


Williams® 
ELECTRONICS GAMES, INC.

MAY 1996
16-50047-101
FINAL

Tales of the Arabian Nights™

 Williams



CE



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 G11

| | 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 Color | Solenoid Part Number | |
|----------|----------------------|---------------|---------------------|---------|---------|--------------|-------------------|---------|---------|------------------|----------------------|-----------|
| | | | Playfield | Backbox | Cabinet | | Playfield | Backbox | Cabinet | | Flashlamp Type | Playfield |
| 01 | LEFT CAGE | High Power | J133-2 | | | Q72 | J116-1 | | | Vio-Brn | A-20099 | |
| 02 | RIGHT CAGE | High Power | J133-2 | | | Q68 | J116-2 | | | Vio-Red | A-20099 | |
| 03 | VANISH DROP | High Power | J133-2 | | | Q71 | J116-4 | | | Vio-Org | FL-11753 | |
| 04 | LOCK EJECT | High Power | J133-2 | | | Q67 | J116-5 | | | Vio-Yel | AE-27-1200 | |
| 05 | BAZAAR EJECT | High Power | J133-2 | | | Q70 | J116-6 | | | Vio-Grn | AE-25-1000 | |
| 06 | LOCK MAGNET | High Power | J133-2 | | | Q66 | J116-7 | | | Vio-Blu | 20-10197 | |
| 07 | KNOCKER | High Power | | J133-2 | | Q69 | | J116-8 | | Vio-Blk | | AE-23-800 |
| 08 | RAMP MAGNET COIL | High Power | J133-1 | | | Q65 | J116-9 | | | Vio-Gry | 20-10179 | |
| 09 | TROUGH EJECT | Low Power | J133-3 | | | Q44 | J113-1 | | | Brn-Blk | AE-26-1500 | |
| 10 | LEFT SLINGSHOT | Low Power | J133-3 | | | Q48 | J113-3 | | | Brn-Red | AE-27-1200 | |
| 11 | RIGHT SLINGSHOT | Low Power | J133-3 | | | Q43 | J113-4 | | | Brn-Org | AE-27-1200 | |
| 12 | LEFT JET BUMPER | Low Power | J133-3 | | | Q47 | J113-5 | | | Brn-Yel | AE-26-1200 | |
| 13 | RIGHT JET BUMPER | Low Power | J133-3 | | | Q42 | J113-6 | | | Brn-Grn | AE-26-1200 | |
| 14 | MIDDLE JET BUMPER | Low Power | J133-3 | | | Q46 | J113-7 | | | Brn-Blu | AE-26-1200 | |
| 15 | LEFT KICKER | Low Power | J133-3 | | | Q41 | J113-8 | | | Brn-Vio | AE-27-1200 | |
| 16 | LEFT EJECT FLASHER | Low Power | J133-6 | J134-5 | | Q45 | J113-9 | J114-5 | | Brn-Gry | #89 (2) | #906 |
| 17 | INLANE FLASHERS | Flasher | J133-6 | | | Q28 | J111-1 | | | Blk-Brn | #89 (2) | |
| 18 | FINAL BATTLE FLASHER | Flasher | J133-6 | | | Q32 | J111-2 | | | Blk-Red | #906 | |
| 19 | LEFT LOOP FLASHER | Flasher | J133-6 | | | Q27 | J111-3 | | | Blk-Org | #906 | |
| 20 | BAZAAR FLASHER | Flasher | J133-6 | | | Q31 | J111-4 | | | Blk-Yel | #89 | |
| 21 | RAMP DIVERTER | Low Power | J133-2 | | | Q26 | J111-5 | | | Blu-Grn | AE-30-2000 | |
| 22 | RUB LAMP FLASHER | Flasher | J133-6 | | | Q30 | J111-6 | | | Blu-Blk | #906 | |
| 23 | MAGIC LAMP FLASHERS | Flasher | J133-6 | | | Q25 | J111-7 | | | Blu-Vio | #906 | |
| 24 | RIGHT LOOP FLASHER | Flasher | J133-6 | | | Q29 | J111-8 | | | Blu-Gry | #906 | |
| 25 | START TALE FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q16 | J109-1 | J108-1 | | Blu-Brn | #906 | #906 |
| 26 | JET FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q15 | J109-2 | J108-2 | | Blu-Red | #906 | #906 |
| 27 | TOP LOOP FLASHER | Gen. Purpose | J133-6 | J134-5 | | Q14 | J109-3 | J108-3 | | Blu-Org | #906 | #906 |
| 28 | RAMP FLASHER | Gen. Purpose | J133-6 | | | Q13 | J109-4 | | | Blu-Yel | #906 | |

General Illumination

| | | | | | | | | | | | | |
|----|-----------------------|------|--------|--------|--------|----|---------|--------|--------|---------|-----|------|
| 01 | ILLUMINATION STRING 1 | G.I. | | J106-1 | | Q5 | | J106-7 | | Wht-Brn | #44 | |
| 02 | ILLUMINATION STRING 2 | G.I. | | J106-2 | | Q4 | | J106-8 | | Wht-Org | #44 | |
| 03 | ILLUMINATION STRING 3 | G.I. | | J106-3 | | Q3 | | J106-9 | | Wht-Yel | #44 | |
| 04 | ILLUMINATION STRING 4 | G.I. | J105-5 | | | Q2 | J105-10 | | | Wht-Grn | | #555 |
| 05 | ILLUMINATION STRING 5 | G.I. | J105-6 | | J104-3 | Q1 | J105-11 | | J104-1 | Wht-Vio | | #555 |

| Flipper Circuits | | Voltage Connection | Drive Transistors | | Drive Connections | Drive Wire Colors | | Coil Part No. | Coil Colors |
|------------------|---------------------|--------------------|-------------------|------------|-------------------|-------------------|------------|---------------|-------------|
| | | | Playfield | Power Hold | | Playfield | Power Hold | | |
| 29 | | Lwr. Rt. Power | J119-1 (Red-Grn) | Q90 | J120-13 | Yel-Grn | | FL-11629 | BLUE |
| 30 | LOWER RIGHT FLIPPER | Lwr. Rt. Hold | J119-1 (Red-Grn) | Q92 | J120-11 | Org-Grn | | | |
| 31 | | Lwr. Lt. Power | J119-4 (Red-Blu) | Q87 | J120-9 | Yel-Blu | | FL-11629 | BLUE |
| 32 | LOWER LEFT FLIPPER | Lwr. Lt. Hold | J119-4 (Red-Blu) | Q89 | J120-7 | Org-Blu | | | |
| 33 | LEFT DIVERTER POWER | Upr. Rt. Power | J119-6 (Red-Vio) | Q84 | J120-6 | Yel-Vio | | FL-11753 | YELLOW |
| 34 | LEFT DIVERTER HOLD | Upr. Rt. Hold | J119-6 (Red-Vio) | Q86 | J120-4 | Org-Vio | | | |
| 35 | VANISH MAGNET | Upr. Lt. Power | J119-8 (Red-Gry) | Q81 | J120-3 | Yel-Gry | | 20-10197 | |
| 36 | LOOP POST DIVERTER | Upr. Lt. Hold | J119-8 (Red-Gry) | Q83 | J120-1 | Org-Gry | | AE-27-1200 | |

J1XX = POWER DRIVER BOARD

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

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

DECLARATION OF CONFORMITY

WILLIAMS ELECTRONICS GAMES INC.

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

WE, HEREBY DECLARE UNDER SOLE RESPONSIBILITY THAT

**THE MODEL: "ARABIAN NIGHTS" 50247, 50347, 50447, 50747, 50947,
51047, 51147, 51347, 51447, 51847, 52047, 52147, 52247, 52347 (PINBALL)**

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

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

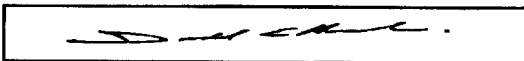
AS IS VERIFIED BY COMPLIANCE WITH THE FOLLOWING STANDARDS:

**EN 55014:1993 EN55104:1995 EN61000-4-2: 1995
IEC 801-3: 1984 (EN61000-4-3) EN61000-4-4: 1995 EN61000-4-5: 1995
ENV50141: 1993 (EN61000-4-6) EN61000-4-11: 1994**

Date issued:

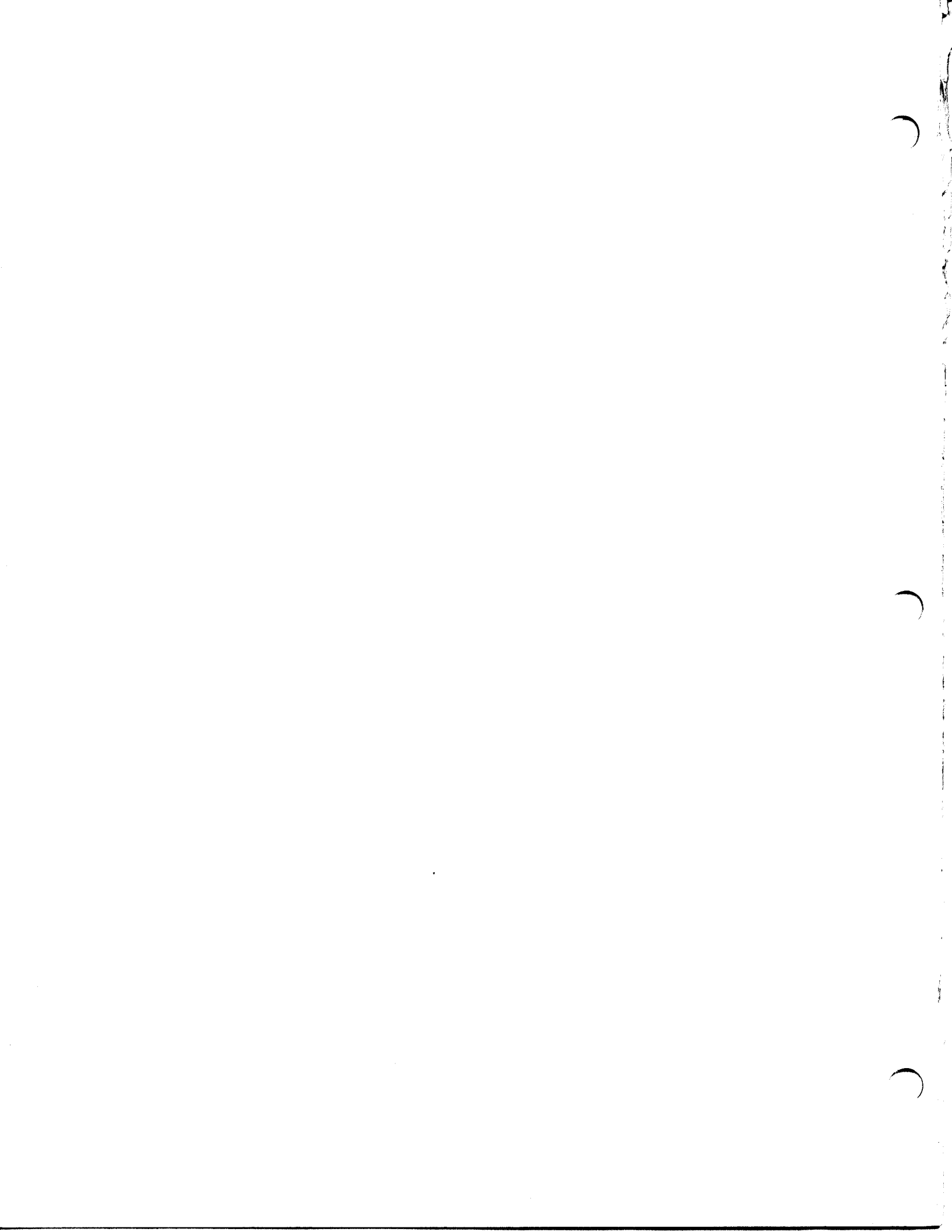
FEBRUARY 1, 1996

MANUFACTURE'S SIGNATURE



DON HASSLER

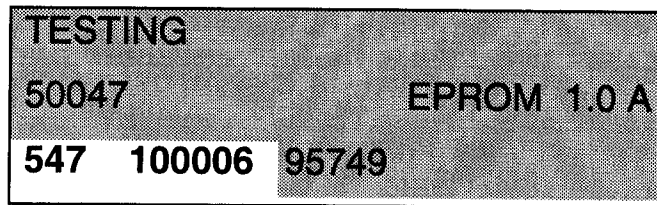
V.P. MANUFACTURING



ATTENTION

The game uses a Security CPU Board that is not downward compatible to the CPU boards used in previous games. The board has an added security chip that can be interchanged between other **TALES OF THE ARABIAN NIGHTS** games and software revision levels. The CPU board itself is interchangeable with later model games, but must be equipped with the correct security chip and software for that specific game.

The games' electronic ID number is shown in the display during power-up. The number displayed is the same nine digit number printed on the security chip label. The first three digits are the project number without the country specific code. An example of the power-up display is shown below, the electronic ID number is bolded.



```
TESTING
50047          EPROM 1.0 A
547 100006 95749
```

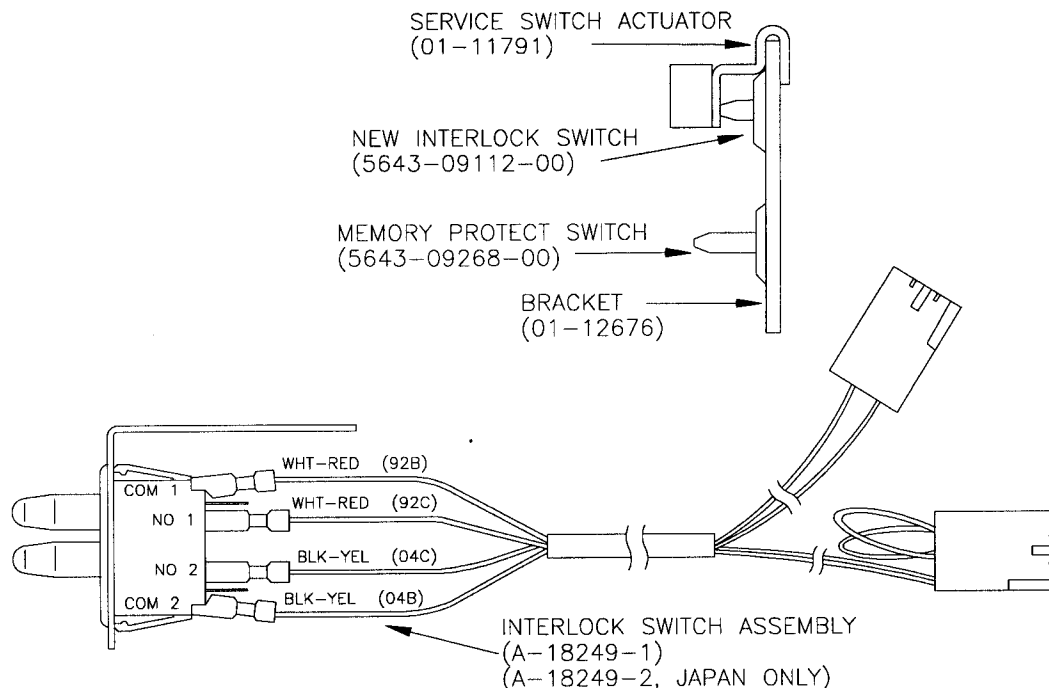
IMPORTANT NOTICE

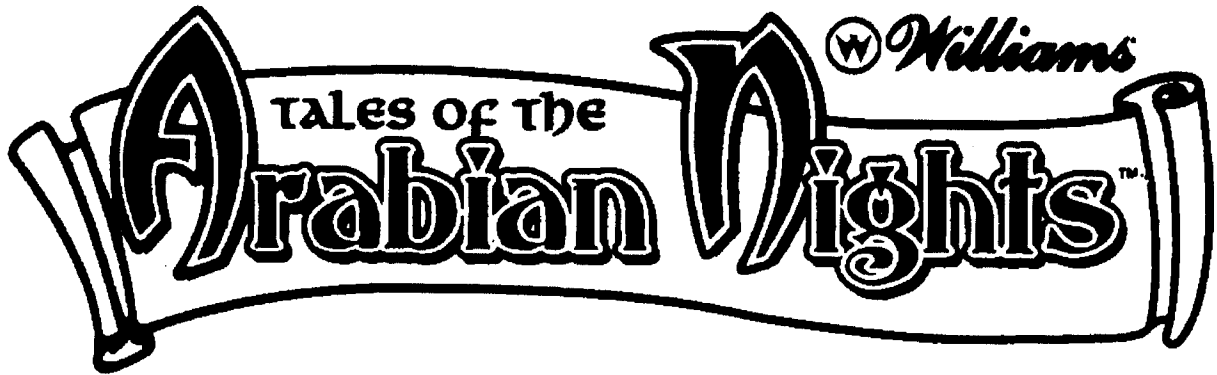
PLEASE READ

This pinball game is equipped with a SAFETY FEATURE to prevent shocks from the solenoid circuit when the coin door is opened. An 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.





Information current at time of release.

Fill out and mail in game Registration card. Be sure to include the game serial number. For your records, write the PIC and game serial numbers in manual.

PIC Number _____ Serial Number _____

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

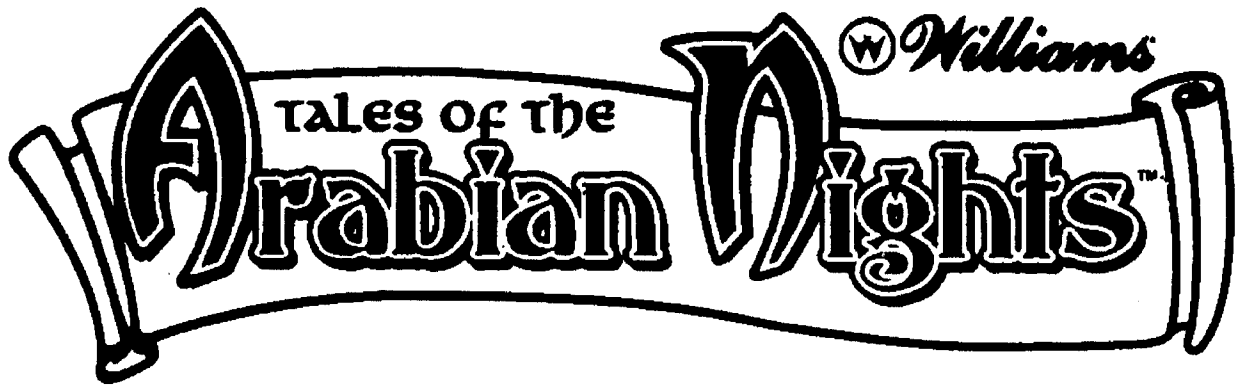
TABLE OF CONTENTS

| | |
|---|-------------|
| Story and Shot Maps..... | I to XVI |
| Section 1 - Game Operation & Test Information..... | 1-1 |
| (System WPC) ROM Summary..... | 1-1 |
| Pinball Game Assembly Instructions..... | 1-2 |
| Raising the Playfield..... | 1-5 |
| Game Control Locations..... | 1-6 |
| Game Operation..... | 1-7 |
| Menu System Operation and Main Menu..... | 1-8 |
| Bookkeeping Menu..... | 1-9 |
| B.1 Main Audits..... | 1-9 |
| B.2 Earnings Audits..... | 1-9 |
| B.3 Standard Audits..... | 1-9 |
| B.4 Feature Audits..... | 1-10 |
| B.5 Histograms..... | 1-13 |
| B.6 Time-Stamps..... | 1-13 |
| Printouts Menu..... | 1-14 |
| Test Menu..... | 1-15 |
| T.1 Switch Edges Test..... | 1-15 |
| T.2 Switch Levels Test..... | 1-15 |
| T.3 Single Switch Test..... | 1-15 |
| T.4 Solenoid Test..... | 1-16 |
| T.5 Flasher Test..... | 1-16 |
| T.6 G.I. Test..... | 1-16 |
| T.7 Sound and Music Test..... | 1-17 |
| T.8 Single Lamp Test..... | 1-17 |
| T.9 All Lamps Test..... | 1-17 |
| T.10 Lamp and Flasher Test..... | 1-17 |
| T.11 Display Test..... | 1-17 |
| T.12 Flipper Coil Test..... | 1-17 |
| T.13 Ordered Lamp Test..... | 1-18 |
| T.14 Lamp Row-Col..... | 1-18 |
| T.15 DIP Switch Test..... | 1-18 |
| T.16 Genie/Vanishing Ball Mechanism Test..... | 1-18 |
| T.17 Empty Balls Test..... | 1-19 |
| Utilities Menu..... | 1-20 |
| U.1 Clear Audits..... | 1-20 |
| U.2 Clear Coins..... | 1-20 |
| U.3 Reset H.S.T.D..... | 1-20 |
| U.4 Set Time & Date..... | 1-20 |
| U.5 Custom Messages..... | 1-20 |
| U.6 Set Game I.D..... | 1-20 |
| U.7 Factory Adjustment..... | 1-20 |
| U.8 Factory Reset..... | 1-21 |

| | |
|--|-------------|
| U.9 Presets..... | 1-21 |
| Game Difficulty Table for U.S., Canadian, French, German, and European Games..... | 1-21 |
| Preset Table for U.S./Canada..... | 1-21 |
| U.10 Clear Credits..... | 1-23 |
| U.11 Auto Burn-in..... | 1-23 |
| Adjustments Menu..... | 1-24 |
| A.1 Standard Adjustments..... | 1-24 |
| A.2 Feature Adjustments..... | 1-28 |
| A.3 Pricing Adjustments..... | 1-32 |
| Pricing Table..... | 1-40 |
| A.4 H.S.T.D. Adjustment..... | 1-41 |
| A.5 Printer Adjustments..... | 1-42 |
| Error Messages..... | 1-43 |
| CPU Board & Audio Visual Board Error Codes..... | 1-45 |
| Opto Theory..... | 1-45 |
| LED List..... | 1-46 |
| Fuse List..... | 1-47 |
| Maintenance Information..... | 1-48 |
| Unit Disassembly for Repair-Major Component Service Instructions..... | 1-49 |
| Shooting Star Spike Assembly..... | 1-50 |
| Genie Target Assembly..... | 1-51 |
| Spinning Aladdins Lamp Assembly..... | 1-52 |

| | |
|--|------------|
| Section 2 - Game Parts Information..... | 2-1 |
| Backbox Assembly..... | 2-2 |
| Cabinet Assembly..... | 2-3 |
| Audio Visual Board Assembly..... | 2-4 |
| Power Driver Board Assembly..... | 2-6 |
| CPU Security Board..... | 2-8 |
| Coin Door Interface Board Assembly..... | 2-10 |
| Flipper Opto Board Assembly..... | 2-10 |
| Trough LED Board Assembly..... | 2-11 |
| Trough Photo Transistor Board Assembly..... | 2-11 |
| 7-Opto Board Assembly..... | 2-12 |
| Ball Eject Assembly..... | 2-13 |
| Flipper Assembly-Left..... | 2-14 |
| Flipper Assembly-Right..... | 2-15 |
| Kicker Arm (slingshot) Assembly..... | 2-16 |
| Outhole Ball Trough Assembly..... | 2-17 |
| Jet Bumper Assembly..... | 2-18 |
| Jet Bumper Coil Assembly..... | 2-19 |
| Tilt Mechanism Assembly..... | 2-20 |
| Knocker Assembly..... | 2-20 |
| Kicker Assembly..... | 2-21 |
| Magnet Diverter Unit Assembly..... | 2-22 |

| | |
|--|------------|
| Spinning Lamp Unit Assembly..... | 2-23 |
| Genie Double Target Assembly..... | 2-24 |
| Vanishing Magnet Assembly..... | 2-25 |
| Solenoid Bracket Assembly..... | 2-26 |
| Skill Shot Bracket Assembly..... | 2-27 |
| Universal Power Interface Assembly..... | 2-28 |
| Universal Power Interface/Cordset Application Chart..... | 2-29 |
| Playfield Slide Mechanism..... | 2-30 |
| Ball Shooter Red Assembly..... | 2-31 |
| Upper Playfield Parts..... | 2-32 |
| Lower Playfield Parts..... | 2-34 |
| Rubber Rings..... | 2-35 |
| Lamp Matrix and Lamp Locations..... | 2-36 |
| Switch Matrix and Switch Locations..... | 2-38 |
| Solenoid Table and Solenoid Locations..... | 2-40 |
| Ramps..... | 2-42 |
| Swirl Ramp Assembly..... | 2-43 |
| | |
| Section 3 - Wiring Diagrams & Schematics..... | 3-1 |
| Connector & Component Identification..... | 3-1 |
| Switch Matrix and Switch Matrix Circuit..... | 3-2 |
| Dedicated Switch Circuit..... | 3-3 |
| Lamp Matrix and Lamp Matrix Circuit..... | 3-4 |
| Solenoid/Flashlamp Circuit Table..... | 3-5 |
| Solenoid Wiring..... | 3-6 |
| Flashlamp Wiring..... | 3-7 |
| High Power and Low Power Solenoid Circuits..... | 3-8 |
| Flashlamp and Special (General Purpose) Solenoid Circuits..... | 3-9 |
| General Illumination Circuit..... | 3-10 |
| Flipper Circuit Diagram..... | 3-11 |
| Flipper Coil and End-of-Stroke Circuits..... | 3-12 |
| Flipper Cabinet Switch Circuits..... | 3-13 |
| Flipper Opto Board..... | 3-14 |
| LED and Photo Transistor Board Assemblies..... | 3-15 |
| Trough 7 IR LED Board..... | 3-16 |
| Trough 7 IR Photo Transistor Board..... | 3-17 |
| 7-opto Switch Board Interboard Wiring List..... | 3-18 |
| 7-opto Switch Board Schematic..... | 3-19 |
| Playfield Opto Switches Wiring Diagram..... | 3-20 |
| Trough Opto Switches Wiring Diagram..... | 3-21 |
| Coin Door Interface Board Interboard Wiring List..... | 3-22 |
| Coin Door Interface Board Schematic..... | 3-23 |
| Security CPU Board Interboard Wiring List..... | 3-24 |
| Audio Visual Board Interboard Wiring List..... | 3-25 |
| Power Driver Board Interboard Wiring List..... | 3-26 |



**Story
and
Shot Maps**

The Original Tales of 1001 Nights.

The collection of approximately 300 tales known in the West as 'The Arabian Nights' has evolved through eleven centuries of Indian, Arabic, and Persian story telling.

Many of the stories take place in the magical cities of Baghdad and Bazrah found in the Middle East. The events were often supposed to happen in the reign of the great Caliph, or ruler of the Faithful, Haroun al Raschid, who lived in Baghdad in 786-808 A.D.

The wonderful stories that include Aladdin and his lamp, Sinbad the Sailor and Ali-Baba with his thieves are told night after night by a young bride named Scheherezad. All the tales bring forth masterful Genies, surreal peoples in great lands full of magic, fortune with the power of imagination.

The Realm of Pinball

For you the player the majestic city of wonders, Baghdad, awaits. Beautiful dancing girls, music, flying carpets, mysterious monsters and caves full of gold lay ahead. The Sultan's only daughter has been imprisoned by an evil Genie, never to return. It is up to you to save the Princess.

At your feet lay a golden lamp in the Bazaar. You pick it up and brush off the dirt. It begins to glow as a lovely Genie appears, "What is your wish?"

You are about to experience the greatest story the world has ever known. The Tales of the Arabian Nights.

Pinball Rules and Game Play

You must escape the pythons first as you journey into Baghdad and collect the "Seven Jewels of the Arabian Nights." The glorious tales and unbelievable events will reveal the locations of these mystical jewels. The magic lamp full of lightning beholds Dimira, your faithful Genie to guide you.

Striking the big blue Genie will begin a new story. You must collect the yellow symbols and ride your magic carpet. All these jewels collected together and placed back into the handle of your mighty Scimitar will unleash the power to engage the "Master of all the Jinn." In this final Genie Battle the red symbol will illuminate. It is here that you can release the Princess from the bottle and escape.

Scorecard

OBJECT- Collect the seven jewels of the Arabian Nights to rescue the Princess.

SKILL SHOT - Fly the ball into play, HIT the basket with the snake in it.

MULTIBALL - Spell GENIE to light LOCKS. Hit the GENIE when lit to start Multiball.

JACKPOT - During Multiball hit the Genie to score Jackpot. Shoot the lit Tiger Loop to re-light Jackpot.

LAMP - Spin the Lamp to: Score Bonus, light Wish and score Lightning Value when lit.

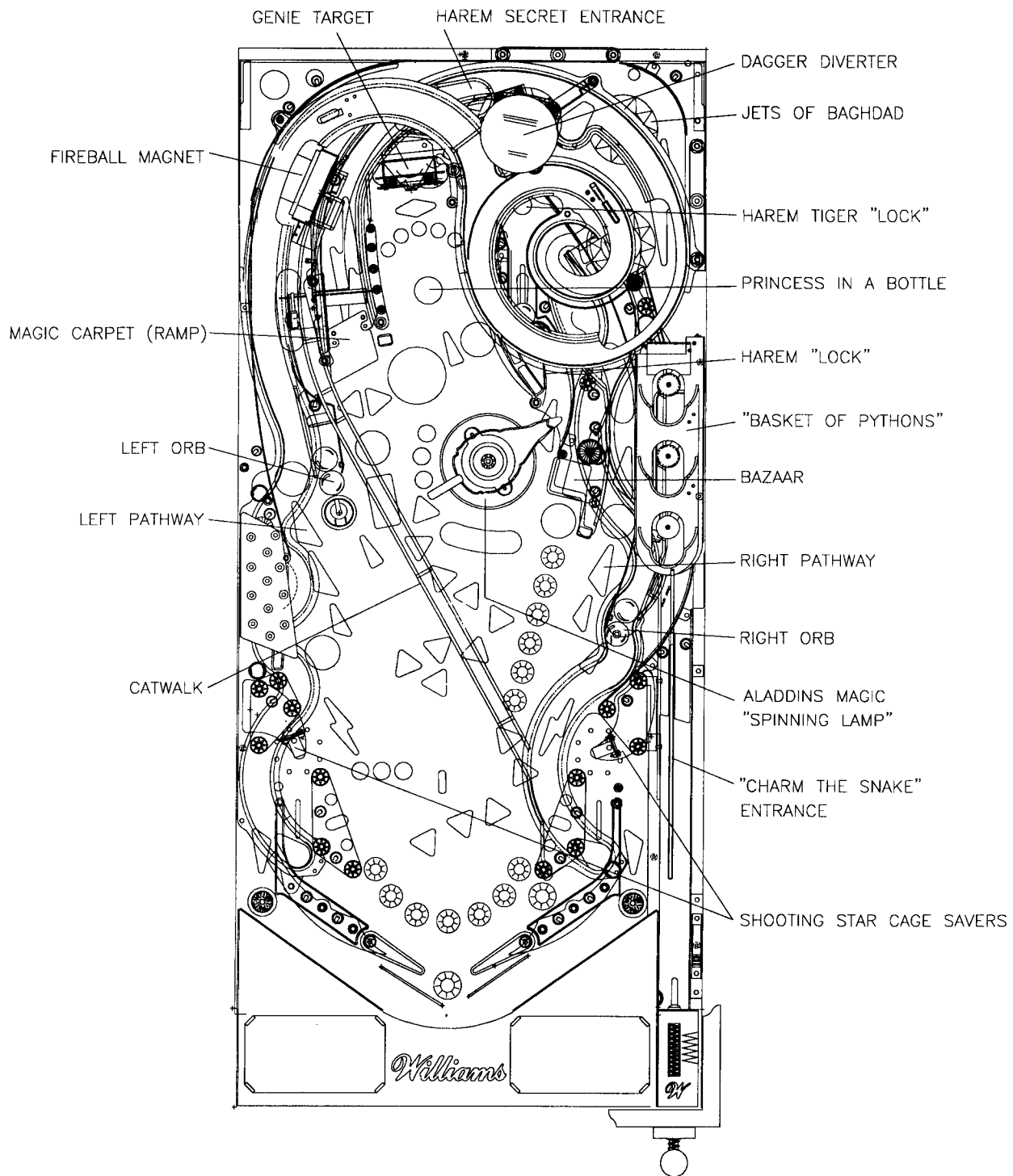
JEWELS - Complete lit Golden Symbols then shoot Magic Carpet to collect Jewels.

BAZAAR - Advance Bazaar letters. Orbs add Bonus X Value when lit.

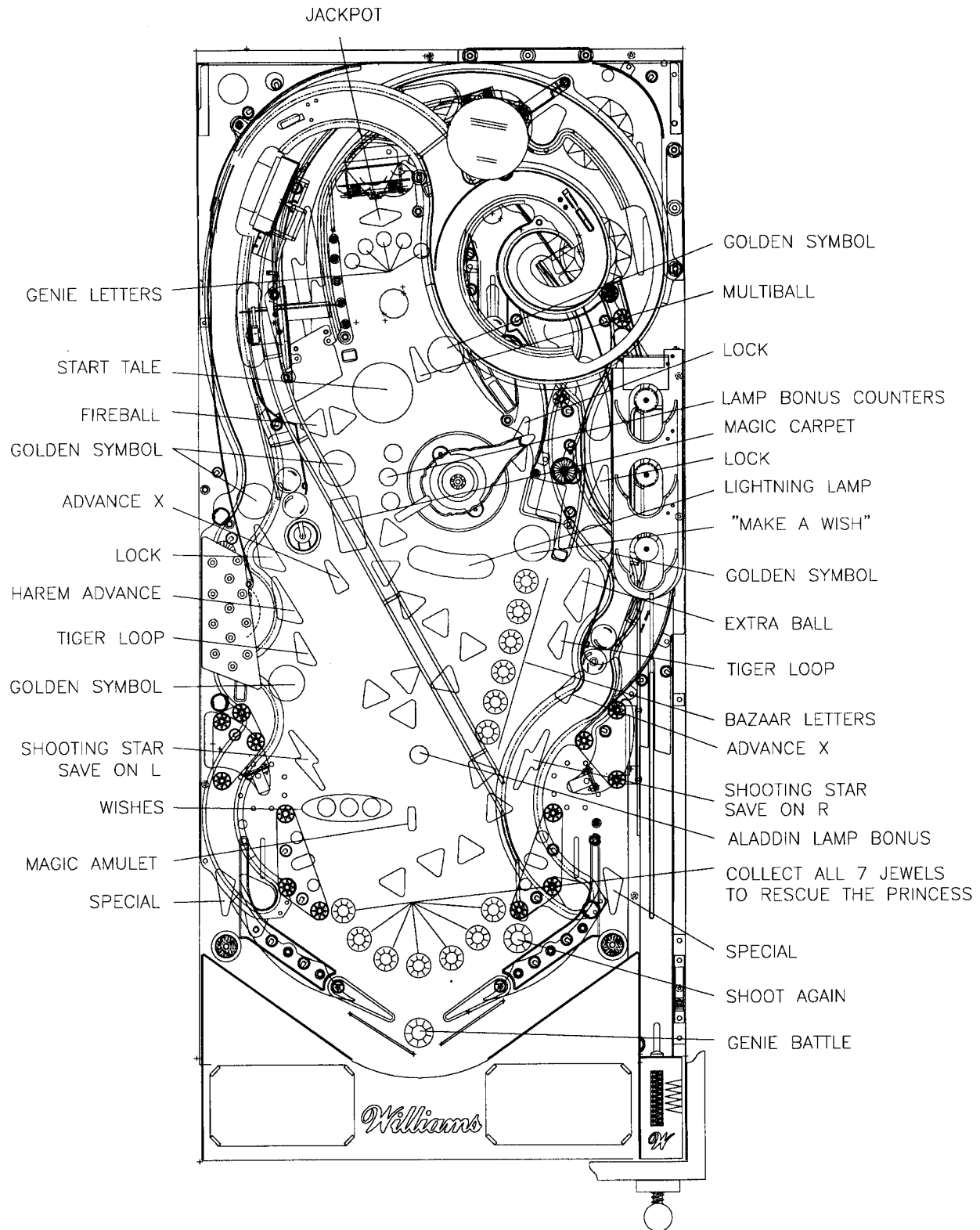
EXTRA BALL - Shoot the right Passageway to score EXTRA BALL when lit.

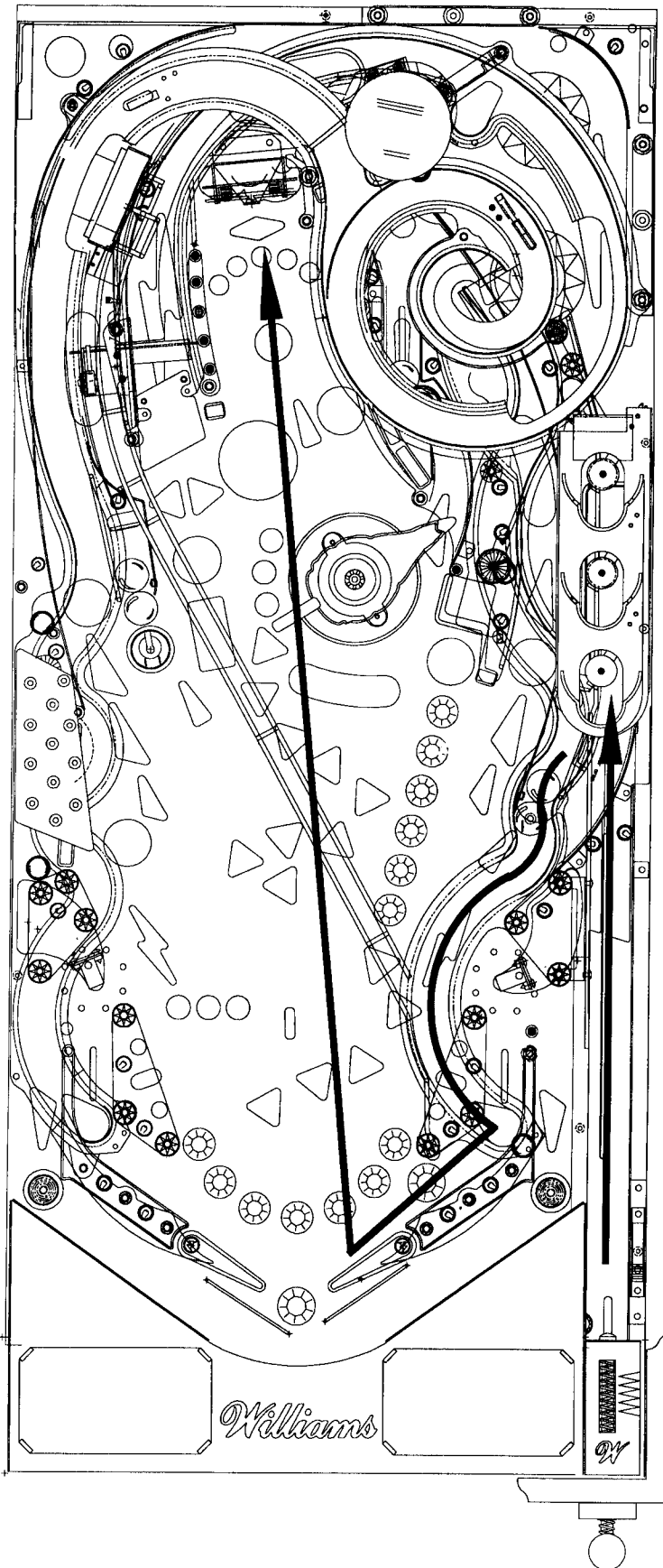
GENIE BATTLE - Strike the Genie when all seven Jewels are lit to start Genie Battle.

PLAYFIELD SHOTS



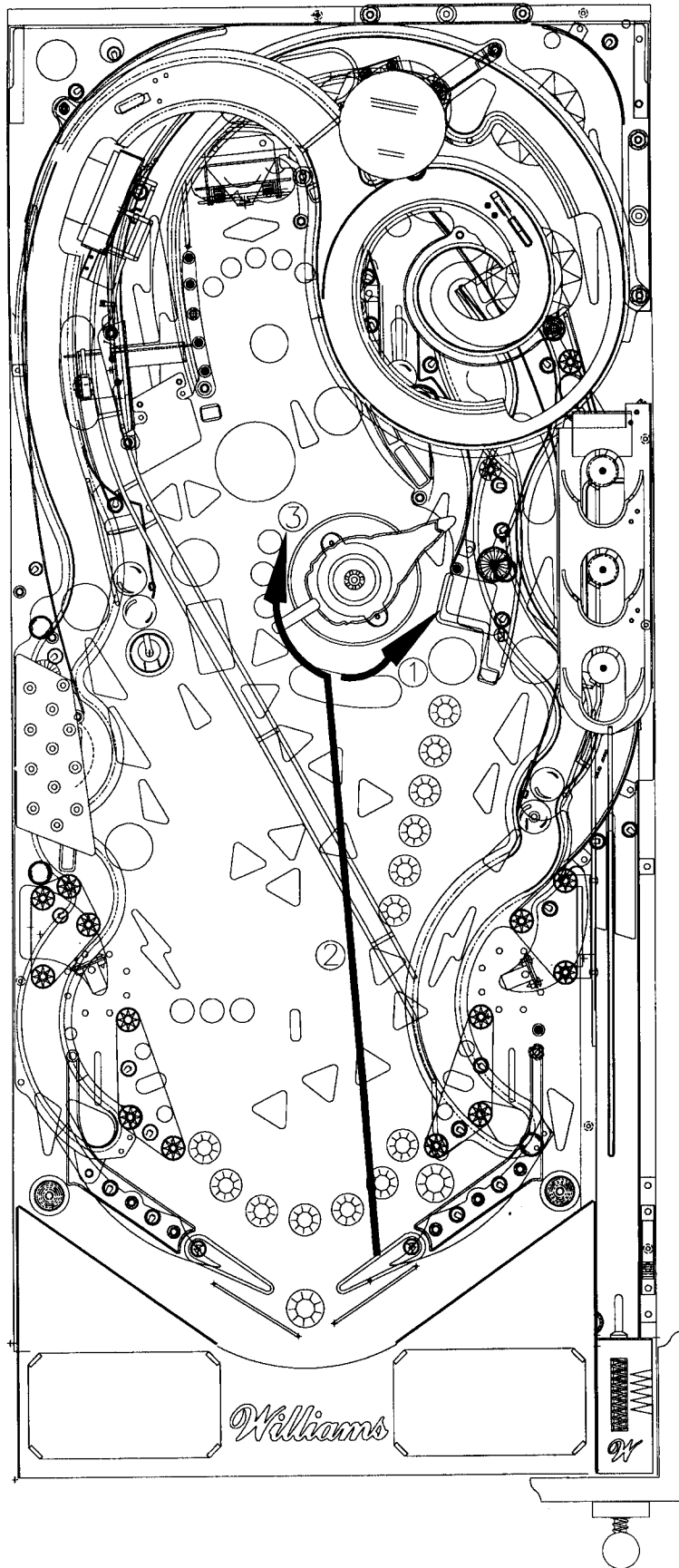
PLAYFIELD SHOTS CONTINUED...





