield - Insert - Hood					
01	Ball Shooter	High Power	Vio-Brn	J130-1			Q82	AE-23-800	
02	Catapult	High Power	Vio-Red	J130-2			Q80	AL-23-800	
03	Ball Popper	High Power	Vio-Org	J130-4			Q78	AE-24-900	
04	Left Slng	High Power	Vio-Yel	J130-5			Q76	AE-27-1200	
05	Right Slng	High Power	Vio-Grn	J130-6			Q64	AE-27-1200	
06	Left Gate	High Power	Vio-Blu	J130-7			Q66	A-14406	
07	Knocker	High Power	Vio-Blk	J130-8			Q68	AE-23-800	
08	Backbox Fish	High Power	Vio-Gry	J130-9			Q70	AE-23-800	
09	Outhole	Low Power	Bm-Blk	J127-1			Q58	AE-27-1200	
10	Ball Release	Low Power	Bm-Red	J127-3			Q56	AE-26-1200	
11	Eject Hole	Low Power	Bm-Org	J127-4			Q54	AE-26-1200	
12	Drop Target Up	Low Power	Bm-Yel	J127-5			Q52	AE-26-1200	
13	Drop Target Down	Low Power	Bm-Gm	J127-6			Q50	SM1-26-600	
14	Left Jet Bumper	Low Power	Bm-Blu	J127-7			Q48	AE-26-1200	
15	Center Jet Bumper	Low Power	Bm-Vio	J127-8			Q46	AE-26-1200	
16	Right Jet Bumper	Low Power	Bm-Gry	J127-9			Q44	AE-26-1200	
17	Jackpot Flasher	Flasher	Blk-Brn	J126-1			Q42	1PL #906	
18	Super Jackpot Flasher	Flasher	Blk-Red	J126-2			Q40	1PL #906	
19	Instant Multi-ball Flasher	Flasher	Blk-Org	J126-3	J125-3		Q38	1PL #906	2 IB #906
20	Light Extra Ball Flasher	Flasher	Blk-Yel	J126-4	J125-5		Q36	1PL #906	2 IB #906
21	Rock the Boat Flasher	Flasher	Blu-Grn	J126-5	J125-6		Q28	1PL #906	2 IB #906
22	Video Mode Flasher	Flasher	Blu-Blk	J126-6	J125-7		Q30	1PL #906	2 IB #906
23	Hold Bonus Flasher	Flasher	Blu-Vio	J126-7	J125-8		Q34	1PL #906	1 IB #906
24	Not Used	Flasher	Blu-Gry				Q32		
25	Reel Flasher	Flasher	Blu-Brn	J122-1	J124-1	J124-1	Q26	1PL #89/1HD #906	2 IB #906
26	Top Left Flasher	Flasher	Blu-Red	J122-2			Q24	1PL #89/1PL #906	
27	Casters Club Flasher	Flasher	Blu-Org	J122-3	J124-3		Q22	1PL #89	1 IB #906
28	Reel Motor	Low Power	Blu-Yel	J122-4			Q20	14-7967	
	General Illumination			Playfield - Insert - Cabinet-Hood					
01	Backbox G.I.	G.I.	Wht-Brn	J121-7			Q18	#555	
02	Backbox G.I. / Hood	G.I.	Wht-Org	J121-8		J120-8	Q10	#555	
03	Playfield G.I.	G.I.	Wht-Yel	J120-9			Q14	#44	
04	Backbox G.I.	G.I.	Wht-Gm		J121-10		Q16	#555	
05	Playfield G.I. / Coin Door	G.I.	Wht-Vio	J120-11		J119-1	Q12	#44	
	Flipper Circuits			Playfield		Pwr Hold			
	Lower Right Flipper		Blu-Yel	J907-8, 9		Q4 Q11		FL-11629	
	Lower Left Flipper		Gry-Yel	J907-6, 7		Q3 Q9		FL-11629	

Williams Electronics Games, Inc. reserves the right to make modifications and improvements to its products.

The specifications and parts identified in this manual are subject to change without notice.

FISH TALES

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FISH TALES

Rules and Shot Maps

FISH TALES RULES

Top L-I-E Lanes
Advance bonus multiplier.

Locks
Lock three balls in the Casters Club to load the fishing reel and start Multi-ball.

During Multi-ball...
Lock one ball in the Casters Club to light the Jackpot Lock. Lock two balls in the Casters Club to light the Double Jackpot. Make the top right Eject to collect.

The Boat
Make Port and Starboard ramp shots to advance School bonus and light Monster Fish (Hurry-up).

Captive Ball
Captive Ball is advanced by making Long Cast Loop shots. Hit the Captive Ball to score the lit value; Hold Bonus, Light Video Mode, Rock the Boat, Light Extra Ball, or Instant Multi-ball.

Stretch the Truth
After catching a fish at either target bank, make the Spinner shot to Stretch the Truth for a larger score value and light Tales Told.

Tales Told
Light all four tales to enter Rock the Boat.

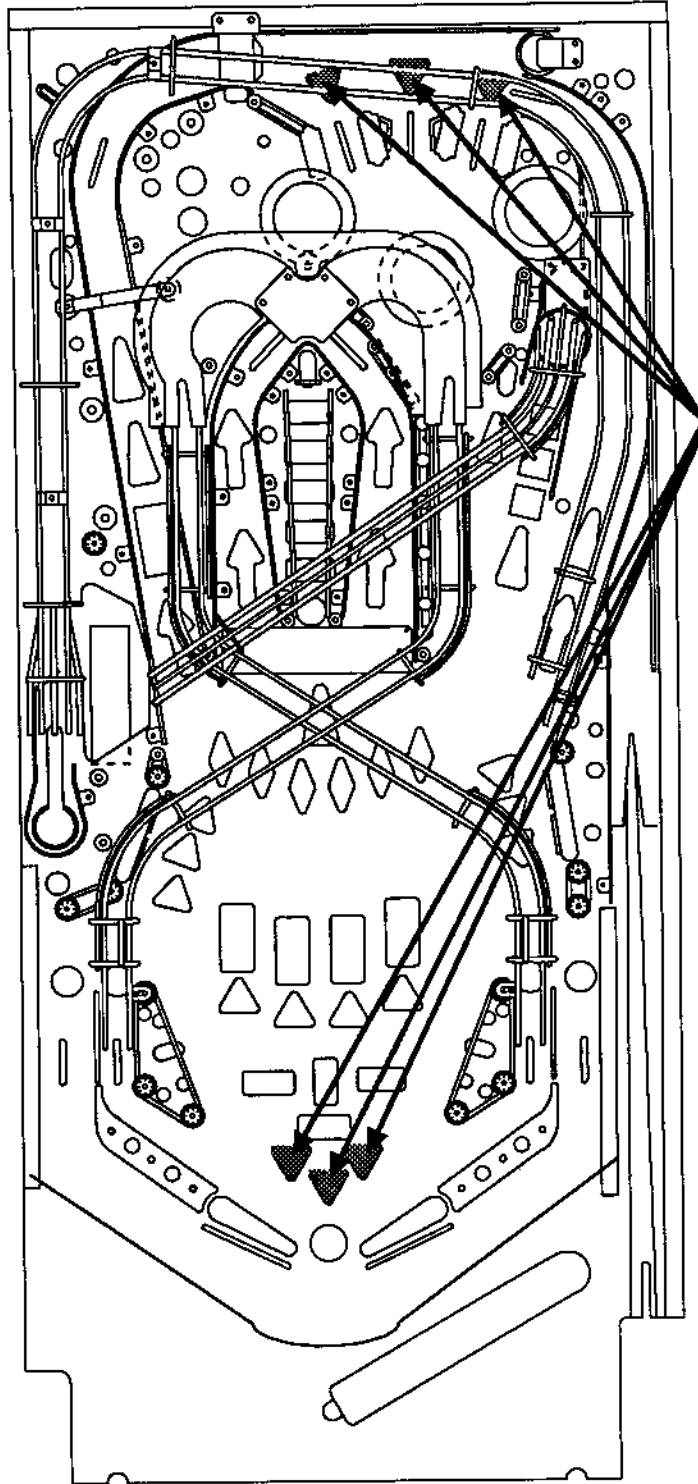
Rock the Boat
Any shot to the boat scores 10 million points.

Feed Frenzy
Catch all four fish on the Stringer to light Feed Frenzy.

Video Mode
Hit passing boats and watercraft by using pushbutton on reel handle on cabinet front.

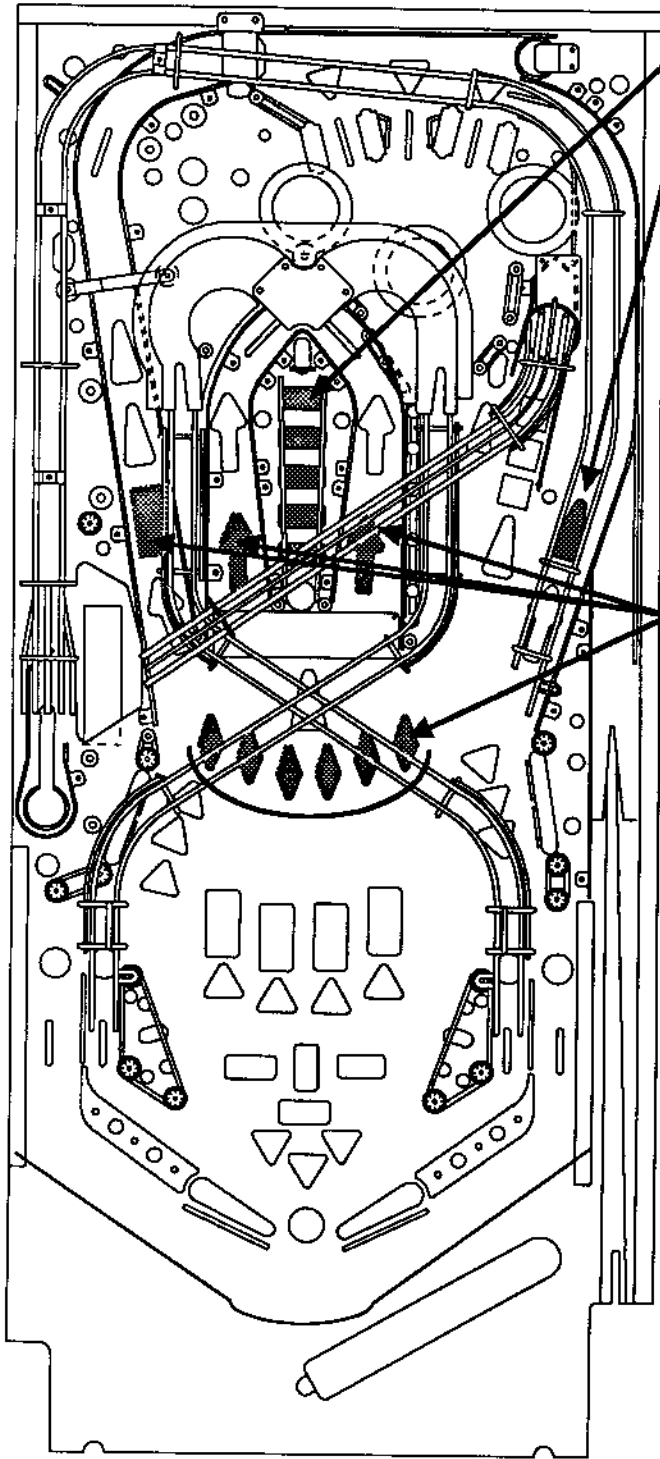
Special
After Captive Ball has been collected completely, continue hitting Captive Ball to light Specials at outlanes.

FISH TALES



Advance Bonus X:
Top L-1-E Lanes advance
Bonus Multiplier 2X, 3X,
4X, 5X, 6X, 7X.

FISH TALES



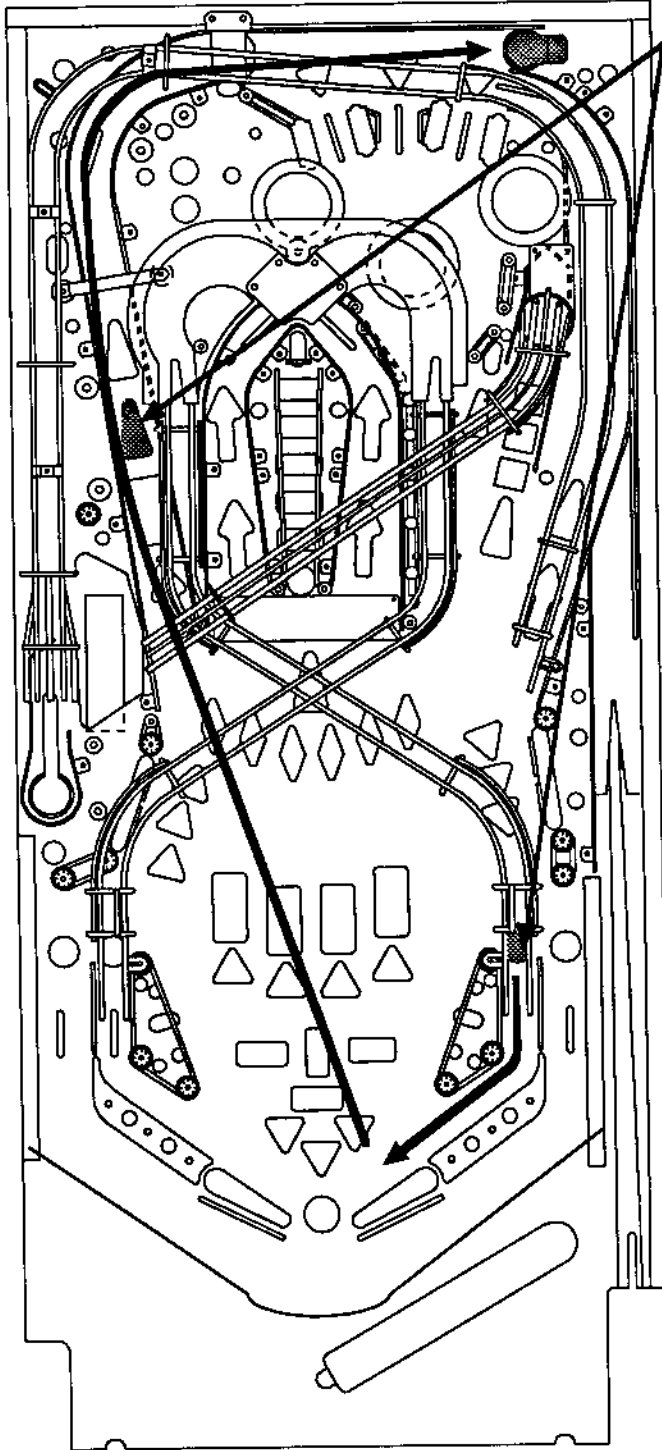
Grab Your Gear or Captive Ball:

Captive Ball values are advanced by making Long Cast Loop shot. Each completed loop advances, -from the bottom to top- Hold Bonus, Video Mode, Rock the Boat, Light Extra Ball and Instant Multi-ball. Hit Captive Ball to score each of these respectively.

The Boat:

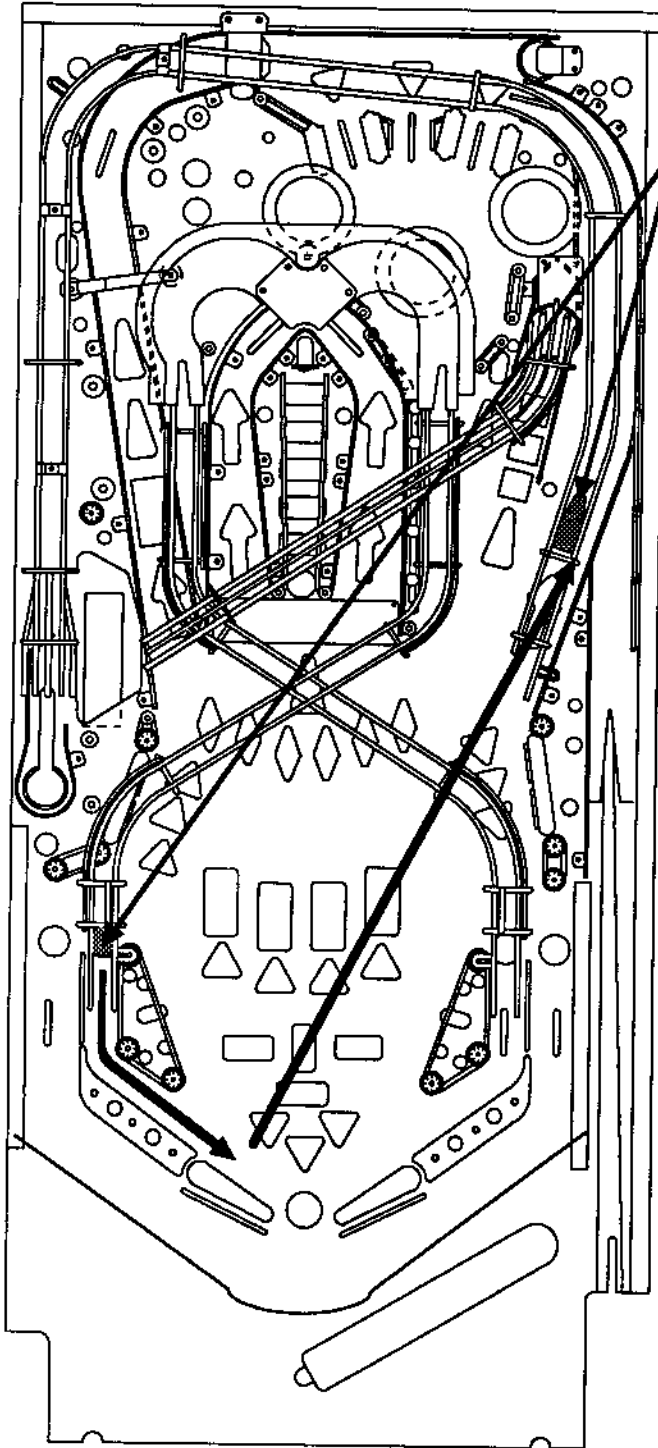
Making Port and Starboard Boat shots advance School of Fish lamps 1 Million points each. Light Monster Fish Bonus is completed in six shots. (Hurry-Up), timed event.

FISH TALES



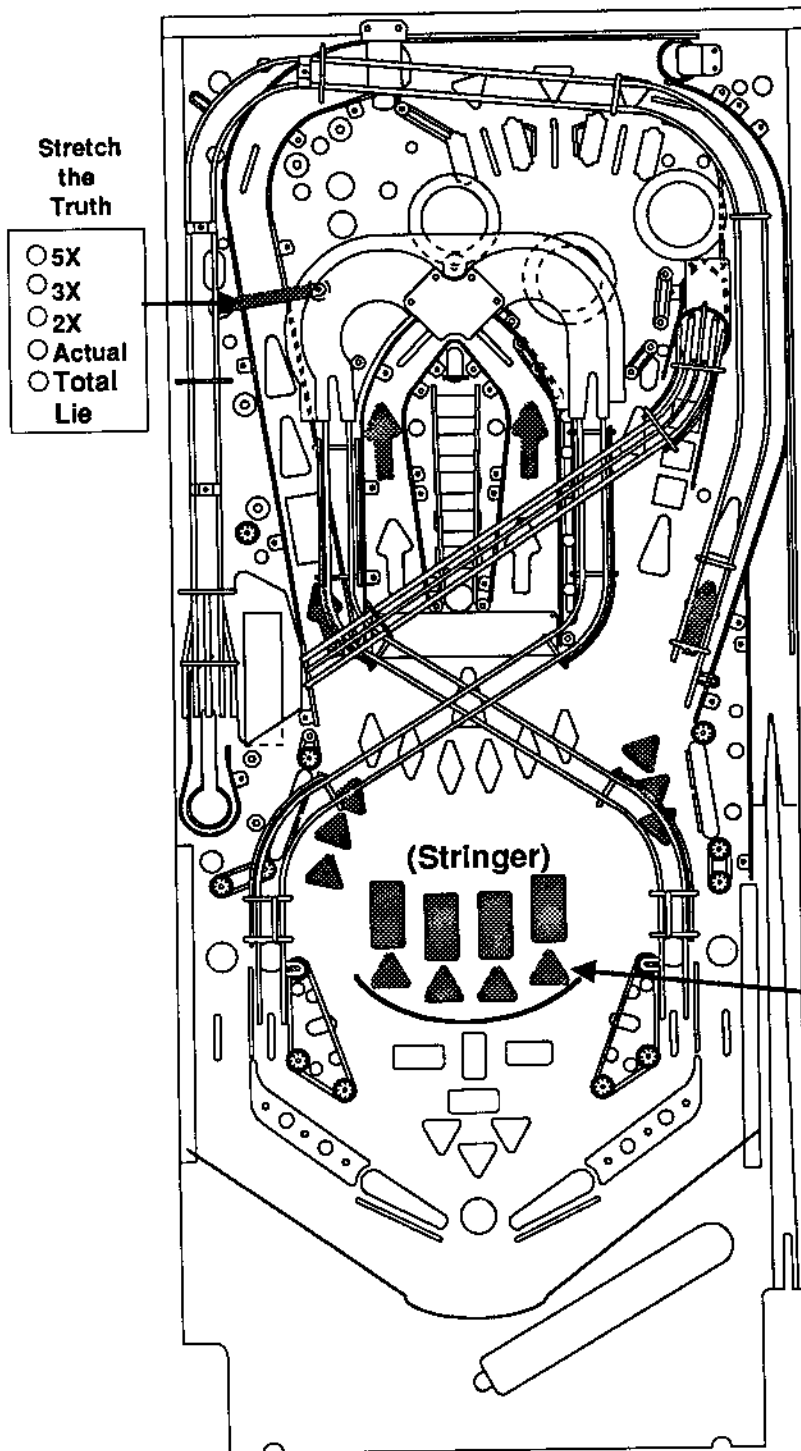
Fish Finder:
(Random Feature)
The Right Return Lane, when lit via the L-I-E Lanes, lights Fish Finder for one of the following:
Light Extra Ball
Super Jets
Feed Frenzy
Instant Multi-ball
Advance Captive Ball and Video Mode
Score Value (shown in display) Collect at Eject.

FISH TALES



Long Cast Loop:
Lit Left Return Lane
lights arrow on top right
marked Long Cast Loop,
Scores Multiple values
and advances Captive
Ball values.

FISH TALES



Feed Frenzy:

Complete Fish targets at the middle right and middle left of the playfield to advance Stringer. When Stringer is complete, shoot for the four Feed Frenzy arrows. Each arrow is worth 5 Million for a timed period which is operator adjustable.

Stretch the Truth:

Upon catching a Fish by completing the targets on the middle left and right sides of the playfield, make the Spinning target shot to activate the lamps on the vertical plastic. The vertical plastic contains the following:

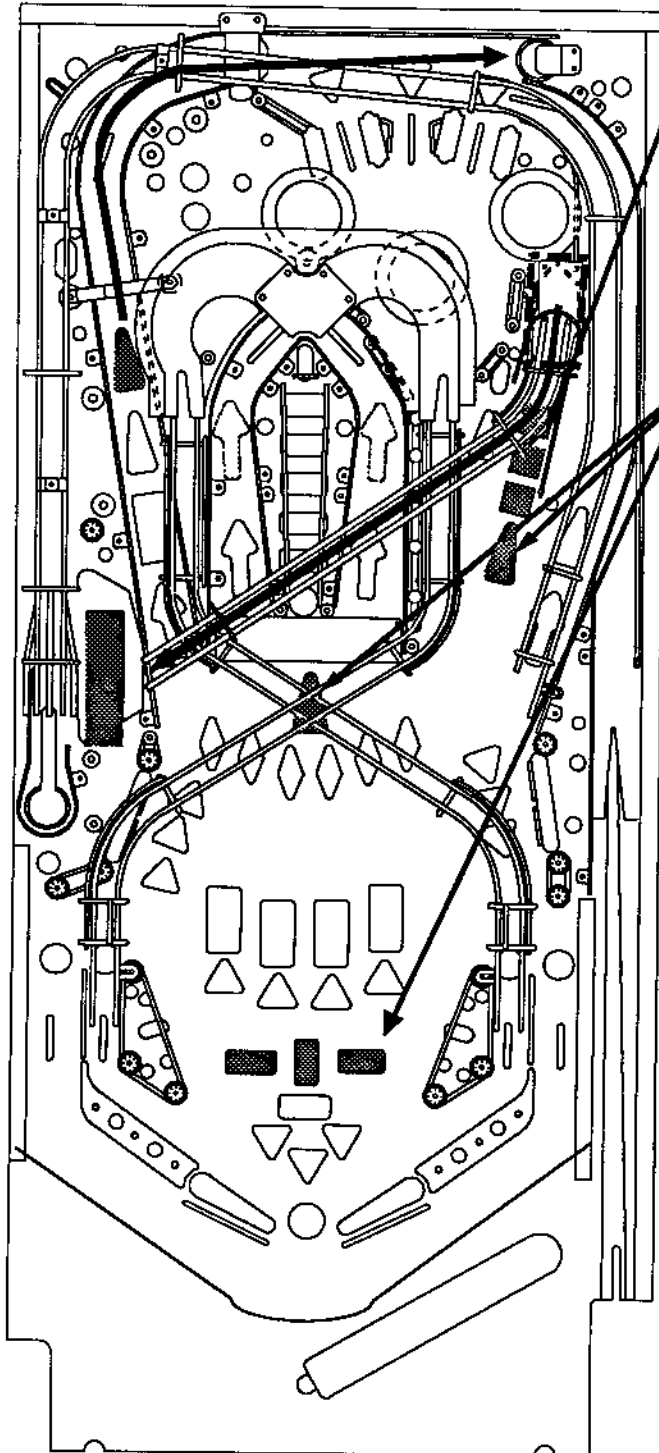
- 5X Actual size
- 3X Actual Size
- 2X Actual Size
- Actual Size
- Total Lie

When the Spinner stops moving, the lamp light stops on one of these positions, scoring that amount. Score being multiplied is that of the Fish caught.

Tale Told:

After each attempt to Stretch the Truth, light one Tale Told lamp. Light all four and start Rock the Boat feature.

FISH TALES



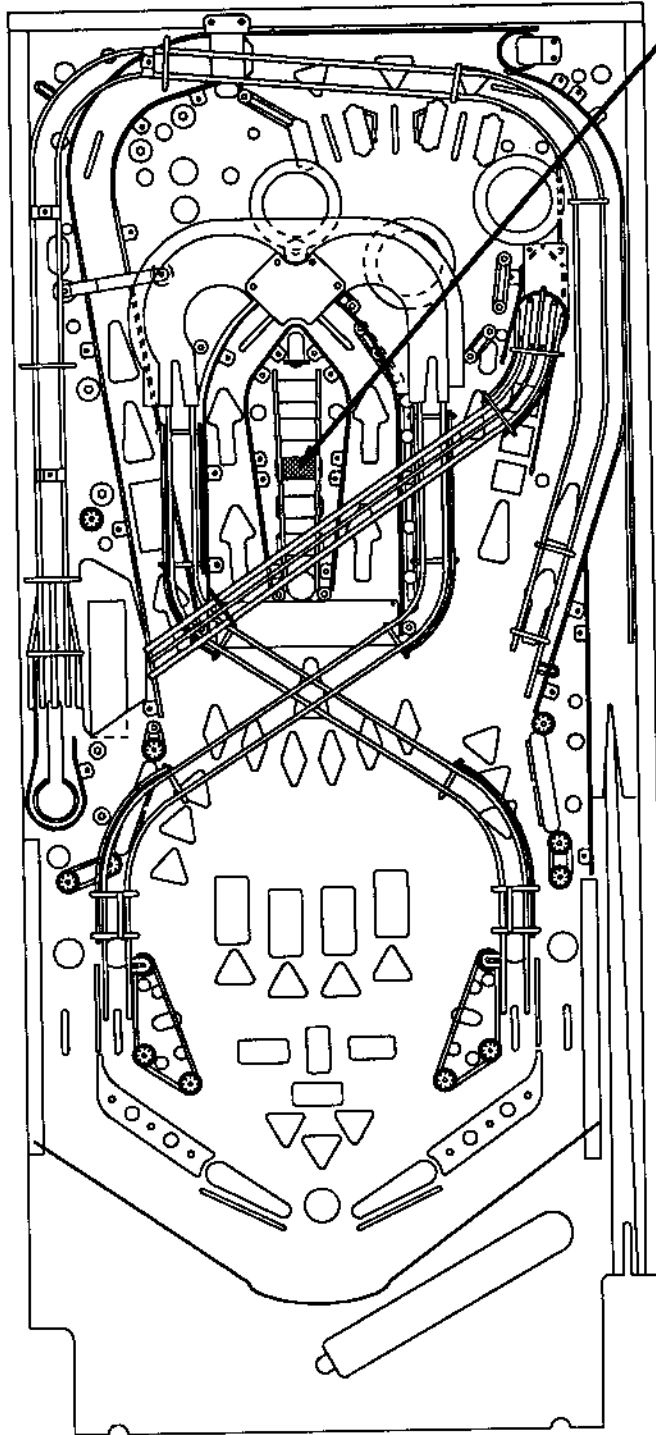
Multi-ball™:

Knock down single drop target to light Lock lamps 1, 2 & 3, (under Club House). Lock three balls in Fishing Reel to get into Multi-ball. (Balls are transferred from Fishing Reel to Club House.)

Jackpot and Doubles Jackpot:

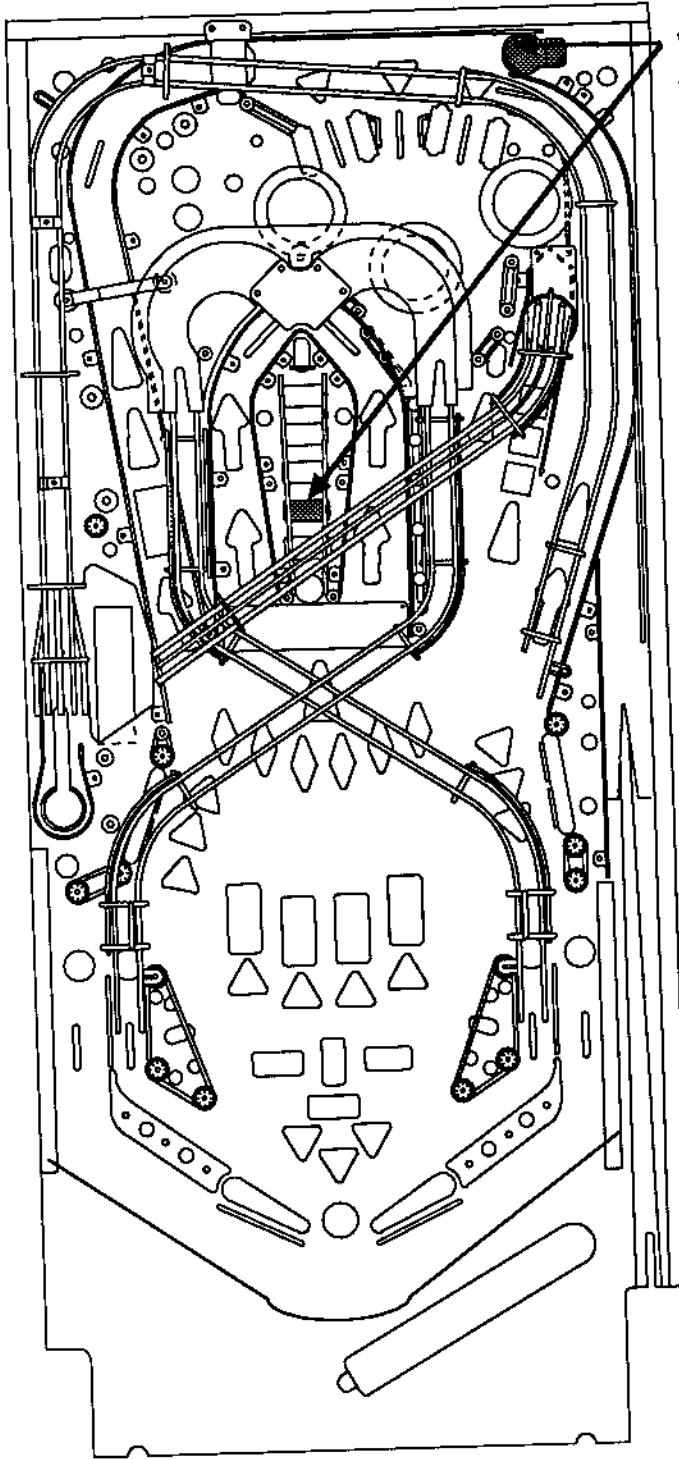
When in Multi-ball, lock a ball in the Fishing Reel to light Jackpot, (at the left Spinner lamp). Lock a second ball in the Fishing Reel to light Doubles Jackpot, (at the Casters Club). Make the shot at the left Spinner lane to collect either Jackpot. Each Jackpot collected advances the Fishing Category, Tropical - Fresh Water - Deep Sea. Light all three to light Super Jackpot.

FISH TALES



Rock the Boat:
When Captive Ball lamps
advance to 3rd position,
make Port, Starboard
and Captive Ball shots
for 10 Million.

FISH TALES



Video Mode:
After Hitting Captive Ball,
(Position 2), hit the Top
Right Eject for Video Mode.
Shoot passing Boats and
Extra Ball Symbol for Extra
Ball.

Section 1

Game

Operation

Information

IC	Type	ROM SUMMARY		Board	Part Number
		Location			
Game ROM	27c040	U6		CPU	A-5343-50005-1
Sound ROM	27c040	U18		Audio	A-5343-50005-3

Pinball Game Assembly Instructions

This is a four ball game.
Three balls in play and one captive ball.

Cabinet Dimensions
Approx.

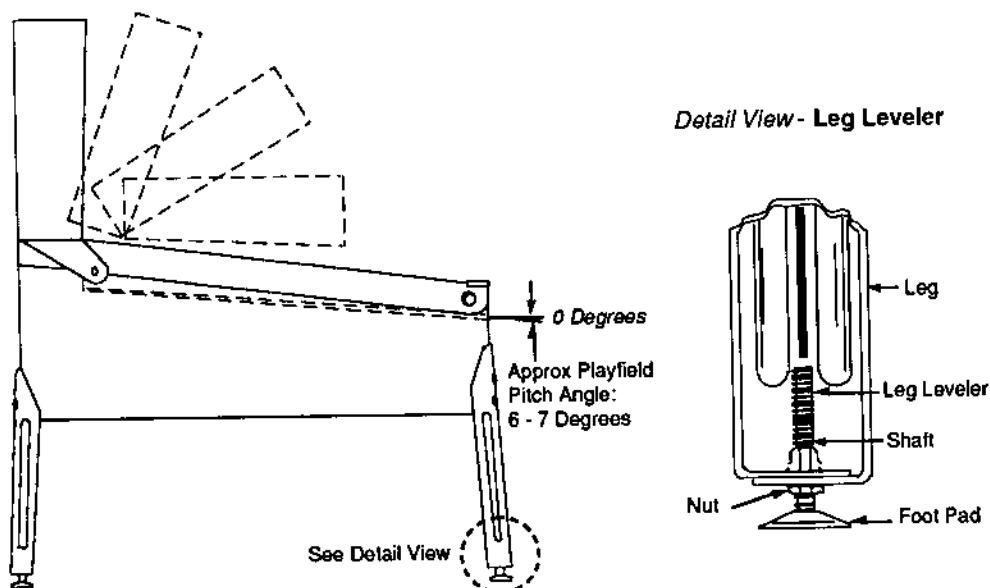
Length: 55" Approx.

Height: 85"

Width: 26" Approx.

Weight: 285 lbs

1. Remove all cartons, parts, and other items from the shipping container, and set them aside.
2. Place the cabinet on a support and attach rear legs using leg bolts. Leg levelers and leg bolts are provided among the parts in the cash box.
3. Attach the front legs (after installing leg levelers), using leg bolts.



4. Reach into the cabinet and backbox and ensure that the interconnecting cables are not kinked or pinched. Be careful to avoid damaging wires at any stage of the assembly process.

5. Raise the hinged backbox upright and latch it into position. Unlock the backbox, and remove the backglass. Remove the shipping block holding the Insert Board. Unlatch and open the Insert Board. Carefully lift up the Speaker Panel and lay it down on the playfield glass. (Be careful not to damage the Dot Matrix Display/Driver.) This allows access to the bolt holes used for securing the backbox upright. To secure the backbox, install the washer-head mounting bolts through the bottom holes of the backbox into the threaded fasteners in the cabinet. Close and latch the Insert Board. Replace the Speaker Panel. Reinstall the backglass, and lock the backbox.

If the Fish Panel on the top of the backbox is removed, be sure to slide the cover plate over the cable hole and screw it into place with the #8 torx bit.

CAUTION

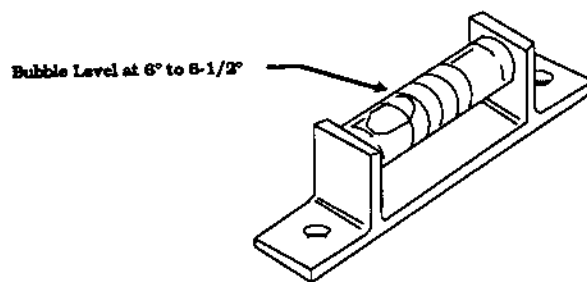
FAILURE TO INSTALL the backbox mounting hardware properly can cause personal injury.
NEVER TRANSPORT a pinball game with the hinged backbox erect. Always lower the backbox forward onto the playfield cabinet on a layer of protective material to prevent marring or damage and possible personal injury.

6. Extend each leg leveler *slightly* below the leg bottom, so that all four foot pads are extended about the same distance. Remove the cabinet from its support and place it on the floor.

7. Unlock and open the coin door. Move the molding latch lever toward the left side of the game. Lift the front molding off the playfield cover glass return the latch lever toward the right, and close the coin door. Carefully slide the glass downward, until it clears the grooves of the left and right side moldings. Lift the glass up and away from the game.

8. Place a level or an inclinometer on the playfield surface. Adjust the leg levelers for proper playfield level (side-to-side). **Note:** It is recommended that this measurement be made **ON** the playfield, not the cabinet nor the playfield cover glass. Tighten the nut on each leg leveler shaft to maintain this setting.

The Tru-Pitch™ level is located on the shooter rail. This allows the operator to accurately pitch the game - without removing the glass - when it is first set in a new location. The first line on the level is approximately 6 degrees. Every line after that is approximately another 1/2 degree of pitch. We recommend you pitch the game with the nose of the bubble between the first and second line on the level (between 6 and 6-1/2 degrees).

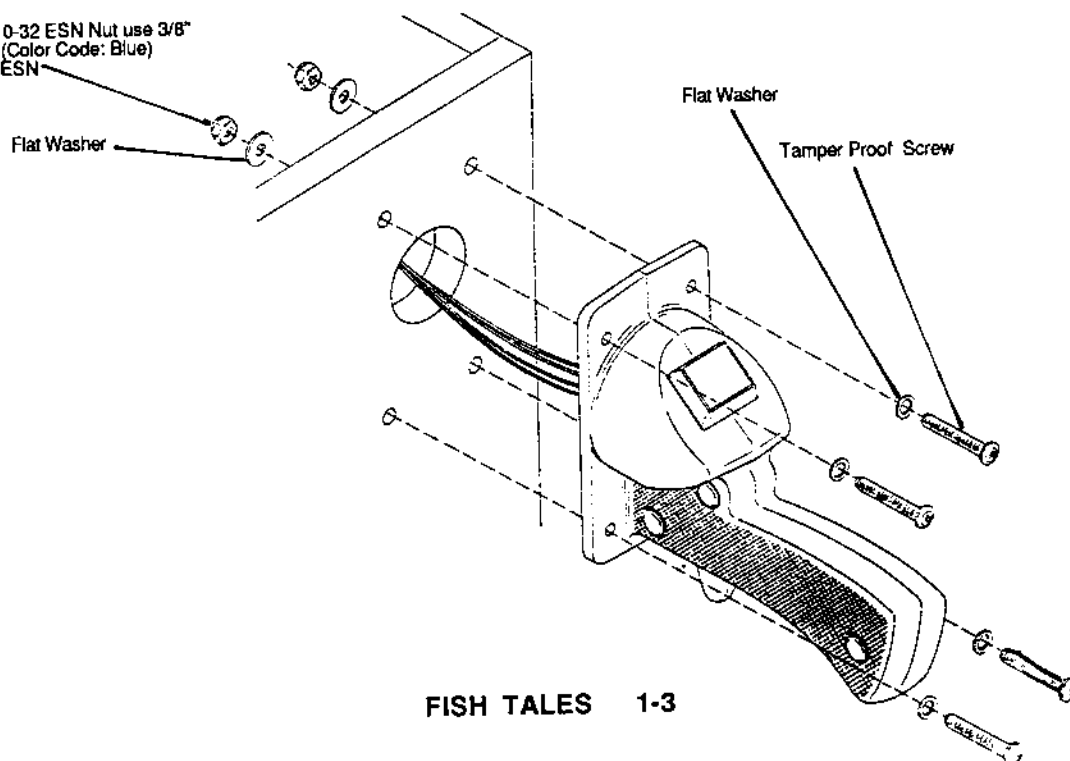


! IMPORTANT !

Playfield pitch angle can affect the operation of the plumb bob tilt. The plumb bob weight is among the parts in the cash box; the operator should install the weight after setting the desired playfield pitch angle.

9. Install the Fishing Reel handle mechanism. Lift the playfield. Place the Fishing Reel handle into the hole in the cabinet (where the plunger is normally located). From the front of the cabinet, slide a washer and a cap head screw through each of the four holes. From the inside of the cabinet, slide a washer over each of the four screws. Secure into place with an ESNA nut. Plug the handle cable into the cabinet cable. Be sure the wire colors match on both connectors. Lower the playfield.

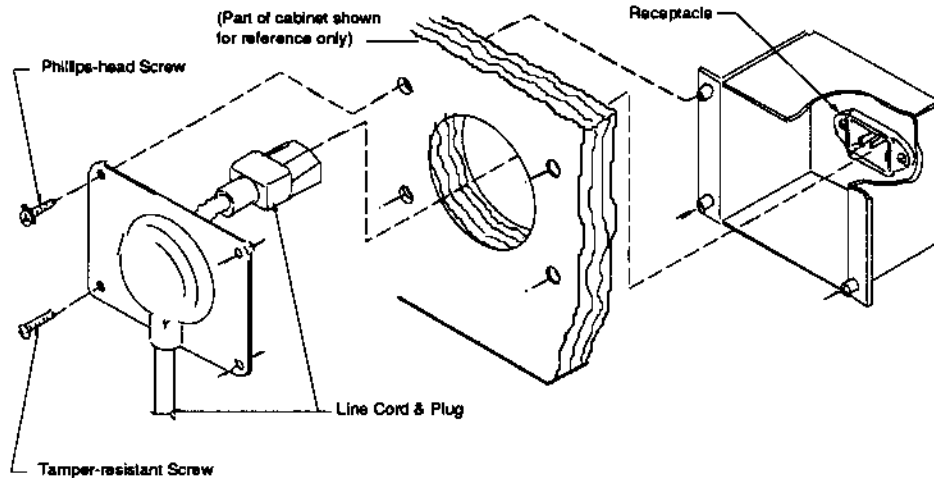
To install 10-32 ESN Nut use 3/8" Nut Driver (Color Code: Blue)
Nut 10-32 ESN



10. Move the game into the desired location; recheck the level and pitch angle of the playfield.
11. Be sure the correct number of ball are installed. **FISH TALES** uses four balls; three balls in play and one captive ball.
12. Remove foam from the captive ball mechanism. Grasp the foam at the bottom of the captive ball trough and pull it out of the mechanism.
13. Install playfield mylars if desired.

Note: The **FISH TALES** playfield is coated with a covering called Diamond Plate™ and does not require a protective mylar. However, mylars can be purchased through your local Williams Distributor. Specify part number 03-8674-1 for full playfield mylar.

14. To attach the line cord, remove the envelope stapled to the inside of the cabinet (near the cashbox). Remove the four Phillips-head screws that mount to line cord cover plate to the rear cabinet. Match the prongs on the plug with the holes in the receptacle, and push the line cord securely into place. Make sure the cord is aligned with the indentation on the cover plate (indentation should point toward bottom of the cabinet). Remount line cord cover plate. If desired, four tamper resistant screws have been provided in an envelope marked "Security Screws" (located in the cashbox) to remount cover plate.



15. Clean and reinstall the playfield cover glass. Prepare the game for player operation.

Control Locations

Cabinet Switches

The On-Off Switch is on the bottom of the cabinet near the right front leg.

The Start Button is a pushbutton to the left of the coin door on the cabinet exterior. Press the Start button to begin a game, or during the diagnostic mode, to ask for HELP.

Coin Door Switches

The operator controls all game adjustments, obtains bookkeeping information, and diagnoses problems, using only four pushbutton switches mounted on the inside of the coin door. The Coin Door Buttons have two modes of operation Normal Function and Test Function.

Normal Function

The Service Credits Button puts credits on the game that are not included in any of the game audits.

The Volume Up Button raises the sound level of the game. Press and hold the button until the desired level is reached.

The Volume Down Button lowers the sound level of the game. Press and hold the button until the desired level is reached. See Adjustment A.1 28 to shut sound Off completely.

The Begin Test Button starts the Menu System Operation and changes the Coin Door Buttons from Normal Function to Test Function.

Test Function

The Escape Button allows you to get out of a menu selection or return to the Attract Mode.

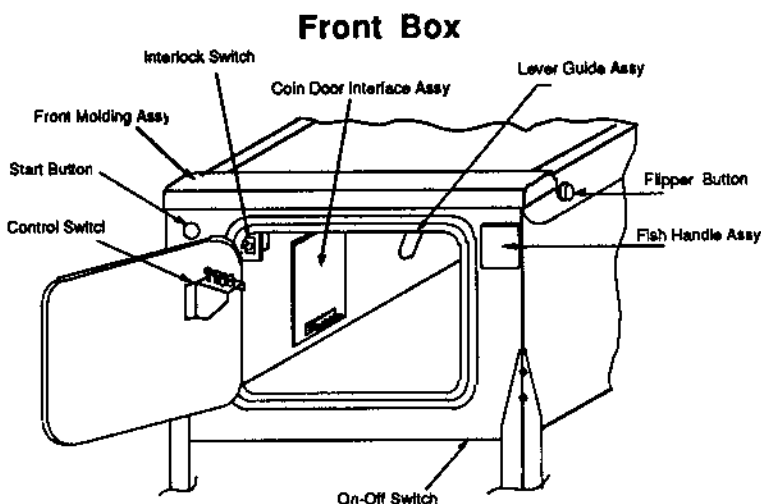
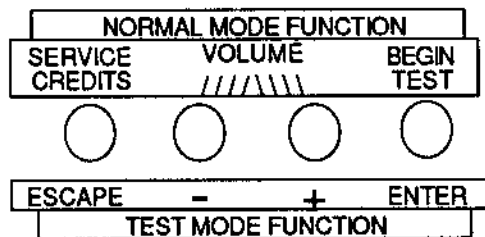
The Up Button allows you to cycle forward through the menu selections or adjustment choices.

The Down Button allows you to cycle backward through the menu selections or adjustment choices.

The Enter Button allows you to get into a menu selection or lock in an adjustment choice.

Holding the Enter button for five seconds, during the Attract Mode, resets the High Scores.

Coin Door Switches



Game Operation

CAUTION

After assembly and installation at its site location, this game must be plugged into a properly grounded outlet to prevent shock hazard, and to assure proper game operation. DO NOT use a 'cheater' plug to defeat the ground pin on the line cord. DO NOT cut off the ground pin.

Powering Up. With the coin door closed, plug the game in, and switch it On. In normal operation, Testing shows in the displays as the game performs Start-up Tests. Once the Start-up Tests have been successfully completed the last score is displayed. After that, the game goes into the Attract Mode.

Note: After the game has been on location for a time, the Start-up Tests may contain messages concerning game problems. The section entitled 'Error Messages' contains more details concerning messages displayed at each game turn-on.

Open the coin door and press the Begin Test switch. The display shows the game name, number, and software revision. The message changes. The display shows the sound software revision, the revision level of the system software, and the date the software was revised.

Example:

	FISH TALES		Sound Rev. L-1
50005	Rev. L-X	SY. 0.X0	X-X-92

Press the Enter button to enter the WPC Menu System (refer to the section entitled "Menu System Operation" for more information). Perform the entire Test Menu routine to verify that the game is operating satisfactorily.

Attract Mode*. After completing the Test Menu routine, press the Escape button three times to enter the Attract Mode. During the Attract Mode, the score display shows a series of messages informing the player concerning, recent highest scores*, "custom messages*", and the score to achieve to obtain a Replay award*.

Credit Posting. Insert coin(s). A sound is heard for each coin, and the display shows the number of credits purchased. So long as the number of maximum allowable credits* are NOT exceeded by coin purchase or high score, credits are posted correctly.

Starting a Game. Press the Start button once. A startup sound plays, and the credit amount shown in the display decreases by one. The display flashes 00 (until the first playfield switch is actuated), and shows ball 1. If credits are posted, additional players may enter the game by pressing the Start button once for each player, before the end of play on the first ball.

Tilts Actuating the Cabinet Tilt switch inside the cabinet ends the current game and then proceeds to the Game Over Mode. With the third closure* of the plumb bob tilt switch, the player loses the remaining play of that ball, but can complete the game.

End of a Game. All earned scores and bonuses are awarded. If a player's final score exceeds the specified value, the player receives a designated award for achieving the current highest score. A random digit set* appears in the display. Credit* may be awarded, when the last two digits of any player's score match the random digits. Match, high score, and game over sounds are made, as appropriate.

Game Over Mode The Game Over display shows in the display. Then, the high scores flash. The game proceeds to the Attract Mode.

* - operator-adjustable feature

Menu System Operation

This game operates on a Menu System. The Main Menu allows you to choose from several main categories, which in turn lead to other menus to choose from. To enter the Menu System, open the coin door and press the Begin Test button. The displays show the Game I.D. Mode. Press the Enter button and the Main Menu appears. To cycle through the Main Menu, (or any other menu), selections press either the Up or Down button. Activate any selection by pressing the Enter button when the desired selection appears in the display. Return to the Attract Mode or a previous menu selection, by pressing the Escape button. Press the Start button for HELP at any time.

Main Menu

B. Bookkeeping Menu

- B.1 Main Audits
- B.2 Earning Audits
- B.3 Standard Audits
- B.4 Feature Audits
- B.5 Histograms
- B.6 Time-stamps

Press Escape

To move out of a menu selection.

Press Enter

To get into a menu selection.

Press Up

Increases sequence; (ex. A.1, A.2, A.3, A.4).

Press Down

Decreases sequence; (ex. A.4, A.3, A.2, A.1).

P. Printouts Menu

- P.1 Earnings Data
- P.2 Main Audits
- P.3 Standard Audits
- P.4 Feature Audits
- P.5 Score Histograms
- P.6 Game Time Histograms
- P.7 Time-Stamped
- P.8 All Data

Use Up or Down to cycle through the selections in a menu.

T. Test Menu

- T.1 Switch Edges
- T.2 Switch Levels
- T.3 Single Switches
- T.4 Solenoid Test
- T.5 Flasher Test
- T.6 General Illumination
- T.7 Sound and Music Test
- T.8 Single Lamps
- T.9 All Lamps
- T.10 Lamp & Flasher Test
- T.11 Display Test

Use Escape and Enter to move into and out of the selected menu.

U. Utilities Menu

- U.1 Clear Audits
- U.2 Clear Coins
- U.3 Reset H.S.T.D.
- U.4 Set Time & Date
- U.5 Custom Message
- U.6 Set Game I.D.
- U.7 Factory Adjustments
- U.8 Factory Resets
- U.9 Presets
- U.10 Clear Credits
- U.11 Auto Bum-in

A. Adjustments Menu

- A.1 Standard Adjustments
- A.2 Feature Adjustments
- A.3 Pricing Adjustments
- A.4 H.S.T.D. Adjustments
- A.5 Printer Adjustments

Bookkeeping is the first category available from the Main Menu. Press the Enter button to activate the Bookkeeping Menu. Press the Up or Down button to cycle through the Bookkeeping Menu selections. Press the Enter button to activate a selection. Once you have activated a selection, press the Up or Down button to cycle through the available audits. Audits cannot be set, they can only be cleared by using U1 and U2 from the Utilities Menu. Press the Escape button to return to the Bookkeeping Menu. Press it again to return to the Main Menu.

B. Bookkeeping Menu

- B.1 Main Audits**
- B.2 Earning Audits**
- B.3 Standard Audits**
- B.4 Feature Audits**
- B.5 Histograms**
- B.6 Time-Stamps**

One-Button Audit System

The Bookkeeping Menu is obtainable directly from the Attract Mode. Continually pressing, (do not press and hold), the Enter button, while in the Attract Mode, will cycle through all of the game audits.

B.1 Main Audits These audits, available in other groups, are grouped here for easier access.

B.1	01	Total Earnings	00
B.1	02	Recent Earnings	00
B.1	03	Free Play Percent	00
B.1	04	Average Ball Time	00
B.1	05	Average Game Time	00
B.1	06	Total Plays	00
B.1	07	Replay Awards	00
B.1	08	Percent Replays	00
B.1	09	Extra Balls	00
B.1	10	Percent Extra Ball	00

B.2 Earning Audits

B.2	01	Recent Earnings	00
B.2	02	Recent Left Slot	00
B.2	03	Recent Center Slot	00
B.2	04	Recent Right Slot	00
B.2	05	Recent 4th Slot	00
B.2	06	Recent Paid Credits	00
B.2	07	Recent Service Credits	00
B.2	08	Total Earnings*	00
B.2	09	Total Left Slot*	00
B.2	10	Total Center Slot*	00
B.2	11	Total Right Slot*	00
B.2	12	Total 4th Slot*	00
B.2	13	Total Paid Credits*	00
B.2	14	Total Service Credits*	00

* Note: These Audits are NOT Resettable.
They are a record of the earnings of the game since the "CLOCK 1ST SET" Time -Stamp.

B.3 Standard Audits

B.3	01	Games Started	00	•"Total Plays" only counts completed games. A game is considered completed when the final ball begins. Audit information from incomplete games is ignored. Operation for test and service do not affect Audits.
B.3	02	Total Plays*	00	
B.3	03	Total Free Play	00	
B.3	04	Free Play Percent	00	
B.3	05	Replay Awards	00	
B.3	06	Percent Replays	00	
B.3	07	Special Awards	00	
B.3	08	Percent Special	00	
B.3	09	Match Awards	00	
B.3	10	Percent Match	00	
B.3	11	H.S.T.D. Credits	00	
B.3	12	Percent H.S.T.D	00	
B.3	13	Extra Ball	00	
B.3	14	Percent Extra Ball	00	
B.3	15	Tickets Awarded	00	
B.3	16	Percent Tickets	00	
B.3	17	Left Drains	00	
B.3	18	Right Drains	00	
B.3	19	Average Ball Time	00	
B.3	20	Average Game Time	00	
B.3	21	Minutes of Play	00	
B.3	22	Minutes On	00	
B.3	23	Balls Played	00	
B.3	24	Tilts	00	
B.3	25	Replay 1 Awards	00	
B.3	26	Replay 2 Awards	00	
B.3	27	Replay 3 Awards	00	
B.3	28	Replay 4 Awards	00	
B.3	29	1 Player Games	00	
B.3	30	2 Player Games	00	
B.3	31	3 Player Games	00	
B.3	32	4 Player Games	00	
B.3	33	H.S.T.D. Reset Count	00	
B.3	34	Burn-in Cycles	00	
B.3	35	1st Replay Level	00	
B.3	36	Left Flipper	00	
B.3	37	Right Flipper	00	# of times the right flipper has been activated.

B.4 Feature Audits

B.4	01	Left Boat Award	# of Left Boat awards achieved.
B.4	02	Right Boat Award	# of Right Boat awards achieved.
B.4	03	Monster Fish Lit	# of times the Monster Fish was lit.
B.4	04	Monster Fish Award	# of Monster Fish awards achieved
B.4	05	Balls Locked	# of times the balls were locked.
B.4	06	Multi-balls	# of Multi-balls achieved.
B.4	07	Jackpot Lit	# of times the Jackpot was lit.
B.4	08	Double Jackpot Lit	# of times the Double Jackpot was lit.
B.4	09	Jackpots	# of Jackpots achieved.
B.4	10	Double Jackpots	# of Double Jackpots achieved.
B.4	11	Super Jackpots	# of Super Jackpots achieved.
B.4	12	Tropical Jackpots	# of Tropical Jackpots achieved.
B.4	13	Freshwater Jackpots	# of Freshwater Jackpots achieved.
B.4	14	Deep Sea Jackpot	# of Deep Sea Jackpots achieved
B.4	15	Left Stand-ups	# of times the Left Stand-up targets were achieved.

B.4 Feature Audits Continued...

B.4	16	Right Stand-ups	# of times the Right Stand-up targets were achieved.
B.4	17	Fish Caught	# of Fish caught.
B.4	18	Tales Told	# of Tales told.
B.4	19	Feed Frenzy Lit	# of times Feed Frenzy was lit.
B.4	20	Feed Frenzy Award	# of Feed Frenzy award achieved.
B.4	21	Feed Frenzy Completed	# of times Freed Frenzy was completed.
B.4	22	Rock Boat Lit	# of times Rock the Boat was lit.
B.4	23	Rock Boat Awards	# of Rock the Boat awards achieved.
B.4	24	Fish Finder	# of times Fish Finder was achieved.
B.4	25	Captive Ball Hit	# of times the Captive Ball was hit.
B.4	26	Long Cast Loop	# of Long Cast Loops made.
B.4	27	Auto Cast	# of times Auto Cast was achieved.
B.4	28	Video Mode	# of times Video Mode was achieved.
B.4	29	Sell Gear Lit	# of times the Sell Gear was lit.
B.4	30	Sell Gear Award	# of Sell Gear awards achieved.

B.5 Histograms

B.5	01	0.0-1.9 Million Scores	00%	00
B.5	02	2.0-4.9 Million Scores	00%	00
B.5	03	5.0-9.9 Million Scores	00%	00
B.5	04	10-19 Million Scores	00%	00
B.5	05	20-29 Million Scores	00%	00
B.5	06	30-39 Million Scores	00%	00
B.5	07	40-49 Million Scores	00%	00
B.5	08	50-69 Million Scores	00%	00
B.5	09	70-99 Million Scores	00%	00
B.5	10	100-149 Million Scores	00%	00
B.5	11	150-199 Million Scores	00%	00
B.5	12	200-299 Million Scores	00%	00
B.5	13	Over 300 Million	00%	00
B.5	14	Game Time 0.0-1.0 Mins	00%	00
B.5	15	Game Time 1.0-1.5 Mins	00%	00
B.5	16	Game Time 1.5-2.0 Mins	00%	00
B.5	17	Game Time 2.0-2.5 Mins	00%	00
B.5	18	Game Time 2.5-3.0 Mins	00%	00
B.5	19	Game Time 3.0-3.5 Mins	00%	00
B.5	20	Game Time 3.5-4.0 Mins	00%	00
B.5	21	Game Time 4-5 Mins	00%	00
B.5	22	Game Time 5-6 Mins	00%	00
B.5	23	Game Time 6-8 Mins	00%	00
B.5	24	Game Time 8-10 Mins	00%	00
B.5	25	Game Time 10-15 Mins	00%	00
B.5	26	Game Time Over 15 Mins	00%	00

B.6 Time-Stamps

Time-Stamps Menu shows dates and times that are important to game software.

B.6	01	Current Time
B.6	02	Clock 1st Set
B.6	03	Clock Last Set
B.6	04	Audits Cleared
B.6	05	Coins Cleared
B.6	06	Factory Setting
B.6	07	Last Game Start
B.6	08	Last Replay
B.6	09	Last H.S.T.D. Reset
B.6	10	Champion Reset
B.6	11	Last Printout
B.6	12	Last Service Credit

Press the Enter button to activate the Printouts Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Printouts Menu selections. Press the Enter button to activate a selection. Press the Escape button to return to the Printouts Menu. Press in again to return to the Main Menu.

P. Printouts Menu

(optional board required)

- P.1 Earnings Data**
- P.2 Main Audits**
- P.3 Standard Audits**
- P.4 Feature Audits**
- P.5 Score Histograms**
- P.6 Time Histograms**
- P.7 Time-Stamps**
- P.8 All Data**

The Printouts Menu is a combination of the other menus. This menu allows you to access and print information in the available menu selections.

If no Printer is attached the the message "Waiting for Printer" appears in the displays.

Note: Set the print specification from the Adjustment Menu, A.5 Printer Adjustments.

