Williams®
ELECTRONICS GAMES, INC.

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PRELIMINARY

JACK•BOT

OPERATIONS MANUAL INCLUDES

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

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

DIP SWITCH SETTINGS AND JUMPERS

EPROM Jumper Settings for U6	W1	W2
1MEG, 2MEG, 4 MEG EPROM	In	Out

DIP Switch Chart

COUNTRY	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
AMERICA	Off	Off	On	On	On	On	On	On
EUROPEAN	Off	Off	On	On	On	Off	On	On
FRENCH	Off	Off	On	On	On	On	Off	Off
GERMAN	Off	Off	On	On	On	On	On	Off
SPAIN	Off	Off	On	On	Off	On	On	On

SOLENOID/FLASHER TABLE

SOL. NO.	FUNCTION	SOLENOID TYPE	VOLTAGE CONNECTIONS			DRIVE XISTOR	DRIVE CONNECTIONS			DRIVE WIRE	SOLENOID PART NUMBER FLASHLAMP TYPE	
			PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX
01	BALL RELEASE	High Power	J107-2			Q82	J130-1			VIO-BRN	AE-26-1500	
02	NOT USED	High Power	J107-2			Q80	J130-2			VIO-RED		
03	FAR LEFT EJECT	High Power	J107-2			Q78	J130-4			VIO-ORG	AE-26-1200	
04	DROP TARGETS	High Power	J107-2			Q76	J130-5			VIO-YEL	AE-26-1200	
05	RIGHT EJECT HOLE	High Power	J107-2			Q64	J130-6			VIO-GRN	AE-26-1200	
06	RAISE RAMP	High Power	J107-2			Q66	J130-7			VIO-BLU	AE-26-1200	
07	KNOCKER	High Power		J107-2		Q68		J130-8		VIO-BLK		AE-23-800
08	LEFT EJECT HOLE	High Power	J107-2			Q70	J130-9			VIO-GRY	AE-26-1200	
09	LEFT SLINGSHOT	Low Power	J107-3			Q58	J127-1			BRN-BLK	AE-26-1200	
10	RIGHT SLINGSHOT	Low Power	J107-3			Q56	J127-3			BRN-RED	AE-26-1200	
11	LOWER JET BUMPER	Low Power	J107-3			Q54	J127-4			BRN-ORG	AE-26-1200	
12	LEFT JET BUMPER	Low Power	J107-3			Q52	J127-5			BRN-YEL	AE-26-1200	
13	UPPER JET BUMPER	Low Power	J107-3			Q50	J127-6			BRN-GRN	AE-26-1200	
14	DROP RAMP	Low Power	J107-3			Q48	J127-7			BRN-BLU	SM1-26-600	
15	RIGHT VISOR FLSHR(2)	Low Power	J107-6			Q46	J127-8			BRN-VIO	#906	
16	LEFT VISOR FLSHR(2)	Low Power	J107-6			Q44	J127-9			BRN-GRY	#906	
17	CENTER VISOR FLSHR	Flashlamp	J107-6			Q42	J126-1			BLK-BRN	#906	
18	PINBOT FACE FLSHR	Flashlamp	J107-6			Q40	J126-2			BLK-RED	#906	
19	JET BUMPERS FLSHR	Flashlamp	J107-6			Q38	J126-3			BLK-ORG	#906	
20	LOWER LEFT FLSHR	Flashlamp	J107-6			Q36	J126-4			BLK-YEL	#906	
21	MIDDLE LEFT FLSHR	Flashlamp	J107-6			Q28	J126-5			BLU-GRN	#906	
22	LOWER RIGHT FLSHR	Flashlamp	J107-6			Q30	J126-6			BLU-BLK	#906	
23	BACK PNL FLSHR 1 (LT)	Flashlamp	J107-6			Q34	J126-7			BLU-VIO	#906	
24	BACK PANEL FLSHR 2	Flashlamp	J107-6			Q32	J126-8			BLU-GRY	#906	
25	BACK PANEL FLSHR 3	Gen. Purpose	J107-6			Q26	J122-1			BLU-BRN	#906	
26	BACK PANEL FLSHR 4	Gen. Purpose	J107-6			Q24	J122-2			BLU-RED	#906	
27	BACK PNL FLSHR 5 (RT)	Gen. Purpose	J107-6			Q22	J122-3			BLU-ORG	#906	
28	VISOR MOTOR	Gen. Purpose	J118-2			Q20	J122-4			BLU-YEL	14-8023	
29-36	SEE FLIPPER CKTS											
37	NOT USED	Low Power				Q16				BRN-WHT		
38	NOT USED	Low Power				Q15				BLK-WHT		
39	NOT USED	Low Power				Q14				ORG-WHT		
40	NOT USED	Low Power				Q13				YEL-WHT		
41	NOT USED	Low Power				Q9				GRN-WHT		
42	NOT USED	Low Power				Q10				BLU-WHT		
43	NOT USED	Low Power				Q11				VIO-WHT		
44	NOT USED	Low Power				Q12				GRY-WHT		
	GENERAL ILLUMINATION											
01	PLAYFIELD LOWER	G.I.	J120-1	J121-1		Q18	J120-7	J121-7		WHT-BRN	#44	
02	PLAYFIELD LEFT	G.I.	J120-2	J121-2		Q10	J120-8	J121-8		WHT-ORG	#44	
03	PLAYFIELD UPPER	G.I.	J120-3	J121-3		Q14	J120-9	J121-9		WHT-YEL	#44	
04	PLAYFIELD RIGHT	G.I.	J120-5	J121-5		Q16	J120-10	J121-10		WHT-GRN	#44	
05	INSERT	G.I.	J120-6		J119-3	Q12	J120-11		J119-1	WHT-VIO		#555

	FLIPPER CIRCUITS		VOLTAGE CONNECTION	DRIVE XISTOR POWER	DRIVE XISTOR HOLD	DRIVE CONNECTION PLAYFIELD	DRIVE WIRE POWER	DRIVE WIRE HOLD	COIL PART NUMBER	COIL COLOR
29	LOWER RIGHT FLIPPER	Power	J907-1 (RED-GRN)	Q4		J902-13	YEL-GRN		FL-11630	RED
30		Hold	J907-1 (RED-GRN)		Q11	J902-11		ORG-GRN		
31	LOWER LEFT FLIPPER	Power	J907-4 (RED-BLU)	Q3		J902-9	YEL-BLU		FL-11630	RED
32		Hold	J907-4 (RED-BLU)		Q9	J902-7		ORG-BLU		
33	NOT USED	Power	J907-6 (RED-VIO)	Q2		J902-6	YEL-VIO		NOT USED	
34	UPPER RIGHT FLIPPER	Hold	J907-6 (RED-VIO)		Q7	J902-4		ORG-VIO		
35	NOT USED	Power	J907-8 (RED-GRY)	Q1		J902-3	YEL-GRY		NOT USED	
36	UPPER LEFT FLIPPER	Hold	J907-8 (RED-GRY)		Q5	J902-1		ORG-GRY		

J1XX-X=POWER DRIVER BOARD; JX-X=AUX. DRIVER BOARD; J9XX-X=FLIPTRONIC II BOARD; 24-6549=#44 BULB; 24-8704=#89 BULB; 24-8768=#555 BULB; 24-8802=#906; 24-8825=#545

DEDICATED TO JOSEPH JOOS JR.

Joe Joos Jr. was a Game Designer and Mechanical Engineer with a long and illustrious history in the Pinball industry. He started his career at The Chicago Coin company which became Stern Electronics in the 1970's. While at Stern, he created (both Mechanical and Game Design) Dragon Fist, Quicksilver, Lightning, Catacomb, Viper and Orbitor 1 among others. He spent a short period of time at Game Plan where he co-designed and engineered the game Sharp Shooter. In December of 1985, Joe joined Williams Electronics to work in the Mechanical Engineering department. His very first game at Williams was the original Pin•Bot. Joe was responsible for the mechanical design of this game, including the motorized 5-bank visor mechanism for which he was granted a patent. Joe also holds a patent for the catapult device first seen on Big Guns and later in Taxi, Black Rose and Star Trek The Next Generation. Joe's mechanical credits include the designs for Pin•Bot, Black Knight 2000 and Rollergames. In March of 1989, Joe was promoted to Manager of Mechanical Engineering department of the now combined Williams and Bally pinball division. Joe died in 1994 at the age of 53 as a result of a tragic illness. In Jack•Bot, his fine work gets to live again. With fond memory, this game is dedicated to Joe Joos Jr.

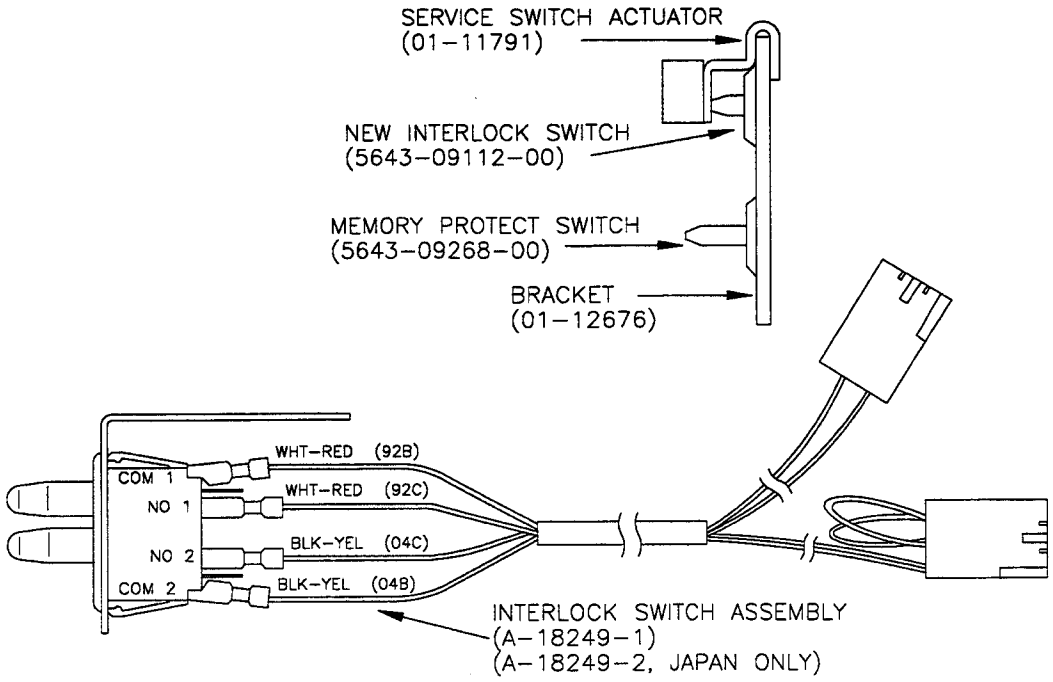
IMPORTANT NOTICE

PLEASE READ

This pinball game is equipped with a SAFETY FEATURE to prevent shocks from the solenoid circuit when the coin door is opened. A new interlock switch assembly (part no. A-18249-1), located at the left of the coin door opening, has been added to the game. This assembly is a bracket containing the existing memory protect switch on the bottom and a new interlock switch on the top. When the coin door is opened, this new interlock switch opens, breaking the connection to the +50V and +20V winding of the transformer secondary.

A special tool called the Service Switch Actuator is provided for the serviceman/technician that repairs the game. This tool is painted yellow and located in a bag stapled inside the cabinet. The service Switch Actuator slips over the interlock switch and holds it closed while the coin door is opened, allowing the serviceman to test and repair the solenoid circuit.

Hold the top interlock switch in, then slide the short end of the Service Switch Actuator over the top of the interlock switch bracket and the long end over the center of the switch plunger to hold it in.



JACK•BOT

Information current at time of release.

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.

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JACK-BOT RULES & SHOTMAPS

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♦ ***SKILL SHOT:***

Plunge the ball into the Vortex. The top and bottom holes will award the Vortex Millions value, while the middle hole will award three times the Vortex Millions Value. During the skill shot, the display will show the value of each hole. Vortex multiplier may be increased by Slot Machine and Casino Run awards.

♦ ***PINBOT'S CHEST AND VISOR:***

Complete the matrix of lamps in Pinbot's chest to open the visor. Hitting the targets on the visor and bank of standups next to the visor will light the lamps. The number of lamps lit per hit will get smaller as the game gets harder. Before the first Multiball™, each hit to the visor targets will light an entire column of lamps.

Once the chest matrix is complete, the visor will open, revealing the locks. Shoot balls into the locks to get ready for Multiball™.

♦ ***JET BUMPERS:***

Hitting the Jet Bumpers in normal play raises the Dice Wager value. This value is used in the Dice Game, which is played in the Game Saucer.

♦ ***DROP TARGETS:***

When all drop targets are up, a single target lamp will move back and forth. Hitting this target before hitting any of the others will advance the Bonus Multiplier. Once a drop target is down, a timer will start on the remaining two targets. Completing all drop targets before the timer expires awards a Card.

♦ ***CARD HAND:***

Collect cards to build a good hand before playing Pinbot Poker (see Game Saucer below). Every player starts with one card. Completing the drop targets before they reset will award another card. The playfield lamps will show the current hand you possess. Collecting all five cards will award a Hand Completed bonus of 25 million points. Completing the first hand lights extra ball.

♦ ***BONUS MULTIPLIER:***

The Bonus Multiplier is used to multiply the final Bonus Total. The maximum multiplier available is 5X. Hitting the moving drop target when the multiplier is at 5X will award 25,000,000 points.

♦ ***GAME SAUCER:***

Light the Game Saucer by shooting the ramp. The flashing game light can be moved by the Jet Bumpers or the Left Flipper button.

When the Game Saucer is ready, one of the four lamps near the eject hole on the far left will be flashing. The games available during normal play are:

Pinbot Poker • Slot Machine • Roll The Dice • Keno

Completing the first four games will light the fifth game, Casino Run, where you can really collect the big prizes.

GAME SAUCER: Pinbot Poker
Play Poker with Pinbot by comparing your Card Hand with the house. The two Deuces and three Aces can be lit in the following combinations:

No Pair	-	***15 Million***
One Pair	-	***20 Million***
Two Pair	-	***30 Million***
Three of a Kind	-	***40 Million***
Full House	-	***50 Million***
Four of a Kind	-	***99 Million***

The player is awarded an additional 50 million points for each hand completed before playing Pinbot Poker.

GAME SAUCER: Slot Machine
Spin the Slot Machine in Pinbot's chest and try your luck! Some of the awards availabie from the slot machine are:

Multiball™ • Light Extra Ball • Hold Vortex Value • Increase Vortex Multiplier • Special • Collect Bonus • Big Points (20 million through 50 million) • "Hit Me" Hurry Up (see next page)

GAME SAUCER: Roll the Dice
The Dice Wager value is built up from the Jet Bumpers during normal play. When Roll the Dice starts, the Bride of Pinbot will roll a number from 2 to 12. The Dice Wager is multiplied by this number to determine the final Dice Award.

GAME SAUCER: Keno
The lights that are currently lit on Pinbot's chest are used as the 'Keno card' to be played. The Keno game will pick six spots on the chest at random. The more lights that are lit on Pinbot's chest, the better your chances of getting all six squares to match.

1 Match	-	***10 Million***
2 Matches	-	***15 Million***
3 Matches	-	***20 Million***
4 Matches	-	***25 Million***
5 Matches	-	***30 Million***
6 Matches	-	***50 Million***
25 Matches	-	***99 Million***

- ***GAME SAUCER: Casino Run***
  Once all four games have been played on the game saucer, Casino Run will be lit. Shoot the Game Saucer again to start this mode.

  Casino Run is a one-ball mode, and lasts 45 seconds. Draining a ball will put the ball back in the shooter, with a five-second penalty taken off of the clock. Casino Run ends when the clock runs out, or if the player decides to take what's in the Bank, or gets a Bomb on the slot machine.

  Each switch in Casino Run adds two million to the Bank.

To spin the Casino Run Slot Machine, shoot the Game Saucer or either Eye lock. The Slot Machine will give awards including the following:

Points (20 million through 150 million) • Light Extra Ball • Special • Bomb (ends Casino Run) • Bucket of Water (defuses the Bomb) • Additional Time

After adding the Slot Machine awards to the Bank, the player has the option to take what's in the Bank or to risk the Bank and go for more awards. The ball is put back into play in both cases.

If the player takes what's in the Bank, Casino Run is instantly over and the Bank added to the player's score and credits. If the player does not collect the Bank before time runs out, the Bank is lost.

If less than ten seconds remain on the clock and the ball is at the shooter, the Center Vortex shot will instantly collect the Bank and end the mode.

There are also awards in Casino Run that the player wins instantly without the need to collect them in the bank. They are:

Jack•Bot (Gives next Multiball™ Jack•Bot award) • Bonus X • Vortex X • Spot Card • Vortex at Max • Hold Vortex

In addition, any time the exact same symbol appears on all three slot reels, a SPECIAL will be awarded.

- ***GAME SAUCER/SLOT MACHINE: Hit Me Hurry Up***

  A countdown timer starts at 75,000,000. The player must hit the 'Hit Me' target to collect the value before it runs out.

- ***GAME SAUCER: Cheating***

  When a Game Saucer "GAME TITLE" is being displayed, rapidly pressing the Extra Ball buy-in button may cause Pinbot to 'cheat' on the game. This is a novelty feature that will cause the results of a casino game to become more favorable to the player (i.e. the player is not really cheating the pinball machine). The "cheats" are accompanied by entertaining speech and dot matrix animation.

- ***DOUBLE OR NOTHING:***

  When one of the Game Saucer games results in the award of points to the player (Some Slot Machine awards and all games of Keno, Roll the Dice and Pinbot Poker) the player may risk these points in an attempt to double these winnings. A selection screen appears on the dot matrix display. The player may press the left flipper to collect the winnings. If the player presses the right flipper, then the double or nothing round gives the player ten seconds to shoot the ball to the cashier (under the ramp). Hitting the cashier target awards twice the point value. If the timer reaches zero or the ball drains, then the points are lost.

- ***HIT-ME:***

  Shooting the lower right "Hit-Me" target adds a card to the player's Blackjack hand. Each time a card is added, the player will receive one million for each point in the hand. If the hand reaches "20", the player will be awarded a bonus of 15 million (35 million total). If the hand reaches 21, the player will be awarded a bonus of 29 million (50 million total).

- ***MULTIBALL™:***

  During Multiball™, the four shots that will award Jack•Bot (jackpot) are:

  Under the Ramp (Cashier) • Left Eye Lock • Right Eye Lock • Lower Right 'Hit Me' target

  The shots that are currently lit for Jack•Bot will be blinking during Multiball™. Shooting the Game Saucer relights unlit Jack•Bot shots. If all Jack•Bot shots are lit when the Game Saucer is hit then the game saucer will award a Jack•Bot.

  Hitting two holes at the same time during Multiball™ will award a Super Jack•Bot, combining the score for the next three Jack•Bots (one for each hole and a 3rd as a bonus).

  Each Jack•Bot collected in the game scores a higher point value. After 15 Jack•Bots have been collected, the Visor will raise and begin "Mega Visor" (see below).

- ***MEGA VISOR:***

  After 15 Jack•Bots have been scored during Multiball™, the visor will be raised and the player will be in "Mega Visor" mode as long as there is more than one ball in play.

  In Mega Visor mode, all 25 chest lamps will be lit. Each hit to any visor target will score 25 million points and turn off one chest lamp. Turning off all 25 chest lamps while still playing multiple balls will re-open the visor for a chance at the Mega-Jack•Bot.

  To score a Mega-Jack•Bot, one ball must be shot in either eye-hole, and the remaining ball must be shot around up the ramp.

- ***RAMP-MINI-PLAYFIELD:***

  Shooting the ramp into the mini-playfield starts the Vortex Millions counter and starts a rotating award on the mini-playfield exit. The Vortex Millions counter counts up one million for each second the ball is on the mini-playfield. When the ball exits the mini-playfield at the lower exit (into the right flipper lane), the counter stops and the lit award on the exit is given. Awards are:

  Cashier: Shoot under the ramp to cash out 1X Bonus • Mega Ramp • Light Extra Ball • 25,000,000

- ***MEGA-RAMP:***

  When Mega Ramp is awarded from the mini-playfield exit, shooting the ramp will award the Mega Ramp bonus. If the ball makes it to the mini-playfield exit again, the Mega Ramp bonus will be increased and Mega Ramp stays lit.

- ***SOLAR JETS:***

  If the ball falls through the mini-playfield to the Jets, the Solar Jets award will build. When the ball leaves the jets, the player has ten seconds to shoot under the ramp to collect the Solar Jets bonus.

- ***VORTEX:***

  If the ball returns to the ball shooter from the mini-playfield, the player has the chance to collect the new Vortex Millions value from the vortex holes. The multipliers are 1X, 3X, and 1X unless they were increased by an Increase Vortex Multiplier award (from Slot Machine or Casino Run).

- ***EXTRA BALL:***

  Extra Balls are collected from the flipper return lanes and outlanes. The flippers rotate the Extra Ball lights.

- ***BONUS:***

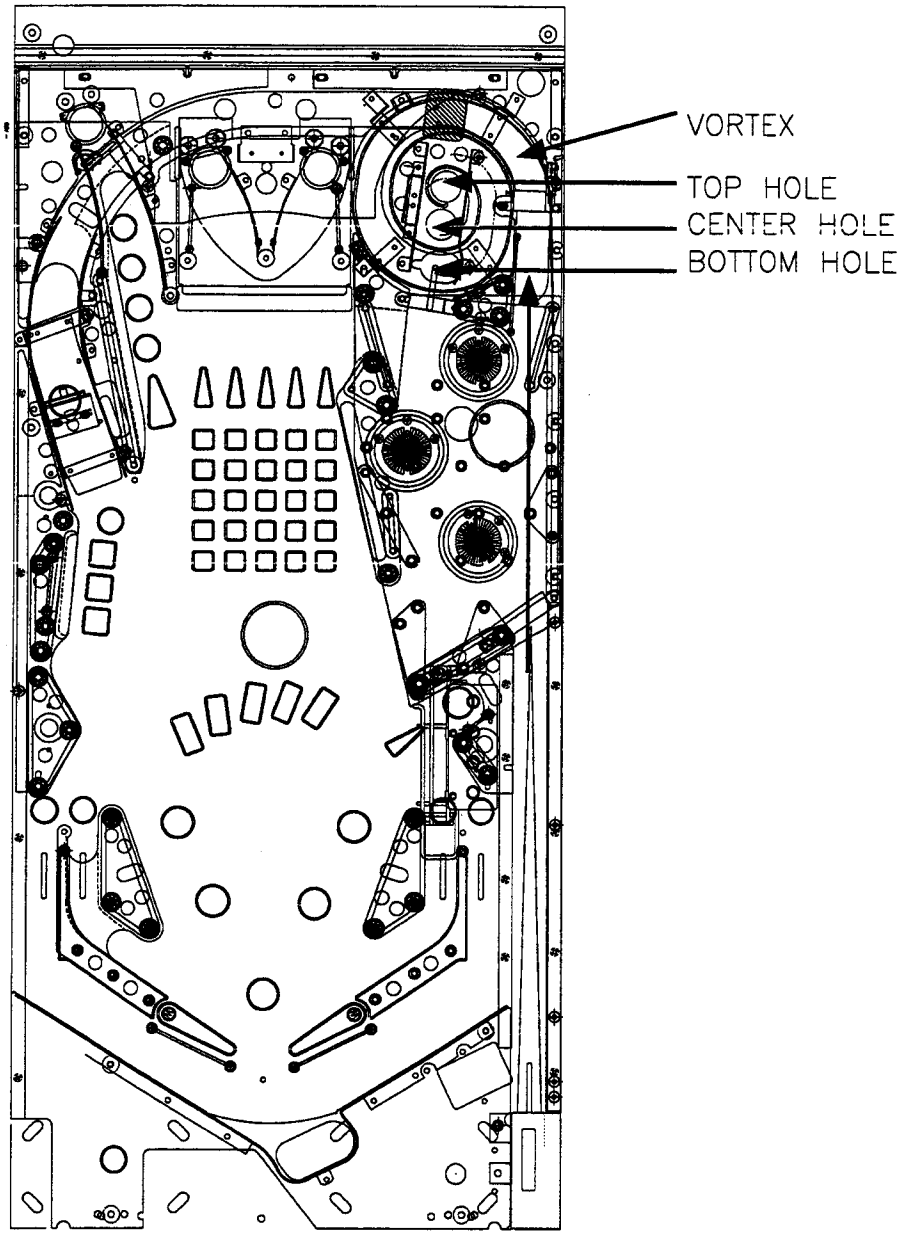
  The following values are computed in the player's bonus count:

  Cards Collected - Three Million Each
  + Vortex Millions
  + Dice Wager Value

  x Bonus Multiplier -> Total Bonus

SKILL SHOT

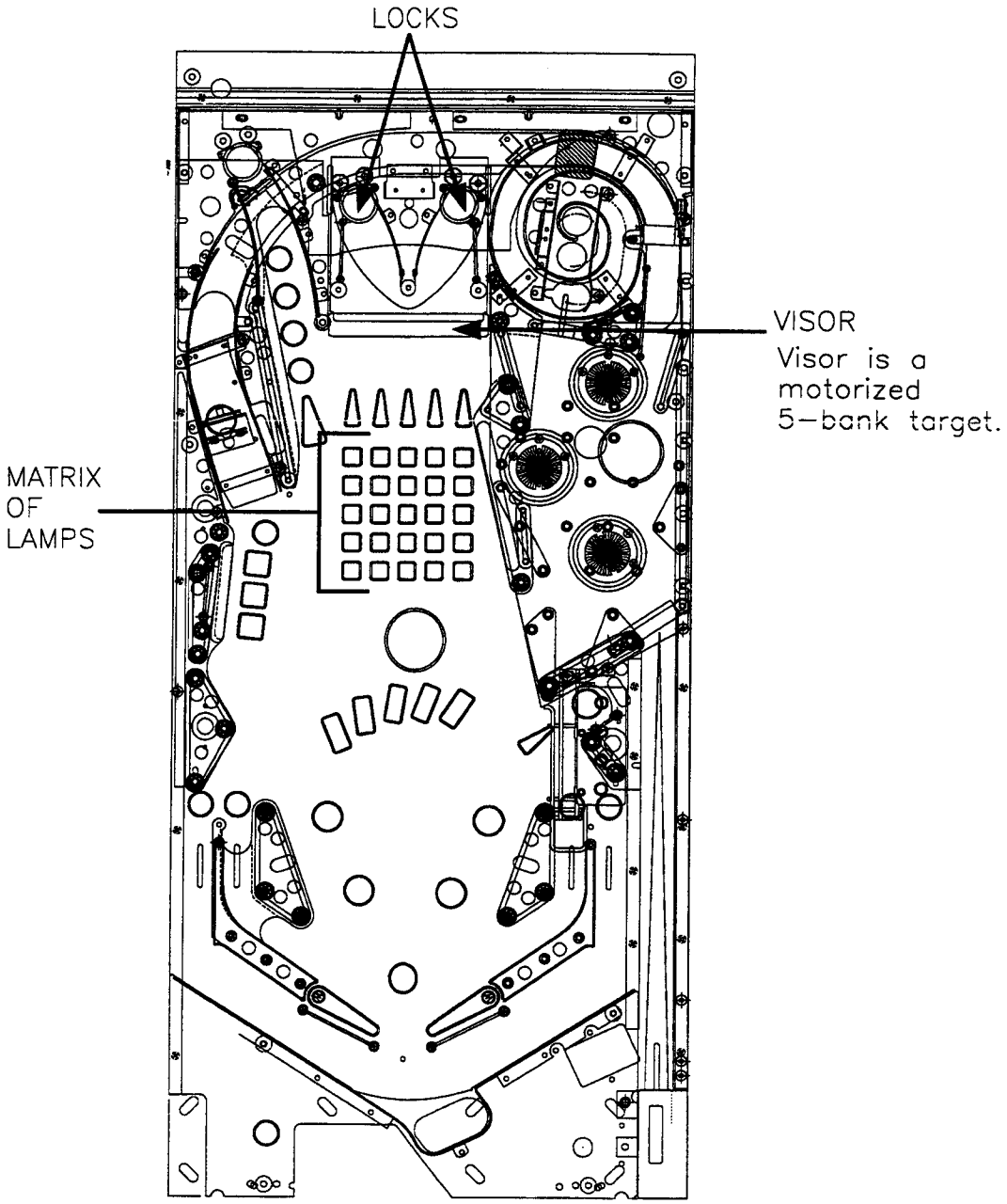
Plunge the ball into the Vortex. The Top and the Bottom holes will award the Vortex Millions value, while the Center hole will award three times the Vortex Millions value. During the Skill Shot, the display will show the value of each hole. Vortex Multiplier may be increased by Slot Machine and Casino Run Awards.



PIN•BOTS CHEST AND VISOR

Complete the matrix of lamps in the Pin•Bot's chest to open the visor. Hitting the targets on the visor and the bank of standups next to the visor will light the lamps. The number of lamps lit per hit will get smaller as the game gets harder. Before the first Multiball, each hit to the visor targets will light an entire column of lamps.

Once the chest matrix is complete, the visor will open, revealing the locks. Shoot balls into the locks to get ready for multiball™.



JET BUMPERS

Hitting the Jet Bumpers in normal play raises the Dice Wager value. This value is used in the Dice Game, which is played off of the Game saucer.

DROP TARGETS

When all drop targets are up, a single target lamp will move back and forth. Hitting this target before hitting any of the others will advance the Bonus Multiplier. Once a drop target is down, a timer will start on the remaining two targets. Completing all drop targets before the timer expires awards a Card.

CARD HAND

Collect cards to build a good hand before playing Pin•Bot Poker (see Game Saucer below). Every player starts with one card. Completing the drop targets before they reset will awards another card. The playfield lamps will show the current hand you possess. Collecting all five cards will award a Hand Completed bonus of 25 million points. Completing the first hand lights Extra Ball.

BONUS MULTIPLIER

The Bonus Multiplier is used to multiply the final Bonus Total. The maximum multiplier available is at 5X. Hitting the moving drop target when the multiplier is at 5X will awards 25 million points.

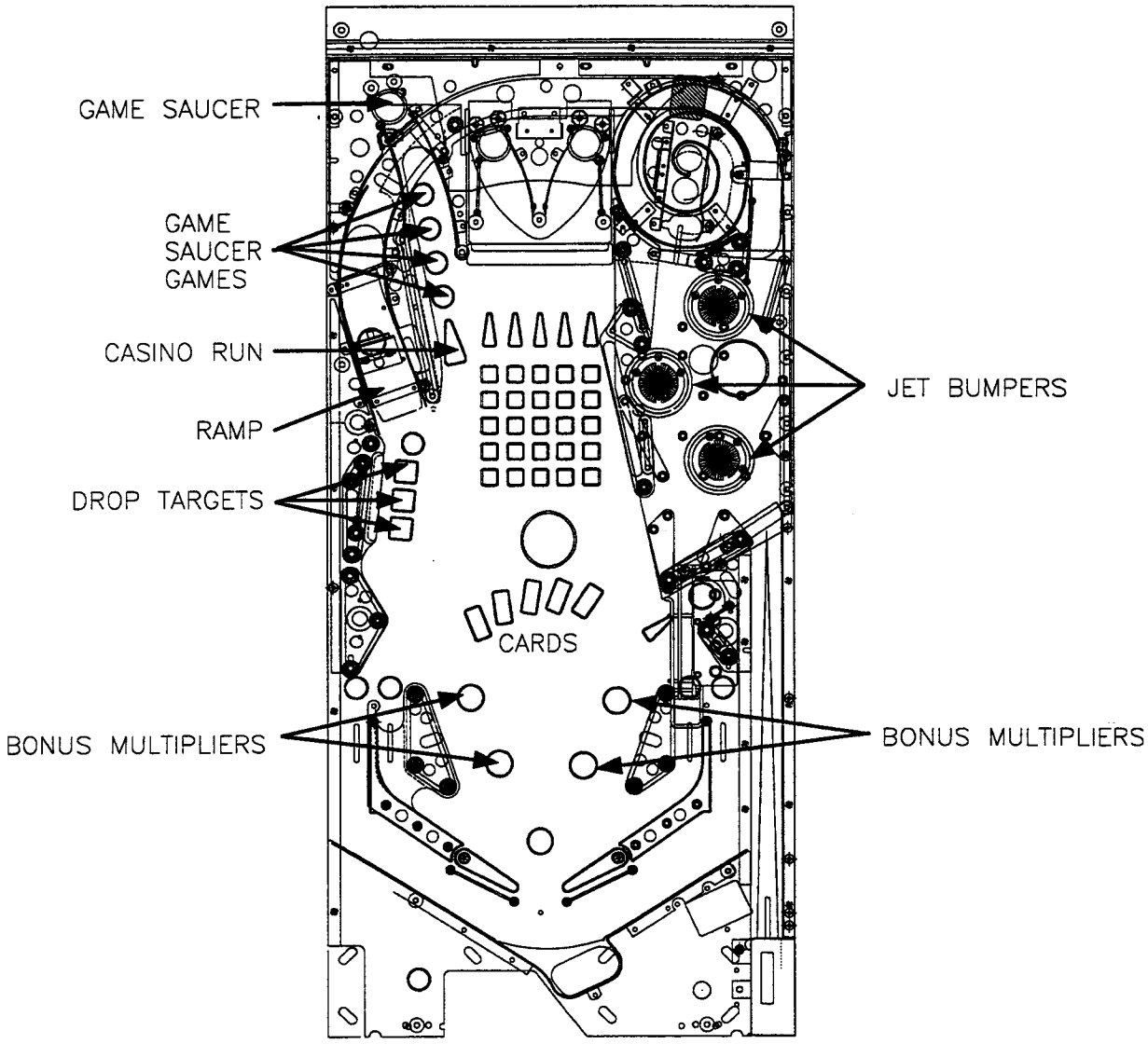
GAME SAUCER

Light the Game Saucer by shooting the ramp. The flashing game light can be moved by the Jet Bumpers or the Left Flipper button.

When the Game Saucer is ready, one of the five lamps near the eject on the far left will be flashing. The games available during normal play are:

Pin•Bot - Slot Machine - Roll the Dice - Keno

Completing the first four games will light the fifth game, Casino Run, where you can really collect big prizes.


GAME SAUCER
GAME
SAUCER
GAMES
CASINO RUN
RAMP
DROP TARGETS
CARDS
JET BUMPERS
BONUS MULTIPLIERS
BONUS MULTIPLIERS

GAME SAUCER: Pin•Bot Poker

Play Poker with Pin•Bot by comparing your Card Hand with the house. The two Deuces and three Aces can be lit in the following combinations:

NO PAIR	=	15 MILLION
ONE PAIR	=	20 MILLION
TWO PAIR	=	30 MILLION
THREE OF A KIND	=	40 MILLION
FULL HOUSE	=	50 MILLION
FOUR OF A KIND	=	99 MILLION

The player is awarded an additional 50 million points for each hand completed before playing Pin•Bot Poker.

GAME SAUCER: Slot Machine

Spin the Slot Machine in Pin•Bot's chest and try your luck ! Some of the awards available from the slot machine are:

Multiball™
Light Extra Ball
Hold Vortex Value
Increase Vortex Multiplier
Special
Collect Bonus
Big Points (20 million through 50 million)
"Hit Me" Hurry-up (see next page)

GAME SAUCER: Roll the Dice

The Dice Wager value is built up from the Jet Bumpers during normal play. When Roll the Dice starts, the Bride of Pin•Bot will roll a number from 2 to 12. The Dice Wager is multiplied by this number to determine the final Dice Award.

GAME SAUCER: Keno

The lights that are currently lit on Pin•Bot's chest are used as the 'keno card' to be played. The Keno game will pick six spots on the chest at random. The more lights that are lit on Pin•Bot's chest, the better your chances of getting all six squares to match.

1 MATCH	-	10 MILLION
2 MATCHES	-	15 MILLION
3 MATCHES	-	20 MILLION
4 MATCHES	-	25 MILLION
5 MATCHES	-	30 MILLION
6 MATCHES	-	50 MILLION
25 MATCHES	-	99 MILLION

GAME SAUCER: Casino Run

Once all four games have been played on the Game Saucer, Casino Run will be lit. Shoot the Game Saucer again to start this mode.

Casino Run is a one-ball mode, and lasts for 45 seconds. Draining a ball will put the ball back in the shooter, with a five second penalty taken off of the clock. Casino Run ends when the clock runs out, or if the player decides to take what's in the Bank, or gets a Bomb on the Slot Machine.

Each switch in Casino Run adds 2 million to the bank.

To spin the Casino Run slot machine, shoot the Game Saucer or the two Eye locks. The slot machine will give awards including the following:

Points (20 million to 150 million)
Light Extra Ball
Special
Bomb (ends Casino Run)
Bucket of Water (defuses the Bomb)
Additional Time

After adding the slot machine awards to the Bank, the player has the option to take what's in the Bank or to risk the bank and go for more awards. The ball is put back into play in both cases.

If the player takes what's in the Bank, Casino Run is instantly over and the Bank added to the player's score and credits. If the player does not collect the bank before time runs out, the Bank is lost.

If less than ten seconds remain on the clock and the ball is at the shooter, the Center vortex shot will instantly collect the Bank and end the mode.

Jack•Bot (Gives next multiball™ Jack•Bot award)
Bonus X
Vortex X
Spot Card
Vortex at Max.
Hold Vortex

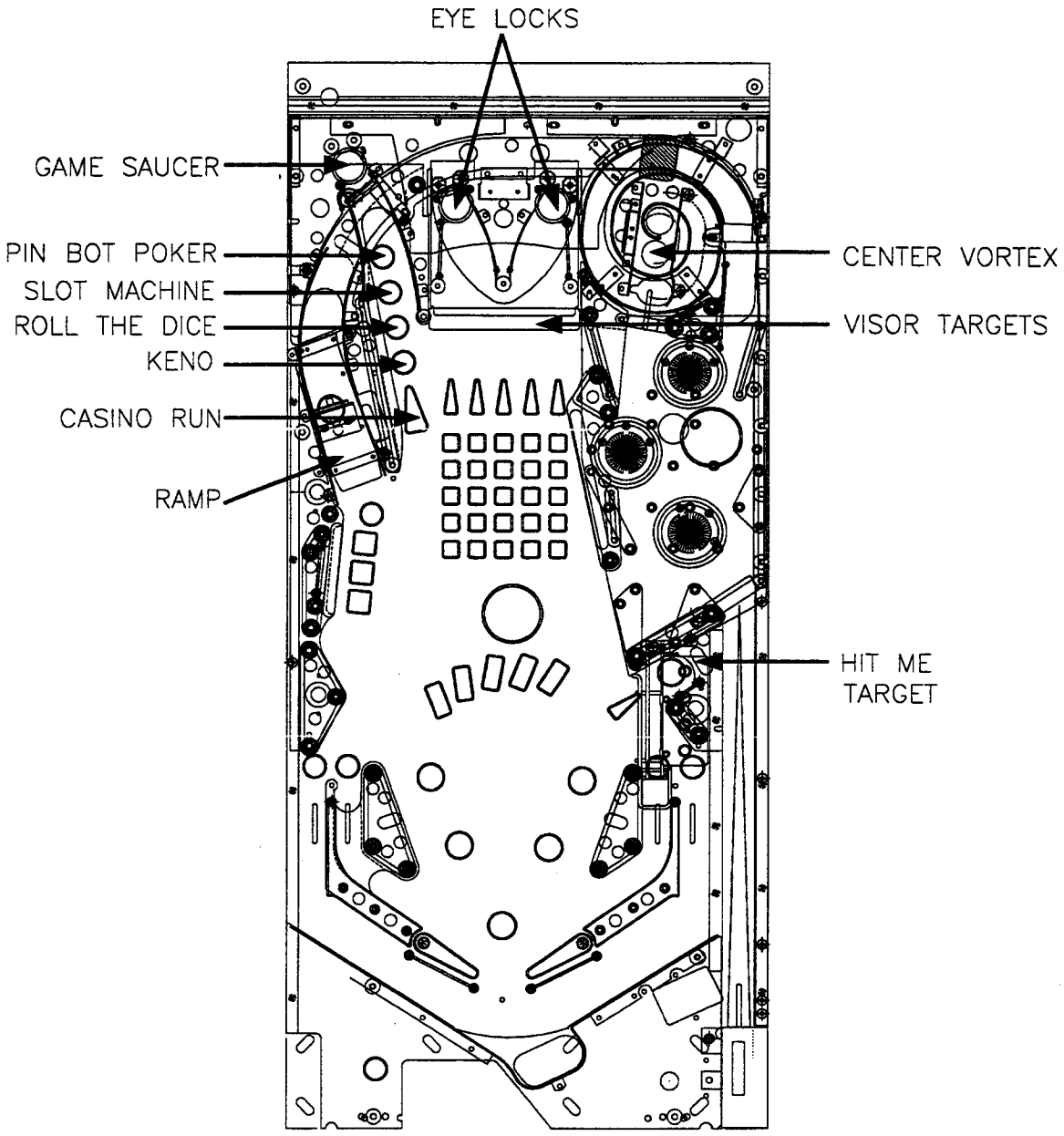
In addition, any time the exact same symbol appears on all three slot reels, a SPECIAL will be awarded.

GAME SAUCER and/or SLOT MACHINE: Hit Me Hurry-up

A countdown timer starts at 75 million. The player must hit the 'Hit Me' target to collect the value before it runs out.

GAME SAUCER: Cheating

When a Game Saucer "GAME TITLE" is being displayed, rapidly pressing the Extra Ball (buy-in) button may cause Pin•Bot to 'cheat' on the game. This is a novelty feature that will cause the results of the casino game to become more favorable to the player (i.e. the player is not really cheating the pinball machine). The "cheats" are accompanied by entertaining speech and dot-matrix animation.


EYE LOCKS
GAME SAUCER
PIN BOT POKER
SLOT MACHINE
ROLL THE DICE
KENO
CASINO RUN
RAMP
CENTER VORTEX
VISOR TARGETS
HIT ME
TARGET

DOUBLE OR NOTHING

When one of the four Game Saucer games results in the award of points to the player (some Slot Machine awards and all games of Keno, Roll the Dice and Pin•Bot Poker) the player may risk these points in an attempt to double these winnings. A selection screen appears on the dot matrix display. The player may press the left flipper to collect the winnings. If the player presses the right flipper, then the Double or Nothing round gives the player ten seconds to shoot the ball to the cashier (under the ramp). Hitting the cashier target awards twice the point value. If the timer reaches zero or the ball drains, then the points are lost.

HIT ME

Shooting the lower right "Hit Me" targets adds a card to the player's Blackjack hand. Each time a card is added, the player will receive one million for each point in the hand. If the hand reaches "20", the player will be awarded a bonus of 15 million (35 million total). If the hand reaches 21, the player will be awarded a bonus of 20 million (50 million total).

MULTIBALL™

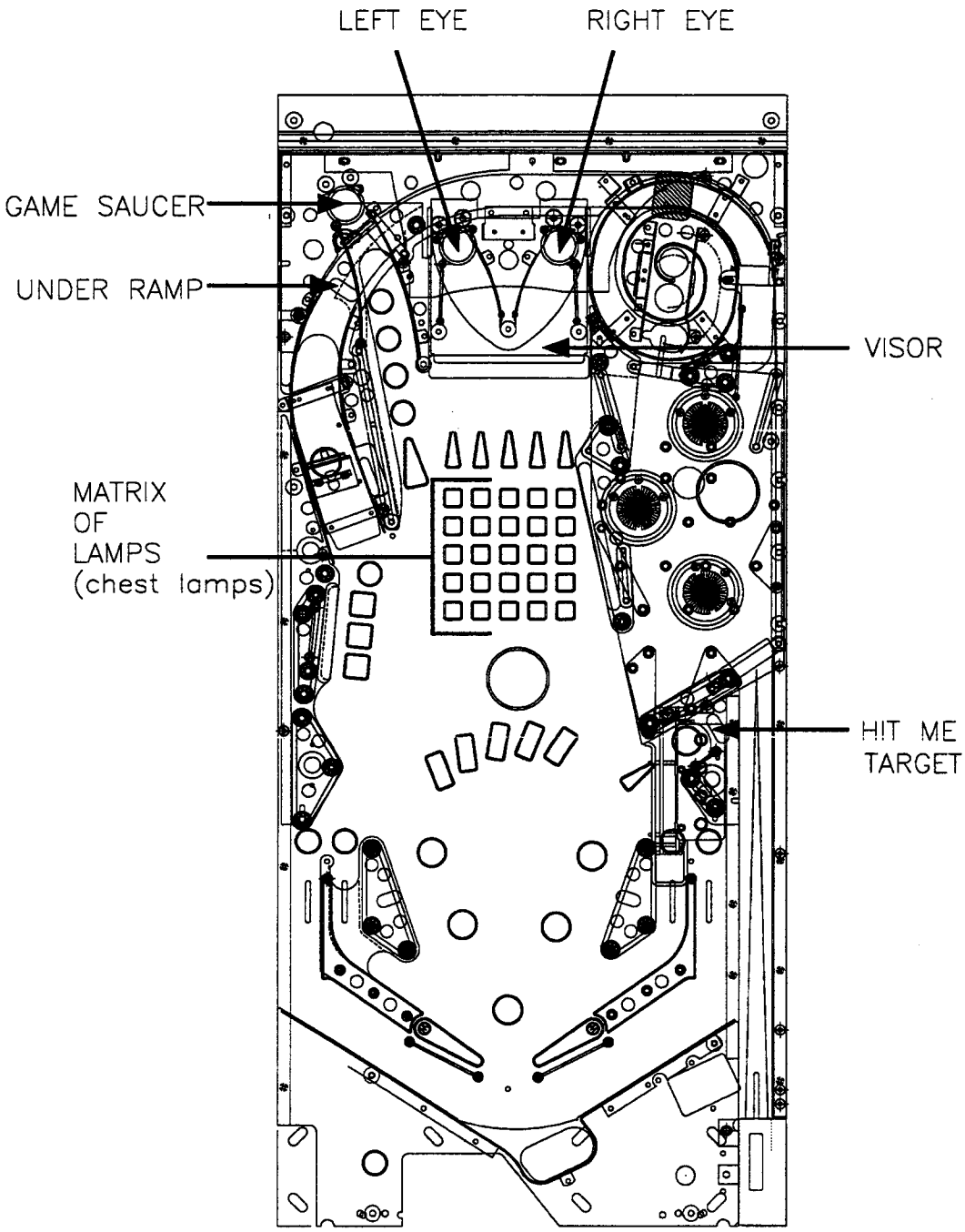
During multiball™, the four shots that will award Jack•Bot (jackpot) are:

Under the Ramp (cashier)
Left Eye Lock
Right Eye Lock
Lower Right 'Hit Me" Target

The shots that are currently lit for Jack•Bot will be blinking during Multiball™. Shooting the Game Saucer re-lights unlit Jack•Bot shots. If all Jack•Bot shots are lit when the Game Saucer is hit then the game saucer will award a Jack•Bot.

Hitting two holes at the same time during multiball™ will award a Super Jack•Bot, combining the score for the next three Jack•Bots (one for each hole and a third as a bonus).

Each Jack•Bot collected in the game scores a higher point value. After 15 Jack•Bots have been collected, the Visor will raise and begin Mega Visor.


LEFT EYE
RIGHT EYE
GAME SAUCER
UNDER RAMP
VISOR
MATRIX
OF
LAMPS
(chest lamps)
HIT ME
TARGET

MEGA VISOR

After 15 Jack•Bots have been score during multiball™, the visor will be raised and the player will be in "Mega Visor" mode as long as there is more than one ball in play.

In Mega Visor mode, all 25 chest lamps will be lit. Each hit to any visor target will score 25 million points and turn off one chest lamp. Turning off all 25 chest lamps while still playing multiple ball will re-open the visor for a chance at the Mega Jack•Bot.

To score a Mega Jack•Bot, one ball must be shot in either eye hole, and the remaining ball must be shot around the ramp.

RAMP MINI-PLAYFIELD

Shooting the ramp into the mini-playfield starts the Vortex Millions counter and starts a rotating award on the mini-playfield exit. The Vortex Millions counter counts up to one million for each second the ball is on the mini-playfield. When the ball exits the mini-playfield at the lower exit, (into the right flipper lane), the counter stops and the lit award on the exit is given. The awards are:

Cashier: Shoot under the ramp to cash out 1 X Bonus
Mega Ramp
Light Extra Ball
25 million

MEGA RAMP

When Mega Ramp is awarded from the mini-playfield exit, shooting the ramp will award the Mega Ramp bonus. If the ball makes it to the mini-playfield exit again, the Mega ramp bonus will be increased and the Mega Ramp stays lit.

SOLAR JETS

If the ball falls through the mini-playfield to the Jets, the Solar Jets award will build. When the ball leaves the jets, the player has ten seconds to shoot under the ramp to collect the Solar Jets bonus.

VORTEX

If the ball returns to the ball shooter from the mini-playfield, the player has a chance to collect the new Vortex Millions value from the Vortex holes. The multipliers are 1X - 3X - 1X unless they were increased by an Increase Vortex Multiplier award (from the Slot Machine or Casino Run).

EXTRA BALL

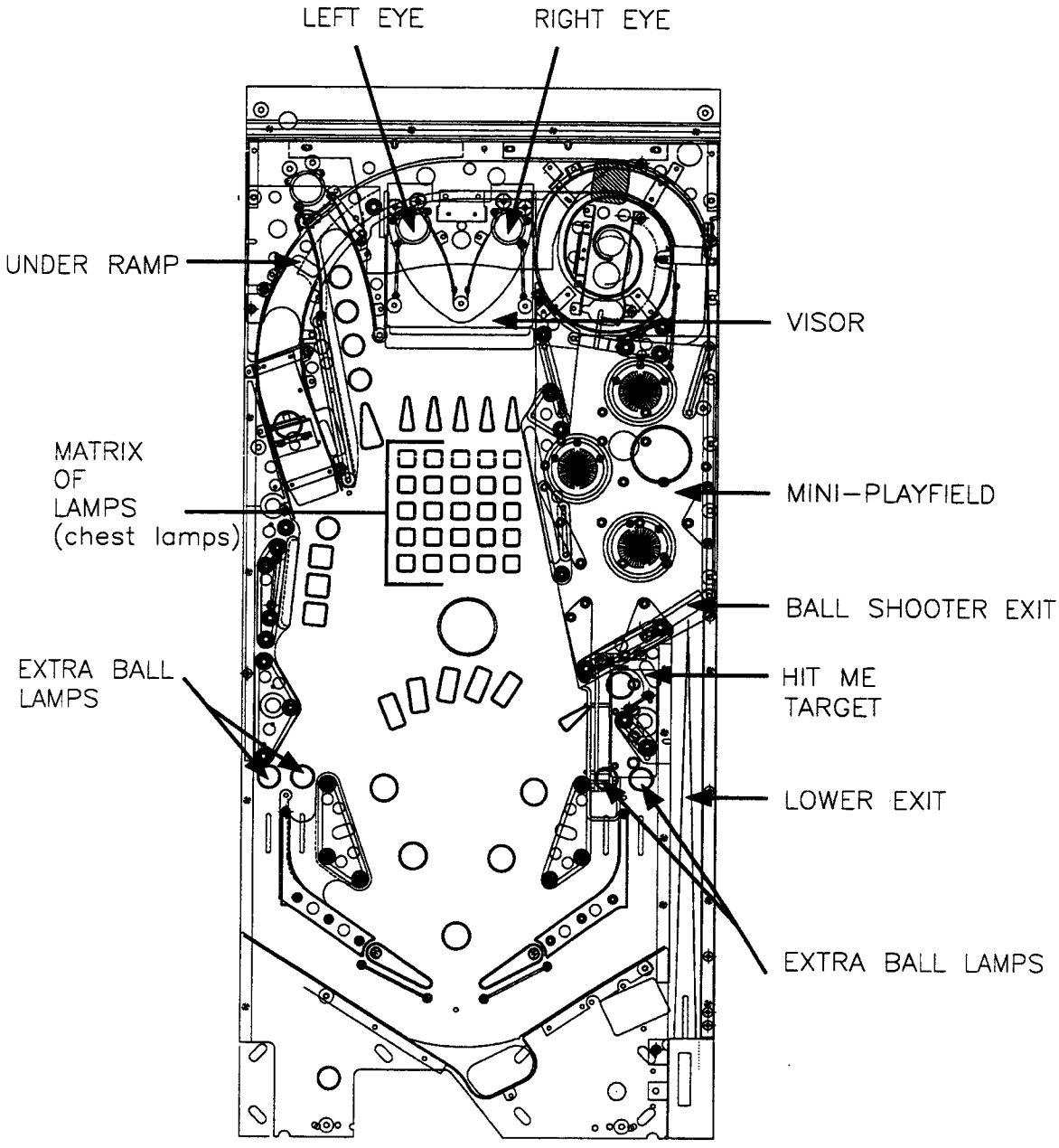
Extra Balls are collected from the flipper return lanes and outlanes. The flippers rotate the Extra Ball lights.