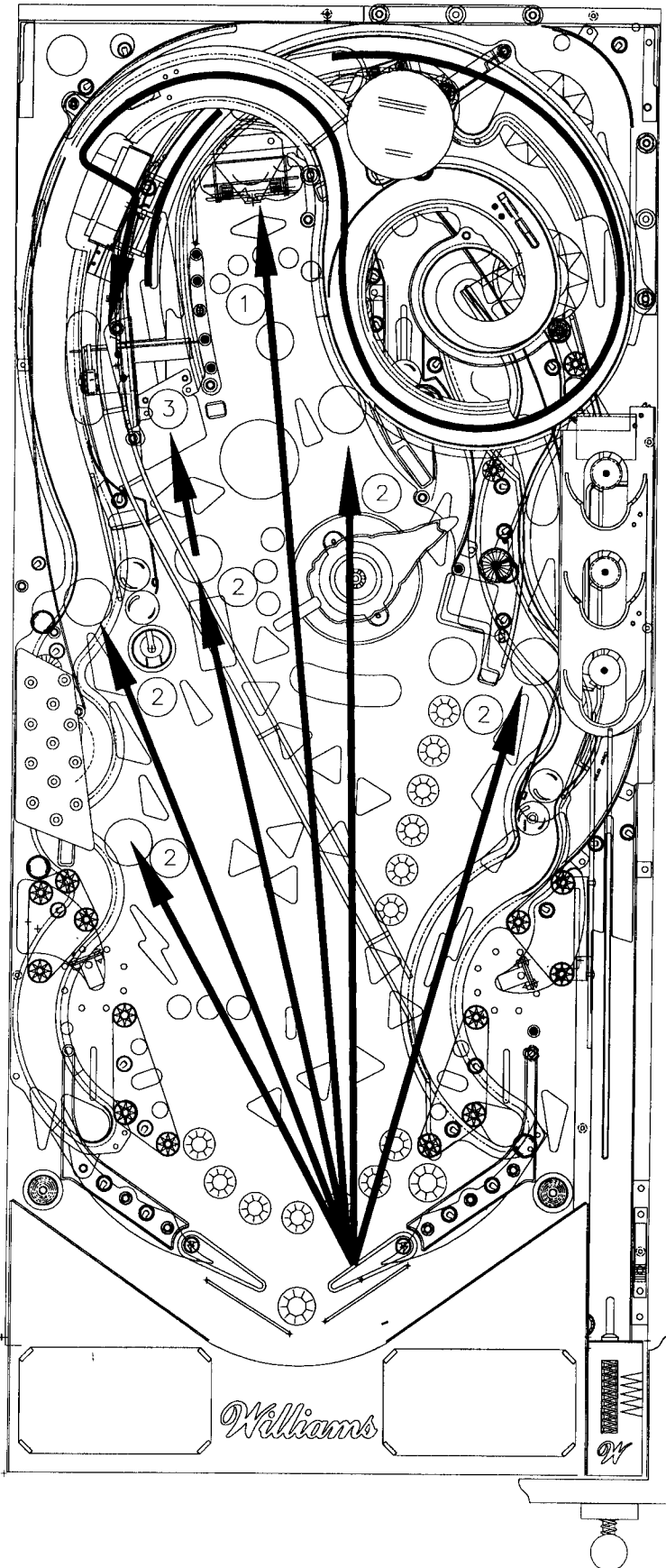
SKILL SHOT

- 1) Shoot the ball into play to "Charm The Snake".
- 2) Hit the Genie for Super Skill Shot Value.



ALADDIN'S WONDERFUL LAMP

- 1) Shoot the ball to spin the magic lamp.
- 2) More lamp spins add more bonus.
- 3) Spin the lamp to light "Lightning Lamp" for added scoring and effects.
- 4) Collect Lamp Bonus after each ball.



THE SEVEN TALES

Collect the seven jewels from the tales to rescue the princess.

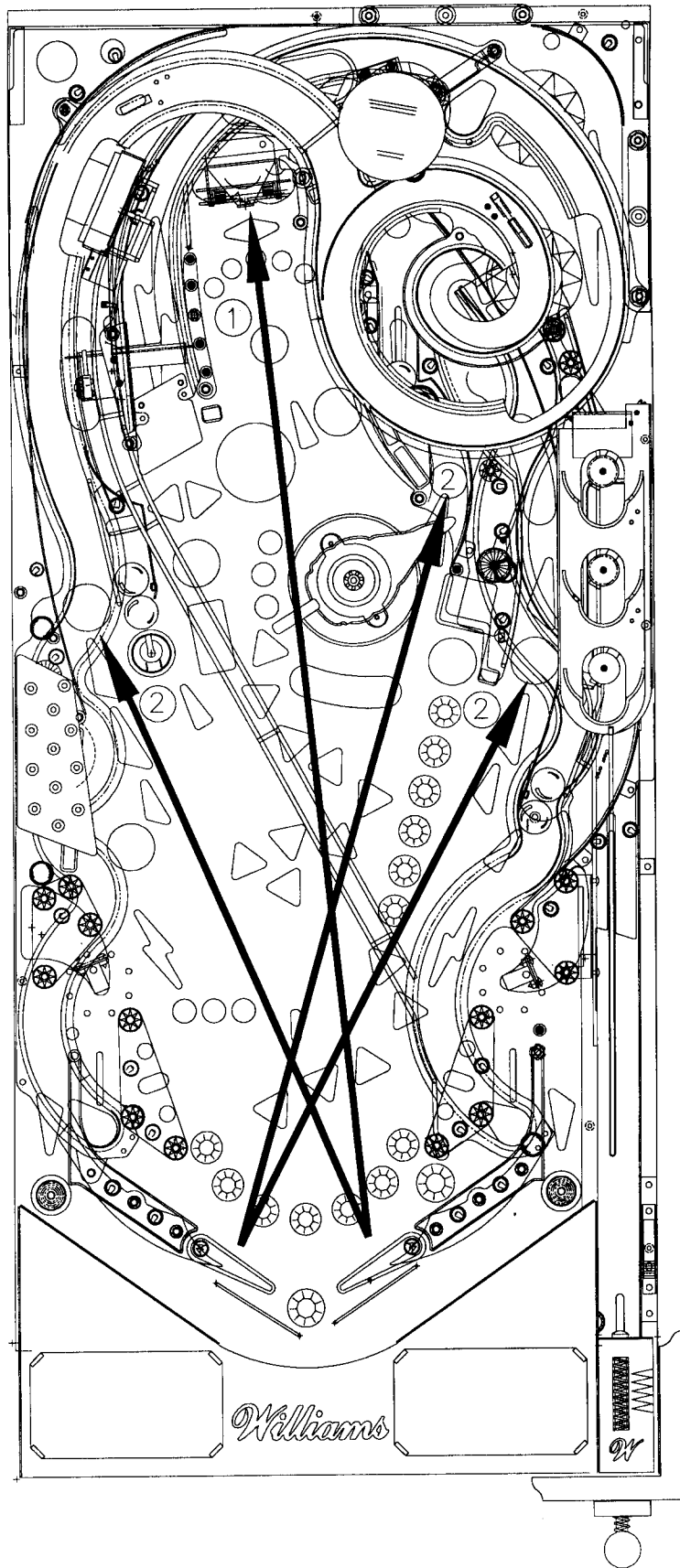
- 1) Hit the Genie when lit, to start the next tale.
- 2) Shoot the lit Golden Symbols during the tale.

This will light the Magic Carpet shot.

COLLECT A JEWEL

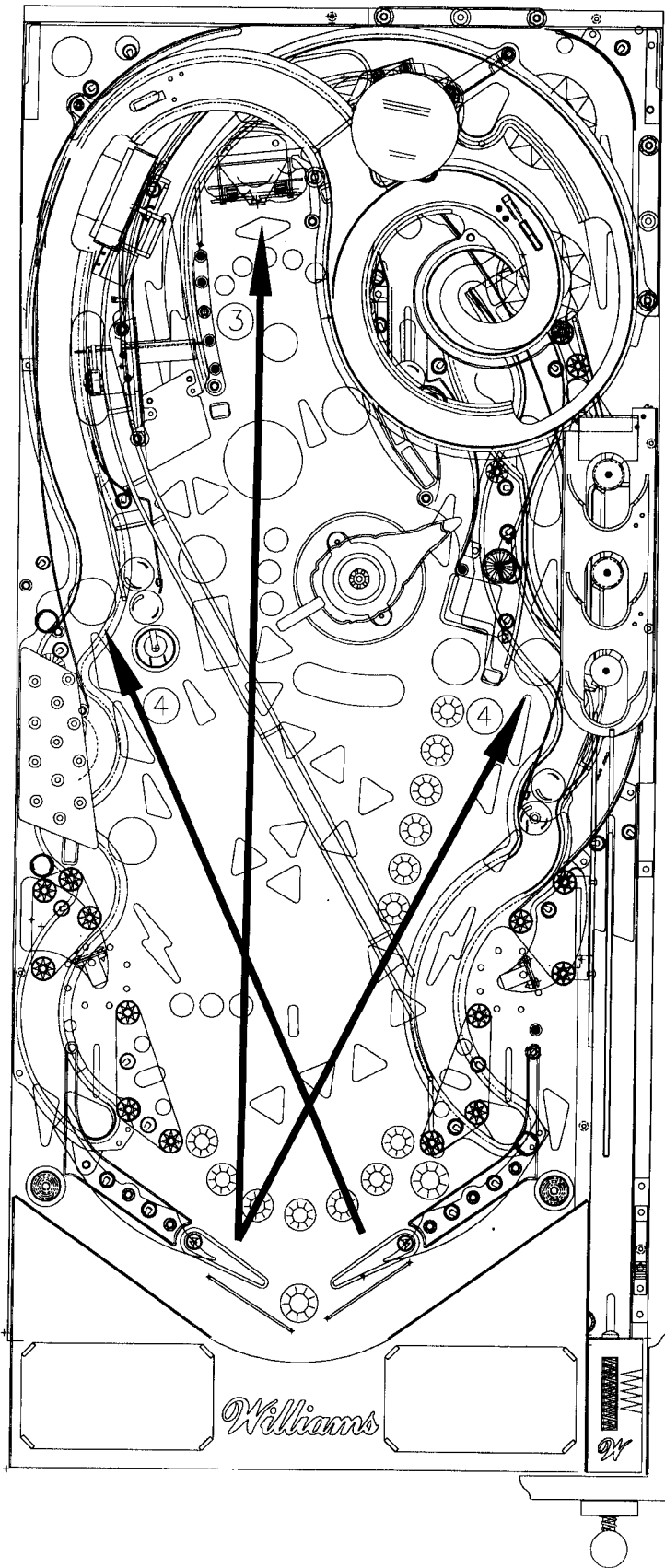
- 3) Shoot the Magic Carpet ramp to collect the Jewel.

All Jewels collected will light Genie Battle.



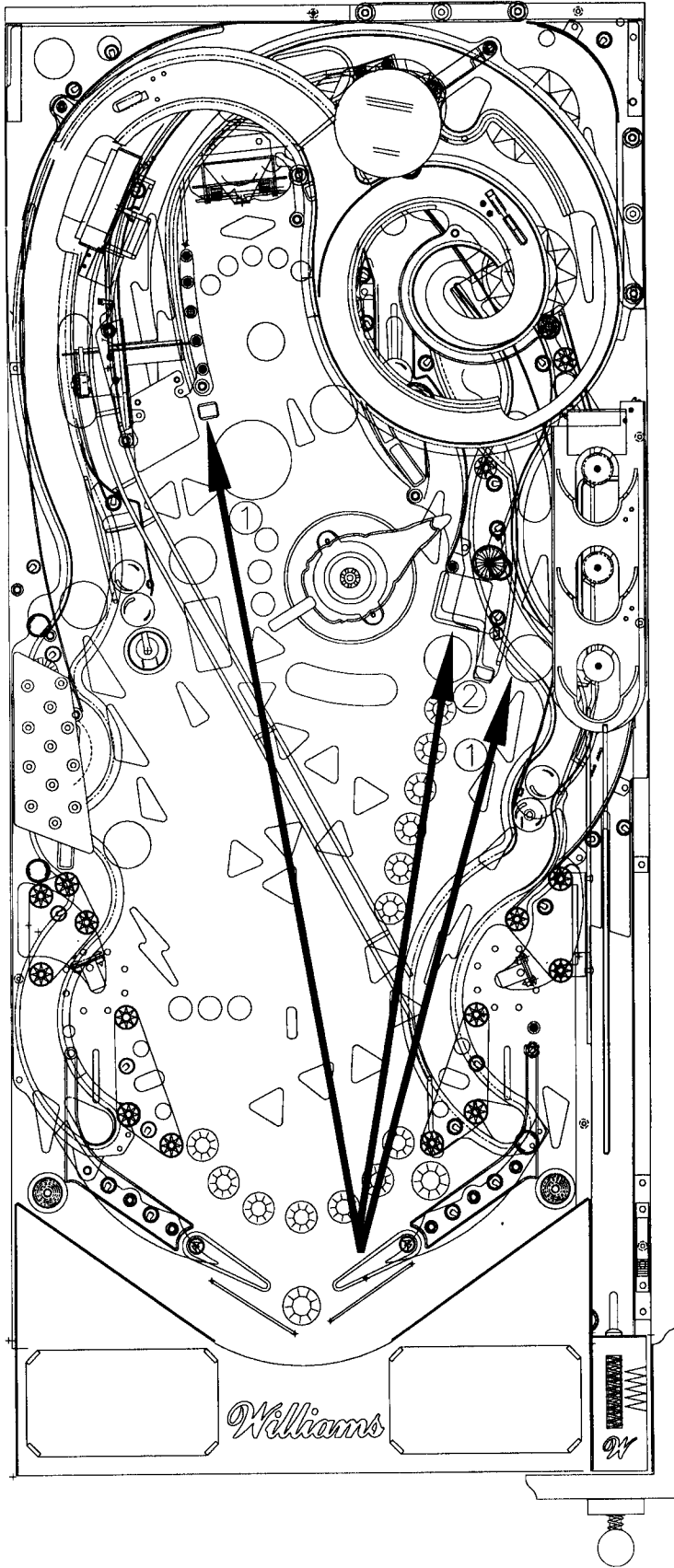
HAREM TIGER LOCK

- 1) Strike the Genie to light a letter in G-E-N-I-E. All letters lit will light locks.
- 2) Shoot the Harem or pathways to lock a ball by the Tiger.



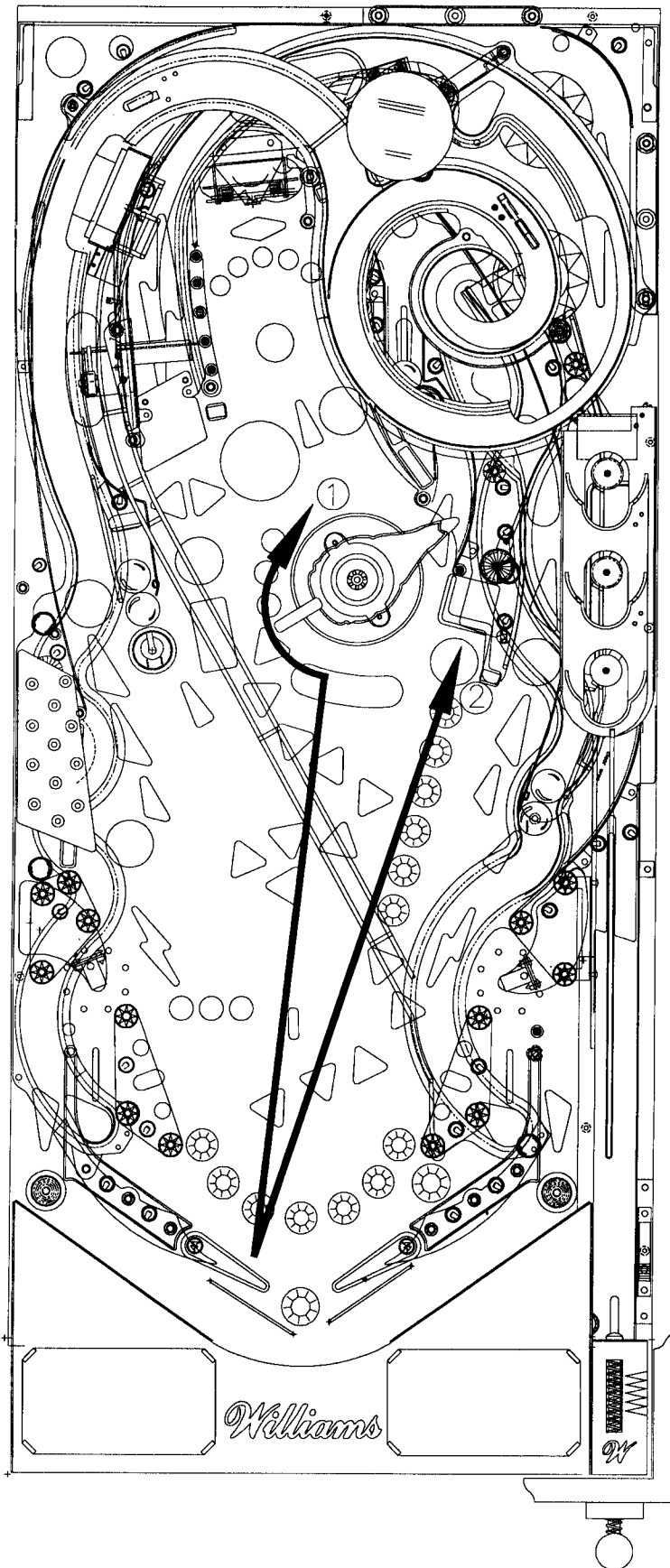
HAREM TIGER LOCK **CONTINUED...**

- 3) Then hit the Genie to start Multiball.
- 4) Hit the Genie to score Jackpot, and shoot the Left and Right Passageways to re-light the Lock.



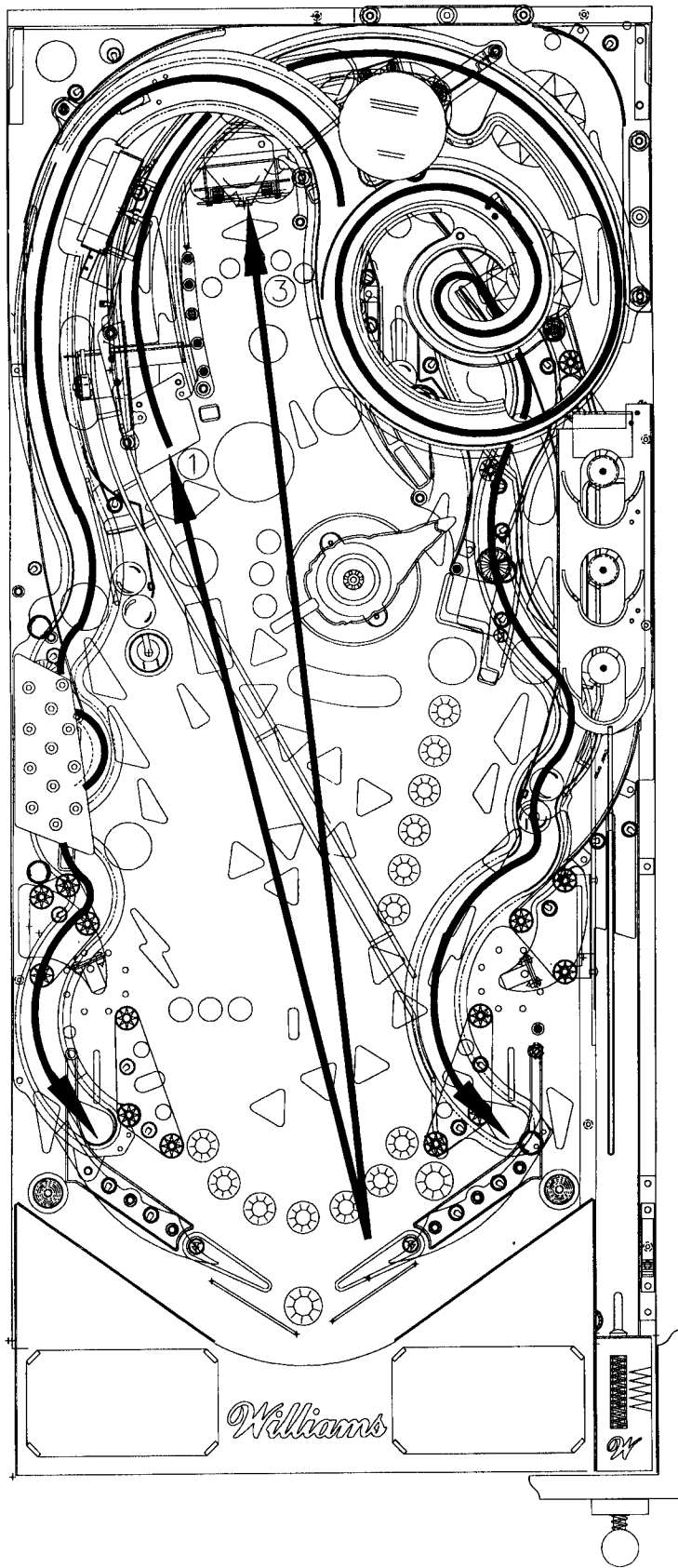
THE BAZAAR

- 1) Hit the small targets to light the Bazaar letters.
- 2) When all letters are lit, go in the Bazaar to find a great prize.



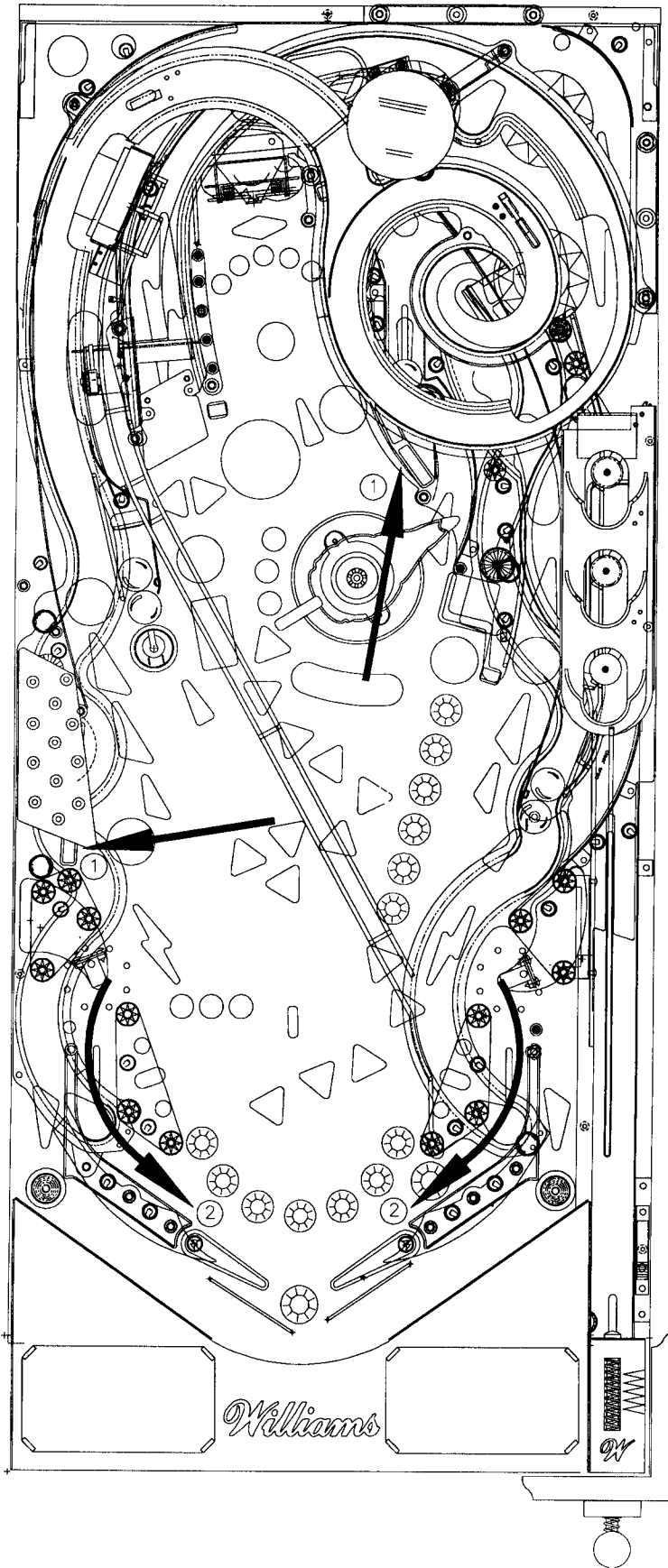
MAKE A WISH

- 1) Spin the Magic Lamp to light the Bonus to the top. This will light one Wish.
- 2) Shoot into the Bazaar when "Make a Wish" is lit to choose your destiny.



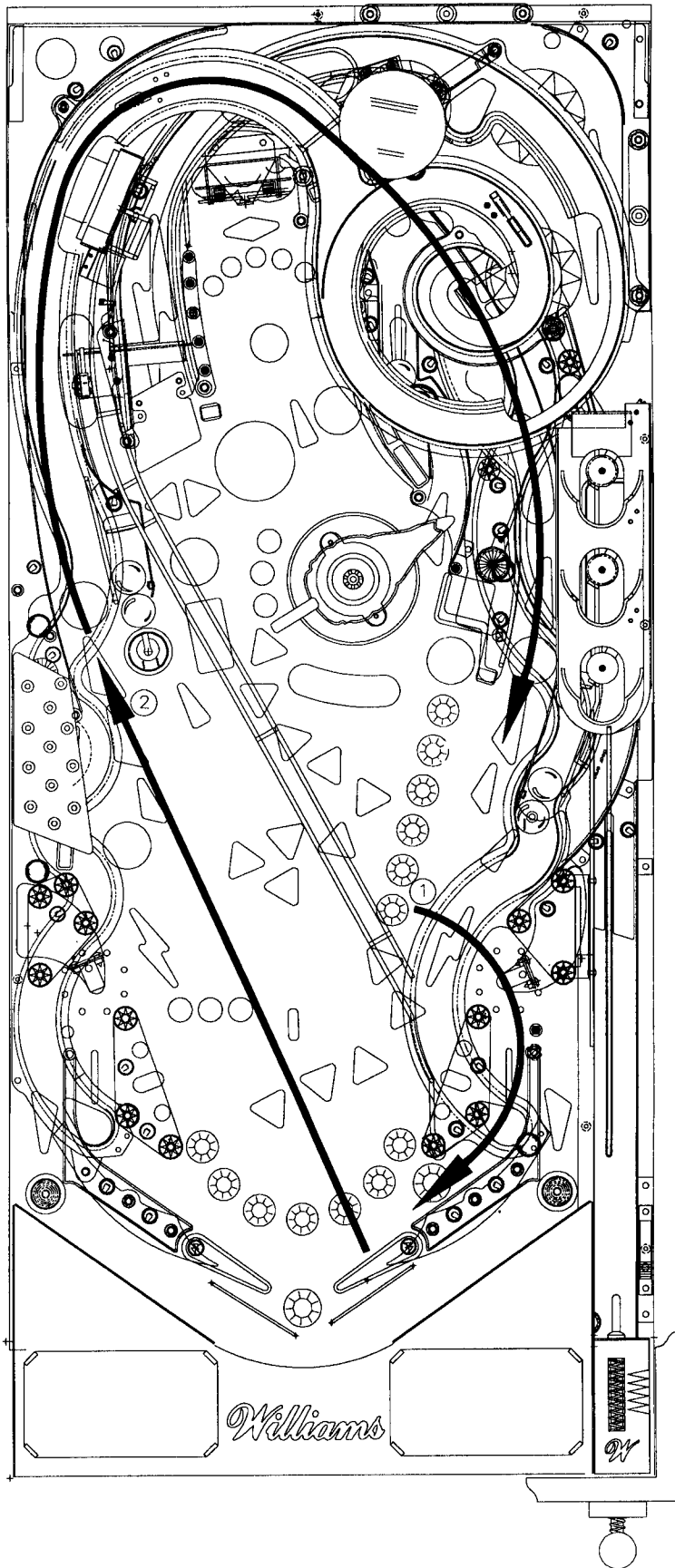
THROW A FIREBALL

- 1) Shoot the "Magic Carpet" ramp to light the Fireball Diamonds.
- 2) Make the "Magic Carpet" ramp again to have the Genie conjure and throw a Fireball at you.
- 3) Strike the Genie to collect the "Fireball Jackpot".



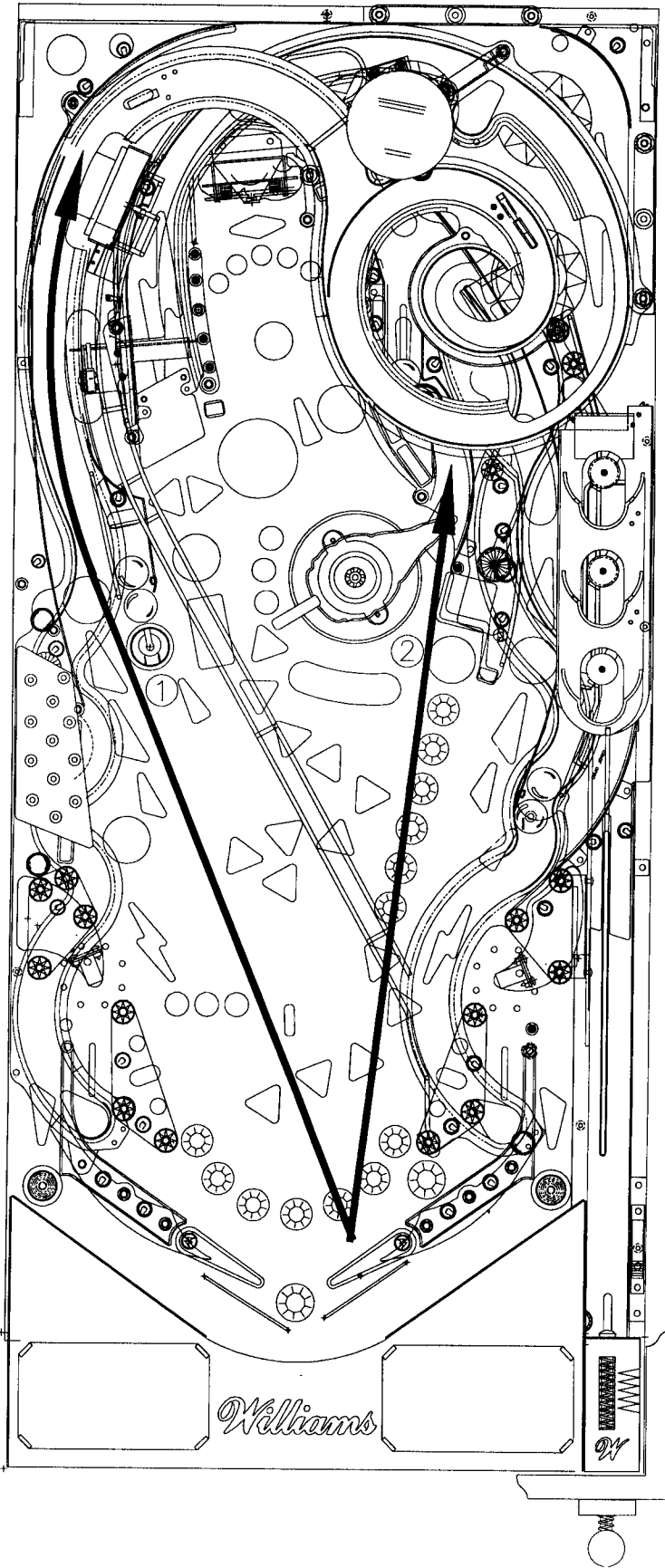
SHOOTING STARS
(Outlane Savers)

- 1) Hit the large red targets to light the Shooting Stars.
- 2) Then, for a timed amount, the Shooting Stars will save the ball from exiting the playfield and give it back to you.



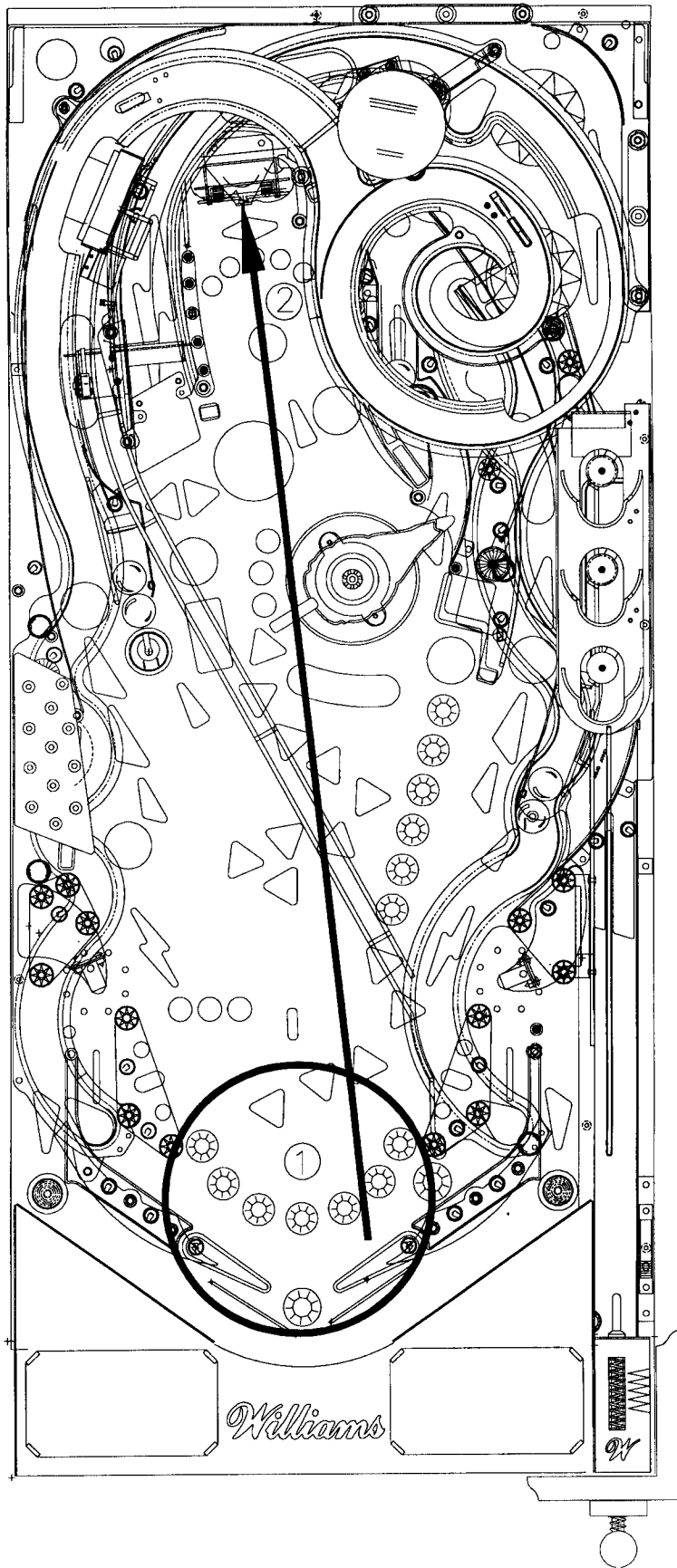
TIGER LOOPS

- 1) The return lanes will light the opposite passageway for a Tiger Loop.
- 2) Shoot the lit Tiger Loop to advance the Loop Value on each passageway.



HAREM LETTER MULTIBALL

- 1) Travel through the Left Passageway to light a letter in Harem.
- 2) When all letters are lit shoot into the Harem to begin a quick Multiball.



GENIE BATTLE - RESCUE THE PRINCESS

- 1) When all jewels are collected, the Genie Battle lamp will flash.
- 2) Strike the Genie to challenge him and begin the battle.
- 3) Shoot all lit playfield shots to defeat the Genie and his skeleton warriors.
- 4) Then hit the Genie to banish him in unlimited Multiball and smash the bottle that holds the princess!

SECTION ONE

GAME OPERATION AND TEST INFORMATION

(System WPC) ROM SUMMARY

| IC | TYPE | BOARD | LOCATION | PART NUMBER |
|---------------|----------|-------|----------|-----------------|
| Game 1 | 27c040 | CPU | G11 | A-5343-50047-1 |
| Security Chip | PIC16C57 | CPU | G10 | A-5400-50047-1 |
| Music/Speech | M27c801 | Audio | SU2 | A-5343-50047-S2 |
| Music/Speech | M27c801 | Audio | SU3 | A-5343-50047-S3 |
| Music/Speech | M27c801 | Audio | SU4 | A-5343-50047-S4 |

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

TALES OF THE ARABIAN NIGHTS™ is a six ball game.
There are four ball-in-play balls and two captive balls.

Power: Domestic 120V @ 60Hz
Foreign 230V @ 50Hz
Japan 100V @ 50Hz

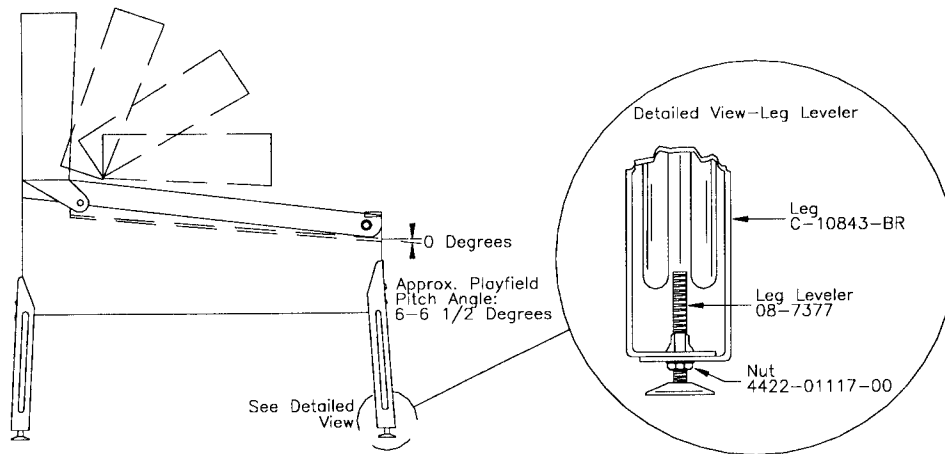
Temp: 32°F to 100° F, (0°C to 38°C)

Humidity: Not to exceed 95% relative.

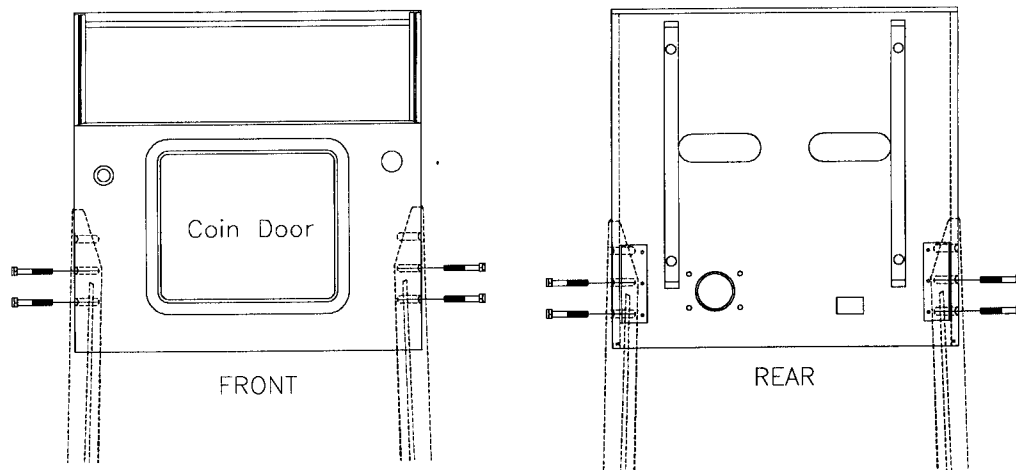
Dimensions: Width: 29" approx.
Depth: 52" approx.
Height: 75" approx.

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.

Note: The insert panel is no longer latched to the backbox; it is attached to the backglass. The backglass and the insert panel are removed from the backbox housing as a single unit.

Unlock the backbox, carefully remove the backglass/insert panel, and lay it down on the playfield glass.

Note: The speaker panel uses a new hinging system; the bottom of the speaker panel remains attached to the backbox unit when released.

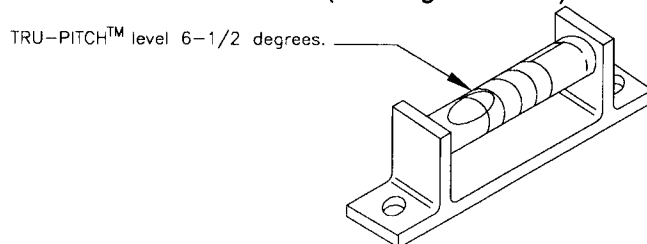
Carefully lift the speaker panel and rotate it away from the backbox, toward the playfield glass. The speaker panel will remain attached to the backbox unit.