Press the Enter button to activate the Test Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Test Menu selections. Press the Enter button to activate a test. Press the Escape button to return to the Test Menu. Press it again to return to the Main Menu. **Note:** During any test, press the Start button to obtain the wire color, driver number, connector number and fuse location.

T. Test Menu

- T.1 Switch Edges**
- T.2 Switch Levels**
- T.3 Single Switch**
- T.4 Solenoid Test**
- T.5 Flasher Test**
- T.6 General Illumination**
- T.7 Sound & Music Test**
- T.8 Single Lamps**
- T.9 All Lamps**
- T.10 Lamp & Flasher Tests**
- T.11 Display Test**

The switch matrix, on the left side of the display, shows the state of all switches. A dot indicates the switch is open, a square indicates the switch is closed. The numbers assigned to each switch indicate where the switch is located in the matrix. The number on the left indicates the column, the number on the right indicates the row. Example - Switch 23 is 2nd column, 3rd row.

A short to ground - on either the row or column wire - appears as a shorted row(s). However, a column wire shorted to ground disappears when all of the indicated row switches are open. A row wire shorted to ground does not disappear.

A shorted diode in the switch matrix can cause other switches to appear closed. These "phantom" switches (though not actually closed), complete a rectangle in the switch matrix. Therefore, if two switches in the same column are closed (example; #22 and #24), and a third switch is pressed in another column but in the same row as one of the first two (example; #32), the "phantom" switch #34 is falsely indicated as closed. The switch with the shorted diode is diagonally opposite the "phantom" switch (in this case #22).

T.1 Switch Edges

Press each switch one at a time. The name and number of the switch is shown in the display. If a switch other than the one pressed, or no switch at all is indicated, the system has detected a problem with the switch circuit.

T.2 Switch Levels

This test automatically cycles through all switches that are detected closed. The name and number of each switch that is detected is shown in the display. A filled square indicates the switch's position in the matrix.

T.3 Single Switches

The Single Switch Test isolates a particular switch by blocking signals from all other switches. Use the Up or Down buttons to select the switch to be tested.

T.4 Solenoid Test

The Solenoid Test has three modes, Repeat, Stop, and Run. Only one solenoid should pulse at a time. The system has detected a problem if; more then one solenoid pulses, a solenoid comes On and stays On or, during the Repeat and Run mode, no solenoid pulses.

Repeat - The Repeat mode pulses a single solenoid. After entering this test, Solenoid 1 shows in the display and the corresponding solenoid activates. Press the Up or Down button to cycle through the solenoids, one at a time. The same solenoid pulses until the Up or Down button is pressed. Either press the Escape button to return to the Test Menu, or press the Enter button to move to the next mode.

Stop - The Stop mode halts the Solenoid Test. Press Enter during the Repeat mode and the Solenoid Test stops. No solenoids should be activated while the test is stopped. Either press the Escape button to return to the Test Menu, or the Enter button to move to the next mode.

Run - The Run mode cycles through the solenoids automatically. The display shows the name and number of the solenoid currently being pulsed. Either press the Escape button to return to the Test Menu.

T.5 Flasher Test

This tests the flashlamp part of the solenoid circuit exclusively. This, like the Solenoid Test, has three modes, Repeat, Stop, and Run. During this test, only one flashlamp circuit should pulse at a time. The system has detected a problem if more then one circuit pulses, a circuit stays On or, during the Repeat and Run mode, no circuit pulses.

Repeat - The Repeat mode allows you to pulse a single flashlamp. Once you have entered this test, the name and number of the first flashlamp circuit shows in the display and the corresponding bulb(s) flashes. Press the Up or Down button to cycle through all of the flashlamps circuits one at a time. The same circuit pulses until you press the Up or Down button. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next mode.

Stop - The Stop mode halts the Flasher Test. No flashlamp circuit should be turned On during this mode. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next mode.

Run - The Run mode cycles through the flashlamps automatically. The display shows the name and number of the circuit currently being pulsed, and the corresponding bulb(s) flashes. Either press the Escape button to return to the Test Menu.

T.6 General Illumination

This test checks all of the General Illumination circuits. There are two modes of operation, Stop and Run.

Stop - Press the Up or Down buttons to cycle through the General Illumination Test manually. All illumination is tested first, followed by an individual circuit test. The circuit name and number shows in the display while the corresponding lamps lights. If any other results occur the system has detected an error.

Run - Press the Enter button any time during Stop mode and the General Illumination. Test cycles through automatically. For each circuit shown in the display the corresponding bulbs should light. If any other results occurs the system has detected a problem.

T.7 Sound and Music Test

The Sound and Music Test checks the audio circuits. This test has three modes for testing the sound and music circuits, Run, Repeat and Stop.

Run - The Run mode steps through a sequence of sounds and music. Pressing the Up or Down button during this portion of the Sound and Music test advances to a particular sound or tune without having to wait for the program to play all the sounds available in the test. A sound or tune should be heard for each name and number that appears in the display. Any other results indicates the system has detected a problem.

Repeat - Press the Enter button at any time during the Run mode to cause the program to stop and repeat a particular sound or tune. The same sound should repeat continuously until the Up or Down button is pressed. Any other results indicates the system has detected a problem.

Stop - Press the Enter button at any time during the Repeat mode to stop this test altogether. Nothing should be heard. Any other results indicates the system has detected a problem.

T.8 Single Lamp Test

The number assigned to each lamp indicates the lamp's position in the matrix. The number on the left indicates the column. The number on the right indicates the row. Example - Lamp 23 means 2nd column, 3rd row.

This test checks each lamp circuit individually. Press the Up or Down button to cycle through this test. For each name and number that is shown in the display the corresponding lamp should light. Any other results indicates the system has detected a problem.

T.9 All Lamps Test

This test causes all the controlled lamps to flash at the same time. Every controlled lamp should flash. Any other results indicates the system has detected a problem.

T.10 Lamp and Flasher Test

This test causes all the flashlamps and the controlled lamps to flash at the same time. The controlled lamps blink, while the flashlamps cycle from highest to lowest. Any other results indicates the system has detected a problem.

T.11 Display Test

This test automatically checks every dot in the Dot Matrix Display. A series of patterns appear in sequence. Each pattern turns On and Off a section of dots. Every dot on the matrix display should be turned On and off during this test.

Press the Enter button to activate the Utilities Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Utility Menu selections. Press the Enter button to activate a selection. Use the Up or Down button to rotate the settings. Press the Enter button to lock in a setting. If a mistake is made while changing a setting, press the Escape button while "Saving Adjustment Value" is still in the display. The original setting is retained and the new setting is ignored. Press the Escape button to return to the Utilities Menu. Press it again to return to the Main Menu.

U. Utilities Menu

- U.1 Clear Audits**
- U.2 Clear Coins**
- U.3 Reset H.S.T.D.**
- U.4 Set Time & Date**
- U.5 Custom Message**
- U.6 Set Game I.D.**
- U.7 Factory Adjustments**
- U.8 Factory Resets**
- U.9 Presets**
- U.10 Clear Credits**
- U.11 Auto Burn-in**

U.1 Clear Audits

Press the Enter button to clear the Standard Audits, Feature Audits, and Histograms.

U.2 Clear Coins

Press the Enter button to clear the Earnings Audits.

U.3 Reset H.S.T.D.

Press the Enter button to clear the High Score to Date Table and the Grand Champion.

U.4 Set Time and Date

Press the Enter button to activate the time and date. Use the Up or Down button to change the value, then press the Enter button to lock in that value. If a mistake is made press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

U.5 Custom Message Note: Set A.1 20 to ON before trying to write a Custom Message.

Press the Enter button to begin entry of the custom message. Use the Up or Down button to rotate letters. Use the Start button to rotate punctuation marks, (if desired). Press the Enter button to lock in the desired letter and punctuation. If a mistake is made, use Up and Down to select the "back-arrow" character. The "back-arrow" character is located before the space character and after the number nine. Press Enter while the back-arrow shows to erase the previously entered character. Once the message is complete, press and hold the Enter button until "Message Stored" is displayed. Press the Escape button to cancel the new message. The message "Press Enter to Reset" appears. If Enter is pressed, the custom message is cleared and no message is displayed. If Escape is pressed, the original message remains intact.

U.6 Set Game I.D.

This utility allows for the installation of a message, such as game location, that only appears on printouts. Press the Enter button to activate Set Game I.D.. Use the Up or Down button to rotate letters. Use the Start button to rotate punctuation marks, (if desired). Press the Enter button to lock in the desired letter and punctuation.

U.7 Factory Adjustment

Press the Enter button to restore the adjustments to factory settings.

U.8 Factory Reset

Press the Enter button to restore the adjustments to their factory setting, clear the Audits, H.S.T.D Table, and Custom Message/Game I.D.

Factory Setting Table

Adj #	Adj Description	U.S.A.
A.1 06	Replay Percent	10%
A.1 09	Replay Level 1	80 Million
A.1 13	Replay Boost	10 Million
A.2 01	Timed Plunger	Off
A.2 02	Flipper Plunger	Off
A.2 03	Outlane Auto Cast	Yes
A.2 04	Percent Extra Ball	25%
A.2 05	Ramp Timer	10 sec
A.2 06	Fish Finder Time	10 sec
A.2 07	Stretch the Truth	15 sec
A.2 08	Feed Frenzy Time	Slow
A.2 09	Captive Ball Lights	1
A.2 10	Lock Difficulty	Medium
A.2 11	Ball Save Time	7 sec
A.2 12	Special Lights At	4 S. Gears
A.4 10	Backup Champion	300 Million
A.4 11	Backup H.S.T.D. 1	250 Million
A.4 12	Backup H.S.T.D. 2	225 Million
A.4 13	Backup H.S.T.D. 3	200 Million
A.4 14	Backup H.S.T.D. 4	175 Million

U.9 Presets

Use the Up or Down buttons to cycle through the available Presets. When the desired Preset is displayed, press the Enter button to lock in that Preset. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

- U.9 01 Install Extra Easy
- U.9 02 Install Easy
- U.9 03 Install Medium
- U.9 04 Install Hard
- U.9 05 Install Extra Hard

The game play difficulty adjustments can be changed from the factory settings to any of the difficulty groups listed above. The Game Difficulty Setting Table lists the adjustments and settings that comprise each difficulty group.

Difficulty Setting Table for U.S. and Canadian Games

Adj #	Adj Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03	Hard U.9 04	Extra Hard U.9 05
A.2 04	Percent Extra Ball	35%	30%	25%	20%	17%
A.2 05	Ramp Timer	17 sec	13 sec	10 sec	7 sec	6 sec
A.2 06	Fish Finder Time	17 sec	13 sec	10 sec	6 sec	5 sec
A.2 07	Stretch the Truth	23 sec	18 sec	15 sec	12 sec	10 sec
A.2 08	Feed Frenzy Time	Slow	Slow	Slow	Fast	Fast
A.2 09	Captive Ball Light	3	2	1	1	0
A.2 10	Lock Difficulty	Easy	Medium	Medium	Medium	Hard
A.2 11	Ball Save Time	10 sec	8 sec	7 sec	6 sec	5 sec
A.2 12	Special Lights At	2 S. Gears	3 S. Gears	4 S. Gears	5 S. Gears	6 S. Gears

U.9 06 Install 5 Ball*

The game can be changed to 5 ball play, including the changing of certain features to the recommended 5-ball level. The Preset Game Adjustments Table for U.S./Canadian Games lists the adjustments and settings that comprise the 'Install 5 Ball' Group.

U.9 07 Install 3 Ball*

The game can be changed to 3 ball play, including the changing of certain features to the recommended 3-ball level. The Preset Game Adjustments Table for U.S./Canadian Games lists the adjustments and settings that comprise the 'Install 3 Ball' Group.

Preset Adjustments Table for U.S. and Canadian Games

Adj #	Adj Description	Install 5-ball U.9 06	Install 3-ball U.9 07
A.1 01	Balls/Game	5	3
A.1 07	Replay Start	100 Million	100 Million
A.2 04	Percent Extra Ball	20%	25%
A.2 05	Ramp Timer	7 sec	10 sec
A.2 06	Fish Finder Time	6 sec	10 sec
A.2 07	Stretch the Truth	12 sec	15 sec
A.2 08	Feed Frenzy Time	Fast	Slow
A.2 09	Captive Ball Lights	1	1
A.2 10	Lock Difficulty	Medium	Medium
A.2 11	Ball Save Time	6 sec	7 sec
A.2 12	Special Lights At	5 S. Gears	4 S. Gears
A.4 10	Backup Champion	300 Million	300 Million
A.4 11	Backup H.S.T.D. 1	250 Million	250 Million
A.4 12	Backup H.S.T.D. 2	225 Million	225 Million
A.4 13	Backup H.S.T.D. 3	200 Million	200 Million
A.4 14	Backup H.S.T.D. 4	175 Million	175 Million

* For American Jumpered CPU Boards only.

American Jumpers are:
W14 W15 W16 W17 W18
 In In In In In

U.9 08

Install Add -A -Ball

This option deletes all Free Play awards and replaces them with Extra Ball awards. Individual adjustments are affected, as follows:

Ad	Name	New Setting
A.1 13	Replay Boost	Off
A.1 14	Replay Award	Ex. Ball
A.1 15	Special Award	Ex. Ball
A.1 17	Extra Ball Ticket	No
A.1 19	Match Feature	Off
A.4 04	Champion Credits	00
A.4 05	High Score 1 Credits	00
A.4 06	High Score 2 Credits	00
A.4 08	High Score 3 Credits	00
A.4 07	High Score 4 Credits	00

U.9 09

Install Ticket

This option deletes Credit awards and replaces them with Ticket awards. Individual adjustments are affected as follows:

Ad	Name	New Setting
A.1 14	Replay Award	Ticket
A.1 15	Special Award	Ticket
A.1 16	Match Award	Ticket
A.1 17	Ex. Ball Ticket	Yes
A.1 31	Ticket Expan.Brd.	Yes
A.4 02	H.S.T.D. Award	Ticket

U.9 10

Install Novelty

This option removes all Free Play and Extra Ball awards. Individual adjustments are affected as follows:

Ad	Name	New Setting
A.1 04	Max. Ex. Ball	Off
A.1 05	Replay System	Fixed
A.1 09	Replay Level 1	Off
A.1 10	Replay Level 2	Off
A.1 11	Replay Level 3	Off
A.1 12	Replay Level 4	Off
A.1 15	Special Award	Points
A.1 19	Match Feature	Off
A.4 01	Highest Score	On
A.4 04	Champion Credits	00
A.4 05	High Score 1 Credits	00
A.4 06	High Score 2 Credits	00
A.4 07	High Score 3 Credits	00
A.4 08	High Score 4 Credits	00

U.9 11

Install Buy-in

This option automatically sets game pricing to 1 for 50¢/2 for \$1.00 and 1 Coin Buy-in (A.3 19) to YES.

U.9 12 through U.9 16 are Not Used

U.9 17 through U.9 22 are for German games only. (See International Section.)

U.9 23 through U.9 28 are for French games only. (See International Section.)

U.10 Clear Credits

Press the Enter button to clear the game Credits.

U.11 Auto Burn-in

Press the Enter button to activate Auto Burn-in. This utility automatically cycles through several tests. This helps in finding intermittent problems. The tests that Auto Burn-in cycles through are the Display Test, the Sound and Music Test, the All Lamps Test, the Solenoid Test, the Flashers Test, and the G.I. Test.

Press the Enter button to activate the Adjustments Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Adjustments Menu selections. Press the Enter button to activate a selection. Press the Up or Down button to cycle through the available adjustments. Press the Enter button to activate an adjustment. When an adjustment is activated, the setting value begins to flash. Use the Up or Down button to raise or lower the setting value. Press Enter to lock in the value. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained. Press the Escape button to return to the Adjustments Menu. Press it again to return to the Main Menu.

A. Adjustment Menu

- A.1 Standard Adjustments**
- A.2 Feature Adjustments**
- A.3 Pricing Adjustments**
- A.4 H.S.T.D Adjustments**
- A.5 Printer Adjustments (optional board required)**

A.1 Standard Adjustments

- A.1 01 Balls Per Game**
A "game" is defined by specifying the number of balls to be played. Range: 1 to 10.
- A.1 02 Tilt Warnings**
The number of total actuations of the plumb bob mechanism that can occur before the game is "tilted". Range: 1 to 10.
- A.1 03 Maximum Extra Balls**
The number of Extra Balls that a player may accumulate. Range: 0 to 10.
- A.1 04 Maximum Extra Balls/Ball in Play**
The number of Extra Balls to be awarded per ball in play. Range:

Off	-	No maximum number of Extra Ball per ball in play.
1-10	-	1 through 10 Extra Balls per ball in play.
- A.1 05 Replay System**
The type of replay system to be used. Choices:

Fixed	-	Replay value is set and does not change during game play.
Auto%	-	Replay starting value is set but changes every 50 games to comply with the percentage of replays desired.
- A.1 06 Replay Percent***
The percentage of replays the players are able to earn when Auto Replay is used. Range: 5% to 50%.
- A.1 07 Replay Start***
Replay start value when Auto% Replay is used. Range: 15,000,000 to 250,000,000.
- A.1 08 Replay Levels***
The number of replay levels used by the Auto% Replay mode. The range of this setting is 1 through 4. When two replay levels are chosen, the second replay level is automatically adjusted to twice the starting replay level. When three or four replay levels are chosen, their values are automatically adjusted to three or four times the starting replay level.

*For Auto% Replay.

- A.1 09 Replay Level 1****
A.1 10 Replay Level 2**
A.1 11 Replay Level 3**
A.1 12 Replay Level 4**
 The value to be used for the first, second, third, and fourth Fixed Replay. Range: 00 to 250,000,000.
- A.1 13 Replay Boost**
 The replay score can be temporarily boosted by the selected amount EACH time the player reaches or exceeds the replay score. This temporary boost is cancelled when Credits=0, when the player inserts another coin, or when Begin Test is pressed. Range: Off, 1,000,000 to 50,000,000.
- A.1 14 Replay Award**
 The form of award automatically provided when the player exceeds any replay level for either Auto% Replay or Fixed Replay. Choices:
- Credit - Reaching each Replay level awards credit.
 - Ticket - Reaching each Replay level awards a ticket.
 - Ball - Reaching each Replay level awards an Extra Ball.
 - Audit - Reaching each Replay level awards nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards.
- A.1 15 Special Award**
 The award automatically provided when the player scores a special. Choices:
- Credit - Scoring a Special awards a Credit.
 - Ticket - Scoring a Special awards a Ticket.
 - Ball - Scoring a Special awards an Extra Ball.
 - Points - Scoring a Special awards 1 Million points.
- A.1 16 Match Award**
 The award automatically provided when the players wins a match. Choices:
- Credit - Winning a Match awards a Credit.
 - Ticket - Winning a Match awards a Ticket.
- A.1 17 Extra Ball Ticket**
 A Ticket is awarded when the player earns an Extra Ball. Choices:
- Yes - The player is awarded a Ticket in addition to an Extra Ball.
 - No - The player is not awarded a Ticket.
- A.1 18 Maximum Ticket/Player**
 The amount of Tickets each player can earn. Range: 00 to 100.
- A.1 19 Match Feature**
 Desired percentage for the Match Feature occurring at the end of the game. Range :
- Off - Match Feature is not available.
 - 1 - 50% - 1% is 'hard'; 50% is 'extremely easy'. The Match Feature selects a random two-digit number at the end of the game and compares each players score for an identical two digits in the rightmost two positions. A match of these two digit results in an award of a Credit or a Ticket.

** For Fixed Replay

- A.1 20 Custom Message**
The message displayed during the Attract Mode. Choices:
- On - A message is displayed
 - Off - A message is not displayed.
- A.1 21 Language**
The language the game uses. Choices: English, French, or German.
- A.1 22 Clock Style**
The style of clock the game uses. Choices: A.M./P.M. or 24 Hours.
- A.1 23 Date Style**
The style of date the game uses. Choices: Month/Date/Year, or Date/Month/Year.
- A.1 24 Show Date and Time**
The date and time show in the Attract Mode. Choices:
- Yes - Show the date, time in status report or in the Attract Mode.
 - No - Do Not show date, time in status report or in the Attract Mode.
- A.1 25 Allow Dim Illumination**
The game program dims the General Illumination for special effects and during the Attract Mode. Choices:
- Yes - Dim the General Illumination during the Attract Mode.
 - No - Do Not dim the General Illumination.
- A.1 26 Tournament Play**
Equalize Multi-ball and Jackpots during multi-player games, (do not carry over to next player). Choices:
- Yes - Keep Multi-ball and Jackpots equal.
 - No - Do Not Keep Multi-ball and Jackpots equal.
- A.1 27 Euro. Scr. Format**
Use either commas or dots between digits when numbers are displayed. Choices:
- Yes - Dots instead of commas, (example- 1.000.000).
 - No - Commas instead of dots, (example- 1, 000, 000).
- A.1 28 Minimum Volume Control**
The volume can be turned Off. Choices:
- Yes - Volume can be turned Off.
 - No - Volume can be turned Down but not Off.
- A.1 29 G.I. Power Saver**
This allows the G. I. and Controlled lamps to be dimmed following a time interval after a game is played. A.1 30 (Power Saver Level) determines how dim the lamps get. Using this feature substantially increases the life of the lamps. Range: Off, 2 to 60 minutes.
- A.1 30 Power Saver Level**
When A.1 29 (G.I. Power Saver) is set to On, this controls the intensity of the G.I. and Controlled lamps once the game has been idle for a specified time period. Range: 4 to 7.

A.1 31

Ticket Expansion Board

When a Ticket Expansion Board is connected, full control of the ticket dispenser is available. This includes a ticket low/error lamp, resume on ticket jam switch and manual ticket dispense switch. Choices:

- Yes - Ticket Expansion Board is connected.
- No - Ticket Expansion Board is NOT installed in the game.

A.1 32

No Bonus Flips

Activate the flippers during the end of ball Bonus sequence. **Note:** Setting to Yes may extend the useful life of the flippers. Choices:

- Yes - The flippers do not activate during the end of ball Bonus sequence.
- No - The flippers activate during the end of ball Bonus sequence.

A.1 33

Game Reset

When a player presses the Start button during the 2nd ball or later, the game in progress is ended, and a new game begins. This adjustment has three settings to determine how this is handled.

- Never - Do not allow a new game start until the current game is over.
- Slow - Restart if the Start button is pressed continuously for over 1/2 second. This helps to prevent the unintended restart of game in progress.
- Instantly - Restart as soon as the Start button is pressed.

When the Start button is pressed during game over, or during the 1st ball (to add a player), it is always handled instantly.

A.2 Feature Adjustments

- A.2 01 Timed Plunger**
The plunger kicker kicks automatically for the player. Choices:
- On - After 1 to 120 seconds of inactive play, the plunger kicker kicks automatically.
 - Off - The plunger kicker does not kick automatically.
- A.2 02 Flipper Plunger**
The Flipper buttons, as well as the Fishing Reel Handle, can shoot the ball. Choices:
- Yes - Pressing the Flipper buttons shoots the ball.
 - No - Pressing the Flipper buttons does not shoot the ball.
- A.2 03 Outlane Auto Cast**
The next ball is automatically shot up the shooter lane when an outlane switch is made. Choices:
- Yes - The game automatically shoots the next ball.
 - No - The game does not shoot the next ball.
- A.2 04 Extra Ball Percent**
The percent of games that award an Extra Ball. Range: 1% to 50%.
- A.2 05 Ramp Timer**
The amount of time the player has to achieve the ramp. Range: 5 to 20 seconds.
- A.2 06 Fish Finder Time**
The amount of time the player has to achieve the Fish Finder. Range: 3 to 20 seconds.
- A.2 07 Stretch the Truth**
The amount of time the player has to complete Stretch the Truth. Range: 5 to 30 seconds.
- A.2 08 Feed Frenzy Time**
The time lapse speed of the Feed Frenzy feature. Choices: Fast or Slow.
- A.2 09 Captive Ball Lights**
The amount of Captive Ball lights that blink at game start. Range: 0 to 5 lights.
- A.2 10 Lock Difficulty**
The amount of difficulty faced when trying to lock a ball. Choices: Easy, Medium or Hard.
- A.2 11 Ball Save Time**
The length of time the Auto Cast light blinks. Range: 4 to 20 seconds.
- A.2 12 Special Lights At**
The amount of Gear needed to light Specials. Range: 1 to 10 self gear.

A. 3 Pricing Adjustments

- A.3 01 Game Pricing (If set to custom, then 02 to 09 are available)**
The cost for a game is selected from the Standard Pricing Table or by installing Custom pricing.
- A.3 02 Left Coin Units**
A.3 03 Center Coin Units
A.3 04 Right Coin Units
A.3 05 4th Slot Units
The number of coin units purchased by a coin passing through the left, center, right, or fourth coin chute.
- A.3 06 Units/Credits**
Defines the number of coin units required to obtain 1 credit. A coin unit counter in the game program totals the number of coin units purchased through all coin chutes prior to each game. If the total number of these coin units exceeds or matches the Unit per Credit value by a multiple (or more, coin units) of the specified Units per Credit value the Credits display shows the proper number of credits. The coin unit counter retains any remaining coin units, until the start of Ball 2; then the coin unit counter is cleared (its contents are zeroed).
- A.3 07 Units/Bonus**
Additional credits are to be indicated in the credits display, when a certain number of coin units are accumulated.
- A.3 08 Bonus Credits**
The number of credits that are awarded when the Units/Bonus level is achieved.
- A.3 09 Minimum Units**
No credits are to be posted (indicated in the credit display), until the credits unit counter reaches a particular value, by setting this value to 02 (or more).
- A.3 10 Coin Door Type (If set to custom, then 11 to 15 and 20 are available)**
This adjustment is used to pre-set adjustments 11 to 15 based on standard coin doors (U.S.A., German, etc.).
- A.3 11 Collection Text**
The coin system is used to display the Earning Audits.
- A.3 12 Left Slot Value**
A.3 13 Center Slot Value
A.3 14 Right Slot Value
A.3 15 4th Slot Value
The monetary value of the left, center, right, or fourth coin chute.
- A.3 16 Maximum Credits**
The maximum number of credits the game can accumulate, either through game play awards or coin purchases. Reaching this setting prevents the award of any credits. Range: 5 to 10.
- A.3 17 Free Play**
A player can operate the game without a coin (free play) or with a coin. Choices:
- | | | |
|-----|---|--------------------------------------|
| No | - | A coin is necessary for game play. |
| Yes | - | Game play is free; no coin required. |

A.4 H.S.T.D. Adjustments

A.4 01 Highest Scores

The game maintains a record of the four highest scores achieved to date. Choices:

- Off - No high scores are recorded, or displayed.
- On - The four highest scores are stored in memory and displayed in the Attract Mode.

A.4 02 H.S.T.D. Award

The award given for achieving the High Score To Date, or the Champion H.S.T.D.. Choices: Credit or a Ticket.

A.4 03 Champion H.S.T.D.

The "Highest" High Score can be displayed in the Attract Mode. This score is not cleared when "High Score Reset Every" occurs. Choices:

- On - The "Highest" High Score is retained in memory and displayed.
- Off - The "Highest" High Score is not retained.

A.4 04 Champion Credits

The number of credits or tickets awarded for a Grand Champion Score. Range: 00 to 10.

A.4 05 H.S.T.D. 1 Credits

A.4 06 H.S.T.D. 2 Credits

A.4 07 H.S.T.D. 3 Credits

A.4 08 H.S.T.D. 4 Credits

The number of credits or tickets awarded whenever a player exceeds the first, second, third, or fourth highest score. Range: 00 to 10.

A.4 09 High Score Reset Every

The number of games to be played before an automatic reset of the displayed 'Highest Score' occurs. The values provided upon reset are those selected by the operator in the Back-up High Scores. Range: OFF (disabled); 250 to 20,000.

A.4 10 Backup Champion

The Back-up Grand Champion Score. Range: 00 to 999,000,000.

A.4 11 Backup H.S.T.D. 1

A.4 12 Backup H.S.T.D. 2

A.4 13 Backup H.S.T.D. 3

A.4 14 Backup H.S.T.D. 4

The first, second, third, and fourth Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. Range: 00 to 999,000,000.

A.5 Printer Adjustments (optional board required)

A.5 01 Column Width
The column width to be printed. Range: 22 to 80.

A.5 02 Lines Per Page
The amount of lines per page. Range: 20 to 80.

A.5 03 Pause Every Page
Choose whether the printer pauses at the end of a page. Choices:

- Yes - The printer does pause.
- No - The printer doesn't pause.

A.5 04 Printer Type
Select the type of printer. Choices: Parallel, Serial or ADP.

A.5 05 Serial Baud Rate
Select which baud rate to use for serial or ADP communications (bit rate). Choices: 300, 600, 1200, 2400, 4800, or 9600.

A.5 06 Serial D.T.R. (Data Terminal Ready)
When a serial printer is used, this line may be connected to a printer output line signaling that the printer is busy.

Normal - Normal D.T.R. signal goes low to indicate the printer is not ready.

Inverted - Inverted D.T.R. (busy) signal goes high to indicate the printer is not ready.

Ignore - D.T.R. signal is ignored.

Error Messages

The WPC game program has the capability to aid the operator and service personnel. At Game Turn-on, or after pressing the Begin Test switch, once the game has been operating for an extended period, the display may signal with a message, "Press ENTER for Test Report". This indicates that the game program has detected a possible problem with the game.

To obtain details of the problem, open the coin door and press the Begin Test switch. Press the Enter button to begin displaying the message(s). The following messages apply to your game.

Check Switch ##.

This error message indicates that at least one switch was stuck 'On' at game turn-on or has NOT been actuated during ball play (for 90 balls or ~30 games). The game program compensates the game play requirements affected by each disabled switch to allow 'nearly normal' play. This helps keep your game earning, until the service technician can repair the problem, bringing the game back to its normal operation.

To verify the problem, refer to the Test Menu text describing Switch Testing, and check each reported switch using applicable switch tests. Always check switch operation using a ball, to simulate game conditions. Switch problems may often be resolved by adjusting the wire switch actuators, fixing switch circuitry problems, securing loose connectors, etc. Mechanisms using 'opto switches' (drop targets, etc.) need to be checked for proper power connections (+12V dc and ground).

Pinball Missing.

This game normally uses four balls; however, it will operate with less. This error message announces that a ball is missing or stuck somewhere. When the ball is located, return it to the game through the Outhole. Other possibilities for this problem could be malfunctions of the Ball Trough switches or the Ball Shooter switch.

xxxx Sw. Is Stuck On.

This error message indicates that a switch, which is not usually On, remains in the On position after the game is switched On. The stuck switch is essential for game play (for example, a coin chute switch, the slam tilt switch, the plumb bob tilt switch), and should be cleared to permit proper game operation.

Ground Short Row - (Row Number and Color)

This error message indicates that the switch wires being called out are touching a grounded part on the playfield or coin door.

Check for the following: 1) Slam Tilt (or other coin door) switch touching the grounded coin door; 2) A leaf-type, playfield switch touching a grounded part; 3) Players poking metallic objects (wires, coat hangers, etc.) into the game; 4) Switch cable insulation pierced or damaged allowing bare wire contact with a grounded part; 5) All switches in a row closing at the same time. **Note:** This instance is NOT a switch problem; however, for most games this is a very rare possibility.

Factory Settings Restored.

This message indicates that the CMOS RAM (U8) no longer retains any custom Pricing or Game Adjustment settings and has reverted to factory default settings. Generally, the following CPU checks will isolate the cause of the CMOS RAM memory failure. The voltage at pin 28 and pin 26 of U8 should be +5V (game turned On) and at least +4V (game turned Off). When the voltage drops below +4V, memory reset occurs. Check the batteries and battery holder. Be sure that the batteries are good and that there is no contamination on the battery holder terminals. Turn the game OFF, and use an ohmmeter to check diodes D1 and D2 on the CPU Board. D1 should read 0 ohms when forward-biased and infinite ohms when reverse-biased. D2 should read 15 ohms when forward-biased and infinite ohms when reverse-biased. (Readings taken with an analog meter.)

This error message can also indicate that there is an open diode on a 50V coil and noise is entering the circuit.

U6 Checksum Error.

The game ROM checksum is invalid. If this occurs replace the game ROM.

Time and Date Not Set.

The real time clock is not running. Go to U.4 of the Utilities Menu and set the time and date.

CPU L.E.D.s

The CPU has three L.E.D.s located on the upper left side of the board D19, D20, and D21. On game power-up D19 and D21 turn On for a moment then, D19 turns Off and D20 starts to blink rapidly. D21 remains On. The system has detected a problem if the following happens:

CPU Board L.E.D. Error Codes

D20 blinks one time	-	ROM Failure U6
D20 blinks two times	-	RAM Failure U8
D20 blinks three times	-	Custom Chip Failure U9

Sound Board Beep Error Codes Upon Game Turn-On:

1 Beep	=	Sound Board O.K.
2 Beeps	=	Sound RAM Failure
3 Beeps	=	U18 Failure
4 Beeps	=	U15 Failure (if used)
5 Beeps	=	U14 Failure (if used)

Maintenance Information

Lubrication

The two main lubrication points of the Ball Release mechanism are the pivots for the arm. The mechanisms of other playfield devices are somewhat similar to the Ball Release device, and have the same lubrication requirements. A medium viscosity oil (switch target grease) is satisfactory for these devices.

Because of the functional design (arm-actuated via solenoid plunger operation), the pivot points of the Left and Right Kickers ("Slingshots") all require lubrication as a regular servicing procedure.

Lubrication to ensure proper operation also applies to the target blades of the Drop Targets. MBI Instrument Grease, also known as Drop Target Switch Lubricant, with a Williams' part number of EI165, is a recommended lubricant.

Switch Contacts

Playfield Switches

For proper game operation, switch contacts should be free of dust, dirt, contamination, and corrosion. Blade switch contacts are plated to resist corrosion. Cleaning blade switch contacts requires gentle closing of the contacts on a clean business card or piece of paper, and then pulling the paper about 2 inches, which should restore the clean contact surface. Adjust the switch contacts to a 1/16-inch gap.

Flipper Switches

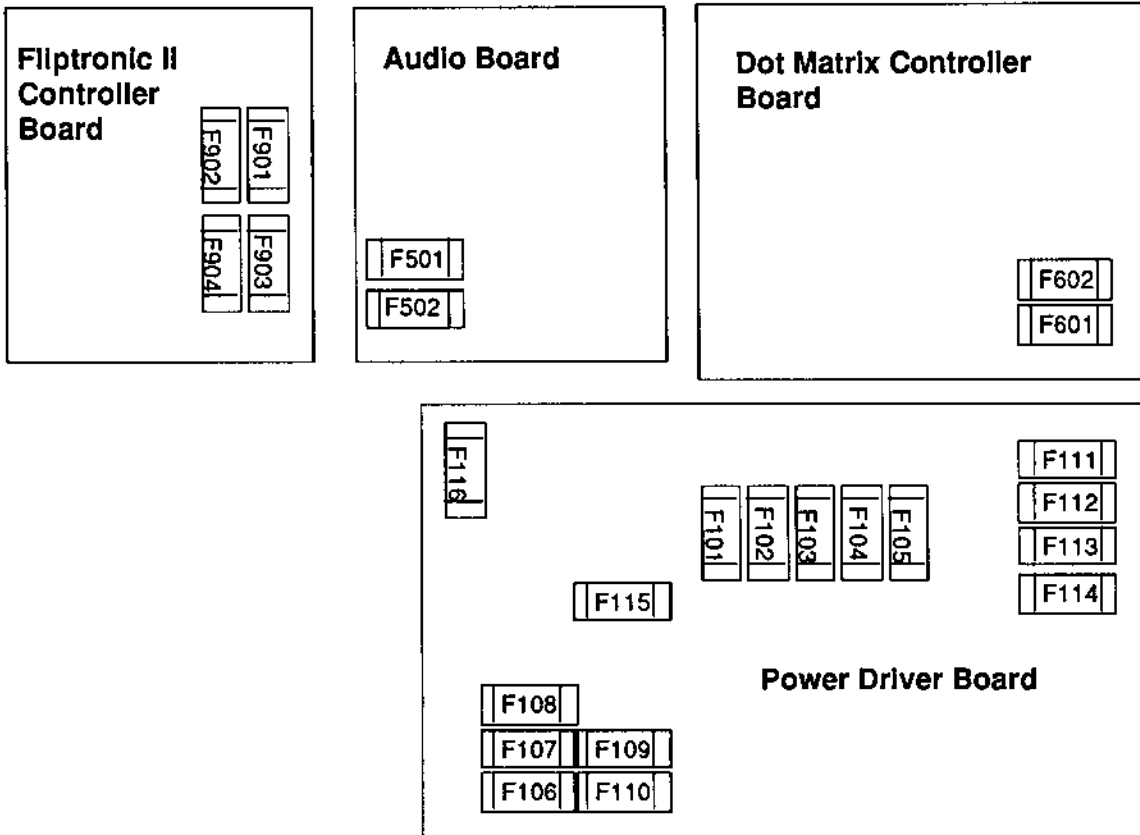
This game uses the new Fliptronic II Electronic Flipper System. The End-of-Stroke switches are NORMALLY OPEN. The switch should close when the flipper is energized. All E.O.S. switches and flipper button cabinet switches are gold flashed computer grade leaf switches. Only low computer current is carried through these switches. DO NOT FILE or abrasively clean these switches! DO NOT REPLACE these switches with the old style tungsten high current type switches as intermittent operation could occur. **Note:** Unlike the old style of flipper, an E.O.S. switch failure does not harm the flipper. The game notifies the operator of the switch being mis-adjusted in the test report, but continues to play. The E.O.S. switches are a means by which the new electronic flippers feel and play with all of the subtleties of the old flippers.

Cleaning

Good game action and extended playfield life are the results of regular playfield cleaning. During each collection stop, the playfield glass should be removed and thoroughly cleaned and the playfield should be wiped off with a clean, lint-free cloth. The game balls should be cleaned and inspected for any chips, nicks, or pits. Replace any damaged balls to prevent playfield damage.

Regular, more extensive, playfield cleaning is recommended. However, avoid excessive use of water and caustic or abrasive cleaners because they tend to damage the playfield surface. Playfield wax (or any carnauba based wax), or polish may be used sparingly, to prevent a buildup on the playfield surface. Do not use cleaners containing petroleum distillates on any playfield plastics because they may dissolve the plastic material or damage the artwork.

Fuse List



Audio Board

F501 -25V Circuit, 3A, S.B.
 F502 +25V Circuit, 3A, S.B.

Dot Matrix Controller Board

F601 +62V Circuit, 3/8A, S.B.
 F602 -113V and -125V Circuits, 3/8A, S.B.

Power Driver Board

F101 Left Flipper, 3A, S.B. Not Used
 F102 Right Flipper, 3A, S.B. Not Used
 F103 Solenoid #25-#28, 3A, S.B.
 F104 Solenoid #9-#16, 3A, S.B.
 F105 Solenoid #1-#8, 3A, S.B.
 F106 G.I. #5 Wht-Vio, 5A, S.B.
 F107 G.I. #4 Wht-Grn, 5A, S.B.
 F108 G.I. #3 Wht-Yel, 5A, S.B.
 F109 G.I. #2 Wht-Org, 5A, S.B.
 F110 G.I. #1 Wht-Brn, 5A, S.B.
 F111 Flasher Secondary, 5A, S.B.
 F112 Solenoid Secondary, 7A, S.B.
 F113 +5V Logic, 5A, S.B.
 F114 +18V Lamp Matrix, 8A, N.B.
 F115 +12V Switch Matrix, 3/4A, S.B.
 F116 +12V Secondary, 3A, S.B.

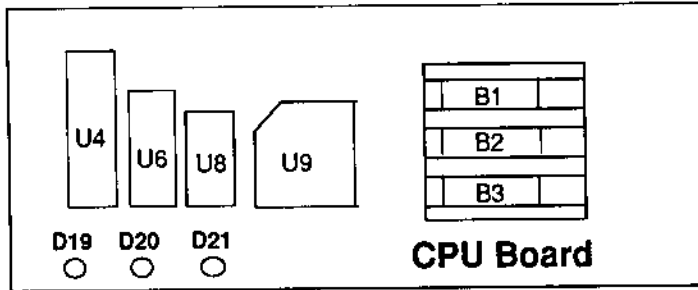
Fliptronic II Controller Board

F901 Upper Left Flipper, 3A, S.B.
 F902 Upper Right Flipper, 3A, S.B.
 F903 Lower Left Flipper, 3A, S.B.
 F904 Lower Right Flipper, 3A, S.B.

Line Filter

Domestic Game 8A, N.B.

LED List



CPU Board

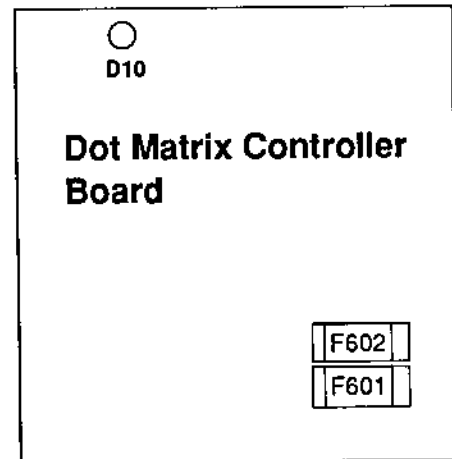
D19 , Blanking

D20, Diagnostic

D21, +5vdc

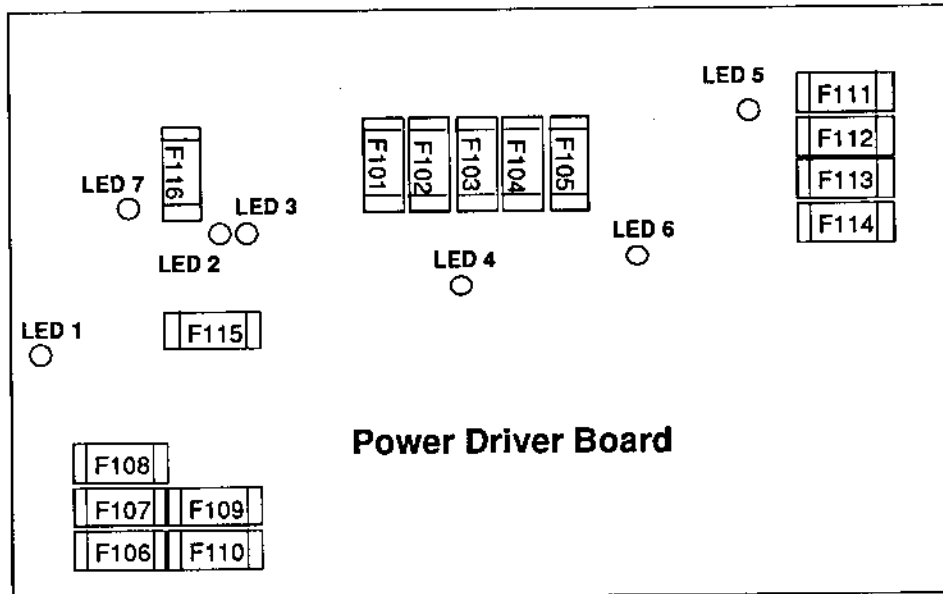
At game Turn-On = D19 & D21 On, D20 Off

During Normal Operation = D19 Off, D20 Flashing, D21 On



Dot Matrix Controller Board

D10, +5V Circuit, Normally On



Power Driver Board

LED 1, +12vdc Switch Circuit, Normally On

LED 2, High/Low Line Voltage Sensor, Normally On

LED 3, High/Low Line Voltage Sensor, Normally Off

LED 4, +5vdc, Digital Circuit, Normally On

LED 5, +20vdc, Flashlamp Circuit, Normally On

LED 6, +18vdc, Lamps Circuit, Normally On

LED 7, +12vdc, Power Circuit (motors relays etc.), Normally On

Section 2

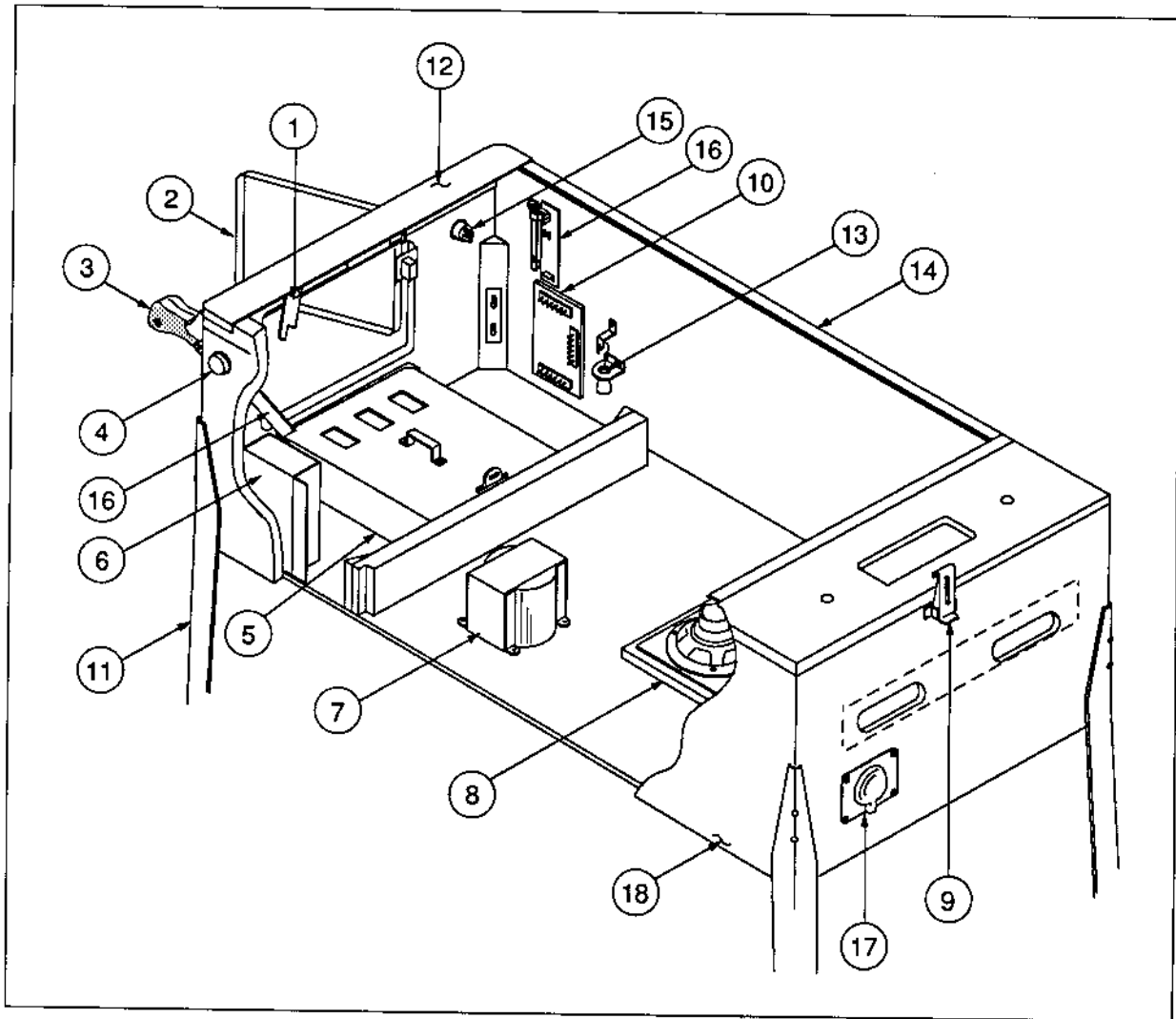
Game Parts Information

Parts Lists & Diagrams

- Cabinet
- Backbox
- WPC Audio Board
- WPC System CPU Board
- WPC Power Driver Board
- Dot Matrix Controller Board
- Fliptronic II Board

- Major Mechanism Assemblies
 - Playfield Parts
 - Lower Playfield Parts
 - Lamps
 - Switches
 - Solenoids/Flashers
 - Rubber Rings
 - Ramps

Cabinet Parts



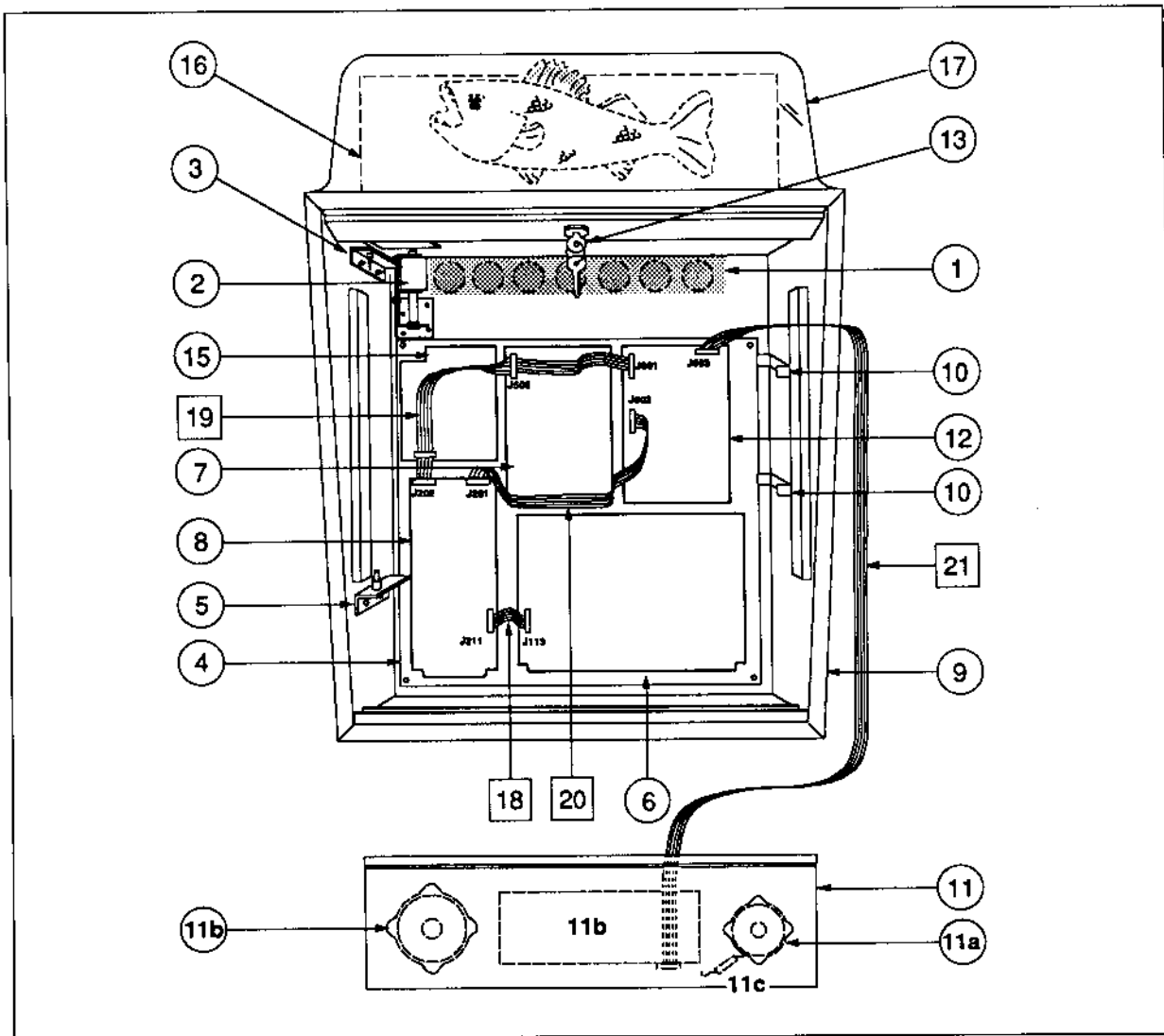
Item	Part Number	Description	Item	Part Number	Description
1.	D-9174-3	Lever Guide Assembly	12.	D-12615	Front Molding Assy.
2.	A-14148-1	Coin Door - 2 Slot	13.	20-6502-A	Plum Bob
3.	A-15130	Fishing Reel Handle Assembly	14.	A-12359-3	Side Molding Assembly
4.	B-12273-4	Flipper Button - Red (2 Used)	15.	20-9663-1	Start Button
5.	A-15579-1	Cashbox Assembly	16.	A-15894	Flipper Opto Board
6.	*	Line Filter Assembly	17.	01-10714	Line Cord Cover
7.	5610-12835-00	WPC Transformer, 115/230v	18.	11-1067-50005	<i>Fish Tales</i> Wood Cabinet Cordset
8.	5555-12929-00	Speaker, 4Ω, 6", 25w	19.	*	
9.	20-9347	Toggle Latch			
10.	A-14689	WPC Coin Door Interface Bd.			
11.	C-10843	Metal Leg Assembly			

* See Application Chart.

