Williams ® W
ELECTRONICS GAMES, INC.

PINBALL™ 2000

STAR WARS™

EPISODE I

OPERATIONS MANUAL

C E c ⒧ US

MANUAL INCLUDES

Operations & Adjustments • Testing & Problem Diagnosis • Parts Information
Wiring Diagrams & Schematics
Williams Electronics Games, Inc., 3401 N. California Avenue, Chicago, IL 60618

SOLENOID TABLE

Sol No.	Solenoid Function	Fuse	Power to Playfield	Power Wire Color	Drive Transistor	Drive to Playfield	Drive Wire Color	Solenoid Part Number or Flasher Type
01	LEFT SAUCER	F101	J102-1	RED-BRN	Q59	J111-13	VIO-BRN	AE1-27-1200
02	LEFT DROP TARGET UP	F101	J102-1	RED-BRN	Q60	J111-14	VIO-RED	AE1-26-1200
03	LEFT DROP TARGET DOWN	F101	J102-1	RED-BRN	Q61	J111-15	VIO-ORG	SM1-26-600
04	MAGNET*	F101	J102-1	RED-BRN	Q62	J111-16	VIO-YEL	20-10197*
05	NOT USED	F102		RED-BLK	Q63		VIO-GRN	
06	RIGHT DROP TGT DOWN	F102	J102-2	RED-BLK	Q64	J111-18	VIO-BLU	SM1-26-600
07	RIGHT DROP TARGET UP	F102	J102-2	RED-BLK	Q65	J111-19	VIO-BLK	AE1-26-1200
08	SHIELD POPPER	F102	J102-2	RED-BLK	Q66	J111-20	VIO-GRY	AE1-26-1500
09	TROUGH EJECT	F103	J102-3	RED-ORG	Q51	J112-11	BRN-BLK	AE1-26-1500
10	LEFT SLINGSHOT	F103	J102-3	RED-ORG	Q52	J112-12	BRN-RED	AE1-27-1200
11	RIGHT SLINGSHOT	F103	J102-3	RED-ORG	Q53	J112-13	BRN-ORG	AE1-27-1200
12	UPPER JET BUMPER	F103	J102-3	RED-ORG	Q54	J112-14	BRN-YEL	AE1-26-1200
13	MIDDLE JET BUMPER	F100	J102-7	RED-YEL	Q55	J112-15	BRN-GRN	AE1-26-1200
14	LOWER JET BUMPER	F100	J102-7	RED-YEL	Q56	J112-16	BRN-BLU	AE1-26-1200
15	UPPER HOTDOG FLASHERS	F109	J102-8	RED-WHT	Q57	J112-17	BRN-VIO	#906 (2)
16	RIGHT SAUCER	F100	J102-7	RED-YEL	Q58	J112-18	BRN-GRY	AE1-27-1200
17	LOWER LEFT HOTDOG FL	F109	J102-8	RED-WHT	Q43	J111-1	BLU-BRN	#906
18	LOWER RIGHT HOTDOG FL	F109	J102-8	RED-WHT	Q44	J111-2	BLU-RED	#906
19	BACK PANEL RIGHT UP FL**	F109	J102-8	RED-WHT	Q45	J111-3	BLU-ORG	#906
20	BACK PANEL RIGHT MID FL**	F109	J102-8	RED-WHT	Q46	J111-4	BLU-YEL	#906
21	JET FLASHER	F109	J102-8	RED-WHT	Q47	J111-5	BLU-GRN	#906
22	LEFT INLANE FLASHER	F109	J102-8	RED-WHT	Q48	J111-6	BLU-BLK	#89
23	RIGHT INLANE FLASHER	F109	J102-8	RED-WHT	Q49	J111-7	BLU-VIO	#89
24	BACK PANEL MIDDLE FL	F109	J102-8	RED-WHT	Q50	J111-8	BLU-GRY	#906
25	BACK PANEL RT LOW FL**	F109	J102-8	RED-WHT	Q67	J112-9	BLK-BRN	#906
26	BACK PANEL LEFT UP FL**	F109	J102-8	RED-WHT	Q68	J112-10	BLK-RED	#906
27	BACK PANEL LEFT MID FL**	F109	J102-8	RED-WHT	Q69	J112-19	BLK-ORG	#906
28	BACK PANEL LEFT LOW FL**	F109	J102-8	RED-WHT	Q70	J112-20	BLK-YEL	#906
	Flipper Circuits							
33	LOW RIGHT FLIPPER PWR				Q35	J112-1	YEL-GRN	
34	LOW RIGHT FLIPPER HOLD	F104	J103-1	RED-GRN	Q36	J112-2	ORG-GRN	FL1-11722
35	LOW LEFT FLIPPER PWR				Q37	J112-3	YEL-BLU	
36	LOW LEFT FLIPPER HOLD	F105	J103-2	RED-BLU	Q38	J112-4	ORG-BLU	FL1-11722
37	CENTER BUMPER POWER				Q39	J112-5	YEL-VIO	
38	CENTER BUMPER HOLD	F106	J103-3	RED-VIO	Q40	J112-6	ORG-VIO	FL1-15411
39	LEFT LASER FLASHER	F109	J102-8	RED-WHT	Q41	J112-7	YEL-GRY	#89
40	RIGHT LASER FLASHER	F109	J102-8	RED-WHT	Q42	J112-8	ORG-GRY	#89
41	NEON	F108	J102-9	GRY-YEL	U35	J111-9	BRN-WHT	A-23157

*Used in conjunction with a wave spring washer P/N 20-9612.
** Used in conjunction with receptacle and skirt P/N A-14265-13.
#906 part number is 24-8802
#89 part number is 24-8704

Mr. Squeaky   Mr. Ring   Mr. Bulb   Mr. Flipper

DECLARATION OF CONFORMITY

WILLIAMS ELECTRONICS GAMES, INC.

3401 N. CALIFORNIA AVE.
CHICAGO, IL 60618
U.S.A.

WE, HEREBY DECLARE UNDER SOLE RESPONSIBILITY THAT

THE MODEL: *"STAR WARS EPISODE I"* *50269,50369,50469,50769,50969,51069,*
51169,51269,51369,51469,51869,51969,52069,52169,52269,52369,57269

TO WHICH THIS DECLARATION RELATES IS IN CONFORMITY WITH THE FOLLOWING EUROPEAN PRODUCT SAFETY DIRECTIVES:

ELECTROMAGNETIC COMPATABILITY DIRECTIVE
(89/336/EEC AND AMENDMENTS 91/C162/08, 92/31/EEC,93/68/EEC

ELECTRICAL EQUIPMENT DESIGNED FOR USE WITHIN CERTAIN VOLTAGE LIMITS DIRECTIVE
(73/23/EEC AND AMENDMENTS 88/C168/02, 92/C210/01,
93/68/EEC, 94/C199/03, 95/C214/02)

AS IS VERIFIED BY COMPLIANCE WITH THE FOLLOWING STANDARDS

EN 55014:1993 EN55104:1995   EN61000-4-2: 1995
IEC 801-3: 1984 (EN61000-4-3) EN61000-4-4: 1995   EN61000-4-5: 1995
ENV50141: 1993 (EN61000-4-6)   EN61000-4-11: 1994 EN60335-1: 1995
IEC 335-2-82 (DRAFT)

JUNE 3, 1999

Date issued:

MANUFACTURE'S SIGNATURE

DAN GALARDE

CORPORATE V.P. OF QUALITY

Remember that: If you clean them, they will earn!

A note from the STAR WARS - EPISODE I design team.

This game has been designed and built with maintenance in mind. All the devices are easy to get to, the playfield is easy to clean, and the software does all it can to detect faults and problems. Games that are clean and working WILL EARN MORE then dirty, broken games with no lights. It doesn't take long to clean the playfield and change bulbs if it is done weekly or every two weeks (according to how much play the machine gets). Check the Test Report (displayed as soon as the coin door is opened) and fix any problems that the game has detected. Pinball is a game of FUN, and people have the most fun on bright happy games that work.

Mr. Squeaky   Mr. Ring   Mr. Bulb   Mr. Flipper

PINBALL
2000

STAR WARS

EPISODE I

Williams Electronics Games, Inc. reserves the rights to make modifications and improvements to its products. The specifications and parts identified in this manual are subject to change without notice.

TABLE OF CONTENTS

SECTION ONE

GAME ASSEMBLY, OPERATION, AND TEST INFORMATION

ROM Summary

IC	TYPE	BOARD	LOCATION	PART NUMBER
Image	Masked ROM	Prism ROM Daughter Card	U100	5341-16332-01
Image	Masked ROM	Prism ROM Daughter Card	U101	5341-16333-01
Image	Masked ROM	Prism ROM Daughter Card	U102	5341-16334-01
Image	Masked ROM	Prism ROM Daughter Card	U103	5341-16335-01
Image	Masked ROM	Prism ROM Daughter Card	U104	5341-16336-01
Image	Masked ROM	Prism ROM Daughter Card	U105	5341-16337-01
Image	Masked ROM	Prism ROM Daughter Card	U106	5341-16338-01
Image	Masked ROM	Prism ROM Daughter Card	U107	5341-16339-01
Sound	Masked ROM	Prism ROM Daughter Card	U109	5341-16340-01
Sound	Masked ROM	Prism ROM Daughter Card	U110	5341-16341-01

PINBALL GAME ASSEMBLY INSTRUCTIONS
It takes two people to assemble a PINBALL 2000 game.
Do not plug in or switch on power to the cabinet until assembly is complete!

Power:　Domestic 120V @ 60Hz
Foreign 230V @ 50Hz
Japan 100V @ 50HZ
Temp:　32°F to 100° F, (0°C to 38°C)
Humidity:　Not to exceed 95% relative.

Dimensions:　Width: 24" approx.
Length: 48" approx.
Height: 73" approx.
Weight:　Backbox: 130 LB approx.
Cabinet: 230 LB approx.

It is not necessary to open the computer case to assemble a PINBALL 2000 game. However, should you ever find it necessary to open the case, be sure to replace the computer case cover. Failure to do so will void FCC, UL and CE compliance, and may cause damage to the PC boards in the case. The foam lining of the cover holds the PC boards securely in place and protects them from vibrations that normally occur in a pinball game.

REMOVE THE PLAYFIELD

1. To start removing the playfield from the cabinet, set the cabinet on a level surface. Unlock and open the coin door. Pull the yellow lever, (located on the left side of the coin door opening), to the right. The front molding pops up. Lift the molding from the cabinet. Slide the playfield glass down and lift it off of the cabinet. See Figure 1.
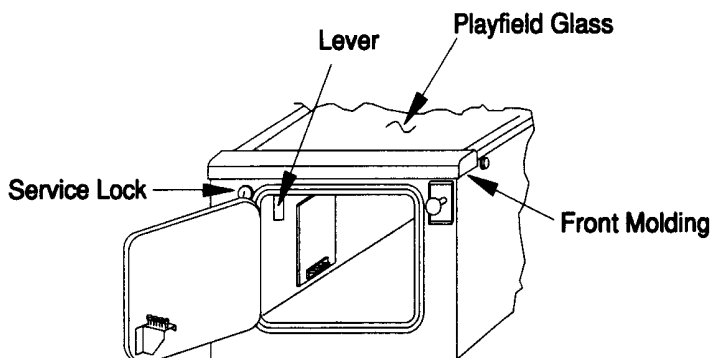
FIGURE 1

2. Lift the playfield by the support bracket under the front of the bottom arch. Rest the playfield on the top of the cabinet, nesting the plastic hex buttons in the trough of the bracket as shown in Figure 2A. Close the coin door.
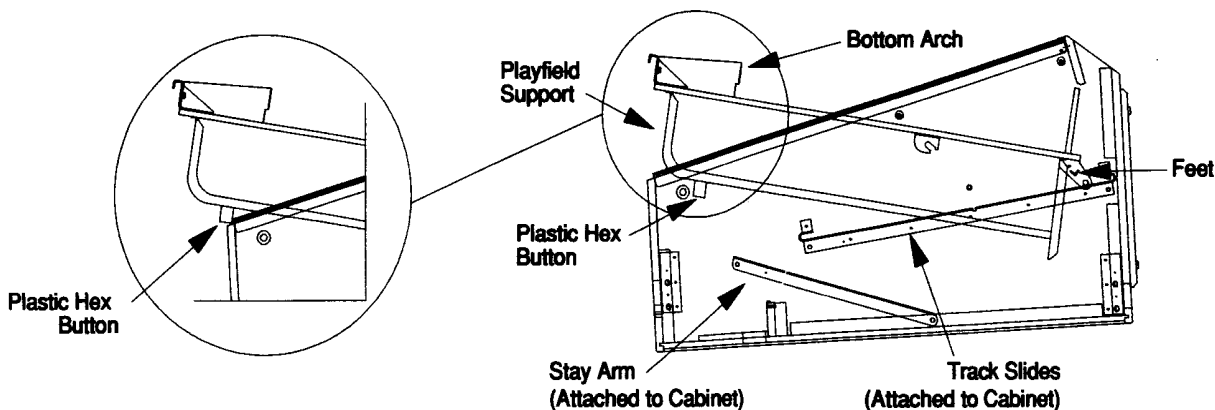
FIGURE 2A　　　　　　　　　**FIGURE 2**

3. Firmly grasp the playfield and slide it forward (toward you) along the bottom track slide brackets. Rotate the front of the playfield down and set it on the floor as shown in Figures 3 through 5.

FIGURE 3

FIGURE 4

Unplug Cables from Playfield Panel.
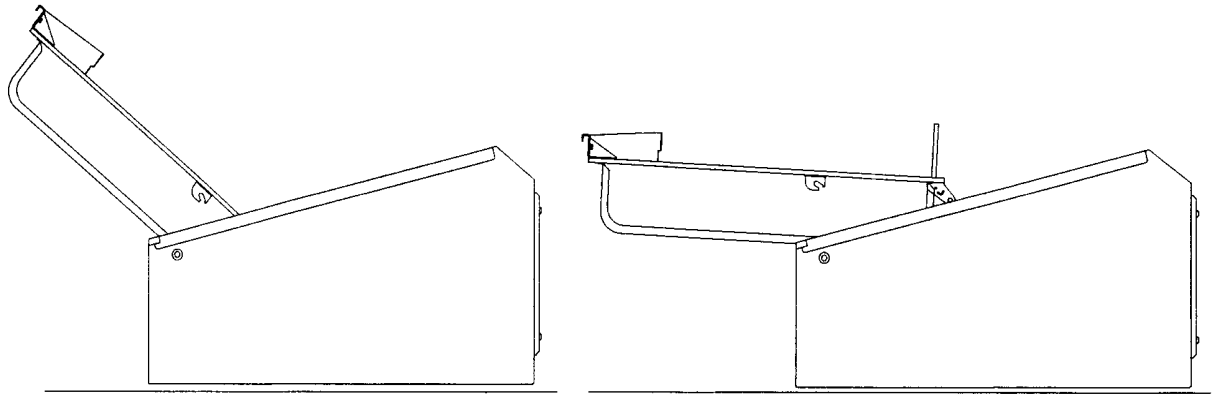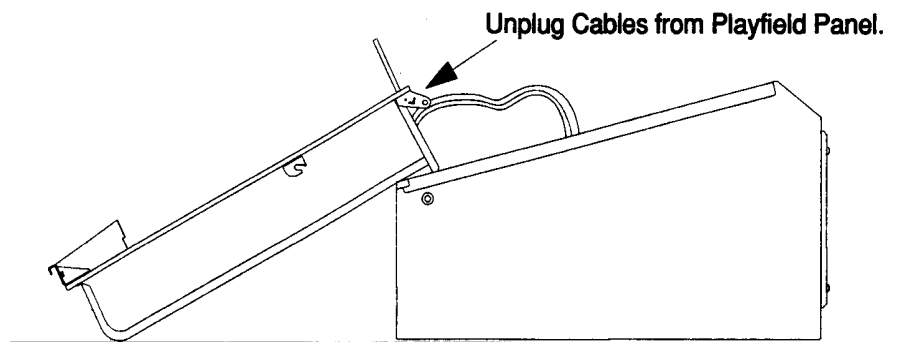
FIGURE 5

4. Unplug the cables from the bracket on the back of the playfield and pull the playfield away. See Figure 5, above.

5. The leg levelers, nuts, and leg bolts are among the parts in the cash box. Install a leg leveler and nut on each of the front and rear legs. Place the cabinet on a support. Using two leg bolts in each leg attach the front and rear legs to the cabinet. Screw the levelers all the way into the legs. Remove the cabinet from the support. See Figure 6, below.

Detailed View-Leg Leveler

Leg Assembly

Leg Leveler

Nut
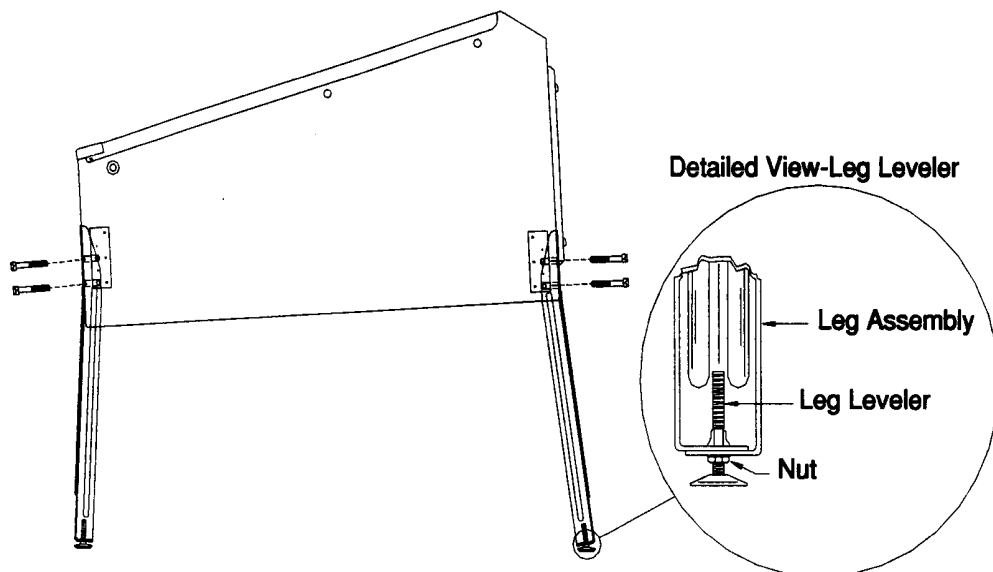
FIGURE 6

ATTACH THE BACKBOX

6. Cut the tie-wrap that holds the 9-pin serial cable, the 25-pin parallel cable and the power/speaker cable to the wood shipping brace. The shipping brace is held in place by two screws located on the left and right sides of the backbox. Remove the screws and shipping brace from the backbox and discard. See Figure 7, below.
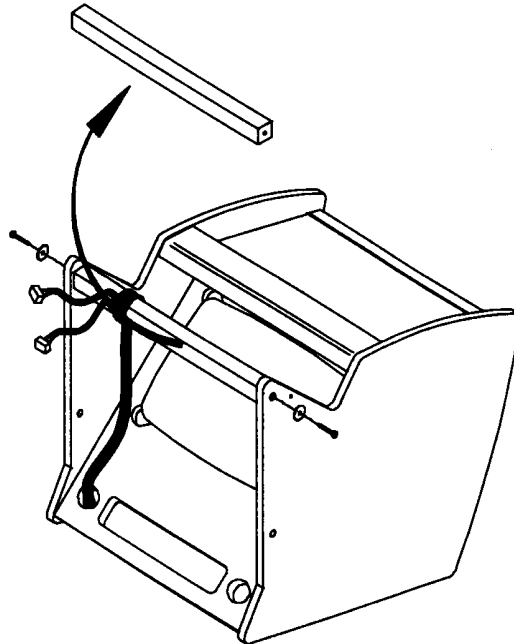
FIGURE 7

7. Stand the backbox upright. Unlock, unscrew and remove the rear door. Pull the three cables out through the back door opening and let them hang down the rear of the backbox. See Figure 8. Among the parts in the cash box locate the four mounting bolts, washers and bushings, the 1/4" hex key and the 7/32" hex key. Set these parts aside.

Backbox Assembly

Ground Strap

Cabinet Assembly

25-Pin Parallel Cable

9-Pin Serial Cable to

Isolation/Speaker Cable:
2-Pin to Speakers
3-Pin to Isolation

FIGURE 8

1-4
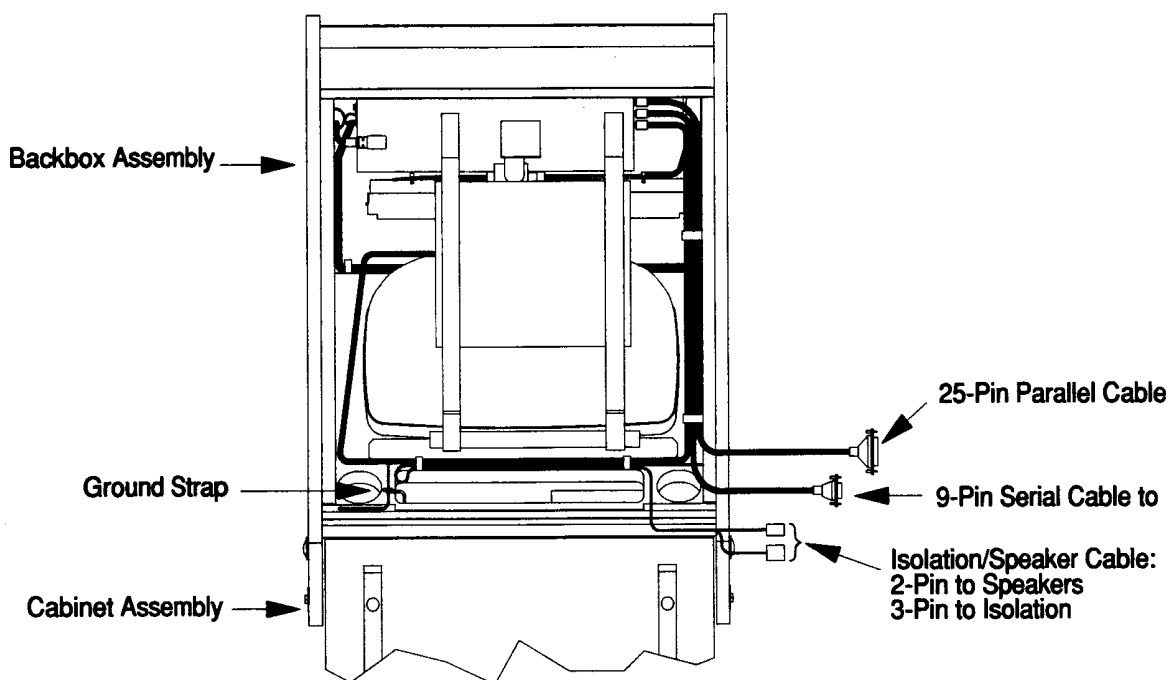
8. **WITH THE HELP OF ANOTHER PERSON, carefully lift the backbox and set it on the cabinet. See Figure 9.**
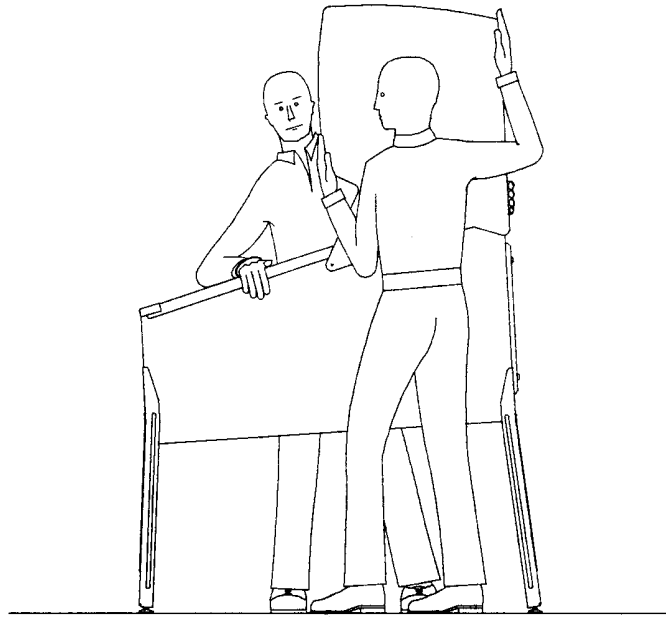
FIGURE 9

9. Line up the four mounting holes in the cabinet with the mounting holes in the backbox. In each of the four mounting holes, insert one bushing from the inside of the cabinet and one washer and bolt from the outside of the backbox. Use the 7/32" hex key in the bolt and the 1/4" hex key in the bushing and securely fasten the backbox to the cabinet. See Figure 10 below.
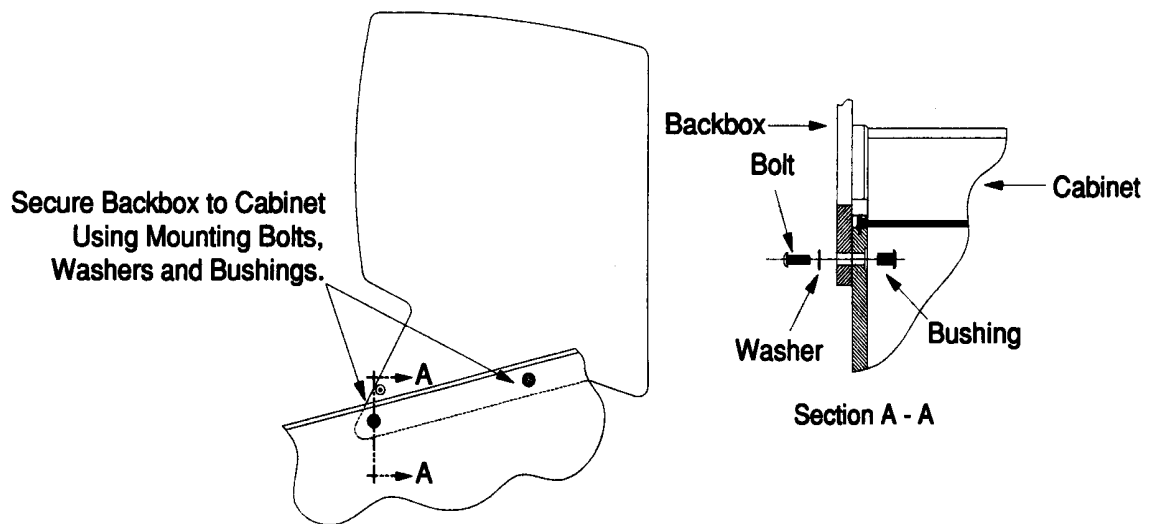
FIGURE 10

⚠ **CAUTION**
FAILURE TO INSTALL the backbox mounting hardware properly can cause personal injury.

PLUG IN THE CABLES

10. *Do not force cables onto connectors, they should plug in easily.* Plug the cables into the proper connectors on the Joining Bracket, which is located on the right side of the rectangular opening in the rear of the cabinet (see Figure 11). Secure the DB25 and DB09 cables in place using the thumbscrews.

Reach through the rectangular opening and pull the ground strap up. You may need to wrap the ground strap through the round hole to take up some slack. Remove the wing nut from the stud located to the left of the rectangle opening. Slip the ground strap ring terminal over the ring lug and secure it in place with the wing nut.

Rectangular Opening   Detail of Joining Bracket

Top View

Ground Strap   Joining Bracket

Speaker Cable   DB25 Cable   DB09 Cable   120V Isolation Cable

Side View
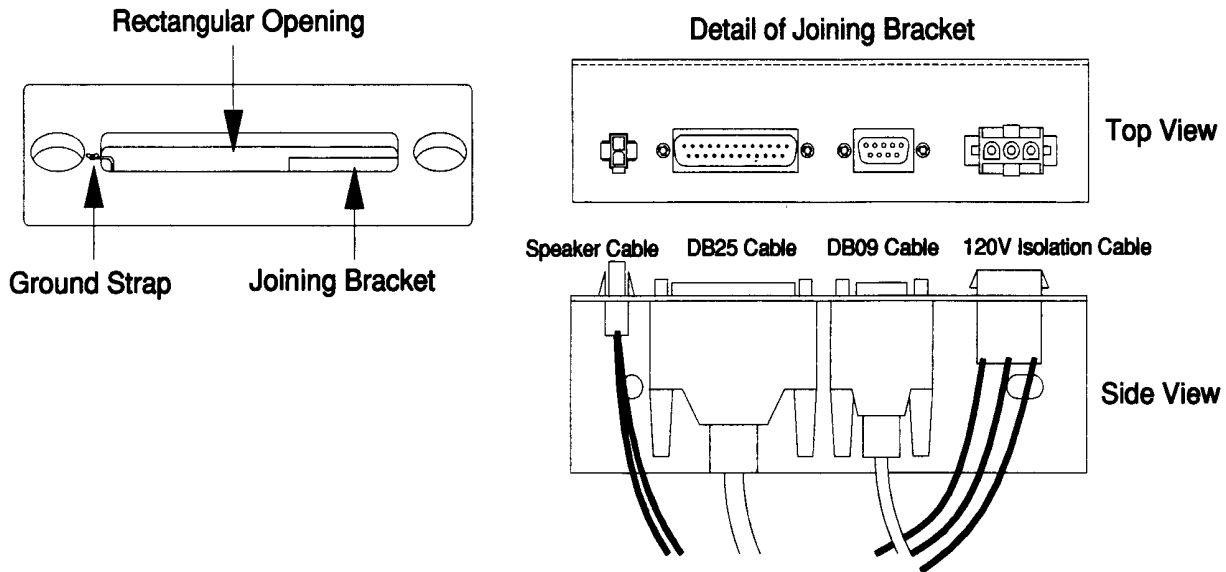
FIGURE 11

11. Replace and lock the backbox rear door. Replacing the screws is optional.

12. Lean the playfield against the cabinet front and plug the cables back into the rear bracket.

13. Carefully, lift the playfield from the front and tip the back of it onto the slides. Slide it back into the cabinet. Be sure that the cables at the back of the playfield are not kinked.

14. Rest the front of the playfield on the top of the cabinet as you did in Step 2. Open the coin door. Lower the playfield all the way into the cabinet.

15. Be sure the **required number** of balls is installed.

16. Replace the playfield glass. Be sure that the PINBALL 2000 logo is in the lower left corner. See Figure 12 below. Snap the front molding securely into place. Close and lock the coin door.

Playfield Glass

INSTALL GLASS THIS SIDE UP!   ☺   ⬇ COIN DOOR THIS END ⬇   ☺   INSTALL GLASS THIS SIDE UP!

FIGURE 12

1-6
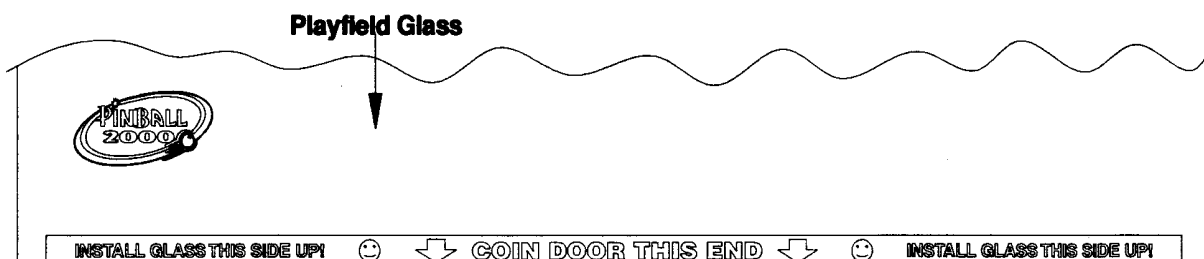
17. Plug the line cord into the game cabinet. Match the prongs on the plug with the holes in the receptacle, and push the line cord securely into place. See Figure 13.

Receptacle — Cabinet

Line Cord and Plug
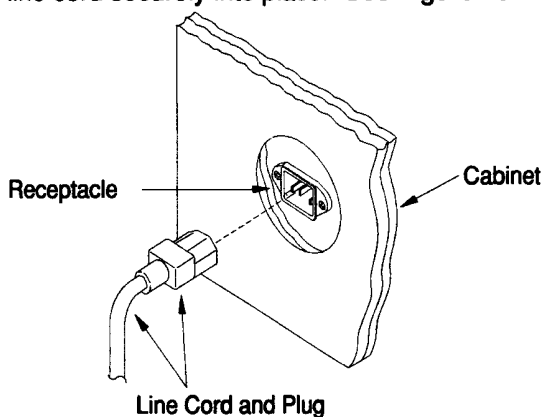
FIGURE 13

LEVEL THE GAME

18. Move the game to the desired location. Screw the leg levelers all the way into the legs. If the floor is level, the cabinet is designed to position the playfield at exactly the recommended 6-1/2 degree angle. This places the game in a FIXED position. If the floor is not level, continue to adjust the levelers to compensate (see Step 18 below). On carpeting, the game must be allowed to settle overnight. Check the level and pitch again the next day. See Figure 14.

Raise levelers
only to compensate
for uneven floors

Correct starting
position
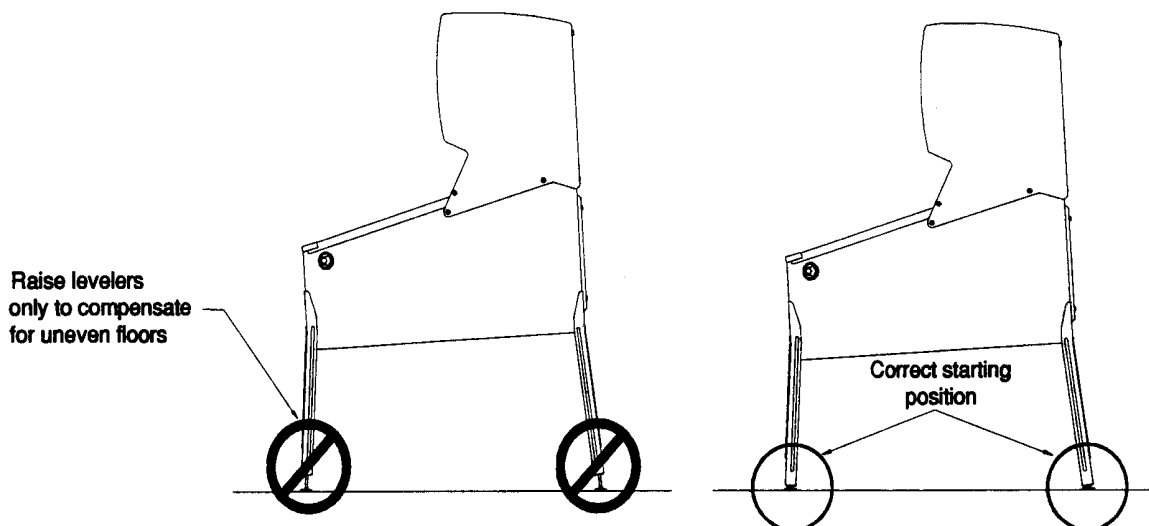
FIGURE 14

19. The level is located on the right shooter rail. The first line, (closest to the front of the game), on the level is approximately 6 degrees. Every line thereafter is approximately another 1/2 degree of pitch. The game is properly leveled when the NOSE of the bubble is between the first and second line on the level. See Figure 15.

6.5° Indicator

Bubble
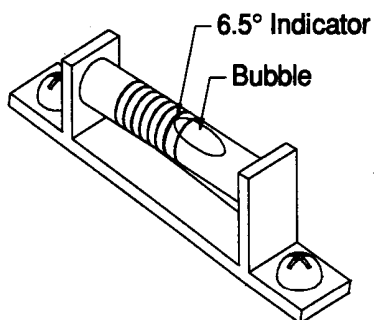
FIGURE 15

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. After completion of the desired playfield pitch angle setting, the operator should install the weight and adjust this tilt mechanism for proper operation. The unit is factory installed for a 6-1/2 degree angle. If an adjustment is necessary, loosen the screw at the bottom of the unit. Move the pointer, one groove at a time to the left or the right, depending on the degree desired. Hold the pointer in place and tighten screw.

POWER UP

20. If a padlock is desired, install the security bar as shown below in Figure 16.

Slotted Hasp Plate
01-14084.2

Hasp Staple Bracket
01-14086.1

Hasp Hinge Bracket
01-14085.1

FIGURE 16

⚠ 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. DO NOT cut off the ground pin.

21. With the coin door closed, plug the game into a properly grounded outlet and switch it on. In normal operation the game performs Start-up Tests. Once the Start-up tests have been successfully completed, the game enters the Attract mode.

22. IMPORTANT: Fill out and return the registration card.

RAISING THE PLAYFIELD

⚠ CAUTION

This game uses playfield support assemblies to raise and lower the playfield. Be sure the back of the playfield supports slide along the cabinet tracks until the feet hook into the loop at the end of the track.

Before Raising the Playfield:

Be sure there are no balls present in any of the ball-holding playfield devices (i.e. poppers). Raising the playfield with balls present in these locations may cause them to come loose and damage the playfield. Use the "Empty Balls Test" to remove all of the balls from these locations.

To Raise the Playfield:

1. Open the coin door. Remove the front molding and the playfield glass. Lift the playfield by the metal bracket under the front of the bottom arch. Rest it on the top of the cabinet, nesting the plastic hex button in the trough of the bracket.

2. Close the coin door. Grasp the playfield by the supports and pull it toward you along the track slides until it stops. Rotate the front of the playfield up and back toward the backbox.
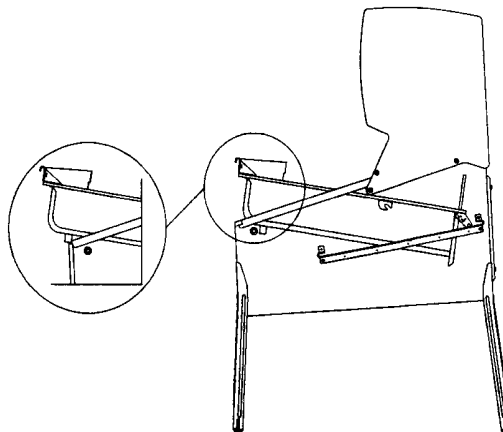
To Lower the Playfield

1. Rotate the front of the playfield down and push it back, away from you, along the track slides. Rest it on top of the cabinet. Open the coin door.

2. Grasp the playfield by the metal bracket under the front of the bottom arch and lower it back into the cabinet. Replace the playfield glass and the front molding. Close and lock the coin door.

Slide the Feet of the Playfield Along the Tracks.

Be Sure the Feet of the Playfield Hook into the Loop on the Tracks.
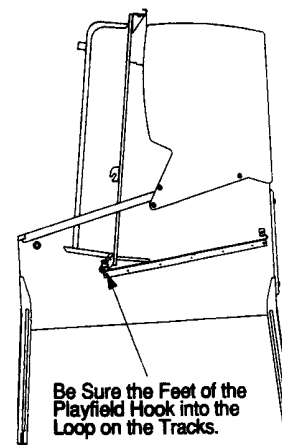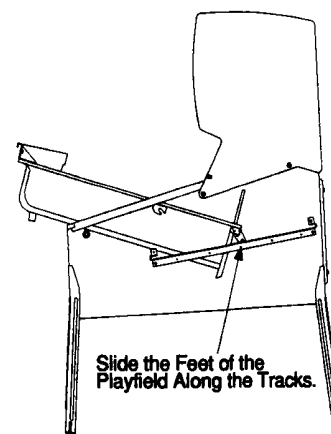
USING THE STAY ARM AND CHANGING FUSES

⚠ CAUTION

Before Raising the Playfield:
Be sure there are no balls present in any of the ball-holding playfield devices (i.e. poppers). Raising the playfield with balls present in these locations may cause them to come loose and damage the playfield. Use the "Empty Balls Test" to remove all of the balls from these locations.

To Use the Stay Arm:

1. Turn off power to the game. Open the coin door. Lift the front molding and slide the glass off of the cabinet. Lift the playfield by the metal bracket under the bottom arch. Rest it on the top of the cabinet.

2. Close the coin door. Lift the playfield high enough to enable you to unhook the rubber ring holding the stay arm down.

3. Slide the playfield forward until the feet lock into the notch on the slide.

4. Lift the stay arm and slide the round retainer into the 'U' shaped playfield holder bracket located on the right side of the playfield.

5. To release the stay arm, slightly raise the playfield and slide the retainer out of the playfield holder bracket.

   Note: Be sure to support the playfield once the stay arm has been removed.

To Change a Fuse:

1. Turn off power to the game. Raise the playfield and hold it in place with the stay arm.

2. Lift the Power Driver board cover.

3. The fuses are accessible. Use the proper extraction tool to remove fuses.

Playfield Holder Bracket

Feet

Notch

Stay Arm   Retainer

Lock Feet into Notch.

Lock the Stay Arm Retainer into the Playfield Holder Bracket.
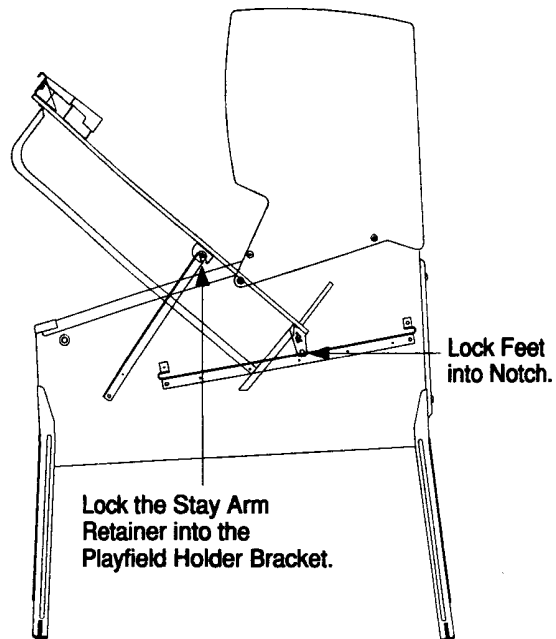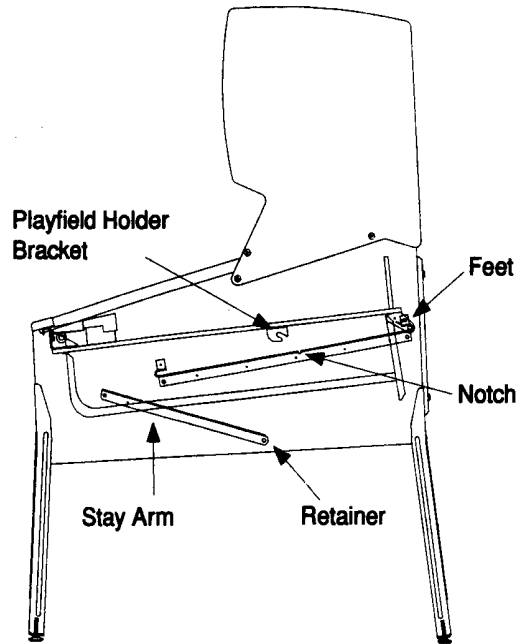
GAME CONTROL LOCATIONS

Cabinet Switches

The ON/OFF SWITCH is on the bottom of the cabinet on the middle of the right side.
The START BUTTON is a push-button 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.

Service Lock

The service lock allows the operator to gain access to the playfield without allowing access to the cash box. With the coin door closed, turn the key in the service lock and the front molding pops up. Remove the molding and slide the glass down and off of the cabinet. The operator can clean the playfield or remove a trapped ball without being able to lift the playfield and gain access to the cash box.

Coin Door Buttons

The operator controls all game adjustments, obtains bookkeeping information, and diagnoses problems, using only four push-button 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 games 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 the Adjustment menu to turn the sound down all the way.
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.
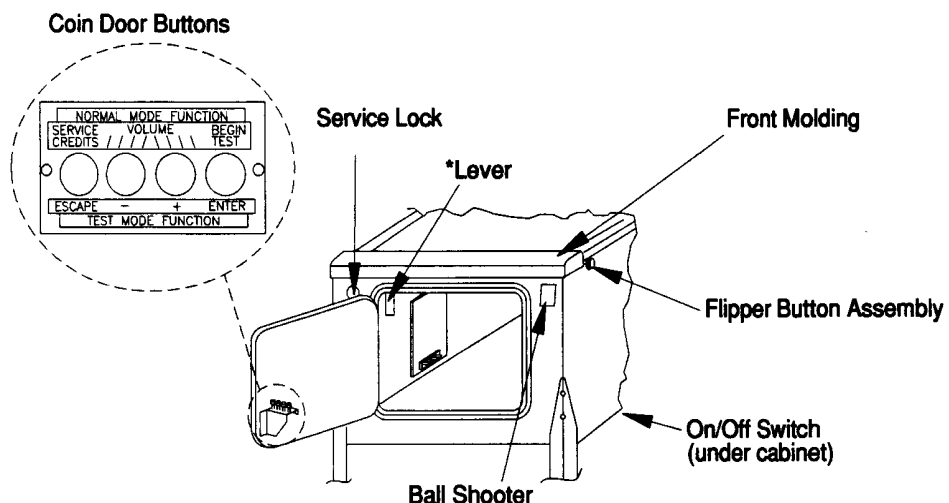
The START BUTTON is not shown on this drawing. It is located below the service lock.
*The LEVER is part of the LOCK BRACKET ASSEMBLY.
** To Reset the High Scores, press and hold the Begin Test button.

1-11

GAME OPERATION

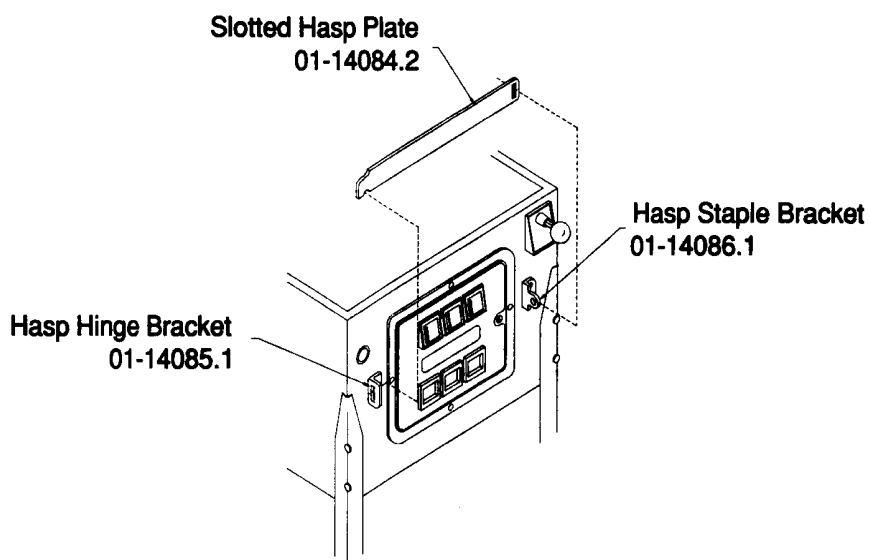## ⚠ CAUTION

After assembly and installation at its 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. The game performs Start-up Tests. A test pattern and 'PLEASE WAIT' appears on the screen. The screen changes and 'TESTING' appears on the screen. Once the Start-up tests have been successfully completed 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.*

ATTRACT MODE. During the Attract mode, the screen shows a series of messages informing the player of the recent highest scores.

CREDIT POSTING. Insert coin(s). The screen shows the number of credits purchased.

STARTING A GAME. Press the Start button. A ball is ejected into the shooter lane. Pull the Ball Shooter on the cabinet to send the ball onto the playfield and begin game play. 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 slam tilt switch inside the cabinet ends the current game and 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. An award may be given when the last two digits of any player's score match the random digits.

GAME-OVER MODE. The **Game-over** screen shows the high scores and the game proceeds to the Attract Mode.

SYSTEM MENU OPERATION

The System Menu allows you to choose from several menus, which in turn, lead to other menus to choose from. To access the System Menu, open the coin door and press the Enter button. The System Menu appears on the screen. Press either the Up or the Down buttons to move the cursor up or down the screen. Notice how the menu options are highlighted in order. A menu option must be highlighted for it to be selected. To open a System Menu item, (Diagnostics menu, Adjustments menu etc.), press the Enter button when that menu is highlighted. To return to the System Menu (from the Diagnostics menu, Adjustments menu, etc.) press the Escape button at any time. The following outline shows the System Menu and the next lower level of menus available from the System Menu.

SYSTEM MENU

ALL TESTS OK (or READ TEST REPORT)
DIAGNOSTICS
- Switch Test
- Lamp Tests
- Solenoid Test
- Audio Tests
- Video Tests
- Device Tests
- Fuse Check
- DIP Switches
- Checksum ROMs

ADJUSTMENTS
- System Adjustments
- Feature Adjustments
- Game Pricing
- Score Awards
- Extra Balls
- Match
- High Scores
- Audio Adjustments
- Clock/Format
- Communication

BOOKKEEPING
- Main Audits
- Earning Audits
- Standard Audits
- Feature Audits
- Histograms
- Timestamps
- Earnings Charts

UTILITIES
- System Information
- Show Shell Window
- Set Custom Message
- Set Location I.D.
- Update Game Code
- Set Clocks
- Install Presets
- Reset Menu

PRINTOUTS
- Print Audits
- Print Adjustments
- Print Earning Chart
- Print Fatal Errors
- Print Non-fatal Errors
- Print Everything

LANGUAGE
- English
- Deutsch
- Francais
- Espanol

RESET MACHINE

ALL TESTS OK or READ TEST REPORT

If there are no known errors, this menu reads 'ALL TESTS OK'. However, if the system detects an error, 'READ TEST REPORT' shows on the screen.

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select Read Test Report. Press the Enter button to start the function. The phrase 'Testing Please Wait' appears as the game performs a self-test. The screen changes to show the test results. Press the Escape button to return to the System menu.

```
SYSTEM MENU
XX/XX/XXXX            X:XX p.m.


Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```

```
READ TEST REPORT
XX/XX/XXXX            X:XX p.m.




          TESTING, PLEASE WAIT...
```

```
READ TEST REPORT
XX/XX/XXXX            X:XX p.m.




          3 LAMP PROBLEMS DETECTED
```
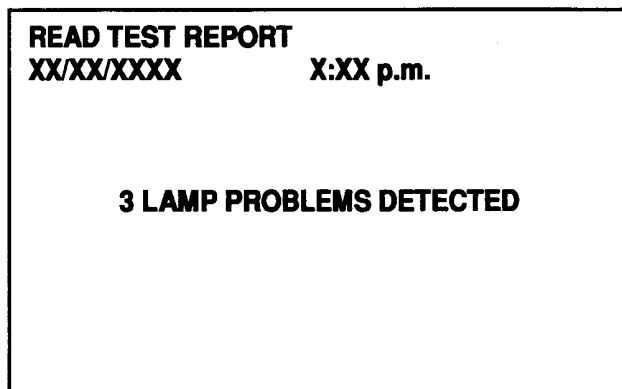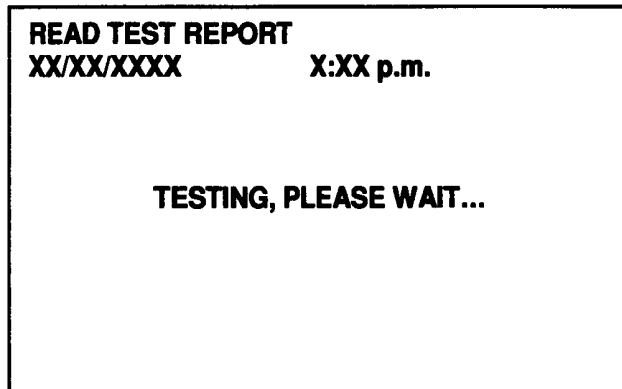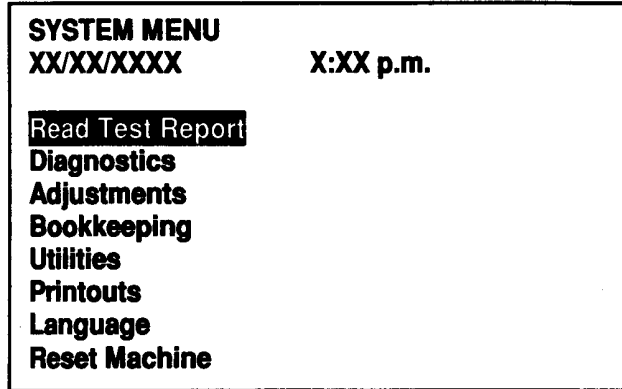
DIAGNOSTICS

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Diagnostic menu. Press the Enter button to open the menu. Once the Diagnostic menu is open, use the Up and Down buttons to move the cursor and select a test. Some tests, such as the Lamp test, lead to several sub-tests. In which case, use the Up and Down buttons to move the cursor and select a sub-test. Press the Enter button to begin the test.

Press the Escape button to return to the Diagnostic menu. Press the Escape button a second time to return to the System Menu.

In order to operate the tests that use the +50V or +20V circuits, pull the interlock switch button out. The interlock switch is located on a bracket in the coin door opening.

```
SYSTEM MENU
XX/XX/XXXX          X:XX p.m.


Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```

```
DIAGNOSTIC MENU
XX/XX/XXXX          X:XX p.m.



Switch Test
Lamp Tests
Solenoid Test
Audio Tests
Video Tests
Device Tests
Fuse Check
DIP Switches
Checksum ROMs
```

SWITCH TEST

Press each of the switches one at a time. The name and number of the switch is displayed, and the location in the matrix and on the playfield is lit up on the screen. 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. Press the Start button for additional options.