This allows access to the bolt holes for securing the backbox upright. Install the washer-head mounting bolts through the bottom holes of the backbox into the threaded fasteners in the cabinet to secure the backbox. Replace the speaker panel and the backglass/insert panel. 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).



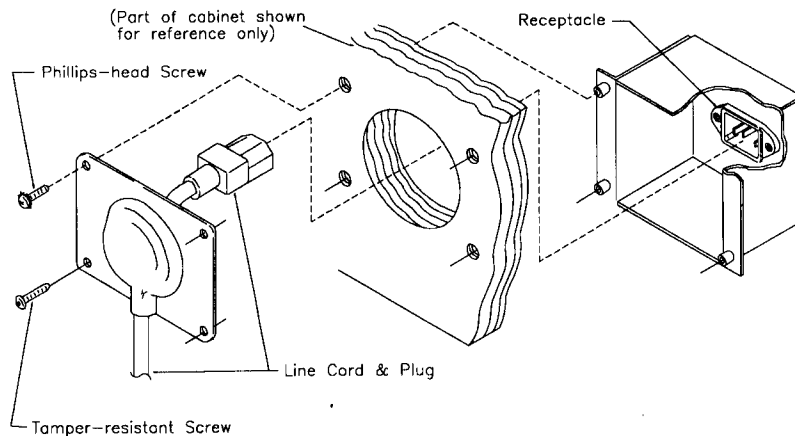
! IMPORTANT !

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 groove 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. The **TALES OF THE ARABIAN NIGHTS™** game uses six balls. There are four ball-in-play balls and two captive balls.
12. Install full playfield mylar, if desired.

NOTE: The **TALES OF THE ARABIAN NIGHTS™** 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 03-9488-1 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.



15. **IMPORTANT:** Fill out and return the registration card.

RAISING THE PLAYFIELD

CAUTION

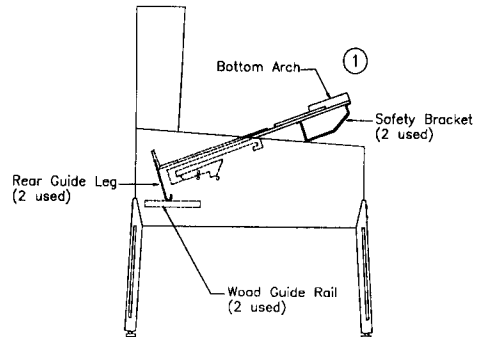
Do not raise the playfield straight up! This game uses a slide assembly to raise and lower the playfield.

Before Raising the Playfield:

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

To Raise the Playfield.

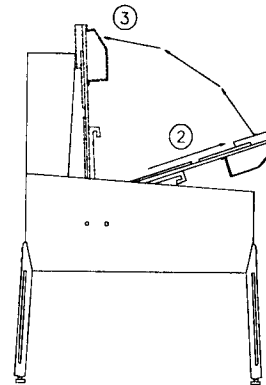
1. Grasp bottom arch and carefully lift up playfield only high enough to clear safety brackets. Rear guide legs should not hit wood guide rails, or be used to slide out playfield.



2. Pull the playfield out toward you until it stops (rest position), and raise it approximately 3".

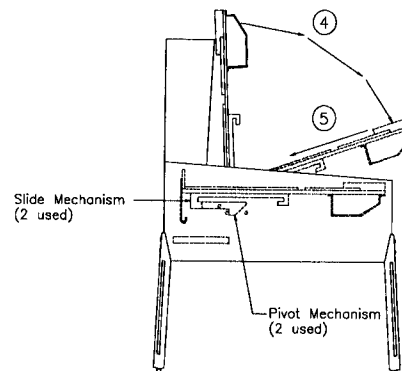
Be sure playfield is in locked position and does not slide back into cabinet. If it does, repeat Step 2 before proceeding to Step 3.

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.

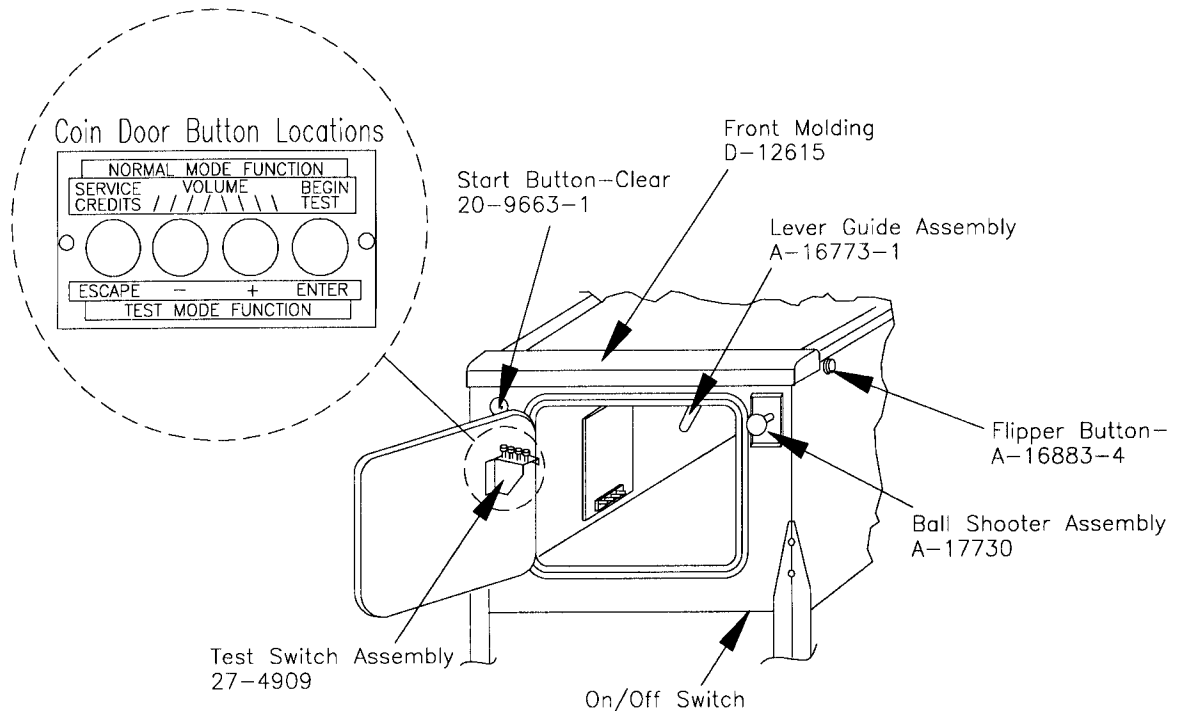
Test Function

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. See 'Error Messages' for more detailed information regarding messages.

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

Example: **TALES OF THE ARABIAN NIGHTS™** **Sound Rev. 1.0A**
 50047 Rev. 1.0A SY. 0.X0 XX-XX-96

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 display shows a series of messages informing the player of the recent highest *scores, "**custom messages", and the score 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.

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

END OF A GAME. All earned scores and bonuses are awarded. If a player's final score exceeds the specified value, the player receives a designated award for achieving the current highest score. A random digit set* appears in the display. 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 | Press Escape |
| B.2 Earning Audits | To move out of a menu selection. |
| B.3 Standard Audits | |
| B.4 Feature Audits | Press Enter |
| B.5 Histograms | To get into a menu selection. |
| B.6 Time-Stamps | |

P. PRINTOUTS MENU

| | |
|----------------------|---|
| P.1 Earnings Data | Press Up |
| P.2 Main Audits | Increases sequence; Example A.1, A.2, A.3, A.4. |
| P.3 Standard Audits | Press Down |
| P.4 Feature Audits | Decreases sequence; Example A.4, A.3, A.2, A.1. |
| P.5 Score Histograms | |
| P.6 Time Histograms | Use Up or Down to cycle through the |
| P.7 Time-Stamps | selections in a menu. |
| P.8 All Data | |

T. TEST MENU

| | |
|--------------------------------|--|
| T.1 Switch Edges Test | Use Escape and Enter to move into and out of the |
| T.2 Switch Levels Test | selected menu. |
| 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 Genie/Vanishing Ball Test | |
| T.17 Empty Balls Test | |

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 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-Stamped**

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 Number of times the player bought an extra ball. | 00 | 00% |
| B.4 02 Time Per Credit Average time per credit of play. | 00 | 00% |
| B.4 03 1 Buy-In Games Number of games with 1 Buy-in. | 00 | 00% |
| B.4 04 2 Buy-In Games Number of games with 2 Buy-ins. | 00 | 00% |
| B.4 05 3 Buy-In Games Number of games with 3 Buy-ins. | 00 | 00% |
| B.4 06 >=4 Buy-In Games Number of games with 4 or more Buy-ins. | 00 | 00% |
| B.4 07 Left Drains Number of balls drained down the left outlane. | 00 | 00% |
| B.4 08 Left Cage Saves Number of times the Shooting Star saved the ball on the left side. | 00 | 00% |
| B.4 09 Right Drains Number of balls drained down the right outlane. | 00 | 00% |
| B.4 10 Right Cage Saves Number of times the Shooting Star saved the ball on the right side. | 00 | 00% |
| B.4 11 Ball Saves Number of times the ball was returned to the player due to Free Ride Time (A2.06). | 00 | 00% |
| B.4 12 Bonus Multiplier Number of times the player won a Bonus Multiplier. | 00 | 00% |
| B.4 13 Tale Starts Number of times a tale was started from the Genie target. | 00 | 00% |
| B.4 14 Locks Lit Number of times the G-E-N-I-E spellout was completed to light Locks. | 00 | 00% |
| B.4 15 Balls Locked Number of times a ball was locked. | 00 | 00% |
| B.4 16 Genie Multiball Number of times Genie Multiball was started. | 00 | 00% |
| B.4 17 Genie Jackpots Number of times Jackpot was won in Genie Multiball. | 00 | 00% |

| | | | |
|---|---|----|-----|
| B.4 18 Multiball Rematch Offered | Number of times the player ended multiball without winning a jackpot. | 00 | 00% |
| B.4 19 Multiball Rematch Made | Number of times the player won a Multiball Rematch. | 00 | 00% |
| B.4 20 Harem Sneakins | Number of times the ball entered the Harem Sneak-in hole. | 00 | 00% |
| B.4 21 Harem Multiball Started | Number of times Harem Multiball was started. | 00 | 00% |
| B.4 22 Genie Awards | Number of times the player completed the G-E-N-I-E spell out for a Genie Award. | 00 | 00% |
| B.4 23 Bazaar Ready | Number of times the player relight the Bazaar award. | 00 | 00% |
| B.4 24 Bazaar Awards | Number of times the player won a Bazaar award. | 00 | 00% |
| B.4 25 Fireball Started | Number of times Fireball was started from the ramp. | 00 | 00% |
| B.4 26 Fireball Awarded | Number of times Fireball was won by shooting the Genie Target. | 00 | 00% |
| B.4 27 Tiger Loops | Number of times the player completed a Tiger Loop. | 00 | 00% |
| B.4 28 Tiger Loop Extra Balls Lit | Number of times Extra Ball was lit from the Tiger Loop. | 00 | 00% |
| B.4 29 Lightning Lamp Started | Number of times Lightning Lamp was started. | 00 | 00% |
| B.4 30 Bazaar Awarded 250,000 | Number of times the player won 250,000 from the Bazaar award. | 00 | 00% |
| B.4 31 Bazaar Awarded 500,000 | Number of times the player won 500,000 from the Bazaar award. | 00 | 00% |
| B.4 32 Bazaar Awarded Bonus X | Number of times the player won a Bonus Multiplier from the Bazaar award. | 00 | 00% |
| B.4 33 Bazaar Awarded Shooting Star | Number of times the player lit the Shooting Stars from the Bazaar award. | 00 | 00% |
| B.4 34 Bazaar Awarded Locks Lit | Number of times the player lit the Locks from the Bazaar award. | 00 | 00% |
| B.4 35 Bazaar Awarded Extra Ball Lit | Number of times the player lit an Extra Ball from the Bazaar award. | 00 | 00% |

| | | | |
|---|---|----|-----|
| B.4 36 Bazaar Awarded Extra Ball | Number of times the player won an Extra Ball from the Bazaar award. | 00 | 00% |
| B.4 37 Bazaar Awarded Make a Wish Lit | Number of times the player lit Make a Wish from the Bazaar award. | 00 | 00% |
| B.4 38 Bazaar Awarded Special Lit | Number of times the player lit Special from the Bazaar award. | 00 | 00% |
| B.4 39 Bazaar Awarded Bonus Hold | Number of times the player won a Bonus Multiplier Hold from the Bazaar award. | 00 | 00% |
| B.4 41 Make a Wish Awarded 3X Lightning Lamp | Number of times player chose 3 times the Lightning Lamp value from Make a Wish. | 00 | 00% |
| B.4 42 Make a Wish Awarded 3X Fireball | Number of times the player chose 3 times the Fireball value from Make a Wish. | 00 | 00% |
| B.4 43 Make a Wish Awarded Lightning Lamp | Number of times the player chose to start Lightning Lamp from Make a Wish. | 00 | 00% |
| B.4 44 Make a Wish Awarded 3 Tiger Loops | Number of times the player chose 3 tiger loops from Make a Wish. | 00 | 00% |
| B.4 45 Make a Wish Choice Expired | Number of times the Make a Wish screen timed out. | 00 | 00% |
| B.4 46 Make a Wish Awarded Jewel | Number of times the player chose a jewel from Make a Wish. | 00 | 00% |
| B.4 47 Skill Shot High Switch | Number of times the ball landed on the top Skill Shot switch. | 00 | 00% |
| B.4 48 Skill Shot Middle Switch | Number of times the ball landed on the middle Skill Shot switch. | 00 | 00% |
| B.4 49 Skill Shot Lower Switch | Number of times the ball landed on the bottom Skill Shot switch. | 00 | 00% |
| B.4 50 Skill Shot Won | Number of times the player won a Skill Shot Award. | 00 | 00% |
| B.4 51 Skill Shot Lost | Number of times the player missed the Skill Shot Award. | 00 | 00% |
| B.4 52 All Jewels Collected | Number of times the player collected all 7 Jewels. | 00 | 00% |
| B.4 53 Final Battle Started | Number of times the player started the Final Genie Battle. | 00 | 00% |

B.5 Histograms

| | | | |
|---------------|--------------------------|----|-----|
| B.5 01 | 0.0 - 0.4 Million Scores | 00 | 00% |
| B.5 02 | 0.5 - 0.9 Million Scores | 00 | 00% |
| B.5 03 | 1.0 - 1.4 Million Scores | 00 | 00% |
| B.5 04 | 1.5 - 1.9 Million Scores | 00 | 00% |
| B.5 05 | 2.0 - 2.9 Million Scores | 00 | 00% |
| B.5 06 | 3.0 - 3.9 Million Scores | 00 | 00% |
| B.5 07 | 4.0 - 4.9 Million Scores | 00 | 00% |
| B.5 08 | 5.0 - 5.9 Million Scores | 00 | 00% |
| B.5 09 | 6.0 - 7.9 Million Scores | 00 | 00% |
| B.5 10 | 8.0 - 9.9 Million Scores | 00 | 00% |
| B.5 11 | 10 - 15 Million Scores | 00 | 00% |
| B.5 12 | 15 - 20 Million Scores | 00 | 00% |
| B.5 13 | Over 20 Million Score | 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.10 Lamps And Flasher Test |
| T.2 Switch Levels Test | T.11 Display Test |
| T.3 Single Switch Test | T.12 Flipper Coil Test |
| T.4 Solenoid Test | T.13 Ordered Lamps Test |
| T.5 Flasher Test | T.14 Lamp Row-Col. |
| T.6 General Illumination Test | T.15 DIP Switch Test |
| T.7 Sound & Music Test | T.16 Genie/Vanishing Ball Mechanism Test |
| T.8 Single Lamps Test | T.17 Empty Ball Test |
| T.9 All Lamps 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 than the one pressed, or no switch at all is indicated, the system has detected a problem with the switch circuit.

T.2 Switch Levels 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 than 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, the name of the first solenoid shows in the display and the corresponding coil pulses. 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. There are three modes - Repeat, Stop, and Run. During this test the flashlamp circuit named in the display should blink. The system has detected a problem if more than one flashlamp circuit blinks, the lamps stays on, or no lamps blink 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 shows in the display and the corresponding bulb(s) blink. The same lamps blink 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 advance to the next mode.

Stop: The Stop mode halts the Flasher test. There should not be any flashlamps lit 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 than 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.

T.12 Flipper Coil Test Continued...

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 Genie/Vanishing Ball Mechanism Test

Select T.16 from the Test Menu and press Enter to begin the Genie/Vanish Test.

This test is designed to test the Genie Target, the Vanishing Ball Mechanism, and the tunnel switches located underneath the playfield. If this mechanism is disabled by adjustment (A2.20), this screen will say VANISH MECH. DISABLED BY A2.20. The test may still be performed, but the game will not attempt to use this mechanism during game play. Set adjustment A2.20 to NO to re-enable the Vanishing Ball Mechanism.

The display will show the state of the following switches:

Genie Target (switch 42)

Vanish Tunnel (switch 12)

Bazaar Eject (switch 25)

An "X" in the box next to the switch name indicates that the switch is closed.

Hit the Genie Target with a ball (or by hand) to begin the test. The Vanishing Ball mechanism will attempt to grab the ball, drop beneath the playfield, and deliver the ball to the bazaar eject. Check to see that all three switches have an "X" in their boxes, showing that they are operational.

If the ball failed to close all three switches, use Switch Test (Test T.1) to check the operation of the failed switches.

Press either flipper button to reset the three boxes and begin the test again.
Press Escape to return to the test menu.

T.17 Empty Balls

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

NOTE: *As the trough kicks out balls, they may 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.7 | Factory Adjustments |
| U.2 | Clear Coins | U.8 | Factory Reset |
| U.3 | Reset H.S.T.D. | U.9 | Preset |
| U.4 | Set Time & Date | U.10 | Clear Coins |
| U.5 | Custom Message | U.11 | Auto Burn-in |
| U.6 | Set Game I.D. | | |

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 the 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 desired letters and punctuation marks.

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 02 Install 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 07 | Shooting Star Difficulty | EASY | EASY | MED. | HARD | HARD |
| A.2 09 | Tiger Loop Difficulty | EASY | EASY | MED. | HARD | HARD |
| A.2 11 | Tiger Loop Extra Ball Level 1 | 03 | 04 | 06 | 07 | 08 |
| A.2 13 | Bazaar Advance Difficulty | EASY | EASY | MED. | MED. | HARD |
| A.2 14 | Multiball Difficulty | EASY | EASY | MED. | MED. | HARD |
| A.2 18 | Tale Completed Extra Ball | 03 | 03 | 04 | 04 | 05 |

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.1 01 | Ball Per Game | 05 | 03 |
| A.1 07 | Replay Start | 10,000,000 | 8,000,000 |
| A.2 06 | Free Ride Time | 4 seconds | 5 seconds |
| A.2 07 | Shooting Star Difficulty | HARD | MEDIUM |
| A.2 11 | Tiger Loop Extra Ball 1 | 08 | 06 |
| A.2 13 | Bazaar Advance Difficulty | HARD | MEDIUM |
| A.2 17 | Tale Extra Ball Memory | NO | YES |
| A.2 18 | Tale Completed Extra Ball | 05 | 04 |

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:

| <u>Ad</u> | <u>Name</u> | <u>New Setting</u> |
|-----------|----------------------|--------------------|
| 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:

| <u>Ad</u> | <u>Name</u> | <u>New Setting</u> |
|-----------|-----------------------|--------------------|
| 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:

| <u>Ad</u> | <u>Name</u> | <u>New Setting</u> |
|-----------|----------------------|--------------------|
| 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 play.

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.

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 actuation's 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.

NO EXTRA BALL - No Extra Balls may be accumulated.

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.

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.

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 random game features and global score values during multi-player games.

YES - Equalize random game features and global score values.

NO - Do Not equalize random game features and global score values.

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 each player may buy 1 Extra Ball for 1 Credit at the end of the game.

Settings: OFF, 1/2 CREDIT, 1 CREDIT

Factory Default: Off

A.2 02 Buy In Count

This determines how many times a player may buy in if **Buy Extra Ball** is not set to **Off**.

Factory Default: 4

A.2 03 Attract Mode Sound

The operator can select whether or not the attract mode has sounds on the flipper buttons to attract players.

Settings: YES, NO

Factory Default: YES

A.2 04 Attract Mode Music

The operator can select whether or not the attract mode will play music to attract players.

Settings: YES, NO

Factory Default: NO

A.2 06 Free Ride Time (Ball Saver)

This determines how long (in seconds) the game will allow the player to get his ball back after a quick drain.

Factory Default: 5 seconds.

A.2 07 Shooting Star Difficulty

This determines how long a 'Shooting Star' ball saver will stay lit when enabled.

Settings: EASY, MEDIUM, HARD

Factory Default: MEDIUM

A.2 08 Shooting Star Memory

This determines if lit Shooting Stars are carried over from ball to ball.

Settings: YES, NO

Factory Default: NO

A.2 09 Tiger Loop Difficulty

This decides how long to keep Tiger Loops lit once they are turned on.

Settings: EASY, MEDIUM, HARD

Factory Default: MEDIUM

A.2 10 Extra Ball Percent

The operator selects the percentage of Extra Balls desired. The game will try to match this percentage by:

- 1) Increasing or decreasing the number of Tiger Loops necessary to light Extra Ball
- 2) Increasing or decreasing the chances that Extra Ball will be given from the Bazaar.

The setting range is OFF to 40 percent
Factory Default: 25 Percent.

A.2 11 Tiger Loop Extra Ball Level 1

This sets the number of Tiger Loops necessary to light the first Extra Ball

Setting Range is 3 to 9
Factory Default: 6

A.2 12 Tiger Loop Extra Ball Level 2

This determines if the player can earn a second Extra Ball from Tiger Loops, and at what count. The second count is always 20.

Settings: ON, OFF
Factory Default: ON

A.2 13 Bazaar Advance Difficulty

This determines how hard it is for a player to re-light the Bazaar Random Award.

Settings: EASY, MEDIUM, HARD
Factory Default: MEDIUM

A.2 14 Multiball Difficulty

This determines how hard it is for a player to complete the GENIE spell out to start Multiball.

Settings: EASY, MEDIUM, HARD
Factory Default: MEDIUM

A.2 15 Tiger Extra Ball Memory

The operator selects whether or not the Extra Ball lit from Tiger Loops will remain lit from ball to ball. The choices are:

YES = Extra Ball stays lit until the end of the GAME or when collected.
NO = Extra Ball stays lit until the end of the BALL or when collected
Factory Default: YES

A.2 16 Wish Extra Ball Memory

The operator selects whether or not the Extra Ball lit from Make a Wish will remain lit from ball to ball. The choices are:

YES = Extra Ball stays lit until the end of the GAME or when collected.
NO = Extra Ball stays lit until the end of the BALL or when collected
Factory Default: YES

A.2 17 Tale Extra Ball Memory

The operator selects whether or not the Extra Ball lit from completing Tales will remain lit from ball to ball. The choices are:

YES = Extra Ball stays lit until the end of the GAME or when collected.

NO = Extra Ball stays lit until the end of the BALL or when collected

Factory Default: YES

A.2 18 Tales Completed Light Extra Ball Count

After the player completes this many tales, Extra Ball will light.

Setting Range: 2 to 5

Factory Default: 3

A.2 19 Disable Ramp Diverter

Use this setting to disable the ramp diverter mechanism. If set to YES, the game will not try to open the diverter and will compensate game play accordingly.

Settings: YES, NO

Factory Default: NO

A.2 20 Disable Vanishing Ball Mechanism

Use this setting to disable the vanishing ball mechanism. If set to YES, the game will not try to use the vanishing magnet and will compensate game play accordingly.

Settings: YES, NO

Factory Default: NO

A.2 21 Disable Fireball Ramp Magnet

Use this setting to disable Fireball ramp magnet (located on the left ramp). If set to YES, the game will not try to use the ramp magnet and will compensate game play accordingly.

Settings: YES, NO

Factory Default: NO

A.2 22 Genie Ball Saver Enabled

If the vanishing ball magnet throws the ball down between the flippers, the player will get their ball back.

Settings: YES, NO

Factory Default: NO

A.2 23 Shooting Star Ball Saver Enabled

If a lit Shooting Star device fails to grab the ball and deliver it back to the flippers, the player will get their ball back.

Settings: YES, NO

Factory Default: YES

A.2 24 Volume Interlock

When set to YES, a flipper button must be held to change the game's sound volume. This is designed to prevent accidental volume changes while adding service credits to the game.

Settings: YES, NO
Factory Default: NO

A.2 25 Player Tournament Mode

When this adjustment is set to YES, holding both flipper buttons, (during the Attract mode), for five seconds prompts the player with "TOURNAMENT MODE READY" and gives them ten seconds to start a game in Tournament mode.

Settings: YES, NO
Factory Default: YES

A.2 26 Smoke Carryover

When set to YES, the entire Lamp Bonus is carried over from ball to ball. When set to NO, the units lower than 15 are cleared between balls. Setting this feature to YES will increase the average score of the game and increase the player's chances of earning Lightning Lamp.

Settings: YES, NO
Factory Default: NO

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 USA 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 USA 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

These are the values for the coins for these respective coin slots. These values are used for determining collection totals. The corresponding adjustments A.3 28 (Left Slot Credit Value) through A.3 31 (4th Slot Credit Value) typically contain the same values and are used to determine the number of credits awarded for the coin slot. Whenever these values are changed, the new value is copied to the corresponding A.3 28 through A.3 31 adjustment. If a bonus is desired for a particular coin (such as 3 credits for dollar coin) then the corresponding A.3 28 through A.3 31 "Credit Value" adjustment should be modified to award the bonus. See "Bonus for Special Coin" section 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.

A.3 21 Coin Meter Units

The adjustment determines the value of each coin unit on the coin meter. For example, to show the total amount of money collected as "total quarters", set the adjustment to "0.25". To show the total amount of money collected as "total dollars", set this adjustment to "1.00". Setting this adjustment to anything other than OFF establishes the coin unit for the meter installed on the Coin Door Interface board. *Note: All WPC-95 games are cable ready to operate a coin meter mounted to the Coin Door Interface board. Boards without a meter can use the parts listed below to take advantage of the coin meter feature. The coin meter and spacer may be purchased from your distributor. coin meter +6V p/n 20-9302-3; spacer p/n 20-9914*

A.3 22 Dollar Bill Slot

The system normally requires 150 microseconds between coin pulses. This is too long a delay for a fast-pulsing dollar bill validator. This adjustment may be used to tell the game that there is a fast-pulsing dollar bill validator connected to one of the coin switches.

NONE = No validator connected.
LEFT = Validator connected to left slot.
CENTER = Validator connected to center slot.
RIGHT = Validator connected to right slot.
FOURTH = Validator connected to fourth.

A.3 23 Minimum Coin Milliseconds

This is the minimum width required for coin pulses to be accepted as valid coins. This may be changed to prevent certain kinds of cheating.

A.3 24 NOT USED

A.3 25 Allow Hundredths

This is used for a custom door specifier. If set to "YES", then the values for A.3 12-15 are specified in units and hundredths (such as dollars and quarters). If set to "NO", then all values are in units (such as Francs and Lire.)

A.3 26 Credit Fraction

This determines the smallest fraction used for credits. It must be even to accommodate the extra ball buy-in option of 1/2 credit, and is typically 1/2 but may need to be a different value for modes requiring more coins per credit.

A.3 27 Pricing Editor (Custom Pricing Is Not Available For U.S.A. And Canadian Games).

This function is now used to enter information for a custom pricing mode. The adjustment A.3 26 (Credit Fraction) may need to be set before entering the custom pricing editor. This specifies the smallest fraction available for partial credits.

Because of availability of an extra ball (buy-in) for 1/2 credit, this value is always even (1/2, 1/4, 1/6 etc.). The typical setting for A.3 26 is 1/2 (such that there are only full credits and half credits) but you may need to use a different value for other pricing modes.

Please note that formerly, the coin values specified by custom coin doors adjustments A.3 12-15 only affected audit totals that showed collection totals. In the 10/94 pricing system, these coin values are added up for each coin received and credits are awarded based on pricing levels being reached. The pricing editor described here allows you to set these levels, however it may be necessary for you to set A.3 10 (Coin Door Type) to "CUSTOM" and then change A.3 11-15, 20 and 25 to reflect the value of the coins being used. This is usually NOT NECESSARY, but must be done BEFORE using the custom pricing editor when it is necessary.

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) | \$1.50 | 4 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

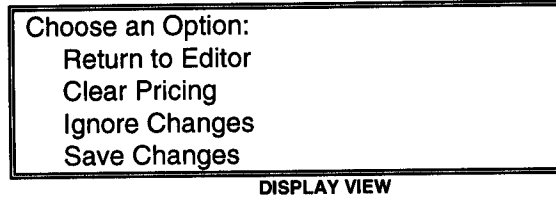
Now repeatedly press "Enter" to move the right hand column to the 20th level. The display will show (with "10 cred." Blinking):

| 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 been 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:



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.

Bonus for Special Coins

For most coin modes, the system allows the mixing of any combination of any size coin and awards credits as each appropriate amount is accumulated. With A.3 10 (Coin Door Type) set to "custom", the value of each coin slot may be entered for adjustments A.3 12 (Left slot value) through A.3 15 (4th slot value). Whenever these values are changed, the new values are copied to A.3 28 (Left Slot Credit Value) through A.3 31 (4th Slot Credit Value) respectively. To give a bonus for a particular coin, you need to modify the "Credit Value" adjustment to specify the value to be given for the bonus coin.

For example, in a game with a Left Coin Slot that takes quarters and a center coin slot that takes dollars, if you wish to charge 50 cents for 1 play and \$1.00 for 2 plays, you setup the pricing editor to show:

| 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

If you set A.3 10 (Coin Door Type) to "custom" you will see the following coin door specifier adjustments:

| | | |
|--------|--------------------------|------|
| A.3 12 | Left Slot Value | 0.25 |
| A.3 13 | Center Slot Value | 1.00 |
| A.3 28 | Left Slot Credit Value | 0.25 |
| A.3 29 | Center Slot Credit Value | 1.00 |

To change the pricing to 1 play for \$0.50, 2 plays for \$1.00 and 3 plays for a dollar coin, you change A.3 29 (Center Slot Credit Value) to 1.50. This will result in the following settings:

| | | |
|--------|--------------------------|------|
| A.3 12 | Left Slot Value | 0.25 |
| A.3 13 | Center Slot Value | 1.00 |
| A.3 28 | Left Slot Credit Value | 0.25 |
| A.3 29 | Center Slot Credit Value | 1.50 |

This will cause \$1.50 worth of credits (3) to be awarded for each coin inserted in the center coin slot (dollar coin). This is due to the \$1.50 setting of A.3 29 (Center Slot CREDIT VALUE). Note that the 1.00 setting of A.3 13 tells the game that each coin in the center slot adds \$1.00 to the total collection.

- A.3 28 Left Slot Credit Value**
- A.3 29 Center Slot Credit Value**
- A.3 30 Right Slot Credit Value**
- A.3 31 4th Slot Credit Value**

This adjustment specifies the value to be used for awarding credits. It is typically the same value as the corresponding A.3 12 (Left Slot Value) through A.3 15 (4th Slot Value) adjustment.

The A.3 12 through A.3 15 values are used to determine the auditing value of each coin (for collection totals) while the A.3 28 through A.3 31 value determine the coin value for awarding credits. By making this "Credit Value" adjustment higher than the A.3 12 through A.3 15 "Value" adjustment, a bonus may be given for a specific call (see "Bonus for Special Coin" section for more information).

Pricing Table

| Country | Coin Chutes | | | | Games/Coins | Display | Pricing Adjustments A3 02 03 04 05 06 07 08 09 |
|----------------------|-------------|---------|--------|-----------------------|--|-------------------|---|
| | Left | Center | Right | 4 th Chute | | | |
| 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¢ | 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 | |
| | 25¢ | - | \$1.00 | - | 1/0.50, 2/\$1.00, 3/\$1.00-Coin ² | CAN.\$ BONUS | |
| Canada 3/Dollar Coin | 25¢ | - | \$1.00 | - | 1/2x5sch, 3/2x10sch | 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 | 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, 5/5Fr | SWISS 2 | |
| | 1Fr | 2Fr | 5Fr | - | 1/1Fr, 5/5Fr | SWISS 3 | |
| | 1Fr | 2Fr | 5Fr | - | 1/1Fr, 2/2Fr, 6/5Fr ¹ | SWISS 4 | |
| | 1Fr | 1Fr | 1Fr | - | 1/1Fr (all slots = 1Fr) ² | SWISS 5 | |
| Belgium | 5Fr | 20Fr | 50Fr | - | 1/4x5Fr, 1/20Fr, 3/50Fr | BELGIUM | |
| Belgium 2 | 5Fr | 20Fr | 50Fr | - | 1/20Fr, 3/60Fr, 3/50Fr-Coin | BELG. BONUS | |
| 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 | 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 | 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¥ | 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) ² | 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 | 1HFI | 2.5HFI | 2.5HFI | - | 1/1HFI, 3/2.5HFI | NETHERLANDS | |
| | 1HFI | 2.5HFI | 2.5HFI | - | 1/1HFI, 3/3HFI, 3/2.5HFI-Coin | NETH. BONUS | |
| 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 them 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.

LOCK MAGNET IS BROKEN

The Ball Lock magnet is not grabbing balls correctly. Check the Ball Lock Magnet (Coil #6) as well as the Inner Loop Left switch (#44) and the Inner Loop Right (#45) switches. Also check for blown fuses.

DIVERTER IS BROKEN

The playfield diverter (located in the upper left of the playfield) is not working properly. Check the Left Diverter High Power coil (coil #34) and the Left Diverter Low Power coil (coil #35) for proper operation. Check the Left Loop switch (#43). Also check for blown fuses.

RAMP DIVERTER IS BROKEN

The diverter on the ramp is not functioning properly. Check the Ramp Diverter coil (coil #21) as well as the Ramp Enter switch (#15) for proper adjustment. Also check for blown fuses.

RAMP DIVERTER IS DISABLED

The diverter on the ramp was disabled by the operator. Set adjustment A2.19 to NO to reset the ramp diverter.

VANISH MECH IS BROKEN

The Vanishing Ball Mechanism is not functioning properly. Check the Genie Target switch (switch #42) for proper adjustment. Check the Vanish Tunnel switch (switch #12) and the Bazaar Eject (switch #25). Check the Vanish Drop coil (#3) and the Vanish Magnet coil (#35). Also check for blown fuses. Use Test T.16 (Genie Test) to test the operation of this mechanism.

VANISH MECH IS DISABLED

The Vanishing Ball Mechanism was disabled by the operator. Set adjustment A2.20 to NO to reset the Vanishing Ball Mechanism.

RAMP MAGNET IS BROKEN

The Fireball Magnet (located on the ramp) is not working properly. Check the Ramp Magnet coil (coil #8) for proper operation. Also check the Ramp Made Left switch (#41) and Left Wire Make switch (#28). Also check for blown fuses.

RAMP MAGNET IS DISABLED

The Fireball Magnet (located on the ramp) was disabled by the operator. Set adjustment A2.21 to NO to reset the Vanishing Ball Mechanism.

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 (F109), or at connectors J138, J139, J140 or J141 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 five 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.

XXXX 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.

G10 ERROR

The security chip is incorrect or faulty. If this occurs, replace the security chip.

G11 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 AND AUDIO VISUAL BOARD ERROR CODES

The CPU has three LED's, 201, 202, and 203. At game turn-on, LED 201 and LED 202 are on, LED 203 is off. During normal operation LED 201 is off, LED 202 is on, and LED 203 is flashing. If the system detects an error the following happens:

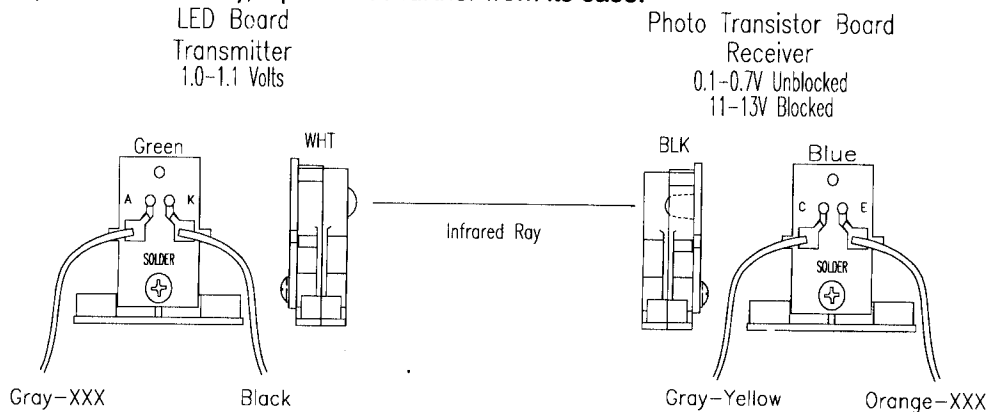
| | | |
|------------------------|-------------------------------|-----------------------------|
| CPU BOARD | Center LED blinks once | = G11 ROM Failure |
| LED ERROR CODES | Center LED blinks twice | = U8 RAM Failure |
| | Center LED blinks three times | = G10 Security Chip Failure |

Upon game turn-on you will hear one of the following.

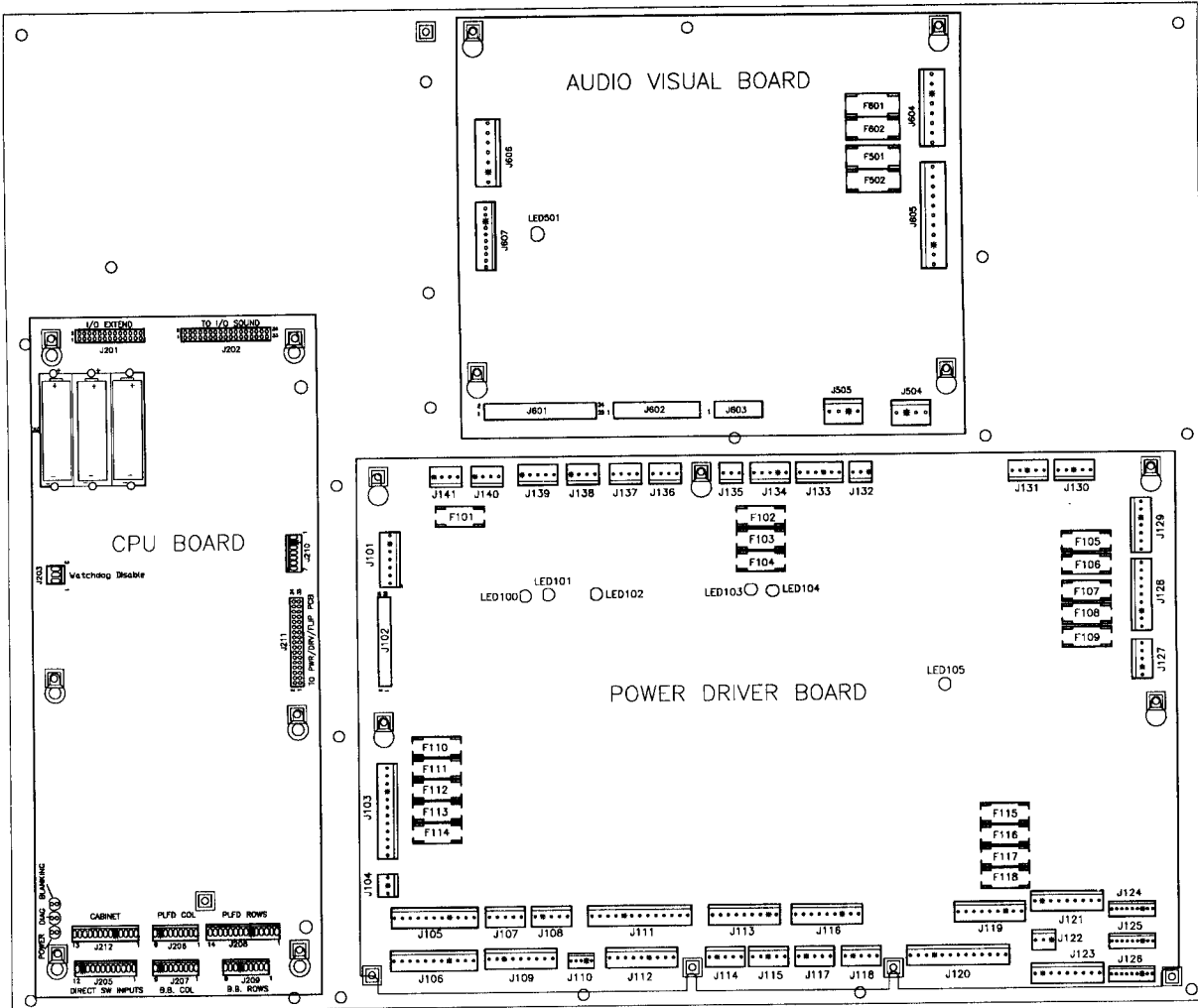
| | | |
|---------------------------|----------|------------------------------|
| AUDIO VISUAL BOARD | 1 Beep | = Audio Visual Board is O.K. |
| BEEP ERROR CODES | 2 Beeps | = S2 Failure |
| | 3 Beeps | = S3 Failure |
| | 4 Beeps | = S4 Failure |
| | 5 Beeps | = S5 Failure |
| | 6 Beeps | = S6 Failure |
| | 7 Beeps | = S7 Failure |
| | 10 Beeps | = Audio Static RAM 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

- LED 201 Blanking
- LED 202 Power
- LED 203 Diagnostics

At game turn-on, LED 201 and LED 202 are on, LED 203 is off. During normal operation LED 201 is off, LED 202 is on, and LED 203 is flashing.