BONUS

The following values are computed in the player's bonus count:

Cards Collected
+ Vortex Millions
+ Dice Wager Value

X Bonus Multiplier -> Total Bonus



NOTES

SECTION ONE

GAME OPERATION AND TEST INFORMATION

(System WPC) ROM SUMMARY

IC	TYPE	BOARD	LOCATION	PART NUMBER
Game 1	27c040	CPU	U6	A-5343-50051-1A (Domestic)
Game 1	27c040	CPU	U6	A-5343-50051-1X (Foreign)
Security Chip	27c040	CPU	U22	A-5400-50051-1
Music/Speech	27c040	Audio	SU2	A-5343-50051-S2
Music/Speech	27c040	Audio	SU3	A-5343-50051-S3
Music/Speech	27c040	Audio	SU4	A-5343-50051-S4
Music/Speech	27c040	Audio	SU5	A-5343-50051-S5
Music/Speech	27c040	Audio	SU6	A-5343-50051-S6

NOTICE

Order replacement ROMs from your authorized Williams Electronics Games, Inc. distributor. Specify: (1) part number (if available); (2) ROM level (number) on label; (3) game in which ROM is used.

PINBALL GAME ASSEMBLY INSTRUCTIONS

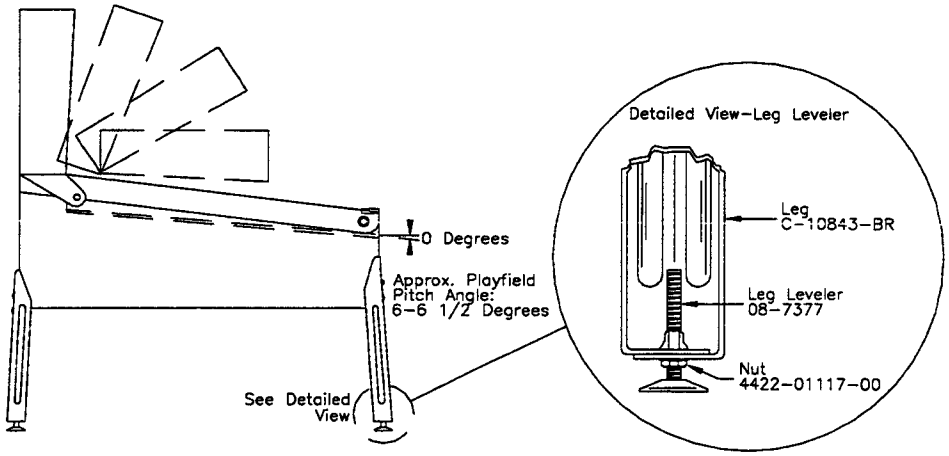
JACK•BOT IS A FOUR BALL GAME

Power:	Domestic 120V @ 60Hz Foreign 230V @ 50Hz Japan 100V @ 50HZ	***Dimensions:***	Width: 29" approx. Depth: 52" approx. Height: 75" approx.
Temp:	32°F to 100° F, (0°C to 38°C)		
Humidity:	Not to exceed 95% relative.	***Weight:***	325 lb. approx. (crated)

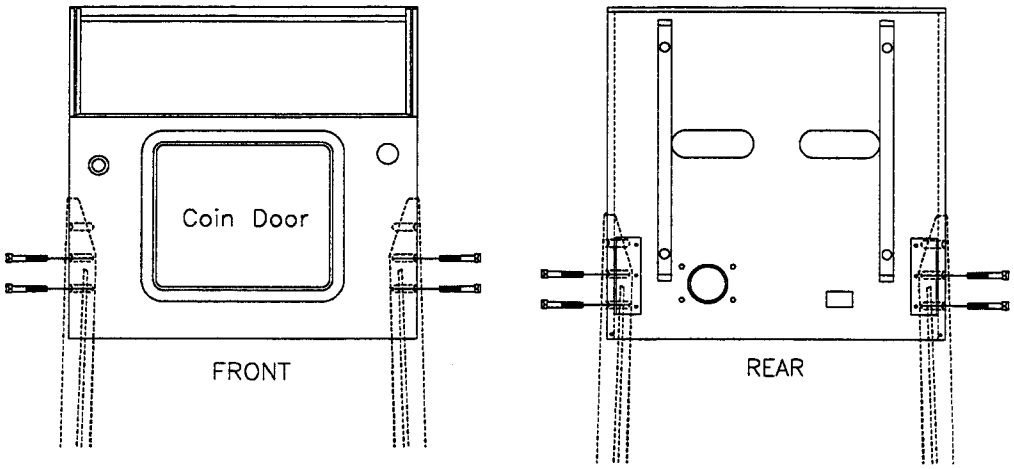
1. Remove all cartons, parts, and other items from the shipping container and set them aside.

2. Leg levelers and leg bolts are among the parts in the cash box. Install leg levelers on the front and rear legs (View 1). Place cabinet on a support and attach rear legs using leg bolts (View 2).

3. Attach front legs using leg bolts (View 2).



VIEW 1



VIEW 2

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

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

⚠ CAUTION

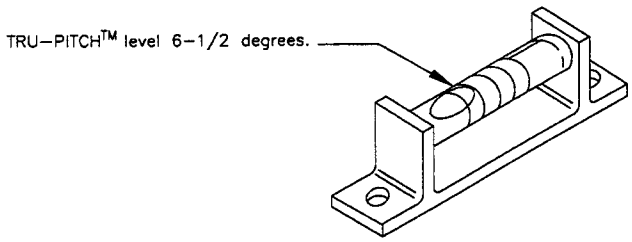
FAILURE TO INSTALL the backbox mounting hardware properly can cause personal injury. ***NEVER TRANSPORT*** a pinball game with the hinged backbox erect. Always lower the backbox forward onto the playfield cabinet on a layer of protective material to prevent marring or damage and possible personal injury.

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

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

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

9. The TRU-PITCH™ level is located on the right shooter rail. This allows the playfield pitch angle to be properly adjusted WITHOUT REMOVING THE GLASS. 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 recommended pitch is 6-1/2 degrees. The NOSE of the bubble should be between the first and second line on the level (see diagram below).



! IMPORTANT !

Playfield pitch angle can affect the operation of the plumb bob tilt. The plumb bob weight is among the parts in the cash box; the operator should install the weight and adjust this tilt mechanism for proper operation, after completion of the desired playfield pitch angle setting. 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 grove at a time to the left or the right, depending on the degree desired. Hold the pointer in place and tighten screw

10. Move the game into the desired location; recheck the level and pitch angle of the playfield.

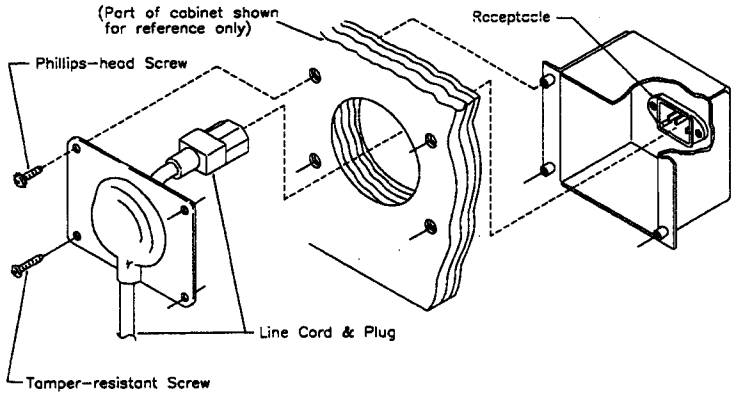
11. Be sure the ***required number*** of balls are installed. **JACK•BOT** game uses four balls.

12. Install full playfield mylar, if desired.

    NOTE: The **JACK•BOT** playfield is coated with a special hardcoat surface and does not require a protective mylar. However, mylars can be purchased through your local Williams Distributor. Specify part number 03-7960-549-1 for full playfield mylar.

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

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



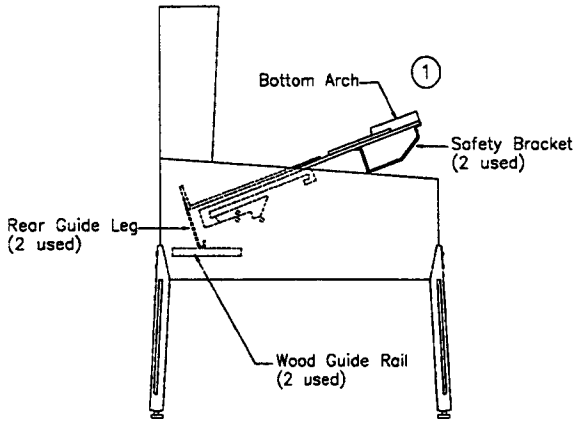
RAISING THE PLAYFIELD

⚠ CAUTION

Do not raise the playfield straight up! This game uses a slide assembly to raise and lower the playfield.

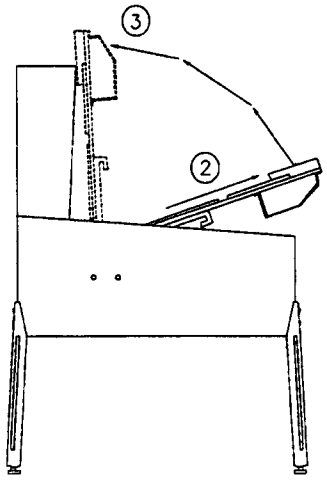
To raise the playfield.

1. Remove all the balls from the game. Grasp bottom arch and carefully lift up playfield only high enough to clear safety brackets. Rear guide legs should not hit wood guide rails, or be used to slide out playfield.



2. Pull the playfield out toward you until it stops (rest position), and raise it approximately 3". Be sure playfield is in locked position and does not slide back into cabinet. If it does, repeat Step 2 before proceeding to Step 3.

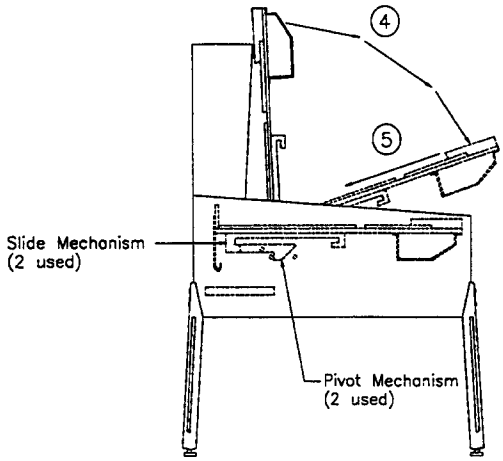
3. Rotate playfield to upright service position (lean on backbox) by pulling toward you and up. Listen for the sound of a click: this ensures locking and pivoting sequence.



To lower the playfield.

4. Rotate the playfield to the rest position. This unlocks the pivoting mechanism.

5. Push the playfield back into cabinet and into the playing position.



GAME CONTROL LOCATIONS

Cabinet Switches

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

Coin Door Buttons

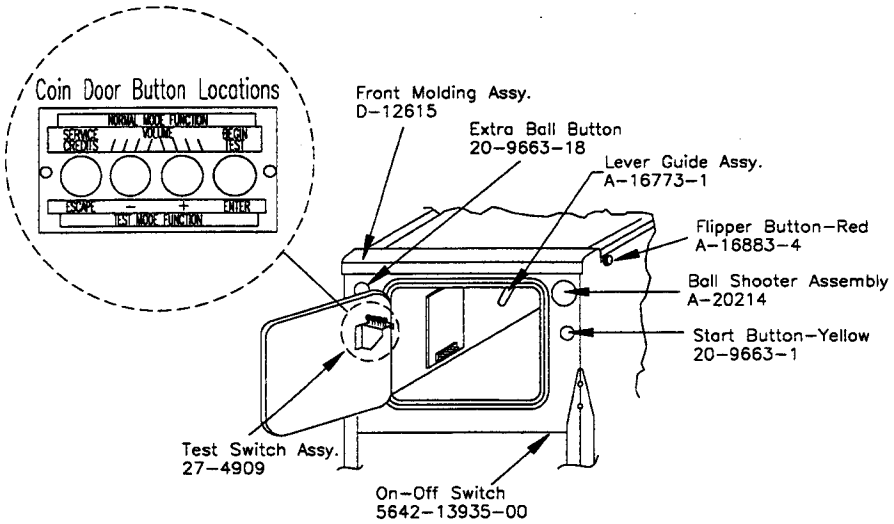
The operator controls all game adjustments, obtains bookkeeping information, and diagnoses problems, using only four push-button switches mounted on the inside of the coin door. The coin door buttons have two modes of operation Normal Function and Test Function.

Normal Function

The Service Credits button puts credits on the game that are not included in any of the game audits.
The Volume Up (+) button raises the sound level of the game. Press and hold the button until the desired level is reached.
The Volume Down (-) button lowers the sound level of the game. Press and hold the button until the desired level is reached. See Adjustment A.1 28 to shut sound Off completely.
The Begin Test button starts the Menu System operation and changes the coin door buttons from Normal Function to Test Function.

Test Function

The Escape button allows you to get out of a menu selection or return to the Attract mode.
The Up (+) button allows you to cycle forward through the menu selections or adjustment choices.
The Down (-) button allows you to cycle backward through the menu selections or adjustment choices.
The *Enter button allows you to get into a menu selection or lock in an adjustment choice.



To reset High Score, hold down the Begin Test/Enter switch for five seconds while in the Attract mode.

GAME OPERATION

⚠ CAUTION

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

POWERING UP. With the coin door closed, plug the game in, and switch it On. In normal operation, Testing shows in the displays as the game performs Start-up tests. Once the Start-up tests have been successfully completed the last score is displayed and the game goes into the Attract mode.

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

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

Example:	**JACK•BOT**		**Sound Rev. 1.0 A**	
	50051	**Rev. 1.0 A**	**SY. 0.X0**	**X-X-95**

Press the Enter button to enter the WPC Menu System (refer to the section entitled "Menu System Operation" for more information). Slide the Service Switch Actuator over the top interlock switch located in the bottom left corner of the coin door opening. Perform the entire Test menu routine to verify that the game is operating satisfactorily.

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

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

STARTING A GAME. Press the Start button. A startup sound plays, and the credit amount shown in the display decreases by one. The display flashes 00 (until the first playfield switch is actuated), and shows ball 1. If credits are posted, additional players may enter the game by pressing the Start button once for each player, before the end of play on the first ball. Pull the ball shooter on the front of the cabinet to launch a ball. Press the flipper buttons to operate the flippers.

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

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

GAME OVER MODE. The **Game Over** display shows the high scores and the game proceeds to the Attract Mode.

* - Operator-adjustable feature

MENU SYSTEM OPERATION

The Main Menu allows you to choose from several categories, which in turn lead to other menus to choose from. To access the Main Menu, open the coin door and press the Begin Test button, then press the Enter button. Press the Up or Down buttons to cycle through the Main Menu. Press the Enter button to access a menu. Press the Escape button to return to the Main Menu. Press the Start button for HELP at any time.

MAIN MENU

B. BOOKKEEPING MENU

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

P. PRINTOUTS MENU

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

T. TEST MENU

- T.1 Switch Edges Test
- T.2 Switch Levels Test
- T.3 Single Switches Test
- T.4 Solenoid Test
- T.5 Flasher Test
- T.6 General Illumination Test
- T.7 Sound and Music Test
- T.8 Single Lamp Test
- T.9 All Lamps Test
- T.10 Lamp and Flasher Test
- T.11 Display Test
- T.12 Flipper Coil Test
- T.13 Ordered Lamps Test
- T.14 Lamp Row-Col
- T.15 DIP Switch Test
- T.16 Ramp Test
- T.17 Visor Test
- T.18 Empty Balls

U. UTILITIES MENU

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

A. ADJUSTMENT MENU

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

Press Escape
To move out of a menu selection.

Press Enter
To get into a menu selection.

Press Up
Increases sequence; Example A.1, A.2, A.3, A.4.

Press Down
Decreases sequence; Example A.4, A.3, A.2, A.1.

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

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

Press the Up or Down buttons to cycle through the menu. Press the Enter button to access an audit menu. Press the Escape button to return to the Bookkeeping Menu.

B. BOOKKEEPING MENU

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

One Button Audit System. *The Bookkeeping Menu is obtainable directly from the Attract Mode. Repeatedly pressing the Enter button, while in the Attract Mode, will cycle through all of the game audits.*

B.1 Main Audits

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

B.2 Earning Audits

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

**These audits are NOT re-settable. They are a record of the earnings of the game since the "CLOCK 1ST SET" Time-stamp.*

B.3 Standard Audits

B.3	01	Games Started	00	B.3	20	Average Game Time	00
B.3	02	Total Plays**	00	B.3	21	Play Time	00
B.3	03	Total Free Play	00	B.3	22	Minutes On	00
B.3	04	Free Play Percent	00	B.3	23	Balls Played	00
B.3	05	Replay Awards	00	B.3	24	Tilts	00
B.3	06	Percent Replays	00	B.3	25	Replay 1 Awards	00
B.3	07	Special Awards	00	B.3	26	Replay 2 Awards	00
B.3	08	Percent Special	00	B.3	27	Replay 3 Awards	00
B.3	09	Match Awards	00	B.3	28	Replay 4 Awards	00
B.3	10	Percent Match	00	B.3	29	1 Player Games	00
B.3	11	H.S.T.D. Credits	00	B.3	30	2 Player Games	00
B.3	12	Percent H.S.T.D.	00	B.3	31	3 Player Games	00
B.3	13	Extra Ball	00	B.3	32	4 Player Games	00
B.3	14	Percent Extra Ball	00	B.3	33	H.S.T.D. Reset Count	00
B.3	15	Tickets Awarded	00	B.3	34	Burn-in Time†	00:00:00
B.3	16	Percent Tickets	00	B.3	35	1st Replay Level	00
B.3	17	Left Drains	00	B.3	36	Left Flipper	00
B.3	18	Right Drains	00	B.3	37	Right Flipper	00
B.3	19	Average Ball Time	00				

***"Total Plays" only counts on completed games. A game is considered complete when the final ball begins. Audit information from incomplete games is ignored. Operation for test and service do not affect audits.*
†This Audit is not re-settable.

B.4 Feature Audits

B.4	01	**Buy-in Extra Balls** This is the number of Extra Balls purchased at the end of the game.	00	00%
B.4	02	**Total Multiball** Total number of multiballs™ played.	00	00%
B.4	03	**Game Saucer Award** Number of game saucer awards (Poker, Slot Machine, Roll the Dice or Keno).	00	00%
B.4	04	**Cheats Achieved** Number of times a "cheat" was executed by rapidly pressing the Buy-in button during the title screen of the game.	00	00%
B.4	05	**Keno Arrow Saucer** Number of times the game saucer was lit from the Moving Keno arrow feature.	00	00%
B.4	06	**Multiball Jack•Bots** Number of Jack•Bots earned during Multiball™.	00	00%
B.4	07	**Multiball Super Jack•Bots** Number of Super Jack•Bots earned during regular multiball™ play.	00	00%
B.4	08	**Quick Visor Open** Number of times the visor was opened by hitting the blinking row or column before any other targets.	00	00%
B.4	09	**Visor Open Games** Number of games that opened the visor one or more times.	00	00%
B.4	10	**1 Multiball Games** Number of games that had one or more multiballs™.	00	00%
B.4	11	**2 Multiball Games** Number of games that had two or more multiballs™.	00	00%
B.4	12	**3 Multiball Games** Number of games that had three or more multiballs™.	00	00%
B.4	13	**Rematch Offered** Number of times Rematch was offered. Rematch allows you a timed period to re-start multiball™ if you do not score any Jack•Bots during multiball™.	00	00%
B.4	14	**Rematch Awarded** Number of times Rematch was achieved.	00	00%
B.4	15	**Slot Multiball** Number of times Multiball™ was awarded from the slot machine.	00	00%
B.4	16	**Ramp Shots** Number of ramp shots completed.	00	00%
B.4	17	**Right Lane Awards** Number of "Right Lane Awards" achieved by the ball going from the ramp, back to the right flipper lane.	00	00%

B.4	18	**Solar Jets On** Number of times the Solar Jets feature was activated by going from the ramp to the Jet Bumpers (as a result of falling through the hole in the mini-playfield).	00	00%
B.4	19	**Return To Vortex** Number of times a ramp shot returned to the ball shooter for a Vortex Skill-Shot.	00	00%
B.4	20	**Double Offered** Number of times "Double or Nothing" was offered after completing a game saucer game. Any game saucer game that results in a score award offers "Double or Nothing" before kicking the ball out.	00	00%
B.4	21	**Double Attempted** This is the number of times that the player elected to go for "Double or Nothing" by pressing the right flipper during the selection screen.	00	00%
B.4	22	**Double Collected** This is the number of times that the player collected the doubled value by shooting under the ramp (the cashier) during "Double or Nothing".	00	00%
B.4	23	**Drop Banks** Number of times the Drop Target Bank was completed.	00	00%
B.4	24	**Right Lane Extra Ball** Number of times the Right Flipper Lane feature lit the Extra Ball.	00	00%
B.4	25	**Poker Extra Ball** Number of times the Extra Ball was lit by completing the Full House poker hand.	00	00%
B.4	26	**Chest Extra Ball** Number of times the Extra Ball was lit by completing the chest while the visor was down. Chest lamps are lit by hitting the 5-bank of targets on the right side.	00	00%
B.4	27	**Slot Extra Ball** Number of Extra Balls lit from the slot machine.	00	00%
B.4	28	**Bonus Multiplier** Number of Bonus Multipliers earned from the Slot Machine.	00	00%
B.4	29	**Low Vortex Shot** Number of Vortex Shots in the Low Hole.	00	00%
B.4	30	**Middle Vortex Shot** Number of Vortex Shots in the Center Hole.	00	00%
B.4	31	**High Vortex Shot** Number of Vortex Shots in the Upper Hole.	00	00%
B.4	32	**Casino Run** Number of times "Casino Run" played.	00	00%
B.4	33	**Casino Run Spins** Number of Spins on the Slot Machine during Casino Run.	00	00%

B.4	34	**Casino Run Extra Ball** Number of Extra Balls lit from the Casino Run Feature.	00	00%
B.4	35	**Casino Run Specials** Number of Specials awarded from the Casino Run Feature.	00	00%
B.4	36	**Casino Run Bombs** Number of "Bombs" received during Casino Run. A Bomb will end the round unless the player is in possession of a "Bucket".	00	00%
B.4	37	**Casino Run Buckets** Number of "Buckets" earned from Casino Run. If the player has a "Bucket", it will disable the next Bomb received by the player.	00	00%
B.4	38	**Casino Run Lost Specials** Number of Specials lost in the Casino Run Round as the result of a bomb or a time-out.	00	00%
B.4	39	**Casino Run Lost Extra Ball** Number of Extra Balls lost in the Casino Run Round as the result of a bomb or a time-out.	00	00%
B.4	40	**Casino Run Time-outs** Number of Casino Run Time-outs.	00	00%
B.4	41	**Mega Visor** Number of games reaching "Mega Visor".	00	00%
B.4	42	**Visor Time Super Jack•Bot** Number of Super Jack•Bots earned from Mega Visor.	00	00%
B.4	43	**Visor Time Mega Jack•Bot** Number of Mega Jack•Bots earned from Mega Visor.	00	00%
B.4	44	**Hit Me Cards** Number of Blackjack cards earned from the Hit Me target.	00	00%
B.4	45	**Hit Me "20"** Number of Blackjack games reaching "20" from the Hit Me target.	00	00%
B.4	46	**Hit Me "21"** Number of Blackjack games reaching "21" from the Hit Me target.	00	00%
B.4	47	**Hit Me Bust** Number of Busts (over 21) on Blackjack games from the "Hit Me" target.	00	00%
B.4	48	**Keno Arrow Award 1** Number of times the 1st Keno Arrow Award Given.	00	00%
B.4	49	**Keno Arrow Award 2** Number of times the 2nd Keno Arrow Award Given.	00	00%
B.4	50	**Keno Arrow Award 3** Number of times the 3rd Keno Arrow Award Given.	00	00%

B.4	51	**Keno Arrow Award 4** Number of times the 4th Keno Arrow Award Given.	00	00%
B.4	52	**Keno Arrow Award 5** Number of times the 5th Keno Arrow Award Given.	00	00%
B.4	53	**Keno Arrow Award 6** Number of times the 6th Keno Arrow Award Given.	00	00%
B.4	54	**Keno Arrow Award 7** Number of times the 7th Keno Arrow Award Given.	00	00%
B.4	55	**1 Buy-In Games** Number of games with one or more buy-in ball.	00	00%
B.4	56	**2 Buy-In Games** Number of games with two or more buy-in balls.	00	00%
B.4	57	**3 Buy-In Games** Number of games with three or more buy-in balls.	00	00%
B.4	59	**>=4 Buy-In Games** Number of games with four or more buy-in balls.	00	00%
B.4	59	**Ball Save** Number of balls saved by the ball save feature.	00	00%
B.4	60	**Slot Awards** Number of slot machine awards.	00	00%

B.5 Histograms

B.5	01	0 - 99 Million Scores	00%	00
B.5	02	100 - 299 Million Scores	00%	00
B.5	03	300 - 499 Million Scores	00%	00
B.5	04	500 - 749 Million Scores	00%	00
B.5	05	750 - 999 Million Scores	00%	00
B.5	06	1.0 - 1.4 Billion Scores	00%	00
B.5	07	1.5 - 1.9 Billion Scores	00%	00
B.5	08	2.0 - 2.9 Billion Scores	00%	00
B.5	09	3.0 - 3.9 Billion Scores	00%	00
B.5	10	4.0 - 4.9 Billion Scores	00%	00
B.5	11	5.0 - 6.9 Billion Scores	00%	00
B.5	12	7.0 - 8.9 Billion Scores	00%	00
B.5	13	Over 9 Billion Scores	00%	00
B.5	14	Game Time 0.0-1.0 Mins	00%	00
B.5	15	Game Time 1.0-1.5 Mins	00%	00
B.5	16	Game Time 1.5-2.0 Mins	00%	00
B.5	17	Game Time 2.0-2.5 Mins	00%	00
B.5	18	Game Time 2.5-3.0 Mins	00%	00
B.5	19	Game Time 3.0-3.5 Mins	00%	00
B.5	20	Game Time 3.5-4.0 Mins	00%	00
B.5	21	Game Time 4-5 Mins	00%	00
B.5	22	Game Time 5-6 Mins	00%	00
B.5	23	Game Time 6-8 Mins	00%	00
B.5	24	Game Time 8-10 Mins	00%	00
B.5	25	Game Time 10-15 Mins	00%	00
B.5	26	Game Time Over 15 Mins	00%	00

B.6 Time-Stamps

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

Time-Stamps Menu allows you to view dates and times that are important to game software.

Press the Up or Down buttons to cycle through the menu. Press the Enter button to access a menu. Press the Escape button to return to the Printouts Menu.

P. PRINTOUTS MENU

(optional board required)

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

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

If no printer is attached the message "Waiting for Printer" appears in the displays. ***Note:*** Set the print specification from the Adjustment Menu, A.5 Printer Adjustments.

Use the Service Switch Actuator to hold in the top interlock switch located in the bottom left corner of the coin door opening. The actuator must be in place in order to activate the solenoids and flashlamps.

Press the Up or Down buttons to cycle through the menu. Press the Enter button to access a test. Press the Escape button to return to the Test menu. **Note:** During any test, press the Start button to obtain the wire color, driver number, connector number and fuse location.

T. TEST MENU

T.1	**Switch Edges Test**
T.2	**Switch Levels Test**
T.3	**Single Switch Test**
T.4	**Solenoid Test**
T.5	**Flasher Test**
T.6	**General Illumination Test**
T.7	**Sound & Music Test**
T.8	**Single Lamps Test**
T.9	**All Lamps Test**
T.10	**Lamps And Flasher Test**
T.11	**Display Test**
T.12	**Flipper Coil Test**
T.13	**Ordered Lamps Test**
T.14	**Lamp Row-Col**
T.15	**DIP Switch Test**
T.16	**Ramp Test**
T.17	**Visor Test**
T.18	**Empty Balls Test**

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

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

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

T.1 Switch Edges Test

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

T.2 Switch Levels Test

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

T.3 Single Switches Test

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

T.4 Solenoid Test

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

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

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

Run: The Run mode cycles through the solenoids automatically. The display shows the name and number of the solenoid currently being pulsed.

T.5 Flasher Test

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

Repeat: The Repeat mode pulses a single flashlamp. After entering this test the name and number of the first flashlamp circuit shows in the display and the corresponding bulb(s) flash. Press the Up or Down buttons to cycle through all of the flashlamps circuits one at a time. The same circuit pulses until press the Up or Down button is pressed. Either press the Escape button to return to the Test menu, or press the Enter button to advance to the next mode.

Stop: The Stop mode halts the Flasher test. No flashlamp circuit should be active during this mode. Either press the Escape button to return to the Test menu, or press the Enter button to advance to the next mode.

Run: The Run mode cycles through the flashlamps automatically. The display shows the name and number of the flashlamp circuit currently being pulsed as the corresponding bulb(s) flashes.

T.6 General Illumination Test

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

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

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

T.7 Sound and Music Test

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

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

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

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

T.8 Single Lamp Test

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

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

T.9 All Lamps Test

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

T.10 Lamp and Flasher Test

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

T.11 Display Test

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

T.12 Flipper Coil Test

The Flipper Coil test has three modes - Repeat, Stop, and Run. Only one flipper should pulse at a time. The system has detected a problem if more then one flipper pulses, a flipper comes on and stays on, or no flippers pulse during the Repeat or Run modes.

Repeat: The Repeat mode pulses a single flipper. After entering this test, flipper coil 01 shows in the display and the corresponding coil activates. Press the Up or Down button to cycle through the flipper coils, one at a time. The same solenoid pulses until the Up or Down button is pressed. Either press the Escape button to return to the Test menu, or press the Enter button to move to the next mode.

Stop: The Stop mode halts the Flipper Coil test. Press Enter during the Repeat mode and the test stops. No coils should be activated while the test is stopped. Either press the Escape button to return to the Test menu, or the Enter button to move to the next mode.

Run: The Run mode cycles through the flippers automatically. The display shows the name and number of the flipper coil currently being pulsed.

T.13 Ordered Lamps Test

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

This test checks each lamp circuit individually. Press the Up or Down button to cycle through the lamps. Lamps light in a clock-wise or counter clock-wise direction starting from the bottom of the playfield. Direction depends on which button, Up or Down, is pressed. For each name and number that is shown in the display the corresponding lamp should light. Any other results indicates the system has detected a problem.

T.14 Lamp Row-Col

This test allows individual rows and columns in the lamp matrix to be operated. This is useful for trouble-shooting wiring and driver problems.

Press the Up and Down buttons to cycles through the different rows and columns.

T.15 DIP Switch Test

This test is used to show the positions of the DIP switches on the CPU board (U27).

T.16 Ramp Test

Once the test name is shown under the Test Menu, press the Enter button. The bottom line of the display shows "RAMP DOWN SW." when the Ramp is down and the Ramp Down switch is activated. This test has three modes of operation:

Repeat: The repeat test pulses a single coil, either the up or down coil, until the Up or Down button is pressed to move to the next coil.

Stop: Press the Enter button during the Repeat test and the Ramp stops activating.

Run: Press the Enter button during the Stop test and the Ramp cycles Up and Down automatically.

T.17 Visor Test

Once the test name is shown under the Test Menu, press the Enter button. The bottom line of the display will show the state of the Visor Open and Visor Closed switches. An 'X' in the box indicates the switch is closed.

This test has three modes of operation:

Open - Open the Visor: Run the visor motor until the Visor Open switch is closed.

Close - Close the Visor: Run the visor motor until the Visor Closed switch is closed.

Cycle - Run the visor motor continuously.

The Up and Down changes the test mode. Pressing Enter changes the test between RUNNING and STOPPED. When STOPPED, the motor will be turned off and the current test halted.

Press Escape to return to the Test Menu at any time.

T.18 Empty Balls

This test checks the poppers and kickers that are under the playfield.

Press the enter button and all balls loaded into the poppers and troughs should be kicked out until no balls remain in these locations. Any other result indicates a problem.

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

Press the Up or Down buttons to cycle through the menu. Press the Enter button to access a utility. Press the Up or Down buttons to see the setting choices. Press the Enter button to lock in a choice. If a mistake is made, press Escape while "Saving Adjustment Value" is in the display. The original setting is retained and the new setting is ignored. Press the Escape button to return to the Utility menu.

U. Utilities Menu

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

U.1 Clear Audits

Press the Enter button to clear the Standard Audits (except Burn-in Time), Feature Audits, and Histograms.

U.2 Clear Coins

Press the Enter button to clear the Earnings Audits.

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

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

U.4 Set Time and Date

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

U.5 Custom Message

Set A.1 20 to ON before trying to write a Custom Message. Press the Enter button to begin entry of the custom message. Use the Up or Down buttons to cycle through letters. Use the Start button to cycle through punctuation marks. Press the Enter button to lock in the desired letter and punctuation. If a mistake is made, use Up and Down to select the "back-arrow" character. The "back-arrow" character is located before the space character and after the number nine. Press Enter while the back-arrow shows to erase the previously entered character. Once the message is complete, press and hold the Enter button until "Message Stored" is displayed.

Press the Escape button to cancel the new message. The message "Press Enter to Reset" appears. If Enter is pressed, the custom message is cleared and no message is displayed. If Escape is pressed, the original message remains intact.

U.6 Set Game I.D.

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

U.7 Factory Adjustment

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

U.8 Factory Reset

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

U.9 Presets

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

Game Difficulty Levels The game play difficulty adjustments can be changed to a combination that is MUCH LESS to MUCH MORE difficult than Factory Settings. The Game Difficulty Setting Table lists the adjustments and settings that comprise the individual group.

U.9 01 Install Extra Easy	MUCH LESS difficult than factory setting.
U.9 02Install Easy	Somewhat LESS difficult than factory setting.
U.9 03 Install Medium	About the SAME as factory setting.
U.9 04 Install Hard	Somewhat MORE difficult than factory setting.
U.9 05 Install Extra Hard	MUCH MORE difficult than factory setting.

Difficulty Setting Table for
U.S., Canadian, French, German, and European Games

Adj. #	Adj. Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03 (factory)	Hard U.9 04	Extra Hard U.9 05
A.2 03	Last Column Multiball	2	1	1	1	1
A.2 05	Last 2-Spot Multiball	3	2	2	2	1
A.2 06	Last 3-Row Multiball	3	2	1	0	0
A.2 07	Last 2-Row Multiball	5	5	5	5	5
A.2 08	Last Easy Multiball	3	3	3	3	2
A.2 15	Game Saucer Memory	Easy	Easy	Easy	Medium	Medium
A.2 19	Free Ride Time	6	4	3	3	3
A.2 20	Drop Target Difficulty	Easy	Easy	Medium	Medium	Medium
A.2 23	Chest Extra Ball Spots	2	2	2	1	1
A.2 24	Free Saucer Lamps	2	1	0	0	0
A.2 26	Keno Saucer Light	Yes	Yes	Yes	Yes	No

U.9 06 Install 5 Ball
U.9 07 Install 3 Ball

Adjustments U.9 06 and U.9 07 can be used to change a game to 3 or 5 ball play, including changing of certain features to the recommended 3-and 5-ball level. The Preset Game Adjustments Table for U.S./Canadian Games lists the adjustments and settings that comprise the individual groups.

Preset Adjustments Table for U.S. and Canadian Games

Adj. #	Adj. Description	Install 5-ball U.9 06	Install 3-ball U.9 07
A.2 03	Last Column Multiball	0	1
A.2 05	Last 2-Spot Multiball	1	2
A.2 06	Last 3-Row Multiball	0	1
A.2 26	Keno Saucer Light	No	Yes

U.9 08 Install Add-A-Ball

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

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

U.9 09 Install Ticket

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

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

U.9 10 Install Novelty

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

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

U.9 11 NOT USED

U.9 12 Serial Capture

This sets up the printer adjustments for a serial transmission to a laptop computer, (9600 baud, 40 column, no page breaks, serial printer). This option requires the installation of the optional printer kit; part number 63110.

U.9 13 to U.9 16 NOT USED

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

Adjustments U.9 17 through U.9 22 are used to modify game pricing and type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the individual groups. ***NOTE:*** German replay starts at 500,000,000.

Preset Adjustments Table for German Games

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

• German DIP Switch settings are:

Sw4	Sw5	Sw6	Sw7	Sw8
On	On	On	On	Off

U.9 23 Install French 1*
U.9 24 Install French 2*
U.9 25 Install French 3*
U.9 26 Install French 4*
U.9 27 Install French 5*
U.9 28 Install French 6*
Adjustments U.9 23 through U.9 28 are used to modify game pricing and type of play.

*** French DIP Switch settings are:**

Sw4	Sw5	Sw6	Sw7	Sw8
On	On	On	Off	Off

U.10 Clear Credits

Press the Enter button to clear the game Credits.

U.11 Auto Burn-in

Press the Enter button to activate Auto Burn-in. This utility automatically cycles through several tests. This helps in finding intermittent problems. The tests that Auto Burn-in cycles through are: the Display Test, the Sound and Music Test, the All Lamps Test, the Solenoid Test, the Flashers Test, the General Illumination Test, and the Flipper Coil Test. All of the test run are run concurrently. The time spent on the burn-in cycle, and the total time the game has spent in burn-in are displayed.

Press the Up or Down buttons to cycle through the menu. Press the Enter button to access an adjustment. Press the Up or Down buttons to see the setting choices. Press the Enter button to lock in a setting choice. If a mistake is made, press the Escape button while "Saving Adjustment Value" is in the display. The original value is retained and the new value is ignored. Press the Escape button to return to the Adjustment Menu.

A. ADJUSTMENTS MENU

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

A.1 Standard Adjustments

A.1 01 Balls Per Game
A "game" is defined by specifying the number of balls to be played.
Range: 1 to 10.

A.1 02 Tilt Warnings
The number of total actuations of the plumb bob that can occur before the game is "tilted".
Range: 1 to 10.

A.1 03 Maximum Extra Balls
The number of Extra Balls that a player may accumulate.
Range: 0 to 10.

A.1 04 Maximum Extra Balls/Ball in Play
The number of Extra Balls to be awarded per ball in play.

OFF - No maximum number of Extra Ball per ball in play.
1-10 - 1 through 10 Extra Balls per ball in play.

A.1 05 Replay System
The type of replay system to be used.

Fixed - Replay value is set and does not change during game play.
Auto% - Replay starting value is set but changes every 50 games to comply with the percentage of replays desired.

A.1 06 Replay Percent*
The percentage of replays the players are able to earn when Auto Replay is used.
Range: 5% to 50%.

A.1 07 Replay Start*
Replay start value when Auto% Replay is used.
Range: 15,000,000 to 250,000,000.

*For Auto% Replay.

A.1 08 Replay Levels*

The number of replay levels used by the Auto% Replay mode. The range of this setting is 1 to 4. When two replay levels are chosen, the second replay level is automatically adjusted to twice the starting replay level. When three of four replay levels are chosen, their values are automatically adjusted to three or four times the starting replay level.

A.1 09 Replay Level 1**
A.1 10 Replay Level 2**
A.1 11 Replay Level 3**
A.1 12 Replay Level 4**

The value to be used for the 1st through 4th Fixed Replay.

Range: 00 to 250,000,000.

A.1 13 Replay Boost

The replay score can be temporarily boosted by the selected amount EACH time the player reaches or exceeds the replay score. This temporary boost is canceled when credits equal 0, the player inserts another coin, or when Begin Test is pressed.

ON - Score is boosted between 500,000 and 5,000,000 points.
OFF - Replay score is not boosted.

A.1 14 Replay Award

The form of award automatically provided when the player exceeds any replay level for either Auto% Replay or Fixed Replay.

Credit - Reaching each Replay level awards credit.
Ticket - Reaching each Replay level awards a ticket.
Ball - Reaching each Replay level awards an Extra Ball.
Audit - Reaching each Replay level awards nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards.

A.1 15 Special Award

The award automatically provided when the player scores a special.

Credit - Scoring a Special awards a Credit.
Ticket - Scoring a Special awards a Ticket.
Ball - Scoring a Special awards an Extra Ball.
Points - Scoring a Special awards 1 Million points.

A.1 16 Match Award

The award automatically provided when the players wins a match.

Credit - Winning a Match awards a Credit.
Ticket - Winning a Match awards a Ticket.

*For Auto% Replay; ** For Fixed Replay.

A.1 17 Extra Ball Ticket
A Ticket is awarded when the player earns an Extra Ball.

YES - The player is awarded a Ticket in addition to an Extra Ball.
NO - The player is not awarded a Ticket

A.1 18 Maximum Ticket/Player
The amount of Tickets each player can earn.

Range: 00 to 100.

A.1 19 Match Feature
The desired percentage for the Match Feature occurring at the end of the game.

OFF - Match Feature is not available.
1 - 50% - 1% is 'hard'; 50% is 'extremely easy'. The Match Feature selects a random two-digit number at the end of the game and compares each players score for an identical two digits in the rightmost two positions. A match of these two digit results in an award of a Credit or a Ticket.

A.1 20 Custom Message
The message displayed during the Attract Mode.

YES - A message is displayed
NO - A message is not displayed.

A.1 21 Language
The language the game uses: English, French, or German.

A.1 22 Clock Style
The style of clock the game uses: A.M./P.M. or 24 Hours.

A.1 23 Date Style
The style of date the game uses: Month/Date/Year, or Date/Month/Year.

A.1 24 Show Date and Time
The date and time show in the Attract Mode.

YES - Show the date, time in status report or in the Attract Mode.
NO - Do Not show date, time in status report or in the Attract Mode.

A.1 25 Allow Dim Illumination
The game program dims the General Illumination for special effects and during the Attract Mode.

YES - Dim the General Illumination during the Attract Mode.
NO - Do Not dim the General Illumination.

A.1 26 Tournament Play
Equalize Multiball and Jackpots during multi-player games, (do not carry over to next player).

YES - Keep Multiball and Jackpots equal.
NO - Do Not Keep Multiball and Jackpots equal.

A.1 27 Euro. Scr. Format
Use either commas or dots between digits when numbers are displayed.

YES - Dots instead of commas, (example- 1.000.000).
NO - Commas instead of dots, (example- 1, 000, 000).

A.1 28 Minimum Volume Override
The volume can be turned Off.

YES - Volume can be turned Off.
NO - Volume can be turned Down but not Off.

A.1 29 General Illumination Power Saver
This allows the general illumination and controlled lamps to be dimmed following a time interval after a game is played. Power Saver Level (A.1 30) determines dimness of the lamps. Using this feature substantially increases the life of the lamps.

Setting: OFF, 2 to 60 minutes.

A.1 30 Power Saver Level
When General Illumination Power Saver (A.1 29) is set to On, this controls the intensity of the G.I. and controlled lamps once the game has been idle for a specified period of time.

Range: 4 to 7. (4 = dimmest, 7 = brightest)

A.1 31 Ticket Expansion Board
When a Ticket Expansion Board is connected, full control of the ticket dispenser is available. This includes a ticket low/error lamp, resume on ticket jam switch and manual ticket dispense switch.

YES - Ticket Expansion Board is connected.
NO - Ticket Expansion Board is NOT installed in the game.

A.1 32 No Bonus Flips
The activation of flippers during the end of ball "bonus" sequence. Setting to "YES" may extend the life of the flipper mechanisms.

A.1 33 Game Restart

When the Start button is pressed during or after the 2nd ball, the game in progress will end and a new game will begin. This adjustment has three settings to determine how this is handled.

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

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

A.2 Feature Adjustments

A.2 01 Buy Extra Ball
This determines whether the player may buy an extra ball for 1 credit or 1/2 credit at the end of the game.

A.2 02 Buy In Count
If A.2 01 (BUY EXTRA BALL) is set to "1 CREDIT", this determines the number of extra balls that may be purchased at the end of the game.

Choices are 1-3.

A.2 03 Last Column Multiball
This is the last multiball™ where full chest columns will be spotted for each hit on the visor.

A.2 04 Last 3-Spot Multiball
After the A.2 03 multiball™, all hits on the visor and the 5-bank will spot three chest lamps each, until the multiball™ specified here. If this adjustment is set less or equal to A.2 03, then 3-lamps per target will never occur.

A.2 05 Last 2-Spot Multiball
After the A.2 04 multiball™, all hits on the visor and the 5-bank will spot two chest lamps each, until the multiball™ specified here. If this adjustment is set less or equal to A.2 04, then 2-lamps per target will never occur.

A.2 06 Last 3-Row Multiball
After the A.2 03 multiball™, all hits on the visor (and 5-bank) will try to light lamps in the column of that visor target or either of its neighboring columns. This is the last multiball™ to spot in three different columns for each target. If this adjustment is set less or equal to A.2 03, then spotting in three columns will never occur.

A.2 07 Last 2-Row Multiball
After the A.2 06 multiball™, all hits on the visor (and 5-bank) will try to light lamps in the column of that visor target or one of its neighboring columns. This is the last multiball™ to spot in two different columns for each target. If this adjustment is set less or equal to A.2 06, then spotting in two columns will never occur.

A.2 08 Last Easy Multiball
This is the last multiball™ that requires only one completion of the chest lamps to open the visor.

A.2 09 Chest Extra Ball Memory
This determines whether extra balls that are lit by completing the chest lamps WHILE THE VISOR IS OPEN are retained in memory from ball to ball.

A.2 10 Poker Extra Ball Memory

This determines whether extra balls that are lit by competing the 1st full house poker hand are retained in memory from ball to ball.

A.2 11 Ramp Extra Ball Memory

This determines whether extra balls that are lit from a ramp shot returning to the right flipper lane are retained in memory from ball to ball.

A.2 12 Slot Machine Extra Ball Memory

This determines whether extra balls that are lit by the slot machine are retained in memory from ball to ball.

A.2 13 Casino Run Extra Ball Memory

This determines whether extra balls that are lit during Casino Run are retained in memory from ball to ball.

A.2 14 Arrow Extra Ball Memory

This determines whether extra balls that are lit from the "Keno Arrow" feature are retained in memory from ball to ball.

A.2 15 Game Saucer Memory

EASY - Game Saucer is lit at the start of each ball until Casino Run is reached. After Casino Run, the Game Saucer lit state is saved from ball to ball.

MEDIUM - Game Saucer is lit at the start of the game and stays in memory from ball to ball.

HARD - Game Saucer is turned off at the start of every ball.

A.2 16 Cheating Allowed

This may be used to disable the feature that allows the player to "cheat" at the game saucer games. By rapidly pressing the "Extra Ball" button during the game saucer title screen, the player can get Pin•Bot to cheat and score a bigger win at the game.

PLEASE NOTE: This is not a way to cheat the pinball machine. It is merely a very entertaining feature of the game.

A.2 17 Special Percentage

This is the desired percentage of Special Awards that are given in the Casino Run Game and the Slot Machine.

A.2 18 Casino Run Specials

This determines whether the Special awards in Casino Run are awarded at a fixed constant rate or automatically percentaged to arrive at the percentage requested in A.2 17. If this adjustment is set to "FIXED", then the adjustment at A.2 17 (Special Percentage) has no effect.

A.2 19 Free Ride Time
Any ball that has not been in play for this many seconds will be returned to the player for another turn.

A.2 20 Drop Target Difficulty
This determines the amount of time the player has to complete the drop target bank after hitting the 1st target.

A.2 21 Attract Mode Sound
This may be used to disable the sound generated by hitting the Magna-goal save, buy-in or flipper buttons in attract mode.

A.2 22 Attract Mode Music
This allows the game to play music in the attract mode. It will play a short music sequence every five to seven minutes, for about 30 minutes after a game has been played.

A.2 23 Chest Extra Ball Spots
This determines the number of lamps lit for each hit on the chest while the visor is down. Completing the chest while the visor is down lights extra ball.

A.2 24 Free Saucer Lamps
This is the number of Game Saucer lamps that are lit at the start of the game.

A.2 25 Mega Visor Difficulty
This determines the number of Multiball™ Jack•Bots that are required to reach Mega Visor.

A.2 26 Keno Saucer Light
This determines whether the Keno Arrow may re-light the game saucer.

A.2 27 Card Displays
Set this adjustment to "OFF" to prevent the display of cards in the dot-matrix display.

A.2 28 Disable Visor
This may be used to disable the visor mechanism while waiting for it to be serviced.

A.2 29 Disable Ramp
This may be used to disable the up/down ramp mechanism while waiting for it to be serviced.

A. 3 Pricing Adjustments

A.3 01 Game Pricing (If set to custom, then 02 to 09 are available. Custom Pricing Is Not Available For U.S.A. And Canadian Games).
The cost of a game is selected here from the Standard Pricing Table or by using the custom pricing editor (A.3 27).

A.3 02 to A.2 09 NOT USED

A.3 10 Coin Door Type (If set to custom, then 11 to 15, 20 and 25 are available. Custom Pricing Is Not Available For U.S.A. And Canadian Games).
This adjustment is used to preset adjustments 11 through 15, 20 and 25, based on standard coin doors.

A.3 11 Collection Text
The coin system is used to display the Earning Audits.

A.3 12 Left Slot Value
A.3 13 Center Slot Value
A.3 14 Right Slot Value
A.3 15 4th Slot Value
The monetary value of the left, center, right and 4th coin chutes. Formerly these values only affected the way in which the coins were totaled for auditing displays. In the new 10/94 pricing system, these values are added for each coin inserted and credits are awarded based on the amount of money accumulated. See Pricing Editor (A.3 27) for more information.

A.3 16 Maximum Credits
The maximum number of credits the game can accumulate, either through game play awards or coin purchases. The range of this setting is 5 through 99. Reaching the specified setting prevents the award of any credits. Factory default is 10.

A.3 17 Free Play
A player can operate the game without a coin (free play) or with a coin.

NO - A coin is necessary for game play.
YES - Game play is free; no coin required.

A.3 18 Hide Coin Audits
The coin audits may, or may not, be displayed.

YES - The coin audits are not displayed.
NO - The coin audits are displayed.
HIDE NAMES - The coin audit value is shown but not the audit name.

A.3 19 NOT USED

A.3 20 Base Coin Size
This is the smallest unit of coin that may be used when creating a custom pricing mode using the Pricing Editor (A.3 27). For example, in the USA this is typically $0.25. All pricing levels are then specified in 25 cents (or greater) increments.

Begin the custom pricing function by pressing the "Enter" button while A.3 27 "Pricing Editor" is showing in the display.

The pricing editor will now show the data for the currently selected pricing mode. If this is the 1st use of the pricing editor then this will show the last built-in pricing that was selected. Otherwise it will be the last custom mode created by this function. (Note that A.3 01 will display "Custom" any time a non-standard pricing has been selected.)

Assuming the last mode installed was 1/$0.50 2/$0.75 3/$1.00 the display appears as follows:

CUSTOM PRICING EDITOR		
1)	$0.25	1/2 cred.
2)	$0.50	1 cred.
3)	$0.75	2 cred.
4)	$1.00	3 cred.

DISPLAY VIEW

The "$0.25" field will be flashing. You may now use the test mode buttons to perform the following functions:

Escape: Undo any changes to the current field and move to the previous field.

"-" (Down): Make the current field lower.

"+" (Up): Make the current field higher.

Enter: Save any changes to the current field and move to the next field. Note that there are 2 columns of fields. Price levels are in the left column and credit levels are in the right column. Pressing "Enter" will move from left column to right column before moving to the next line.

Start: Save the current price mode or start over

By using the above functions, you simply enumerate each pricing level and the number of credits that should be awarded at that level. Please note that you must specify each fractional level in sequence.

Example:

1/$0.50	2/$1.00	4/$1.50	6/$2.00
1)	$0.25	1/2 cred.	
2)	$0.50	1 cred.	
3)	$0.75	1 1/2 cred.	
4)	$1.00	2 cred.	
5)	$1.25	2 1/2 cred.	
6)	$1.50	4 cred.	
7)	$1.75	4 1/2 cred	
8)	$2.00	6 cred.	

Also note that once the value of the coins repeat that no further specification is necessary.

Example:

1/$0.50	2/$1.00	
1)	$0.25	1/2 cred.

In the above example, only one line needs to be specified, indicating that 1/2 credit is awarded for each $0.25 received.