Line Filter/Cordset Application Chart

COUNTRY	LINE FILTER ASSY. A-15707-120V	CORDSET 5850-13271-00
UNITED STATES	●	●
CANADA	●	●

Backbox Assembly

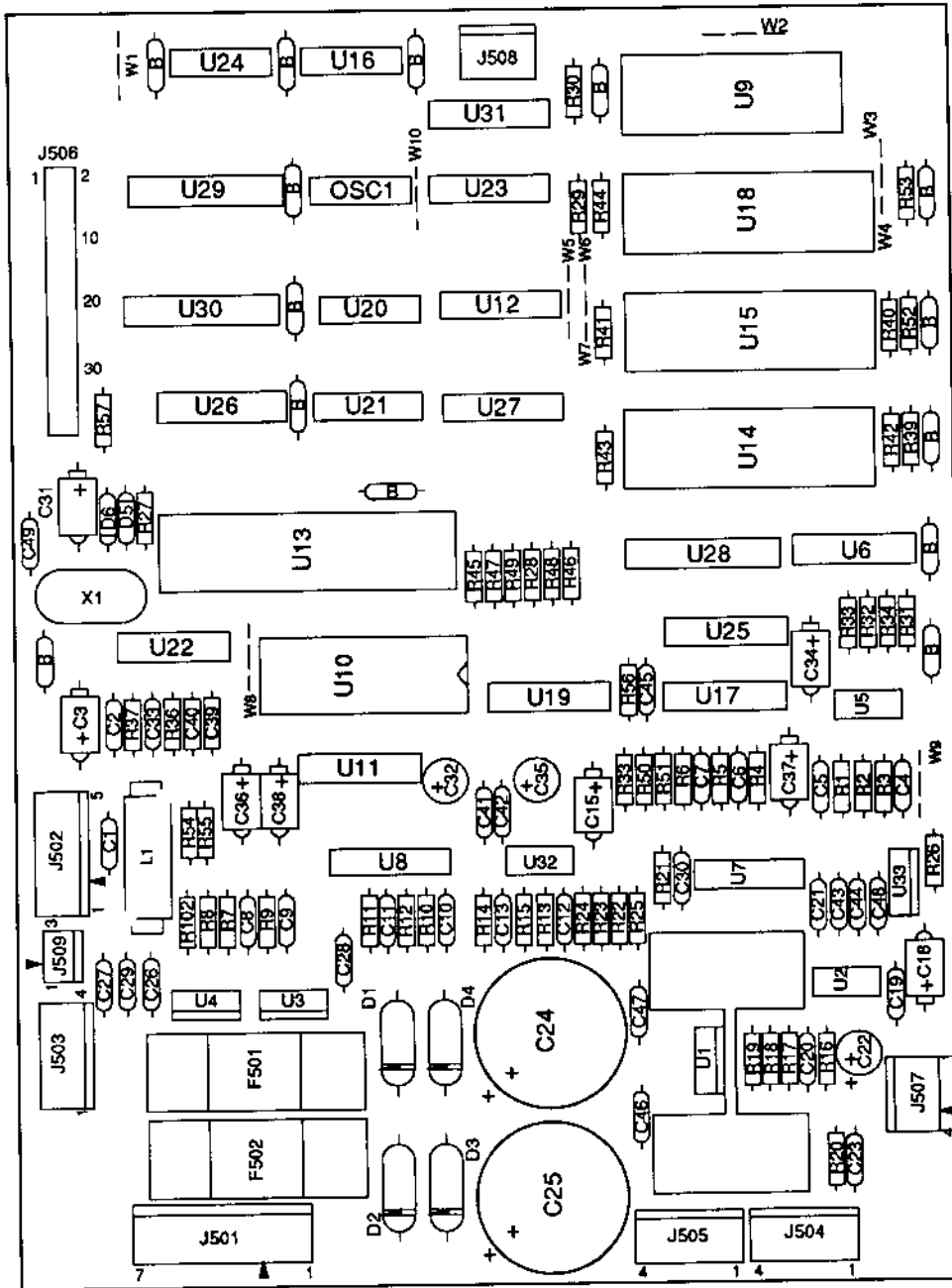


Item	Part Number	Description	Item	Part Number	Description
1.	01-6645	Venting Screen	14.	b) 01-6655	Insert Latch
2.	B-10686-1	Knocker & Bracket Assy.	15.	A-15472	Fliptronic II Board
3.	A-12497	Upper Insert Bd Hinge Assy.	16.	A-15306	Fish Unit Assembly
4.	A-14092-3	Mounting Plate Assembly	17.	A-15632	Fish Panel Cover Assy.
5.	A-12498	Lower Insert Bd Hinge Assy.	Ribbon Cables:		
6.	A-12697-1	Power Driver Assembly	18.	5795-12653-03	Ribbon Cable, 3"
7.	A-12738-50005	WPC Sound Board	19.	5795-13018-00	Ribbon Cable, 22"
8.	A-12742-50005	WPC CPU Board	20.	5795-10938-14	Ribbon Cable, 14"
9.	A-14376-50005	Backbox Assembly	21.	5795-12838-30	Ribbon Cable, 30"
10.	01-9047	Insert Stop Bracket	Miscellaneous Parts:		
11.	A-15498	Speaker / Display Assy.	A-8552-50005	Tempered Backglass Assy.	
a)	5555-12924-00	Speaker, 4Ω, 15w	08-7456	Backbox Glass: 27" x 18-7/8"	
b)	5555-12856-00	Speaker, 5-1/4", 4Ω, 25w	31-1357-50005	Screened Translight	
c)	5045-12914-00	Cap., 10μfd., 50v, (±20%)	03-8228-2	Glass Channel Top (1)	
d)	5901-12784-00	Dot Matrix Display/Driver Bd.	03-8228-3	Glass Channel Edge (2)	
12.	A-14039	Dot Matrix Contoller Board	03-8229-1	Glass Lift Channel (1)	
13.	A-13379	Lock & Plate Assembly			
a)	20-9637	Lock & Cam Kit			
14.	50005-IN	Insert Board			
a)	01-6571	Hinge Mounting Bracket			

A-12738-50005 WPC Audio Board

Part No.	Designator	Description	Part No.	Designator	Description
01-9980		Shield: Wire Protector	5070-08919-00	D5, D6	Diode, 1N4148
4004-01005-06	U1	Mach. Screw, 4-40 x 3/8	5070-09045-00	D1-D4	Diode MR501, 3.0A
4104-01012-04	U1	Sh. Mach. Screw, #4 x 1/4	5250-10495-00	U3	Reg. 7912 1.0A -12v.
4404-01119-00	U1	Nut, 4-40 SNUT	5281-09215-00	U22	IC, 74LS04 Hex INV
5010-08772-00	R21	Resistor, 15K Ω , 1/4w, 5%	5281-09246-00	U12	IC, 74LS139 2-4 Dec.
5010-12065-00	R22, R25	Resistor, 120K Ω , 1/4w, 5%	5281-09486-00	U28-U30	IC, 74LS374 8 Dual Flipflop
5010-08991-00	R51	Resistor, 4.7K Ω , 1/4w, 5%	5281-09487-00	U6, U23-U25	IC, 74LS74 Dual Flipflop
5010-10987-00	R23, R24	Resistor, 56K Ω , 1/4w, 5%	5281-09500-00	U31	IC, 74LS32
5010-09034-00	R13, R14, R29-R31, R33, R34, R50, R45-R49	Resistor, 10K Ω , 1/4w, 5%	5281-09745-00	U26, U27	IC, 74LS138 DMLTPX
5010-09035-00	R4	Resistor, 47K Ω , 1/4w, 5%	5281-09850-00	U20	IC, 74LS11 Tripple AND
5010-09036-00	R35	Resistor, 100K Ω , 1/4w, 5%	5281-10577-00	U16	IC, 74LS125 Q/B Bfr
5010-09134-00	R1, R2, R6, R8, R9, R11, R12	Resistor, 150K Ω , 1/4w, 5%	5370-11086-00	U10	IC, YM2511 Sound
5010-09162-00	R26, R102	Resistor, 100K Ω , 1/4w, 5%	5371-11087-00	U11	IC, YM3012 D/A
5010-08774-00	R3, R5, R17, R19	Resistor, 22K Ω , 1/4w, 5%	5400-10320-00	U13	IC, MPU 68B08E
5010-09269-00	R15	Resistor, 12K Ω , 1/4w, 5%	5284-12651-00	U21	IC 4584
5010-09358-00	R18, R32	Resistor, 1K Ω , 1/4w, 5%	5340-12278-00	U8	S/Ram 2064
5010-09416-00	R28, R36, R37, R39-R44 R52, R53, R57	Resistor, 470 Ω , 1/4w, 5%	5370-09691-00	U17	IC, 55536 CVSD
5010-09534-00	W3, W5, W7-W10	Resistor, 0 Ω	5370-12260-00	U2	IC, 3340 Elec Atten
5010-10171-00	R38, R56	Resistor, 56 Ω , 1/4w, 5%	5370-12728-00	U1	IC, Audio Amp LM1875
5010-10258-00	R16	Resistor, 1M, 1/4w, 5%	5370-12730-00	U7, U8	IC, Op Amp TL084
5010-10650-00	R7, R10	Resistor, 62K Ω , 1/4w, 5%	5370-12742-00	U32	IC, Op Amp TL082
5010-10989-00	R54, R55, R27	Resistor, 470K Ω , 1/4w, 5%	5371-12727-00	U19	Dac AD7524
5010-12752-00	R20	Resistor, 1 Ω , 1/4w, 5%	5432-12726-00	U5	EE Prom Pot X9503
5040-08986-00	C3	Capacitor, 100M, 10v (\pm 20%)	5460-12423-00	U4	IC, LM7812
5040-09332-00	C15, C18, C34, C36, C38	Capacitor, 47 μ fd., 25v, Axial	5460-12743-00	U33	LM7809 TO-220
5040-11036-00	C32, C35	Capacitor, 47 μ fd., 16v, Rad	5520-09020-00	X1	Crystal, 3.58 MHz.
5040-12729-00	C24, C25	Capacitor, 4700 μ fd., 35v.	5521-10931-00	OSC1	Oscillator, 8.0 MHz.
5040-12750-00	C22	Capacitor, 22 μ fd., 35v, Rad.	5551-09822-00	L1	Ind, 4.7UH 3.0A.
5041-09031-00	C26-C29, C37, C46-C48	Capacitor, 1 μ fd. TANT	5700-08985-00	U13	Socket, IC 40-pin, .6"
5041-09243-00	C20, C21	Capacitor, 10 μ fd. TANT	5700-09004-00	U10	Socket, IC 24-pin, .6"
5043-08980-00	C41-C44, B(15)	Capacitor, .01M, 50v, (+80, -20)	5700-09006-00	U11	Socket, IC 16-pin, .3"
5043-08996-00	C1, C2	Capacitor, .1 μ fd., 50v, 10%	A-5343-50005-2	U15	IC, Audio ROM
5048-11027-00	C8, C10	Capacitor, 33pfd., 50v, 10%	A-5343-50005-3	U18	IC, Audio ROM
5048-11028-00	C45	Capacitor, 22pfd., 50V, Axial	Not Used	U14	
5048-11029-00	C39, C49	Capacitor, 100pfd., 50v	5700-12088-00	U1	Socket, IC 32-pin (U15, U18)
5048-11030-00	C12	Capacitor, 470pfd., 50v	5705-12755-00		Heatsink 5299B-220
5048-11031-00	C19, C31	Capacitor, .001 μ fd., 50v, 10%	5731-10356-00	F501, F502	Fuse, 3A, S-B, 250v
5048-11065-00	C13	Capacitor, .0022 μ fd., 50v, 10%, Ax.	5733-12060-01		Fuse Holder (F501, F502)
5048-11072-00	C39, C40	Capacitor, .0033 μ fd.	5791-10862-04	J504, J505	Connector, 4-pin Header Sq. .156
5048-12036-00	C23	Capacitor, .22 μ fd., 10v, Ceramic	5791-10862-05	J502	Connector, 5-pin Header Sq. .156
5048-12745-00	C4, C6	Capacitor, 1800pfd., 50V, 10%	5791-10862-07	J501	Connector, 7-pin Header Sq. .156
5048-12746-00	C5, C7	Capacitor, 330pfd., 50V	5791-12462-03	J509	Connector, 3-pin Header Sq. .100
5048-12748-00	C9, C11, C30	Capacitor, 220pfd., 50V	5791-12462-04	J508	Connector, 4-pin Header Sq. .100
			5791-12516-00	J506	34 Hen 2x17 STR

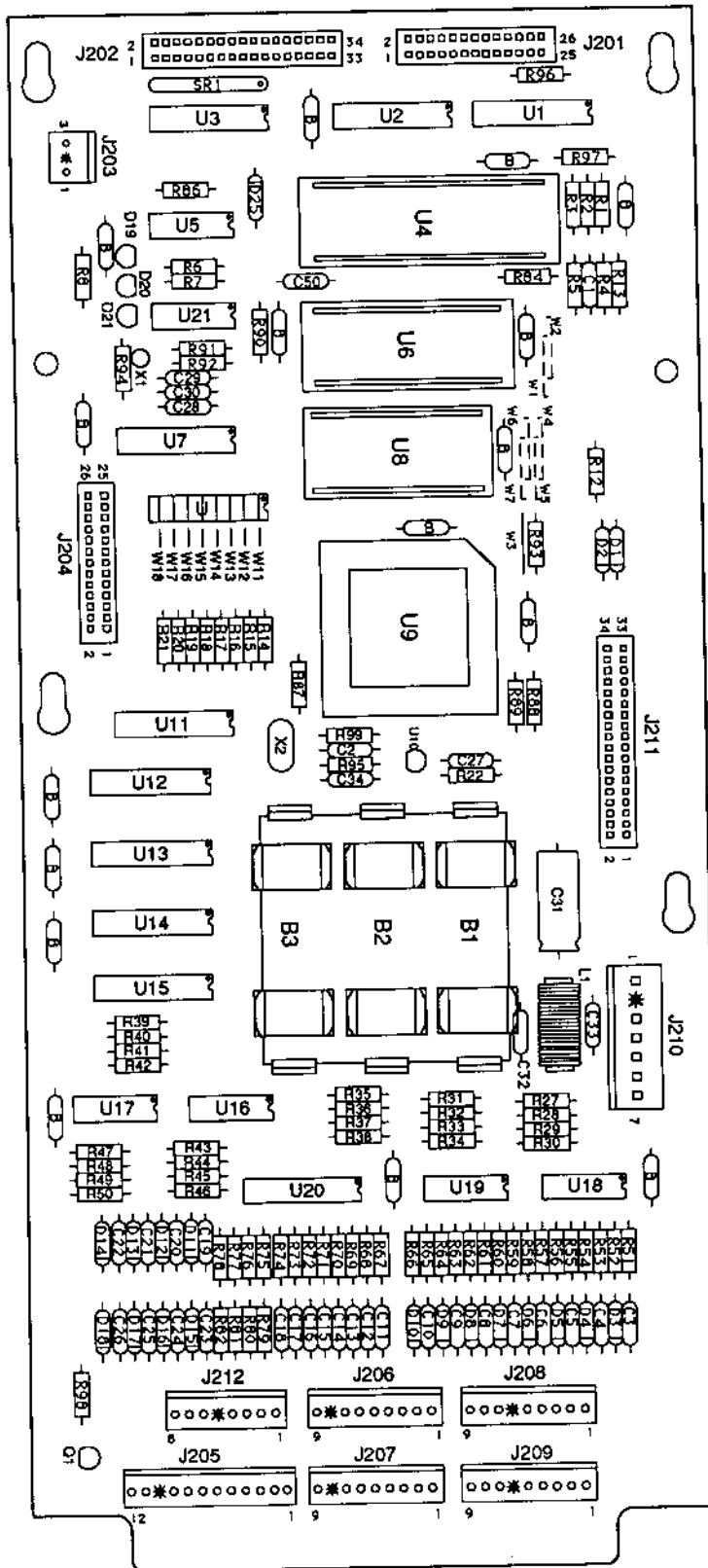
A-12738-50005 WPC Audio Board



A-12742-50005 WPC CPU Board

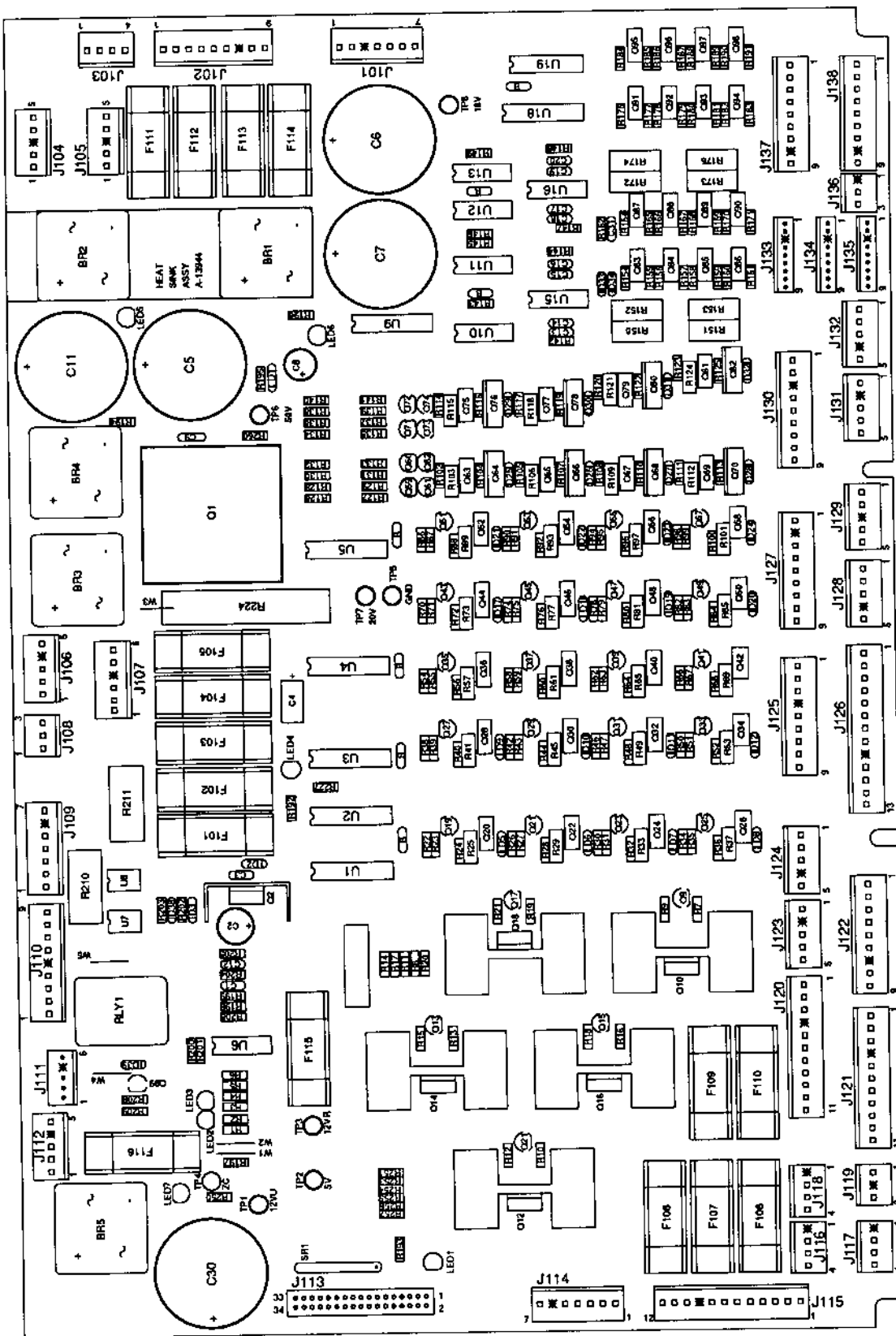
Part Number	Designator	Description
5010-09034-00	R14-R22, R27-R42, R86, R90, R94, R98	Resistor, 10K Ω , 1/4w, 5%
5010-09085-00	R1, R2, R4, R93, R96, R97	Resistor, 1.5K Ω , 1/4w, 5%
5010-09314-00	R52, R54, R56, R58, R60, R62, R64, R66, R75-R82	Resistor, 1.2K Ω , 1/4w, 5%
5010-09358-00	R3, R43-R51, R53, R55, R57, R59, R61, R63, R65, R67-R74, R84	Resistor, 1K Ω , 1/4w, 5%
5010-09416-00	R5-R8, R12, R13, R87-R89	Resistor, 470 Ω , 1/4w, 5%
5010-09534-00	W1, W4, W7, W13 - W18	Resistor, 0 Ω
5010-10258-00	R95, R99	Resistor, .01 μ fd, 1/4w, 5%
5010-10989-00	R92	Resistor, 470K Ω , 1/4w, 5%
5010-12104-00	R91	Resistor, 22 μ fd, 1/4w, 5%
5019-09362-00	SIP 1	SIP, 9R, 10-pin, 4.7K Ω , 5%
5040-08986-00	C31	Capacitor, 100 μ fd, 10v (\pm 20%)
5043-08980-00	B	Capacitor, .01 μ fd, 50v, (+80, -20%)
5043-09030-00	C27	Capacitor, 0.047 μ fd, 50v (\pm 20%)
5043-09065-00	C3 - C26	Capacitor, 470pfd, 50v (\pm 20%)
5043-09491-00	C2, C29, C30, C34	Capacitor, 22pfd, 1KV, (\pm 10%)
5043-09492-00	C28	Capacitor, 100pfd, 50v, (\pm 10%)
5043-09845-00	C32, C33	Capacitor, 1KP, 50v, (\pm 20%)
5070-08919-00	D2 - D18	Diode, 1N4148, 150MA
5070-09266-00	D1, D25	Diode, 1N5817, 1.0A.
5160-10269-00	Q1	Transistor, 2N3904, NPN
5162-12422-00	U20	IC, ULN, 2803A
5281-09308-00	U3	IC, 74LS245, Octal Bus Trncv
5281-09486-00	U14	IC, 74LS374, 8D F/F
5281-09851-00	U5	IC, 74LS14, SMT/TRG
5281-09867-00	U1, U2, U7	IC, Octal Buffer, 74LS244
5281-10182-00	U11, U12, U13, U15	IC, 74LS240 Driver
5284-12651-00	U21	IC, 4584
5340-12278-00	U8	S/RAM 2064
5370-12272-00	U16 - U19	IC, LM339, Quad. Comp
5370-12687-00	U10	MC, 34064 Reset Chip
5520-10438-00	X2	Crystal, 8.0MHz.
5520-12084-00	X1	Crystal 32.768 KHz
5551-09822-00	L1	ILN, 4.7 UH 3A
5671-09019-00	D19 - D21	DSPL LED RED
5700-08985-00	U4	Socket, IC 40P, .6"
5700-12088-00	U6	Socket, IC 32P, .6"
5700-12424-00	U9	Socket, 84 Pin PLCC
5791-10850-00	J201, J204	Connector, 26-pin Header Str Sq.
5791-10862-07	J210	Connector, 7-pin Header Str Sq.
5791-12461-08	J212	Connector, 8-pin Header Str Sq.
5791-12461-09	J206 - J209	Connector, 9-pin Header Sq. pin
5791-12461-12	J205	Connector, 12-pin Header Sq. pin
5791-12516-00	J202, J211	34 Hen 2x17 STR
5881-09021-00	B1 - B3	Battery Holder "AA"
5048-11033-00	C50	Capacitor, 0.022 μ f, 10v
A-5343-50005-1	U6	Game PROM Assembly
5410-12426-00	U9	WPC-89 ASIC
5400-10320-00	U4	IC MPU 68B09E
5880-09022-00	B1 - B3	Battery, Alkaline, 1.5v ("AA")

A-12742-50005 WPC CPU Board



A-12697-1 WPC Power Driver Assembly

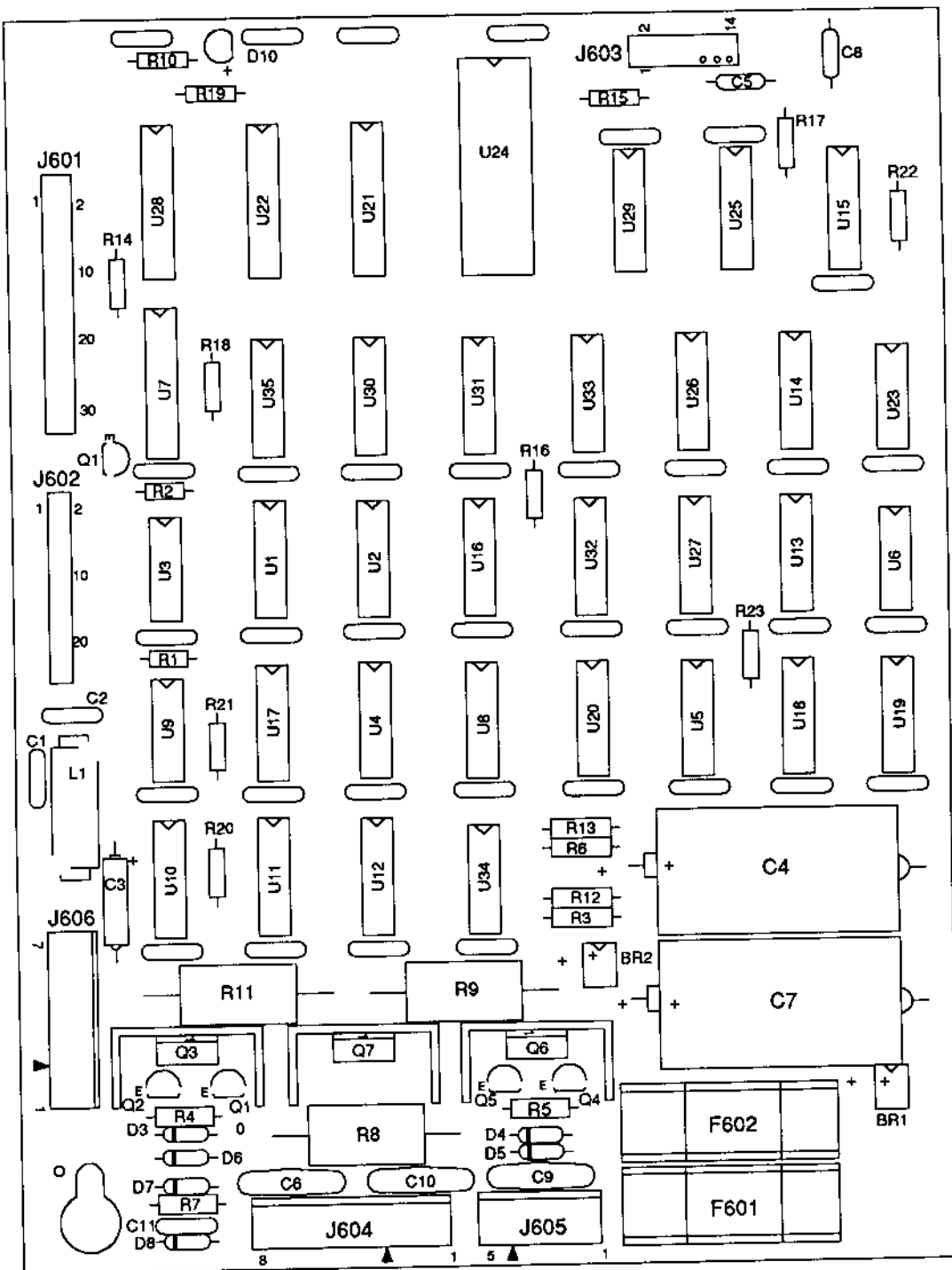
Item	Part Number	Ckt Designator	Description	Item	Part Number	Ckt Designator	Description
1	Not Used			32	5043-08996-00	C13-C20, C31	Capacitor, .1µfd, 50v (±20%)
2	4006-01005-06	Q1, Q2	Mach. Screw, 6-32 x 3/8	33	5043-09845-00	C1, C12	Capacitor, 1.000µfd, 50v (±20%)
3	4406-01128-00	Q1, Q2	Nut, 6-32 KEPS	34	5048-10994-00	C3	Capacitor, .33µfd, 50v (±20%) Ax.
4	4004-01005-08	Q10, Q12, Q14, Q16, Q18	Mach. Screw, 4-40 x 3/8	35	5070-08919-00	D33, D34	Diode, 1N4148, 150MA.
5	4404-01119-00	Q10, Q12, Q14, Q16, Q18	Nut, 4-40 SNUT	36	5070-09054-00	D1-D3, D5-D12, D17-D32, D38, D39	Diode, 1N4004, 1.0A.
6	5010-08981-00	R260	Resistor, 10KΩ, 1/2w, 5%	37	5100-09690-00	BR1-BR5	Bridge Rectifier, 35A., 200v
7	5010-08991-00	R9, R12, R15, R18, R21, R23, R27, R31, R35, R39, R43, R47, R51, R55, R59, R63, R67, R71, R75, R79, R83, R87, R91, R95, R99, R126, R128, R130, R132, R134, R136, R138, R140, R209, R227	Resistor, 4.7KΩ, 1/4w, 5%	38	5131-12725-00	Q10, Q12, Q14, Q16, Q18	Triac, BT138E
8	5010-08992-00	R8, R11, R14, R17, R20, R177, R179, R181, R183, R185, R187, R189, R191	Resistor, 560Ω, 1/4w, 5%	39	5162-12422-00	U19	IC, ULN 2803
9	5010-08993-00	R25, R29, R33, R37, R41, R45, R49, R53, R57, R61, R65, R69, R73, R77, R81, R85, R89, R93, R97, R101, R103, R106, R108, R112, R115, R118, R121, R124	Resistor, 68Ω, 1/4w, 5%	40	5162-12635-00	Q20, Q22, Q24, Q26, Q28, Q30, Q32, Q34, Q36, Q38, Q40, Q42, Q44, Q46, Q48, Q50, Q52, Q54, Q56, Q58, Q63, Q65, Q67, Q69, Q75, Q77, Q79, Q81, Q83 - Q90	Transistor, TIP 102
10	5010-08997-00	R24, R28, R32, R36, R40, R44, R48, R52, R56, R60, R64, R68, R72, R76, R80, R84, R88, R92, R96, R100, R102, R106, R108, R111, R114, R117, R120, R123, R195	Resistor, 2.7KΩ, 1/4w, 5%	41	5194-09055-00	Q9, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31, Q33, Q35, Q37, Q39, Q41, Q43, Q45, Q47, Q49, Q51, Q53, Q55, Q57, Q59-Q62, Q71-Q74, Q99	Transistor, 2N5401 PNP
11	5010-08998-00	R155, R157, R159, R161, R165, R167, R169, R171	Resistor, 2.2KΩ, 1/4w, 5%	42	5191-12179-00	Q64, Q66, Q68, Q70, Q78, Q78, Q80, Q82	Transistor, TIP36C PNP
12	5010-09034-00	R3, R4, R6, R142-R149, R197-R198	Resistor, 10KΩ, 1/4w, 5%	43	5192-12428-00	Q81-Q88	Transistor, TIP 107
13	5010-09085-00	R194, R196, R251, R253-R257	Resistor, 1.5KΩ, 1/4w, 5%	44	5250-12634-00	Q1	Reg LM 323 5v
14	5010-09086-00	R252	Resistor, 8.8KΩ, 1/4w, 5%	45	5281-09486-00	U1-U5, U18	IC, 74LS374 8 Dual D Flipflop
15	5010-09224-00	R1, R2, R192, R201- R205, R209	Resistor, 270Ω, 1/4w, 5%	46	5281-09487-00	U10-U13	IC, 74LS374 Dual D Flipflop
16	5010-09314-00	R176, R178, R180, R182, R184, R186, R188, R190, R206	Resistor, 1.2KΩ, 1/4w, 5%	47	5281-10182-00	U9	IC, 74LS240, L/Drvr
17	5010-09324-00	R154, R156, R158, R160, R164, R166, R168, R170, R162, R193, R199, R200, R250	Resistor, 27KΩ, 1/4w, 5%	48	5370-12272-00	U6, U15, U16	IC, LM339 Quad. Comp
18	5010-09358-00	R154, R156, R158, R160, R164, R166, R168, R170, R162, R193, R199, R200, R250	Resistor, 1KΩ, 1/4w, 5%	49	5460-12423-00	Q2	IC, LM 7812
19	5010-09361-00	R104, R107, R110, R113, R116, R119, R122, R125	Resistor, 220Ω, 1/4w, 5%	50	5490-10892-00	U7, U8	Opto Isolator, 4N25
20	5010-09416-00	R22, R26, R30, R34, R38, R42, R46, R50, R54, R58, R62, R66, R70, R74, R78, R82, R86, R90, R94, R98, R127, R129, R131, R133, R135, R137, R139, R141	Resistor, 470Ω, 1/4w, 5%	51	5580-08994-01	RLY 1	Relay 4PDT 6VDC5A VS
21	5010-09534-00	W1, W2	Resistor, Ω	52	5671-09019-00	LED1 - LED7	Display LED Red
22	5010-11079-00	R7, R10, R13, R16, R19	Resistor, 51Ω, 1/4w, 5%	53	5701-09652-00	Q1	Thermal Pad TO-3
23	5010-12427-00	R150-R153, R172-R175	Resistor, .22Ω, 1w, 5%	54	5705-09199-00	Q2	Heatsink #60308
24	5012-12632-00	R224	Resistor, .12Ω, 10w, 5%	55	Not Used		
25	5012-12239-00	R210, R211	Resistor, 3.3KΩ, 5w, 10%	56	5705-12637-00	Q1	Heatsink 5054
26	5019-10143-00	SR1	SIP, 9P, 10 pin, 470Ω, 5%	57	5705-12638-00	Q10, Q12, Q14, Q16, Q18	Heatsink 5298B
27	5040-08988-00	C4	Capacitor, 100µfd, 10v (±20%)	58	5733-12060-01		Fuse Holder, F101-F116
28	5040-09421-00	C2	Capacitor, 100µfd, 25v (+50, -10%)	59	Not Used		
29	5040-09537-00	C8	Capacitor, 100µfd, 100v (±20%)	60	5791-10862-03	J108, J119, J136	Connector, 3-pin Header STR Sq.
30	5040-12313-00	C5, C6, C7, C11, C30	Capacitor, 15,000µfd, 25v (±20%)	61	5791-10862-04	J103, J116-J118	Connector, 4-pin Header STR Sq.
31	5043-08980-00	B-BYPASS	Capacitor, .01µfd, 50v (+80, -20%)	62	5791-10862-05	J112, J104-J106, J123, J124, J128, J129, J131, J132	Connector, 5-pin Header STR Sq.
				63	5791-10862-06	J107	Connector, 6-pin Header STR Sq.
				64	5791-10862-07	J101, J109, J114	Connector, 7-pin Header STR Sq.
				65	5791-10862-09	J102, J110, J122, J125, J127, J130, J137, J138	Connector, 9-pin Header STR Sq.
				66	5791-10862-11	J120, J121	Connector, 11-pin Header STR Sq.
				67	5791-10862-12	J115	Connector, 12-pin Header STR Sq.
				68	5791-10862-13	J126	Connector, 13-pin Header STR Sq.
				69	5791-12461-05	J111	Connector, 5-pin Header STR Sq.
				70	5791-12461-09	J133-J135	Connector, 9-pin Header STR Sq.
				71	5791-12516-00	J113	34 HEN 2x17 STR
				72	5824-09248-00	TP1-TP8	Test Point #1502-1
				73	5041-09163-00	C9	Capacitor, 2.2µfd TANT
				74-100	Not Used		
				101	Not Used		
				102	5730-09071-00	F114	Fuse, 8A, 32v
				103	Not Used		
				104	5731-09432-00	F112	Fuse, S-B, 7A., 250v
				105	5731-09651-00	F106 - F111, F113	Fuse, S-B, 5A., 250v
				106	Not Used		
				107	5731-10356-00	F101 - F105, F116	Fuse, S-B, 3A., 250v
				108	5730-09797-00	F115	Fuse, S-B, 3/4A., 250v
				109	5705-12698-00		Heatsink #62365
				110	4010-01006-00		Mach. Screw, 10-32 x 5/8



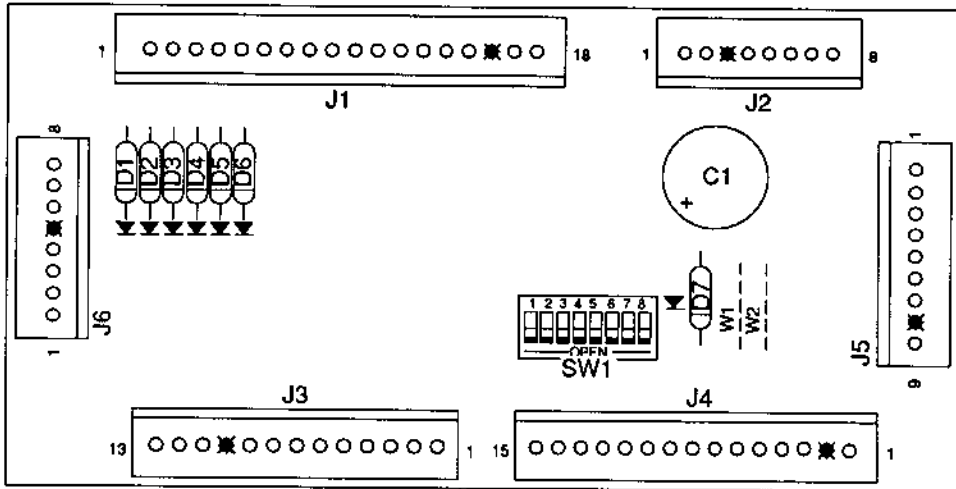
A-14039 Dot Matrix Controller Assembly

Part Number	Ckt Designator	Description
5010-08991-00	R1	Resistor, 4.7K Ω , 1/4w, 5%
5010-09224-00	R10	Resistor, 270 Ω , 1/4w, 5%
5010-12832-00	R3, R6, R12, R13	Resistor, 47K Ω , 1/2w, 5%
5010-12841-00	R4, R5	Resistor, 120 Ω , 1/2w, 5%
5012-12830-00	R9	Resistor, 1.8K Ω , 5w, 5%
5012-12842-00	R11	Resistor, 120 Ω , 5w, 5%
5012-12843-00	R8	Resistor, 4.7K, 5w, 5%
5010-10171-00	R7	Resistor, 56 Ω , 1/4w, 5%
5040-08986-00	C3	Capacitor, 100 μ fd., 10v, (\pm 20%)
5040-12324-00	C4, C7	Capacitor, 150 μ fd., 160v, (\pm 50%)
5043-08980-00	BYPASS	Capacitor, .01 μ fd., 50v, (+80, -20%)
5043-09072-00	C6, C9, C10	Capacitor, .1 μ fd., 500v, (+80, -20%)
5043-09845-00	C1, C2, C11	Capacitor, 1KP, 50v, (\pm 20%)
5043-09492-00	C5, C8	Capacitor, 100P, 50v, (\pm 10%)
5070-09054-00	D7	Diode, 1N4004, 1.0A.
5075-12824-00	D6, D8	Zener, 1N4742A, 12v
5075-12823-00	D4, D5	Zener, 1N4758A, 62v
5075-12826-00	D3	Zener, 1N4759A, 62v
5100-12833-00	BR1, BR2	Bridge, 400v, 1A.
5160-10269-00	Q1	Transistor, 2N3904 NPN
5164-09056-00	Q2, Q10	Transistor, MPSD02, NPN
5164-12154-00	Q3, Q7	Transistor, MJE15030 NPN
5194-09055-00	Q4, Q5	Transistor, MPSD52 PNP
5194-12155-00	Q6	Transistor, MJE15031 PNP
5281-09738-00	U16, U25 - U27	IC, 74LS157
5281-10033-00	U3	IC, 74LS30
5281-10043-00	U31 - U33, U35	IC, 74LS175
5311-10946-00	U4, U5, U17, U18, U20	IC, 74HC74
5311-10947-00	U9	IC, 74HC125
5311-10951-00	U10, U11	IC, 74HC161
5311-10977-00	U6	IC, 74HC04
5311-12817-00	U29	IC, 74HC165
5311-12819-00	U21	IC, 74HC688
5311-12820-00	U23	IC, 74HC27
5311-12822-00	U13 - U15	IC, 74HC193
5315-12009-00	U22	IC, 74HCT374
5315-12812-00	U1, U2, U30	IC, 74HCT138
5281-09308-00	U28	IC, 74HCT245
5315-12815-00	U8, U34	IC, 74HCT08
5315-12816-00	U19	IC, 74HCT32
5315-12821-00	U7	IC, 74HCT240
5340-12278-00	U24	S/RAM 2064 150NS
5551-09822-00	L1	IND 4.7 μ H, 3.0A.
5671-09019-00	D10	Display LED Red
5705-09199-00	Q3, Q6, Q7	Heatsink 6030B
5731-12328-00	F601, F602	Fuse, 3/8A., SB, 250v
5733-12060-00		Fuse Holder (F601, F602)
5791-10850-00	J602	Connector, 26-pin STR Sq.
5791-10862-05	J605	Connector, 5-pin Header Sq.
5791-10862-07	J606	Connector, 7-pin Header Sq.
5791-10862-08	J604	Connector, 8-pin Header Sq.
5791-12516-00	J601	34 Hen 17x2 STR
5791-12827-00	J603	14 Hen 7x2 STR
5010-09036-00	R14-R23	Resistor, 100 Ω , 1/4w, 5%
4006-01003-06	Q3, Q6, Q7	Mach. Screw, 6-32 x 3/8
4406-01128-00	Q3, Q6, Q7	Nut, 6-32 KEPS

A-14039 Dot Matrix Controller Assembly



A-14689 WPC Coin Door Interface Board

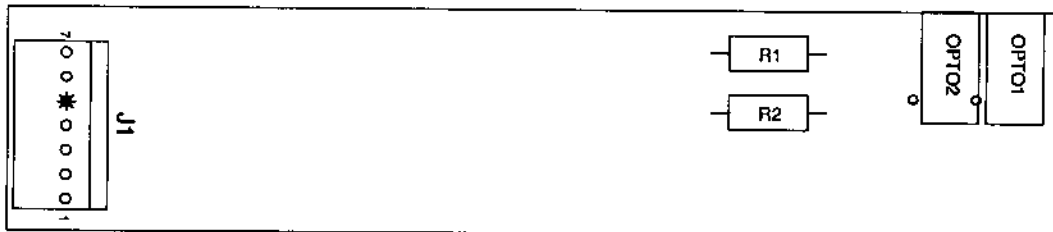


Part Number	Designator	Description
5070-09054-00	D1-D7	Diode, 1N4004, 1.0A.
5791-10862-18	J1	Connector, 18-pin Header Str Sq.
5791-10862-08	J2, J6	Connector, 8-pin Header Str Sq.
5791-10862-13	J3	Connector, 13-pin Header Str Sq.
* 5791-10862-15	J4	Connector, 15-pin Header Str Sq.
* 5791-10862-09	J5	Connector, 9-pin Header Str Sq.
* 5645-09025-00	SW1	Switch DIP 8-Position

Notes:

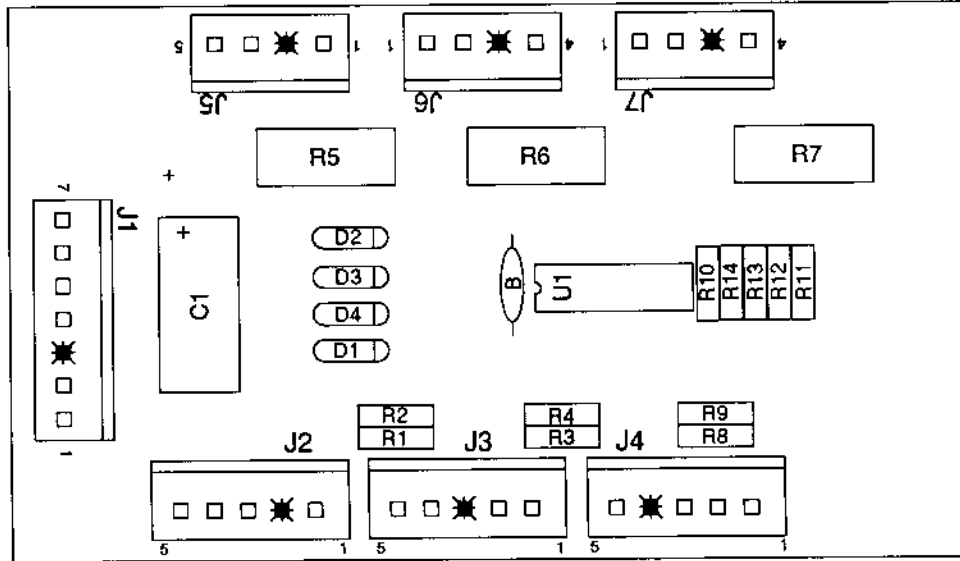
1. For Belgium, France, Finland, Sweden and England use A-14689-1 Coin Door Interface Board.
2. * - Used on Electronic Coin Door only.

A-15894 Flipper Opto Board

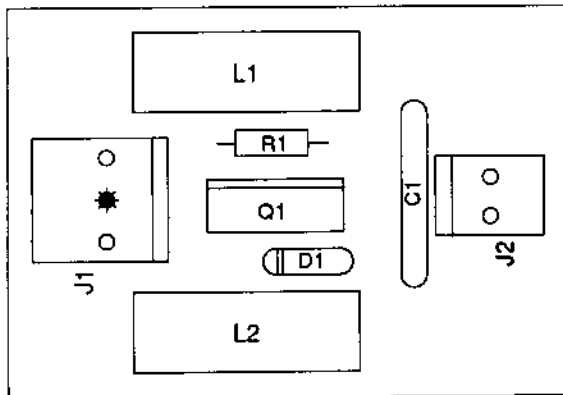


Part Number	Designator	Description
5010-08930-00	R1, R2	Resistor 470Ω, 1/2w, 5%
5490-12451-00	OPTO1, OPTO2	Opto Inter Lg. 10ma.
5791-12273-07	J1	Connector, 7-pin Header

A-13901-1 Opto Ramp Switch Assembly



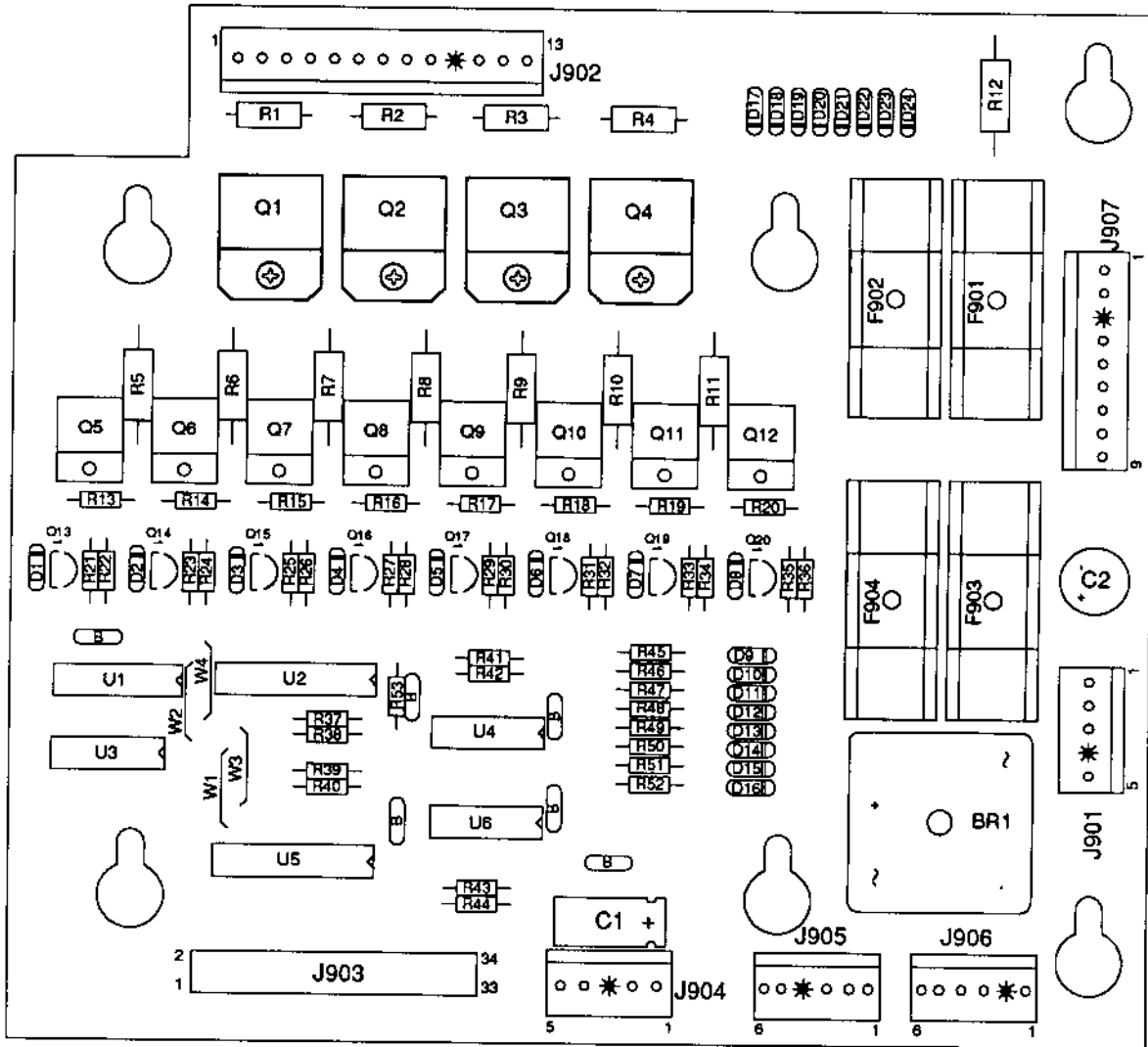
Part Number	Designator	Description
5010-08774-00	R10, R13	Resistor, 22ΩK, 1/4w, 5%
5010-09034-00	R14	Resistor, 10KΩ, 1/4w, 5%
5010-09162-00	R11, R12	Resistor, 100KΩ, 1/4w, 5%
5010-09999-00	R1 - R4, R8, R9	Resistor, 2KΩ, 1/4w, 5%
5010-12733-00	R5 - R7	Resistor, 220Ω, 1w, 5%
5040-12298-00	C1	Capacitor, 100μfd., 40v (+50, -10%)
5043-08980-00	B	Capacitor, .01μfd., 50v (+80, -20%)
5070-09054-00	D1 - D4	Diode, 1N4004
5370-12272-00	U1	IC, LM339 Quad.
5791-12273-05	J2, J3	Connector, 5-pin Header Sq.
5791-12273-07	J1	Connector, 7-pin Header Sq.



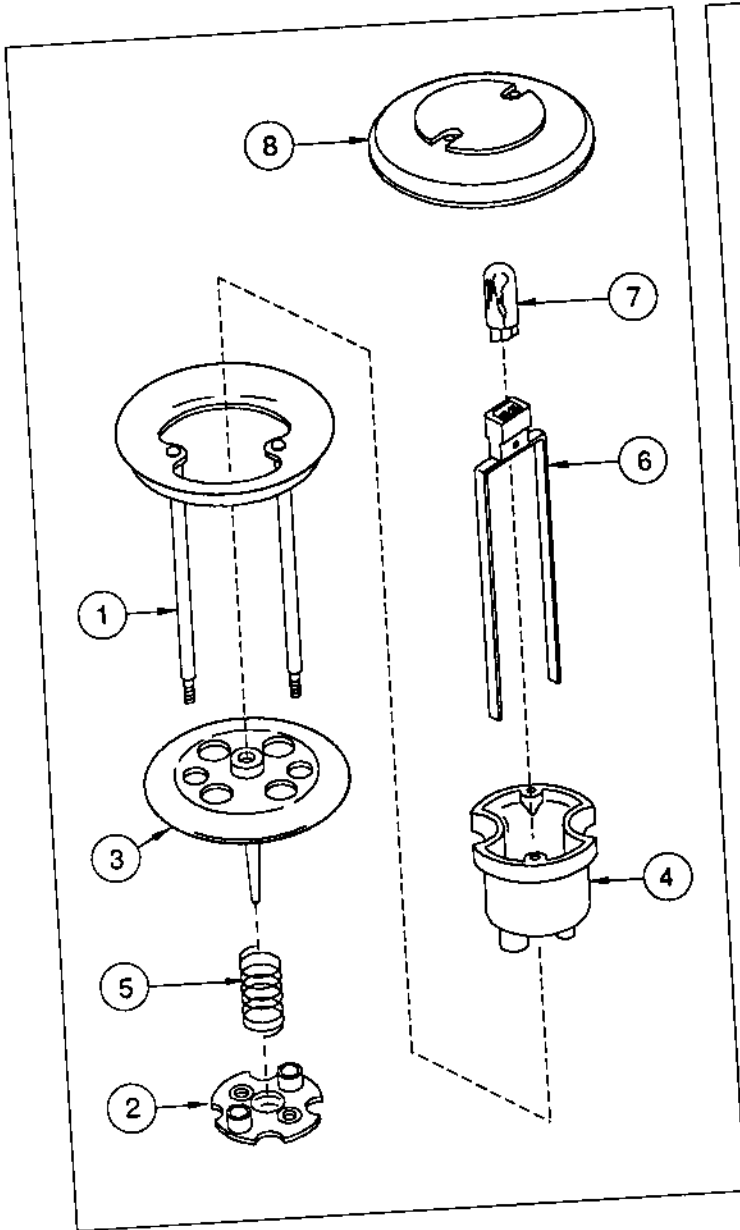
A-15340 Motor EMI Board

Part Number	Designator	Description
5551-09822-00	L1, L2	Ind. 4.7MH3AMP
5791-12273-03	J1	Connector, 3-pin Header Sq.
5791-12273-02	J2	Connector, 2-pin Header Sq.
5010-08998-00	R1	Resistor, 2.2KΩ, 1/4w, 5%
5070-09054-00	D1	Diode 1N4004, 1.0A.
5162-12635-00	Q1	Transistor TIP 102

A-15472 Fliptronic II Board



Part Number	Designator	Description	Part Number	Designator	Description
01-10572	Q1-Q4	Heatsink	5070-09054-00	D1 - D24	Diode 1N4004
20-9684	Q5-Q12	Fastener Snap	5162-12635-00	Q5-Q12	Transistor TIP102 NPN
4006-01003-08	Q1-Q4	Mach. Screw, 6-32	5190-09016-00	Q13 - Q20	Transistor 2N4403 PNP
4406-01128-00	Q1-Q4	Nut 6-32 KEPS	5191-12179-00	Q1-Q4	Transistor TIP36C PNP
5010-09034-00	R37 - R44, R53	Resistor, 10K Ω , 1/4w, 5%	5315-12009-00	U2	IC 74HCT374
5010-09358-00	R22, R24, R26, R28, R30, R32, R34, R36, R45 - R52	Resistor, 1K Ω , 1/4w, 5%	5315-12031-00	U5	IC 74HCT244
5010-09361-00	R1 - R4	Resistor, 220 Ω , 1/2w, 5%	5315-12812-00	U1	IC 74HCT138
5010-09416-00	R21, R23, R25, R27, R29, R31, R33, R35	Resistor, 470 Ω , 1/4w, 5%	5315-12951-00	U3	IC 74HCT00
5010-09534-00	W3, W4	Resistor, 0 Ω	5370-12272-00	U4, U6	IC LM339 QUAD COMP
5010-10171-00	R13 - R20	Resistor, 56 Ω , 1/4w, 5%	5791-10862-09	J907	Connector, 9-pin Header Sq. Pin
5011-12956-00	R5 - R12	Resistor, 2.7K Ω , 1w, 5%	5791-10862-05	J901, J904	Connector, 5-pin Header Sq. Pin
5040-08986-00	C1	Capacitor, 100M, 10v	5791-10862-13	J902	Connector, 13-pin Header Sq. Pin
5043-08980-00	B	Capacitor, .01 μ F, 50v	5791-12461-06	J905, J906	Connector, Str Sq. Pin Header .100
5040-09537-00	C2	Capacitor, 100 μ F, 100v	5791-12516-00	J903	34 HEN 2x17 STR
			5100-09690-00	BR1	Bridge Rectifier
			5731-10356-00	F901 - F904	Fuse S-B, 3A., 250v
			5733-12060-01	-	Fuse Holder (F901-F904)

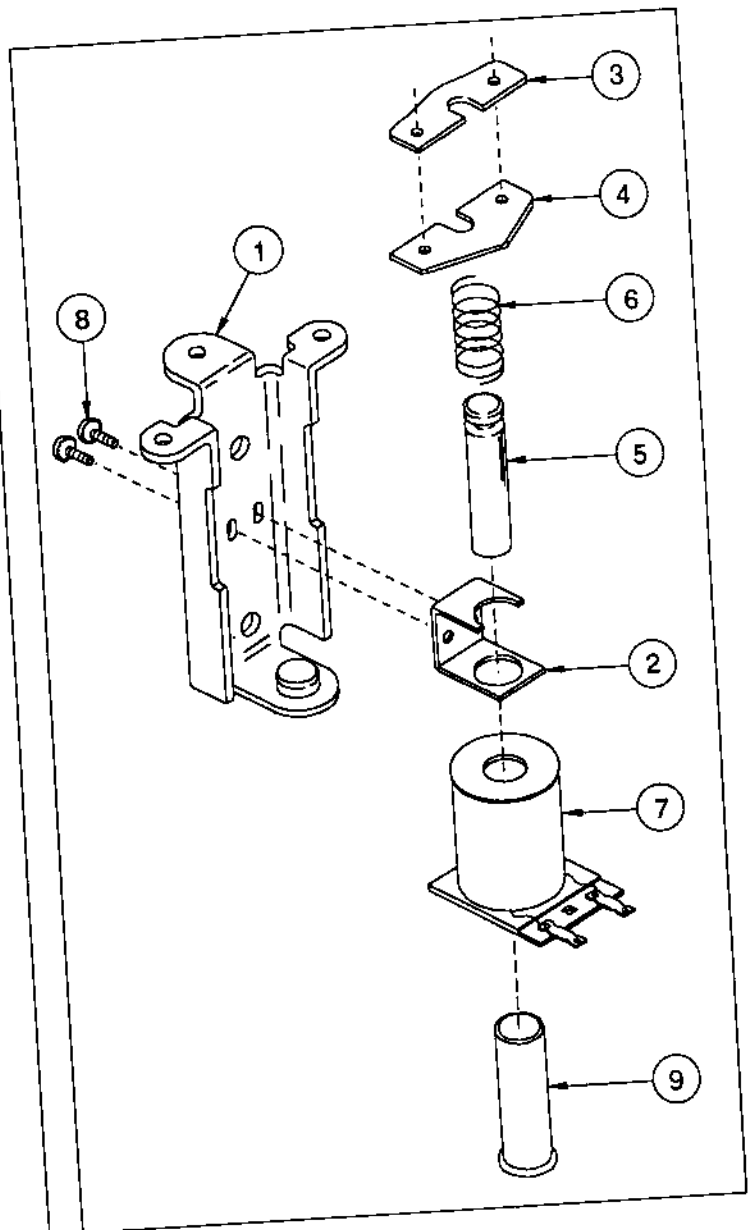


**B-9414-3
Jet Bumper Assembly**

Item	Part Number	Description
1.	A-4754	Bumper Ring Assembly
2.	03-6009-A5	Bumper Base, White
3.	03-6035-4	Bumper Wafer, Red
4.	03-7443-5	Bumper Body, White
5.	10-7	Spring
6.	24-8776	Socket - Wedge Base
7.	24-8768	Bulb #555 (6.3V., 0.25A.)

Associated Parts:

8.	03-8254-9	Jet Bumper Cap, Trans. Red (3)
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**A-9415-2
Jet Bumper Coil Assembly**

Item	Part Number	Description
1.	B-7417	Bracket & Stop Assembly
2.	01-1747	Coil Retaining Bracket
3.	01-5492	Armature Link, Steel
4.	01-5493	Armature Link, Bakelite
5.	02-3406-1	Coil Plunger
6.	10-326	Armature Spring
7.	AE-26-1200	Coil Assembly
8.	4006-01017-04	Mach. Screw, 6-32 x 1/4"
9.	03-7066	Coil Tubing

A-15205-R-2
A-15205-L-2

Fliptronic II Flipper Assembly (Lower Right)
Fliptronic II Flipper Assembly (Lower Left)

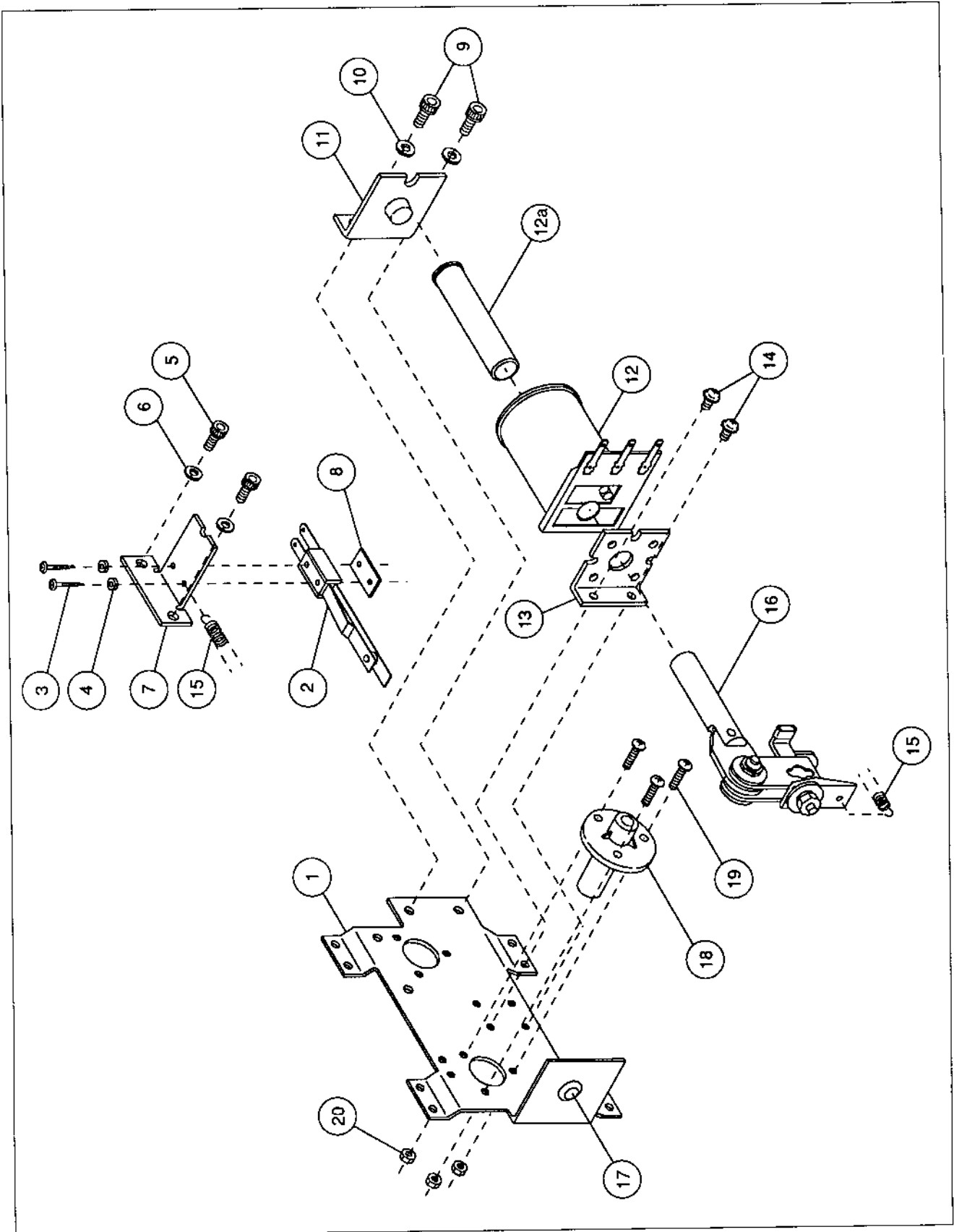
Item	Part Number	Description
1.	B-13104-R	Flipper Base Assy, Right
	* B-13104-L	Flipper Base Assy, Left
2.	SW-1A-193	Switch Assembly
3.	4701-00002-00	Lockwasher, #6 Split
4.	4105-01019-10	Sh. Metal Screw, #5 x 5/8 P-RH-A
5.	4008-01079-05	Mach. Screw, 8-32 x 5/16 H-SOC
6.	4701-00003-00	Lockwasher, #8 Split
7.	01-9375	Lock Mounting Bracket
8.	20-6516	Speednut, Tinnerman
9.	4010-01066-06	Cap Screw, 10-32 x 3/8, SH
10.	4701-00004-00	Lockwasher, #10 Split
11.	A-12111	Flipper Stop Assembly
12.	FL-11629	Flipper Coil (Blue)
a)	03-7066-5	Coil Tubing
13.	01-7695	Solenoid Bracket
14.	4006-01017-04	Mach. Screw, 6-32 x 1/4 P-RH-S
15.	10-364	Spring
16.	B-13882-R	Crank Link Assembly, Right
	* B-13882-L	Crank Link Assembly, Left
a)	B-13884-R	Flipper Crank Assembly, Right
	* B-13884-L	Flipper Crank Assembly, Left
b)	A-10656	Flipper Link Assembly
c)	02-4179	Link Spacer Bushing
d)	4010-01086-14	Cap Screw, 10-32 x 7/8 SH
e)	4700-00023-00	Flatwasher, 5/8 x 13/64 x 16ga.
f)	4701-00004-00	Lockwasher #10 Split
g)	4410-01132-00	Nut, 10-32 ESN
17.	23-6577	Bumper Plug, 5/8"
18.	03-7568	Flipper Bushing
19.	4006-01005-06	Mach. Screw, 6-32 x 3/8 P-PH
20.	4406-01117-00	Nut, 6-32 Hex.

Notes:

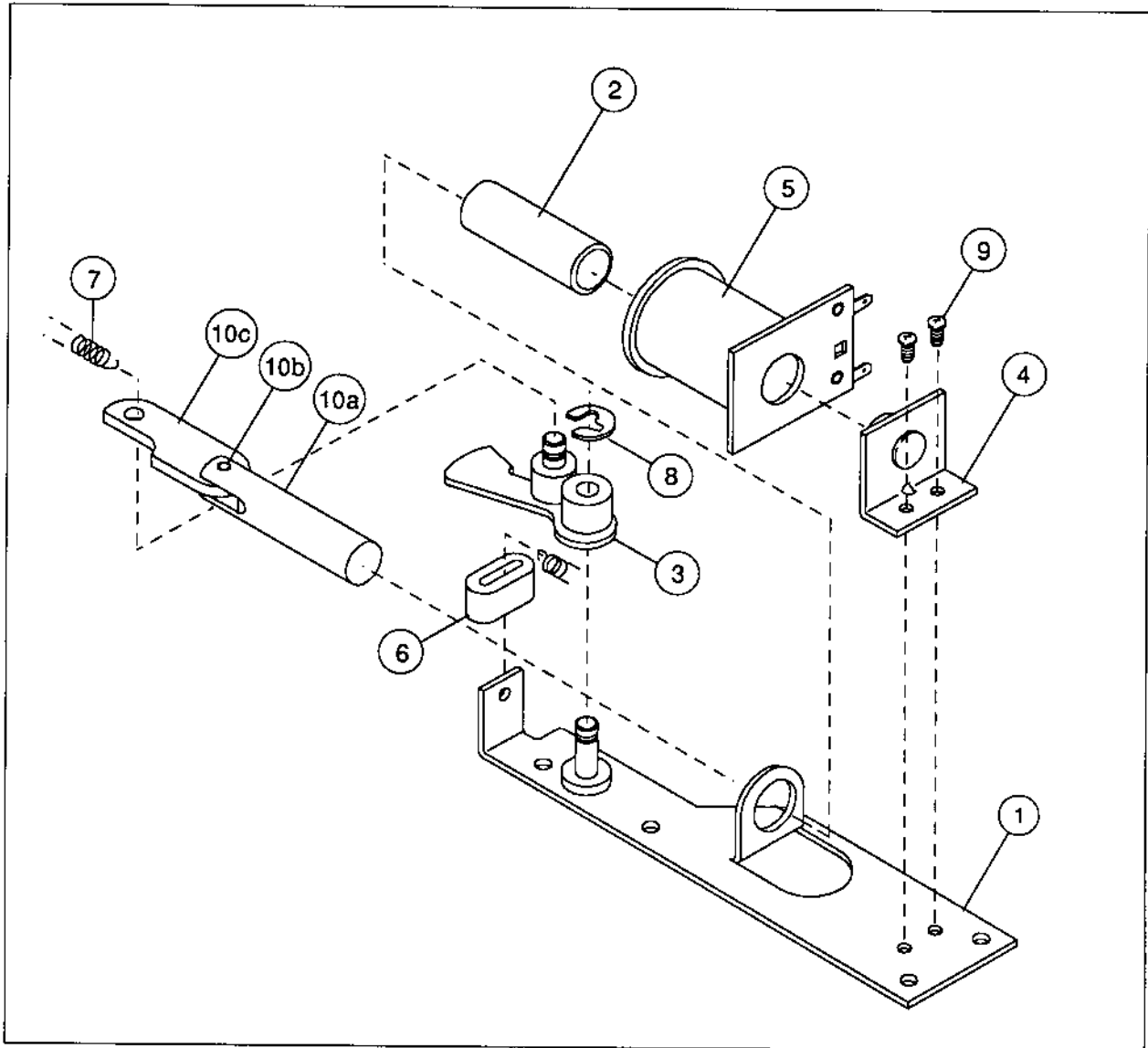
1. * Items for Left Flipper Assembly ONLY.
2. Each Flipper Assembly is mounted beneath the playfield, in conjunction with the Plastic Flipper & Shaft, (20-9250-6) and Flipper Rubber (23-6519-4) on the upper side of the playfield.
3. With the flipper, in the non-activated position, the E.O.S. Switch contacts must have a gap of .062 (±.015) inch. When flipper is activated switch must close.
4. Any adjustment of the E.O.S. Switch must be made at a minimum distance of 0.25 inch from the switch body.
5. Longer blade of E.O.S. Switch must be straight. Gap adjustment is done by adjusting shorter blade.
6. All moving elements of the assembly must operate freely without any evidence of binding.
7. Apply Loctite™ 242 when reattaching screws to the Flipper Stop Assy, the Solenoid Bracket, and the Flipper Bushing.