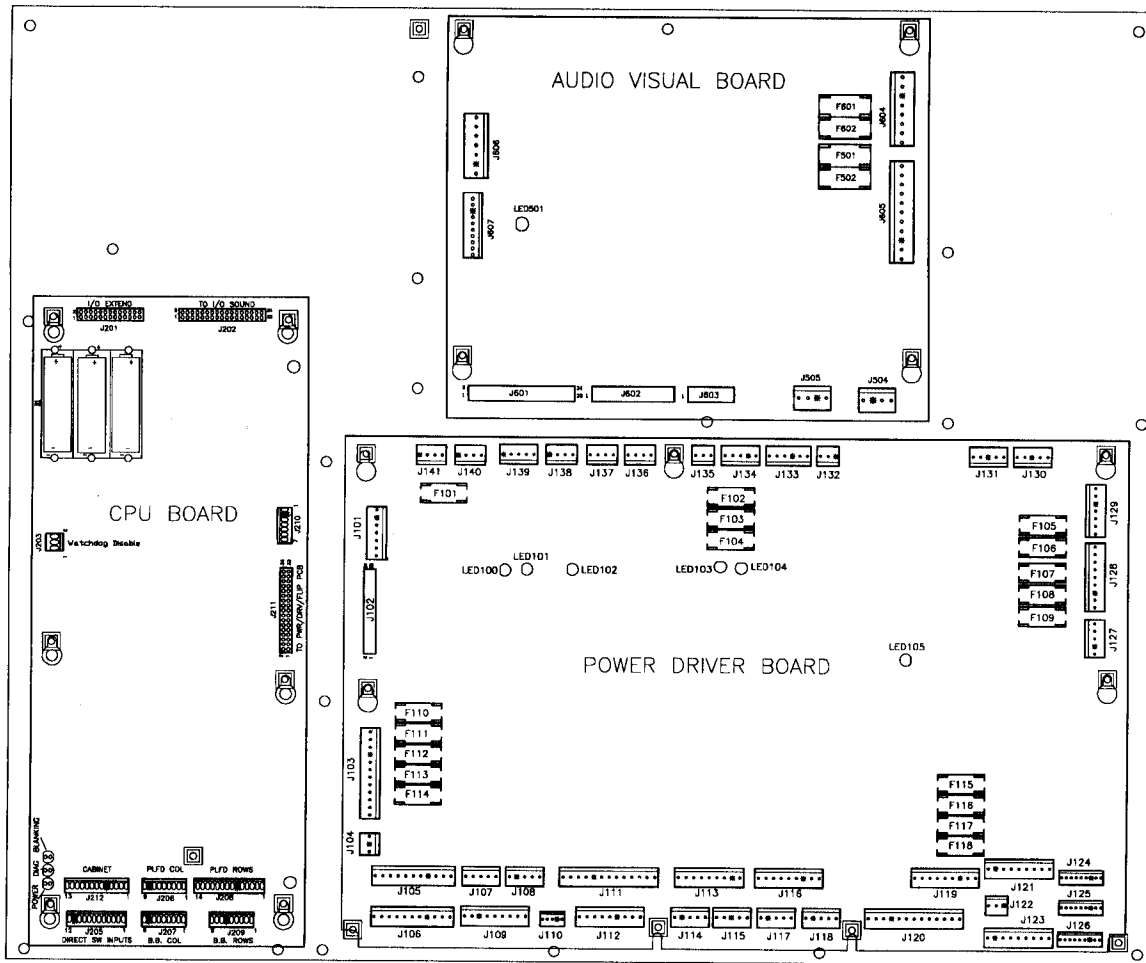
AUDIO VISUAL BOARD

- LED 501 +5VDC, Normally flashing, but at a slower rate than LED 203.

POWER DRIVER BOARD

- LED 100 +12VDC Regulated, Normally On
- LED 101 +5VDC Digital, Normally On
- LED 102 +18VDC Lamps, Normally On
- LED 103 +12VDC Unregulated, Normally On
- LED 104 +20VDC Flashlamps, Normally On
- LED 105 +50VDC Coils, Normally On

FUSE LIST



AUDIO VIDEO BOARD

| Loc. | Description | Part Number | Value |
|------|---------------|---------------|--------------|
| F501 | -25V | 5731-14532-00 | T2.5A, 250V |
| F502 | +25V | 5731-14532-00 | T2.5A, 250V |
| F601 | +62V | 5731-14533-00 | T0.25A, 250V |
| F602 | -113V & -125V | 5731-14533-00 | T0.25A, 250V |

CPU BOARD

There are no fuses on the CPU board.

POWER DRIVER BOARD

| Loc. | Description | Part Number | Value | Loc. | Description | Part Number | Value |
|------|----------------------|---------------|--------------|------|-----------------|---------------|-------------|
| F101 | Regulated 12V | 5731-14531-00 | T0.63A, 250V | F110 | G.I. #5 WHT-VIO | 5731-14530-00 | T4.0A, 250V |
| F102 | Solenoid. #25 to #28 | 5731-14530-00 | T4.0A, 250V | F111 | G.I. #4 WHT-GRN | 5731-14530-00 | T4.0A, 250V |
| F103 | Solenoid #1-#8 | 5731-14530-00 | T4.0A, 250V | F112 | G.I. #3 WHT-YEL | 5731-14530-00 | T4.0A, 250V |
| F104 | Solenoid #9 to #16 | 5731-14530-00 | T4.0A, 250V | F113 | G.I. #2 WHT-ORG | 5731-14530-00 | T4.0A, 250V |
| F105 | +5V Logic | 5731-14530-00 | T4.0A, 250V | F114 | G.I. #1 WHT-BRN | 5731-14530-00 | T4.0A, 250V |
| F106 | +18V Lamp Matrix | 5731-14046-00 | T5.0A, 250V | F115 | +50V Flippers | 5731-14530-00 | T4.0A, 250V |
| F107 | Flasher Secondary | 5731-14530-00 | T4.0A, 250V | F116 | +50V Flippers | 5731-14530-00 | T4.0A, 250V |
| F108 | Solenoid Secondary | 5731-14529-00 | T6.3A, 250 | F117 | +50V Flippers | 5731-14530-00 | T4.0A, 250V |
| F109 | Unregulated 12V | 5731-14530-00 | T4.0A, 250V | F118 | +50V Flippers | 5731-14530-00 | T4.0A, 250V |

LINE FILTER

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

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 E1165, 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.

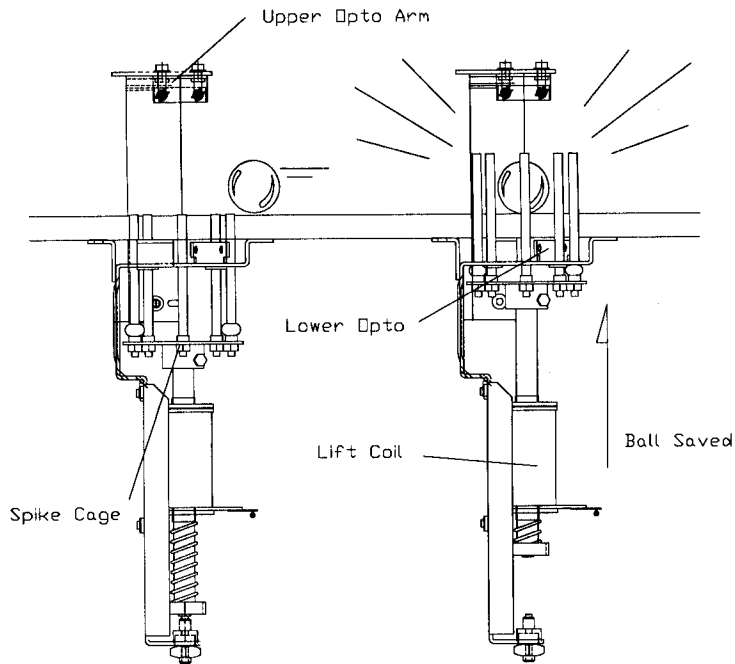
Regular, more extensive, playfield cleaning is recommended. However, avoid excessive use of water and caustic or abrasive cleaners because they tend to damage the playfield surface. Playfield wax (or any carnauba based wax), or polish may be used sparingly, to prevent a buildup on the playfield surface.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

TALES OF THE
ARABIAN NIGHTS

UNIT DISASSEMBLY FOR REPAIR
MAJOR COMPONENT SERVICE INSTRUCTIONS

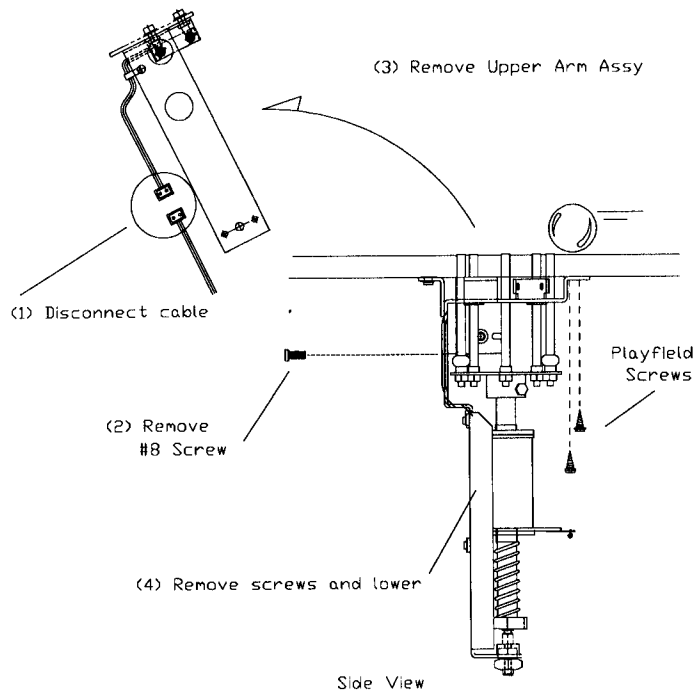
“SHOOTING STAR” SPIKE ASSEMBLY

The Spike's can save a ball from exiting play. A ball rolling over the spikes will be detected by an opto pair. When a ball is detected, the coil will drive the Spike finger assembly up and capture the ball in play. The Spikes will automatically lower and give the ball back to the player.



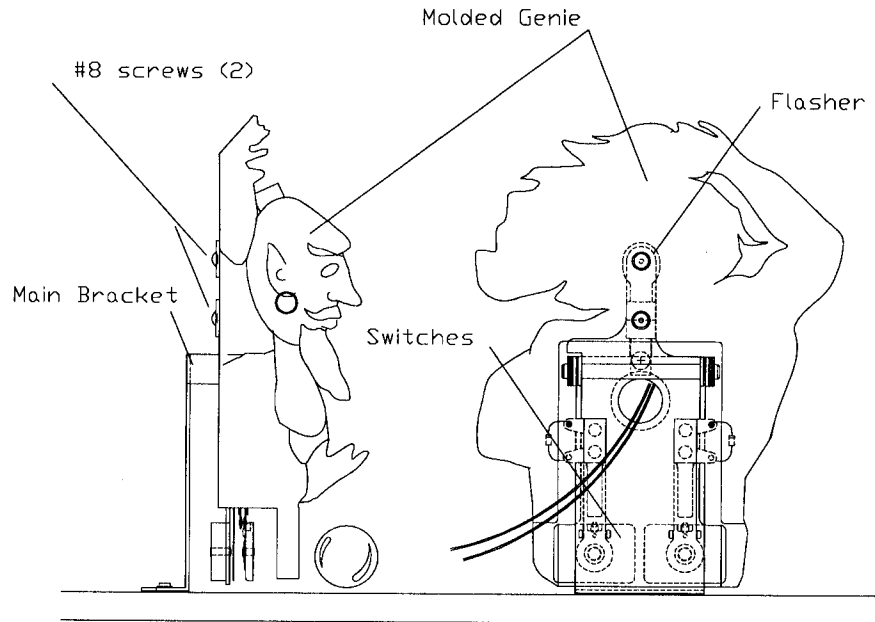
REMOVE THE SPIKE ASSEMBLIES

To remove the Spike Assembly first disconnect the upper opto cable (1) under the playfield, then remove the #8 machine screw (2) that holds the upper arm in place. Then gently lift the arm (3) and remove it from the playfield. Remaining screws (4) that hold the main Spike assembly, can be taken out to lower the Spike Assembly.



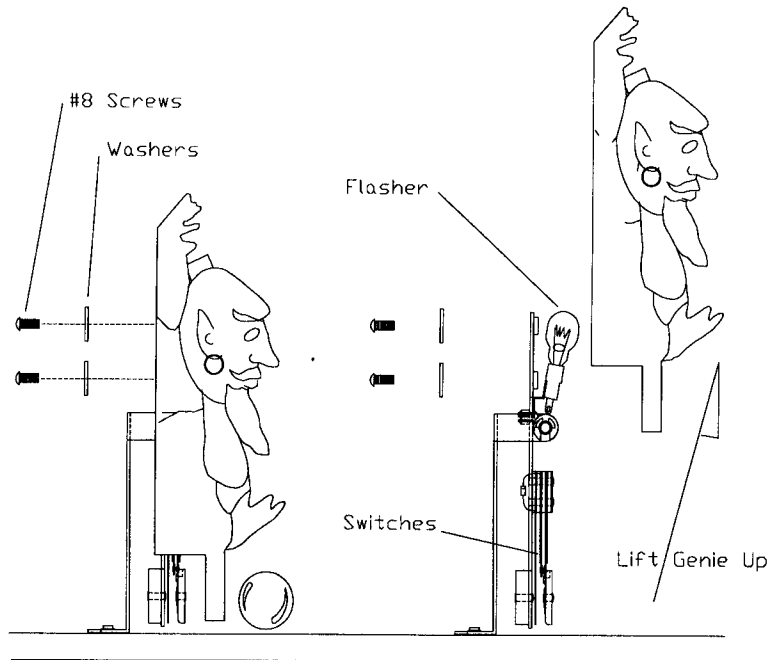
GENIE TARGET ASSEMBLY

The Genie Target consists of a hinged metal bracket which holds switches and a flasher. A molded Genie is attached to this assembly by #8 screws (2). A ball in play will strike the Genie causing the switches to close and score. The whole assembly can be easily dismantled for adjustment or flasher replacement.



REMOVE THE MOLDED GENIE

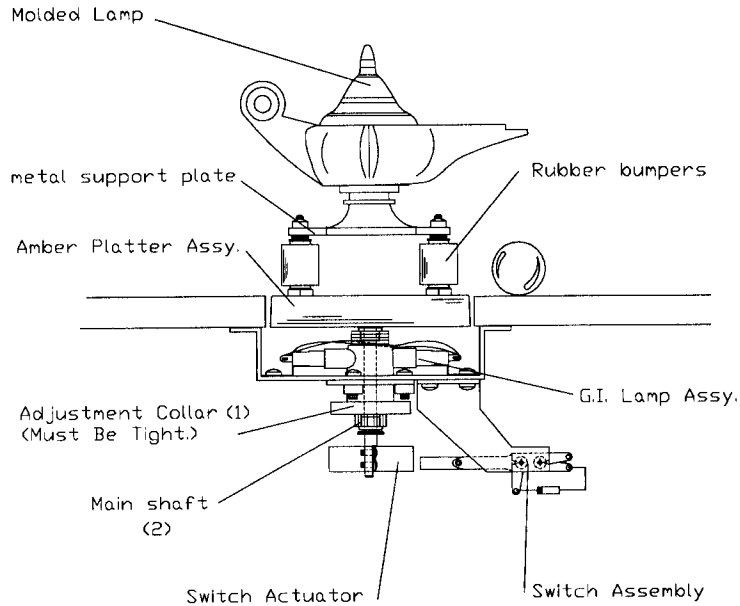
To remove the Molded Genie, slide the playfield out of the cabinet and remove the #8 screws (2) on the back of the Genie. Then gently lift up the Genie and remove it from the metal base. The switches and flasher can now be serviced.



Side View

SPINNING "ALADDINS LAMP" ASSEMBLY

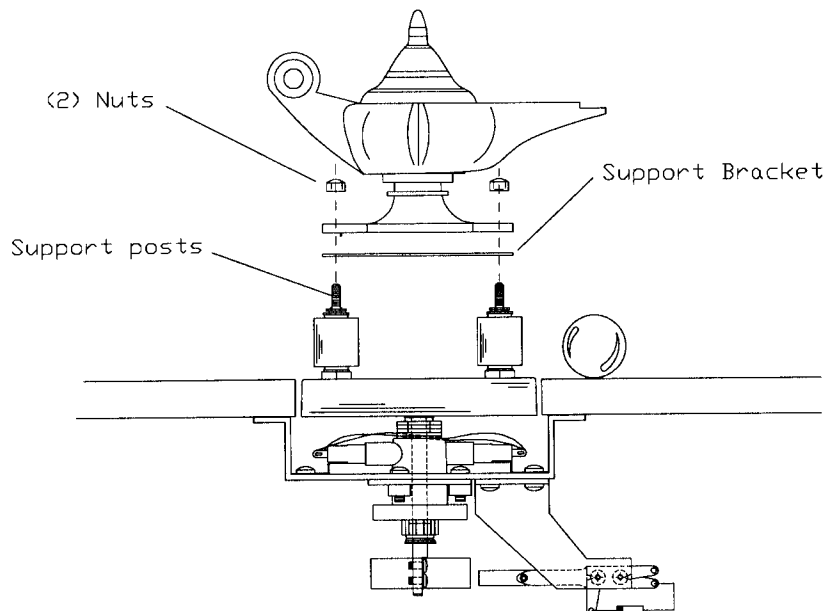
The Spinning Lamp Assembly is mounted from under the playfield. Balls in play can hit the rubber bumpers, making the lamp spin and score points when the lamp switches are closed. The whole unit is easily cleaned and serviceable. The platter should be flush with the playfield for smooth action and height adjustment is achieved by loosening the collar (1) and rotating the main threaded shaft piece (2) up or down. Then re-tighten the collar with needle nose grips.



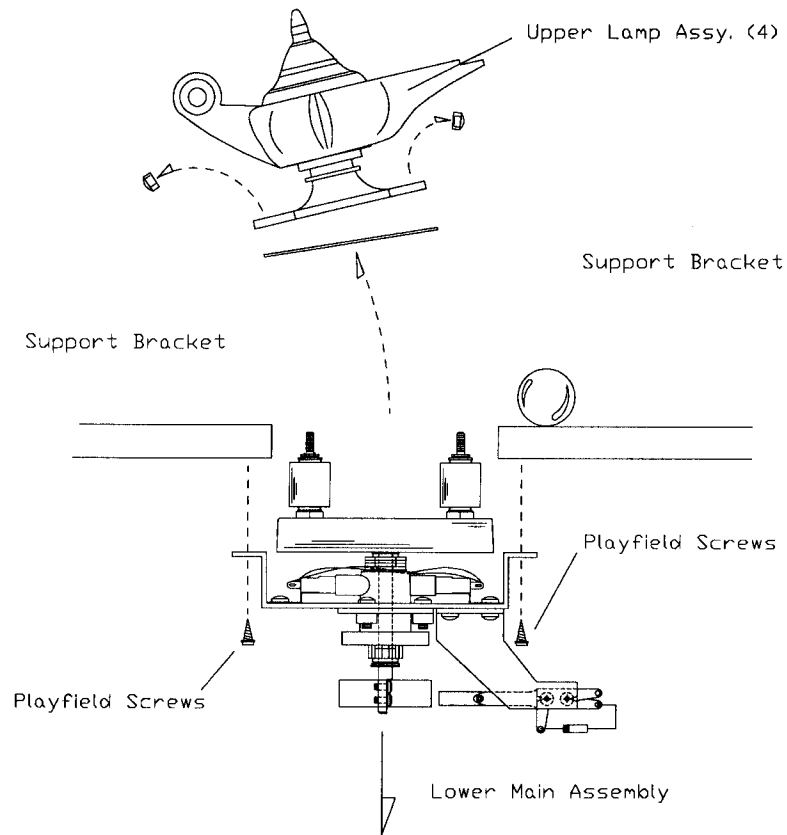
Side View

REMOVE THE SPINNING LAMP ASSEMBLY

- 1) To remove the Lamp, loosen the nuts (2) that hold the molded lamp and support bracket onto the support posts. Gently lift the lamp and bracket off the platter assembly.



- 2) Once the upper lamp assembly (4) has been removed, the whole lower mechanism can be quickly released from the playfield by loosening the wood screws that hold the main bracket in place. Once off, the entire assembly can be serviced.



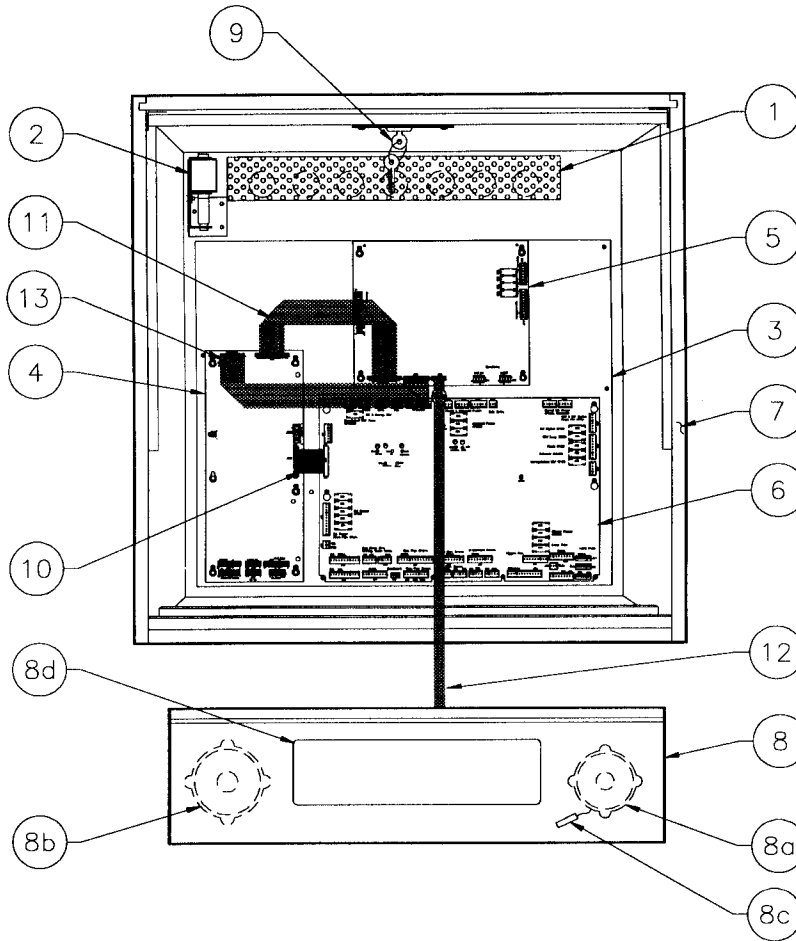
NOTES

NOTES

SECTION TWO

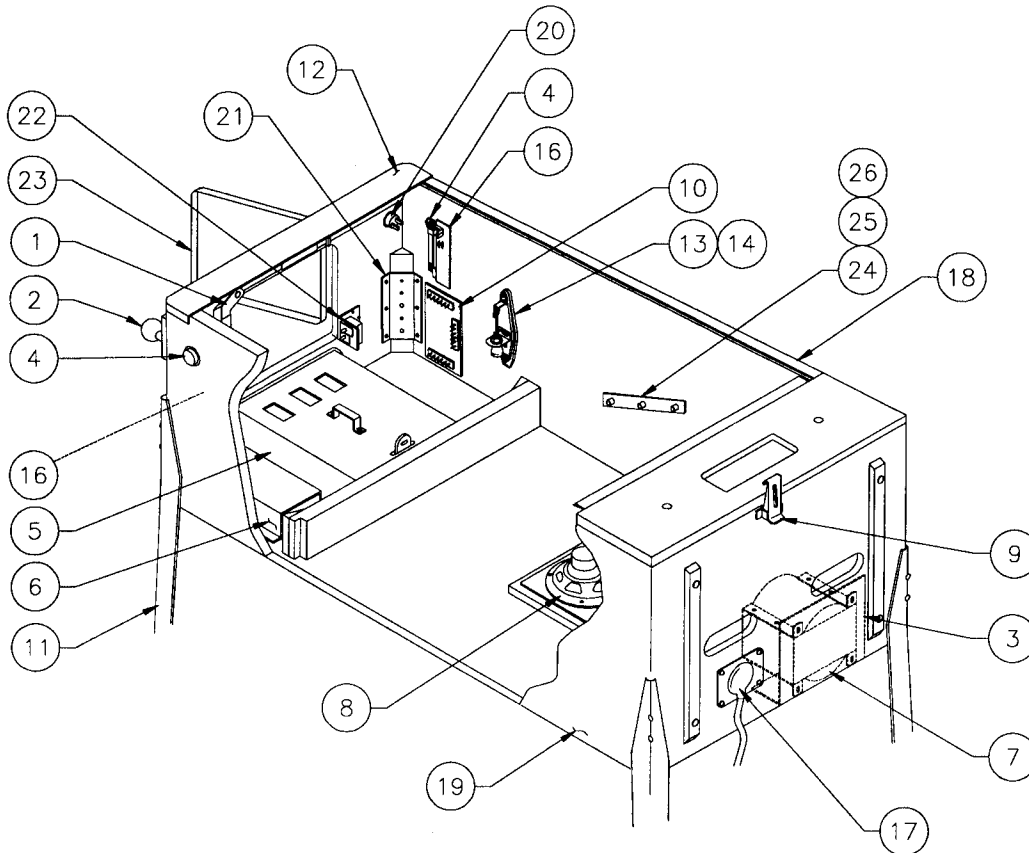
PARTS INFORMATION

50047-BB Backbox Assembly



| | | | Ribbon Cables | | |
|------|----------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| Item | Part Number | Description | Item | Part Number | Designator |
| 1 | 01-6645 | Venting Screen | 10 | 5795-12653-03 | Ribbon Cable, 34-pin, 3" |
| 2 | B-10686-1 | Knocker Assembly | 11 | 5795-12653-12 | Ribbon Cable, 34-pin, 12" |
| 3 | A-14092-7 | WPC '95 Mounting Plate Assy. | 12 | 5795-13434-25 | Ribbon Cable, 14-pin w/Ferrite |
| 4 | A-20028 | WPC '95 Power Driver PCB | 13 | 5795-10938-15 | Ribbon Cable, 26-pin, 15" |
| 5 | A-20516-50047 | WPC '95 Audio Visual PCB | | | |
| 6 | A-20119-50047 | WPC '95 CPU PCB | | | |
| 7 | 04-10450-50047 | Backbox, Wood | | | |
| 8 | A-20866 | Speaker/Display Assembly | | | |
| a) | 5555-12924-00 | Speaker Tweeter, 15w, 4Ω | | | |
| b) | 5555-12856-00 | Speaker, 5-1/4", 25w, 4Ω | | | |
| c) | 5045-12914-00 | Capacitor, 10μfd., 50v (±20%) | | | |
| d) | 5901-12784-00 | Dot Matrix Display/Driver Board | | | |
| 9 | A-13379 | Lock & Plate Assembly | | | |
| | | | Miscellaneous Parts | | |
| | | | 08-7456 | Backbox Glass: 27 x 18-7/8" | |
| | | | 20-9718 | Wing Screw, 3/8-16 x 2" | |
| | | | 31-1357-50047 | Screened Translight | |
| | | | Backbox Cables | | |
| | | | H-20479 | Dot Matrix Display Power Cable | |
| | | | H-20477 | Logic Power Cable | |
| | | | H-20478 | Secondary Cable | |
| | | | H-20858.1 | Insert Cable | |

50047-CAB Cabinet Assembly



Miscellaneous Parts (Not Shown)

| Item | Part Number | Description | Part Number | Description |
|------|---------------|----------------------------------|-------------|-----------------------------|
| 1 | A-16773-1 | Lever Guide Assembly | A-17195 | Tilt Switch Assy. w/Cable |
| 2 | A-17730-3 | Ball Shooter w/Silver Knob Assy. | A-19562.1 | Stay Arm Assembly |
| 3 | 01-13936 | Drip Plate - Narrow | 01-12352 | Clip Bracket |
| 4 | A-16883-4 | Flipper Button w/Spring, Red (2) | 01-9011.1-L | Backbox Mtg. Bracket, Left |
| 5 | A-20729-5 | 4-Ball Cashbox Assembly | 01-9011.1-R | Backbox Mtg. Bracket, Right |
| 6 | A-17540-1 | Univ. Power Interface Assy. | 01-6389-1 | Cashbox Lock Bracket |
| 7 | 5610-14515-00 | WPC Transformer | 08-7028-T | Playfield Glass |
| 8 | 5555-12929-00 | Speaker, 4Ω, 6", 25w | 08-7377 | Leg Leveler Adjuster, 3" |
| 9 | 20-9347 | Toggle Latch | 20-6500 | Steel Ball, 1-1/16" (6) |
| 10 | A-20580 | Coin Door Interface Board | | |
| 11 | A-19514 | Leg Assembly, Chrome (4) | | |
| 12 | D-12615 | Front Molding Assembly | | |
| 13 | 20-6502-A | Plumb Bob | | |
| 14 | 04-10346 | 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 | 11-1314 | Wood Cabinet | | |
| 20 | 20-9663-1 | Push Button w/Sw., Start (Clear) | | |
| 21 | 01-11400 | Leg Plate (4) | | |
| 22 | A-18249-1 | Cable & Interlock Switch Assy. | | |
| 23 | 09-61000-1 | Coin Door-U.S.A. | | |
| 24 | 01-11408 | Plate Spacer (2) | | |
| 25 | 02-4329-2 | Pivot Nut, 11/16" (4) | | |
| 26 | 02-4352 | Pivot Bushing (2) | | |

Cabinet Cables

| | |
|-------------|---------------------------------|
| A-20201 | Cable & Jumper Assy., Coin Door |
| H-17217.1 | Plumb/Bob Mech. Protect Cable |
| H-17837-2 | Voltage Program Jumper Cable |
| H-20599-1.1 | Cabinet Cable |
| H-19601-1 | Power Extension Cable |
| H-20856 | Cabinet Switch/Lamp Cable |

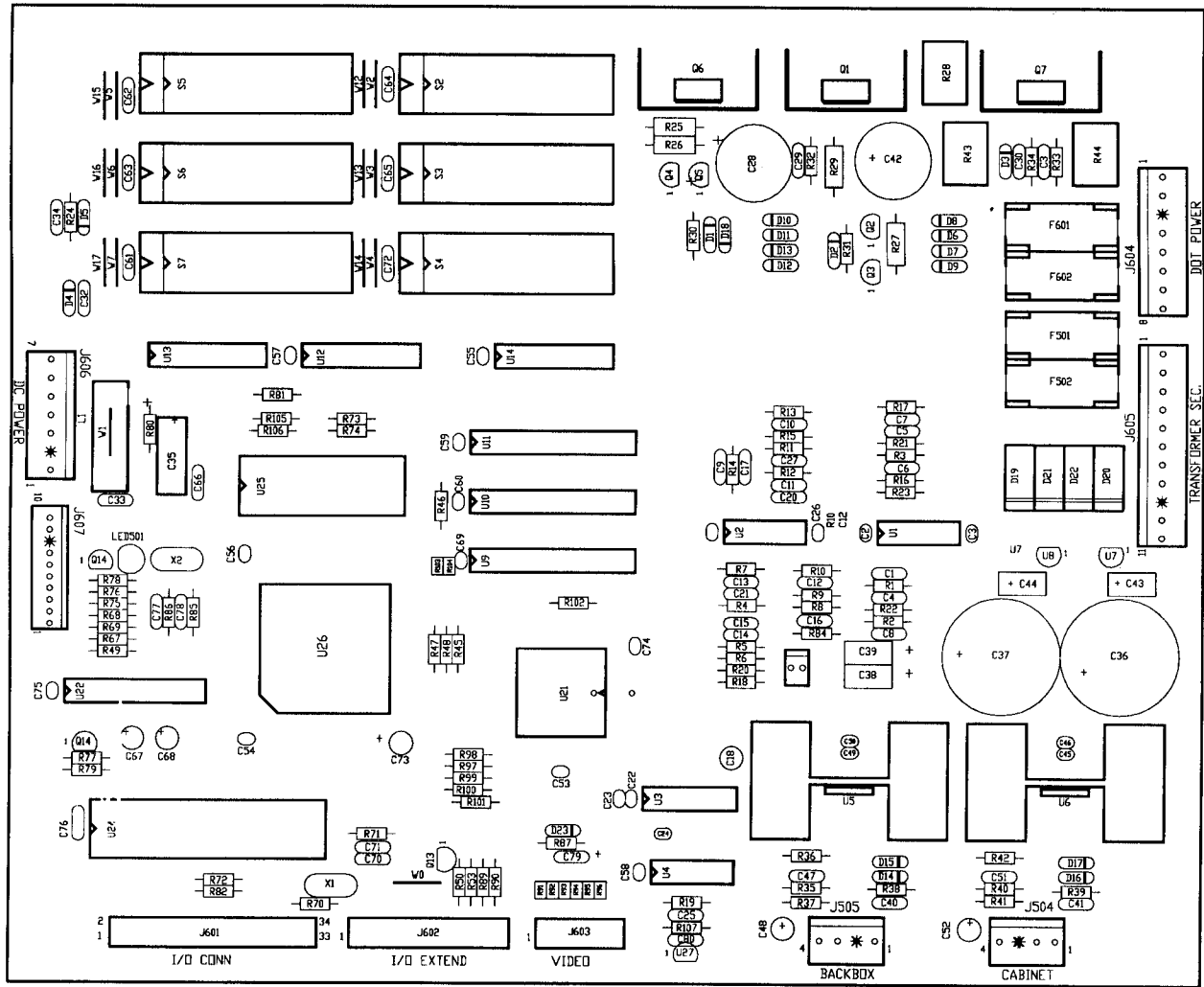
* See Application Chart p.2-29.

A-20516-50047

WPC '95 Audio Visual PCB Assembly

| Part Number | Designator | Description | Part Number | Designator | Description |
|---------------|--|---|-----------------|------------------------|------------------------------------|
| 4004-01005-06 | - | Mach. Screw, 4-40 x 3/8" | 5048-13172-00 | C78 | Cap., 47pf, 50v, 20% Ax. |
| 4404-01119-00 | - | Nut 4-40 ESN | 5048-13418-00 | C4 - C6 | Cap., .047m, 50v, 5% Ax. |
| 5010-08774-00 | R2, R17, R22, R23, R35, R36, R40, R42, R87 | Resistor, 22K Ω , 1/4w, 5% | 5048-13609-00 | C9, C12, C15 | Cap., 3900pf, 50v, 5% Ax. |
| 5010-08991-00 | R20, R46-R48, R50, R72, R76, R77, R80, R107 | Resistor, 4.7K Ω , 1/4w, 5% | 5048-13610-00 | C8, C10, C11, C13, C14 | Cap., 1000pf, 50v, 5% Ax. |
| 5010-09034-00 | R21 | Resistor, 10K Ω , 1/4w, 5% | 5048-13611-00 | C16, C17, C20, C21 | Cap., 680pf, 50v, 5% Ax. |
| 5010-09036-00 | R19 | Resistor, 100 Ω , 1/4w, 5% | 5048-14563-00 | C29-C31 | Cap., .01 μ f, 200v, 10% Axial |
| 5010-09134-00 | R32-R34 | Resistor, 150K Ω , 1/4w, 5% | 5070-09045-00 | D19-D22 | Diode MR501, 3.0A |
| 5010-09219-00 | R1, R3 | Resistor, 8.2K Ω , 1/4w, 5% | 5070-09054-00 | D4, D6-D17, D23 | Diode 1N4004, 1.0A |
| 5010-09416-00 | R73, R74, R82, R88, R105, R106 | Resistor, 470 Ω , 1/4w, 5% | 5075-12823-00 | D1, D18 | Zener, 1N4758A 56v, 1w |
| 5010-09807-00 | R30, R31, R67-R69, R102 | Resistor, 120 Ω , 1/4w, 5% | 5075-12824-00 | D3, D5 | Zener, 1N4742A 12v, 1w |
| 5010-10171-00 | R24 | Resistor, 56 Ω , 1/4w, 5% | 5075-12826-00 | D2 | Zener, 1N4759, 62v, 1w |
| 5010-10258-00 | R86 | Resistor, 1M Ω , 1/4w, 5% | 5160-08938-00 | Q13-Q15 | Transistor, 2N4401 NPN |
| 5010-10983-00 | R53, R75, R79, R84, R85, R89, R90 | Resistor, 1.8K Ω , 1/4w, 5% | 5164-09056-00 | Q2, Q3 | Transistor, MPSD02 NPN |
| 5010-12832-00 | R25, R26, R27, R29 | Resistor, 47K Ω , 1/4w, 5% | 5164-12154-00 | Q1, Q7 | Transistor, MJE15030 NPN |
| 5010-13215-00 | R78, R97-R101 | Resistor, 200K Ω , 1/4w, 5% | 5194-09055-00 | Q4, Q5 | Transistor, MPSD52 PNP |
| 5010-13372-00 | R91-R96, R103, R104 | Resistor, 220 Ω , 1/8w, 5% | 5194-12155-00 | Q6 | Transistor, MJE15031 PNP |
| 5010-13420-00 | R37, R41 | Resistor, 680 Ω , 1/4w, 5% | 5250-13302-00 | U7 | Reg. 78L05T 5v |
| 5010-13517-00 | R38, R39 | Resistor, 15 Ω , 1/4w, 5% | 5250-13303-00 | U8 | Reg. 79L05T 5v |
| 5010-13607-00 | R4, R5, R7-R15 | Resistor, 6.19K Ω , 1/8w, 1% | 5311-12538-00 | U4 | IC 74HC14 Hex. S-T |
| 5012-14558-00 | R44 | Resistor, 1.8K Ω , 5w vertical | 5317-12211-00 | U12-U14 | IC Octal Buffer 74ALS541 |
| 5012-14559-00 | R43 | Resistor, 4.7K Ω , 5w vertical | 5340-12278-00 | U25 | S/Ram 2064 150NS |
| 5012-14560-00 | R28 | Resistor, 120 Ω , 5w vertical | 5370-12687-00 | U27 | IC MC 340640Reset Chp |
| 5013-13661-00 | R16 | Resistor, 9.09K Ω , 1/4w, 1% | 5349-14351-00 | U9-U11 | SRAm 8Kx8-35ms, 28pdIp |
| 5013-14456-00 | R6, R18 | Resistor, 3.32K Ω , 1/4w, 1% | 5370-12730-00 | U1, U2 | IC Op Amp TL084 |
| 5040-14569-00 | C35 | Cap., 100mf, 25v, Axial | 5370-13419-00 | U5, U6 | IC TDA 2030AV 18w, Audio Amp |
| 5040-09365-00 | C38, C39, C43, C44 | Cap., 1m, 63v(+50, -10%)Ax. | 5371-13299-00 | U3 | IC Ad-1851 16bit mono |
| 5040-12750-00 | C48, C52, C73 | Cap., 22m, 35v Radial | 5520-14561-00 | X2 | Crystal 20MHz, parallel 20pf |
| 5040-13098-00 | C18, C67, C68 | Cap., 4.7 μ , 35v (\pm 20%) | 5671-14516-00 | LED 501 | Led-Display Red T 1-3/4 |
| 5040-13417-00 | C36, C37 | Cap., 10000 μ f, 35v Radial | 5700-08985-00 | U24 | Socket IC 40-pin .6 |
| 5040-14564-00 | C28, C42 | Cap., 150 μ f, 160v, 20%Rad. | 5700-12047-00 | U22 | Socket IC 24.3P |
| 5043-08996-00 | C2, C3, C19, C22- C24, C26, C32, C34, C45, C46, C49, C50, C53-C66, C69, C72, C74-C76, C79, C80 | Cap., 0.1 μ f, 50v (\pm 20%) Ax. | 5700-12088-00 | S2-S7 | Socket Dip 32.6P" |
| 5043-10267-00 | C47, C51 | Cap., 150pf, 100v Cer. Ax. | 5705-12638-00 | U5, U6 | Heatsink 5298B |
| 5048-10992-00 | C27 | Cap., .0047m, 50v, 10% Ax. | 5705-14562-00 | Q1, Q6, Q7 | Heatsink 10-220 wave sol 287 |
| 5048-11028-00 | C77 | Cap., 22p, 50v, Axial | 5733-14528-00 | F501, F502, F601, F602 | Fuse Holder 5x20mm 10A. |
| 5048-11029-00 | C25 | Cap., 100p, 50v, 5% Axial | 5731-14532-00 | F501, F502 | Fuse 5x20mm T2.5A., 250V |
| 5048-11030-00 | C7 | Cap., 470p, 50v, Axial | 5731-14533-00 | F601, F602 | Fuse 5x20mm T0.250A., 250V |
| 5048-11033-00 | C1 | Cap., .022m, 50v, 10% Ax. | 5791-10850-00 | J602 | Connector, 26-pin Header Str. |
| 5048-12036-00 | C40, C41 | Cap., .22m, 50v, Axial | 5791-10862-04 | J504, J505 | Connector, 4-pin Header Str. |
| | | | 5791-10862-07 | J606 | Connector, 7-pin Header Str. |
| | | | 5791-10862-08 | J604 | Connector, 8-pin Header Str. |
| | | | 5791-10862-11 | J605 | Connector, 11-pin Header Str. |
| | | | 5791-12516-00 | J601 | Connector, 34 hdr 2 x 17 .100 |
| | | | 5791-12827-00 | J603 | Connector, 14 Hen 7x2 Str. |
| | | | 5791-13830-10 | J607 | Connector, 10-pin Str. Sq. |
| | | | 5010-09534-00 | W0, W1-W7, R49 | Resistor, 0 Ω , 0w |
| | | | A-5343-50047-S2 | S2 | E-PROM Assembly |
| | | | A-5343-50047-S3 | S3 | E-PROM Assembly |
| | | | A-5343-50047-S4 | S4 | E-PROM Assembly |
| | | | A-5343-50047-S5 | S5 | E-PROM Assembly |