Special Features:
There are some special features available by pressing the "-" (Down) button while in the left column. The following words will be displayed instead of a pricing level:

End
Delete
Insert
Clear
Repeat 1
Repeat 2
Repeat 3
Repeat 4
Repeat 5
Repeat 6
Repeat 7
Repeat 8
Repeat 9
Repeat 10
Repeat 11
Repeat 12
Repeat 13
Repeat 14
Repeat 15
Repeat 16
Repeat 17
Repeat 18
Repeat 19
Repeat 20

Pressing "Enter" with the above words selected will activate the following instructions:

End This is the same as pressing the Start button. A menu of choices will be provided (see "Start Button" below).

Delete This will delete the current level from the pricing mode.

Insert This will insert a new pricing level ABOVE the current level. The current level will be unaffected. There must be room for at least one coin between the current level and the previous level, and at least one fractional credit unit between the current level and the previous level.

Example: Inserting a new pricing level.

CUSTOM PRICING EDITOR		
1)	$0.50	1 cred.
2)	$1.00	2 cred.
3)	$1.50	4 cred.
4)	$2.00	6 cred

DISPLAY VIEW

Use the "Enter " button to move to the $1.50 field. Now press the "-" button once to create the following display:

CUSTOM PRICING EDITOR		
1)	$0.50	1 cred.
2)	$1.00	2 cred.
3)	INSERT	4 cred.
4)	$2.00	6 cred

DISPLAY VIEW

Now press the "Enter" button. The display will now show:

CUSTOM PRICING EDITOR		
1)	$0.50	1 cred.
2)	$1.00	2 cred.
3)	$1.25	2 1/2 cred.
4)	$2.00	6 cred

DISPLAY VIEW

Note that the line "5) $2.00 6 cred." no longer fits on the display. Whenever there are more than four pricing levels that the display will scroll up and down as "Enter" and "Escape" are used to move from field to field. If you repeatedly press "Enter" the display will then show:

CUSTOM PRICING EDITOR		
2)	$1.00	2 cred.
3)	$1.25	2 1/2 cred.
4)	$1.50	4 cred.
5)	$2.00	6 cred

DISPLAY VIEW

Clear This will clear out the current entries to allow a new price mode to be entered.

Repeat(1-20) This will cause all entries above the current line to be repeated the number of times specified. This is only available when there are no pricing levels below the current line.

Example: 1/$0.50 2/$1.00 15/$5.00

Use the "Edit New Pricing Mode" feature described below to clear out the current levels.

Use "+" and "Enter" to specify 1/2 credit for $0.25:

CUSTOM PRICING EDITOR		
1)	$0.25	1/2 cred.

DISPLAY VIEW

Now, use "-" until the display shows "Repeat 20". The display will show the following:

CUSTOM PRICING EDITOR		
1)	$0.50	1 cred.
2)	REPEAT 20	

DISPLAY VIEW

Press "Enter" and the display will show the following:

CUSTOM PRICING EDITOR		
1)	$0.25	1/2 cred.
2)	$0.50	1 cred.
3)	$0.75	1 1/2 cred.
4)	$1.00	2 cred

DISPLAY VIEW

Actually, by repeating the 1st line 20 times the pricing mode is currently set up as follows, but only the 1st four lines are displayed.

CUSTOM PRICING EDITOR		
1)	$0.25	1 /2 cred.
2)	$0.50	1 cred.
3)	$0.75	1 1/2 cred.
4)	$1.00	2 cred.
5)	$1.25	2 1/2 cred.
6)	$1.50	3 cred.
7)	$1.75	3 1/2 cred.
8)	$2.00	4 cred.
9)	$2.25	4 1/2 cred.
10)	$2.50	5 cred.
11)	$2.75	5 1/2 cred.
12)	$3.00	6 cred.
13)	$3.25	6 1/2 cred.
14)	$3.50	7 cred.
15)	$3.75	7 1/2 cred.
16)	$4.00	8 cred.
17)	$4.25	8 1/2 cred
18)	$4.50	9 cred.
19)	$4.75	9 1/2 cred.
20)	$5.00	10 cred

DISPLAY VIEW

Now repeatedly press "Enter" to move the right hand column to the 20th level. The display will show (with "10 cred." blinking):

CUSTOM PRICING EDITOR		
17)	$4.25	8 1/2 cred.
18)	$4.50	9 cred.
19)	$4.75	9 1/2 cred.
20)	$5.00	10 cred

DISPLAY VIEW

Now press "+" repeatedly until the right hand column of line 20 reads "15 cred."

Start Button: Once the pricing mode has be specified, you exit the custom pricing editor by pressing the 'Start" button. This will bring up a menu with some or all of the following choices:

Choose an Option:
Return to Editor
Clear Pricing
Ignore Changes
Save Changes

DISPLAY VIEW

Use the "+" and "-" button to select your choice and press the "Enter" button to activate. The selections cause the following actions:

Return To Editor: This option will allow you to continue to edit the pricing information.

Clear Pricing: This option will clear out all pricing levels and bring you back to the pricing editor to create a pricing mode from scratch.

Ignore Changes: This option will discard the work done in the previous pricing editor and leave the previously installed pricing mode in the game.

Save Changes: Press "Enter" to save your custom edited pricing mode and install it as the pricing for the game. Note that this choice will not be displayed if there is not at least one pricing level specified in the pricing editor, or if no changes have been made.

Exit Pricing Editor: This option will appear if no changes have been made. It will exit the Pricing Editor leaving the pricing as is.

Pricing Table

Country	Coin Chutes Left	Center	Right	4th Chute	Games/Coins	Display	Pricing Adjustments A3 02 03 04 05 06 07 08 09
USA	25¢	$1.00*	25¢	$1.00	1/50¢, 2/75¢, 3/$1[2]	50¢, 75¢, $1.00	
	25¢	$1.00*	25¢	$1.00	1/75¢, 2/$1.50, 3/$2.00[2]	1/.75, 3/2.00	
	25¢	$1.00	25¢	$1.00	1/3X25¢[2]	USA 1/$0.75	
	25¢	$1.00	25¢	$1.00	1/50¢, 2/$1[2]	USA 2/$1.00	
	25¢	$1.00	25¢	$1.00	1/50¢, 3/$1.00[2]	USA 3/$1.00	
	25¢	$1.00	25¢	$1.00	1/2x25¢, 2/$1.00, 3/$1.50, 6/$2.00[2]	USA 6/$2.00	
	25¢	$1.00	25¢	$1.00	1/2x25¢, 2/$1.00, 3/$1.50, 5/$2.00[1,2]	USA 5/$2.00	
	25¢	$1.00	25¢	$1.00	1/3x25¢, 2/$1.50, 4/$2.00[2]	1/.75, 4/$2.00	
	25¢	$1.00	25¢	$1.00	1/2x25¢, 2/$1.00, 4/$1.50, 6/$2.00[2]	6/$2. 00 4/$1.50	
	25¢	25¢	25¢	-	1/4x25¢, 6/$5.00[2]	1/1, 6/5	
	25¢	25¢	25¢	-	1/4x25¢[2]	1/$1.00	
Canada	25¢	-	$1.00	-	1/50¢, 2/75¢, 3/$1[2]	CAN. 50-75-1	
	25¢	-	$1.00	-	1/50¢, 2/$1[2]	CAN. 2/$1.00	
	25¢	-	$1.00	-	1/50¢, 3/$1.00[2]	CAN. 3/$1.00	
	25¢	-	$1.00	-	1/2x25¢, 2/4x25¢, 3/$1.00[2]	3/$1.00 Coin	
	25¢	-	$1.00	-	1/2x25¢, 2/$1.00, 3/$1.50, 6/$2.00[2]	CAN. 6/$2.00	
	25¢	-	$1.00	-	1/2x25¢, 2/$1.00, 3/$1.50, 5/$2.00[1,2]	CAN. 5/$2.00	
	25¢	-	$1.00	-	1/2x25¢, 2/$1.00, 4/$1.50, 6/$2.00[2]	6/$2, 4/1.50	
	25¢	-	$1.00	-	1/3x25¢, 2/$1.50, 4/$2.00[2]	1/.75, 4/2.00	
	25¢	-	$1.00	-	1/75¢, 2/$1.50, 3/$2.00[2]	1/.75, 3/2.00	
	25¢	-	$1.00	-	1/3X25¢[2]	CAN. 1/$0.75	
Austria	5sch	10sch	10sch	-	1/2x5sch, 3/2x10sch[2]	AUSTRIA	
	5sch	-	10sch	-	12/5sch, 5/10sch	CUSTOM	02 00 05 00 01 00 01 00
Australia	20¢	$1	$1	$2	1/$1, 3/$2[2]	AUSTRALIA 1	
	20¢	$1	$1	$2	1/$1, 2/$2	AUSTRALIA 2	
U.K.	£1.00	50P	20P	10P	1/3x10P, 2/50P, 4/£1[2]	U. KINGDOM	
Switzerland	1Fr	2Fr	5Fr	-	1/1Fr, 3/2Fr, 7/5Fr[2]	SWISS 1	
	1Fr	2Fr	5Fr	-	1/2Fr, 2/3Fr, 3/4Fr, 5/5F	SWISS 2	
Belgium	5Fr	20Fr	50Fr	-	1/4x5Fr, 1/20Fr , 3/50Fr[2]	BELGIUM	
Germany	1DM	2DM	5DM	-	1/2DM, 2/3DM, 3/4DM, 4/5DM[1,2]	GER. 4/5DM	
					1/2DM, 2/3DM, 3/4DM, 5/5DM[2]	GER. 1/2DM	
					1/1DM, 2/2DM, 5/5DM[2]	GER. 1/1DM	
					1/1DM, 2/2DM, 6/5DM[2]	GER. 6/5DM	
Holland	1G	-	1G	-	1/1G[2]	HOLLAND	
Sweden	1Kr	5Kr	10Kr	1Kr	1/10Kr, 2/15Kr, 3/20Kr[1,2]	SWEDEN 1	
	1Kr	5Kr	10Kr	1Kr	1/5Kr[2]	SWEDEN 2	
France	1Fr	5Fr	10Fr	20Fr	1/3x1Fr, 2/5Fr, 5/10Fr , 10/20Fr[2,3]	TARIFF 1	
	1Fr	5Fr	10Fr	20Fr	1/2x1Fr, 3/5Fr, 7/10Fr ,14/20Fr[2,3]	TARIFF 2	
	1Fr	5Fr	10Fr	20Fr	1/5Fr, 3/10Fr, 7/2x10Fr , 7/20Fr[1,2,3]	TARIFF 3	
	1Fr	5Fr	10Fr	20Fr	2/5Fr, 4/10Fr, 9/2x10Fr , 9/20Fr[2,3]	TARIFF 4	
	1Fr	5Fr	10Fr	20Fr	2/5Fr, 5/10Fr, 11/2x10Fr , 11/20Fr[2,3]	TARIFF 5	
	1Fr	5Fr	10Fr	20Fr	1/5Fr, 3/10Fr , 6/20Fr[2,3]	TARIFF 6	
Italy	500L	500L	500L	-	1/500L[2]	ITALY 1	
	500L	500L	500L	-	1/2x500L, 3/4x500L[1,2]	ITALY 2	
	500L	500L	500L	-	1/2x500L, 2/4x500L[2]	ITALY 3	
Spain	100P	-	500P	-	1/100P, 6/500P[2]	SPAIN	
	25P	-	100P	-	1/25P, 5/100P	CUSTOM	01 00 04 00 01 04 01 00
	25P	-	100P	-	1/25P, 4/100P	CUSTOM	01 00 04 00 01 00 01 00
	25P	-	100P	-	1/2x25P, 2/100P	CUSTOM	01 00 04 00 02 00 01 00
	25P	-	100P	-	1/2x25P, 3/100P	CUSTOM	03 00 12 00 04 00 01 06
Japan	100¥	-	100¥	-	1/100¥[2]	JAPAN	
Chile	Token	-	Token	-	1/1Token[2]	CHILE	
Denmark	1Kr	5Kr	10Kr	20Kr	1/2x1 Kr, 3/5 Kr, 7/10 Kr[2]	DENMARK 1	
	1Kr	5Kr	10Kr	20Kr	1/5 Kr, 3/10 Kr, 6/20 Kr[1,2]	DENMARK 2	
Finland	1Mka	-	5Mka	-	1/2x1Mka, 3/5Mka[2]	FINLAND 1	
	1Mka	-	5Mka	-	1/3x1Mka, 2/5Mka[2]	FINLAND 2	
New Zealand	$1.00	-	$2.00	-	1/$1, 3/$2[2]	NEW ZEALAND 1	
	$2.00	-	$1.00	-	1/$1, 3/$2, ($2-$1 door)	NEW ZEALAND 2	
Norway	5Kr	-	10Kr	-	1/5Kr, 2/10Kr, 5/20Kr[2]	NORWAY	
Argentina	10¢	10¢	10¢	-	1/1 Token[2]	ARGENTINA	
Greece	10D	20D	50D	-	1/2x10D, 1/20D, 3/50D	GREECE	
Antilles	25¢	25¢	1G	-	1/25¢, 4/1G	ANTILLES	
Netherlands	1Hfl	2.5Hfl	2.5Hfl	-	1/1Hfl, 3/2.5Hfl	NETHERLANDS	
Hungary	20 Old	20 New	50F	-	1/40F, 2/60F, 4/100F	HUNGARY	

Note: 1. Factory Default. 2. Standard Setting - Change by pressing Enter button. 3. Other functions are also affected.

* Only if Bill Acceptor and Center Chute are available.

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

A.4 01 Highest Scores
The game maintains a record of the four highest scores achieved to date.

OFF - No high scores are recorded, or displayed.
ON - The four highest scores are stored in memory and displayed in Attract Mode.

A.4 02 H.S.T.D. Award
The award given for achieving the High Score To Date, or the Champion H.S.T.D.: Credit or a Ticket.

A.4 03 Champion H.S.T.D.
The "Highest" High Score can be displayed in the Attract Mode. This score is not cleared when "High Score Reset Every" occurs.

ON - The "Highest" High Score is retained in memory and displayed.
OFF - The "Highest" High Score is not retained.

A.4 04 Champion Credits
The number of credits or tickets awarded for a Grand Champion Score.
Range: 00 to 10.

A.4 05 H.S.T.D. 1 Credits
A.4 06 H.S.T.D. 2 Credits
A.4 07 H.S.T.D. 3 Credits
A.4 08 H.S.T.D. 4 Credits
The number of credits or tickets awarded whenever a player exceeds the 1st, 2nd, 3rd, or 4th highest score.
Range: 00 to 10.

A.4 09 High Score Reset Every
The number of games to be played before an automatic reset of the displayed "Highest Score" occurs. The values provided upon reset are those selected by the operator in the Back-up High Scores.
Range: OFF (disabled); 250 to 20,000.

A.4 10 Backup Champion
The Back-up Grand Champion Score.
Range: 00 to 999,000,000.

A.4 11 Backup H.S.T.D. 1
A.4 12 Backup H.S.T.D. 2
A.4 13 Backup H.S.T.D. 3
A.4 14 Backup H.S.T.D. 4
The first through the fourth Back-up High Score values. The game automatically restores this value when the High Score Reset Every value is reached.
Range: 00 - 999,000,000.

A.5 Printer Adjustments (optional board required)

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

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

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

YES - The printer does pause.
NO - The printer doesn't pause.

A.5 04 Printer Type
Select the type of printer: Parallel, Serial, ADP, Mini-Drucker, or NSM.

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

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

NORMAL - Normal D.T.R. signal goes low to indicate the printer is not ready.
INVERTED - Inverted D.T.R. (busy) signal goes high to indicate the printer is not ready.
IGNORE - D.T.R. signal is ignored.

A.5 07 Auto Printout
With the optional printer board installed, this adjustment allows the initiation of printouts whenever the game detects a printer connected to the game. Parallel printers are detected automatically by plugging them in and putting then on-line. Serial printers (or computers) are detected by sending a carriage return (ASCII 0x0D) or XON (ASCII 0x11).

This adjustment has the following settings:

OFF	Disable automatic printouts
MAIN AUDITS	Main Audit Table (B.1)
EARNINGS	Earning Audits (B.2)
STD. AUDITS	Standard Audits (B.3)
FEATURES	Feature Audits (B.4)
HISTOGRAMS	Histograms (B.5)
TIMESTAMPS	Time Stamps (B.6)
ALL DATA	All of the above data

The table specified above will automatically be printed when a printer (or computer) is detected.

If the printer is detected during game over or test mode, the printout will be taken right away.

If the printer is connected while a game is being played, it will take up to 10 seconds to be detected, after which the printout will occur. The game will resume after the printout is complete.

Automatic printouts will only take place if the coin door is open.

After an automatic printout has been generated, a 2nd automatic printout will not be possible until a new game has started, or test mode begins.

ERROR MESSAGES

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

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

Check Switch ##.

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

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

Check Fuses F115 and F116 and Opto 12V Supply

This message will be displayed if the game senses that all optical switches are not functioning. This usually occurs when there is no 12V supply to the playfield optics.

The problem is likely to be a blown fuse (F115 or F116), or at connectors J112, J116, J117 or J118 on the power driver board.

Opto Trough Bad Check Connectors, Wires and 12V Supply.

This message will be displayed if all of the optics in the playfield ball trough are not functioning. This is usually caused by a problem with a ball trough connector supplying 12V and ground for the optical circuits.

Pinball Missing.

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

xxxxx Sw. is Stuck On.

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

Ground Short Row-N, Wht-xxx.

This message indicates that the switch wires being called out are touching a grounded part on the playfield or coin door. The following should be checked:

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

U6 Checksum Error.

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

Time and Date Not Set.

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

Factory Settings Restored.

This message indicates that the CMOS RAM (U8) no longer retains any custom Pricing or Game Adjustment settings and has reverted to factory default settings. Generally, the following CPU checks will isolate the cause of the CMOS RAM memory failure. The voltages at pin 28 and pin 26 of U8 should be +5V (game turned On) and at least +4V (game turned Off). When the voltage drops below +4V, memory reset occurs. Check the batteries and battery holder. Be sure that the batteries are good and that there is no contamination on the battery holder terminals. Turn the game OFF, and use an ohmmeter to check diodes D1 and D2 on the CPU Board. D1 should read 0 ohms when forward-biased and infinite ohms when reverse-biased. D2 should read 15 ohms when forward-biased and infinite ohms when reverse-biased. (Readings taken with an analog meter.)This message can also indicate that there is an open diode on a 50V coil circuit and noise is entering the circuit.

CPU L.E.D.'s

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

CPU Board L.E.D. Error Codes

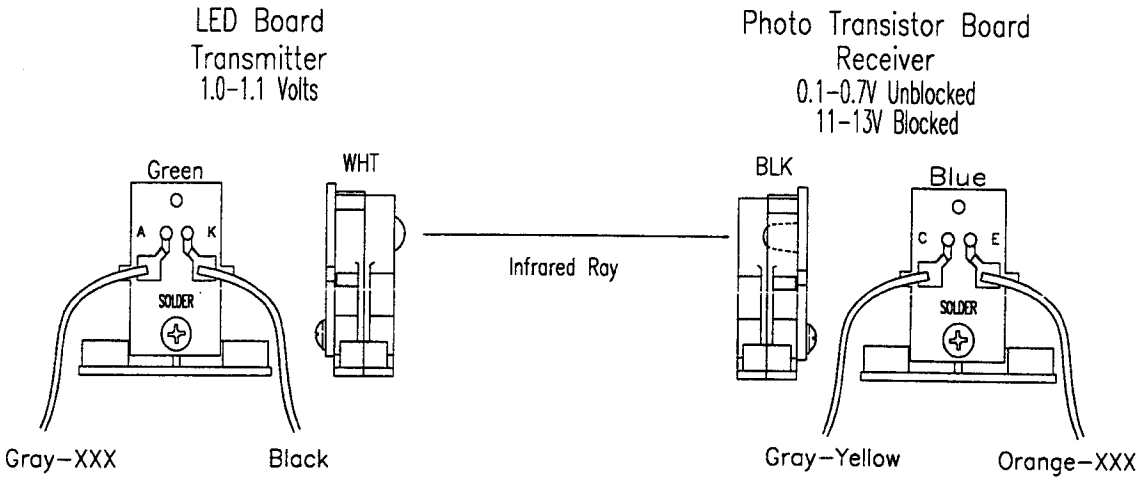
Center L.E.D. blinks one time	-	U6 ROM Failure
Center L.E.D. blinks two times	-	U8 RAM Failure
Center L.E.D. blinks three times	-	U9 Custom Chip Failure

Sound Board Beep Error Codes
Upon Game Turn-On:

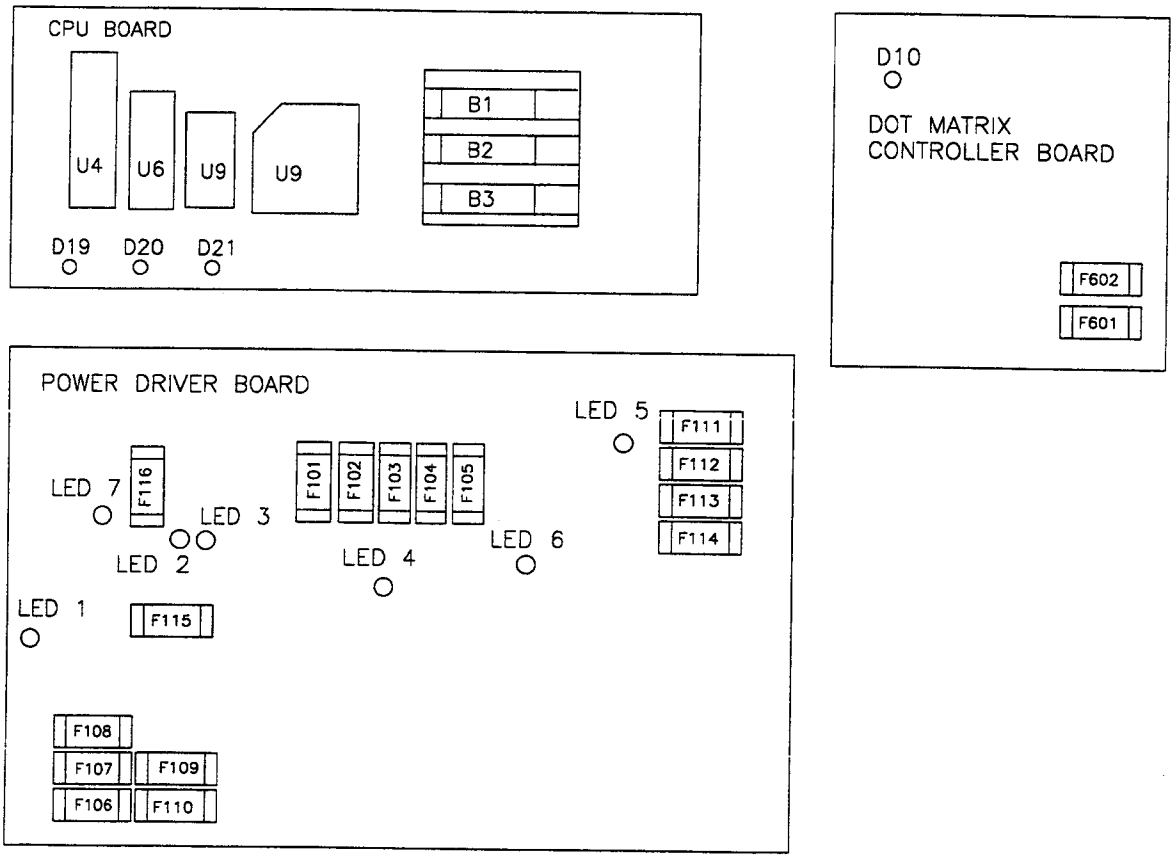
1 Beep	=	Sound Board O.K.
2 Beeps	=	U2 Failure
3 Beeps	=	U3 Failure
4 Beeps	=	U4 Failure
5 Beeps	=	U5 Failure
6 Beeps	=	U6 Failure
7 Beeps	=	U7 Failure
8 Beeps	=	U8 Failure
9 Beeps	=	U9 Failure

Opto Theory

The opto receiver (Photo Transistor) should be approximately 0.1 - 0.7 volts when the opto beam is unblocked and approximately 11 - 13 volts when the opto beam is blocked. The opto transmitter (LED) should always be approximately 1.4 volts. ***Note:*** The transmitter (LED) is larger than the receiver (Photo Transistor); it protrudes further from its case.



LED List

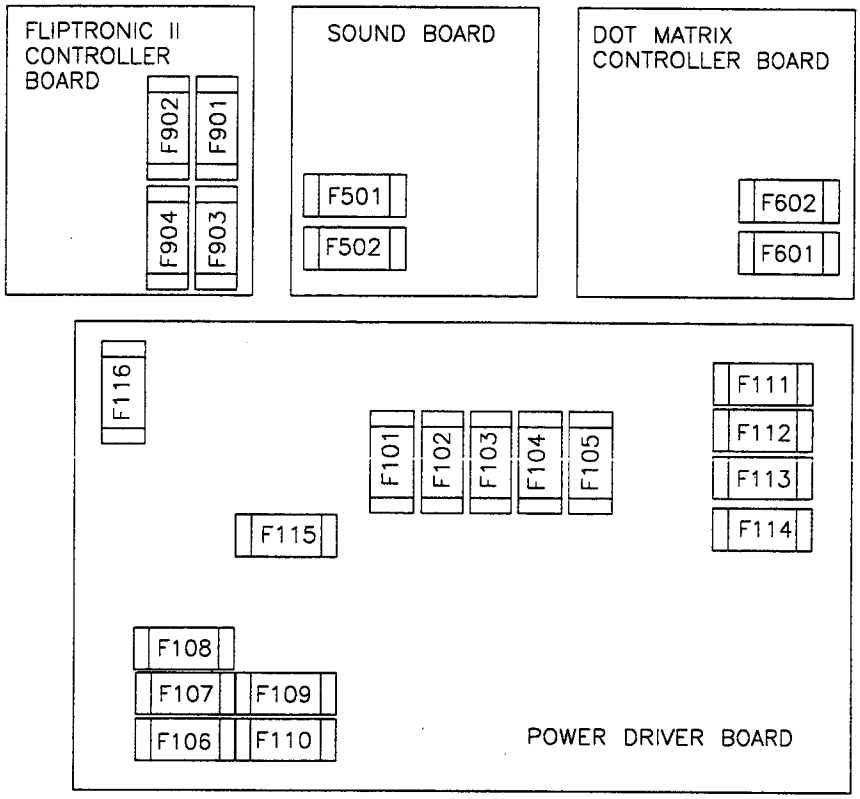


CPU Board
D19, Blanking
D20, Diagnostic
D21, +5VDC
At game turn-on, D19 and D21 are on, D20 is off.
During normal operation, D19 is off, D20 is flashing and D21 is on.

Dot Matrix Controller
D10, +5VDC, Normally On

Power Driver Board
LED 1, +12VDC Switch Circuit, Normally On
LED 2, High/Low Line Voltage Sensor, Normally On
LED 3, High/Low Voltage Sensor, Normally Off
LED 4, +5VDC, Digital Circuit, Normally On
LED 5, +20VDC, Flashlamp Circuit, Normally On
LED 6, +18VDC Lamp Circuit, Normally On
LED 7, +12VDC, Power Circuit, (motors, relays, etc.), Normally On

Fuse List



Sound Board

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

Dot Matrix Controller Board

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

Power Driver Board

F101 +50V general (l. flipper)	3A, S.B.
F102 +50V general (r. flipper)	3A, S.B.
F103 Solenoid #25-#28	3A, S.B.
F104 Solenoid #9-#16	3A, S.B.
F105 Solenoid #1-#8	3A, S.B.
F106 G.I. #5 Wht-Vio	5A, S.B.
F107 G.I. #4 Wht-Grn	5A, S.B.
F108 G.I. #3 Wht-Yel	5A, S.B.
F109 G.I. #2 Wht-Org	5A, S.B.
F110 G.I. #1 Wht-Brn	5A, S.B.
F111 Flasher Secondary	5A, S.B.
F112 Solenoid Secondary	7A, S.B.
F113 +5V Logic	5A, S.B.
F114 +18V Lamp Matrix	8A, N.B.
F115 +12V Switch Matrix	3/4A, S.B.
F116 +12V Secondary	3A, S.B.

Fliptronic II Controller Board

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

Line Filter

Domestic Game	8A, N.B.
Foreign Game	5A, S.B.

MAINTENANCE INFORMATION

LUBRICATION

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

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

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

SWITCH CONTACTS

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

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

CLEANING

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

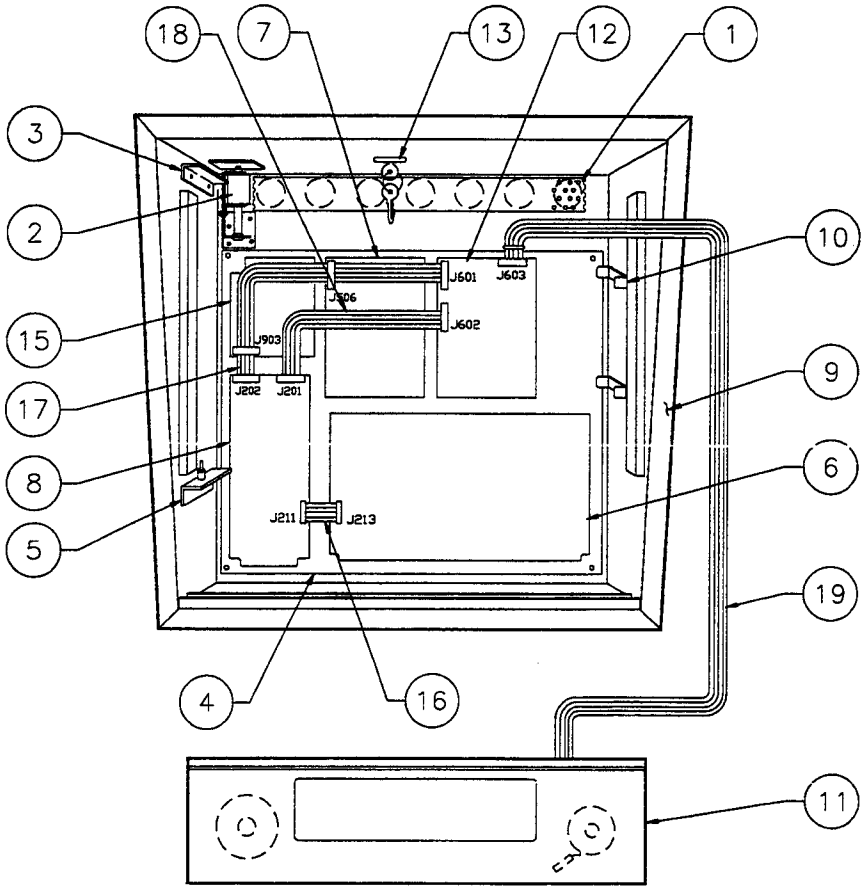
Regular, more extensive, playfield cleaning is recommended. However, avoid excessive use of water and caustic or abrasive cleaners because they tend to damage the playfield surface. Playfield wax (or any carnauba based wax), or polish may be used sparingly, to prevent a buildup on the playfield surface.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

NOTES

SECTION TWO

PARTS INFORMATION

50051-BB
Backbox Assembly



Item	Part Number	Description
1	01-6645	Venting Screen
2	B-10686-1	Knocker Assembly
3	A-12497	Insert Bd. Hinge Assy., Upper
4	A-14092-6	WPC Mounting Plate Assy.
5	A-12498	Insert Bd. Hinge Assy., Lower
6	A-12697-3	Power Driver Assembly
7	A-16917-50051	Sound Board Assembly
8	A-17651-50051	WPC Security CPU Board
9	04-10012-50051	Backbox, Wood
10	01-9047	Insert Stop Bracket
11	A-20165	Speaker/Display Assembly
12	A-14039.1	Dot Matrix Controller Board
13	A-13379	Lock & Plate Assembly
14	50051-IN	Insert Board
15	A-15472-1	Fliptronic II Board

Ribbon Cables

16	5795-12653-03	Ribbon Cable, 3"
17	5795-13018-01	Ribbon Cable, 23.5"
18	5795-10938-15	Ribbon Cable, 15"
19	5795-13434-32	Ribbon Cable w/Ferrite 32"

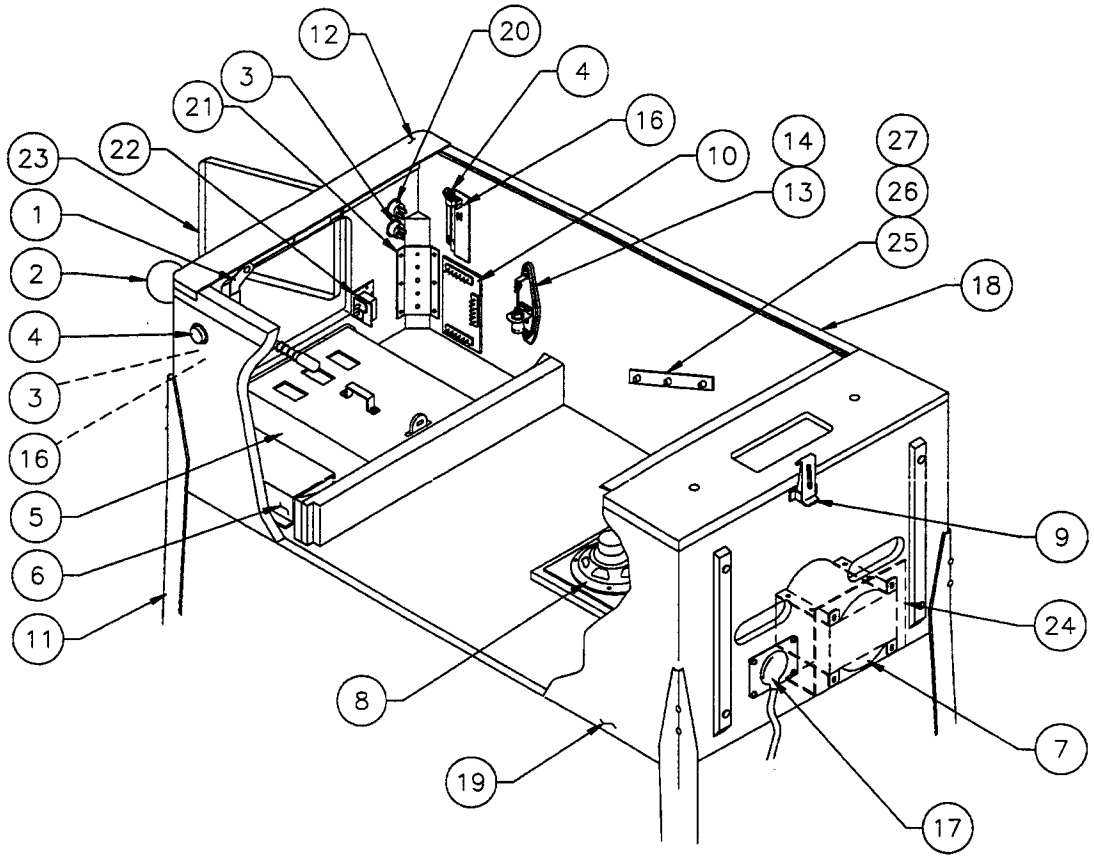
Miscellaneous Parts

Part Number	Description
A-8552-50051	Tempered Backglass Assy.
03-8228-2	Glass Channel Top (1)
03-8228-3	Glass Channel Edge (2)
03-8229-1	Glass Lift Channel (1)
08-7456	Backbox Glass: 27 x 18-7/8"
20-9718	Wing Screw, 3/8-16 x 2"
31-1357-50051	Screened Translight

Backbox Cables

H-14584	Dot Matrix Display Power Cable
H-15476	Logic Power Cable
H-15736-1	Secondary Cable
H-20128	Insert Cable

50051-CAB
Cabinet Assembly



Item	Part Number	Description
1	A-16773-1	Lever Guide Assembly
2	A-20214	Ball Shooter Assembly
3	20-9663-21	Push Button w/Sw., *Extra Ball*
4	A-16883-4	Flipper Button, Red (2)
5	A-18531-1	4-Ball Cashbox Assembly
6	A-17540	Univ. Power Interface Assy.
7	5610-14515-00	WPC Transformer
8	5555-12929-00	Speaker, 4Ω, 6", 25w
9	20-9347	Toggle Latch
10	A-17051-1	Coin Door Interface Board
11	A-19514	Leg Assembly, Chrome
12	D-12615	Front Molding Assembly
13	20-6502-A	Plum Bob
14	A-15361	Tilt Mechanism Assembly
15	*	Cordset
16	A-17316	Opto Flipper Assembly (2)
17	01-10714	Line Cord Cover
18	A-12359-3	Side Molding Assembly (2)
19	11-1229	Wood Cabinet
20	20-9663-1	Push Button w/Sw., *Start*
21	01-11400	Leg Plate (4)
22	A-18249-1	Cable & Interlock Switch Assy.
23	09-61000-1	Coin Door-USA
24	01-13936	Drip Plate
25	01-11408	Plate Spacer (2)
26	02-4329-1	Pivot Nut, 7/8" (4)
27	02-4352	Pivot Bushing (2)

Miscellaneous Parts

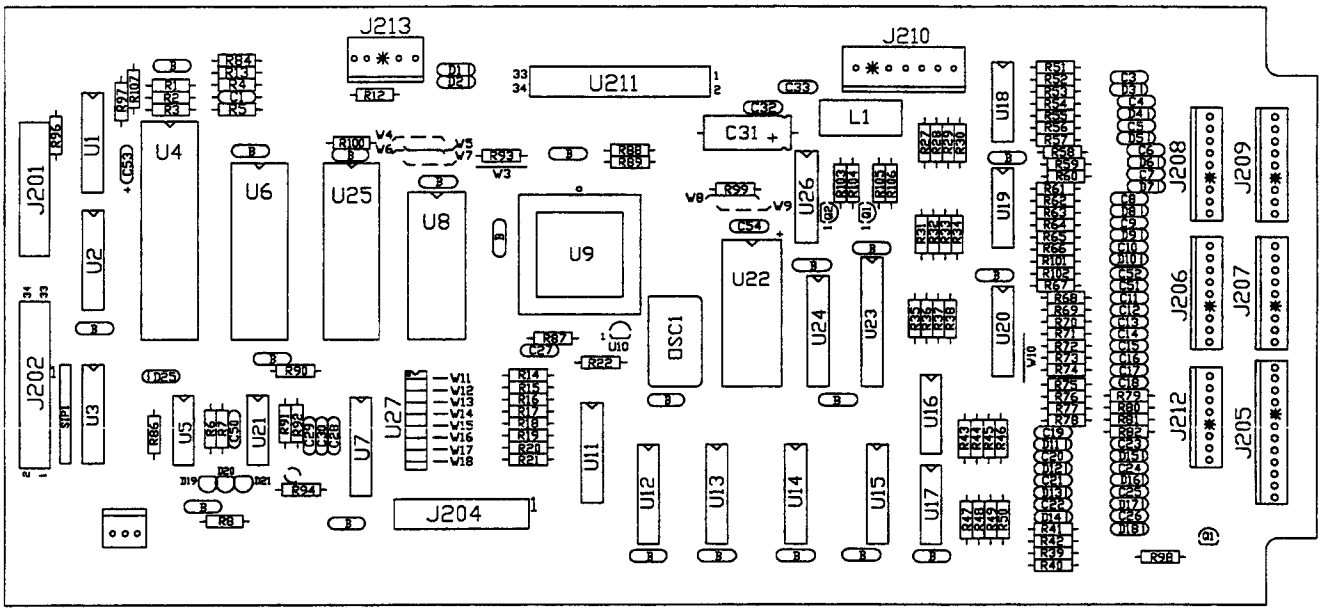
Part Number	Description
A-17195	Tilt Switch Assy. w/Cable
A-19562.1	Stay Arm Assembly
01-12352	Clip Bracket
01-9011-L	Backbox Mtg. Bracket, Left
01-9011-R	Backbox Mtg. Bracket, Right
01-6389-1	Cashbox Lock Bracket
08-7028-T	Playfield Glass
08-7377	Leg Leveler Adjuster, 3"
20-6500	Steel Ball, 1-1/16" (4)

Cabinet Cables

A-20201	Cable & Jumper Assy., Coin Door
H-17217	Plumb/Bob Mech. Protect Cable
H-17837-2	Voltage Program Jumper Cable
H-19524	Cabinet Cable
H-19601-1	Power Extension Cable
H-20130	Cabinet Switch/Lamp Cable

* See Application Chart p.2-29.

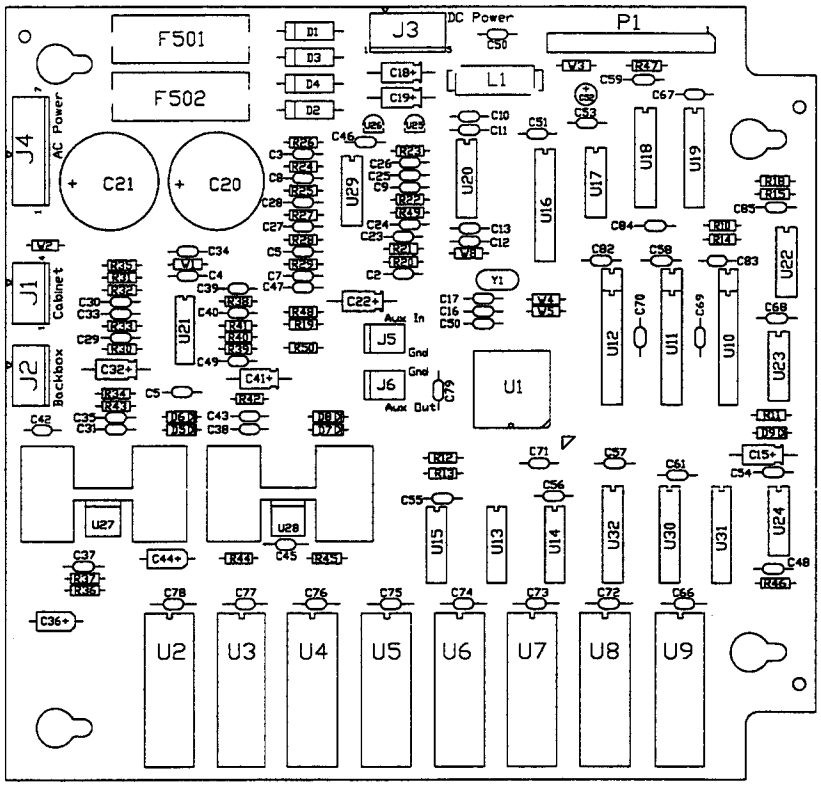
A-17651-50051
WPC CPU Security Board Assembly



Part Number	Designator	Description
5010-09034-00	R14-R22, R27-R42, R86, R94, R90, R98	Res., 10KΩ, ¼w, 5%
5010-09314-00	R52, R54, R56, R58, R60, R62, R64, R66, R75-R82	Res., 1.2KΩ, ¼w, 5%
5010-09358-00	R3, R43-R51, R53, R55, R57,R59, R61, R63, R65, R67-R74, R84, R101, R102, R105, R106	Res., 1KΩ, ¼w, 5%
5010-09416-00	R5-R8, R12, R13, R87-R89, R99, R100	Res., 470Ω, ¼w, 5%
5010-09085-00	R1, R2, R4, R93,R96, R97, R107	Res., 1.5KΩ, ¼w, 5%
5010-09534-00	W4, W7, W9	Res., 0Ω
5010-10989-00	R92	Res., 470KΩ, ¼w, 5%
5010-12104-00	R91	Res., 22MΩ, ¼w, 5%
5010-08991-00	R103, R104	Res., 4.7KΩ, ¼w, 5%
5019-09362-00	SIP1	SIP 4.7K, 9R, 10P, 5%
5040-08986-00	C31	Cap., 100M, 10v (±20%)
5043-08980-00	B	Cap., .01M, 50v (+80, -20%)
5043-09030-00	C27	Cap., .047M, 50v, (±20%)
5043-09065-00	C3,-C26, C51, C52	Cap., 470P, 50v, (±20%)
5043-09491-00	C29, C30	Cap., 22P, 1KV (±10%)
5043-09492-00	C28	Cap., 100P, 50v (±10%)
5041-09163-00	C53, C54	Cap., 2.2µF, 15v (20%) Ax.
5070-08919-00	D2-D18	Diode, 1N4148 150MA
5070-09266-00	D1, D25	Diode, 1N5817, 1.0A.
5160-10269-00	Q1-Q3	Trans., 2N3904 NPN
5700-10389-00	U20	IC Socket 18-pin
5281-09308-00	U3	IC, 74LS245 TRNCV
5281-09486-00	U14, U24	IC, 74LS374 8 D F/F
5281-09851-00	U5	IC, 74LS14 SMT TRG
5281-09867-00	U1, U2, U7	IC, 74LS244 OCT BUF

Part Number	Designator	Description
5281-10182-00	U11-U13, U15	IC, 74LS240 / DRVR
5284-12651-00	U21	IC, 4548
5315-13924-00	U23	IC, 74HC4514 LTCH 1to16 Dec.
5281-09246-00	U26	IC, 74LS139 2 T 4 Decoder
5340-12558-00	U8	S/RAM 8Kx8 Low Power
5370-12272-00	U16-U19	IC, LM339 Quad Comp
5370-12687-00	U10	MC 34064
5521-10931-00	0SC1	8.00MHZ OSC 14PIN DIP
5520-12084-00	X1	Crystal 32.768 KHz
5551-09822-00	L1	Inductor, 4.7µH, 3.0A.
5671-14516-00	D19-D21	Display LED Red
5700-08985-00	U4	Socket IC 40P .6"
5700-12088-00	U6	Socket IC 32P .6"
5700-12424-00	U9	Socket 84 Pin PLCC
5700-10176-00	U22	Socket IC 28 P .6"
5791-10850-00	J201, J204	Connector, 26-pin Header Str
5791-14090-05	J213	Connector, 5-pin Header Str
5791-10862-07	J210	Connector, 7-pin Header Str
5791-13830-08	J212	Connector, 8-pin Header Str
5791-13830-09	J208, J209	Connector, 9-pin Header Str
5791-13830-11	J206, J207	Connector, 11-pin Header Str
5791-12516-00	J202, J211	34 Hen 2x17 Str
5048-11033-00	C50	Cap., .022 µF
5791-13830-12	J205	Cap., 12-pin Header Str
5043-09845-00	C32, C33	Cap., 1KP, 50v (±10%)
5645-09025-00	U27	Switch DIP 8 POS
5162-12422-00	U20	IC, ULN 2803A
A-5400-50051-1	U22	WPC PIC 16C57 Micro-C
A-5343-50051-1	U6	Game ROM Assembly
A-17643	-	Battery Holder PCB Assy.
5400-10320-00	U4	MC68B09E 2Mhz µP
5410-12426-00	U9	WPC ASIC-89
20-9665-1	-	PCB Standoffs
H-18258	-	WPC CPU Security Cable

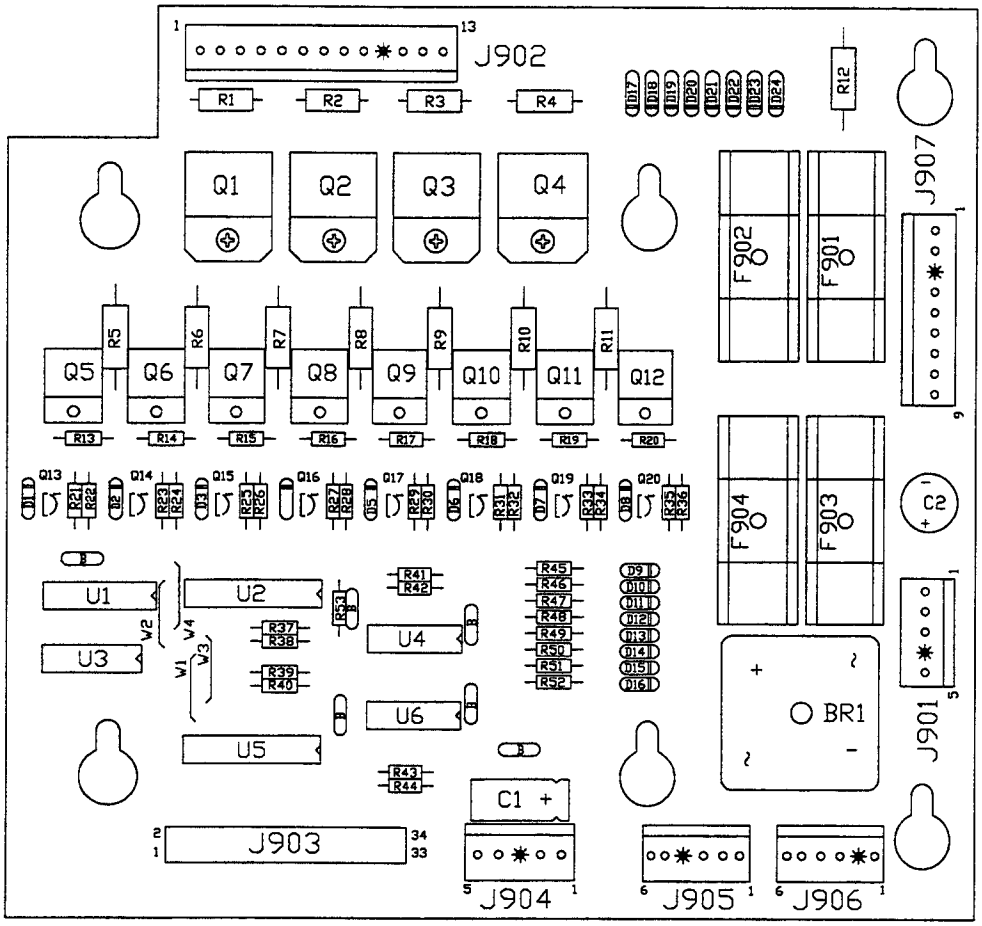
A-16917-50051
Sound Board Assembly



Part Number	Designator	Description
4004-01005-06	U27, U28	MS, 4-40 x 3/8"
4404-01119-00	U27, U28	Nut 4-40
5010-08772-00	R39, R41	Resistor, 15KΩ, ¼w, 5%
5010-08774-00	R30, R34, R37, R42, R45	Resistor, 22KΩ, ¼w, 5%
5010-08991-00	R10, R12-R16	Resistor, 4.7Ω,¼ w, 5%
5010-09034-00	R47	Resistor, 10KΩ, ¼w, 5%
5010-09035-00	R11, R19, R33, R40	Resistor, 47KΩ, ¼w, 5%
5010-09036-00	R46	Resistor, 100Ω, ¼w, 5%
5010-09219-00	R31, R32, R38	Resistor, 8.2KΩ, ¼w, 5%
5010-09358-00	R50	Resistor, 1KΩ,¼ w, 5%
5010-09534-00	W4, W6	Resistor,0Ω (Jumper)
5010-13420-00	R36, R44	Resistor, 680Ω, ¼w, 5%
5010-13607-00	R20-R29, R48, R49	Resistor, 6.2KΩ, 1/8w, 1%
5010-13517-00	R35, R43	Resistor, 15Ω, ¼w, 5%
5040-09365-00	C15, C18, C19, C32, C41	Cap., 1µF, 63v, Alum Ax.
5040-09421-00	C52	Cap., 100µF,25v,Alum Ax.
5040-13417-00	C20, C21	Cap., 10,000µF, 35v,Alum.
5041-09009-00	C36, C44	Cap., 22µF,10v, Tant Alum
5041-13187-00	C22	Cap., 4.7µF, Tant Axial.
5043-08996-00	C4, C5, C10-C13 C31, C35, C38, C43, C46, C47, C50-C79	Cap., .10µF, 50v, Cer Ax.
5043-10267-00	C37, C45	Cap., 150pF,50v, Cer Ax.
5048-11028-00	C16, C17	Cap., 22pF, 50v, Cer Ax.
5048-11029-00	C48	Cap., 100pF,50v, Cer Ax.
5048-11030-00	C49	Cap., 470pF,50v, Cer Ax.
5048-11033-00	C33	Cap., .022µF,50v, CerAx.
5048-12036-00	C34, C42	Cap., .22µF, 50v, Cer Ax.
5048-13418-00	C30, C39, C40	Cap., .047µF,50v, Cer Ax.
5048-13608-00	C8	Cap., 6800pF, 50v, Cer Ax.
5048-13609-00	C7, C24, C26	Cap., 3900pF, 50v, Cer Ax.
5048-13610-00	C2, C3, C9, C27, C29	Cap., 1000pF, 50v, Cer Ax.
5048-13611-00	C6, C23, C25, C28	Cap., 680pF, 50v, Cer Ax.
5070-09045-00	D1-D4	MR-501 Rectifier Diode