LAMP TESTS

The Lamp test leads to a menu of tests for the lamp circuits.

Single Lamp Test

The Single Lamp test checks each lamp circuit individually. Press the Up or Down buttons to scroll through this test. A lamp should light for each name and number that is displayed. Any other results indicate the system has detected a problem.

LAMP TESTS CONTINUED...
Lamp Row/Column Test
This test allows entire individual rows and columns in the lamp matrix to be operated.

Press the Up and Down buttons to cycles through the different rows and columns. The rows in Matrix A light first, followed by the columns. Next, the rows in Matrix B light followed by the columns.

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

Lamp and Flasher Test
This test flashes all the controlled lamps and the solenoid flashers at the same time. Every bulb should light. Any other results indicate the system has detected a problem.

Ordered Lamp Test
This test lights each lamp in order. Every lamp should light in its turn. Any other results indicate the system has detected a problem.

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 than one solenoid pulses, a solenoid comes on and stays on, or no solenoids pulse during the Repeat and Run modes.

Repeat
The Repeat mode activates an individual solenoid. Press the Enter button to start this test. The name of the first solenoid shows in the display and the corresponding coil pulses. Press the Up or Down buttons to cycle through the solenoids, one at a time. The same solenoid pulses until you press the Up or Down buttons to advance to the next or previous solenoid. To advance to the Stop mode, press the Enter button.

Stop
The Stop mode halts the Solenoid test. No solenoids should be active. To advance to the Run mode, press the Enter button.

Run
The Run mode loops through the solenoids automatically. The screen shows the name and number of the solenoid currently being pulsed. To return to the Repeat mode, press the Enter button.

AUDIO TESTS
The Audio Tests lead to a menu of tests for the audio circuits. Note that the only way to end an audio test is to use the Stop Audio Test feature.

Left Channel
This test causes music to be heard through the left side speakers.

Center Channel
This test causes music to be heard through the left and right speakers simultaneously.

Right Channel
This test causes music to be heard through the right side speakers.

Test Knocker
This test makes the knocker sound.

AUDIO TESTS CONTINUED...
Stop Audio Test
Selecting this item stops the music started from the above tests.

VIDEO TESTS
The Video Tests lead to a menu of tests for the video circuits.

Color Bars
The Color Bars test fills the screen with several shades of colors to help with red, green, and blue color level adjustments. Each color should appear sharp and clear.

Convergence Grid
The Convergence Grid test fills the screen with a series of lines and dots. The imagines should be clear and the dots should be round.

RGB Tests
The RGB tests fill the screen with red, green, or blue. Press the Up or Down buttons to change the colors.

Setup Tests
The Setup test allows for all aspects of the monitor picture adjustment at one time.

Alignment Tests
This test allows for picture object alignment.

DEVICE TESTS
The Device Tests lead to a menu of test for specific mechanisms on the playfield.

Empty Balls
This function kicks out all the balls loaded in troughs, lockups, poppers, and kick-outs until no balls remain in those locations.

As the trough kicks out balls, they will stack up in the shooter lane, which may require manual clearing in order to allow further balls to be kicked out.

FUSE CHECK
This test shows the status – good or blown – of the fuses on the Power Driver board. A layout of the fuses on the Power Driver board is displayed on the screen. The good fuses are shown in green, the blown fuses are shown in red.

DIP SWITCH
This test shows the current DIP switch setting, as well as the available DIP switch setting for various countries. Press the Up or Down buttons to cycle through the countries that have DIP switch settings available.

CHECKSUM ROMS
This test automatically checks the checksums for the ROMs. Press the Enter button and wait until all the ROMs have been checked.
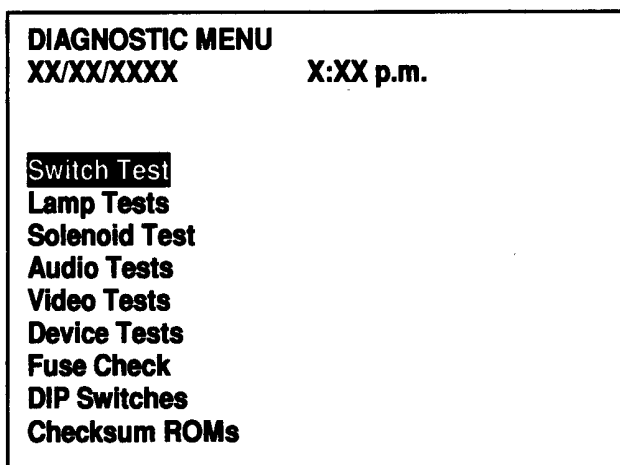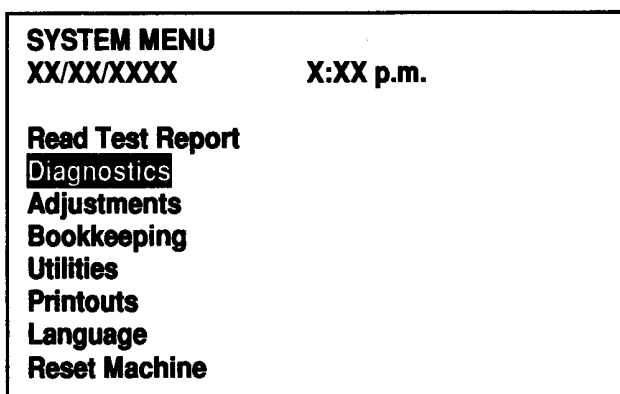
Note: This can take a while to complete.

ADJUSTMENTS

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Adjustment menu. Press the Enter button to open the menu when it is selected. Once the Adjustment menu is open, use the Up and Down buttons to move the cursor and select a sub-menu. Press the Enter button to enable the sub-menu and view the next level of functions.

Use the Up and Down buttons to move the cursor and select a sub-menu function. Press the Enter button to enable that function. Use the Up and Down buttons to change the value. Press the Enter button to lock in the new value, or press the Escape button to retain the original value and return to the sub-menu. The setting values are color coded: Blue = Factory Setting; Red = Changed Value; Green (during adjustment) = Default Factory Setting

Press the Escape button to return to the sub-menu. Press the Escape button a second time to return to the Adjustment menu and a third time to return to the System Menu.

```
SYSTEM MENU
XX/XX/XXXX              X:XX p.m.

Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```

```
ADJUSTMENT MENU
XX/XX/XXXX              X:XX p.m.


System Adjustments
Feature Adjustment
Game Pricing
Score Awards
Extra Balls
Match
High Scores
Audio Adjustments
Clock/Format
Communication
```
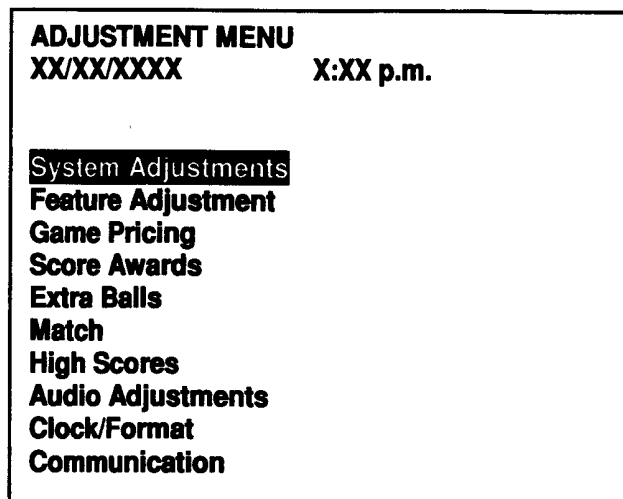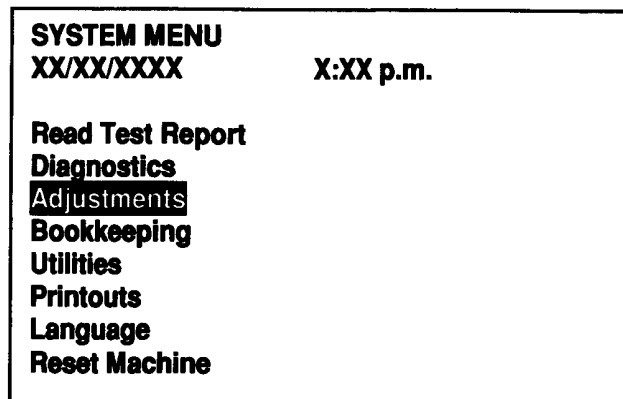
SYSTEM ADJUSTMENTS

Power Saver

The Power Saver feature helps to prolong the life of each lamp by reducing the power of all the lamps when the game is idle. This adjustment leads to sub-menus to choose from.

Lamp Power Saver

This adjusts the number of minutes of idle time (no game being played) before the Lamp Power Saver mode is enabled.
Settings: Off, 1 to 60 minutes
Factory Setting: 15

SYSTEM ADJUSTMENTS CONTINUED...

Power Saver Level

This adjusts the level of power savings when the Power Saver mode is enable (i.e. the game has been idle for the 'Lamp Power Saver' minutes). The higher the number, the dimmer the lamps will be when saving power.
Settings: 5-25
Factory Setting: 10

Lamp Intensity Level

This adjusts the level of power saving when the Power Saver mode is not active. The lower the number, the brighter the lamp will be during game play.
Settings: 0-15
Factory Setting: 5

Balls Per Game

A "game" is defined by specifying the number of balls to be played.
Settings: 1 to 10
Factory Setting: 3

Family Mode

This eliminates any video or speech that may be offensive to young or sensitive players.
Settings: Yes, No
Factory Setting: No

Player-select Tournament

The player can activate tournament mode before the start of a game. Tournament mode will be activated only for one game.
Settings: Yes, No
Factory Setting: No

Game Restart

When you press the Start button during or after the 2nd ball, the game in progress ends and a new game begins. This adjustment determines how to handle this.
Settings: Never – Don't 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 the game in progress.
           Instantly - Restart as soon as the Start button is pressed. When you press the Start button during game over, or during the 1st ball (to add a player), it is always handled instantly.
Factory Setting: Slow

Tournament Play

Equalize random game features and global score values during multi-player games.
Settings: Yes or No
Factory Default: No

Maximum Tickets per Player

The number of tickets each player can earn.
Settings: 00 to 100.
Factory Default: 25

Special Award

The award a player receives when he/she earns a Special.
Settings: Credit, Ticket, Extra Ball, Points
Factory Setting: Credit

SYSTEM ADJUSTMENTS CONTINUED...

Slamtilt Penalty

Whether or not the player is penalized for causing a Slamtilt. Normally, Slamtilt only locks out coins for a short period of time. If this adjustment is set to yes, then a credit is removed, (if one is present).
Settings: Yes or No
Factory Setting: No

Tilt Warning

The number of actuation's of the plumb bob that can occur before the game is "tilted".
Settings: 1 to 10
Factory Setting: 1

Allow Chase Ball

The Chase Ball feature will attempt to keep a game operational in the event that a ball becomes stuck on the playfield. After a number of unsuccessful ball searches, the game software will end the player's current ball, give a bonus award, then serve a new ball (or end the game if that was the last ball in the player's game). This ball 'chases' the stuck ball on the playfield and will hopefully knock it loose. Setting this adjustment to NO will revert to the previous behavior of searching endlessly until the stuck ball becomes freed, or the machine's power is turned off and back on.
Settings: Yes or No
Factory Setting: Yes

Midas Enabled

This enables the second serial port to work with the Midas Security Unit.
Settings: Yes or No
Factory Setting: No

FEATURE ADJUSTMENTS

Multiball Rematch Time (seconds)

This adjustment sets the time (in seconds) that the player can shoot for multiball rematch. Rematch is available after main multiball if the player did not score enough jackpots to have fun.
Settings: 10 to 30 seconds
Factory Setting: 20 seconds

Hits to Light Locks

This adjustment sets the number of times the player must shoot the lock saucers (Watto's Junk Shop, or Mos Espa Market) to light lock for the first multiball. After each multiball is played, the number of hits to light lock is increased by 1, to a maximum of 3.
Settings: 0 to 3
Factory Setting: 0

Targets Help Start Scene

The targets on either side of the shield count as hits on the shield while the player is trying to start a scene. This feature is only available until a certain number of scenes have been played. This adjustment sets the number of scenes that the targets will help start. If set to three, then the player can hit the targets to start the first three scenes only.
Settings: 0 to 10
Factory Setting: 3

Note: If the shield opto is detected as being bad, the targets will ALWAYS help start the scenes, regardless of this adjustment.

FEATURE ADJUSTMENTS CONTINUED...

Destroyer Droid Scene Speed

This sets the speed that the roving gun moves during the Destroyer Droid scene.
Settings: Fast, Medium, Slow
Factory Setting: Medium

Hover Tank Scene Speed

This sets the speed that the roving catapult moves during the Hover Tank scene.
Settings: Fast, Medium, Slow
Factory Setting: Medium

Musical Chairs Silence (seconds)

This sets the time (in seconds) that the music is stopped during the musical chairs scene.
Settings: 10 to 30
Factory Setting: 20

Probe Droid Scene Speed

This sets the speed that the roving gun moves during the Probe Droid scene.
Settings: Fast, Medium, Slow
Factory Setting: Medium

Side Targets Difficulty

This sets the difficulty of the side targets.
Settings: Hard, Medium, Easy
Factory Setting: Medium

Easy - Hitting any target adds a light.
Medium – Hitting a target turns that light on ONLY. If two lights are on, hitting any target
            will complete the bank.
Hard – Hitting a target turns that light on ONLY.

Skill Shots for Awards

This selects the number of skill shots that the players need until they get an award (JEDI letter).
Settings: 0 to 10
Factory Setting: 3

C3P0 Game Start Spot

This sets the number of lights that are lit on C3P0 (the left loop) at the start of the game.
Settings: 0 to 7
Factory Setting: 4

C3P0 Memory

This can disable the memory feature on C3P0 (the left loop) causing it to reset between each ball. Note that C3P0 will NEVER reset between balls until he has been completed at least once.
Settings: Yes, No
Factory Setting: Yes (Do NOT reset between balls.)

Lasers at Game Start

This sets the number of lasers the player has at game start.
Settings: 0 to 20
Factory Setting: 10

Maximum Laser Count

This sets the maximum number of lasers a player can have during a game.
Settings: 30 to 70
Factory Setting: 50

FEATURE ADJUSTMENTS CONTINUED...

GUNGAN Memory

This can enable the memory feature on the GUNGAN spellout (in the jets) causing it to NOT reset between balls.

Settings: Yes, No

Factory Setting: No (Reset between balls.)

Attract Mode Sounds

When set to yes, the flipper and Start buttons will make sounds when pressed in the Attract mode. If this adjustment is set to no, then the buttons will never make sounds.

Settings: Yes or No

Factory Setting: Yes

Note: Even when set to yes, after a few presses, these buttons will make no sounds for about two minutes.

Attract Mode Music

When set to yes, this game will briefly play music periodically in the Attract mode.

Settings: Yes or No

Factory Setting: No

Neon Warm-up Time (minutes)

Some tubes have a gas that's an argon/mercury mixture. When it is turned on, the mercury gives off a lot of UV, which is transformed into visible light by the phosphorus coating on the inside of the tube.

If the tube is left off for a long time, the mercury cools; this means that when the tube is next turned on, there will be some dull spots, as the mercury is not giving as much UV.

Note: The dull spots do not affect the operation or safety of the neon tube or the game in any way. It is purely cosmetic.

This adjustment sets the time (in minutes) that the tube will be turned on in the Attract mode so that it stays warm and looking good.

Settings: 0 to 120 minutes (2 hours)

Factory Setting: 5 minutes

Neon Run Time (minutes)

Some tubes have a gas that's an argon/mercury mixture. When it is turned on, the mercury gives off a lot of UV, which is transformed into visible light by the phosphorus coating on the inside of the tube.

If the tube is left off for a long time, the mercury cools; this means that when the tube is next turned on, there will be some dull spots, as the mercury is not giving off as much UV. The tube will be turned on in the Attract mode so that it stays warm and looking good.

Note: The dull spots do not affect the operation or safety of the neon tube or the game in any way. It is purely cosmetic.

This adjustment sets the run time (in minutes). The run time is the time between warm-ups. During this time the neon tube will be cycled with the Attract mode lamp effects.

Settings: 5 to 300

Factory Setting: 60 (1 hour)

FEATURE ADJUSTMENTS CONTINUED...

Disable Left Drop Target

This can be set to disable the left drop target device. If this is set to yes, the target will not be touched. The game will use the ramp enter opto to compensate for hits on the target.
Settings: Yes or No
Factory Setting: No

Disable Right Drop Target

This can be set to disable the right drop target device. If this is set to yes, the target will not be touched. The game will use the ramp enter opto to compensate for hits on the target.
Settings: Yes or No
Factory Setting: No

Disable Magnet

This can be set to disable the magnet device. If this is set to yes, the magnet will not be pulsed.
Settings: Yes or No
Factory Setting: No

Disable Shield

This can be set to disable the shield device. If this is set to yes, the shield will not be touched. The game will use the shield targets to compensate for hits on the shield.
Settings: Yes or No
Factory Setting: No

Note: If the shield is disabled it will remain down, which means that no balls will reach the shield popper. This causes the game to report the popper opto as bad.

GAME PRICING

View Game Pricing

This adjustment allows you to view the current game pricing.

Select Game Pricing

This adjustment allows you to set the price a player pays for a game from a list of standard prices. Use the Up and Down buttons to move the cursor and select a country. Press the Enter button to view the available prices for that country. Use the Up and Down buttons to move the cursor and select a price and press the Enter button to lock in the new price.

Advance Settings

In the event that the price you wish to charge a player for a game is not available from the standard prices in the Select Game Pricing feature, the Advance Settings allows you to create custom pricing. This allows you to set the credits needed for a game.

Currency Settings

This adjustment allows you to set which currency the earnings are reported in. Use the Up and Down buttons to move the cursor and select a currency. Press the Enter button to lock in that currency.

Pricing Editor

In the event that the price you wish to charge a player for a game is not available from the standard prices in the Select Game Pricing feature, the Advance Settings allows you to create custom pricing. This allows you to set the credits needed for a game. This allows you to set the credits per coin.

GAME PRICING CONTINUED...

Edit Pricing Card Text

This allows you to change the text that is displayed as the pricing card.

Free Play

This adjustment determines whether or not the player can play the game for free.
Settings: Yes or No
Factory Setting: No

Maximum Credits

This is the maximum amount of credits that can be bought at one time.
Settings: 5 to 99
Factory Setting: 10

Show, 'Insert Coins'

This adjustment can stop the game from displaying the 'Insert Coin' message in Attract Mode and during a game. Use this if the game is setup for a payment method Not available in the following adjustments. ·
Settings: Yes, No
Factory Setting: Yes

Payment Method

This selects the payment method used to get credits on the game. This will be displayed in the Attract Mode while the game is waiting for, or accepting credits.
Settings: Coin, Token, Card, Bill
Factory Setting: Coin

Coin – Attract Mode will display' Insert Coins'
Token – Attract Mode will display' Insert Tokens'
Card – Attract Mode will display 'Swipe Card'
Bill – Attract Mode will display 'Insert Bill'

Note: If adjustments 'Show Insert Coin's' is set to No, then this adjustment will have NO effect, and no message will be displayed in the Attract mode.

SCORE AWARDS

This adjustment leads to a menu of adjustments for awards given at score levels. If an item shows up on the screen as dark blue, then it can be changed. If an item shows up on the screen as gray, then it cannot be changed.

Up to four (4) score award levels can be enabled. Each score award level can be set to award one of Extra Ball, Ticket, or Audit. The level two (2) award can additionally be set to award a Credit if the level one (1) award is set to award an Extra Ball. If the level two (2) award is set to Credit, then the Replay menu is enabled.

The score at which each level's award is given can be set to a score in the range of 1,000,000 (or the previous score level plus 500,000) to the next score level minus 500,000 (or 10,000,000,000). This is designed to enforce an increasing set of score awards levels.

Replay

This is a sub-menu of the 'Score Awards' adjustment menu. This menu is only available if the 'Score Levels' setting is 2 - 4, the 'Score Award 1' setting is 'EXTRA BALL', and the 'Score Award 2' setting is 'CREDIT'.

SCORE AWARDS CONTINUED...

Replay Mode

This setting controls the replay (CREDIT Score Award) mode of operation.
Settings: Auto or Fixed
Factory Setting: Auto

AUTO - This setting causes the effective 'Score Level 2' setting to be automatically adjusted based on the actual score levels achieved by players over time, in order to award a target percentage of CREDITS.
FIXED - This setting causes the actual 'Score Level 2' setting to be the score at which a CREDIT is awarded.

Replay Percent

If 'Replay Mode' is set to 'Auto', then this sets the target percentage of games that award a CREDIT.
Settings: 1 to 50
Factory Setting: 5

Replay Score

If 'Replay Mode' is set to 'Auto', then this displays the current effective 'Score Level 2' score necessary for the player to be awarded a CREDIT. This adjustment is not settable.

Replay Max. Bucket

If 'Replay Mode' is set to 'Auto', then this setting controls the highest score considered by the automatic percentaging system in order to determine the 'Replay Score'.

Replay Boost

If 'Replay Mode' is set to 'Auto', then this displays the current score boost value used by the automatic percentaging system in order to determine the 'Replay Score'. This adjustment is not settable.

If 'Replay Mode' is set to 'Fixed', then this sets the value by which the 'Score Level 2' is increased in order to minimize the number of replays awarded to the same player.

Score Levels

This sets the total number of score award levels enabled.
Settings: Off, 1 to 4
Factory Setting: 2

Score Level 1

This is the first score award level. If 'Score Levels' is set to 1 - 4, this is the score that the player must achieve in order to earn the 'Score Award 1' setting.
Settings: 1,000,000 to 10,000,000,000 (or 'Score Level 2' minus 500,000)
Factory Setting: 50,000,000

Score Level 2

This is the second score award level. If 'Score Levels' is set to 2 - 4, this is the score that the player must achieve in order to earn the 'Score Award 2' setting.
Settings: 1,500,000 (or 'Score Level 1' plus 500,000) to 10,000,000,000 (or 'Score Level 3' minus 500,000)
Factory Setting: 200,000,000

SCORE AWARDS CONTINUED...

Score Level 3

This is the third score award level. If 'Score Levels' is set to 3 - 4, this is the score that the player must achieve in order to earn the 'Score Award 3' setting.
Settings: 2,000,000 (or 'Score Level 2' plus 500,000) to 10,000,000,000 (or 'Score Level 4' minus 500,000)
Factory Setting 500,000,000

Score Level 4

This is the last score award level. If 'Score Levels' is set to 4, this is the score that the player must achieve in order to earn the 'Score Award 4' setting.
Settings: 2,500,000 (or 'Score Level 3' plus 500,000) to 10,000,000,000
Factory Setting: 700,000,000

Score Award 1

This is the first score award. If 'Score Levels' is set to 1 - 4, this is the award that the player will receive when the 'Score Level 1' score is achieved.
Settings: Extra Ball, Ticket, Audit
Factory Setting: Extra Ball

EXTRA BALL - an additional ball is added to this player's number of balls per game for this award.
TICKET - if a ticket dispenser is attached to the game, then a ticket will be dispensed for this award.
AUDIT - the 'Bookkeeping' audit 'Tickets Awarded' will be chalked for this award.

Score Award 2

This is the second score award. If 'Score Levels' is set to 2 - 4, this is the award that the player will receive when the 'Score Level 2' score is achieved.
Settings: Credit, Extra Ball, Ticket, Audit
Factory Setting: Extra Ball
Note that CREDIT is only available at this level and when 'Score Award 1' is set to 'EXTRA BALL', this setting awards a CREDIT (replay) for this award.

Score Award 3

This is the third score award. If 'Score Levels' is set to 3 - 4, this is the award that the player will receive when the 'Score Level 3' score is achieved.
Settings: Extra Ball, Ticket, Audit
Factory Setting: Extra Ball

Score Award 4

This is the last score award. If 'Score Levels' is set to 4, this is the award that the player will receive when the 'Score Level 4' score is achieved.
Settings: Extra Ball, Ticket, Audit
Factory Setting: Extra Ball

EXTRA BALL

This adjustment leads to a menu of adjustments relating to Extra Ball awards.

Maximum Extra Ball Count

This sets the total number of extra balls that a player can accumulate per game.
Settings: 0 to 10
Factory Setting: 4

EXTRA BALL CONTINUED...

Maximum Extra B.I.P.

This sets the total number of extra balls that a player can accumulate per Ball in Play. If set to off, then no maximum is enforced.
Setting: Off, 1 to 10
Factory Setting: Off

Extra Ball Knock

This controls whether the knocker is sounded when an extra ball is awarded.
Settings: Yes, No
Factory Setting: Yes

Extra Ball Ticket

This controls whether a ticket is awarded to the player earned an extra ball.
Settings: Yes, No
Factory Setting: No

MATCH

This adjustment lead to a menu of adjustments relating to the award of a credit (or ticket) at the end of each game, based on chance and settable target percentage.

Match Feature

This controls whether the Match feature is enabled (or not) and if enabled, the target percentage.
Settings: Off, 1 to 50
Factory Setting: 5

Match Award

This sets the award that the player will receive in the event of a match at the end of a game.
Settings: Credit, Ticket
Factory Setting: Credit

HIGH SCORES

Jedi Battle Tables

This adjustment can totally disable the Jedi Battle tables. If this is set to No, then the player will not be asked to enter initials for playing the Jedi Multiballs, and the tables will NOT be displayed in the Attract Mode.
Settings: Yes, No
Factory Setting: Yes

Jedi Battles Tables Award

This selects the type of award that can be given when the player qualifies for one of the Jedi Battles tables.
Settings: None, Credit, Ticket
Factory Setting: None

Jedi Battle Table Credits

This selects the number of awards (as set by the 'Jedi Battle Tables Award' adjustment) given out for qualifying for the Jedi Battle tables.
Settings: 0 to 10
Factory Setting: 1

HIGH SCORES CONTINUED...

Ramp Combo Champion

This adjustment can totally disable the Ramp Combo Champion. If this is set to No, then the player will not be asked to enter initials for Ramp Combo Champion, and the champion will NOT be displayed in the Attract Mode.
Settings: Yes, No
Factory Setting: Yes

Ramp Combo Champion Award

This selects the type of award that can be given when the player qualifies for one of the Ramp Combo Champion.
Settings: None, Credit, Ticket
Factory Setting: None

Ramp Combo Champion Credits

This selects the number of awards (as set by the 'Ramp Combo Champion Award' adjustment) given out for qualifying for the Ramp Combo Champion.
Settings: 0 to 10
Factory Setting: 1

Ramp Combo Champion Default
This sets the default Ramp Combo Champion.
Settings: 3 to 20
Factory Setting: 6

Multiple Initials/Players

This determines if a player has to enter initials multiple times for each High Score type earned.
Settings: Yes or No
Factory Setting: No

Highest Scores

The game maintains a record of the four highest scores achieved to date.
Settings: Yes or No
Factory Setting: Yes

High Score Award

This is the award given for achieving the High Score.
Settings: Credit or Ticket.
Factory Setting: None

Champion Credit

The number of credits or tickets awarded for a Grand Champion Score.
Settings: 0 to 10
Factory Setting: 1

H.S.T.D. 1 Credits
H.S.T.D. 2 Credits
H.S.T.D. 3 Credits
H.S.T.D. 4 Credits

The number of credits or tickets awarded whenever a player exceeds the four highest scores.
Settings: 0 to 10
Factory Setting: 1

HIGH SCORES CONTINUED...

H.S.T.D. Reset Every

The number of games to be played before an automatic reset of the displayed Highest Score occurs. The operator selects the values provided at reset in the Back-up High Scores.

Settings: OFF (Never Reset), 200 to 20,000.
Factory Setting: 2000 Games

Default Champion

The Back-up Grand Champion Score.
Settings: 500,000 to 1,000,000,000
Factory Setting: 120,000,000

Default H.S.T.D. 1
Default H.S.T.D. 2
Default H.S.T.D. 3
Default H.S.T.D. 4

The first through fourth Default High Score values. The game automatically restores this value when the "High Score Reset Every" value is reached.

Settings: 500,000 to 1,000,000,000
Factory Setting: Default H.S.T.D. 1 = 100,000,000
Default H.S.T.D. 2 = 95,000,000
Default H.S.T.D. 3 = 90,000,000
Default H.S.T.D. 4 = 85,000,000

AUDIO ADJUSTMENTS

This adjustment leads to a menu of adjustments relating to the audio system.

Current Volume

This sets the audio volume level.
Settings: 0 to 31
Factory Setting: 12

Minimum Volume Override

This controls whether the audio volume level can be adjusted below a minimum threshold, including off.
Settings: Yes or No
Factory Setting: No

Volume Interlock

This controls whether a flipper button needs to be pressed in order to allow the audio volume level to be changed from the diagnostic buttons. The purpose of this adjustment is to avoid inadvertent volume level changes.
Settings: Yes or No
Factory Setting: No

CLOCK/FORMAT

This adjustment leads to a menu of adjustments for the Clock feature.

24 Hour
Euro Score Format

COMMUNICATIONS

There are no Communications adjustments available at this time.

BOOKKEEPING

Audits Cannot Be Set, They Can Only Be Cleared.

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Bookkeeping menu. Press the Enter button to open the menu when it is selected. Once the Bookkeeping menu is open, use the Up and Down buttons to move the cursor and select a sub-menu. Press the Enter button to enable the sub-menu and view the next level of functions.

Use the Up and Down buttons to move the cursor and select a sub-menu function. Press the Enter button to enable that function. Use the Up and Down buttons to reset the value to zero. Press the Enter button to lock in the zero value, or press the Escape button to retain the original value and return to the sub-menu.

Press the Escape button to return to the sub-menu. Press the Escape button a second time to return to the Bookkeeping menu and a third time to return to the System Menu.

```
SYSTEM MENU
XX/XX/XX              X:XX p.m.


Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```

```
BOOKKEEPING MENU
XX/XX/XX              X:XX p.m.



Main Audits
Earnings Audits
Standard Audits
Feature Audits
Histograms
Timestamps
Earnings Charts
```

MAIN AUDITS

Total Plays	0	
Total Free Plays	0	0%
Total Score Awards	0	0%
Extra Balls	0	0%
Average Ball Time	0 sec	
Average Game Time	0 min	
Special Awards	0	0%
Total Earnings	$0.00	
Recent Earnings	$0.00	

EARNING AUDITS

Total Earnings	$0.00		Recent Slot 6	0
Recent Earnings	$0.00		Recent Slot 7	0
Recent Paid Credits	0		Recent Slot 8	0
Total Paid Credits	0		Total Slot 1	0
Recent Service Credits	0		Total Slot 2	0
Total Service Credits	0		Total Slot 3	0
Recent Slot 1	0		Total Slot 4	0
Recent Slot 2	0		Total Slot 5	0
Recent Slot 3	0		Total Slot 6	0
Recent Slot 4	0		Total Slot 7	0
Recent Slot 5	0		Total Slot 8	0

STANDARD AUDITS

Games Started	0		Average Game Time	0.00	min
Total Plays	0		Forced Game Overs	0	
Total Free Plays	0	0%	Game Tilts	0	
Replay Credits	0	0%	Slam Tilts	0	
Special Credits	0	0%	Plumb Bob Hits	0	
Match Credits	0	0%	Ball Roll Tilts	0	
H.S.T.D. Credits	0	0%	Special Awards	0	0%
Total Score Awards	0	0%	Left Drains	0	0%
Score 1 Awards	0	0%	Right Drains	0	0%
Score 2 Awards	0	0%	1 Player Games	0	
Score 3 Awards	0	0%	2 Player Games	0	
Score 4 Awards	0	0%	3 Player Games	0	
Match Awards	0	0%	4 Player Games	0	
Balls Played	0		Ball Searches	0	
Extra Balls	0	0%	Ball Searches (5)	0	
Tickets Awarded	0	0%	Chase Balls	0	
Average Ball Time	0.00	sec	H.S.T.D. Reset Count	0	

FEATURE AUDITS

Total Multiballs	0	0%	Fashion Scene Started	0	0%
Main Multiball Start	0	0%	Fashion Scene Finished	0	0%
Main Multiball Rematch	0	0%	Question Mark Started	0	0%
Main Multiball Jackpots	0	0%	Question Mark Finished	0	0%
Main M/B Super Jackpots	0	0%	R2D2 Scene Started	0	0%
Jedi Multiball Lose	0	0%	R2D2 Scene Finished	0	0%
Jedi Multiball Start	0	0%	Sub Escape Scene Start	0	0%
Jedi Multiball Win	0	0%	Sub Escape Scene Won	0	0%
Scenes Started	0	0%	Sub Escape Scene Lost	0	0%
B. Droid Scene Started	0	0%	Watto's Chance Started	0	0%
B. Droid Scene Finished	0	0%	Watto's Chance Finished	0	0%
Fed. Fight Scene Started	0	0%	Jedi Letters	0	0%
Fed. Fight Scene Finished	0	0%	Jedi Complete	0	0%
Hanger Escape Started	0	0%	Skill Shots	0	0%
Hanger Escape Finished	0	0%	Skill Shots Awards	0	0%
Hover Tank Scene Start	0	0%	C3PO Advance	0	0%
Hover Tank Scene Finish	0	0%	C3PO Complete	0	0%
Jar Jar Juggle Started	0	0%	Left Targets Complete	0	0%
Jar Jar Juggle Finished	0	0%	Right Targets Complete	0	0%
Musical Chairs Started	0	0%	Laser Fired Left	0	0%
Musical Chairs Finished	0	0%	Laser Fired Right	0	0%
Podrace Scene Started	0	0%	Laser Collected	0	0%
Podrace Scene Finished	0	0%	Super Jets Start	0	0%
Probe Droid Started	0	0%	Bonus X Increased	0	0%
Probe Droid Finished	0	0%	Bonus X Maximum	0	0%

FEATURE AUDITS CONTINUED...

Bonus X Increased	0	0%	Shield Hit	0	0%
Bonus X Maximum	0	0%	Shield Popper	0	0%
Left Inlane	0	0%	Shield Target Right	0	0%
Left Loop	0	0%	Right Ramp	0	0%
Captive Ball	0	0%	Right Saucer	0	0%
Left Saucer	0	0%	Right Sneak Lane	0	0%
Left Ramp	0	0%	Right Inlane	0	0%
Shield Target Left	0	0%	Ramp Combo Champs	0	0%

HISTOGRAMS

Score Histograms
Ball Histograms

TIMESTAMPS

Power Up Count	0	Totals Cleared	00/00/0000
Total Uptime	0.00	Audits Cleared	00/00/0000
Current Uptime	0.00	Coins Cleared	00/00/0000
System Downtime	0.00	Last H.S.T.D. Reset	00/00/0000
System Started	00/00/0000	Clock Last Set	00/00/0000
Last Power Down At	00/00/0000	Last Replay	00/00/0000
Last Game Start	00/00/0000	Last Game Tilt	00/00/0000
Last Service Credit	00/00/0000	Last Slam Tilt	00/00/0000
Last Factory Reset	00/00/0000	Last Roll Tilt	00/00/0000

EARNINGS CHARTS

Last 7 Days - Hourly
Last 21 Days - Daily
Last 21 Weeks
Last 12 Months

UTILITIES

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Utilities menu. Press the Enter button to open the menu when it is selected. Once the Utilities menu is open, use the Up and Down buttons to move the cursor and select a function. Press the Enter button to enable the function.

Use the Up and Down buttons to change the function setting. Press the Enter button when the desired setting is displayed and a 'countdown' screen appears. Press the Enter button during the 'countdown' to lock in the new setting. Or, wait for the 'countdown' to complete and the new setting is locked in automatically. Press the Escape button, during the 'countdown' to retain the original setting and return to the Utilities Menu.

Press the Escape button to return to the Utilities menu. Press the Escape button a second time to return to the System Menu.

```
┌─────────────────────────────────────────┐
│ SYSTEM MENU                              │
│ XX/XX/XX              X:XX p.m.          │
│                                          │
│ Read Test Report                         │
│ Diagnostics                              │
│ Adjustments                              │
│ Bookkeeping                              │
│ Utilities                                │
│ Printouts                                │
│ Language                                 │
│ Reset Machine                            │
│                                          │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│ UTILITIES MENU                           │
│ XX/XX/XX              X:XX p.m.          │
│                                          │
│                                          │
│ System Information                       │
│ Show Shell Window                        │
│ Set Custom Message                       │
│ Set Location I.D.                        │
│ Update Game Code                         │
│ Set Clock                                │
│ Install Presets                          │
│ Reset Menu                               │
│                                          │
└─────────────────────────────────────────┘
```

SYSTEM INFORMATION

The System Information utility displays game specifications. It cannot be cleared.

SHOW SHELL WINDOW

This is used to show the system terminal window. It is for diagnostic use.

SET CUSTOM MESSAGE

This allows the operator to install a message that the players can read during the Attract Mode.

SET LOCATION I.D.

This utility allows the operator to show the game's location on printouts. Press the Enter button to open the utility. Use the Up and Down buttons to move the cursor and select letters. Press the Enter button to lock in desired letters.

UPDATE GAME CODE (You will typically want to run the latest update).
Use this menu to enable or disable the update game code (stored in the PRISM board FLASH memory).

Enable Updated Code
If the update game code is enabled, the system will run the last version of update game code installed (REFERENCE SOFTWARE UPDATES IN NEW FEATURES OF PINBALL 2000).

Disabled Updated Code
If the update game code is disabled, the system will run the version of game code located in the original PRISM board ROMs.

WARNING TO THE OPERATOR.
In early releases of the Revenge from Mars game code ROMs, DO NOT perform the Disabled Updated Code. Doing so will cause your game to run in Free Only Mode and the UPDATE GAME CODE utility menu will not allow the updated game code to be enabled.
If you accidentally disable the update game code, do one of the following:
1) Plug a keyboard into the keyboard port (located near the computer case in the backbox) or,
2) Plug a computer terminal into the COM 1 port (located near the coin door).
Then, at the command (%) prompt type the following:
    % fupdate enable
to re-enable the Updated Game Code.
Note: This operation takes about 15 seconds to complete.

SET CLOCK
Press the Enter button to activate the clock. Use the Up and Down buttons to change the time, then press the Enter button to lock in the time.

INSTALL PRESETS
Press the Enter button to open the utility. Use the Up and Down buttons to move the cursor and select from the available Presets. When the desired Preset is selected, press the Enter button to lock it in. Press the Escape button, during the 'countdown' to retain the original setting and return to the Utilities Menu.

PRESET TABLE for Game Specific Adjustments

Preset Name	Extra Easy	Easy	Medium	Hard	Extra Hard
Multiball Rematch Time	30 sec	25 sec	20 sec	15 sec	10 sec
Hits to Light Locks	0	0	0	1	2
Targets Help Start Scene	5	4	3	2	0
Destroyer Droid Scene Speed	Slow	Slow	Medium	Medium	Fast
Hover Tank Scene Speed	Slow	Slow	Medium	Fast	Fast
Musical Chairs Silence	30 sec	25 sec	20 sec	15 sec	10 sec
Probe Droid Scene Speed	Slow	Slow	Medium	Fast	Fast
Side Targets Difficulty	Easy	Medium	Medium	Hard	Hard
Skill Shots for Awards	1	2	3	3	3
C3PO Game Start Spot	6	5	4	2	0
C3PO Memory	Yes	Yes	Yes	Yes	No
Lasers at Game Start	20	15	10	10	5
Maximum Laser Count	70	60	50	40	30
GUNGAN Memory	Yes	No	No	No	No

INSTALL PRESETS CONTINUED...
PRESET TABLE for Three Ball and Five Ball Play

Preset Name	Three Ball Play	Five Ball Play
Balls per Game	3	5
Score Level #1	20,000,000	35,000,000
Score Level #2	60,000,000	80,000,000
Score Level #3	100,000,000	120,000,000
Score Level #4	150,000,000	180,000,0001
Hits to Light Locks	0	1
Targets Help Start Scene	3	2
Side Targets Difficulty	Medium	Hard
Skill Shots For Award	3	5
C3P0 Game Start Spot	4	2

RESET MENU

Clear Audits
Press the Enter button to clear the all of the audits.

Clear Coins
Press the Enter button to clear the Earnings Audits.

Clear Credits
Press the Enter button to clear the game Credits.

Clear Earnings Charts
Press the Enter button to clear the Earning Charts.

Reset High Scores
Press the Enter button to clear the High Score to Date Table.

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

Factory Reset
Press the Enter button to restore the adjustments to their factory setting, clear the Audits, Reset the High Score, and the Location I.D.
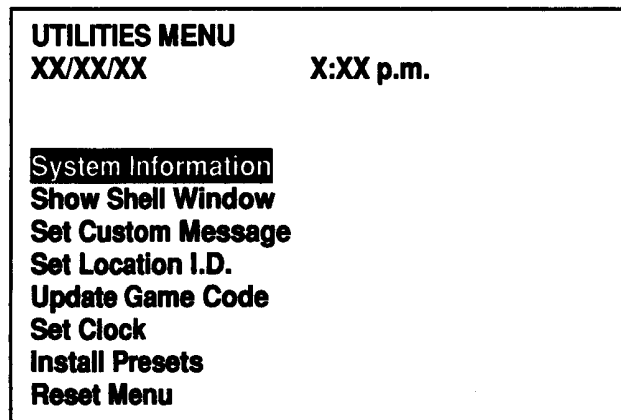
PRINTOUTS

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Printouts menu. Press the Enter button to open the menu when it is selected. Once the Printouts menu is open, use the Up and Down buttons to move the cursor and select a function. Press the Enter button to enable the function.

Press the Escape button to return to the Printouts menu. Press the Escape button a second time to return to the System Menu.

```
┌─────────────────────────────────────┐
│ SYSTEM MENU                         │
│ XX/XX/XX                X:XX p.m.   │
│                                     │
│ Read Test Report                    │
│ Diagnostics                         │
│ Adjustments                         │
│ Bookkeeping                         │
│ Utilities                           │
│ �switchPrintouts                     │
│ Language                            │
│ Reset Machine                       │
│                                     │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ PRINTOUTS MENU                      │
│ XX/XX/XX                X:XX p.m.   │
│                                     │
│                                     │
│ Print Audits                        │
│ Print Adjustments                   │
│ Print Earning Charts                │
│ Print Fatal Errors                  │
│ Print Non-fatal Errors              │
│ Print Everything                    │
│                                     │
└─────────────────────────────────────┘
```
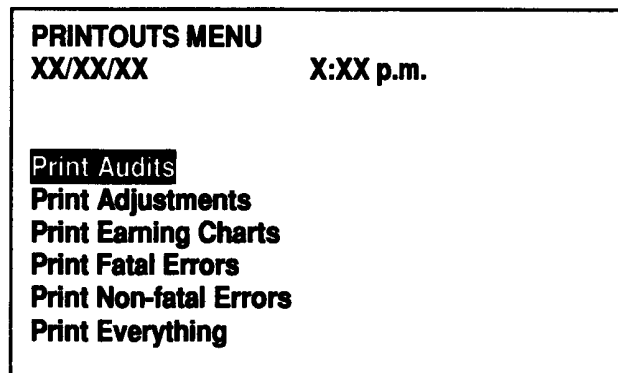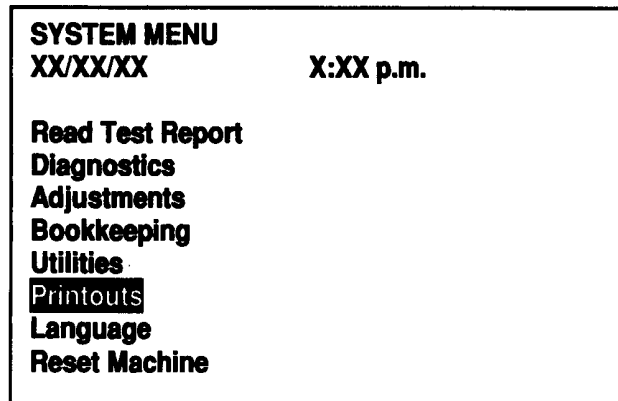
PRINT AUDITS
> Print all System Audits.

PRINT ADJUSTMENTS
> Print a record of all System Adjustments. A "*" signifies a changed adjustment.

PRINT EARNING CHARTS
> Prints the Earning Charts.

PRINT FATAL ERRORS
> Prints errors that caused the game to reset.

PRINT NON-FATAL ERRORS
> Prints errors that have occurred but are not catastrophic.
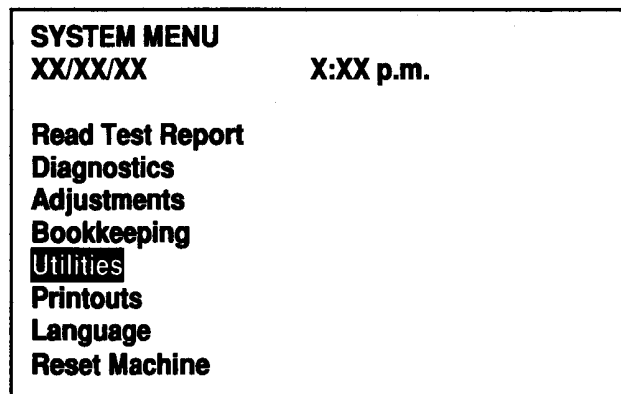
PRINT EVERYTHING
> Print both audits and adjustments.

LANGUAGE

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Language menu. Press the Enter button to open the menu when it is selected. Once the Language menu is open, use the Up and Down buttons to move the cursor and select a language. Press the Enter button to enable that language.

Press the Escape button to return to the Language menu. Press the Escape button a second time to return to the System Menu.

```
SYSTEM MENU
XX/XX/XX              X:XX p.m.

Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```

```
LANGUAGE MENU
XX/XX/XX              X:XX p.m.


English
Deutsch
Francais
Espanol
```
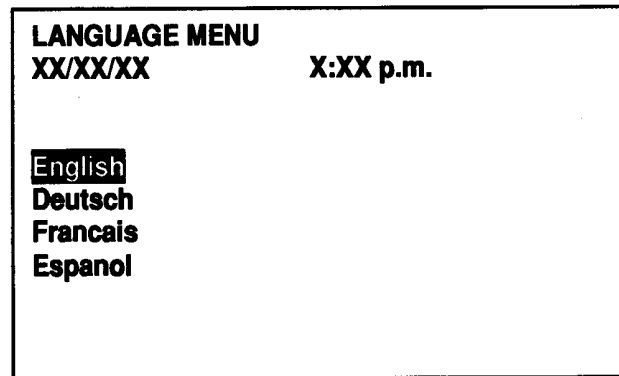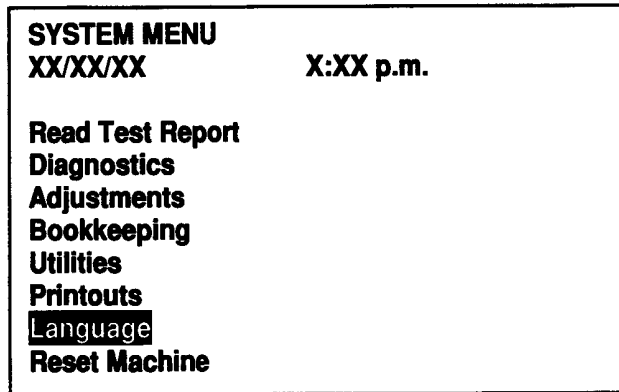
RESET MACHINE

Open the coin door, press the Enter button and the System Menu appears on the screen. Use the Up and Down buttons to move the cursor and select the Reset Machine. Press the Enter button and you are given two choices − Yes or No. Use the Up or Down buttons to select a choice and press the Enter button to lock it in. A five-second 'countdown' starts. Press the Escape button during the 'countdown' and the reset is cancelled.

Press the Escape button to return to the System Menu.

```
SYSTEM MENU
XX/XX/XX              X:XX p.m.