Associated Parts for Left & Right Flippers:

21.	23-6519-4	Flipper Rubber (Red)
22.	20-9250-6	Flipper & Shaft (Yellow)

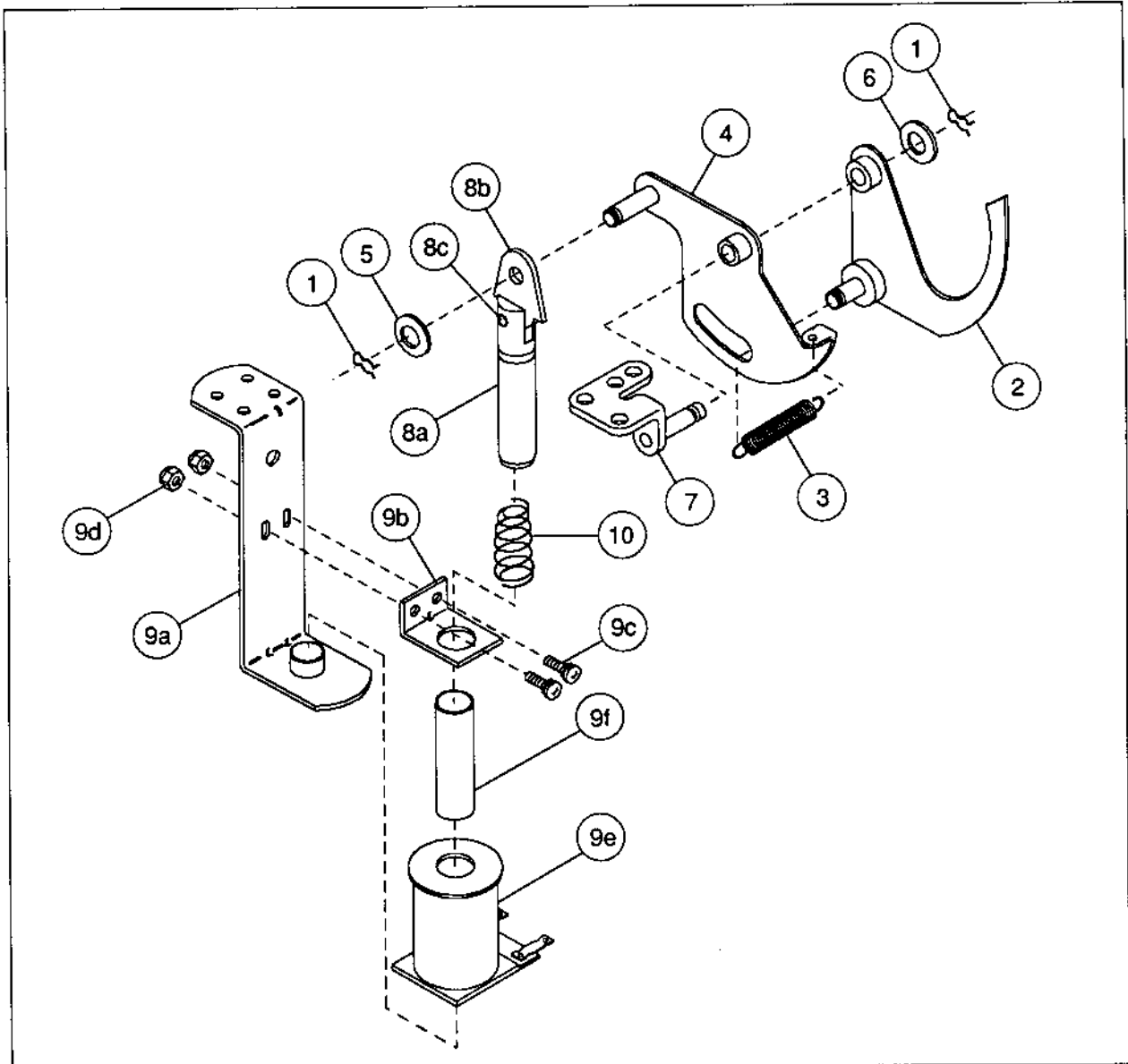


A-8039-3 Outhole Kicker Assembly



Item	Part Number	Description
1.	A-6378	Mounting Plate Assembly
2.	03-7066	Coil Tubing
3.	A-6889	Kicker Lever Assembly
4.	A-8038	Coil Stop Assembly
5.	AE-27-1200	Coil Assembly
6.	03-7176-1	Striker Ring
7.	10-101-4	Spring-Reset
8.	20-8712-25	"E" Ring, 1/4" Shaft
9.	4006-01003-03	Mach. Screw, 6-32 x 3/16"
10.	A-8335	Coil Plunger Assembly
a)	02-2364	Coil Plunger
b)	20-8716-5	Roll Pin, 1/8 x 7/16"
c)	01-4251	Ball Return Link

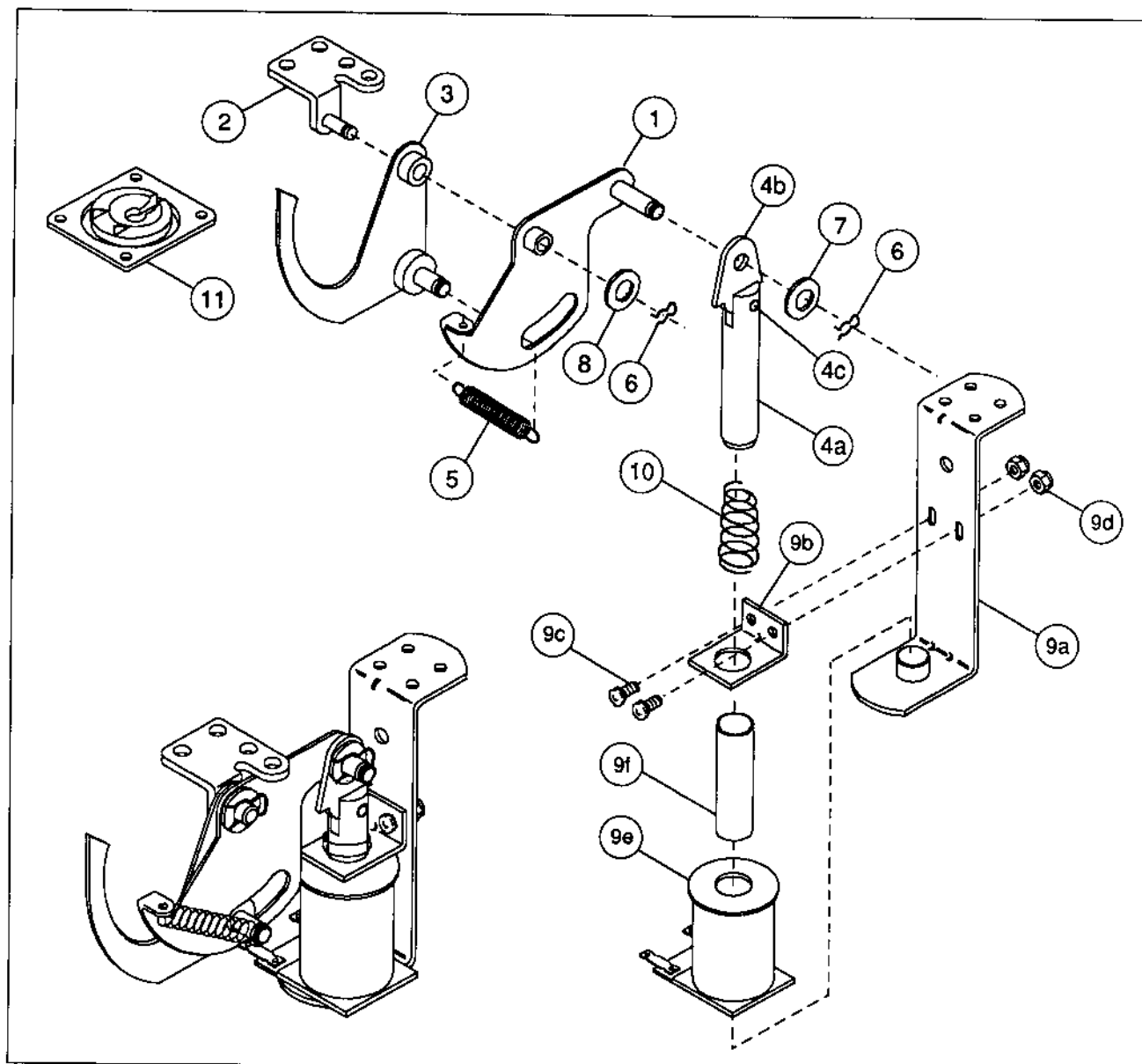
C-9638 Ball Shooter Lane Feeder Assembly



Associated Parts:

Item	Part Number	Description	Item	Part Number	Description
1.	12-6227	Hairpin Clip	9.	B-9362-R-3	Coil & Bracket Assembly
2.	A-8247	Eject Cam Assembly	a)	B-7572-1	Bracket & Stop Assembly
3.	10-362	Ejector Spring (Plain)	b)	01-8-508-S	Coil Retaining Bracket
4.	A-6949-L	Spring Plate Assembly	c)	4006-01017-06	Mach. Screw, 6-32 x 3/8
5.	4700-00030-00	Flatwasher, 17/64 x 1/2 x 15ga.	d)	4406-01119-00	Nut, 6-32 ESN
6.	4700-00103-00	Flatwasher, 17/64 x 1/2 x 28ga.	e)	AE-26-1200	Coil Assembly
7.	A-8268	Mounting Bracket Assembly	f)	03-7066	Coil Tubing
8.	A-8050-1	Coil Plunger Assembly	10.	10-128	Spring
a)	02-3407-2	Coil Plunger Assy, 2-1/8"			
b)	03-8085	Armature Link			
c)	20-8716-5	Roll Pin, 1/8 x 7/16"			

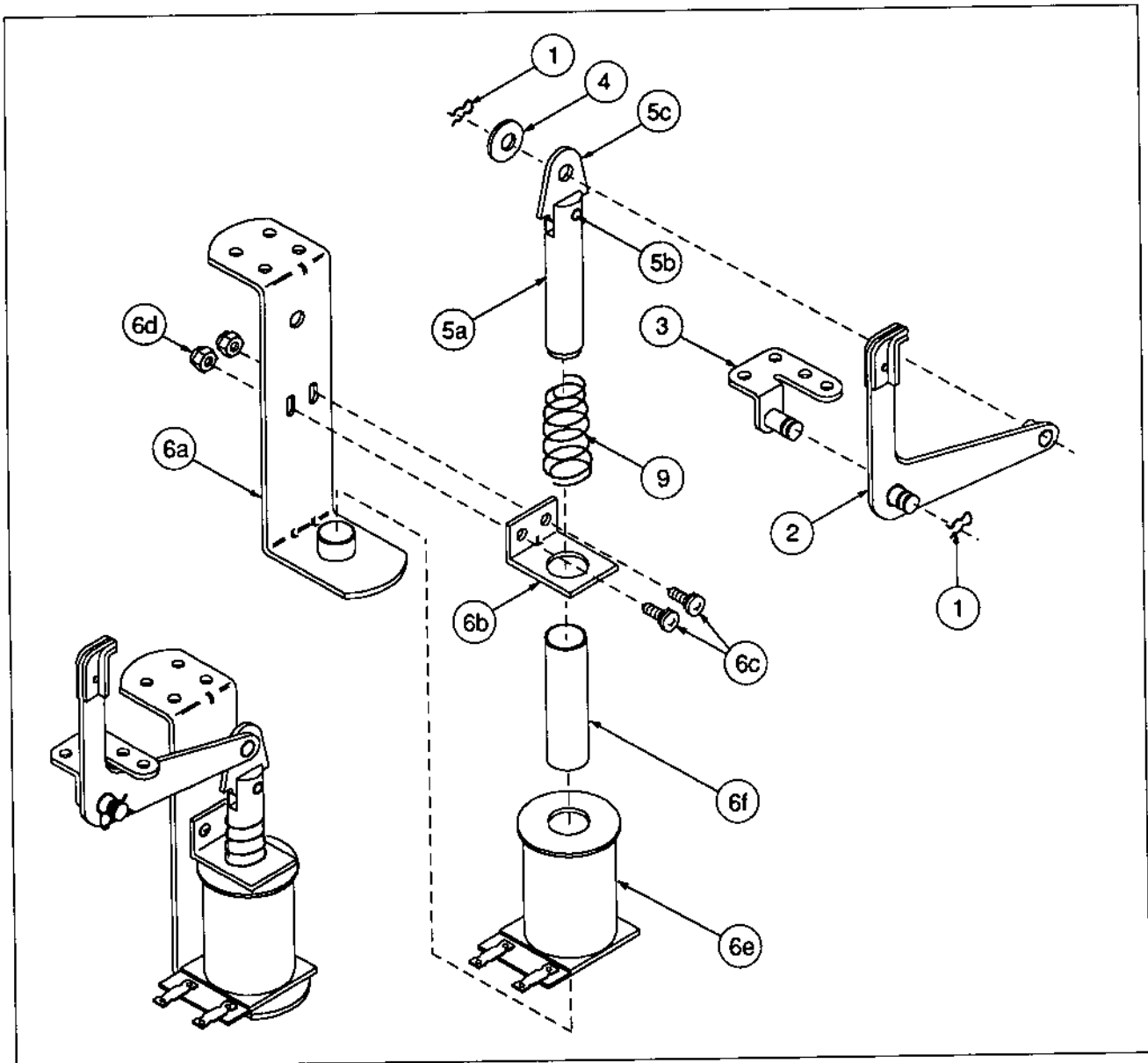
A-9361-R-11 Ball Eject Assembly



Associated Parts:

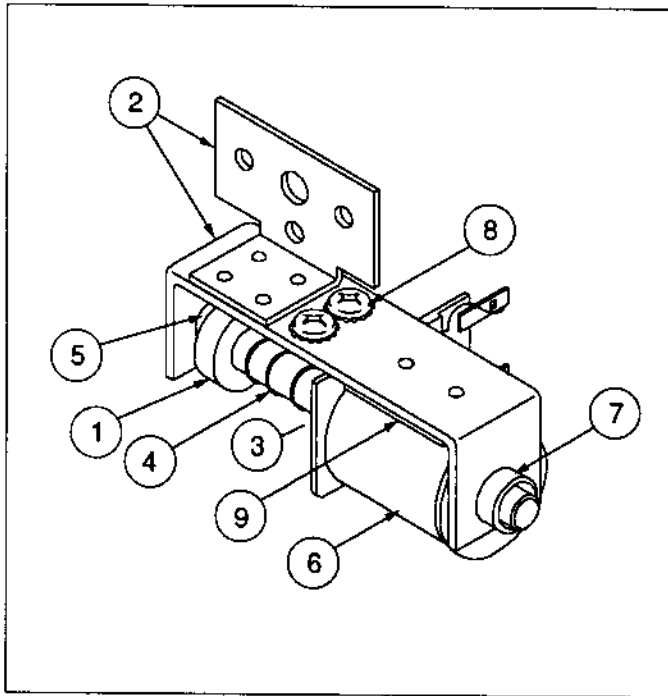
Item	Part Number	Description	Item	Part Number	Description
1.	A-6949-R	Spring Plate Assembly	9.	B-9362-R-3	Coil & Bracket Assembly
2.	A-8268	Mounting Bracket Assembly	a)	B-7572-1	Bracket & Stop Assembly
3.	A-7471-R	Eject Cam Assembly	b)	01-8-508-S	Coil Retaining Bracket
4.	A-8050-2	Coil Plunger Assembly	c)	4006-01017-06	Mach. Screw, 6-32 x 3/8
a)	02-3407-1	Coil Plunger Assy., 2-5/16"	d)	4406-01119-00	Nut, 6-32 ESN
b)	03-8085	Armature Link	e)	AE-26-1200	Coil Assembly
c)	20-8716-5	Roll Pin, 1/8 x 7/16"	f)	03-7066	Coil Tubing
5.	10-320	Eject Spring	10.	10-128	Spring
6.	12-6227	Hairpin Clip (2)	11.	03-7351-1-9	Eject Shield
7.	4700-00030-00	Flatwasher, 17/64 x 1/2 x 15ga. (1)			
8.	4700-00103-00	Flatwasher, 17/64 x 1/2 x 28ga. (1)			

B-12665 Kicker Arm (Slingshot) Assembly



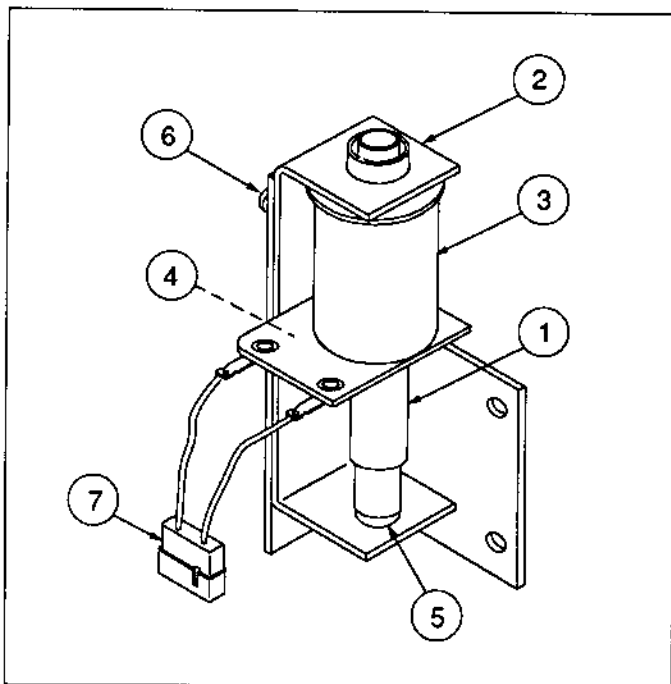
Associated Parts for Right & Left Kickers

Item	Part Number	Description	Item	Part Number	Description
1.	12-6227	Hairpin Clip	6.	A-14369-R	Coil & Bracket Assy, Right
2.	A-12664	Kicker Crank Assembly		A-15749	Coil & Bracket Assy, Left
3.	A-5653	Mounting Bracket Assembly	a)	B-7572-1	Bracket & Stop Assembly
4.	4700-00030-00	Flatwasher, 17/64 x 1/2 x 15ga.	b)	01-8-508-S	Coil Retaining Bracket
5.	A-5103	Coil Plunger Assembly	c)	4006-01017-06	Mach. Screw, 6-32 x 3/8
a)	02-2364	Coil Plunger	d)	4406-01119-00	Nut, 6-32 ESN
b)	03-8085	Armature Link	e)	AE-27-1200	Coil Assembly
c)	20-8716-5	Roll Pin, 1/8 x 7/16"	f)	03-7066	Coil Tubing
			7.	10-128	Spring



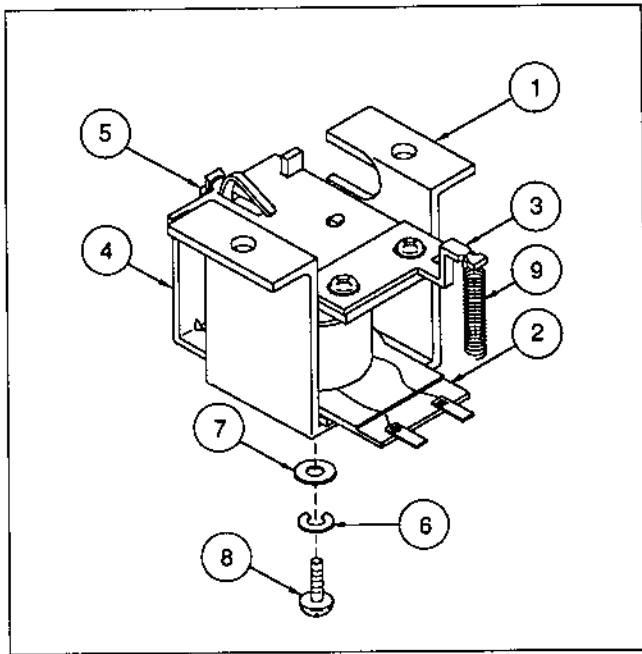
A-14525 Kicker Bracket Assembly

Item	Part Number	Description
1.	A-6306-2	Bell Armature Assembly
2.	A-14526	Mounting Bracket Assembly
3.	01-8-508-T	Solenoid Bracket
4.	10-135	Solenoid Spring
5.	23-6420	Rubber Grommet
6.	AE-23-800	Coil Assembly
7.	03-7067-5	Coil Tubing
8.	4008-01017-04	Mach. Screw, #8-32 x 5/16 P-RH
9.	03-8523	Insulator



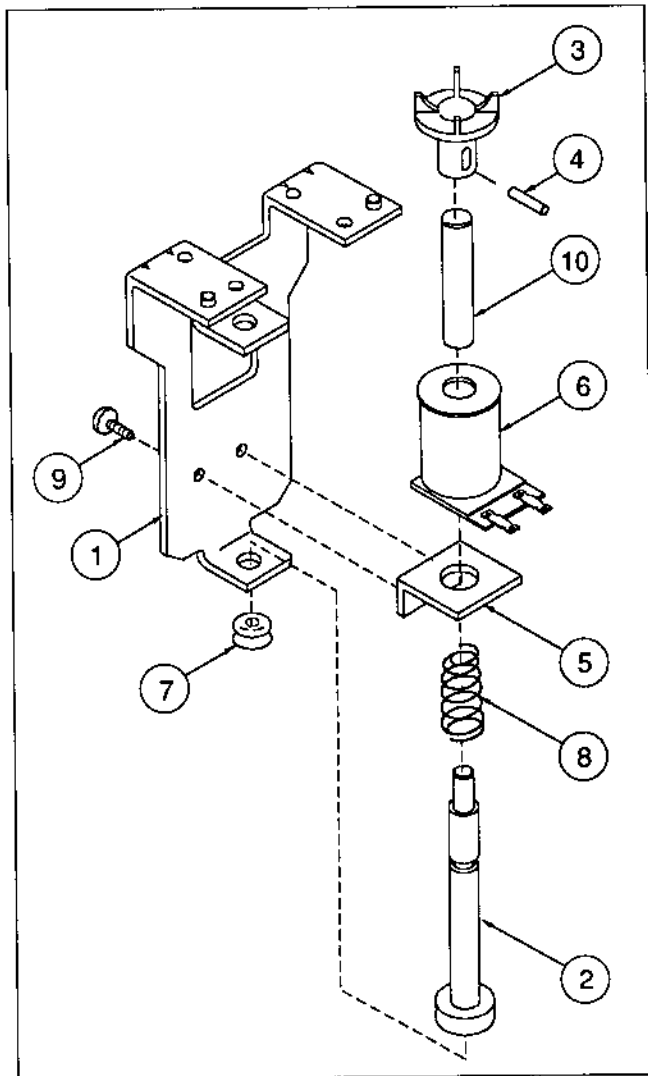
B-10686-1 Kocker Assembly

Item	Part Number	Description
1.	A-5387	Coil Plunger Assembly
2.	B-7409-2	Mtg. Bracket Assembly
3.	AE-23-800	Coil Sub-Assembly
4.	01-8-508-T	Coil Retaining Bracket
5.	23-6420	Rubber Grommet
6.	4008-01017-06	Mach. Screw, 8/32 x 3/8
7.	H-11835	Knocker Cable
8.	03-7067-5	Coil Tubing



A-14422 Actuator Assembly

Item	Part Number	Description
1.	01-8111	Ball Gate Coil Bracket
2.	A-14406	Coil Assembly
3.	A-11146	Armature Assembly
4.	A-6892	Frame & Eyelet Assembly
5.	10-120	Spring
6.	4701-00003-00	Lockwasher #8 Split
7.	4700-00089-00	Flatwasher, 11/64 x 7/16 x 16ga.
8.	4008-01021-07	Mach. Screw, 8-32 x 7/16 P-RHBR
9.	10-194	Extension Spring



D-11335-1 Ball Popper Assembly

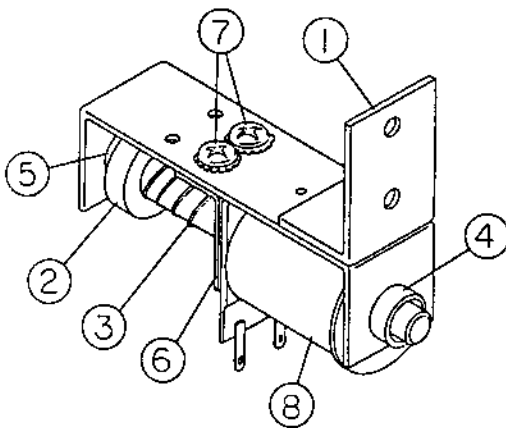
Item	Part Number	Description
1.	B-11631	Bracket Assembly
2.	A-11336	Armature Assembly
3.	03-8053	Ball Popper Cap
4.	20-9314-7	Dowel Pin, 3/32 x 1/2"
5.	01-9794	Mounting Bracket
6.	AE-24-900	Coil Assembly
7.	23-6420	Rubber Grommet
8.	10-135	Spring
9.	4008-01017-04	Mach. Screw, #8-32 x 5/16
10.	03-7067	Coil Tubing

A-15306 Fish Unit Assembly

Item	Part Number	Description
1.	A-15713	Fish & Plastic Insert
2.	11-1059	Wood Panel
3.	* 31-1692	Screened Translite
4.	A-15304	Coil Unit Assembly
5.	A-15585	Plate Protector Assembly
6.	4408-01119-00	Nut #8-32 ESNA
7.	A-11734	Socket & Bulb Assembly
8.	4106-01114-08	SMS #6-1/2 PL-HWH-A (7)
9.	4008-01003-20	MS #8-32 x 1-1/4 P-PH-S (4)
10.	4700-00070-00	Flatwasher, 3/16 x 5/8 x 16ga.
11.	4408-01128-00	Nut #8-32 KEPS (4)
12.	01-10618	Fish Panel Mounting Bracket (2)
13.	4008-01003-08	Mach. Screw #8-32 x 1/2 P-PH-S (6)
14.	4408-01118-02	Nut #8-32 Tee (6)
15.	* 31-1682-5	Screened Decal
16.	4106-011033-08B	SMS #6 x 1/2 TR-HD-A, Black (2)
17.	A-12336-1	Socket & Bulb Assembly
18.	A-12887	Socket & Bulb Assembly
19.	03-7655-8	Nylon Harness Clip (4)
20.	H-15497	Cable Assembly

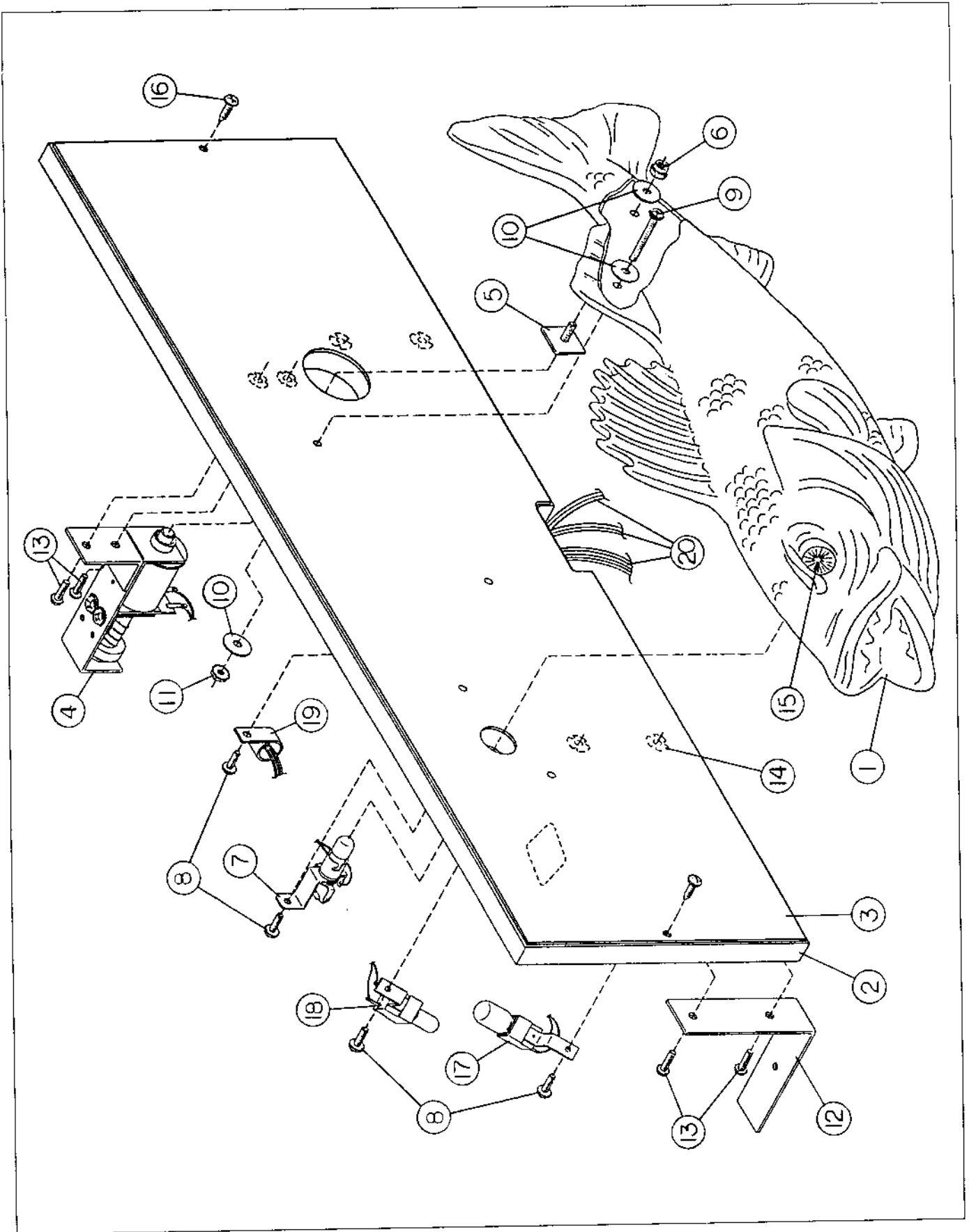
* Not available for individual sale. Order Decal Set 31-1692 & 31-1682 respectively.

A-15304 Coil Unit Assembly



Item	Part Number	Description
1.	A-15305	Coil & Bracket Sub-Assembly
2.	A-6306-2	Bell Armature Assembly
3.	10-135	Solenoid Spring
4.	03-7067-5	Coil Tubing
5.	23-6420	Rubber Grommet
6.	01-8-508-T	Solenoid Bracket
7.	4008-01017-04	Mach. Screw, #8-32 x 1/4 P-RH-S
8.	AE-23-800	Coil Sub-Assembly

A-15306 Fish Unit Assembly

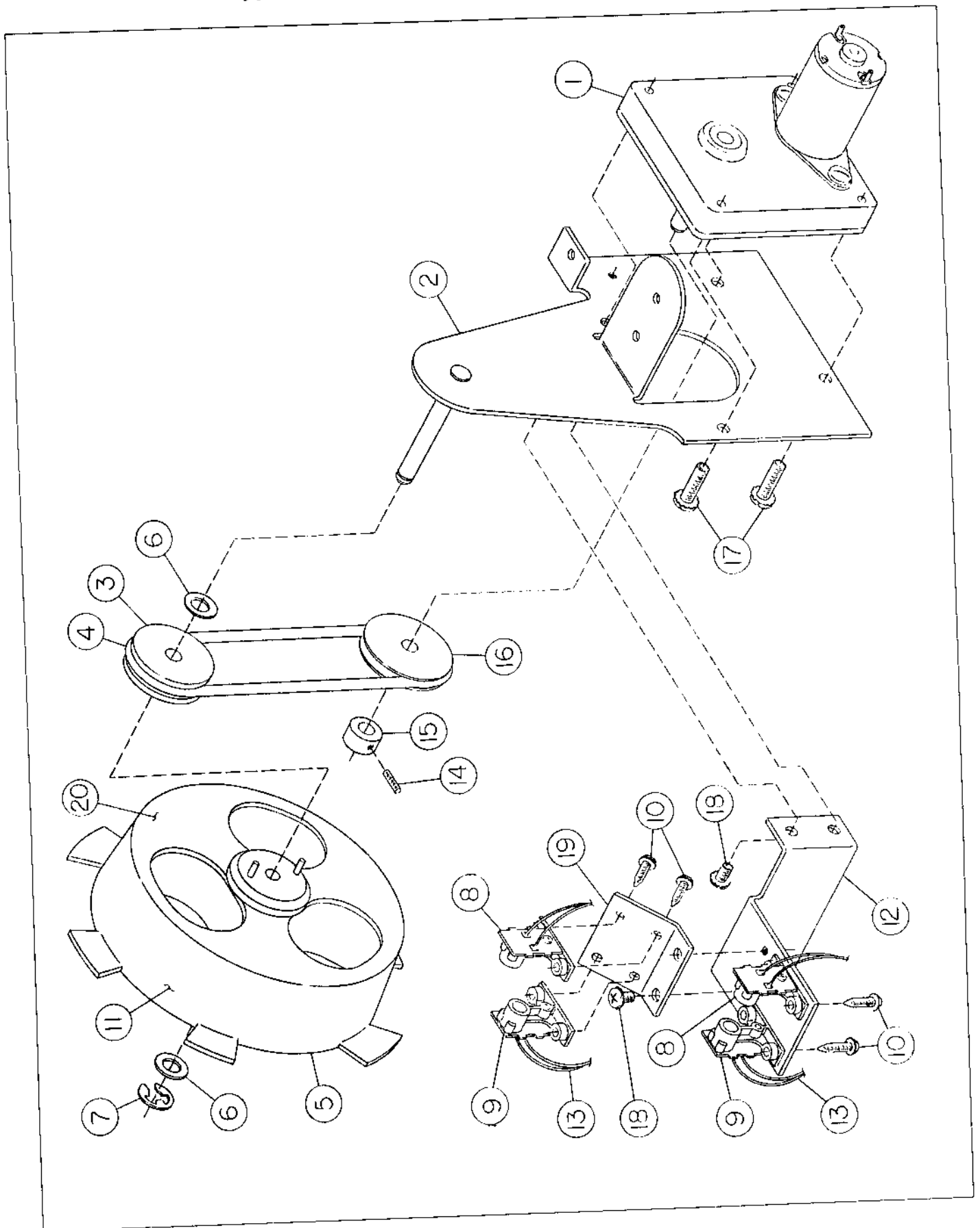


A-14945 Fish Reel Unit Assembly

Item	Part Number	Description
1.	14-7967	Gear Motor, 50V
2.	A-14948	Reel Bracket Assembly
3.	03-8705	Reel Pulley
4.	03-8614	Drive Belt
5.	03-8612	Fishing Reel
6.	4700-00072-00	Flatwasher, 17/64 x 1/2 x 21ga. (2)
7.	20-8712-25	Retaining "E" Ring
8.	A-14316	Opto Photo/Trans Assy. (2)
9.	A-14315	Opto LED Assembly (2)
10.	4106-01114-08	Sh. Metal Screw, #6 x 1/2 P-HWH-A (8)
11.	* 31-1694-2	Screened Decal
12.	01-10378	Opto Bracket, Bottom
13.	H-15606	Cable Assembly (2)
14.	4008-01076-06	Set Screw, #8-32 x 3/8
15.	02-4290	Collar
16.	03-8086	Pulley
17.	4010-01006-10	Mach. Screw #10-32 x 5/8 P-PH-S (4)
18.	4008-01017-04	Mach. Screw #8-32 x 1/4 P-PH-S (4)
19.	01-10533	Opto Bracket, Top
20.	* 31-1683-3	Screened Decal

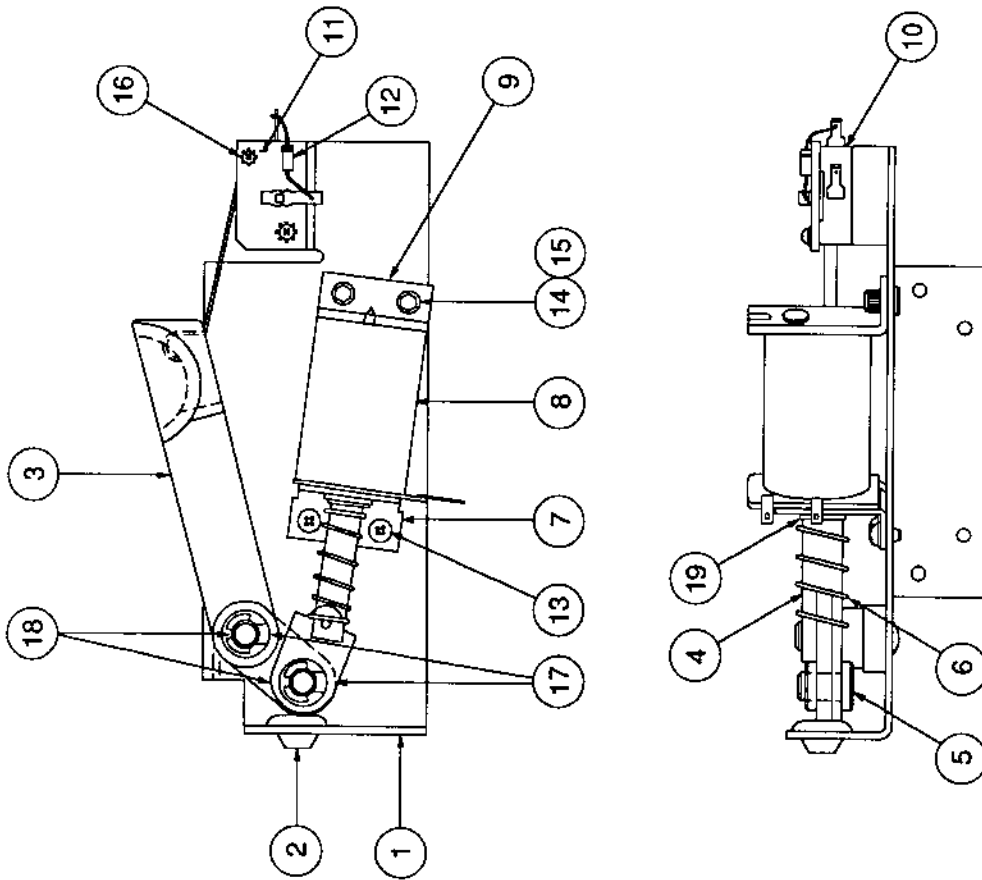
* Not available for individual sale. Order Decal Set 31-1694 & 31-1683 respectively.

A-14945 Fish Reel Unit Assembly



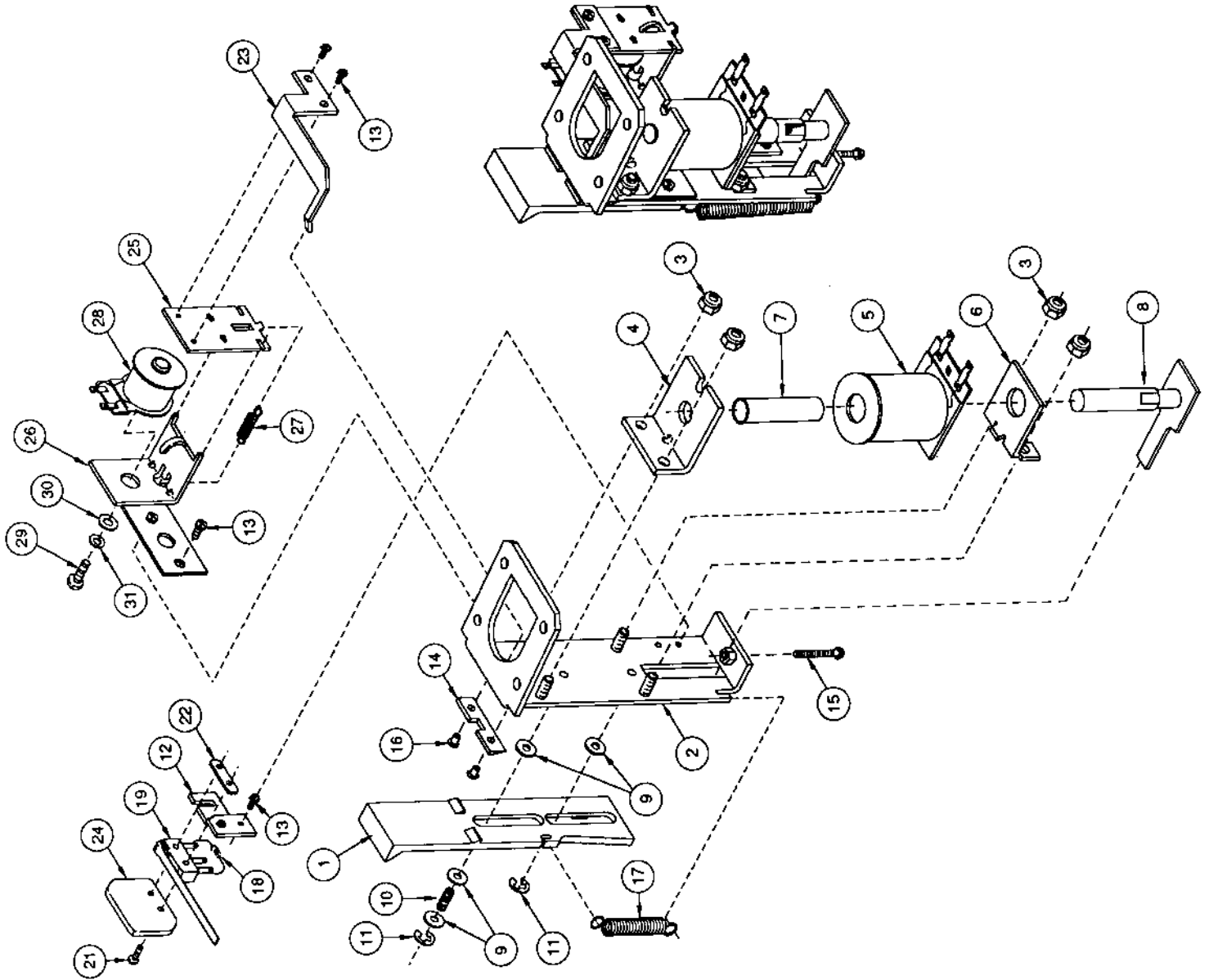
A-14947 Catapult Assembly

Item	Part Number	Description
1.	A-14946	Bracket Assembly
2.	23-6577	Plug Bumper, 5/8"
3.	03-8089	Catapult Arm
4.	A-12293	Plunger Assembly
5.	02-4301	Catapult Arm Pin
6.	10-135	Spring
7.	01-8413	Coil Mounting Bracket
8.	AL-23-800	Coil assembly
9.	A-10821	Flipper Stop Bracket Assy.
10.	5647-12133-12	Mini Micro Switch
11.	A-7438-1	Terminal Strip
12.	5070-09054-00	Diode 1N4004
13.	4008-01017-04	Mach. Screw, 8-32 x 1/4 P-RH-S
14.	4010-01066-06	Cap Screw, #10-32 x 3/8
15.	4701-00004-00	Lockwasher #10 Split SH
16.	4004-01003-10	Mach. Screw, 4-40 x 5/8 P-PH-S
17.	4700-00104-00	Flatwasher, 5/16 x 1/2 x 16ga.
18.	20-8712-31	"E" Ring, 5/16" Shaft
19.	03-7066	Coil Tubing

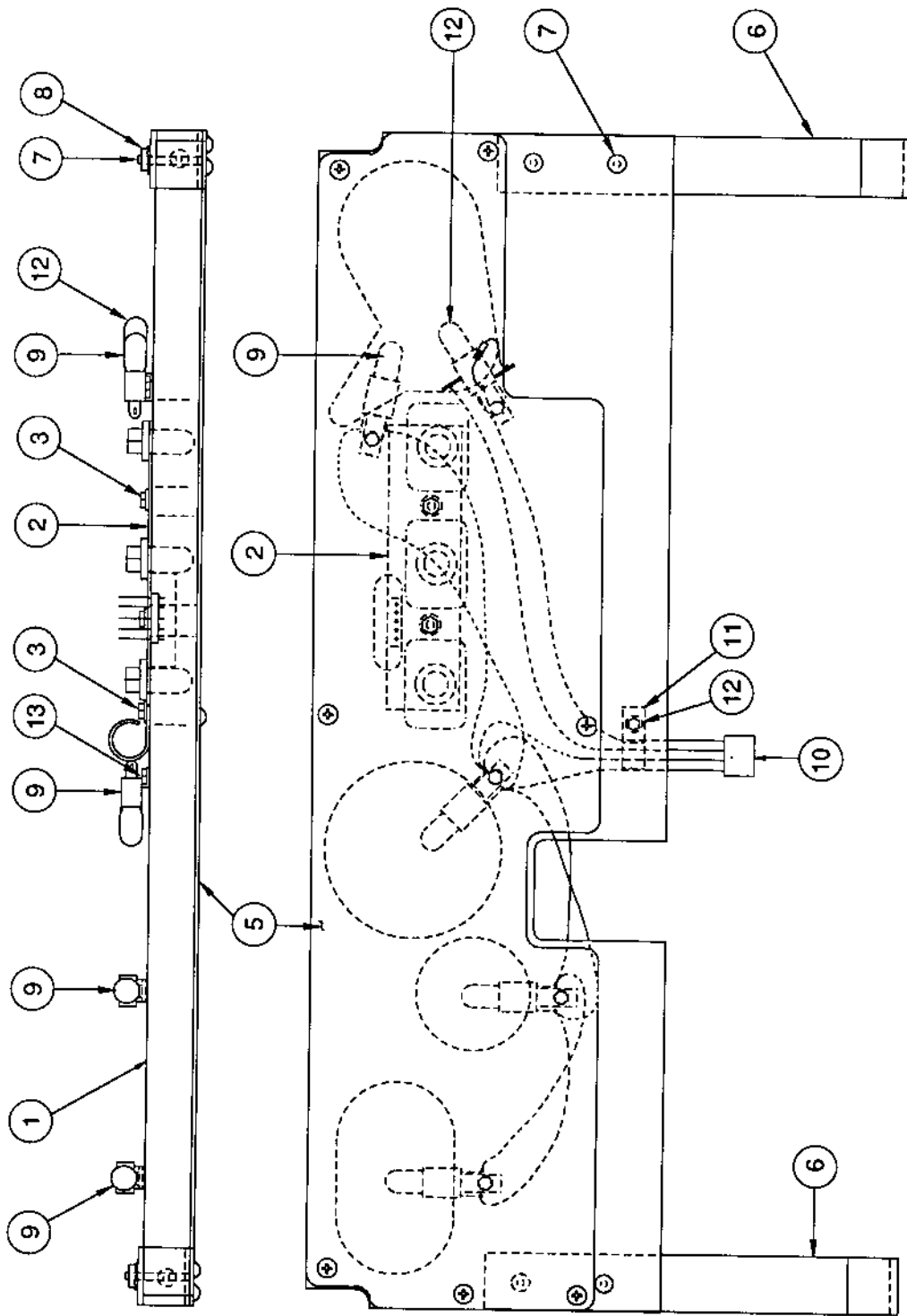


A-15211 1-Bank Drop Target Assembly

Item	Part Number	Description
1.	03-8033	Target, Flush
2.	A-14617	Bracket & Post Assembly
3.	4408-01119-00	Nut 8-32 ESNA (4)
4.	A-11397	Stop Bracket Assembly
5.	AE-26-1200	Coil Assembly
6.	01-8413	Coil Mounting Bracket
7.	03-7066-4	Coil Tubing
8.	A-11388-2	Plunger & Plate Reset Assembly
9.	4700-00072-00	Flatwasher, 17/64 x 1/2 x 21ga. (4)
10.	10-392	Compression Spring
11.	20-8712-25	"E" Ring, 1/4" Shaft (2)
12.	01-10183	Switch Bracket
13.	4006-01003-03	Mach. Screw 6-32 x 3/16 P-PH (6)
14.	03-8034	Single Stop Target
15.	4010-01025-14	Mach. Screw, 10-32 x 7/8 P-RH
16.	07-6688-17N	Rivet, 5/32 x 1/8" (2)
17.	10-433	Extension Spring
18.	5070-09054-00	Diode 1N4001
19.	5647-12693-31	Mini Micro Switch
20.	01-8600	Switch Insulator
21.	4002-01105-10	Mach. Screw 2-56 x 5/8 P-PH-S (2)
22.	01-8240	Nut Plate #2-56
23.	01-8647-R	Actuator
24.	03-8630	Actuator Guide
25.	A-8936	Armature Sub-Assembly
26.	A-15209	Frame & Eyelet Assembly
27.	10-363	Extension Spring
28.	SM1-26-600	Coil Assembly
29.	4008-01021-06	Mach. Screw, #8-32 x 3/8 P-PH-BR
30.	4700-00089-00	Flatwasher, 11/64 x 7/16 x 16ga.
31.	4701-00003-00	Lockwasher #8 Split



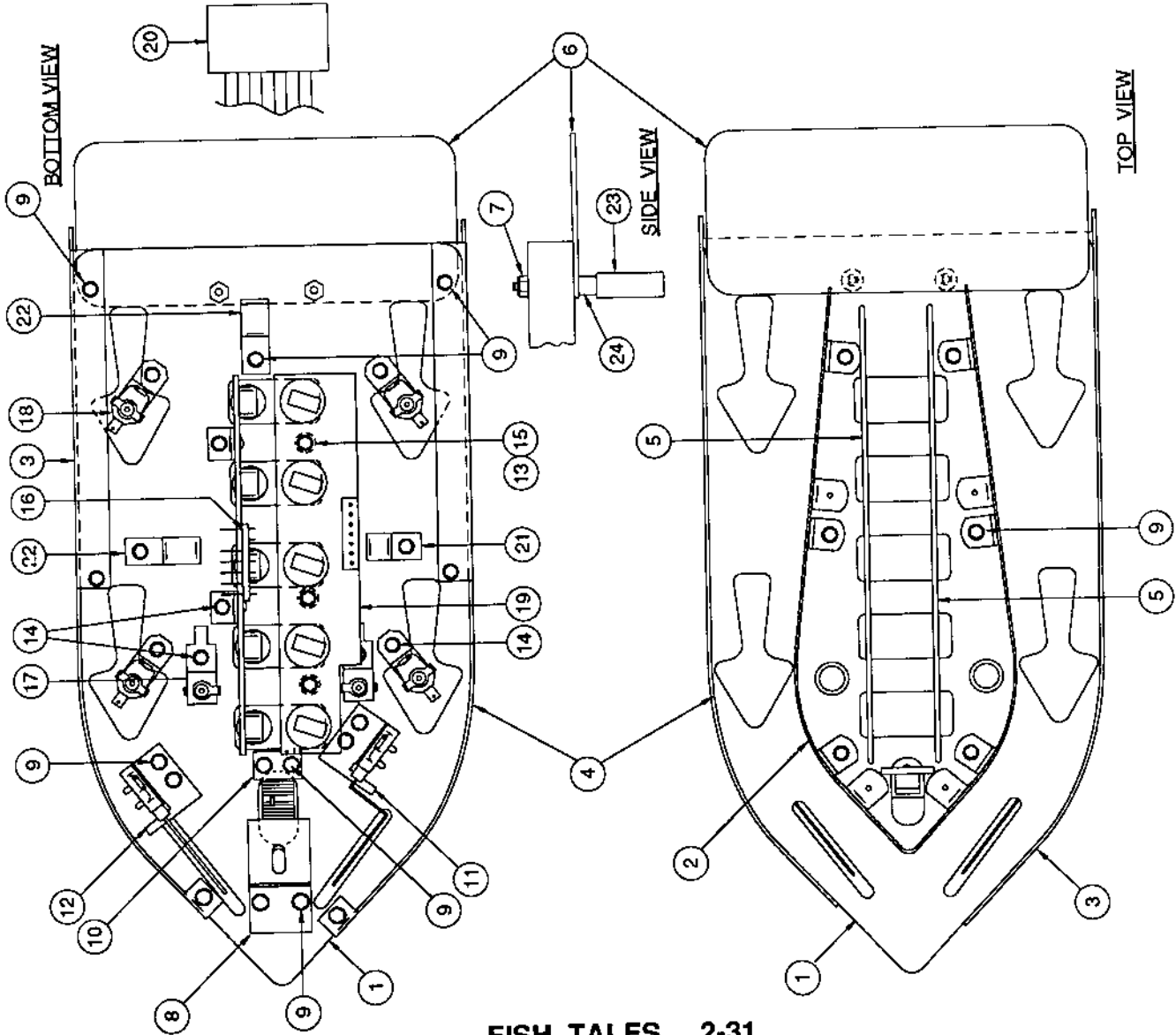
A-15208 Back Panel Assembly



Item	Part Number	Description	Item	Part Number	Description
1.	11-831-50005	Back Panel	8.	4406-01128-00	Nut #6-32 KEPS (4)
2.	A-15339	3-Lamp Board Assembly	9.	A-12887	Socket & Bulb Assembly (4)
3.	4106-01114-08	TCS #6x1/2 PL-HWH-17	10.	H-15912	Cable Assembly
4.	4106-01033-08B	Sh. Metal Screw, #6 x 1/2 P-TH-A (7)	11.	03-7655-8	Wire Harness Clip
5.	31-1676A-1	Playfield Plastic	12.	A-8882	Light Bulb & Socket Assy. w/Diode
6.	01-10726	Leg Rear Guide (2)	13.	4106-01115-06Y	Sh. Metal Screw #6 x 3/8 PL-HWH (5)
7.	4506-01106-16B	SSS #6-32 x 1" Long (4)			

A-15109 Boat Unit Assembly

Item	Part Number	Description
1.	36-50005-1	Screened Playfield
2.	A-15108	Ball Guide - Boat (Center)
3.	01-10492-1	Ball Guide - Boat (Left)
4.	01-10492-2	Ball Guide - Boat (Right)
5.	12-7053-47	Ball Guide Wireform 7" (2)
6.	01-10440	Boat Flap
7.	4408-01119-01	Nut #8 ESN
8.	01-10491	Support Bracket
9.	4106-01114-08	Sh. Metal Screw #6 x 1/2 PL-HWH-A (20)
10.	A-14691-5	Standup Target Assy. (White)
11.	A-12687	Sub-Mini Switch Assembly
12.	A-12688-1	Rollover Switch Assembly
13.	03-8022-1	Spacer, .550" Long (3)
14.	4106-01115-06Y	Sh. Metal Screw #6 x 3/8 PL-HWH (8)
15.	4106-01115-16	Sh. Metal Screw #6 x 1" PL-HWH-A (3)
16.	A-15471	5-Flash Lamp & Bracket Assembly
17.	A-11905	Socket & Bulb Assembly (2)
18.	A-11271	Socket & Bulb Assembly (4)
19.	A-15338	5-Lamp PCB Assembly
20.	H-15494	Cable Assembly
21.	03-7655-4	Wire Harness Clip, 1/4"
22.	03-7655-8	Wire Harness Clip, 1/2" (2)
23.	23-6556	Rubber Bumper Sleeve, Black
24.	02-4036	Post



Coin Door Assembly

A-14148-1 U.S.A. Door with Decals

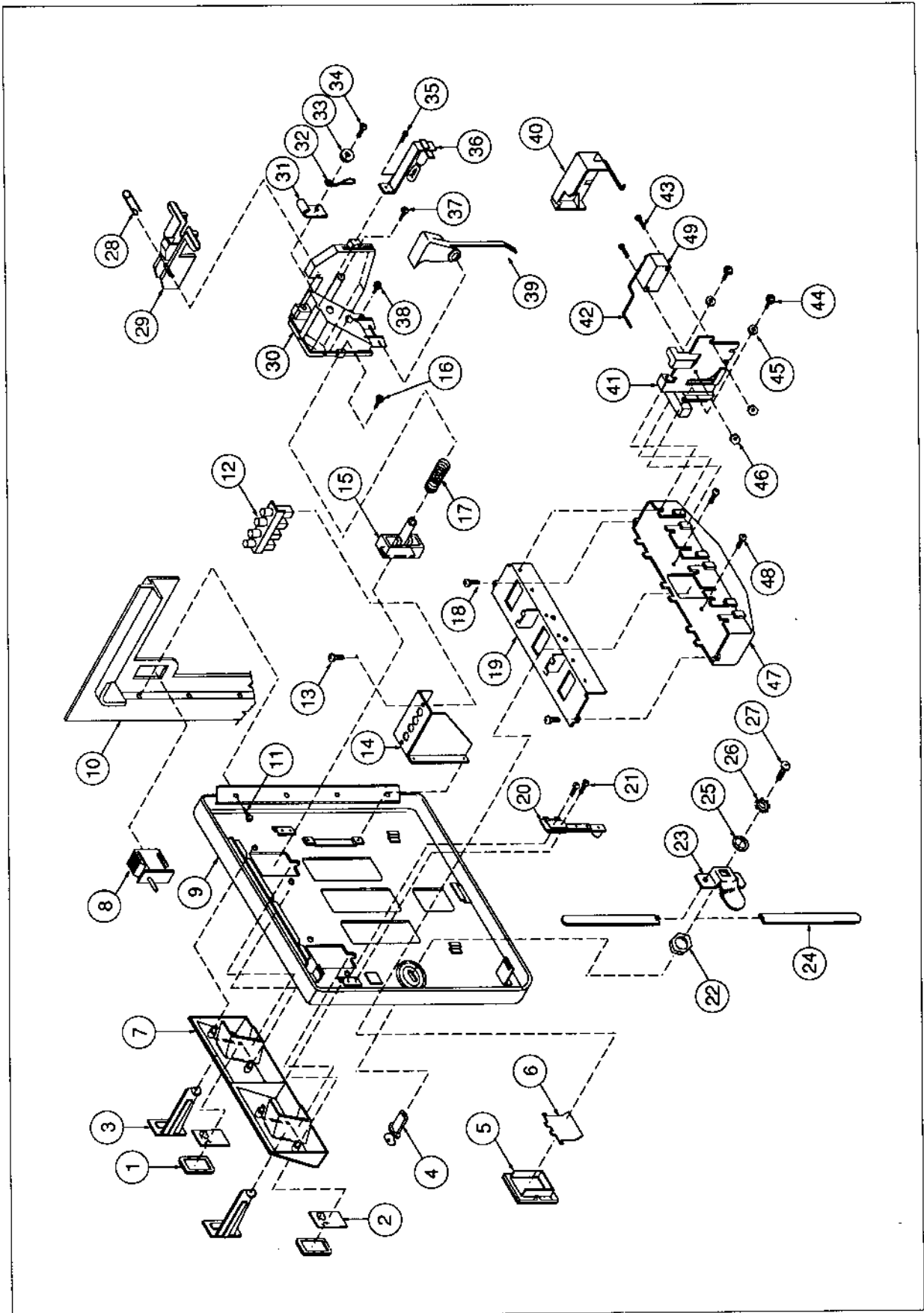
09-17002-x 2-Chute Door

09-17003-x 3-Chute Door

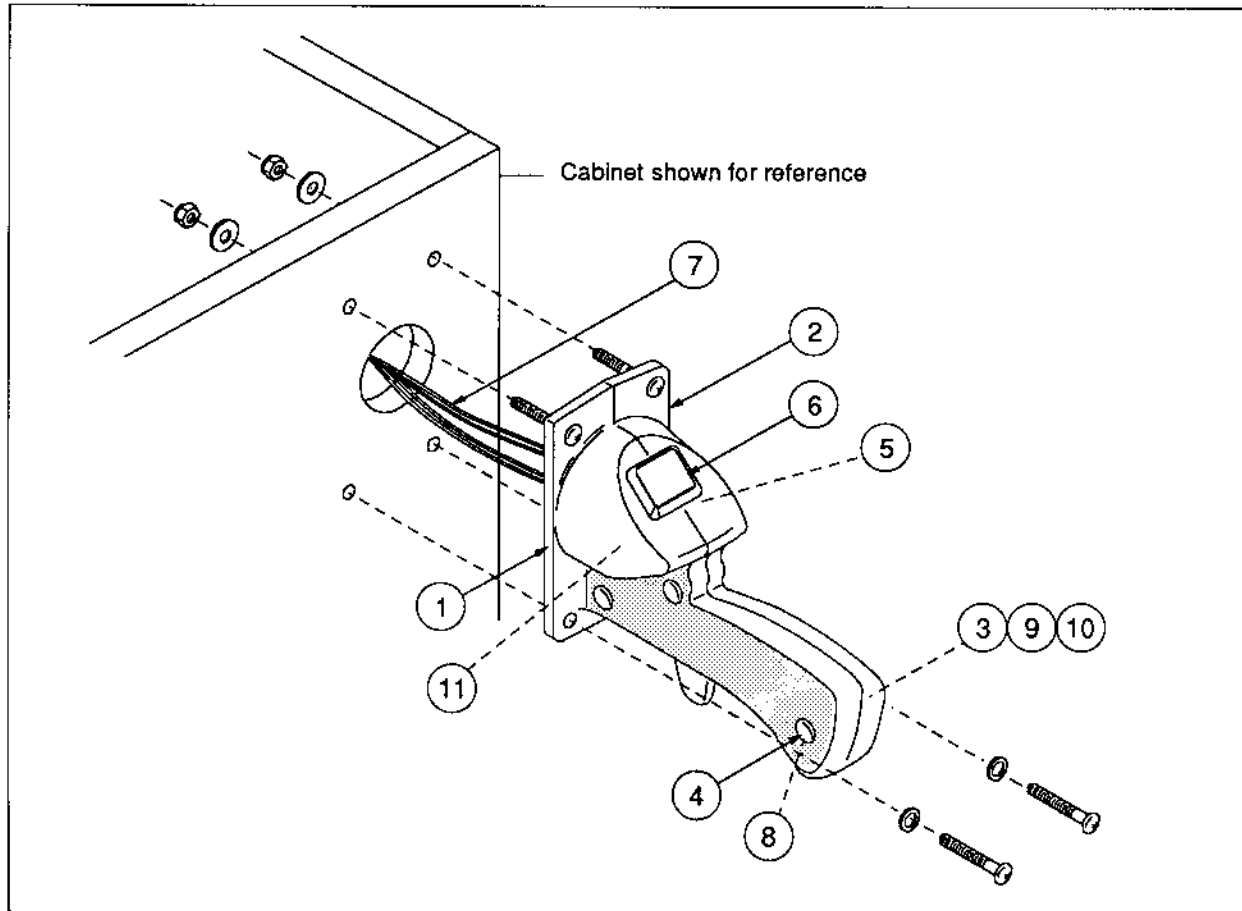
("x" is the country designator)