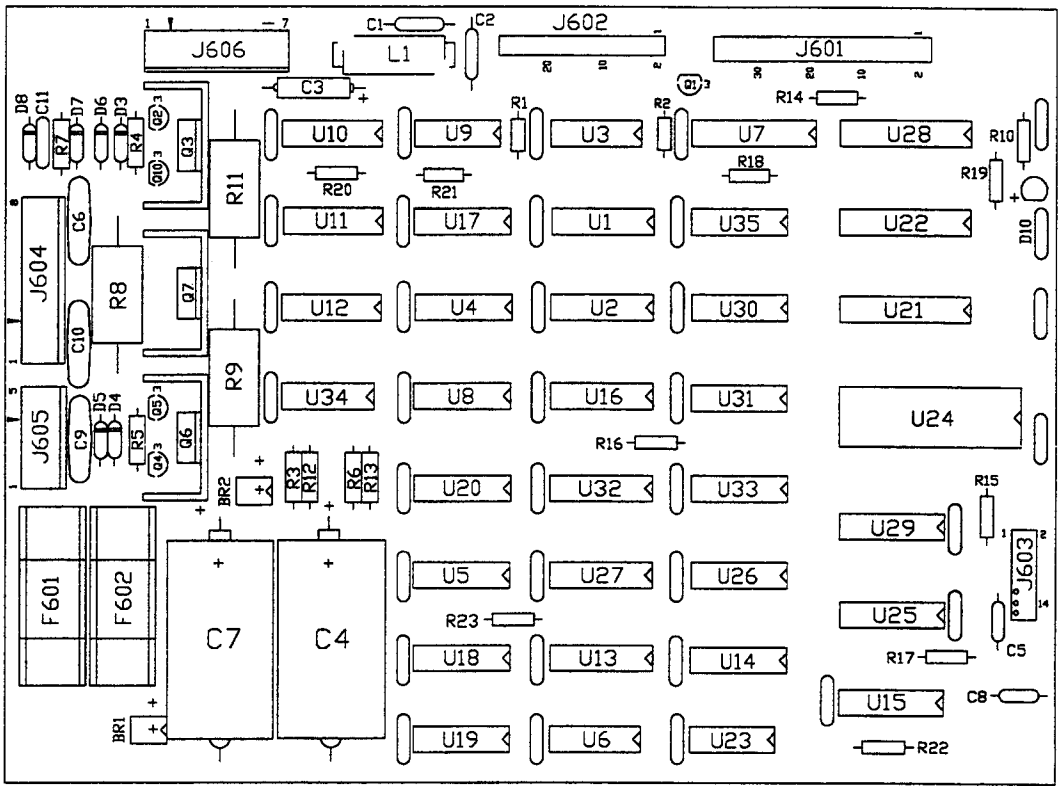
Part Number	Designator	Description
5070-09054-00	D5-D9	Diode Signal 1N4004
5250-13302-00	U25	78L05 Pos 5V reg TO-92
5250-13303-00	U26	79L05 Neg 5V Reg TO-92
5283-10551-00	U17	IC74F00 Fast Quad NAND
5311-10946-00	U22	IC74HC74 Dual D Flip Flop
5311-10947-00	U23	IC74HC125 Quad Tri-State Buffer
5311-10948-00	U15	IC74HC138 1 of 8 Decoder
5315-12009-00	U18, U19	IC74HCT374 Octal D Flip Flop
5311-12043-00	U13, U14	IC74HC174 Hex D Flip Flop
5311-12538-00	U24	IC74HC14 Hex Schmitt Inverter
5311-12287-00	U30-U32	IC74HC541 Octal Bus Driver
5340-13304-00	U10-U12	ICSRAM 2Kx8 35ns .300 DIP
5370-12730-00	U21, U29	ICTL084 Quad Op AMP
5370-13419-00	U27, U28	Audio Power Amp TDA2030AV
5371-13299-00	U20	IC DAC AD-1851 16Bit
5520-13301-00	Y1	Crystal 10MHz Parallel resonant
5551-09822-00	L1	Inductor, 4.7µH, 3Amp.
5700-12047-00	U16	IC, Socket 24-Pin .300 DIP
5700-12088-00	U2-U9	IC, Socket 32-Pin .600 DIP
5705-12638-00	U27, U28	Heatsink 5298-B
5733-12060-01	F501, F502	MT3AG PCMounted Fuse Holder
5791-10862-04	J1, J2	Connector, 4-pin Header STR .156
5791-10862-05	J3	Connector, 5-pin Header STR .156
5791-10862-07	J4	Connector, 7-pin Header STR .156
5791-12516-00	P1	Connector, 34 Hen 2x17 STR .100
A-17002	U16	PAL Sub-Assembly
A-5343-50051-S2	U2	ROM Sub-Assembly
A-5343-50051-S3	U3	ROM Sub-Assembly
A-5343-50051-S4	U4	ROM Sub-Assembly
A-5343-50051-S5	U5	ROM Sub-Assembly
A-5343-50051-S6	U6	ROM Sub-Assembly
Not Used	U7	ROM Sub-Assembly
Not Used	U8	ROM Sub-Assembly
Not Used	U9	ROM Sub-Assembly
5731-10356-00	F501, F502	Fuse, 3Amp, 250v, Slow Blow

A-15472-1
Fliptronic II Board Assembly



Part Number	Designator	Description	Part Number	Designator	Description
01-10572	Q1-Q4	Heatsink	5070-09054-00	D1-D24	Diode, 1N4004
4006-01003-08	Q1-Q4	Mach. Screw, 6-32	5100-09690-00	BR1	Bridge Rectifier
4406-01128-00	Q1-Q4	Nut 6-32 KEPS	5162-12635-00	Q5-Q12	Trans., TIP102 NPN
5010-09034-00	R37-R44, R53	Res., 10KΩ, ¼w, 5%	5190-09016-00	Q13, Q20	Trans., 2N4403 PNP
5010-09358-00	R22, R24, R26, R28, R30, R32, R34, R36, R45-R52	Res., 1KΩ, ¼w, 5% Res., 220Ω, ½w, 5%	5191-12179-00 5315-12009-00 5315-12031-00	Q1-Q4 U2 U5	Trans., TIP36C PNP IC, 74HCT374 IC, 74HCT244
5010-09361-00	R1-R4	Res., 470Ω, ¼w, 5%	5315-12812-00	U1	IC, 74HCT138
5010-09416-00	R21, R23, R25, R27, R29, R31, R33, R35		5315-12951-00 5370-12272-00 5731-10356-00	U3 U4, U6 F901-F904	IC, 74HCT00 IC, LM339 Quad Comp Fuse S-B, 3A., 250v
5010-09534-00	W3, W4	Res., 0Ω	5733-12060-01		Fuse Holder (F901-F904)
5010-10171-00	R13, R20	Res., 56Ω, ¼w, 5%	5791-10862-05	J901, J904	Connector, 5-pin Header
5011-12956-00	R5, R12	Res., 2.7KΩ, 1w, 5%	5791-10862-09	J907	Connector, 9-pin Header
5040-08986-00	C1	Cap., 100µF, 10v	5791-10862-13	J902	Connector, 13-pin Header
5040-09537-00	C2	Cap., 100µF, 100v	5791-13830-06	J905, J906	Connector, Str Sq. Pin Hdr.
5043-08980-00	B	Cap., .01µF, 50v	5791-12516-00	J903	34 Hen 2 x 17 STR

A-14039.1
Dot Matrix Assembly



Part Number	Designator	Description
5010-08991-00	R1	Res., 4.7KΩ, ¼w, 5%
5010-09036-00	R14-R23	Res., 100Ω, ¼w, 5%
5010-09224-00	R10	Res., 270Ω, ¼w, 5%
5010-12832-00	R3, R6, R12, R13	Res., 4.7KΩ, ½w, 5%
5010-12841-00	R4, R5	Res., 120Ω, ½w, 5%
5012-12830-00	R9	Res., 1.8KΩ, 5w, 5%
5012-12842-00	R11	Res., 120Ω, 5w, 5%
5012-12843-00	R8	Res., 4.7KΩ, 5w, 5%
5010-10171-00	R7	Res., 56Ω, ¼w, 5%
5043-09492-00	C5, C8	Cap., 100P, 50v, (±10%)
5040-08986-00	C3	Cap., 100M, 10v (±20%)
5040-12324-00	C4, C7	Cap., 150M, 160v (±50%)
5043-08980-00	BYPASS	Cap., .01M, 50v (+80,-20%)
5043-09072-00	C6, C9, C10	Cap., .1M, 500v (+80,-20%)
5043-09845-00	C1, C2, C11	Cap., 1KP, 50v (±20%)
5070-09054-00	D7	Diode, 1N4004, 1.0A.
5075-12824-00	D6, D8	Zener, 1N4742A, 12v
5075-12823-00	D4, D5	Zener, 1N4758, 56v
5075-12826-00	D3	Zener, !N4759A, 62v
5100-12833-00	BR1, BR2	Bridge, 400v, 1A
5150-10269-00	Q1	Trans., 2N3904 NPN
5164-09056-00	Q2, Q10	Trans., MPSD02 NPN
5164-12154-00	Q3, Q7	Trans., MJE15030 NPN
5194-09055-00	Q4, Q5	Trans., MPSD52 PNP
5194-12155-00	Q6	Trans., MJE15031 PNP
5281-09738-00	U16, U25-U27	IC, 74LS157
5281-10033-00	U3	IC, 74LS30
5281-10043-00	U31-U33, U35	IC, 74LS175

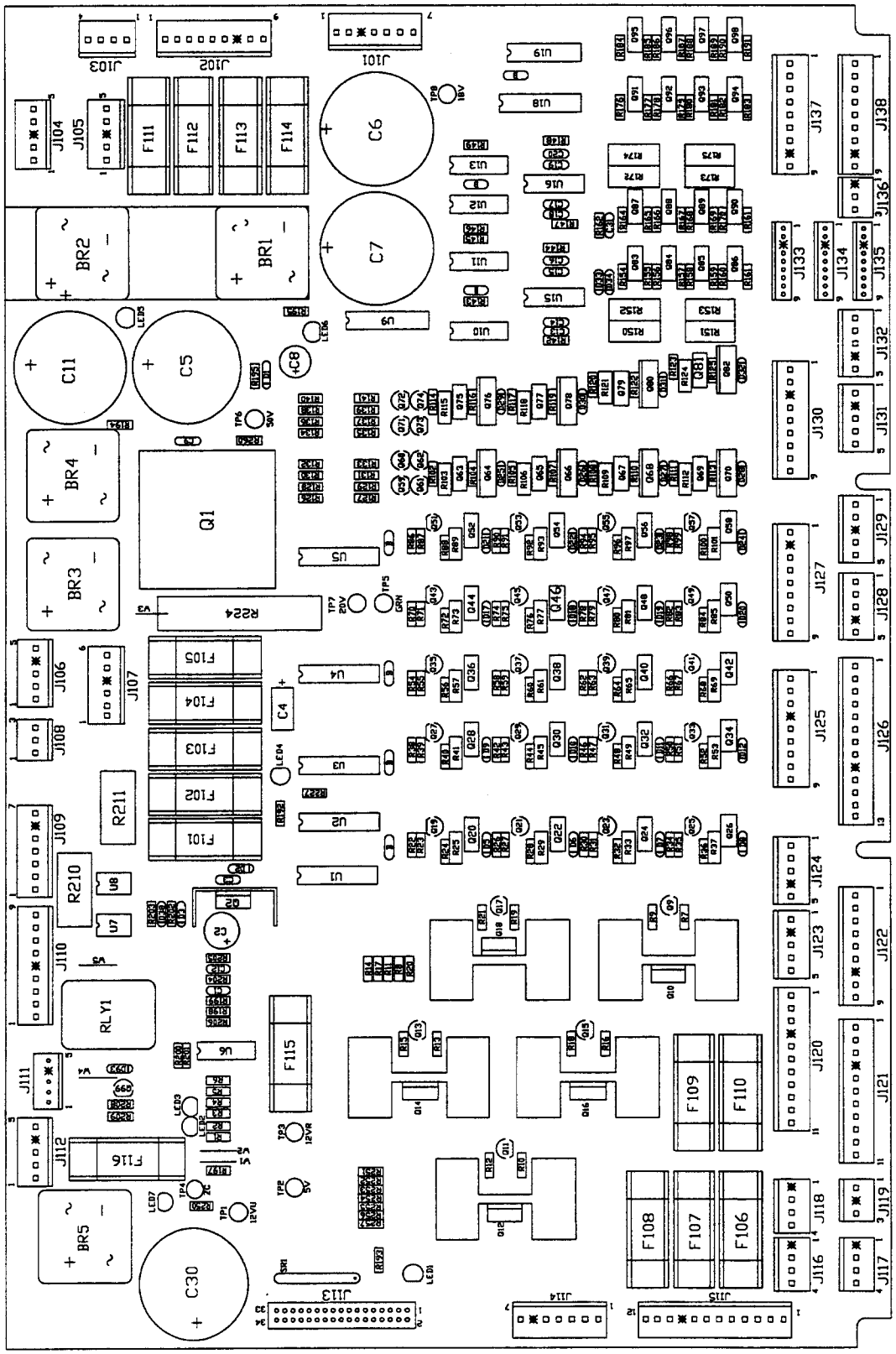
Part Number	Designator	Description
5311-10946-00	U4, U5, U17, U18, U20	IC, 74HC74
5311-10947-00	U9	IC, 74HC125
5311-10951-00	U10, U11	IC, 74HC161
5311-10977-00	U6	IC, 74HC04
5311-12817-00	U29	IC, 74HC165
5311-12819-00	U21	IC, 74HC688
5311-12820-00	U23	IC, 74HC27
5311-12822-00	U13-U15	IC, 74HC193
5315-12009-00	U22	IC, 74HCT374
5315-12812-00	U1, U2, U30, U12	IC, 74HCT138
5281-09308-00	U28	IC, 74HCT245
5315-12815-00	U8, U34	IC, 74HCT08
5315-12816-00	U19	IC, 74HCT32
5315-12821-00	U7	IC 74HCT240
5340-12278-00	U24	S/RAM 2064 150NS
5551-09822-00	L1	Ind. 4.7µH, 3A.
5671-14516-00	D10	Display LED Red
5705-09199-00	Q3, Q6, Q7	Heatsink, 6030B
5731-12328-00	F601, F602	Fuse, 3/8A., SB, 250v
5733-12060-01		Fuse Holder (F601, F602)
5791-10850-00	J602	Connector, 26-pin Header
5791-10862-05	J605	Connector, 5-pin Header
5791-10862-07	J606	Connector, 7-pin Header
5791-10862-08	J604	Connector, 8-pin Header
5791-12516-00	J601	34 Hen 17x2 STR
5791-12827-00	J603	14 Hen 7x2 STR

A-12697-3
WPC Power Driver Assembly

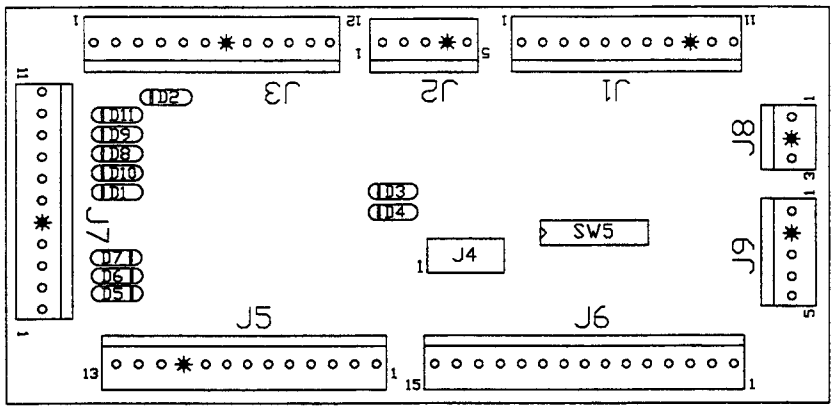
Part Number	Designator	Description
5010-08981-00	R260	Res., 10KΩ, ½w, 5%
5010-08991-00	R9, R12, R15, R18, R21, R23, R27, R31, R35, R39, R43, R47, R51, R55, R59, R63, R67, R71, R75, R79, R83, R87, R91, R95, R99, R126, R128, R130, R132, R134, R136, R138, R140, R227	Res., 4.7KΩ, ¼w, 5%
5010-08992-00	R8, R11, R14, R17, R20, R177, R179, R181, R183, R185, R187, R189, R191	Res., 560Ω, ¼w, 5%
5010-08993-00	R25, R29, R33, R37, R41, R45, R49, R53, R57, R61, R65, R69, R73, R77, R81, R85, R89, R93, R97, R101, R103, R106, R109, R112, R115, R118, R121, R124	Res., 68KΩ, ½w, 5%
5010-08997-00	R24, R28, R32, R36, R40, R44, R48, R52, R56, R60, R64, R68, R72, R76, R80, R84, R88, R92, R96, R100, R102, R105, R108, R111, R114, R117, R120, R123	Res., 2.7KΩ, ¼w, 5%
5010-08998-00	R155, R157, R159, R161, R165, R167, R169, R171	Res., 2.2KΩ, ¼w, 5%
5010-09034-00	R142-R149, R197-R198	Res., 10KΩ, ¼w, 5%
5010-09085-00	R194, R196, R251, R253-R257	Res., 1.5KΩ, ¼w, 5%
5010-09086-00	R252	Res., 6.8KΩ, ¼w, 5%
5010-09224-00	R192, R202-R205	Res., 270Ω, ¼w, 5%
5010-09314-00	R176, R178, R180, R182, R184, R186, R188, R190	Res., 1.2K, ¼w, 5%
5010-09324-00	R206	Res., 27KΩ, ¼w, 5%
5010-09358-00	R154, R156, R158, R160, R162, R164, R166, R168, R170, R193, R199, R250	Res., 1KΩ, ¼w, 5%
5010-09361-00	R104, R107, R110, R113, R116, R119,	Res., 220Ω, ½w, 5%
5010-09416-00	R122, R125	Res., 470Ω, ¼w, 5%
	R22, R26, R30, R34, R38, R42, R46, R50, R54, R58, R62, R66, R70, R74, R78, R82, R86, R90, R94, R98, R127, R129, R131, R133, R135, R137, R139, R141	
5010-11079-00	R7, R10, R13, R16, R19	Res., 51Ω, ¼w, 5%
5010-12427-00	R150-R153, R172-R175	Res., .22Ω, 1w, 5%
5012-12632-00	R224	
5019-10143-00	SR1	Res., .12Ω, 10w, 5%
5040-08986-00	C4	SIP 470Ω, 9R, 10-pin, 5%
5040-09421-00	C2	Cap., 100M, 10v (±20%)
5040-09537-00	C8	Cap., 100M, 25v (+50, -10%)
		Cap., 100M, 100v (±20%)

Part Number	Designator	Description
5040-12313-00	C5-C7, C11, C30	Cap., 15KM, 25v (±20%)
5043-08980-00	B-BYPASS	Cap., .01M, 50v (+80, -20%)
5043-08996-00	C13-C20, C31	Cap., .1M, 50v (±20%)
5043-09845-00	C1, C12	Cap., 1KP, 50v (±20%) Axial
5048-10994-00	C3	Cap., .33M, 50v (±20%) Axial
5070-08919-00	D33, D34	Diode 1N4148, 150MA.
5070-09054-00	D1-D3, D5-D12, D17-D32, D38	Diode 1N4004, 1.0A.
5100-09690-00	BR1-BR5	Bridge, 35A., Rect, 200v
5131-12725-00	Q10, Q12, Q14, Q16, Q18	Triac BT138E
5162-12422-00	U19	IC ULN 2803 OC-DRL
5162-12635-00	Q20, Q22, Q24, Q26, Q28, Q30, Q32, Q34, Q36, Q38, Q40, Q42, Q44, Q46, Q48, Q50, Q52, Q54, Q56, Q58, Q63, Q65, Q67, Q69, Q75, Q77, Q79, Q81, Q83-Q90	Transistor, TIP 102
5194-09055-00	Q9, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31, Q33, Q35, Q37, Q39, Q41, Q43, Q45, Q47, Q49, Q51, Q53, Q55, Q57, Q59-Q62, Q71-Q74	Transistor, 2N5401 PNP
5191-12179-00	Q64, Q66, Q68, Q70, Q76, Q78, Q80, Q82	Transistor, TIP36C PNP
5192-12428-00	Q91-Q98	Transistor, TIP 107
5250-12634-00	Q1	Reg LM 323 5v
5281-09486-00	U1-U5, U18	IC, 74LS374 8D F/F
5281-09487-00	U10-U13	IC, 74LS74 Dual D F/F
5281-10182-00	U9	IC, 74LS240 L/Drvr.
5370-12272-00	U6, U15, U16	IC, LM339 Quad Comp.
5460-12423-00	Q2	IC, LM7812
5671-14516-00	LED1, LED4-LED7	Display LED Red
5701-09652-00	Q1	Thermal Pad
5705-09199-00	Q2	Heatsink 6030B
5705-12637-00	Q1	Heatsink 5054
5705-12638-00	Q10, Q12, Q14, Q16, Q18	Heatsink 5298B
5733-12060-01	F101-F116	Fuse Holder PC MT3AG
5791-10862-03	J108, J119, J136	Connector, 3-pin Header .156
5791-10862-04	J103, J116-J118	Connector, 4-pin Header .156
5791-10862-05	J104-J106, J112, J123, J124, J128, J129, J131, J132	Connector, 5-pin Header .156
5791-10862-06	J107	Connector, 6-pin Header .156
5791-10862-07	J101, J109, J114	Connector, 7-pin Header .156
5791-10862-09	J102, J122, J125, J127, J130, J137, J138	Connector, 9-pin Header .156
5791-10862-11	J120, J121	Connector, 11-pin Header .156
5791-10862-12	J115	Connector, 12-pin Header .156
5791-10862-13	J126	Connector, 13-pin Header .156
5791-13830-05	J111	Connector, 5-pin Header
5791-13830-09	J133-J135	Connector, 9-pin Header
5791-12516-00	J113	34 Hen 2x17 STR
5824-09248-00	TP1-TP8	Test Point #1502-1
5041-09163-00	C9	Cap., 2.2MF Tant
5730-09071-00	F114	Fuse, 8A, 32v
5731-09432-00	F112	Fuse, S-B, 7A., 250v
5731-09651-00	F106-F111, F113	Fuse, S-B, 5A., 250v
5731-10356-00	F101-F105, F116	Fuse, S-B, 3A., 250v
5730-09797-00	F115	Fuse, S-B, 3/4A., 250v
5705-12698-00		Heatsink #62365

A-12697-3
WPC Power Driver Assembly

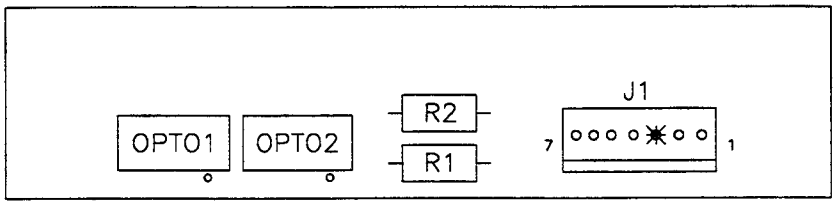


A-17051-1
Coin Door Interface PCB Assembly



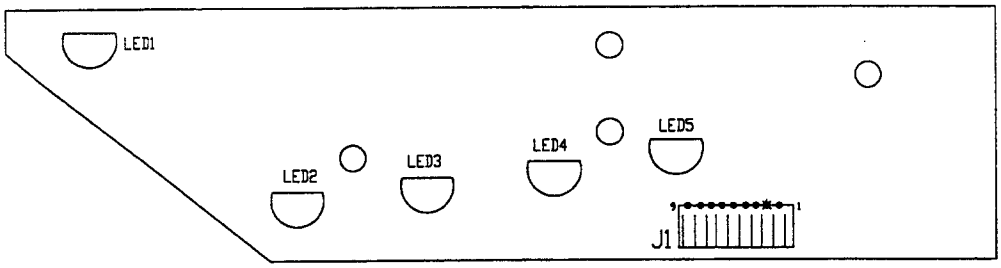
Part Number	Designator	Description
5791-10862-03	J8	Connector, 3-pin Header Str. Sq.
5791-10862-05	J2, J9	Connector, 5-pin Header Str. Sq.
5791-10862-11	J1, J7	Connector, 11-pin Header Str. Sq.
5791-10862-12	J3	Connector, 12-pin Header Str. Sq.
5791-10862-13	J5	Connector, 13-pin Header Str. Sq.
5791-10862-15	J6	Connector, 15-pin Header Str. Sq.
5791-11000-10	J4	Connector, 10-pin Header Str. Sq.
5645-09025-00	SW5	Switch DIP 8 Pos.
5070-09054-00	D1 - D11	Diode, 1N4004, 1.0A.

A-17316
Flipper Opto PCB Assembly



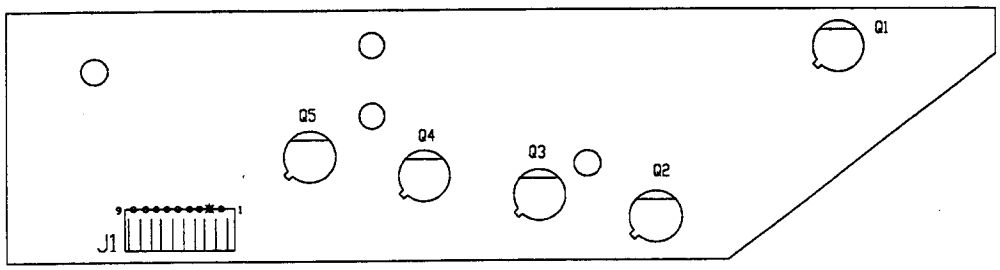
Part Number	Designator	Description
A-16384	-	Flipper Opto Switch PCB
5010-08930-00	R1, R2	Resistor, 470Ω, 1/2w, 5%
5490-12451-00	OPTO1, OPTO2	Opto Interrupter Lg. 10mA.
5791-13830-07	J1	Connector, 7-pin Header Solid Sq.
03-9001	-	Interrupter Flip-Opto

A-18617-1
Trough IRED LED PCB Assembly



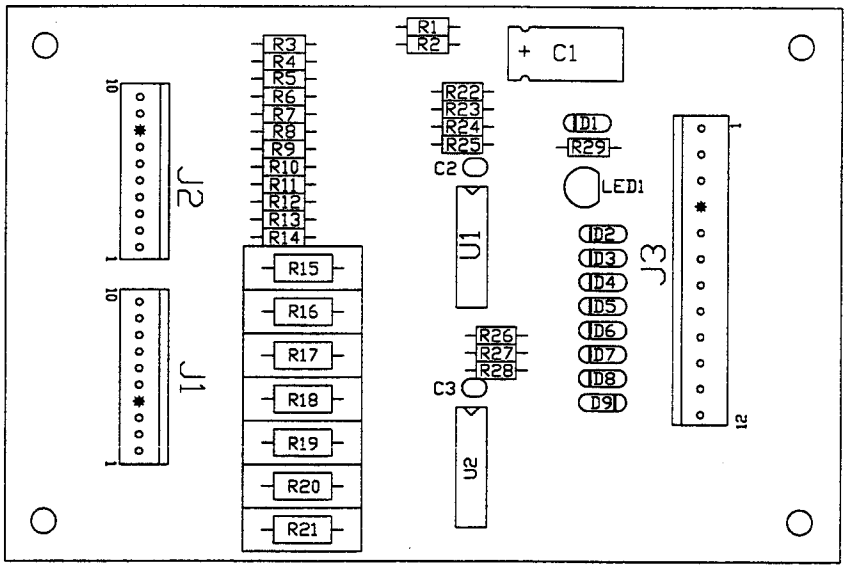
Part Number	Designator	Description
5671-12731-00	LED1 - LED5	Infra Red Diode
5791-12622-09	J1	Connector, 9-pin Header Sq.

A-18618-1
Trough IRED Transistor PCB Assembly



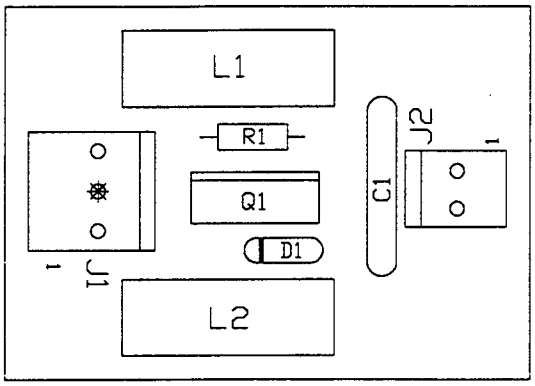
Part Number	Designator	Description
5163-14114-00	Q1 - Q5	Infra Red Photo Transistor
5791-12622-09	J1	Connector, 9-pin Header Sq.

A-15595
7-Switch Opto PCB & Bracket Assembly



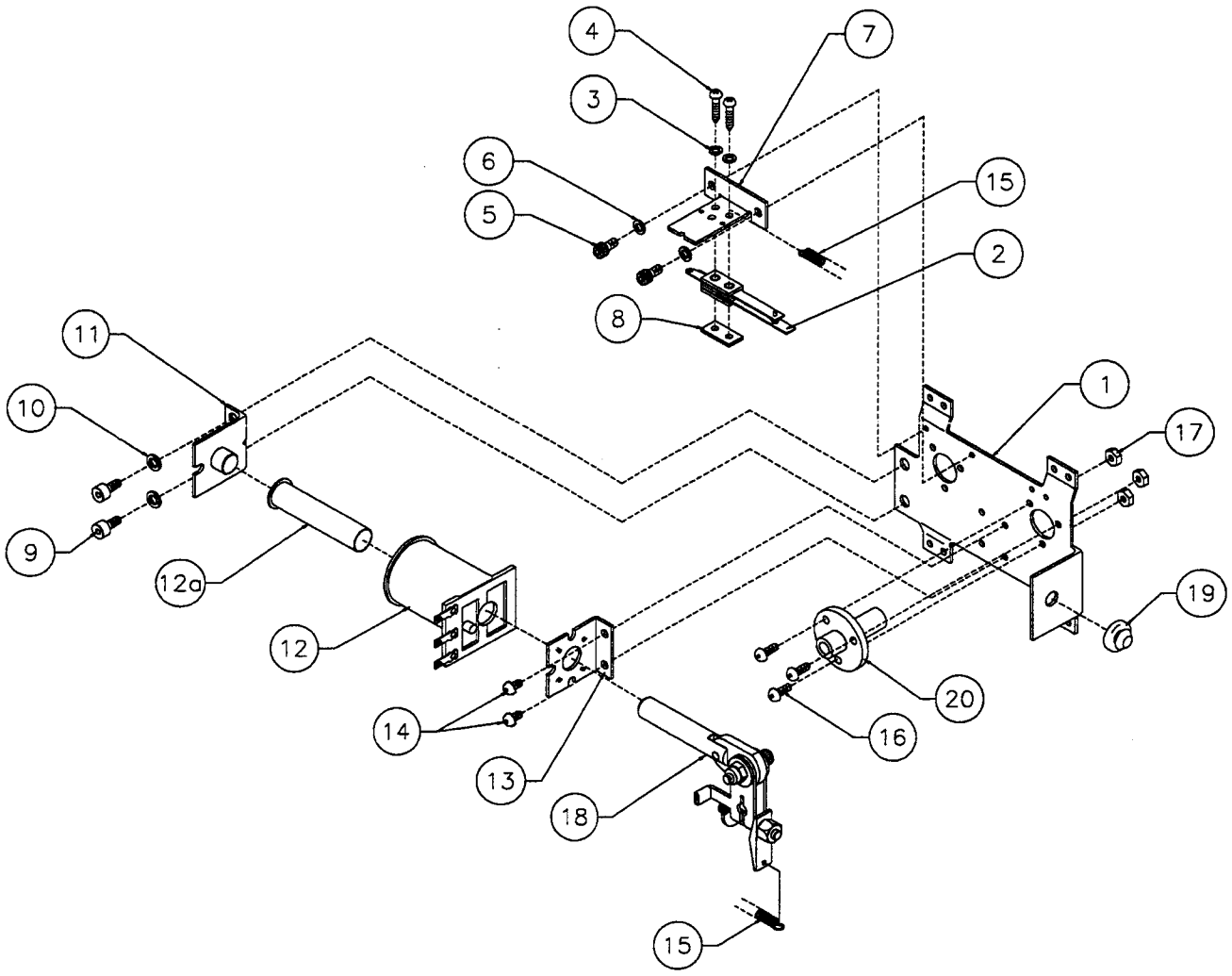
Part Number	Designator	Description
A-15576	-	7-Opto Switch PCB
5040-12298-00	C1	Capacitor, 100µFd, 40v (±50%)
5043-08980-00	C2, C3	Capacitor, 0.01µ, 50v
5671-13732-00	LED1	Display LED Red
5370-12272-00	U1, U2	ICLM339 Quad
5070-09054-00	D1 - D9	Diode 1N4004 1.0A.
5010-12928-00	R15 - R21	Resistor, 270Ω, 2w, 5%
5010-09999-00	R1 - R14	Resistor, 2KΩ, 1/4w, 5%
5010-10631-00	R29	Resistor, 1.2KΩ, 1/4w, 5%
5010-09162-00	R23, R25, R26	Resistor, 100KΩ, 1/4w, 5%
5010-08774-00	R22, R24	Resistor, 22KΩ, 1/4w, 5%
5010-09034-00	R28	Resistor, 10KΩ, 1/4w, 5%
5791-10862-12	J3	Connector, 12-pin Header Sq.
5791-13830-10	J1, J2	Connector, 10-pin Header Sq.
01-10756	-	PCB Mounting Bracket
07-6688-18N	-	Rivet, 3/16 x 18" Nickel

A-15340
Motor EMI w/Brake PCB Assembly



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

A-15849-L
Flipper Assembly, Lower Left



Item	Part Number	Description
1	B-13104-L	Flipper Base Assembly, Left
2	SW-1A-194	Switch Assembly
3	4701-00002-00	Lockwasher #6 Split
4	4105-01019-10	Sh. Metal Screw, #5 x 5/8"
5	4008-01079-05	Mach. Screw, 8-32 x 5/16"
6	4701-00003-00	Lockwasher #8 Split
7	01-9375	Switch Mounting Bracket
8	20-6516	Speednut, Tinnerman
9	4010-01066-06	Cap Screw, 10-32 x 3/8"
10	4701-00004-00	Lockwasher #10 Split
11	A-12360	Flipper Stop Assembly
12	FL-11630	Flipper Coil, Red
a)	03-7066-5	Coil Tubing
13	01-7695	Solenoid Bracket
14	4006-01017-04	Mach. Screw, 6-32 x 1/4"
15	10-364	Spring
16	4006-01005-06	Mach. Screw, 6-32 x 3/8"
17	4406-01117-00	Nut 6-32 Hex.

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

Associated Parts:
(Not Shown)

21	23-6695	Flipper Rubber Ring, Red
22	20-9250-5	Flipper w/Shaft, White

A-15849-R
Flipper Assembly, Lower Right

Item	Part Number	Description
1	B-13104-R	Flipper Base Assembly, Right
2	SW-1A-194	Switch Assembly
3	4701-00002-00	Lockwasher #6 Split
4	4105-01019-10	Sh. Metal Screw, #5 x 5/8"
5	4008-01079-05	Mach. Screw, 8-32 x 5/16"
6	4701-00003-00	Lockwasher #8 Split
7	01-9375	Switch Mounting Bracket
8	20-6516	Speednut, Tinnerman
9	4010-01066-06	Cap Screw, 10-32 x 3/8"
10	4701-00004-00	Lockwasher #10 Split
11	A-12360	Flipper Stop Assembly
12	FL-11630	Flipper Coil, Red
a)	03-7066-5	Coil Tubing
13	01-7695	Solenoid Bracket
14	4006-01017-04	Mach. Screw, 6-32 x 1/4"
15	10-364	Spring
16	4006-01005-06	Mach. Screw, 6-32 x 3/8"
17	4406-01117-00	Nut 6-32 Hex.
18	A-15848-R	Crank Link Assembly, Right
a)	A-17050-R	Flipper Crank Assembly, Right
b)	A-15847	Flipper Link Assembly
c)	02-4676	Link Spacer Bushing
d)	4010-01086-14	Cap Screw, 10-32 x 7/8"
e)	4700-00023-00	Flat Washer, 5/8 x 13/64 x 16ga.
f)	4701-00004-00	Lockwasher #10 Split
g)	4410-01132-00	Nut 10-32 ESN
19	23-6577	Bumper Plug, 5/8"
20	03-7568	Flipper Bushing

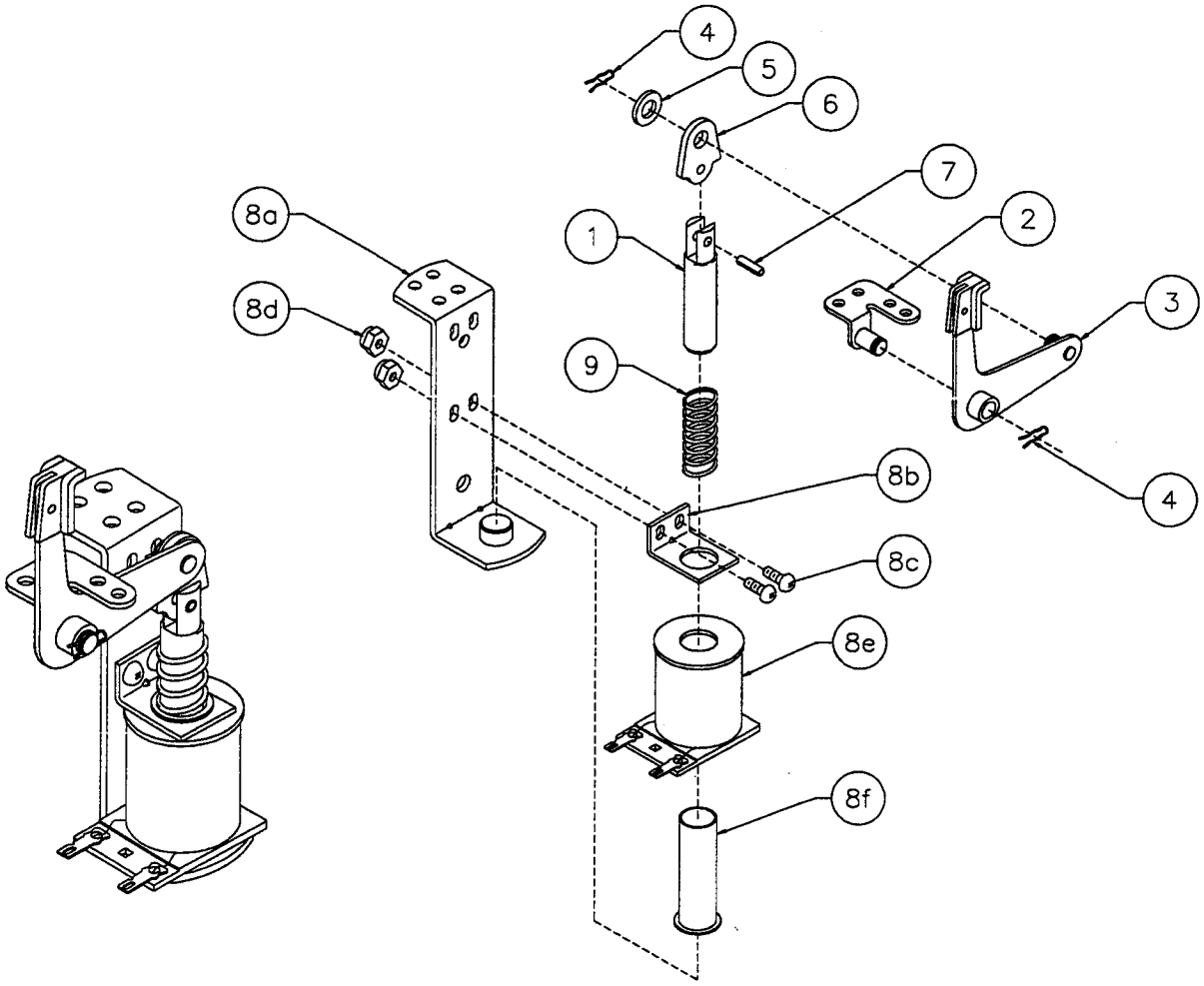
Associated Parts:
(Not Shown)

21	23-6695	Flipper Rubber Ring, Red
22	20-9250-5	Flipper w/Shaft, White

Flipper Notes...

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

A-17811
Kicker Arm (Slingshot) Assembly

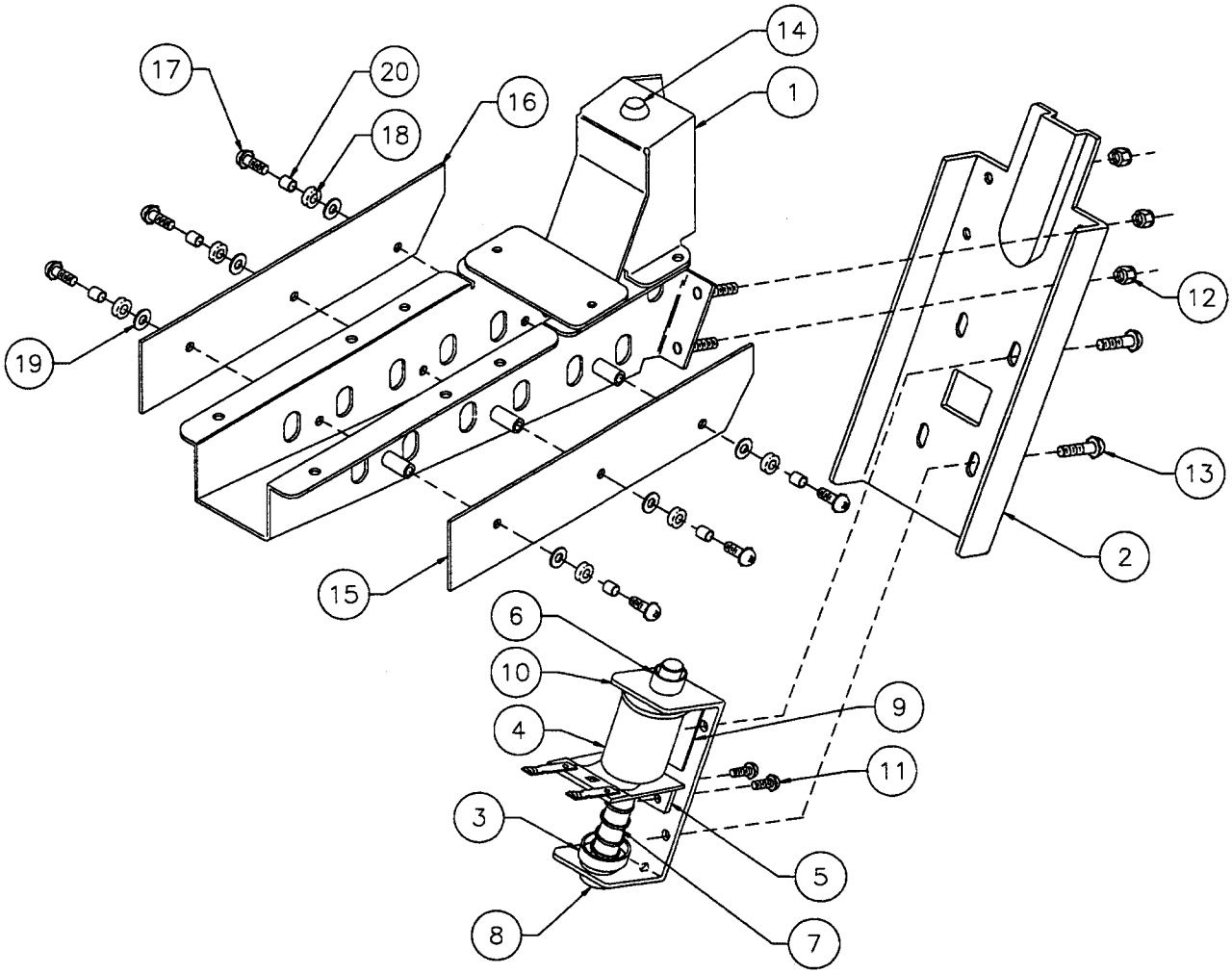


Associated Parts for Right & Left Kickers:

Item	Part Number	Description
1	02-2364	Coil Plunger
2	A-17810	Mounting Bracket Assembly
3	A-12664	Kicker Crank Assembly
4	12-6227	Hairpin Clip
5	4700-00030-00	FW, 17/64 x 1/2 x 15ga.
6	03-8085	Armature Link
7	20-8716-5	Roll Pin, 1/8 x 7/16"

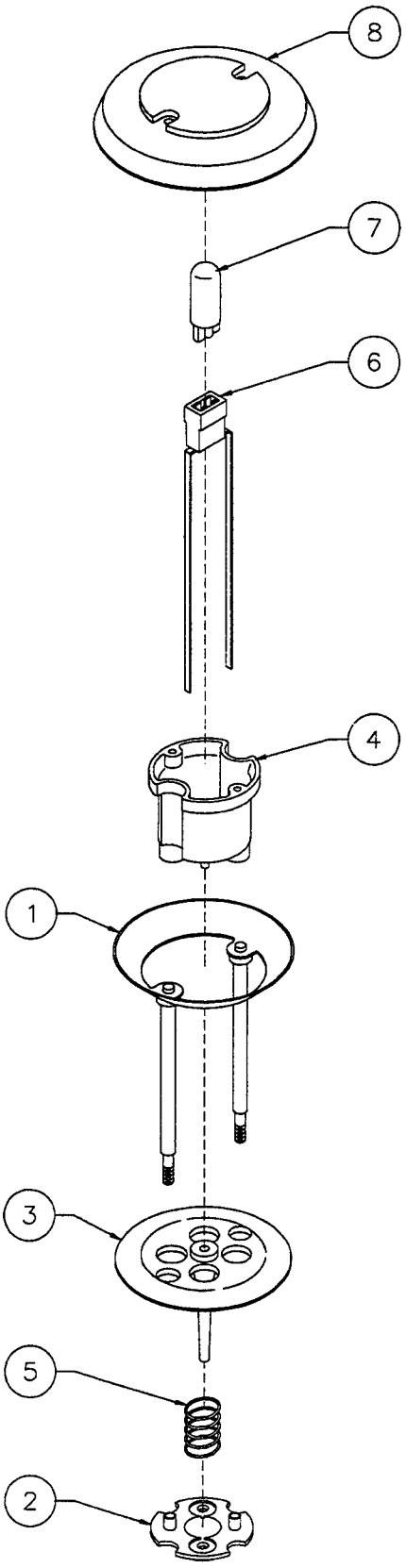
Item	Part Number	Description
8	**B-9362-L-2**	**Coil & Bracket Assembly**
a)	A-17808	Bracket & Stop Assembly
b)	01-8-508-S	Coil Retaining Bracket
c)	4006-01017-06	Mach. Screw, 6-32 x 3/8"
d)	4406-01119-00	Nut, 6-32 ESN
e)	AE-26-1200	Coil Assembly
f)	03-7066	Coil Tubing
9	10-128	Spring

A-19963
Outhole Ball Trough Assembly



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

B-9414-3
Jet Bumper Assembly

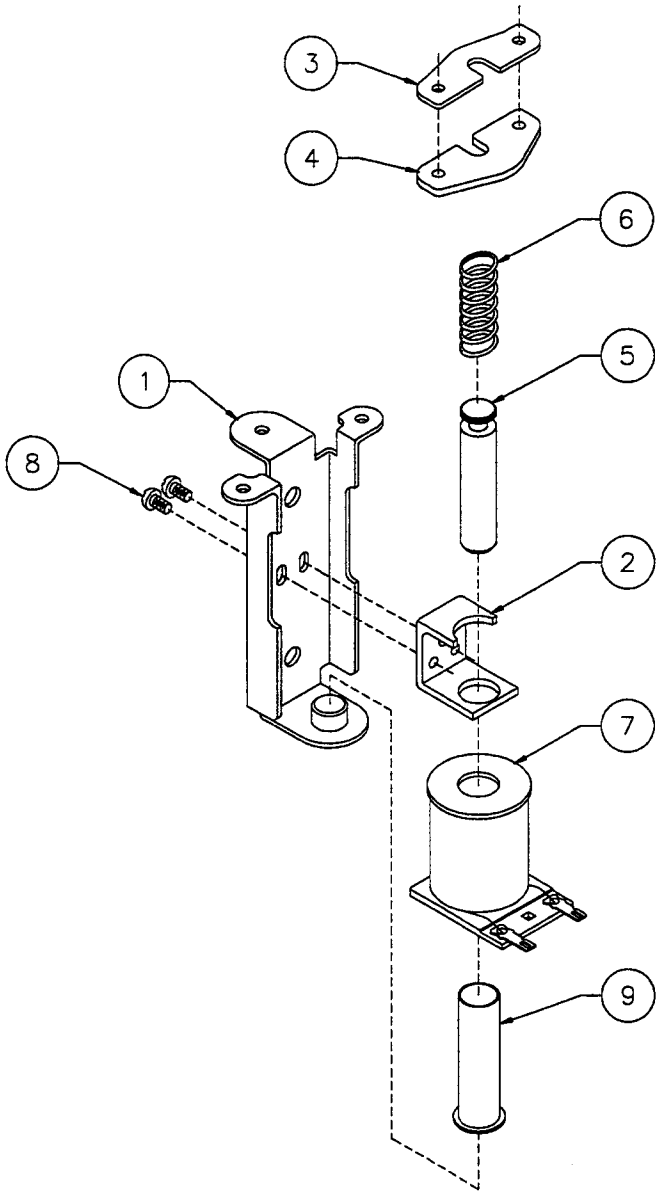


Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base, White
3	03-6035-4	Bumper Wafer, Red
4	03-7443-5	Bumper Body, White
5	10-7	Spring
6	24-8776	Socket-Wedge Base
7	24-8768	Bulb #555(6.3v., 0.25A.)