Read Test Report
Diagnostics
Adjustments
Bookkeeping
Utilities
Printouts
Language
Reset Machine
```
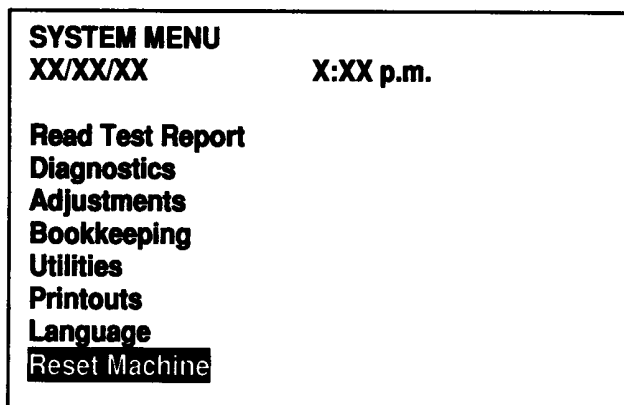
ROUTINE MAINTENANCE INFORMATION

♦ **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 using only a non-abrasive sprayed liquid glass cleaner and a soft cloth. The playfield should be wiped off with a clean, lint-free cloth. The game steel 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.

♦ **GLASS PARTS**
Wear protective gloves and use both hands when carrying or moving parts made of glass. Glass pieces can fly eight feet (two meters) or more from the point of impact.

SERVICE INFORMATION
Only trained personal should service the game. Always turn off power and unplug the game before attempting any service!

♦ **LUBRICATION**
The main lubrication points of playfield mechanisms are the pivots. 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 Slingshots 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.

♦ **SWITCHES**
Standup Target and Slingshot Switches. To ensure proper 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. End-of-Stroke switches are NORMALLY OPEN. The switch should close when the flipper is energized. Only low computer current is carried through these switches. DO NOT FILE or abrasively clean these switches! An E.O.S. switch failure does not harm the flipper. The game notifies the operator that the switch is out of adjustment in the test report, but continues to play.

Rollover Switches. Roll the ball over the switch and listen for an audible click. The click indicates the switch is good and adjusted properly. If you do not hear a click, the switch may be wearing out.

Magnetic Reed Switches. A magnetic reed switch must be tested using a ball. Enter the Switch test and roll a ball over the switch. The corresponding number should show on the screen. If it does not and the switch is located on the playfield, be sure it is secured against an insert with two rubber grommets. If the switch is on a ramp, it must be in a holder. The switch must be flush against whatever surface it is attached to; if it's not there may be inconsistencies in the way it operates.

◆ SERVICE MIRROR

The backglass doubles as a service mirror when the playfield glass has been removed from the cabinet. Place the backglass – shiny side up – under the monitor. The black plastic knobs hold it in place.

◆ FLUORESCENT PARTS
If you drop a fluorescent tube or a CRT and it breaks, it will implode! Use care in handling.

Wear protective gloves and use both hands when carrying or moving parts made of glass. Fluorescent tubes and CRTs will usually implode if broken. Glass pieces can fly eight feet (two meters) or more from the point of impact.

Remove the backglass. Remove both plastic lamp locks. Grasp the bulb at each end and give it a quarter turn. Gently pull the bulb straight out to remove it from its socket. The starter also requires a quarter turn for removal. Do not force the bulb or starter during reinstallation. Clean the bulb to remove fingerprints and dust, then reinstall the backglass.

To remove the entire light fixture, remove the lamp locks and the bulb as described above. Disconnect the fluorescent light assembly connector from its power cable. Remove the screws that hold the assembly to the cabinet, then lift out the assembly.

◆ HIGH VOLTAGE CONSIDERATIONS
CRTs and their power supplies can retain energy for long periods of time after the power has been turned off. This is especially true when a defective circuit prevents a normal discharge. Connect a very well insulated ground strap to the metal chassis. Slide the free end of the strap under the CRT anode cap until contact is made. Wait two minutes for charge recovery, then discharge the anode a second time.

◆ RADIATION
The high voltages used in the Monitor Assembly are capable of generating X-rays under fault conditions. Do not substitute high voltage components or modify the circuit without factory authorization. Follow manufacturer's directions for measuring and adjusting the CRT anode voltage.

◆ CIRCUIT PROTECTION
To avoid equipment damage, any replacement fuse must match the original in fuse type, voltage rating, and current rating. Do not use fuses with different time delay characteristics.

◆ MONITOR
Unlock and remove the backbox rear door. Disconnect all of the cables going to the monitor. Remove the four flange nuts securing the monitor's mounting brackets to its mounting panel. CAREFULLY, pull the monitor from the backbox. Clean the face of the monitor before reinstalling it.

⚠ CAUTION
THE VIDEO MONITOR IS HEAVY, WITH MOST OF THE WEIGHT TOWARD THE FRONT OF THE ASSEMBLY. Be sure it is firmly supported as it is removed from the cabinet. The monitor does require isolation from the A.C. line voltage in normal operation. When operating outside the backbox or servicing the monitor on a test bench, YOU MUST ISOLATE THE MONITOR FROM LINE VOLTAGE WITH A TRANSFORMER. THE MONITOR MUST BE POWERED AT 120V.

♦ ACCESSING THE COMPUTER CASE

Should you ever find it necessary to open the case, be sure to replace the computer case cover. Failure to do so will void FCC, UL and CE compliance, and may cause damage to the PC boards in the case. The foam lining of the cover holds the PC boards securely in place and protects them from vibrations that normally occur in a pinball game.
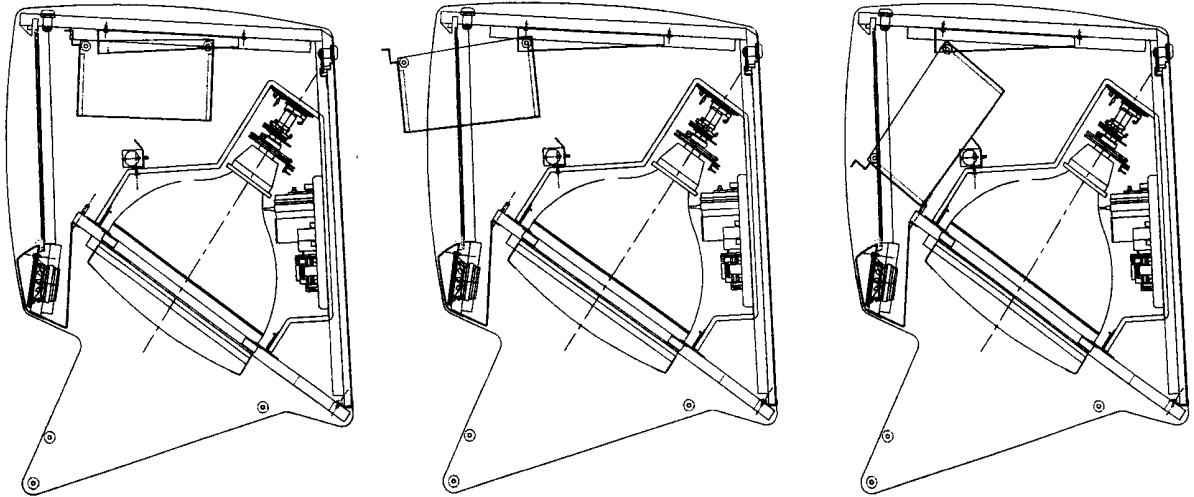
Side View of Backbox

Unlock and remove the backglass. Grasp the case from the front and slide it toward you. Let it hang down in front of the monitor. Slide the metal clip to the right and lift the cover off of the computer case. The PC boards are now accessible. Always replace the cover before reinstalling the case in the backbox.

♦ REMOVING THE COMPUTER CASE

Unlock and remove the backglass. Grasp the case from the front and slide it toward you. Let it hang down in front of the monitor. Unplug the three cables on the left side and the one cable in the front of the case. Lift the rear of the case and pull it out of the backbox. Unplug the IEC cord from the rear of the computer case.

♦ WATCHDOG-RESET CIRCUIT

Be sure the watchdog-reset cable is plugged into the proper location on the motherboard. The location of the reset connector depends on the manufacturer of the PC board.

Keyboard Connector (same for both manufacturers)

James Industries

GCT All Well Technologies (Last Two Pins on the Connector)
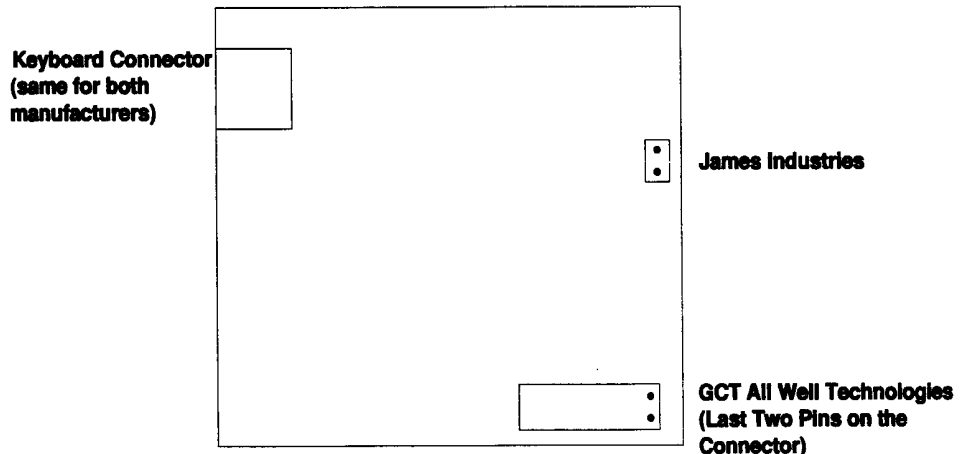
View of the Motherboard from the Top of the Computer Case.

♦ **POWER SUPPLY**
Be sure voltage switch is set to 115V (110V to 120V respectively) before installing the new power supply in the computer case, regardless of what country the game is in.

Unlock and remove the backglass. Grasp the case from the front and slide it toward you. Let it hang down in front of the monitor. Unplug the three cables on the left side and the one cable in the front of the case. Lift the rear of the case and pull it out of the backbox. Unplug the IEC cord from the rear of the computer case.

Remove the four outer screws surrounding the power supply that secure it to the case (see the diagram below). Slide the metal clip to the right and lift cover off of the computer case. Unplug the cable harnesses leading from the power supply; one plug is going to one connector on the power amp and two plugs are going to one connector on the motherboard. Lift the power supply out of the computer case.
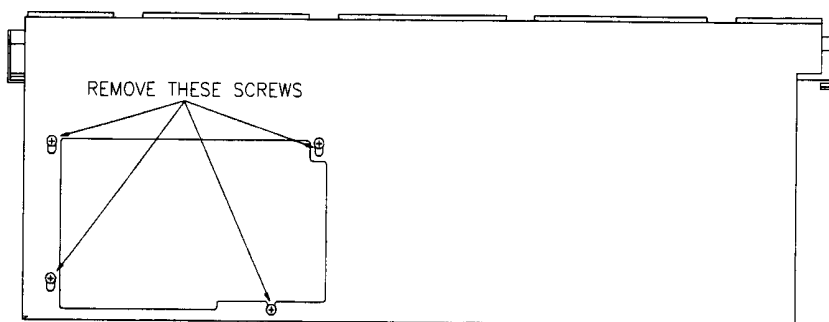
Rear View of the Computer Case.

♦ **MEMORY**
The ROM chips contain the computer operating instructions. Memory devices are very sensitive to static charges. Use grounding precautions when handling these parts.

To remove a ROM from its socket, carefully note its position and then lift it using a chip extraction tool. To reinstall a ROM place it over its socket so that the notch in the chip lines up with the silkscreen on the board, and press down firmly to seat. Do not force the ROM into the socket. Do not bend the pins under the ROM.

⚠ **CAUTION**
Use wrist straps, conductive mats or other methods of safely discharging static electricity. Hold all chips by their packages and not by the metal pins. Extractor and insertion tools are recommended to avoid bent or broken pins caused by excessive force.

♦ **BATTERY**
Note the position of the battery. Gently lift the contact arm to release tension. Do not bend the arm. Slide the battery out of it holder. To reinstall the battery, orient the cell near the holder and slide it under the contact arm. Do not force the battery into the holder.

⚠ **CAUTION**
Danger of explosion if battery is incorrectly replaced. Replace with only the same or equivalent type recommended by manufacturer. Do not attempt to recharge these batteries. Avoid direct shorts across terminals or from terminals to ground. Dispose of batteries according to manufacturer's instructions.

◆ **UPDATING THE GAME PROGRAM**
Using a Pub card
1. Turn off the game.
2. Remove the marquee.
3. Pull the computer case forward and let it hang down in front of the monitor.
4. Open the computer case.
5. Plug the card into the ISA socket. (See diagram below.)
6. Turn the game on. The updated program downloads automatically. This takes a few minutes.
7. When the process is complete, turn the game off and remove the card.
8. Close the computer case and slide it back in the backbox.
9. Replace the marquee.
10. Turn the game on. It is ready to play with the updated program installed.
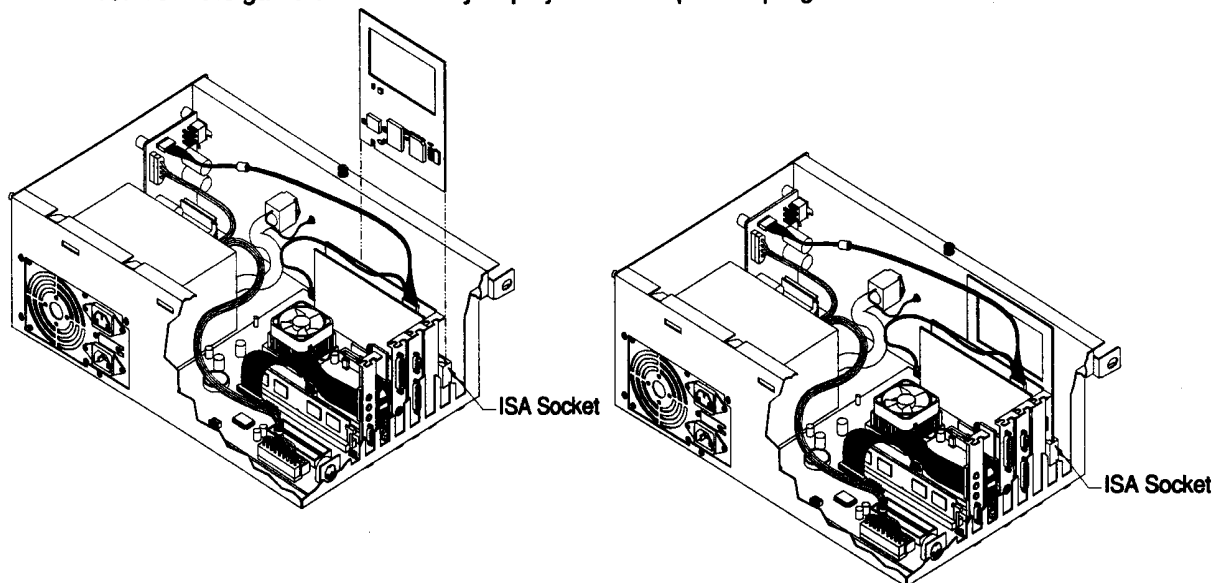
Using a laptop computer
You need a serial 'null modem' cable, Internet access and of course a laptop computer.
1. Go to web site www.pinball.com, then click on Technical Support. From Technical Support, click on Pinball 2000 Support, then scroll down to and click on Updating Pinball 2000 (under technical bulletins and tutorial). Read all of Updating Pinball 2000 BEFORE going any further.
2. Download the Update Manager to your laptop.
3. Download the game software update to your laptop.
4. Install the Update Manager. You will locate it in Windows Explorer. Once it is installed, a shortcut icon will appear on the desktop.
5. Connect your laptop to the game. Use the 'null modem' cable and connect the serial port of the laptop to the serial port of the game. The game's serial port is located just inside the coin door on the same bracket as the interlock switch.
6. Run the update manager as shown in the tutorial. It takes about ten minutes to download the updated program into the game.
7. Once the download is complete, disconnect the cables, turn the game off and back on. You are ready to play.

EPILEPSY WARNING

A very small portion of the population has a condition which may cause them to experience epileptic seizures or have momentary loss of consciousness when viewing certain kinds of flashing lights that are present in our daily environment. These persons may experience seizures while watching some kinds of television pictures or playing certain video games. People who have not had any previous seizures may nonetheless have an undetected epileptic condition.

If you or anyone in your family has experienced symptoms linked to an epileptic condition (e.g., seizures or loss of awareness), immediately consult your physician before using any video games.

We recommend that parents observe their children while they play video games. If you or your child experience the following symptoms: dizziness, altered vision, eye or muscle twitching, involuntary movements, loss of awareness, disorientation, or convulsions, DISCONTINUE USE IMMEDIATELY and consult your physician.

LED AND FUSE LIST

POWER DRIVER BOARD
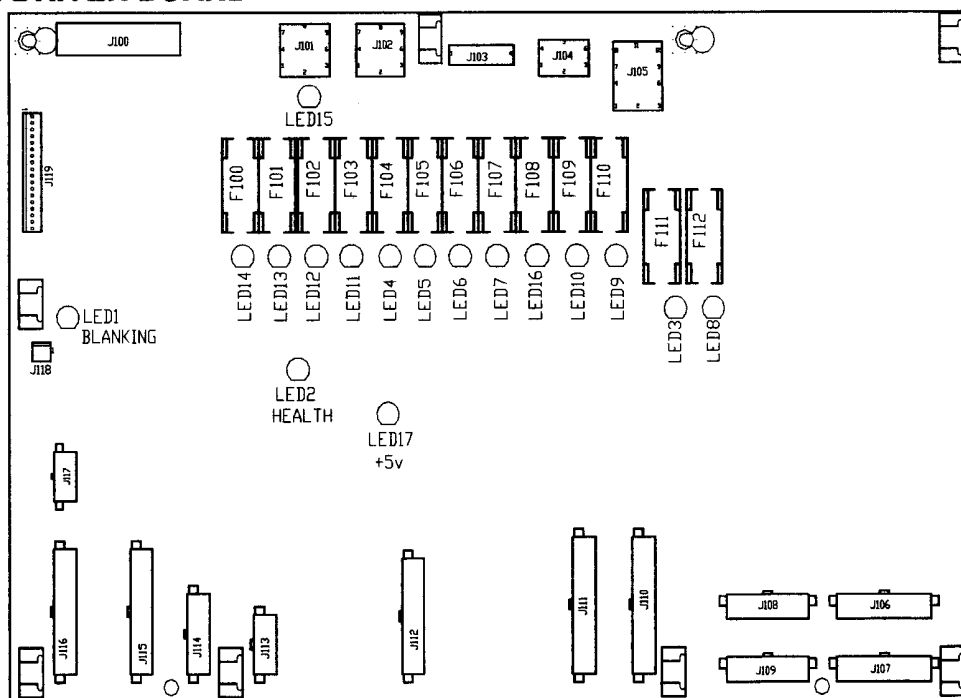
LED LIST

LED 1	Watchdog	LED 10	+20V Flashlamps
LED 2	Health	LED 11	Solenoid Power 1
LED 3	+18V Lamp Matrix A	LED 12	Solenoid Power 2
LED 4	+50V Lower Right Flipper	LED 13	Solenoid Power 3
LED 5	+50V Lower Left Flipper	LED 14	Solenoid Power 4
LED 6	+50V Upper Right Flipper	LED 15	+20V
LED 7	+50V Upper Left Flipper	LED 16	+12V
LED 8	+18V Lamp Matrix B	LED 17	+5V
LED 9	+50V Solenoids		

FUSE LIST

Loc.	Value		Part Number	Description
F100	T4.0A	250V	5371-14530-00	Solenoid Power 4
F101	T4.0A	250V	5371-14530-00	Solenoid Power 1
F102	T4.0A	250V	5371-14530-00	Solenoid Power 2
F103	T4.0A	250V	5371-14530-00	Solenoid Power 3
F104	T4.0A	250V	5371-14530-00	Lower Right Flipper Power
F105	T4.0A	250V	5371-14530-00	Lower Left Flipper Power
F106	T4.0A	250V	5371-14530-00	Upper Right Flipper Power
F107	T4.0A	250V	5371-14530-00	Upper Left Flipper Power
F108	T4.0A	250V	5371-14530-00	12VAC Unregulated
F109	T4.0A	250V	5371-14530-00	20VAC Flashlamps
F110	T6.3A	250V	5731-14529-00	50VAC Solenoids
F111	T5.0A	250V	5731-14046-00	18VAC Lamp Matrix A
F112	T5.0A	250V	5731-14046-00	18VAC Lamp Matrix B

LINE FUSE

Location	Value		Part Number
Foreign	T4.0A	250V	5731-14530-00
Domestic	T5.0A	250V	5731-14046-00

NOTES

SECTION TWO

PARTS INFORMATION

**Items listed as Associated Parts are not sold as part of the main assembly.
Associated Parts are only sold separate.**

50069-CAB
Cabinet Assembly

View inside front of cabinet

To item 37

To item 14

To item 14

To item 22

50069-CAB
Cabinet Assembly Parts List

Item	Part Number	Description
1	04-12753.2	Cabinet
2	01-11400-1	Leg Mounting Bracket (x4)
3	04-12869	Leg Assembly, Heavy– Black Ridge (x4)
4	08-7377	Leg Leveler/Adjuster (x4)
5	01-15132-1	Playfield Slide Track – Right
6	04-12610	Stay Arm
7	A-22996	Lockdown Bracket Assembly
8	A-23419	Speaker & Cable Assembly
9	A-22966	Power Control Box Assembly
10	04-12596.1	Drip Plate
11	5610-15930-01	Transformer Assembly
12	A-22998	Driver Board Cover Assembly
13	A-23299	Driver Board Back Plate Assembly
14	04-12329	Power Driver Board
15	03-10011	Cover Stop Tube
16	09-96032-33	Coin Door – USA – 2 Slot
17	20-10690	Hand Molding Lock
18	A-22984-1	Flipper Button Assembly (x2)
19	20-10696	Push Button w/Switch – START (Yellow)
20	01-3535	Ball Shooter Mounting Bracket
21	A-17730-1	Ball Shooter Assembly
22	A-23024	Coin Door Interlock Switch Assembly
23	A-22964	Coin door Interface PCB Assembly & Spacer
24	A-17195-2	Tilt Switch Assembly w/Cable
25	04-10346.1	Tilt Mechanism Assembly
26	20-6502-A	Plumb Bob
27	A-23139	4-Ball Cash Box Assembly
28	A-22997	Hand Molding Assembly
29	A-22976-1	Side Molding Assembly (x2)
30	04-12739.1	Tinted Playfield Glass Assembly
31	03-8091	Rear Molding
32	01-15214	Hole Cover
33	01-15212	Cabinet Corner Bracket
34	01-14085.1	Hasp Hinge Bracket
35	01-14086.1	Hasp Staple Bracket
36	20-10704-1	Slit Hose Sleeve - &1.25 x 60" Lg.
37	A-23421	Joined Cable Assembly

Cabinet Cables:

Item	Part Number	Description
38	H-22740-3	Cabinet Cable
39	H-22740-1.2	Cabinet Cable
40**	H-23412	Isolation/Speaker Cable
41	H-23420	Cabinet Switch/Lamp Cable
42**	20-10581	Extension Cable, db25 – 6ft
43**	20-10580	Extension Cable, db09 – 6ft

Miscellaneous Parts: (Not Shown)

Part Number	Description
01-15132-2	Playfield Slide Track – Left
04-12628.2	Safety Bracket
01-15136-1-2	Lock Plate
*	Cordset
20-6500	Steel Ball, &1-1/16" (x4)
01-6389-1	Cash Box lock Bracket
01-12352	Clip Bracket
4322-1125-40	3/8 x 16 Hex Acorn Head Leg Bolt
01-14084.2	Slotted Hasp Plate
A-23297	Unique parts Bag - 50069

*See Power Interface/Cordset Application Chart on page 2-31
**These cables are shown for reference only. They are part of Item37, A-23421, Joined Cable Assembly.

50069-BB
Back Box Assembly
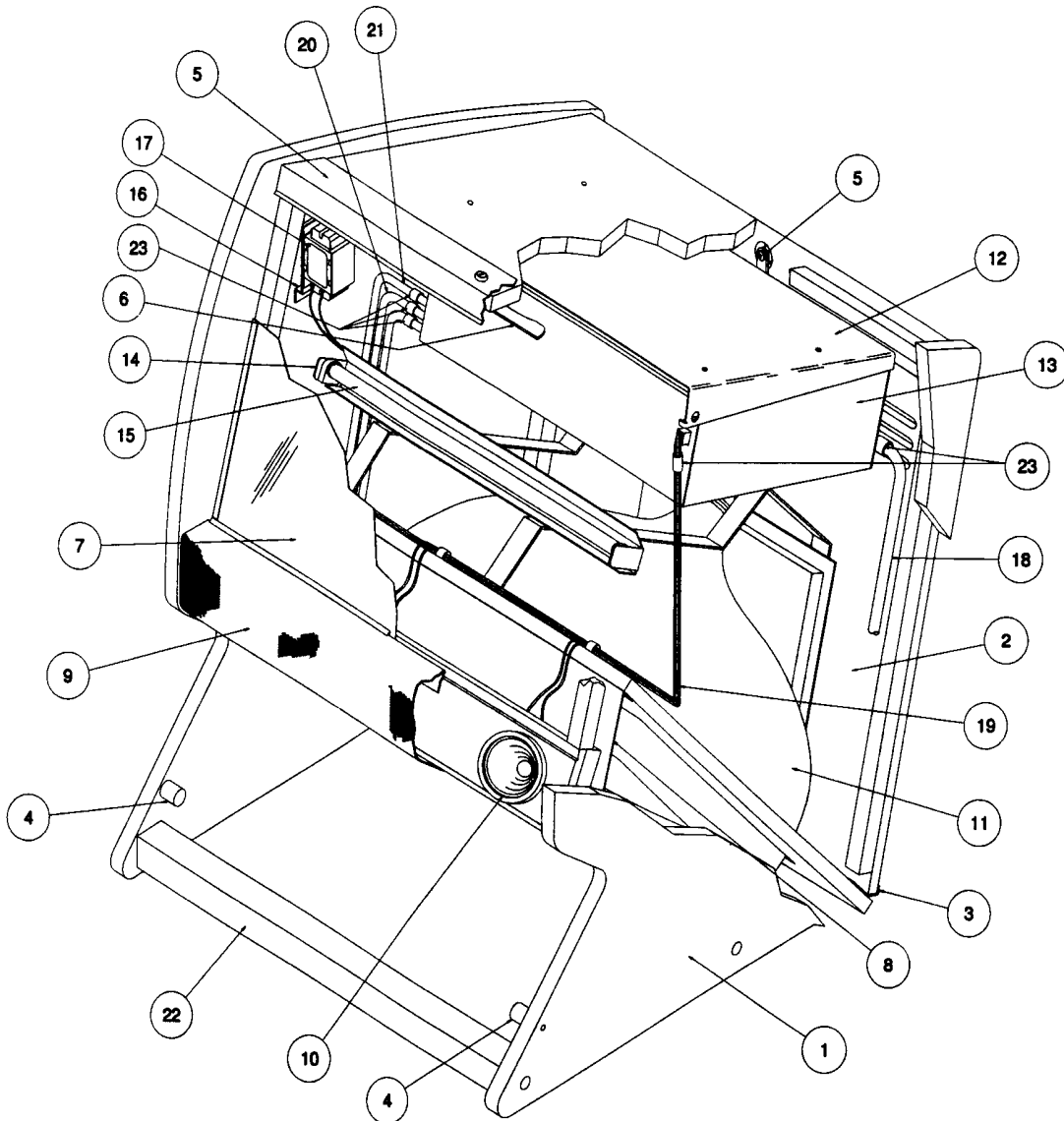
Item	Part Number	Description
1	04-12754	Back Box
2	A-22982	Back Boor Assembly
3	01-15131	Door Channel
4	03-9992	Knob
5	A-22981	Lock & Plate Assembly
6	01-15134	Front Lock Cam
7	A-22975-50069	Marquee Assembly
8	04-12607.1	Speaker Grill Bracket
9	04-12606.1	Speaker Grill
10	5555-16223-00	Speaker - 4ç, 25W
11	5675-16058-02	Monitor – 19"
12	01-15130.2	Computer Case Mounting Bracket
13	A-22724	Computer Case Assembly
14	A-22980	Fluorescent Lamp Assembly

Item	Part Number	Description
15	24-8809	Fluorescent Lamp 15W, 18"
16	04-12752	Ballast Mounting Bracket
17	A-23155	Ballast Assembly
18	A-23160	CPU/AC Power Cable
19	H-22737-1.1	AC/Speaker Cable
20	20-10581	Extension Cable db09 – 6ft
21	20-10580	Extension Cable db25 – 6ft

Miscellaneous Parts:

Item	Part Number	Description
22	11-1464	Back Box Shipping Brace
23	5556-16449-00	Ferrite
*24	02-4352-3	Pivot Bushing
*25	4322-10228-12	CS 3/8-16 x ¾ Button Head – Nylon Patch
*26	4700-00111-00	FW .390 x .875 x .062

04-12602
Prism PCB Assembly
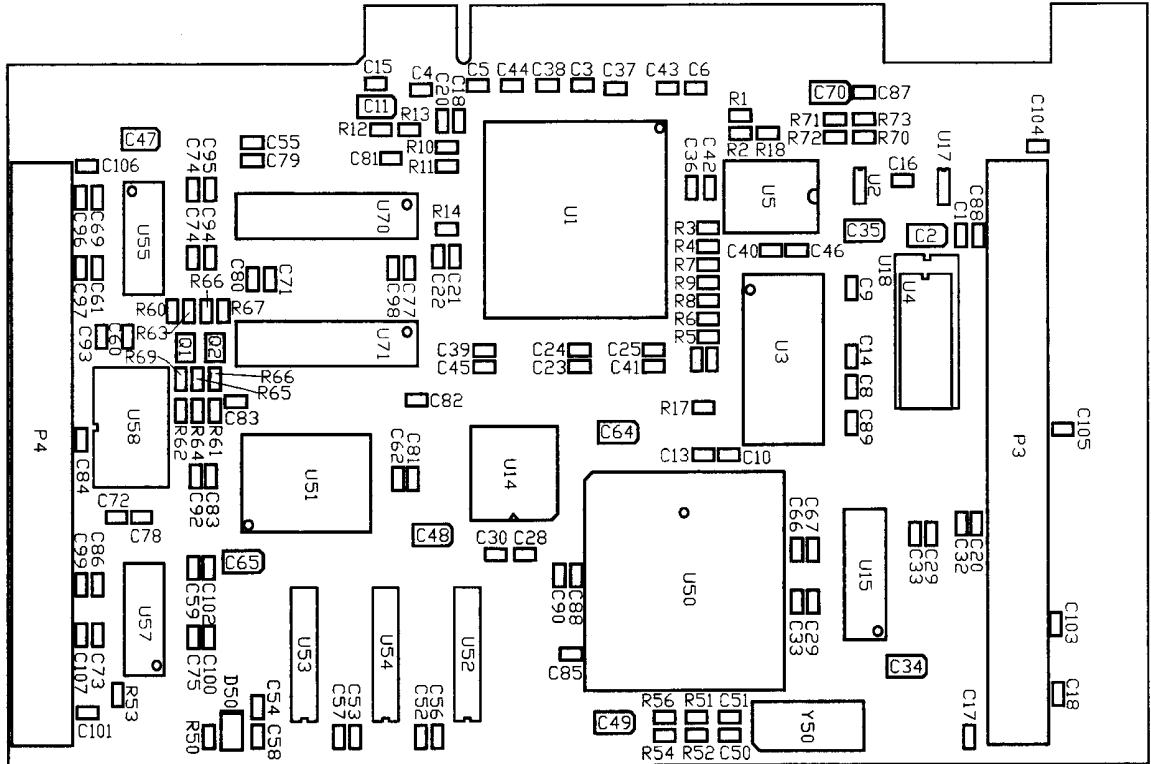
Designator	Part Number	Description
R1-R14, R17, R18, R52-R54, R56, R65, R66, R69-R73	5020-14156-00	Resistor, 10Kç, 5%, 1/10W, R0805
R50	5020-14160-00	Resistor, 330ç, 5%, 1/10W, R0805
R62, R63, R64, R67, R68	5020-14152-00	Resistor, 100ç, 5%, 1/10W, R0805
C2, C11, C34, C35, C47, C48 C49, C64, C65, C70	5051-14151-00	Capacitor, 10µf, 16V 620%, SMD TANT
C50, C51	5052-14149-00	Capacitor, 22pf, 100V 10%, SMD
C1, C7-C10, C17, C19, C21 C24-C29, C36-C40, C52-C55, C67, C90-C100	5052-14164-00	Capacitor, .01µf, 50V 20%, SMD
C3-C6, C12-C16, C20, C22, C23, C41-C46, C101-C107	5052-14165-00	Capacitor, .1µf, 50V 20%, SMD Z5U
C18, C30-C33, C56-C63, C66, C68, C69, C78-C89	5052-14368-00	Capacitor, 22pf, 100V 10%, SMD
Q1, Q2	5160-16056-00	Transistor, NPN 2N3904 SC70
U15	5283-16051-00	IC, Bus Transceiver, 74FCT162543T
U55, U57	5285-14601-00	IC, 74FCT162245
U4	5340-16204-00	IC, SRAM, 32K x 8, 70ns, SOP28
U2	5345-16049-00	IC, EE Serial PROM
U58	5345-16053-00	IC, Flash 8Mbit TSOP48
U3	5345-16196-00	IC, Flash EEPROM, 28F320J5 SSOP
U5	5521-16050-00	OSC, 30MHz SMT
U17	5432-16052-00	IC, NVRAM Controller SOIC8
U50	5400-15450-00	ADSP-2104KP-40
U51	5410-14590-00	IC, SDRC ASIC Video
U52, U53, U54	5349-14606-00	IC, SRAM, 32K x 8 – 15, 28PSOJ
U1	5430-16048-00	IC, PCI Bus Interface, PCI9502
U14	A-23290	IC, CPLD U14 Assembly
Y50	5520-16054-00	OSC, 16MHz Crystal SMT
D50	5671-14653-00	LED, Yellow SMD
P3, P4	5792-16057-00	Connector, Dual Row 2 x 40 SMT

04-12329
Power Driver Board
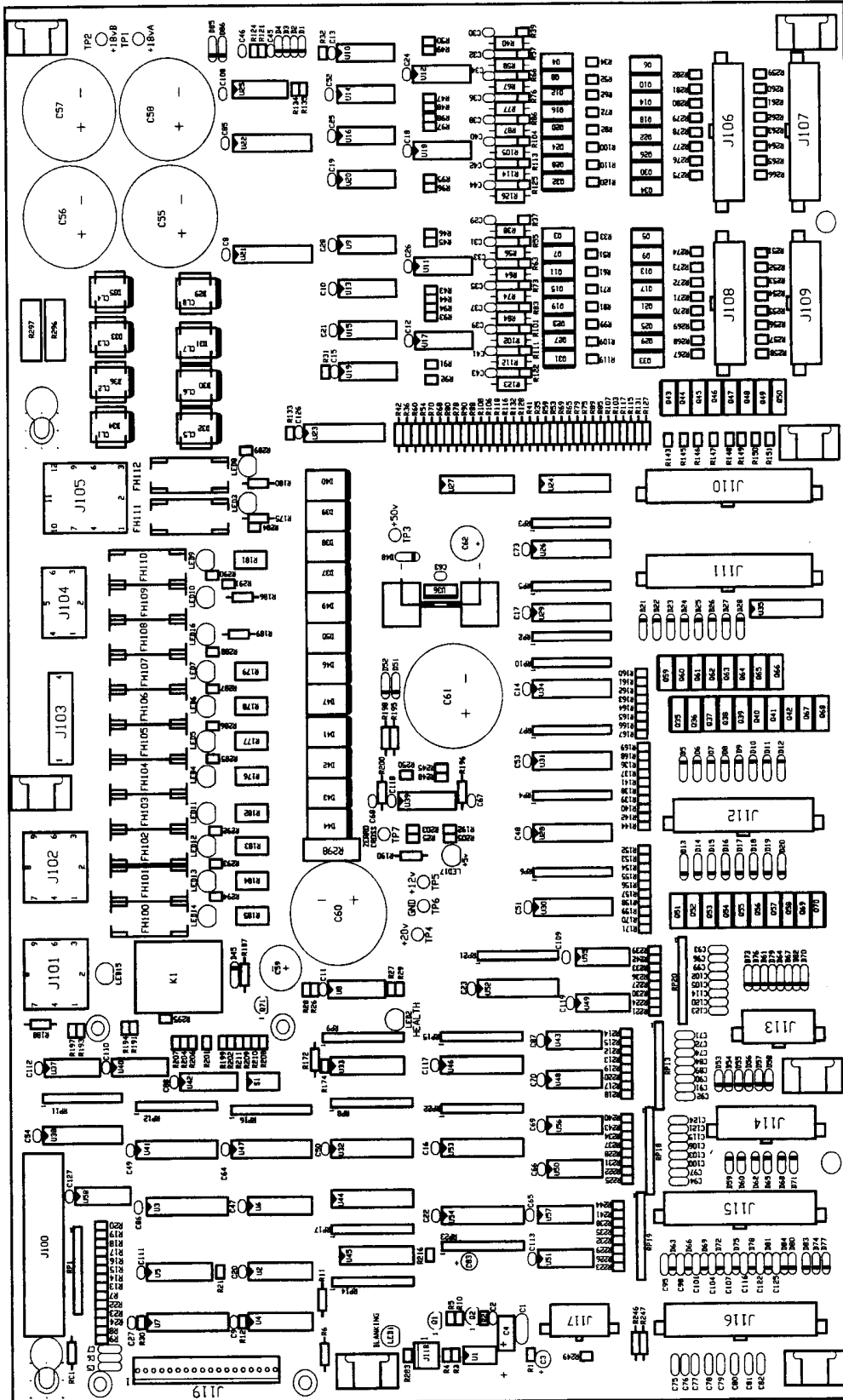
04-12329
Power Driver Board Parts List

Part Number	Description	Designator
5043-08996-00	Capacitor, 0.1µf, 50V ±20% Axial	C1, C2, C8-C54, C63-C70, C73, C85-C88, C108-C113, C117-C119, C126, C127