A-20516-50047 WPC '95 Audio Visual PCB Assembly



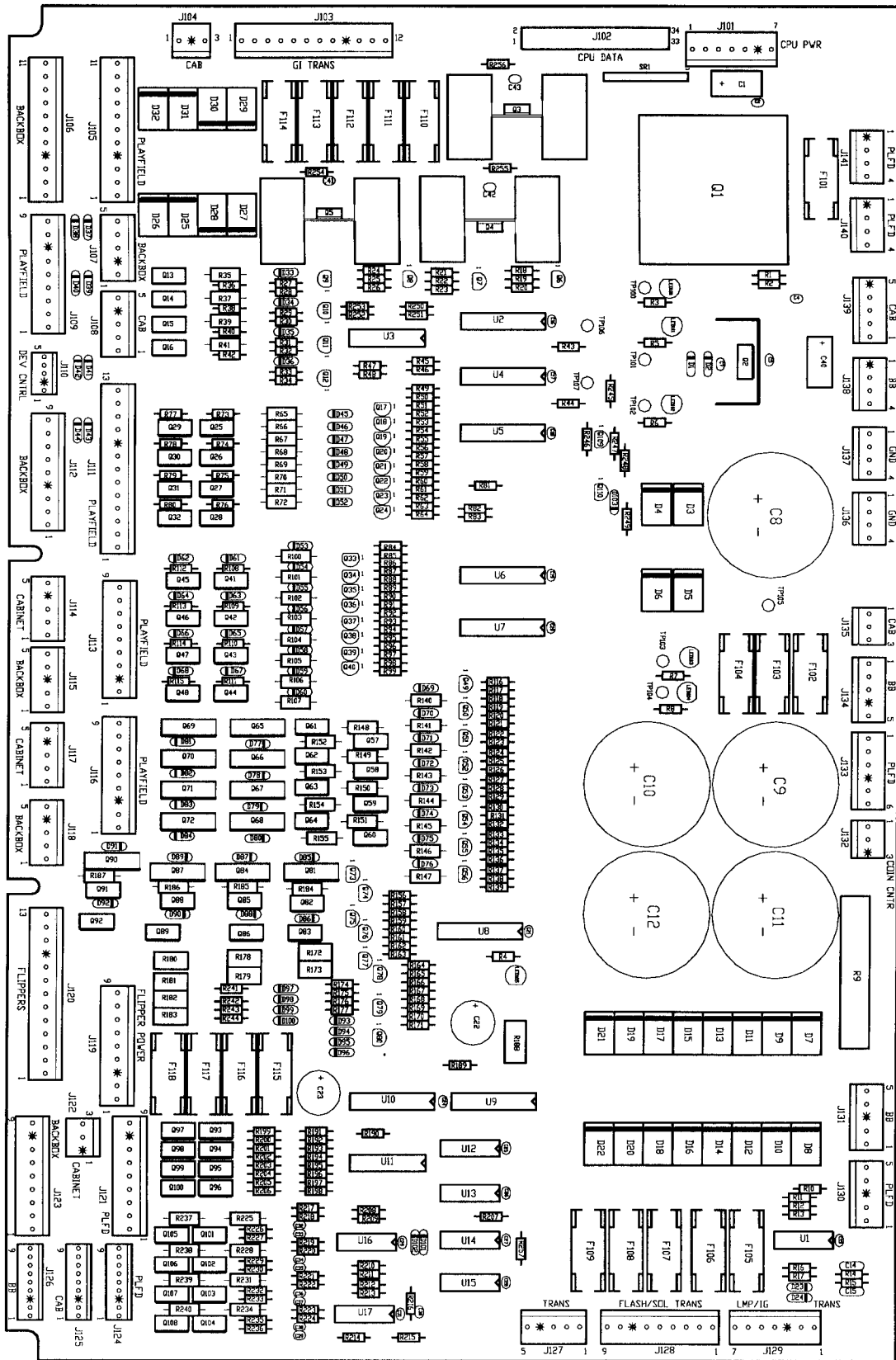
A-20028

WPC '95 Power Driver PCB Assembly

| Part Number | Designator | Description | Part Number | Designator | Description |
|---------------|---|-------------------------------------|---------------|---|---------------------------|
| 5040-14569-00 | C1, C40 | Capacitor, 100µF, 25v, Ax. | 5010-09999-00 | R3, R4, R6-R8, R43, R44, R81-R83, R190 | Resistor, 2KΩ, 1/4w, 5% |
| 5043-08996-00 | C2, C4, C5, C7, C13, C16-C21, C24-C39, C41-C43 | Capacitor, 0.1m, 50v (±20%) Ax. | 5010-09224-00 | R5, R14 - R17 | Resistor, 270Ω, 1/4w, 5% |
| 5040-13417-00 | C8 - C12 | Capacitor, 10000µf, 35v Radial | 5012-12632-00 | R9 | Resistor, 12Ω, 10w, 5% |
| 5048-11031-00 | C14, C15 | Capacitor, .001m, 50v, 10% Ax. | 5010-09324-00 | R10 | Resistor, 27KΩ, 1/4w, 5% |
| 5040-09537-00 | C22, C23 | Capacitor, 100µ, 100v (±20%) Radial | 5010-09358-00 | R11, R157, R159, R161, R163, R165, R167, R169, R171, R216-R224 | Resistor, 1KΩ, 1/4w, 5% |
| 5070-09054-00 | D1, D2, D23, D24, D33 - D100, D103 | Diode 1N4004 1.0A. | 5010-09036-00 | R247 | Resistor, 100Ω, 1/4w, 5% |
| 5070-14526-00 | D3-D22, D25-D32 | Diode P600G 6A 400 PIV | 5010-09034-00 | R12, R13, R189, R208-R215, R248 | Resistor, 10KΩ, 1/4w, 5% |
| 5070-08919-00 | D101, D102 | Diode, 1N4148 150mA. | 5010-08992-00 | R18, R21, R24, R192, R194, R196, R198, R200, R202, R204, R206 | Resistor, 560Ω, 1/4w, 5% |
| 5731-14531-00 | F101 | Fuse 5 x 20mm TO 63A., 250V | 5010-08991-00 | R19, R22, R25, R28, R30, R32, R34, R50, R52, R54, R56, R58, R60, R62, R64, R84, R86, R88, R90, R92, R94, R96, R98, R116, R119, R122, R125, R128, R131, R134, R137, R246 | Resistor, 4.7KΩ, 1/4w, 5% |
| 5731-14530-00 | F102-F105, F107, F109-F118 | Fuse 5 x 20mm T 4A, 250V | 5010-11079-00 | R20, R23, R26, R254-R256 | Resistor, 51Ω, 1/4w, 5% |
| 5731-14046-00 | F106 | Fuse S-B, 5A, 5x20mm | 5010-09416-00 | R27, R29, R31, R33, R45-R49, R51, R53, R55, R57, R59, R61, R63, R85, R87, R89, R91, R93, R95, R97, R99, R117, R120, R123, R126, R129, R132, R135, R138, R156, R158, R160, R162, R164, R166, R168, R170, R245, R250-R253, R257 | Resistor, 470Ω, 1/4w, 5% |
| 5731-14529-00 | F108 | Fuse 5 x 20mm T 6.3A, 250V | 5010-08993-00 | R35, R37, R39, R41, R65-R72, R100-R107, R140-R147 | Resistor, 68Ω, 1/4w, 5% |
| 5733-14528-00 | F101-F118 | Fuse Holder 5 x 20mm10A | 5010-08997-00 | R36, R38, R40, R42, R73-R80, R108, R109, R110-R115, R118, R121, R124, R127, R130, R133, R136, R139 | Resistor, 2.7kΩ, 1/4w, 5% |
| 5705-14724-00 | Q1 | Heat Sink TO-3 5.1DEG/W | 5010-09361-00 | R148-R155, R184-R187 | Resistor, 220Ω, 1/4w, 5% |
| 5701-09652-00 | Q1 | Thermal Pad TO-3 | 5011-12956-00 | R172, R173, R178-R183 | Resistor, 2.7KΩ, 1/4w, 5% |
| 4406-01128-00 | Q1 | Nut 6-32 KEPS | 5010-10171-00 | R174-R177, R241-R244 | Resistor, 56Ω, 1/4w, 5% |
| 4006-01005-06 | Q1 | Mach. Screw, 6-32 x 3/8" | 5010-14711-00 | R188 | Resistor, 10KΩ, 1/4w, 5% |
| 5705-14562-00 | Q2 | Heat Sink 10-220 Wave Sol 287 | 5010-09314-00 | R191, R193, R195, R197, R199, R201, R203, R205 | Resistor, 1.2kΩ, 1/4w, 5% |
| 4004-01005-06 | Q2-Q5 | Mach. Screw, 4-40 x 3/8" | 5010-09086-00 | R207 | Resistor, 6.8kΩ, 1/4w, 5% |
| 4404-01119-00 | Q2-Q5 | Nut 4-40 ESN | 5010-12427-00 | R225, R228, R231, R234, R237-R240 | Resistor, .22kΩ, 1/4w, 5% |
| 5705-12638-00 | Q3-Q5 | Heat Sink 5298B | 5010-08998-00 | R226, R227, R229, R230, R232, R233, R235, R236 | Resistor, 2.2kΩ, 1/4w, 5% |
| 5791-10862-07 | J101, J129 | Connector, 7-pin Header Str. | 5010-13517-00 | R249 | Resistor, 150Ω, 1/4w, 5% |
| 5791-12516-00 | J102 | Connector, 34 Hdr 2x17 | 5019-10143-00 | SRI | SIP RES 470 x 9R |
| 5791-10862-12 | J103 | Connector, 12-pin Header Str. | 5824-09248-00 | TP100-TP107 | Test Point #1502-1 |
| 5791-10862-03 | J104, J122, J132, J135 | Connector, 3-pin Header Str. | 5370-12272-00 | U1, U16, U17 | I.C. LM339 Quad Comp |
| 5791-10862-11 | J105, J106 | Connector, 11-pin Header Str. | 5281-09486-00 | U2, U4-U8, U10 | I.C. 74LS374 8d/f/f |
| 5791-10862-05 | J107, J108, J114, J115, J117, J118, J127, J130, J131, J134, J139 | Connector, 5-pin Header Str. | 5162-12422-00 | U3, U11 | Trans uln 2803 Oc-drl |
| 5791-10862-09 | J109, J112, J113, J116, J119, J121, J123, J128 | Connector, 9-pin Header Str. | 5281-10182-00 | U9 | I.C. 74LS240 l/drvr |
| 5791-10862-13 | J111, J120 | Connector, 13-pin Header Str. | 5281-09487-00 | U12 - U15 | I.C. 74LS74 Dual d f/f |
| 5791-13830-09 | J124-J126 | Connector, 9-pin Header Str. | 5791-13830-05 | J110 | Connector, 5-pin Header |
| 5791-10862-06 | J133 | Connector, 6-pin Header Str. | | | |
| 5791-10862-04 | J136-J138, J140, J141 | Connector, 4-pin Header Str. | | | |
| 5671-14516-00 | LED100-LED105 | LED Dspl Red T-1 | | | |
| 5250-14527-00 | Q1 | Regulator Voltage LM317K | | | |
| 5460-12423-00 | Q2 | I.C. LM7812 | | | |
| 5131-12725-00 | Q3-Q5 | Triac BT138E | | | |
| 5194-09055-00 | Q6-Q12, Q17-Q24, Q33-Q40, Q49-Q56, Q109 | Transistor, MPSD52 PNP | | | |
| 5162-12635-00 | Q13-Q16, Q25-Q32, Q41-Q48, Q57-Q64, Q82, Q83, Q85, Q86, Q88, Q89, Q91, Q92, Q101-Q108 | Transistor, TIP102 | | | |
| 5191-12179-00 | Q65-Q72, Q81, Q84, Q87, Q90 | Transistor, TIP36C | | | |
| 5190-09016-00 | Q73 - Q80 | Transistor, 2N4403 PNP | | | |
| 5192-12428-00 | Q93 - Q100 | Transistor, TIP107 | | | |
| 5160-10269-00 | Q110 | Transistor, 2N3904 | | | |
| 5013-14535-00 | R1 | Resistor, 750Ω, 1/4w, 1% | | | |
| 5013-14534-00 | R2 | Resistor, 243Ω, 1/4w, 1% | | | |

A-20028

WPC '95 Power Driver PCB Assembly

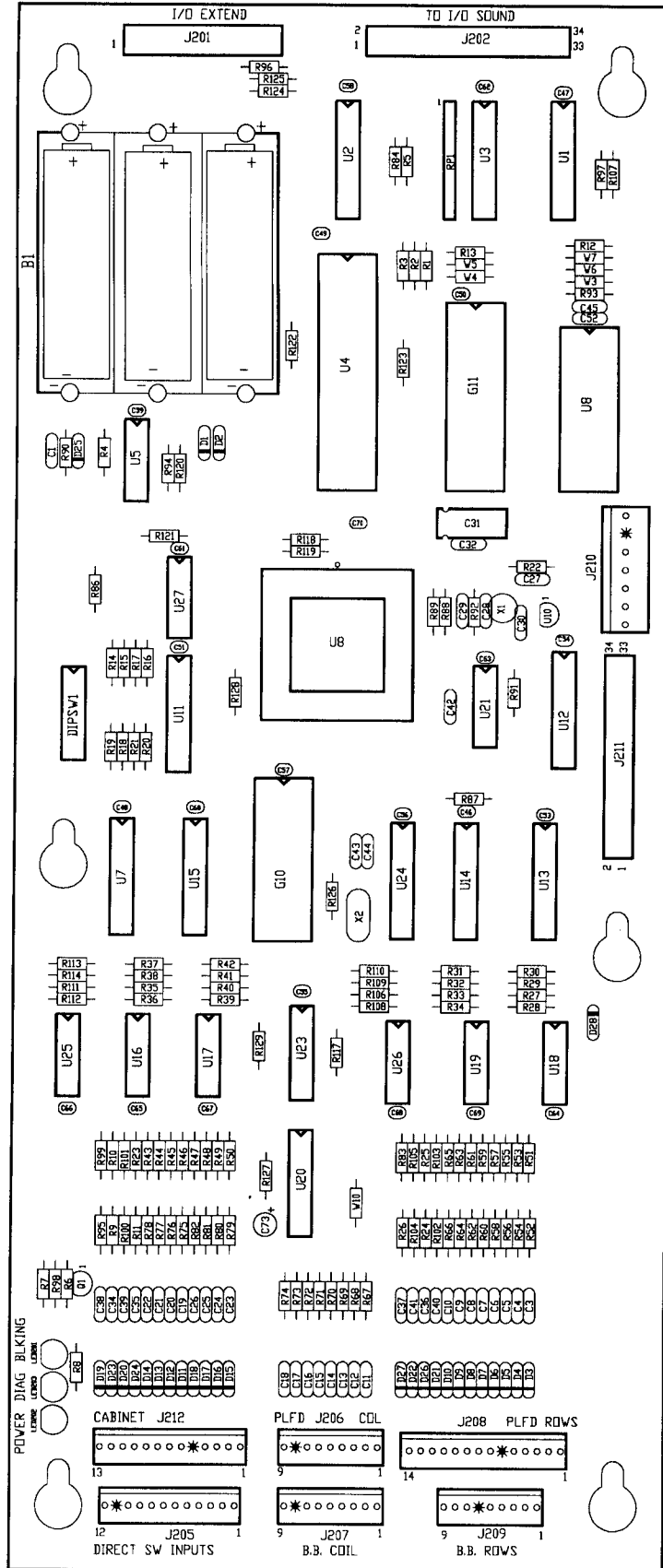


A-20119-50047

WPC '95 CPU PCB Assembly

| Part Number | Designator | Description |
|-----------------|--|--|
| A-15814 | B1 | Battery Holder |
| 5048-11033-00 | C1, C42 | Cap., .022 μ . 50v, 10% Ax. |
| 5048-11030-00 | C3-C26, C34-C41 | Cap., 470p, 50v Axial |
| 5043-09030-00 | C27 | Cap., .047m, 50v (\pm 20%) Ax. |
| 5048-13375-00 | C28 | Cap., 100p, 50v, 10% Axial |
| 5048-11028-00 | C29, C30, C43, C44 | Cap., 22p, 50v Axial |
| 5040-14569-00 | C31 | Cap., 100 μ , 25v, Axial |
| 5048-11031-00 | C32 | Cap., .001 μ , 50v, Axial |
| 5043-08996-00 | C45 - C70 | Cap., 0.1 μ , 50v (\pm 20%) Ax. |
| 5040-13098-00 | C73 | Cap., 4.7 μ F, 35v (\pm 20%) |
| 5645-09025-00 | DIPSW1 | Switch Dip 8-Position |
| 5070-09266-00 | D1, D25, D28 | Diode 1N5817 1.0A. |
| 5070-08919-00 | D2 - D24, D26, D27 | Diode 1N4148 150mA. |
| 5700-10176-00 | G10 | Socket Dip 28.6 |
| 5700-12088-00 | G11 | Socket Dip 32.6p" |
| 5700-08985-00 | U4 | IC Socket 40-pin |
| 5700-12424-00 | U9 | Socket 84-pin |
| 5700-10389-00 | U20 | IC Socket 18-pin 3" |
| 5791-10850-00 | J201 | Connector, 26-pin Header |
| 5791-12516-00 | J202, J211 | Connector, 34-pin Hdr. 2x17 |
| 5791-13830-12 | J205 | Connector, 12-pin Header Str. |
| 5791-13830-09 | J206, J207, J209 | Connector, 9-pin Header |
| 5791-13830-14 | J208 | Connector, 14-pin Header |
| 5791-10862-07 | J210 | Connector, 7-pin Header |
| 5791-13830-13 | J212 | Connector, 13-pin Header |
| 5671-14516-00 | LED201 - LED203 | LED Dspl. Red T-1-3/4 |
| 5160-10269-00 | Q1 | Transistor, 2N3904 NPN |
| 5019-09669-00 | RP1 | SIP 4.7K, 9R, 10 (5%) |
| 5010-09358-00 | R1-R4, R9-R11, R23-R26, R43-R84, R93, R95-R97, R99-R114, R117 | Resistor, 1k Ω , 1/4W, 5% |
| 5010-08774-00 | R129 | Resistor, 22K Ω , 1/4w, 5% |
| 5010-09416-00 | R5-R8, R12, R13, R87-R89 | Resistor, 470 Ω , 1/4w, 5% |
| 5010-09034-00 | R14-R22, R27-R42, R86, R90, R94, R98 | Resistor, 10K Ω , 1/4w, 5% |
| 5010-12104-00 | R91 | Resistor, 22M, 1/4w, 5% |
| 5010-10989-00 | R92 | Resistor, 470K Ω , 1/4w, 5% |
| 5010-09187-00 | R118 - R123, R128 | Resistor, 150 Ω , 1/4w, 5% |
| 5010-09040-00 | R127 | Resistor, 33 Ω , 1/4w, 5% |
| 5010-09534-00 | W3, W4, W7, R124, R125 | Resistor, 0 Ω |
| 5010-10258-00 | R126 | Resistor, 1M, 5% 1/4w |
| 5281-09867-00 | U1, U2, U7 | I.C. 74HCT244 |
| 5281-09851-00 | U5 | I.C. 74LS14 SMT/TRG |
| 5281-09308-00 | U3 | IC 74LS245 Trnc |
| 5340-13062-00 | U8 | IC RAM 32k x 8 Static |
| 5370-12687-00 | U10 | I.C. MC 34064 Reset Chp. |
| 5281-10182-00 | U11-U13, U15 | I.C. 74LS240 Vdrv |
| 5311-14068-00 | U14, U24 | I.C. 74HC574 Octal d-latch |
| 5370-12272-00 | U16-U19, U25, U26 | I.C. LM339 Quad Comp. |
| 5284-12651-00 | U21 | I.C. 4584 Hex Schmitt |
| 5311-14554-00 | U23 | I.C. 74HC237 3 to 8 non inv |
| 5281-09743-00 | U27 | I.C. 74LS08 Quad. |
| 5520-12084-00 | X1 | Crystal 32.768KHz |
| 5520-14761-00 | X2 | Xtal-8M Anti Res Parallel Cut |
| A-5400-50047-1 | G10 | PIC16C57 Assembly |
| 5880-09022-00 | B1 | Battery 1.5v AA Alkaline |
| 5400-10320-00 | U4 | I.C. MPU68B09E |
| 5410-12426-00 | U9 | I.C. WPC-89 ASIC |
| 5162-12422-00 | U20 | Trans uln 2803 Oc-Drl |
| A-5343-50047-1A | G11 | Game ROM Assembly |

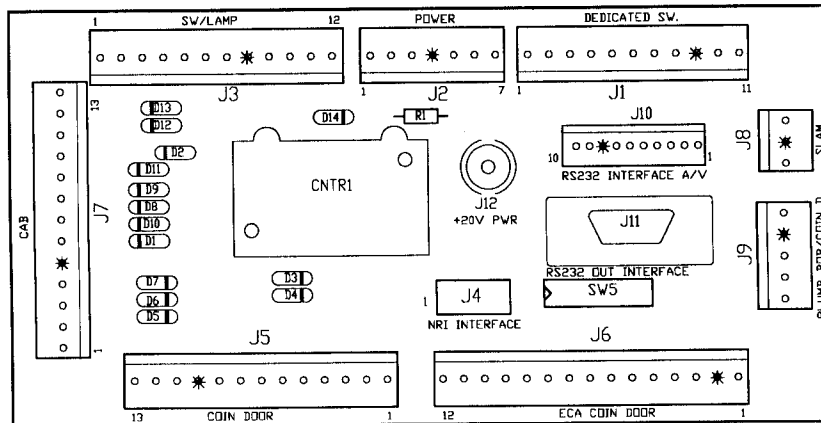
A-20119-50047 WPC '95 CPU PCB Assembly



A-20580

Coin Interface PCB Assembly

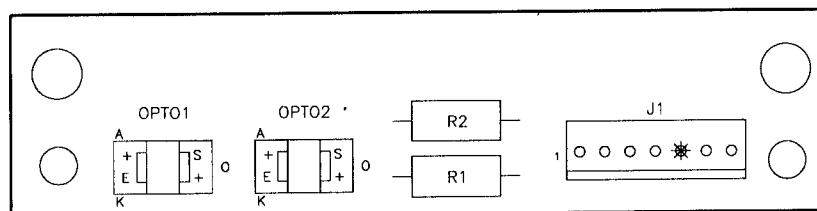
(This board does not contain optional items such as the coin counter and printer interface.)



| Part Number | Designator | Description |
|---------------|------------|-----------------------------------|
| 5070-09054-00 | D1-D14 | Diode 1N4004 1.0A. |
| 5791-10862-11 | J1 | Connector, 11-pin Header Str. Sq. |
| 5791-10862-07 | J2 | Connector, 7-pin Header Str. Sq. |
| 5791-10862-12 | J3 | Connector, 12-pin Header Str. Sq. |
| 5791-11000-10 | J4 | Connector, 10-pin Header Str. Sq. |
| 5791-10862-13 | J5, J7 | Connector, 13-pin Header Str. Sq. |
| 5791-10862-15 | J6 | Connector, 15-pin Header Str. Sq. |
| 5791-10862-03 | J8 | Connector, 3-pin Header Str. Sq. |
| 5791-10862-05 | J9 | Connector, 5-pin Header Str. Sq. |
| 5791-12462-10 | J10 | Connector, 10-pin Header Str. Sq. |
| 5010-13517-00 | R1 | Resistor, 15Ω, 1/4w, 5% |
| 5645-09025-00 | SW5 | Switch DIP 8 Pos. |

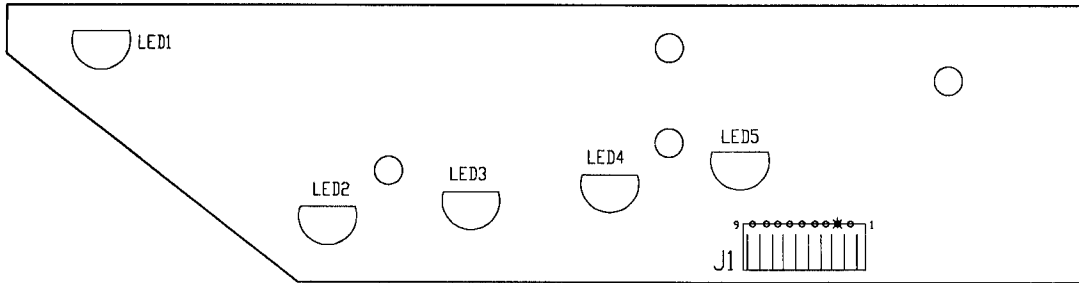
A-17316

Flipper Opto PCB Assembly



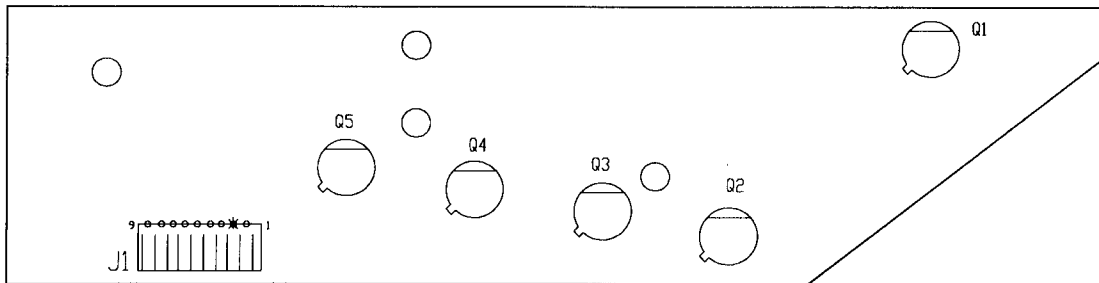
| Part Number | Designator | Description |
|---------------|-----------------|-----------------------------------|
| A-20207 | - | Flipper Opto Switch PCB |
| 5010-09061-00 | R1, R2 | Resistor, 680Ω, 1/2w, 5% |
| 5490-14575-00 | OPTO1, OPTO2 | IC Opto Integ Schmitt 10mA. |
| 5791-13830-07 | J1 | Connector, 7-pin Header Solid Sq. |
| 03-9001 | - | Interrupter Flip-Opto |

A-18617-1 Trough IR LED PCB Assembly



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

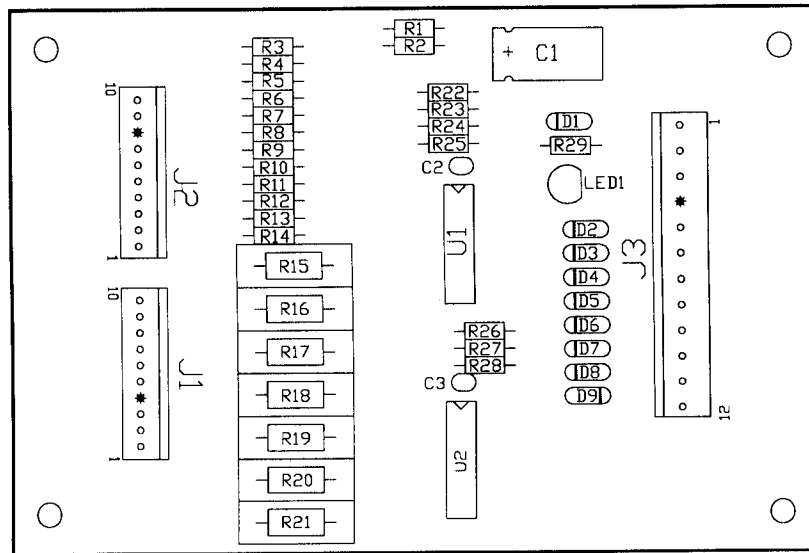
A-18618-1 Trough IR Photo Transistor PCB Assembly



| Part Number | Designator | Description |
|---------------|------------|-----------------------------|
| 5671-14114-00 | Q1 - Q5 | Infra Red Photo Transistor |
| 5791-12622-09 | J1 | Connector, 9-pin Header Sq. |

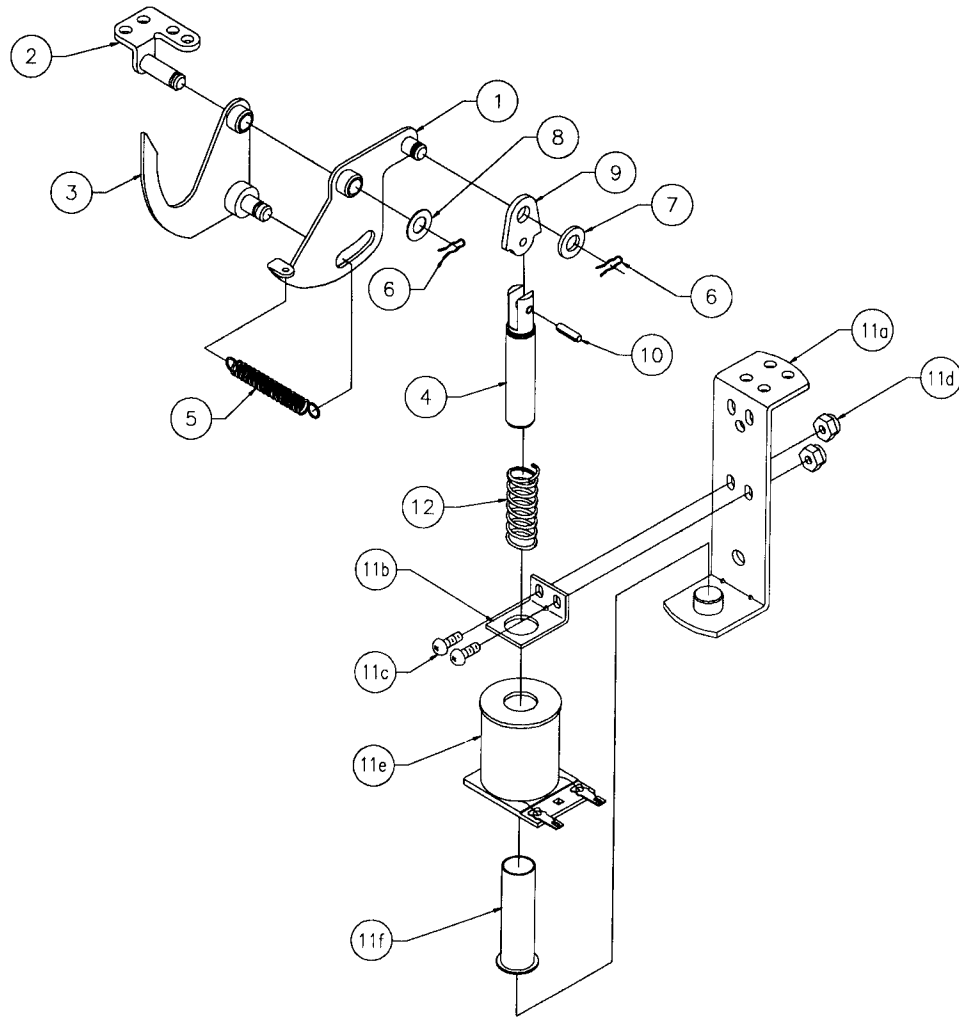
A-15576

7-Switch Opto PCB Assembly



| Part Number | Designator | Description |
|---------------|---------------|---|
| 5040-12298-00 | C1 | Capacitor, 100 μ Fd, 40v (\pm 50%) |
| 5043-08980-00 | C2, C3 | Capacitor, 0.01 μ , 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, 270 Ω , 2w, 5% |
| 5010-09999-00 | R1 - R14 | Resistor, 2K Ω , 1/4w, 5% |
| 5010-10631-00 | R29 | Resistor, 1.2K Ω , 1/4w, 5% |
| 5010-09162-00 | R23, R25, R26 | Resistor, 100K Ω , 1/4w, 5% |
| 5010-08774-00 | R22, R24 | Resistor, 22K Ω , 1/4w, 5% |
| 5010-09034-00 | R28 | Resistor, 10K Ω , 1/4w, 5% |
| 5791-10862-12 | J3 | Connector, 12-pin Header Sq. |
| 5791-13830-10 | J1, J2 | Connector, 10-pin Header Sq. |

B-9361-R-1 Ball Eject Assembly

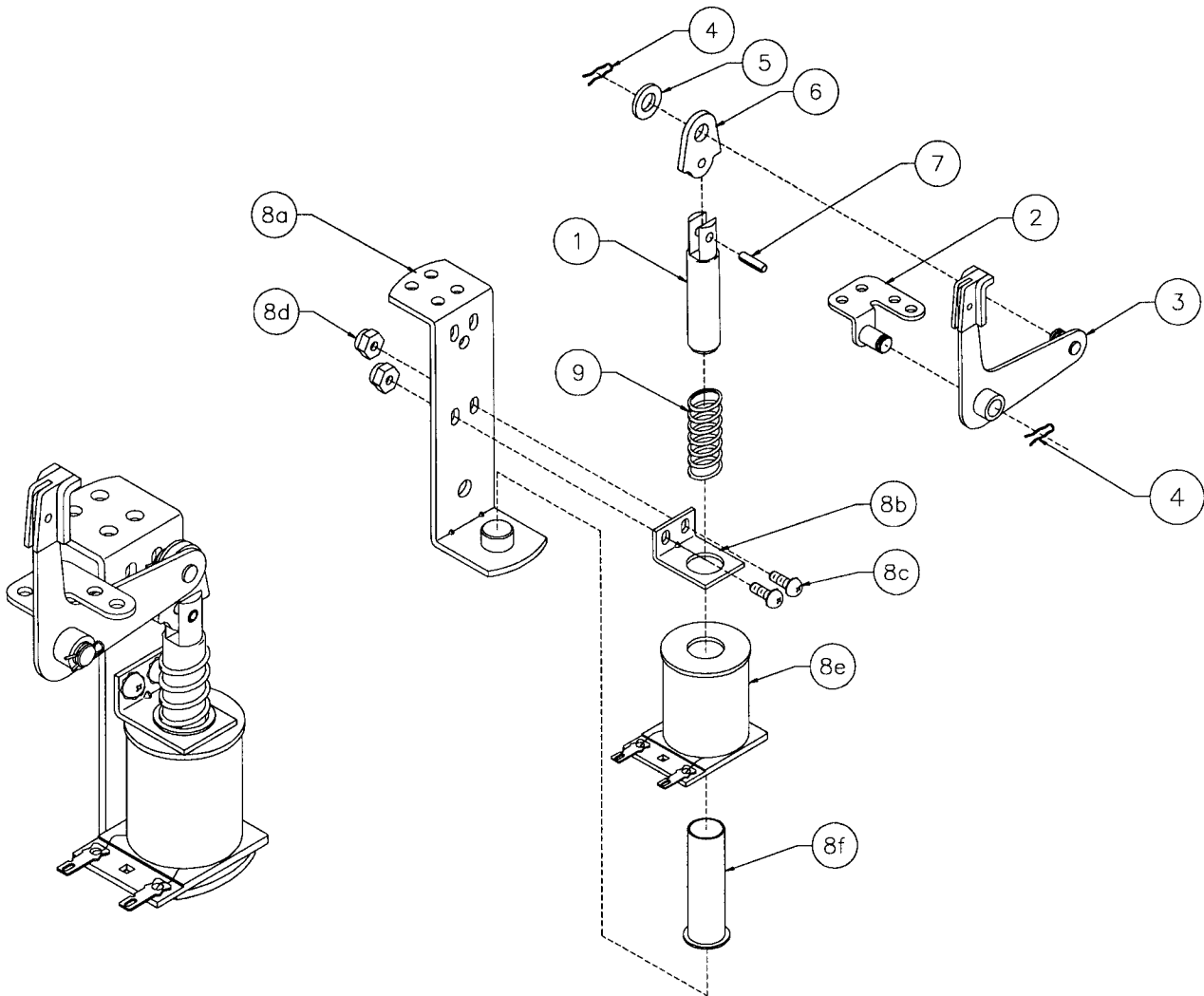


Associated Assemblies:

| Item | Part Number | Description | Item | Part Number | Description |
|------|---------------|----------------------------------|------|-------------------|--------------------------|
| 1 | A-6949-R | Spring Plate | 11 | B-9362-L-3 | Coil & Bracket Assembly |
| 2 | A-18146 | Mounting Bracket Assembly | a) | A-17808 | Bracket & Stop Assembly |
| 3 | A-7471-R | Eject Cam Assembly | b) | 01-8-508-S | Coil Retaining Bracket |
| 4 | 02-3407-02 | Coil Plunger | c) | 4006-01017-06 | Mach. Screw, 6-32 x 3/8" |
| 5 | 10-362 | Spring Eject | d) | 4406-01119-00 | Nut, 6-32 ESN |
| 6 | 12-6227 | Hairpin Clip | e) | AE-27-1200 | Coil Assembly |
| 7 | 4700-00030-00 | Flat Washer, 17/64 x 1/2 x 15ga. | f) | 03-7066 | Coil Tubing |
| 8 | 4700-00103-00 | Flat Washer, 17/64 x 1/2 x 28ga. | 12 | 10-128 | Spring |
| 9 | 03-8085 | Armature Link | * 13 | 03-9101-18 | Eject Shield, Tr. Violet |
| 10 | 20-8716-5 | Roll Pin, 1/8 x 7/16" | | | |

*Not shown.