Associated Parts:

8	03-8254-9	Jet Bumper Cap, Tr. Red

A-9415-2
Jet Bumper Coil Assembly

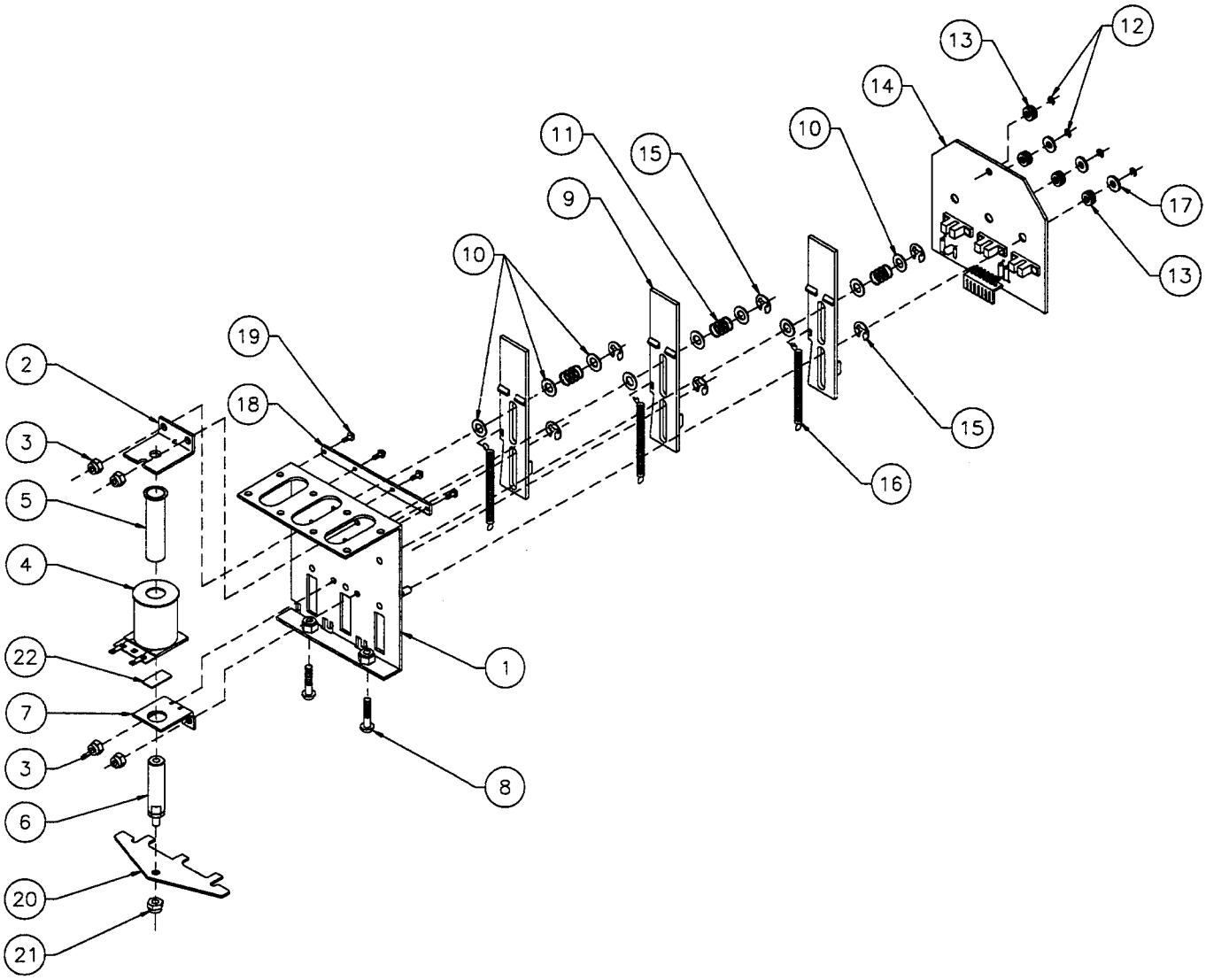


Item	Part Number	Description
1	B-7417	Bracket & Stop Assembly
2	01-1747	Coil Retaining Bracket
3	01-5492	Armature Link, Steel
4	01-5493	Armature Link, Bakeline
5	02-3406-1	Coil Plunger
6	10-326	Armature Spring
7	AE-26-1200	Coil Assembly
8	4006-01017-04	Mach. Screw, 6-32 x 1/4"
9	03-7066	Coil Tubing

Associated Parts:
(Not Shown)

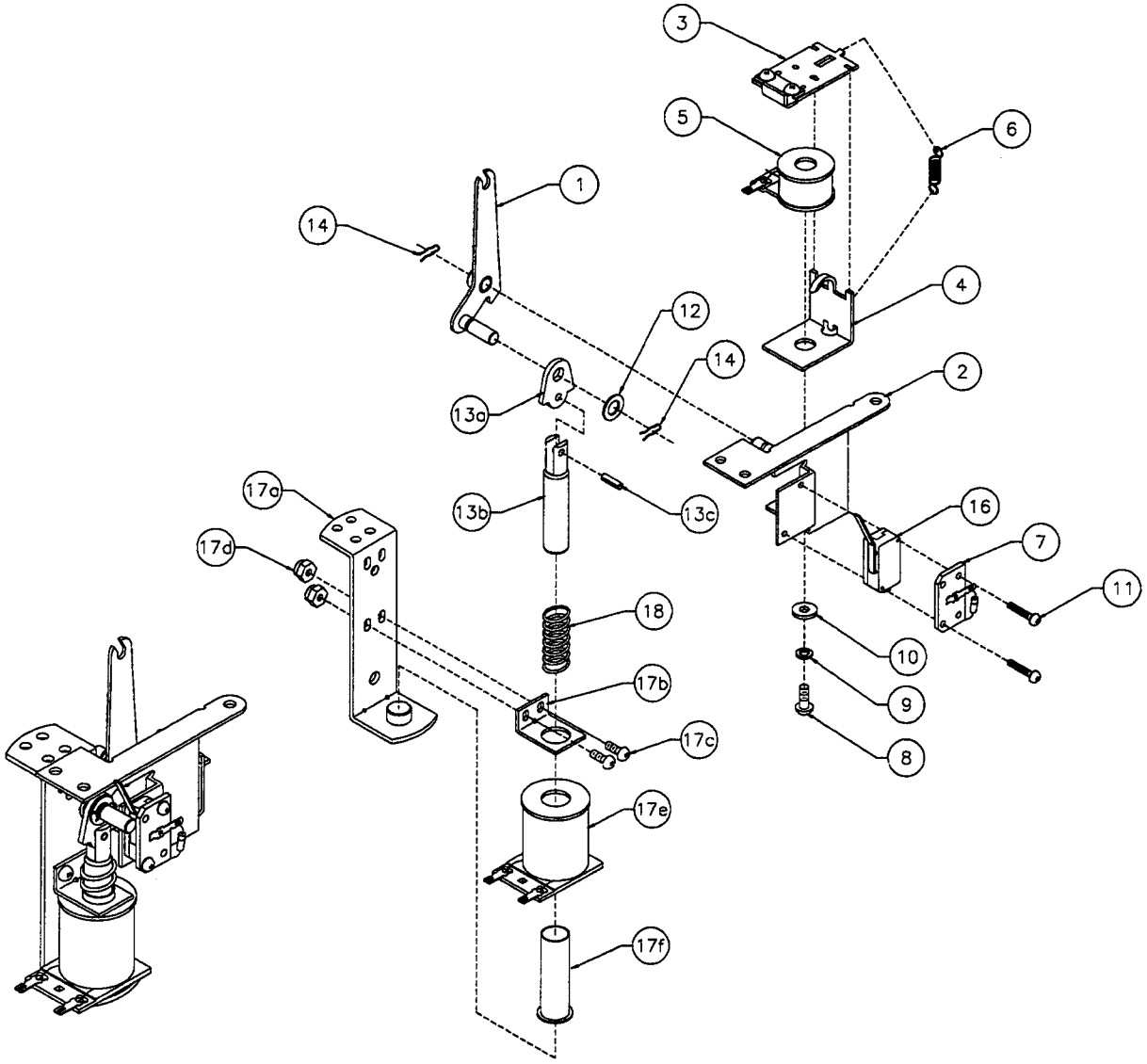
10	B-12030-2	Leaf Switch Assembly
a)	A-16443	Switch & Diode Assembly
b)	01-1168	Switch Mounting Bracket
c)	01-3670	Switch Plate
d)	03-7395	Switch Actuator
e)	4005-01003-12	Mach. Screw, 5-40 x 3/4"
f)	4405-01117-00	Nut 5-40 Hex.

A-16032-1
3-Bank Drop Target Assembly



Item	Part Number	Description	Item	Part Number	Description
1	A-17045	3-Bank Bracket & Stud Assy.	12	20-8712-18	"E"-Ring, 3/16" Shaft
2	A-11397	Stop Bracket Assembly	13	23-6626	Rubber Grommet
3	4408-01119-00	Nut #8 ESN	14	A-13609	3-Bank Opto Assembly
4	AE-26-1200	Coil Assembly	15	20-8712-25	"E"-Ring, 1/4" Shaft
5	03-7066-4	Coil Tubing, 2.093" Lg.	16	10-364	Spring, Retractor
6	02-3972-1	Plunger	17	4700-00016-00	Flatwasher, 3/16x7/16x17ga.
7	01-8413-1	Bracket Coil Mounting Assy.	18	03-8334-3	Target Stop, 3-15/16"
8	4010-01025-14	Mach. Screw, #10-32 x 7/8"	19	4004-01005-04	Mach. Screw, 4-40 x 1/4"
9	03-8749-1	Plain Target, Black	20	01-11769	Reset Plate
10	4700-00072-00	Flat Washer, 17/64x1/2x21ga.	21	4410-01132-00	Nut #10 ESNA
11	10-392	Spring, Extension	22	23-6622	Foam Tape, Double Sided

B-11304
Ramp Lifting Mechanism Assembly



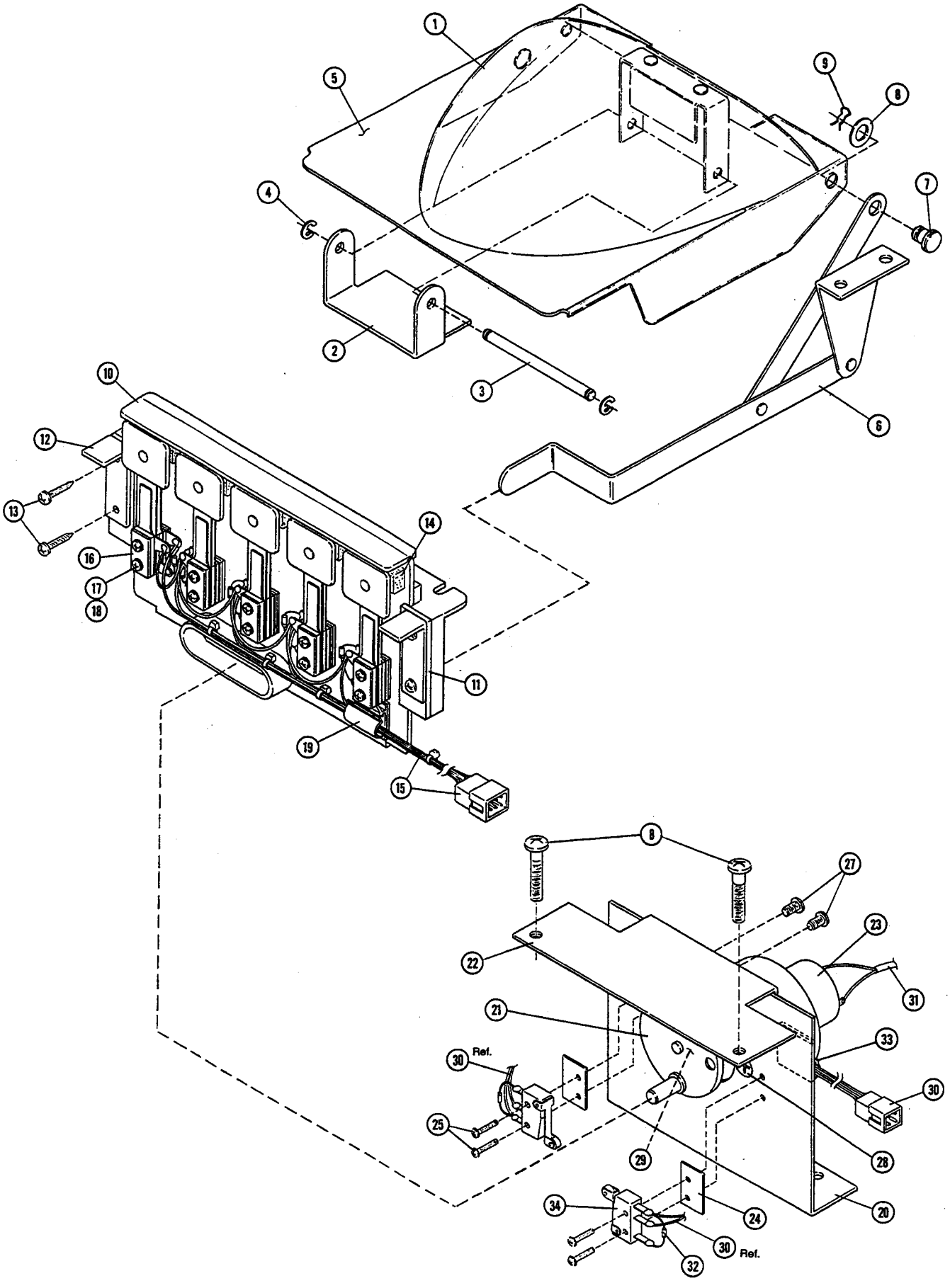
Item	Part Number	Description
1	04-10071.1	Lift Crank Assembly
2	04-10067	Lift Mech. Bracket Assembly
3	A-11139	Armature Assembly
4	A-6892	Frame & Eyelet Assembly
5	SM1-26-600	Coil Assembly
6	10-363	Extension Spring
7	A-7438-1	Terminal Strip Assembly
8	4008-01021-07	Mach. Screw, 8-32 x 7/16"
9	4701-00003-00	Lockwasher #8 Split
10	4700-00089-00	Flat Washer,11/64x7/16x16ga.
11	4004-01003-10	Mach. Screw, 4-40 x 5/8"
12	4700-00073-00	Flat Washer, 9/32 x 1/2 x
13	A-8050	Plunger Assembly
a)	02-3407	Plunger Coil, 2-3/4"
b)	03-8085	Armature Link
c)	20-8716-5	Roll Pin, 1/8 x 7/16"

Item	Part Number	Description
14	12-6227	Hairpin Clip
15	5070-09054-00	Diode 1N4001, 1.0A.
16	5647-12001-00	Micro-Switch

Associated Assemblies:

17	B-9362-L-2	Coil & Bracket Assembly
a)	A-17808	Bracket & Stop Assembly
b)	01-8-508-S	Coil Retaining Bracket
c)	4006-01017-06	Mach. Screw, 6-32 x 3/8"
d)	4406-01119-00	Nut, 6-32 ESN
e)	AE-26-1200	Coil Assembly
f)	03-7066	Coil Tubing
18	10-128	Spring

Visor, Targets & Motor



C-11159
Visor Assembly

Item	Part Number	Description	Item	Part Number	Description
1	C-11158	Visor Rivet Assembly	6	B-11555	Lever Arm & Link Assy (2)
2	01-8366	Pivot Bracket	7	02-4265	Connecting Pin (2)
3	02-4264	Hinge Pin	8	4700-00073-00	FW 9/32 x 1/2 x 21ga. (2)
4	20-8712-18	'E' Ring, 3/16" Shaft (2)	9	12-6227	Hair Pin Clip (2)
* 5	31-2328-7	Decal			

* Not available for individual sale. Order Decal Set 31-2328.

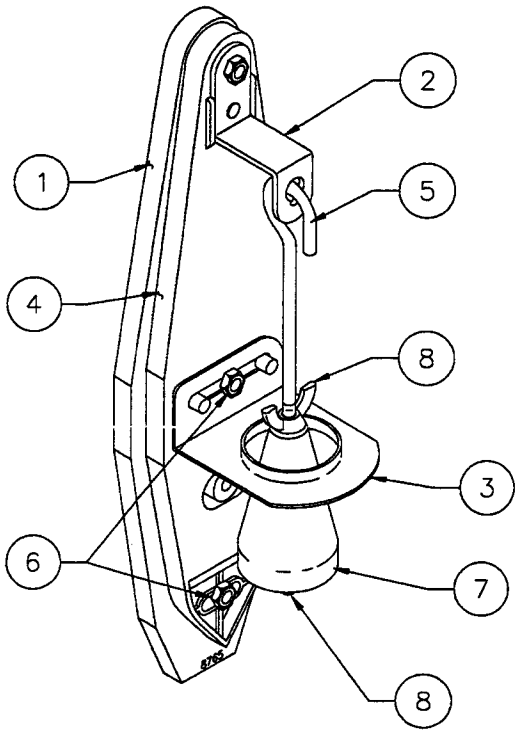
C-11157
Moving Target Assembly

Item	Part Number	Description	Item	Part Number	Description
10	B-11406	Guide & Carrier Assembly	15	C-11176	Switch & Cable Assembly
11	03-8028	Carrier Retainer (2)	16	01-3670-1	Switch Plate, Flat (5)
12	01-8494	Support Bracket (2)	17	4004-01003-12	MS-40 x 3/4 P-PH-S (10)
13	4106-01019-10	SMS #6 x 5/8 P-RH (4)	18	4404-01119-00	Nut 4-40 ESNA (1 0)
14	23-6534-9	Edge Protector (5)	19	03-7722-4	Kwik-Klip

A-20100
Visor Motor Bracket Assembly

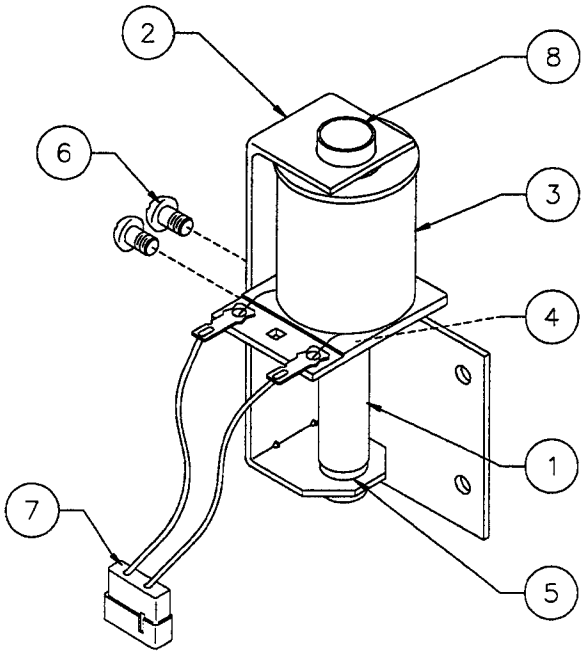
Item	Part Number	Description	Item	Part Number	Description
20	01-13895	Motor Drive Bracket	28	4010-01044-04	MS 10-32 x 114 P-FH (2)
21	04-10080	Motor Cam Assembly	29	4008-01083-04	SS B-32 x 1/4 SH-CP-N
22	04-10068	Adjustment Bracket Assy.	30	H-20127	Up/Down Cable Assembly
23	14-8023	Visor Drive Motor	31	H-18600-3	Motor Cable Ass'y, 2 Pin
24	01-8600	Insulator (2)	32	5070-09054-00	Diode 1 N4004, 1.0 A (2)
25	4002-01105-07	MS 2-56 x 7/16 P-PH-S (4)	33	03-7722-4	Kwik-Klip (2)
26	4010-01007-16	MS 10-32 x 1 P-PH (2)	34	5647-12694-06	Mini Micro Switch (2)
27	4006-01003-04	MS 6-32 x 1/4 P-PH-S (2)			

A-15361
Tilt Mechanism Assembly



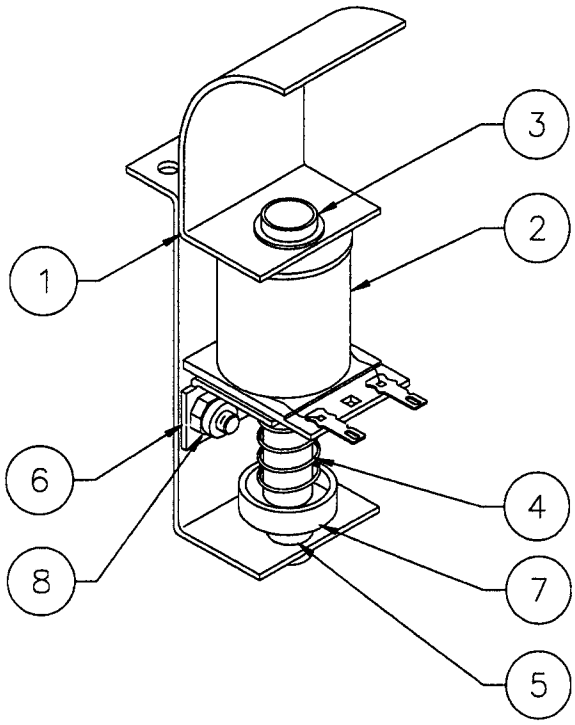
Item	Part Number	Description
1	A-15360	Mount Plate
2	01-3444	Bracket, Tilt Upper
3	01-3445	Bracket, Tilt Lower
4	03-8668	Pendulum
5	12-6231	Plumb Bob Wire
6	4006-01113-06	Mach. Screw, 6-32 x 3/8"
Associated Parts:		
7	20-6502-A	Plumb Bob
8	4406-01120-00	Wing Nut (2)

B-10686-1
Knocker Assembly



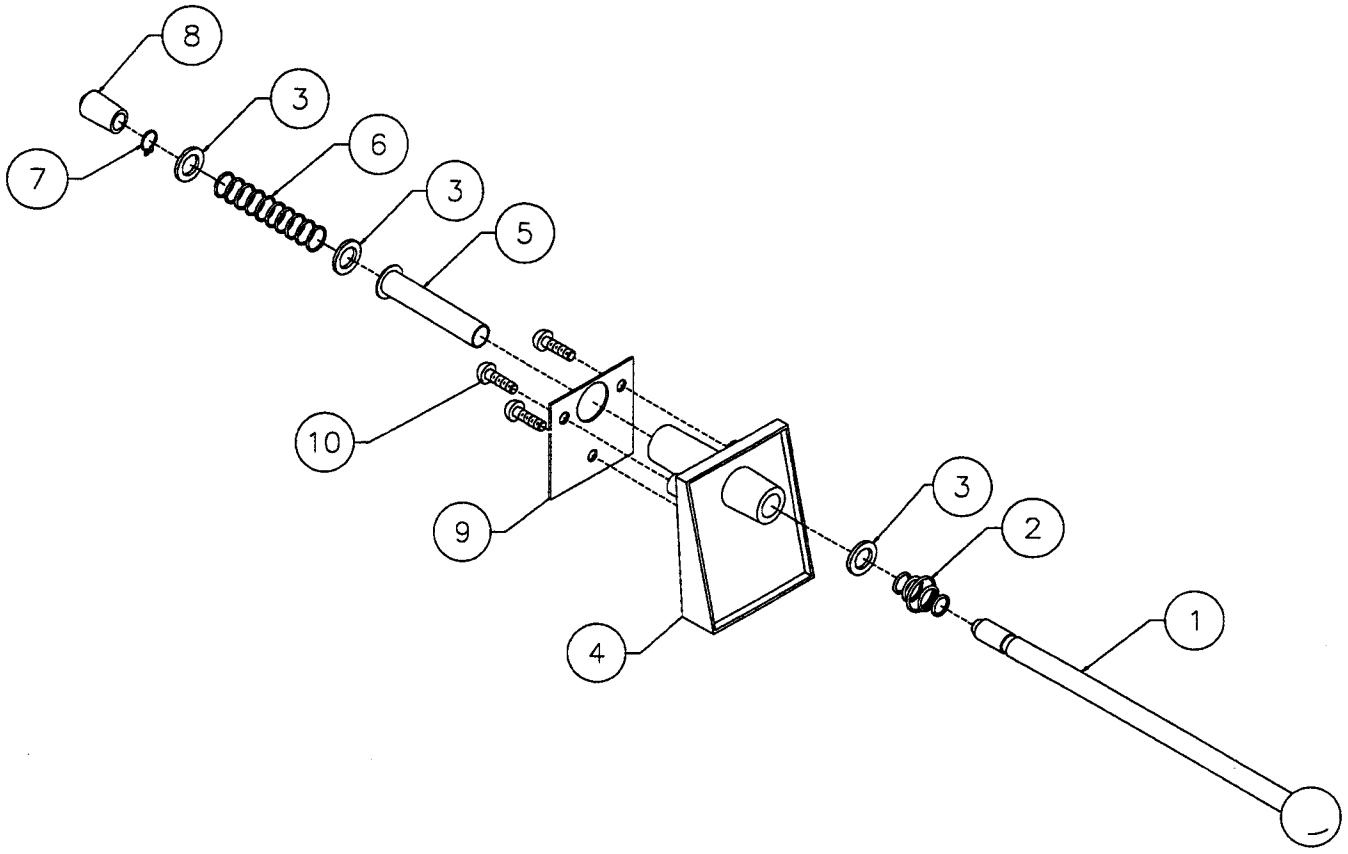
Item	Part Number	Description
1	A-5387	Coil Plunger Assembly
2	01-11273	Mounting Bracket Assembly
3	AE-23-800	Coil Sub-Assembly
4	01-8-508-T	Coil Retaining Bracket
5	23-6420	Rubber Grommet
6	4008-01017-04	Mach. Screw, 8/32 x 1/4"
7	H-11835	Knocker Cable
8	03-7067-5	Coil Tubing

A-20453
Eject Assembly



Item	Part Number	Description
1	04-10217	Eject Bracket Assembly
2	AE-26-1200	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	01-9784	Coil Bracket
7	A-17767	Bell Armature Assembly
8	4408-01119-00	Nut #8-32 ESN

A-20014
Ball Shooter Assembly



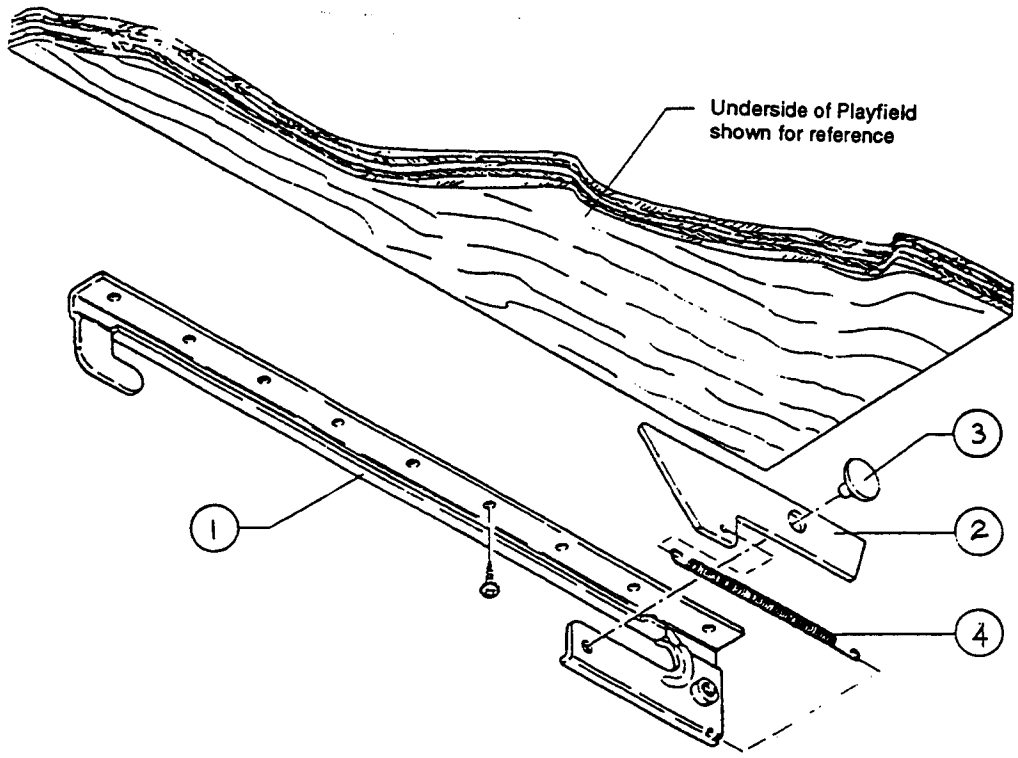
Item	Part Number	Description
1	20-9927-1	Ball Shooter Rod w/Shaft
2	10-149	Outer Spring
3	4700-00051-00	Flat Washer, 25/64 x 5/8 x 16ga.
4	21-6645-1	Shooter Housing
5	03-7357	Shooter Sleeve
6	10-148	Power Spring
7	20-8714-37	External Retainer Ring
8	23-6327	Ball Shooter Tip

Associated Parts:

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

Playfield Slide Mechanism Assembly

(Left Assembly Shown)



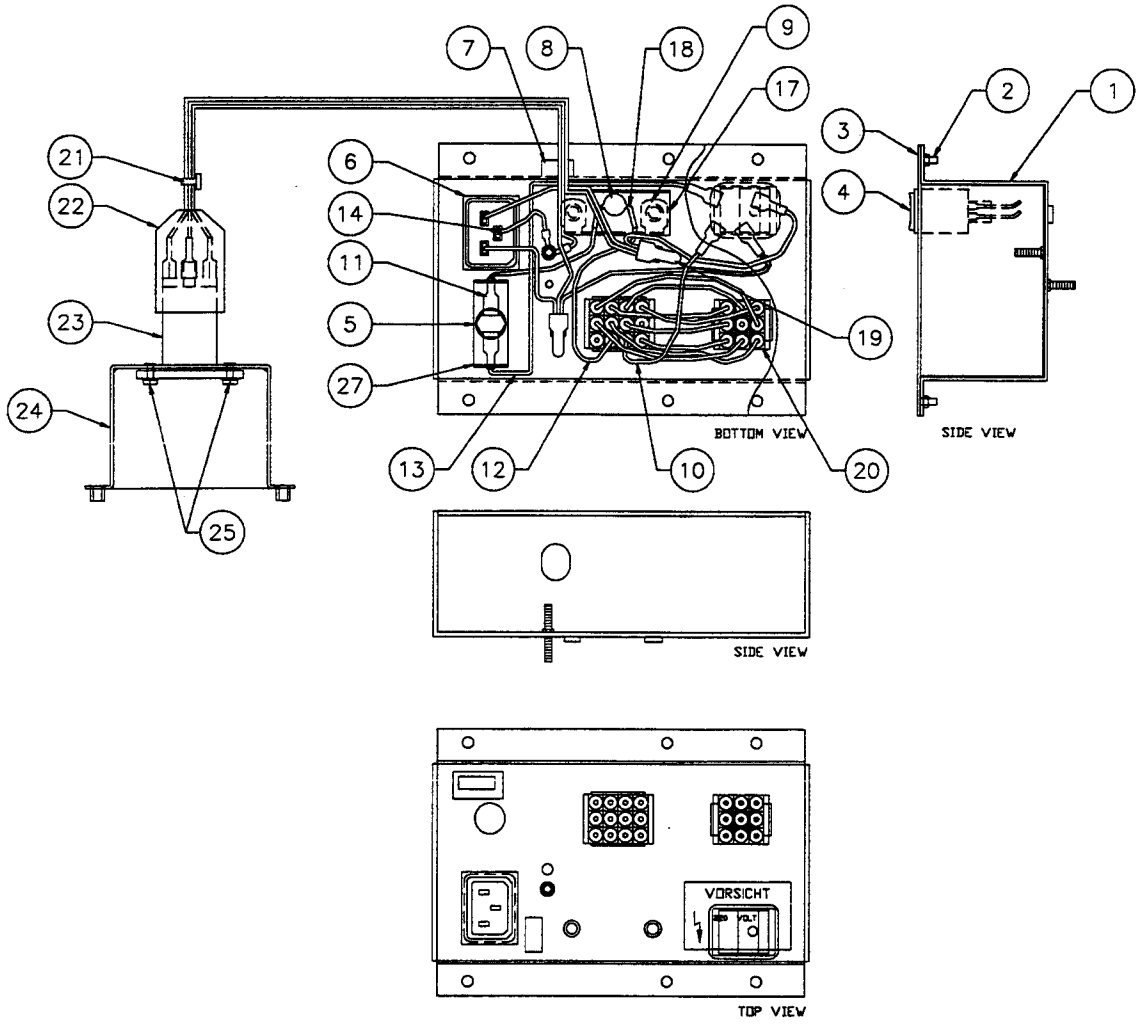
A-17749.1-1
Playfield Slide Mechanism Assy.
Left Assembly

Item	Part Number	Description
1	01-12304-1	Slide, Left
2	01-10664.1	Lever Retainer
3	02-4615	Shoulder Rivet
Associated Part:		
4	10-439	Spring

A-17749.1-2
Playfield Slide Mechanism Assy.
Right Assembly

Item	Part Number	Description
1	01-12304-1	Slide, Right
2	01-10664.1	Lever Retainer
3	02-4615	Shoulder Rivet
Associated Part:		
4	10-439	Spring

A-17540
Universal Power Interface Assembly



Item	Part Number	Description	Item	Part Number	Description
1	01-12293.1	Power Control Chassis Box	14	H-17542	Ground Jumper Grn/Yel Cable
2	4406-01128-00	Nut #6-32 KEPS	15	5797-13940-01	Jumper Cable
3	01-12294	Switch Mounting Plate Assembly	16	01-10623	Insulator, Thermistor
4	5642-13935-00	Power Switch	17	01-12299	Insulator, Terminal Strip
5	5733-12869-00	Fuse Holder Panel	18	RM-21-06	#18 Vinyl Fgls
6	5851-13867-00	Outlet-IEC Conn. 237 Socket	19	5822-13865-00	Terminal Strip 3-CKT 2-Mtg.
7	03-8712	Strain Relief Bushing	20	H-18050	Jumper Cable, Transformer Prog.
8	5016-12978-00	Thermistor 8A., 2.5R25	21	03-7933	Ty-Wrap Nylon
9	4006-01003-10	Mach. Screw, #6-32 x 5/8"	22	20-9682-1	Boot w/9-32 Dia. Hole
10	H-17992	Jumper Cable Neutral Sw/1FC	23	5102-13864-00	Line Filter w/IEC Connector
11	H-17543	Hot Jumper Black Cable	24	01-12292	Line Filter Chassis Box
12	H-17546	Jumper Interface Hot Black Cable	25	4004-01003-05	Mach. Screw, #4-40 x 5/16"
13	H-17545	Jumper Switch/Fuse Black Cable			

Universal Power Interface/Cordset Application Chart

COUNTRY	UNIVERSAL PWR. INTERFACE ASSEMBLY	VOLTAGE PROGRAMMING JUMP CABLE				5AMP FUSE/ LABEL		8AMP FUSE/ LABEL		LABEL HIGH/ VOLTAGE CAUTION	POWER ADAPTER CORD	CORDSET								
	A-17540	H-17837-1	H-17837-2	H-17837-3	H-17837-4	5731-09651-00 FUSE	16-9668 LABEL	5730-09252-00 FUSE	16-9670 LABEL	16-9669	5850-14052-00	5850-13271-00	5850-13272-00	5850-13273-00	5850-13274-00	5850-13275-00	5850-13276-00	5850-13277-00	5850-13278-00	A-17175-2
UNITED STATES	X		X					X	X		X	X								
CANADA	X	X						X	X			X								
TAIWAN	X		X					X	X			X								
MEXICO	X		X					X	X			X								
CENTRAL AMERICA	X		X					X	X			X								
SOUTH KOREA	X		X					X	X			X								
PUERTO RICO	X		X					X	X			X								
AUSTRIA	X			X		X	X			X			X							
BELGIUM	X			X		X	X			X			X							
FINLAND	X			X		X	X			X			X							
FRANCE	X			X		X	X			X			X							
GREECE	X			X		X	X			X			X							
HOLLAND	X			X		X	X			X			X							
HUNGARY	X			X		X	X			X			X							
NETHERLANDS	X			X		X	X			X			X							
NETH. ANTILLES	X			X		X	X			X			X							
NORWAY	X			X		X	X			X			X							
POLAND	X			X		X	X			X			X							
PORTUGAL	X			X		X	X			X			X							
SPAIN	X			X		X	X			X			X							
SWEDEN	X			X		X	X			X			X							
TURKEY	X			X		X	X			X			X							
WEST GERMANY	X			X		X	X			X			X							
UNITED KINGDOM	X			X		X	X			X				X						
IRELAND	X			X		X	X			X				X						
HONG KONG	X			X		X	X			X				X						
DENMARK	X			X		X	X			X					X					
ITALY	X			X		X	X			X						X				
CHILE	X			X		X	X			X						X				
PEOPLE'S REP. OF CHINA	X			X		X	X			X						X				
SWITZERLAND	X			X		X	X			X							X			
AUSTRALIA	X			X		X	X			X								X		
NEW ZEALAND	X			X		X	X			X								X		
ARGENTINA	X			X		X	X			X								X		
JAPAN	X				X			X	X										X	X

Upper Playfield Parts

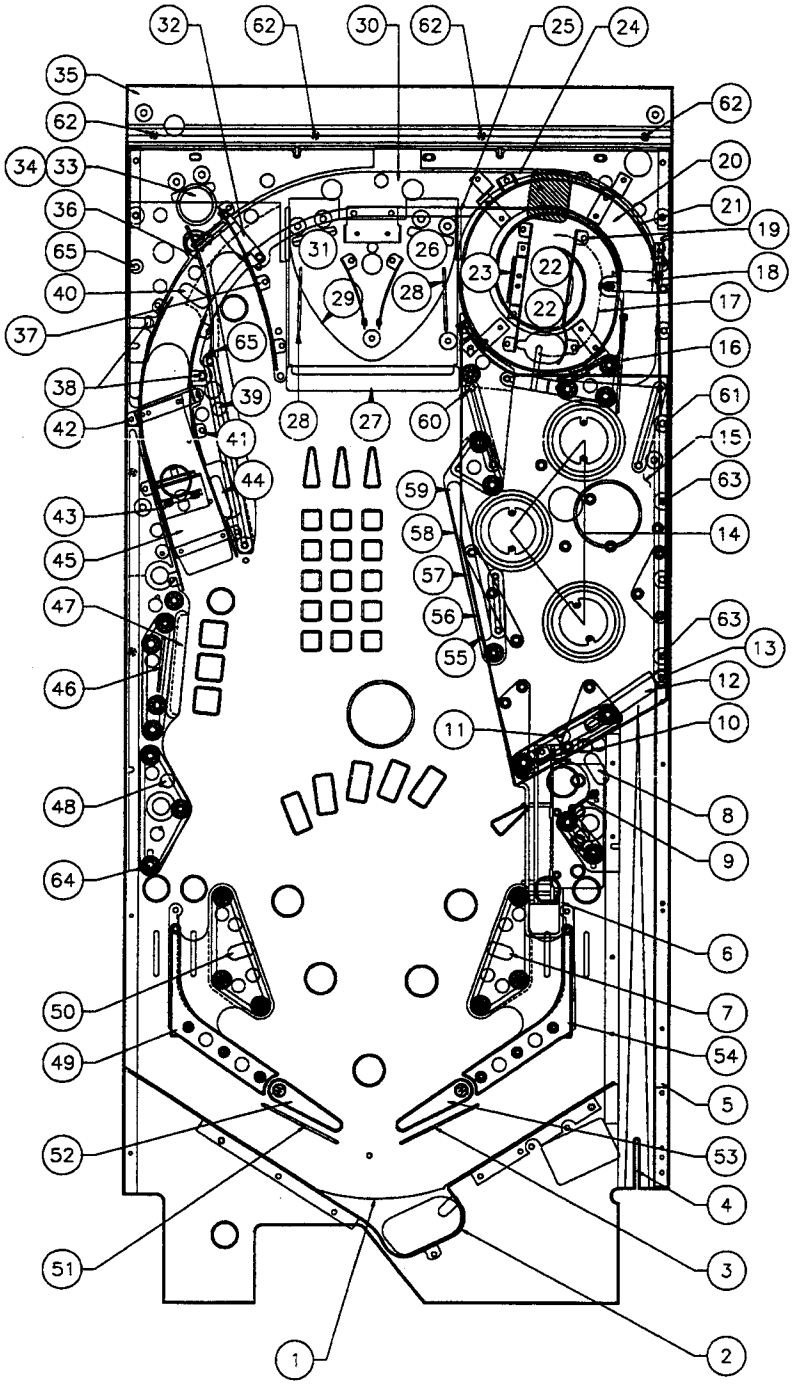
Item	Part Number	Description
1	12-6842	Bottom Arch Fence
2	01-13638	Bottom Arch Ball Guide
3	12-6468	Rebound Wire
4	A-17791	Shooter Lane Switch Assy
5	20-9691	Level
	03-8633	Level Mount
6	A-20171	Wire Ramp
	A-19035	4-Lamp Board
7	A-17811	Kicker Assembly
	A-17801	Kicker Switch Assembly
8	A-18605-2	Standup Target (green)
9	12-6466-4	Wireform
10	01-13885	Ball Guide #6
11	A-17794	Kicker Switch Assembly
12	A-11126	Bracket & Gate Assembly
13	02-5213-1	Post - 3/8 Hex 8-32
14	A-9415-2	Jet Bumper Coil Assy
	A-12030-3	Leaf Switch Assembly
	B-9414-3	Wafer Assembly (red)
15	A-20082	Mini-Playfield
16	12-6469-4	Wireform
17	A-20083	Ramp Cover
18	A-17516	Switch & Gate Assembly
19	01-13883	Ball Guide #4
20	A-20080	Spiral Ramp
21	A-20115	Ball Guide #3
22	A-17995	Spin Target Switch Assy
23	A-20117	Ball Guide #5
24	A-20139	Helmet Assembly
	01-13905	Ball Guide #8
25	A-20100	Motor Bracket Assembly
26	A-20453	Eject Assembly
27	C-11157	Moving Target Assembly
	A-11177 (yel)	Target
	A-11315-1 (blu)	Target
	A-11315-4 (org)	Target
	A-11315-2 (grn)	Target
	A-11315-3 (red)	Target
28	12-6466-6	Wireform
29	C-11159	Visor
30	A-20077	Plastic Ramp
31	A-20453	Eject
32	A-17516	Switch & Gate Assembly
33	A-20453	Eject
34	01-6933	Ball Deflector
35	A-20166	Back Panel
36	12-6469-4	Wireform
37	01-13886	Ball Guide
38	03-8022-1	Spacer .375 x .541
	4006-01113-16	MS 6-32 x 1PL-HWH
39	A-17794	Kicker Switch Assembly
40	A-18605-4	Standup Target (red)
41	A-20089	Right Guard Rail
42	A-20090	Left Guard Rail
43	A-17272	2-Lamp Board
44	B-11304	Ramp Lift Mechanism
45	B-11239	Lift Ramp Assembly
	A-11852	Ramp Flap & Mylar
	01-8424	Protector
46	12-6466-8	Wireform
47	A-20415	Drop Target Assembly
48	A-17794	Kicker Switch Assembly
49	03-9216-9	Flipper Ball Guide
50	A-17811	Kicker Assembly
	A-17801	Kicker Switch Assembly
51	12-6468	Wireform
52	A-15849-L	Left Flipper Assembly
	FL-11630	Flipper Coil
	20-9250-5	Shaft & Paddle
53	A-15849-R	Right Flipper Assembly
	FL-11630	Flipper Coil
	20-9250-5	Shaft & Paddle
54	03-9216-9	Flipper Ball Guide
55	A-18605-4	Standup Target (red)
56	A-18605-2	Standup Target (green)
57	A-18605-15	Standup Target (orange)
58	A-18605-1	Standup Target (blue)
59	A-18605-6	Standup Target (yellow)
60	03-9357	Post - #8 x 1.06 trns. (red)
61	02-5215	Post - 5/16 Hex 8-32
62	02-5214-2	Post - 5/16 Hex 8-32,3.75"
63	02-5213-2	Post - 3/8 Hex 8-32
64	02-4434	Post - #8 x 1
65	02-5214-1	Post - 5/16 Hex 8-32,3.56"

Not Shown:

03-7960-549-1	Full Playfield Mylar*
03-7960-549-2	Mylar - under mini playfield
03-7960-549-3	Mylar - right kicker
03-7960-549-4	Mylar - left kicker
03-7960-549-5	Mylar - under lift ramp spring
03-7960-549-6	Mylar - under spiral ramp
03-7960-549-7	Mylar - under wire ramp
03-8118	Ramp Mylar
25-6500	Steel Balls
A-13204-50051	Screened Bottom Arch Assy
31-2331	Screened Bottom Arch
36-50051	Screened Hardcoat Playfield

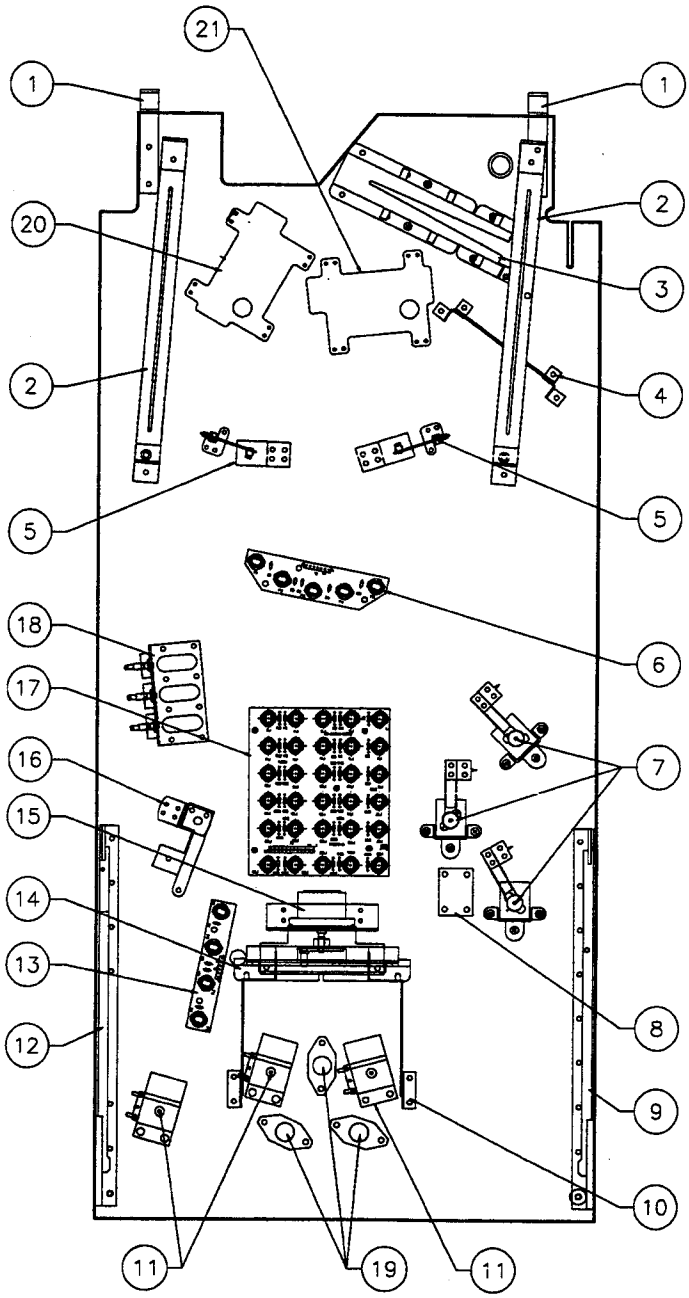
*The JACK•BOT hardcoat playfield does not require a full mylar. However, mylars can be purchased through your local Williams Distributor.