Item	Part No.	Description	Quantity
1	27-1038	Button Cover	2 or 3
2	27-1041-1→ 58	Price Panel	2 or 3
3	27-1026-1→ 17	Coin Entry Plate	2 or 3
4	27-1016	Lock Assembly	1
5	27-1061-1	Coin Return - Bezel	1
6	27-1062	Coin Return Flap	1
7	27-1021	Button Housing - 2-slot	1
	27-1022	Button Housing - 3-slot	1
8	27-1111	Interlock Switch	1
9	27-1006-1	Coin Door , 2-Slot	1
	27-1007-1	Coin Door , 3-Slot	1
10	27-1005	Coin Door Frame	1
11	27-1003	M/C Screw, 6-32 x 3/16	4
12	5641-12724-00	Diagnostic Switch	1
13	27-1101	M/C Screw, 4-40 x 1/4	2
14	01-9885	Bracket, Diagnostic Switch	1
15	03-7601-4	Button, Red	2
	03-7601-7	Button, Black	2
16	27-1078	M/C Screw, 6-32 x 3/8	2 or 3
17	27-1039	Conical Spring	2 or 3
18	27-1079	Self-tapping Screw, #6 x 1/4	2
19	27-1077-1	Coinbox Cover	1
20	27-1066	Slam Switch	1
21	27-1067	M/C Screw, 4-40 x 1/2	2
22	27-1017	Nut (key)	1
23	27-1012	Locking Cam	1
24	27-1011	Locking Arm	2
25	27-1020	Washer	1
26	27-1018	Star Washer	1
27	27-1019	M/C Screw, 1/4-28 x 5/16	1
28	27-1089	R-Ring	1
29	27-1083	Retainer	1
30	27-1081	Coin Inlet Chute	2 or 3
31	27-1088	Cable Clamp	2 or 3
32	27-1025	Key Hook	1
33	27-1086	Washer, #6	2 or 3
34	27-1078	M/C Screw, 6-32 x 3/8	1 or 2
	27-1113	M/C Screw, 6-32 x 7/16	1
35	27-1079	Self-tapping Screw, #6 x 1/4	2 or 3
36	27-1084	Lamp Socket	2 or 3
	27-1085	Lamp	2 or 3
37	27-1096	Self-tapping Screw, #5 x 3/8	2 or 3
38	27-1087	M/C Screw, 6-32 x 5/8	2 or 3
39	27-1082	Lever Arm	2 or 3
40	27-1097	Switch Cover	2 or 3
41	27-1091-1	Coin Accept Chute	2 or 3
42	27-1075	Wire Form (Small)	2 or 3
	or		
	27-1093	Wire Form (Large)	
43	27-1094	M/C Screw, 4-40 x 7/8	4 or 6
44	27-1087	M/C Screw, 6-32 x 5/8	4 or 6
45	27-1086	Washer, #6	4 or 6
46	27-1095	Nut, 4-40 ESNA	4 or 6
47	27-1076-1	Coin Return Box	1
48	27-1078	M/C Screw, 6-32 x 3/8	2
49	27-1092	Microswitch	2 or 3

Coin Door Assembly



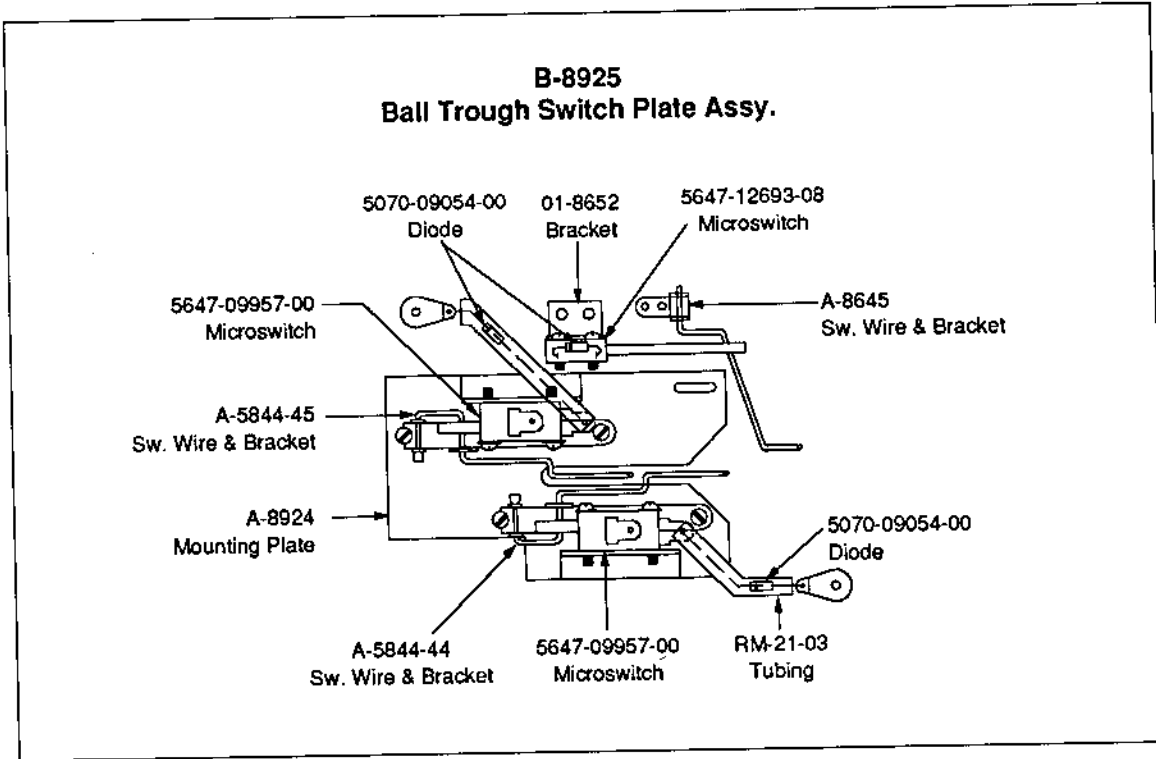
A-15130 Fishing Reel Handle Assembly



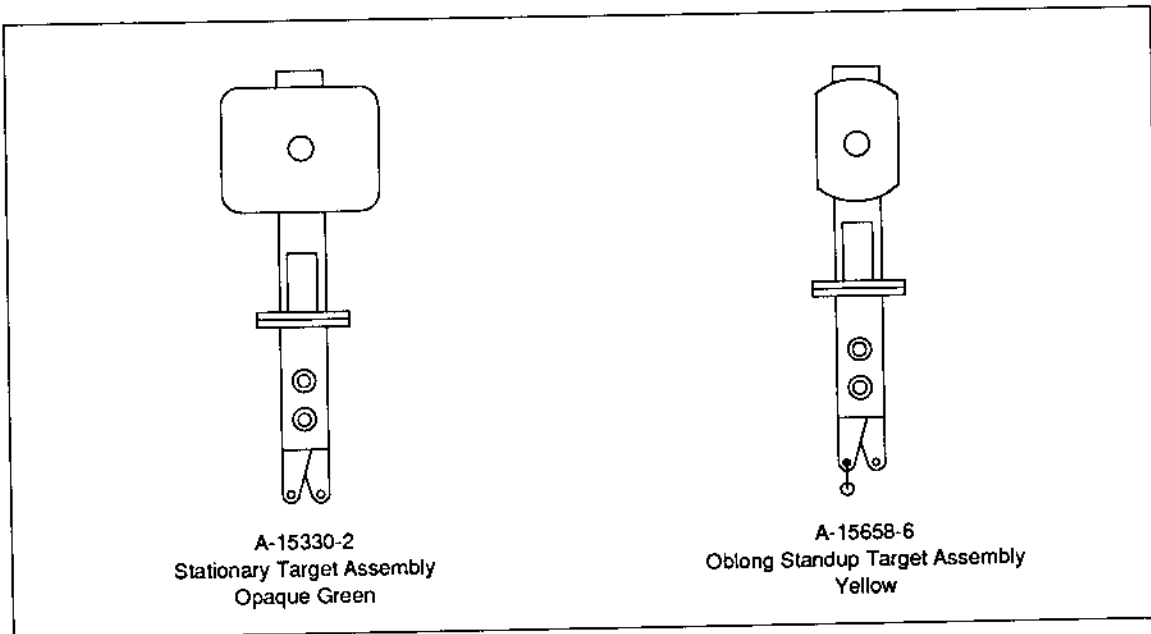
Item	Part Number	Description
1.	21-6689-1	Fishing Reel, Left Handle
2.	21-6689-2	Fishing Reel, Right Handle
3.	4010-01097-06B	Mach. Screw, #10-32 x 3/8
4.	02-4547	Fastener Button-Head, 1/2"
5.	01-10508	Plate
6.	20-9713-7	Switch HSI Gaming
7.	H-15528	Caster Cable
8.	4702-00014-00B	Lockwasher #1/4 Int. Tooth
9.	4700-00129-00B	Flatwasher, 13/64 x 15/32 x 22ga.
10.	4702-00013-00B	Lockwasher #10 Int. Tooth
11.	RM-21-03	Tubing #10

Ball Trough Switches

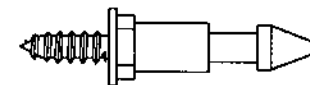
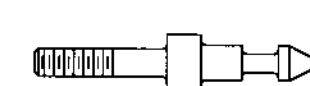

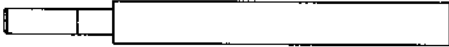
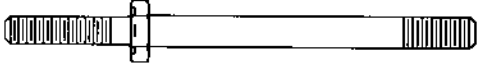
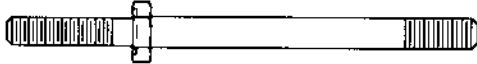
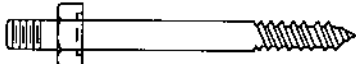
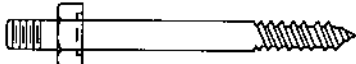
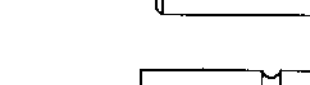


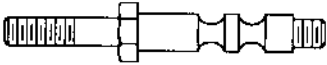
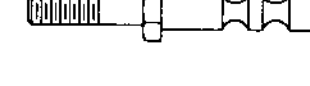
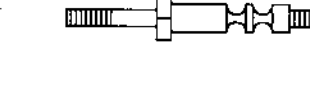


(Viewed from underside of playfield to show locations)



Standup Targets



Metal & Plastic Posts

	Part No.	Description	Quantity
	02-3905	Bumper Post #8WS	3
	02-4660	Single Bumper Post	2
	02-4659	Mini Post	3
	02-4657	Mounting Post	1
	02-4424-1	Post #6-32/8-32	5
	02-4425-1	Post #8-32/8-32	2
	02-4426-1	Post #6-32/8 SMS, 1-1/2" Lg.	6
	02-4426-2	Post #6-32/8 SMS, 1-11/16" Lg.	1
	02-4433	Post, #8 x 1-3/16"	2
	02-4434	Post, #8 x 1"	2
	02-4435	Playfield Post #8 x 1-3/16"	2
	02-4493	Double Bumper Post (Hex)	1
	02-4608	Double Bumper Post	2
	02-4658	Double Bumper Post	1
	03-8365-16	Post 3/8 x 1-3/16", Tr. Yellow	14
	03-8319-9	Star Post #8	17

Unique Parts

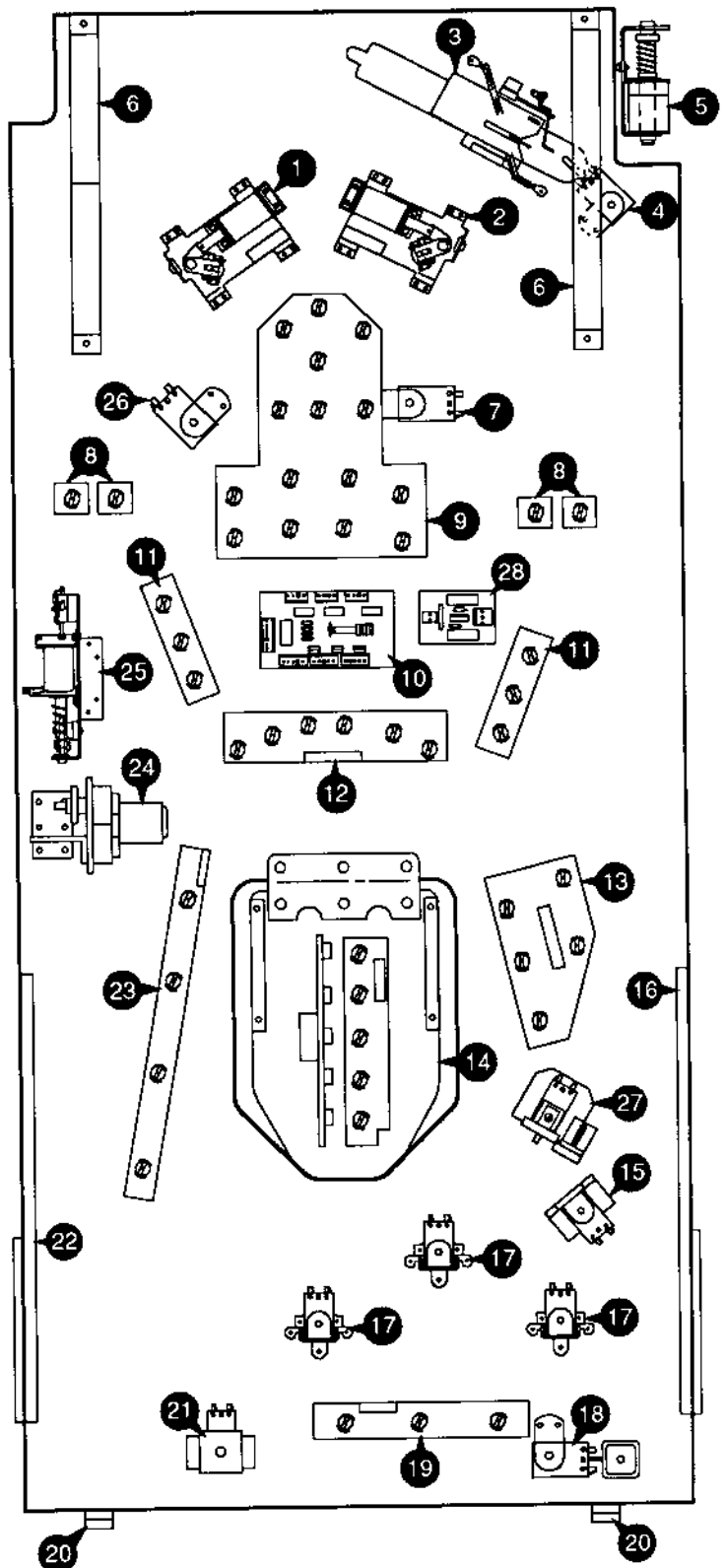
Part Number	Description	Part Number	Description
A-11657-2	Ball Poper Assembly	A-15403-1	Flipper Return Frame Assy. L.
A-11658-1	Switch & Diode Assembly	A-15403-2	Flipper Return Frame Assy. R.
A-12738-50005	WPC Sound Board	A-15404	Reel Enter Ramp Assembly
A-12742-50005	WPC CPU Board	A-15405	Fish Rod & Reel Cover Assembly
A-13204-50005	Bottom Arch Assembly	A-15412	Right Wire Ramp Assembly
A-13769-50005	Playfield & Insert Assembly	A-15413	Left Wire Ramp Assembly
A-13769A-50005	Mini Playfield & Inserts	A-15415	5-Lamp Board Assembly
A-14376-50005	Backbox Assembly	A-15421-1	Playfield Slide Assembly, Left
A-14945	Fish Reel Unit Assembly	A-15421-2	Playfield Slide Assembly, Right
A-14947	Catapult Assembly	A-15457	5-Lamp Board Assembly
A-15055	Boat Ramp Assembly	A-15470	3-Lamp Board Assembly
A-15069	Ball Guide Assembly	A-15471	5-Lamp Board Assembly
A-15108	Ball Guide Assembly	A-15498	Speaker Display Assembly
A-15109	Boat Unit Assembly	A-15506	Playfield Plastic & Bracket Assy.
A-15130	Fish/Reel Handle Assembly	A-15531	Wire Ramp Cover Assembly
A-15177	Ball Guide Assembly	A-15532	Fish Reel Handle & Parts Assy.
A-15178	Ball Guide Assembly	A-15540	Boat Flap & Decal Assy.
A-15179	Ball Guide Assembly	A-15544-	Playfield Plastic Set Assembly
A-15180	Ball Guide Assembly	A-15565	5-Lamp Board Assembly
A-15182	Ball Guide Assembly	A-15579-1	Cashbox Assembly
A-15208	Back Panel Assembly	A-15585	Plate - Fish Protect
A-15211	1-Bank Drop Target Assembly	A-15632	Fish Panel Cover Assembly
A-15304	Coil Unit Assembly	A-15658-6	Oblong Target Assy. Yellow
A-15306	Fish Panel Assembly	A-15689	Support Bar Assembly
A-15330-2	Stationary Target Assembly	A-15713	Fish Assembly
A-15333	3-Lamp Board Assembly	A-15741	Stationary Target & Decal Assy.
A-15334	4-Lamp Board Assembly	A-15749	Coil & Bracket Assembly
A-15335	5-Lamp Board Assembly	A-8552-50005	Backglass Assembly
A-15336	6-Lamp Board Assembly	A-9361-R-11	Ball Eject Assembly, Right
A-15337	15-Lamp Board Assembly		
A-15338	5-Lamp Board Assembly	02-4252-40	F-F Spacer 2-1/2"
A-15339	3-Lamp Board Assembly	02-4311-3	Mounting Post 4-3/8"
A-15373	Ball Guide Unit Assembly	02-4608	Double Bumper Post
A-15401	Spin Target Light Unit Assembly		

Cable List

Part Number	Description
H-11835	Knocker Assembly
H-13870	Black Jumper Cable
H-14582	Secondary Cable
H-14584	Dot Matrix Display Cable
H-14790	A.C. Cable
H-14792-1	A.C. Jumper Cable
H-14792-2	A.C. Jumper Cable
H-15183	Single Flipper
H-15236	Speaker Panel Lamp Cable
H-15466	Playfield Switch Cable
H-15467	Playfield Lamp Cable
H-15468	Playfield Solenoid Cable
H-15476	Logic Power Cable
H-15478	Tilt Switch Cable
H-15494	Boat/Switch Lamp Cable
H-15495	Insert Cable
H-15496	Cabinet Cable
H-15497	Fish Backbox Cable
H-15528	Caster Cable
H-15530	Ramp Exit Switch Cable
H-15534	Bait Shot Cable
H-15606	Opto Switch Cable
H-15653	Motor Cable
H-15684	Truth Flash Cable
H-15725	Back Panel G.I. Cable

Lower Playfield Parts

Item	Part Number	Description
1.	A-15205-L-2	Lower Left Flipper
2.	A-15205-R-2	Lower Right Flipper
3.	B-8925	Micro Switch Plate Assembly
4.	C-9638	Multiball Eject Assembly
	10-128	Spring
	B-9362-R-3	Coil & Bracket Assy.
5.	A-14525	Shooter Kicker Assembly
6.	01-10721	Safety Bracket (2 used)
7.	B-12665	Kicker Arm (Slingshot) Assy. - R.
	B-14369	Coil & Bracket Assembly
	10-128	Spring
	A-8284-2	Kicker Switch Assembly
8.	B-12224	Single Lamp Board Assembly
9.	A-15337	15- Lamp Board Assembly
10.	A-13901-1	Opto Ramp Switch Lamp Assy.
11.	A-15470	3-Lamp Board Assy. (2 used)
12.	A-15336	6-Lamp Board Assembly
13.	A-15335	5-Lamp Board Assembly
14.	A-15109	Boat Unit Assembly
15.	D-11335-1	Ball Popper Assembly
16.	A-15421-2	Playfield Slide Assy. - Right
17.	A-9415-2	Jet Bumper Assembly (3 used)
	B-12030-2	Switch & Diode Assy. (3 used)
18.	B-9361-R-11	Ball Eject Assembly
	B-9362-R-3	Coil & Bracket Assembly
19.	A-15333	3-Lamp Board Assembly
20.	01-10726	Rear Guide Leg (2 used)
21.	A-14422	Actuator Assembly
22.	A-15421-1	Playfield Slide Assy. - Left
23.	A-15334	4-Lamp Board Assembly
24.	A-14945	Fish Reel Unit Assembly
25.	A-14947	Catapult Assembly
26.	B-12665	Kicker Arm (Slingshot) Assy. Left
	B-15749	Coil & Bracket Assembly
	10-128	Spring
	A-8284-2	Kicker Switch Assembly
27.	A-15211	1-Bank Drop Target Assembly
28.	A-15340-1	EMI Motor Board Assembly

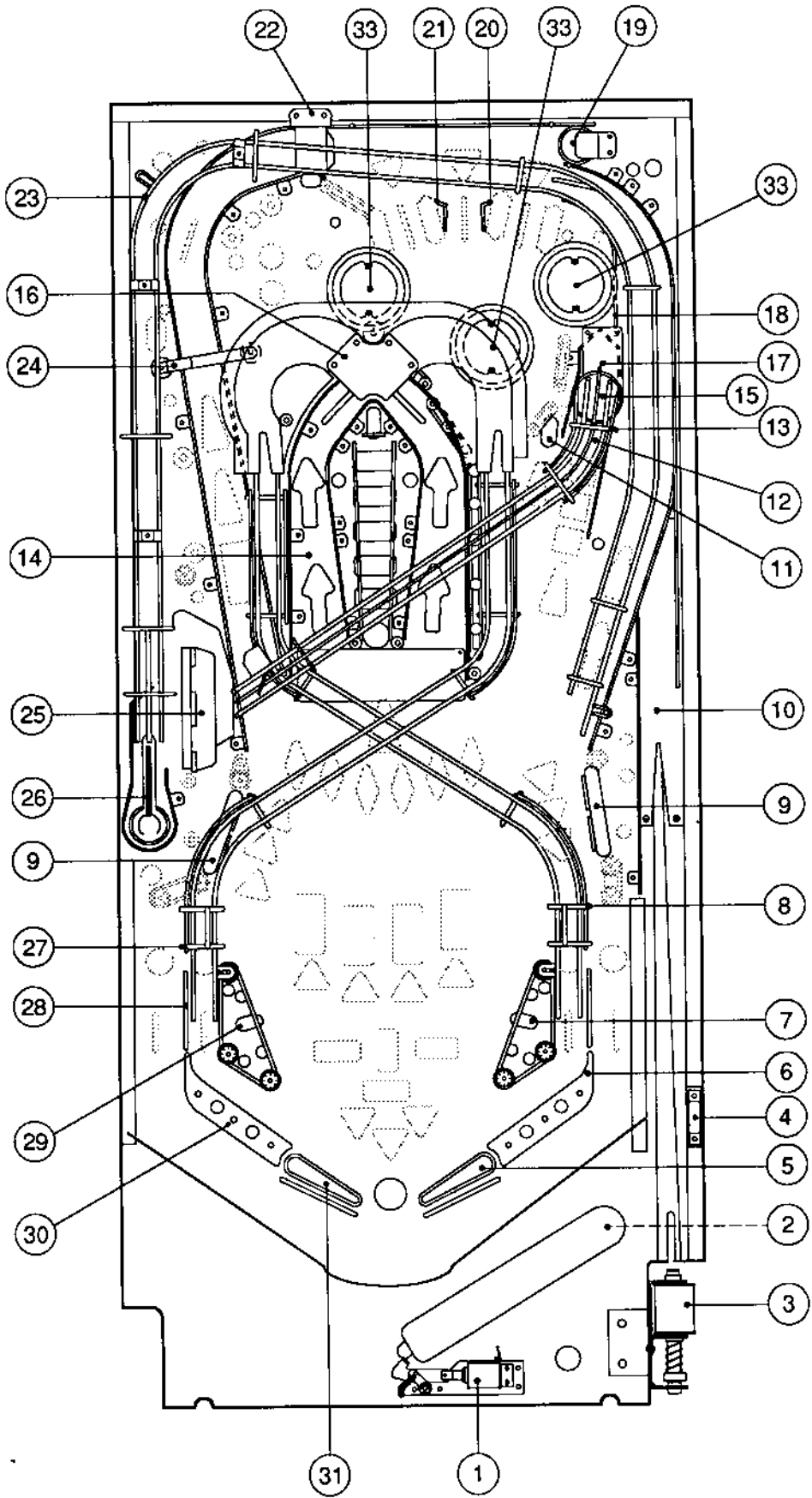


Underside of Playfield, Viewed in Raised Position

Playfield Parts

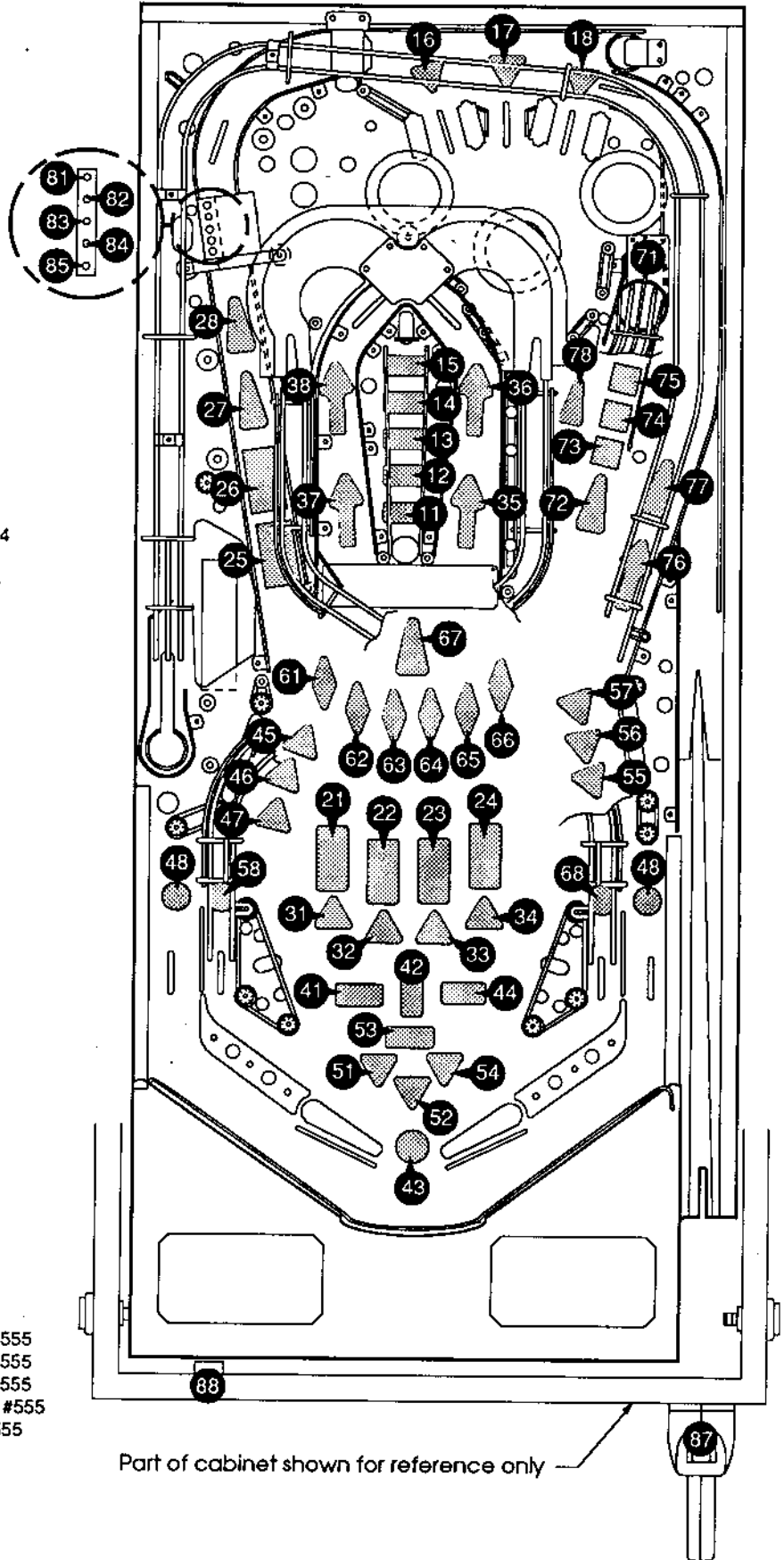
<u>Item</u>	<u>Part Number</u>	<u>Description</u>	<u>Not Shown</u>	
1	A-8039-3	Outhole	A-13204-50005	Bottom Arch Assembly
2	C-9638	Ball Release	12-6842	Wire Fence
a)	B-9362-R-3	Coil & Bracket Assembly	16-50005-1	Instruction Card
3	A-14525	Shooter Lane Kicker	20-9041	Tinnerman Speednut
4	20-9691	Level	20-9045	Instruction Card Cover
a)	03-8633	Level Mount	23-6313-1	Rubber Grommet
b)	01-10621	Strike Plate	31-1008-50005	Screened Bottom Arch
5	A-15205-R-2	Right Flipper Assembly	A-15058	Flipper Cabinet Switch
a)	20-9250-6	Yellow Flipper Paddle & Shaft	01-3569-1	Ball Return Runway
6	A-15403-2	Right Flipper Paddle Return	03-8674-2	Jet Bumper Mylar
7	B-12665	Kicker Assembly	03-8674-3	Small Playfield Mylar
a)	A-14369-R	Coil & Bracket	03-8674-4	Boat Mylar
8	A-15412	Right Wire Ramp	20-6500	Steel Ball
9	A-15741	Standup Target		
10	01-10489	Shooter Ramp Bracket		
11	A-15658-2	Oblong Target		
12	A-15211	Drop Target		
13	A-15405	Reel Enter Ramp		
14	A-15109	Boat Assembly		
a)	A-14691-5	Captive Ball Target		
15	D-11335-1	Ball Popper		
16	A-15055	Boat Ramp		
17	A-15373	Ball Guide Unit		
18	12-7033	Wire Ball Guide		
19	B-9361-R-11	Ball Eject		
a)	B-9362-R-3	Coil & Bracket		
20	12-7024-2	Wire Ball Guide		
21	12-7024-1	Wire Ball Guide		
22	B-10732-L	Ball Gate Assembly		
a)	A-14422	Ball Gate Actuator		
23	12-7011	Wire Ramp Guide		
24	A-15401	Spin Target & Light Assembly		
25	A-14945	Fish Reel Unit		
a)	14-7967	Motor		
b)	A-15340	EMI Motor Board		
c)	A-14231	LED Board		
d)	A-14232	Trans Board		
e)	A-13901-1	Opto Switch Board		
26	A-14947	Catapult		
27	A-15413	Left Wire Ramp		
28	12-6466-10	Wire Guide		
29	B-12665	Kicker Assembly		
a)	A-15749	Coil & Bracket Assembly		
30	A-15403-1	Left Flipper Return		
31	A-15205-L-2	Left Flipper Assembly		
a)	20-9250-6	Yellow Flipper Paddle & Shaft		
32	A-13204-50005	Bottom Arch Assembly		
33	B-9414-3	Jet Bumper Assembly		
a)	B-12030-2	Switch Assembly		
b)	A-9415-2	Coil & Bracket Assembly		

Playfield Parts



Lamp Locations

Item No.	Bulb No.	Lamp Assy No.	Description
11	24-8768	A-15338	Hold Bonus #555
12	24-8768	A-15338	Video Mode #555
13	24-8768	A-15338	Rock the Boat #555
14	24-8768	A-15338	Light Ex. Ball #555
15	24-8768	A-15338	Instant Multi-Ball #555
16	24-8768	A-15339	Letter (L) IE #555
17	24-8768	A-15339	Letter L(I)E #555
18	24-8768	A-15339	Letter LI(E) #555
21	24-8768	A-15337	Stringer 1 Body #555
22	24-8768	A-15337	Stringer 2 Body #555
23	24-8768	A-15337	Stringer 3 Body #555
24	24-8768	A-15337	Stringer 4 Body #555
25	24-8768	A-15334	Left Feed Frenzy #555
26	24-8768	A-15334	Monster Bonus #555
27	24-8768	A-15334	Fish Finder #555
28	24-8768	A-15334	Jackpot #555
31	24-8768	A-15337	Stringer 1 Tail #555
32	24-8768	A-15337	Stringer 2 Tail #555
33	24-8768	A-15337	Stringer 3 Tail #555
34	24-8768	A-15337	Stringer 4 Tail #555
35	24-6549	A-11271	Right Boat End #44
36	24-6549	A-11271	Rt. Boat Feed Frenzy #44
37	24-6549	A-11271	Fish Finder #44
38	24-6549	A-11271	Lt. Boat Feed Frenzy #44
41	24-8768	A-15337	Tropical #555
42	24-8768	A-15337	Freshwater #555
43	24-6549	A-11754	Cast Again #44
44	24-8768	A-15337	Deep Sea #555
45	24-8768	A-15470	Left Fish Head #555
46	24-8768	A-15470	Left Fish Body #555
47	24-8768	A-15470	Left Fish Tail #555
48	24-8768	B-12224	Specials #555
51	24-8768	A-15337	Bonus 1X #555
52	24-8768	A-15337	Bonus 2X #555
53	24-8768	A-15337	Auto Cast #555
54	24-8768	A-15337	Bonus 4X #555
55	24-8768	A-15470	Right Fish Head #555
56	24-8768	A-15470	Right Fish Body #555
57	24-8768	A-15470	Right Fish Tail #555
58	24-8768	B-12224	Light Long Cast #555
61	24-8768	A-15336	School Fish 1 #555
62	24-8768	A-15336	School Fish 2 #555
63	24-8768	A-15336	School Fish 3 #555
64	24-8768	A-15336	School Fish 4 #555
65	24-8768	A-15336	School Fish 5 #555
66	24-8768	A-15336	School Fish 6 #555
67	24-6549	A-11271	Super Jackpot #44
68	24-8768	B-12224	Light Fish Finder #555
71	24-6549	A-11271	Casters Club #44
72	24-8768	A-15335	Doubles Jackpot #555
73	24-8768	A-15335	Lock 3 #555
74	24-8768	A-15335	Lock 2 #555
75	24-6549	A-11754	Lock 1 #44
76	24-8768	A-15335	Rt. Feed Frenzy #555
77	24-8768	A-15335	Long Cast #555
78	24-6549	A-11754	Extra Ball #44
81	24-8768	A-15415	Stretch Truth 5X Actual #555
82	24-8768	A-15415	Stretch Truth 3X Actual #555
83	24-8768	A-15415	Stretch Truth 2X Actual #555
84	24-8768	A-15415	Stretch Truth Actual Size #555
85	24-8768	A-15415	Stretch Truth Total Lie #555
86	24-6549	A-8882	Video Mode #44
87	—	20-9713-07	Cast
88	—	20-9663-1	Start Button

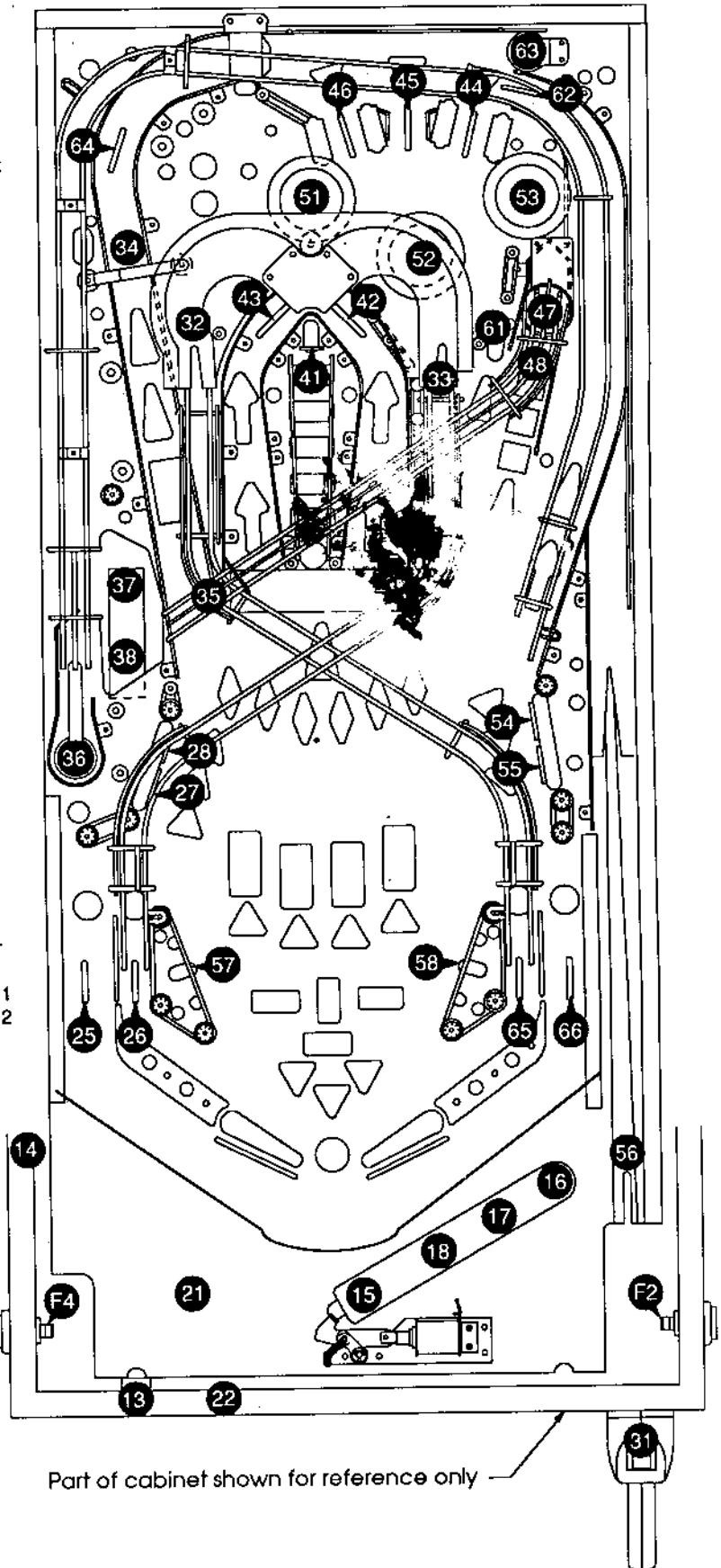


Part of cabinet shown for reference only

Switch Locations

Item No.	Switch No.	Switch Assy No.	Description
F1	SW-1A-193	A-15205-R-2	†Rt. Flipper EOS
F2	SW-1A-191	A-15058	Rt. Flipper Cabinet
F3	SW-1A-193	A-15205-L-2	Lt. Flipper EOS
F4	SW-1A-191	A-15058	†Lt. Flipper Cabinet
13	—	20-9663-1	Start Button
14	—	20-6502-A	Plumb Bob Tilt
15	5647-12133-12	A-10417	Outhole
16	5647-12693-08	A-11680	Trough 1
17	5647-09957-00	B-8925	Trough 2
18	5647-09957-00	B-8925	Trough 3
21	SW-1A-117	A-15487	Slam Tilt
22	—	A-8630	Coin Door Closed
23	—	Not Used	Ticket Opto
24	—	A-8630	†Always Closed
25	5647-12693-19	A-12688	Left Outlane
26	5647-12693-19	A-12688	Left Return Lane
27	—	A-15741	Left Standup Tgt 1
28	—	A-15741	Left Standup Tgt 2
31	20-9713-07	A-15130	Cast
32	5647-12693-21	A-15055	Left Boat Exit
33	5647-12693-21	A-15055	Right Boat Exit
34	5647-12133-00	A-12010	Spinner
35	5647-12693-17	A-15404	Reel Entry
36	5647-12693-12	A-14947	Catapult
37	A-14315 (LED)	—	Reel 1
	A-14316 (Trans)	—	
38	A-14315 (LED)	—	Reel 2
	A-14316 (Trans)	—	
41	—	A-14691-5	Captive Ball
42	5647-12693-18	A-12687	Right Boat Entry
43	5647-12693-19	A-12688-1	Left Boat Entry
44	5647-12693-19	A-12688-1	Letter (L)IE
45	5647-12693-19	A-12688	Letter L(I)E
46	5647-12693-19	A-12688	Letter L(I)E
47	SW-1A-167-1	A-11658-1	Ball Popper
48	5647-12693-31	A-15211	Drop Target
51	SW-11A-37	B-12029-2	Left Jet Bumper
52	SW-11A-37	B-12029-2	Center Jet Bumper
53	SW-11A-37	B-12029-2	Right Jet Bumper
54	—	A-15741	Right Standup Tgt 1
55	—	A-15741	Right Standup Tgt 2
56	5647-12693-19	A-12688	Ball Shooter
57	SW-1A-114 (Kick)	A-8284-2	Left Slingshot
	SW-1A-120-1 (Score)*		
58	SW-1A-114 (Kick)	A-8284-2	Right Slingshot
	SW-1A-120-1 (Score)*		
61	—	A-15658-6	Extra Ball
62	5647-12693-18	A-12687	Top Right Loop
63	5647-12133-11	A-9381-R	Top Eject Hole
64	5647-12693-19	A-12688	Top Left Loop
65	5647-12693-19	A-12688	Right Return
66	5647-12693-19	A-12688	Right Outlane

* The Score slingshot switches have diodes across them.
† Not Shown



Part of cabinet shown for reference only

Solenoid/Flasher Locations

Item No.	Coll/Flasher No.	Assy No.	Description
01	AE-23-800	A-14525	Ball Shooter
02	AL-23-800	A-14947	Catapult
03	AE-24-900	D-11335-1	Ball Popper
04	AE-27-1200	A-15749	Left Slingshot
05	AE-27-1200	A-14369-R	Right Slingshot
06	A-14406	A-14422	Left Gate
07	AE-23-800	B-10686-1	Knocker
08	AE-23-800	A-15304	Backbox Fish
09	AE-27-1200	A-8039-3	Outhole
10	AE-26-1200	B-9362-R-3	Ball Release
11	AE-26-1200	B-9362-R-3	Eject Hole
12	AE-26-1200	A-15211	Drop Target Up
13	SM1-26-600	A-15211	Drop Target Down
14	AE-26-1200	A-9415-2	Left Jet Bumper
15	AE-26-1200	A-9415-2	Center Jet Bumper
16	AE-26-1200	A-9415-2	Right Jet Bumper
17	24-8802	A-12336-1	Jackpot Flasher #906
18	24-8802	A-12336-1	Super Jackpot Flasher #906
19	24-8802	A-15457	Instant Multi-ball Flasher #906
20	24-8802	—	Backbox Insert Flasher #906
21	24-8802	A-15457	Light Extra Ball Flasher #906
22	24-8802	—	Backbox Insert Flasher #906
23	24-8802	A-15457	Rock the Boat Flasher #906
24	24-8802	—	Backbox Insert Flasher #906
25	24-8802	—	Video Mode Flasher #906
26	24-8802	—	Backbox Insert Flasher #906
27	24-8802	A-15457	Hold Bonus Flasher #906
28	24-8802	—	Backbox Insert Flasher #906
29	24-8802	—	Not Used
30	24-8704	A-8798	Reel Flasher #89
31	24-8802	—	Backbox Insert Flasher #906
32	24-8802	A-12336-1	Hood Flasher #906
33	24-8704	A-8798	Top Left Flasher #89
34	24-8802	A-12336-1	Top Left Flasher #906
35	24-8704	A-9302	Caster Club Flasher #89
36	24-8802	—	Backbox Insert Flasher #906
37	14-7967	A-14945	Reel Motor

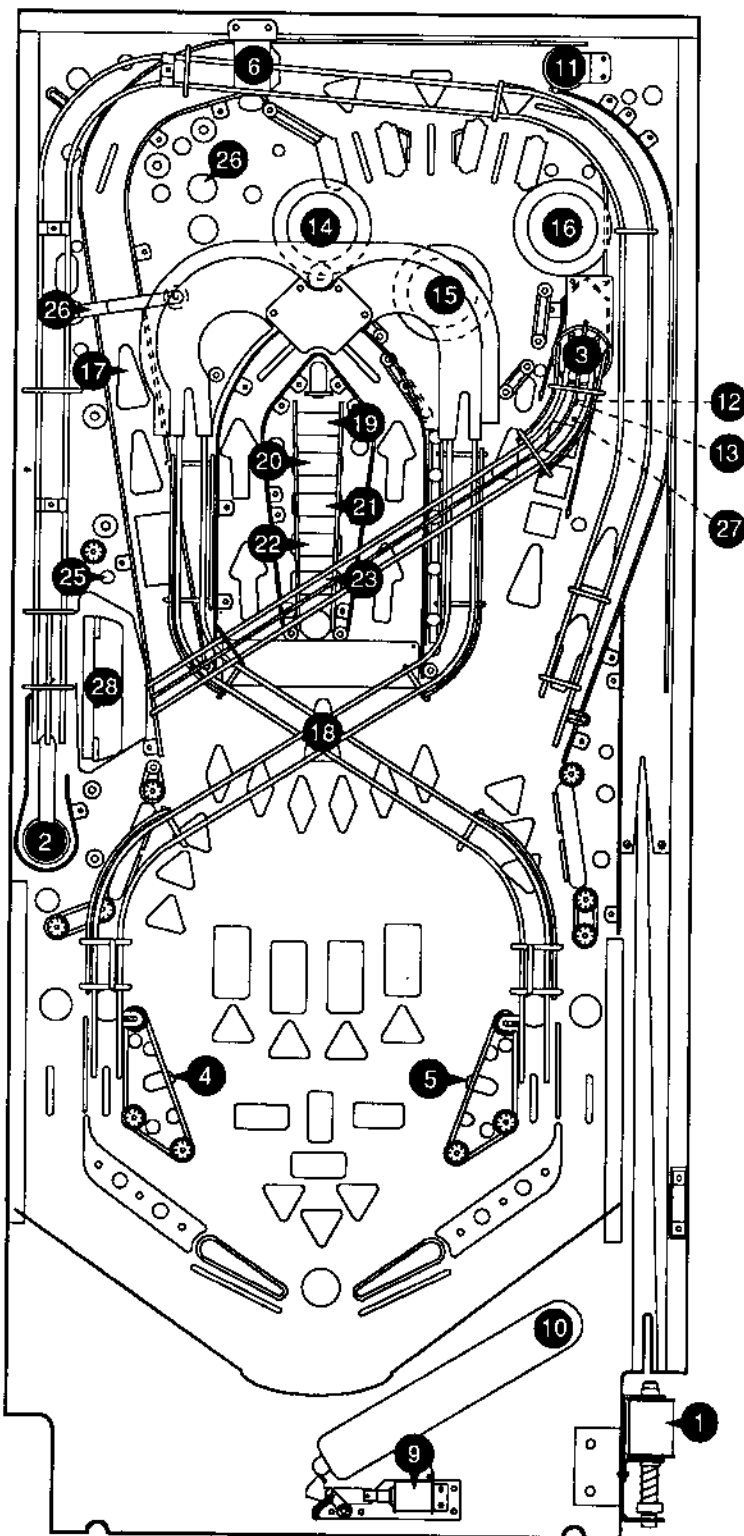
General Illumination

01	24-8768	—	*Backbox G.I. #555
02	24-8768	—	*Backbox & Hood G.I. #555
03	24-6549	—	*Playfield G.I. #44
04	24-8768	—	*Backbox G.I. #555
05	24-6549	—	*Playfield & Coin Door G.I. #44

Flippers

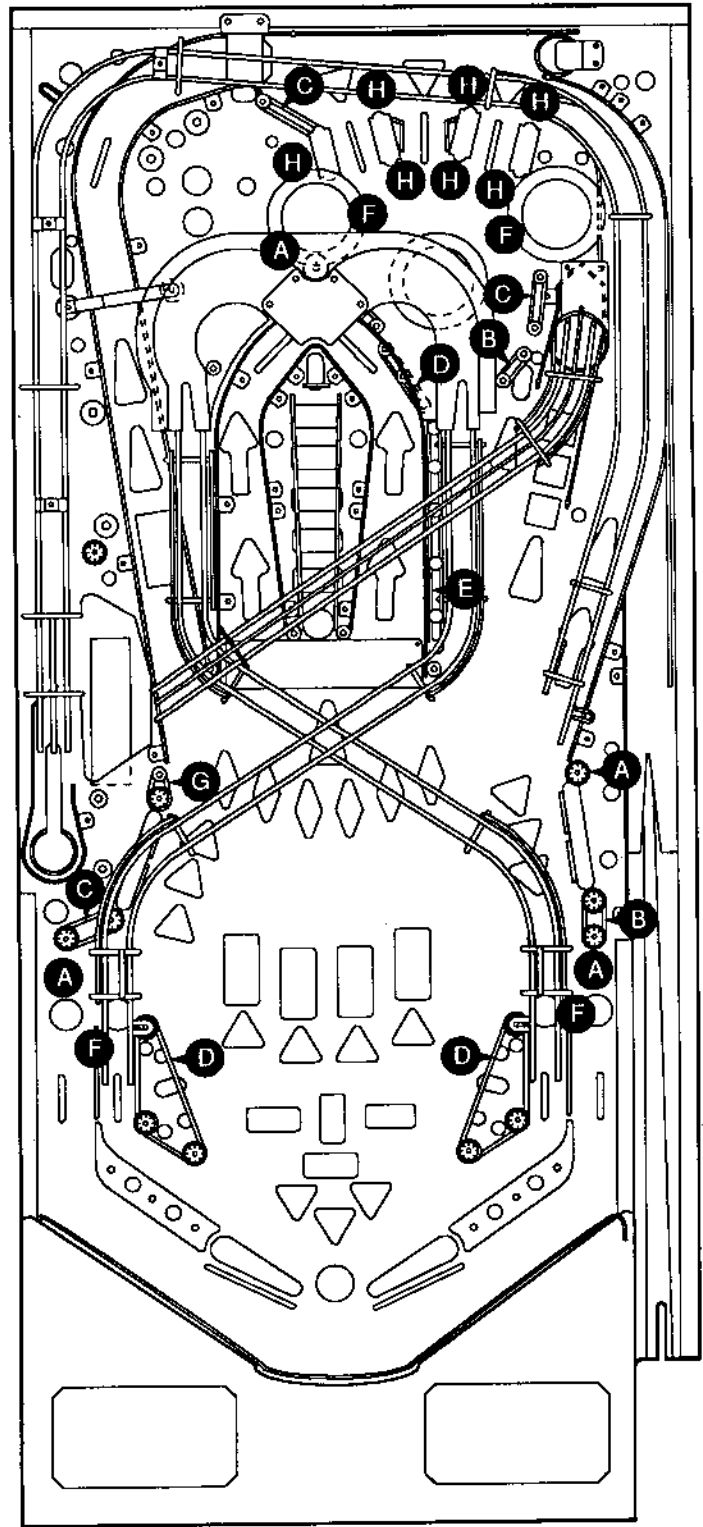
FL-11629	A-15205-R-2	*Lower Right Flipper
FL-11629	A-15205-L-2	*Lower Left Flipper

* Not Shown



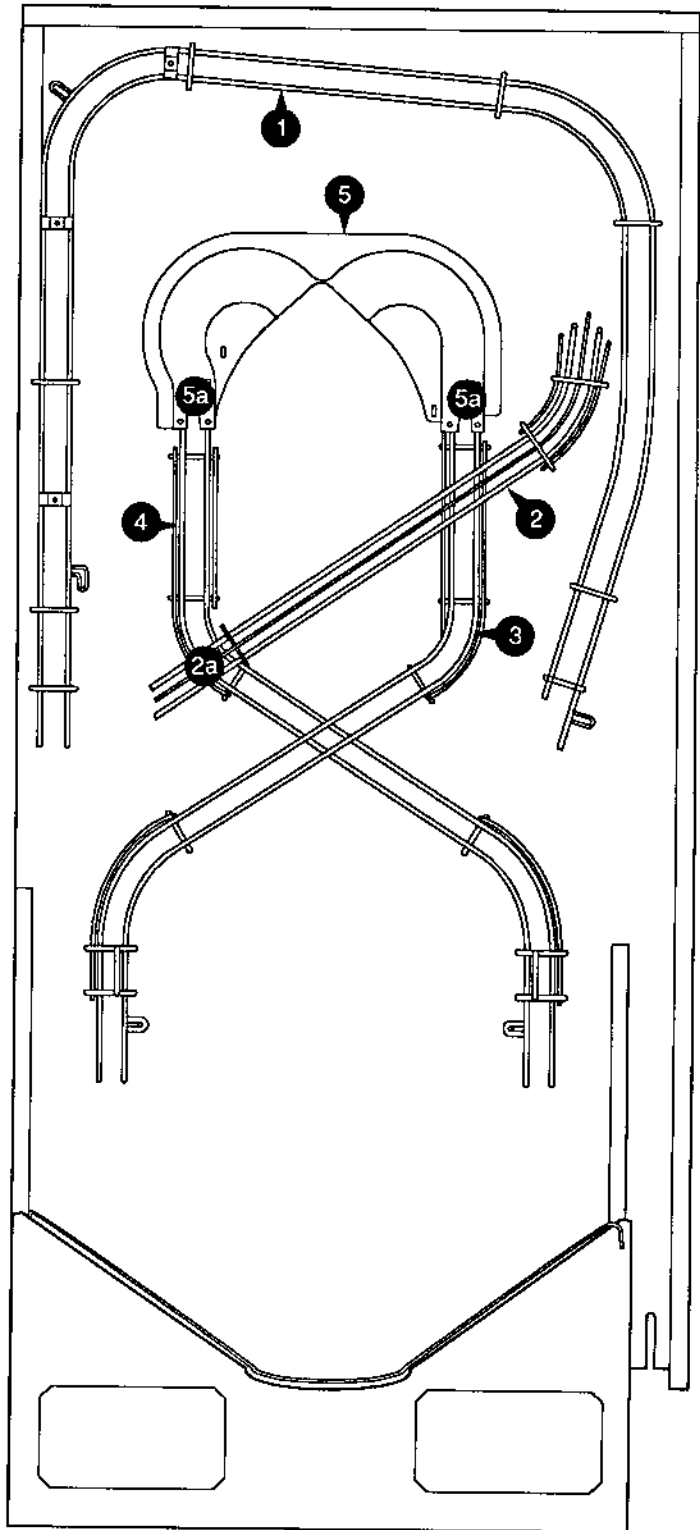
Rubber Rings

Item	Part Number	Qty.	Description
A.	23-6300	4	5/16" Rubber Ring
B.	23-6301	2	3/4" Rubber Ring
C.	23-6302	3	1" Rubber Ring
D.	23-6306	4	2-1/2" Rubber Ring
E.	23-6307	1	3" Rubber Ring
F.	23-6535	5	Rubber Bumper
G.	23-6599	1	7/16" Rubber Ring
H.	23-6641-1	7	White Rubber Ring
J.	23-6519-4	2	Flipper Rubber Ring



Ramps

Item	Part Number	Description
1.	12-7011	Wire Ramp
2.	A-15404	Reel Enter Wire Ramp
a)	5647-12693-17	Mini-Micro Switch
3.	A-15412	Right Wire Ramp
4.	A-15413	Left Wire Ramp
5.	A-15055	Boat Ramp
a)	5647-12693-21	Mini-Micro Switch (2 used)



Section 3

Schematics, Wiring Diagrams, and Circuit Theory

CONNECTOR & COMPONENT IDENTIFICATION

Each plug or jack receives a number that identifies the circuit board and position on that board that it connects to. J-designations refer to the male part of a connector. P-designations refer to the female part of a 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 refers to a fuse located on the Sound Board.