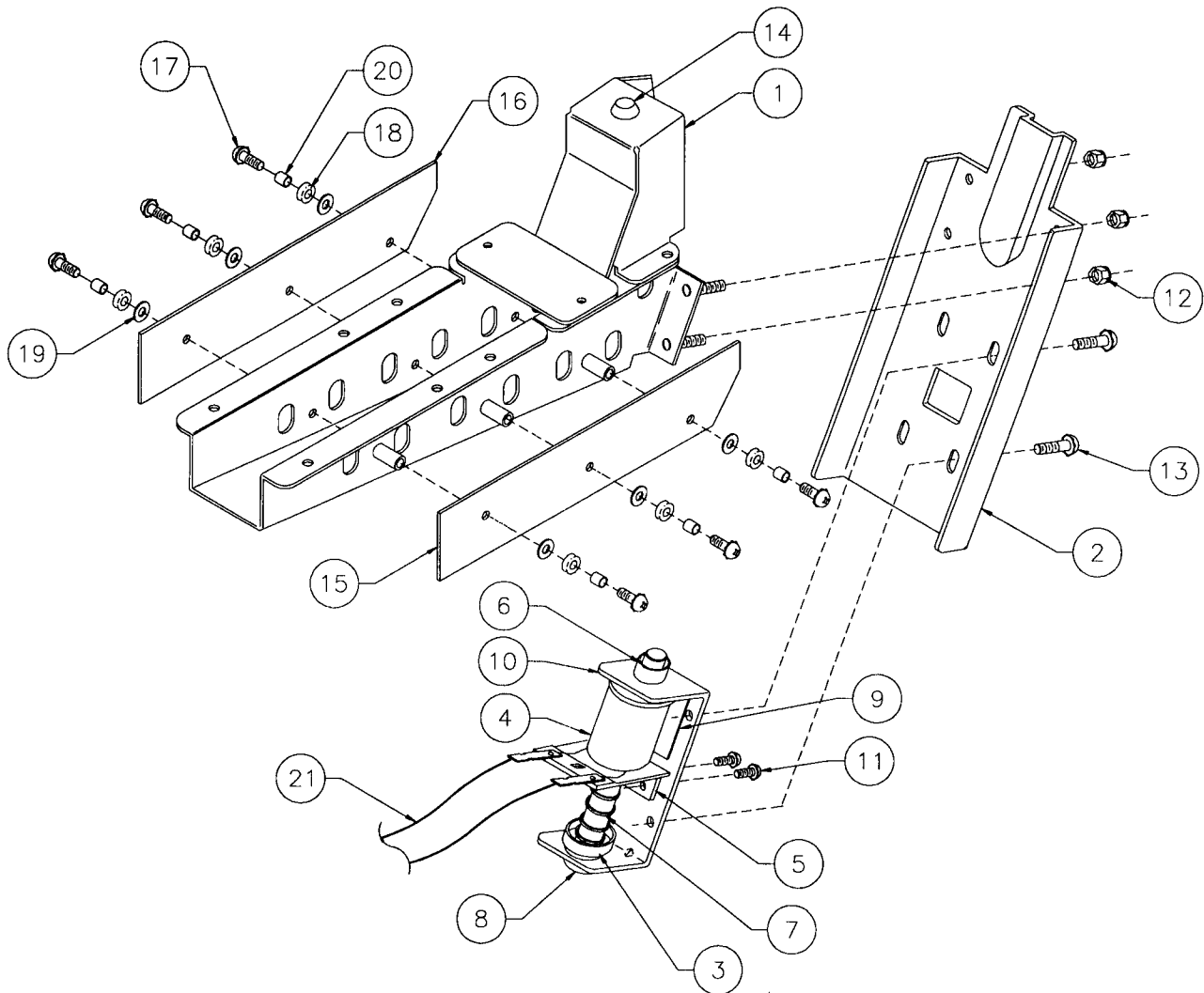
A-17811 Kicker Arm (Slingshot) Assembly



Associated Parts for Right & Left Kickers:

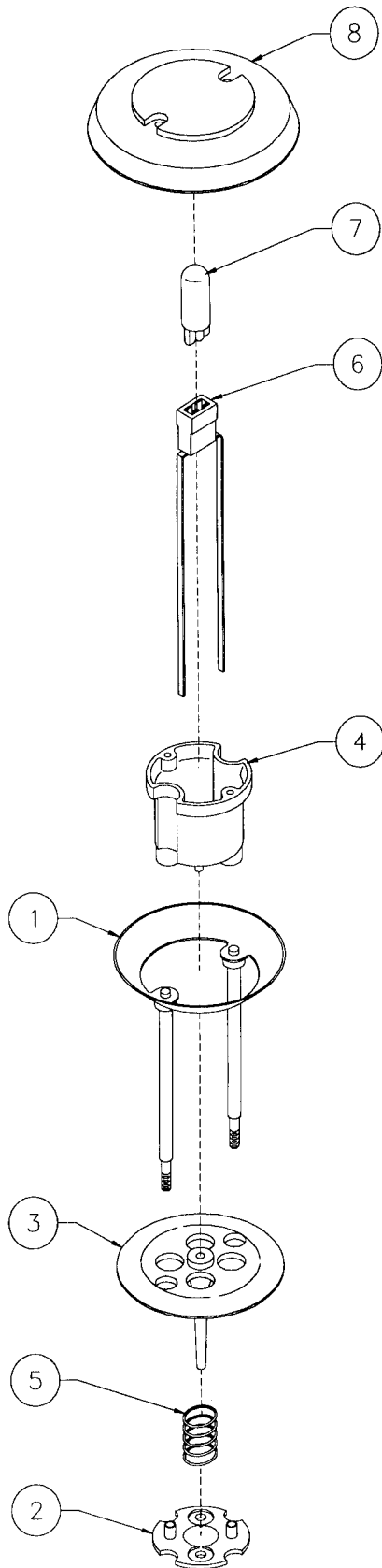
| Item | Part Number | Description | Item | Part Number | Description |
|------|---------------|---------------------------|------|-------------------|------------------------------------|
| 1 | 02-2364 | Coil Plunger | 8 | B-9362-L-3 | Coil & Bracket Assembly |
| 2 | A-17810 | Mounting Bracket Assembly | a) | A-17808 | Bracket & Stop Assembly |
| 3 | A-12664 | Kicker Crank Assembly | b) | 01-8-508-S | Coil Retaining Bracket |
| 4 | 12-6227 | Hairpin Clip | c) | 4006-01017-06 | Mach. Screw, 6-32 x 3/8" |
| 5 | 4700-00030-00 | FW, 17/64 x 1/2 x 15ga. | d) | 4406-01119-00 | Nut, 6-32 ESN |
| 6 | 03-8085 | Armature Link | e) | AE-27-1200 | Coil Assembly |
| 7 | 20-8716-5 | Roll Pin, 1/8 x 7/16" | f) | 03-7066 | Coil Tubing |
| | | | 9 | 10-128 | Spring |

A-19963-1 Ball Trough Assembly Complete



| Item | Part Number | Description | Item | Part Number | Description |
|------|---------------|---------------------------|------|---------------|----------------------------------|
| 1 | A-16809-2 | Ball Trough Welded Assy. | 12 | 4408-01119-00 | Nut 8-32 ESN |
| 2 | 01-11587 | Ball Trough Front | 13 | 4008-01017-06 | Mach. Screw, 8-32 x 3/8" |
| 3 | A-6306-2 | Bell Armature Assembly | 14 | 23-6702 | Bumper Plug |
| 4 | AE-26-1500 | Coil Assembly | 15 | A-18617-1 | Trough IRED LED PCB Assembly |
| 5 | 01-8-508-T | Solenoid Assembly | 16 | A-18618-1 | Trough IRED Transistor PCB Assy. |
| 6 | 03-7067-5 | Coil Tubing | 17 | 4006-01003-10 | Mach. Screw, 6-32 x 5/8" SEMS |
| 7 | 10-135 | Spring | 18 | 23-6626 | Rubber Grommet |
| 8 | 23-6420 | Rubber Grommet | 19 | 4700-00004-00 | Flat Washer, 9/64 x 7/16 x 21ga. |
| 9 | 03-8523 | Insulator | 20 | 02-4975 | Bushing |
| 10 | 01-1158 | Coil Mounting Bracket | 21 | H-19523 | Mini Solenoid Cable |
| 11 | 4008-01017-05 | Mach. Screw, 8-32 x 5/16" | | | |

B-9414-7 Jet Bumper Assembly

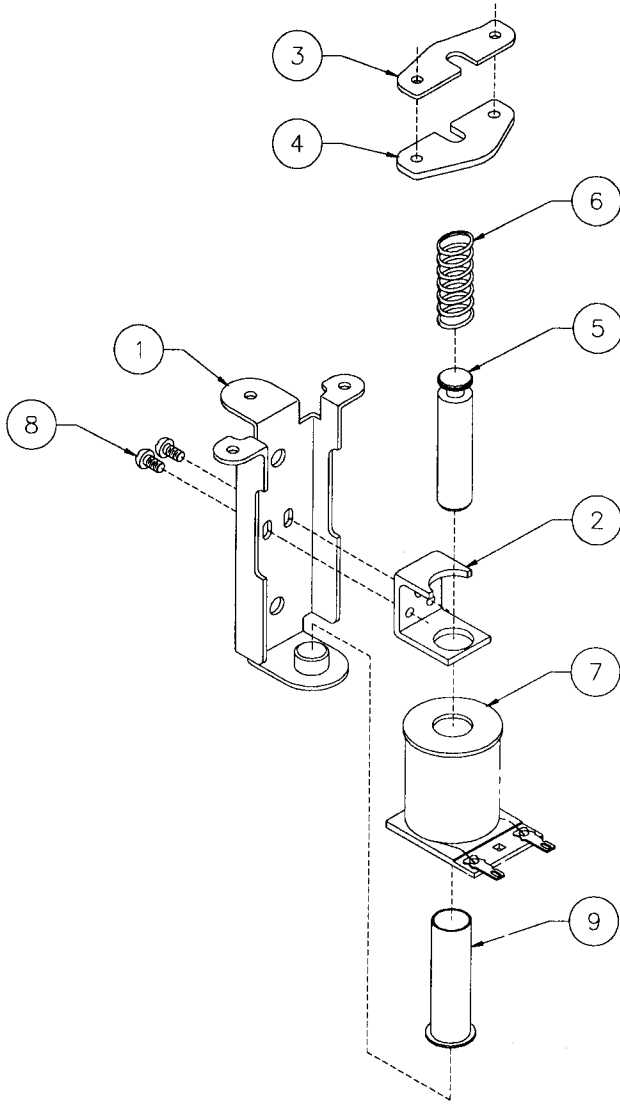


| Item | Part Number | Description |
|------|-------------|--------------------------|
| 1 | A-4754 | Bumper Ring Assembly |
| 2 | 03-6009-A5 | Bumper Base, White |
| 3 | 03-6035-3 | Bumper Wafer, Purple |
| 4 | 03-7443-5 | Bumper Body, White |
| 5 | 10-7 | Spring |
| 6 | 24-8776 | Socket-Wedge Base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

Associated Parts:

| | | |
|---|------------|--------------------|
| 8 | 03-8254-18 | Jet Bumper Cap (3) |
|---|------------|--------------------|

A-9415-2 Jet Bumper Coil Assembly

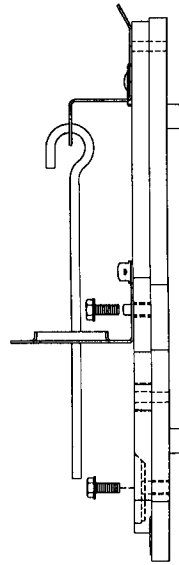
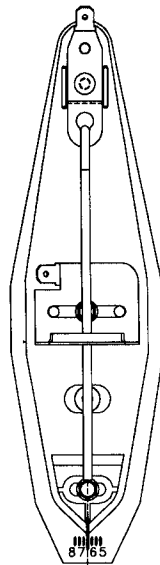


| Item | Part Number | Description |
|------|---------------|--------------------------|
| 1 | B-7417 | Bracket & Stop Assembly |
| 2 | 01-1747 | Coil Retaining Bracket |
| 3 | 01-5492 | Armature Link, Steel |
| 4 | 01-5493 | Armature Link, Bakelite |
| 5 | 02-3406-1 | Coil Plunger |
| 6 | 10-326 | Armature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

**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. |

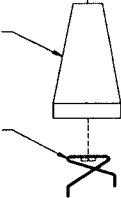
04-10346 Tilt Mechanism Assembly



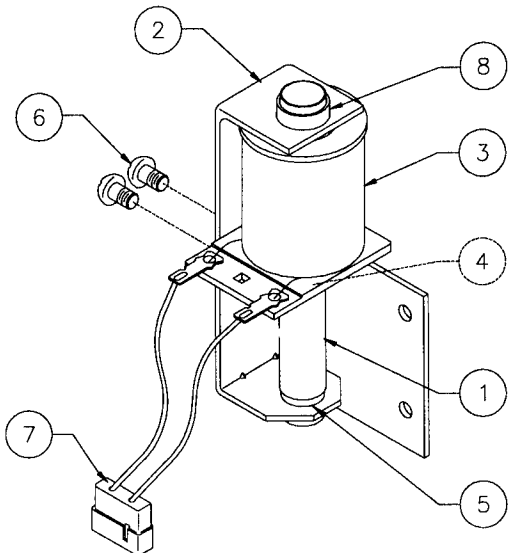
Associated Assemblies:

20-6502-A
Plumb Bob

20-10289
Fastener

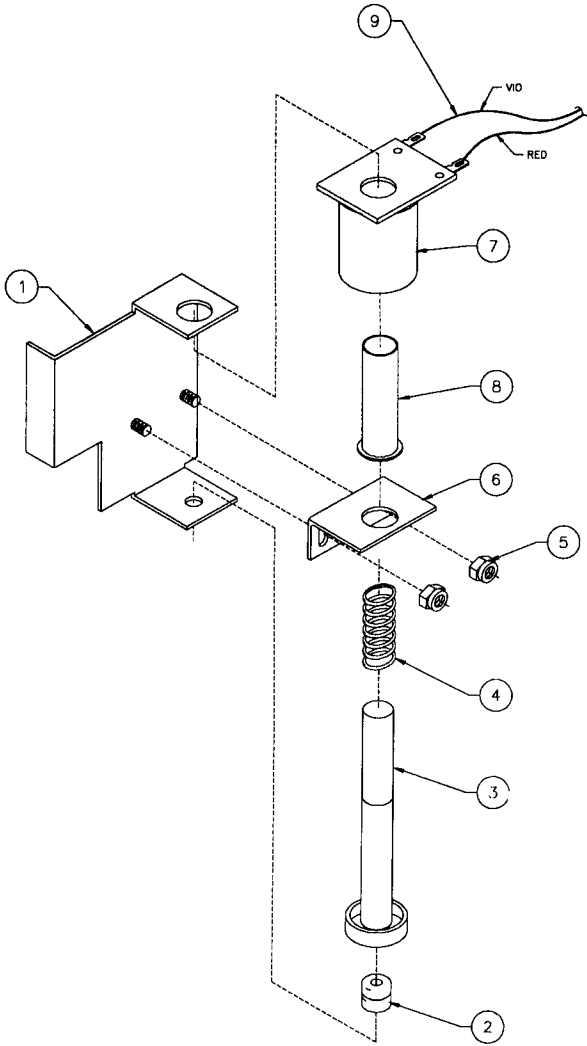


B-10686-1 Knocker Assembly



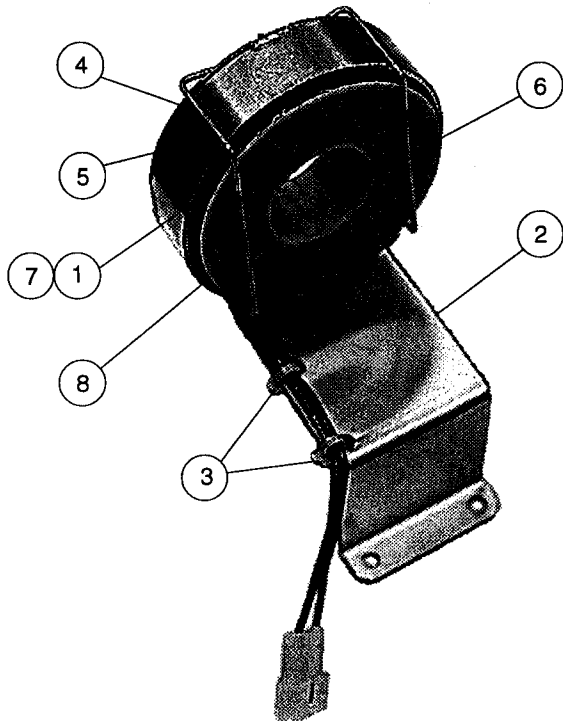
| Item | Part Number | Description |
|------|----------------|---------------------------|
| 1 | A-5387 | Coil Plunger Assembly |
| 2 | 01-11273 | Mounting Bracket Assembly |
| 3 | AE-23-800 | Coil Sub-Assembly |
| 4 | 01-8-508-T | Coil Retaining Bracket |
| 5 | 23-6420 | Rubber Grommet |
| 6 | 40008-01017-04 | Mach. Screw, 8-32 x 1/4" |
| 7 | H-11835 | Knocker Cable |
| 8 | 03-7067-5 | Coil Tubing |

A-16434-2 Kicker Assembly



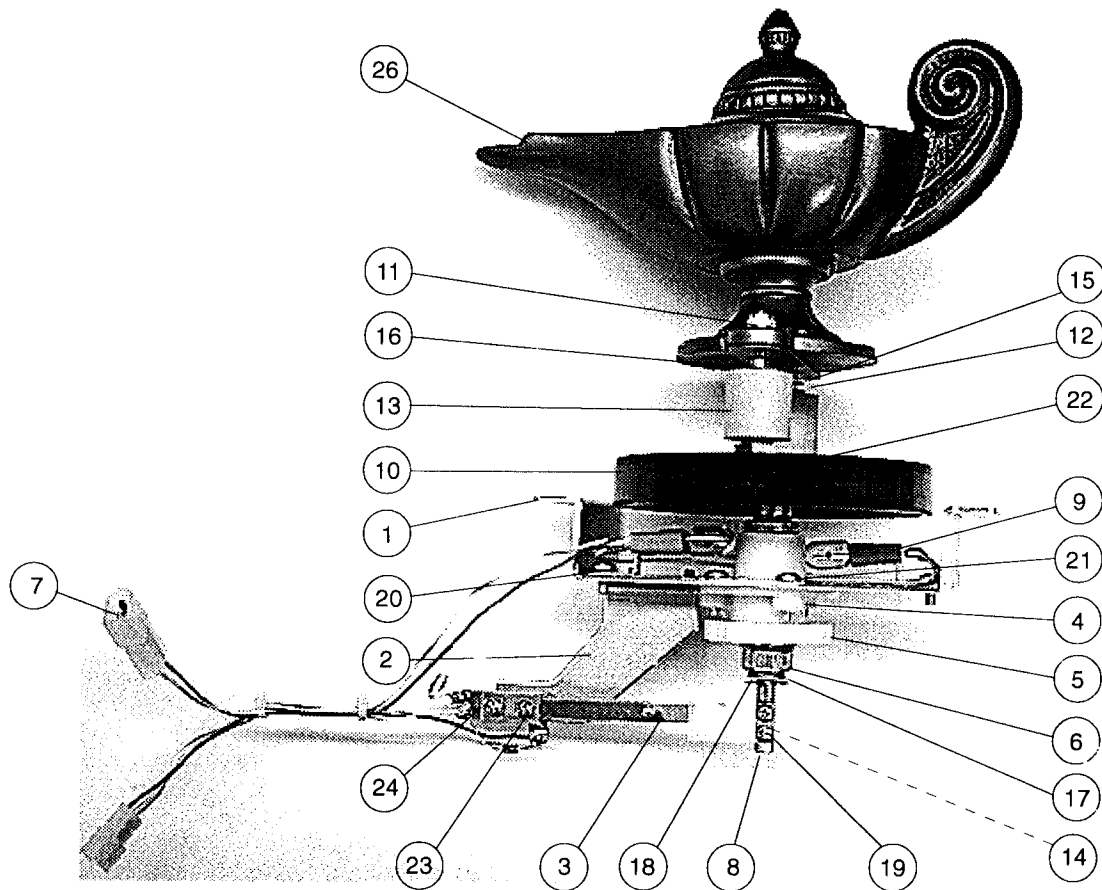
| Item | Part Number | Description |
|------|---------------|------------------------|
| 1 | A-16435 | Kicker Bracket |
| 2 | 23-6420 | Rubber Grommet |
| 3 | A-17747 | Bell Armature Assembly |
| 4 | 10-135 | Coil Plunger Spring |
| 5 | 4408-01119-00 | Nut 8-32 ESN |
| 6 | 01-9423 | Coil Bracket |
| 7 | AE-25-1000 | Coil Sub-Assembly |
| 8 | 03-7067 | Coil Tubing |
| 9 | H-19523-1 | Mini Solenoid Cable |

A-20839 Magnet Diverter Unit Assembly



| Item | Part Number | Description |
|------|---------------|-------------------------------|
| 1 | 04-10365 | Diverter Magnet Bracket |
| 2 | 01-14262 | Bracket |
| 3 | 03-9454 | Cable Tie |
| 4 | 31-2546-2 | Decal |
| 5 | 4008-01003-05 | Mach. Screw, #8-32 x 5/16" |
| 6 | 12-7331 | Magnet Wire |
| 7 | 31-2546-3 | Decal |
| 8 | 20-10179 | Magnet & Thermal Breaker Coil |

A-20636 Spinning Lamp Unit Assembly



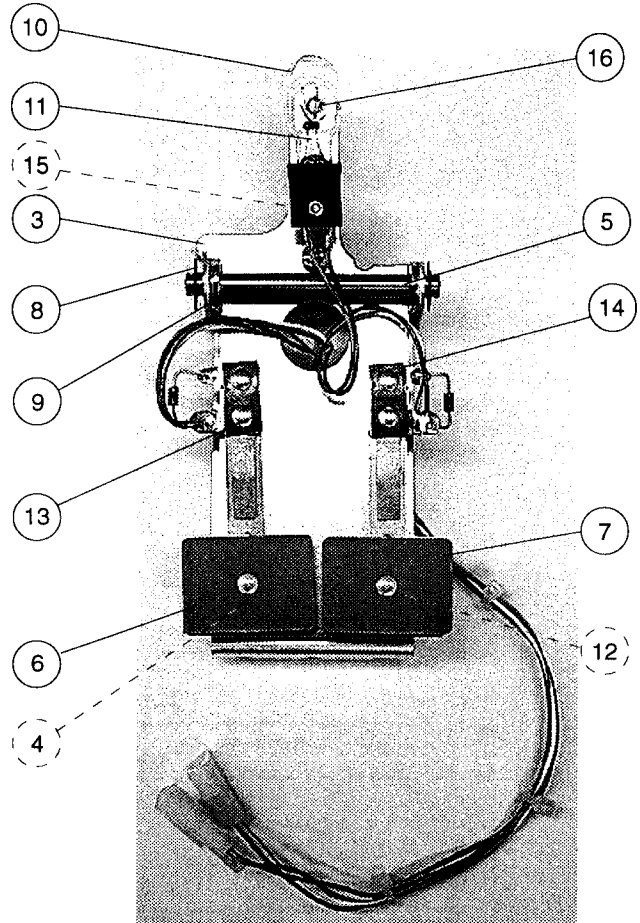
| Item | Part Number | Description | Item | Part Number | Description |
|------|-------------|-----------------------------|-----------------------------|---------------|----------------------------|
| 1 | 01-14156 | Spinning Lamp Assembly | 15 | 20-8712-18 | "E" Retaining Ring |
| 2 | 01-14157 | Spin Lamp Act. Switch | 16 | 4700-00021-00 | FW, 13/64 X 7/6 X 22ga. |
| 3 | SW-1A-206 | Spinning Lamp Switch Assy. | 17 | 4700-00072-00 | FW, 17/64 x 35/64 x 22ga. |
| 4 | 03-8347 | Gland | 18 | 20-8712-25 | "E" Reatining Ring |
| 5 | 03-8363-1 | Locking Nut | 19 | 4004-01003-04 | Mach. Screw, #4-40 x 1/4" |
| 6 | 04-10412 | Adj. Screw Assembly | 20 | 4008-01003-05 | Mach. Screw, #8-32 x 5/16" |
| 7 | H-20863 | Cable | 21 | 4108-01013-08 | Sh. Metal Screw, #8 x 1/2" |
| 8 | 04-10308 | Shaft/Bracket Assembly | 22 | 4410-01132-01 | Nut #10-32 ESN |
| 9 | A-17826 | Socket & Bulb Assembly | 23 | 4005-01003-12 | Mach. Screw, #5-40 x 3/4" |
| 10 | 03-9466 | Spinning Lamp Disk | 24 | 01-3670-1 | Switch Plate |
| 11 | 02-5233 | Post - Spinning Lamp | | | |
| 12 | 03-7301 | Rotate Bumper Insulator | | | |
| 13 | 23-6770 | Bumper | | | |
| 14 | 03-9465 | Actuator - Spin Lamp Switch | | | |
| | | | Associated Assembly: | | |
| | | | 25 | 31-2526 | Lamp |

A-20638 Genie Double Target Assembly

FRONT VIEW



REAR VIEW

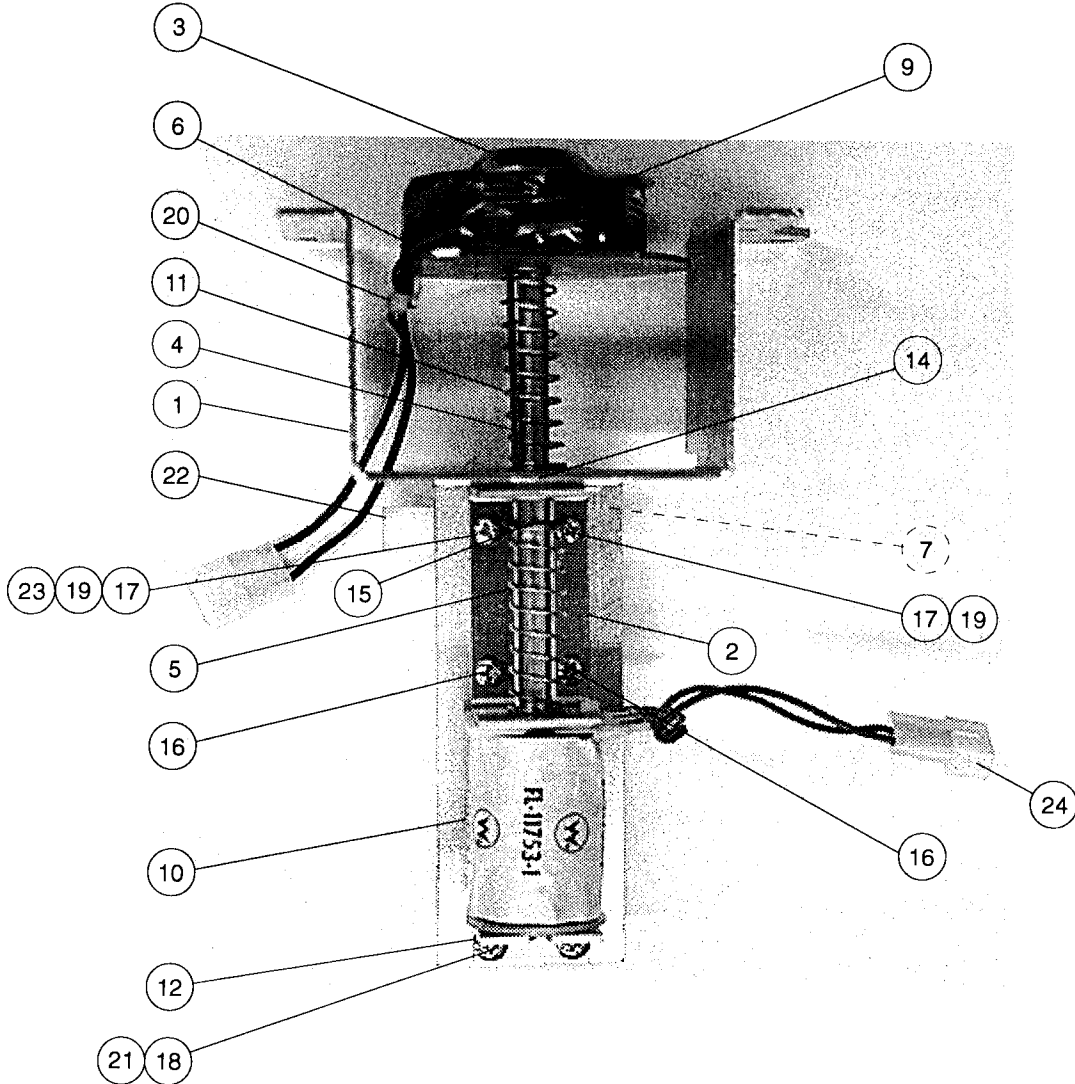


| Item | Part Number | Description |
|------|---------------|------------------------------|
| 1 | 31-2527 | Genie |
| * 2 | 01-14260 | Target Mounting Bracket |
| 3 | 04-10310 | Genie Double Target Bracket |
| 4 | 01-14261 | Weight Genie Plate |
| 5 | 02-5255 | Genie Target Shaft |
| 6 | SW-1A-207 | Genie Target Assembly, Left |
| 7 | SW-1A-208 | Genie Target Assembly, Right |
| 8 | 20-8712-25 | "E" Retaining Ring |
| 9 | 4700-00072-00 | FW, 17/64 x 1/2 x 21ga. |

| Item | Part Number | Description |
|------|---------------|---------------------------|
| 10 | A-17802 | Socket & Bulb Assembly |
| 11 | 4008-01003-06 | Mach. Screw, #8-32 x 3/8" |
| 12 | 07-6688-23N | Rivet, 1/8 x 3/8" |
| 13 | 07-6688-27 | Rivet, 1/8 x 9/16" |
| 14 | 01-3670 | Switch Plate Curved |
| 15 | 4408-01119-01 | Nut #8-32 ESN |
| 16 | 4700-00023-00 | FW, 13/64 x 5/8 x 16ga. |
| 17 | A-20862 | Cable |

* Not Shown.

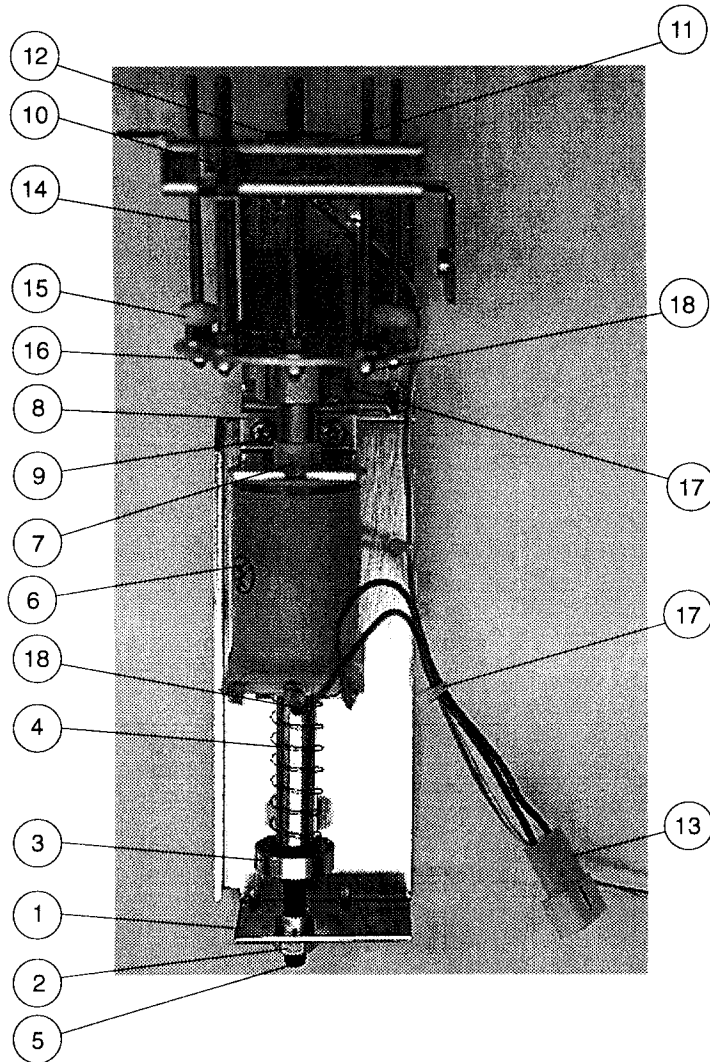
A-20644 Vanishing Magnet Assembly



| Item | Part Number | Description | Item | Part Number | Description |
|------|--------------|-----------------------|------|---------------|----------------------------|
| 1 | 04-10307 | Bracket | 13 | 03-7066-5 | Coil Tubing |
| 2 | 02-5231 | Plunger | 14 | 20-8790-2 | Nyliner |
| 3 | 04-10373 | Pole Piece | 15 | 20-8712-43 | "E" Retaining Ring |
| 4 | 02-5234 | Shaft | 16 | 4008-01003-04 | Mach. Screw, #8-32 x 1/4" |
| 5 | 01-14166 | Shaft Bracket | 17 | 4008-01003-10 | Mach. Screw, #8-32 x 5/8" |
| 6 | 01-14179 | Plate | 18 | 4010-01008-06 | Mach. Screw, #10-32 x 3/8" |
| 7 | 01-14182 | Post Bracket | 19 | 4408-01119-01 | Nut #8-32 ESN |
| *8 | 02-5251 | Guide Post | 20 | 03-9454 | Tie Wrap Nylon 4" |
| 9 | 20-10197 | Coil Magnet | 21 | 4701-00004-00 | Lockwasher #10 Split |
| 10 | FL-11753/50V | Coil, Yellow | 22 | 03-7655-12 | Clamp 3/4" |
| 11 | 10-406 | Spring, Compression | 23 | 4700-00011-00 | FW, 11/64 x 7/16 x 16ga. |
| 12 | A-10821 | Stop Bracket Assembly | 24 | H-19523-1 | Mini Solenoid Cable |

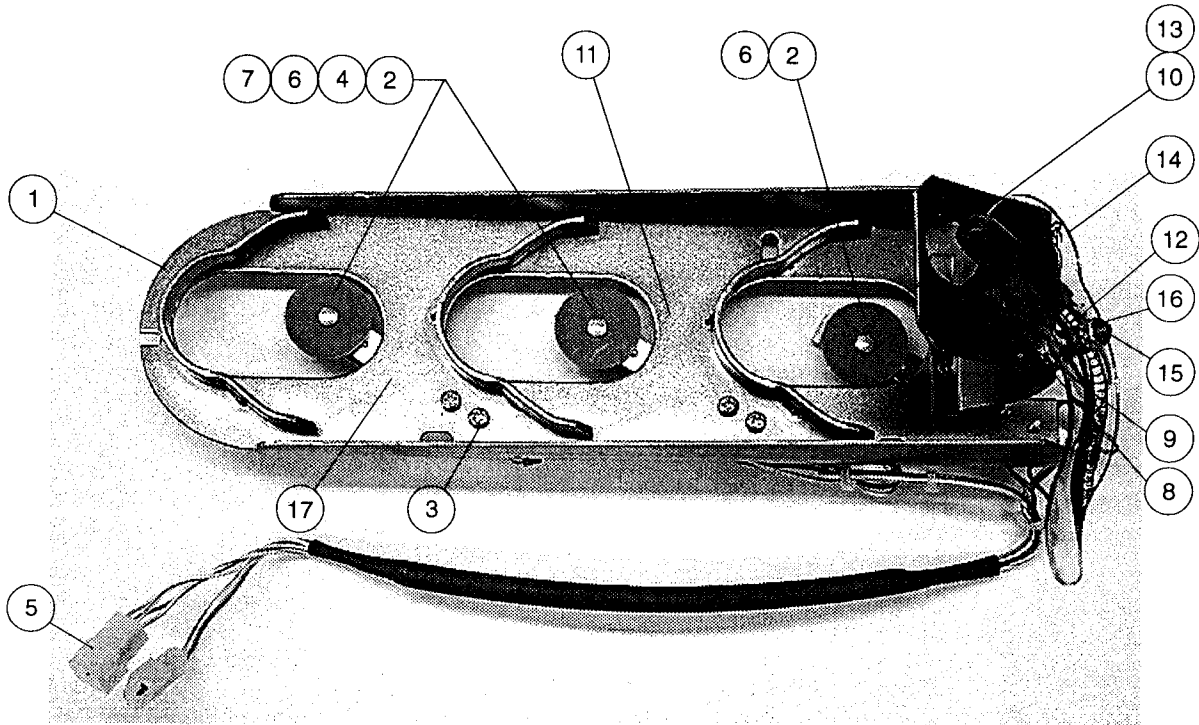
* Not Shown.

A-20693 Solenoid Bracket Assembly



| Item | Part Number | Description |
|------|---------------|-----------------------------------|
| 1 | 04-10336 | Solenoid Bracket |
| 2 | 4420-01117-00 | Hex Nut 1/4-20 |
| 3 | 04-10019 | Armature Extension |
| 4 | 10-128 | Spring |
| 5 | 4020-01196-16 | Set Screw, 1/4-20 x 1.0 Nylon Tip |
| 6 | A-20099 | Coil Assembly |
| 7 | 03-7067-6 | Coil Tubing |
| 8 | 01-7695-1 | Solenoid Bracket |
| 9 | 4008-01017-06 | Mach. Screw, #8-32 x 3/8" |
| 10 | 20-8790 | Nylined Bearing |
| 11 | 4106-01013-06 | Sh. Metal SCrew, #6-32 x 3/8" |
| 12 | A-16909 | Photo Transistor Assembly |
| 13 | H-20899.1 | Cable |
| 14 | 02-5248 | Post - Spike |
| 15 | 23-6535 | Bumper Post |
| 16 | 04-10333.2 | Washer Assembly |
| 17 | 02-5161 | Screw Pin-Scoop |
| 18 | 4406-01119-00 | Nut #6-32 ESN |
| 19 | 03-9454 | Tie Wrap Nylon 4" |

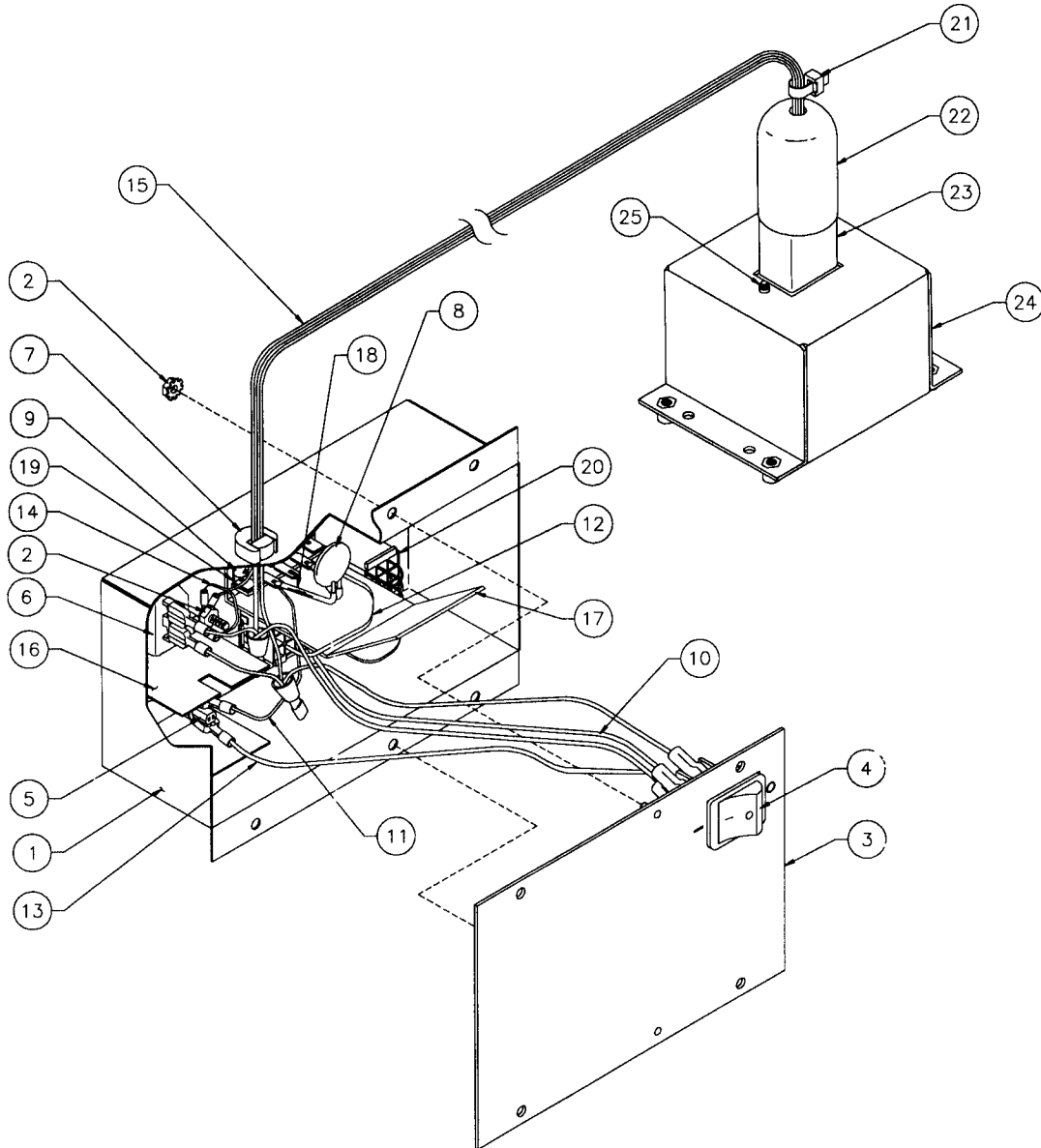
A-20692 Skill Shot Bracket Assembly



| Item | Part Number | Description | Qty. |
|------|---------------|--------------------------|------|
| 1 | 04-10335 | Skill Shot Bracket | 1 |
| 2 | SW-1A-202-15 | Standup Target Assembly | 3 |
| 3 | 4005-01003-12 | Mach. Screw, 5-40 x 3/4" | 6 |
| 4 | 01-12823 | Nut Plate | 2 |
| 5 | H-20898 | Cable Assembly | 1 |
| 6 | 01-3670 | Plate Switch Curved | 3 |
| 7 | 01-8657 | Switch Limit | 3 |
| 8 | 23-6626 | Grommet | 1 |
| 9 | 4406-01128-00 | Nut 6-32 KEPS | 1 |
| 10 | A-17826 | Socket & Bulb Assembly | 1 |
| *11 | 31-2546-5 | Decal | 1 |
| 12 | 23-6710-1 | Tubing | 2 |
| 13 | 03-8063-2 | Light Bulb Sleeve | 1 |
| 14 | 31-2545-4 | Plastic | 1 |
| 15 | 03-6047-2 | Spacer | 1 |
| 16 | 4406-01119-00 | Nut ESN | 1 |
| *17 | 31-2546-4 | Decal | 1 |

* Not Shown.