Upper Playfield Parts



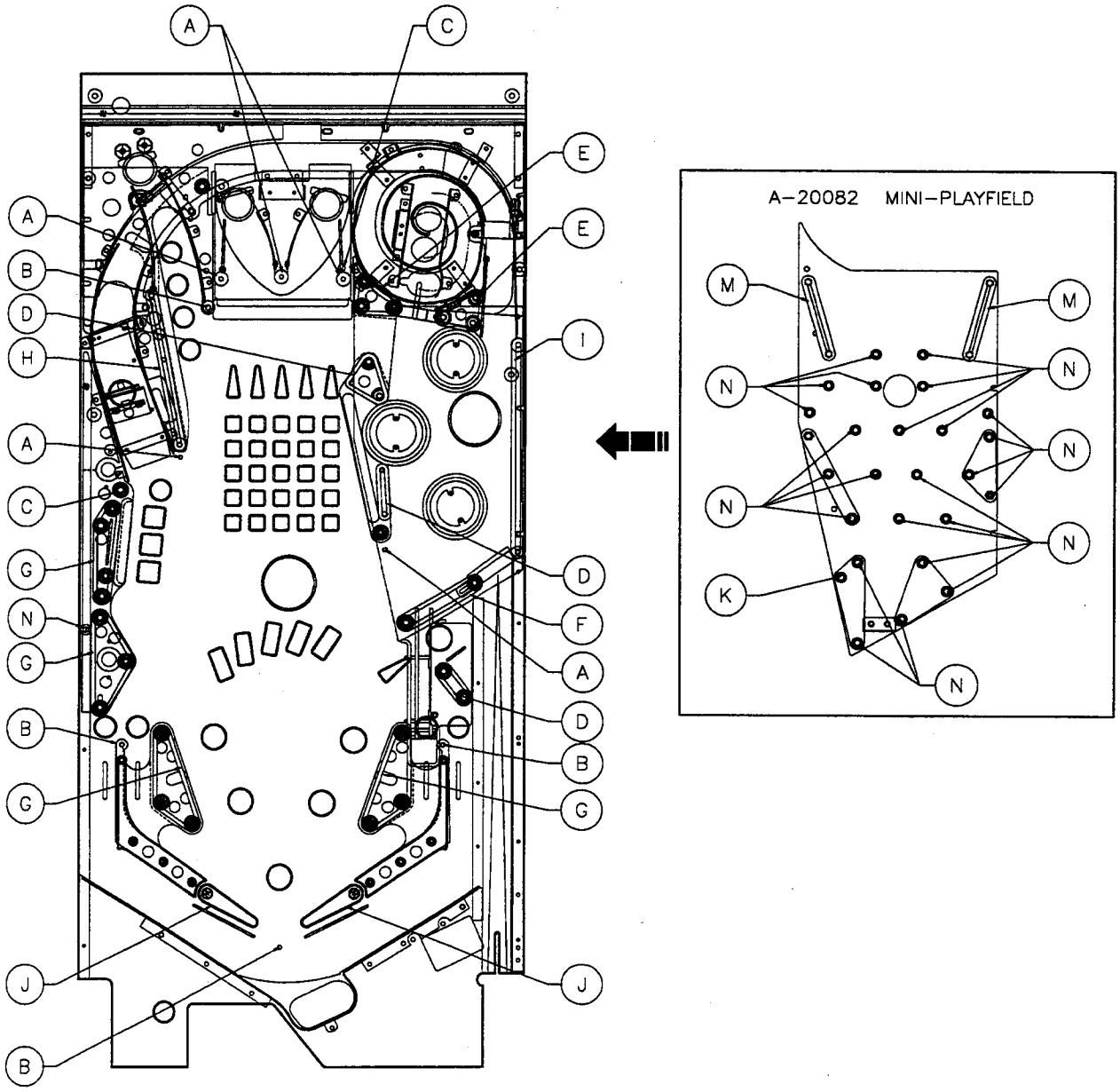
Lower Playfield Parts

Item	Part Number	Description
1	01-9211	Plfd. Hanger Bracket Assy. (2)
2	01-11781	Leg Support (2)
3	A-19963	Outhole Ball Trough Assembly
4	A-15595	7-Switch Opto PCB & Bracket
5	A-17811	Kicker Arm (Slingshot) Assy.
	B-9362-L-2	Coil & Bracket Assembly (2)
6	A-20125	5-Lamp PCB Assembly
7	A-9415-2	Jet Bumper Coil Assembly (3)
	B-9414-3	Jet Bumper Assembly (3)
8	A-15340	Motor EMI w/Brake Assembly
9	A-17749.1-2	Slide Playfield Assembly, R.
10	C-11159	Visor Assembly
11	A-20453	Eject Assembly (3)
12	A-17749.1-2	Slide Playfield Assembly, L.
13	A-20174	4-Lamp PCB Assembly
14	C-11157	Moving Target Assembly
15	A-20100	Motor Bracket Assembly
16	B-11304	Ramp Lifting Mech. Assembly
17	A-20079	30-Lamp PCB Assembly
18	A-16032-1	3-Bank Drop Target Assembly
19	A-20158	Single Flashlamp Assy. (3)
20	A-15849-L	Flipper Assembly, Lwr. Left
21	A-15849-R	Flipper Assembly, Upr. Right

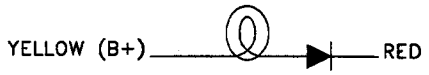


Rubber Rings

Item	Part Number	Description	Quantity
A	23-6556	Black Bumper Sleeve	5
B	23-6694-1	Black Grommet-3/32"	4
C	23-6694-3	Black Ring - 5/16"	2
D	23-6694-6	Black Ring - 1"	3
E	23-6694-8	Black Ring - 1-1/2"	2
F	23-6694-9	Black Ring - 2"	1
G	23-6694-10	Black Ring - 2-1/2"	4
H	23-6694-11	Black Ring - 3"	1
I	23-6694-13	Black Ring - 4"	1
J	23-6695	Black Flipper Ring	2
K	23-6302	White Ring - 1"	1
M	23-6304	White Ring - 1-1/2"	2
N	23-6535	White Grommet	25



Lamp Matrix



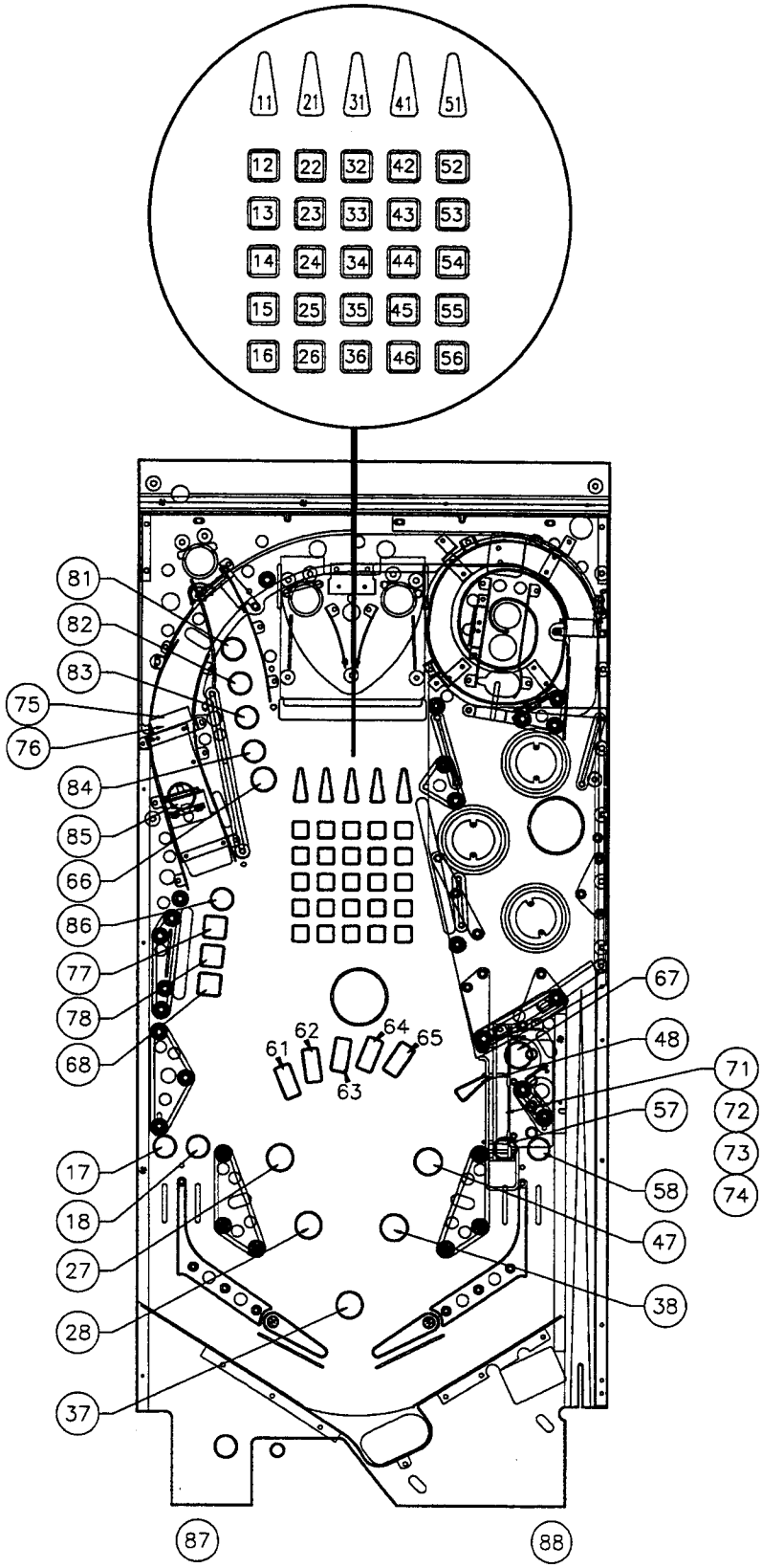
COLUMN / ROW	1 Yellow–Brown J137–1 Q98	2 Yellow–Red J137–2 Q97	3 Yellow–Orange J137–3 Q96	4 Yellow–Black J137–4 Q95	5 Yellow–Green J137–5 Q94	6 Yellow–Blue J137–6 Q93	7 Yellow–Violet J137–7 Q92	8 Yellow–Gray J137–9 Q91
Red–Brown J134–1 Q90 1	YELLOW ARROW 11	BLUE ARROW 21	AMBER ARROW 31	GREEN ARROW 41	RED ARROW 51	CARD 1 (LEFT) 61	CASHIER MINI–PLFD 71	PINBOT POKER 81
Red–Black J134–2 Q89 2	YELLOW 1 (HIGH) 12	BLUE 1 (HIGH) 22	AMBER 1 (HIGH) 32	GREEN 1 (HIGH) 42	RED 1 (HIGH) 52	CARD 2 62	MEGA RAMP MINI–PLFD 72	SLOT MACHINE 82
Red–Orange J134–4 Q88 3	YELLOW 2 13	BLUE 2 23	AMBER 2 33	GREEN 2 43	RED 2 53	CARD 3 63	LIGHT EX. BALL MINI–PLFD 73	ROLL THE DICE 83
Red–Yellow J134–5 Q87 4	YELLOW 3 14	BLUE 3 24	AMBER 3 34	GREEN 3 44	RED 3 54	CARD 4 64	JACK•BOT MINI–PLFD 74	KENO 84
Red–Green J134–6 Q87 5	YELLOW 4 15	BLUE 4 25	AMBER 4 35	GREEN 4 45	RED 4 55	CARD 5 (RIGHT) 65	GAME SAUCER 75	CASHIER (UNDER RAMP) 85
Red–Blue J134–7 Q86 6	YELLOW 5 (LOW) 16	BLUE 5 (LOW) 26	AMBER 5 (LOW) 36	GREEN 5 (LOW) 46	RED 5 (LOW) 56	CASINO RUN 66	MEGA RAMP 76	JACK•BOT (RAMP) 86
Red–Violet J134–8 Q84 7	LEFT OUTLANE 17	BONUS 2X 27	SHOOT AGAIN 37	BONUS 5X 47	RIGHT FLIPPER LANE 57	HIT ME 67	HIGH DROP TARGET 77	BUY–IN BUTTON 87
Red–Gray J134–9 Q83 8	LEFT FLIPPER LANE 18	BONUS 3X 28	BONUS 4X 38	JACK•BOT (TARGET) 48	RIGHT OUTLANE 58	LOW DROP TARGET 68	CENTER DROP TARGET 78	START BUTTON 88

J1XX = POWER DRIVER BOARD

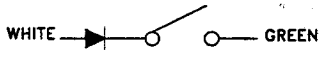
Lamp Locations

Item No.	Bulb Number	Lamp Assy Number	Description
11	24-8768	A-20079	Yellow Arrow
12	24-8768	A-20079	Yellow 1 (High)
13	24-8768	A-20079	Yellow 2
14	24-8768	A-20079	Yellow 3
15	24-8768	A-20079	Yellow 4
16	24-8768	A-20079	Yellow 5 (Low)
17	24-6549	A-17835	Left Outlane
18	24-6549	A-17835	Left Flipper Lane
21	24-8768	A-20079	Blue Arrow
22	24-8768	A-20079	Blue 1 (High)
23	24-8768	A-20079	Blue 2
24	24-8768	A-20079	Blue 3
25	24-8768	A-20079	Blue 4
26	24-8768	A-20079	Blue 5 (Low)
27	24-6549	A-17835	Bonus 2X
28	24-6549	A-17835	Bonus 3X
31	24-8768	A-20079	Amber Arrow
32	24-8768	A-20079	Amber 1 (High)
33	24-8768	A-20079	Amber 2
34	24-8768	A-20079	Amber 3
35	24-8768	A-20079	Amber 4
36	24-8768	A-20079	Amber 5 (Low)
37	24-6549	A-17807	Shoot Again
38	24-6549	A-17835	Bonus 4X
41	24-8768	A-20079	Green Arrow
42	24-8768	A-20079	Green 1 (High)
43	24-8768	A-20079	Green 2
44	24-8768	A-20079	Green 3
45	24-8768	A-20079	Green 4
46	24-8768	A-20079	Green 5 (Low)
47	24-6549	A-17835	Bonus 5X
48	24-6549	A-17835	Jack•Bot (Target)
51	24-8768	A-20079	Red Arrow
52	24-8768	A-20079	Red 1 (High)
53	24-8768	A-20079	Red 2
54	24-8768	A-20079	Red 3
55	24-8768	A-20079	Red 4
56	24-8768	A-20079	Red 5 (Low)
57	24-6549	A-17835	Right Flipper Lane
58	24-6549	A-17835	Right Outlane
61	24-8768	A-20125	Card 1 (Left)
62	24-8768	A-20125	Card 2
63	24-8768	A-20125	Card 3
64	24-8768	A-20125	Card 4
65	24-8768	A-20125	Card 5 (Right)
66	24-6549	A-17835	Casino Run
67	24-6549	A-17835	Hit Me
68	24-6549	A-17807	Low Drop Target
71	24-8768	A-19035	Light Ex. Ball (Mini Plfd)
72	24-8768	A-19035	Mega Ramp (Mini Plfd)
73	24-8768	A-19035	Cashier (Mini Plfd)
74	24-8768	A-19035	25 Million (Mini Plfd)
75	24-8768	A-17272	Game Saucer
76	24-8768	A-17272	Mega Ramp
77	24-6549	A-17807	High Drop Target
78	24-6549	A-17807	Center Drop Target
81	24-8768	A-20174	Pinbot Poker
82	24-8768	A-20174	Slot Machine
83	24-8768	A-20174	Roll The Dice
84	24-8768	A-20174	Keno
85	24-6549	A-17807	Cashier (Under Ramp)
86	24-6549	A-17835	Jack•Bot (Ramp)
87	-----	20-9663-18	Buy-In Button
88	-----	20-9663-1	Start Button

24-6549 = #44 BULB **24-8768 = #555 BULB**



Switch Matrix

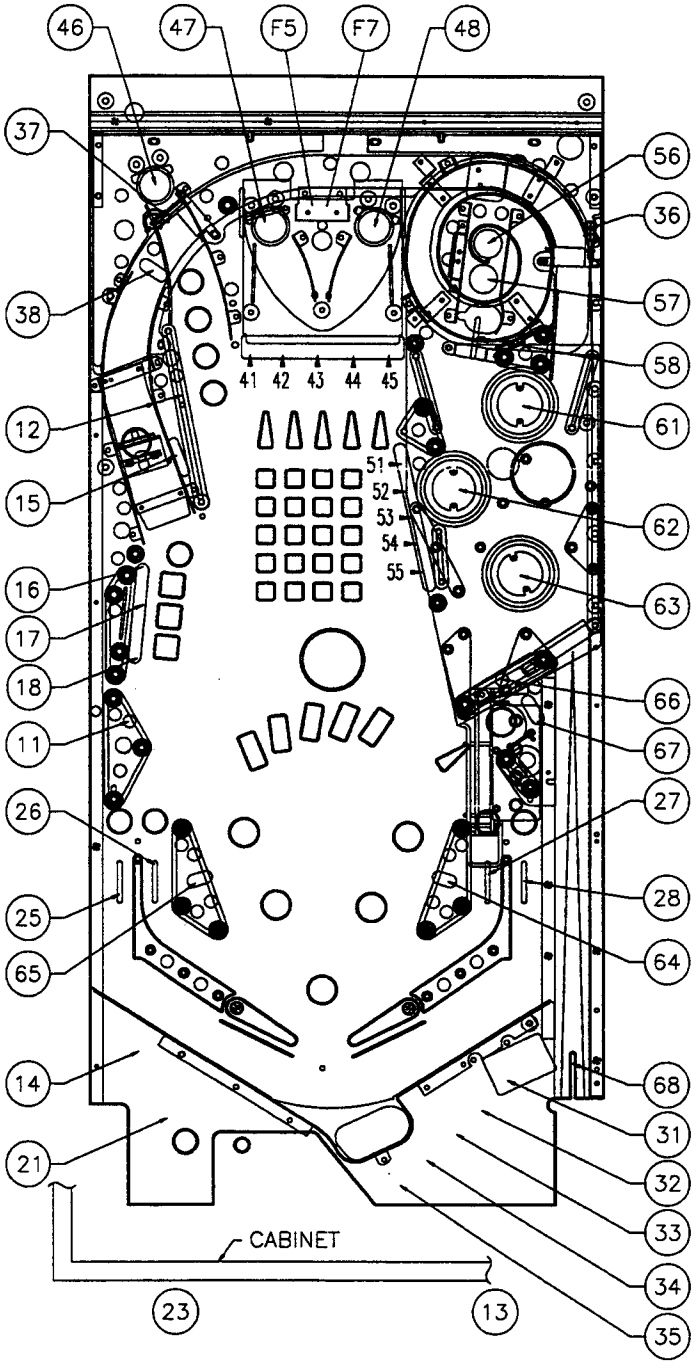


Dedicated Grounded Switches	ROW \ COLUMN	1 Green–Brown J207–1 U20–18	2 Green–Red J207–2 U20–17	3 Green–Orange J207–3 U20–16	4 Green–Yellow J207–4 U20–15	5 Green–Black J207–5 U20–14	6 Green–Blue J207–6 U20–13	7 Green–Violet J207–7 U20–12	8 Green–Gray J207–9 U20–11	Flipper Grounded Switches
Org–Brn J205–1 Left Coin Chute D1	White–Brown J209–1 U18–11 1	LOWER LEFT 10 POINT 11	SLAM TILT 21	TROUGH JAM 31	VISOR 1 (LEFT) 41	5–BANK TARGET 1 (UPPER) 51	UPPER JET BUMPER 61	NOT USED 71	NOT USED 81	Black–Green J906–1 Lower Right E.O.S. F1
Org–Red J205–2 Center Coin Chute D2	White–Red J209–2 U18–9 2	UPPER LEFT 10 POINT 12	COIN DOOR CLOSED 22	TROUGH 1 (RIGHT) 32	VISOR 2 42	5–BANK TARGET 2 52	LEFT JET BUMPER 62	NOT USED 72	NOT USED 82	Blue–Violet J905–1 Lower Right Opto F2
Org–Blk J205–3 Right Coin Chute D3	White–Orange J209–3 U18–5 3	START BUTTON 13	BUY EXTRA BALL 23	TROUGH 2 33	VISOR 3 43	5–BANK TARGET 3 53	LOWER JET BUMPER 63	NOT USED 73	NOT USED 83	Black–Blue J906–3 Lower Left E.O.S. F3
Org–Yel J205–4 4th Coin Chute D4	White–Yellow J209–4 U18–7 4	PLUMB BOB TILT 14	ALWAYS CLOSED 24	TROUGH 3 34	VISOR 4 44	5–BANK TARGET 4 54	RIGHT SLINGSHOT 64	NOT USED 74	NOT USED 84	Blue–Gray J905–2 Lower Left Opto F4
Org–Grn J205–6 Normal Service Credit / Test Escape D5	White–Green J209–5 U19–11 5	RAMP IS DOWN 15	LEFT OUTLANE 25	TROUGH 4 LEFT 35	VISOR 5 (RIGHT) 45	5–BANK TARGET 5 (LOWER) 55	LEFT SLINGSHOT 65	NOT USED 75	NOT USED 85	Black–Violet J906–4 Visor Closed F5
Org–Blu J205–7 Normal Volume Down / Test Down D6	White–Blue J209–7 U19–9 6	HIGH DROP TARGET 16	LEFT FLIPPER LANE 26	RAMP EXIT 36	FAR LEFT EJECT 46	VORTEX UPPER 56	RIGHT 10 POINT 66	NOT USED 76	NOT USED 86	Black–Yellow J905–3 Upper Right Opto F6
Org–Vio J205–8 Normal Volume Up / Test Up D7	White–Violet J209–8 U19–5 7	CENTER DROP TARGET 17	RIGHT FLIPPER LANE 27	RAMP ENTRANCE 37	LEFT EJECT HOLE (VISOR) 47	VORTEX CENTER 57	HIT ME TARGET 67	NOT USED 77	NOT USED 87	Black–Gray J906–5 Visor Open F7
Org–Gry J205–9 Normal Begin Test / Test Enter D8	White–Gray J209–9 U19–7 8	LOW DROP TARGET 18	RIGHT OUTLANE 28	TARGET UNDER RAMP 38	RIGHT EJECT HOLE (VISOR) 48	VORTEX LOWER 58	BALL SHOOTER 68	NOT USED 78	NOT USED 88	Black–Blue J905–5 Upper Left Opto F8

J2XX = CPU BOARD; J9XX = FLIPTRONIC II BOARD = OPTO, TYPICALLY CLOSED

Switch Locations

Item No.	Switch Part Number	Description
F1	SW-1A-194	Lwr Right Flipper E.O.S.
F2	A-17316	Lwr Right Flipper Cab.
F3	SW-1A-194	Lwr Left Flipper E.O.S.
F4	A-17316	Lwr Left Flipper Cab.
F5	5647-12693-06	Visor Is Closed
F6		NOT USED
F7	5647-12693-06	Visor Is Open
F8		NOT USED
11	SW-1A-120	Lower Left 10 Point
12	SW-1A-120	Upper Left 10 Point
13	20-9663-1	Start Button
14	A-15361	Plumb Bob Tilt*
15	5647-12001-00	Ramp Is Down
16	A-13609	High Drop Target
17	A-13609	Center Drop Target
18	A-13609	Low Drop Target
21	A-17238	Slam Tilt*
22	5643-09268-00	Coin Door Closed*
23	20-9663-18	Buy Extra Ball
24	5643-09112-00	Always Closed*
25	5647-12693-19	Left Outlane
26	5647-12693-19	Left Flipper Lane
27	5647-12693-19	Right Flipper Lane
28	5647-12693-19	Right Outlane
31	A-18617-1 (LED) A-18618-1 (Trans.)	Trough Jam
32	A-18617-1 (LED) A-18618-1 (Trans.)	Trough 1 (Right)
33	A-18617-1 (LED) A-18618-1 (Trans.)	Trough 2
34	A-18617-1 (LED) A-18618-1 (Trans.)	Trough 3
35	A-18617-1 (LED) A-18618-1 (Trans.)	Trough 4
36	5647-12693-11	Ramp Exit
37	5647-12693-11	Ramp Entrance
38	A-18605-4	Target Under Ramp
41	SW-1A-161	Visor 1 (Left)
42	SW-1A-163-1	Visor 2
43	SW-1A-163-4	Visor 3
44	SW-1A-163-2	Visor 4
45	SW-1A-163-3	Visor 5 (Right)
46	5647-12693-43	Far Left Eject
47	5647-12693-43	Left Eject Hole (Visor)
48	5647-12693-43	Right Eject Hole (Visor)
51	A-18605-6	5-Bank Target 1 (Upper)
52	A-18605-1	5-Bank Target 2
53	A-18605-15	5-Bank Target 3
54	A-18605-2	5-Bank Target 4
55	A-18605-4	5-Bank Target 5 (Lower)
56	5647-12133-08	Vortex Upper
57	5647-12133-08	Vortex Center
58	5647-12693-19	Vortex Lower
61	A-12030-3	Upper Jet Bumper
62	A-12030-3	Left Jet Bumper
63	A-12030-3	Lower Jet Bumper
64	SW-1A-120 (score) SW-1A-114 (kick)	Right Slingshot
65	SW-1A-120 (score) SW-1A-114 (kick)	Left Slingshot
66	SW-1A-120	Right 10 Point
67	A-18605-2	Hit Me Target
68	5647-12693-32	Ball Shooter



71 THROUGH 88 ARE NOT USED
***NOT SHOWN**

Solenoid/Flashlamp Table

SOL. NO.	FUNCTION	SOLENOID TYPE	VOLTAGE CONNECTIONS			DRIVE XISTOR	DRIVE CONNECTIONS			DRIVE WIRE	SOLENOID PART NUMBER FLASHLAMP TYPE	
			PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX
01	BALL RELEASE	High Power	J107-2			Q82	J130-1			VIO-BRN	AE-26-1500	
02	NOT USED	High Power	J107-2			Q80	J130-2			VIO-RED		
03	FAR LEFT EJECT	High Power	J107-2			Q78	J130-4			VIO-ORG	AE-26-1200	
04	DROP TARGETS	High Power	J107-2			Q76	J130-5			VIO-YEL	AE-26-1200	
05	RIGHT EJECT HOLE	High Power	J107-2			Q64	J130-6			VIO-GRN	AE-26-1200	
06	RAISE RAMP	High Power	J107-2			Q66	J130-7			VIO-BLU	AE-26-1200	
07	KNOCKER	High Power		J107-2		Q68		J130-8		VIO-BLK		AE-23-800
08	LEFT EJECT HOLE	High Power	J107-2			Q70	J130-9			VIO-GRY	AE-26-1200	
09	LEFT SLINGSHOT	Low Power	J107-3			Q58	J127-1			BRN-BLK	AE-26-1200	
10	RIGHT SLINGSHOT	Low Power	J107-3			Q56	J127-3			BRN-RED	AE-26-1200	
11	LOWER JET BUMPER	Low Power	J107-3			Q54	J127-4			BRN-ORG	AE-26-1200	
12	LEFT JET BUMPER	Low Power	J107-3			Q52	J127-5			BRN-YEL	AE-26-1200	
13	UPPER JET BUMPER	Low Power	J107-3			Q50	J127-6			BRN-GRN	AE-26-1200	
14	DROP RAMP	Low Power	J107-3			Q48	J127-7			BRN-BLU	SM1-26-600	
15	RIGHT VISOR FLSHR(2)	Low Power	J107-6			Q46	J127-8			BRN-VIO	#906	
16	LEFT VISOR FLSHR(2)	Low Power	J107-6			Q44	J127-9			BRN-GRY	#906	
17	CENTER VISOR FLSHR	Flashlamp	J107-6			Q42	J126-1			BLK-BRN	#906	
18	PINBOT FACE FLSHR	Flashlamp	J107-6			Q40	J126-2			BLK-RED	#906	
19	JET BUMPERS FLSHR	Flashlamp	J107-6			Q38	J126-3			BLK-ORG	#906	
20	LOWER LEFT FLSHR	Flashlamp	J107-6			Q36	J126-4			BLK-YEL	#906	
21	MIDDLE LEFT FLSHR	Flashlamp	J107-6			Q28	J126-5			BLU-GRN	#906	
22	LOWER RIGHT FLSHR	Flashlamp	J107-6			Q30	J126-6			BLU-BLK	#906	
23	BACK PNL FLSHR 1 (LT)	Flashlamp	J107-6			Q34	J126-7			BLU-VIO	#906	
24	BACK PANEL FLSHR 2	Flashlamp	J107-6			Q32	J126-8			BLU-GRY	#906	
25	BACK PANEL FLSHR 3	Gen. Purpose	J107-6			Q26	J122-1			BLU-BRN	#906	
26	BACK PANEL FLSHR 4	Gen. Purpose	J107-6			Q24	J122-2			BLU-RED	#906	
27	BACK PNL FLSHR 5 (RT)	Gen. Purpose	J107-6			Q22	J122-3			BLU-ORG	#906	
28	VISOR MOTOR	Gen. Purpose	J118-2			Q20	J122-4			BLU-YEL	14-8023	
29-36	SEE FLIPPER CKTS											
37	NOT USED	Low Power				Q16				BRN-WHT		
38	NOT USED	Low Power				Q15				BLK-WHT		
39	NOT USED	Low Power				Q14				ORG-WHT		
40	NOT USED	Low Power				Q13				YEL-WHT		
41	NOT USED	Low Power				Q9				GRN-WHT		
42	NOT USED	Low Power				Q10				BLU-WHT		
43	NOT USED	Low Power				Q11				VIO-WHT		
44	NOT USED	Low Power				Q12				GRY-WHT		
	GENERAL ILLUMINATION											
01	PLAYFIELD LOWER	G.I.	J120-1	J121-1		Q18	J120-7	J121-7		WHT-BRN	#44	
02	PLAYFIELD LEFT	G.I.	J120-2	J121-2		Q10	J120-8	J121-8		WHT-ORG	#44	
03	PLAYFIELD UPPER	G.I.	J120-3	J121-3		Q14	J120-9	J121-9		WHT-YEL	#44	
04	PLAYFIELD RIGHT	G.I.	J120-5	J121-5		Q16	J120-10	J121-10		WHT-GRN	#44	
05	INSERT	G.I.	J120-6		J119-3	Q12	J120-11		J119-1	WHT-VIO		#555

	FLIPPER CIRCUITS		VOLTAGE CONNECTION	DRIVE XISTOR POWER	DRIVE XISTOR HOLD	DRIVE CONNECTION PLAYFIELD	DRIVE WIRE POWER	DRIVE WIRE HOLD	COIL PART NUMBER	COIL COLOR
29		Power	J907-1 (RED-GRN)	Q4		J902-13	YEL-GRN			
30	LOWER RIGHT FLIPPER	Hold	J907-1 (RED-GRN)		Q11	J902-11		ORG-GRN	FL-11630	RED
31		Power	J907-4 (RED-BLU)	Q3		J902-9	YEL-BLU			
32	LOWER LEFT FLIPPER	Hold	J907-4 (RED-BLU)		Q9	J902-7		ORG-BLU	FL-11630	RED
33	NOT USED	Power	J907-6 (RED-VIO)	Q2		J902-6	YEL-VIO		NOT USED	
34	UPPER RIGHT FLIPPER	Hold	J907-6 (RED-VIO)		Q7	J902-4		ORG-VIO		
35	NOT USED	Power	J907-8 (RED-GRY)	Q1		J902-3	YEL-GRY		NOT USED	
36	UPPER LEFT FLIPPER	Hold	J907-8 (RED-GRY)		Q5	J902-1		ORG-GRY		

J1XX-X=POWER DRIVER BOARD; JX-X=AUX. DRIVER BOARD; J9XX-X=FLIPTRONIC II BOARD; 24-6549=#44 BULB; 24-8704=#89 BULB; 24-8768=#555 BULB; 24-8802=#906; 24-8825=#545

Solenoid/Flashlamp Locations

Item No.	Coil/ Flasher No.	Assembly Number	Description
01	AE-26-1500	A-19663	Ball Release
02			NOT USED
03	AE-26-1200	A-20453	Far Left Eject
04	AE-26-1200	A-20415	Drop Targets
05	AE-26-1200	A-20453	Right Eject Hole
06	AE-26-1200	B-9362-L-2	Raise Ramp
07	AE-23-800	B-10686-1	Knocker
08	AE-26-1200	A-20453	Left Eject Hole
09	AE-26-1200	B-9362-L-2	Left Slingshot
10	AE-26-1200	B-9362-L-2	Right Slingshot
11	AE-26-1200	A-9415-2	Lower Jet Bumper
12	AE-26-1200	A-9415-2	Left Jet Bumper
13	AE-26-1200	A-9415-2	Upper Jet Bumper
14	SM1-26-600	B-11304	Drop Ramp
15	24-8802	A-20158	Right Visor Flshr
16	24-8802	A-20158	Left Visor Flshr
17	24-8802	A-20158	Center Visor Flshr
18	24-8802	A-17802	Pinbot Face Flshr
19	24-8802	A-17802	Jet Bumpers Flshr
20	24-8802	04-10091.1	Lower Left Flshr
21	24-8802	04-10091.1	Middle Left Flshr
22	24-8802	04-10091.1	Lower Right Flshr
23	24-8802	A-20158	Back Panel Flshr 1 (Left)
24	24-8802	A-20158	Back Panel Flshr 2
25	24-8802	A-20158	Back Panel Flshr 3
26	24-8802	A-20158	Back Panel Flshr 4
27	24-8802	A-20158	Back Panel Flshr 5 (Rght)
28	14-8023	A-20100	Visor Motor

*Not Shown.

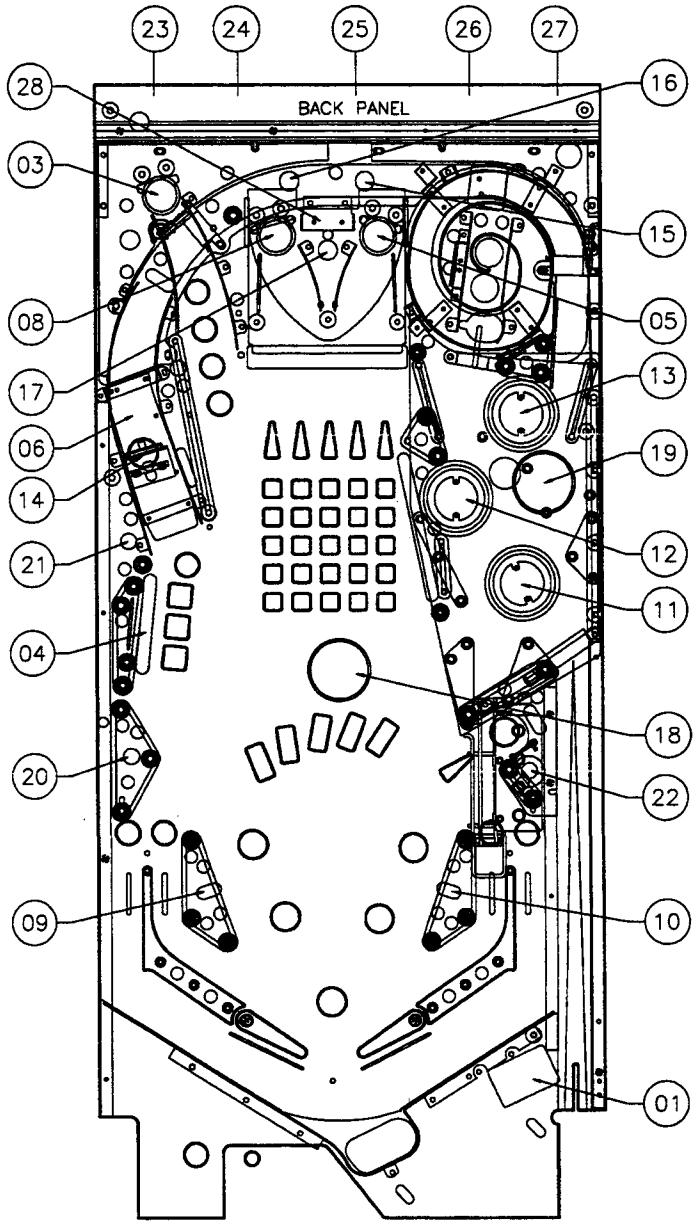
Flippers

Item No.	Coil Number	Assembly Number	Description
29-30	FL-11630	A-15849-R	Lower Right
31-32	FL-11630	A-15849-L	Lower Left
33-34			NOT USED
35-36			NOT USED

General Illumination

Item No.	Bulb Number	Decsription
01	24-6549	Playfield Lower
02	24-6549	Playfield Left
03	24-6549	Playfield Upper
04	24-6549	Playfield Right
05	24-8768	Insert

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



Notes

SECTION THREE

GAME WIRING AND SCHEMATICS

CONNECTOR & COMPONENT IDENTIFICATION

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

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

Prefix numbers for WPC circuit boards are listed below.
1 - Power Driver Board
2 - CPU Board
6 - Dot Matrix Controller Board
9 - Fliptronic II Controller Board

The Audio Board and the Dot Matrix Display/Driver Board do not have identification numbers.

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

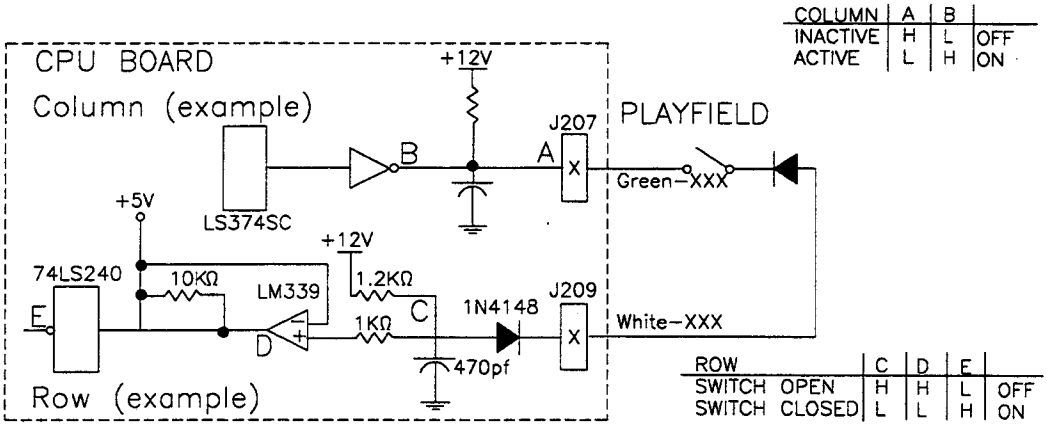
SWITCH MATRIX

WHITE — GREEN

Dedicated Grounded Switches	COLUMN / ROW	1 Green–Brown J207–1 U20–18	2 Green–Red J207–2 U20–17	3 Green–Orange J207–3 U20–16	4 Green–Yellow J207–4 U20–15	5 Green–Black J207–5 U20–14	6 Green–Blue J207–6 U20–13	7 Green–Violet J207–7 U20–12	8 Green–Gray J207–9 U20–11	Flipper Grounded Switches
Org–Brn J205–1 Left Coin Chute D1	White–Brown J209–1 U18–11 1	LOWER LEFT 10 POINT 11	SLAM TILT 21	TROUGH JAM 31	VISOR 1 (LEFT) 41	5–BANK TARGET 1 (UPPER) 51	UPPER JET BUMPER 61	NOT USED 71	NOT USED 81	Black–Green J906–1 Lower Right E.O.S. F1
Org–Red J205–2 Center Coin Chute D2	White–Red J209–2 U18–9 2	UPPER LEFT 10 POINT 12	COIN DOOR CLOSED 22	TROUGH 1 (RIGHT) 32	VISOR 2 42	5–BANK TARGET 2 52	LEFT JET BUMPER 62	NOT USED 72	NOT USED 82	Blue–Violet J905–1 Lower Right Opto F2
Org–Blk J205–3 Right Coin Chute D3	White–Orange J209–3 U18–5 3	START BUTTON 13	BUY EXTRA BALL 23	TROUGH 2 33	VISOR 3 43	5–BANK TARGET 3 53	LOWER JET BUMPER 63	NOT USED 73	NOT USED 83	Black–Blue J906–3 Lower Left E.O.S. F3
Org–Yel J205–4 4th Coin Chute D4	White–Yellow J209–4 U18–7 4	PLUMB BOB TILT 14	ALWAYS CLOSED 24	TROUGH 3 34	VISOR 4 44	5–BANK TARGET 4 54	RIGHT SLINGSHOT 64	NOT USED 74	NOT USED 84	Blue–Gray J905–2 Lower Left Opto F4
Org–Grn J205–6 Normal Service Credit Test Escape D5	White–Green J209–5 U19–11 5	RAMP IS DOWN 15	LEFT OUTLANE 25	TROUGH 4 LEFT 35	VISOR 5 (RIGHT) 45	5–BANK TARGET 5 (LOWER) 55	LEFT SLINGSHOT 65	NOT USED 75	NOT USED 85	Black–Violet J906–4 Visor Closed F5
Org–Blu J205–7 Normal Volume Down Test Down D6	White–Blue J209–7 U19–9 6	HIGH DROP TARGET 16	LEFT FLIPPER LANE 26	RAMP EXIT 36	FAR LEFT EJECT 46	VORTEX UPPER 56	RIGHT 10 POINT 66	NOT USED 76	NOT USED 86	Black–Yellow J905–3 Upper Right Opto F6
Org–Vio J205–8 Normal Volume Up Test Up D7	White–Violet J209–8 U19–5 7	CENTER DROP TARGET 17	RIGHT FLIPPER LANE 27	RAMP ENTRANCE 37	LEFT EJECT HOLE (VISOR) 47	VORTEX CENTER 57	HIT ME TARGET 67	NOT USED 77	NOT USED 87	Black–Gray J906–5 Visor Open F7
Org–Gry J205–9 Normal Begin Test Test Enter D8	White–Gray J209–9 U19–7 8	LOW DROP TARGET 18	RIGHT OUTLANE 28	TARGET UNDER RAMP 38	RIGHT EJECT HOLE (VISOR) 48	VORTEX LOWER 58	BALL SHOOTER 68	NOT USED 78	NOT USED 88	Black–Blue J905–5 Upper Left Opto F8

J2XX = CPU BOARD; J9XX = FLIPTRONIC II BOARD = OPTO, TYPICALLY CLOSED

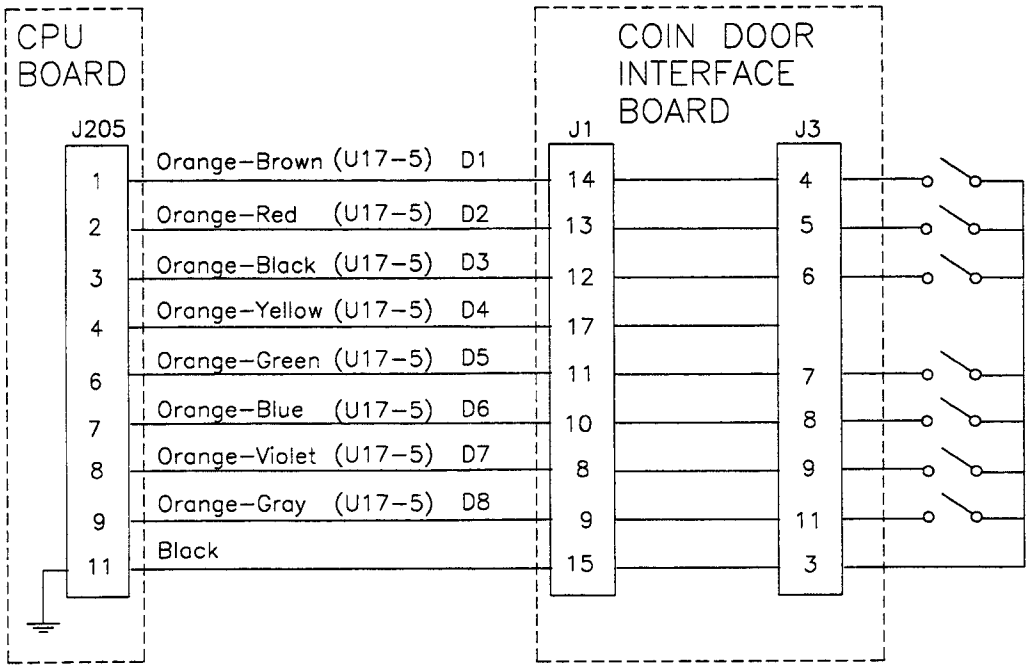
SWITCH MATRIX CIRCUIT



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

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

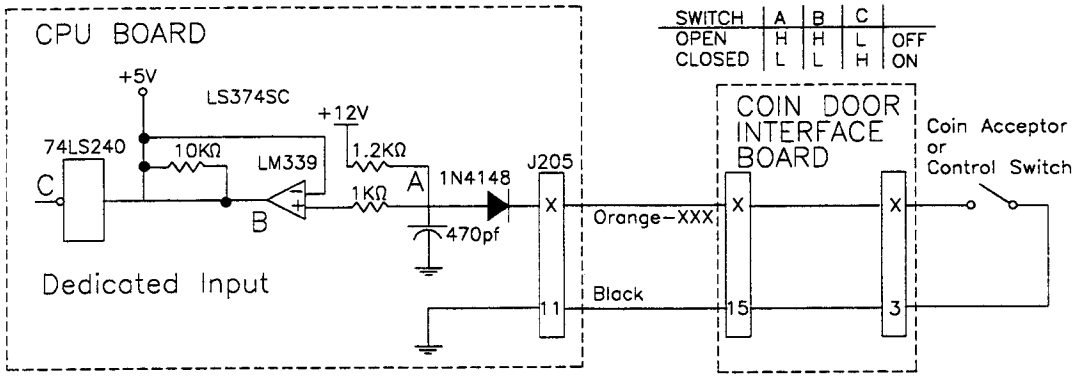
DEDICATED SWITCHES



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

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

DEDICATED SWITCH CIRCUIT



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

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

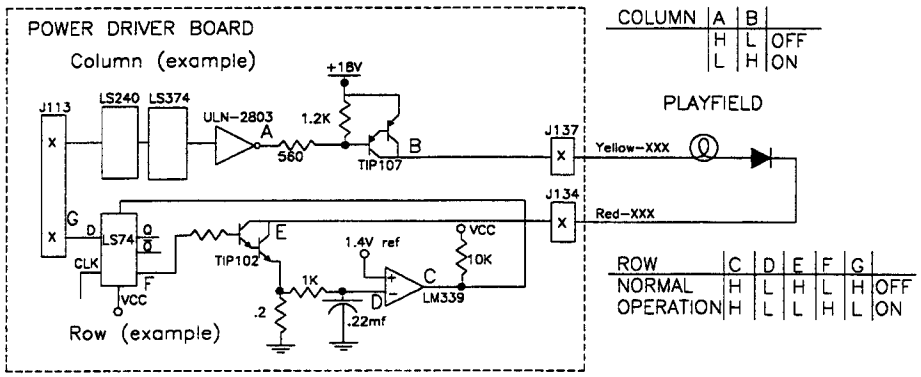
LAMP MATRIX

YELLOW (B+) —Q→ RED

COLUMN / ROW	1 Yellow–Brown J137–1 Q98	2 Yellow–Red J137–2 Q97	3 Yellow–Orange J137–3 Q96	4 Yellow–Black J137–4 Q95	5 Yellow–Green J137–5 Q94	6 Yellow–Blue J137–6 Q93	7 Yellow–Violet J137–7 Q92	8 Yellow–Gray J137–9 Q91
Red–Brown J134–1 Q90 1	YELLOW ARROW 11	BLUE ARROW 21	AMBER ARROW 31	GREEN ARROW 41	RED ARROW 51	CARD 1 (LEFT) 61	CASHIER MINI–PLFD 71	PINBOT POKER 81
Red–Black J134–2 Q89 2	YELLOW 1 (HIGH) 12	BLUE 1 (HIGH) 22	AMBER 1 (HIGH) 32	GREEN 1 (HIGH) 42	RED 1 (HIGH) 52	CARD 2 62	MEGA RAMP MINI–PLFD 72	SLOT MACHINE 82
Red–Orange J134–4 Q88 3	YELLOW 2 13	BLUE 2 23	AMBER 2 33	GREEN 2 43	RED 2 53	CARD 3 63	LIGHT EX. BALL MINI–PLFD 73	ROLL THE DICE 83
Red–Yellow J134–5 Q87 4	YELLOW 3 14	BLUE 3 24	AMBER 3 34	GREEN 3 44	RED 3 54	CARD 4 64	JACK•BOT MINI–PLFD 74	KENO 84
Red–Green J134–6 Q87 5	YELLOW 4 15	BLUE 4 25	AMBER 4 35	GREEN 4 45	RED 4 55	CARD 5 (RIGHT) 65	GAME SAUCER 75	CASHIER (UNDER RAMP) 85
Red–Blue J134–7 Q86 6	YELLOW 5 (LOW) 16	BLUE 5 (LOW) 26	AMBER 5 (LOW) 36	GREEN 5 (LOW) 46	RED 5 (LOW) 56	CASINO RUN 66	MEGA RAMP 76	JACK•BOT (RAMP) 86
Red–Violet J134–8 Q84 7	LEFT OUTLANE 17	BONUS 2X 27	SHOOT AGAIN 37	BONUS 5X 47	RIGHT FLIPPER LANE 57	HIT ME 67	HIGH DROP TARGET 77	BUY–IN BUTTON 87
Red–Gray J134–9 Q83 8	LEFT FLIPPER LANE 18	BONUS 3X 28	BONUS 4X 38	JACK•BOT (TARGET) 48	RIGHT OUTLANE 58	LOW DROP TARGET 68	CENTER DROP TARGET 78	START BUTTON 88

J1XX = POWER DRIVER BOARD

LAMP MATRIX CIRCUIT



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

The microprocessor changes the input of the 74LS74 to a high state to turn the lamp off.

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

SOLENOID/FLASHLAMP TABLE

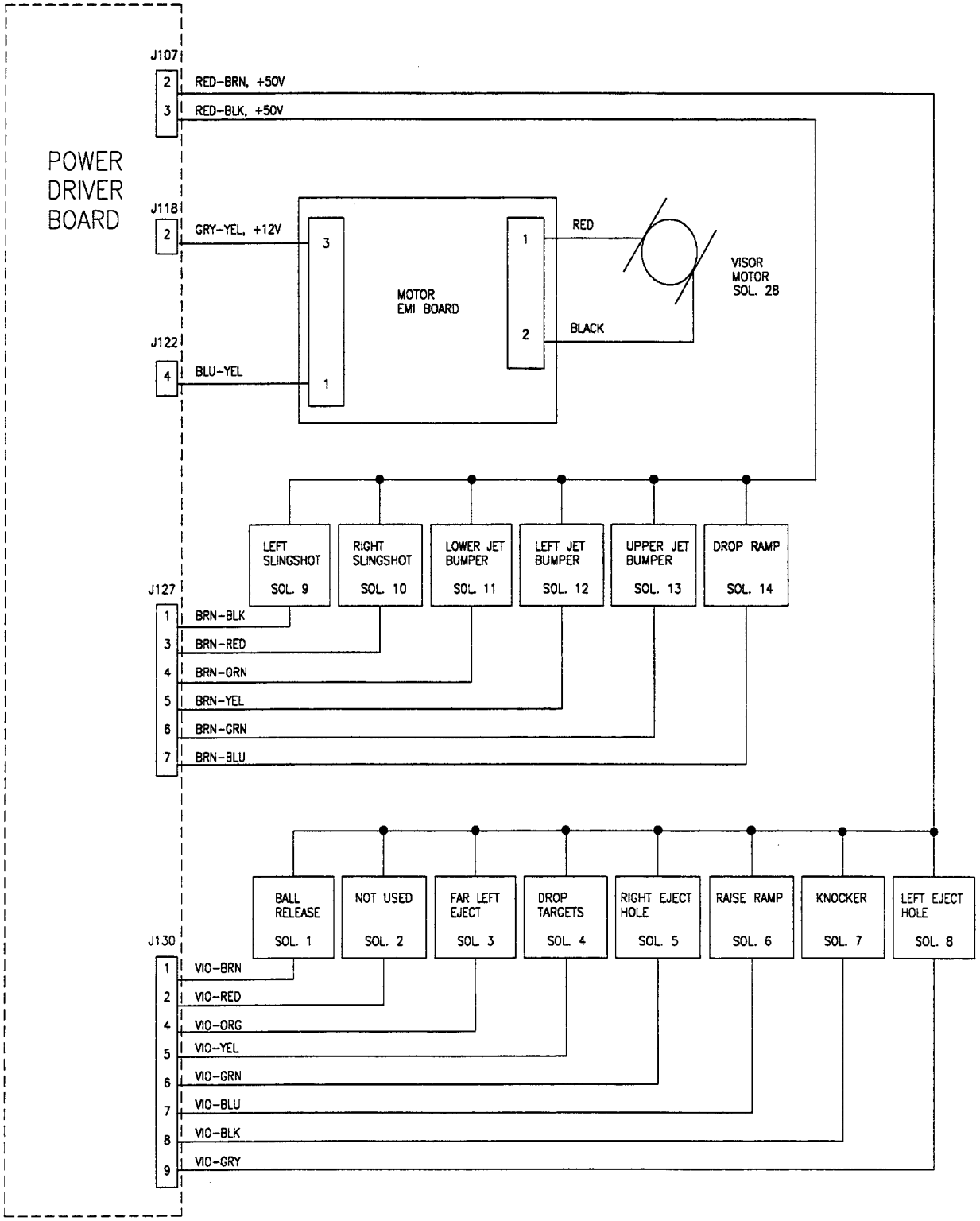
SOL. NO.	FUNCTION	SOLENOID TYPE	VOLTAGE CONNECTIONS			DRIVE XISTOR	DRIVE CONNECTIONS			DRIVE WIRE	SOLENOID PART NUMBER FLASHLAMP TYPE	
			PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX	CABINET		PLAYFIELD	BACKBOX
01	BALL RELEASE	High Power	J107-2			Q82	J130-1			VIO-BRN	AE-26-1500	
02	NOT USED	High Power	J107-2			Q80	J130-2			VIO-RED		
03	FAR LEFT EJECT	High Power	J107-2			Q78	J130-4			VIO-ORG	AE-26-1200	
04	DROP TARGETS	High Power	J107-2			Q76	J130-5			VIO-YEL	AE-26-1200	
05	RIGHT EJECT HOLE	High Power	J107-2			Q64	J130-6			VIO-GRN	AE-26-1200	
06	RAISE RAMP	High Power	J107-2			Q66	J130-7			VIO-BLU	AE-26-1200	
07	KNOCKER	High Power		J107-2		Q68		J130-8		VIO-BLK		AE-23-800
08	LEFT EJECT HOLE	High Power	J107-2			Q70	J130-9			VIO-GRY	AE-26-1200	
09	LEFT SLINGSHOT	Low Power	J107-3			Q58	J127-1			BRN-BLK	AE-26-1200	
10	RIGHT SLINGSHOT	Low Power	J107-3			Q56	J127-3			BRN-RED	AE-26-1200	
11	LOWER JET BUMPER	Low Power	J107-3			Q54	J127-4			BRN-ORG	AE-26-1200	
12	LEFT JET BUMPER	Low Power	J107-3			Q52	J127-5			BRN-YEL	AE-26-1200	
13	UPPER JET BUMPER	Low Power	J107-3			Q50	J127-6			BRN-GRN	AE-26-1200	
14	DROP RAMP	Low Power	J107-3			Q48	J127-7			BRN-BLU	SM1-26-600	
15	RIGHT VISOR FLSHR(2)	Low Power	J107-6			Q46	J127-8			BRN-VIO	#906	
16	LEFT VISOR FLSHR(2)	Low Power	J107-6			Q44	J127-9			BRN-GRY	#906	
17	CENTER VISOR FLSHR	Flashlamp	J107-6			Q42	J126-1			BLK-BRN	#906	
18	PINBOT FACE FLSHR	Flashlamp	J107-6			Q40	J126-2			BLK-RED	#906	
19	JET BUMPERS FLSHR	Flashlamp	J107-6			Q38	J126-3			BLK-ORG	#906	
20	LOWER LEFT FLSHR	Flashlamp	J107-6			Q36	J126-4			BLK-YEL	#906	
21	MIDDLE LEFT FLSHR	Flashlamp	J107-6			Q28	J126-5			BLU-GRN	#906	
22	LOWER RIGHT FLSHR	Flashlamp	J107-6			Q30	J126-6			BLU-BLK	#906	
23	BACK PNL FLSHR 1 (LT)	Flashlamp	J107-6			Q34	J126-7			BLU-VIO	#906	
24	BACK PANEL FLSHR 2	Flashlamp	J107-6			Q32	J126-8			BLU-GRY	#906	
25	BACK PANEL FLSHR 3	Gen. Purpose	J107-6			Q26	J122-1			BLU-BRN	#906	
26	BACK PANEL FLSHR 4	Gen. Purpose	J107-6			Q24	J122-2			BLU-RED	#906	
27	BACK PNL FLSHR 5 (RT)	Gen. Purpose	J107-6			Q22	J122-3			BLU-ORG	#906	
28	VISOR MOTOR	Gen. Purpose	J118-2			Q20	J122-4			BLU-YEL	14-8023	
29-36	SEE FLIPPER CKTS											
37	NOT USED	Low Power				Q16				BRN-WHT		
38	NOT USED	Low Power				Q15				BLK-WHT		
39	NOT USED	Low Power				Q14				ORG-WHT		
40	NOT USED	Low Power				Q13				YEL-WHT		
41	NOT USED	Low Power				Q9				GRN-WHT		
42	NOT USED	Low Power				Q10				BLU-WHT		
43	NOT USED	Low Power				Q11				VIO-WHT		
44	NOT USED	Low Power				Q12				GRY-WHT		
	GENERAL ILLUMINATION											
01	PLAYFIELD LOWER	G.I.	J120-1	J121-1		Q18	J120-7	J121-7		WHT-BRN	#44	
02	PLAYFIELD LEFT	G.I.	J120-2	J121-2		Q10	J120-8	J121-8		WHT-ORG	#44	
03	PLAYFIELD UPPER	G.I.	J120-3	J121-3		Q14	J120-9	J121-9		WHT-YEL	#44	
04	PLAYFIELD RIGHT	G.I.	J120-5	J121-5		Q16	J120-10	J121-10		WHT-GRN	#44	
05	INSERT	G.I.	J120-6		J119-3	Q12	J120-11		J119-1	WHT-VIO		#555

	FLIPPER CIRCUITS		VOLTAGE CONNECTION	DRIVE XISTOR POWER	DRIVE XISTOR HOLD	DRIVE CONNECTION PLAYFIELD	DRIVE WIRE POWER	DRIVE WIRE HOLD	COIL PART NUMBER	COIL COLOR
29		Power	J907-1 (RED-GRN)	Q4		J902-13	YEL-GRN			
30	LOWER RIGHT FLIPPER	Hold	J907-1 (RED-GRN)		Q11	J902-11		ORG-GRN	FL-11630	RED
31		Power	J907-4 (RED-BLU)	Q3		J902-9	YEL-BLU			
32	LOWER LEFT FLIPPER	Hold	J907-4 (RED-BLU)		Q9	J902-7		ORG-BLU	FL-11630	RED
33	NOT USED	Power	J907-6 (RED-VIO)	Q2		J902-6	YEL-VIO		NOT USED	
34	UPPER RIGHT FLIPPER	Hold	J907-6 (RED-VIO)		Q7	J902-4		ORG-VIO		
35	NOT USED	Power	J907-8 (RED-GRY)	Q1		J902-3	YEL-GRY		NOT USED	
36	UPPER LEFT FLIPPER	Hold	J907-8 (RED-GRY)		Q5	J902-1		ORG-GRY		