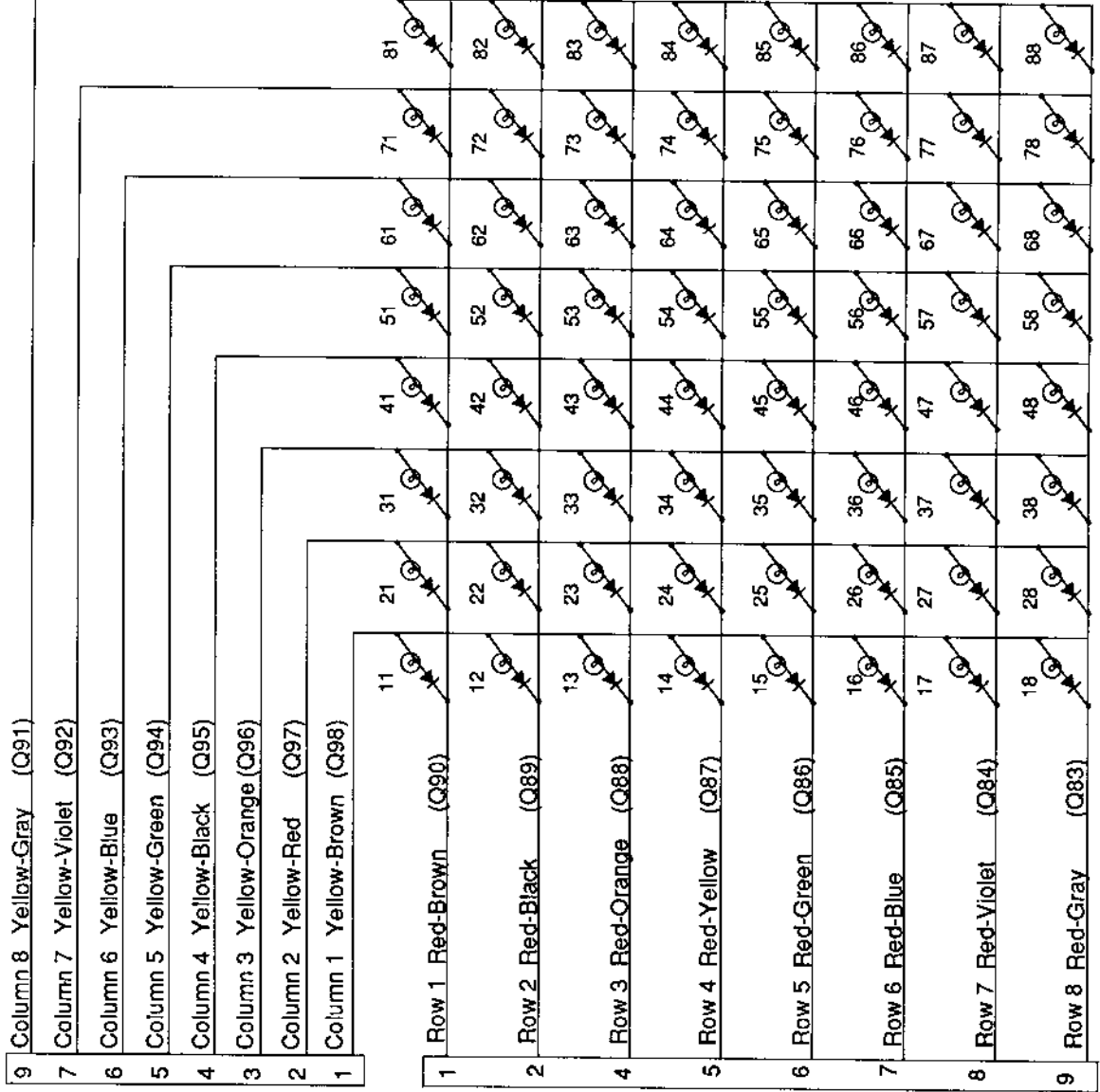
Prefix numbers for the WPC circuit boards are listed below.

- 1- Power Driver Board
- 2- CPU Board
- 5- Sound Board
- 6- Dot Matrix Controller
Dot Matrix Display/Driver Board
- 9-Fliptronic II Controller Board

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

Lamp Matrix

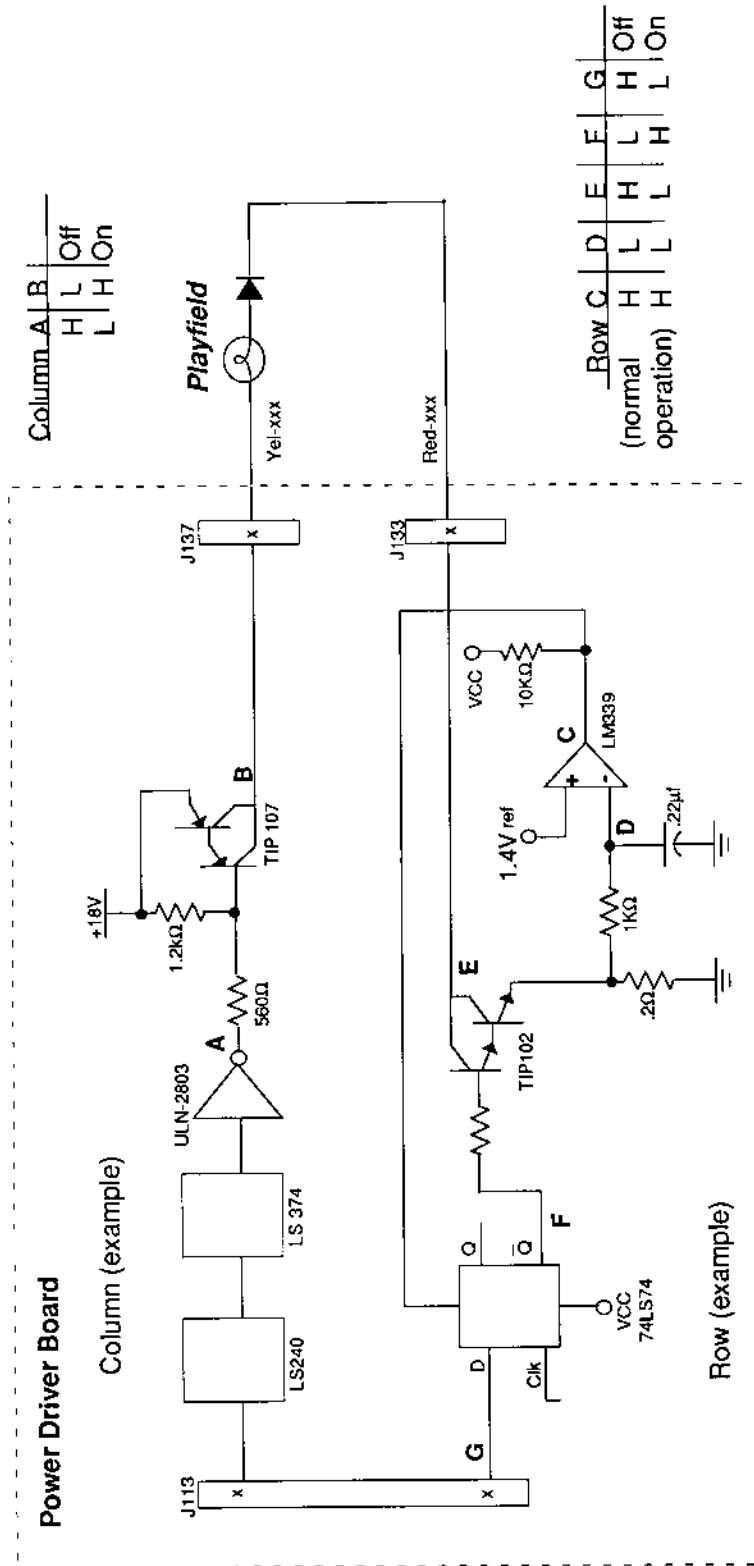
- 11 Hold Bonus
- 12 Video Mode
- 13 Rock the Boat
- 14 Light Extra Ball
- 15 Instant Multi-ball
- 16 Lie (L)
- 17 Lie (I)
- 18 Lie (E)
- 21 Stringer Body 1
- 22 Stringer Body 2
- 23 Stringer Body 3
- 24 Stringer Body 4
- 25 Lt. Side Feed Frenzy
- 26 Monster Bonus
- 27 Fish Finder
- 28 Jackpot
- 31 Stringer Tail 1
- 32 Stringer Tail 2
- 33 Stringer Tail 3
- 34 Stringer Tail 4
- 35 Right Boat Entry
- 36 Rt. Boat Feed Frenzy
- 37 Left Boat Entry
- 38 Lt. Boat Feed Frenzy
- 41 Tropical
- 42 Freshwater
- 43 Cast Again
- 44 Deep Sea
- 45 Left Fish Head
- 46 Left Fish Body
- 47 Left Fish Body
- 48 Specials
- 51 Bonus 1X
- 52 Bonus 2X
- 53 Auto Cast
- 54 Bonus 4X
- 55 Right Fish Head
- 56 Right Fish Body
- 57 Right Fish Tail
- 58 Light Long Cast
- 61 School Fish 1
- 62 School Fish 2
- 63 School Fish 3
- 64 School Fish 4
- 65 School Fish 5
- 66 School Fish 6
- 67 Super Jackpot
- 68 Light Fish Finder
- 71 Casters Club
- 72 Doubles Jackpot
- 73 Lock 3
- 74 Lock 2
- 75 Lock 1
- 76 Rt. Side Feed Frenzy
- 77 Long Cast
- 78 Extra Ball
- 81 Stretch 5X Actual
- 82 Stretch 3X Actual
- 83 Stretch 2X Actual
- 84 Stretch Actual Size
- 85 Stretch Total Lie
- 86 Video Mode
- 87 Cast
- 88 Start Button



Power Driver Board J137

Power Driver Board J133

Lamp Matrix Circuit



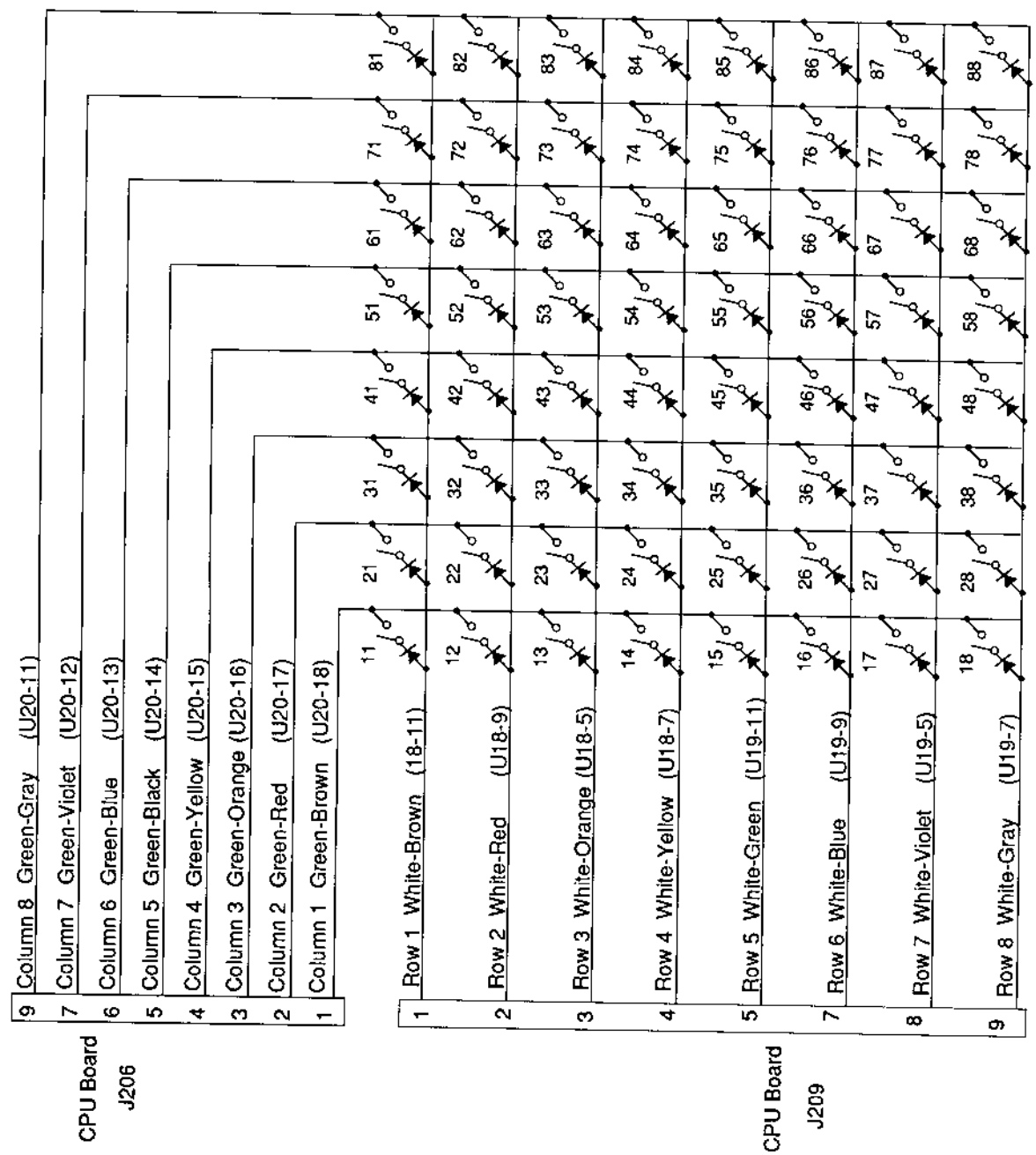
The processor sends a signal to the column circuit causing the output of the ULN-2803 to toggle. When point "A" drops low, the TIP107 transistor conducts and point "B" changes to a high state. At the same time the processor drives the input of the 74LS74 low, causing a high at output "F". A high state at the base of TIP102 causes the transistor to conduct bringing the row circuit to ground and turning the lamp On.

The processor changes the input of the 74LS74 to a high state to turn the lamp Off.

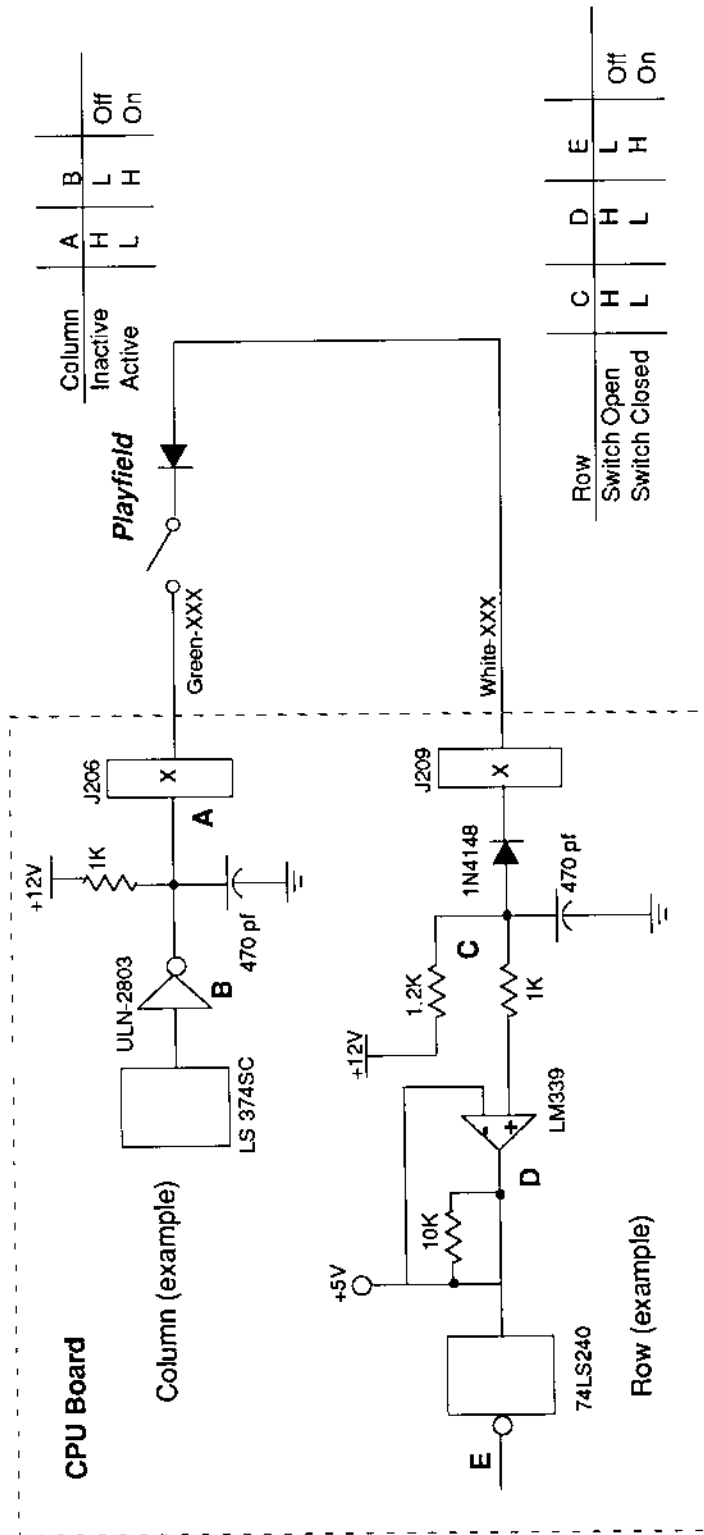
In overcurrent conditions the lamp is shut Off through the comparator. If the voltage at the negative input of the LM339 rises above 1.4V the output changes to a low, which is fed back to the 74LS74 and shuts the row circuit Off.

Switch Matrix

- 11 Not Used
- 12 Not Used
- 13 Start Button
- 14 Plumb Bob Tilt
- 15 Outhole
- 16 Trough 1
- 17 Trough 2
- 18 Trough 3
- 21 Slam Tilt
- 22 Coin Door Closed
- 23 Ticket Opto
- 24 Always Closed
- 25 Left Outlane
- 26 Left Return Lane
- 27 Lt. Stand-up Tgt 1
- 28 Lt. Stand-up Tgt 2
- 31 Cast
- 32 Left Boat Exit
- 33 Right Boat Exit
- 34 Spinner
- 35 Reel Entry
- 36 Catapult
- 37 Reel 1
- 38 Reel 2
- 41 Captive Ball
- 42 Right Boat Entry
- 43 Left Boat Entry
- 44 Lie (E)
- 45 Lie (I)
- 46 Lie (L)
- 47 Ball Popper
- 48 Drop Target
- 51 Left Jet
- 52 Center Jet
- 53 Right Jet
- 54 Rt. Stand-up Tgt 1
- 55 Rt. Stand-up Tgt 2
- 56 Ball Shooter
- 57 Left Sling
- 58 Right Sling
- 61 Extra Ball
- 62 Top Right Loop
- 63 Top Eject Hole
- 64 Top Left Loop
- 65 Right Return
- 66 Right Outlane
- 67 Not Used
- 68 Not Used
- 71 Not Used
- 72 Not Used
- 73 Not Used
- 74 Not Used
- 75 Not Used
- 76 Not Used
- 77 Not Used
- 78 Not Used
- 81 Not Used
- 82 Not Used
- 83 Not Used
- 84 Not Used
- 85 Not Used
- 86 Not Used
- 87 Not Used
- 88 Not Used



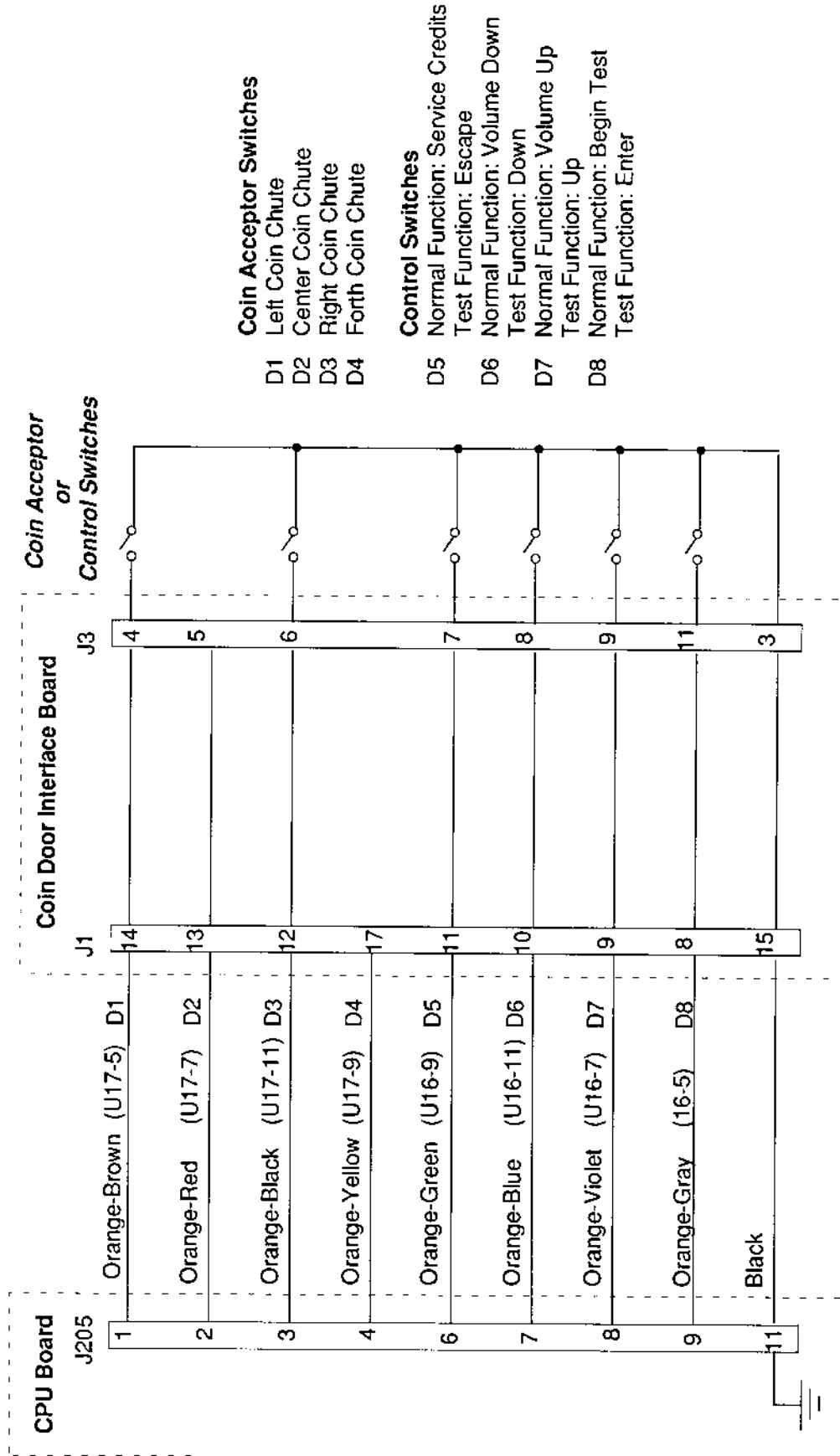
Switch Matrix Circuit



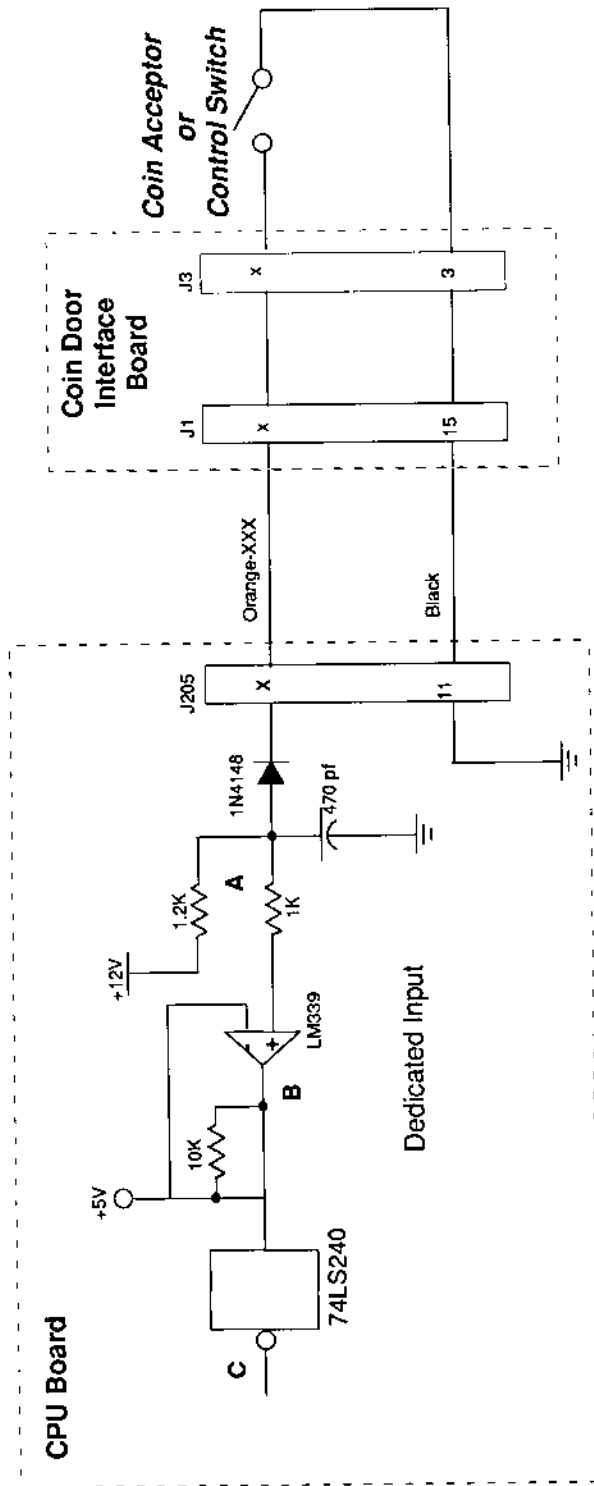
The microprocessor is constantly strobing the column side of the switch. When point "A" on the column circuit toggles low the column side is active.

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



Dedicated Switch Circuit



Switch	A	B	C
Open	H	H	L
Closed	L	L	H
			Off
			On

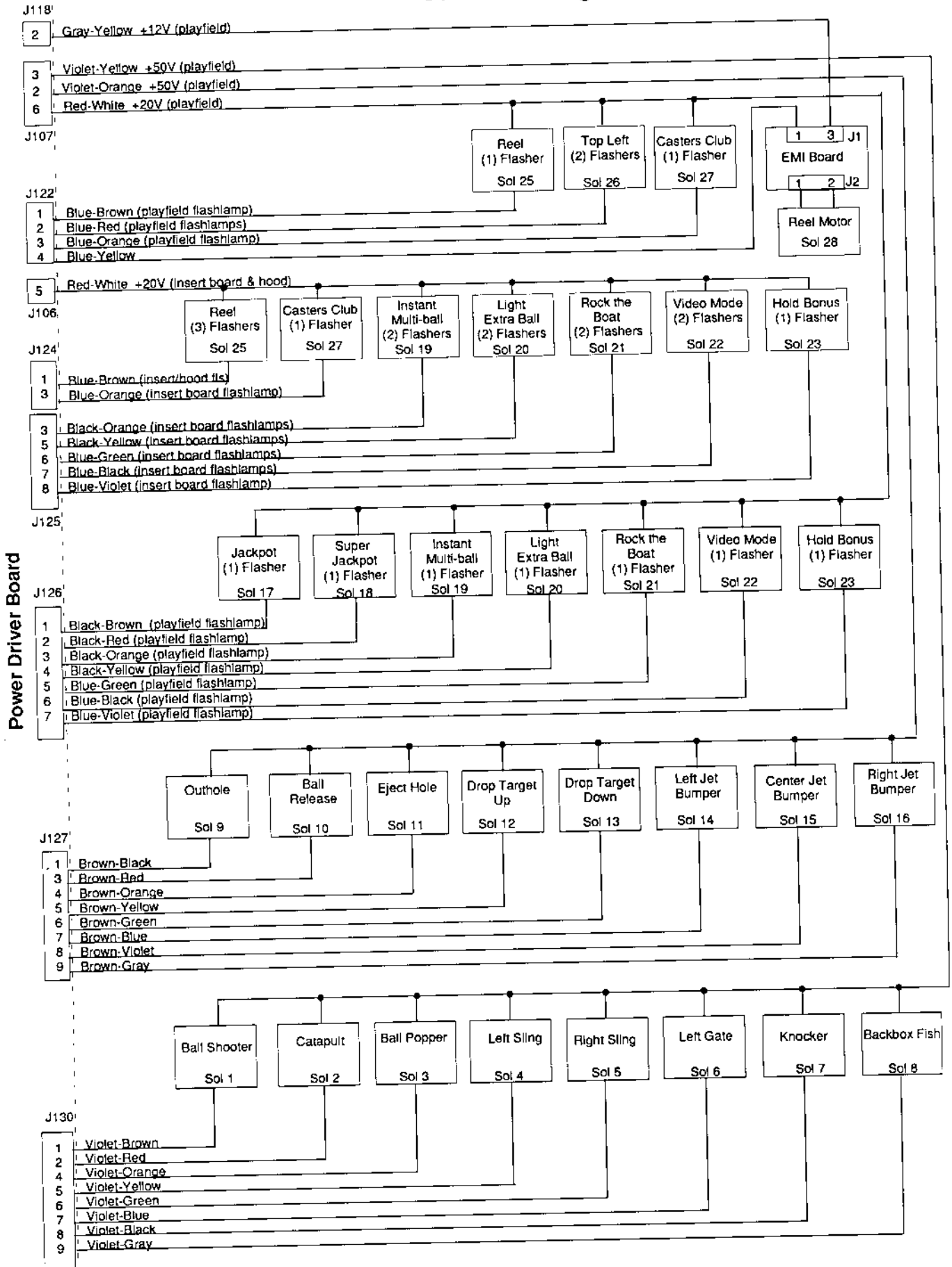
The dedicated switches operate similar to switches in the matrix except that instead of a column circuit there is a direct tie to ground. Therefore, the column side is constantly active (low).

When a switch closes the row side (dedicated input) of the circuit activates. The "+" input to the LM339 drops below +5V therefore its 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.

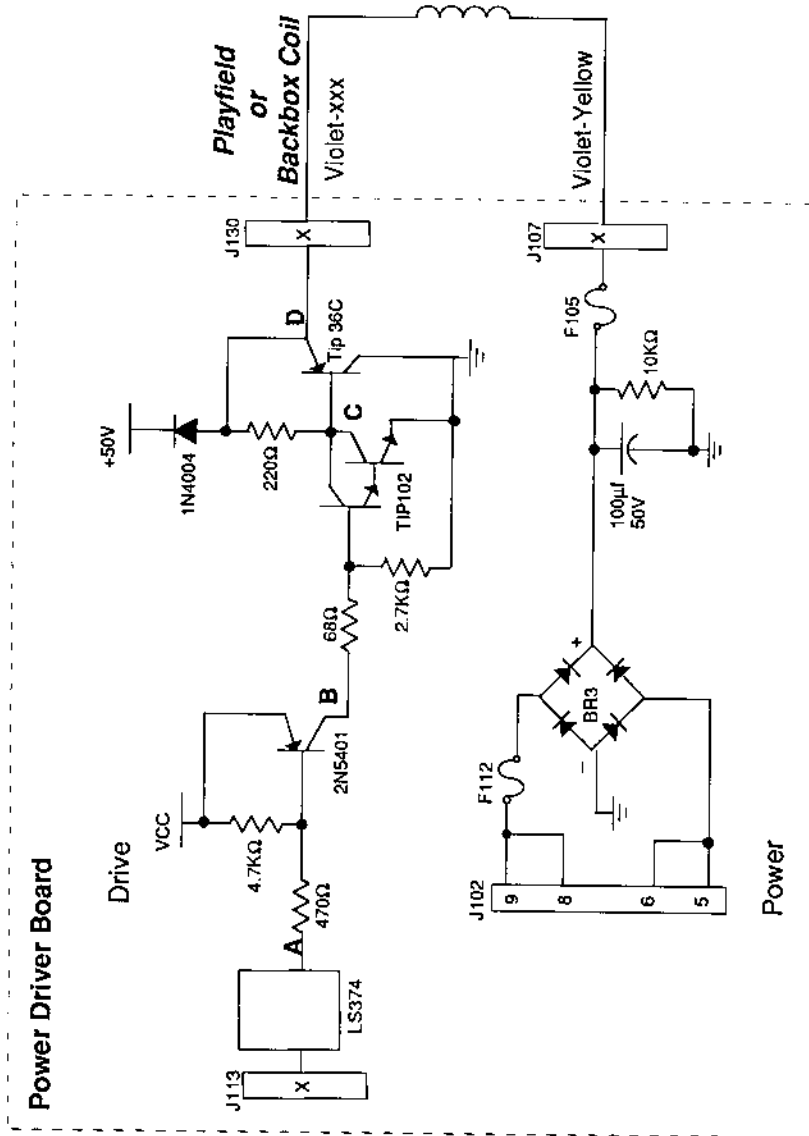
Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections Playfield - Insert - Hood	Driver Trnstr	Solenoid Part Number Flashlamp Type
01	Ball Shooter	High Power	Vio-Brn	J130-1	Q82	AE-23-800
02	Catapult	High Power	Vio-Red	J130-2	Q80	AL-23-800
03	Ball Popper	High Power	Vio-Org	J130-4	Q78	AE-24-900
04	Left Sling	High Power	Vio-Yel	J130-5	Q76	AE-27-1200
05	Right Sling	High Power	Vio-Grn	J130-6	Q64	AE-27-1200
06	Left Gate	High Power	Vio-Blu	J130-7	Q66	A-14406
07	Knocker	High Power	Vio-Blk	J130-8	Q68	AE-23-800
08	Backbox Fish	High Power	Vio-Gry	J130-9	Q70	AE-23-800
09	Outhole	Low Power	Brn-Blk	J127-1	Q58	AE-27-1200
10	Ball Release	Low Power	Brn-Red	J127-3	Q56	AE-26-1200
11	Eject Hole	Low Power	Brn-Org	J127-4	Q54	AE-26-1200
12	Drop Target Up	Low Power	Brn-Yel	J127-5	Q52	AE-26-1200
13	Drop Target Down	Low Power	Brn-Grn	J127-6	Q50	SM1-26-600
14	Left Jet Bumper	Low Power	Brn-Blu	J127-7	Q48	AE-26-1200
15	Center Jet Bumper	Low Power	Brn-Vio	J127-8	Q46	AE-26-1200
16	Right Jet Bumper	Low Power	Brn-Gry	J127-9	Q44	AE-26-1200
17	Jackpot Flasher	Flasher	Blk-Brn	J126-1	Q42	1PL #906
18	Super Jackpot Flasher	Flasher	Blk-Red	J126-2	Q40	1PL #906
19	Instant Multi-ball Flasher	Flasher	Blk-Org	J126-3 J125-3	Q38	1PL #906 2 IB #906
20	Light Extra Ball Flasher	Flasher	Blk-Yel	J126-4 J125-5	Q36	1PL #906 2 IB #906
21	Rock the Boat Flasher	Flasher	Blu-Grn	J126-5 J125-6	Q28	1PL #906 2 IB #906
22	Video Mode Flasher	Flasher	Blu-Blk	J126-6 J125-7	Q30	1PL #906 2 IB #906
23	Hold Bonus Flasher	Flasher	Blu-Vio	J126-7 J125-8	Q34	1PL #906 1 IB #906
24	Not Used	Flasher	Blu-Gry		Q32	
25	Reel Flasher	Flasher	Blu-Brn	J122-1 J124-1	Q26	1PL #89/1HD #906 2 IB #906
26	Top Left Flasher	Flasher	Blu-Red	J122-2	Q24	1PL #89/1PL #906
27	Casters Club Flasher	Flasher	Blu-Org	J122-3 J124-3	Q22	1PL #89 1 IB #906
28	Reel Motor	Low Power	Blu-Yel	J122-4	Q20	14-7967
General Illumination						
01	Backbox G.I.	G.I.	Whit-Brn	Playfield - Insert - Cabinet-Hood J121-7	Q18	#555
02	Backbox G.I. / Hood	G.I.	Whit-Org	J121-8	Q10	#555
03	Playfield G.I.	G.I.	Whit-Yel	J120-9	Q14	#44
04	Backbox G.I.	G.I.	Whit-Grn	J121-10	Q16	#555
05	Playfield G.I. / Coin Door	G.I.	Whit-Vio	J120-11 J119-1	Q12	#44
Flipper Circuits						
	Lower Right Flipper		Blu-Yel	Playfield J907-8, 9	Hold Q4	FL-11629
	Lower Left Flipper		Gry-Yel	J907-6, 7	Q3	FL-11629

Solenoid Wiring

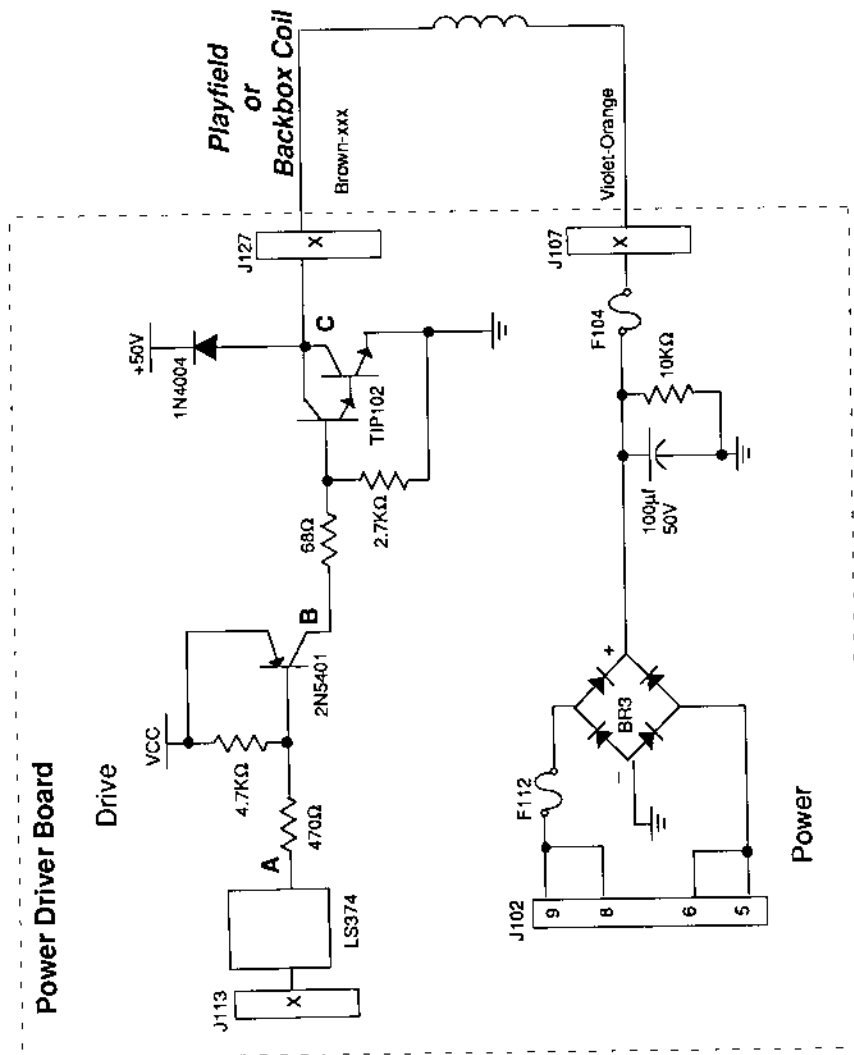


High Power Solenoid Circuit



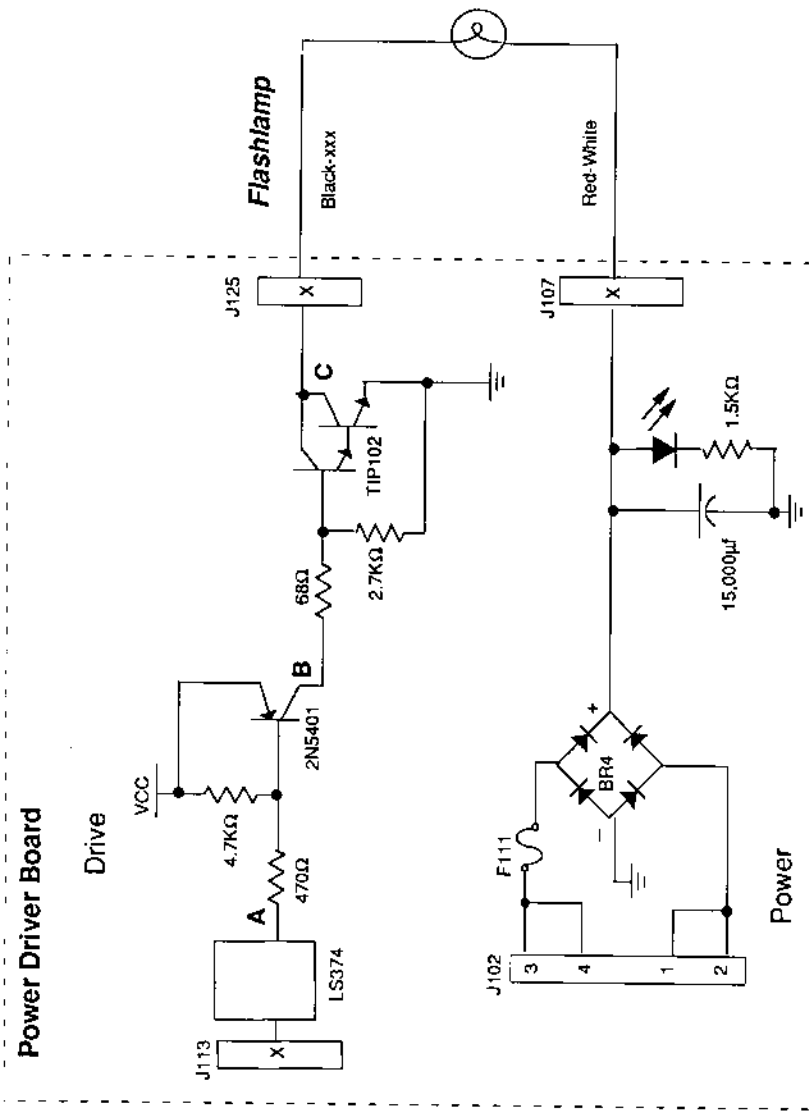
The microprocessor toggles the output of the 74LS374. When point "A" drops low, point "B" the collector of the 2N5401 transistor is high. A high at point "B" causes point "C" the collector of the TIP102 transistor, and point "D" the emitter of the TIP36 transistor to drop low. When point "D" is low the coil is grounded through the transistor and the coil turns On. The coil shuts Off when point "A" toggles high.

Low Power Solenoid Circuit



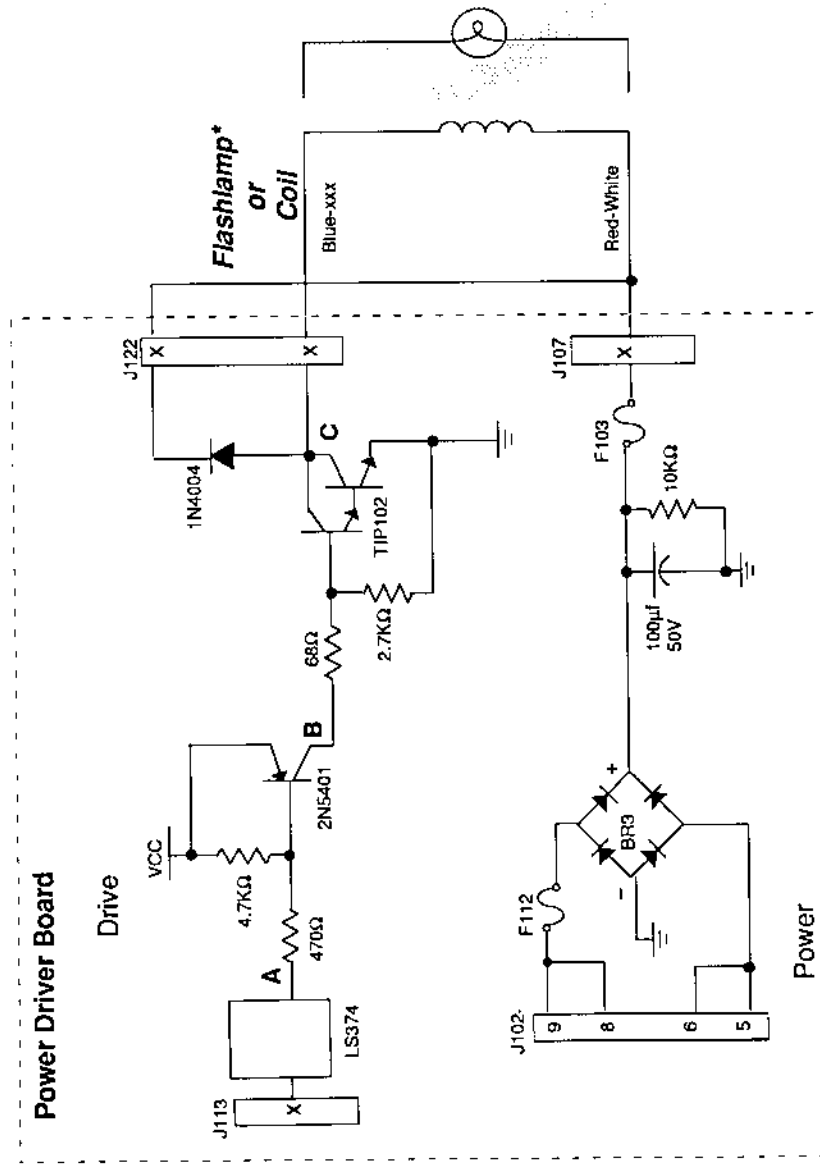
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B" the collector of the 2N5401 transistor is driven high. A high at point "B" turns On the TIP102 transistor and causes point "C" to drop low. When point "C" is low the coil is grounded through the transistor and the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

Flashlamp Circuit



The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B" the collector of the 2N5401 transistor is high. Once point "B" is high, point "C" the collector of the TIP102 transistor is low. When Point "C" is low the flashlamp is grounded through the transistor and the flashlamp turns On. When point "A" toggles high the circuit shuts Off.

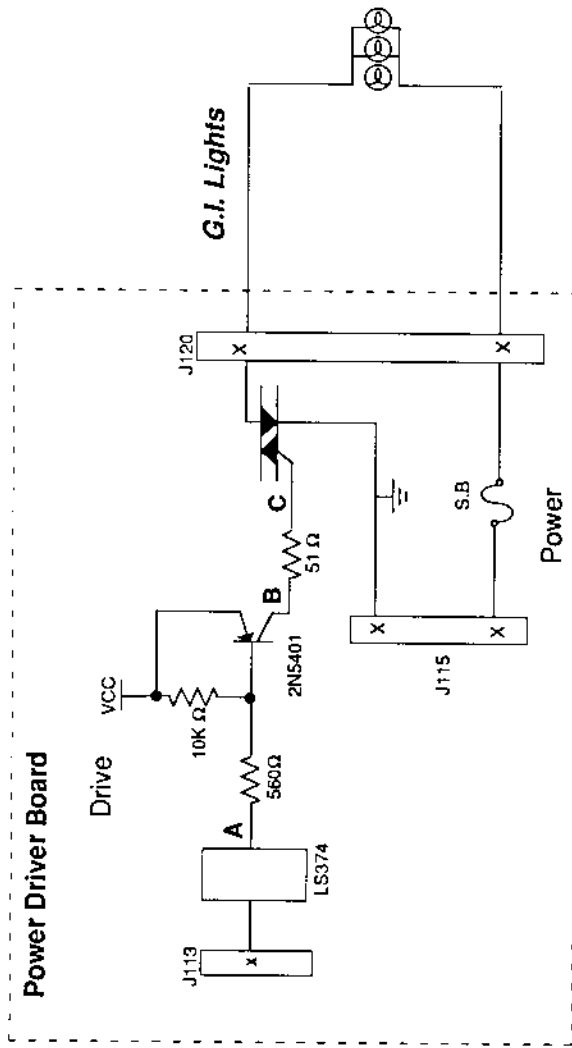
Special (General Purpose) Solenoid Circuit



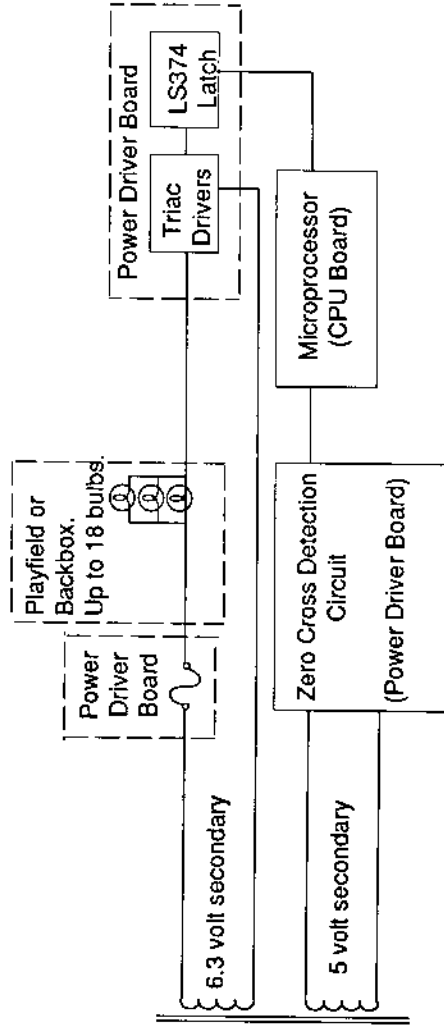
The microprocessor toggles the output of the 74LS374. When point "A" drops low, point "B" is high. A high at point "B" causes a low at point "C". When point "C" is low the coil/flashlamp is grounded through the transistor and the coil/flashlamp turns On. When point "A" toggles high the coil/flashlamp turns Off.

* Tieback Diode is not used for flashlamp circuit.

General Illumination Circuit

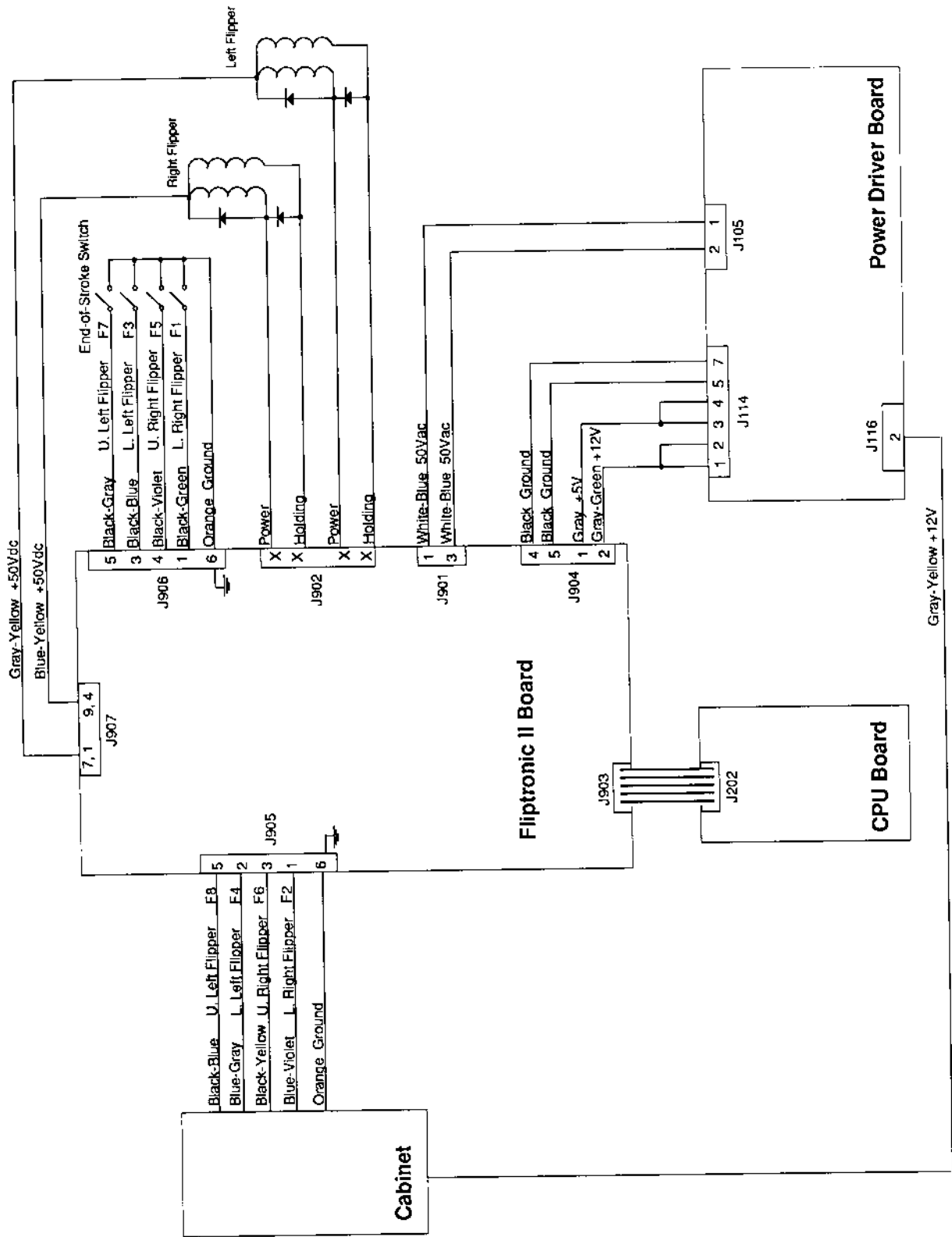


Block Diagram of General Illumination Circuit



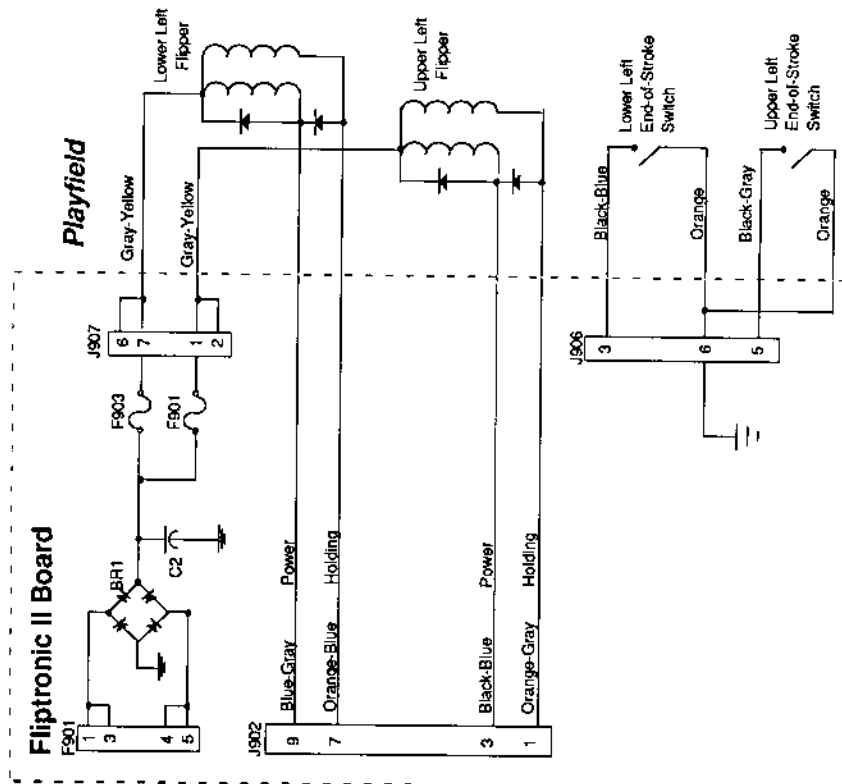
When point "A" toggles low, then points "B" and "C" are high. This turns On the triac and the desired General Illumination string lights.