A-17540-1 Universal Power Interface Assembly



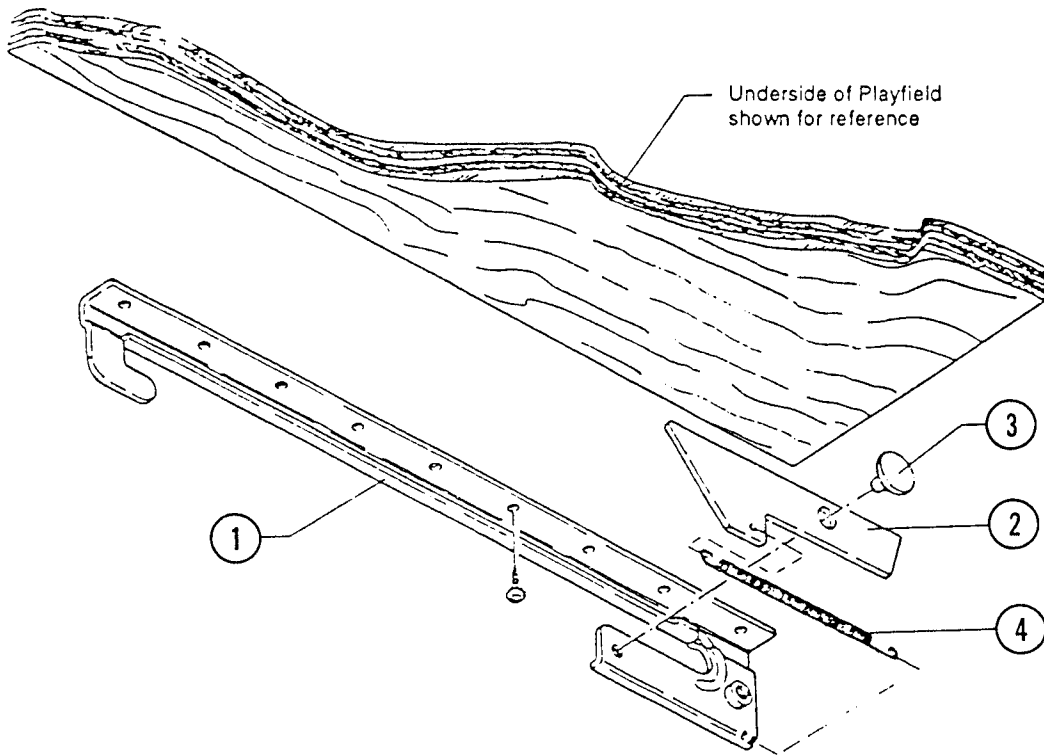
| Item | Part Number | Description | Item | Part Number | Description |
|------|---------------|----------------------------------|------|---------------|---------------------------------|
| 1 | 04-10292 | Power Control Chassis Box | 14 | H-17542 | Ground Jumper Grn/Yel Cable |
| 2 | 4406-01128-00 | Nut #6-32 KEPS (3) | 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 | 5733-14734-00 | Fuse Holder Panel (5 x 20mm) | 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 | 04-10293 | Line Filter Chassis Box |
| 12 | H-17546 | Jumper Interface Hot Black Cable | 25 | 4004-01003-05 | Mach. Screw, #4-40 x 5/16" (2) |
| 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 | | | | | | | | | | |
|------------------------|-----------------------------------|--------------------------------|-----------|-----------|-----------|--------------------------|--------------------------|----------------------------|--------------------|--------------------|---------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | H-17837-1 | H-17837-2 | H-17837-3 | H-17837-4 | 5731-09651-00 FUSE LABEL | 5730-09252-00 FUSE LABEL | | | 16-9670 FUSE 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 |
| 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 |

Playfield Slide Mechanism

(Left Assembly Shown)



A-17749.1-1 Playfield Slide Mechanism (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 |
|---|--------|--------|

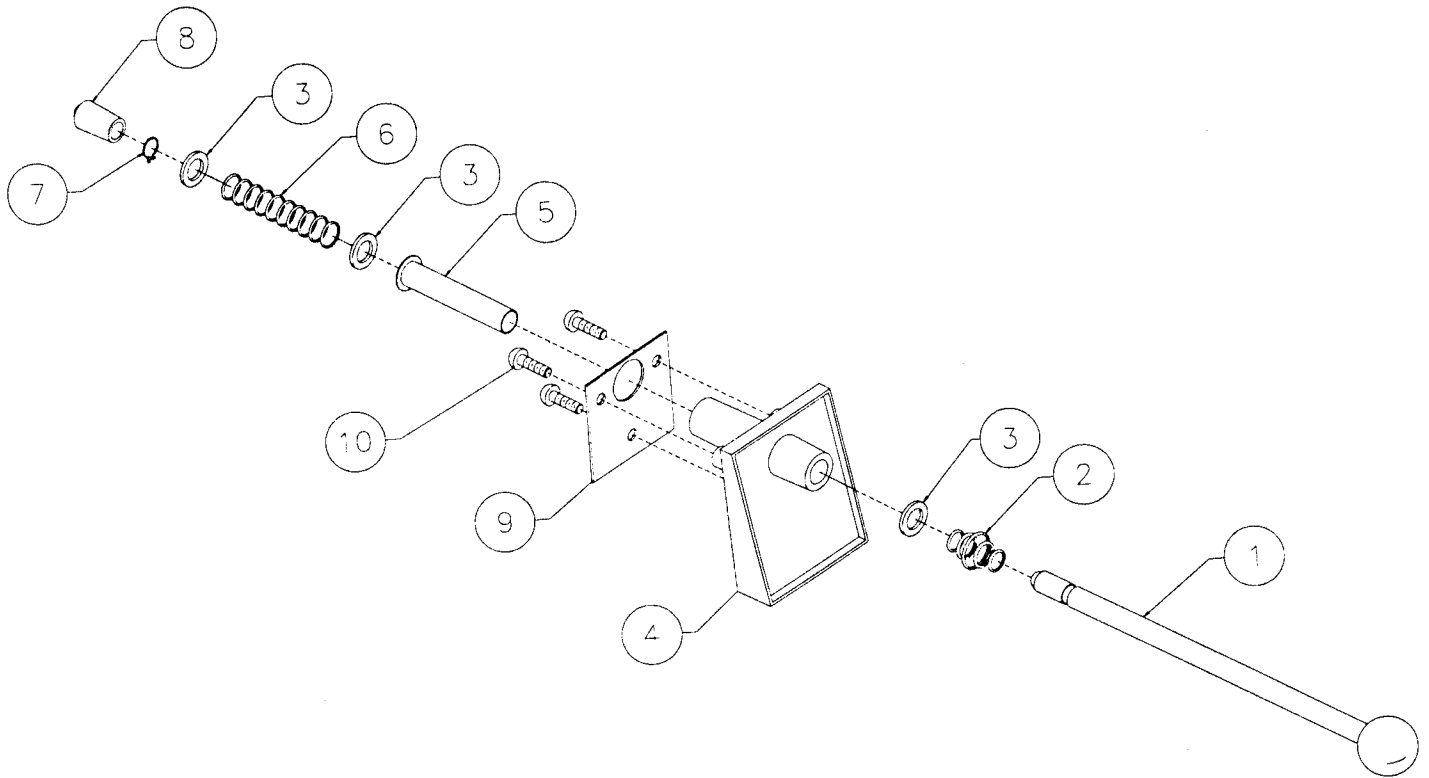
A-17749.1-2 Playfield Slide Mechanism (Right Assembly)

| 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-17730-3 Ball Shooter Rod Assembly



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

Associated Assemblies:

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

Upper Playfield Parts

| Item No. | Part No. | Description | Item No. | Part No. | Description |
|----------|---------------|----------------------------------|----------|---------------|--------------------------------|
| 1 | A-17730-3 | Ball Shooter w/ Silver Knob | 30 | A-20638 | Genie Double Target |
| | 23-6327 | Ball Shooter Rubber Tip | 31 | A-20642 | Loop Post Diverter |
| | 20-9927-1 | Silver Knob with Shaft | | A-16636 | Diverter Plunger Assembly |
| 2 | A-20842 | Shooter Lane Switch & Bracket | 32 | A-20644 | Vanishing Magnet |
| | 01-14004 | Shooter Switch Bracket | | 04-10373 | Magnet Pole Piece |
| 3 | 20-9691 | Level | | 20-10197 | Coil Magnet & Brake-small hole |
| | 03-8633 | Mount | 33 | A-18017-6 | Yellow Standup Mini Target |
| 4 | A-14876-R-3 | Flipper Coil Assembly | 34 | A-18530-6 | Yellow Standup Target |
| | 20-10110-5 | Flipper Shaft & White Bat | 35 | A-20810 | Magnet Wire Ramp |
| 5 | A-20903 | Rollover Button Assembly | 36 | B-9362-L-3 | Coil & Bracket Assembly |
| | A-16443 | Switch & Diode Assembly | 37 | A-20628 | Magnet Ramp |
| | 03-9103.1 | Rollover Button | | A-20879 | Bed of Nails |
| | A-17806 | Socket & Bulb | | 01-14268 | End Ramp Guard |
| 6 | A-20878-1 | Flipper Guide-Right | | 03-9255-3 | Spacer #8 x .541 |
| | 03-9216-18 | Violet Flipper Return | 38 | A-20846-9 | Red Standup Target |
| | 03-9255-3 | Spacer #8 x .541 | 39 | A-20499-9 | Red Standup Target |
| 7 | A-20694 | Guide Assembly | 40 | A-20695 | Bracket & Opto Assembly |
| 8 | B-9362-L-3 | Coil & Bracket Assembly | 41 | A-20693 | Spike Assembly |
| 9 | A-20877-1 | Scimitar Plastic | | A-16909 | Photo Transistor PCB Assembly |
| 10 | A-20627 | Skill Ramp | | 02-5248 | Spike Assembly |
| | 01-14268 | End Ramp Guard | | 04-10333.1 | Spike Plate Sub-assembly |
| | 01-14267.1 | Skill Ramp Guard | 42 | B-9362-L-3 | Coil & Bracket Assembly |
| 11 | A-20693 | Spike Assembly | 43 | A-20878-2 | Flipper Guide-Left |
| | A-16909 | Photo Transistor PCB Assembly | | 03-9216-18 | Violet Flipper Return |
| | 02-5248 | Spike Post | | 03-9255-3 | Spacer #8 x .541 |
| | 04-10333.1 | Spike Plate Sub-assembly | 44 | A-20903 | Rollover Button Assembly |
| 12 | A-20695-1 | Bracket & Opto Assembly | | A-16443 | Switch & Diode Assembly |
| 13 | 04-10337 | Welded Sword Assembly | | 03-9103.1 | Rollover Button |
| 14 | A-18530-6 | Yellow Standup Target | | A-17806 | Socket & Bulb |
| 15 | A-18017-6 | Yellow Standup Mini Target | 45 | A-15849-L-2 | Flipper Coil Assembly |
| 16 | A-20691 | Loop Sub-Assembly | | 20-10110-5 | Flipper Shaft w/ White Bat |
| | 5647-12693-13 | Switch | 46 | A-13204-50047 | Screened Bottom Arch |
| | 5070-09054-00 | 1N4004 Diode | 47 | 12-7210 | Rebound Wires |
| 17 | A-16434-2 | Kicker Assembly | 48 | 12-7315 | Wire Ball Guide #7 |
| 18 | A-20636 | Spinning Lamp Assembly | 49 | 12-7316 | Wire Ball Guide #8 |
| | A-17826 | Socket & Bulb | 50 | 12-7317 | Wire Ball Guide #9 |
| | 01-14157 | Actuator Bracket | 51 | 12-7318 | Wire Ball Guide #10 |
| 19 | A-20692 | Skill Shot Assembly | 52 | 12-7319 | Wire Ball Guide #11 |
| | SW-1A-202-15 | Stationary Target Assembly | 53 | 12-7326 | Wire Ball Guide #12 |
| | A-17826 | Socket & Bulb | 54 | 12-7340 | Wire Ball Guide |
| | 03-8063-2 | Green Bulb Sleeve | 55 | 01-14148 | Ball Guide #1 |
| 20 | A-20499-9 | Red Standup Target | 56 | 01-14221 | Ball Guide #14 |
| 21 | B-9362-L-3 | Coil & Bracket Assembly | 57 | 01-14222 | Ball Guide #15 |
| 22 | A-20846-9 | Red Standup Target | 58 | 01-14223 | Ball Guide #16 |
| 23 | A-20626 | Swirl Ramp | 59 | 04-10297 | Ball Guide #2 |
| | 01-14266 | Ramp Flap | 60 | 04-10300 | Ball Guide #5 |
| | A-20847 | Ball Gate | 61 | 04-10301 | Ball Guide #6 |
| | 03-8365-13 | Post #8 -Clear | | | |
| | A-20811 | Ramp Guard | | | |
| | A-20914 | Plunger & Ball Guide Assembly | | | |
| 24 | A-18530-6 | Yellow Standup Target | | | |
| 25 | A-20643 | Ball Guide Diverter Assembly | | | |
| | 02-5235 | Diverter Shaft | | | |
| | 01-14163 | Diverter Ball Guide | | | |
| | 01-14162 | Diverter Flap | | | |
| 26 | B-9414-7 | Jet Bumper Assembly | | | |
| | B-12030-2 | Switch Assembly | | | |
| | A-9415-2 | Coil Assembly | | | |
| 27 | A-17932-2 | Disappearing Post Assembly | | | |
| 28 | A-20798 | Back Panel | | | |
| | 03-8171-26 | Green Twist Lock Mini Dome | | | |
| | 03-8171-16 | Yellow Twist Lock Mini Dome | | | |
| 29 | A-20839 | Magnet Diverter Unit | | | |
| | 20-10179 | Coil Magnet & Brake-large hole | | | |
| | 12-7331 | Magnet Wire | | | |
| | 01-14262 | Diverter Magnet Mounting Bracket | | | |

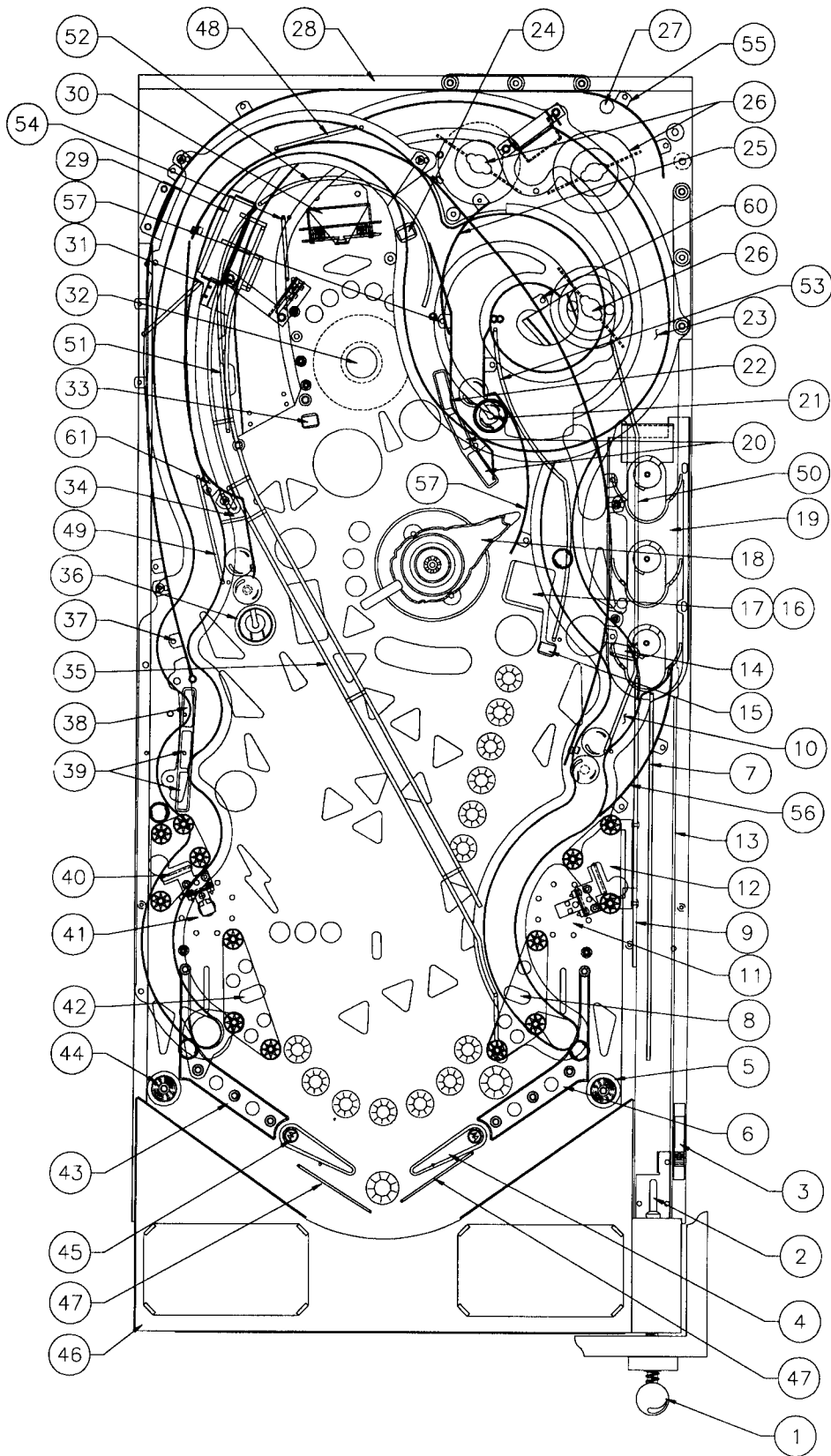
Not Shown:

| | |
|---------------|-----------------------------|
| 03-9488-1 | *Full Playfield Mylar |
| 03-9488-2 | Jet Bumper Area Mylar |
| 03-9488-3 | Drop Area Mylar (2) |
| 03-9488-4 | Drop Area Mylar (2) |
| 12-7210 | Rebound Wires |
| 20-6500 | **Steel Balls (6) |
| 31-1357-50047 | Backglass Translight |
| 36-50047 | Screened Hardcoat Playfield |

*The *Tales of the Arabian Nights* hardcoat playfield does not require a full mylar. However, mylars can be purchased through your local Williams Distributor.

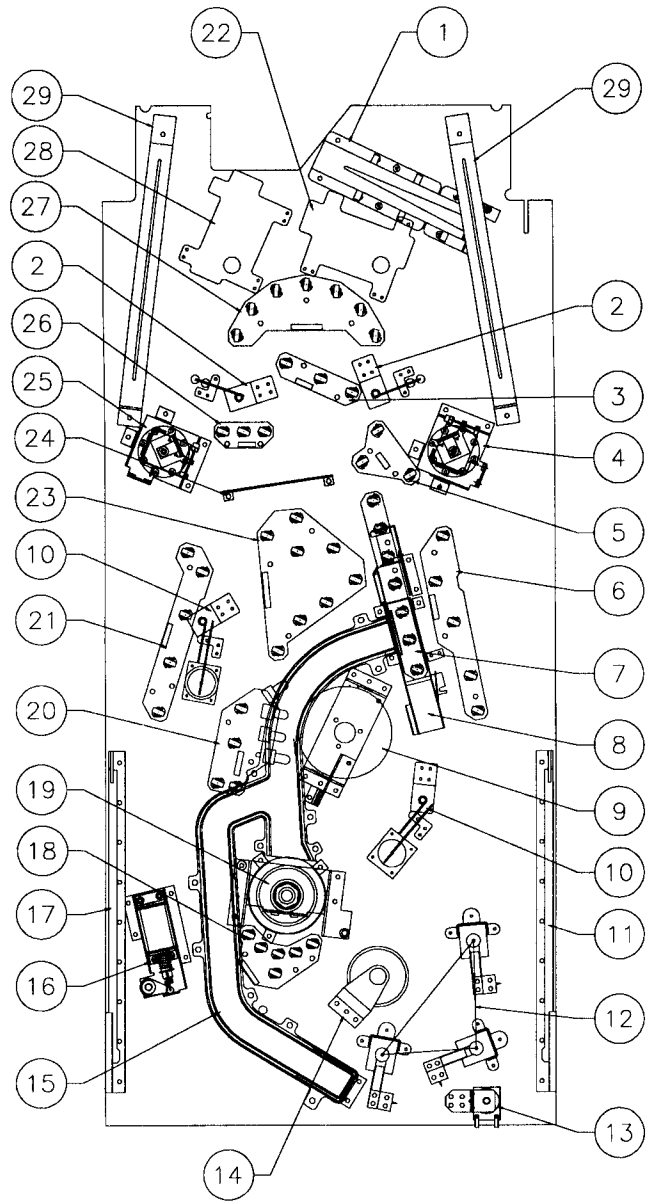
**There are four ball-in-play balls and two captive balls.

Upper Playfield Parts Locations



Lower Playfield Parts

| Item | Part Number | Description |
|------|-------------|---------------------------------|
| 1 | A-19963-1 | Ball Trough Assembly |
| 2 | B-9362-L-3 | Coil & Bracket Assembly (2) |
| | *A-17811 | Kicker (Slingshot) Assy. (2) |
| 3 | A-20742 | 3-Lamp Board Assembly |
| 4 | A-20695-1 | Bracket & Opto Board Assy. |
| 5 | A-20749 | 3-Lamp Board Assembly |
| 6 | A-20743 | 5-Lamp Board Assembly |
| 7 | A-16434-2 | Kicker Assembly |
| 8 | A-20691 | Loop Sub-Assembly |
| 9 | A-20636 | Spinning Lamp Assembly |
| 10 | B-9362-L-3 | Coil & Bracket Assembly (2) |
| | *B-9361-R-1 | Ball Eject Assembly (2) |
| 11 | A-17749.1-2 | Pfkd. Slide Mechanism Assy., R. |
| 12 | A-9415-2 | Jet Bumper Coil Assembly (3) |
| 13 | A-17932-1 | Disappearing Post Assembly |
| 14 | A-18157 | Magnet Bracket Assembly |
| 15 | A-20812 | Bottom Trough Assembly |
| 16 | A-20642 | Diverter Assembly |
| 17 | A-17749.1-1 | Pfkd. Slide Mechanism Assy., L. |
| 18 | A-20744 | 7-Lamp PCB Assembly |
| 19 | A-20644 | Vanishing Magnet Assembly |
| 20 | A-20747 | 8-Lamp PCB Assembly |
| 21 | A-20746 | 5-Lamp PCB Assembly |
| 22 | A-14876-R-3 | Flipper Assembly, Right |
| 23 | A-20745 | 8-Lamp PCB Assembly |
| 24 | A-15576 | 7-Switch Opto PCB Assy. |
| 25 | A-20693 | Spike Assembly |
| 26 | A-20748 | 3-Lamp Board |
| 27 | A-20750 | 7-Lamp PCB Assembly |
| 28 | A-15849-L-2 | Flipper Assembly, Left |
| 29 | 01-11781 | Support Bracket (2) |



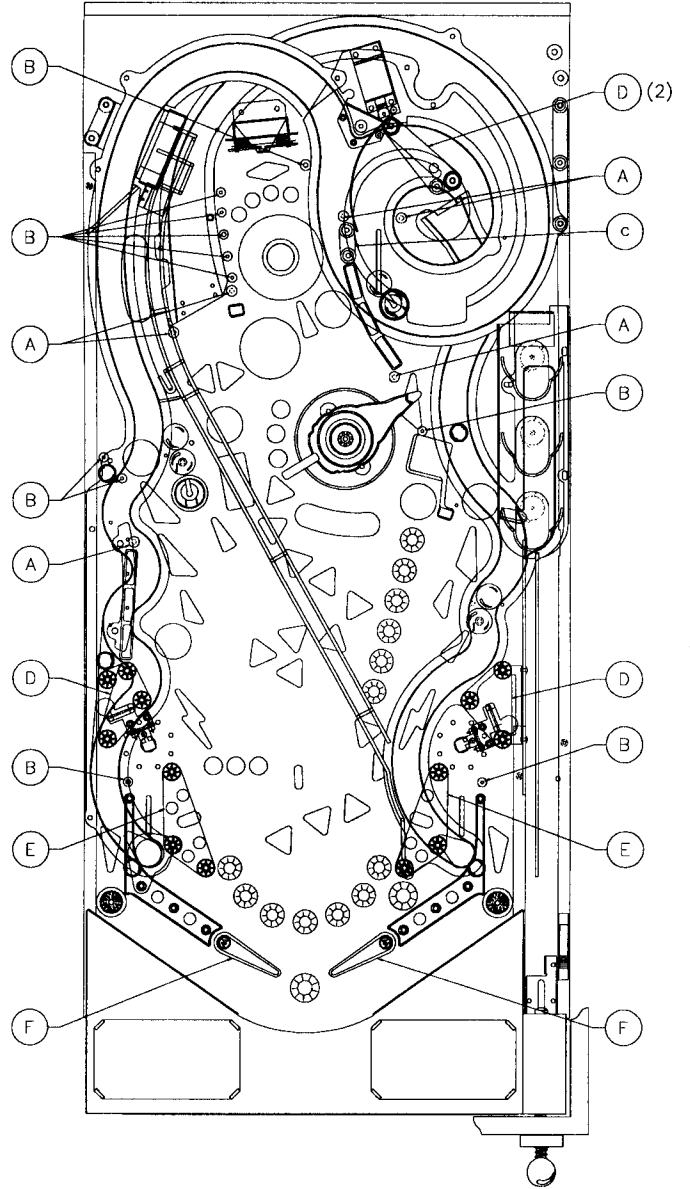
Underside of playfield, viewed in raised position.

NOTE:

* Item located on **top of playfield.**

Rubber Rings

| Item No. | Part No. | Description | Quantity |
|----------|------------|------------------------|----------|
| A | 23-6556 | Black Bumper Sleeve | 6 |
| B | 23-6694-1 | Black Rubber Grommet | 11 |
| C | 23-6694-5 | Black Rubber Ring ¾" | 1 |
| D | 23-6694-9 | Black Rubber Ring 2" | 4 |
| E | 23-6694-10 | Black Rubber Ring 2½" | 2 |
| F | 23-6695 | Black Flipper Ring 1½" | 2 |



LAMP MATRIX

Yellow (B+) → Red

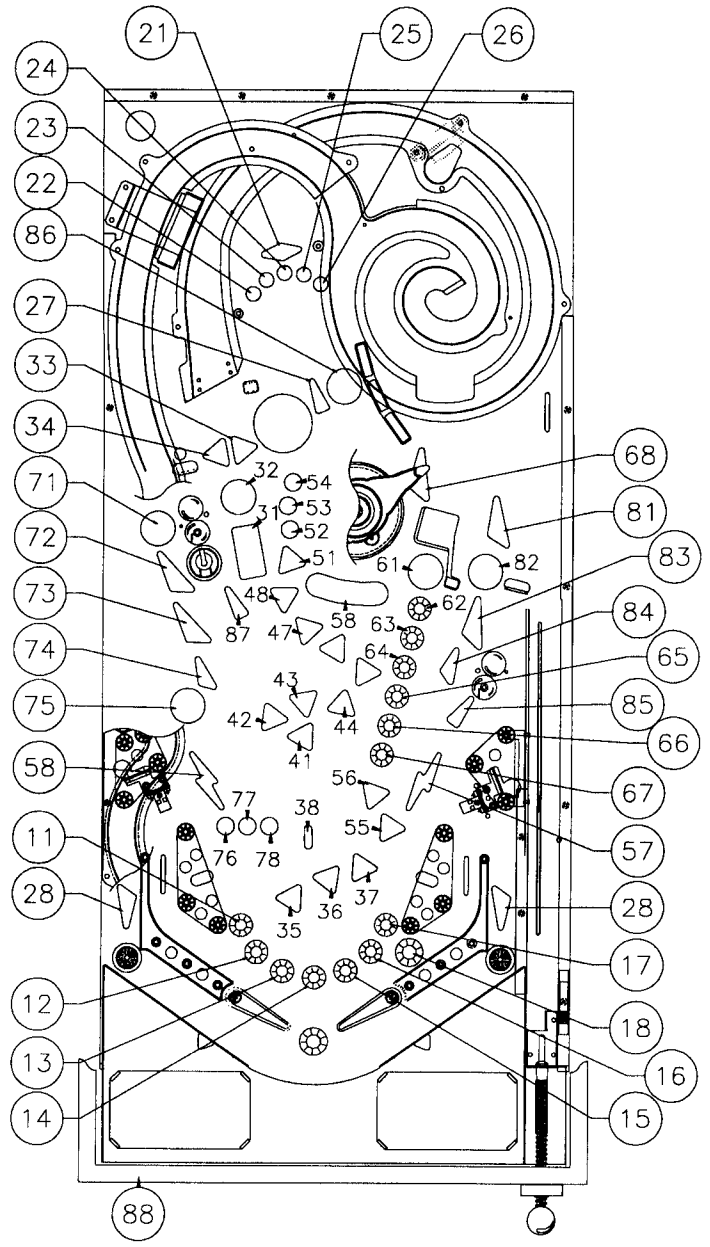
| Column \ Row | 1 Yellow-Brown J121-1 Q96 | 2 Yellow-Red J121-2 Q100 | 3 Yellow-Orange J121-3 Q95 | 4 Yellow-Black J121-4 Q99 | 5 Yellow-Green J121-5 Q94 | 6 Yellow-Blue J121-6 Q98 | 7 Yellow-Violet J121-7 Q93 | 8 Yellow-Gray J121-9 Q97 |
|--------------------------------|------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|
| 1 Red-Brown J125-1 Q104 | JEWEL 1 (LEFT) 11 | JACKPOT 21 | MAGIC CARPET 31 | SMOKE 6 41 | SMOKE 14 (TOP) 51 | MAKE A WISH 61 | ACTION 2 71 | EXTRA BALL 81 |
| 2 Red-Black J125-2 Q108 | JEWEL 2 12 | (G)ENIE 22 | ACTION 3 32 | SMOKE 7 42 | LAMP-15 52 | (B)AZAAR 62 | LEFT LOCK 72 | ACTION 5 82 |
| 3 Red-Orange J125-4 Q103 | JEWEL 3 13 | G(E)NIE 23 | RAMP ARROW RIGHT 33 | SMOKE 8 43 | LAMP-30 53 | B(A)ZAAR 63 | HAREM ADVANCE 73 | RIGHT LOCK 83 |
| 4 Red-Yellow J125-5 Q107 | JEWEL 4 14 | GE(N)IE 24 | RAMP ARROW LEFT 34 | SMOKE 9 44 | LAMP-60 54 | BA(Z)AAR 64 | LEFT TIGER LOOP 74 | RIGHT TIGER LOOP 84 |
| 5 Red-Green J125-6 Q102 | JEWEL 5 15 | GEN(I)E 25 | SMOKE 1 (BOTTOM) 35 | SMOKE 10 45 | SMOKE 4 55 | BAZ(A)AR 65 | ACTION 1 75 | CAPTIVE BALL RIGHT 85 |
| 6 Red-Blue J125-7 Q106 | JEWEL 6 16 | GENI(E) 26 | SMOKE 2 36 | SMOKE 11 46 | SMOKE 5 56 | BAZA(A)R 66 | WISH 1 76 | ACTION 4 86 |
| 7 Red-Violet J125-8 Q101 | JEWEL 7 (RIGHT) 17 | MULTIBALL 27 | SMOKE 3 37 | SMOKE 12 47 | SHOOT STAR RIGHT 57 | BAZAA(R) 67 | WISH 2 77 | CAPTIVE BALL LEFT 87 |
| 8 Red-Gray J125-9 Q105 | SHOOT AGAIN 18 | OUTLANE SPECIAL 28 | AMULET 38 | SMOKE 13 48 | SHOOT STAR LEFT 58 | CENTER LOCK 68 | WISH 3 78 | START BUTTON 88 |

J1XX = Power Driver Board


Lamp Locations

| Item No. | Bulb No. | Lamp Assy No. | Description |
|----------|----------|---------------|---------------------|
| 11 | 24-8768 | A-20750 | Jewel 1 (left) |
| 12 | 24-8768 | A-20750 | Jewel 2 |
| 13 | 24-8768 | A-20750 | Jewel 3 |
| 14 | 24-8768 | A-20750 | Jewel 4 |
| 15 | 24-8768 | A-20750 | Jewel 5 |
| 16 | 24-8768 | A-20750 | Jewel 6 |
| 17 | 24-8768 | A-20750 | Jewel 7 (right) |
| 18 | 24-6549 | A-17835 | Shoot Again |
| 21 | 24-8768 | A-20741 | Jackpot |
| 22 | 24-8768 | A-20741 | (G)enie |
| 23 | 24-8768 | A-20741 | G(E)nie |
| 24 | 24-8768 | A-20741 | Ge(N)ie |
| 25 | 24-8768 | A-20741 | Gen(I)e |
| 26 | 24-8768 | A-20741 | Geni(E) |
| 27 | 24-6549 | A-17807 | Multiball |
| 28 | 24-6549 | A-17835 | Outlane Special (2) |
| 31 | 24-8768 | A-20747 | Magic Carpet |
| 32 | 24-8768 | A-20747 | Action 3 |
| 33 | 24-8768 | A-20747 | Ramp Arrow Right |
| 34 | 24-8768 | A-20747 | Ramp Arrow Left |
| 35 | 24-8768 | A-20742 | Smoke 1 (bottom) |
| 36 | 24-8768 | A-20742 | Smoke 2 |
| 37 | 24-8768 | A-20742 | Smoke 3 |
| 38 | 24-6549 | A-17807 | Amulet |
| 41 | 24-8768 | A-20745 | Smoke 6 |
| 42 | 24-8768 | A-20745 | Smoke 7 |
| 43 | 24-8768 | A-20745 | Smoke 8 |
| 44 | 24-8768 | A-20745 | Smoke 9 |
| 45 | 24-8768 | A-20745 | Smoke 10 |
| 46 | 24-8768 | A-20745 | Smoke 11 |
| 47 | 24-8768 | A-20745 | Smoke 12 |
| 48 | 24-8768 | A-20745 | Smoke 13 |
| 51 | 24-8768 | A-20747 | Smoke 14 (top) |
| 52 | 24-8768 | A-20747 | Lamp 15 |
| 53 | 24-8768 | A-20747 | Lamp 30 |
| 54 | 24-8768 | A-20747 | Lamp 60 |
| 55 | 24-8768 | A-20749 | Smoke 4 |
| 56 | 24-8768 | A-20749 | Smoke 5 |
| 57 | 24-8768 | A-20749 | Shoot Star Right |
| 58 | 24-6549 | A-17807 | Shoot Star Left |
| 61 | 24-8768 | A-20744 | Make A Wish |
| 62 | 24-8768 | A-20744 | (B)azaar |
| 63 | 24-8768 | A-20744 | B(A)azaar |
| 64 | 24-8768 | A-20744 | Ba(Z)aar |
| 65 | 24-8768 | A-20744 | Baz(A)ar |
| 66 | 24-8768 | A-20744 | Baza(A)r |
| 67 | 24-8768 | A-20744 | Bazaa(R) |
| 68 | 24-6549 | A-17835 | Center Lock |
| 71 | 24-8768 | A-20746 | Action 2 |
| 72 | 24-8768 | A-20746 | Left Lock |
| 73 | 24-8768 | A-20746 | Harem Advance |
| 74 | 24-8768 | A-20746 | Left Tiger Loop |
| 75 | 24-8768 | A-20746 | Action 1 |
| 76 | 24-8768 | A-20748 | Wish 1 |
| 77 | 24-8768 | A-20748 | Wish 2 |
| 78 | 24-8768 | A-20748 | Wish 3 |
| 81 | 24-8768 | A-20743 | Extra Ball |
| 82 | 24-8768 | A-20743 | Action 5 |
| 83 | 24-8768 | A-20743 | Right Lock |
| 84 | 24-8768 | A-20743 | Right Tiger Loop |
| 85 | 24-8768 | A-20743 | Captive Ball Right |
| 86 | 24-6549 | A-17835 | Action 4 |
| 87 | 24-6549 | A-17835 | Captive Ball Left |
| 88 | ----- | 20-9663-1 | Start Button |

24-6549 = #44 Bulb 24-8768 = #555



SWITCH MATRIX

White  Green

| Dedicated Grounded Switches | Column | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Flipper Grounded Switches |
|--|---|---------------------------------|--------------------------------------|----------------------------------|------------------------------------|-----------------------------------|--------------------------------|----------------------------------|--------------------------------|---|
| | Row | Green-Brown J206-1 U20-18 | Green-Red J206-2 U20-17 | Green-Orange J206-3 U20-16 | Green-Yellow J206-4 U20-15 | Green-Black J206-5 U20-14 | Green-Blue J206-6 U20-13 | Green-Violet J206-7 U20-12 | Green-Gray J206-9 U20-11 | |
| Orange-Brown J205-1 Left Coin Chute U17-5 D1 | 1 White-Brown J208-1 U18-11 | HAREM PASSAGE 11 | SLAM TILT 21 | TROUGH EJECT 31 | RAMP MADE LEFT 41 | LEFT SLING 51 | LEFT STANDUPS 61 | NOT USED 71 | NOT USED 81 | Black-Green J208-13 Lower Right Flipper E.O.S. F1 |
| Orange-Red J205-2 Center Coin Chute U17-7 D2 | 2 White-Red J208-2 U18-9 | VANISH TUNNEL 12 | COIN DOOR CLOSED 22 | TROUGH BALL 1 32 | GENIE TARGET 42 | RIGHT SLING 52 | RIGHT STANDUPS 62 | NOT USED 72 | NOT USED 82 | Blue-Violet J212-12 Lower Right Flipper Opto F2 |
| Orange-Black J205-3 Right Coin Chute U17-11 D3 | 3 White-Orange J208-3 U18-5 | START BUTTON 13 | GENIE STANDUP TARGET 23 | TROUGH BALL 2 33 | LEFT LOOP 43 | LEFT JET 53 | TOP SKILL 63 | NOT USED 73 | NOT USED 83 | Black-Blue J208-12 Lower Left Flipper E.O.S. F3 |
| Orange-Yellow J205-4 4th Coin Chute U17-9 D4 | 4 White-Yellow J208-4 U18-7 | PLUMB BOB TILT 14 | ALWAYS CLOSED 24 | TROUGH BALL 3 34 | INNER LOOP LEFT 44 | RIGHT JET 54 | MIDDLE SKILL 64 | NOT USED 74 | NOT USED 84 | Blue-Gray J212-11 Lower Left Flipper Opto F4 |
| Orange-Green J205-6 U16-9 Normal Test Function Function Srv Crdts Escape D5 | 5 White-Green J208-5 U19-11 | RAMP ENTER 15 | BAZAAR EJECT 25 | TROUGH BALL 4 35 | INNER LOOP RIGHT 45 | MIDDLE JET 55 | BOTTOM SKILL 65 | NOT USED 75 | NOT USED 85 | Black-Violet J208-11 Upper Right Flipper E.O.S. F5 |
| Orange-Blue J205-7 U16-11 Normal Test Function Function Volume Dn Down D6 | 6 White-Blue U208-7 U19-9 | LEFT OUTLANE 16 | LEFT INLANE 26 | LEFT CAGE OPTO 36 | MINI STANDUPS 46 | LAMP SPIN CCW 56 | LOCK 1 (BOTTOM) 66 | NOT USED 76 | NOT USED 86 | Black-Yellow J212-10 Upper Right Flipper Opto F6 |
| Orange-Violet J205-8 U16-7 Normal Test Function Function Volume Up Up D7 | 7 White-Violet J208-8 U19-5 | RIGHT INLANE 17 | RIGHT OUTLANE 27 | RIGHT CAGE OPTO 37 | RAMP MADE RIGHT 47 | LAMP SPIN CW 57 | LOCK 2 (MIDDLE) 67 | NOT USED 77 | NOT USED 87 | Black-Gray J208-10 Upper Left Flipper E.O.S. F7 |
| Orange-Gray J205-9 U16-5 Normal Test Function Function Begin Test Enter D8 | 8 White-Gray J208-9 U19-7 | BALL SHOOTER 18 | LEFT WIRE MAKE 28 | LEFT EJECT 38 | RIGHT CAPTIVE BALL 48 | LEFT CAPTIVE BALL 58 | LOCK 3 (TOP) 68 | NOT USED 78 | NOT USED 88 | Black-Blue J212-9 Upper Left Flipper Opto F8 |

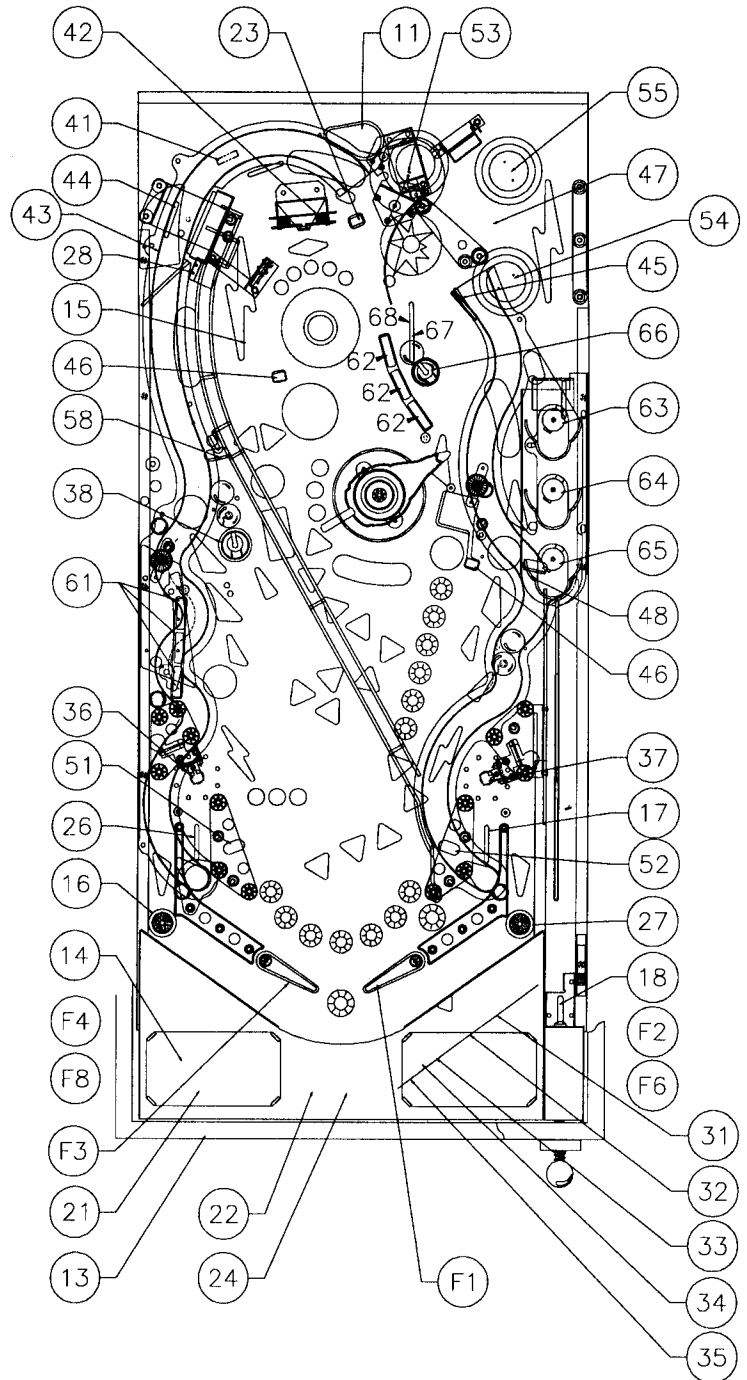
J2XX = CPU BOARD  = OPTO, TYPICALLY CLOSED