5040-13098-00	Capacitor, 4.7µf, 35V ±20%	C3, C83
5040-09365-00	Capacitor, 1µf, 63V +50%-10% Axial	C4
5048-11029-00	Capacitor, 100pf 50V ±5% Axial	C5-C7
5040-15413-00	Capacitor, 10000µf, 35V, 25mm	C55-C58, C60, C61
5040-09537-00	Capacitor, 100µf, 100V ±20% Radial	C59
5040-13102-00	Capacitor, 470µf, 35V ±20% Radial	C62
5048-11030-00	.Capacitor, 470pf, 50V Axial	C71, C72, C74-C82, C84, C89, C90-C107, C114-C116, C120-C125
5070-08919-00	Diode, 1N4148, 150mA	D1-D4, D53-D84
5070-09054-00	Diode, 1N4004, 1.0A	D5-D28, D45, D48, D51, D52
5070-14526-00	Diode, P600G, 6A, 400 PIV	D29-D44, D46, D47, D49, D50
5733-14528-00	Fuse Holder, 5x20mm, 10A	FH100-FH112
5731-14530-00	Fuse, 5x20mm, T4A, 250V	F100, F101, F102, F103, F104, F105, F106, F107, F108, F109
5731-14529-00	Fuse, 5X20mm, T6.3A, 250V	F110
5731-14046-00	Fuse, 5x20mm, SB T5A	F111, F112
5705-14562-00	Heatsink, 10-220 Wave Sol 287	HS1
5791-16065-00	25 Pin D-SUB Connector, R/A PCB Mount	J100
5792-13223-09	9 Pin Female, .084 MLX	J102, J101
5792-13223-04	4 Pin Female, .084 MLX	J103
5792-13223-06	6 Pin Female, .084 MLX	J104
5792-13223-12	12 Pin Female, .084 MLX	J105
5791-13356-18	Header-PCB Mount, 0.165 center 18P	J106, J107
5791-13356-16	Header-PCB Mount, 0.165 center 16P	J108, J109
5791-13356-24	Header-PCB Mount, 0.165 center 24p	J110, J111
5791-13356-20	Header-PCB Mount, 0.165 center 20p	J112
5791-13356-10	Header-PCB Mount, 0.165 center 10P	J113
5791-13356-14	Header-PCB Mount, 0.165 center 14P	J114
5791-13356-22	Header-PCB Mount, 0.165 center 22P	J115, J116
5791-13356-08	Header-PCB Mount, 0.165 center 8P(N)	J117
5791-13830-03	3H Straight Square Pin, .100 Solid Tab	J118
5792-15928-18	Connector, 18 Pin, 22-02-7183 Top EN	J119
5580-12782-00	Relay DPDT 12VDC	K1
5671-13732-00	LED, Display Red, T1¾	LED1-LED15, LED17
5190-10270-00	Transistor, 2N3906 PNP	Q1, Q2
5162-12635-00	Transistor, Tip 102	Q3, Q4, Q7, Q8, Q11, Q12, Q15, Q16, Q19, Q20, Q23, Q24, Q27, Q28, Q31, Q32
5192-12428-00	Transistor, Tip 107	Q5, Q6, Q9, Q10, Q13, Q14, Q17, Q18, Q21, Q22, Q25, Q26, Q29, Q30, Q33, Q34
5220-15710-00	Transistor-FET, STP20N10L, N-Channel	Q35-Q70
5160-10269-00	Transistor, 2N3904, NPN	Q71
5019-09669-00	SIP Resistor, 1Kç, 9R 10, 5%	RP14
5019-16328-00	SIP Resistor, 2.2Kç, 9R 10P, 5%	RP19
5019-10661-00	SIP Resistor, 10Kç, 9R 10, 5%	RP1-RP13, RP15-RP18, RP20-RP23
5010-13517-00	Resistor, 15ç, 1/4W,	R247
5010-13594-00	Resistor, 1kç, 1/8W, 5% Film	R1, R22, R23, R31-R34, R51, R52, R61, R62, R71, R72, R81, R82, R99, R100, R109, R110, R119, R120, R191, R193, R194, R197, R201, R204, R205-R215, R217-R244
5010-13365-00	Resistor, 4.7kç, 1/8W, 5%	R2
5010-13366-00	Resistor, 470ç, 1/8W, 5%	R3, R4, R7, R8, R9, R136-R171
5010-13368-00	Resistor, 3.9kç, 1/8W, 5%	R5
5010-09160-00	Resistor, 220ç, 1/4W, 5%	R6, R11, R172, R190, R195, R196, R198, R200
5010-14395-00	Resistor, 6.8kç, 1/8W, 5%	R10, R284, R289, R291
5010-13593-00	Resistor, 10kç, 1/8W, 5% Film	R12, R21, R25-R28, R29, R43-R50, R91-R98,R121, R124, R134, R135, R192, R199, R245, R248-R282
5010-13364-00	Resistor, 33ç, 1/8W, 5%	R13-R20, R24, R30, R133, R174, R216
5010-09358-00	Resistor, 1kç, 1/4W, 5%	R35, R36, R53, R54, R65, R68, R75, R78, R85, R88, R103, R106, R115, R116, R127, R128
5010-13372-00	Resistor, 220ç, 1/8W, 5%	R37, R39, R55, R57, R63, R66, R73, R76, R83, R86, R101, R104, R111, R113, R122, R125, R283
5010-12427-00	Resistor,.22ç, 1W, 5%	R38, R40, R56, R58, R64, R67, R74, R77, R84, R87, R102, R105, R112, R114, R123, R126
5010-08992-00	Resistor, 560ç, 1/4W, 5%	R41, R42, R59, R60, R69, R70, R79, R80, R89, R90, R107, R108, R117, R118, R131, R132
5010-14093-00	Resistor, 0ç, 1/8W, 5%	R246
5010-09999-00	Resistor, 2Kç, 1/4W, 5%	R175, R180, R186-R189
5010-14711-00	Resistor, 10kç, 1W, 5%	R176-R179, R181-R185
5010-13595-00	Resistor, 2.7kç, 1/8W, 5% Film	R202
5010-13843-00	Resistor, 22kç, 1/8W, 5% Film	R203
5010-13841-00	Resistor, 47kç, 1/8W, 5%	R285-R290, R292-R295
5011-13292-00	Resistor, 330ç, 2W, 5%	R296-R298
5645-12554-00	Switch DIP, 4 Position	S1
5824-09248-00	Test Point #1502-1	TP5, TP6
5431-10449-00	IC, 555 Timer	U1
5315-12812-00	IC, 74HCT138, 3 to 8 Decoder	U2, U4, U5, U6
5315-12813-00	IC, 74HCT245, Octal Transceiver	U3
5315-13079-00	IC, 74HCT574, Octal D-Latch	U7, U26, U28-U32, U34, U44
5281-09487-00	IC, 74LS74, Dual D F/F	U8-U10, U13-U16, U19, U20
5370-12272-00	IC, LM339, Quad Comp	U11, U12, U17, U18, U25, U37, U39, U40, U42, U43, U48, U49, U50, U51, U55, U56, U57
5315-12821-00	IC, 74HCT240, Octal Buffer	U21-U23, U38, U41, U46, U47, U52-U54
5162-12422-00	Trans, ULN 2803 Oc-Drl	U24, U27, U33, U35, U45
5250-09157-00	Reg, 7805, 1.0A, 5V	U36
5311-12538-00	IC, 74HC14, Hex S-T-	U58
5671-12993-00	LED, Green, 5mm, T1¾ Diffused	LED16
5070-09266-00	Diode, 1N5817, 1.0A, Schottky	D85, D86
DNP	Do Not Populate	TP1-TP4, TP7, RC1, CL1-CL8
MRD	Missing Reference Designators	R173, RP24-RP27, C126, R129, R130

04-12867
P2000 Audio Amplifier PCB Assembly
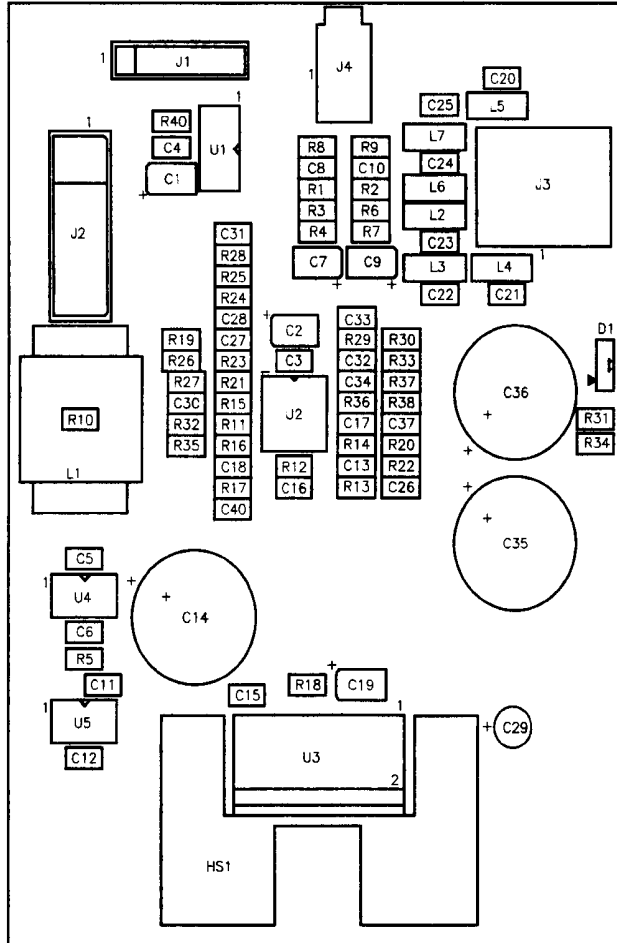
Designator	Part Number	Description
R18	5020-14156-00	Resistor, 10Kç, 1/10W 5% R0805
R19, R29	5020-16061-00	Resistor, 18Kç, 1/10W 5% 0805
R24, R36	5020-16062-00	Resistor, 68Kç, 1/10W 5% 0805
R14	5020-16080-00	Resistor, 82Kç, 1/10W 5% 0805
R1, R2, R4 R7	5020-16079-00	Resistor, 56Kç, 1/10W 5% 0805
R13	5020-14383-00	Resistor, 9.1Kç, 1/10W 1% SMD-0805
R10, R12, R20 R21, R26, R30 R32	5020-14349-00	Resistor, 0Kç, 1/10W SMD-0805
R11, R15, R16 R17	5020-16222-00	Resistor, 100Kç, 1/10W 5% SMD-0805
R3, R6	5020-15029-00	Resistor, 2.4Kç, 1/10W 5% SMD-0805
R25, R28, R31 R37, R38	5020-14157-00	Resistor, 1Kç, 1/10W 5% SMD-0805
C1, C2, C7, C9 C19	5051-14151-00	Capacitor, 10µf, 16V 620%, SMD TANT
C3, C4, C15, C31 C37	5052-14165-00	Capacitor, .1µf, 50V 620%, SMD Z5U
C10, C8	5052-14166-00	Capacitor, 1000pf, 50V 65%, SMD
C17	5052-14170-00	Capacitor, 6800pf, 50V 65%, SMD
C20, C21, C22, C23 C24, C25	5052-14367-00	Capacitor, 150pf, 50V 65%

Designator	Part Number	Description
C5, C6, C11, C12 C30, C32, C40	5052-15041-00	Capacitor, .22µf, 25V Y5V, 0805
C13, C27, C28, C33 C34	5052-16078-00	Capacitor, .068µf, 25V 610%, 7R 0805
C14, C35, C36	5040-14630-00	Capacitor, 2200µf, 25V Radial
C29	5040-11036-00	Capacitor, 47µf, 16V Radial 620%, 105C
C26	5052-16221-00	Capacitor, 68µf, 16V Y5V +80% -20%, 0805
D1	5671-16083-00	LED, Red Side View, SMT
U4	5250-16069-00	IC, Regulator 78L05 SOIC8
U5	5250-16070-00	IC, Regulator 78L08 SOIC8
U2	5370-16072-00	IC, LM324A Quad OpAmp SOIC14
U3	5370-16073-00	IC, Audio Amp TDA7375
U1	5371-16074-00	IC, DAC Stereo, 16Bit CS4333, SOP8
L2 - L7	5553-16075-00	Ferrite BD, 60ç, 6A, 1806 SMD
J1	5791-16076-08	Connector, JST PH, Vertical 8-Pin
J3	5791-16071-06	Header, PCB Mount, R/A MiniFit 6-Pin
J2	5796-14955-00	Connector, 4 CKT, Vertical Header 10A/250V
HS1	5705-16067-00	Heat Sink, Multiwatt 15, 2 Inch

04-12492-1
Coin Door Interface PCB Assembly
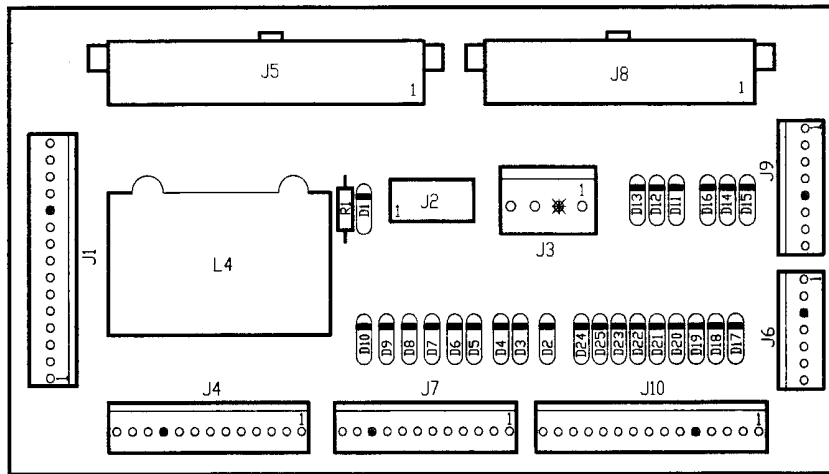
Designator	Part Number	Description
D1-D25	5070-09054-00	Diode, 1N4004, 1.0A
J5	5791-13356-24	Header, PCB Mount, 0.165 Center, 24 Pin
J8	5791-13356-20	Header, PCB Mount, 0.165 Center, 20 Pin
J9	5791-13830-08	8H, Straight Square Pin, .100 Solid Tab
J6	5791-13830-07	7H, Straight Square Pin, .100 Solid Tab
J1, J10	5791-13830-15	15H, Straight Square Pin, .100 Solid Tab
J7	5791-13830-12	12H, Straight Square Pin, .100 Solid Tab
J4	5791-13830-13	13H, Straight Square Pin, .100 Solid Tab
J3	5791-13830-04	4H, Straight Square Pin, .156
J2	5791-11000-10	10 Square Pin Straight Header, .100 w/Shroud
R1	5010-13517-00	Resistor, 15ç, ¼W

04-12612
2 Switch Flipper PCB Assembly
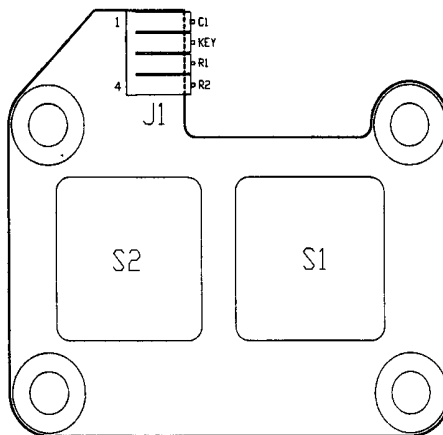
Designator	Part Number	Description
J1	5791-12622-04	R/A Square Pin Header, .100 Solid Tab
S1, S2	5641-16194-00	Keyswitch w/Jumper

A-18617-1
Trough IR LED PCB Assembly
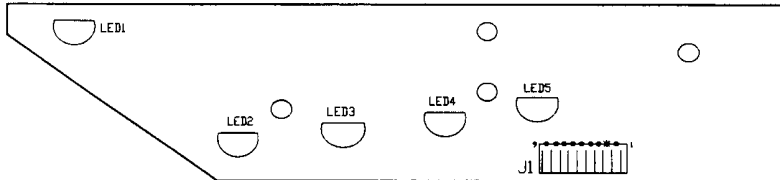
Designator	Part Number	Description
LED1 – LED5	5671-12731-00	Infra Red Diode
J1	5791-12622-09	Connector, 9-Pin Header Sq.

A-18618-1
Trough IR Photo Transistor PCB Assembly
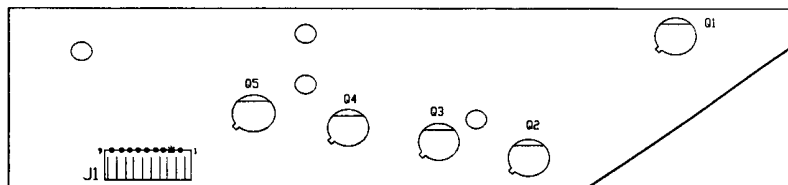
Designator	Part Number	Description
Q1 – Q5	5163-14114-00	Infra Red Photo Transistor
J1	5791-12622-09	Connector, 9-Pin Header Sq.

A-20246
10-Opto PCB Assembly w/Bracket
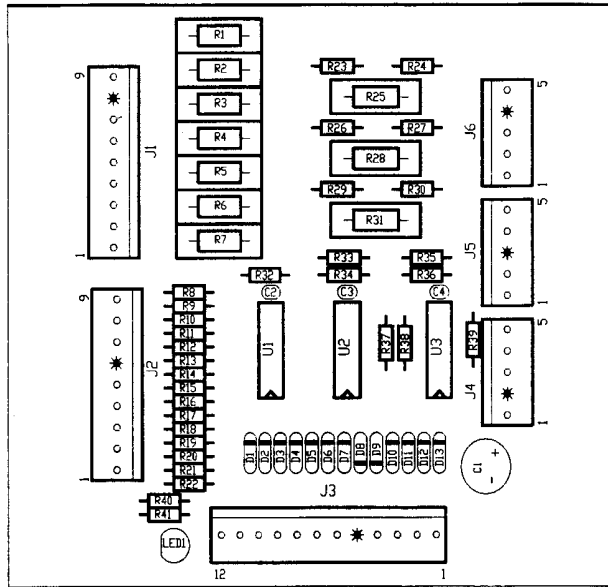
Designator	Part Number	Description
–	A-18159.1	10-Opto PCB Assembly
C1	5040-10974-00	Capacitor, 100M, 35V radial
C2–C4	5043-08996-00	Capacitor, 0.1M, 50V ±20% Ax.
D1-D13	5070-09054-00	Diode 1N4004, 1.0A
J1, J2	5791-10862-09	Connector, 9-Pin Header
J3	5791-10862-12	Connector, 12-Pin Header
J4- J6	5791-10862-05	Connector, 5-Pin Header
LED1	5671-13732-00	LED, Display Red T-1 ¾
R1-R7, R28, R31, R50	5010-12928-00	Resistor, 270Ω, 2W, 5%
R8-R24, R26, R27, R29, R30	5010-09999-00	Resistor, 2KΩ, ¼W, 5%
R32, R35, R39-R41	5010-09162-00	Resistor, 100KΩ, ¼W, 5%
R34, R36-R38,	5010-08774-00	Resistor, 22KΩ, ¼W, 5%
R33	5010-08776-00	Resistor, 68KΩ, ¼W, 5%
U1-U3	5370-12272-00	IC, LM339 Quad Comp
–	01-10756	PCB Mounting Bracket
–	07-6688-18N	Rivet, 1/8" x 3/16"

A-15646-4
24 Opto PCB Assembly w/Spacers
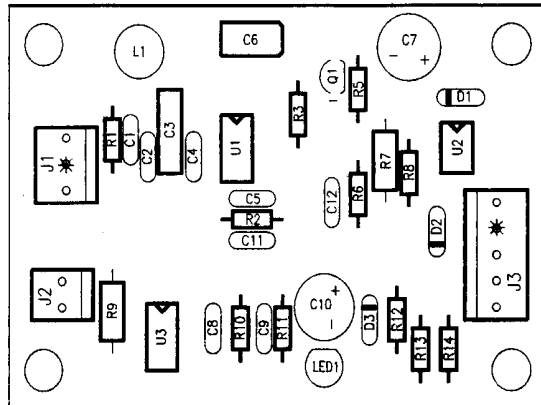
Designator	Part Number	Description
–	A-15646	24 Opto PCB Assembly
C1, C9	5048-11031-00	Capacitor, .001µf, 50V, 10%
C2	5048-12577-00	Capacitor, .47µf
C3	5043-10893-00	Capacitor, .0015µf
C4, C12	5043-09065-00	Capacitor, 470pf
C5, C11	5043-08966-00	Capacitor, 0.1µf
C6	5041-10588-00	Capacitor, 6.8µf
C7, C10	5040-10974-00	Capacitor, 100µf, 35V, +80%/-20%
C8	5043-08980-00	Capacitor, .01µf
D1-D3	5070-09054-00	Diode, IN4004, 1A
J1	5791-12273-03	Connector, 3H Straight Square Lock, .156
J2	5791-12273-02	Connector, 2H Straight Square Lock, .156
J3	5791-12273-05	Connector, 5H Straight Square Lock, .156
L1	5551-10890-00	Inductor, 10mH
LED1	5671-13732-00	Display, Red LED, 1

Designator	Part Number	Description
Q1	5192-13591-00	Transistor, MPSA64, PNP Darlington
R1	5010-08997-00	Resistor, 2.7Kç, 1/4W, 5%
R2	5010-10257-00	Resistor, 75Kç, 1/4W, 5%
R3	5010-09768-00	Resistor, 180ç, 1/4W, 5%
R4	5010-09039-00	Resistor, 10ç, 1/4W, 5%
R5	5010-09324-00	Resistor, 27Kç, 1/4W, 5%
R6	5010-09162-00	Resistor, 100ç, 1/4W, 5%
R7	5010-08930-00	Resistor, 470ç, 1/2W, 5%
R8	5010-09034-00	Resistor, 10Kç, 1/4W, 5%
R9	5010-13509-00	Resistor, 330ç, 1/2W, 5%
R10	5010-10022-00	Resistor, 7.5Kç, 1/4W, 5%
R11	5010-08773-00	Resistor, 18Kç, 1/4W, 5%
R12	5010-09534-00	Resistor, 0ç, Jumper
R13	5010-09085-00	Resistor, 1.5Kç, 1/4W, 5%
U1	5370-10891-00	IC, Opto Receiver MC3373
U2	5490-10892-00	IC, Opto Isolator
U3	5431-10449-00	IC, 555 Timer
–	03-9255-3	Spacer, #8 x .541

A-17730-1
Ball Shooter Assembly
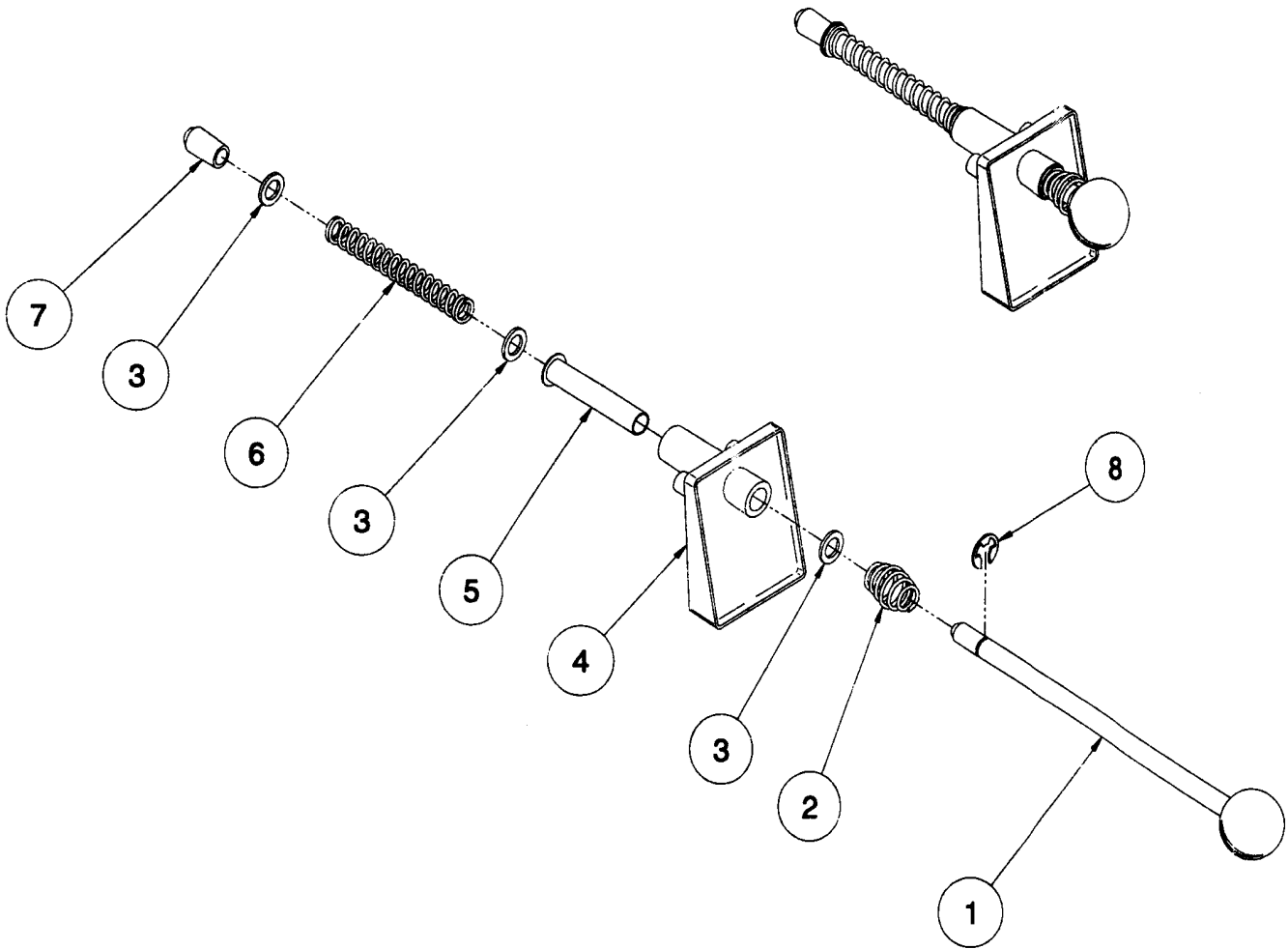
Item	Part Number	Description
1	20-9927-1	Ball Shooter Knob w/Shaft
2	10-149	Outer Spring
3	4700-00051-00	25/64 x 5/8 x 16GA Washer
4	21-6645-1	Shooter Housing
5	03-7357	Shooter Sleeve
6	10-148-4	Power Spring
7	23-6327	Ball Shooter Tip
8	20-8712-37	E-Ring, Ø3/8" Shaft

A-19963-4
Ball Trough Assembly
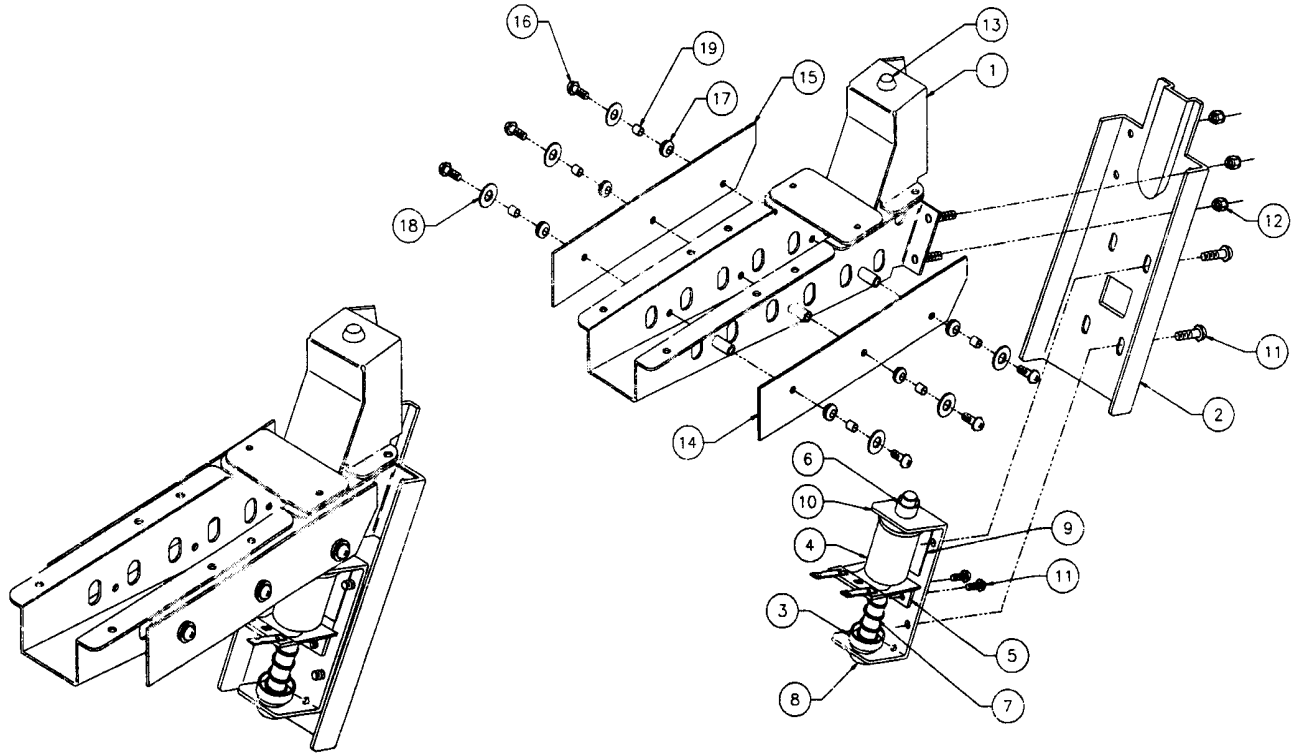
Item	Part Number	Description	Item	Part Number	Description
1	A-16809-2	Ball Trough Welded Assembly	12	4408-01119-00	Nut 8-32 ESN
2	01-11587	Ball Trough Front	13	23-6702	Bumper Plug
3	A-6306-2	Bell Armature Assembly	14	A-18617-1	Trough IRED LED PCB Assembly
4	AE1-26-1500	Coil	15	A-18618-1	Trough IRED Transistor PCB Assembly
5	01-8-508-T	Coil Retainer Bracket	16	4006-01003-10	MS 6-32 x 5/8" P-PH-S
6	03-7067-5	Coil Tubing	17	23-6626	Rubber Grommet
7	10-135	Spring	18	4700-00004-00	FW .146 x .375 x .032
8	23-6420	Rubber Grommet	19	02-4975	Bushing
9	03-8523	Insulator			
10	01-11586	Coil Mounting Bracket			
11	4008-01227-05	MS 8-32 x 5/16" Pin-Hd-S			

A-23001-R-3 Flipper Assembly

Centerline of flipper shaft (not shown).
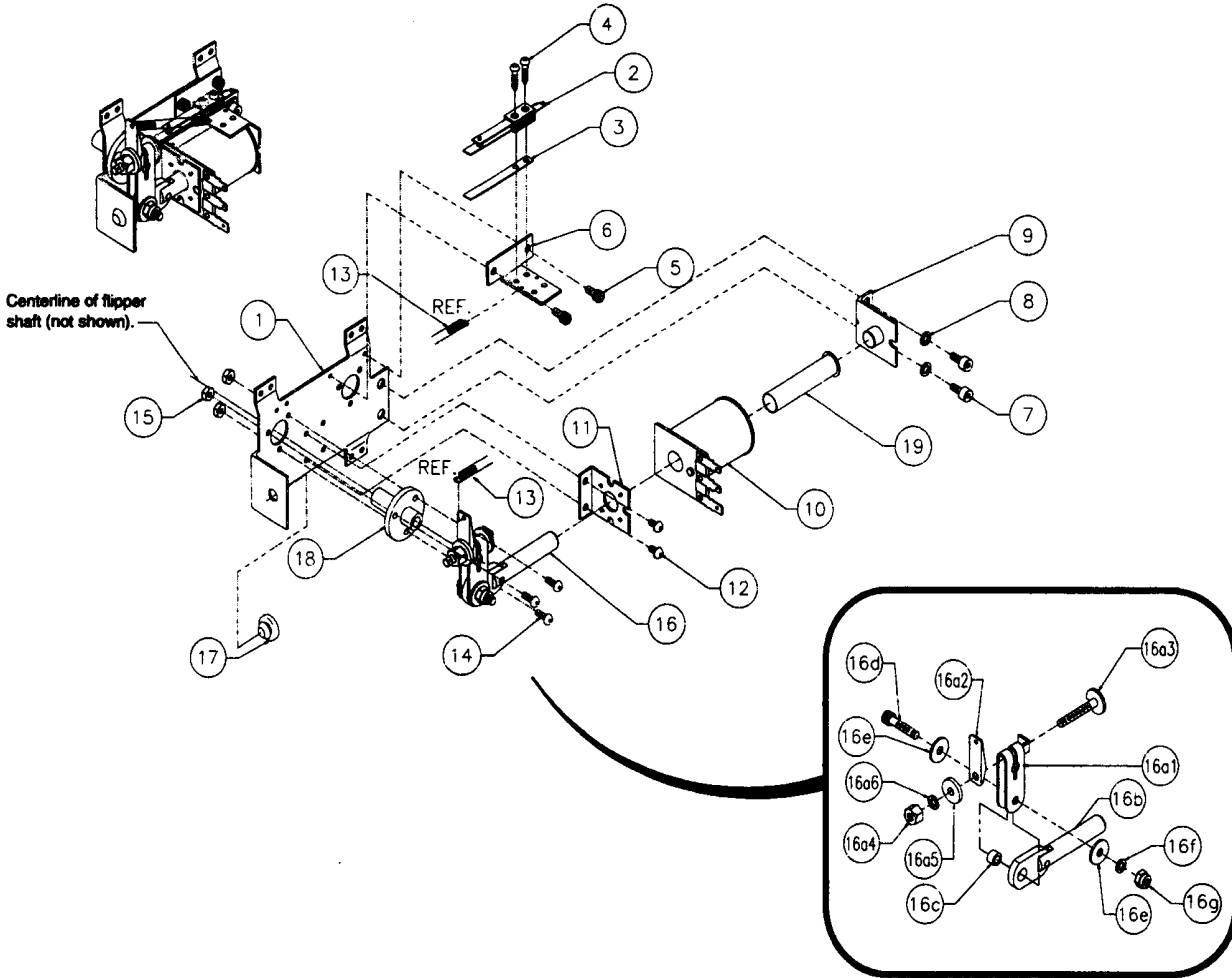
Item	Part Number	Description
1	B-13104.1-R	Flipper Bracket Assembly, Right
2	SW-1A-194	Switch Assembly
3	03-9878	Shock Deflector
4	4006-01003-08	MS 6-32 x ½" P-PH-S
5	4008-01227-05	MS 8-32 x 5/16" Pin Hd-SEMS
6	01-14998	Switch Bracket
7	4010-01066-06	CS-10-31 x 3/8" SH
8	4701-00004-00	LW #10 Split
9	A-12390	Flipper Stop Bracket Assembly
10	FL1-11722	Flipper Coil (Green)
11	01-7695-1	Solenoid Bracket
12	4006-01003-04	MS 6-32 x ¼" P-PH-S
13	10-364	Spring
14	4006-01003-07	MS 6-32 x 7/16" P-PH-S
15	4406-01128-00	Nut 6-32 Keps
16	A-23000	Flipper Crank Link Assembly
16a)	A-22999	Flipper Crank Assembly
16a)1.	01-11764-R	Flipper Crank, Right

Item	Part Number	Description
16a)2.	01-9376	Bracket Retaining Spring
16a)3.	04-11222	Locking Stud
16a)4.	4410-01127-00	Nut 10-32 Hex Heavy Duty
16a)5.	4700-00107-00	FW .203 x .625 x .104
16a)6.	4701-00004-00	LW #10 Split
16b)	A-15847	Flipper Link Assembly
16c)	02-4676	Bushing – Link Spacer
16d)	4010-01066-14	CS 10-32 x 7/8" SH
16e)	4700-00023-00	FW .203 x .625 x .059
16f)	4701-00004-00	LW #10 Split
16g)	4410-01132-00	Nut 10-32 ESNA
17	23-6577	Bumper Plug
18	03-7568	Flipper Bushing
19	03-7066-5	Coil Tubing

Associated Parts: (Not Shown)

	23-6519-4	Flipper Ring - Red
	20-10110-6	Flipper Bat w/Shaft

Notes...

Each Flipper Assembly is mounted beneath the playfield, in conjunction with the Plastic Flipper & Shaft, and Flipper Rubber on the upper side of the playfield.

1. *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.*
2. *Any adjustment of the E.O.S. switch must be made at a minimum distance of 0.25 inch from the switch body.*
3. *Longer blade of E.O.S. switch must be made straight. Gap adjustment is done by adjusting shorter blade.*
4. *All moving elements of the assembly must operate freely without any evidence of binding.*
   Apply Loctite™ 245 when reattaching screws to the Flipper Stop Assembly, the Solenoid Bracket, and the Flipper Bushing.

A-23001-L-3 Flipper Assembly

Centerline of flipper shaft (not shown).
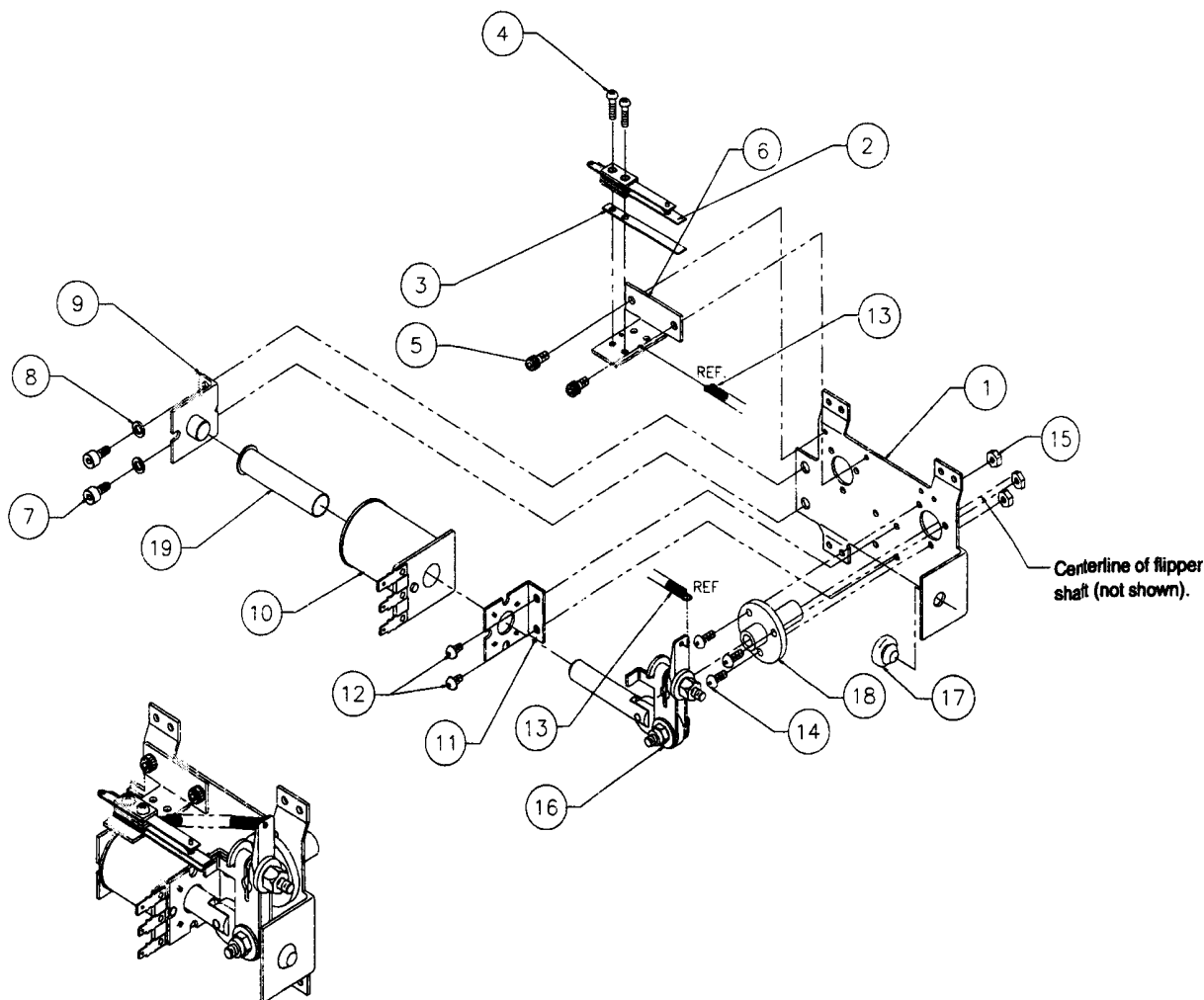
Item	Part Number	Description
1	B-13104.1-L	Flipper Bracket Assembly, Right
2	SW-1A-194	Switch Assembly
3	03-9878	Shock Deflector
4	4006-01003-08	MS 6-32 x ½" P-PH-S
5	4008-01227-05	MS 8-32 x 5/16" Pin Hd-SEMS
6	01-14998	Switch Bracket
7	4010-01066-06	CS-10-31 x 3/8" SH
8	4701-00004-00	LW #10 Split
9	A-12390	Flipper Stop Bracket Assembly
10	FL1-11722	Flipper Coil (Green)
11	01-7695-1	Solenoid Bracket
12	4006-01003-04	MS 6-32 x ¼" P-PH-S
13	10-364	Spring
14	4006-01003-07	MS 6-32 x 7/16" P-PH-S
15	4406-01128-00	Nut 6-32 Keps
*16	A-23000	Flipper Crank Link Assembly
16a)	A-22999	Flipper Crank Assembly
16a)1.	01-11764-R	Flipper Crank, Right

Item	Part Number	Description
16a)2.	01-9376	Bracket Retaining Spring
16a)3.	04-11222	Locking Stud
16a)4.	4410-01127-00	Nut 10-32 Hex Heavy Duty
16a)5.	4700-00107-00	FW .203 x .625 x .104
16a)6.	4701-00004-00	LW #10 Split
16b)	A-15847	Flipper Link Assembly
16c)	02-4676	Bushing – Link Spacer
16d)	4010-01066-14	CS 10-32 x 7/8" SH
16e)	4700-00023-00	FW .203 x .625 x .059
16f)	4701-00004-00	LW #10 Split
16g)	4410-01132-00	Nut 10-32 ESNA
17	23-6577	Bumper Plug
18	03-7568	Flipper Bushing
19	03-7066-5	Coil Tubing

Associated Parts: (Not Shown)

Part Number	Description
23-6519-4	Flipper Ring - Red
20-10110-6	Flipper Bat w/Shaft

*See A-23001-R-3, Flipper Assembly, for assembly detail drawing.
Note: Switch Assembly to be attached to the Switch Bracket using the outermost threaded holes on the bracket

A-17811 Kicker Assembly
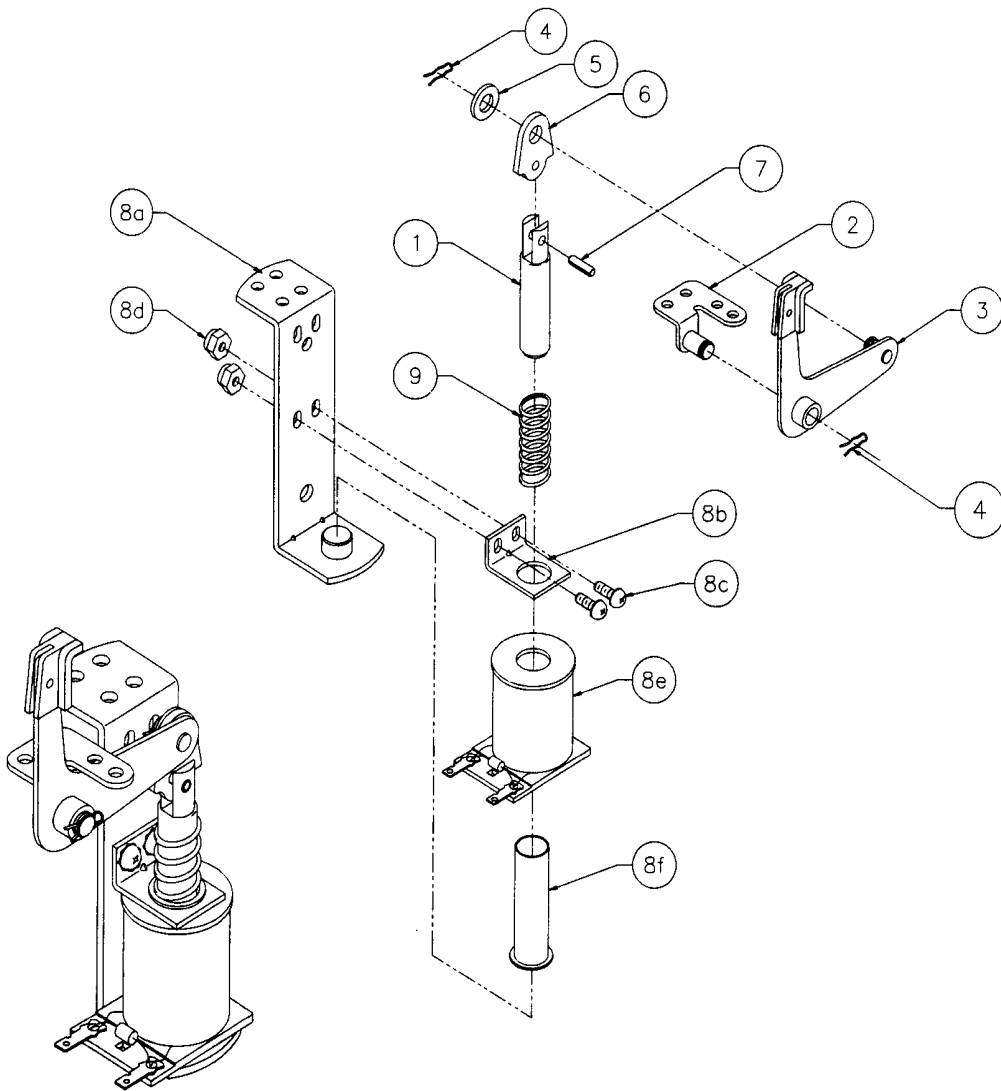
Item	Part Number	Description
1	02-2364	Coil Plunger
2	A-17810	Kicker Mounting Bracket Assembly
3	A-12664	Crank Assembly
4	12-6227	Hair Pin Clip
5	4700-00030-00	FW .265 x .500 x .067
6	03-8085	Armature Link
7	20-8716-5	Roll Pin 1/8" x 7/16"

Associated Parts:

Item	Part Number	Description
8*	A-22207-7	Coil & Bracket Assembly-Left
	A-22206-7	Coil & Bracket Assembly-Right
8a)	A-17808	Bracket & Stop Assembly
8b)	01-8-508-S	Coil Retainer Bracket
8c)	4006-01003-06	MS 6-32 x 3/8" P-PH-S
8d)	4406-01119-00	Nut 6-32 ESN
8e)	AE1-27-1200	Coil Assembly
8f)	03-7066	Coil Tubing
9	10-128	Kicker Spring

Note: One each of assembly numbers A-22207-6 and 22206-6 is required. The parts required for both assemblies are identical. The illustration shows the left-hand assembly. Rotating part 8e, coil assembly, 180 degrees makes the right-hand assembly. The coil lugs will be facing the opposite direction.

A-21829-1 Eject Assembly
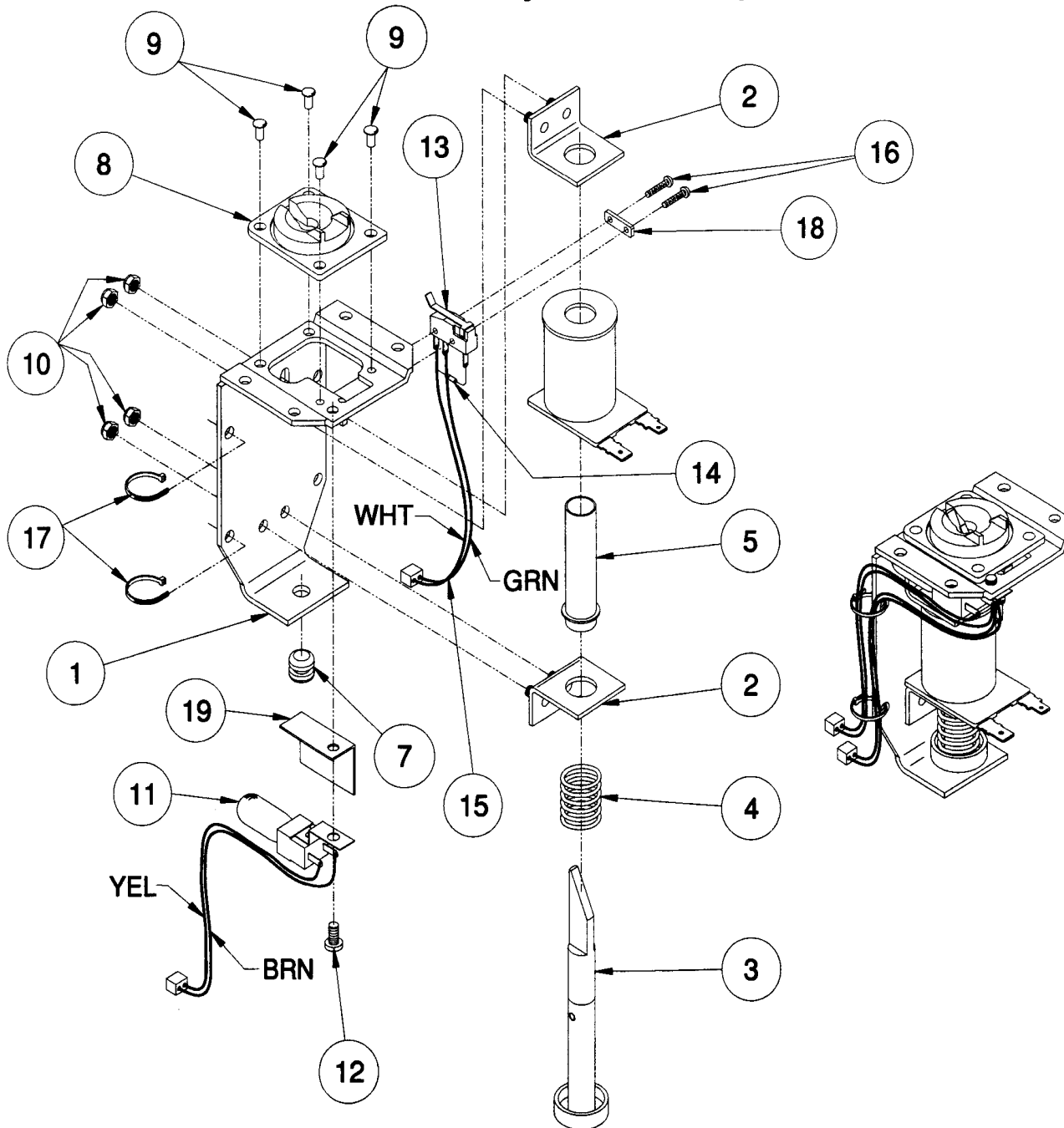
Item	Part Number	Description	Item	Part Number	Description
1	01-14704	Eject Bracket	11	A-20507	Bulb, Socket & Diode Assembly
2	04-10910-1	5/8" Coil Centering bracket			
3	04-10932.1	Eject Plunger Assembly	12	4008-01003-03	MS, #8-32 x 3/16" P-PH-S
4	10-135	Spring	13	5647-12693-66	Switch
5	03-7067-5	Coil Tubing	14	5070-09054-00	Diode, 1N4004
6	AE1-27-1200	Coil Assembly, White	15	H-23294	Cable Assembly
7	23-6420	Rubber Grommet	16	4002-01105-07	MS, #2-56 x 7/16" P-PH-S
8	03-9101-9	Eject Shield, Red	17	03-9454	Cable tie – 4"
9	07-6688-20N	Rivet, 1/8 x 1/4 Nickel	18	01-15218	Switch Protector Plate
10	4408-01119-01	Nut, #8-32 ESN	19	01-15328	Bulb & Socket Insulator

A-23170
Ball Popper Assembly
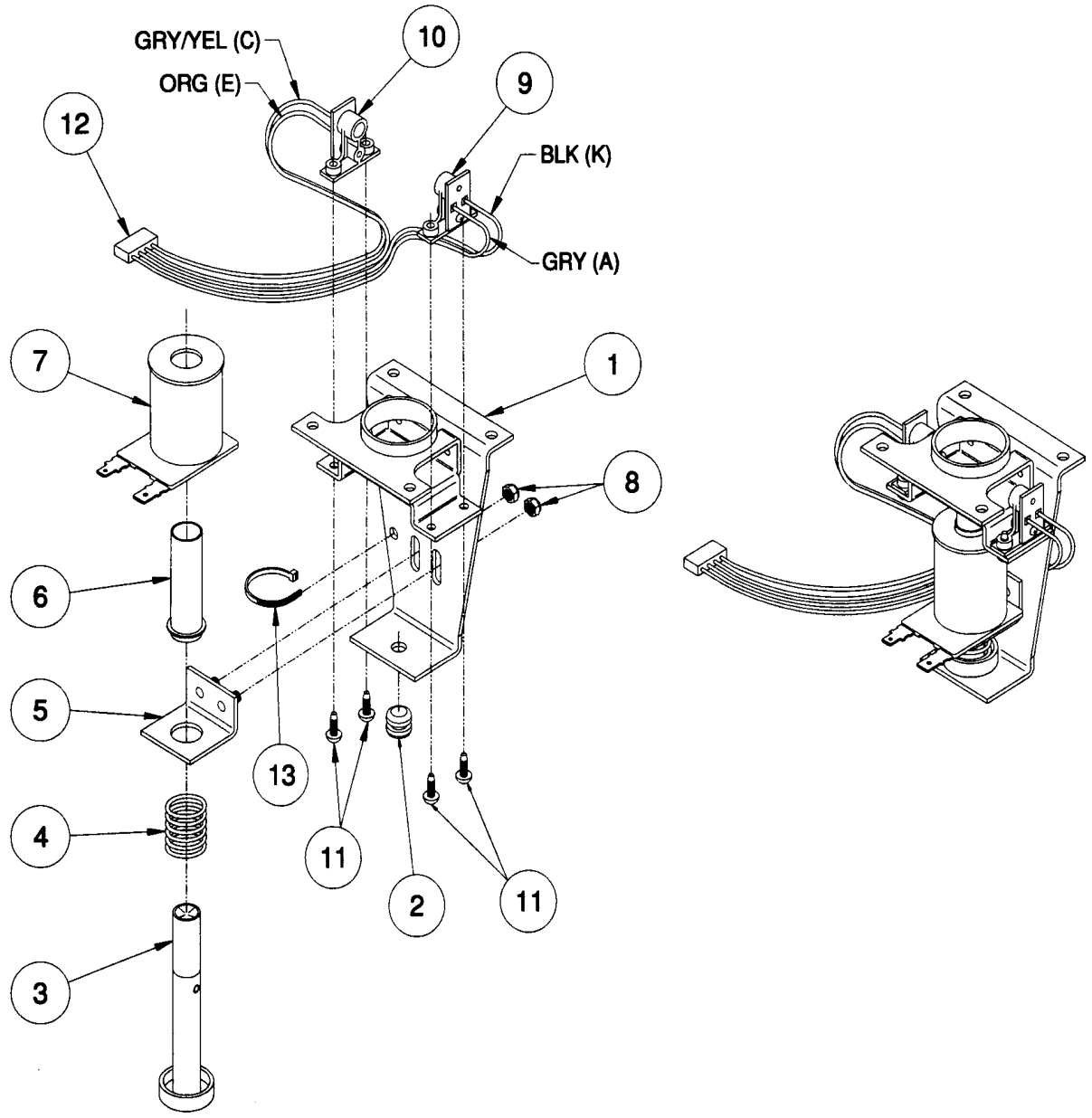
Item	Part Number	Description
1	04-12745	Ball Popper Bracket
2	23-6420	Rubber Grommet
3	A-17767	Bell Armature Assembly
4	10-135	Solenoid Spring
5	04-10910-1	5/8" Coil Centering Bracket
6	03-7067	Coil Tubing
7	AE1-26-1500	Coil Assembly
8	4408-01119-01	Nut, 8-32 ESN
9	A-16908	Opto LED Assembly
10	A-16909	Opto Photo Trans Assembly
11	4106-01013-06	SMS, #6 x 3/8" P-PH Type 25
12	H-23022-8	Opto Cable
13	03-9454	Cable Tie – 4"

A-23293
1 Bank Drop Target Assembly

Item	Part Number	Description
1	03-8750	Flush Target
2	A-14617	Bracket & Post Assembly
3	4408-01119-01	Nut, 8-32 ESNA-NTM
4	A-11397	Drop Target Stop Bracket
5	AE1-26-1200	Coil Assembly
6	01-8413	Coil Mounting Bracket
7	03-7066-4	Coil Tubing
8	A-11388-2	Plunger & Reset Plate Assembly
9	4700-00072-00	FW, .256 x .500 x .032
10	10-392	Compression Spring
11	20-8712-25	E-Ring, ¼" Shaft
12	01-10183	Switch Bracket
13	4006-01003-04	MS, 6-32 x ¼" P-PH-S
14	03-8034	Single Target Stop
15	4010-01025-14	MS, 10-32 x 7/8" P-RH
16	07-6688-17N	Rivet, 5/32 x 1/8" Nickel
17	10-433	Extension Spring
18	5070-09054-00	Diode, 1N4004 1.0A
19	5647-12693-31	Sub-Mini Micro Switch
20	01-8600	Insulator
21	4002-01105-10	MS, 2-56 x 5/8" P-PH-S
22	01-8240	Plate Nut, 2-56