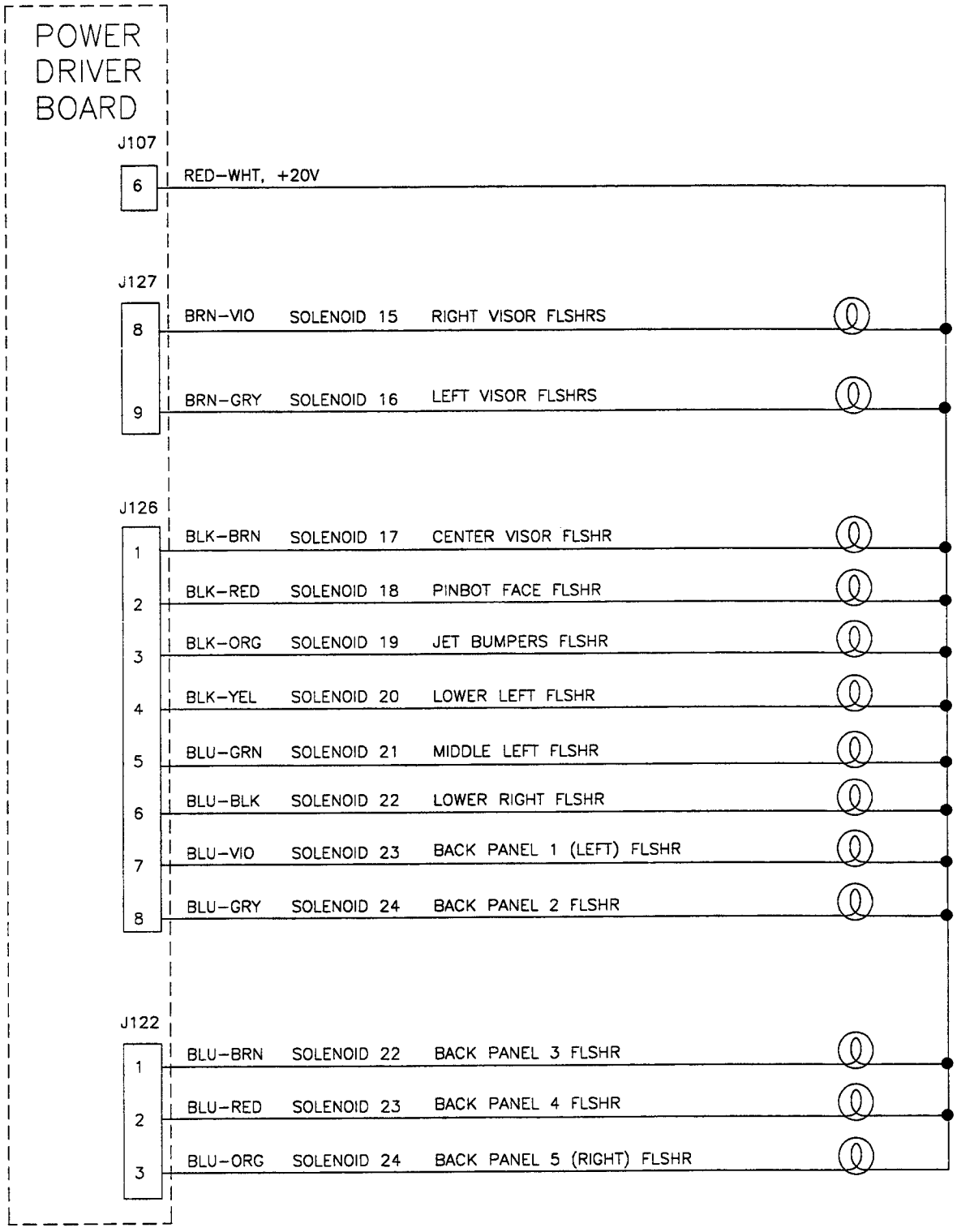
J1XX-X=POWER DRIVER BOARD; JX-X=AUX. DRIVER BOARD; J9XX-X=FLIPTRONIC II BOARD; 24-6549=#44 BULB; 24-8704=#89 BULB; 24-8768=#555 BULB; 24-8802=#906; 24-8825=#545

SOLENOID WIRING

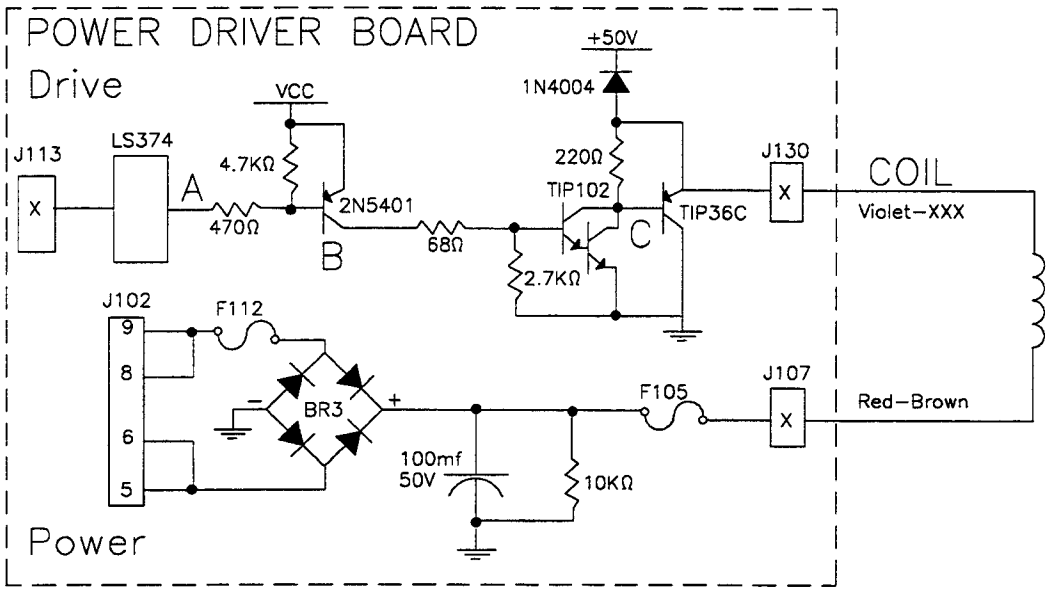
COILS & VISOR MOTOR



FLASHLAMPS

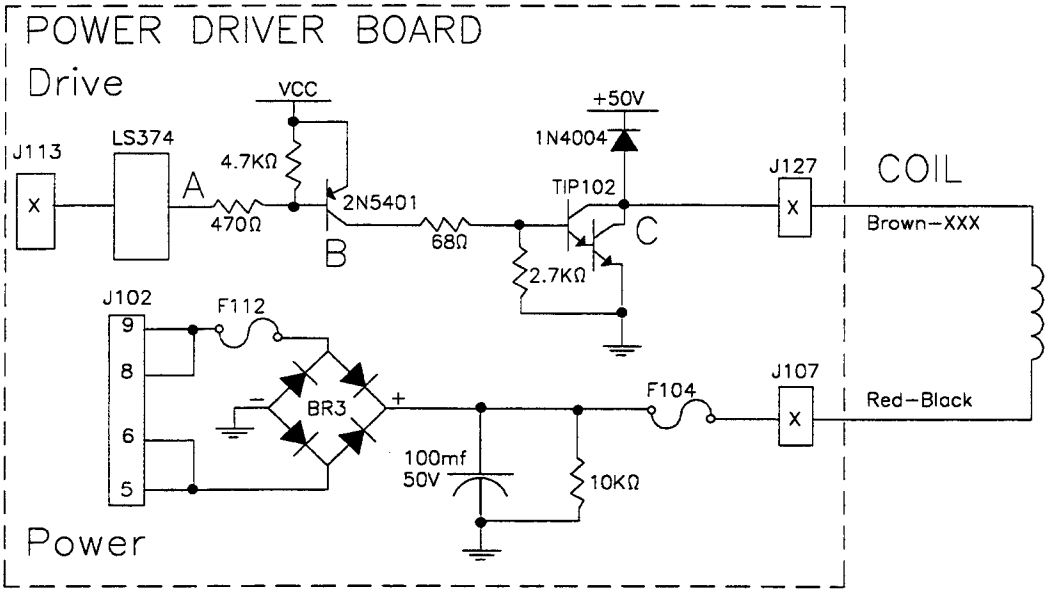

POWER
DRIVER
BOARD
J107
6
RED–WHT, +20V
J127
8
BRN–VIO SOLENOID 15 RIGHT VISOR FLSHRS
9
BRN–GRY SOLENOID 16 LEFT VISOR FLSHRS
J126
1
BLK–BRN SOLENOID 17 CENTER VISOR FLSHR
2
BLK–RED SOLENOID 18 PINBOT FACE FLSHR
3
BLK–ORG SOLENOID 19 JET BUMPERS FLSHR
4
BLK–YEL SOLENOID 20 LOWER LEFT FLSHR
5
BLU–GRN SOLENOID 21 MIDDLE LEFT FLSHR
6
BLU–BLK SOLENOID 22 LOWER RIGHT FLSHR
7
BLU–VIO SOLENOID 23 BACK PANEL 1 (LEFT) FLSHR
8
BLU–GRY SOLENOID 24 BACK PANEL 2 FLSHR
J122
1
BLU–BRN SOLENOID 22 BACK PANEL 3 FLSHR
2
BLU–RED SOLENOID 23 BACK PANEL 4 FLSHR
3
BLU–ORG SOLENOID 24 BACK PANEL 5 (RIGHT) FLSHR

HIGH POWER SOLENOID CIRCUIT



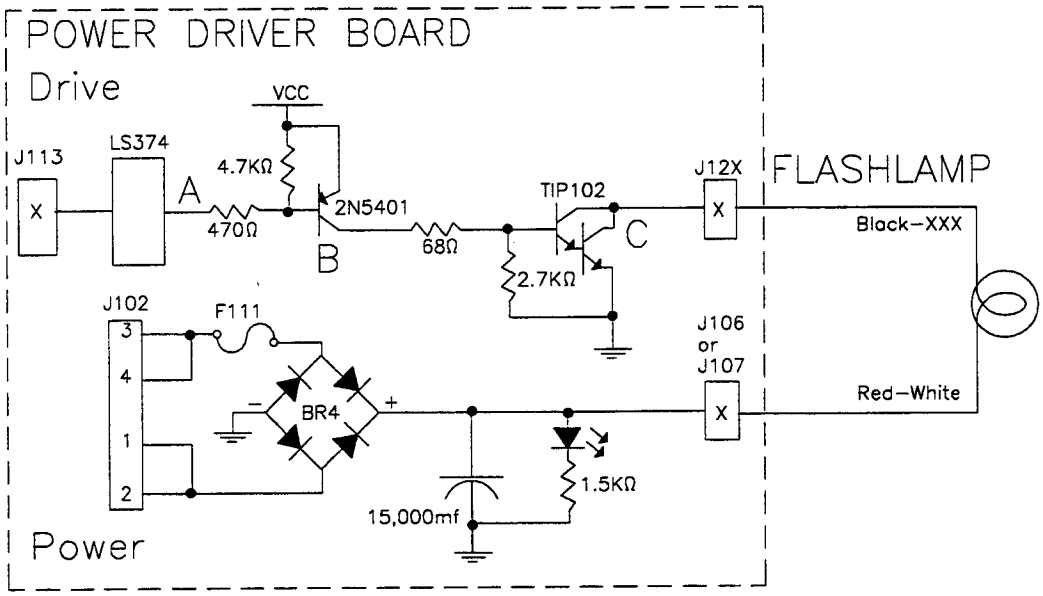
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" causes point "C", the collector of the TIP102 transistor and point "D", the emitter of the TIP36C transistor, to drop low. When point "D" is low,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

LOW POWER SOLENOID CIRCUIT



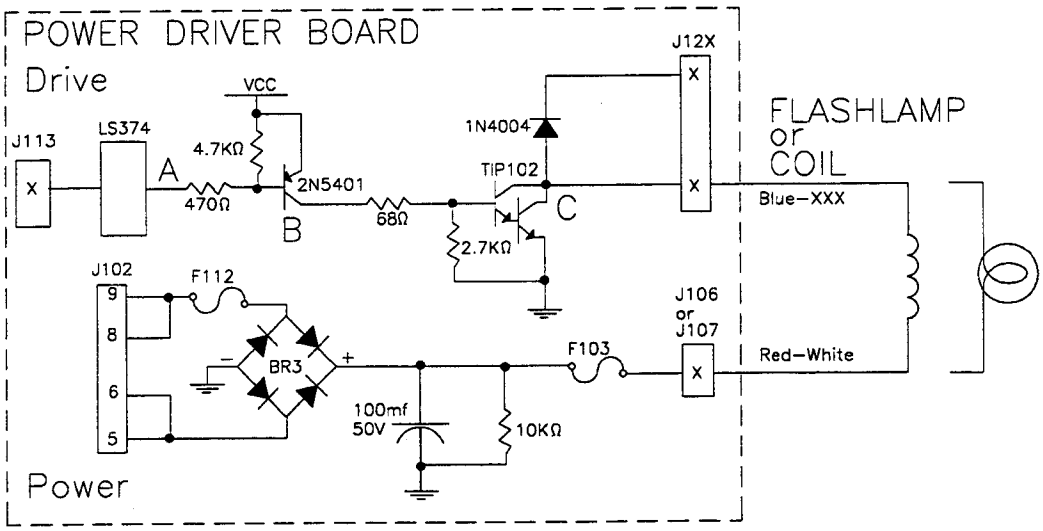
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" turns on the TIP102 transistor and causes point "C" to drop low. When point "C" is low the coil is grounded through the transistor and turns on.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

FLASHLAMP CIRCUIT



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

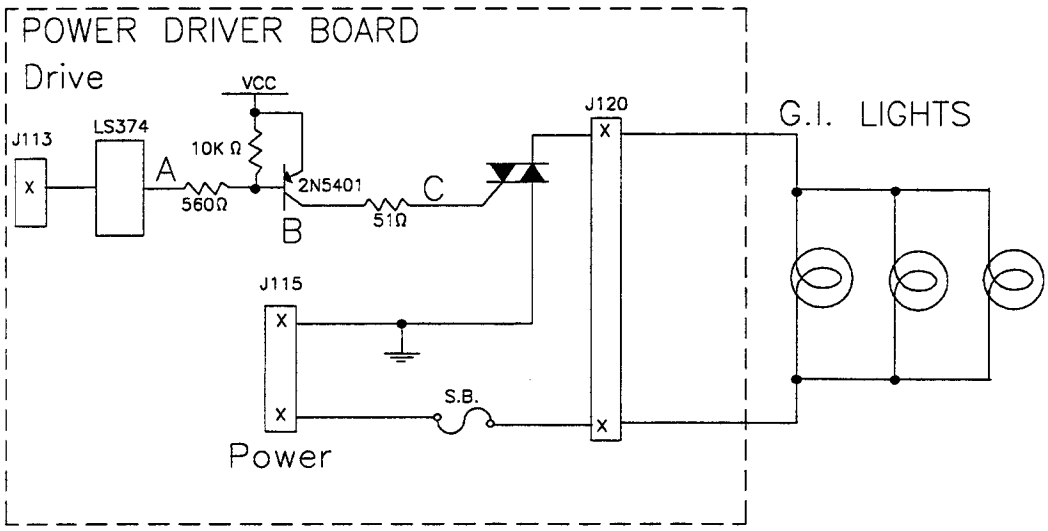
SPECIAL (GENERAL PURPOSE) SOLENOID CIRCUIT



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

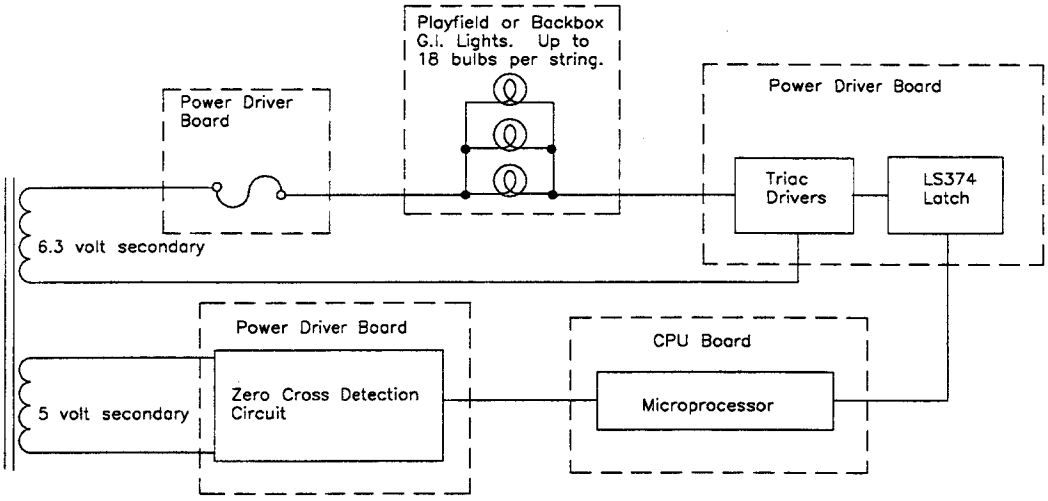
* Tieback diode is not used for flashlamp circuit.

GENERAL ILLUMINATION CIRCUIT

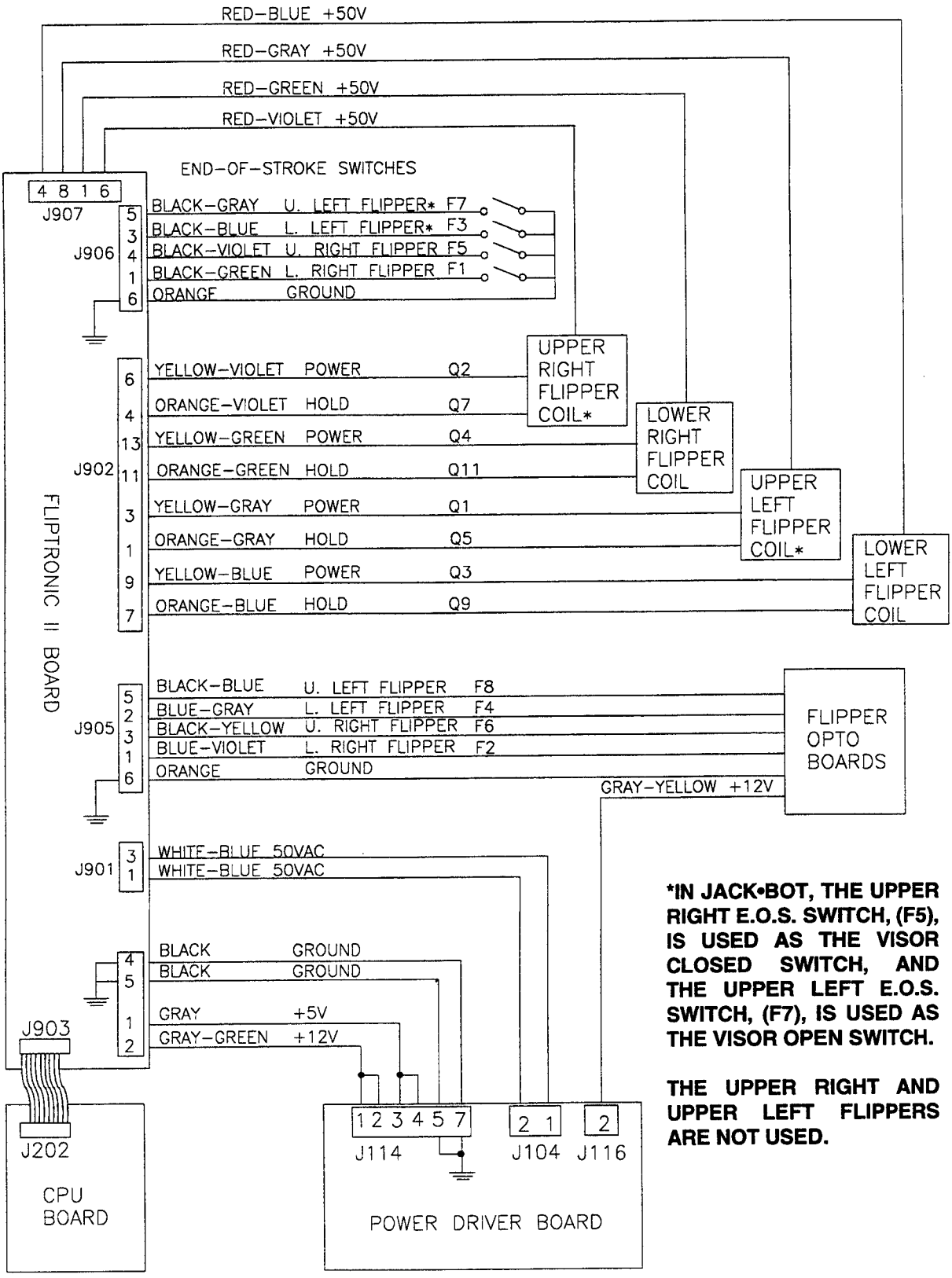


When point "A" toggles low, points, "B" and "C" are high. This turns on the triac and the desired general illumination string of lights.

BLOCK DIAGRAM OF GENERAL ILLUMINATION CIRCUIT



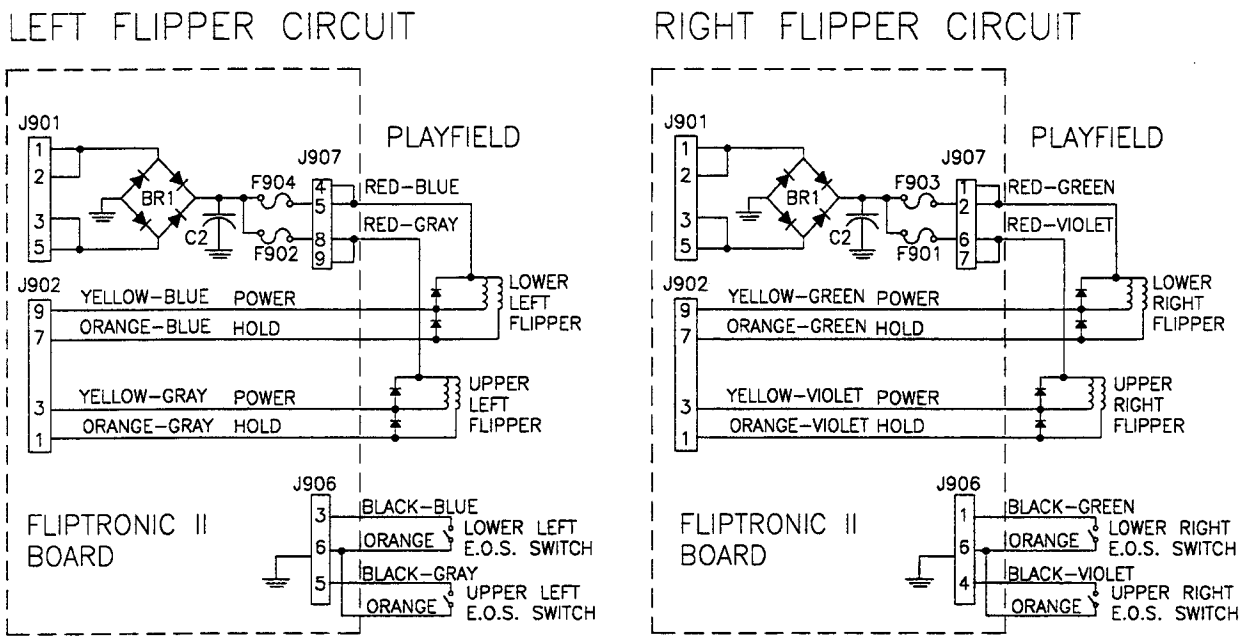
FLIPPER CIRCUIT DIAGRAM



***IN JACK•BOT, THE UPPER RIGHT E.O.S. SWITCH, (F5), IS USED AS THE VISOR CLOSED SWITCH, AND THE UPPER LEFT E.O.S. SWITCH, (F7), IS USED AS THE VISOR OPEN SWITCH.**

THE UPPER RIGHT AND UPPER LEFT FLIPPERS ARE NOT USED.

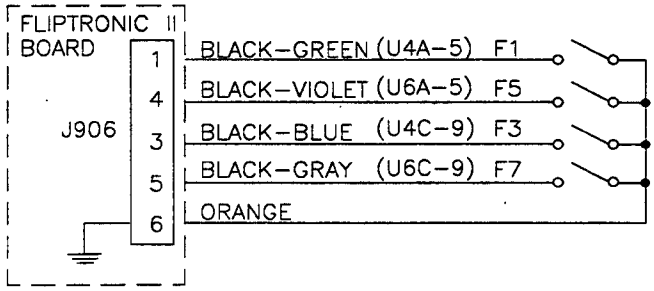
FLIPPER COIL CIRCUIT

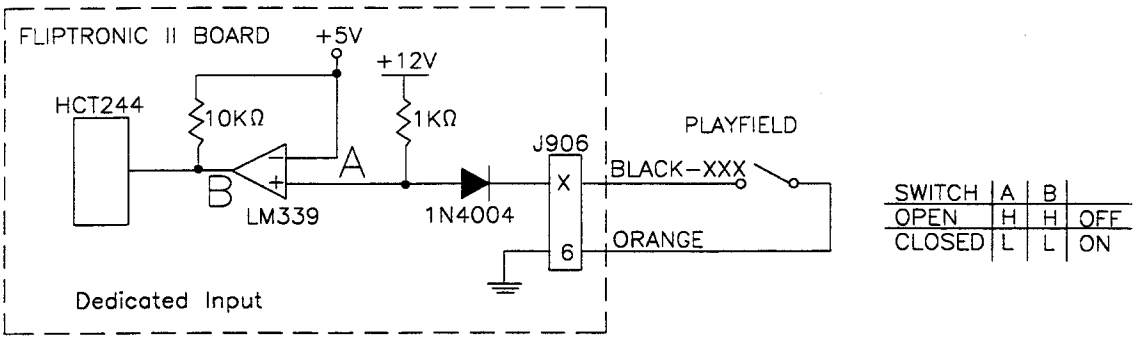


FLIPPER END-OF-STROKE SWITCH CIRCUIT

F1 LOWER RIGHT FLIPPER
F5 UPPER RIGHT FLIPPER
F3 LOWER LEFT FLIPPER
F7 UPPER LEFT FLIPPER

Note:
F5 is used as the Visor Closed switch
F7 is used as the Visor Open switch.



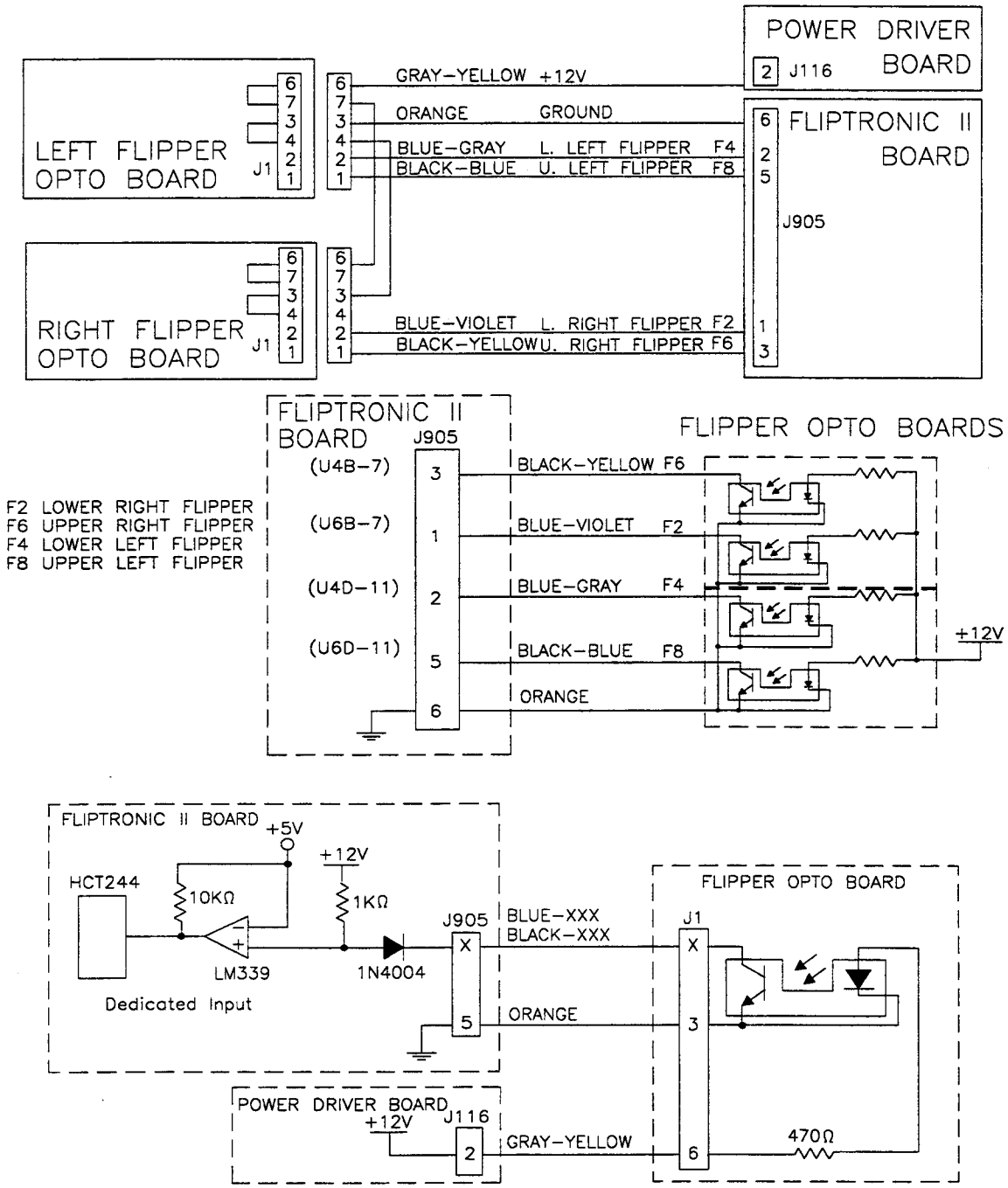


SWITCH	A	B	
OPEN	H	H	OFF
CLOSED	L	L	ON

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

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

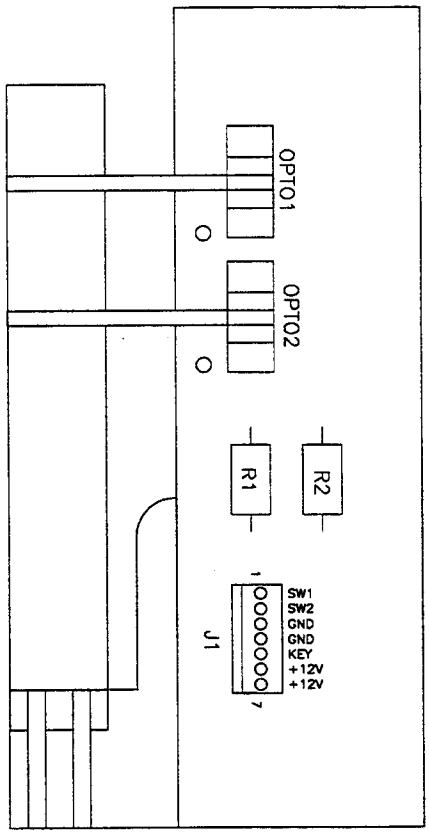
FLIPPER CABINET SWITCH CIRCUIT

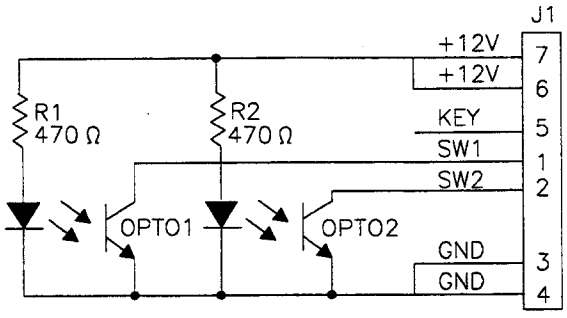


The flipper switch circuits operate similar to the dedicated switch circuit. The circuits are active low and tied to ground through the switch circuit.

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

Flipper Opto Board Assembly
A-17316

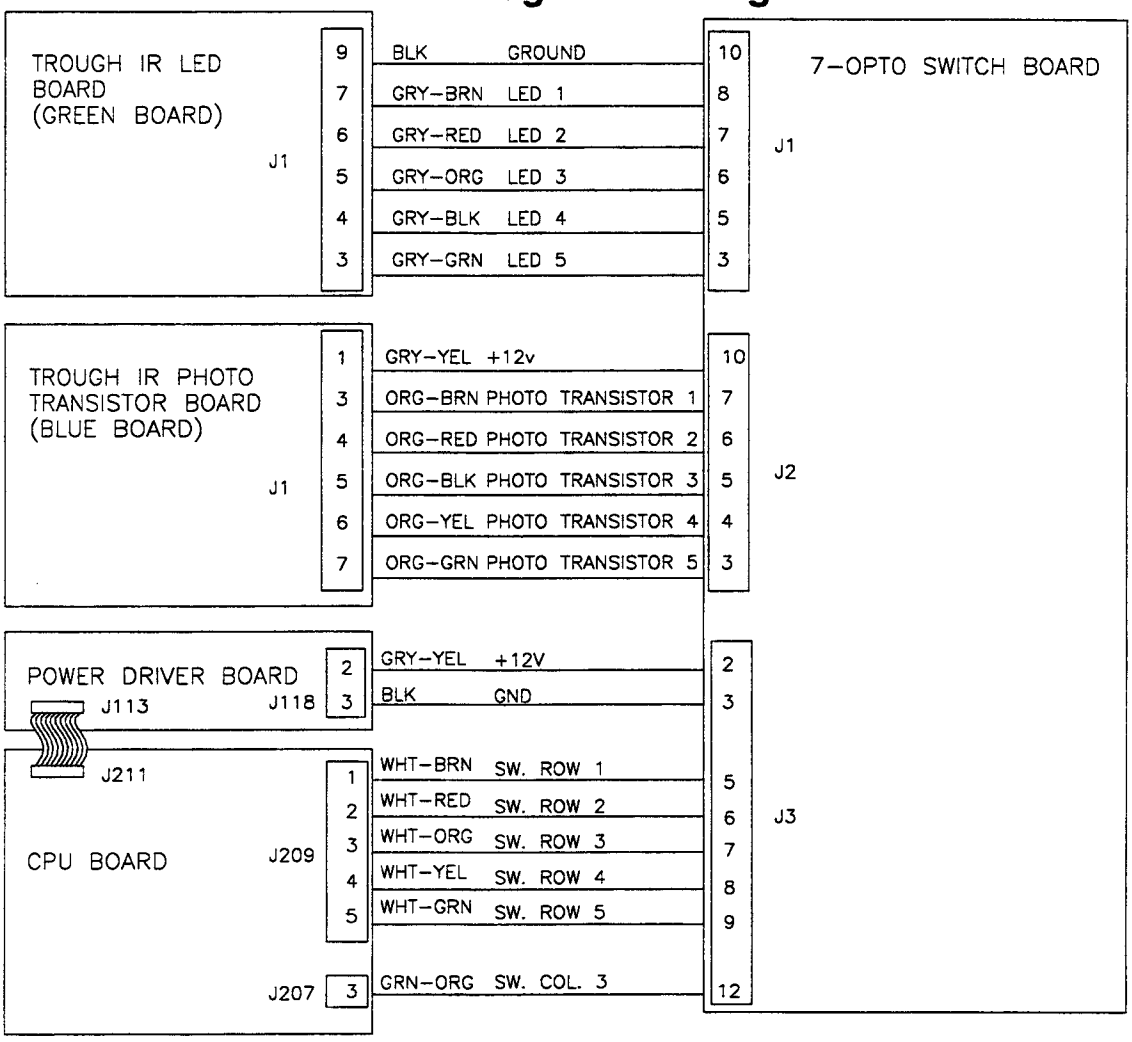


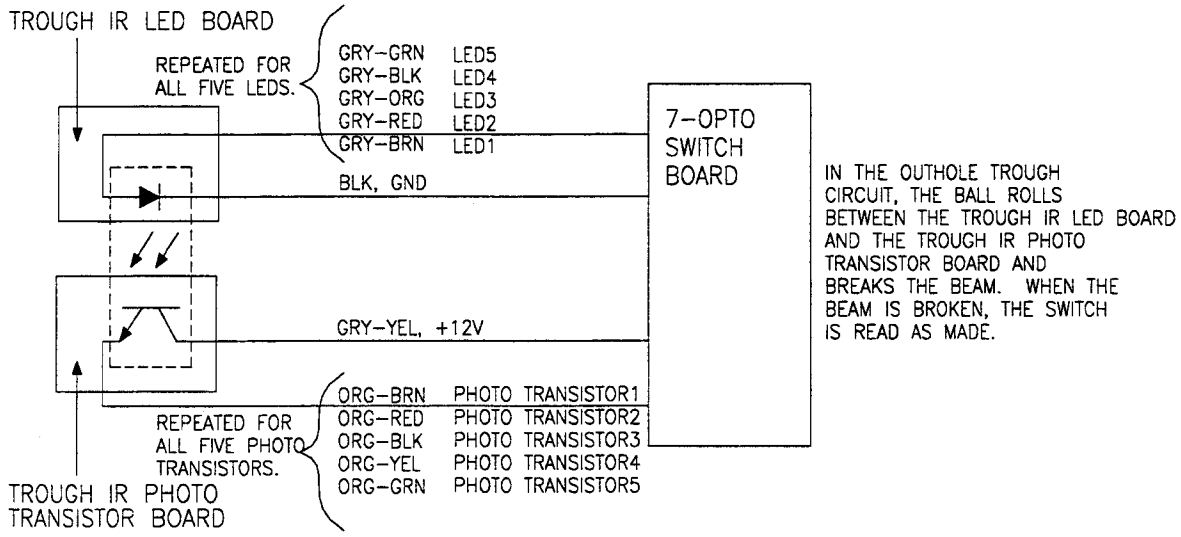


Left Flipper Opto Board Assembly
J1-1 Black-Blue from Fliptronic II Board J905-5
J1-2 Blue-Gray from Fliptronic II Board J905-2
J1-3 N/C
J1-4 Orange from Fliptronic II Board J905-6
J1-5 N/C
J1-6 Gray-Yellow from Power Driver Board J116-2
J1-7 Gray-Yellow from Power Driver Board J116-2

Right Flipper Opto Board Assembly
J1-1 Black-Yellow from Fliptronic II Board J905-1
J1-2 Blue-Violet from Fliptronic II Board J905-3
J1-3 Orange from Fliptronic II Board J905-6
J1-4 Orange from Left Flipper Opto Board Assy J1-4
J1-5 N/C
J1-6 Gray-Yellow from Left Flipper Opto Board Assy J1-6
J1-7 N/C

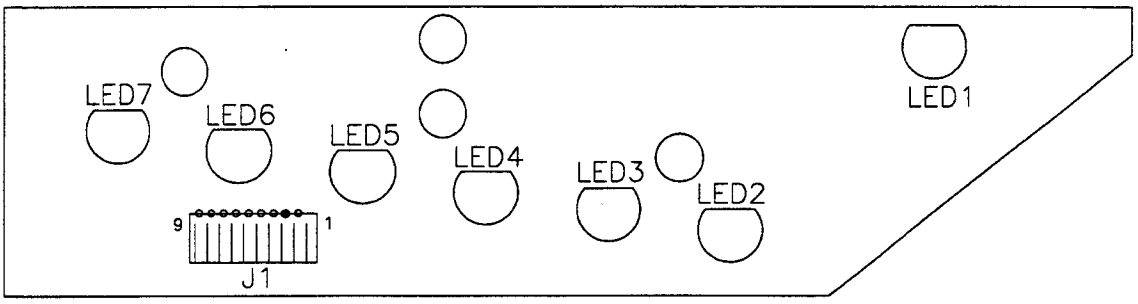
Outhole Trough Block Diagram

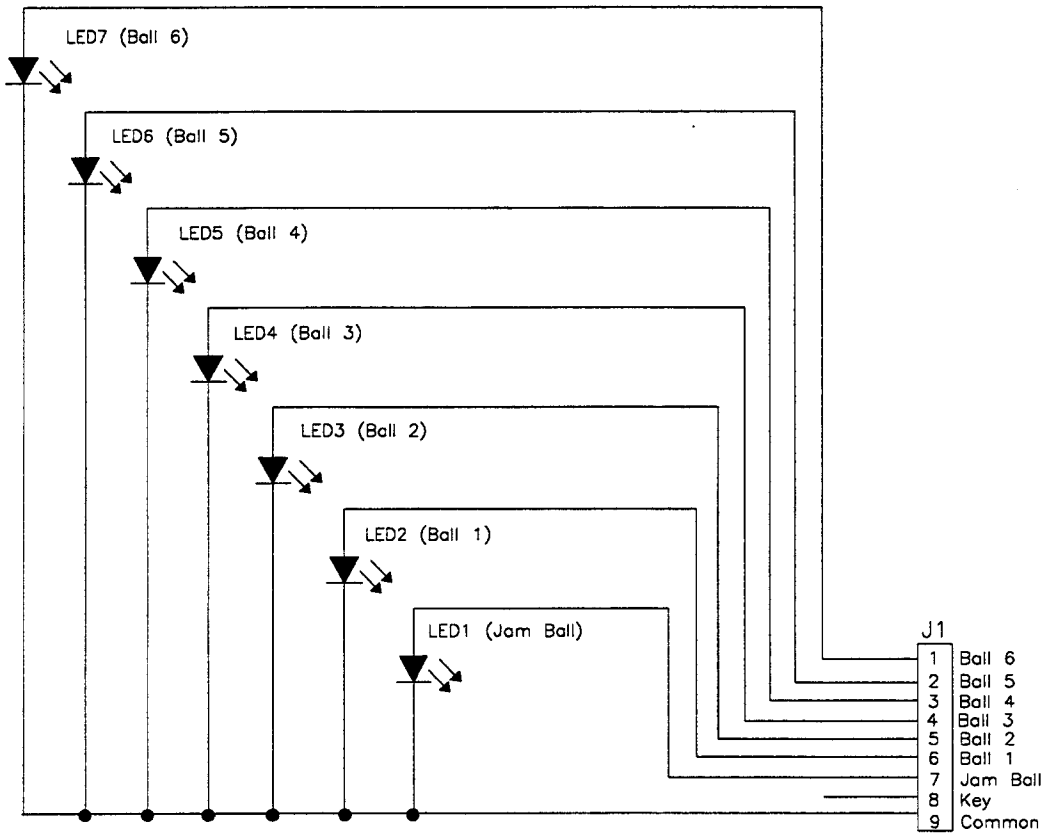




IN THE OUTHOLE TROUGH CIRCUIT, THE BALL ROLLS BETWEEN THE TROUGH IR LED BOARD AND THE TROUGH IR PHOTO TRANSISTOR BOARD AND BREAKS THE BEAM. WHEN THE BEAM IS BROKEN, THE SWITCH IS READ AS MADE.

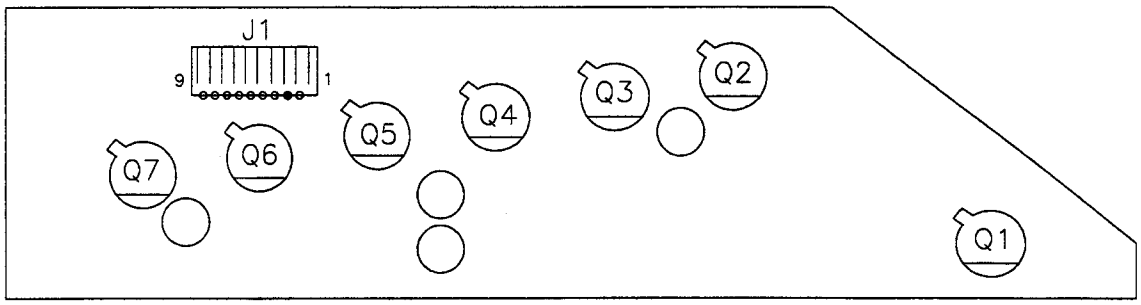
Trough IR LED Board Assembly
(transmitter-green board)
A-18617-1

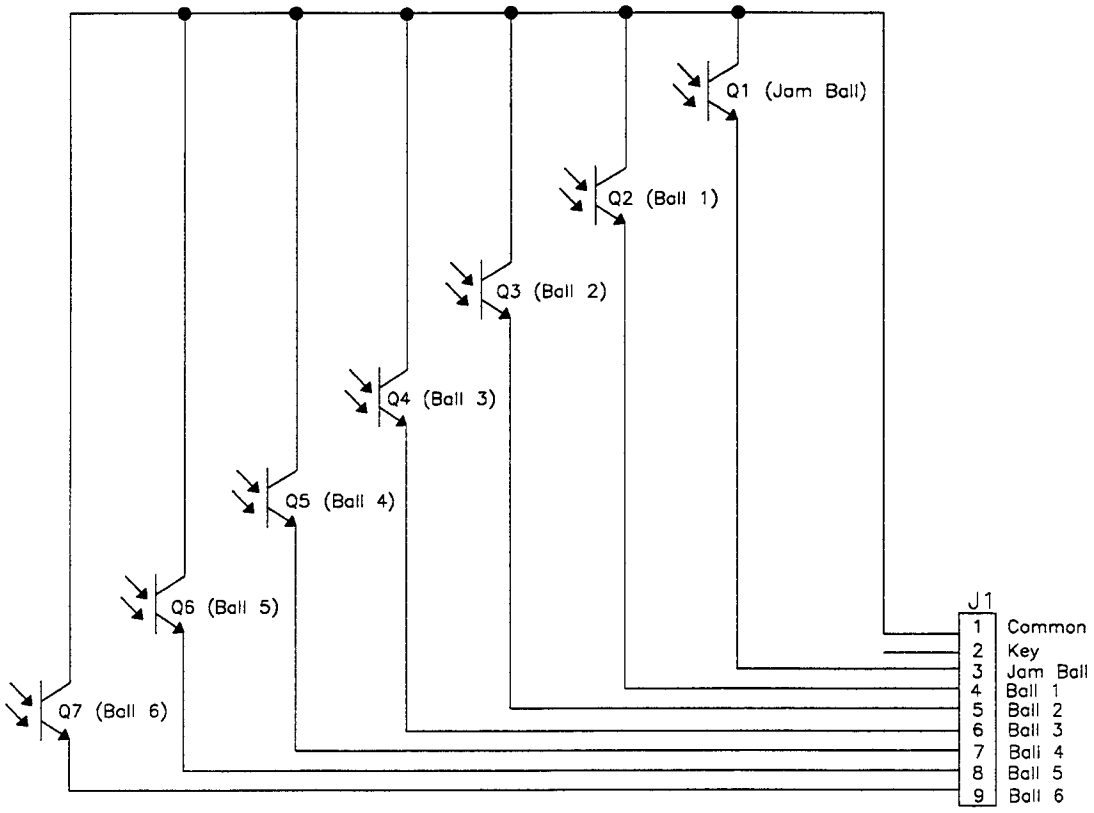




J1-1 N/C
J1-2 N/C
J1-3 Gray-Green, LED5, to 7-Opto Switch Board J1-3
J1-4 Gray-Black, LED4, to 7-Opto Switch Board J1-5
J1-5 Gray-Orange, LED3, to 7-Opto Switch Board J1-6
J1-6 Gray-Red, LED2, to 7-Opto Switch Board J1-7
J1-7 Gray-Brown, LED1, to 7-Opto Switch Board J1-8
J1-8 Key
J1-9 Black, ground, to 7-Opto Switch Board J1-10

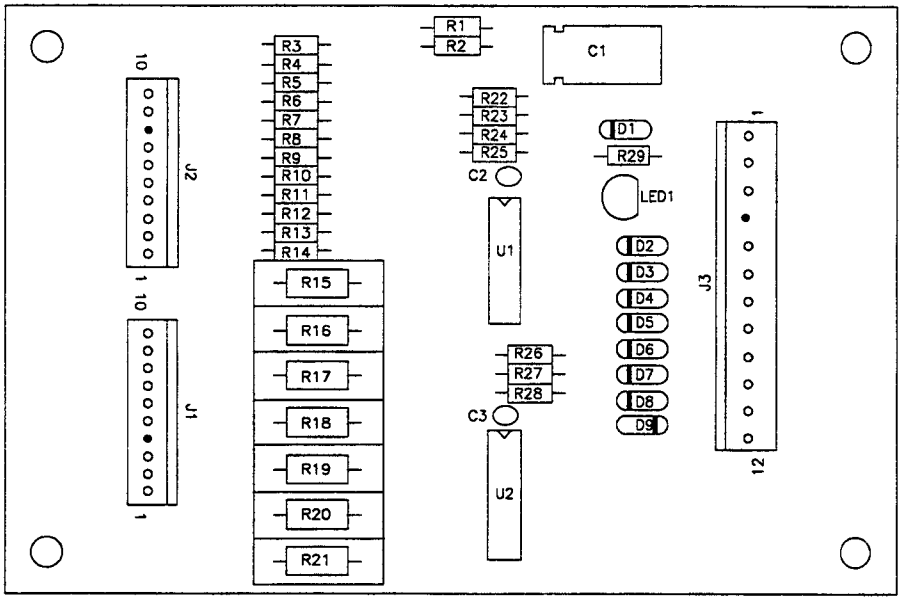
Trough IR Photo Transistor Board Assembly
(receiver-blue board)
A-18618-1





J1-1 Gray-Yellow, +12V, to 7-Opto Switch Board J2-10
J1-2 Key
J1-3 Orange-Brown, Photo Transistor 1, to 7-Opto Switch Board J2-7
J1-4 Orange-Red, Photo Transistor 2, to 7-Opto Switch Board J2-6
J1-5 Orange-Black, Photo Transistor 3, to 7-Opto Switch Board J2-5
J1-6 Orange-Yellow, Photo Transistor 4, to 7-Opto Switch Board J2-4
J1-7 Orange-Green, Photo Transistor 5, to 7-Opto Switch Board J2-3
J1-8 N/C
J1-9 N/C

7-Opto Switch Board and Bracket Assembly
A-15595

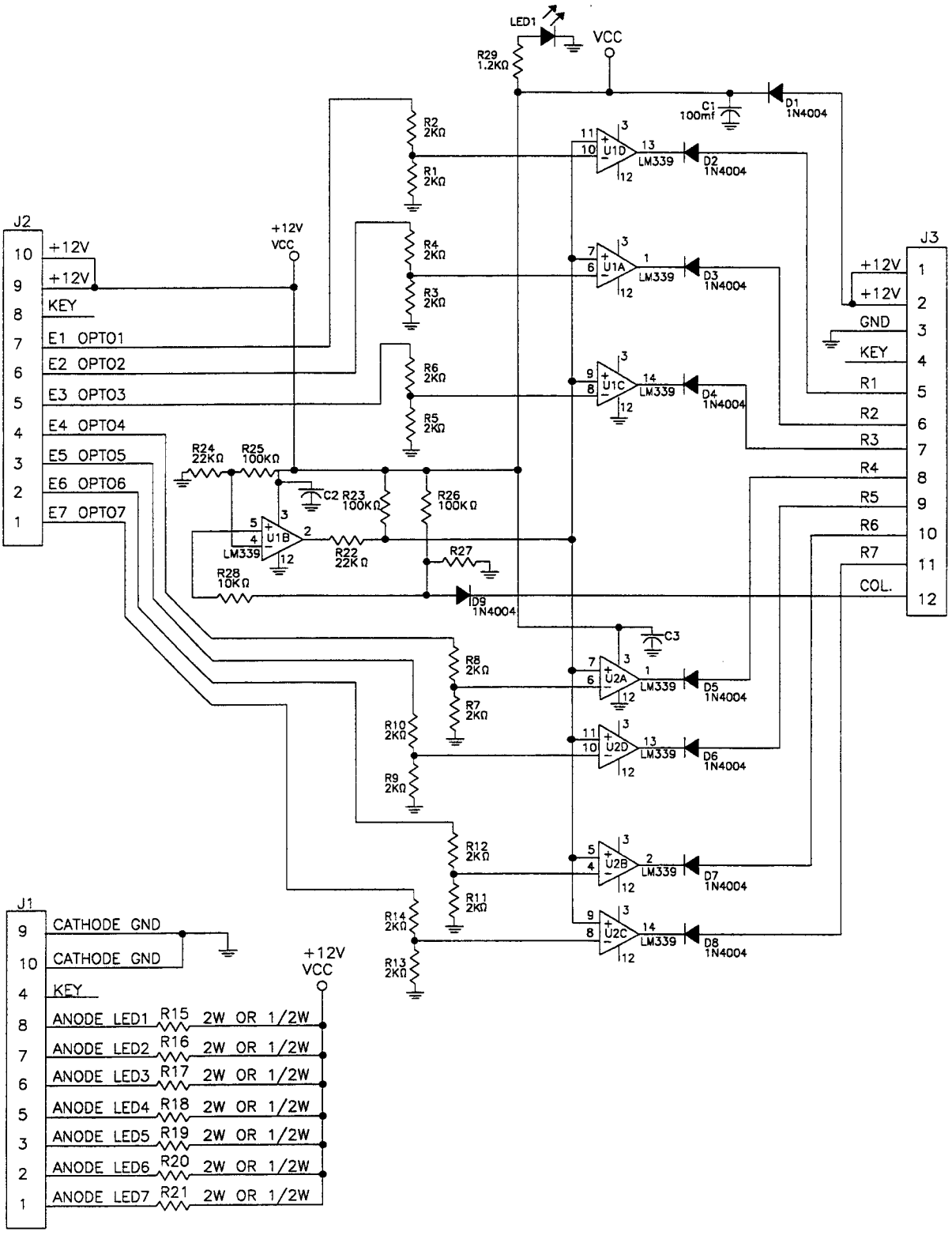


J1-1 N/C
J1-2 N/C
J1-3 Gray-Green, (LED 5), to Trough IR LED Trough board J1-3
J1-4 Key
J1-5 Gray-Black, (LED 4), to Trough IR LED Trough board J1-4
J1-6 Gray-Orange, (LED 3), to Trough IR LED Trough board J1-5
J1-7 Gray-Red, (LED 2), to Trough IR LED Trough board J1-6
J1-8 Gray-Brown, (LED 1), to Trough IR LED Trough board J1-7
J1-9 N/C
J1-10 Black, Ground, to Trough IR LED Trough board J1-9