Fliptronic II Flipper Circuit Diagram

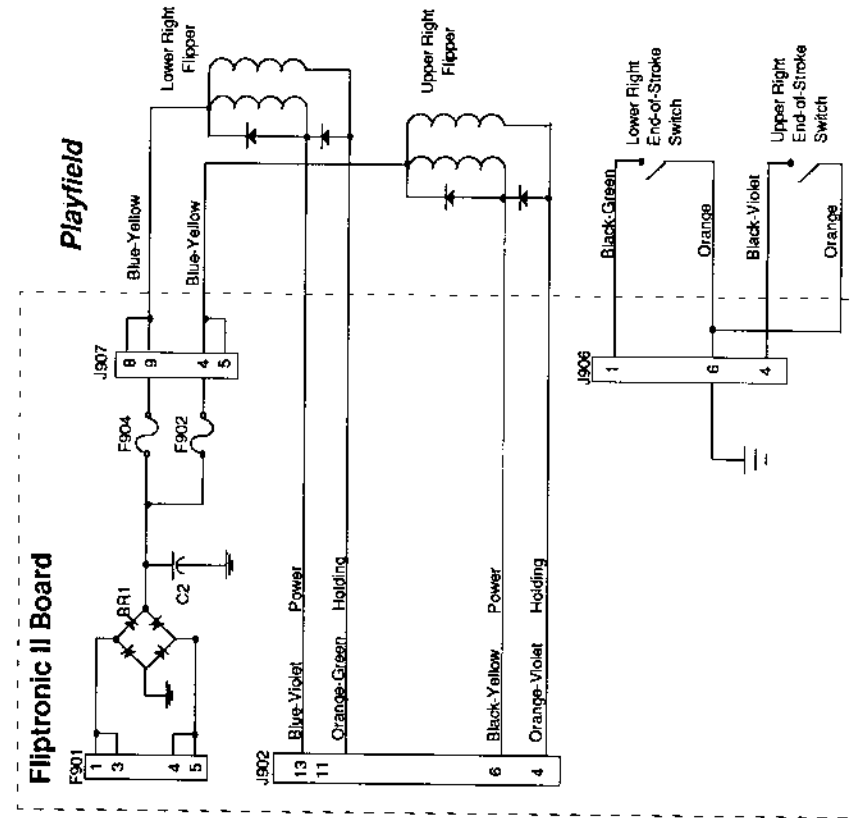


Fliptronic II Flipper Circuits

Left Flipper Circuit

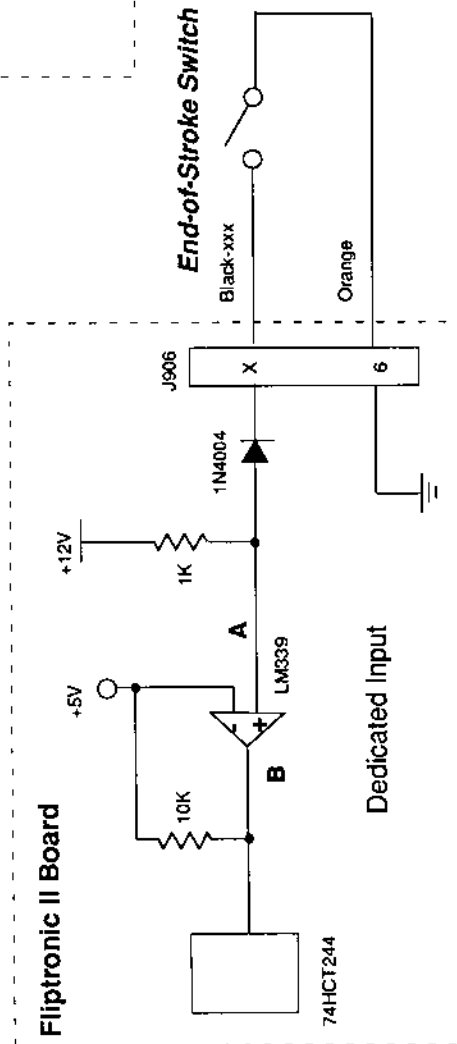
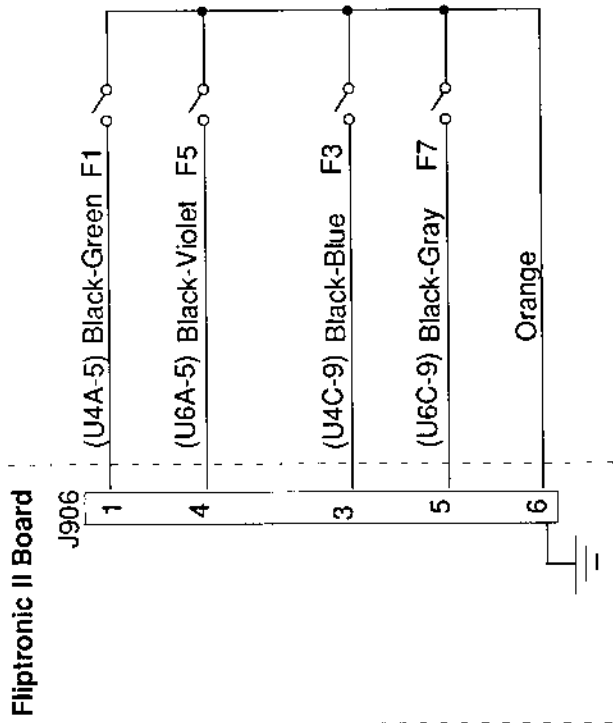


Right Flipper Circuit



Fliptronic II Flipper End-of-Stroke Switches

- F1 Lower Right Flipper
- F5 Upper Right Flipper
- F3 Lower Left Flipper
- F7 Upper Left Flipper

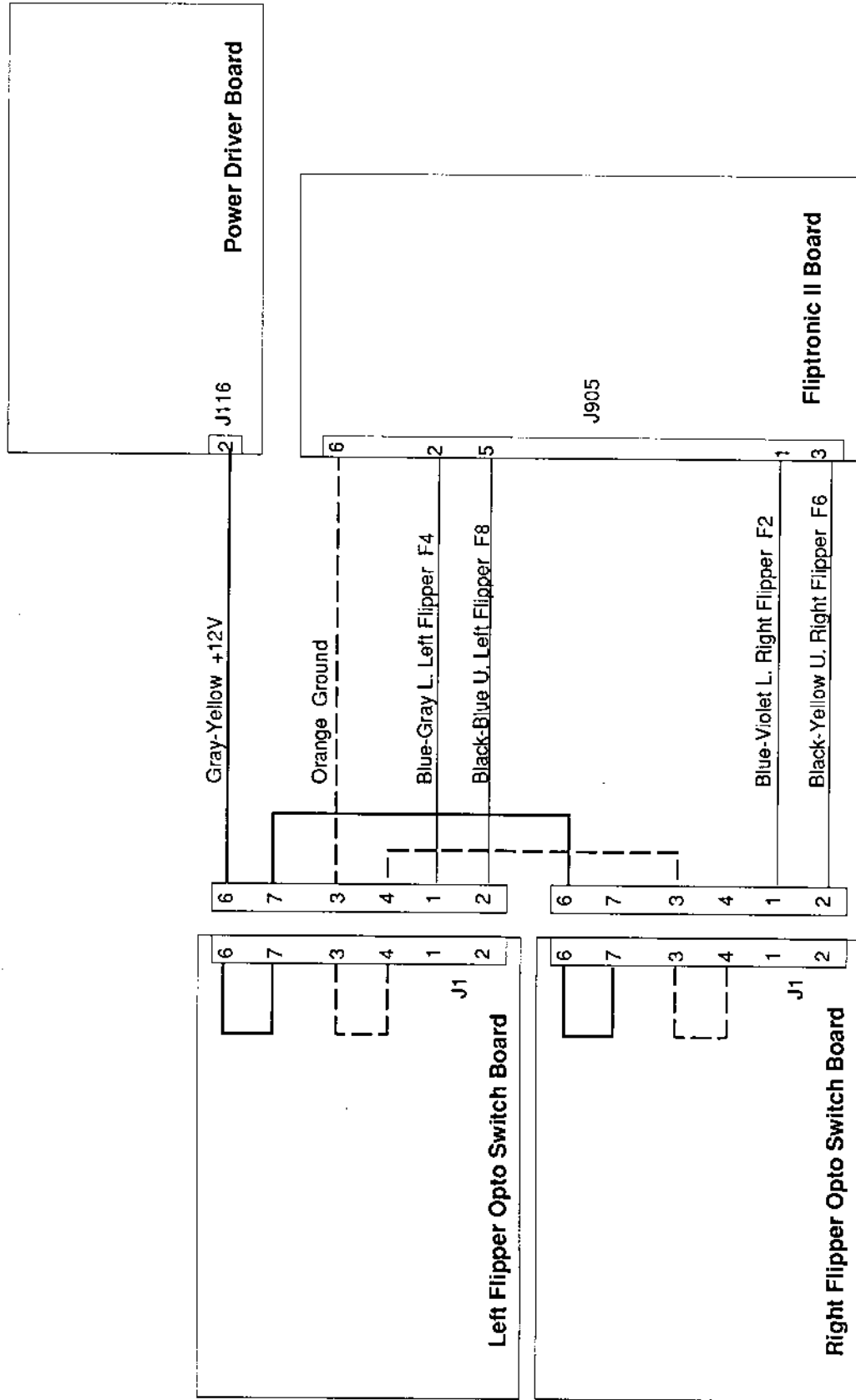


Switch	A	B
Open	H	H
Closed	L	L

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

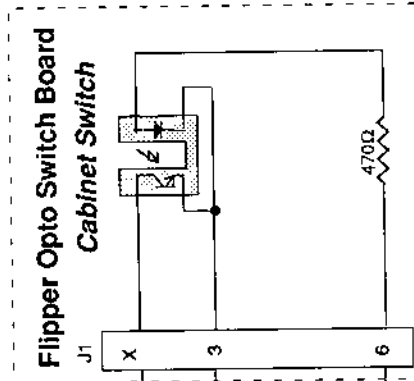
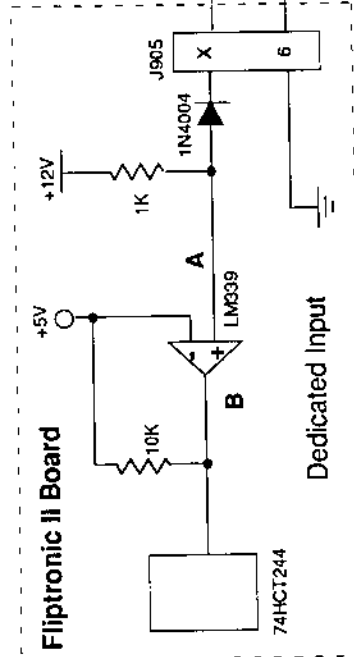
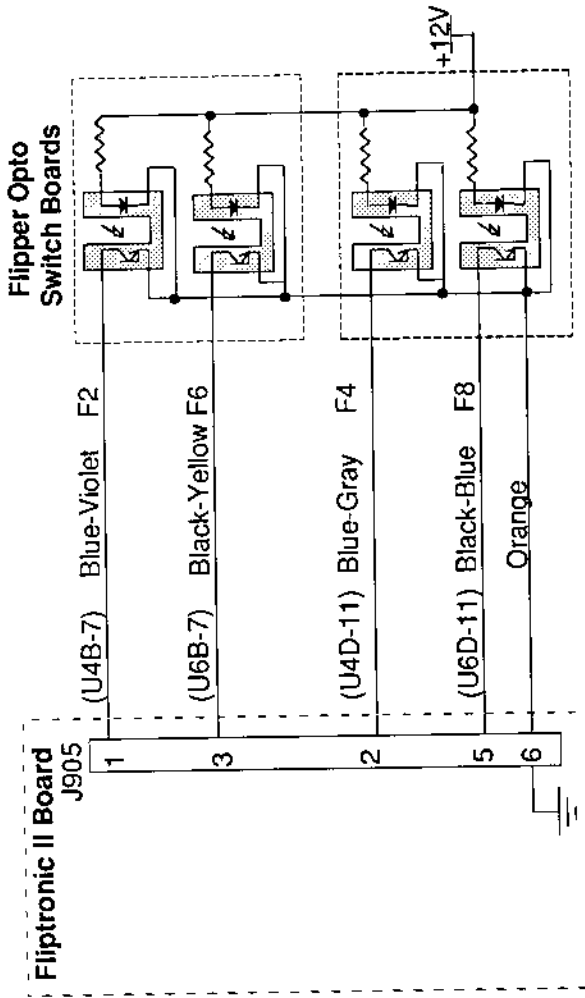
When a switch closes the row side (dedicated input) of the circuit activates. The "+" input to the LM339 drops below +5V therefore its output is low. Since the row (dedicated input) circuit is tied directly to ground through the switch, the switch is considered closed by the microprocessor. When the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

Fliptronic II Flipper Cabinet Switch Circuit Diagram

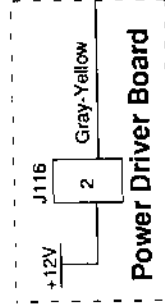


Fliptronic II Flipper Cabinet Switches

- F2 Lower Right Flipper
- F6 Upper Right Flipper
- F4 Lower Left Flipper
- F8 Upper Left Flipper



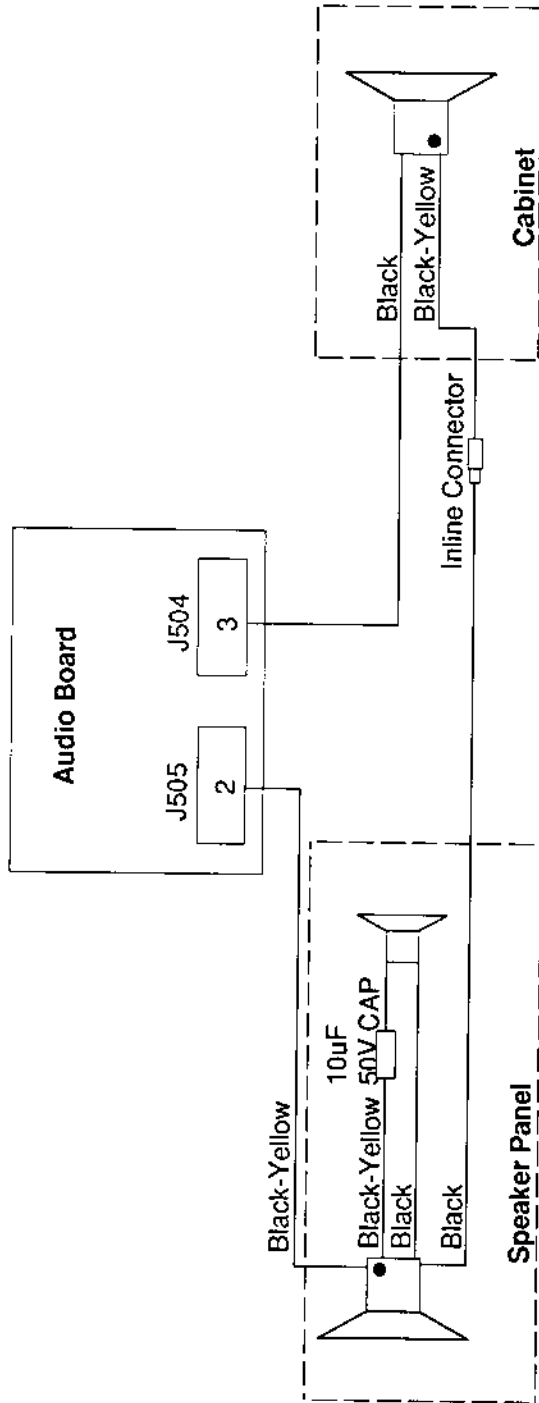
Switch	A	B
Open	H	H
Closed	L	L



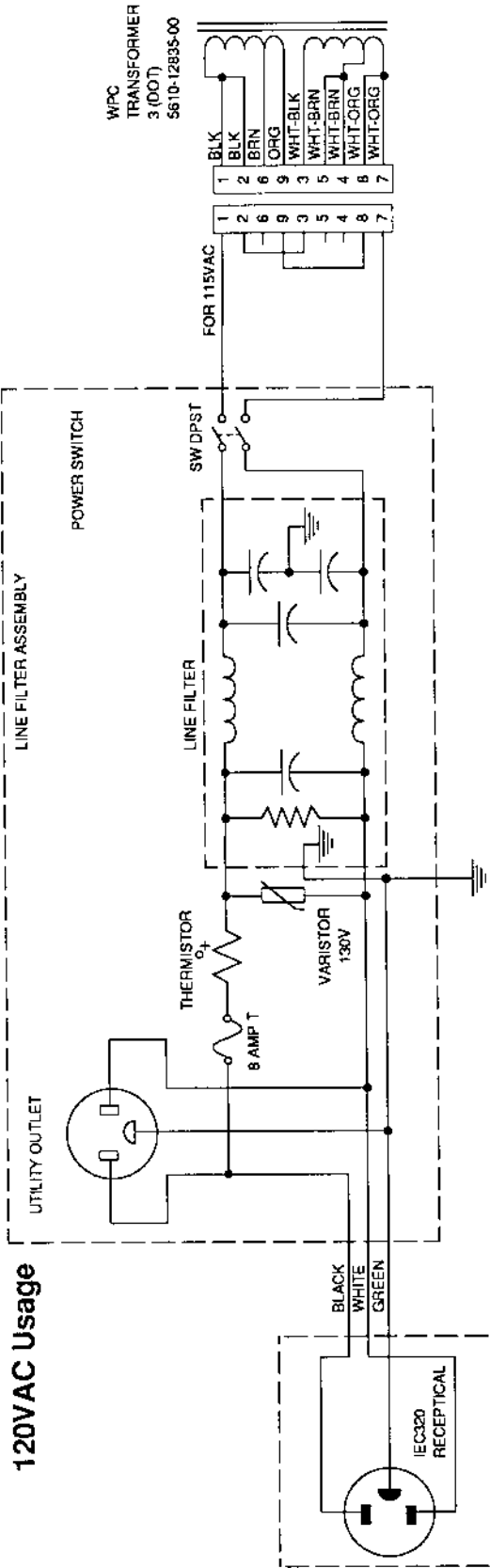
The flipper switch circuits operate similar to the dedicated switch circuit. The circuits are active low and tied to ground through the switch.

When a switch closes the row side (dedicated input) of the circuit activates. The "+" input 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.

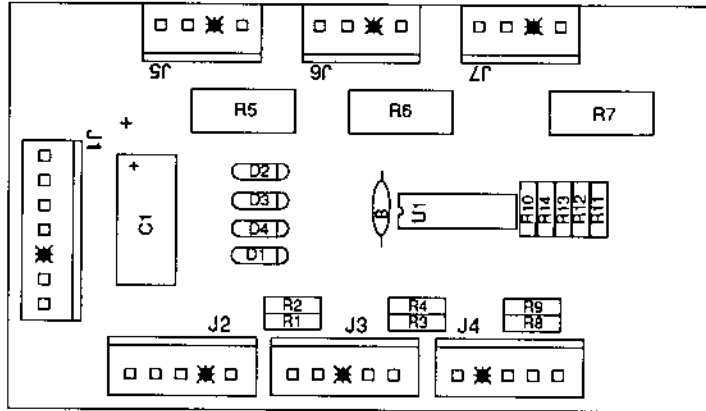
Speaker Wiring Diagram



Power Wiring Diagram



A-13901-1 Opto Switch Board Assembly



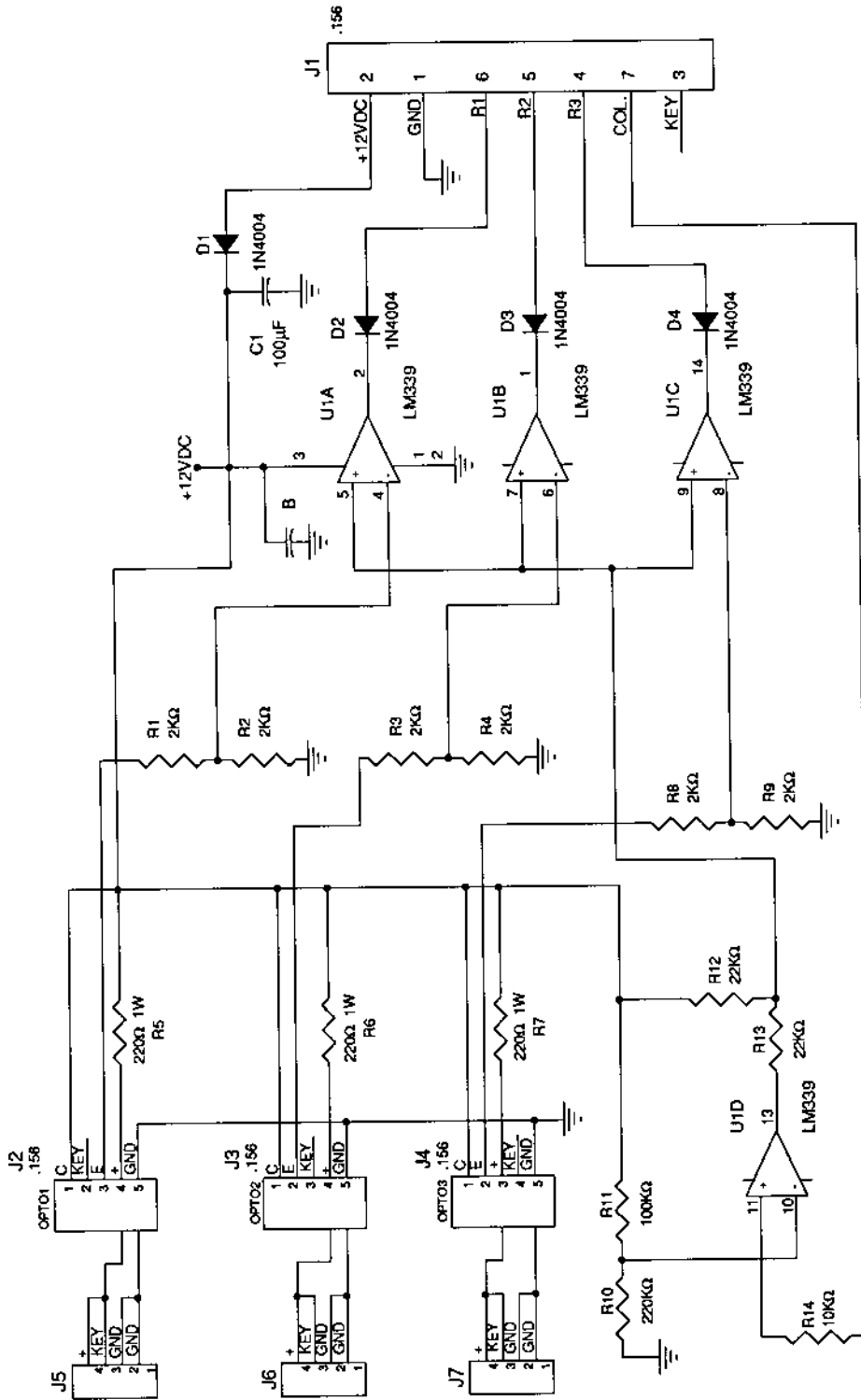
- J1 - 1 Black (Ground) from Power Driver Board J118-3
- J1 - 2 Gray-Yellow (+12V) from Power Driver Board J118-2
- J1 - 3 N/C
- J1 - 4 N/C
- J1 - 5 White-Gray (switch row #8) from CPU Board J209-9
- J1 - 6 White-Violet (switch row #7) from CPU Board J209-8
- J1 - 7 Green-Orange (switch column #3) from CPU Board J207-3

- J2 - 1 White-Violet to Reel 1 (switch #37) Opto Transistor Board
- J2 - 2 N/C
- J2 - 3 Green-Orange to Reel 1 (switch #37) Opto Transistor Board
- J2 - 4 Red to Reel 1 (switch #37) Opto LED Board
- J2 - 5 Black to Reel 1 (switch # 37) Opto LED Board

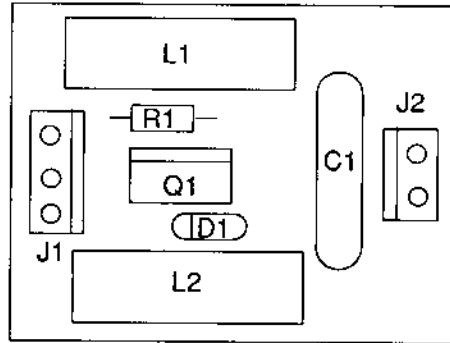
- J3 - 1 White-Gray to Reel 2 (switch #38) Opto Transistor Board
- J3 - 2 Green-Orange to Reel 2 (switch #38) Opto Transistor Board
- J3 - 3 N/C
- J3 - 4 Red to Reel 2 (switch #38) Opto LED Board
- J3 - 5 Black to Reel 2 (switch #38) Opto LED Board

J4 through J7 are Not Used

A-13901-1 Opto Switch Board Schematic

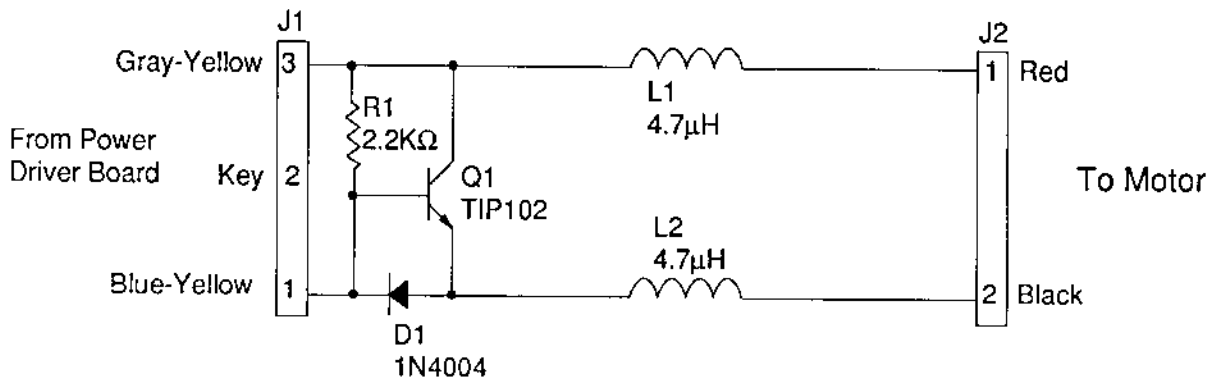


A-15340 Motor EMI Filter Board

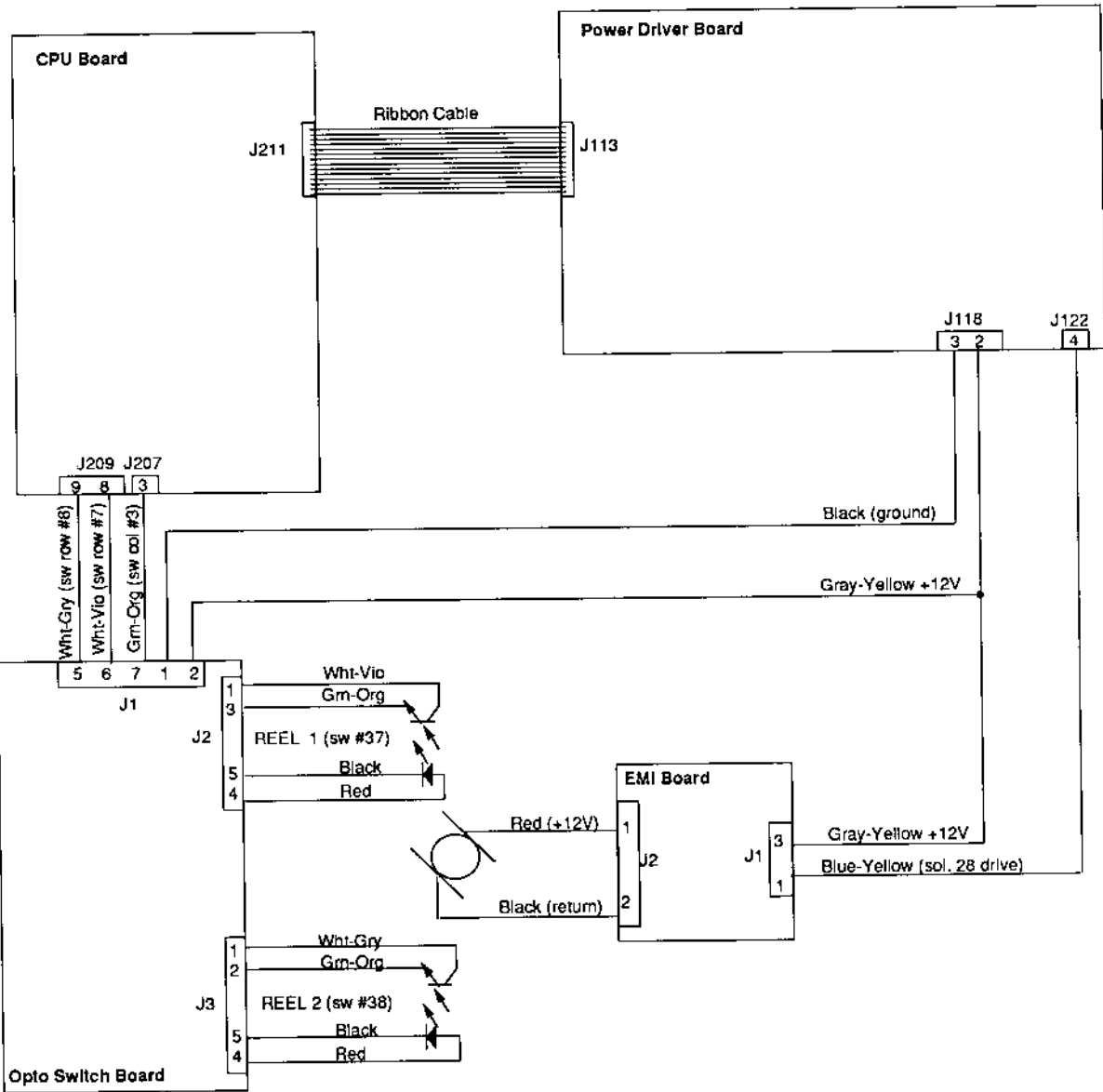


J1 - 1 Blue-Yellow (sol. 28 drive) from Power Driver Board J122-4
 J1 - 2 N/C
 J1 - 3 Gray-Yellow (+12V) from Power Driver Board J118-2

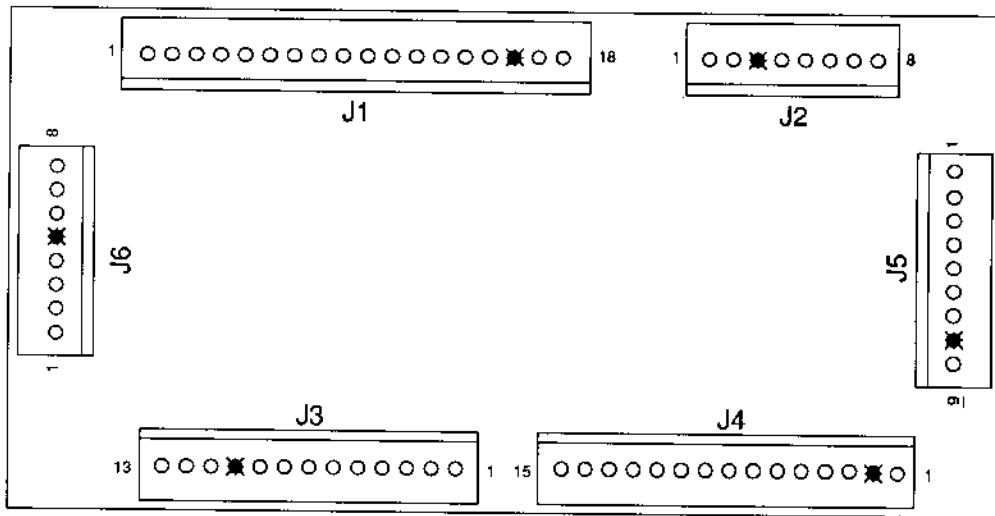
J2 - 1 Red (+12V) to Motor
 J2 - 2 Black (return) from Motor



Reel Motor Circuit

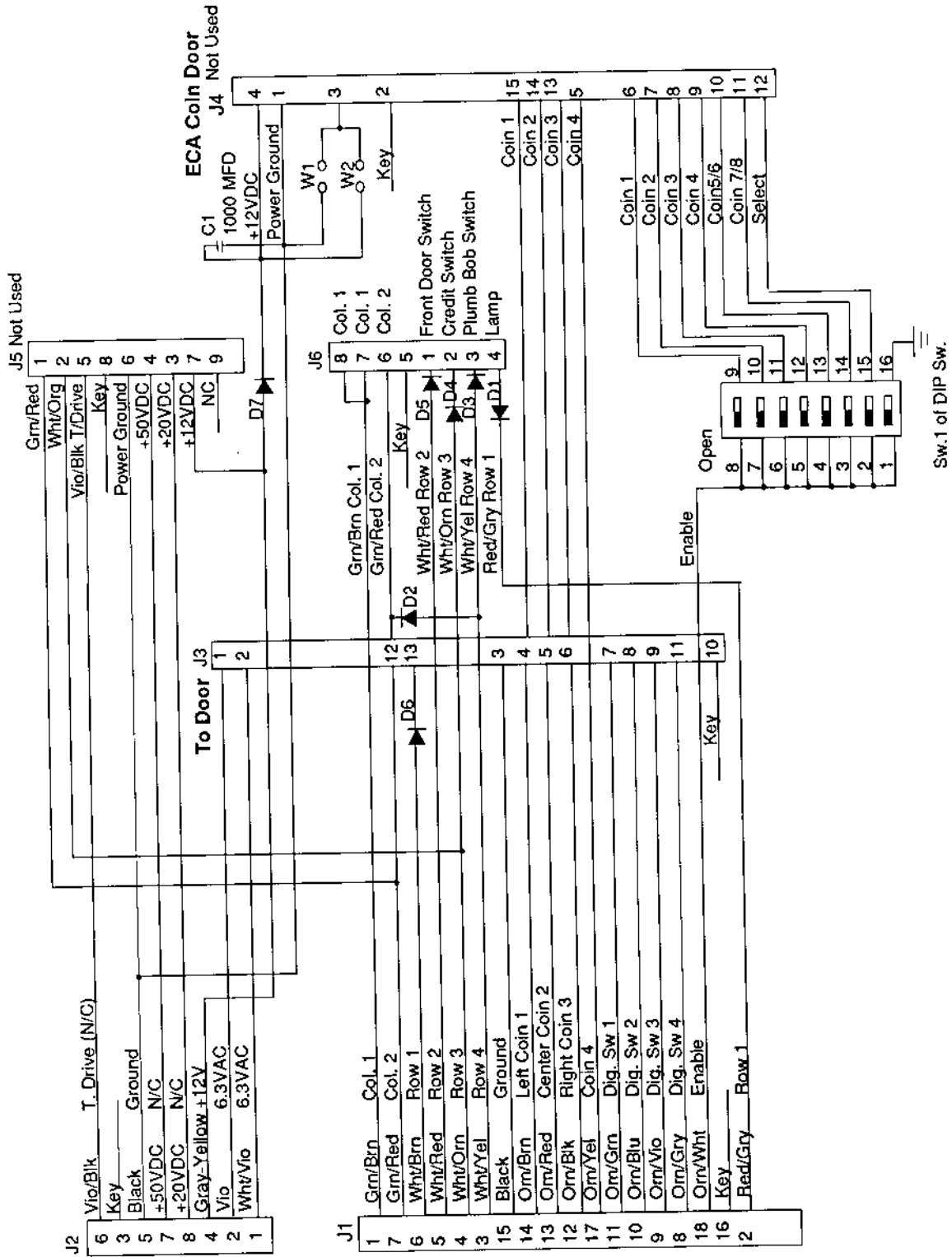


Coin Door Interface Board Interboard Wiring

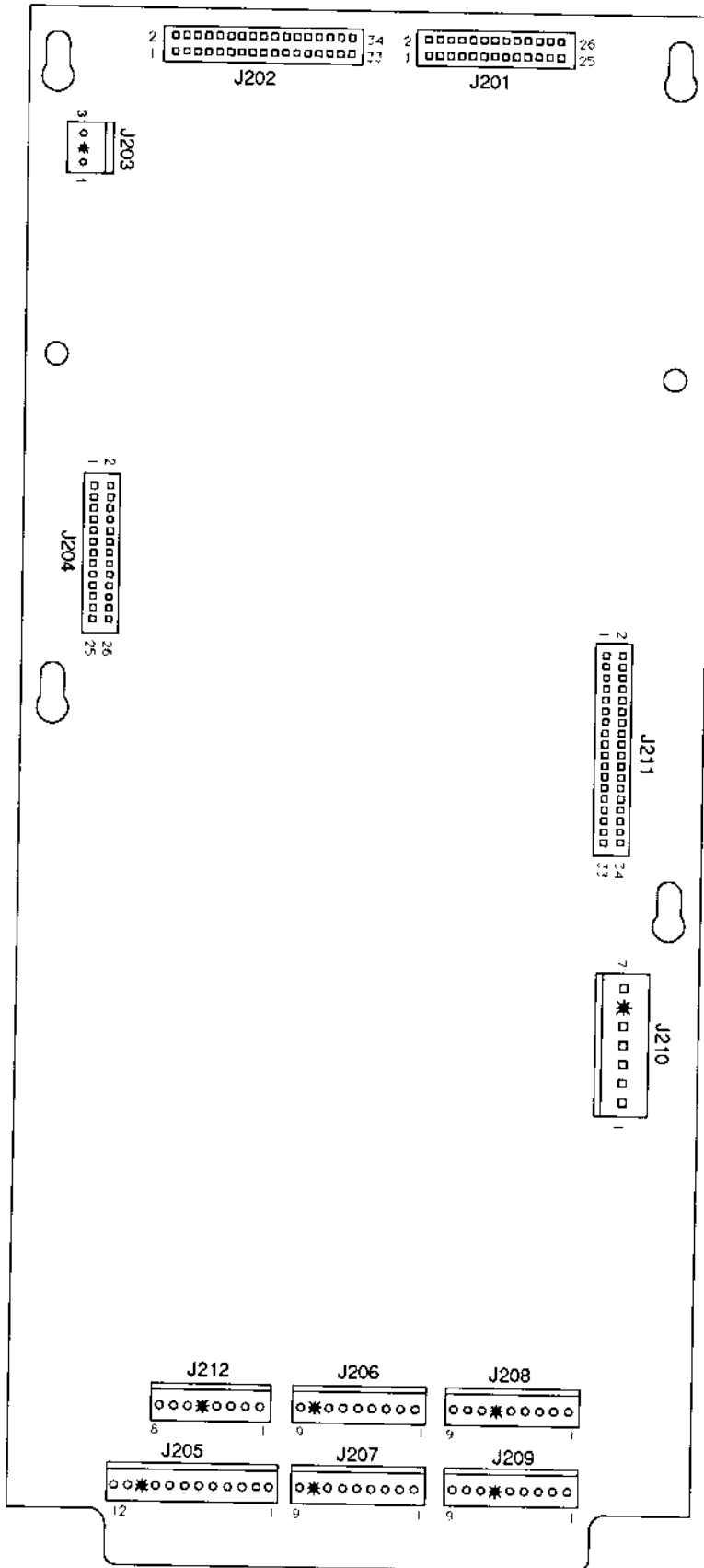


- | | | | |
|---------|---|---------------|--|
| J1 - 1 | Green-Brown (sw. col. 1) from CPU J212-1 | J3 - 1 | Violet (G.I. return) to coin door |
| J1 - 2 | Red-Gray (lamp row 8) from Power Driver Brd J135-9 | J3 - 2 | White-Violet (G.I. 6.8VAC) to coin door |
| J1 - 3 | White-Yellow (sw. row 4) from CPU J212-8 | J3 - 3 | Black (Grd) to Door |
| J1 - 4 | White-Orange (sw. row 3) from CPU J212-7 | J3 - 4 | Orange-Brown (dedicated sw. row 1) to coin door |
| J1 - 5 | White-Red (sw. row 2) from CPU J212-6 | J3 - 5 | N/C |
| J1 - 6 | White-Brown (sw. row 1) from CPU J212-4 | J3 - 6 | Orange-Black (dedicated sw. row 3) to coin door |
| J1 - 7 | Green-Red (sw. col. 2) from CPU J212-2 | J3 - 7 | Orange-Green (dedicated sw. row 4) to coin door |
| J1 - 8 | Orange-Gray (dedicated sw. row 8) from CPU J205-9 | J3 - 8 | Orange-Blue (dedicated sw. row 6) to coin door |
| J1 - 9 | Orange-Violet (dedicated sw. row 7) from CPU J205-8 | J3 - 9 | Orange-Violet (dedicated sw. row 7) to coin door |
| J1 - 10 | Orange-Blue (dedicated sw. row 6) from CPU J205-7 | J3 - 10 | N/C |
| J1 - 11 | Orange-Green (dedicated sw. row 5) from CPU J205-6 | J3 - 11 | Orange -Gray (dedicated sw. row 8) to coin door |
| J1 - 12 | Orange-Black (dedicated sw. row 3) from CPU J205-3 | J3 - 12 | Green-Brown (sw. col. 1) to coin door |
| J1 - 13 | Orange-Red (dedicated sw. row 2) from CPU J205-2 | J3 - 13 | White-Brown (sw. row 1) to coin door |
| J1 - 14 | Orange-Brown (dedicated sw. row 1) from CPU J205-1 | | |
| J1 - 15 | Black (Grd) from CPU J205-10 | J4 - Not Used | |
| J1 - 16 | N/C | J5 - Not Used | |
| J1 - 17 | Orange-Yellow (dedicated sw. row 4) from CPU J205-4 | | |
| J1 - 18 | Orange-White (sw. enable) from CPU J205-12 | | |
| J2 - 1 | Violet (G.I. return) from Power Driver Board J119-3 | J6 - 1 | White-Red (sw. row 2) to cabinet |
| J2 - 2 | Violet-White (G.I. 6.8VAC) from Power Driver Board J119-1 | J6 - 2 | White-Orange (sw. row 3) to cabinet |
| J2 - 3 | N/C | J6 - 3 | White-Yellow (sw. row 3) to cabinet |
| J2 - 4 | Gray-Yellow (+12V) from Power Driver Board J116-2 | J6 - 4 | Red-Gray (lamp row 8) to cabinet |
| J2 - 5 | Black (Grd) from Power Driver Board J116-3 | J6 - 5 | N/C |
| J2 - 6 | N/C | J6 - 6 | Green-Red (sw. col 2) to cabinet |
| J2 - 7 | N/C | J6 - 7 | Green-Brown (sw. col 1) to cabinet |
| J2 - 8 | N/C | J6 - 8 | Green-Brown (sw. col. 1) to cabinet |

A-14689 Coin Door Interface Board Schematic



A-12742-50005
CPU Board



CPU Board Interboard Wiring

J201, 26-pin Ribbon Cable (data) To/from J606-2

J202, 34-pin Ribbon Cable (data) To/from J903; J506; J601

J203 - Not Used

J204 - Not Used

J205 - 1 Orange-Brown (ded. sw. row 1) to Coin Door Brd J1-14
J205 - 2 Orange-Red (ded. sw. row 2) to Coin Door Brd J1-13
J205 - 3 Orange-Black (ded. sw. row 3) to Coin Door Brd J1-12
J205 - 4 Orange-Yellow (ded. sw. row 4) to Coin Door J1-17
J205 - 5 N/C
J205 - 6 Orange-Green (ded. sw. row 5) to Coin Door Brd J1-11
J205 - 7 Orange-Blue (ded. sw. row 6) to Coin Door Brd J1-10
J205 - 8 Orange-Violet (ded. sw. row 7) to Coin Door Brd J1-9
J205 - 9 Orange-Gray (ded. sw. row 8) to Coin Door Brd J1-8
J205 - 10 Black (Grd) to Coin Door Brd J1-15
J205 - 11 N/C
J205 - 12 Orange-White (sw. enable) to Coin Door Brd J1-18

J206 - 1 N/C
J206 - 2 N/C
J206 - 3 N/C
J206 - 4 N/C
J206 - 5 N/C
J206 - 6 N/C
J206 - 7 N/C
J206 - 8 N/C
J206 - 9 N/C

J207 - 1 Green-Brown (sw. col. 1) to playfield switches
J207 - 2 Green-Red (sw. col. 2) to playfield/cabinet switches
J207 - 3 Green-Orange (sw. col. 3) to playfield switches
J207 - 4 Green-Yellow (sw. col. 4) to playfield switches
J207 - 5 Green-Black (sw. col. 5) to playfield switches
J207 - 6 Green-Blue (sw. col. 6) to playfield switches
J207 - 7 N/C
J207 - 8 N/C
J207 - 9 N/C

J208 - 1 N/C
J208 - 2 N/C
J208 - 3 N/C
J208 - 4 N/C
J208 - 5 N/C
J208 - 6 N/C
J208 - 7 N/C
J208 - 8 N/C
J208 - 9 N/C

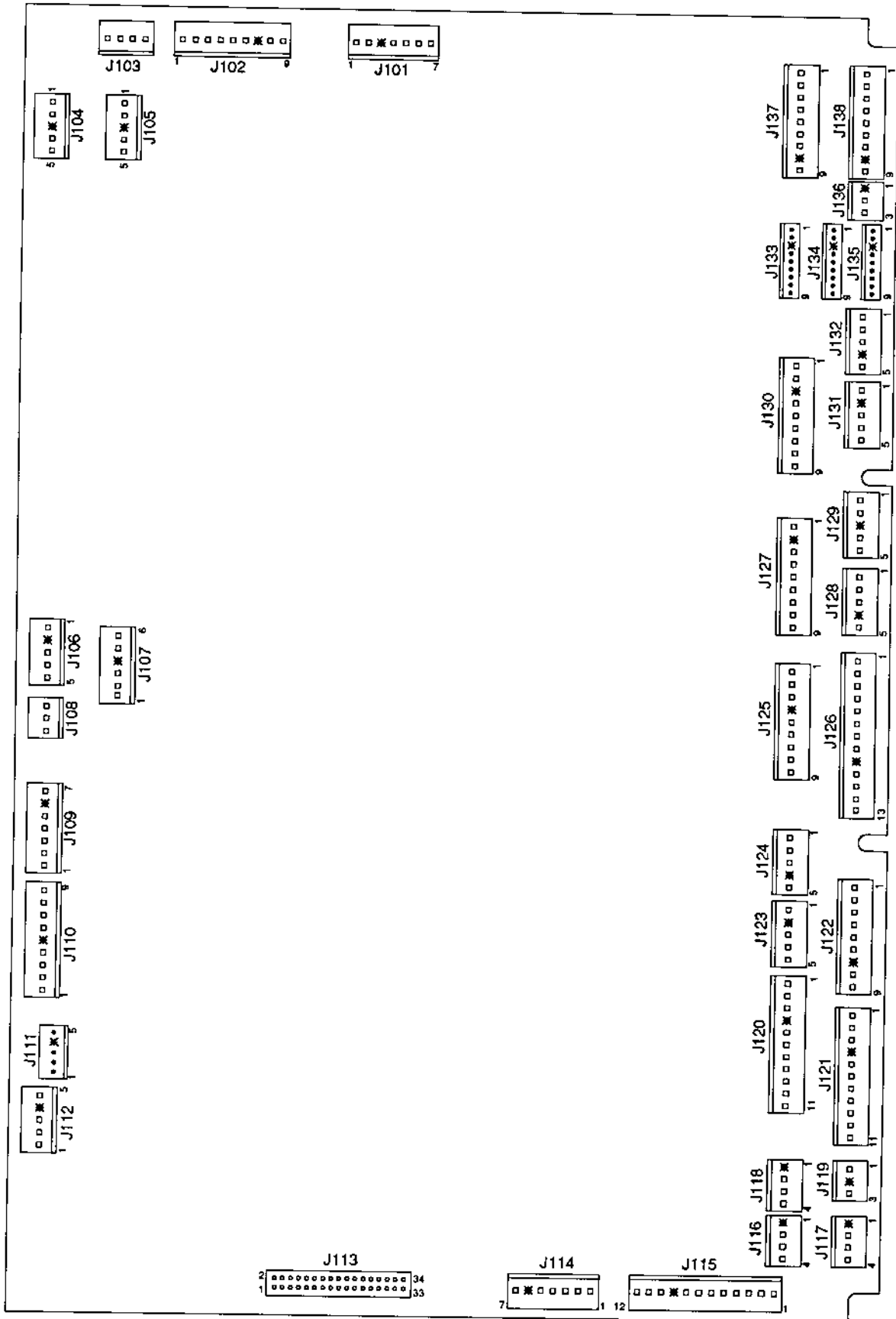
J209 - 1 White-Brown (sw. row 1) to playfield switches
J209 - 2 White-Red (sw. row 2) to playfield switches
J209 - 3 White-Orange (sw. row 3) to playfield switches
J209 - 4 White-Yellow (sw. row 4) to playfield switches
J209 - 5 White-Green (sw. row 5) to playfield switches
J209 - 6 N/C
J209 - 7 White-Blue (sw. row 6) to playfield switches
J209 - 8 White-Violet (sw. row 7) to playfield switches
J209 - 9 White-Gray (sw. row 8) to playfield switches

J210 - 1 Black (Grd) from Power Driver Brd J114-5,7
J210 - 2 N/C
J210 - 3 Black (Grd) from Power Driver Brd J114-5,7
J210 - 4 Gray (+5V) from Power Driver Brd J114-3,4
J210 - 5 Gray (+5V) from Power Driver Brd J114-3,4
J210 - 6 Gray-Green (+12V) from Power Driver Brd J114-1,2
J210 - 7 Gray-Green (+12V) from Power Driver Brd J114-1,2

J211, 34-pin Ribbon Cable (data) To/from J113

J212 - 1 Green-Brown (sw. col. 1) to Coin Door Brd J1-1
J212 - 2 Green-Red (sw. col. 2) to Coin Door J1-7
J212 - 3 Green-Orange (sw. col. 3) to Reel Handle Switch
J212 - 4 White-Brown (sw. row 1) to Coin Door Brd J1-6
J212 - 5 N/C
J212 - 6 White-Red (sw. row 2) to Coin Door Brd J1-5
J212 - 7 White-Orange (sw. row 3) Coin Door Brd J1-4
J212 - 8 White-Yellow (sw. row 4) to Coin Door Brd J1-3

A-12697-1 Power Driver Board



Power Driver Board Interboard Wiring

J101 - 1 Red (9VAC) from xformer secondary	J109 - 1 N/C	
J101 - 2 Red (9VAC) from xformer secondary	J109 - 2 N/C	
J101 - 3 N/C	J109 - 3 N/C	
J101 - 4 Blue-White (13VAC) from xformer secondary	J109 - 4 N/C	
J101 - 5 Blue-White (13VAC) loop from J101-4	J109 - 5 N/C	
J101 - 6 Blue-White (13VAC) from xformer secondary	J109 - 6 N/C	
J101 - 7 Blue-White (13VAC) loop from J101-6	J109 - 7 N/C	
J102 - 1 White-Red (16VAC) loop from J102-2	J110 - 1 N/C	
J102 - 2 White-Red (16VAC) from xformer secondary	J110 - 2 N/C	
J102 - 3 White-Red (16VAC) loop from J102-4	J110 - 3 N/C	
J102 - 4 White-Red (16VAC) from xformer secondary	J110 - 4 N/C	
J102 - 5 Black-Yellow (16VAC) loop from J102-6	J110 - 5 N/C	
J102 - 6 Black-Yellow (16VAC) from xformer secondary	J110 - 6 N/C	
J102 - 7 N/C	J110 - 7 N/C	
J102 - 8 Black-Yellow (16VAC) loop from J102-9	J110 - 8 N/C	
J102 - 9 Black-Yellow (16VAC) from xformer secondary	J110 - 9 N/C	
J103 - 1 N/C	J111 - 1 N/C	
J103 - 2 N/C	J111 - 2 N/C	
J103 - 3 N/C	J111 - 3 N/C	
J103 - 4 N/C	J111 - 4 N/C	
J104 - 1 N/C	J111 - 5 N/C	
J104 - 2 N/C		
J104 - 3 N/C	J112 - 1 White-Green (9.8VAC) from xformer secondary	
J104 - 4 N/C	J112 - 2 White-Green (9.8VAC) loop from J112-1	
J104 - 5 N/C	J112 - 3 White-Green (9.8VAC) from xformer secondary	
J105 - 1 White-Blue (50VAC) to Fliptronic II Board J901-1	J112 - 4 N/C	
J105 - 2 White-Blue (50VAC) to Fliptronic II Board J901-3	J112 - 5 White-Green (9.8VAC) loop from J112-3	
J105 - 3 N/C		
J105 - 4 N/C	J113, 34-pin Ribbon Cable (data) To/from CPU J211	
J105 - 5 N/C	J114 - 1 Gray-Green (+12V) to J210-6,7; J904-2	
J106 - 1 N/C	J114 - 2 Gray-Green (+12V) to J210-6,7; J904-2	
J106 - 2 N/C	J114 - 3 Gray (+5V) to J210-4,5; J502-1,3; J904-1	
J106 - 3 N/C	J114 - 4 Gray (+5V) to J210-4,5; J502-1,3; J904-1	
J106 - 4 N/C	J114 - 5 Black (Grd) to J210-1,3; J502-4,5; J904-4,5	
J106 - 5 Red-White (+20V) to Insert Board flashlamps	J114 - 6 N/C	
J107 - 1 N/C	J114 - 7 Black (Grd) to J210-1,3; J502-4,5; J904-4,5	
J107 - 2 Violet-Orange (+50V) to coils		
J107 - 3 Violet-Yellow (+50V) to coils	J115 - 1 Yellow-White (6.8VAC) from xformer secondary	
J107 - 4 N/C	J115 - 2 Yellow-White (6.8VAC) loop from J115-3	
J107 - 5 N/C	J115 - 3 Yellow-White (6.8VAC) from xformer secondary	
J107 - 6 Red-White (+20V) to playfield flashlamps	J115 - 4 N/C	
J108 - 1 N/C	J115 - 5 Yellow-White (6.8VAC) loop from J115-6	
J108 - 2 N/C	J115 - 6 Yellow-White (6.8VAC) from xformer secondary	
J108 - 3 N/C	J115 - 7 Yellow (6.8VAC) from xformer secondary	
	J115 - 8 Yellow (6.8VAC) loop from J115-9	
	J115 - 9 Yellow (6.8VAC) from xformer secondary	
	J115 - 10 Yellow (6.8VAC) loop from J115-11	
	J115 - 11 Yellow (6.8VAC) from xformer secondary	
	J115 - 12 Yellow-White (6.8VAC) from xformer secondary	

Power Driver Board Interboard Wiring Continued...

J116 - 1 N/C	J123 - 1 N/C
J116 - 2 Gray-Yellow (+12V) to coin door	J123 - 2 N/C
J116 - 3 Black (Grd) to coin door	J123 - 3 N/C
J116 - 4 N/C	J123 - 4 N/C
	J123 - 5 N/C
J117 - 1 N/C	J124 - 1 Blue-Brown (sol. 25 drive) to Insert Brd & Hood flashlmps
J117 - 2 Gray-Yellow (+12V) to Dot Matrix Controller J606-7	J124 - 2 N/C
J117 - 3 Black (Grd) to Dot Matrix Controller J606-3	J124 - 3 Blue-Orange (sol. 27 drive) to Insert Board flashlamp
J117 - 4 Gray (+5V) to Dot Matrix Controller J606-5	J124 - 4 N/C
	J124 - 5 N/C
J118 - 1 N/C	
J118 - 2 Gray-Yellow (+12V) to Opto Sw. Brd & Motor EMI Brd	
J118 - 3 Black (Grd) to Opto Board	
J118 - 4 N/C	J125 - 1 N/C
	J125 - 2 N/C
J119 - 1 Violet-White (6.8VAC) G.I. to coin door	J125 - 3 Black-Orange (sol. 19 drive) to Insert Board flashlamps
J119 - 2 N/C	J125 - 4 N/C
J119 - 3 Violet (return) G.I. to coin door	J125 - 5 Black-Yellow (sol. 20 drive) to Insert Board flashlamps
	J125 - 6 Blue-Green (sol. 21 drive) to Insert Board flashlamps
J120 - 1 Brown (return) G.I. to Insert Board	J125 - 7 Blue-Black (sol. 22 drive) to Insert Board flashlamps
J120 - 2 Orange (return) G.I. to Insert Board	J125 - 8 Blue-Violet (sol. 23 drive) to Insert Board flashlamp
J120 - 3 N/C	J125 - 9 N/C
J120 - 4 N/C	
J120 - 5 Green (return) G.I. to Insert Board	J126 - 1 Black-Brown (sol. 17 drive) to playfield flashlamp
J120 - 6 N/C	J126 - 2 Black-Red (sol. 18 drive) to playfield flashlamp
J120 - 7 White-Brown (6.8VAC) to Insert Board	J126 - 3 Black-Orange (sol. 19 drive) to playfield flashlamp
J120 - 8 White-Orange (6.8VAC) to Insert Board	J126 - 4 Black-Yellow (sol. 20 drive) to playfield flashlamp
J120 - 9 N/C	J126 - 5 Blue-Green (sol. 21 drive) to playfield flashlamp
J120 - 10 White-Green (6.8VAC) to Insert Board	J126 - 6 Blue-Black (sol. 22 drive) to playfield flashlamp
J120 - 11 N/C	J126 - 7 Blue-Violet (sol. 23 drive) to playfield flashlamp
	J126 - 8 N/C
J121 - 1 N/C	J126 - 9 N/C
J121 - 2 Orange (return) G.I. to hood	J126 - 10 N/C
J121 - 3 Yellow (return) G.I. to playfield	J126 - 11 N/C
J121 - 4 N/C	J126 - 12 N/C
J121 - 5 N/C	J126 - 13 N/C
J121 - 6 Violet (return) G.I. to playfield	
J121 - 7 N/C	J127 - 1 Brown-Black (sol. 9 drive) to playfield coil
J121 - 8 White-Orange (6.8VAC) to hood	J127 - 2 N/C
J121 - 9 White-Yellow (6.8VAC) to playfield	J127 - 3 Brown-Red (sol. 10 drive) to playfield coil
J121 - 10 N/C	J127 - 4 Brown-Orange (sol. 11 drive) to playfield coil
J121 - 11 White-Violet (6.8VAC) to playfield	J127 - 5 Brown-Yellow (sol. 12 drive) to playfield coil
	J127 - 6 Brown-Green (sol. 13 drive) to playfield coil
J122 - 1 Blue-Brown (sol. 25 drive) to playfield flashlamp	J127 - 7 Brown-Blue (sol. 14 drive) to playfield coil
J122 - 2 Blue-Red (sol. 26 drive) to playfield flashlamps	J127 - 8 Brown-Violet (sol. 15 drive) to playfield coil
J122 - 3 Blue-Orange (sol. 27 drive) to playfield flashlamp	J127 - 9 Brown-Gray (sol. 16 drive) to playfield coil
J122 - 4 Blue-Yellow (sol. 28 drive) to playfield Motor EMI Brd	
J122 - 5 N/C	J128 - 1 N/C
J122 - 6 N/C	J128 - 2 N/C
J122 - 7 N/C	J128 - 3 N/C
J122 - 8 N/C	J128 - 4 N/C
J122 - 9 N/C	J128 - 5 N/C

Power Driver Board Interboard Wiring Continued...