23	01-8647-L	Actuator
24	03-8630	Actuator Guide
25	A-15821	Armature Sub-Assembly
26	A-14913	Frame & Eyelet Assembly
27	10-363	Extension Spring
28	SM1-26-600	Coil Assembly
29	4008-01021-06	MS, 8-32 x 3/8" P-RH Brass
30	4700-00089-00	FW, .172 x .437 x .062 Brass
31	4701-00003-00	LW, #8 Split
32	H-21778-4	2-Pin Switch Cable
33	H-19523	2-Pin Solenoid Cable
34	4700-00003-00	FW, 1/8 x 9/32 x 1/32"

A-23407
1 Bank Drop Target Assembly

Item	Part Number	Description
1	03-8750	Flush Target
2	A-14617	Bracket & Post Assembly
3	4408-01119-01	Nut, 8-32 ESNA-NTM
4	A-11397	Drop Target Stop Bracket
5	AE1-26-1200	Coil Assembly
6	01-8413	Coil Mounting Bracket
7	03-7066-4	Coil Tubing
8	A-11388-2	Plunger & Reset Plate Assembly
9	4700-00072-00	FW, .256 x .500 x .032
10	10-392	Compression Spring
11	20-8712-25	E-Ring, ¼" Shaft
12	01-10183	Switch Bracket
13	4006-01003-04	MS, 6-32 x ¼" P-PH-S
14	03-8034	Single Target Stop
15	4010-01025-14	MS, 10-32 x 7/8" P-RH
16	07-6688-17N	Rivet, 5/32 x 1/8" Nickel
17	10-433	Extension Spring
18	5070-09054-00	Diode, 1N4004 1.0A
19	5647-12693-31	Sub-Mini Micro Switch
20	01-8600	Insulator
21	4002-01105-10	MS, 2-56 x 5/8" P-PH-S
22	01-8240	Plate Nut, 2-56
23	01-8647-R	Actuator
24	03-8630	Actuator Guide
25	A-15821	Armature Sub-Assembly
26	A-15209	Frame & Eyelet Assembly
27	10-363	Extension Spring
28	SM1-26-600	Coil Assembly
29	4008-01021-06	MS, 8-32 x 3/8" P-RH Brass
30	4700-00089-00	FW, .172 x .437 x .062 Brass
31	4701-00003-00	LW, #8 Split
32	H-23019-2	2-Pin Switch Cable
33	H-19523	2-Pin Solenoid Cable
34	4700-00003-00	FW, 1/8 x 9/32 x 1/32"

A-23010
Bumper Target Coil Assembly

Playfield shown for
reference only
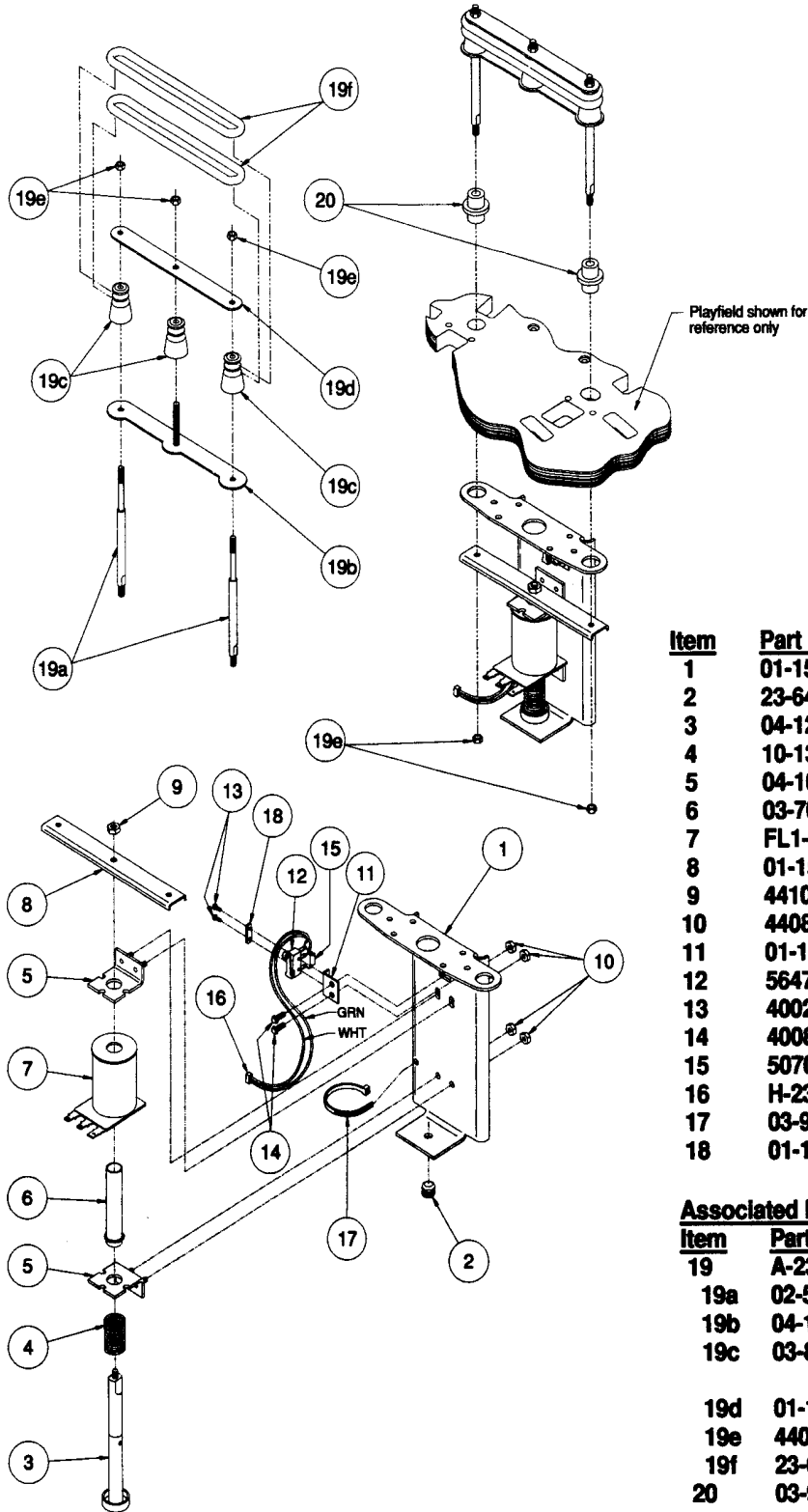
Item	Part Number	Description
1	01-15160	Main Coil Mounting Bracket
2	23-6420	Rubber Grommet
3	04-12627.1	Coil Armature Assembly
4	10-135	Spring
5	04-10911-1	¾" Coil Centering Bracket
6	03-7067-6	Coil Tubing
7	FL1-15411	Flipper Coil (Orange)
8	01-15161	Coil Lift Bumper Bracket
9	4410-01132-01	Nut, Hex #10-32 ESN
10	4408-01119-01	Nut, Hex #8-32 ESN
11	01-15169	Switch Mounting Bracket
12	5647-12693-06	Sub-Miniature Micro Switch
13	4002-01105-07	MS, 2-56 x 7/16" P-PH-S
14	4008-01227-06	MS, 8-32 x 3/8" P-H-S
15	5070-09054-00	Diode, 1N4004 1.0A
16	H-23019-8	Cable Assembly
17	03-9454	Cable Tie – 4"
18	01-15218	Switch Protector Plate

Associated Parts:

Item	Part Number	Description
19	A-23009	Bumper Target Assembly
19a	02-5475	Bumper Target Post
19b	04-12626	Bumper Target Bottom Plate
19c	03-8247-30	Bumper Post, Double Star (Light Blue)
19d	01-15159	Bumper Target Top Plate
19e	4408-01119-01	Nut, Hex 8-32 ESN
19f	23-6694-11	3" Rubber Ring (Black)
20	03-9998	Bumper Target Bushing

A-22205-4
Jet Coil & Bracket Assembly
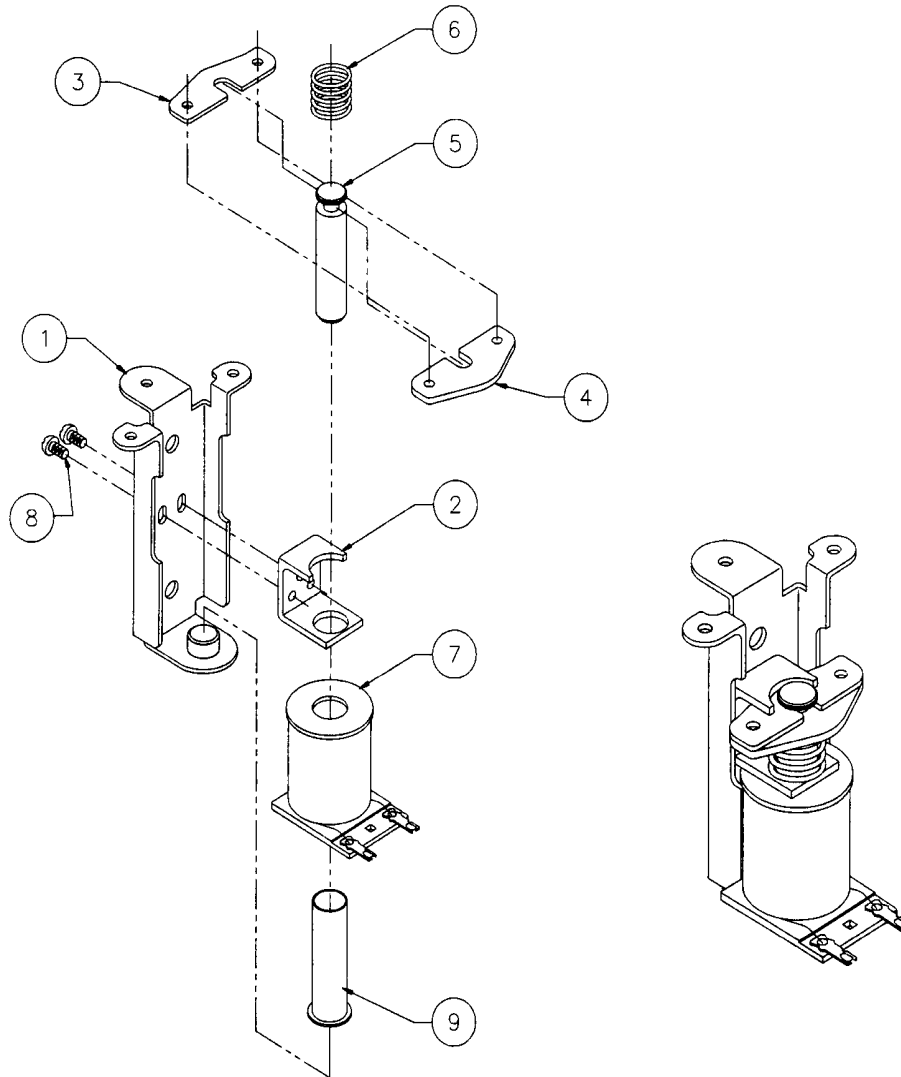
Item	Part Number	Description
1	04-10888	Bracket and Stop Assembly
2	01-1747	Coil Retainer Bracket
3	01-5492	Armature Link (Steel)
4	01-5493	Armature Link (Bakelite)
5	02-3406-1	Coil Plunger
6	10-326	Jet Bumper Spring
7	AE1-26-1200	Coil Assembly
8	4006-01017-04	MS 6-32 x ¼" P-RH-S
9	03-7066	Coil Tubing

Associated Parts: (Not Shown)

Item	Part Number	Description
10	B-12030-2	Jet Bumper Leaf Switch Assembly
10a)	A-16443	Jet Bumper Switch and Diode Assembly
10b)	01-1168	Bumper Switch Mounting Bracket
10c)	01-3670	Curved Switch Plate
10d)	03-7395	Switch Actuator
10e)	4005-01003-12	MS 5-40 x ¾" P-PHS
10f)	4405-01117-00	Nut 5-40 Hex

A-23031 Short Opto Assembly

GRY (A)

ORG (E)

GRY/YEL (C)

BLK (K)
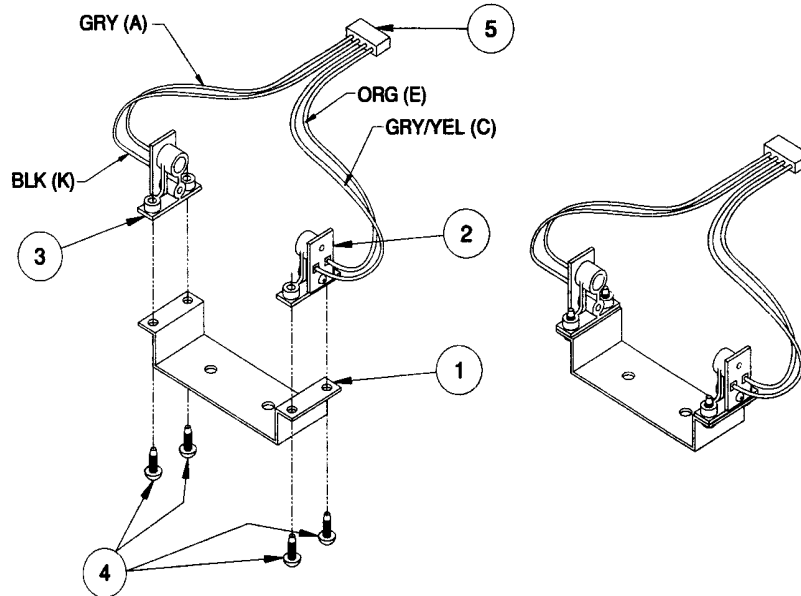
Item	Part Number	Description
1	01-15177	Short Opto Bracket
2	A-16909	Opto Photo Trans Assembly
3	A-16908	Opto LED Assembly
4	4106-01013-06	SMS, #6 x 3/8" P-PH Type 25
5	H-23022-6	Cable Assembly

A-23032 Long Opto Assembly

BLK (K)

GRY (A)

ORG (E)

GRY/YEL (C)

Typ. 8
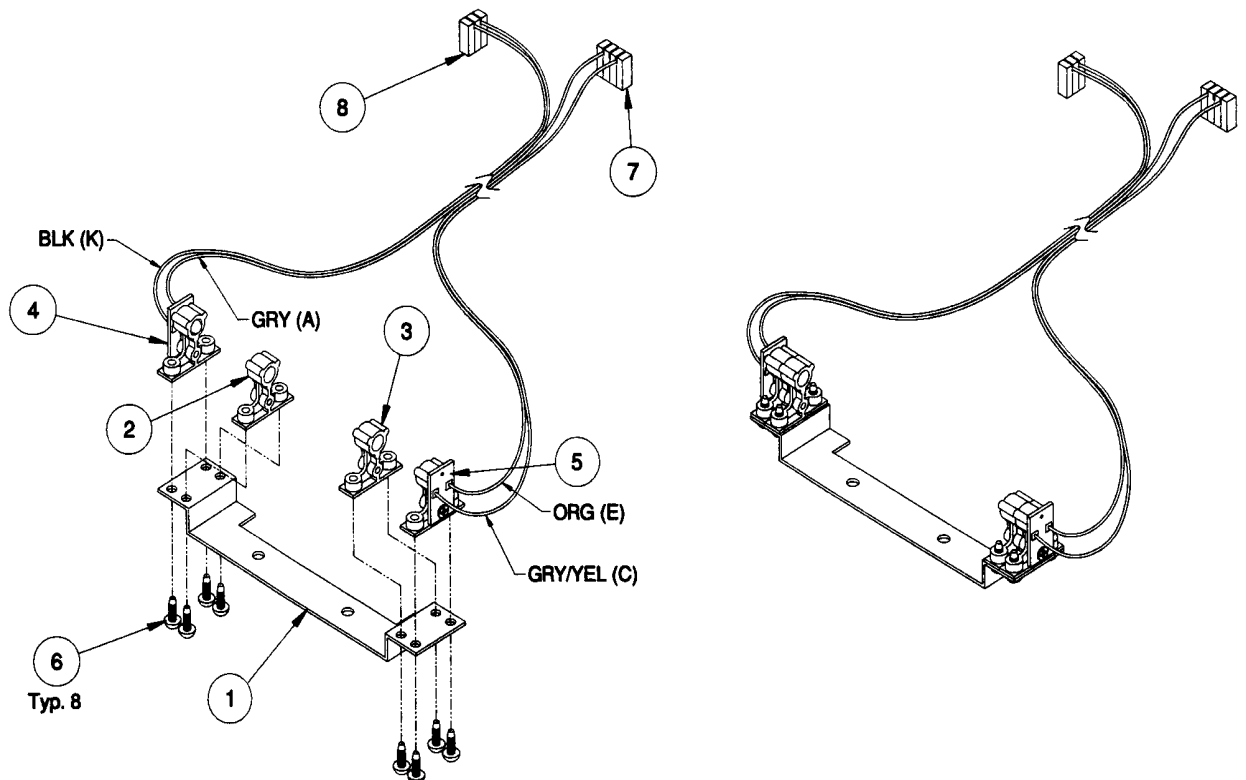
Item	Part Number	Description
1	01-15178	Long Opto Bracket
2	03-8506-1	Opto Mounting Base (White)
2	03-8506	Opto Mounting Base (Black)
4	A-16908	Opto LED Assembly
5	A-16909	Opto Photo Trans Assembly
4	4106-01013-06	SMS, #6 x 3/8" P-PH Type 25
7	H-23530-4	Gen. Opto LED Cable – 3 Pin
8	H-23531-4	Gen. Opto REC Cable – 2 Pin

A-18008-2
Rollover Button Assembly
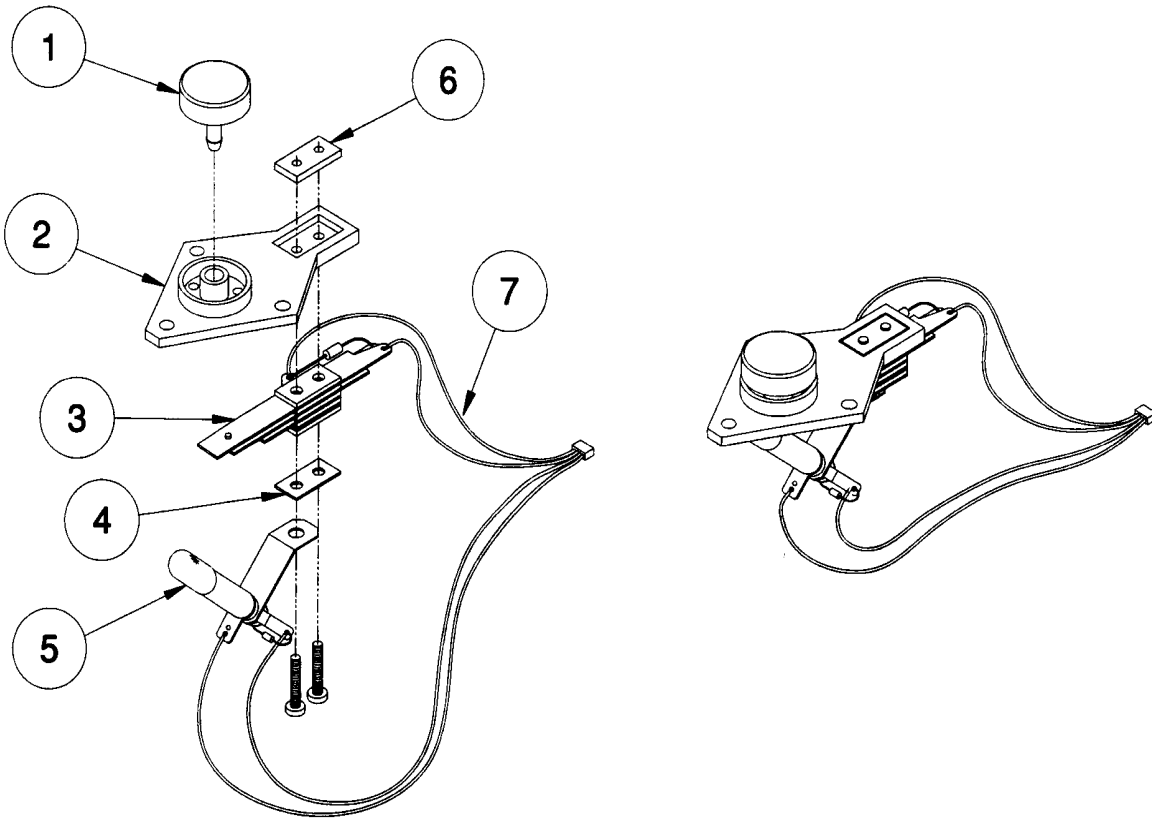
Item	Part Number	Description
1	03-9103.1-8	Rollover Button
2	03-9104	Rollover base
3	A-16443	Jet Switch & Diode Assembly
4	01-3670	Switch Plate
5	A-17807	Socket & #44 Bulb Assembly
6	01-12823	Nut Plate
7	H-23185	Cable Assembly
8	4005-01003-12	MS, 5-40 x ¾" P-PH-S

B-9414-8
Jet Bumper Assembly
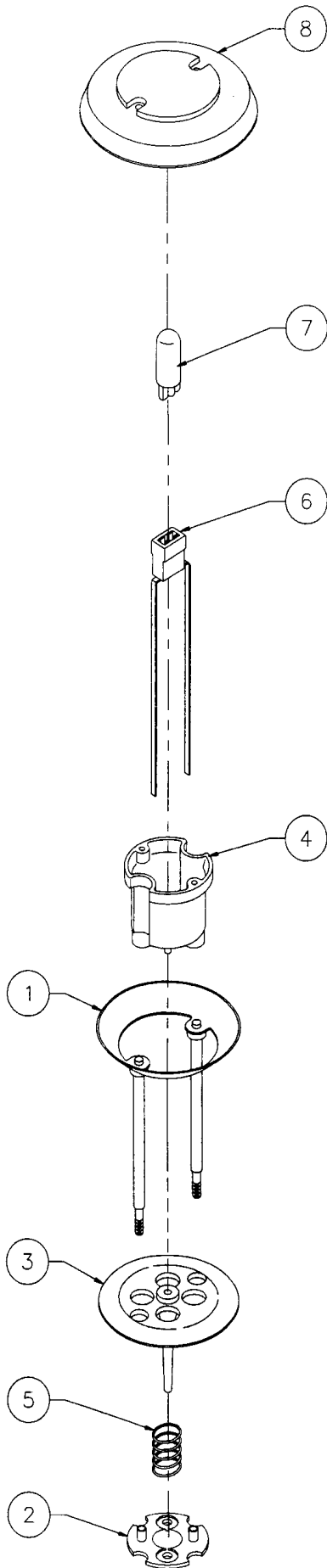
Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base
3	03-6035-31	Bumper Wafer (Light Blue)
4	03-7443-5	Bumper Body
5	10-7	Spring
6	24-8776	Wedge Base Socket
7	24-8768	Bulb #555 (6.3V, 0.25A)

Associated Parts

Item	Part Number	Description
8	03-8254-16	Jet Bumper Cap (Yellow)

A-23147
Back Panel Assembly

Typ. - 6 Bulb Sockets
Typ. - 5 places
Insert tabs on plastic dome, item 3, into slots in bulb socket, item 2, and turn counterclockwise to lock in place. Typ. - 6 places.
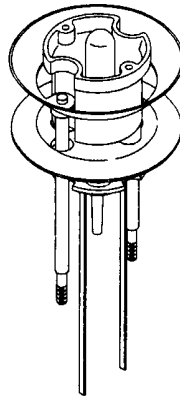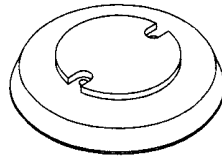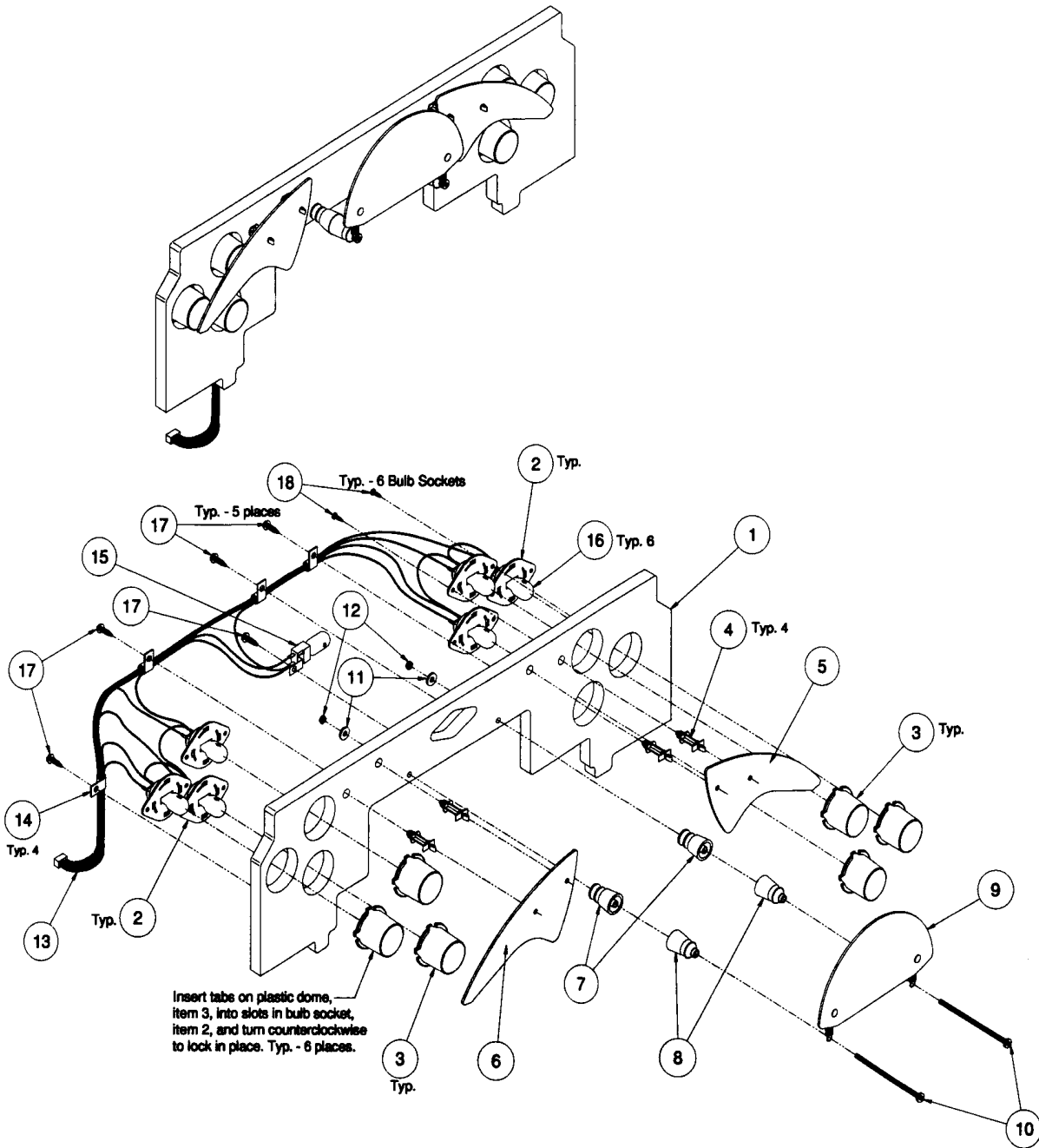
Item	Part Number	Description	Item	Part Number	Description
1	11-1466.1	Wood Back Panel	10	4008-01005-52	MS, 8-32 x 3¼" P-PH
2	A-14265-13	Receptacle & Socket (Clear)	11	4700-00011-00	FW, .172 x .437 x .059
3	03-8171-16	Twist-Lock Mini Dome (Yellow)	12	4408-01119-01	Nut, 8-32 ESN
4*	03-10020	Playfield Plastics Standoff	13	H-23184	Cable Assembly
5*	31-3541-4B	Playfield Plastic	14	03-7655-4	¼" Cable Clamp
6*	31-3541-3C	Playfield Plastic	15	A-17802	W-B Socket w/Bracket
7	03-8247-7	Double Starred Short Post	16	24-8802	Bulb #906
8	03-8319-7	No.8 Starred Post	17	4108-01219-08	SMS, #8 x ½" Lg. P-H-AB
9	A-23298-5	Playfield Plastic Assembly	18	4104-01001-06	SMS, #4 x 3/8" Lg. P-H-AB

*Note: Playfield Plastics are not available separately. They must be purchased as a complete set

A-23157
Neon Saber Assembly
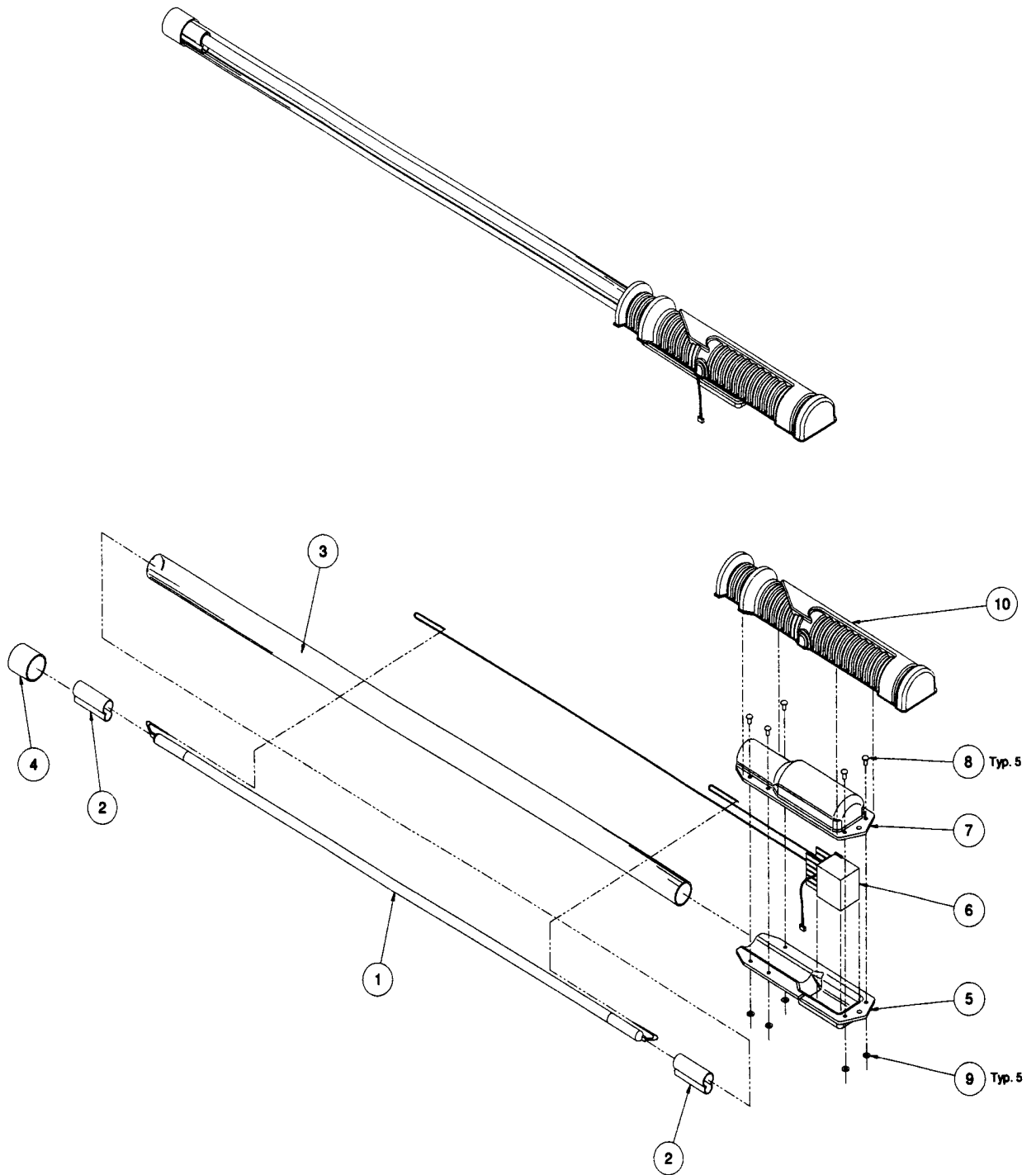
Item	Part number	Description
1	24-8901	Neon Tube
2	20-10458-1	Neon End Cap (Black)
3	03-10009	Saber Tube
4	20-10702	Saber Tube End Cap
5	03-10018	Transformer Bottom Cover
6	04-10947	Neon Transformer
7	03-10017	Transformer Top Cover
8	07-6688-21N	Rivet, Ø.13 x .28 Lg.
9	4700-00003-00	FW, .125 x .281 x .032
10	03-10010	Saber Handle

04-10346.1
Tilt Mechanism Assembly

04-10346.1
TILT MECHANISM ASSY.

20-6502-A
PLUMB BOB

20-10289
FASTENER
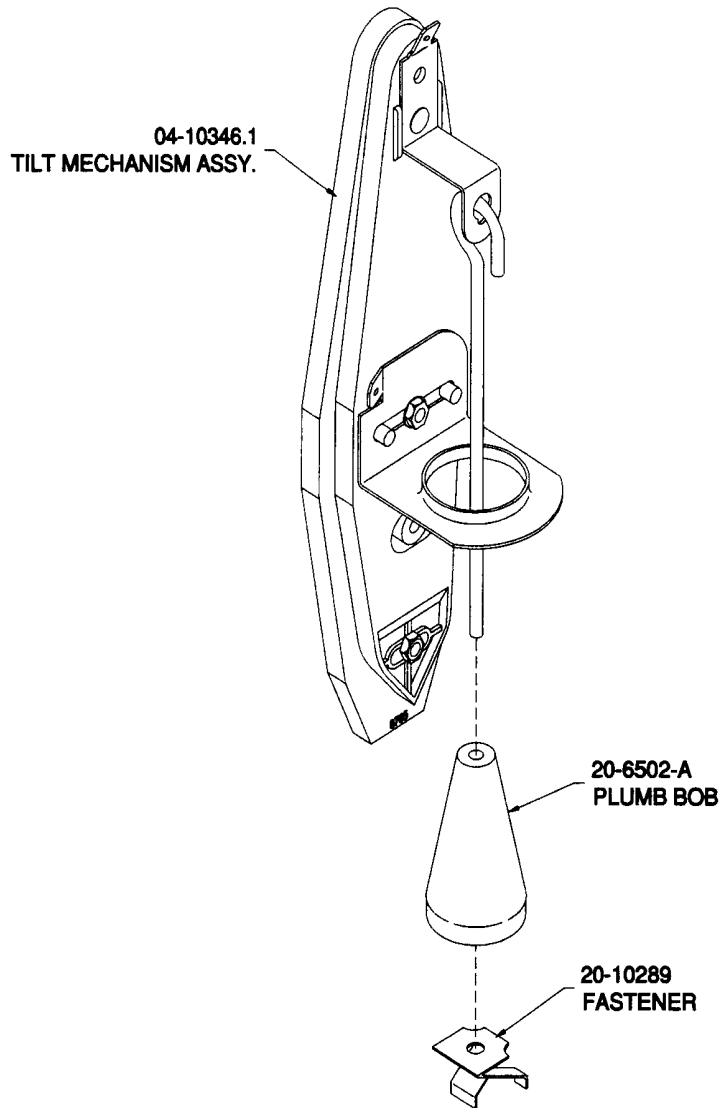
A-22724-1
Computer Case Assembly
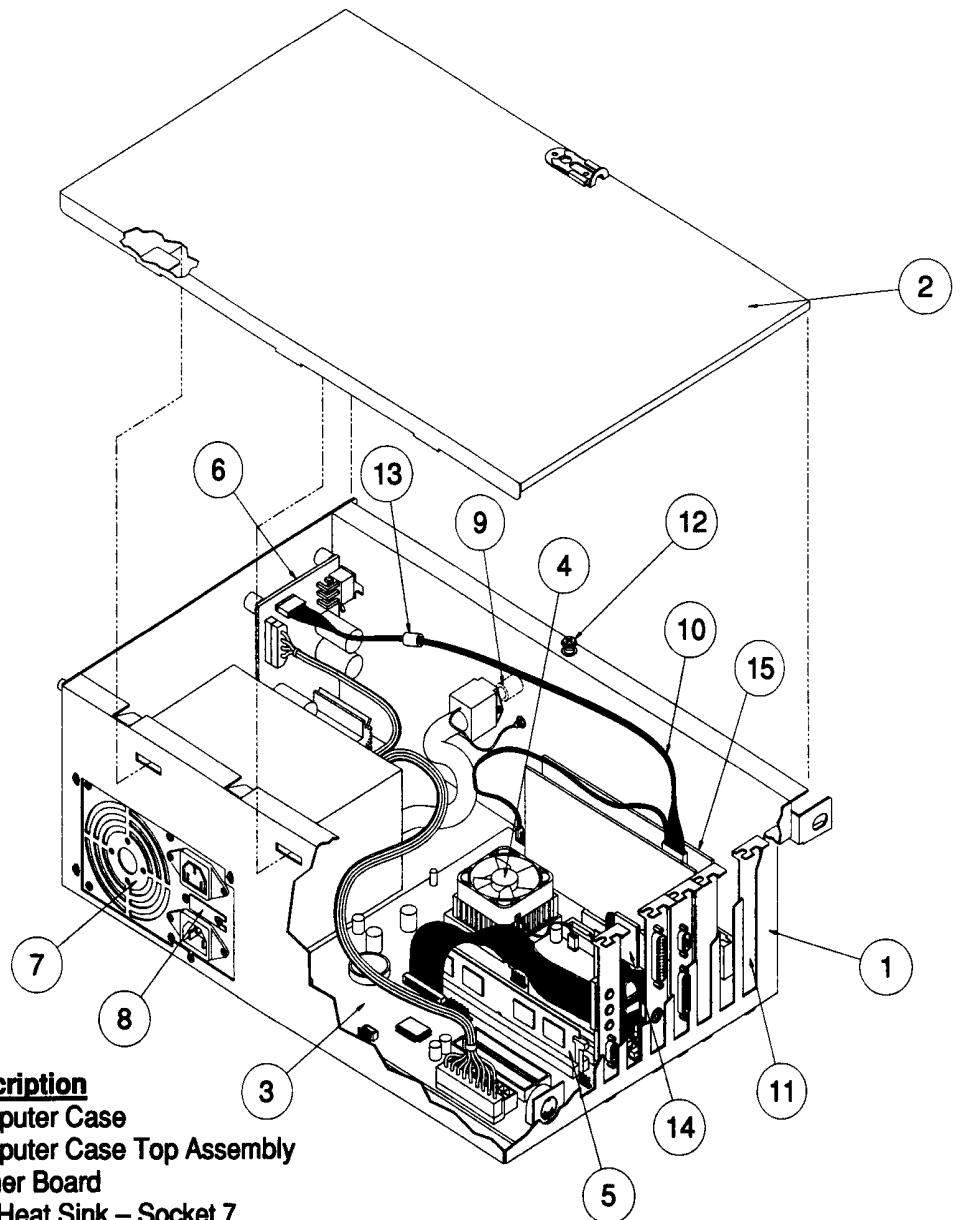
Item	Part Number	Description
1	04-12370.5	Computer Case
2	A-23301	Computer Case Top Assembly
3	04-12604	Mother Board
4	20-10698	Fan/Heat Sink – Socket 7
5	04-12618	SDRAM DIMM Memory Module – 168 Pin
6	04-12867	Audio Amp Assembly
7*	20-10578	Power Supply
8	01-15195	Power Supply Switch Cover
9	03-7601-4	Switch Cap (Red)
10	H-22978	Audio/Reset Cable
11	01-15165	Computer Case Slot Cover
12	02-5477	Bushing
13	5556-16449-00	Ferrite Bushing, .375 ID
14	5556-16364-00	Ferrite Clamp, 26 Pin Max Ribbon cable

Associated Parts

Item	Part Number	Description
15**	A-22994-50069	Prism Card Sandwich Assembly
15a	A-23171-50069	Programmed Prism Card
15b	A-22995-50069	Daughter Card w/ROM

Notes: *Computer case power switch is supplied with item 7, Power Supply.*
**To update Prism Board software, use Prism Update Board (PUB), part number 04-12863 (supplied Separately).*

A-22966
Power Control Box Assembly
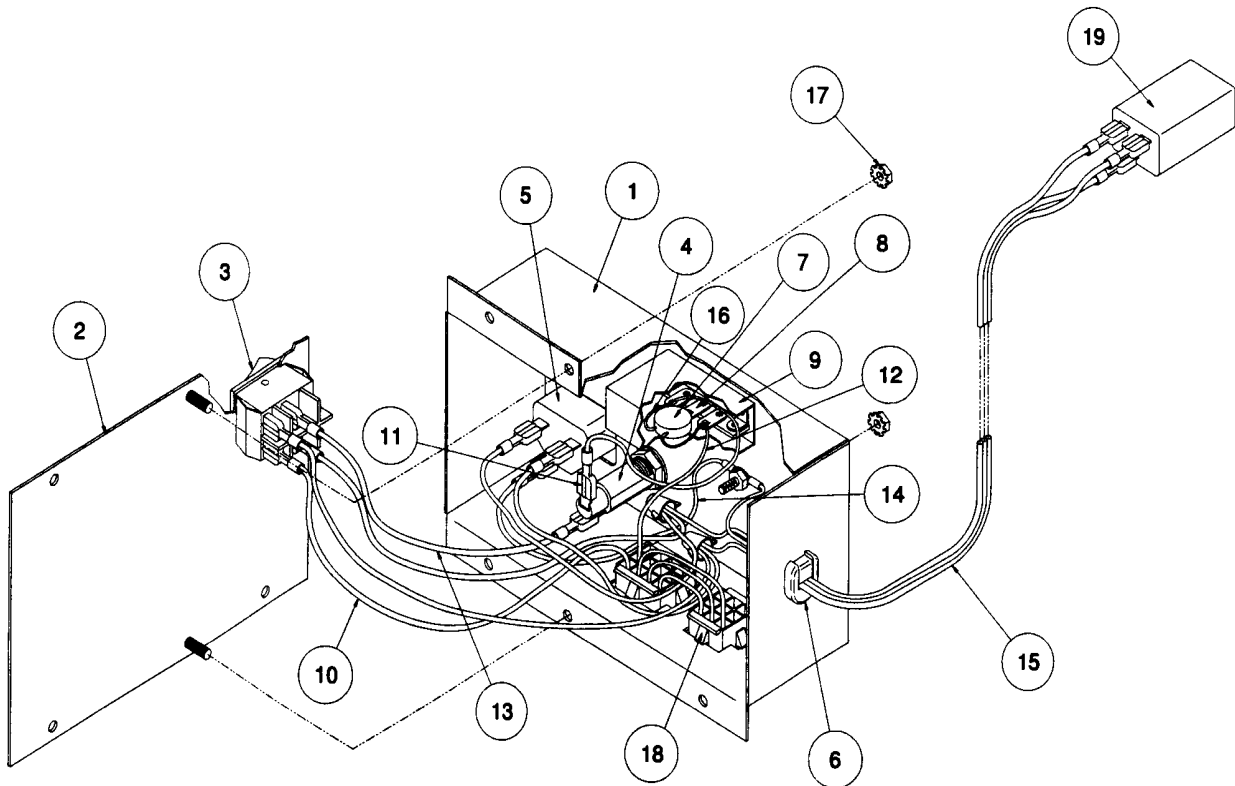
Item	Part Number	Description	Item	Part Number	Description
1	01-15126	Power Control Box	11	H-17543	Jumper, Hot Cable
2	04-12597	Switch Mounting Plate	12	H-23014	Jumper, Hot Interface
3	5642-13935-00	Rocker Switch – DPST	13	H-17545	Jumper, SW/Fuse Cable
4	5733-14734-00	Fuse Holder, 5 x 20mm	14	H-17542	Jumper, Ground Cable
5	5851-13867-00	Outlet, IEC Connector 237 Socket	15	H-23005	3 Conductor Power Cable Assembly
6	03-8712	Strain Relief Bushing	16	RM-21-06	#18 Vinyl Sleeving
7	5016-12978-00	Thermistor, 8A, 2.5R25	17	4408-01128-00	Nut, 8-32 KEPS
8	5822-13865-00	Terminal Strip, 3 CKT, 2 Mounting	18	H-22991	Transformer Programming Cable
9	01-12299	Terminal Strip Insulator	19	5102-14793-00	Line Filter
10	H-23015	Jumper, Neutral SW/1FC			

Note: This drawing is not to be used for the purpose of wiring the Power Control box Assembly. Refer to the appropriate schematic diagram when attempting the wiring of this assembly.

Power Interface/Cordset Application Chart

COUNTRY	UNIVERSAL PWR. INTERFACE ASSEMBLY	VOLTAGE PROGRAMMING JUMP CABLE			4AMP FUSE	5AMP FUSE	POWER ADAPTER CORD	CORDSET								
	A-22966	H-22990-1	H-22990-2	H-22990-3	5731-14530-00	5731-14046-00	5850-14052-00	5850-13271-00	5850-13272-00	5850-13273-00	5850-13274-00	5850-13275-00	5850-13276-00	5850-13277-00	5850-13278-00	A-17175-2
UNITED STATES	X	X				X	X	X								
CANADA	X	X				X		X								
TAIWAN	X	X				X		X								
MEXICO	X	X				X		X								
CENTRAL AMERICA	X	X				X		X								
SOUTH KOREA	X	X				X		X								
PUERTO RICO	X	X				X		X								
AUSTRIA	X		X		X				X							
BELGIUM	X		X		X				X							
FINLAND	X		X		X				X							
FRANCE	X		X		X				X							
GREECE	X		X		X				X							
HOLLAND	X		X		X				X							
HUNGARY	X		X		X				X							
NETHERLANDS	X		X		X				X							
NETH. ANTILLES	X		X		X				X							
NORWAY	X		X		X				X							
POLAND	X		X		X				X							
PORTUGAL	X		X		X				X							
SPAIN	X		X		X				X							
SWEDEN	X		X		X				X							
TURKEY	X		X		X				X							
WEST GERMANY	X		X		X				X							
UNITED KINGDOM	X		X		X					X						
IRELAND	X		X		X					X						
HONG KONG	X		X		X					X						
DENMARK	X		X		X						X					
ITALY	X		X		X							X				
CHILE	X		X		X							X				
PEOPLE'S REP. OF CHINA	X		X		X							X				
SWITZERLAND	X		X		X								X			
AUSTRALIA	X		X		X									X		
NEW ZEALAND	X		X		X									X		
ARGENTINA	X		X		X									X		
JAPAN	X			X		X									X	X
CROATIA	X		X		X				X							

50069-PL
Upper Playfield Parts
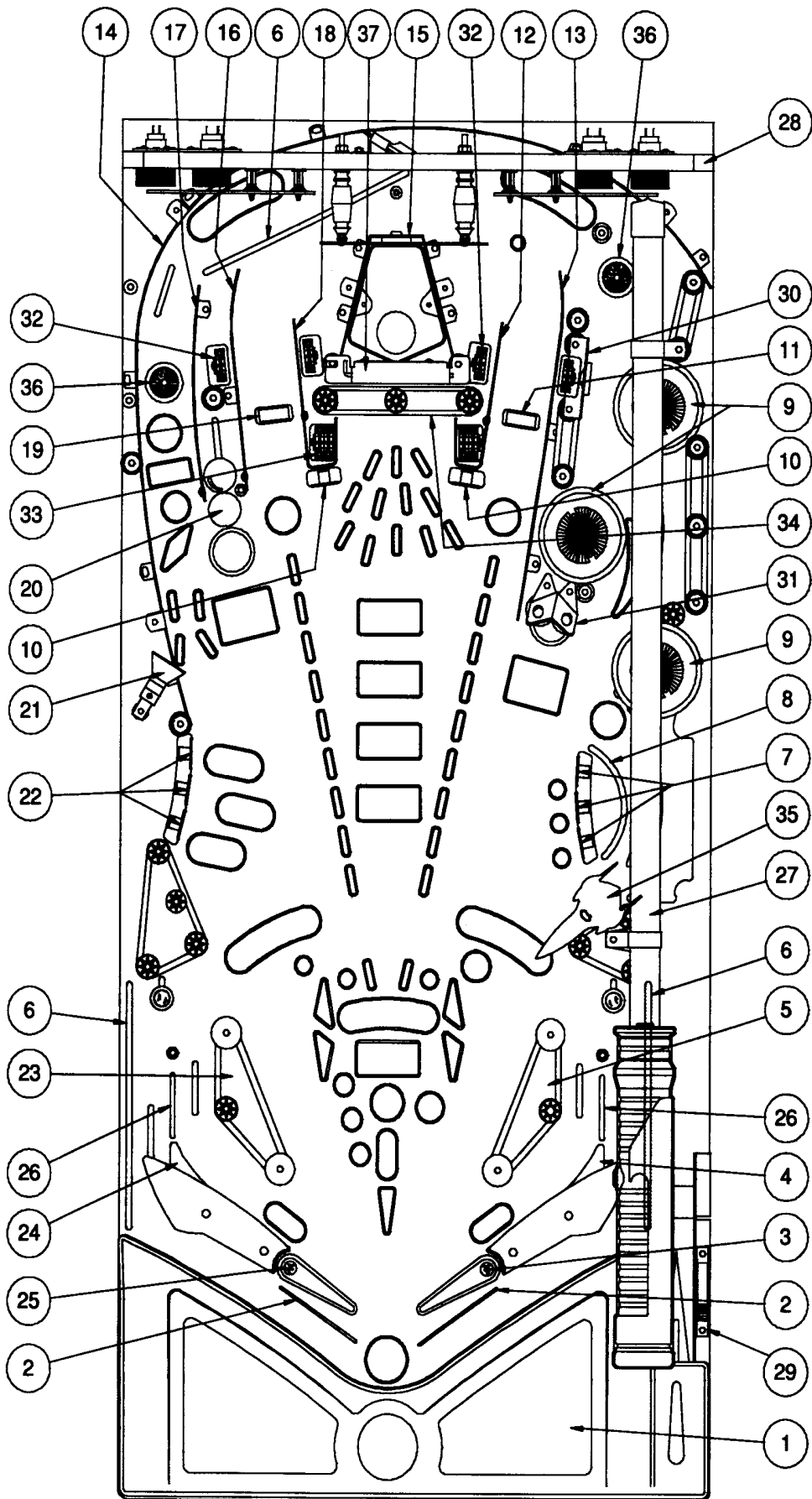
50069-PL
Upper Playfield Parts

Item #	Part Number	Description
1	A-23008	Bottom Arch Assembly
2	12-7210	Rebound Wireform
3	20-10110-6	Flipper Bat & Shaft
	A-23001-R-3	Right Coil Assembly
4	A-23033-1	Right Flipper Return
5	A-17811	Slingshot Assembly
	A-17801	Kicker Switch
	A-22206-7	Coil & Bracket Assembly
6	12-7452	Wire Ball Guide #3
7	A-21576-15	Orange Standup Targets
8	12-7450	Wire Ball Guide #1
9	A-22205-4	Coil & Bracket Assembly
	B-12030-2	Switch Assembly
	B-9414-8	Blue Jet Bumper Assembly
10	A-17799-3	Purple Standup Target
11	A-23407	Drop Target
12	04-12737	Ball Guide #6
13	01-15183	Ball Guide #5
14	04-12733.1	Ball Guide #1
15	A-23169	Ball Guide #7
16	04-12735	Ball Guide #3
17	04-12734	Ball Guide #2
18	04-12736	Ball Guide #4
19	A-23293	Drop Target
20	04-10005	Newton Ball
21	04-12756-18	Reflector Lamp & Cable
22	A-23289-6	Yellow Standup Target
23	A-17811	Slingshot Assembly
	A-17801	Kicker Switch
	A-22207-7	Coil & Bracket Assembly
24	A-23033-2	Left Flipper Return
25	20-10110-6	Flipper Bat & Shaft
	A-23001-L -3	Left Coil Assembly
26	12-7451	Wire Ball Guide #2
27	A-23157	Neon Saber Assembly
28	A-23147	Back Panel Assembly
29	20-9691	Level
	03-8633.1	Mount
	01-15176	Level Bracket
30	A-23168	Ball Guard Assembly
31	A-23034	Eject Deflector Assembly
32	A-23031	Short Opto Assembly
33	A-23032	Long Opto Assembly
34	A-23009	Bumper Target Assembly
	A-23010	Bumper Target Coil Assy.
35	A-23411	Royal Starship Assembly
36	A-18808-2	Rollover Button Assembly
	01-13204	Rollover Button Spacer
37	A-23403	Bumper Gate Assembly

Not Shown:

A-23167	Bottom Arch Support Bracket
04-12739.1	Tinted Playfield Glass w/Decal
20-6500	1-1/16" Steel Ball (4)

50069-PL
Rubber Parts
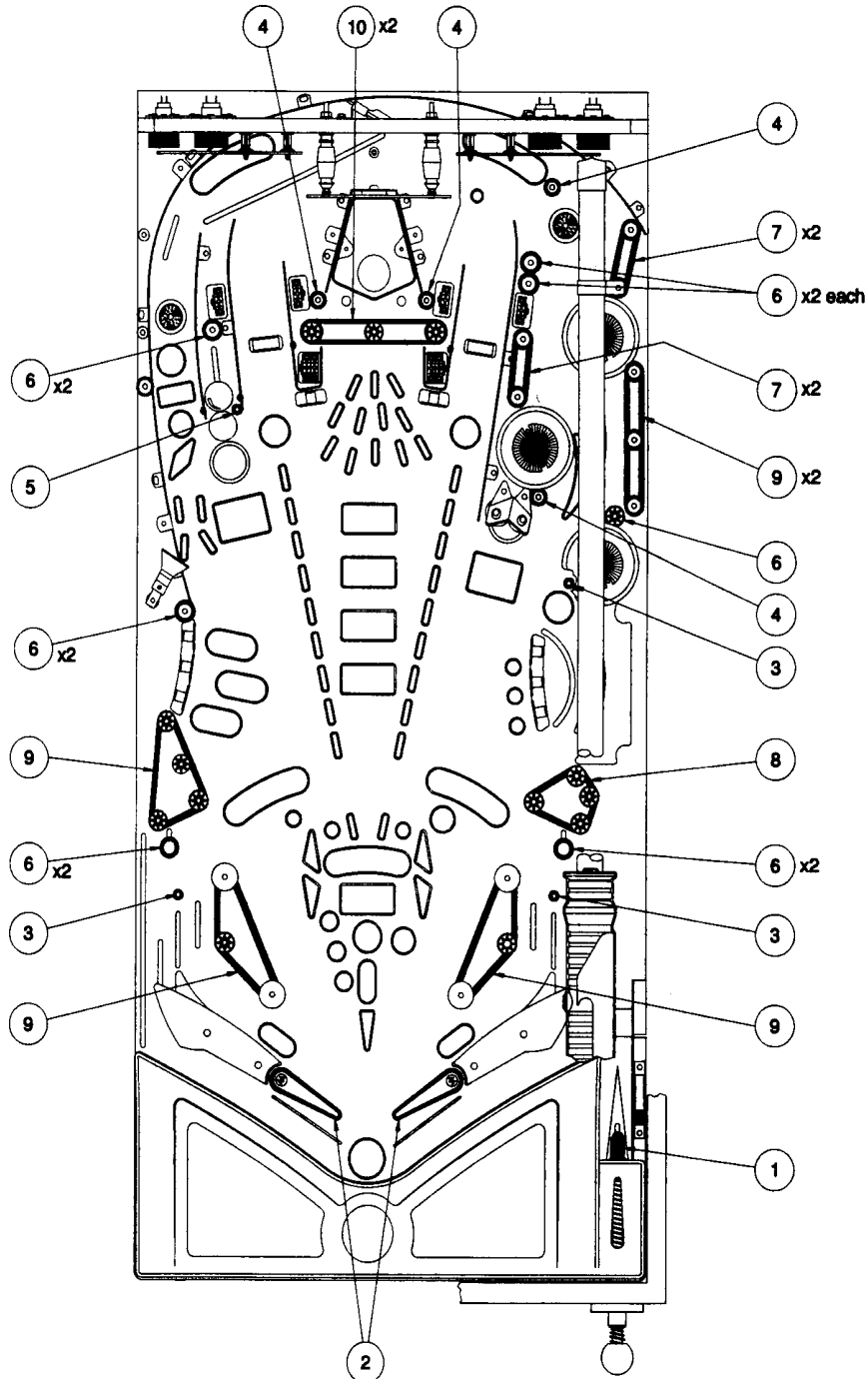
Item	Part Number	Description
1	23-6327	Shooter Tip
2	23-6519-4	Flipper Ring – Red
3	23-6535	Rubber Grommet – White
4	23-6641	Rubber Bumper, .64 OD – Black
5	23-6556	Rubber Bumper Sleeve – Black
6	23-6300	Rubber Ring, 5/16" – White
7	23-6303	Rubber Ring, 1 ¼" – White
8	23-6305	Rubber Ring, 2" – White
9	23-6306	Rubber Ring, 2 ½" – White
10	23-6694-11	Rubber Ring, 3" – Black

Upper Playfield Ramps
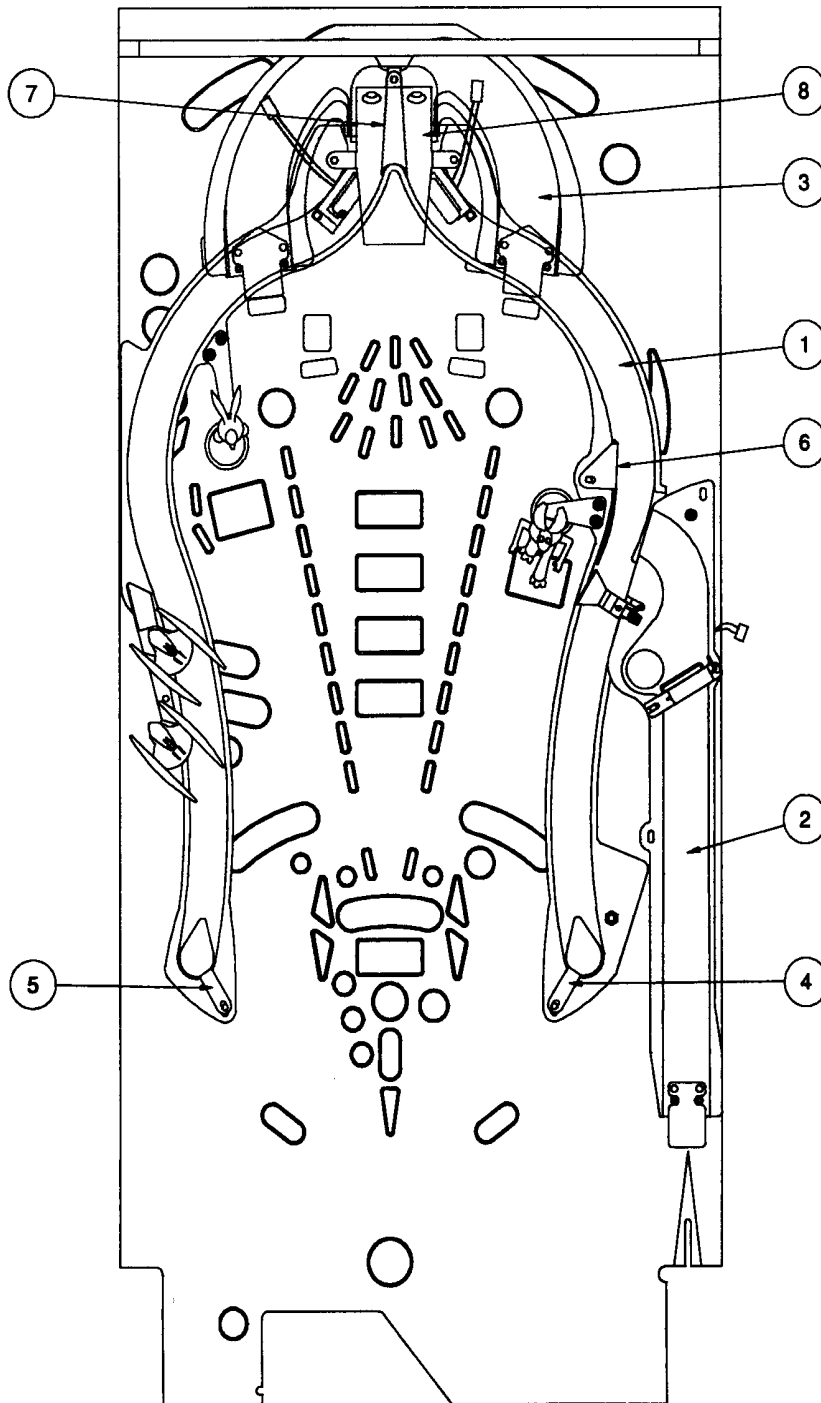
Item	Part Number	Description
1	A-23149	Large Main Ramp Assembly
2	A-23151	Skill Shot Ramp Assembly
3	A-23150	Small Main Ramp Assembly
4	01-15200.1-1	Large Main Ramp End Bracket – Right
5	01-15200.1-2	Large Main Ramp End Bracket – Left
6	01-15199	Large Main Ramp Guard Bracket
7	01-15210.2	Ramp Protector Plate
8	01-15207.1	Ball Popper Scoop

Associated Parts: (Not Shown)

	H-23187	Ramp Reed Switch Cable

50069-PL
Lower Playfield Parts
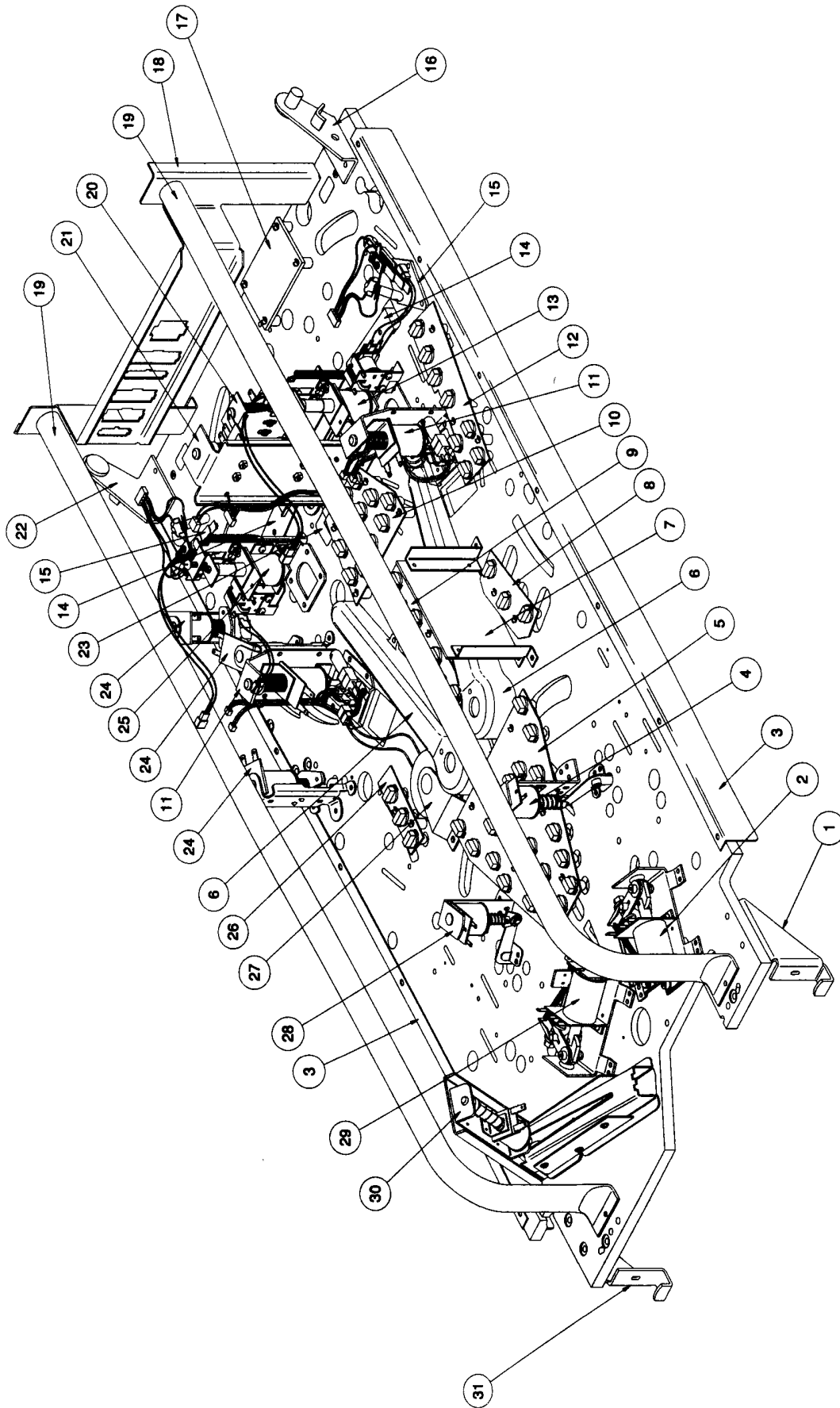
Lower Playfield Parts

Item	Part Number	Description
1	01-14003-2	Hanger Bracket – Left
2	A-23001-L-3	Flipper Assembly – Left
	23-6519-4	Flipper Ring
	20-10110-6	Flipper Bat w/Shaft (Yellow)
3	01-15201.1	Playfield Side Rail
4	A-22207-7	Coil & Bracket Assembly – Left
	A-17811	Kicker Assembly
	10-128	Kicker Spring
5	A-23173	21 Lamp PCB Assembly
6	A-23162	Light Tunnel Assembly
7	A-20246	10 Opto PCB Assembly w/Brackets
8	A-23177	3 Lamp PCB Assembly – Left
9	A-23176	4 Lamp PCB Assembly
10	A-23174	12 Lamp PCB Assembly
11	A-21829-1	Eject Assembly
12	A-23175	8 Lamp PCB Assembly
13	A-23293	1-Bank Drop target Assembly
14	A-23031	Short Opto Assembly
15	A-18008-2	Rollover Button Assembly
	01-13204	Rollover button Spacer
16	04-12608.1-1	Playfield Slide Foot – Right
17	A-15646	24 Opto PCB Assembly
18	01-15125.4	Playfield Cable Bracket
19	01-15133.2	Playfield Support Bracket
20	A-23170	Ball Popper Assembly
21	A-23010	Bumper Target Coil Assembly
	A-23009	Bumper Target Assembly
	03-9998	Bumper target Bushing
22	04-12608.1-2	Playfield Slide Foot – Left
23	A-23032	Long Opto Assembly
24	A-22205-4	Jet Coil & Bracket Assembly
	B-12030-2	Jet Bumper Leaf Switch Assembly
	B-9414-8	Jet Bumper Assembly
25	A-23407	1-Bank Drop target Assembly
26	A-23178	3 Lamp PCB Assembly – Right
27	20-10197	Coil Magnet w/Bracket
28	A-22206-7	Coil & Bracket Assembly – Right
	A-17811	Kicker Assembly
	10-128	Kicker Spring
29	A-23001-R-3	Flipper Assembly – Right
	23-6519-4	Flipper Ring
	20-10110-6	Flipper Bat w/Shaft (Yellow)
30	A-19963-4	Ball Trough Assembly
31	01-14003-1	Hanger Bracket – Right

Playfield Cables (Not Shown)

Part Number	Description
H-23180	Playfield Switch Cable
H-23181-1.1	Playfield Lamp A Cable
H-23181-2.1	Playfield Lamp B Cable
H-23182.1	Playfield Solenoid Cable
H-23183.1	Playfield Opto Cable
H-23186	24" Opto Cable

50069-PL
Lamp Locations (Matrix A)
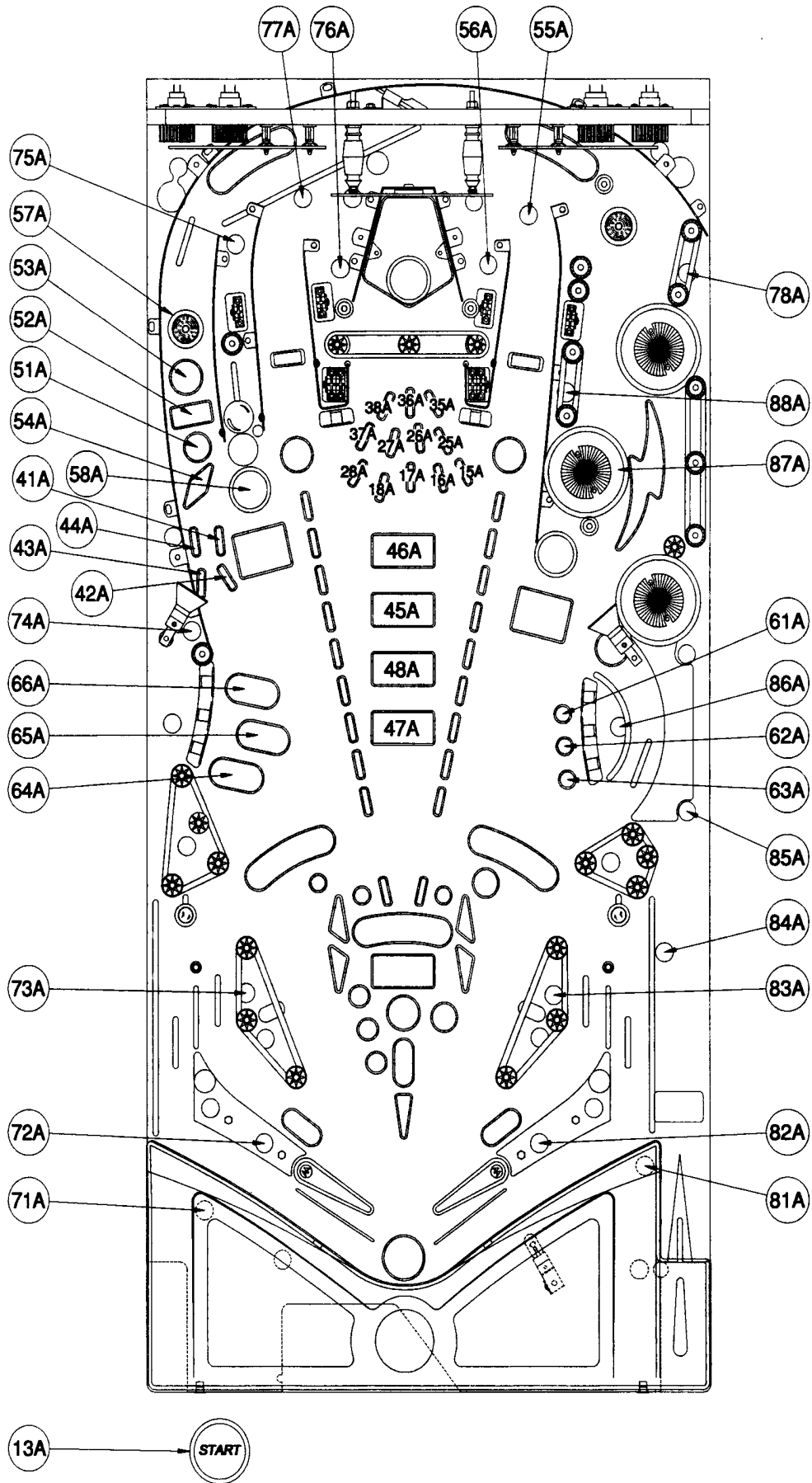
Lamp Matrix A Locations

Item Number	Description	Lamp Assembly Part Number	Bulb Type	Bulb Part Number	Socket Part Number
11A	NOT USED	Not Used	Not Used	Not Used	Not Used
12A	NOT USED	Not Used	Not Used	Not Used	Not Used
13A	START BUTTON	20-10696	Not Sold Separate	Not Sold Separate	Not Sold Separate
14A	NOT USED	Not Used	Not Used	Not Used	Not Used
15A	SHIELD LOWER RIGHT	04-12747	#555	24-8768	24-8767
16A	SHIELD LOWER 4	04-12747	#555	24-8768	24-8767
17A	SHIELD LOWER 3	04-12747	#555	24-8768	24-8767
18A	SHIELD LOWER 2	04-12747	#555	24-8768	24-8767
21A	TICKETS LOW	Not Used	Not Used	Not Used	Not Used
22A	NOT USED	Not Used	Not Used	Not Used	Not Used
23A	NOT USED	Not Used	Not Used	Not Used	Not Used
24A	COIN DOOR ILLUMINATION	Not Sold Separate	Not Sold Separate	Not Sold Separate	Not Sold Separate
25A	SHIELD MIDDLE RIGHT	04-12747	#555	24-8768	24-8767
26A	SHIELD MIDDLE 3	04-12747	#555	24-8768	24-8767
27A	SHIELD MIDDLE 2	04-12747	#555	24-8768	24-8767
28A	SHIELD LOWER LEFT	04-12747	#555	24-8768	24-8767
31A	NOT USED	Not Used	Not Used	Not Used	Not Used
32A	NOT USED	Not Used	Not Used	Not Used	Not Used
33A	NOT USED	Not Used	Not Used	Not Used	Not Used
34A	NOT USED	Not Used	Not Used	Not Used	Not Used
35A	SHIELD UPPER RIGHT	04-12747	#555	24-8768	24-8767
36A	SHIELD UPPER MIDDLE	04-12747	#555	24-8768	24-8767
37A	SHIELD MIDDLE LEFT	04-12747	#555	24-8768	24-8767
38A	SHIELD UPPER LEFT	04-12747	#555	24-8768	24-8767
41A	LEFT LOOP RIGHT LEG	04-12748	#555	24-8768	24-8767
42A	LEFT LOOP RIGHT FOOT	04-12748	#555	24-8768	24-8767
43A	LEFT LOOP LEFT FOOT	04-12748	#555	24-8768	24-8767
44A	LEFT LOOP LEFT LEG	04-12748	#555	24-8768	24-8767
45A	JEDI "E"	04-12749	#555	24-8768	24-8767
46A	JEDI "J"	04-12749	#555	24-8768	24-8767
47A	JEDI "I"	04-12749	#555	24-8768	24-8767
48A	JEDI "D"	04-12749	#555	24-8768	24-8767
51A	LEFT LOOP BODY MIDDLE	04-12748	#555	24-8768	24-8767
52A	LEFT LOOP BODY UPPER	04-12748	#555	24-8768	24-8767
53A	LEFT LOOP HEAD	04-12748	#555	24-8768	24-8767
54A	LET LOOP BODY LOWER	04-12748	#555	24-8768	24-8767
55A	RIGHT RAMP G.I.	A-23163	#44	24-6549	Not Sold Separate
56A	SCOOP LOWER RIGHT G.I.	A-23163	#44	24-6549	Not Sold Separate
57A	LEFT LOOP ROLLOVER	A-17807	#44	24-6549	Not Sold Separate
58A	LEFT SAUCER	A-20507	#44	24-6549	Not Sold Separate
61A	RIGHT STAND-UPS UPPER	04-12751	#555	24-8768	24-8767
62A	RIGHT STAND-UPS MIDDLE	04-12751	#555	24-8768	24-8767
63A	RIGHT STAND-UPS LOWER	04-12751	#555	24-8768	24-8767
64A	LEFT STAND-UPS LOWER	04-12750	#555	24-8768	24-8767
65A	LEFT STAND-UPS MIDDLE	04-12750	#555	24-8768	24-8767
66A	LEFT STAND-UPS UPPER	04-12750	#555	24-8768	24-8767
67A	NOT USED	Not Used	Not Used	Not Used	Not Used
68A	NOT USED	Not Used	Not Used	Not Used	Not Used
71A	BOTTOM ARCH LEFT-LEFT	A-23163	#44	24-6549	Not Sold Separate
72A	LEFT INLANE G.I. RIGHT	A-23163	#44	24-6549	Not Sold Separate
73A	LEFT SLING G.I. UPPER	A-23163	#44	24-6549	Not Sold Separate
74A	LEFT LOOP LOWER G.I.	A-23163	#44	24-6549	Not Sold Separate
75A	CAPTIVE BALL G.I.	A-23163	#44	24-6549	Not Sold Separate
76A	SCOOP LOWER LEFT G.I.	A-23163	#44	24-6549	Not Sold Separate
77A	SCOOP UPPER LEFT G.I.	A-23163	#44	24-6549	Not Sold Separate
78A	JETS TOP G.I.	A-23163	#44	24-6549	Not Sold Separate
81A	BOTTOM ARCH RIGHT-RIGHT	A-23163	#44	24-6549	Not Sold Separate
82A	RIGHT INLANE G.I. LEFT	A-23163	#44	24-6549	Not Sold Separate
83A	RIGHT SLING G.I. UPPER	A-23163	#44	24-6549	Not Sold Separate
84A	SHOOTER RAMP G.I. LOWER	A-23163	#44	24-6549	Not Sold Separate
85A	SHOOTER RAMP G.I. MIDDLE	A-23163	#44	24-6549	Not Sold Separate
86A	RIGHT STAND-UPS G.I.	A-23163	#44	24-6549	Not Sold Separate
87A	MIDDLE JETS	No Assembly	#555	24-8768	24-8776
88A	JETS MIDDLE G.I.	A-23408	#44	24-6549	Not Sold Separate