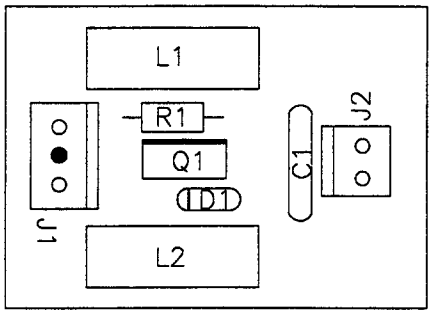
J2-1 N/C
J2-2 N/C
J2-3 Orange-Green, (Photo Transistor 5), to Trough IR Photo Transistor Trough board J1-7
J2-4 Orange-Yellow, (Photo Transistor 4), to Trough IR Photo Transistor Trough board J1-6
J2-5 Orange-Black, (Photo Transistor 3), to Trough IR Photo Transistor Trough board J1-5
J2-6 Orange-Red, (Photo Transistor 2), to Trough IR Photo Transistor Trough board J1-4
J2-7 Orange-Brown, (Photo Transistor 1), to Trough IR Photo Transistor Trough board J1-3
J2-8 Key
J2-9 N/C
J2-10 Gray-Yellow, +12V, to Trough IR Photo Transistor Trough board J1-1

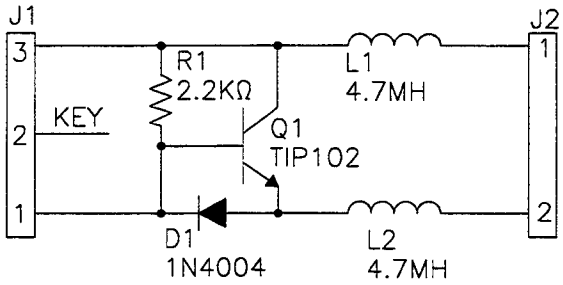
J3-1 N/C
J3-2 Gray-Yellow, +12V, from Power Driver board J118-2
J3-3 Black, Ground, from Power Driver board J118-3
J3-4 Key
J3-5 White-Brown, switch row 1, from CPU board J209-1
J3-6 White-Red, switch row 2, from CPU board J209-2
J3-7 White-Orange, switch row 3, from CPU board J209-3
J3-8 White-Yellow, switch row 4, from CPU board J209-4
J3-9 White-Green, switch row 5, from CPU board J209-5
J3-10 N/C
J3-11 N/C
J3-12 Green-Orange, switch column 3, from CPU board J207-3

7-Opto Switch Board and Bracket Schematic
A-15595



Motor EMI w/Brake Board Assembly
A-15340

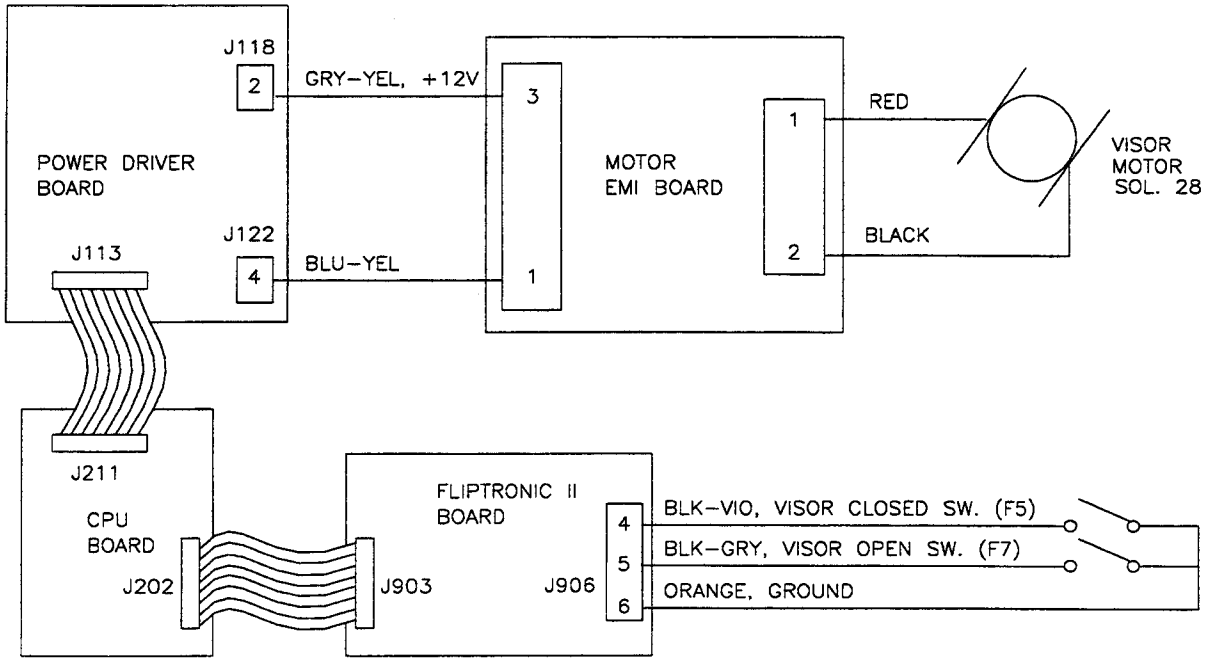




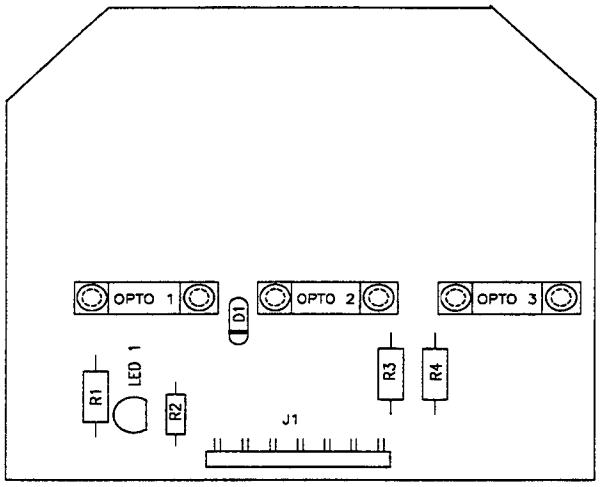
J1-1 Blue-Yellow, Visor Motor, solenoid 28 drive, from Power Driver board J122-4
J1-2 N/C
J1-3 Gray-Yellow, +12V, from Power Driver board J118-2

J2-1 Red, to Visor Motor
J2-2 Black, from Visor Motor

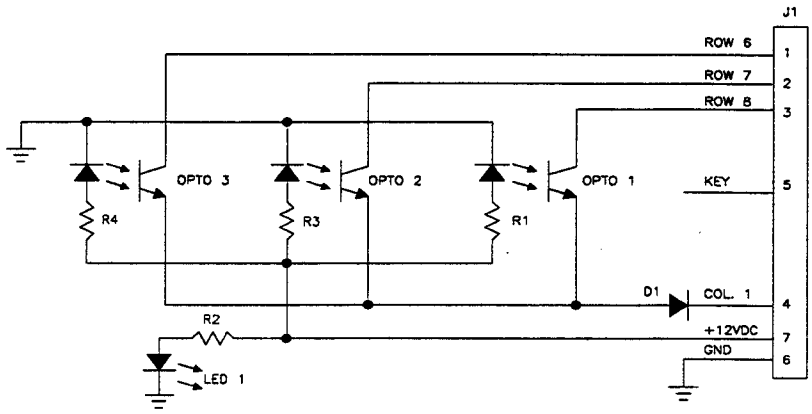
VISOR MOTOR CIRCUIT



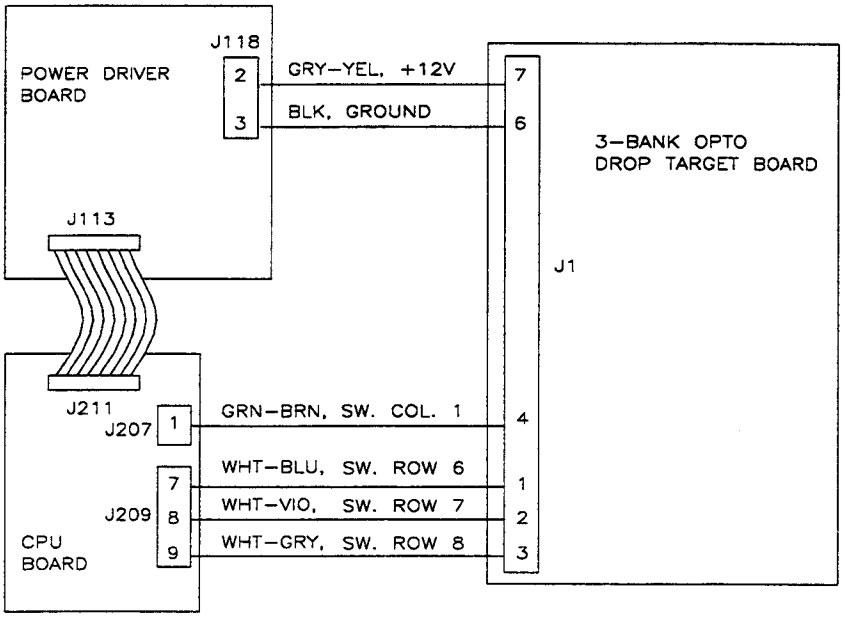
3-Bank Opto Drop Target Board
A-13609



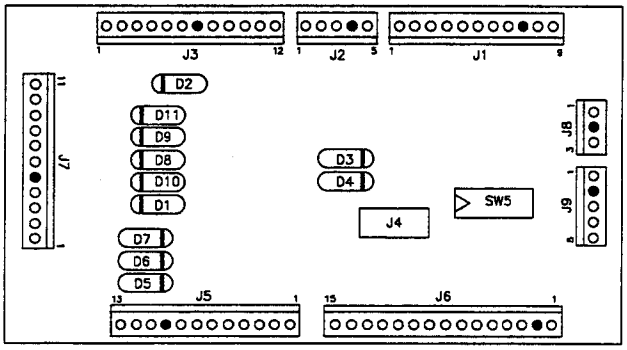
J1-1 White-Blue, sw. row 6, from CPU J209-7
J1-2 White-Violet, sw. row 7, from CPU J209-8
J1-3 White-Gray, sw. row 8, from CPU J209-9
J1-4 Green-Brown, sw. col. 1, from CPU J207-1
J1-5 Key
J1-6 Black, ground, from Power Driver Broad J113-3
J1-7 Gray-Yellow, +12V, from Power Driver Broad J113-2



DROP TARGET CIRCUIT



Coin Door Interface Board
A-17051-1



J1-1 Orange-Gray, ded. switch row 8 form CPU J205-9
J1-2 Orange-Violet, ded. switch row 7 from CPU J205-8
J1-3 Orange-Blue, ded. switch row 6 from CPU J205-7
J1-4 Orange-Green, ded. switch row 5 from CPU J205-6
J1-5 Orange-Yellow, ded. switch row 4 from CPU J205-4
J1-6 Orange-Black, ded. switch row 3 from CPU J205-3
J1-7 Orange-Red, ded. switch row 2 from CPU J205-2
J1-8 Orange-Brown, ded. switch row 1 from CPU J205-1
J1-9 Key
J1-10 Black, ground from CPU J205-10
J1-11 Orange-White, switch enable from CPU J205-12

J2-1 Black, ground from Power Driver Board J116-3
J2-2 Gray-Yellow, +12vac for Power Driver Board J116-2
J2-3 Violet, G.I. from Power Driver Board J119-3
J2-4 Key
J2-5 White-Violet, G.I. 6.8vac from Power Driver J119-1

J3-1 Green-Brown, switch column. 1 from CPU J212-1
J3-2 Green-Red, switch column 2 from CPU J212-2
J3-3 White-Brown, switch row 1 from CPU J212-4
J3-4 White-Red, switch row 2 from CPU J212-6
J3-5 White-Orange, switch row 3 from CPU J212-7
J3-6 White-Yellow, switch row 4 from CPU J212-8
J3-7 Key
J3-8 Yellow-Gray, lamp col. 8 from Power Driver J136-3
J3-9 Red-Blue, lamp row 6 from Power Driver J135-7
J3-10 Red-Violet, lamp row 7 from Power Driver J135-8
J3-11 Red-Gray, lamp row 8 from Power Driver J135-9

J4- Not Used

J5-1 Violet, G.I. return to coin door
J5-2 White-Violet, G.I. 6.8vac to coin door
J5-3 Black, ground to coin door
J5-4 Orange-Brown, ded. switch row 1 to coin door
J5-5 Orange-Red, ded. switch row 2 to coin door
J5-6 Orange-Black, ded. switch row 3 to coin door
J5-7 Orange-Green, ded. switch row 5 to coin door
J5-8 Orange-Blue, ded. switch row 6 to coin door
J5-9 Orange-Violet, ded. switch row 7 to coin door
J5-10 Key
J5-11 Orange-Gray, ded. switch row 8 to coin door
J5-12 Green-Red, switch column 2 to coin door Slam Tilt
J5-13 White-Brown, switch row 1 to coin door Slam Tilt

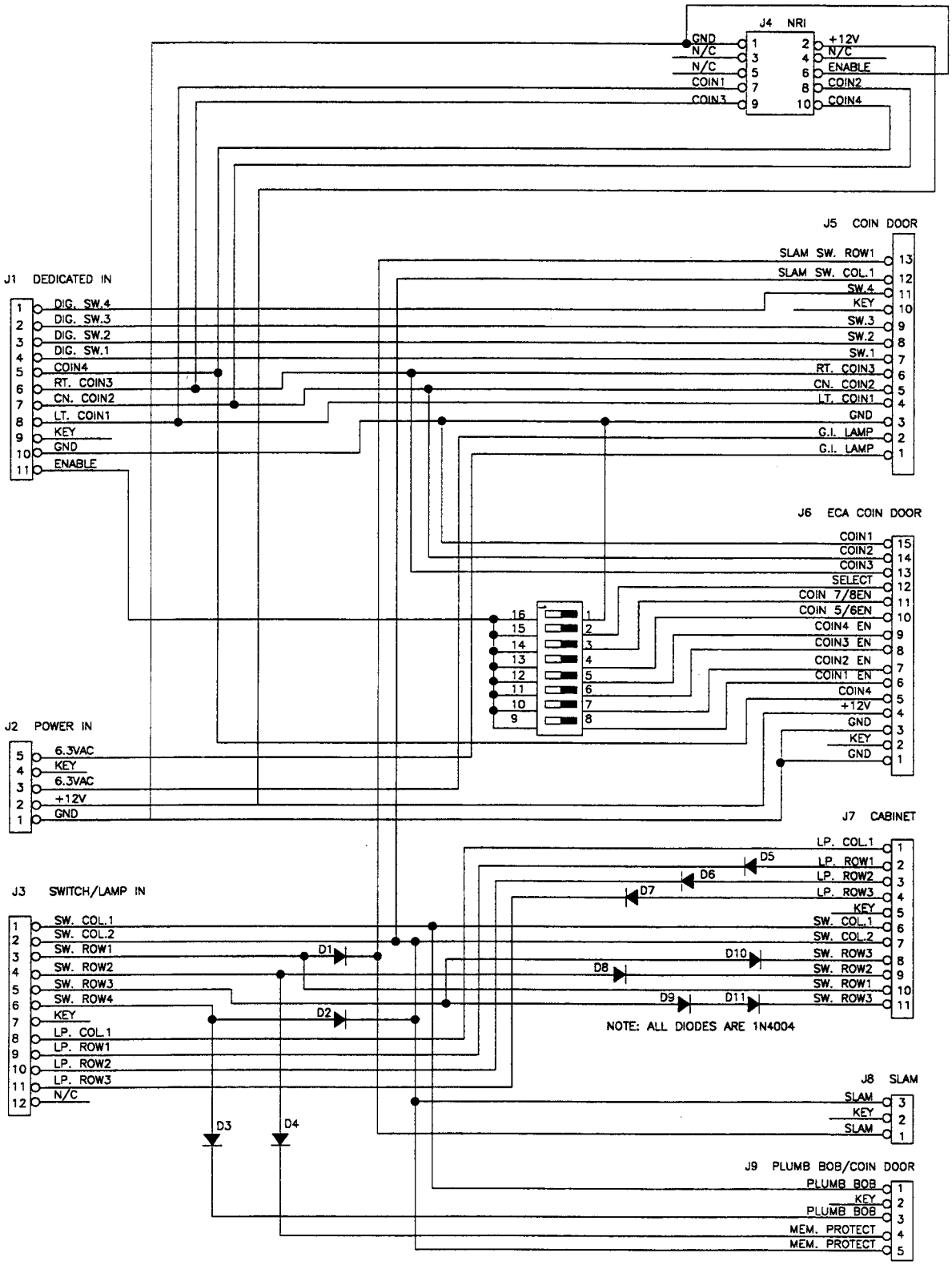
J6- Not Used

J7-1 Yellow-Gray, lamp column 8 to cabinet
J7-2 N/C
J7-3 Red-Violet, lamp row 7 to cabinet
J7-4 Red-Gray, lamp row 8 to cabinet
J7-5 Key
J7-6 Green-Brown, switch column 1 to cabinet
J7-7 Green-Red, switch column 2 to cabinet
J7-8 White-Orange, switch row 3 to cabinet
J7-9 N/C
J7-10 N/C
J7-11 White-Orange, switch row 3 to cabinet

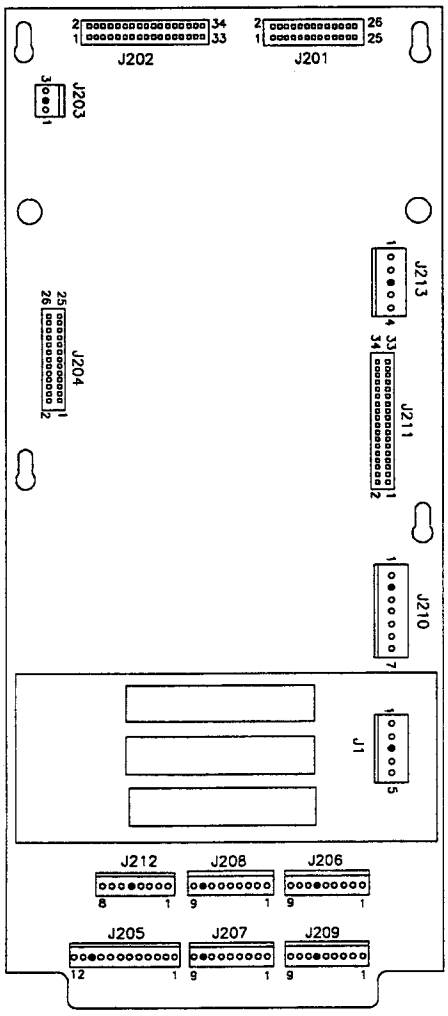
J8-1 White, switch row to cabinet Slam Tilt
J8-2 Key
J8-3 Green, switch column to cabinet Slam Tilt

J9-1 White-Yellow, switch row 4 to Plumb Bob Tilt
J9-2 Key
J9-3 Green-Brown, switch column 1 to Plumb Bob Tilt
J9-4 White-Red, switch row 2 to Interlock Switch
J9-5 Green-Red, switch column 2 to Interlock Switch

Coin Door Interface Board Schematic
A-17051-1



Security CPU Board Assembly
A-17651-50051



J201, 26-pin ribbon cable, data to/from J602

J202, 34-pin ribbon cable, data to/from J903; P1; J601

J203- Not Used

J204- Not Used

J205-1 Orange-Brown, ded. sw. row 1, to Coin Door Brd J1-8
J205-2 Orange-Red, ded. sw. row 2, to Coin Door Brd J1-7
J205-3 Orange-Black, ded. sw. row 3, to Coin Door Brd J1-6
J205-4 Orange-Yellow, ded. sw. row 4, to Coin Door Brd J1-5
J205-5 Key
J205-6 Orange-Green, ded. sw. row 5, to Coin Door Brd J1-4
J205-7 Orange-Blue, ded. sw. row 6, to Coin Door Brd J1-3
J205-8 Orange-Violet, ded. sw. row 7, to Coin Door Brd J1-2
J205-9 Orange-Gray, ded. sw. row 8, to Coin Door Brd J1-1
J205-10 Black, ground, to Coin Door Brd J1-10
J205-11 N/C
J205-12 Orange-White, switch enable, to Coin Door Brd J1-11

J206- Not Used

J207-1 Green-Brown, switch column 1, to playfield switches
J207-2 Green-Red, switch column 2, to playfield switches
J207-3 Green-Orange, switch column 3, to playfield switches
J207-4 Green-Yellow, switch column 4, to playfield switches
J207-5 Green-Black, switch column 5, to playfield switches
J207-6 Green-Blue, switch column 6, to playfield switches
J207-7 N/C
J207-8 Key
J207-9 N/C
J207-10 N/C
J207-11 N/C

J208- Not Used

J209-1 White-Brown, switch row 1, to playfield switches
J209-2 White-Red, switch row 2, to playfield switches
J209-3 White-Orange, switch row 3, to playfield switches
J209-4 White-Yellow, switch row 4, to playfield switches
J209-5 White-Green, switch row 5, to playfield switches
J209-6 Key
J209-7 White-Blue, switch row 6, to playfield switches
J209-8 White-Violet, switch row 7, to playfield switches
J209-9 White-Gray, switch row 8, to playfield switches

J210-1 Black, ground, from Power Driver Board J114-5,7
J210-2 Key
J210-3 Black, ground, from Power Driver Board J114-5, 7
J210-4 Gray, +5V, from Power Driver Board J114-3, 4
J210-5 Gray, +5V, from Power Driver Board J114-3, 4
J210-6 Gray-Green, +12V, from Power Driver Board J114-1, 2
J210-7 Gray-Green, +12V, from Power Driver Board J114-1, 2

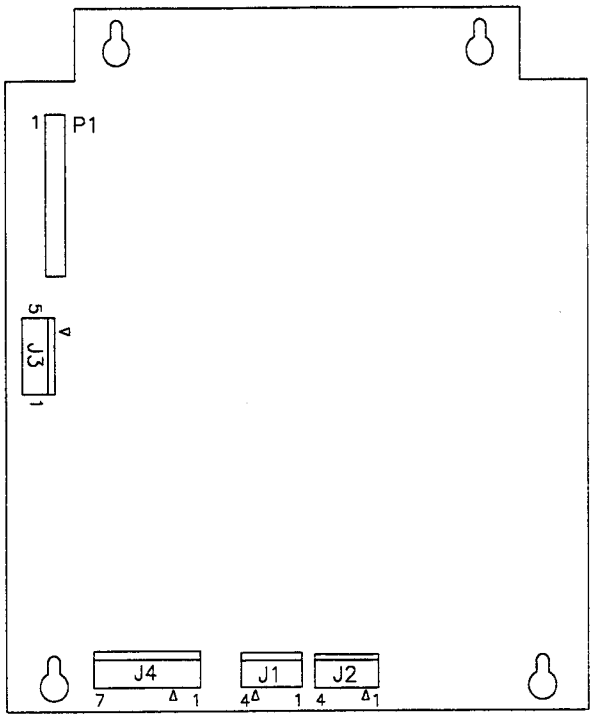
J211, 34-pin ribbon cable, data to/from J113

J212-1 Green-Brown, switch col. 1, to Coin Door Board J3-1
J212-2 Green-Red, switch col. 2, to Coin Door Board J3-2
J212-3 N/C
J212-4 White-Brown, switch row 1, to Coin Door Board J3-3
J212-5 Key
J212-6 White-Red, switch row 2, to Coin Door Board J3-4
J212-7 White-Orange, switch row 3, to Coin Door Board J3-5
J212-8 White-Yellow, switch row 4, to Coin Door Board J3-6

J213-1 Black, to battery holder board J1-1
J213-2 Black, to battery holder board J1-2
J213-3 Key
J213-4 Gray, to battery holder board J1-4
J213-5 Gray, to battery holder board J1-5

J1-1 Black, from CPU J213-1
J1-2 Black, from CPU J213-2
J1-3 Key
J1-4 Gray, from CPU J213-4
J1-5 Gray, from CPU J213-5

Sound Board Assembly
A-16917-50051



P1, 34-pin ribbon cable, data to/from J601; J903; J202

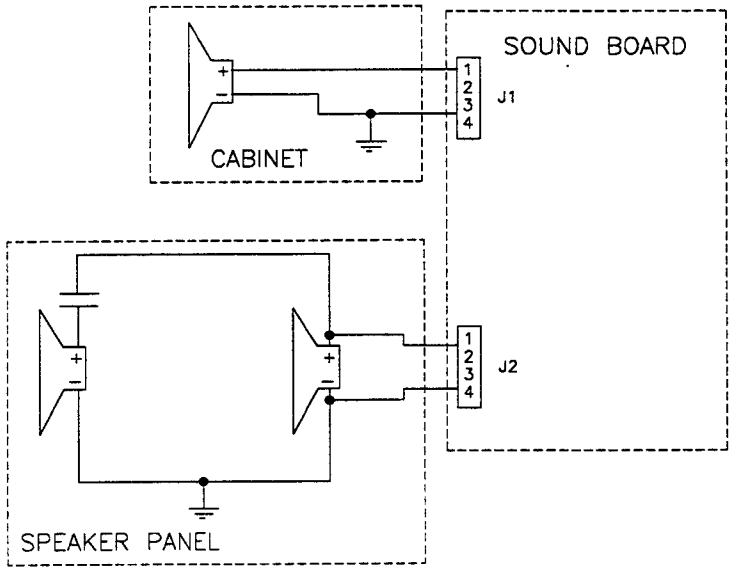
J1-1 Black-Yellow, signal to speaker
J1-2 N/C
J1-3 Key
J1-4 Black, signal to speaker

J2-1 Black-Yellow, signal to speaker
J2-2 Key
J2-3 N/C
J2-4 Black, signal to speaker

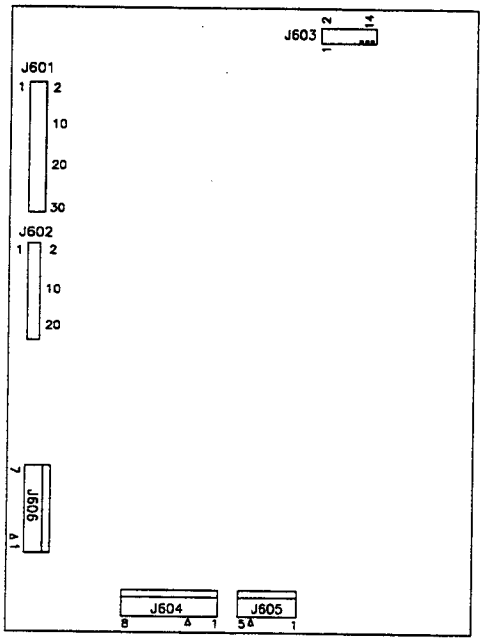
J3-1 Gray, +5V from Power Driver Board J114-3, 4
J3-2 Key
J3-3 Gray, +5V from Power Driver Board J114-3, 4
J3-4 Black, ground from Power Driver Board J114-5, 7
J3-5 Black, ground from Power Driver Board J114-5, 7

J4-1 Gray-Green, 18Vac from transformer secondary
J4-2 Gray-Green, 18Vac loop from J4-1
J4-3 Key
J4-4 Gray, 18Vac from transformer secondary
J4-5 Gray, 18Vac loop from J4-4
J4-6 Gray-White, 18Vac from transformer secondary
J4-7 Gray-White, 18Vac loop from J4-6

Speaker Wiring Diagram



Dot Matrix Controller Board Assembly
A-14039.1



J601, 34-pin ribbon cable, data to/from J202; J903; P1

J602, 26-pin ribbon cable, data to/from J201

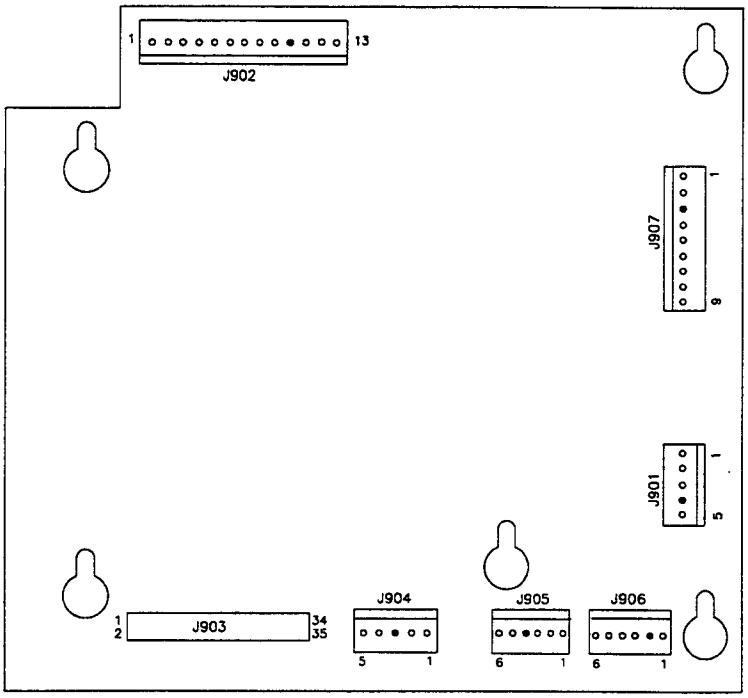
J603, 14-pin ribbon cable, data to/from Dot Matrix Display/Driver

J604-1 Orange, -125V to Display/Driver pin 1
J604-2 Blue, -113V to Display/Driver pin 2
J604-3 Key
J604-4 Black, ground to Display/Driver pin 4
J604-5 Black, ground to Display/Driver pin 5
J604-6 Gray, +5V to Display/Driver pin 6
J604-7 Gray-Yellow, to Display/Driver pin 7
J604-8 Brown, +62V to Display/Driver pin 8

J605-1 White, 80Vac from transformer secondary
J605-2 White, 80Vac from transformer secondary
J605-3 Violet, 100Vac from transformer secondary
J605-4 Key
J605-5 Violet, 100Vac from transformer secondary

J606-1 Black, ground loop from J606-3
J606-2 Key
J606-3 Black, ground from Power Driver Board J117-3
J606-4 Gray, +5V loop from J606-5
J606-5 Gray, +5V from Power Driver Board J117-4
J606-6 Gray-Yellow, +12V loop form J606-7
J606-7 Gray-Yellow, +12V from Power Driver Board J117-2

Fliptronic II Board Assembly
A-15472-1



J901-1 White-Blue, 50Vac from Power Drvr Brd J104-2
J901-2 White-Blue, 50Vac loop from J901-1
J901-3 White-Blue, 50Vac from Power Drvr Brd J104-1
J901-4 Key
J901-5 White-Blue, 50Vac loop from J901-3

J902-1 N/C
J902-2 N/C
J902-3 N/C
J902-4 N/C
J902-5 N/C
J902-6 N/C
J902-7 Orange-Blue, holding, lower left flipper coil
J902-8 N/C
J902-9 Yellow-Blue, power, lower left flipper coil
J902-10 Key
J902-11 Orange-Green, holding, lower right flipper coil
J902-12 N/C
J902-13 Yellow-Green, power, lower right flipper coil

J903, 34-pin ribbon cable, data to/from J202; J601; P1

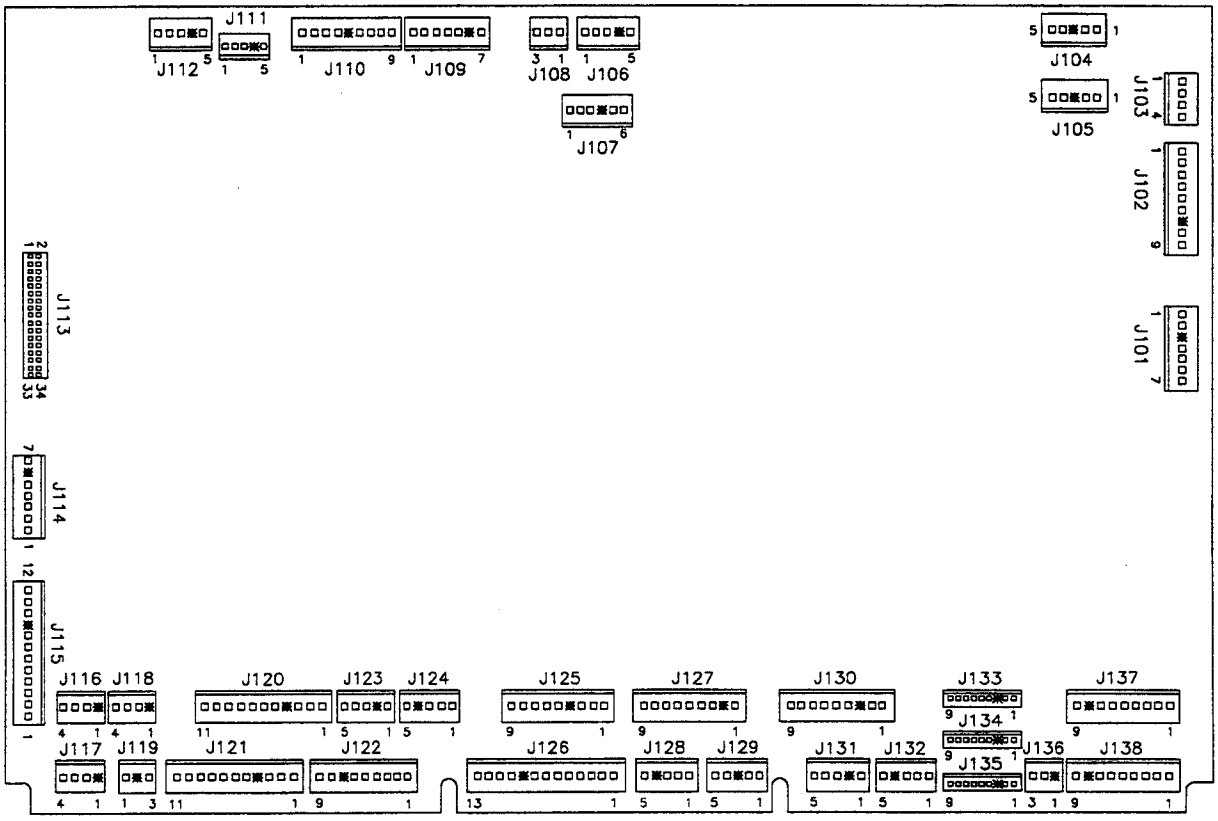
J904-1 Gray, +5V from Power Driver Board J114-3, 4
J904-2 Gray-Green, +12V from Pwr Drvr Brd J114-1, 2
J904-3 Key
J904-4 Black, ground from Power Driver Brd J114-5, 7
J904-5 Black ,ground from Power Driver Brd J114-5, 7

J905-1 Blue-Violet, F2 to right flipper opto J1-2
J905-2 Blue-Gray, F4 to left flipper opto J1-2
J905-3 Black-Yellow, F6 to right flipper opto J1-1 (not used)
J905-4 Key
J905-5 Black-Blue, F8 to left flipper opto J1-1 (not used)
J905-6 Orange, ground to left flipper opto J1-4

J906-1 Black-Green, F1 to lower right E.O.S. switch
J906-2 Key
J906-3 Black-Blue, F3 to lower left E.O.S. switch
J906-4 Black-Violet, F5 to Visor Closed switch
J906-5 Black-Gray, F7 to Visor Open switch
J906-6 Orange, ground to E.O.S. switches

J907-1 Red-Green, +50V to lower right flipper coil
J907-2 Red-Green, +50V loop from J907-1
J907-3 Key
J907-4 Red-Blue, +50V to lower left flipper coil
J907-5 Red-Blue, +50V loop from J907-4
J907-6 N/C
J907-7 N/C
J907-8 N/C
J907-9 N/C

Power Driver Board Assembly
A-12697-3



J101-1 Red, 9Vac from xformer secondary
J101-2 Red, 9Vac from transformer secondary
J101-3 Key
J101-4 Blue-White, 13Vac from xformer secondary
J101-5 Blue-White, 13Vac loop from J101-4
J101-6 Blue-White, 13Vac from xformer secondary
J101-7 Blue-White, 13Vac loop from J101-6

J102-1 White-Red, 16Vac loop from J102-2
J102-2 White-Red, 16Vac from xformer secondary
J102-3 White-Red, 16Vac loop from J102-4
J102-4 White-Red, 16Vac from xformer secondary
J102-5 Black-Yellow, 16Vac loop from J102-6
J102-6 Black-Yellow, 16Vac from xformer secondary
J102-7 Key
J102-8 Black-Yellow, 16Vac loop from J102-9
J102-9 Black-Yellow, 16Vac from xformer secondary

J103- Not Used

J104-1 White-Blue, 50Vac to Fliptronic II Board J901-3
J104-2 White-Blue, 50Vac to Fliptronic II Board J901-1
J104-3 Key
J104-4 N/C
J104-5 N/C

J105- Not Used

J106- Not Used

J107-1 N/C
J107-2 Red-Brown, +50V to coils
J107-3 Red-Black, +50V to coils
J107-4 Key
J107-5 N/C
J107-6 Red-White, +20V to flashlamps

J108- Not Used

J109- Not Used

J110- Not Used

J111- Not Used

J112-1 White-Green, 9.8Vac from xformer secondary
J112-2 White-Green, 9.8Vac loop from J112-1
J112-3 White-Green, 9.8Vac from xformer secondary
J112-4 Keys
J112-5 White-Green, 9.8VAC loop from J112-3

J113, 34-pin ribbon cable, data to/from CPU J211

Power Driver Board Continued...

J114-1 Gray-Green, +12V to J210-6, 7; J904-2
J114-2 Gray-Green, +12V to J210-6, 7; J904-2
J114-3 Gray, +5V to J210-4, 5; J3-1,3; J904-1
J114-4 Gray, +5V to J210-4, 5; J3-1,3; J904-1
J114-5 Black, ground to J210-1, 3; J3-4, 5; J904-4, 5
J114-6 Key
J114-7 Black, ground to J210-1,3; J3-4, 5;. J904-4, 5

J115-1 Yellow-White, 6.8Vac from xformer secondary
J115-2 White-Brown, 6.8Vac from xformer secondary
J115-3 White-Brown, 6.8Vac from xformer secondary
J115-4 White-Orange, 6.8Vac from xformer secondary
J115-5 White-Yellow, 6.8Vac from xformer secondary
J115-6 White-Yellow, 6.8Vac from xformer secondary
J115-7 Orange, 6.8Vac from xformer secondary
J115-8 Orange, 6.8Vac from xformer secondary
J115-9 Key
J115-10 Green, 6.8Vac from xformer secondary
J115-11 Brown, 6.8Vac from xformer secondary
J115-12 Brown, 6.8Vac from xformer secondary

J116-1 Key
J116-2 Gray-Yellow, +12V to Coin Door Board J2-2
J116-3 Black, ground to Coin Door Board J2-1
J116-4 N/C

J117-1 Key
J117-2 Gray-Yellow, +12V to Dot Matrix Cntrllr J606-7
J117-3 Black, ground to Dot Matrix Cntrllr J606-3
J117-4 Gray, +5V to Dot Matrix Cntrllr J606-5

J118-1 Key
J118-2 Gray-Yellow, +12V to playfield boards
J118-3 Black, ground to playfield boards
J118-4 N/C

J119-1 White-Violet, 6.8Vac, G.I. to Coin Door BrdJ2-5
J119-2 Key
J119-3 Violet, return, G.I. to Coin Door Board J2-3

J120-1 Brown, return, G.I. to insert panel
J120-2 Orange, return, G.I. to insert panel
J120-3 Yellow, return, G.I. to insert panel
J120-4 Key
J120-5 Green, return, G.I. to insert panel
J120-6 Violet, return, G.I. to insert panel
J120-7 White-Brown, 6.8Vac, G.I. to insert panel
J120-8 White-Orange, 6.8Vac, G.I. to insert panel
J120-9 White-Yellow, 6.8Vac, G.I. to insert panel
J120-10 White-Green, 6.8Vac, G.I. to insert panel
J120-11 White-Violet, 6.8Vac, G.I. to insert panel

J121-1 Brown, return, G.I. to
J121-2 Orange, return, G.I. to playfield
J121-3 Yellow, return, G.I. to playfield
J121-4 Key
J121-5 Green, return, G.I. to insert panel
J121-6 N/C
J121-7 White-Brown, 6.8Vac, G.I. to playfield
J121-8 White-Orange, 6.8Vac, G.I. to playfield
J121-9 White-Yellow, 6.8Vac, G.I. to playfield
J121-10 White-Green, 6.8Vac, G.I. to playfield
J121-11 N/C

J122-1 Blue-Brown, solenoid 25 drive to flashlamp
J122-2 Blue-Red, solenoid 26 drive to flashlamp
J122-3 Blue-Orange, solenoid 27 drive to flashlamp
J122-4 Blue-Yellow, solenoid 28 drive to flashlamp
J122-5 N/C
J122-6 N/C
J122-7 Key
J122-8 N/C
J122-9 N/C

J123- Not Used

J124- Not Used

J125- Not Used

J126-1 Black-Brown, solenoid 17 drive to flashlamp
J126-2 Black-Red, solenoid 18 drive to flashlamp
J126-3 Black-Orange, solenoid 19 drive to flashlamp
J126-4 Black-Yellow, solenoid 20 drive to flashlamp
J126-5 Blue-Green, solenoid 21 drive to flashlamp
J126-6 Blue-Black, solenoid 22 drive to flashlamp
J126-7 Blue-Violet, solenoid 23 drive to flashlamp
J126-8 Blue-Gray, solenoid 24 drive to flashlamp
J126-9 Key
J126-10 N/C
J126-11 N/C
J126-12 N/C
J126-13 N/C

J127-1 Brown-Black, solenoid 9 drive to coil
J127-2 Key
J127-3 Brown-Red, solenoid 10 drive to coil
J127-4 Brown-Orange, solenoid 11 drive to coil
J127-5 Brown-Yellow, solenoid 12 drive to coil
J127-6 Brown-Green, solenoid 13 drive to coil
J127-7 Brown-Blue, solenoid 14 drive to coil
J127-8 Brown-Violet, solenoid 15 drive to flashlamps
J127-9 Brown-Gray, solenoid 16 drive to flashlamps

J128-Not Used

J129-Not Used

J130-1 Violet-Brown, solenoid 1 drive to coil
J130-2 N/C
J130-3 Key
J130-4 Violet-Orange, solenoid 3 drive to coil
J130-5 Violet-Yellow, solenoid 4 drive to coil
J130-6 Violet-Green, solenoid 5 drive to coil
J130-7 Violet-Blue, solenoid 6 drive to coil
J130-8 Violet-Black, solenoid 7 drive to coil
J130-9 Violet-Gray, solenoid 8 drive to coil

J131- Not Used

J132- Not Used

Power Driver Board Continued...

J133-Not Used

J134-1 Red-Brown, lamp row 1 to playfield
J134-2 Red-Black, lamp row 2 to playfield
J134-3 Key
J134-4 Red-Orange, lamp row 3 to playfield
J134-5 Red-Yellow, lamp row 4 to playfield
J134-6 Red-Green, lamp row 5 to playfield
J134-7 Red-Blue, lamp row 6 to playfield
J134-8 Red-Violet, lamp row 7 to playfield
J134-9 Red-Gray, lamp row 8 to playfield

J135-1 N/C
J135-2 N/C
J135-3 Key
J135-4 N/C
J135-5 N/C
J135-6 N/C
J135-7 Red-Blue, lamp row 6 to cabinet
J135-8 Red-Violet, lamp row 7 to cabinet
J135-9 Red-Gray, lamp row 8 to cabinet

J136-1 Key
J136-2 N/C
J136-3 Yellow-Gray, lamp column 8 to cabinet

J137- Not Used

J138-1 Yellow-Brown, lamp column 1 to playfield
J138-2 Yellow-Red, lamp column 2 to playfield
J138-3 Yellow-Orange, lamp column 3 to playfield
J138-4 Yellow-Black, lamp column 4 to playfield
J138-5 Yellow-Green, lamp column 5 to playfield
J138-6 Yellow-Blue, lamp column 6 to playfield
J138-7 Yellow-Violet, lamp column 7 to playfield
J138-8 Key
J138-9 Yellow-Gray, lamp column 8 to playfield

LAMP MATRIX

YELLOW (B+) —Q— RED

COLUMN / ROW	1 Yellow–Brown J137–1 Q98	2 Yellow–Red J137–2 Q97	3 Yellow–Orange J137–3 Q96	4 Yellow–Black J137–4 Q95	5 Yellow–Green J137–5 Q94	6 Yellow–Blue J137–6 Q93	7 Yellow–Violet J137–7 Q92	8 Yellow–Gray J137–9 Q91
Red–Brown J134–1 Q90 1	YELLOW ARROW 11	BLUE ARROW 21	AMBER ARROW 31	GREEN ARROW 41	RED ARROW 51	CARD 1 (LEFT) 61	CASHIER MINI–PLFD 71	PINBOT POKER 81
Red–Black J134–2 Q89 2	YELLOW 1 (HIGH) 12	BLUE 1 (HIGH) 22	AMBER 1 (HIGH) 32	GREEN 1 (HIGH) 42	RED 1 (HIGH) 52	CARD 2 62	MEGA RAMP MINI–PLFD 72	SLOT MACHINE 82
Red–Orange J134–4 Q88 3	YELLOW 2 13	BLUE 2 23	AMBER 2 33	GREEN 2 43	RED 2 53	CARD 3 63	LIGHT EX. BALL MINI–PLFD 73	ROLL THE DICE 83
Red–Yellow J134–5 Q87 4	YELLOW 3 14	BLUE 3 24	AMBER 3 34	GREEN 3 44	RED 3 54	CARD 4 64	JACK•BOT MINI–PLFD 74	KENO 84
Red–Green J134–6 Q87 5	YELLOW 4 15	BLUE 4 25	AMBER 4 35	GREEN 4 45	RED 4 55	CARD 5 (RIGHT) 65	GAME SAUCER 75	CASHIER (UNDER RAMP) 85
Red–Blue J134–7 Q86 6	YELLOW 5 (LOW) 16	BLUE 5 (LOW) 26	AMBER 5 (LOW) 36	GREEN 5 (LOW) 46	RED 5 (LOW) 56	CASINO RUN 66	MEGA RAMP 76	JACK•BOT (RAMP) 86
Red–Violet J134–8 Q84 7	LEFT OUTLANE 17	BONUS 2X 27	SHOOT AGAIN 37	BONUS 5X 47	RIGHT FLIPPER LANE 57	HIT ME 67	HIGH DROP TARGET 77	BUY–IN BUTTON 87
Red–Gray J134–9 Q83 8	LEFT FLIPPER LANE 18	BONUS 3X 28	BONUS 4X 38	JACK•BOT (TARGET) 48	RIGHT OUTLANE 58	LOW DROP TARGET 68	CENTER DROP TARGET 78	START BUTTON 88

J1XX = POWER DRIVER BOARD

SWITCH MATRIX

WHITE —/— GREEN

Dedicated Grounded Switches	COLUMN / ROW	1 Green–Brown J207–1 U20–18	2 Green–Red J207–2 U20–17	3 Green–Orange J207–3 U20–16	4 Green–Yellow J207–4 U20–15	5 Green–Black J207–5 U20–14	6 Green–Blue J207–6 U20–13	7 Green–Violet J207–7 U20–12	8 Green–Gray J207–9 U20–11	Flipper Grounded Switches
Org–Brn J205–1 Left Coin Chute D1	White–Brown J209–1 U18–11 1	LOWER LEFT 10 POINT 11	SLAM TILT 21	TROUGH JAM 31	VISOR 1 (LEFT) 41	5–BANK TARGET 1 (UPPER) 51	UPPER JET BUMPER 61	NOT USED 71	NOT USED 81	Black–Green J906–1 Lower Right E.O.S. F1
Org–Red J205–2 Center Coin Chute D2	White–Red J209–2 U18–9 2	UPPER LEFT 10 POINT 12	COIN DOOR CLOSED 22	TROUGH 1 (RIGHT) 32	VISOR 2 42	5–BANK TARGET 2 52	LEFT JET BUMPER 62	NOT USED 72	NOT USED 82	Blue–Violet J905–1 Lower Right Opto F2
Org–Blk J205–3 Right Coin Chute D3	White–Orange J209–3 U18–5 3	START BUTTON 13	BUY EXTRA BALL 23	TROUGH 2 33	VISOR 3 43	5–BANK TARGET 3 53	LOWER JET BUMPER 63	NOT USED 73	NOT USED 83	Black–Blue J906–3 Lower Left E.O.S. F3
Org–Yel J205–4 4th Coin Chute D4	White–Yellow J209–4 U18–7 4	PLUMB BOB TILT 14	ALWAYS CLOSED 24	TROUGH 3 34	VISOR 4 44	5–BANK TARGET 4 54	RIGHT SLINGSHOT 64	NOT USED 74	NOT USED 84	Blue–Gray J905–2 Lower Left Opto F4
Org–Grn J205–6 Normal Service Credit; Test Escape D5	White–Green J209–5 U19–11 5	RAMP IS DOWN 15	LEFT OUTLANE 25	TROUGH 4 LEFT 35	VISOR 5 (RIGHT) 45	5–BANK TARGET 5 (LOWER) 55	LEFT SLINGSHOT 65	NOT USED 75	NOT USED 85	Black–Violet J906–4 Visor Closed F5
Org–Blu J205–7 Normal Volume Down; Test Down D6	White–Blue J209–7 U19–9 6	HIGH DROP TARGET 16	LEFT FLIPPER LANE 26	RAMP EXIT 36	FAR LEFT EJECT 46	VORTEX UPPER 56	RIGHT 10 POINT 66	NOT USED 76	NOT USED 86	Black–Yellow J905–3 Upper Right Opto F6
Org–Vio J205–8 Normal Volume Up; Test Up D7	White–Violet J209–8 U19–5 7	CENTER DROP TARGET 17	RIGHT FLIPPER LANE 27	RAMP ENTRANCE 37	LEFT EJECT HOLE (VISOR) 47	VORTEX CENTER 57	HIT ME TARGET 67	NOT USED 77	NOT USED 87	Black–Gray J906–5 Visor Open F7
Org–Gry J205–9 Normal Begin Test; Test Enter D8	White–Gray J209–9 U19–7 8	LOW DROP TARGET 18	RIGHT OUTLANE 28	TARGET UNDER RAMP 38	RIGHT EJECT HOLE (VISOR) 48	VORTEX LOWER 58	BALL SHOOTER 68	NOT USED 78	NOT USED 88	Black–Blue J905–5 Upper Left Opto F8

J2XX = CPU BOARD; J9XX = FLIPTRONIC II BOARD = OPTO, TYPICALLY CLOSED

WARNINGS & NOTICES

WARNING

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

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NOTICE

WARNING

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

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CAUTION: Transport this game ONLY with the hinged backbox DOWN!