J129 - 1 N/C
J129 - 2 N/C
J129 - 3 N/C
J129 - 4 N/C
J129 - 5 N/C

J130 - 1 Violet-Brown (sol. 1 drive) to playfield coil
J130 - 2 Violet-Red (sol. 2 drive) to playfield coil
J130 - 3 N/C
J130 - 4 Violet-Orange (sol. 3 drive) to playfield coil
J130 - 5 Violet-Yellow (sol. 4 drive) to playfield coil
J130 - 6 Violet-Green (sol. 5 drive) to playfield coil
J130 - 7 Violet-Blue (sol. 6 drive) to playfield coil
J130 - 8 Violet-Black (sol. 7 drive) to backbox coil
J130 - 9 Violet-Gray (sol. 8 drive) to hood coil

J131 - 1 N/C
J131 - 2 N/C
J131 - 3 N/C
J131 - 4 N/C
J131 - 5 N/C

J132 - 1 N/C
J132 - 2 N/C
J132 - 3 N/C
J132 - 4 N/C
J132 - 5 N/C

J133 - 1 Red-Brown (lamp row 1) to playfield lamps
J133 - 2 Red-Black (lamp row 2) to playfield lamps
J133 - 3 N/C
J133 - 4 Red-Orange (lamp row 3) to playfield lamps
J133 - 5 Red-Yellow (lamp row 4) to playfield lamps
J133 - 6 Red-Green (lamp row 5) to playfield lamps
J133 - 7 Red-Blue (lamp row 6) to playfield lamps
J133 - 8 Red-Violet (lamp row 7) to playfield lamps
J133 - 9 Red-Gray (lamp row 8) to playfield lamps

J134 - 1 N/C
J134 - 2 N/C
J134 - 3 N/C
J134 - 4 N/C
J134 - 5 N/C
J134 - 6 N/C
J134 - 7 N/C
J134 - 8 N/C
J134 - 9 N/C

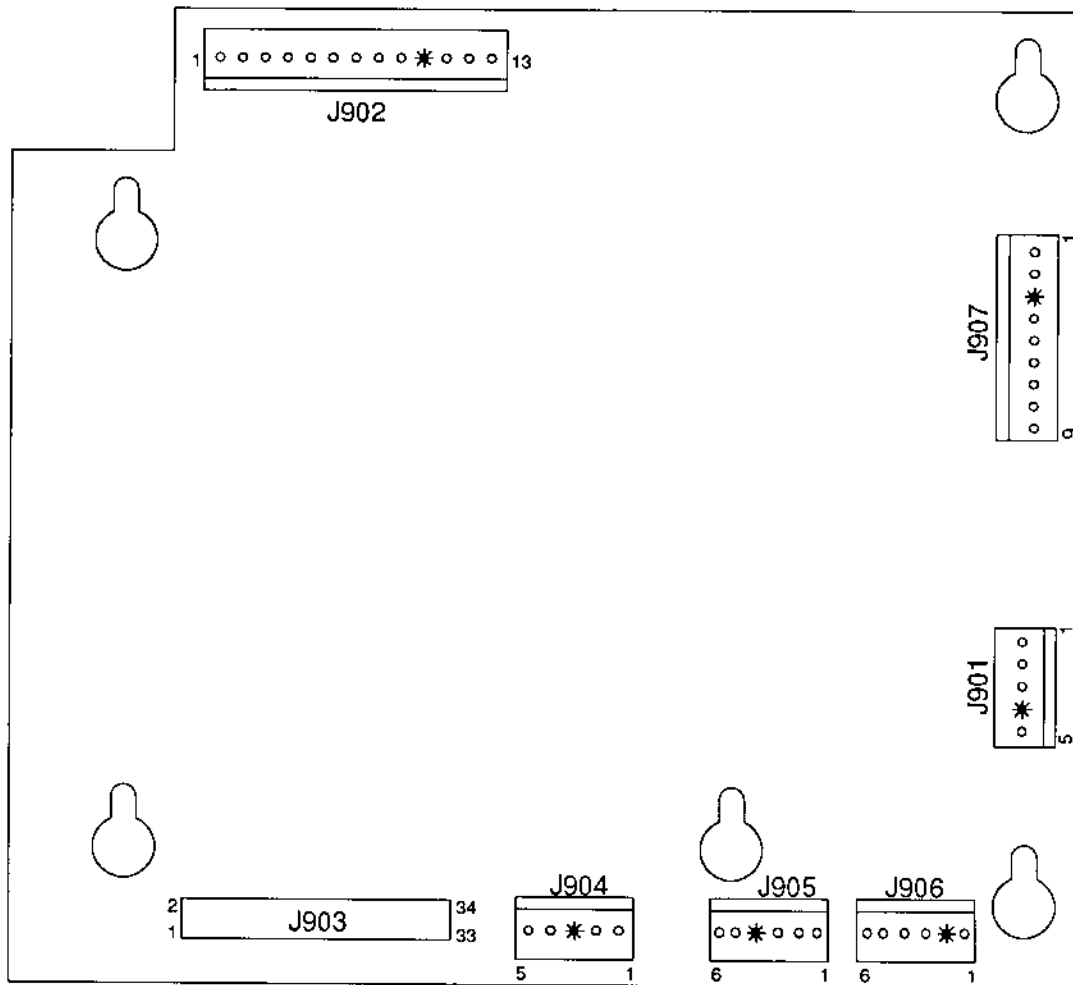
J135 - 1 N/C
J135 - 2 N/C
J135 - 3 N/C
J135 - 4 N/C
J135 - 5 N/C
J135 - 6 N/C
J135 - 7 N/C
J135 - 8 Red-Violet (lamp row 7) to cabinet lamp
J135 - 9 Red-Gray (lamp row 8) to Coin Door Brd. J1-2

J136 - 1 Yellow-Gray (lamp col. 8) to cabinet lamp
J136 - 2 N/C
J136 - 3 N/C

J137 - 1 Yellow-Brown (lamp col. 1) to playfield lamps
J137 - 2 Yellow-Red (lamp col. 2) to playfield lamps
J137 - 3 Yellow-Orange (lamp col. 3) to playfield lamps
J137 - 4 Yellow-Black (lamp col. 4) to playfield lamps
J137 - 5 Yellow-Green (lamp col. 5) to playfield lamps
J137 - 6 Yellow-Blue (lamp col. 6) to playfield lamps
J137 - 7 Yellow-Violet (lamp col. 7) to playfield lamps
J137 - 8 N/C
J137 - 9 Yellow-Gray (lamp col. 8) to playfield lamps

J138 - 1 N/C
J138 - 2 N/C
J138 - 3 N/C
J138 - 4 N/C
J138 - 5 N/C
J138 - 6 N/C
J138 - 7 N/C
J138 - 8 N/C
J138 - 9 N/C

A-15472 Fliptronic II Board Interboard Wiring



- J901 - 1 White-Blue (50VAC) from xformer secondary
- J901 - 2 White-Blue (50VAC) loop from J901-1
- J901 - 3 White-Blue (50VAC) from xformer secondary
- J901 - 4 N/C
- J901 - 5 White-Blue (50VAC) loop from J901-3
- J902 - 1 N/C
- J902 - 2 N/C
- J902 - 3 N/C
- J902 - 4 N/C
- J902 - 5 N/C
- J902 - 6 N/C
- J902 - 7 Orange-Blue (holding) lower left coil
- J902 - 8 N/C
- J902 - 9 Blue-Gray (power) lower left coil
- J902 - 10 N/C
- J902 - 11 Orange-Green (holding) lower right coil
- J902 - 12 N/C
- J902 - 13. Blue-Violet (power) lower right coil

J903, 34-pin Ribbon Cable (data) To/from J202; J601; J506

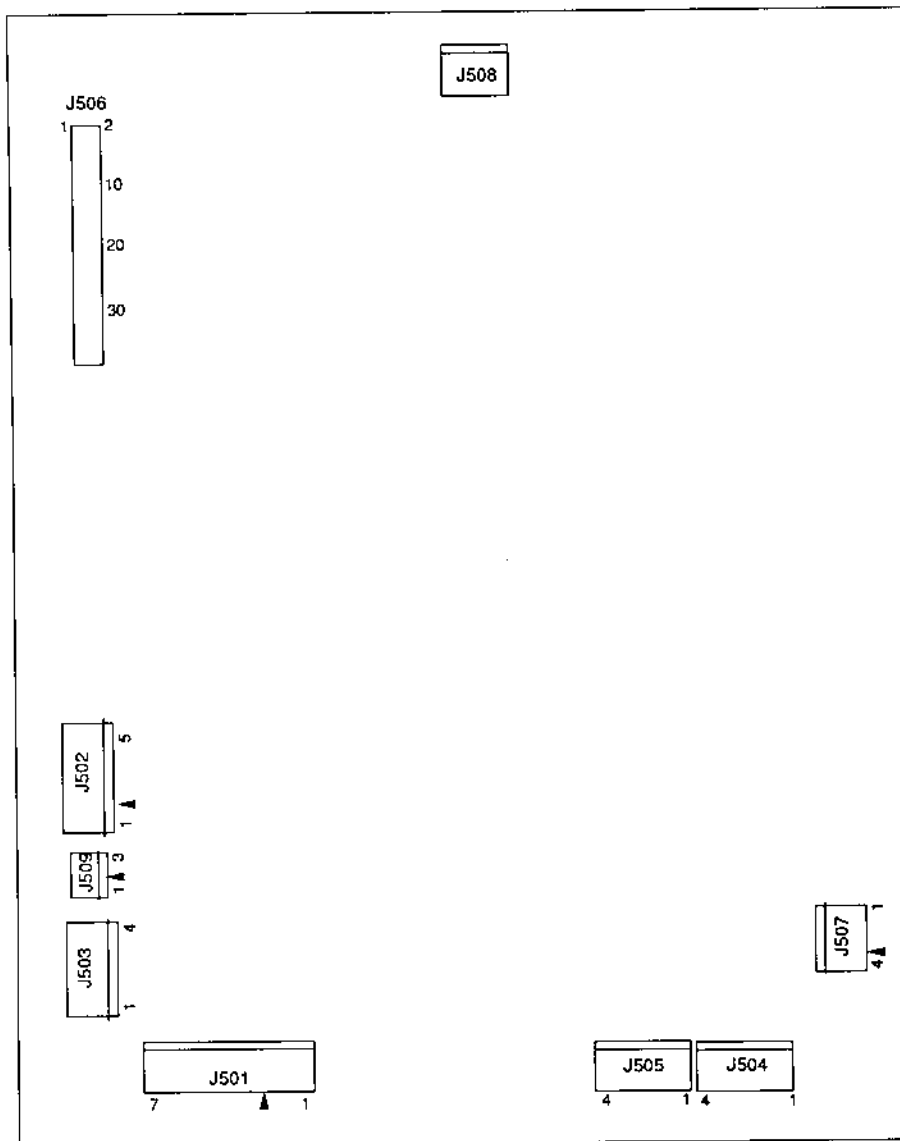
- J904 - 1 Gray (+5V) from Power Driver Board J114-3,4
- J904 - 2 Gray-Green (+12V) from Power Driver Board J114-1,2
- J904 - 3 N/C
- J904 - 4 Black (Grd) from Power Driver Board J114-5,7
- J904 - 5 Black (Grd) from Power Driver Board J114-5,7

- J905 - 1 Blue-Violet to right cabinet switch
- J905 - 2 Blue-Gray to left cabinet switch
- J905 - 3 Black-Yellow to right cabinet switch
- J905 - 4 N/C
- J905 - 5 Black-Blue to left cabinet switch
- J905 - 6 Blue (Grd) to cabinet switches

- J906 - 1 Black-Green to lower right EOS switch
- J906 - 2 N/C
- J906 - 3 Black-Blue to lower left EOS switch
- J906 - 4 N/C
- J906 - 5 N/C
- J906 - 6 Orange (Grd) to EOS switches

- J907 - 1 N/C
- J907 - 2 N/C
- J907 - 3 N/C
- J907 - 4 N/C
- J907 - 5 N/C
- J907 - 6 Gray-Yellow (+50V) to lower left flipper
- J907 - 7 Gray-Yellow (+50V) loop from J907-6
- J907 - 8 Blue-Yellow (+50V) to lower right flipper
- J907 - 9 Blue-Yellow (+50V) loop from J907-8

**A-12738-50005
Audio Board
Interboard Wiring**



- J501 - 1 Gray-Green (18VAC) from xformer secondary
- J501 - 2 Gray-Green (18VAC) loop from J501-1
- J501 - 3 N/C
- J501 - 4 Gray (18VAC) from xformer secondary
- J501 - 5 Gray (18VAC) loop from J501-4
- J501 - 6 Gray-White (18VAC) from xformer secondary
- J501 - 7 Gray-White (18VAC) loop from J501-6

- J502 - 1 Gray (+5V) from Power Driver Board J114-3,4
- J502 - 2 N/C
- J502 - 3 Gray (+5V) from Power Driver Board J114-3,4
- J502 - 4 Black (Grd) from Power Driver Board J114-5,7
- J502 - 5 Black (Grd) from Power Driver Board J114-5,7

J503 - Not Used

- J504 - 1 N/C
- J504 - 2 N/C
- J504 - 3 Black (signal) to speaker
- J504 - 4 N/C

- J505 - 1 N/C
- J505 - 2 Black (signal) to speaker
- J505 - 3 N/C
- J505 - 4 N/C

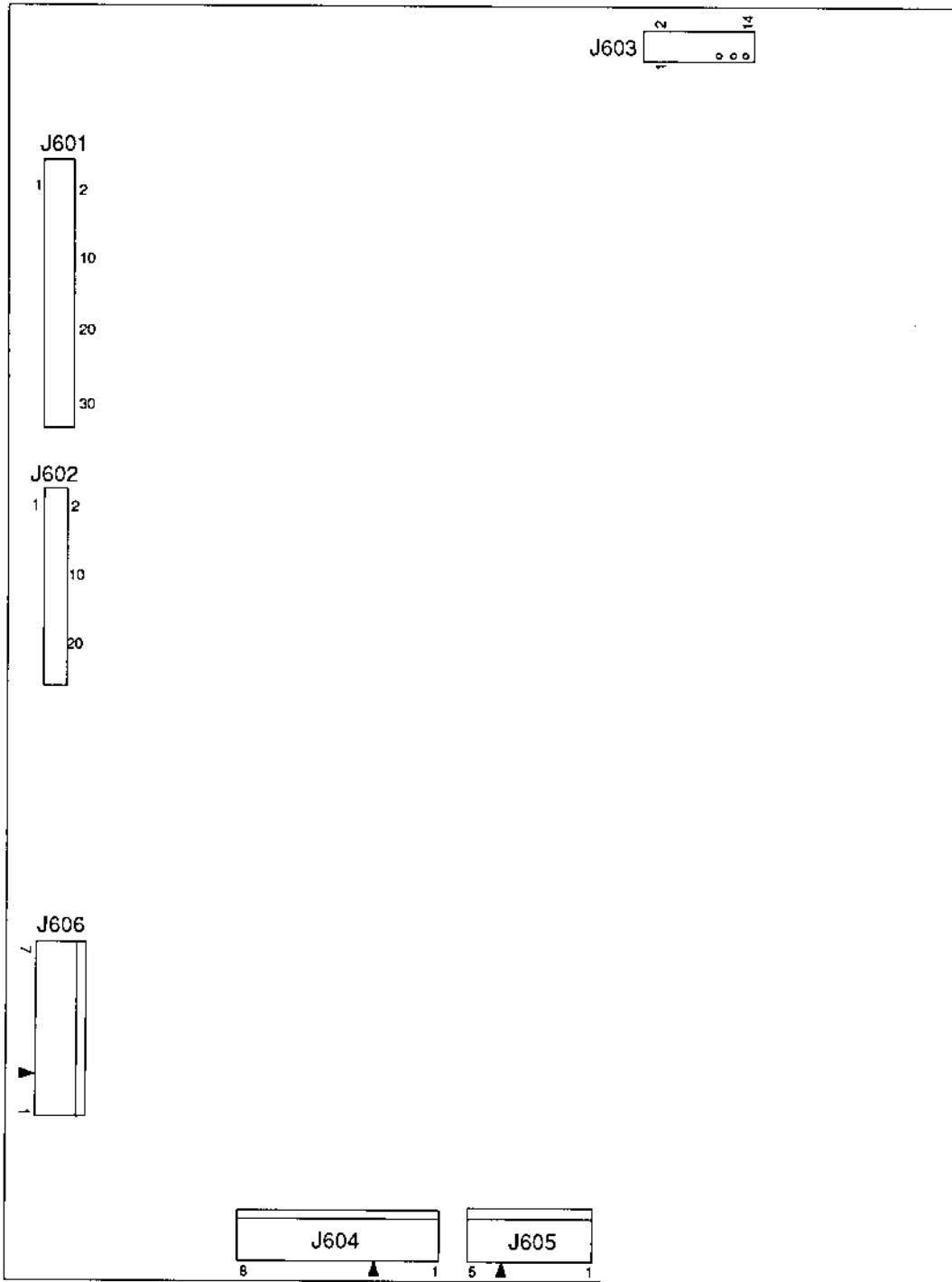
J506, 4-pin Ribbon Cable(data) To/from J601; J903; J202

J507 - Not Used

- J508 - 1 N/C
- J508 - 2 N/C
- J508 - 3 N/C
- J508 - 4 N/C

- J509 - 1 N/C
- J509 - 2 N/C
- J509 - 3 N/C

A-14039
Dot Matrix Controller Board



Dot Matrix Controller Board Interboard Wiring

J601, 34-pin Ribbon Cable (data) To/from J202; J903; J506

J602, 26-pin Ribbon Cable (data) To/from J201

J603, 14-pin Ribbon Cable (data) To/from Dot Matrix Display/Driver

J604 - 1 Orange (-125V) to Display/Driver pin 1
J604 - 2 Blue (-113V) to Display/Driver pin 2
J604 - 3 N/C
J604 - 4 Black (Grd) to Display/Driver pin 4
J604 - 5 Black (Grd) to Display/Driver pin 5
J604 - 6 Gray (+5V) to Display/Driver pin 6
J604 - 7 Gray-Yellow (+12V) to Display/Driver pin 7
J604 - 8 Brown (+62V) to Display/Driver pin 8

J605 - 1 White (80VAC) from xformer secondary
J605 - 2 White (80VAC) from xformer secondary
J605 - 3 Violet (100VAC) from xformer secondary
J605 - 4 N/C
J605 - 5 Violet (100VAC) from xformer secondary

J606 - 1 Black (Grd) loop from J606-3
J606 - 2 N/C
J606 - 3 Black (Grd) from Power Driver Brd J117-3
J606 - 4 Gray (+5V) loop from J606-5
J606 - 5 Gray (+5V) from Power Driver Brd J117-4
J606 - 6 Gray-Yellow (+12V) loop from J606-7
J606 - 7 Gray-Yellow (+12V) from Power Driver Brd J117-2

J607 - Not Used

J608 - Not Used

Section 4

International

Pinball Game Assembly Instructions

This is a four ball game.
Three balls in play and one captive ball.

Cabinet Dimensions
Approx.

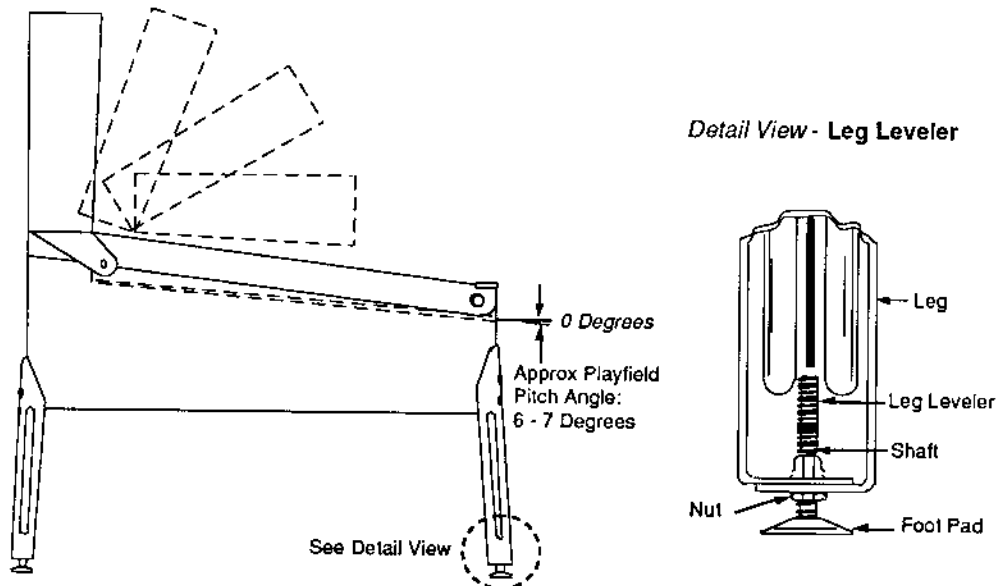
Length: 55" Approx.

Height: 85"

Width: 26" Approx.

Weight: 285 lbs

1. Remove all cartons, parts, and other items from the shipping container, and set them aside.
2. Place the cabinet on a support and attach rear legs using leg bolts. Leg levelers and leg bolts are provided among the parts in the cash box.
3. Attach the front legs (after installing leg levelers), using leg bolts.



4. Reach into the cabinet and backbox and ensure that the interconnecting cables are not kinked or pinched. Be careful to avoid damaging wires at any stage of the assembly process.

5. Raise the hinged backbox upright and latch it into position. Unlock the backbox, and remove the backglass. Remove the shipping block holding the Insert Board. Unlatch and open the Insert Board. Carefully lift up the Speaker Panel and lay it down on the playfield glass. (Be careful not to damage the Dot Matrix Display/Driver.) This allows access to the bolt holes used for securing the backbox upright. To secure the backbox, install the washer-head mounting bolts through the bottom holes of the backbox into the threaded fasteners in the cabinet. Close and latch the Insert Board. Replace the Speaker Panel. Reinstall the backglass, and lock the backbox.

If the Fish Panel on the top of the backbox is removed, be sure to slide the cover plate over the cable hole and screw it into place with the #8 torx bit.

CAUTION

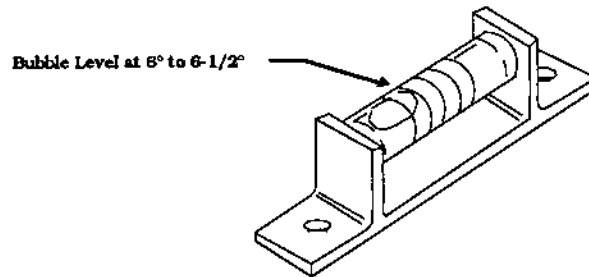
FAILURE TO INSTALL the backbox mounting hardware properly can cause personal injury.
NEVER TRANSPORT a pinball game with the hinged backbox erect. Always lower the backbox forward onto the playfield cabinet on a layer of protective material to prevent marring or damage and possible personal injury.

6. Extend each leg leveler *slightly* below the leg bottom, so that all four foot pads are extended about the same distance. Remove the cabinet from its support and place it on the floor.

7. Unlock and open the coin door. Move the molding latch lever toward the left side of the game. Lift the front molding off the playfield cover glass return the latch lever toward the right, and close the coin door. Carefully slide the glass downward, until it clears the grooves of the left and right side moldings. Lift the glass up and away from the game.

8. Place a level or an inclinometer on the playfield surface. Adjust the leg levelers for proper playfield level (side-to-side). **Note:** It is recommended that this measurement be made ON the playfield, not the cabinet nor the playfield cover glass. Tighten the nut on each leg leveler shaft to maintain this setting.

The Tru-Pitch™ level is located on the shooter rail. This allows the operator to accurately pitch the game - without removing the glass - when it is first set in a new location. The first line on the level is approximately 6 degrees. Every line after that is approximately another 1/2 degree of pitch. We recommend you pitch the game with the nose of the bubble between the first and second line on the level (between 6 and 6-1/2 degrees).

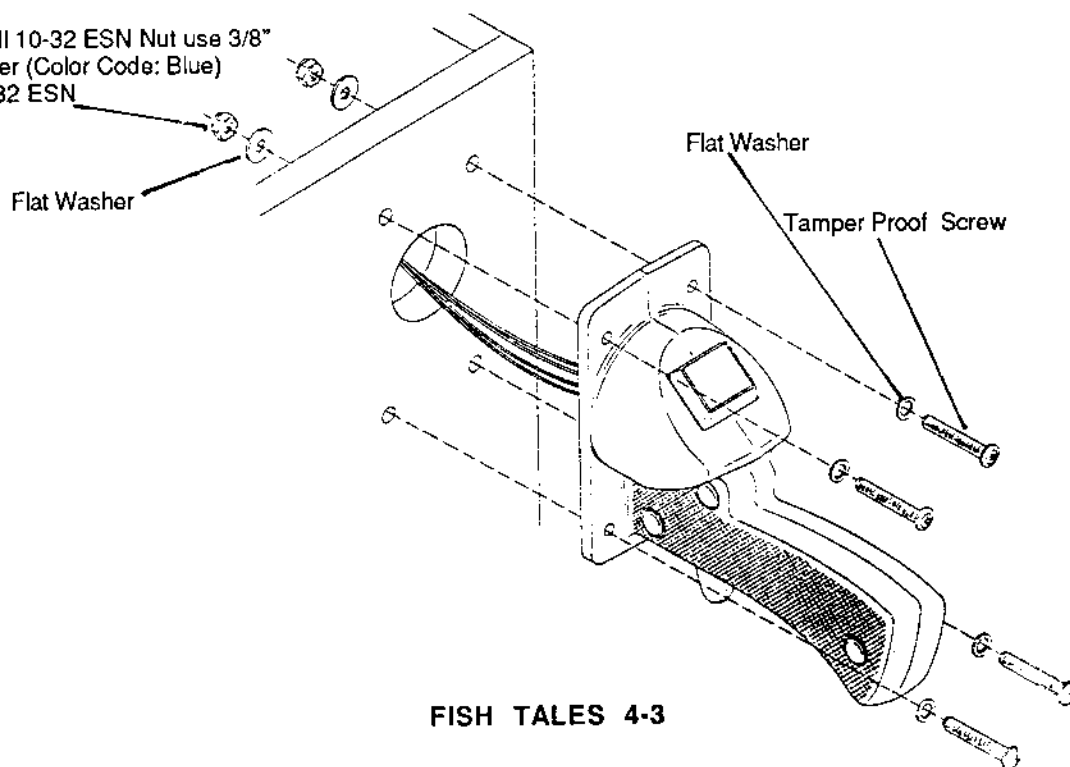


! IMPORTANT !

Playfield pitch angle can affect the operation of the plumb bob tilt. The plumb bob weight is among the parts in the cash box; the operator should install the weight after setting the desired playfield pitch angle.

9. Install the Fishing Reel handle mechanism. Lift the playfield. Place the Fishing Reel handle into the hole in the cabinet (where the plunger is normally located). From the front of the cabinet, slide a washer and a cap head screw through each of the four holes. From the inside of the cabinet, slide a washer over each of the four screws. Secure into place with an ESNA nut. Plug the handle cable into the cabinet cable. Be sure the wire colors match on both connectors. Lower the playfield.

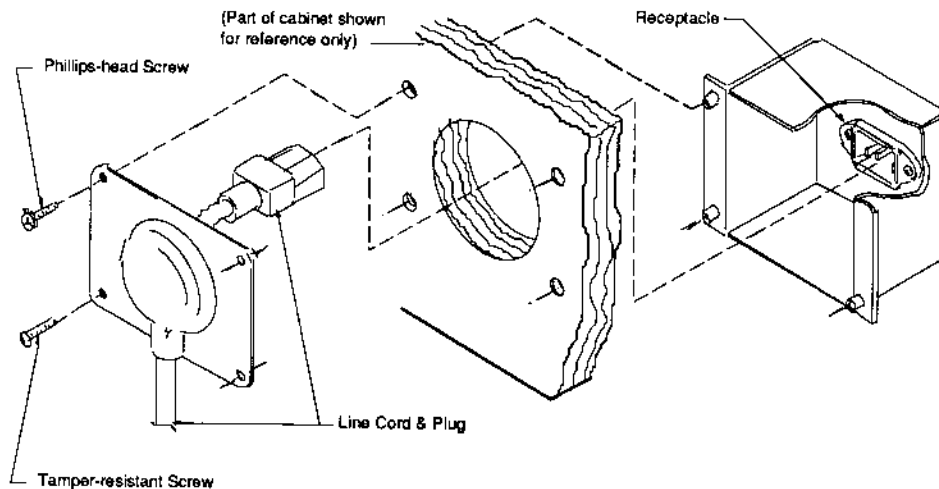
To install 10-32 ESN Nut use 3/8"
Nut Driver (Color Code: Blue)
Nut 10-32 ESN



10. Move the game into the desired location; recheck the level and pitch angle of the playfield.
11. Be sure the correct number of ball are installed. **FISH TALES** uses four balls; three balls in play and one captive ball.
12. Remove foam from the captive ball mechanism. Grasp the foam at the bottom of the captive ball trough and pull it out of the mechanism.
13. Install playfield mylars if desired.

Note: The **FISH TALES** playfield is coated with a covering called Diamond Plate™ and does not require a protective mylar. However, mylars can be purchased through your local Williams Distributor. Specify part number 03-8674-1 for full playfield mylar.

14. To attach the line cord, remove the envelope stapled to the inside of the cabinet (near the cashbox). Remove the four Phillips-head screws that mount to line cord cover plate to the rear cabinet. Match the prongs on the plug with the holes in the receptacle, and push the line cord securely into place. Make sure the cord is aligned with the indentation on the cover plate (indentation should point toward bottom of the cabinet). Remount line cord cover plate. If desired, four tamper resistant screws have been provided in an envelope marked "Security Screws" (located in the cashbox) to remount cover plate.



15. Clean and reinstall the playfield cover glass. Prepare the game for player operation.

Menu System Operation

This game operates on a Menu System. The Main Menu allows you to choose from several main categories, which in turn lead to other menus to choose from. To enter the Menu System, open the coin door and press the Begin Test button. The displays show the Game I.D. Mode. Press the Enter button and the Main Menu appears. To cycle through the Main Menu, (or any other menu), selections press either the Up or Down button. Activate any selection by pressing the Enter button when the desired selection appears in the display. Return to the Attract Mode or a previous menu selection, by pressing the Escape button. Press the Start button for HELP at any time.

Main Menu

B. Bookkeeping Menu

- B.1 Main Audits
- B.2 Earning Audits
- B.3 Standard Audits
- B.4 Feature Audits
- B.5 Histograms
- B.6 Time-stamps

Press Escape

To move out of a menu selection.

Press Enter

To get into a menu selection.

Press Up

Increases sequence; (ex. A.1, A.2, A.3, A.4).

Press Down

Decreases sequence; (ex. A.4, A.3, A.2, A.1).

P. Printouts Menu

- P.1 Earnings Data
- P.2 Main Audits
- P.3 Standard Audits
- P.4 Feature Audits
- P.5 Score Histograms
- P.6 Game Time Histograms
- P.7 Time-Stamped
- P.8 All Data

Use Up or Down to cycle through the selections in a menu.

T. Test Menu

- T.1 Switch Edges
- T.2 Switch Levels
- T.3 Single Switches
- T.4 Solenoid Test
- T.5 Flasher Test
- T.6 General Illumination
- T.7 Sound and Music Test
- T.8 Single Lamps
- T.9 All Lamps
- T.10 Lamp & Flasher Test
- T.11 Display Test

Use Escape and Enter to move into and out of the selected menu.

U. Utilities Menu

- U.1 Clear Audits
- U.2 Clear Coins
- U.3 Reset H.S.T.D.
- U.4 Set Time & Date
- U.5 Custom Message
- U.6 Set Game I.D.
- U.7 Factory Adjustments
- U.8 Factory Resets
- U.9 Presets
- U.10 Clear Credits
- U.11 Auto Burn-in

A. Adjustments Menu

- A.1 Standard Adjustments
- A.2 Feature Adjustments
- A.3 Pricing Adjustments
- A.4 H.S.T.D. Adjustments
- A.5 Printer Adjustments

Utilities

Press the Enter button to activate the Utilities Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Utility Menu selections. Press the Enter button to activate a selection. Use the Up or Down button to rotate the settings. Press the Enter button to lock in a setting. If a mistake is made while changing a setting, press the Escape button while "Saving Adjustment Value" is still in the display. The original setting is retained and the new setting is ignored. Press the Escape button to return to the Utilities Menu. Press it again to return to the Main Menu.

U.8 Factory Reset

Press the Enter button to restore the adjustments to their factory setting, clear the Audits, H.S.T.D Table, and Custom Message/Game I.D.

Factory Setting Table

Adj #	Adj Description	German	French	European
A.1 06	Replay Percent	10%	10%	10%
A.1 09	Replay Level 1	80 Million	80 Million	80 Million
A.1 13	Replay Boost	10 Million	10 Million	10 Million
A.2 01	Timed Plunger	Off	30 sec	Off
A.2 02	Flipper Plunger	Off	On	Off
A.2 03	Outlane Auto Cast	Yes	Yes	Yes
A.2 04	Percent Extra Balls	25%	20%	25%
A.2 05	Ramp Timer	10 sec	10 sec	10 sec
A.2 06	Fish Finder Time	10 sec	10 sec	10 sec
A.2 07	Stretch the Truth	15 sec	15 sec	15 sec
A.2 08	Feed Frenzy Time	Slow	Slow	Slow
A.2 09	Captive Ball Lights	1	1	1
A.2 10	Lock Difficulty	Medium	Medium	Medium
A.2 11	Ball Save Time	7 sec	7 sec	7 sec
A.2 12	Special Lights At	5 S. Gears	4 S. Gears	5 S. Gears
A.4 10	Backup Champion	300 Million	300 Million	300 Million
A.4 11	Backup H.S.T.D. 1	250 Milion	250 Million	250 Million
A.4 12	Backup H.S.T.D. 2	225 Million	225 Million	225 Million
A.4 13	Backup H.S.T.D. 3	200 Million	200 Million	200 Million
A.4 14	Backup H.S.T.D. 4	175 Million	175 Million	175 Million

U.9 Presets

Use the Up or Down buttons to cycle through the available Presets. When the desired Preset is displayed, press the Enter button to lock in that Preset. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

- U.9 01 Install Extra Easy
- U.9 02 Install Easy
- U.9 03 Install Medium
- U.9 04 Install Hard
- U.9 05 Install Extra Hard

The game play difficulty adjustments can be changed from the factory settings to any of the difficulty groups listed above. The Game Difficulty Setting Table lists the adjustments and settings that comprise each difficulty group.

Difficulty Setting Table for French Games

Adj #	Adj Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03	Hard U.9 04	Extra Hard U.9 05
A.2 04	Percent Extra Balls	35%	30%	25%	20 %	17 %
A.2 05	Ramp Timer	17 sec	13 sec	10 sec	7 sec	6 sec
A.2 06	Fish Finder Time	17 sec	13 sec	10 sec	6 sec	5 sec
A.2 07	Stretch the Truth	23 sec	18 sec	15 sec	12 sec	10 sec
A.2 08	FeedFrenzy Time	Slow	Slow	Slow	Fast	Fast
A.2 09	Captive Ball Lights	3	2	1	1	0
A.2 10	Lock Difficulty	Easy	Medium	Medium	Medium	Hard
A.2 11	Ball Save Time	10 sec	8 sec	7 sec	6 sec	5 sec
A.2 12	Special Lights At	2 S. Gears	3 S. Gears	4 S. Gears	5 S. Gears	6 S. Gears

Difficulty Setting Table for German and European Games

Adj #	Adj Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03	Hard U.9 04	Extra Hard U.9 05
A.2 04	Percent Extra Balls	35%	30%	25%	20%	17%
A.2 05	Ramp Timer	13 sec	10 sec	7 sec	6 sec	5 sec
A.2 06	Fish Finder Time	13 sec	10 sec	6 sec	5 sec	4 sec
A.2 07	Stretch the Truth	18 sec	15 sec	12 sec	10 sec	8 sec
A.2 08	FeedFrenzy Time	Slow	Slow	Fast	Fast	Fast
A.2 09	Captive Ball Lights	2	1	1	0	0
A.2 10	Lock Difficulty	Medium	Medium	Medium	Hard	Hard
A.2 11	Ball Save Time	8 sec	7 sec	6 sec	5 sec	5 sec
A.2 12	Special Lights At	3 S. Gears	4 S. Gears	5 S. Gears	6 S. Gears	8 S. Gears

- U.9 17 Install German 1.
- U.9 18 Install German 2.
- U.9 19 Install German 3.
- U.9 20 Install German 4.
- U.9 21 Install German 5.
- U.9 22 Install German 6.

This adjustment modifies the game pricing and the type of game play. The Preset Game Adjustments Table for German Games lists the adjustments and settings that comprise the 'Install German' Groups.

Preset Adjustments Table for German Games

Adj #	Adj Description	German 1 U.9 17	German 2 U.9 18	German 3 U.9 19	German 4 U.9 20	German 5 U.9 21	German 6 U.9 22
A.1 14	Replay Award	Credit	Ticket	Audit	Credit	Ticket	Audit
A.1 15	Special Award	Credit	Ex. Ball	Points	Credit	Ex. Ball	Points
A.1 16	Match Award	Credit	Ticket	Credit	Credit	Ticket	Credit
A.1 19	Match Feature	7%	7%	Off	7%	7%	Off
A.3 01	Game Pricing	6spiele/5DM	6spiele/5DM	6spiele/5DM	7spiele/5DM	7spiele/5DM	7spiele/5DM
A.4 02	H.S.T.D. Award	Credit	Ticket	Credit	Credit	Ticket	Credit
A.4 04	Champion Credits	03	03	00	03	03	00
A.4 05	H.S.T.D. 1 Credits	01	01	00	01	01	00
A.4 06	H.S.T.D. 2 Credits	00	00	00	00	00	00
A.4 07	H.S.T.D. 3 Credits	00	00	00	00	00	00
A.4 08	H.S.T.D. 4 Credits	00	00	00	00	00	00

• For German Jumpered CPU Boards only.

German Jumpers are:

W14 W15 W16 W17 W18
In In In In Out

- U.9 23 Install French 1*
- U.9 24 Install French 2*
- U.9 25 Install French 3*
- U.9 26 Install French 4*
- U.9 27 Install French 5*
- U.9 28 Install French 6*

This adjustment modifies the game pricing and the type of game play. The Preset Game Adjustments Table for French Games lists the adjustments and settings that comprise the 'Install French' Groups.

Preset Adjustments Table for French Games

Adj#	Adj Description	French 1 U.9 23	French 2 U.9 24	French 3 U.9 25	French 4 U.9 26	French 5 U.9 27	French 6 U.9 28
A.2 04	Percent Extra Balls	20%	15%	20%	20%	20%	20%

* For French Jumpered CPU Boards only.

French Jumpers are:

W14 W15 W16 W17 W18
In In In Out In

Adjustments

Press the Enter button to activate the Adjustments Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Adjustments Menu selections. Press the Enter button to activate a selection. Press the Up or Down button to cycle through the available adjustments. Press the Enter button to activate an adjustment. When an adjustment is activated, the setting value begins to flash. Use the Up or Down button to raise or lower the setting value. Press Enter to lock in the value. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained. Press the Escape button to return to the Adjustments Menu. Press it again to return to the Main Menu.

A.1 Standard Adjustments

- A.1 06 Replay Percent***
The percentage of replays the players are able to earn when Auto Replay is used. Range: 5% to 50%.
- A.1 09 Replay Level 1****
The value to be used for the first, second, third, and fourth Fixed Replay. Range: 00 to 250,000,000.
- A.1 13 Replay Boost**
The replay score can be temporarily boosted by the selected amount EACH time the player reaches or exceeds the replay score. This temporary boost is cancelled when Credits=0, when the player inserts another coin, or when Begin Test is pressed. Range: Off, 1,000,000 to 50,000,000.
- A.1 14 Replay Award**
The form of award automatically provided when the player exceeds any replay level for either Auto% Replay or Fixed Replay. Choices:
- Credit - Reaching each Replay level awards credit.
 - Ticket - Reaching each Replay level awards a ticket.
 - Ball - Reaching each Replay level awards an Extra Ball.
 - Audit - Reaching each Replay level awards nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards.
- A.1 15 Special Award**
The award automatically provided when the player scores a special. Choices:
- Credit - Scoring a Special awards a Credit.
 - Ticket - Scoring a Special awards a Ticket.
 - Ball - Scoring a Special awards an Extra Ball.
 - Points - Scoring a Special awards 1 Million points.
- A.1 16 Match Award**
The award automatically provided when the players wins a match. Choices:
- Credit - Winning a Match awards a Credit.
 - Ticket - Winning a Match awards a Ticket.

** For Fixed Replay *For Auto% Replay.

- A.1 19 Match Feature**
Desired percentage for the Match Feature occurring at the end of the game. Range :
- Off - Match Feature is not available.
- 1 - 50% - 1% is 'hard'; 50% is 'extremely easy'. The Match Feature selects a random two-digit number at the end of the game and compares each players score for an identical two digits in the rightmost two positions. A match of these two digit results in an award of a Credit or a Ticket.
- A.1 21 Language**
The language the game uses. Choices: English, French, or German.
- A.1 22 Clock Style**
The style of clock the game uses. Choices: A.M./P.M. or 24 Hours.
- A.1 23 Date Style**
The style of date the game uses. Choices: Month/Date/Year, or Date/Month/Year.
- A.1 27 Euro. Scr. Format**
Use either commas or dots between digits when numbers are displayed. Choices:
- Yes - Dots instead of commas, (example- 1.000.000).
No - Commas instead of dots, (example- 1, 000, 000).

A.2 Feature Adjustments

- A.2 01 Timed Plunger**
The plunger kicker kicks automatically for the player. Choices:
- On - After 1 to 120 seconds of inactive play, the plunger kicker kicks automatically.
Off - The plunger kicker does not kick automatically.
- A.2 02 Flipper Plunger**
The Flipper buttons, as well as the Fishing Reel Handle, can shoot the ball. Choices:
- Yes - Pressing the Flipper buttons shoots the ball.
No - Pressing the Flipper buttons does not shoot the ball.
- A.2 03 Outlane Auto Cast**
The next ball is automatically shot up the shooter lane when an outlane switch is made. Choices:
- Yes - The game automatically shoots the next ball.
No - The game does not shoot the next ball.
- A.2 04 Extra Ball Percent**
The percent of games that award an Extra Ball. Range: 1% to 50%.
- A.2 05 Ramp Timer**
The amount of time the player has to achieve the ramp. Range: 5 to 20 seconds.
- A.2 06 Fish Finder Time**
The amount of time the player has to achieve the Fish Finder. Range: 3 to 20 seconds.

- A.2 07 Stretch the Truth**
The amount of time the player has to complete Stretch the Truth. Range: 5 to 30 seconds.
- A.2 08 Feed Frenzy Time**
The time lapse speed of the Feed Frenzy feature. Choices: Fast or Slow.
- A.2 09 Captive Ball Lights**
The amount of Captive Ball lights that blink at game start. Range: 0 to 5 lights.
- A.2 10 Lock Difficulty**
The amount of difficulty faced when trying to lock a ball. Choices: Easy, Medium or Hard.
- A.2 11 Ball Save Time**
The length of time the Auto Cast light blinks. Range: 4 to 20 seconds.
- A.2 12 Special Lights At**
The amount of Gear needed to light Specials. Range: 1 to 10 sell gear.

A.3 Pricing Adjustments

- A.3 01 Game Pricing (if set to custom, then 02 to 09 are available)**
The cost for a game is selected from the Standard Pricing Table or by installing Custom pricing.
- A.3 02 Left Coin Units**
- A.3 03 Center Coin Units**
- A.3 04 Right Coin Units**
- A.3 05 4th Slot Units**
The number of coin units purchased by a coin passing through the left, center, right, or fourth coin chute.
- A.3 06 Units/Credits**
Defines the number of coin units required to obtain 1 credit. A coin unit counter in the game program totals the number of coin units purchased through all coin chutes prior to each game. If the total number of these coin units exceeds or matches the Unit per Credit value by a multiple (or more, coin units) of the specified Units per Credit value the Credits display shows the proper number of credits. The coin unit counter retains any remaining coin units, until the start of Ball 2; then the coin unit counter is cleared (its contents are zeroed).
- A.3 07 Units/Bonus**
Additional credits are to be indicated in the credits display, when a certain number of coin units are accumulated.
- A.3 08 Bonus Credits**
The number of credits that are awarded when the Units/Bonus level is achieved.
- A.3 09 Minimum Units**
No credits are to be posted (indicated in the credit display), until the credits unit counter reaches a particular value, by setting this value to 02 (or more).
- A.3 10 Coin Door Type (if set to custom, then 11 to 15 and 20 are available)**
This adjustment is used to pre-set adjustments 11 to 15 based on standard coin doors (U.S.A., German, etc.).

- A.3 11 Collection Text**
The coin system is used to display the Earning Audits.
- A.3 12 Left Slot Value**
- A.3 13 Center Slot Value**
- A.3 14 Right Slot Value**
- A.3 15 4th Slot Value**
The monetary value of the left, center, right, or fourth coin chute.
- A.3 16 Maximum Credits**
The maximum number of credits the game can accumulate, either through game play awards or coin purchases. Reaching this setting prevents the award of any credits. Range: 5 to 10.
- A.3 17 Free Play**
A player can operate the game without a coin (free play) or with a coin. Choices:
 - No - A coin is necessary for game play.
 - Yes - Game play is free; no coin required.
- A.3 18 Hide Coin Audits**
The coin audits may, or may not, be displayed. Choices:
 - Yes - The coin audits are not displayed.
 - No - The coin audits are displayed.
 - Hide Names - The coin audit value is shown but not the audit name.
- A.3 19 1 Coin Buy-In**
If the game pricing is set to 1 for 50¢/2 for \$1.00 the player can be allowed to 'buy-in' a subsequent game for 1 coin. The number of games that may be purchased at this cost is determined by the number of players in the previous game; that is, if the previous game had three players, 3 Credits can be purchased at the rate of 1 coin per credit. Choices:
 - Yes - The player has 10 seconds to buy-in at 1 coin per game.
 - No - The buy-in feature is disabled.
- A.3 20 Base Coin Size**
This number is used for ticket per coin calculations.
- A.3 21 Coin Meter Units**
It is possible to connect a coin meter to the knocker coil driver which will log all coins through all slots. This adjustment activates the use of the knocker driver for this purpose, and determines the value of each unit on the meter. For example, to show the total amount of money collected as "total quarters", set this adjustment to "0.25". To show the amount of money collected as "total dollars", set this adjustment to "1.00".

Setting this adjustment to anything other than Off establishes the coin unit for a meter attached to the knocker driver, and overrides use of the knocker during awards.

Pricing Table

Country	Coin Chutes				Games/Coins	Display	Pricing Adjustments A3								
	Left	Center	Right	4th Chute			02	03	04	05	06	07	08	09	
Austria	5sch 5sch	10sch	10sch 10sch	-	1/2x5sch, 3/2x10sch ² 2/5sch, 5/10sch	AUSTRIA CUSTOM	02	00	05	00	01	00	01	00	
Australia	20¢	\$1	\$1	\$2	1/\$1, 3/\$2 ²	AUSTRALIA									
U.K.	£1.00	50P	20P	10P	1/3x10P, 2/50P, 4/£1 ²	U.KINGDOM									
Switzerland	1Fr	2Fr	5Fr	-	1/1Fr, 3/2Fr, 7/5Fr ²	SWISS									
Belgium	5Fr	20Fr	50Fr	-	1/4x5Fr, 1/20Fr, 3/50Fr ²	BELGIUM									
West Germany	1DM	2DM	5DM	-	1/2DM, 2/3DM, 3/4DM, 5/5DM ^{1,2} 1/1DM, 2/2DM, 5/5DM ² 1/1DM, 2/2DM, 6/5DM ^{1,2} 1/1DM, 3/2DM, 9/5DM 1/2x1DM, 1/2DM, 3/5DM 2/1DM, 5/2DM, 14/5DM	GER. 1/2DM GER. 1/1DM GER. 6/5DM CUSTOM CUSTOM CUSTOM	09	18	45	00	05	00	01	00	
Holland	1G	-	1G	-	1/1G	HOLLAND									
Sweden	5Kr	5kr	5Kr	-	1/5Kr ²	SWEDEN									
France	1Fr 1Fr 1Fr 1Fr 1Fr 1Fr	5Fr 5Fr 5Fr 5Fr 5Fr 5Fr	10Fr 10Fr 10Fr 10Fr 10Fr 10Fr	-	1/3x1Fr, 2/5Fr, 5/10Fr ^{2,3} 1/2x1Fr, 3/5Fr, 7/10Fr ^{2,3} 1/5Fr, 3/10Fr, 7/2x10Fr ^{2,3} 2/5Fr, 4/10Fr, 9/2x10Fr ^{1,2,3} 2/5Fr, 5/10Fr, 11/2x10Fr ^{2,3} 1/5Fr, 3/10Fr ^{2,3}	TARIF 1 TARIF 2 TARIF 3 TARIF 4 TARIF 5 TARIF 6									
Italy	500L	500L	500L	-	1/500L ²	ITALY									
Spain	100P 25P 25P 25P 25P	- - - - -	500P 100P 100P 100P 100P	-	1/100P, 6/500P ² 1/25P, 5/100P 1/25P, 4/100P 1/2x25P, 2/100P 1/2x25P, 3/100P	SPAIN CUSTOM CUSTOM CUSTOM CUSTOM	01	00	04	00	01	04	01	00	
Japan	100¥	-	100¥	-	1/100¥ ²	JAPAN									
Chile	Token	-	Token	-	1/1Token ²	CHILE									
Denmark	1Kr	5Kr	10Kr	-	1/2x1 Kr, 3/5Kr, 7/10Kr ²	DENMARK									
Finland	1Mka	-	5Mka	-	1/2x1Mka, 3/5Mka ²	FINLAND									
New Zealand	\$1.00 20¢	- -	\$2.00 20¢	-	1/\$1, 3/\$2 ² 1/3x20¢ ²	NEW ZEALAND CUSTOM	01	00	01	00	03	00	00	01	
Norway	5Kr	-	10Kr	-	1/5Kr, 2/10Kr, 5/20Kr ²	NORWAY									
Argentina	10¢	10¢	10¢	-	1/1Token ²	ARGENTINA									
Hungary	10F	10F	20F	-	1/1x20F, 1/2x10F, 3/2x20F ²	HUNGARY									

Note: 1. Factory Default. 2. Standard Setting - Change by pressing Enter button. 3. Other functions are also affected.
* Only if Bill Acceptor and Center Coin Chute are available.

A.4 H.S.T.D. Adjustments

A.4 01 Highest Scores

The game maintains a record of the four highest scores achieved to date. Choices:

- Off - No high scores are recorded, or displayed.
- On - The four highest scores are stored in memory and displayed in the Attract Mode.

A.4 02 H.S.T.D. Award

The award given for achieving the High Score To Date, or the Champion H.S.T.D.. Choices: Credit or a Ticket.

A.4 03 Champion H.S.T.D.

The "Highest" High Score can be displayed in the Attract Mode. This score is not cleared when "High Score Reset Every" occurs. Choices:

- On - The "Highest" High Score is retained in memory and displayed.
- Off - The "Highest" High Score is not retained.

A.4 04 Champion Credits

The number of credits or tickets awarded for a Grand Champion Score. Range: 00 to 10.

A.4 05 H.S.T.D. 1 Credits

A.4 06 H.S.T.D. 2 Credits

A.4 07 H.S.T.D. 3 Credits

A.4 08 H.S.T.D. 4 Credits

The number of credits or tickets awarded whenever a player exceeds the first, second, third, or fourth highest score. Range: 00 to 10.

A.4 09 High Score Reset Every

The number of games to be played before an automatic reset of the displayed 'Highest Score' occurs. The values provided upon reset are those selected by the operator in the Back-up High Scores. Range: OFF (disabled); 250 to 20,000.

A.4 10 Backup Champion

The Back-up Grand Champion Score. Range: 00 to 999,000,000.

A.4 11 Backup H.S.T.D. 1

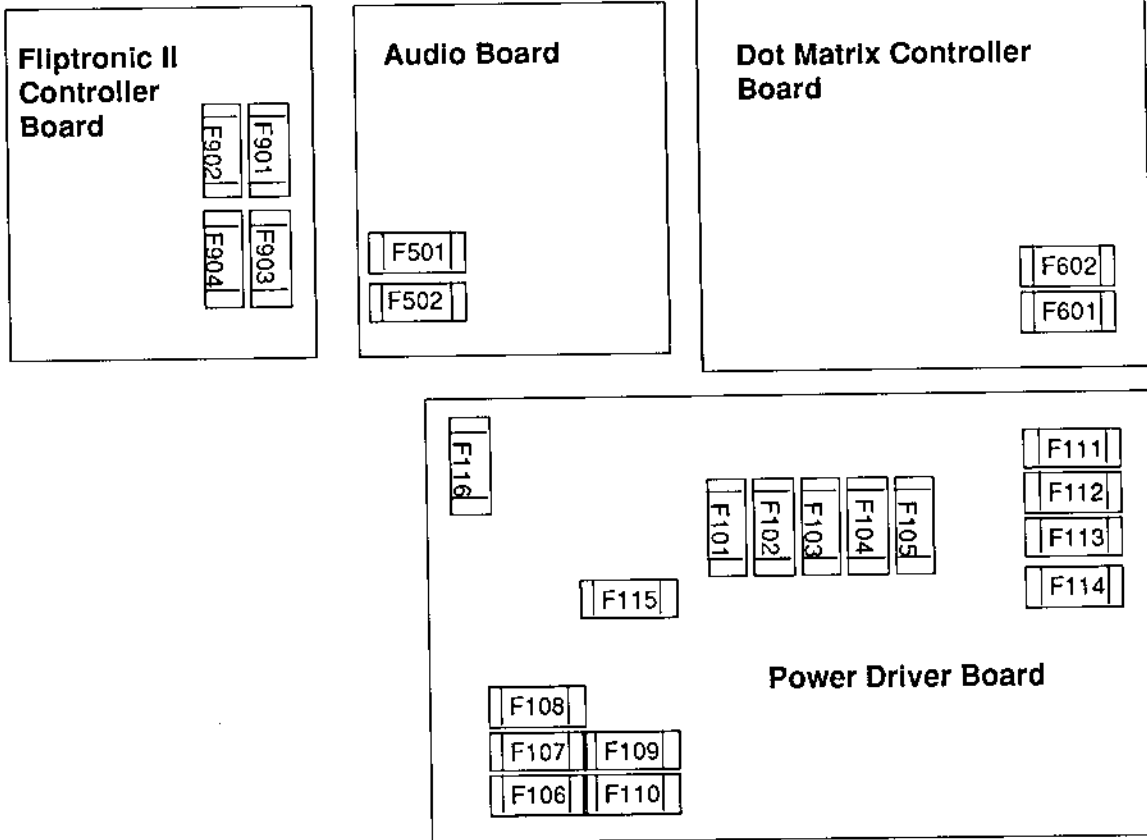
A.4 12 Backup H.S.T.D. 2

A.4 13 Backup H.S.T.D. 3

A.4 14 Backup H.S.T.D. 4

The first, second, third, and fourth Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. Range: 00 to 999,000,000.

Fuse List



Audio Board

F501 -25V Circuit, 3A, S.B.
 F502 +25V Circuit, 3A, S.B.

Dot Matrix Controller Board

F601 +62V Circuit, 3/8A, S.B.
 F602 -113V and -125V Circuits, 3/8A, S.B.

Power Driver Board

F101 Left Flipper, 3A, S.B. Not Used
 F102 Right Flipper, 3A, S.B. Not Used
 F103 Solenoid #25-#28, 3A, S.B.
 F104 Solenoid #9-#16, 3A, S.B.
 F105 Solenoid #1-#8, 3A, S.B.
 F106 G.I. #5 Wht-Vio, 5A, S.B.
 F107 G.I. #4 Wht-Grn, 5A, S.B.
 F108 G.I. #3 Wht-Yel, 5A, S.B.
 F109 G.I. #2 Wht-Org, 5A, S.B.
 F110 G.I. #1 Wht-Brn, 5A, S.B.
 F111 Flasher Secondary, 5A, S.B.
 F112 Solenoid Secondary, 7A, S.B.
 F113 +5V Logic, 5A, S.B.
 F114 +18V Lamp Matrix, 8A, N.B.
 F115 +12V Switch Matrix, 3/4A, S.B.
 F116 +12V Secondary, 3A, S.B.

Fliptronic II Controller Board

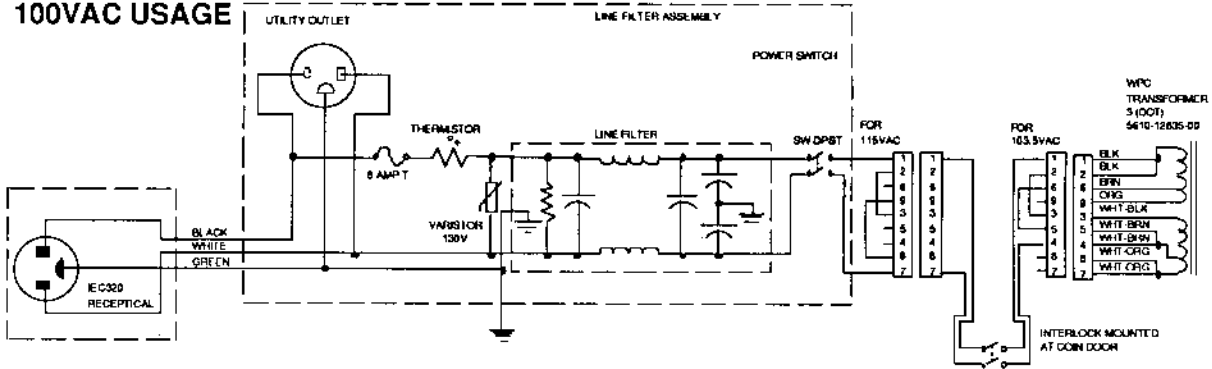
F901 Upper Left Flipper, 3A, S.B.
 F902 Upper Right Flipper, 3A, S.B.
 F903 Lower Left Flipper, 3A, S.B.
 F904 Lower Right Flipper, 3A, S.B.

Line Filter

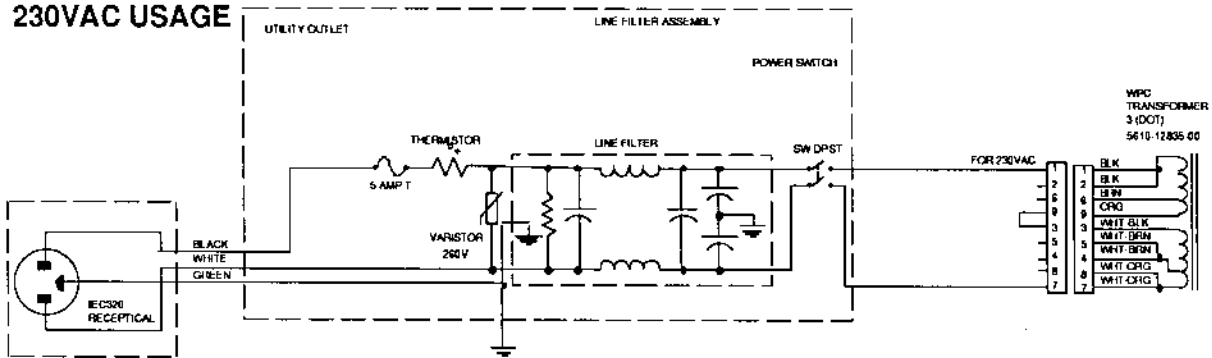
Foreign Game 5A, S.B.

Power Wiring

100VAC USAGE

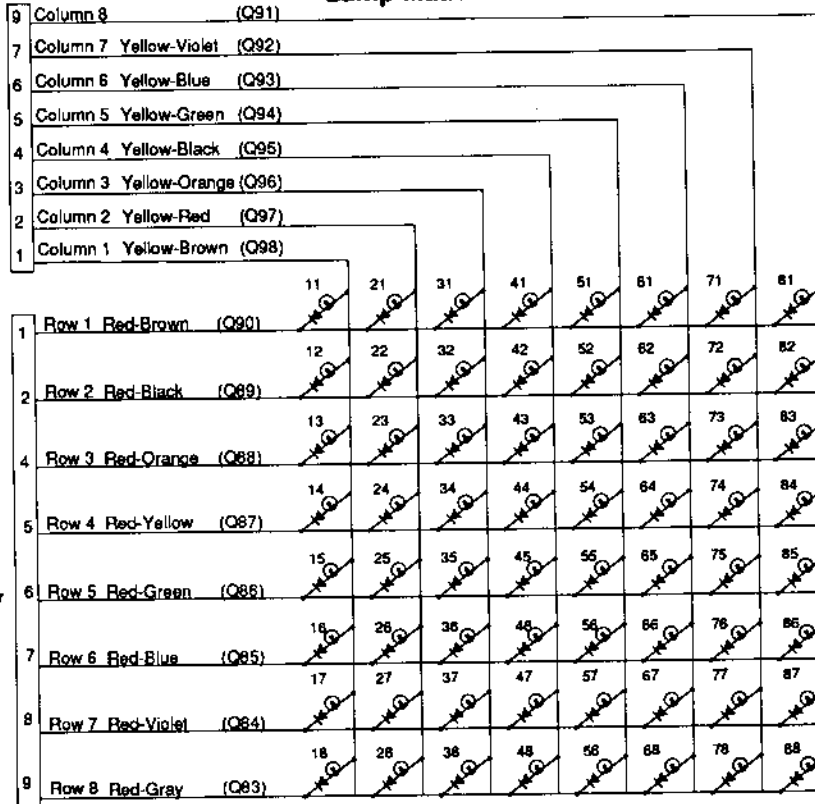


230VAC USAGE



Lamp Matrix

Power Driver Board
J137

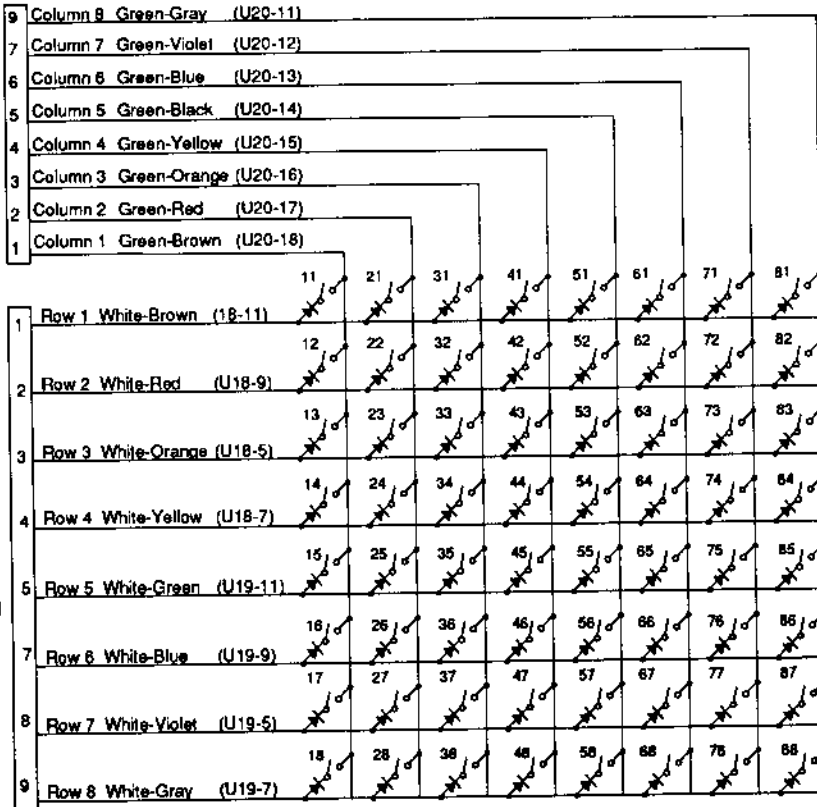


- 11 Hold Bonus
- 12 Video Mode
- 13 Rock the Boat
- 14 Light Extra Ball
- 15 Instant Multi-ball
- 16 Lie (L)
- 17 Lie (I)
- 18 Lie (E)
- 21 Stringer Body 1
- 22 Stringer Body 2
- 23 Stringer Body 3
- 24 Stringer Body 4
- 25 Lt. Side Feed Frenzy
- 26 Monster Bonus
- 27 Fish Finder
- 28 Jackpot
- 31 Stringer Tail 1
- 32 Stringer Tail 2
- 33 Stringer Tail 3
- 34 Stringer Tail 4
- 35 Right Boat Entry
- 36 Rt. Boat Feed Frenzy
- 37 Left Boat Entry
- 38 Lt. Boat Feed Frenzy
- 41 Tropical
- 42 Freshwater
- 43 Cast Again
- 44 Deep Sea
- 45 Left Fish Head
- 46 Left Fish Body
- 47 Left Fish Body
- 48 Specials
- 51 Bonus 1X
- 52 Bonus 2X
- 53 Auto Cast
- 54 Bonus 4X
- 55 Right Fish Head
- 56 Right Fish Body
- 57 Right Fish Tail
- 58 Light Long Cast
- 61 School Fish 1
- 62 School Fish 2
- 63 School Fish 3
- 64 School Fish 4
- 65 School Fish 5
- 66 School Fish 6
- 67 Super Jackpot
- 68 Light Fish Finder
- 71 Casters Club
- 72 Doubles Jackpot
- 73 Lock 3
- 74 Lock 2
- 75 Lock 1
- 76 Rt. Side Feed Frenzy
- 77 Long Cast
- 78 Extra Ball
- 81 Stretch 5X Actual
- 82 Stretch 3X Actual
- 83 Stretch 2X Actual
- 84 Stretch Actual Size
- 85 Stretch Total Lie
- 86 Video Mode
- 87 Cast
- 88 Start Button

Power Driver Board
J133

Switch Matrix

CPU Board
J206



- 11 Not Used
- 12 Not Used
- 13 Start Button
- 14 Plumb Bob Tilt
- 15 Outhole
- 16 Trough 1
- 17 Trough 2
- 18 Trough 3
- 21 Slam Tilt
- 22 Coin Door Closed
- 23 Ticket Opto
- 24 Always Closed
- 25 Left Outlane
- 26 Left Return Lane
- 27 Lt. Stand-up Tgt 1
- 28 Lt. Stand-up Tgt 2
- 31 Cast
- 32 Left Boat Exit
- 33 Right Boat Exit
- 34 Spinner
- 35 Reel Entry
- 36 Catapult
- 37 Reel 1
- 38 Reel 2
- 41 Captive Ball
- 42 Right Boat Entry
- 43 Left Boat Entry
- 44 Lie (E)
- 45 Lie (I)
- 46 Lie (L)
- 47 Ball Popper
- 48 Drop Target
- 51 Left Jet
- 52 Center Jet
- 53 Right Jet
- 54 Rt. Stand-up Tgt 1
- 55 Rt. Stand-up Tgt 2
- 56 Ball Shooter
- 57 Left Sling
- 58 Right Sling
- 61 Extra Ball
- 62 Top Right Loop
- 63 Top Eject Hole
- 64 Top Left Loop
- 65 Right Return
- 66 Right Outlane
- 67 Not Used
- 68 Not Used
- 71 Not Used
- 72 Not Used
- 73 Not Used
- 74 Not Used
- 75 Not Used
- 76 Not Used
- 77 Not Used
- 78 Not Used
- 81 Not Used
- 82 Not Used
- 83 Not Used
- 84 Not Used
- 85 Not Used
- 86 Not Used
- 87 Not Used
- 88 Not Used

CPU Board
J209

WARNINGS & NOTICES

WARNING

FOR SAFETY AND RELIABILITY, substitute parts and equipment modifications are not recommended. Use of Non-WILLIAMS parts or modifications of game circuitry, may adversely affect game play, or may cause injuries.

SUBSTITUTE PART OR EQUIPMENT MODIFICATIONS may void FCC Type Acceptance.

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WARNING

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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.

FCC STICKER. Check the back of your game to verify that an FCC-certification sticker was attached to your game at the factory. All games that leave the WILLIAMS plant 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 may result, if the sticker is missing. If you receive a 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.



CAUTION

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

"Orange Blossom Special"

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