50069-PL
Lamp Locations (Matrix B)

Lamp Matrix B Locations

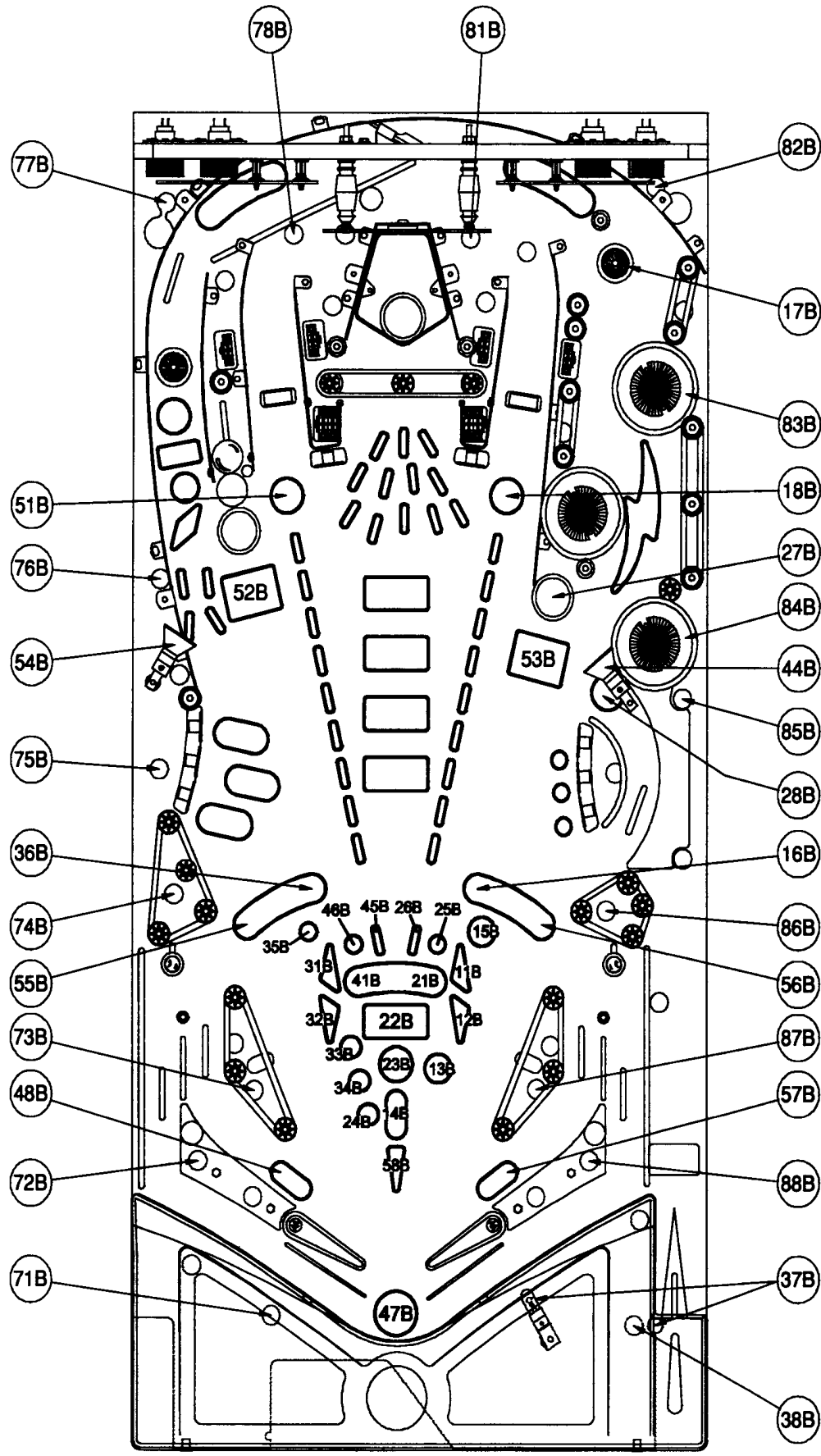| Item Number	Description	Lamp Assembly Part Number	Bulb Type	Bulb Part Number	Socket Part Number
11B	SHIP RIGHT WING UPPER	04-12746	#555	24-8768	24-8767
12B	SHIP RIGHT WING LOWER	04-12746	#555	24-8768	24-8767
13B	BONUS X5	04-12746	#555	24-8768	24-8767
14B	SHIP TAIL UPPER	04-12746	#555	24-8768	24-8767
15B	JEDI SPIRIT	04-12746	#555	24-8768	24-8767
16B	RIGHT HOTDOG LEFT	04-12746	#555	24-8768	24-8767
17B	JETS ROLLOVER	A-17807	#44	24-6549	Not Sold Separate
18B	RIGHT LASER END	A-17835	#44	24-6549	Not Sold Separate
21B	SHIP BODY UPPER RIGHT	04-12746	#555	24-8768	24-8767
22B	SHIP BODY MIDDLE	04-12746	#555	24-8768	24-8767
23B	SHIP BODY LOWER	04-12746	#555	24-8768	24-8767
24B	BONUS X4	04-12746	#555	24-8768	24-8767
25B	JEDI MASTER	04-12746	#555	24-8768	24-8767
26B	FIRE LASERS RIGHT	04-12746	#555	24-8768	24-8767
27B	RIGHT SAUCER	A-20507	#44	24-6549	Not Sold Separate
28B	EXTRA BALL	A-17835	#44	24-6549	Not Sold Separate
31B	SHIP LEFT WING UPPER	04-12746	#555	24-8768	24-8767
32B	SHIP LEFT WING LOWER	04-12746	#555	24-8768	24-8767
33B	BONUS X2	04-12746	#555	24-8768	24-8767
34B	BONUS X3	04-12746	#555	24-8768	24-8767
35B	JEDI YOUTH	04-12746	#555	24-8768	24-8767
36B	LEFT HOTDOG RIGHT	04-12746	#555	24-8768	24-8767
37B	SHOOTER	A-20507	#44	24-6549	Not Sold Separate
38B	BOTTOM ARCH RIGHT-LEFT	A-23163	#44	24-6549	Not Sold Separate
41B	SHIP BODY UPPER LEFT	04-12746	#555	24-8768	24-8767
42B	NOT USED	Not Used	Not Used	Not Used	Not Used
43B	NOT USED	Not Used	Not Used	Not Used	Not Used
44B	SPOTLIGHT RIGHT	04-12756-18	#44	24-6549	04-10094
45B	FIRE LASERS LEFT	04-12746	#555	24-8768	24-8767
46B	JEDI KNIGHT	04-12746	#555	24-8768	24-8767
47B	SHOOT AGAIN	A-17807	#44	24-6549	Not Sold Separate
48B	LEFT FLIPPER	A-17807	#44	24-6549	Not Sold Separate
51B	LEFT LASER END	A-17835	#44	24-6549	Not Sold Separate
52B	LEFT SAUCER INSERT	A-17807	#44	24-6549	Not Sold Separate
53B	RIGHT SAUCER INSERT	A-17807	#44	24-6549	Not Sold Separate
54B	SPOTLIGHT LEFT	04-12756-18	#44	24-6549	04-10094
55B	LEFT HOTDOG LEFT	A-17835	#44	24-6549	Not Sold Separate
56B	RIGHT HOTDOG RIGHT	A-17835	#44	24-6549	Not Sold Separate
57B	RIGHT FLIPPER	A-17807	#44	24-6549	Not Sold Separate
58B	SHIP TAIL LOWER	A-17835	#44	24-6549	Not Sold Separate
61B	NOT USED	Not Used	Not Used	Not Used	Not Used
62B	NOT USED	Not Used	Not Used	Not Used	Not Used
63B	NOT USED	Not Used	Not Used	Not Used	Not Used
64B	NOT USED	Not Used	Not Used	Not Used	Not Used
65B	NOT USED	Not Used	Not Used	Not Used	Not Used
66B	NOT USED	Not Used	Not Used	Not Used	Not Used
67B	NOT USED	Not Used	Not Used	Not Used	Not Used
68B	NOT USED	Not Used	Not Used	Not Used	Not Used
71B	BOTTOM ARCH LEFT-RIGHT	A-23163	#44	24-6549	Not Sold Separate
72B	LEFT INLANE G.I. LEFT	A-23163	#44	24-6549	Not Sold Separate
73B	LEFT SLING G.I. LOWER	A-23163	#44	24-6549	Not Sold Separate
74B	LEFT OUTLANE G.I.	A-23163	#44	24-6549	Not Sold Separate
75B	LEFT STAND-UPS G.I.	A-23163	#44	24-6549	Not Sold Separate
76B	LEFT LOOP MIDDLE G.I.	A-23163	#44	24-6549	Not Sold Separate
77B	UPPER LEFT CORNER G.I.	A-23163	#44	24-6549	Not Sold Separate
78B	LEFT RAMP G.I.	A-23163	#44	24-6549	Not Sold Separate
81B	SCOOP UPPER RIGHT G.I.	A-23163	#44	24-6549	Not Sold Separate
82B	UPPER RIGHT CORNER G.I.	A-23163	#44	24-6549	Not Sold Separate
83B	UPPER JET	No Assembly	#555	24-8768	24-8776
84B	LOWER JET	No Assembly	#555	24-8768	24-8776
85B	SHOOTER RAMP G.I. UPPER	A-23163	#44	24-6549	Not Sold Separate
86B	RIGHT OUTLANE G.I.	A-23163	#44	24-6549	Not Sold Separate
87B	RIGHT SLING G.I. LOWER	A-23163	#44	24-6549	Not Sold Separate
88B	RIGHT INLANE G.I. RIGHT	A-23163	#44	24-6549	Not Sold Separate

50069-PL
Playfield Switch Locations
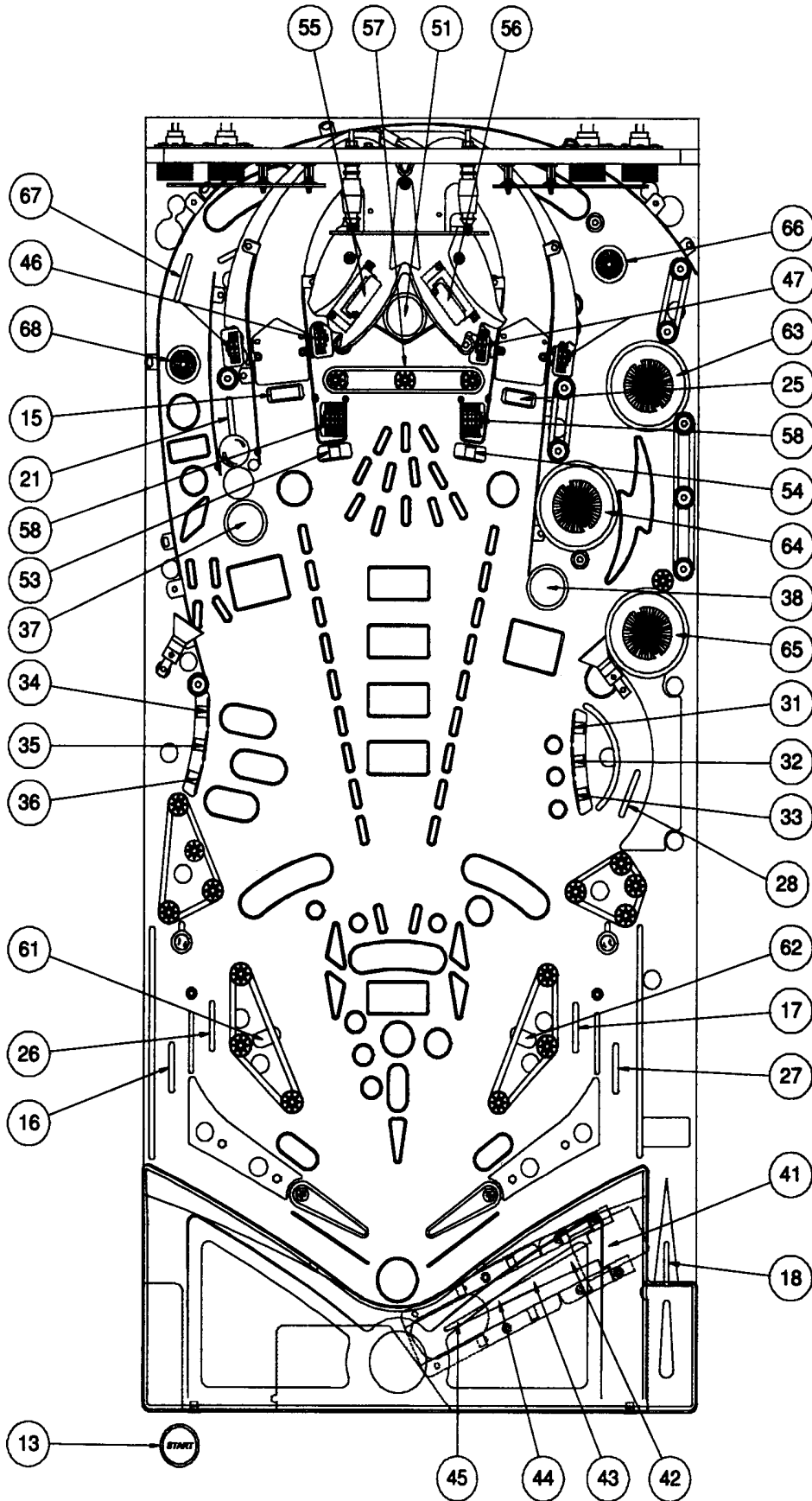
Switch Locations

Item Number	Description	Switch Assembly Part Number OR Opto Assembly Part Number	Switch Part Number
D13	*LOWER RIGHT FLIPPER E.O.S.	----	SW-1A-194
D14	*LOWER LEFT FLIPPER E.O.S.	----	SW-1A-194
D15	UPPER RIGHT FLIPPER E.O.S	NOT USED	NOT USED
D16	UPPER LEFT FLIPPER E.O.S.	NOT USED	NOT USED
D21	*LOWER RIGHT FLIPPER CABINET BUTTON	A-22984	----
D22	*LOWER LEFT FLIPPER CABINET BUTTON	A-22984	----
D23	RIGHT ACTION BUTTON	A-22984	---
D24	LEFT ACTION BUTTON	A-22984	----
11	NOT USED	NOT USED	NOT USED
12	NOT USED	NOT USED	NOT USED
13	START BUTTON	20-10696	----
14	NOT USED	NOT USED	NOT USED
15	LEFT DROP TARGET	A-23293	5647-12693-31
16	LEFT OUTLANE	A-17813	5647-12693-19
17	RIGHT INLANE	A-17813	5647-12693-19
18	SHOOTER LANE	A-20842	5647-12693-32
21	CAPTIVE BALL	A-17813	5647-12693-19
22	NOT USED	NOT USED	NOT USED
23	NOT USED	NOT USED	NOT USED
24	ALWAYS CLOSED	A-23024	5643-15190-00
25	RIGHT DROP TARGET	A-23407	5647-12693-31
26	LEFT INLANE	A-17813	5647-12693-19
27	RIGHT OUTLANE	A-17813	5647-12693-19
28	SNEAKY LANE	A-17813	5647-12693-19
31	RIGHT BANK: UPPER	A-21576-15	----
32	RIGHT BANK: MIDDLE	A-21576-15	---
33	RIGHT BANK: LOWER	A-21576-15	----
34	LEFT BANK: UPPER	A-23289-6	----
35	LEFT BANK: MIDDLE	A-23289-6	---
36	LEFT BANK: LOWER	A-23289-6	---
37	LEFT SAUCER	----	5647-12693-66
38	RIGHT SAUCER	----	5647-12693-66
41	TROUGH EJECT	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---- ----
42	TROUGH BALL 1	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---- ----
43	TROUGH BALL 2	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---- ----
44	TROUGH BALL 3	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---- ----
45	TROUGH BALL 4	A-18617-1 (LED) A-18618-1 (PHOTO TRANS)	---- ----
46	LEFT RAMP ENTER	A-23031	A-16908 (LED) A-16909 (PHOTO TRANS)
47	RIGHT RAMP ENTER	A-23031	A-16908 (LED) A-16909 (PHOTO TRANS)
48	NOT USED	NOT USED	NOT USED
51	SHIELD POPPER	A-16908 (LED) A-16909 (PHOTO TRANS)	---- ----
52	NOT USED	NOT USED	NOT USED
53	LEFT SHIELD TARGET	A-17793-3	----
54	RIGHT SHIELD TARGET	A-17799-3	----
55	RAMP MADE LEFT		
56	RAMP MADE RIGHT		
57	SHIELD UP	----	5647-12693-06
58	SHIELD HIT	A-23032	A-16908 (LED) A-16909 (PHOTO TRANS)
61	LEFT SLINGSHOT	A-17801	A-17800 (KICK) A-17794 (SCORE)**
62	RIGHT SLINGSHOT	A-17801	A-17800 (KICK) A-17794 (SCORE)**
63	UPPER JET BUMPER	B-12030-2	A-16443
64	MIDDLE JET BUMPER	B-12030-2	A-16443
65	LOWER JET BUMPER	B-12030-2	A-16443
66	JETS ROLLOVER	A-18008-2	A-16443
67	LEFT LOOP UPPER	A-17813	5647-12693-19
68	LEFT LOOP ROLLOVER	A-18008-2	A-16443
71 TO 88	NOT USED	NOT USED	NOT USED

* NOT SHOWN.   **SCORE SWITCHES HAVE DIODES ATTACHED.

50069-PL
Solenoid/Flasher Locations

Back Panel Assembly
Rotated for Clarity

Light Sabre Assembly Removed
from Playfield for Clarity
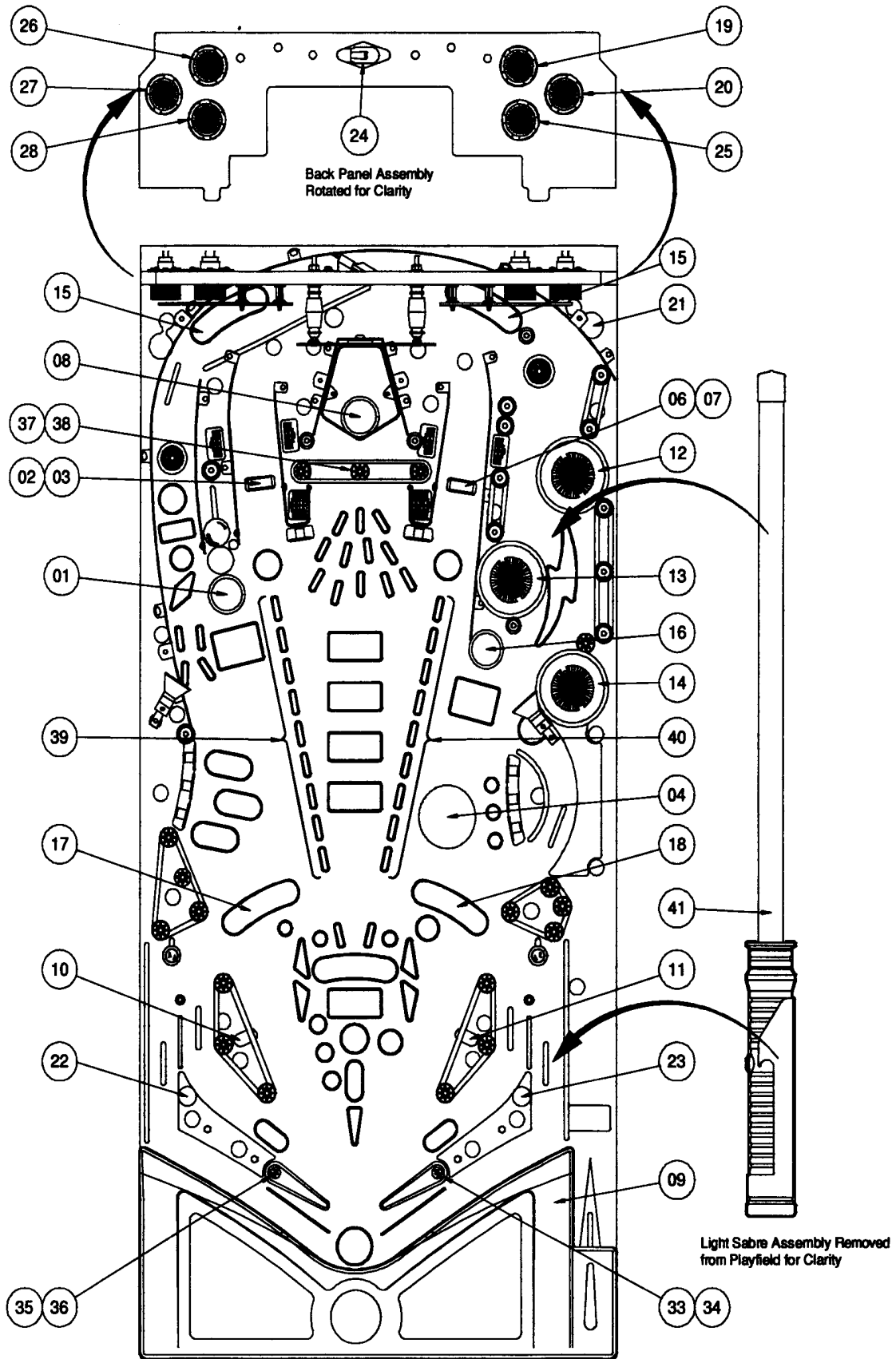
Solenoid/Flasher Locations

Item Number	Assembly Part Number	Coil or Flasher Part Number	Description
01	A-21829-1	AE1-27-1200	LEFT SAUCER
02	A-23293	AE1-26-1200	LEFT DROP TARGET UP
03	A-23293	SM1-26-600	LEFT DROP TARGET DOWN
04	-----	20-10197	MAGNET*
05	NOT USED	NOT USED	NOT USED
06	A-23407	SM1-26-600	RIGHT DROP TARGET DOWN
07	A-23407	AE1-26-1200	RIGHT DROP TARGET UP
08	A-23170	AE1-26-1500	SHIELD POPPER
09	A-19963-4	AE1-26-1500	TROUGH EJECT
10	A-22207-7	AE1-27-1200	LEFT SLINGSHOT
11	A-22206-7	AE1-27-1200	RIGHT SLINGSHOT
12	A-22205-4	AE1-26-1200	UPPER JET BUMPER
13	A-22204-4	AE1-26-1200	MIDDLE JET BUMPER
14	A-22205-4	AE1-26-1200	LOWER JET BUMPER
15	A-17802 (QTY. 2)	24-8802 (#906)	UPPER HOTDOG FLASHERS
16	A-21829-1	AE1-27-1200	RIGHT SAUCER
17	A-17802	24-8802 (#906)	LOWER LEFT HOTDOG FLASH
18	A-17802	24-8802 (#906)	LOWER RIGHT HOTDOG FLASH
19	-----	24-8802 (#906)	BACK PANEL RIGHT UP FLASHER**
20	-----	24-8802 (#906)	BACK PANEL RIGHT MID FLASHER**
21	A-17802	24-8802 (#906)	JET FLASHER
22	A-17983	24-8704 (#89)	LEFT INLANE FLASHER
23	A-17983	24-8704 (#89)	RIGHT INLANE FLASHER
24	A-17802	24-8802 (#906)	BACK PANEL MID FLASHER
25	-----	24-8802 (#906)	BACK PANEL RIGHT LOW FLASHER**
26	-----	24-8802 (#906)	BACK PANEL LEFT UP FLASHER**
27	-----	24-8802 (#906)	BACK PANEL LEFT MID FLASHER**
28	-----	24-8802 (#906)	BACK PANEL LEFT LOW FLASHER**

Flipper Circuits

	Assembly Part Number	Coil Part Number	Description
33-34	A-23001-R-3	FL1-11722	LOWER RIGHT FLIPPER
35-36	A-23001-L-3	FL1-11722	LOWER LEFT FLIPPER
37-38	A-23010	FL1-15411	CENTER BUMPER
39	A-17983	24-8704 (#89)	LEFT LASER FLASHER
40	A-17983	24-8704 (#89)	RIGHT LASER FLASHER
41	A-23157	NOT SOLD SEPARATE	NEON

Used in conjunction with wave spring washer P/N 20-9612.
Used in conjunction with receptacle and skirt P/N A-14265-13.

LAMP MATRIX A

COLUMN ROW	1A YEL-BRN J108-9 Q5	2A YEL-RED J108-10 Q9	3A YEL-ORG J108-11 Q13	4A YEL-BLK J108-12 Q17	5A YEL-GRN J108-13 Q21	6A YEL-BLU J108-14 Q25	7A YEL-VIO J108-15 Q29	8A YEL-GRY J108-16 Q33
1A BRN-BLK J108-1 Q3	NOT USED 11A	TICKETS LOW 21A	NOT USED 31A	LEFT LOOP RIGHT LEG 41A	LEFT LOOP BODY MIDDLE 51A	RIGHT STANDUP UPPER 61A	BOTTOM ARCH LEFT/LEFT 71A	BOTTOM ARCH RIGHT/RIGHT 81A
2A BRN-RED J108-2 Q7	NOT USED 12A	NOT USED 22A	NOT USED 32A	LEFT LOOP RIGHT FOOT 42A	LEFT LOOP BODY UPPER 52A	RIGHT STANDUP MIDDLE 62A	LEFT INLANE G.I. RIGHT 72A	RIGHT INLANE G.I. LEFT 82A
3A BRN-ORG J108-3 Q11	START BUTTON 13A	NOT USED 23A	NOT USED 33A	LEFT LOOP LEFT FOOT 43A	LEFT LOOP HEAD 53A	RIGHT STANDUP LOWER 63A	LEFT SLING G.I. UPPER 73A	RIGHT SLING G.I. UPPER 83A
4A BRN-YEL J108-4 Q15	NOT USED 14A	COIN DOOR ILLUMINA. 24A	NOT USED 34A	LEFT LOOP LEFT LEG 44A	LEFT LOOP BODY LOWER 54A	LEFT STANDUP LOWER 64A	LEFT LOOP LOWER G.I. 74A	SHOOTER RAMP G.I. LOWER 84A
5A BRN-GRN J108-5 Q19	SHIELD LOWER RIGHT 15A	SHIELD MIDDLE RIGHT 25A	SHIELD UPPER RIGHT 35A	JEDI "E" 45A	RIGHT RAMP GI 55A	LEFT STANDUP MIDDLE 65A	CAPTIVE BALL G.I. 75A	SHOOT RAMP G.I. MIDDLE 85A
6A BRN-BLU J108-6 Q23	SHIELD LOWER 4 16A	SHIELD MIDDLE 3 26A	SHIELD UPPER MIDDLE 36A	JEDI "J" 46A	SCOOP LOWER RIGHT G.I. 56A	LEFT STANDUP UPPER 66A	SCOOP LOWER LEFT G.I. 76A	RIGHT STANDUP G.I. 86A
7A BRN-VIO J108-7 Q27	SHIELD LOWER 3 17A	SHIELD MIDDLE 2 27A	SHIELD MIDDLE LEFT 37A	JEDI "I" 47A	LEFT LOOP ROLLOVER 57A	NOT USED 67A	SCOOP UPPER LEFT G.I. 77A	MIDDLE JET 87A
8A BRN-GRY J108-8 Q31	SHIELD LOWER 2 18A	SHIELD LOWER LEFT 28A	SHIELD UPPER LEFT 38A	JEDI "D" 48A	LEFT SAUCER 58A	NOT USED 68A	JETS TOP G.I. 78A	JET MIDDLE G.I. 88A

LAMP MATRIX B

COLUMN ROW	1B YEL-BRN J107-10 Q6	2B YEL-RED J107-11 Q10	3B YEL-ORG J107-12 Q14	4B YEL-BLK J107-13 Q18	5B YEL-GRN J107-14 Q22	6B YEL-BLU J107-15 Q26	7B YEL-VIO J107-16 Q30	8B YEL-GRY J107-17 Q34
1B RED-BRN J107-1 Q4	SHIP RIGHT WING UPPER 11B	SHIP BODY UPPER RIGHT 21B	SHIP LEFT WING UPPER 31B	SHIP BODY UPPER LEFT 41B	LEFT LASER END 51B	NOT USED 61B	BOTTOM ARCH LEFT/RIGHT 71B	SCOOP UPPER RIGHT G.I. 81B
2B RED-BLK J107-2 Q8	SHIP RIGHT WING LOWER 12B	SHIP BODY MIDDLE 22B	SHIP LEFT WING LOWER 32B	NOT USED 42B	LEFT SAUCER INSERT 52B	NOT USED 62B	LEFT INLANE G.I. LEFT 72B	UPPER RIGHT CORNER G.I. 82B
3B RED-ORG J107-3 Q12	BONUS X5 13B	SHIP BODY LOWER 23B	BONUS X2 33B	NOT USED 43B	RIGHT SAUCER INSERT 53B	NOT USED 63B	LEFT SLING G.I. LOWER 73B	UPPER JET 83B
4B RED-YEL J107-4 Q16	SHIP TAIL UPPER 14B	BONUS X4 24B	BONUS X3 34B	SPOTLIGHT RIGHT 44B	SPOTLIGHT LEFT 54B	NOT USED 64B	LEFT OUTLANE G.I. 74B	LOWER JET 84B
5B RED-GRN J107-5 Q20	JEDI SPIRIT 15B	JEDI MASTER 25B	JEDI YOUTH 35B	FIRE LASERS LEFT 45B	LEFT HOTDOG LEFT 55B	NOT USED 65B	LEFT STANDUP G.I. 75B	SHOOTER RAMP G.I. UPPER 85B
6B RED-BLU J107-6 Q24	RIGHT HOTDOG LEFT 16B	FIRE LASERS RIGHT 26B	LEFT HOTDOG RIGHT 36B	JEDI KNIGHT 46B	RIGHT HOTDOG RIGHT 56B	NOT USED 66B	LEFT LOOP MIDDLE G.I. 76B	RIGHT OUTLANE G.I. 86B
7B RED-VIO J107-7 Q28	JETS ROLLOVER 17B	RIGHT SAUCER 27B	SHOOTER 37B	SHOOT AGAIN 47B	RIGHT FLIPPER 57B	NOT USED 67B	UPPER LEFT CORNER G.I. 77B	RIGHT SLING G.I. LOWER 87B
8B RED-GRY J107-8 Q32	RIGHT LASER END 18B	EXTRA BALL 28B	BOTTOM ARCH RIGHT/LEFT 38B	LEFT FLIPPER 48B	SHIP TAIL LOWER 58B	NOT USED 68B	LEFT RAMP G.I. 78B	RIGHT INLANE G.I. RIGHT 88B

SWITCH MATRIX

COLUMN → / ROW ↓	1 GRN-BRN J116-1 U45-18	2 GRN-RED J116-2 U45-17	3 GRN-ORG J116-3 U45-16	4 GRN-WHT J116-4 U45-15	5 GRN-BLK J116-5 U45-14	6 GRN-BLU J116-6 U45-13	7 GRN-VIO J116-7 U45-12	8 GRN-GRY J116-8 U45-11
1 WHT-BRN J116-12 U51-7	NOT USED 11	CAPTIVE BALL 21	RIGHT BANK: UPPER 31	TROUGH JAM 41	SHIELD POPPER 1 51	LEFT SLINGSHOT 61	NOT USED 71	NOT USED 81
2 WHT-RED J116-13 U51-5	NOT USED 12	NOT USED 22	RIGHT BANK: MIDDLE 32	TROUGH BALL 1 42	NOT USED 52	RIGHT SLINGSHOT 62	NOT USED 72	NOT USED 82
3 WHT-ORG J116-14 U51-9	START BUTTON 13	NOT USED 23	RIGHT BANK: LOWER 33	TROUGH BALL 2 43	LEFT SHIELD TARGET 53	UPPER JET BUMPER 63	NOT USED 73	NOT USED 83
4 WHT-YEL J116-15 U51-11	NOT USED 14	ALWAYS CLOSED 24	LEFT BANK: UPPER 34	TROUGH BALL 3 44	RIGHT SHIELD TARGET 54	MIDDLE JET BUMPER 64	NOT USED 74	NOT USED 84
5 WHT-GRN J116-16 U57-7	LEFT DROP TARGET 15	RIGHT DROP TARGET 25	LEFT BANK MIDDLE 35	TROUGH BALL 4 45	RAMP MADE LEFT 55	LOWER JET BUMPER 65	NOT USED 75	NOT USED 85
6 WHT-BLU J116-17 U57-5	LEFT OUTLANE 16	LEFT INLANE 26	LEFT BANK LOWER 36	LEFT RAMP ENTER 46	RAMP MADE RIGHT 56	JETS ROLLOVER 66	NOT USED 76	NOT USED 86
7 WHT-VIO J116-18 U57-9	RIGHT INLANE 17	RIGHT OUTLANE 27	LEFT SAUCER 37	RIGHT RAMP ENTER 47	SHIELD UP 57	LEFT LOOP UPPER 67	NOT USED 77	NOT USED 87
8 WHT-GRY J116-19 U57-11	SHOOTER LANE 18	SNEAKY LANE 28	RIGHT SAUCER 38	NOT USED 48	SPEED HIT 58	LEFT LOOP ROLLOVER 68	NOT USED 78	NOT USED 88

▓ = OPTO, TYPICALLY CLOSED

COIN SLOT SWITCHES

DIRECT GROUND	ORN-BRN J114-1 U43-7	ORG-RED J114-2 U43-5	ORG-BLK J114-3 U43-9	ORG-YEL J114-4 U43-11	ORG-GRN J114-5 U48-7	ORG-BLU J114-6 U48-5	ORG-VIO J114-8 U48-9	ORG-GRY J114-9 U48-11
BLACK J114-14	COIN 1 D1	COIN 2 D2	COIN 3 D3	COIN 4 D4	COIN 5 D5	COIN 6 D6	COIN 7 (Used for Dollar Bill Validator) D7	COIN 8 D8

DIAGNOSTIC SWITCHES

DIRECT GROUND	GRY-BLK J114-10 U50-7	GRY-ORG J114-11 U50-5	GRY-RED J114-12 U50-9	GRY-BRN J114-13 U50-11
BLACK J114-14	'ESCAPE' BUTTON D9	'DOWN' BUTTON D10	'UP' BUTTON D11	'ENTER' BUTTON D12

PLAYFIELD FLIPPER SWITCHES (E.O.S.)

DIRECT GROUND	BLK-GRN J115-9 U56-7	BLK-BLU J115-10 U56-5	BLK-VIO J115-20 U56-9	BLK-GRY J115-21 U56-11
BLACK J115-22	LOWER RIGHT FLIPPER E.O.S. D13	LOWER LEFT FLIPPER E.O.S. D14	UPPER RIGHT FLIPPER E.O.S. D15	UPPER LEFT FLIPPER E.O.S. D16

CABINET FLIPPER SWITCHES

DIRECT GROUND	BLK-BRN J113-1 U49-7	BLK-RED J113-2 U49-5	BLK-ORG J113-3 U49-9	BLK-YEL J113-4 U49-11	BLK-GRN J113-6 U55-7	BLK-BLU J113-7 U55-5	BLK-VIO J113-8 U55-9	BLK-GRY J113-9 U55-11
BLACK J113-10	SLAM TILT D17	COIN DOOR CLOSED D18	PLUMB BOB TILT D19	NOT USED D20	RIGHT FLIPPER BUTTON D21	LEFT FLIPPER BUTTON D22	RIGHT ACTION BUTTON D23	LEFT ACTION BUTTON D24

SOLENOID TABLE

Sol No.	Solenoid Function	Fuse	Power to Playfield	Power Wire Color	Drive Transistor	Drive to Playfield	Drive Wire Color	Solenoid Part Number or Flasher Type
01	LEFT SAUCER	F101	J102-1	RED-BRN	Q59	J111-13	VIO-BRN	AE1-27-1200
02	LEFT DROP TARGET UP	F101	J102-1	RED-BRN	Q60	J111-14	VIO-RED	AE1-26-1200
03	LEFT DROP TARGET DOWN	F101	J102-1	RED-BRN	Q61	J111-15	VIO-ORG	SM1-26-600
04	MAGNET*	F101	J102-1	RED-BRN	Q62	J111-16	VIO-YEL	20-10197*
05	NOT USED	F102		RED-BLK	Q63		VIO-GRN	
06	RIGHT DROP TGT DOWN	F102	J102-2	RED-BLK	Q64	J111-18	VIO-BLU	SM1-26-600
07	RIGHT DROP TARGET UP	F102	J102-2	RED-BLK	Q65	J111-19	VIO-BLK	AE1-26-1200
08	SHIELD POPPER	F102	J102-2	RED-BLK	Q66	J111-20	VIO-GRY	AE1-26-1500
09	TROUGH EJECT	F103	J102-3	RED-ORG	Q51	J112-11	BRN-BLK	AE1-26-1500
10	LEFT SLINGSHOT	F103	J102-3	RED-ORG	Q52	J112-12	BRN-RED	AE1-27-1200
11	RIGHT SLINGSHOT	F103	J102-3	RED-ORG	Q53	J112-13	BRN-ORG	AE1-27-1200
12	UPPER JET BUMPER	F103	J102-3	RED-ORG	Q54	J112-14	BRN-YEL	AE1-26-1200
13	MIDDLE JET BUMPER	F100	J102-7	RED-YEL	Q55	J112-15	BRN-GRN	AE1-26-1200
14	LOWER JET BUMPER	F100	J102-7	RED-YEL	Q56	J112-16	BRN-BLU	AE1-26-1200
15	UPPER HOTDOG FLASHERS	F109	J102-8	RED-WHT	Q57	J112-17	BRN-VIO	#906 (2)
16	RIGHT SAUCER	F100	J102-7	RED-YEL	Q58	J112-18	BRN-GRY	AE1-27-1200
17	LOWER LEFT HOTDOG FL	F109	J102-8	RED-WHT	Q43	J111-1	BLU-BRN	#906
18	LOWER RIGHT HOTDOG FL	F109	J102-8	RED-WHT	Q44	J111-2	BLU-RED	#906
19	BACK PANEL RIGHT UP FL**	F109	J102-8	RED-WHT	Q45	J111-3	BLU-ORG	#906
20	BACK PANEL RIGHT MID FL**	F109	J102-8	RED-WHT	Q46	J111-4	BLU-YEL	#906
21	JET FLASHER	F109	J102-8	RED-WHT	Q47	J111-5	BLU-GRN	#906
22	LEFT INLANE FLASHER	F109	J102-8	RED-WHT	Q48	J111-6	BLU-BLK	#89
23	RIGHT INLANE FLASHER	F109	J102-8	RED-WHT	Q49	J111-7	BLU-VIO	#89
24	BACK PANEL MIDDLE FL	F109	J102-8	RED-WHT	Q50	J111-8	BLU-GRY	#906
25	BACK PANEL RT LOW FL**	F109	J102-8	RED-WHT	Q67	J112-9	BLK-BRN	#906
26	BACK PANEL LEFT UP FL**	F109	J102-8	RED-WHT	Q68	J112-10	BLK-RED	#906
27	BACK PANEL LEFT MID FL**	F109	J102-8	RED-WHT	Q69	J112-19	BLK-ORG	#906
28	BACK PANEL LEFT LOW FL**	F109	J102-8	RED-WHT	Q70	J112-20	BLK-YEL	#906
	Flipper Circuits							
33	LOW RIGHT FLIPPER PWR				Q35	J112-1	YEL-GRN	
34	LOW RIGHT FLIPPER HOLD	F104	J103-1	RED-GRN	Q36	J112-2	ORG-GRN	FL1-11722
35	LOW LEFT FLIPPER PWR				Q37	J112-3	YEL-BLU	
36	LOW LEFT FLIPPER HOLD	F105	J103-2	RED-BLU	Q38	J112-4	ORG-BLU	FL1-11722
37	CENTER BUMPER POWER				Q39	J112-5	YEL-VIO	
38	CENTER BUMPER HOLD	F106	J103-3	RED-VIO	Q40	J112-6	ORG-VIO	FL1-15411
39	LEFT LASER FLASHER	F109	J102-8	RED-WHT	Q41	J112-7	YEL-GRY	#89
40	RIGHT LASER FLASHER	F109	J102-8	RED-WHT	Q42	J112-8	ORG-GRY	#89
41	NEON	F108	J102-9	GRY-YEL	U35	J111-9	BRN-WHT	A-23157

*Used in conjunction with a wave spring washer P/N 20-9612.
** Used in conjunction with receptacle and skirt P/N A-14265-13.

#906 part number is 24-8802
#89 part number is 24-8704

SECTION THREE

GAME WIRING AND SCHEMATICS

Schematics for standard PINBALL 2000 PC boards that are located in the cabinet and backbox are found in the PINBALL 2000 Schematic Manual. Schematics for PC boards attached to the playfield are found in this section.

LAMP MATRIX A

COLUMN / ROW	1A YEL-BRN J108-9 Q5	2A YEL-RED J108-10 Q9	3A YEL-ORG J108-11 Q13	4A YEL-BLK J108-12 Q17	5A YEL-GRN J108-13 Q21	6A YEL-BLU J108-14 Q25	7A YEL-VIO J108-15 Q29	8A YEL-GRY J108-16 Q33
1A BRN-BLK J108-1 Q3	NOT USED 11A	TICKETS LOW 21A	NOT USED 31A	LEFT LOOP RIGHT LEG 41A	LEFT LOOP BODY MIDDLE 51A	RIGHT STANDUP UPPER 61A	BOTTOM ARCH LEFT/LEFT 71A	BOTTOM ARCH RIGHT/RIGHT 81A
2A BRN-RED J108-2 Q7	NOT USED 12A	NOT USED 22A	NOT USED 32A	LEFT LOOP RIGHT FOOT 42A	LEFT LOOP BODY UPPER 52A	RIGHT STANDUP MIDDLE 62A	LEFT INLANE G.I. RIGHT 72A	RIGHT INLANE G.I. LEFT 82A
3A BRN-ORG J108-3 Q11	START BUTTON 13A	NOT USED 23A	NOT USED 33A	LEFT LOOP LEFT FOOT 43A	LEFT LOOP HEAD 53A	RIGHT STANDUP LOWER 63A	LEFT SLING G.I. UPPER 73A	RIGHT SLING G.I. UPPER 83A
4A BRN-YEL J108-4 Q15	NOT USED 14A	COIN DOOR ILLUMINA. 24A	NOT USED 34A	LEFT LOOP LEFT LEG 44A	LEFT LOOP BODY LOWER 54A	LEFT STANDUP LOWER 64A	LEFT LOOP LOWER G.I. 74A	SHOOTER RAMP G.I. LOWER 84A
5A BRN-GRN J108-5 Q19	SHIELD LOWER RIGHT 15A	SHIELD MIDDLE RIGHT 25A	SHIELD UPPER RIGHT 35A	JEDI "E" 45A	RIGHT RAMP GI 55A	LEFT STANDUP MIDDLE 65A	CAPTIVE BALL G.I. 75A	SHOOT RAMP G.I. MIDDLE 85A
6A BRN-BLU J108-6 Q23	SHIELD LOWER 4 16A	SHIELD MIDDLE 3 26A	SHIELD UPPER MIDDLE 36A	JEDI "J" 46A	SCOOP LOWER RIGHT G.I. 56A	LEFT STANDUP UPPER 66A	SCOOP LOWER LEFT G.I. 76A	RIGHT STANDUP G.I. 86A
7A BRN-VIO J108-7 Q27	SHIELD LOWER 3 17A	SHIELD MIDDLE 2 27A	SHIELD MIDDLE LEFT 37A	JEDI "I" 47A	LEFT LOOP ROLLOVER 57A	NOT USED 67A	SCOOP UPPER LEFT G.I. 77A	MIDDLE JET 87A
8A BRN-GRY J108-8 Q31	SHIELD LOWER 2 18A	SHIELD LOWER LEFT 28A	SHIELD UPPER LEFT 38A	JEDI "D" 48A	LEFT SAUCER 58A	NOT USED 68A	JETS TOP G.I. 78A	JET MIDDLE G.I. 88A

J1XX = Power Driver Board

LAMP MATRIX B

COLUMN ROW	1B YEL-BRN J107-10 Q6	2B YEL-RED J107-11 Q10	3B YEL-ORG J107-12 Q14	4B YEL-BLK J107-13 Q18	5B YEL-GRN J107-14 Q22	6B YEL-BLU J107-15 Q26	7B YEL-VIO J107-16 Q30	8B YEL-GRY J107-17 Q34
1B RED-BRN J107-1 Q4	SHIP RIGHT WING UPPER 11B	SHIP BODY UPPER RIGHT 21B	SHIP LEFT WING UPPER 31B	SHIP BODY UPPER LEFT 41B	LEFT LASER END 51B	NOT USED 61B	BOTTOM ARCH LEFT/RIGHT 71B	SCOOP UPPER RIGHT G.I. 81B
2B RED-BLK J107-2 Q8	SHIP RIGHT WING LOWER 12B	SHIP BODY MIDDLE 22B	SHIP LEFT WING LOWER 32B	NOT USED 42B	LEFT SAUCER INSERT 52B	NOT USED 62B	LEFT INLANE G.I. LEFT 72B	UPPER RIGHT CORNER G.I. 82B
3B RED-ORG J107-3 Q12	BONUS X5 13B	SHIP BODY LOWER 23B	BONUS X2 33B	NOT USED 43B	RIGHT SAUCER INSERT 53B	NOT USED 63B	LEFT SLING G.I. LOWER 73B	UPPER JET 83B
4B RED-YEL J107-4 Q16	SHIP TAIL UPPER 14B	BONUS X4 24B	BONUS X3 34B	SPOTLIGHT RIGHT 44B	SPOTLIGHT LEFT 54B	NOT USED 64B	LEFT OUTLANE G.I. 74B	LOWER JET 84B
5B RED-GRN J107-5 Q20	JEDI SPIRIT 15B	JEDI MASTER 25B	JEDI YOUTH 35B	FIRE LASERS LEFT 45B	LEFT HOTDOG LEFT 55B	NOT USED 65B	LEFT STANDUP G.I. 75B	SHOOTER RAMP G.I. UPPER 85B
6B RED-BLU J107-6 Q24	RIGHT HOTDOG LEFT 16B	FIRE LASERS RIGHT 26B	LEFT HOTDOG RIGHT 36B	JEDI KNIGHT 46B	RIGHT HOTDOG RIGHT 56B	NOT USED 66B	LEFT LOOP MIDDLE G.I. 76B	RIGHT OUTLANE G.I. 86B
7B RED-VIO J107-7 Q28	JETS ROLLOVER 17B	RIGHT SAUCER 27B	SHOOTER 37B	SHOOT AGAIN 47B	RIGHT FLIPPER 57B	NOT USED 67B	UPPER LEFT CORNER G.I. 77B	RIGHT SLING G.I. LOWER 87B
8B RED-GRY J107-8 Q32	RIGHT LASER END 18B	EXTRA BALL 28B	BOTTOM ARCH RIGHT/LEFT 38B	LEFT FLIPPER 48B	SHIP TAIL LOWER 58B	NOT USED 68B	LEFT RAMP G.I. 78B	RIGHT INLANE G.I. RIGHT 88B

LAMP MATRIX CIRCUIT

SWITCH MATRIX

COLUMN / ROW	1 GRN-BRN J116-1 U45-18	2 GRN-RED J116-2 U45-17	3 GRN-ORG J116-3 U45-16	4 GRN-WHT J116-4 U45-15	5 GRN-BLK J116-5 U45-14	6 GRN-BLU J116-6 U45-13	7 GRN-VIO J116-7 U45-12	8 GRN-GRY J116-8 U45-11
1 WHT-BRN J116-12 U51-7	NOT USED 11	CAPTIVE BALL 21	RIGHT BANK: UPPER 31	TROUGH JAM 41	SHIELD POPPER 51	LEFT SLINGSHOT 61	NOT USED 71	NOT USED 81
2 WHT-RED J116-13 U51-5	NOT USED 12	NOT USED 22	RIGHT BANK: MIDDLE 32	TROUGH BALL 1 42	NOT USED 52	RIGHT SLINGSHOT 62	NOT USED 72	NOT USED 82
3 WHT-ORG J116-14 U51-9	START BUTTON 13	NOT USED 23	RIGHT BANK: LOWER 33	TROUGH BALL 2 43	LEFT SHIELD TARGET 53	UPPER JET BUMPER 63	NOT USED 73	NOT USED 83
4 WHT-YEL J116-15 U51-11	NOT USED 14	ALWAYS CLOSED 24	LEFT BANK: UPPER 34	TROUGH BALL 3 44	RIGHT SHIELD TARGET 54	MIDDLE JET BUMPER 64	NOT USED 74	NOT USED 84
5 WHT-GRN J116-16 U57-7	LEFT DROP TARGET 15	RIGHT DROP TARGET 25	LEFT BANK MIDDLE 35	TROUGH BALL 4 45	RAMP MADE LEFT 55	LOWER JET BUMPER 65	NOT USED 75	NOT USED 85
6 WHT-BLU J116-17 U57-5	LEFT OUTLANE 16	LEFT INLANE 26	LEFT BANK LOWER 36	LEFT RAMP ENTER 46	RAMP MADE RIGHT 56	JETS ROLLOVER 66	NOT USED 76	NOT USED 86
7 WHT-VIO J116-18 U57-9	RIGHT INLANE 17	RIGHT OUTLANE 27	LEFT SAUCER 37	RIGHT RAMP ENTER 47	SHIELD UP 57	LEFT LOOP UPPER 67	NOT USED 77	NOT USED 87
8 WHT-GRY J116-19 U57-11	SHOOTER LANE 18	SNEAKY LANE 28	RIGHT SAUCER 38	NOT USED 48	SHIELD HIT 58	LEFT LOOP ROLLOVER 68	NOT USED 78	NOT USED 88

▓ = OPTO, TYPICALLY CLOSED

COIN SLOT SWITCHES

DIRECT GROUND	ORG-BRN J114-1 U43-7	ORG-RED J114-2 U43-5	ORG-BLK J114-3 U43-9	ORG-YEL J114-4 U43-11	ORG-GRN J114-5 U48-7	ORG-BLU J114-6 U48-5	ORG-VIO J114-8 U48-9	ORG-GRY J114-9 U48-11
BLACK J114-14	COIN 1 D1	COIN 2 D2	COIN 3 D3	COIN 4 D4	COIN 5 D5	COIN 6 D6	COIN 7 (Used for Dollar Bill Validator) D7	COIN 8 D8

DIAGNOSTIC SWITCHES

DIRECT GROUND	GRY-BLK J114-10 U50-7	GRY-ORG J114-11 U50-5	GRY-RED J114-12 U50-9	GRY-BRN J114-13 U50-11
BLACK J114-14	'ESCAPE' BUTTON D9	'DOWN' BUTTON D10	'UP' BUTTON D11	'ENTER' BUTTON D12

PLAYFIELD FLIPPER SWITCHES (E.O.S.)

DIRECT GROUND	BLK-GRN J115-9 U56-7	BLK-BLU J115-10 U56-5	BLK-VIO J115-20 U56-9	BLK-GRY J115-21 U56-11
BLACK J115-22	LOWER RIGHT FLIPPER E.O.S. D13	LOWER LEFT FLIPPER E.O.S. D14	UPPER RIGHT FLIPPER E.O.S. D15	UPPER LEFT FLIPPER E.O.S. D16

CABINET FLIPPER SWITCHES

DIRECT GROUND	BLK-BRN J113-1 U49-7	BLK-RED J113-2 U49-5	BLK-ORG J113-3 U49-9	BLK-YEL J113-4 U49-11	BLK-GRN J113-6 U55-7	BLK-BLU J113-7 U55-5	BLK-VIO J113-8 U55-9	BLK-GRY J113-9 U55-11
BLACK J113-10	SLAM TILT D17	COIN DOOR CLOSED D18	PLUMB BOB TILT D19	NOT USED D20	RIGHT FLIPPER BUTTON D21	LEFT FLIPPER BUTTON D22	RIGHT ACTION BUTTON D23	LEFT ACTION BUTTON D24

SWITCH MATRIX CIRCUIT
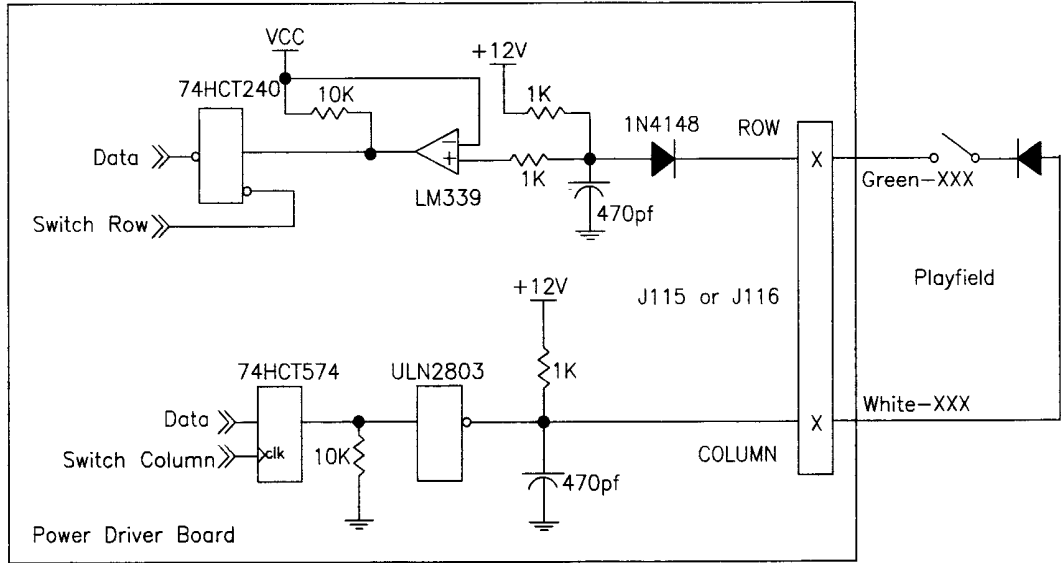
COIN SLOT SWITCH CIRCUIT
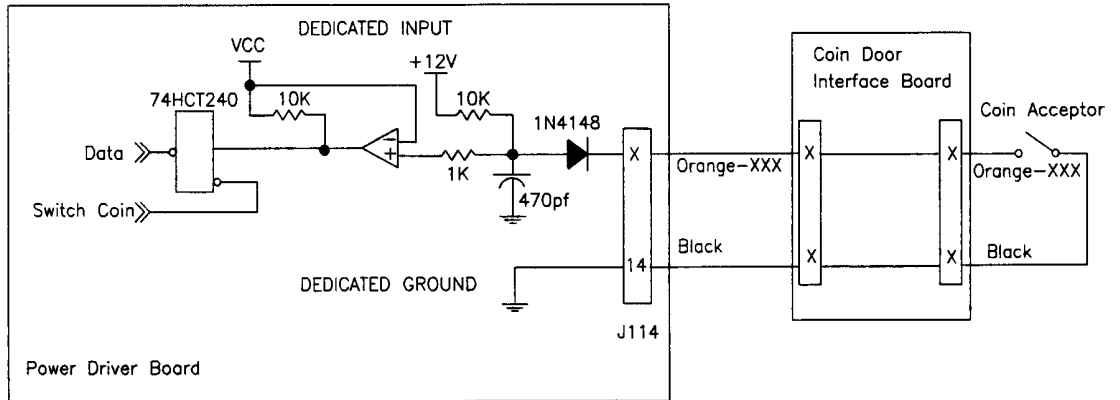
DIAGNOSTIC SWITCH CIRCUIT
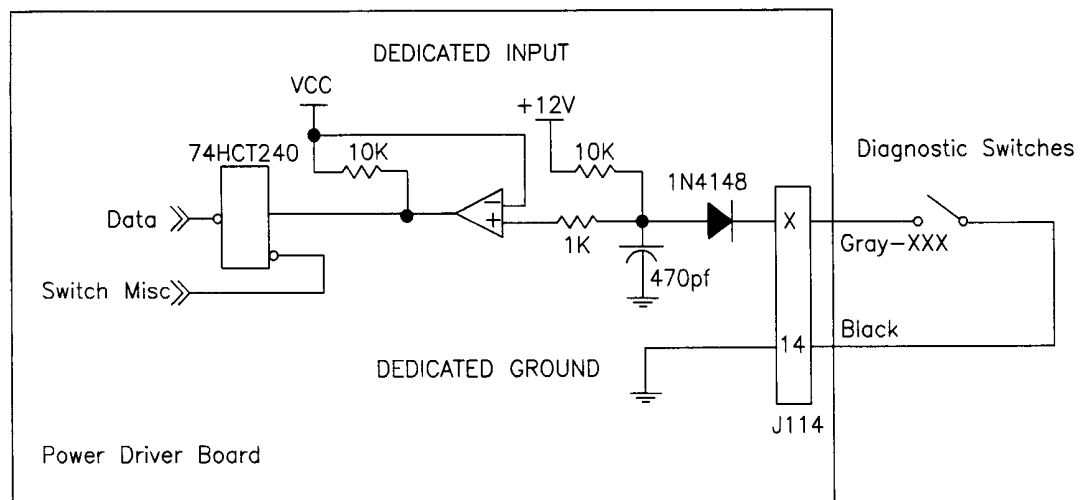
PLAYFIELD FLIPPER SWITCH (E.O.S.) CIRCUIT

DEDICATED INPUT

VCC

74HCT240

10K

+12V

10K

1N4148

End-of-Stroke Switches

Data

1K

X

Black—XXX

Switch Misc

470pf

Black

DEDICATED GROUND

22

Power Driver Board

J115 or J116
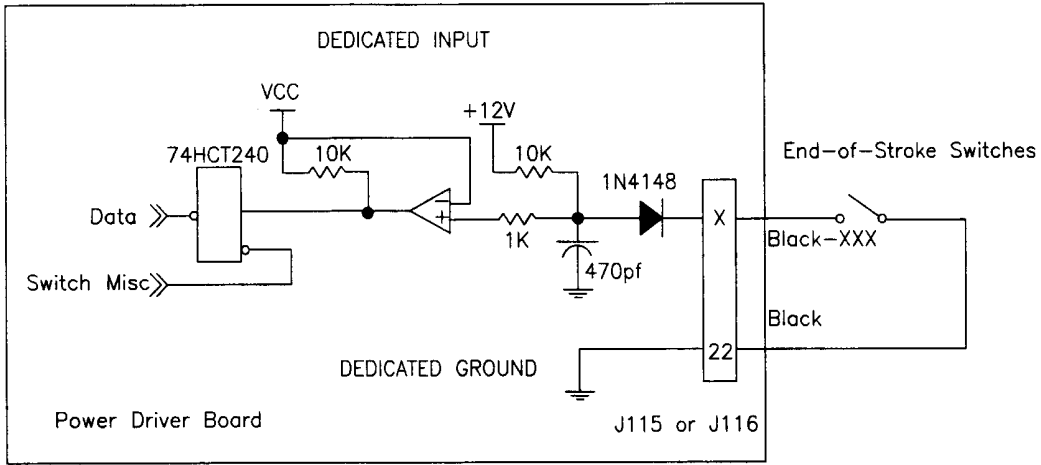
CABINET FLIPPER SWITCH CIRCUIT

DEDICATED INPUT

VCC

74HCT240

10K

+12V

10K

1N4148

Flipper Button
Assembly Board

Data

1K

X

X

Switch Flip.

470pf

Black—XXX

Black

X

DEDICATED GROUND

10

J113

Power Driver Board

SOLENOID TABLE

Sol No.	Solenoid Function	Fuse	Power to Playfield	Power Wire Color	Drive Transistor	Drive to Playfield	Drive Wire Color	Solenoid Part Number or Flasher Type
01	LEFT SAUCER	F101	J102-1	RED-BRN	Q59	J111-13	VIO-BRN	AE1-27-1200
02	LEFT DROP TARGET UP	F101	J102-1	RED-BRN	Q60	J111-14	VIO-RED	AE1-26-1200
03	LEFT DROP TARGET DOWN	F101	J102-1	RED-BRN	Q61	J111-15	VIO-ORG	SM1-26-600
04	MAGNET*	F101	J102-1	RED-BRN	Q62	J111-16	VIO-YEL	20-10197*
05	NOT USED	F102		RED-BLK	Q63		VIO-GRN	
06	RIGHT DROP TGT DOWN	F102	J102-2	RED-BLK	Q64	J111-18	VIO-BLU	SM1-26-600
07	RIGHT DROP TARGET UP	F102	J102-2	RED-BLK	Q65	J111-19	VIO-BLK	AE1-26-1200
08	SHIELD POPPER	F102	J102-2	RED-BLK	Q66	J111-20	VIO-GRY	AE1-26-1500
09	TROUGH EJECT	F103	J102-3	RED-ORG	Q51	J112-11	BRN-BLK	AE1-26-1500
10	LEFT SLINGSHOT	F103	J102-3	RED-ORG	Q52	J112-12	BRN-RED	AE1-27-1200
11	RIGHT SLINGSHOT	F103	J102-3	RED-ORG	Q53	J112-13	BRN-ORG	AE1-27-1200
12	UPPER JET BUMPER	F103	J102-3	RED-ORG	Q54	J112-14	BRN-YEL	AE1-26-1200
13	MIDDLE JET BUMPER	F100	J102-7	RED-YEL	Q55	J112-15	BRN-GRN	AE1-26-1200
14	LOWER JET BUMPER	F100	J102-7	RED-YEL	Q56	J112-16	BRN-BLU	AE1-26-1200
15	UPPER HOTDOG FLASHERS	F109	J102-8	RED-WHT	Q57	J112-17	BRN-VIO	#906 (2)
16	RIGHT SAUCER	F100	J102-7	RED-YEL	Q58	J112-18	BRN-GRY	AE1-27-1200
17	LOWER LEFT HOTDOG FL	F109	J102-8	RED-WHT	Q43	J111-1	BLU-BRN	#906
18	LOWER RIGHT HOTDOG FL	F109	J102-8	RED-WHT	Q44	J111-2	BLU-RED	#906
19	BACK PANEL RIGHT UP FL**	F109	J102-8	RED-WHT	Q45	J111-3	BLU-ORG	#906
20	BACK PANEL RIGHT MID FL**	F109	J102-8	RED-WHT	Q46	J111-4	BLU-YEL	#906
21	JET FLASHER	F109	J102-8	RED-WHT	Q47	J111-5	BLU-GRN	#906
22	LEFT INLANE FLASHER	F109	J102-8	RED-WHT	Q48	J111-6	BLU-BLK	#89
23	RIGHT INLANE FLASHER	F109	J102-8	RED-WHT	Q49	J111-7	BLU-VIO	#89
24	BACK PANEL MIDDLE FL	F109	J102-8	RED-WHT	Q50	J111-8	BLU-GRY	#906
25	BACK PANEL RT LOW FL**	F109	J102-8	RED-WHT	Q67	J112-9	BLK-BRN	#906
26	BACK PANEL LEFT UP FL**	F109	J102-8	RED-WHT	Q68	J112-10	BLK-RED	#906
27	BACK PANEL LEFT MID FL**	F109	J102-8	RED-WHT	Q69	J112-19	BLK-ORG	#906
28	BACK PANEL LEFT LOW FL**	F109	J102-8	RED-WHT	Q70	J112-20	BLK-YEL	#906
	Flipper Circuits							
33	LOW RIGHT FLIPPER PWR				Q35	J112-1	YEL-GRN	
34	LOW RIGHT FLIPPER HOLD	F104	J103-1	RED-GRN	Q36	J112-2	ORG-GRN	FL1-11722
35	LOW LEFT FLIPPER PWR				Q37	J112-3	YEL-BLU	
36	LOW LEFT FLIPPER HOLD	F105	J103-2	RED-BLU	Q38	J112-4	ORG-BLU	FL1-11722
37	CENTER BUMPER POWER				Q39	J112-5	YEL-VIO	
38	CENTER BUMPER HOLD	F106	J103-3	RED-VIO	Q40	J112-6	ORG-VIO	FL1-15411
39	LEFT LASER FLASHER	F109	J102-8	RED-WHT	Q41	J112-7	YEL-GRY	#89
40	RIGHT LASER FLASHER	F109	J102-8	RED-WHT	Q42	J112-8	ORG-GRY	#89
41	NEON	F108	J102-9	GRY-YEL	U35	J111-9	BRN-WHT	A-23157

*Used in conjunction with a wave spring washer P/N 20-9612.
** Used in conjunction with receptacle and skirt P/N A-14265-13.

#906 part number is 24-8802
#89 part number is 24-8704

SOLENOID WIRING

COILS

POWER DRIVER BOARD

J102
7	RED—YEL, +50V	(FUSE 100)
3	RED—ORG, +50V	(FUSE 103)
2	RED—BLK, +50V	(FUSE 102)
1	RED—BRN, +50V	(FUSE 101)

| LEFT SAUCER SOL. 1 | LEFT DROP TGT UP SOL. 2 | LEFT DROP TGT DOWN SOL. 3 | MAGNET SOL. 4 |

J111
13	VIO—BRN
14	VIO—RED
15	VIO—ORG
16	VIO—YEL

| RIGHT DROP TGT DOWN SOL. 6 | RIGHT DROP TGT UP SOL. 7 | SHIELD POPPER SOL. 8 |

18	VIO—BLU
19	VIO—BLK
20	VIO—GRY

| TROUGH EJECT SOL. 9 | LEFT SLINGSHOT SOL. 10 | RIGHT SLINGSHOT SOL. 11 | UPPER JET BUMPER SOL. 12 |

J112
11	BRN—BLK
12	BRN—RED
13	BRN—ORG
14	BRN—YEL

| MIDDLE JET BUMPER SOL. 13 | LOWER JET BUMPER SOL. 14 | RIGHT SAUCER SOL. 16 |

15	BRN—GRN
16	BRN—BLU
18	BRN—GRY

FLASHLAMPS AND NEON

POWER DRIVER BOARD	J102 9	GRY-YEL, +12V	(FUSE 108)
	J102 8	RED-WHT, +20V	(FUSE 109)

J111			
1	BLU-BRN	SOLENOID 17	LOWER LEFT HOTDOG FLASHER
2	BLU-RED	SOLENOID 18	LOWER RIGHT HOTDOG FLASHER
3	BLU-ORG	SOLENOID 19	BACK PANEL RIGHT UPPER FLASHER
4	BLU-YEL	SOLENOID 20	BACK PANEL RIGHT MIDDLE FLASHER
5	BLU-GRN	SOLENOID 21	JET FLASHER
6	BLU-BLK	SOLENOID 22	LEFT INLANE FLASHER
7	BLU-VIO	SOLENOID 23	RIGHT INLANE FLASHER
8	BLU-GRY	SOLENOID 24	BACK PANEL MIDDLE FLASHER
9	BRN-WHT	SOLENOID 41	NEON

J112			
7	YEL-GRY	SOLENOID 39	LEFT LASER FLASHER
8	ORG-GRY	SOLENOID 40	RIGHT LASER FLASHER
9	BLK-BRN	SOLENOID 25	BACK PANEL RIGHT LOWER FLASHER
10	BLK-RED	SOLENOID 26	BACK PANEL LEFT UPPER FLASHER
17	BRN-VIO	SOLENOID 15	UPPER HOTDOG FLASHERS
19	BLK-ORG	SOLENOID 27	BACK PANEL LEFT MIDDLE FLASHER
20	BLK-YEL	SOLENOID 28	BACK PANEL LEFT LOWER FLASHER

3-9

CIRCUIT for SOLENOIDS 1 to 16

CIRCUIT for SOLENOIDS 17 to 28
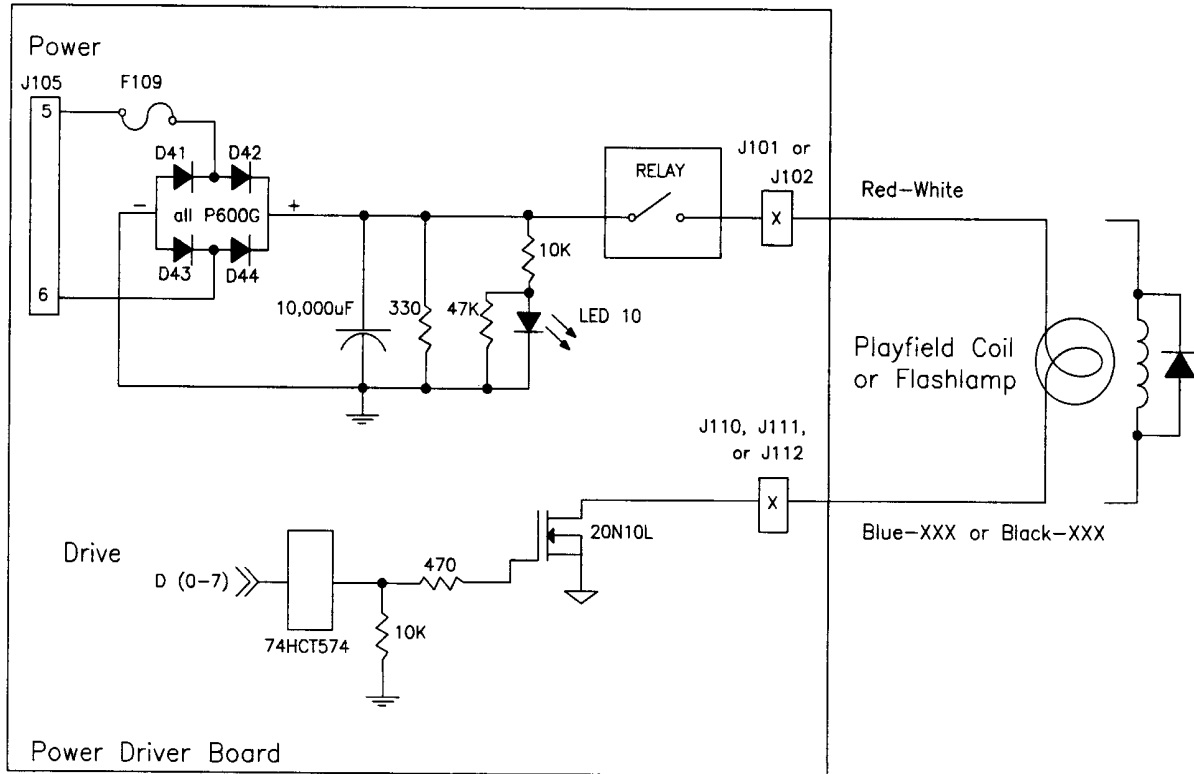
FLIPPER COIL CIRCUIT
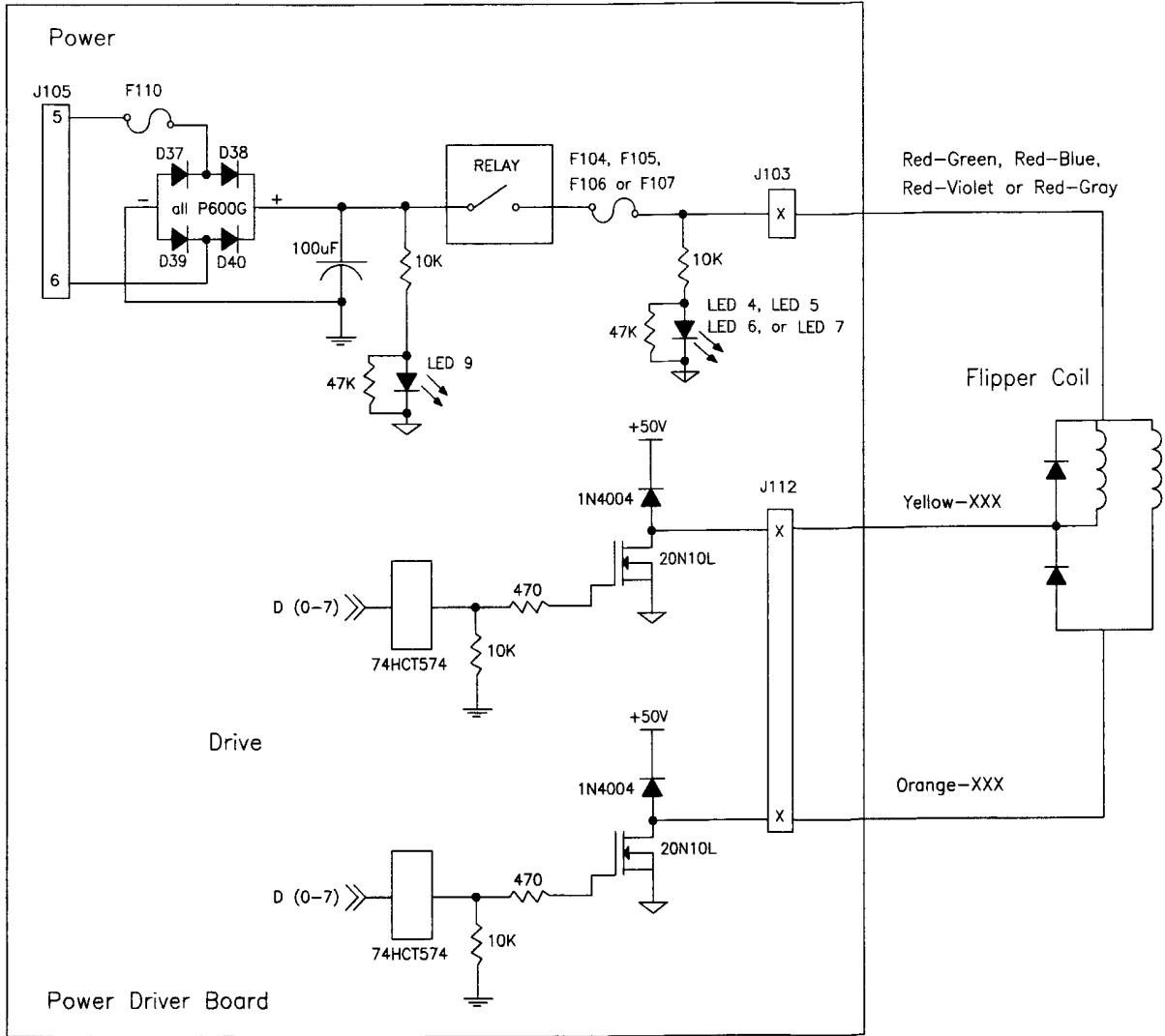
LOWER RIGHT FLIPPER CIRCUIT AND CENTER BUMPER CIRCUIT
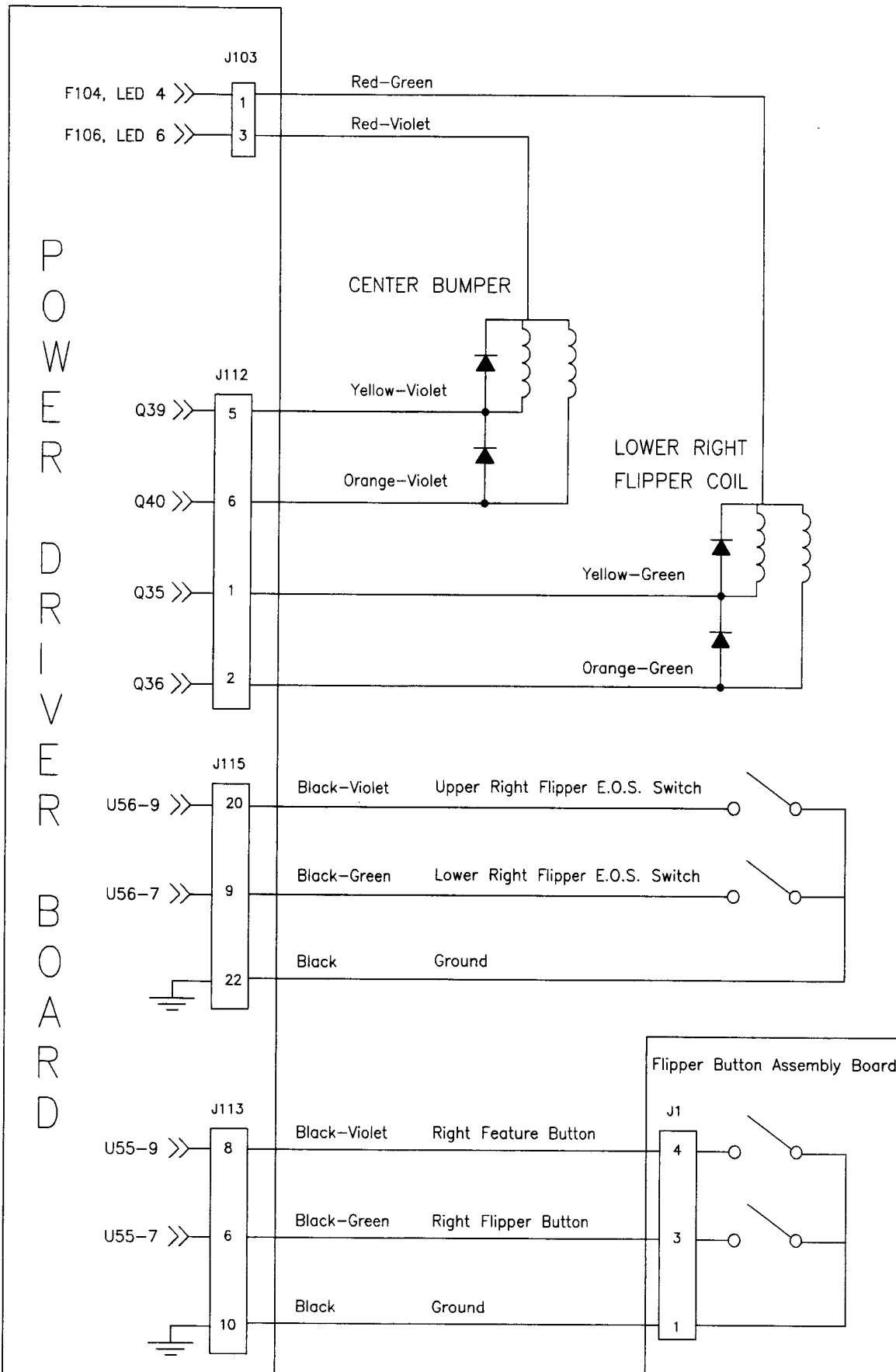
UPPER AND LOWER LEFT FLIPPER CIRCUITS

P
O
W
E
R

D
R
I
V
E
R

B
O
A
R
D

J103

F105, LED 5 >> — 2   Red—Blue

F107, LED 7 >> — 4   Red—Gray

UPPER LEFT
FLIPPER COIL

(There is no
upper left flipper
on Star Wars.)

J112

Q41 >> — 7   Yellow—Gray

Q42 >> — 8   Orange—Gray

LOWER LEFT
FLIPPER COIL

Q37 >> — 3   Yellow—Blue

Q38 >> — 4   Orange—Blue

J115

U56—11 >> — 21   Black—Gray   Upper Left Flipper E.O.S. Switch

U56—5 >> — 10   Black—Blue   Lower Left Flipper E.O.S. Switch

— 22   Black   Ground

Flipper Button Assembly Board

J113   J1

U55—11 >> — 9   Black—Gray   Left Feature Button   4

U55—5 >> — 7   Black—Blue   Left Flipper Button   3

— 10   Black   Ground   1

2 SWITCH FLIPPER BUTTON ASSEMBLY
04-12612

Schematic

Top View

Side View
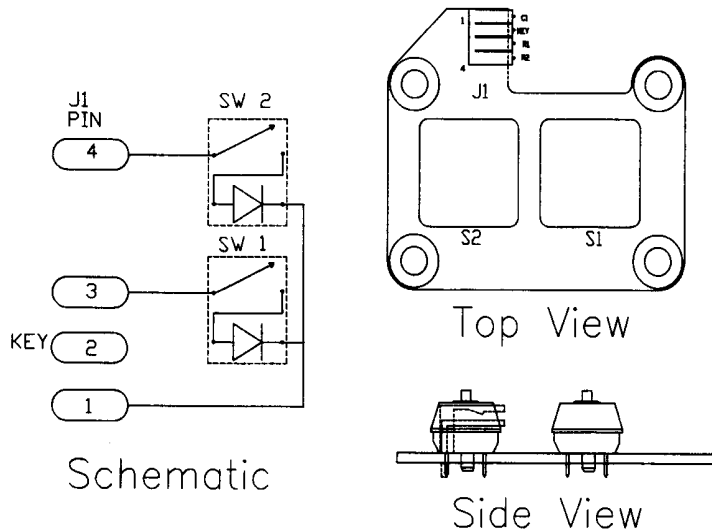
Left Side Flipper
J1-1 Black, Ground from Power Driver Board at J113-10
J1-2 Key
J1-3 Black-Blue, Flipper Button from Power Driver Board at J113-7
J1-4 Black-Gray, Feature Button from Power Driver Board at J113-9

Right Side Flipper
J1-1 Black, Ground from Power Driver Board at J113-10
J1-2 Key
J1-3 Black-Green, Flipper Button from Power Driver Board at J113-6
J1-4 Black-Violet, Feature Button from Power Driver Board at J113-8

Individual LED Board Assembly
A-16908
(Transmitter-Green Board)
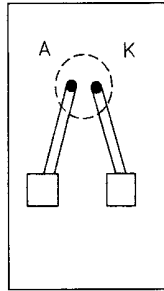
solder side	component side	schematic
A K	K A	A K
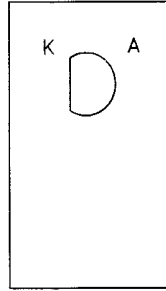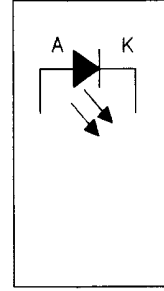
Individual Photo Transistor Board Assembly
A-16909
(Receiver-Blue Board)
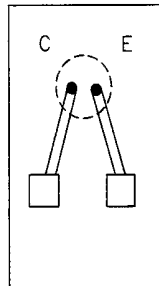
solder side	component side	schematic
C E	E C	C E
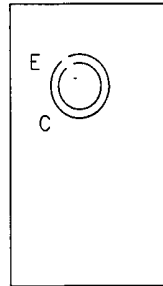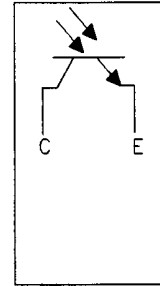
Typical Circuit Diagram

LED BOARD
Transmitter
1.0–1.4 volts

BEAM

PHOTO TRANSISTOR BOARD
Receiver

0.1–0.7 volts unblocked
11–13 volts blocked

Gray–XXX

Black, Ground

Gray–Yellow, +12V

Orange–XXX

LED BOARD
Transmitter

White

PHOTO TRANSISTOR BOARD
Receiver

Green

Black

Blue

A K

Solder

Infrared Beam

C E

Solder

Gray

Black

Gray–Yellow

Orange
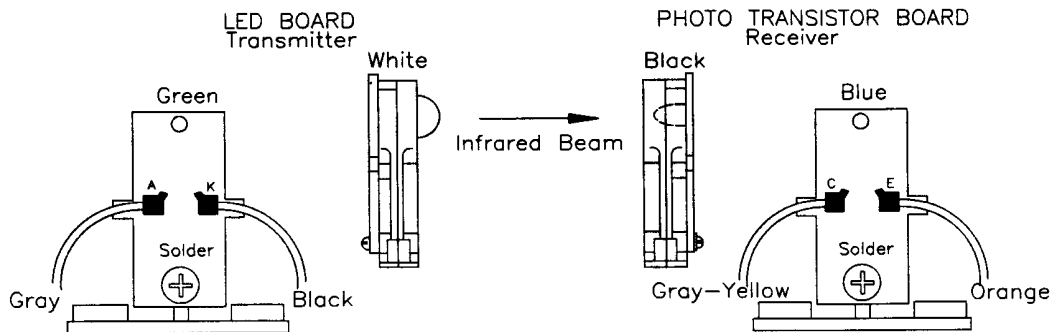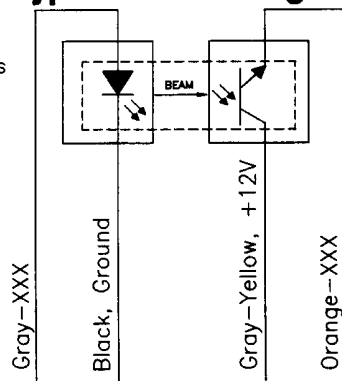
Ball Trough Infrared LED Board Assembly
A-18617-1
(Transmitter - Green Board)

LED7 LED6 LED5 LED4 LED3 LED2 LED1

J1

LED 7 TROUGH BALL 6 NOT USED

LED 6 TROUGH BALL 5 NOT USED

LED 5 TROUGH BALL 4 SW. #45

LED 4 TROUGH BALL 3 SW. #44

LED 3 TROUGH BALL 2 SW. #43

LED 2 TROUGH BALL 1 SW. #42

LED 1 TROUGH EJECT SW. #41

J1
1
2
3
4
5
6
7
8
9
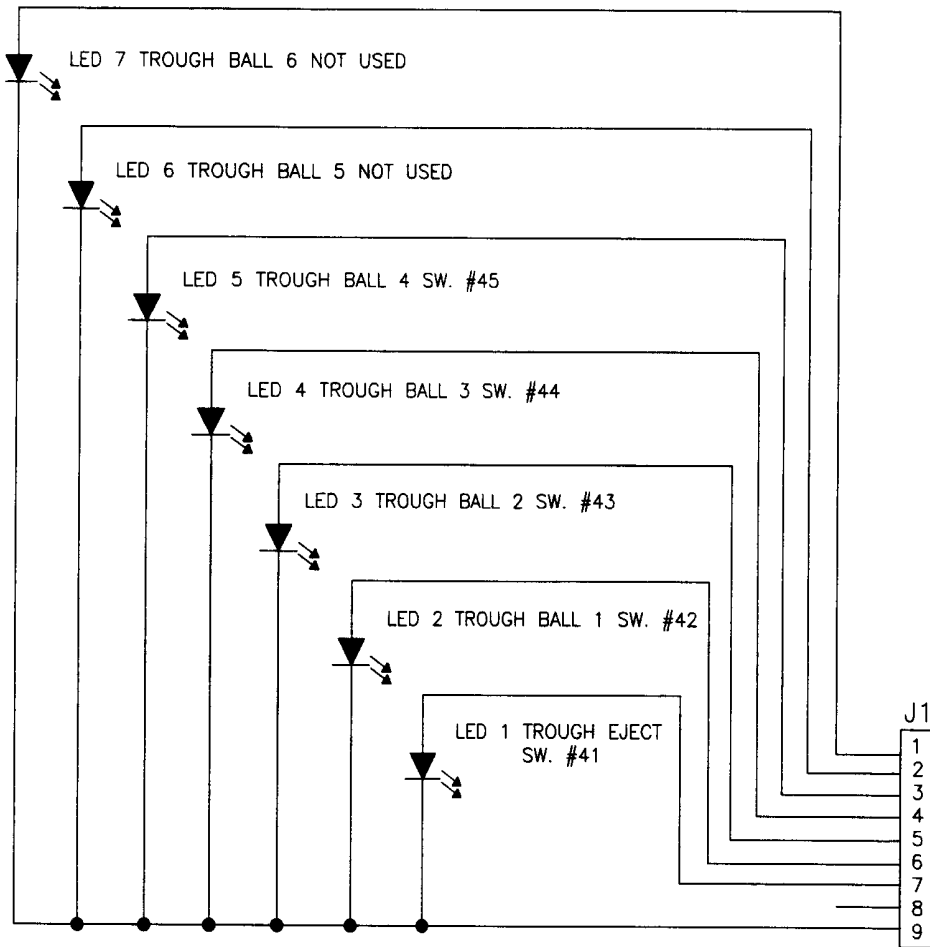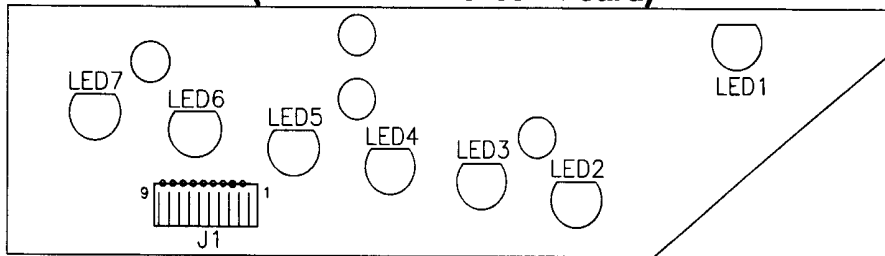
J1-1	N/C	
J1-2	N/C	
J1-3	GRY-GRN,	For TROUGH BALL 4 switch #45 from 10-Opto Switch Board J1-3
J1-4	GRY-BLK,	For TROUGH BALL 3 switch #44 from 10-Opto Switch Board J1-4
J1-5	GRY-ORG,	For TROUGH BALL 2 switch #43 from 10-Opto Switch Board J1-5
J1-6	GRY-RED,	For TROUGH BALL 1 switch #42 from 10-Opto Switch Board J1-6
J1-7	GRY-BRN,	For TROUGH EJECT switch #41 from 10-Opto Switch Board J1-7
J1-8	KEY	
J1-9	BLK,	Ground from 10-Opto Switch Board J1-9

Ball Trough Infrared Photo Transistor Board Assembly
A-18618-1
(Receiver - Blue Board)
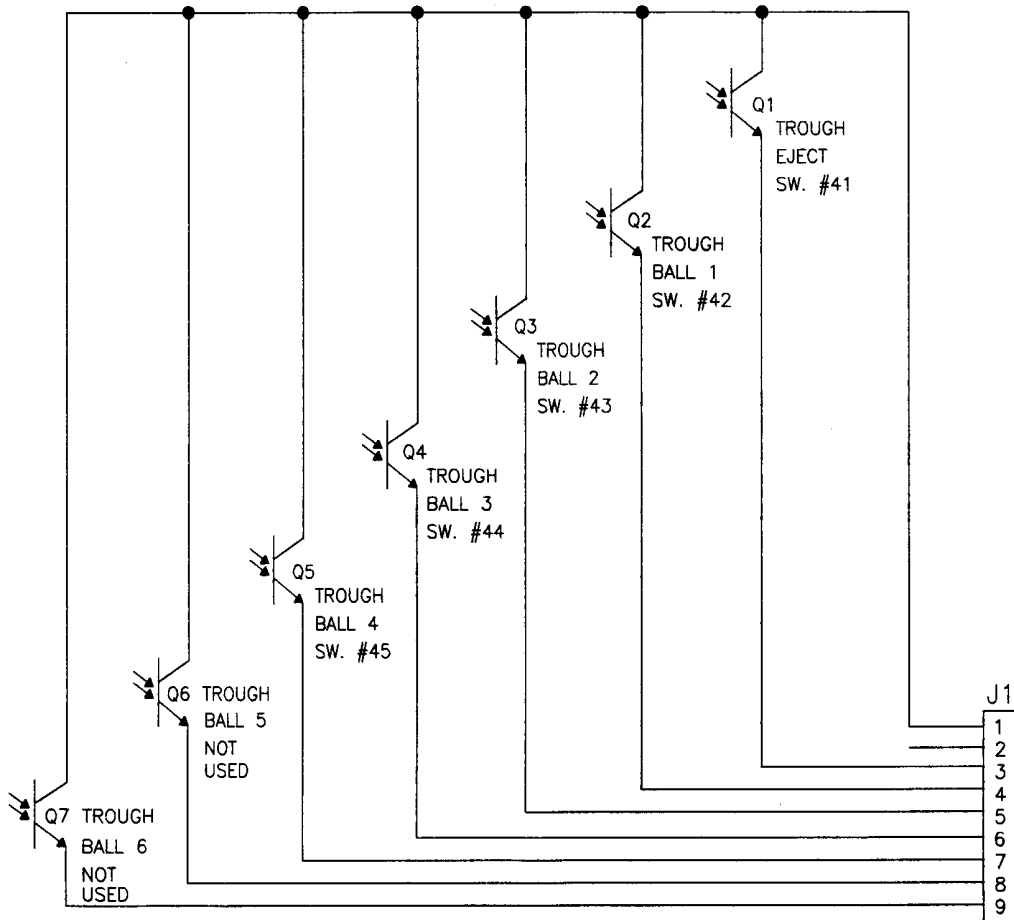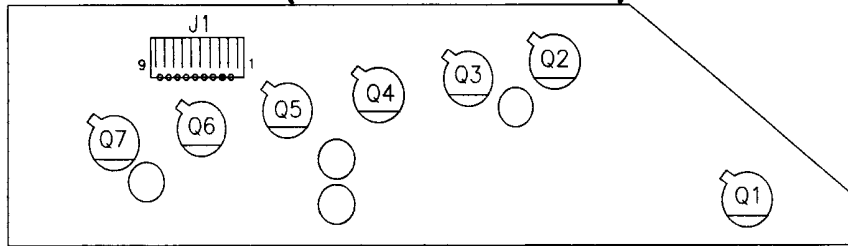
J1-1	GRY-YEL,	+12V from 10-Opto Switch Board J2-9
J1-2	KEY	
J1-3	ORG-BRN,	For TROUGH EJECT switch #41 from 10-Opto Switch Board J2-8
J1-4	ORG-RED,	For TROUGH BALL 1 switch #42 from 10-Opto Switch Board J2-7
J1-5	ORG-BLK,	For TROUGH BALL 2 switch #43 from 10-Opto Switch Board J2-5
J1-6	ORG-YEL,	For TROUGH BALL 3 switch #44 from 10-Opto Switch Board J2-4
J1-7	ORG-GRN,	For TROUGH BALL 4 switch #45 from 10-Opto Switch Board J2-3
J1-8	N/C	
J1-9	N/C	

10-Opto Switch Board Assembly
A-20246
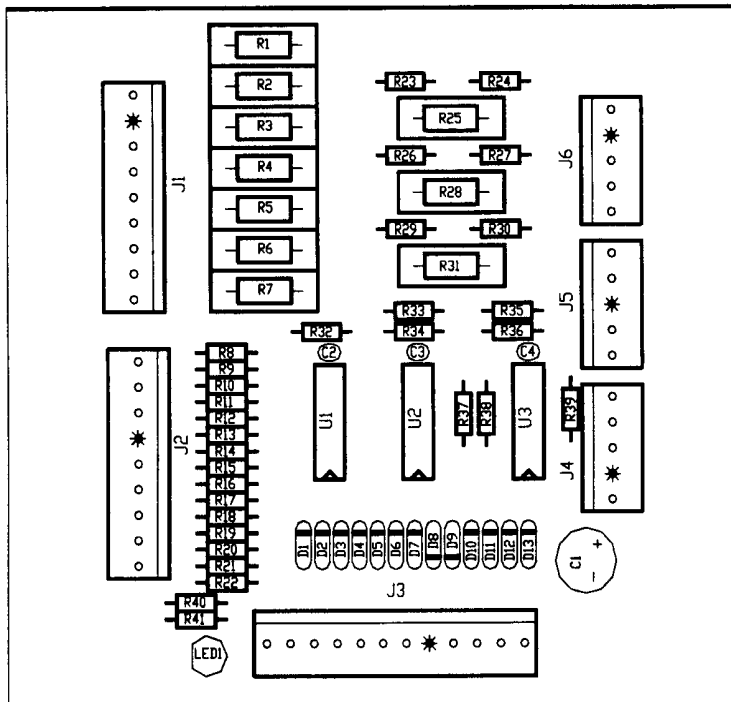
J1-1	GRY-VIO	To switch #47 LED board
J1-2	GRY-BLU	To switch #46 LED board
J1-3	GRY-GRN	To switch #45 LED board
J1-4	GRY-BLK	To switch #44 LED board
J1-5	GRY-ORG	To switch #43 LED board
J1-6	GRY-RED	To switch #42 LED board
J1-7	GRY-BRN	To switch #41 LED board
J1-8	KEY	
J1-9	BLK	Ground to LED boards

J2-1	ORG-VIO	To switch #47 Photo Trans. board
J2-2	ORG-BLU	To switch #46 Photo Trans. board
J2-3	ORG-GRN	To switch #45 Photo Trans. board
J2-4	ORG-YEL	To switch #44 Photo Trans. board
J2-5	ORG-BLK	To switch #43 Photo Trans. board
J2-6	KEY	
J2-7	ORG-RED	To switch #42 Photo Trans. board
J2-8	ORG-BRN	To switch #41 Photo Trans. board
J2-9	GRY-YEL	+12V to Photo Trans. boards

J3-1	BLK	Ground from Power Driver board J116-22
J3-2	GRY-YEL	+12V from Power Driver board J116-11
J3-3	GRN-BLK	Switch Column 5 from Power Driver board J116-5
J3-4	GRN-WHT	Switch Column 4 from Power Driver board J116-4
J3-5	KEY	
J3-6	WHT-VIO	Switch Row #7 from Power Driver board J116-18
J3-7	WHT-BLU	Switch Row #6 from Power Driver board J116-17
J3-8	WHT-GRN	Switch Row #5 from Power Driver board J116-16
J3-9	WHT-YEL	Switch Row #4 from Power Driver board J116-15
J3-10	WHT-ORG	Switch Row #3 from Power Driver board J116-14
J3-11	WHT-RED	Switch Row #2 from Power Driver board J116-13
J3-12	WHT-BRN	Switch Row #1 from Power Driver board J116-12

J4	NOT USED	

J5	NOT USED	

J6-1	GRN-BRN	To switch #51 LED board
J6-2	KEY	
J6-3	BLK	Ground to switch #51 LED board
J6-4	GRY-YEL	+12V to sw. #51 Photo Trans board
J6-5	WHT-BRN	To switch #51 Photo Trans. board

10-Opto Switch Board Schematic
A-20246
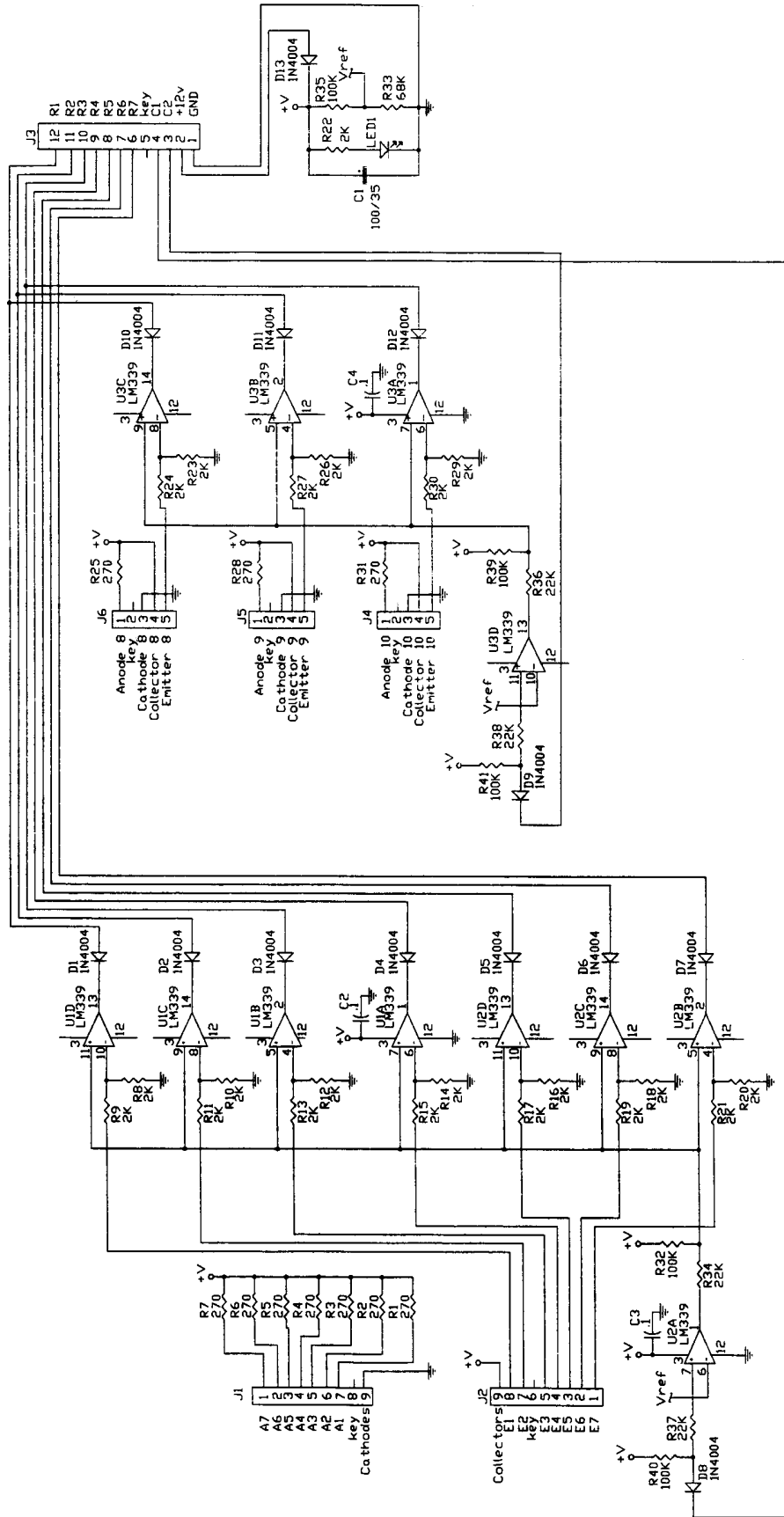
Wiring Diagram for the Ball Trough Assembly Opto Switches

This diagram shows the opto switches in the Ball Trough Assembly only. See the next page for the individual playfield opto switches.

The Ball Trough Assembly opto switches are:

Switch #41	Trough Eject
Switch #42	Trough Ball 1
Switch #43	Trough Ball 2
Switch #44	Trough Ball 3
Switch #45	Trough Ball 4

The Ball Trough Assembly opto switches use a green Ball Trough LED board (P/N A-18617-1), and a blue Ball Trough Photo Transistor board (P/N A-18618-1).

OPTO SWITCH OPERATION:

The ball rolls between the Ball Trough LED board and the Ball Trough Photo Transistor board and breaks the beam. The broken beam 'makes' the switch.
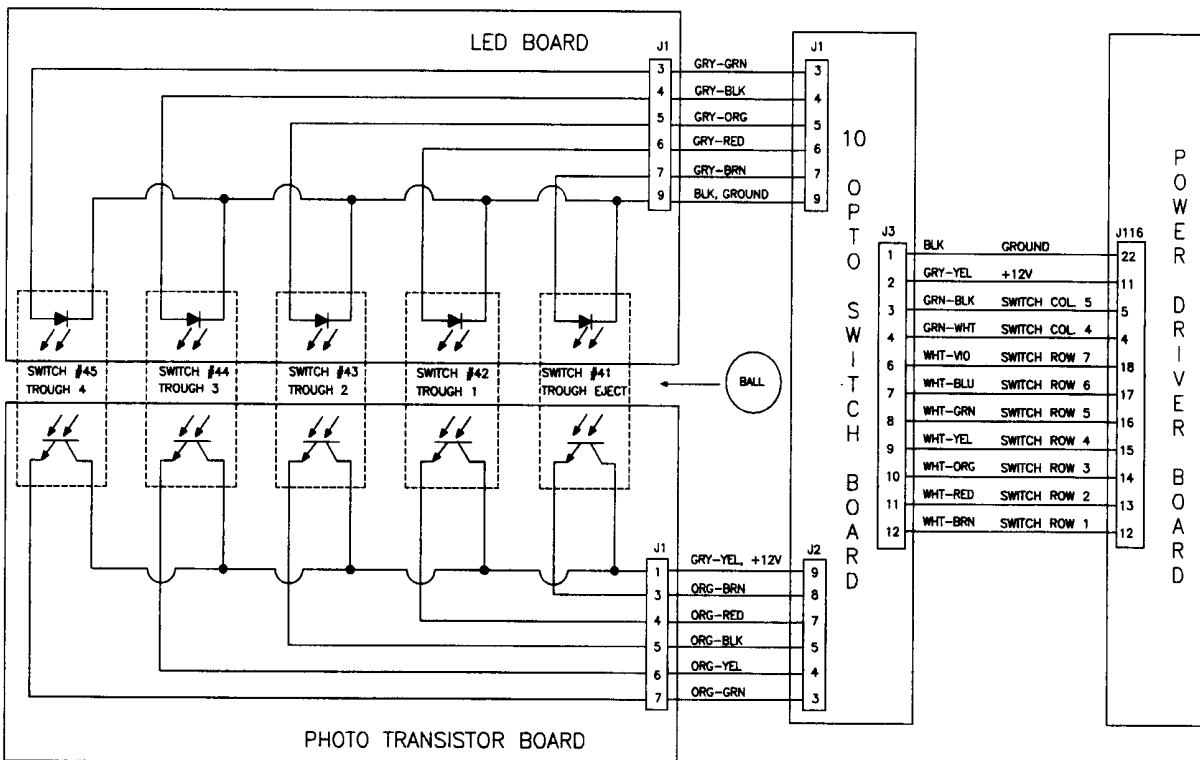
Wiring Diagram for Individual Playfield Opto Switches

This diagram shows the wiring for individual playfield opto switches only (except #41, Shield Hit switch). See the previous page for the Ball Trough Assembly opto switches wiring diagram and page 3-23 for the Shield Hit opto switch wiring diagram.

The individual playfield opto switches are:

        Switch #46   Left Ramp Enter
        Switch #47   Right Ramp Enter
        Switch #51   Shield Popper 1

Each of these switches uses a green Individual LED board (P/N A-16908), and a blue Individual Photo Transistor board (P/N A-16909).

OPTO SWITCH OPERATION:

The ball rolls between the Individual LED board and the Individual Photo Transistor board and breaks the beam. The broken beam 'makes' the switch.
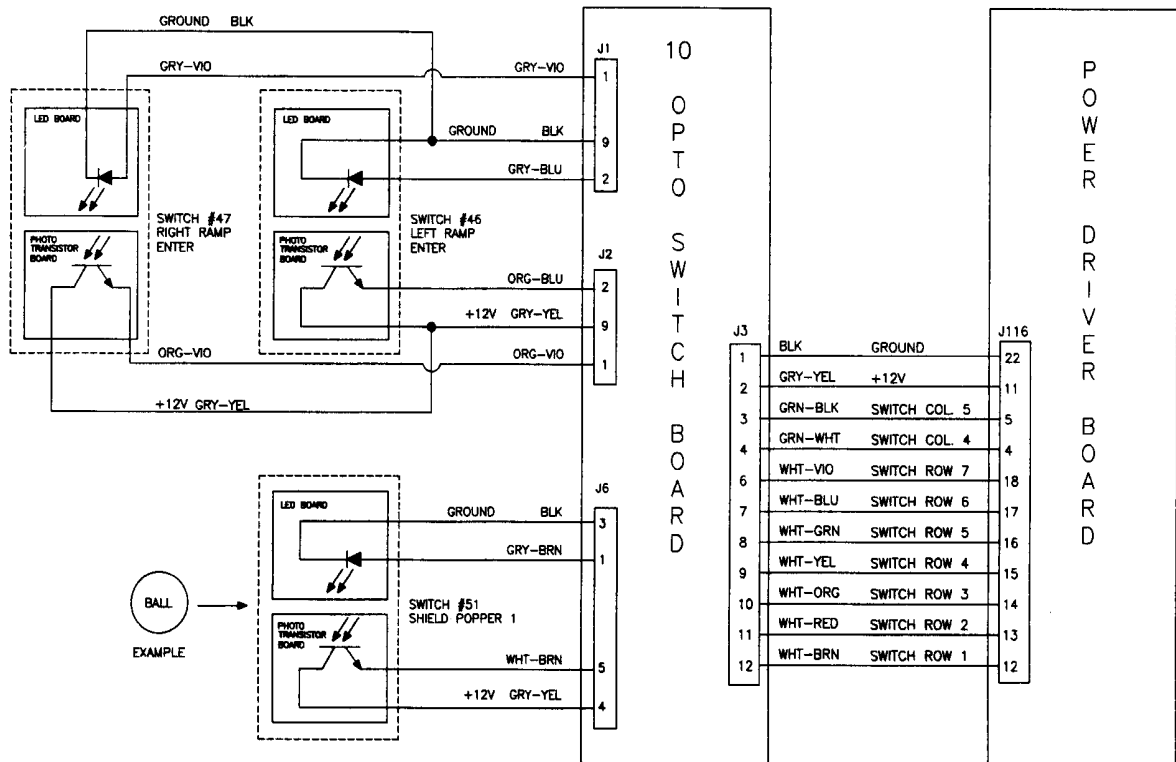
24 Opto Switch Board
A-15646
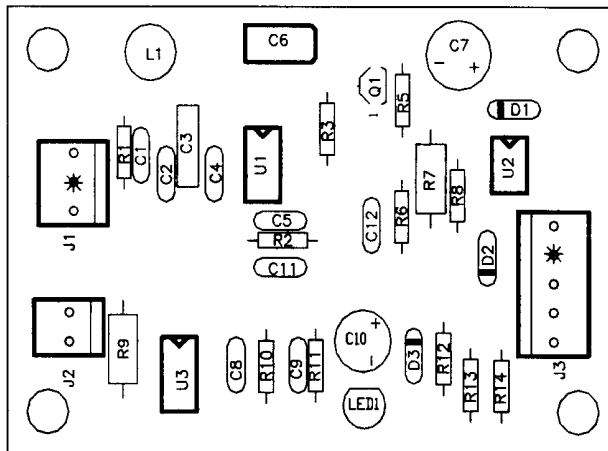
J1-1	ORG	To switch #58 Photo Transistor Board
J1-2	KEY	
J1-3	GRY-YEL	+12 to sw. #58 Photo Transistor Board
J2-1	BLK	Ground to switch #58 LED Board
J2-2	GRY	To switch #58 LED Board
J3-1	WHT-GRY	Switch Row #8 from Power Driver Board J116-19
J3-2	KEY	
J3-3	GRN-BLK	Switch Column #5 from Power Driver Board J116-5
J3-4	BLK	Ground from Power Driver Board J116-22
J3-5	GRY	+12V from Power Driver Board J116-11
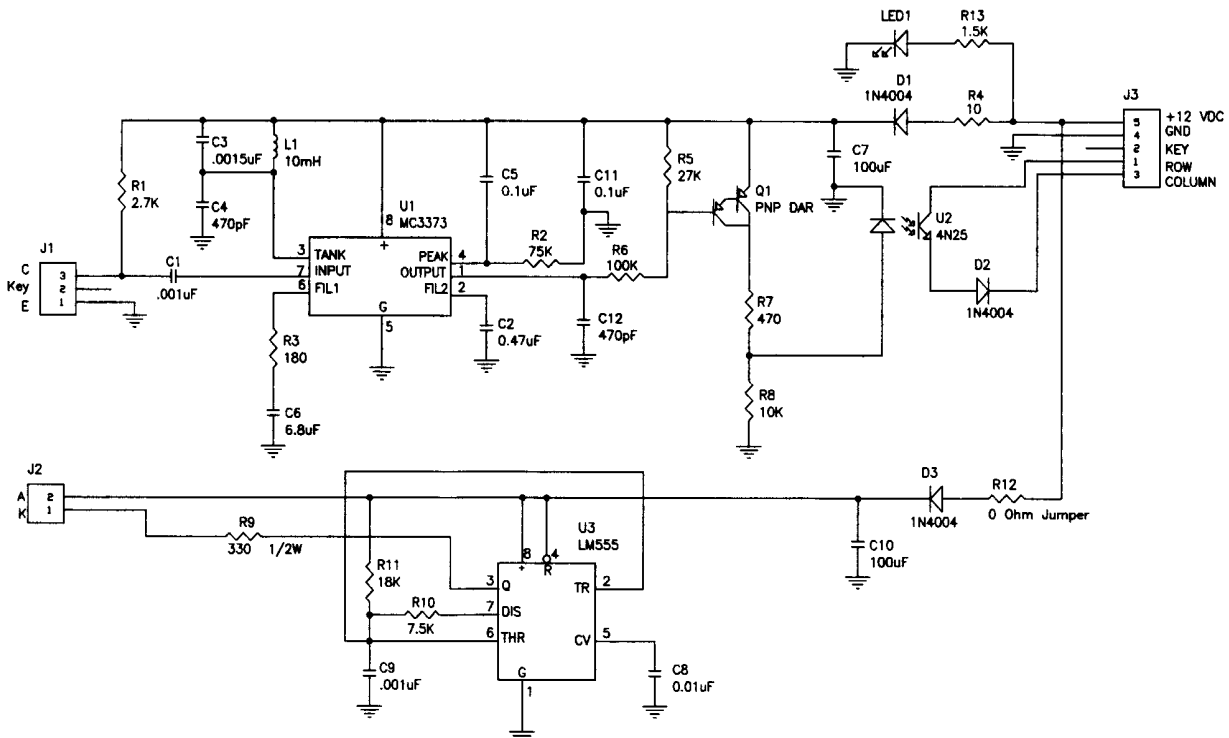
Wiring Diagram for 24 Opto Switch - #41 Shield Hit

This diagram shows the wiring for switch #41 Shield Hit. See page 3-20 for the wiring diagram for the Ball Trough Assembly opto switches and page 3-21 for the individual opto switches wiring diagram.

This switch uses a green Individual LED board (P/N A-16908), and a blue Individual Photo Transistor board (P/N A-16909).

OPTO SWITCH OPERATION:
The ball rolls between the Individual LED board and the Individual Photo Transistor board and breaks the beam. The broken beam 'makes' the switch.

Coin Door Interface Board
04-12492

|		
J1-1	BLK-YEL	Slam Tilt
J1-2	BLK-RED	Interlock Switch
J1-3	BLK-ORG	Plumb Bob Tilt
J1-4	N/C	
J1-5	BLK-GRN	Right Flipper 1
J1-6	BLK-BLU	Left Flipper 1
J1-7	BLK-VIO	Right Flipper 2
J1-8	BLK-GRY	Left Flipper 2
J1-9	N/C	
J1-10	N/C	
J1-11	Key	
J1-12	N/C	
J1-13	BLK	Flipper Switch Ground
J1-14	N/C	
J1-15	N/C	Ground
J2	Ribbon Cable	
J3-1	BLU	For DBV
J3-2	Key	
J3-3	N/C	
J3-4	BRN	For DBV
J4-1	WHT-YEL	Lamp Row 4
J4-2	YEL-WHT	Lamp Column 2
J4-3	BLK	Switch Ground
J4-4	BLK-BRN	Coin 1 Left
J4-5	N/C	Coin 2 Center
J4-6	BLK-RED	Coin 3 Right
J4-7	WHT-GRY	Escape Button
J4-8	ORG-RED	Down Button
J4-9	ORG-GRN	Up Button
J4-10	Key	
J4-11	BLK-BLU	Enter Button
J4-12	GRN-BRN	Slam Column
J4-13	BLK-GRN	Slam Row

J5-1	BLK-BRN	Slam Switch
J5-2	BLK-RED	Interlock Switch
J5-3	BLK-ORG	Plumb Bob Tilt
J5-4	BLK-YEL	Misc.
J5-5	BLK-GRN	Right Flipper 1
J5-6	BLK-BLU	Left Flipper 1
J5-7	BLK-VIO	Right Flipper 2
J5-8	BLK-GRY	Left Flipper 2
J5-9	GRY-BRN	Enter Button
J5-10	GRY-RED	Up Button
J5-11	BLU	Counter Signal
J5-12	GRY-YEL	+12V
J5-13	ORG-BRN	Coin 1
J5-14	ORG-RED	Coin 2
J5-15	ORG-BLK	Coin 3
J5-16	ORG-YEL	Coin 4
J5-17	ORG-GRN	Coin 5
J5-18	ORG-BLU	Coin 6
J5-19	ORG-VIO	Coin 7
J5-20	ORG-GRY	Coin 8
J5-21	GRY-ORG	Down Button
J5-22	GRY-BLK	Escape Button
J5-23	GRY-VIO	Counter Power
J5-24	BLK	Ground
J6	Not Used	
J7-1	GRN-BRN	Switch Column 1
J7-2	GRN-RED	Switch Column 2
J7-3	N/C	
J7-4	N/C	
J7-5	N/C	
J7-6	N/C	
J7-7	N/C	
J7-8	WHT-ORG	Start Button
J7-9	WHT-ORG	Switch #23
J7-10	Key	
J7-11	N/C	
J7-12	N/C	

Coin Door Interface Board Continued...

J8-1 YEL-VIO Lamp Column 1
J8-2 YEL-RED Lamp Column 2
J8-3 YEL-ORG Lamp Column 3
J8-4 BRN-BLK Lamp Row 1
J8-5 BRN-RED Lamp Row 2
J8-6 BRN-ORG Lamp Row 3
J8-7 BRN-YEL Lamp Row 4
J8-8 GRY-GRN Ticket Notch
J8-9 GRY-BLU Ticket Low
J8-10 GRY-YEL +12V
J8-11 GRN-BRN Switch Column 1
J8-12 GRN-RED Switch Column 2
J8-13 GRN-ORG Switch Column 3
J8-14 WHT-BRN Switch Row 1
J8-15 WHT-RED Switch Row 2
J8-16 WHT-ORG Switch Row 3
J8-17 WHT-YEL Switch Row 4
J8-18 Key
J8-19 WHT Ticket Motor
J8-20 BLK Ground

J9 Not Used

J10-1 N/C
J10-2 YEL-RED Lamp Column 2
J10-3 YEL-BRN Lamp Column 3
J10-4 Key
J10-5 N/C
J10-6 N/C
J10-7 N/C
J10-8 N/C
J10-9 N/C
J10-10 BRN-ORG Lamp 13
J10-11 ORG-BRN Lamp 23
J10-12 N/C
J10-13 N/C
J10-14 N/C
J10-15 N/C

Coin Door Interface Board Schematic
04-12492
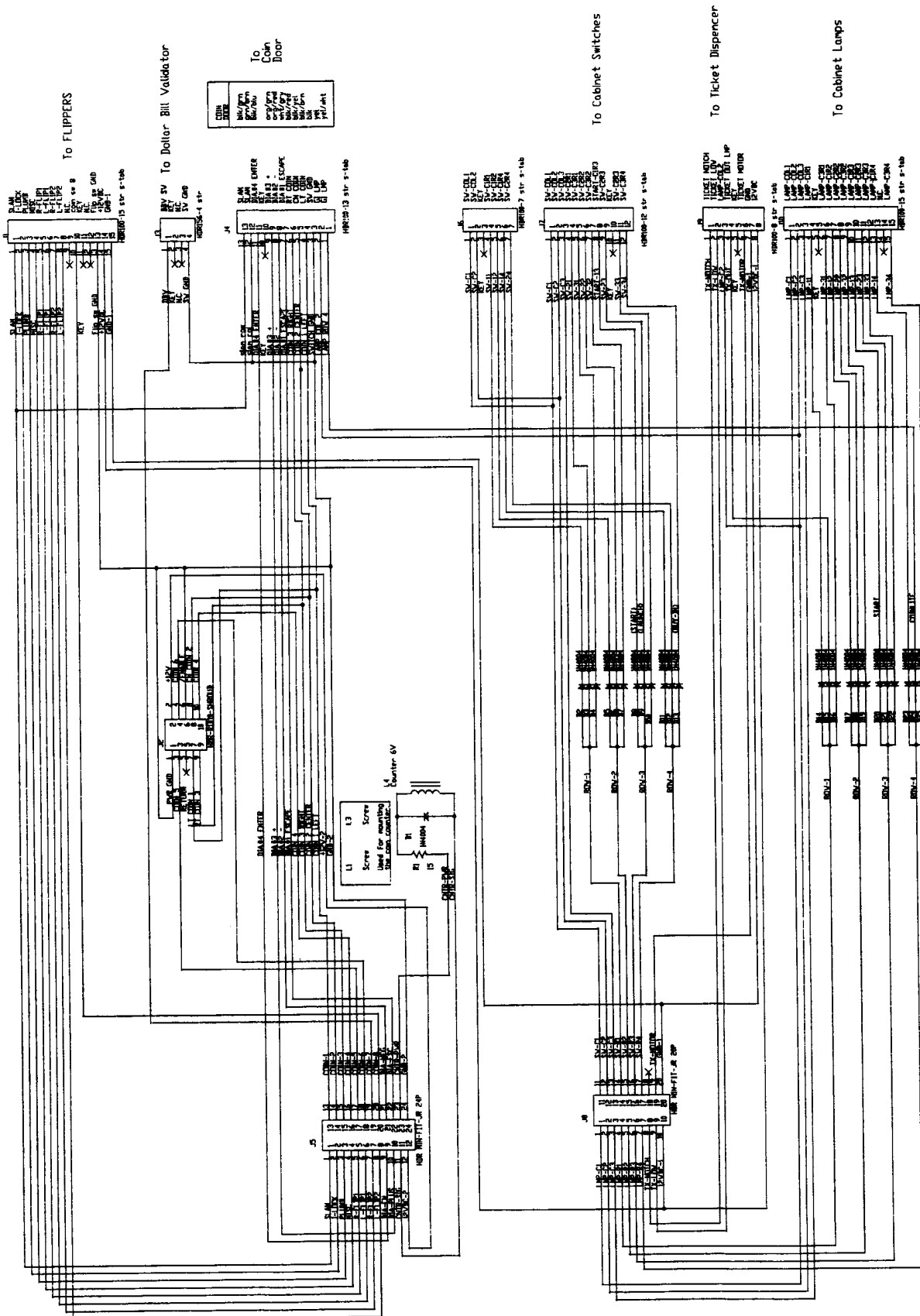
Power Driver Board Assembly
04-12329
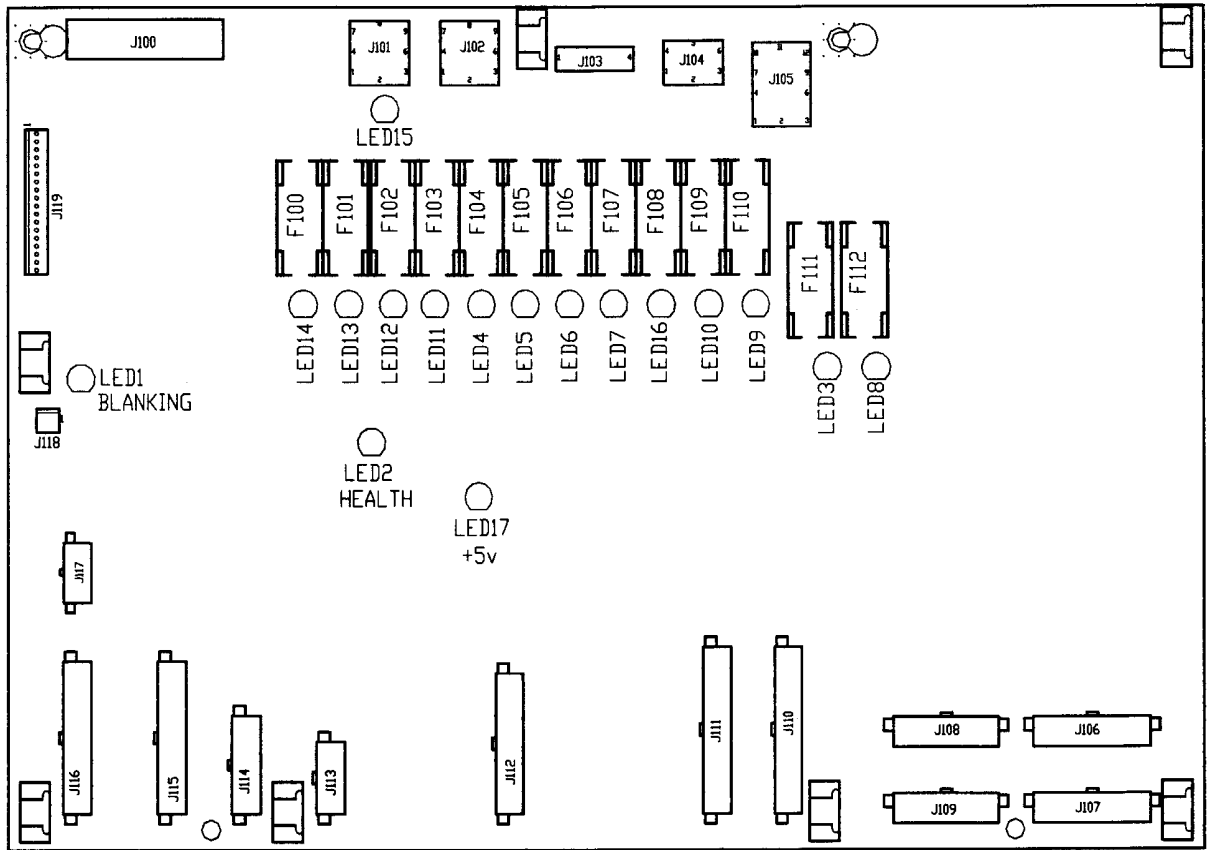
Playfield Cable Connector Bracket
01-15125.4

NOTE: *Not all of the wires from the Cabinet Cable that go to the Playfield Cable Connector Bracket are used on every game.*

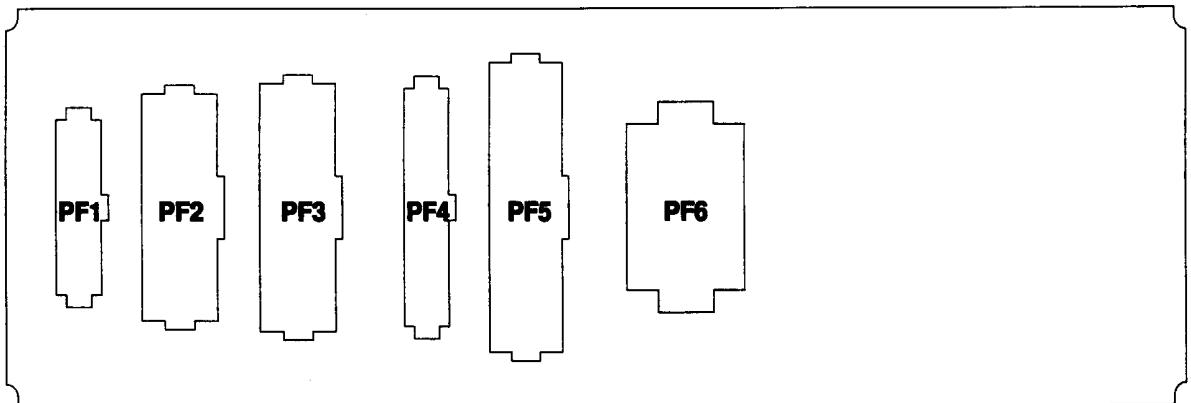| Power Driver Board Connector	Playfield Cable Bracket Connector	Wire Color	Purpose
J100			DB25 Parallel Port Extension Cable for Data to/from Joining Bracket
J101-1/J102-1	PF6-1	RED-BRN	Power for solenoids 1 to 4
J101-2/J102-2	PF6-2	RED-BLK	Power for solenoids 5 to 8
J101-3/J102-3	PF6-3	RED-ORG	Power for solenoids 9 to 12
J101-4/J102-4		N/C	
J101-5/J102-5	PF6-9	BLK	Ground for solenoids
J101-6/J102-6	PF6-10	ORG	Signal Ground
J101-7/J102-7	PF6-4	RED-YEL	Power for solenoids 13 to 16
J101-8/J102-8	PF6-11	RED-WHT	+20V flashlamp power
J101-9/J102-9	PF6-12	GRY-YEL	+12V unregulated power
J103-1	PF6-5	RED-GRN	Power for lower right flipper
J103-2	PF6-6	RED-BLU	Power for lower left flipper
J103-3	PF6-7	RED-VIO	Power for upper right flipper
J103-4	PF6-8	RED-GRY	Power for upper left flipper
J104-1	PF6-13	WHT-VIO	50V AC
J104-2	PF6-14	WHT-BLK	50V AC
J104-3		N/C	
J104-4	PF6-15	N/C	
J104-5		WHT-ORG	20V AC
J104-6		N/C	
J105-1		BLU-WHT	18V AC Secondary, for Lamp Matrix A, from transformer
J105-2		BLU-WHT	18V AC Secondary, for Lamp Matrix A, from transformer
J105-3		WHT-BLU	18V AC Secondary, for Lamp Matrix B, from transformer
J105-4		WHT-BLU	18V AC Secondary, for Lamp Matrix B, from transformer
J105-5		BLK-YEL	51.4V AC Secondary from transformer
J105-6		BLK-YEL	51.4V AC Secondary from transformer
J105-7		WHT-RED	16V AC Secondary from transformer
J105-8		WHT-RED	16V AC Secondary from transformer
J105-9		WHT-GRN	9.8V AC Secondary from transformer
J105-10		WHT-GRN	9.8V AC Secondary from transformer
J105-11		N/C	
J105-12		N/C	
J106-1/J107-1	PF2-1	RED-BRN	Lamp Row 1B
J106-2/J107-2	PF2-2	RED-BLK	Lamp Row 2B
J106-3/J107-3	PF2-3	RED-ORG	Lamp Row 3B
J106-4/J107-4	PF2-4	RED-YEL	Lamp Row 4B
J106-5/J107-5	PF2-5	RED-GRN	Lamp Row 5B
J106-6/J107-6	PF2-6	RED-BLU	Lamp Row 6B
J106-7/J107-7	PF2-7	RED-VIO	Lamp Row 7B
J106-8/J107-8	PF2-8	RED-GRY	Lamp Row 8B
J106-9/J107-9	PF2-9	N/C	
J106-10/J107-10	PF2-10	YEL-BRN	Lamp Column 1B
J106-11/J107-11	PF2-11	YEL-RED	Lamp Column 2B
J106-12/J107-12	PF2-12	YEL-ORG	Lamp Column 3B
J106-13/J107-13	PF2-13	YEL-BLK	Lamp Column 4B
J106-14/J107-14	PF2-14	YEL-GRN	Lamp Column 5B
J106-15/J107-15	PF2-15	YEL-BLU	Lamp Column 6B
J106-16/J107-16	PF2-16	YEL-VIO	Lamp Column 7B
J106-17/J107-17	PF2-17	YEL-GRY	Lamp Column 8B
J106-18/J107-18	PF2-18	N/C	

Power Driver Board Continued...

Power Driver Board Connector	Playfield Cable Bracket Connector	Wire Color	Purpose
J108-1	PF1-1	BRN-BLK	Lamp Row 1A
J108-2	PF1-2	BRN-RED	Lamp Row 2A
J108-3	PF1-3	BRN-ORG	Lamp Row 3A
J108-4	PF1-4	BRN-YEL	Lamp Row 4A
J108-5	PF1-5	BRN-GRN	Lamp Row 5A
J108-6	PF1-6	BRN-BLU	Lamp Row 6A
J108-7	PF1-7	BRN-VIO	Lamp Row 7A
J108-8	PF1-8	BRN-GRY	Lamp Row 8A
J108-9	PF1-9	YEL-BRN	Lamp Column 1A
J108-10	PF1-10	YEL-RED	Lamp Column 2A
J108-11	PF1-11	YEL-ORG	Lamp Column 3A
J108-12	PF1-12	YEL-BLK	Lamp Column 4A
J108-13	PF1-13	YEL-GRN	Lamp Column 5A
J108-14	PF1-14	YEL-BLU	Lamp Column 6A
J108-15	PF1-15	YEL-VIO	Lamp Column 7A
J108-16	PF1-16	YEL-GRY	Lamp Column 8A
J109-1	PF1-1	BRN-BLK	Lamp Row 1A
J109-2	PF1-2	BRN-RED	Lamp Row 2A
J109-3	PF1-3	BRN-ORG	Lamp Row 3A
J109-4	PF1-4	BRN-YEL	Lamp Row 4A
J109-5	PF1-5	N/C	
J109-6	PF1-6	N/C	
J109-7	PF1-7	N/C	
J109-8	PF1-8	N/C	
J109-9	PF1-9	YEL-BRN	Lamp Column 1A
J109-10	PF1-10	YEL-RED	Lamp Column 2A
J109-11	PF1-11	YEL-ORG	Lamp Column 3A
J109-12	PF1-12	N/C	
J109-13	PF1-13	N/C	
J109-14	PF1-14	N/C	
J109-15	PF1-15	N/C	
J109-16	PF1-16	N/C	
J110-1/J111-1	PF5-1	BLU-BRN	Solenoid Drive 17
J110-2/J111-2	PF5-2	BLU-RED	Solenoid Drive 18
J110-3/J111-3	PF5-3	BLU-ORG	Solenoid Drive 19
J110-4/J111-4	PF5-4	BLU-YEL	Solenoid Drive 20
J110-5/J111-5	PF5-5	BLU-GRN	Solenoid Drive 21
J110-6/J111-6	PF5-6	BLU-BLK	Solenoid Drive 22
J110-7/J111-7	PF5-7	BLU-VIO	Solenoid Drive 23
J110-8/J111-8	PF5-8	BLU-GRY	Solenoid Drive 24
J110-9/J111-9	PF5-9	BRN-WHT	Solenoid Drive 41-Logic
J110-10/J111-10	PF5-10	ORG-WHT	Solenoid Drive 42-Logic
J110-11/J111-11	PF5-11	YEL-WHT	Solenoid Drive 43-Logic
J110-12/J111-12	PF5-12	BLU-WHT	Solenoid Drive 44-Logic
J110-13/J111-13	PF5-13	VIO-BRN	Solenoid Drive 1
J110-14/J111-14	PF5-14	VIO-RED	Solenoid Drive 2
J110-15/J111-15	PF5-15	VIO-ORG	Solenoid Drive 3
J110-16/J111-16	PF5-16	VIO-YEL	Solenoid Drive 4
J110-17/J111-17	PF5-17	VIO-GRN	Solenoid Drive 5
J110-18/J111-18	PF5-18	VIO-BLU	Solenoid Drive 6
J110-19/J111-19	PF5-19	VIO-BLK	Solenoid Drive 7
J110-20/J111-20	PF5-20	VIO-GRY	Solenoid Drive 8

Power Driver Board Continued...

Power Driver Board Connector	Playfield Cable Bracket Connector	Wire Color	Purpose
J110-21/J111-21	PF5-21	VIO-WHT	Solenoid Drive 45-Logic
J110-22/J111-22	PF5-22	GRY-WHT	Solenoid Drive 46-Logic
J110-23/J111-23	PF5-23	BLK-WHT	Solenoid Drive 47-Logic
J110-24/J111-24	PF5-24	N/C	
J112-1	PF3-1	YEL-GRN	Solenoid Drive 33-Lower Right Flipper Power
J112-2	PF3-2	ORG-GRN	Solenoid Drive 34-Lower Right Flipper Hold
J112-3	PF3-3	YEL-BLU	Solenoid Drive 35-Lower Left Flipper Power
J112-4	PF3-4	ORG-BLU	Solenoid Drive 36-Lower Left Flipper Hold
J112-5	PF3-5	YEL-VIO	Solenoid Drive 37-Upper Right Flipper Power
J112-6	PF3-6	ORG-VIO	Solenoid Drive 38-Upper Right Flipper Hold
J112-7	PF3-7	YEL-GRY	Solenoid Drive 39-Upper Left Flipper Power
J112-8	PF3-8	ORG-GRY	Solenoid Drive 40-Upper Left Flipper Hold
J112-9	PF3-9	BLK-BRN	Solenoid Drive 25
J112-10	PF3-10	BLK-RED	Solenoid Drive 26
J112-11	PF3-11	BRN-BLK	Solenoid Drive 9
J112-12	PF3-12	BRN-RED	Solenoid Drive 10
J112-13	PF3-13	BRN-ORG	Solenoid Drive 11
J112-14	PF3-14	BRN-YEL	Solenoid Drive 12
J112-15	PF3-15	BRN-GRN	Solenoid Drive 13
J112-16	PF3-16	BRN-BLU	Solenoid Drive 14
J112-17	PF3-17	BRN-VIO	Solenoid Drive 15
J112-18	PF3-18	BRN-GRY	Solenoid Drive 16
J112-19	PF3-19	BLK-ORG	Solenoid Drive 27
J112-20	PF3-20	BLK-YEL	Solenoid Drive 28
J113-1		BLK-BRN	Direct Switch 17-Slam to cabinet
J113-2		BLK-RED	Direct Switch 18-Interlock to cabinet
J113-3		BLK-ORG	Direct Switch 19-Plumb Bob to cabinet
J113-4		BLK-YEL	Direct Switch 20-Not Used
J113-5		GRY-YEL	+12V DC to cabinet
J113-6		BLK-GRN	Direct Switch 21-Right Flipper Button to cabinet
J113-7		BLK-BLU	Direct Switch 22-Left Flipper Button to cabinet
J113-8		BLK-VIO	Direct Switch 23-Right Feature Button to cabinet
J113-9		BLK-GRY	Direct Switch 24 Left Feature Button to cabinet
J113-10		BLK	Ground to cabinet
J114-1		ORG-BRN	Direct Switch 1-Coin 1 to Coin Door Interface board
J114-2		ORG-RED	Direct Switch 2-Coin 2 to Coin door Interface board
J114-3		ORG-BLK	Direct Switch 3-Coin 3 to Coin Door Interface board
J114-4		ORG-YEL	Direct Switch 4-Coin 4 to Coin Door Interface board
J114-5		ORG-GRN	Direct Switch 5-Coin 5 to Coin Door Interface board
J114-6		ORG-BLU	Direct Switch 6-Coin 6 to Coin Door Interface board
J114-7		N/C	
J114-8		ORG-VIO	Direct Switch 7-Coin 7 (may be used for DBV) to Coin Door Interface board
J114-9		ORG-GRY	Direct Switch 8-Coin 8 to Coin Door Interface board
J114-10		GRY-BLK	Direct Switch 9-Diagnostic 'Escape' Button to Coin Door Interface board
J114-11		GRY-ORG	Direct Switch 10-Diagnostic 'Down' Button to Coin Door Interface board
J114-12		GRY-RED	Direct Switch 11-Diagnostic 'Up' Button to Coin Door Interface board
J114-13		GRY-BRN	Direct Switch 12-Diagnostic 'Enter' Button to Coin Door Interface board
J114-14		BLK	Ground to Coin Door Interface board

Power Driver Board Continued...

Power Driver Board Connector	Playfield Cable Bracket Connector	Wire Color	Purpose
J115-1/J116-1	PF4-1	GRN-BRN	Switch Column 1
J115-2/J116-2	PF4-2	GRN-RED	Switch Column 2
J115-3/J116-3	PF4-3	GRN-ORG	Switch Column 3
J115-4/J116-4	PF4-4	GRN-WHT	Switch Column 4
J115-5/J116-5	PF4-5	GRN-BLK	Switch Column 5
J115-6/J116-6	PF4-6	GRN-BLU	Switch Column 6
J115-7/J116-7	PF4-7	GRN-VIO	Switch Column 7
J115-8/J116-8	PF4-8	GRN-GRY	Switch Column 8
J115-9/J116-9	PF4-9	BLK-GRN	Direct Switch 13-Lower Right Flipper E.O.S.
J115-10/J116-10	PF4-10	BLK-BLU	Direct Switch 14-Lower Left Flipper E.O.S.
J115-11/J116-11	PF4-11	GRY-YEL	+12V
J115-12/J116-12	PF4-12	WHT-BRN	Switch Row 1
J115-13/J116-13	PF4-13	WHT-RED	Switch Row 2
J115-14/J116-14	PF4-14	WHT-ORG	Switch Row 3
J115-15/J116-15	PF4-15	WHT-YEL	Switch Row 4
J115-16/J116-16	PF4-16	WHT-GRN	Switch Row 5
J115-17/J116-17	PF4-17	WHT-BLU	Switch Row 6
J115-18/J116-18	PF4-18	WHT-VIO	Switch Row 7
J115-19/J116-19	PF4-19	WHT-GRY	Switch Row 8
J115-20/J116-20	PF4-20	BLK-VIO	Direct Switch 15-Upper Right Flipper E.O.S. (not used)
J115-21/J116-21	PF4-21	BLK-GRY	Direct Switch 16-Upper Left Flipper E.O.S. (not used)
J115-22/J116-22	PF4-22	BLK	Ground
J117-1		N/C	
J117-2		N/C	
J117-3		WHT	Drive 48-Logic-Ticket Driver to Coin Door Interface board
J117-4		GRY-VIO	+12V Coin Door Power to Coin Door Interface board
J117-5		GRY-GRN	Direct Switch 25-Ticket Notch to Coin Door Interface brd
J117-6		GRY-BLU	Direct Switch 26-Ticket Low to Coin Door Interface board
J117-7		BLUE	Coin Counter to Coin Door Interface board
J117-8		N/C	

LAMP MATRIX A

COLUMN / ROW	1A YEL-BRN J108-9 Q5	2A YEL-RED J108-10 Q9	3A YEL-ORG J108-11 Q13	4A YEL-BLK J108-12 Q17	5A YEL-GRN J108-13 Q21	6A YEL-BLU J108-14 Q25	7A YEL-VIO J108-15 Q29	8A YEL-GRY J108-16 Q33
1A BRN-BLK J108-1 Q3	NOT USED 11A	TICKETS LOW 21A	NOT USED 31A	LEFT LOOP RIGHT LEG 41A	LEFT LOOP BODY MIDDLE 51A	RIGHT STANDUP UPPER 61A	BOTTOM ARCH LEFT/LEFT 71A	BOTTOM ARCH RIGHT/RIGHT 81A
2A BRN-RED J108-2 Q7	NOT USED 12A	NOT USED 22A	NOT USED 32A	LEFT LOOP RIGHT FOOT 42A	LEFT LOOP BODY UPPER 52A	RIGHT STANDUP MIDDLE 62A	LEFT INLANE G.I. RIGHT 72A	RIGHT INLANE G.I. LEFT 82A
3A BRN-ORG J108-3 Q11	START BUTTON 13A	NOT USED 23A	NOT USED 33A	LEFT LOOP LEFT FOOT 43A	LEFT LOOP HEAD 53A	RIGHT STANDUP LOWER 63A	LEFT SLING G.I. UPPER 73A	RIGHT SLING G.I. UPPER 83A
4A BRN-YEL J108-4 Q15	NOT USED 14A	COIN DOOR ILLUMINA. 24A	NOT USED 34A	LEFT LOOP LEFT LEG 44A	LEFT LOOP BODY LOWER 54A	LEFT STANDUP LOWER 64A	LEFT LOOP LOWER G.I. 74A	SHOOTER RAMP G.I. LOWER 84A
5A BRN-GRN J108-5 Q19	SHIELD LOWER RIGHT 15A	SHIELD MIDDLE RIGHT 25A	SHIELD UPPER RIGHT 35A	JEDI "E" 45A	RIGHT RAMP GI 55A	LEFT STANDUP MIDDLE 65A	CAPTIVE BALL G.I. 75A	SHOOT RAMP G.I. MIDDLE 85A
6A BRN-BLU J108-6 Q23	SHIELD LOWER 4 16A	SHIELD MIDDLE 3 26A	SHIELD UPPER MIDDLE 36A	JEDI "J" 46A	SCOOP LOWER RIGHT G.I. 56A	LEFT STANDUP UPPER 66A	SCOOP LOWER LEFT G.I. 76A	RIGHT STANDUP G.I. 86A
7A BRN-VIO J108-7 Q27	SHIELD LOWER 3 17A	SHIELD MIDDLE 2 27A	SHIELD MIDDLE LEFT 37A	JEDI "I" 47A	LEFT LOOP ROLLOVER 57A	NOT USED 67A	SCOOP UPPER LEFT G.I. 77A	MIDDLE JET 87A
8A BRN-GRY J108-8 Q31	SHIELD LOWER 2 18A	SHIELD LOWER LEFT 28A	SHIELD UPPER LEFT 38A	JEDI "D" 48A	LEFT SAUCER 58A	NOT USED 68A	JETS TOP G.I. 78A	JET MIDDLE G.I. 88A

LAMP MATRIX B

COLUMN / ROW	1B YEL-BRN J107-10 Q6	2B YEL-RED J107-11 Q10	3B YEL-ORG J107-12 Q14	4B YEL-BLK J107-13 Q18	5B YEL-GRN J107-14 Q22	6B YEL-BLU J107-15 Q26	7B YEL-VIO J107-16 Q30	8B YEL-GRY J107-17 Q34
1B RED-BRN J107-1 Q4	SHIP RIGHT WING UPPER 11B	SHIP BODY UPPER RIGHT 21B	SHIP LEFT WING UPPER 31B	SHIP BODY UPPER LEFT 41B	LEFT LASER END 51B	NOT USED 61B	BOTTOM ARCH LEFT/RIGHT 71B	SCOOP UPPER RIGHT G.I. 81B
2B RED-BLK J107-2 Q8	SHIP RIGHT WING LOWER 12B	SHIP BODY MIDDLE 22B	SHIP LEFT WING LOWER 32B	NOT USED 42B	LEFT SAUCER INSERT 52B	NOT USED 62B	LEFT INLANE G.I. LEFT 72B	UPPER RIGHT CORNER G.I. 82B
3B RED-ORG J107-3 Q12	BONUS X5 13B	SHIP BODY LOWER 23B	BONUS X2 33B	NOT USED 43B	RIGHT SAUCER INSERT 53B	NOT USED 63B	LEFT SLING G.I. LOWER 73B	UPPER JET 83B
4B RED-YEL J107-4 Q16	SHIP TAIL UPPER 14B	BONUS X4 24B	BONUS X3 34B	SPOTLIGHT RIGHT 44B	SPOTLIGHT LEFT 54B	NOT USED 64B	LEFT OUTLANE G.I. 74B	LOWER JET 84B
5B RED-GRN J107-5 Q20	JEDI SPIRIT 15B	JEDI MASTER 25B	JEDI YOUTH 35B	FIRE LASERS LEFT 45B	LEFT HOTDOG LEFT 55B	NOT USED 65B	LEFT STANDUP G.I. 75B	SHOOTER RAMP G.I. UPPER 85B
6B RED-BLU J107-6 Q24	RIGHT HOTDOG LEFT 16B	FIRE LASERS RIGHT 26B	LEFT HOTDOG RIGHT 36B	JEDI KNIGHT 46B	RIGHT HOTDOG RIGHT 56B	NOT USED 66B	LEFT LOOP MIDDLE G.I. 76B	RIGHT OUTLANE G.I. 86B
7B RED-VIO J107-7 Q28	JETS ROLLOVER 17B	RIGHT SAUCER 27B	SHOOTER 37B	SHOOT AGAIN 47B	RIGHT FLIPPER 57B	NOT USED 67B	UPPER LEFT CORNER G.I. 77B	RIGHT SLING G.I. LOWER 87B
8B RED-GRY J107-8 Q32	RIGHT LASER END 18B	EXTRA BALL 28B	BOTTOM ARCH RIGHT/LEFT 38B	LEFT FLIPPER 48B	SHIP TAIL LOWER 58B	NOT USED 68B	LEFT RAMP G.I. 78B	RIGHT INLANE G.I. RIGHT 88B

SWITCH MATRIX

COLUMN / ROW	1 GRN-BRN J116-1 U45-18	2 GRN-RED J116-2 U45-17	3 GRN-ORG J116-3 U45-16	4 GRN-WHT J116-4 U45-15	5 GRN-BLK J116-5 U45-14	6 GRN-BLU J116-6 U45-13	7 GRN-VIO J116-7 U45-12	8 GRN-GRY J116-8 U45-11
1 WHT-BRN J116-12 U51-7	NOT USED 11	CAPTIVE BALL 21	RIGHT BANK: UPPER 31	TROUGH JAM 41	SHIELD POPPER 1 51	LEFT SLINGSHOT 61	NOT USED 71	NOT USED 81
2 WHT-RED J116-13 U51-5	NOT USED 12	NOT USED 22	RIGHT BANK: MIDDLE 32	TROUGH BALL 1 42	NOT USED 52	RIGHT SLINGSHOT 62	NOT USED 72	NOT USED 82
3 WHT-ORG J116-14 U51-9	START BUTTON 13	NOT USED 23	RIGHT BANK: LOWER 33	TROUGH BALL 2 43	LEFT SHIELD TARGET 53	UPPER JET BUMPER 63	NOT USED 73	NOT USED 83
4 WHT-YEL J116-15 U51-11	NOT USED 14	ALWAYS CLOSED 24	LEFT BANK: UPPER 34	TROUGH BALL 3 44	RIGHT SHIELD TARGET 54	MIDDLE JET BUMPER 64	NOT USED 74	NOT USED 84
5 WHT-GRN J116-16 U57-7	LEFT DROP TARGET 15	RIGHT DROP TARGET 25	LEFT BANK MIDDLE 35	TROUGH BALL 4 45	RAMP MADE LEFT 55	LOWER JET BUMPER 65	NOT USED 75	NOT USED 85
6 WHT-BLU J116-17 U57-5	LEFT OUTLANE 16	LEFT INLANE 26	LEFT BANK LOWER 36	LEFT RAMP ENTER 46	RAMP MADE RIGHT 56	JETS ROLLOVER 66	NOT USED 76	NOT USED 86
7 WHT-VIO J116-18 U57-9	RIGHT INLANE 17	RIGHT OUTLANE 27	LEFT SAUCER 37	RIGHT RAMP ENTER 47	SHIELD UP 57	LEFT LOOP UPPER 67	NOT USED 77	NOT USED 87
8 WHT-GRY J116-19 U57-11	SHOOTER LANE 18	SNEAKY LANE 28	RIGHT SAUCER 38	NOT USED 48	SHIELD HIT 58	LEFT LOOP ROLLOVER 68	NOT USED 78	NOT USED 88

▓ = OPTO, TYPICALLY CLOSED

COIN SLOT SWITCHES

DIRECT GROUND	ORN-BRN J114-1 U43-7	ORG-RED J114-2 U43-5	ORG-BLK J114-3 U43-9	ORG-YEL J114-4 U43-11	ORG-GRN J114-5 U48-7	ORG-BLU J114-6 U48-5	ORG-VIO J114-8 U48-9	ORG-GRY J114-9 U48-11
BLACK J114-14	COIN 1 D1	COIN 2 D2	COIN 3 D3	COIN 4 D4	COIN 5 D5	COIN 6 D6	COIN 7 (Used for Dollar Bill Validator) D7	COIN 8 D8

DIAGNOSTIC SWITCHES

DIRECT GROUND	GRY-BLK J114-10 U50-7	GRY-ORG J114-11 U50-5	GRY-RED J114-12 U50-9	GRY-BRN J114-13 U50-11
BLACK J114-14	'ESCAPE' BUTTON D9	'DOWN' BUTTON D10	'UP' BUTTON D11	'ENTER' BUTTON D12

PLAYFIELD FLIPPER SWITCHES (E.O.S.)

DIRECT GROUND	BLK-GRN J115-9 U56-7	BLK-BLU J115-10 U56-5	BLK-VIO J115-20 U56-9	BLK-GRY J115-21 U56-11
BLACK J115-22	LOWER RIGHT FLIPPER E.O.S. D13	LOWER LEFT FLIPPER E.O.S. D14	UPPER RIGHT FLIPPER E.O.S. D15	UPPER LEFT FLIPPER E.O.S. D16

CABINET FLIPPER SWITCHES

DIRECT GROUND	BLK-BRN J113-1 U49-7	BLK-RED J113-2 U49-5	BLK-ORG J113-3 U49-9	BLK-YEL J113-4 U49-11	BLK-GRN J113-6 U55-7	BLK-BLU J113-7 U55-5	BLK-VIO J113-8 U55-9	BLK-GRY J113-9 U55-11
BLACK J113-10	SLAM TILT D17	COIN DOOR CLOSED D18	PLUMB BOB TILT D19	NOT USED D20	RIGHT FLIPPER BUTTON D21	LEFT FLIPPER BUTTON D22	RIGHT ACTION BUTTON D23	LEFT ACTION BUTTON D24

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Remember that: If you clean them, they will earn!

Mr. Squeaky   Mr. Ring   Mr. Bulb   Mr. Flipper