Switch Locations

| Item No. | Switch No. | Description |
|----------|------------------------------|-----------------------------|
| F1 | SW-1A-194 | Lower Right Flipper E.O.S. |
| F2 | A-17316 | Lower Right Flipper Cabinet |
| F3 | SW-1A-194 | Lower Left Flipper E.O.S. |
| F4 | A-17316 | Lower Left Flipper Cabinet |
| F5 | Not Used | Upper Right Flipper E.O.S. |
| F6 | Not Used | Upper Right Flipper Cabinet |
| F7 | Not Used | Upper Left Flipper E.O.S. |
| F8 | Not Used | Upper Left Flipper Cabinet |
| 11 | A-12238 | Harem Passage |
| 12 | A-12238 | Vanish Tunnel |
| 13 | 20-9663-1 | Start Button |
| 14 | 04-10346 | Plumb Bob Tilt* |
| 15 | 5647-12693-36 | Ramp Enter |
| 16 | A-16443 | Left Outlane |
| 17 | A-17813 | Right Inlane |
| 18 | A-20842 | Ball Shooter |
| 21 | A-17238 | Slam Tilt* |
| 22 | 5643-09268-00 | Coin Door Closed* |
| 23 | A-18530-6 | Genie Standup |
| 24 | 5643-09112-00 | Always Closed* |
| 25 | 5647-12693-13 | Bazaar Eject |
| 26 | A-17813-1 | Left Inlane |
| 27 | A-16443 | Right Outlane |
| 28 | 5647-12693-21 | Left Wire Make |
| 31 | A-18617-1 (LED) | Trough Eject |
| | A-18618-1 (photo transistor) | |
| 32 | A-18617-1 (LED) | Trough Ball 1 |
| | A-18618-1 (photo transistor) | |
| 33 | A-18617-1 (LED) | Trough Ball 2 |
| | A-18618-1 (photo transistor) | |
| 34 | A-18617-1 (LED) | Trough Ball 3 |
| | A-18618-1 (photo transistor) | |
| 35 | A-18617-1 (LED) | Trough Ball 4 |
| | A-18618-1 (photo transistor) | |
| 36 | A-16908 (LED) | Left Cage Opto |
| | A-16909 (photo transistor) | |
| 37 | A-16908 (LED) | Right Cage Opto |
| | A-16909 (photo transistor) | |
| 38 | A-17985-R | Left Eject |
| 41 | A-12238 | Ramp Made Left |
| 42 | SW-1A-207 (left) | Genie Target |
| | SW-1A-208 (right) | |
| 43 | A-17813 | Left Loop |
| 44 | A-17813 | Inner Loop Left |
| 45 | A-17813 | Inner Loop Right |
| 46 | A-18017-6 | Mini Standups (3) |
| 47 | A-12238 | Ramp Made Right |
| 48 | A-18530-6 | Right Captive Ball |
| 51 | A-17800 (Kick) | Left Slingshot |
| | A-17793 (Score)** | |
| 52 | A-17800 (Kick) | Right Slingshot |
| | A-17793 (Score)** | |
| 53 | A-16443 | Left Jet Bumper |
| 54 | A-16443 | Right Jet Bumper |
| 55 | A-16443 | Middle Jet Bumper |
| 56 | SW-1A-206 | Lamp Spin CCW |
| 57 | SW-1A-206 | Lamp Spin CW |
| 58 | A-18530-6 | Left Captive Ball |
| 61 | A-20846-9 (top) | Left Standups |
| | A-20499-9 (middle) | |
| | A-20499-9 (bottom) | |
| 62 | A-20846-9 (top) | Right Standups |
| | A-20499-9 (middle) | |
| | A-20499-9 (bottom) | |
| 63 | SW-1A-202-15 | Top Skill |
| 64 | SW-1A-202-15 | Middle Skill |
| 65 | SW-1A-202-15 | Bottom Skill |
| 66 | A-17985-R | Lock 1 (bottom) |
| 67 | A-14820 | Lock 2 (middle) |
| 68 | A-14820 | Lock 3 (top) |

71 to 88 Not Used

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



SOLENOID/FLASHER TABLE

| Sol. No. | Function | Solenoid Type | Voltage Connections | | | Drive Xistor | Voltage Connections | | | Drive Wire Color | Solenoid Part Number | |
|----------|----------------------|---------------|---------------------|---------|---------|--------------|---------------------|---------|---------|------------------|----------------------|-----------|
| | | | Playfield | Backbox | Cabinet | | Playfield | Backbox | Cabinet | | Flashlamp Type | Playfield |
| 01 | LEFT CAGE | High Power | J133-2 | | | Q72 | J116-1 | | | Vio-Brn | A-20099 | |
| 02 | RIGHT CAGE | High Power | J133-2 | | | Q68 | J116-2 | | | Vio-Red | A-20099 | |
| 03 | VANISH DROP | High Power | J133-2 | | | Q71 | J116-4 | | | Vio-Org | FL-11753 | |
| 04 | LOCK EJECT | High Power | J133-2 | | | Q67 | J116-5 | | | Vio-Yel | AE-27-1200 | |
| 05 | BAZAAR EJECT | High Power | J133-2 | | | Q70 | J116-6 | | | Vio-Grn | AE-25-1000 | |
| 06 | LOCK MAGNET | High Power | J133-2 | | | Q66 | J116-7 | | | Vio-Blu | 20-10197 | |
| 07 | KNOCKER | High Power | | J133-2 | | Q69 | | J116-8 | | Vio-Blk | | AE-23-800 |
| 08 | RAMP MAGNET COIL | High Power | J133-1 | | | Q65 | J116-9 | | | Vio-Gry | 20-10179 | |
| 09 | TROUGH EJECT | Low Power | J133-3 | | | Q44 | J113-1 | | | Brn-Brn | AE-26-1500 | |
| 10 | LEFT SLINGSHOT | Low Power | J133-3 | | | Q48 | J113-3 | | | Brn-Red | AE-27-1200 | |
| 11 | RIGHT SLINGSHOT | Low Power | J133-3 | | | Q43 | J113-4 | | | Brn-Org | AE-27-1200 | |
| 12 | LEFT JET BUMPER | Low Power | J133-3 | | | Q47 | J113-5 | | | Brn-Yel | AE-26-1200 | |
| 13 | RIGHT JET BUMPER | Low Power | J133-3 | | | Q42 | J113-6 | | | Brn-Grn | AE-26-1200 | |
| 14 | MIDDLE JET BUMPER | Low Power | J133-3 | | | Q46 | J113-7 | | | Brn-Blu | AE-26-1200 | |
| 15 | LEFT KICKER | Low Power | J133-3 | | | Q41 | J113-8 | | | Brn-Vio | AE-27-1200 | |
| 16 | LEFT EJECT FLASHER | Low Power | J133-6 | J134-5 | | Q45 | J113-9 | J114-5 | | Brn-Gry | #89 (2) | #906 |
| 17 | INLANE FLASHERS | Flasher | J133-6 | | | Q28 | J111-1 | | | Blk-Brn | #89 (2) | |
| 18 | FINAL BATTLE FLASHER | Flasher | J133-6 | | | Q32 | J111-2 | | | Blk-Red | #906 | |
| 19 | LEFT LOOP FLASHER | Flasher | J133-6 | | | Q27 | J111-3 | | | Blk-Org | #906 | |
| 20 | BAZAAR FLASHER | Flasher | J133-6 | | | Q31 | J111-4 | | | Blk-Yel | #89 | |
| 21 | RAMP DIVERTER | Low Power | J133-2 | | | Q26 | J111-5 | | | Blu-Grn | AE-30-2000 | |
| 22 | RUB LAMP FLASHER | Flasher | J133-6 | | | Q30 | J111-6 | | | Blu-Blk | #906 | |
| 23 | MAGIC LAMP FLASHERS | Flasher | J133-6 | | | Q25 | J111-7 | | | Blu-Vio | #906 | |
| 24 | RIGHT LOOP FLASHER | Flasher | J133-6 | | | Q29 | J111-8 | | | Blu-Gry | #906 | |
| 25 | START TALE FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q16 | J109-1 | J108-1 | | Blu-Brn | #906 | #906 |
| 26 | JET FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q15 | J109-2 | J108-2 | | Blu-Red | #906 | #906 |
| 27 | TOP LOOP FLASHER | Gen. Purpose | J133-6 | J134-5 | | Q14 | J109-3 | J108-3 | | Blu-Org | #906 | #906 |
| 28 | RAMP FLASHER | Gen. Purpose | J133-6 | | | Q13 | J109-4 | | | Blu-Yel | #906 | |

General Illumination

| | | | | | | | | | | | | |
|----|------------------------|------|--------|--------|--------|----|---------|--------|--------|---------|-----|------|
| 01 | ILLUMINATION STRING 1 | G.I. | | J106-1 | | Q5 | | J106-7 | | Wht-Brn | #44 | |
| 02 | ILLUMINATION STRING 2 | G.I. | | J106-2 | | Q4 | | J106-8 | | Wht-Org | #44 | |
| 03 | ILLUMINATION STRING 3 | G.I. | | J106-3 | | Q3 | | J106-9 | | Wht-Yel | #44 | |
| 04 | *ILLUMINATION STRING 4 | G.I. | J105-5 | | | Q2 | J105-10 | | | Wht-Grn | | #555 |
| 05 | *ILLUMINATION STRING 5 | G.I. | J105-6 | | J104-3 | Q1 | J105-11 | | J104-1 | Wht-Vio | | #555 |

| Flipper Circuits | | Lwr. Rt. Power | Voltage Connection | Drive Transistors | | Drive Connections | | Drive Wire Colors | | Coil Part No. | Coil Colors |
|------------------|---------------------|----------------|--------------------|-------------------|-------|-------------------|-----------|-------------------|------------|---------------|-------------|
| | | | | Playfield | Power | Hold | Playfield | Power | Hold | | |
| 29 | LOWER RIGHT FLIPPER | Lwr. Rt. Power | J119-1 (Red-Grn) | Q90 | | J120-13 | Yel-Grn | | FL-11629 | BLUE | |
| 30 | | Lwr. Rt. Hold | J119-1 (Red-Grn) | | Q92 | J120-11 | | Org-Grn | | | |
| 31 | LOWER LEFT FLIPPER | Lwr. Lt. Power | J119-4 (Red-Blu) | Q87 | | J120-9 | Yel-Blu | | FL-11629 | BLUE | |
| 32 | | Lwr. Lt. Hold | J119-4 (Red-Blu) | | Q89 | J120-7 | | Org-Blu | | | |
| 33 | LEFT DIVERTER POWER | Upr. Rt. Power | J119-6 (Red-Vio) | Q84 | | J120-6 | Yel-Vio | | FL-11753 | YELLOW | |
| 34 | LEFT DIVERTER HOLD | Upr. Rt. Hold | J119-6 (Red-Vio) | | Q86 | J120-4 | | Org-Vio | | | |
| 35 | VANISH MAGNET | Upr. Lt. Power | J119-8 (Red-Gry) | Q81 | | J120-3 | Yel-Gry | | 20-10197 | | |
| 36 | LOOP POST DIVERTER | Upr. Lt. Hold | J119-8 (Red-Gry) | | Q83 | J120-1 | | Org-Gry | AE-27-1200 | | |

J1XX = POWER DRIVER BOARD

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

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

Solenoid/Flashlamp Locations

| Item No. | Coil/Flasher Number | Assembly Number | Description |
|----------|---------------------|-----------------|----------------------|
| 01 | A-20099 | A-20693 | Left Cage |
| 02 | A-20099 | A-20693 | Right Cage |
| 03 | FL-11753 | A-20644 | Vanish Drop |
| 04 | AE-27-1200 | B-9362-L-3 | Lock Eject |
| 05 | AE-25-1000 | A-16434-2 | Bazaar Eject |
| 06 | 20-10197 | ----- | Lock Magnet |
| 07 | AE-23-800 | B-10686-1 | *Knocker |
| 08 | 20-10179 | A-20839 | Ramp Magnet Coil |
| 09 | AE-26-1500 | A-19963-1 | Trough Eject |
| 10 | AE-27-1200 | B-9362-L-3 | Left Slingshot |
| 11 | AE-27-1200 | B-9362-L-3 | Right Slingshot |
| 12 | AE-26-1200 | A-9415-2 | Left Jet Bumper |
| 13 | AE-26-1200 | A-9415-2 | Right Jet Bumper |
| 14 | AE-26-1200 | A-9415-2 | Bottom Jet Bumper |
| 15 | AE-27-1200 | B-9362-L-3 | Left Kicker |
| 16 | 24-8704 | A-17983 (2) | Left Eject Flasher |
| | 24-8802 | ----- | *Insert Flasher |
| 17 | 24-8704 | A-17983 (2) | Inlane Flasher |
| 18 | 24-8802 | A-17802 | Final Battle Flasher |
| 19 | 24-8802 | A-17802 | Left Loop Flasher |
| 20 | 24-8704 | A-17983 | Bazaar Flasher |
| 21 | AE-30-2000 | A-20626 | Ramp Diverter |
| 22 | 24-8802 | A-17802 | Rub Lamp Flasher |
| 23 | 24-8802 | A-17802 | Magic Lamp Flasher |
| 24 | 24-8802 | A-17802 | Right Loop Flasher |
| 25 | 24-8802 | A-17802 | Start Tale Flasher |
| | 24-8802 | ----- | *Insert Flasher |
| 26 | 24-8802 | A-17802 | Jet Flasher |
| | 24-8802 | ----- | *Insert Flasher |
| 27 | 24-8802 | A-17802 | Top Loop Flasher |
| | 24-8802 | ----- | *Insert Flasher |
| 28 | 24-8802 | A-17802 | Ramp Flasher |

Flippers

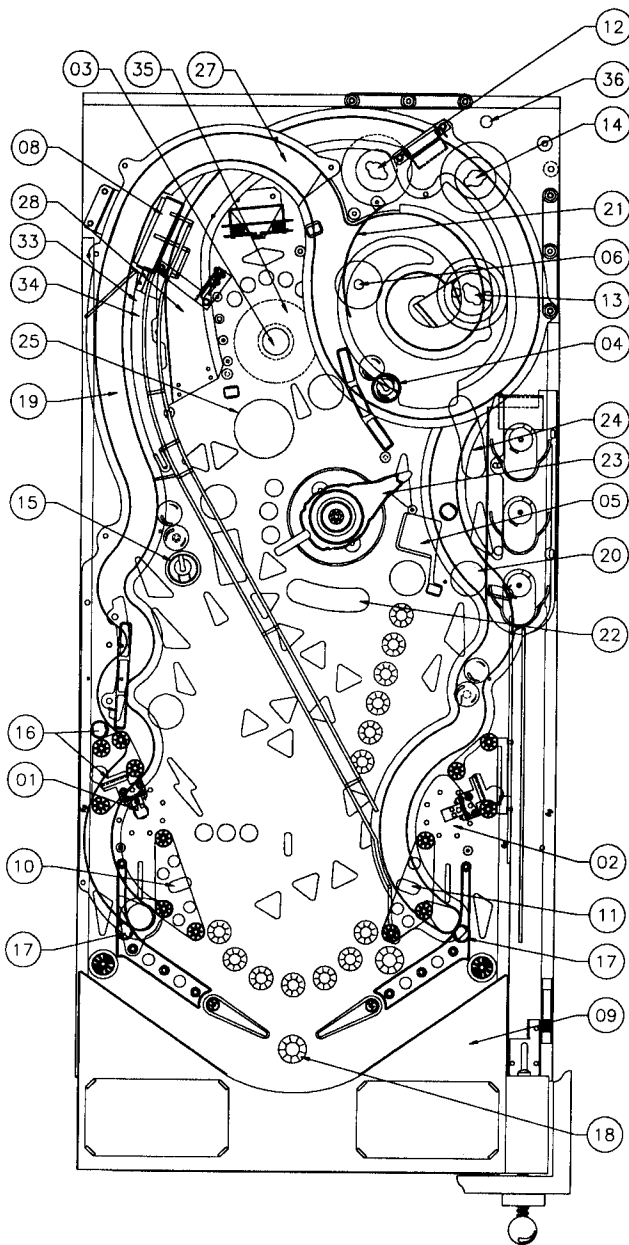
| Item No. | Coil/Flasher Number | Assembly Number | Description |
|----------|---------------------|-----------------|---------------------|
| 29-30 | FL-11629 | A-14876-R-3 | Lower Right Flipper |
| 31-32 | FL-11629 | A-15849-L-2 | Lower Left Flipper |
| 33 | FL-11753 | A-20642 | Left Diverter Power |
| 34 | | | Left Diverter Hold |
| 35 | 20-10197 | A-20644 | Vanish Magnet |
| 36 | AE-27-1200 | A-17932-1 | Loop Post Diverter |

General Illumination

| Item No. | Bulb Number | Description |
|----------|-------------|------------------------|
| 01 | 24-6549 | *Illumination String 1 |
| 02 | 24-6549 | *Illumination String 2 |
| 03 | 24-6549 | *Illumination String 3 |
| 04 | 24-8768 | *Illumination String 4 |
| 05 | 24-8768 | *Illumination String 5 |

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

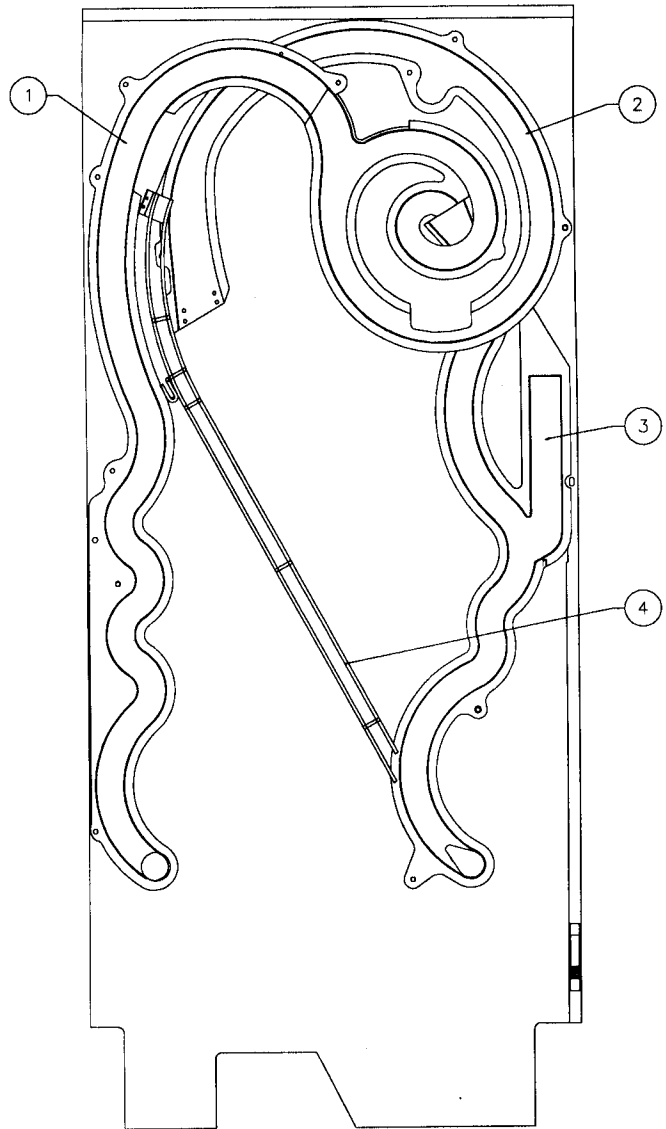
*NOT SHOWN



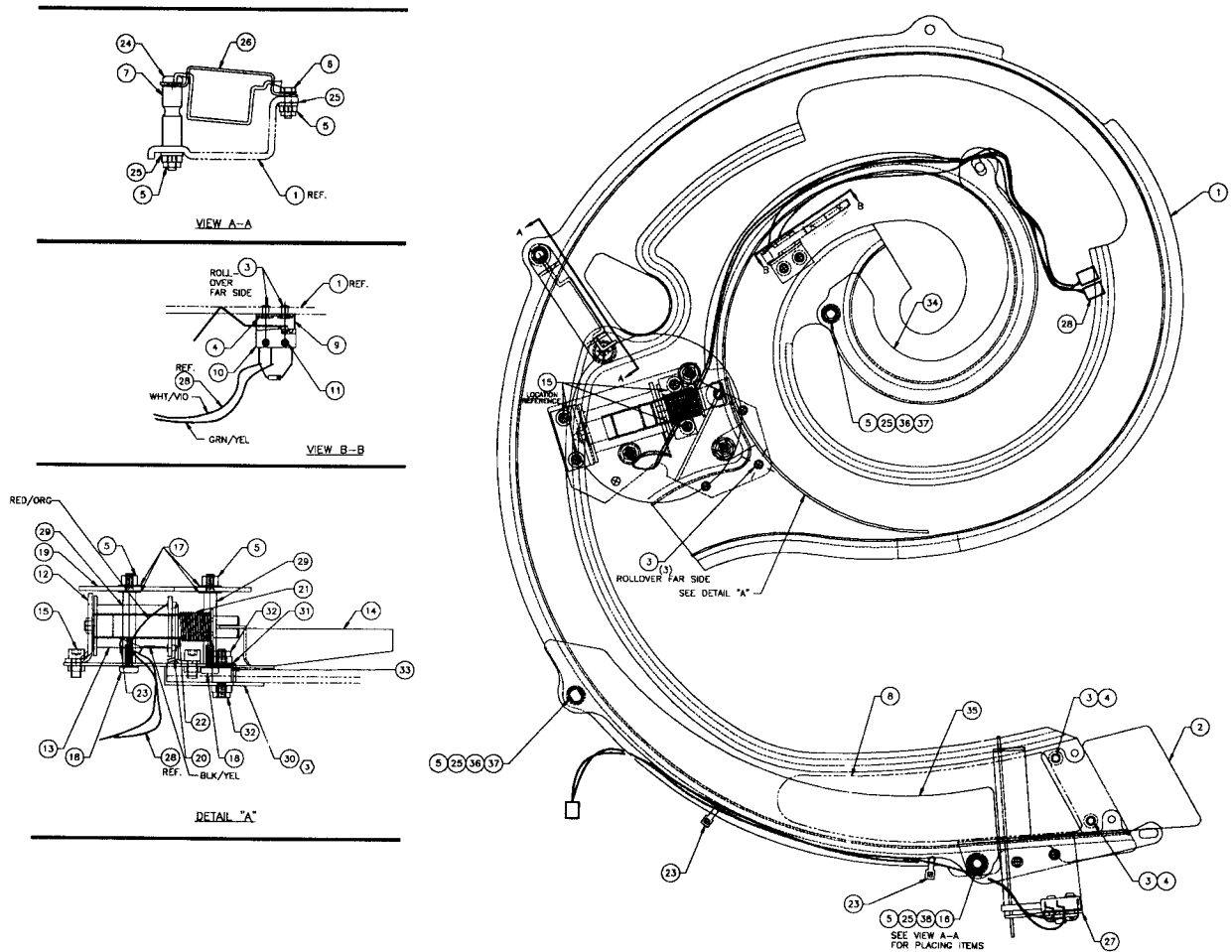
Ramps

| Item | Part Number | Description |
|------|---------------------|---------------------------------------|
| 1 | A-20628 | Magnet Ramp Assembly |
| a) | A-20879 | Bed of Nails Assembly |
| b) | 01-14268 | End Ramp Guard |
| c) | A-12238 | Switch & Diode Assy. |
| *2 | A-20626 | Swirl Ramp Assembly |
| 3 | A-20627 01-14268 | Skill Ramp Assembly End Ramp Guard |
| 4 | A-20810 | Magnet Wire Ramp Assy. |

* See page 2-43 for ramp assembly details.



A-20626 Swirl Ramp Assembly



| Item | Part Number | Description | Item | Part Number | Description |
|------|---------------|----------------------------------|------|---------------|--------------------------------------|
| 1 | 03-9462 | Ramp - Swirl | 20 | 01-8413 | Coil Mounting Bracket |
| 2 | 01-14266 | Flap | 21 | 10-303 | Spring Master |
| 3 | 07-6688-20N | Rivet, 1/8 x 1/4" Nickel | 22 | 03-7066 | Coil Tubing |
| 4 | 4700-00003-00 | Fw, 1/8 x 9/32 x 21ga. | 23 | 03-9454 | Tie Wrap |
| 5 | 4406-01119-00 | Nut 6-32 ESN | 24 | 4006-01005-26 | Mach. Screw, 6-32 x 1-5/8" |
| 6 | 4006-01113-06 | Mach. Screw, 6-32 x 3/8" | 25 | 4700-00007-00 | Flat Washer, 5/32 x 7/16 x 16ga. |
| 7 | 03-8365-13 | Post #8 Clear | 26 | A-20847 | Gate Assembly |
| 8 | 31-2547-1 | Decal - Under Side | 27 | A-20811 | Guard Assembly |
| 9 | 01-8774 | Switch Mounting Bracket | 28 | H-20897 | Cable |
| 10 | A-12238 | Switch & Diode | 29 | 02-4250-23 | M-F Sapcer 6-32 x 1-7/16 x 1/4" Hex. |
| 11 | 4002-01105-06 | Screw, #2-56 x 3/8" w/SEMS | 30 | 04-10490 | Diverter Ramp Plate |
| 12 | A-11397 | Drop Target Stop Bracket | 31 | 4700-00009-00 | Flat Washer, 11/64 x 7/16 x 21ga. |
| 13 | AE-30-2000 | Coil Assembly | 32 | 4408-01119-01 | Nut 8-32 ESNA/NTM |
| 14 | A-20914 | Plunger & Ball Guide Assy. | 33 | 02-5262 | Diverter Ramp Post |
| 15 | 4010-01066-06 | Cap Screw, 10-32 x 3/8" | 34 | 31-2562-1 | Playfield Plastics |
| 16 | 4006-01113-18 | Mach. Screw, #6-32 x 1-1/8" | 35 | 31-2562-2 | Playfield Plastics |
| 17 | 4700-00005-00 | Flat Washer, 9/64 x 7/16 x 21ga. | 36 | 03-9255-1 | Spacer #8.250 Long |
| 18 | 4006-01003-06 | Mach. Screw, 6-32 x 3/8" | 37 | 4006-01113-12 | Mach. Screw, #6-32 x 3/4" |
| 19 | 31-2545-21A | Playfield Plastic | 38 | 03-9255-3 | Spacer #8.541 Long |

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SECTION THREE

GAME WIRING AND SCHEMATICS

CONNECTOR & COMPONENT IDENTIFICATION

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

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

Prefix numbers for WPC circuit boards are listed below.

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

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

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

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

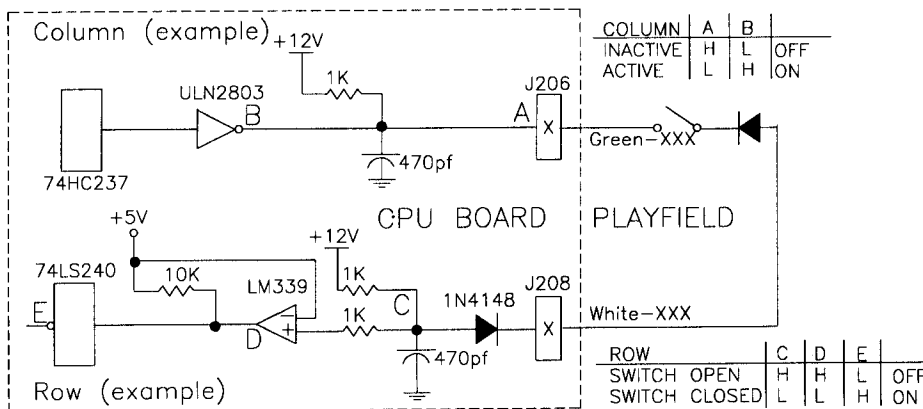
SWITCH MATRIX

White Green

| Dedicated Grounded Switches | Column | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Flipper Grounded Switches |
|--|---|---------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|--------------------------------|----------------------------------|--------------------------------|---|
| | Row | Green-Brown J206-1 U20-18 | Green-Red J206-2 U20-17 | Green-Orange J206-3 U20-16 | Green-Yellow J206-4 U20-15 | Green-Black J206-5 U20-14 | Green-Blue J206-6 U20-13 | Green-Violet J206-7 U20-12 | Green-Gray J206-9 U20-11 | |
| Orange-Brown J205-1 Left Coin Chute U17-5 D1 | 1 White-Brown J208-1 U18-11 | HAREM PASSAGE 11 | SLAM TILT 21 | TROUGH EJECT 31 | RAMP MADE LEFT 41 | LEFT SLING 51 | LEFT STANDUPS 61 | NOT USED 71 | NOT USED 81 | Black-Green J208-13 Lower Right Flipper E.O.S. F1 |
| Orange-Red J205-2 Center Coin Chute U17-7 D2 | 2 White-Red J208-2 U18-9 | VANISH TUNNEL 12 | COIN DOOR CLOSED 22 | TROUGH BALL 1 32 | GENIE TARGET 42 | RIGHT SLING 52 | RIGHT STANDUPS 62 | NOT USED 72 | NOT USED 82 | Blue-Violet J212-12 Lower Right Flipper Opto F2 |
| Orange-Black J205-3 Right Coin Chute U17-11 D3 | 3 White-Orange J208-3 U18-5 | START BUTTON 13 | GENIE STANDUP TARGET 23 | TROUGH BALL 2 33 | LEFT LOOP 43 | LEFT JET 53 | TOP SKILL 63 | NOT USED 73 | NOT USED 83 | Black-Blue J208-12 Lower Left Flipper E.O.S. F3 |
| Orange-Yellow J205-4 4th Coin Chute U17-9 D4 | 4 White-Yellow J208-4 U18-7 | PLUMB BOB TILT 14 | ALWAYS CLOSED 24 | TROUGH BALL 3 34 | INNER LOOP LEFT 44 | RIGHT JET 54 | MIDDLE SKILL 64 | NOT USED 74 | NOT USED 84 | Blue-Gray J212-11 Lower Left Flipper Opto F4 |
| Orange-Green J205-6 U16-9 Normal Test Function Srv Crdts Escape D5 | 5 White-Green J208-5 U19-11 | RAMP ENTER 15 | BAZAAR EJECT 25 | TROUGH BALL 4 35 | INNER LOOP RIGHT 45 | MIDDLE JET 55 | BOTTOM SKILL 65 | NOT USED 75 | NOT USED 85 | Black-Violet J208-11 Upper Right Flipper E.O.S. F5 |
| Orange-Blue J205-7 U16-11 Normal Test Function Volume Dn Down D6 | 6 White-Blue J208-7 U19-9 | LEFT OUTLANE 16 | LEFT INLANE 26 | LEFT CAGE OPTO 36 | MINI STANDUPS 46 | LAMP SPIN CCW 56 | LOCK 1 (BOTTOM) 66 | NOT USED 76 | NOT USED 86 | Black-Yellow J212-10 Upper Right Flipper Opto F6 |
| Orange-Violet J205-8 U16-7 Normal Test Function Volume Up Up D7 | 7 White-Violet J208-8 U19-5 | RIGHT INLANE 17 | RIGHT OUTLANE 27 | RIGHT CAGE OPTO 37 | RAMP MADE RIGHT 47 | LAMP SPIN CW 57 | LOCK 2 (MIDDLE) 67 | NOT USED 77 | NOT USED 87 | Black-Gray J208-10 Upper Left Flipper E.O.S. F7 |
| Orange-Gray J205-9 U16-5 Normal Test Function Begin Test Enter D8 | 8 White-Gray J208-9 U19-7 | BALL SHOOTER 18 | LEFT WIRE MAKE 28 | LEFT EJECT 38 | RIGHT CAPTIVE BALL 48 | LEFT CAPTIVE BALL 58 | LOCK 3 (TOP) 68 | NOT USED 78 | NOT USED 88 | Black-Blue J212-9 Upper Left Flipper Opto F8 |

J2XX = CPU BOARD = OPTO, TYPICALLY CLOSED

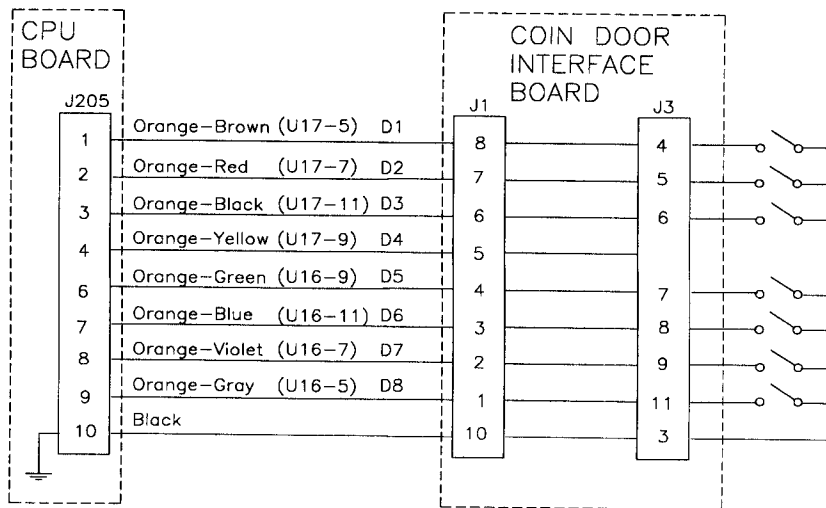
SWITCH MATRIX CIRCUIT



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

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

DEDICATED SWITCHES



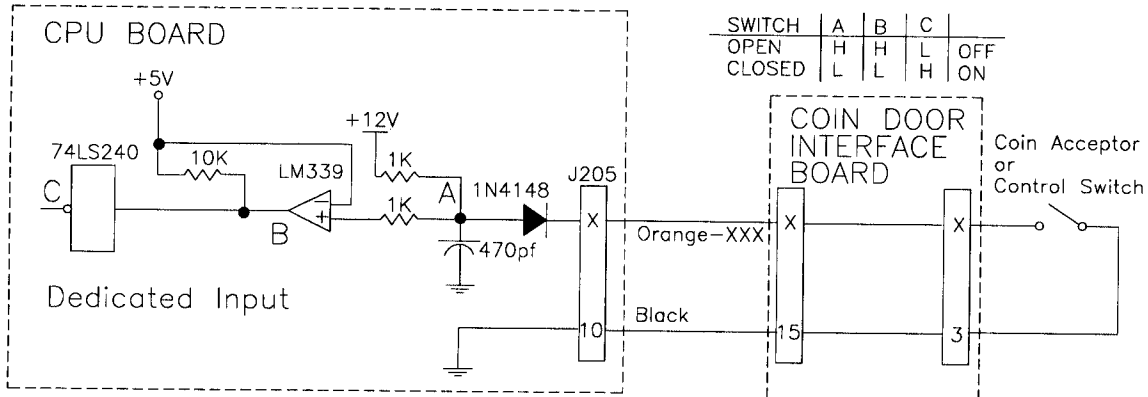
Coin Acceptor Switches

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

Control Switches

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

DEDICATED SWITCH CIRCUIT



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

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

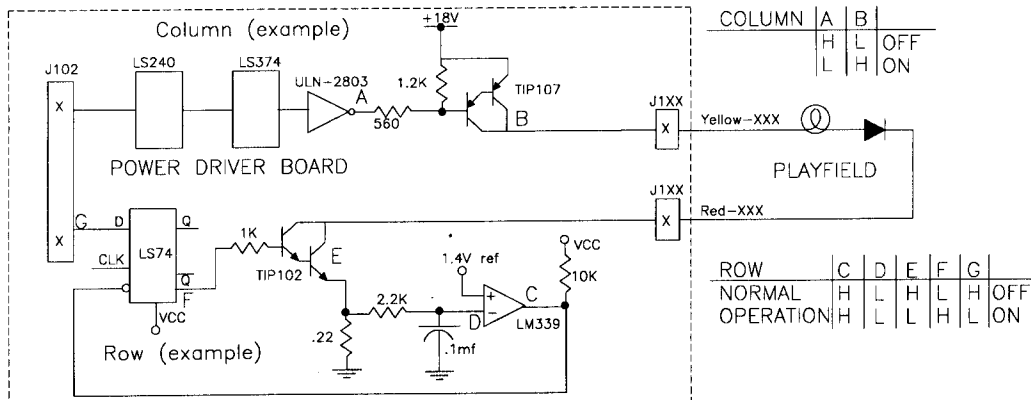
LAMP MATRIX

Yellow (B+)  Red

| Column \ Row | 1 Yellow-Brown J121-1 Q96 | 2 Yellow-Red J121-2 Q100 | 3 Yellow-Orange J121-3 Q95 | 4 Yellow-Black J121-4 Q99 | 5 Yellow-Green J121-5 Q94 | 6 Yellow-Blue J121-6 Q98 | 7 Yellow-Violet J121-7 Q93 | 8 Yellow-Gray J121-9 Q97 |
|--------------------------------|------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|
| 1 Red-Brown J125-1 Q104 | JEWEL 1 (LEFT) 11 | JACKPOT 21 | MAGIC CARPET 31 | SMOKE 6 41 | SMOKE 14 (TOP) 51 | MAKE A WISH 61 | ACTION 2 71 | EXTRA BALL 81 |
| 2 Red-Black J125-2 Q108 | JEWEL 2 12 | (G)ENIE 22 | ACTION 3 32 | SMOKE 7 42 | LAMP-15 52 | (B)AZAAR 62 | LEFT LOCK 72 | ACTION 5 82 |
| 3 Red-Orange J125-4 Q103 | JEWEL 3 13 | G(E)NIE 23 | RAMP ARROW RIGHT 33 | SMOKE 8 43 | LAMP-30 53 | B(A)ZAAR 63 | HAREM ADVANCE 73 | RIGHT LOCK 83 |
| 4 Red-Yellow J125-5 Q107 | JEWEL 4 14 | GE(N)IE 24 | RAMP ARROW LEFT 34 | SMOKE 9 44 | LAMP-60 54 | BA(Z)AAR 64 | LEFT TIGER LOOP 74 | RIGHT TIGER LOOP 84 |
| 5 Red-Green J125-6 Q102 | JEWEL 5 15 | GEN(I)E 25 | SMOKE 1 (BOTTOM) 35 | SMOKE 10 45 | SMOKE 4 55 | BAZ(A)AR 65 | ACTION 1 75 | CAPTIVE BALL RIGHT 85 |
| 6 Red-Blue J125-7 Q106 | JEWEL 6 16 | GENI(E) 26 | SMOKE 2 36 | SMOKE 11 46 | SMOKE 5 56 | BAZA(A)R 66 | WISH 1 76 | ACTION 4 86 |
| 7 Red-Violet J125-8 Q101 | JEWEL 7 (RIGHT) 17 | MULTIBALL 27 | SMOKE 3 37 | SMOKE 12 47 | SHOOT STAR RIGHT 57 | BAZAA(R) 67 | WISH 2 77 | CAPTIVE BALL LEFT 87 |
| 8 Red-Gray J125-9 Q105 | SHOOT AGAIN 18 | OUTLANE SPECIAL 28 | AMULET 38 | SMOKE 13 48 | SHOOT STAR LEFT 58 | CENTER LOCK 68 | WISH 3 78 | START BUTTON 88 |

J1XX = Power Driver Board

LAMP MATRIX CIRCUIT



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

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

SOLENOID/FLASHER TABLE

| Sol. No. | Function | Solenoid Type | Voltage Connections | | | Drive Xistor | Drive Connections | | | Drive Wire Color | Solenoid Part Number | |
|----------|----------------------|---------------|---------------------|---------|---------|--------------|-------------------|---------|---------|------------------|----------------------|-----------|
| | | | Playfield | Backbox | Cabinet | | Playfield | Backbox | Cabinet | | Flashlamp Type | Playfield |
| 01 | LEFT CAGE | High Power | J133-2 | | | Q72 | J116-1 | | | Vio-Brn | A-20099 | |
| 02 | RIGHT CAGE | High Power | J133-2 | | | Q68 | J116-2 | | | Vio-Red | A-20099 | |
| 03 | VANISH DROP | High Power | J133-2 | | | Q71 | J116-4 | | | Vio-Org | FL-11753 | |
| 04 | LOCK EJECT | High Power | J133-2 | | | Q67 | J116-5 | | | Vio-Yel | AE-27-1200 | |
| 05 | BAZAAR EJECT | High Power | J133-2 | | | Q70 | J116-6 | | | Vio-Grn | AE-25-1000 | |
| 06 | LOCK MAGNET | High Power | J133-2 | | | Q66 | J116-7 | | | Vio-Blu | 20-10197 | |
| 07 | KNOCKER | High Power | | J133-2 | | Q69 | | J116-8 | | Vio-Blk | | AE-23-800 |
| 08 | RAMP MAGNET COIL | High Power | J133-1 | | | Q65 | J116-9 | | | Vio-Gry | 20-10179 | |
| 09 | TROUGH EJECT | Low Power | J133-3 | | | Q44 | J113-1 | | | Brn-Blk | AE-26-1500 | |
| 10 | LEFT SLINGSHOT | Low Power | J133-3 | | | Q48 | J113-3 | | | Brn-Red | AE-27-1200 | |
| 11 | RIGHT SLINGSHOT | Low Power | J133-3 | | | Q43 | J113-4 | | | Brn-Org | AE-27-1200 | |
| 12 | LEFT JET BUMPER | Low Power | J133-3 | | | Q47 | J113-5 | | | Brn-Yel | AE-26-1200 | |
| 13 | RIGHT JET BUMPER | Low Power | J133-3 | | | Q42 | J113-6 | | | Brn-Grn | AE-26-1200 | |
| 14 | MIDDLE JET BUMPER | Low Power | J133-3 | | | Q46 | J113-7 | | | Brn-Blu | AE-26-1200 | |
| 15 | LEFT KICKER | Low Power | J133-3 | | | Q41 | J113-8 | | | Brn-Vio | AE-27-1200 | |
| 16 | LEFT EJECT FLASHER | Low Power | J133-6 | J134-5 | | Q45 | J113-9 | J114-5 | | Brn-Gry | #89 (2) | #906 |
| 17 | INLANE FLASHERS | Flasher | J133-6 | | | Q28 | J111-1 | | | Blk-Brn | #89 (2) | |
| 18 | FINAL BATTLE FLASHER | Flasher | J133-6 | | | Q32 | J111-2 | | | Blk-Red | #906 | |
| 19 | LEFT LOOP FLASHER | Flasher | J133-6 | | | Q27 | J111-3 | | | Blk-Org | #906 | |
| 20 | BAZAAR FLASHER | Flasher | J133-6 | | | Q31 | J111-4 | | | Blk-Yel | #89 | |
| 21 | RAMP DIVERTER | Low Power | J133-2 | | | Q26 | J111-5 | | | Blu-Grn | AE-30-2000 | |
| 22 | RUB LAMP FLASHER | Flasher | J133-6 | | | Q30 | J111-6 | | | Blu-Blk | #906 | |
| 23 | MAGIC LAMP FLASHERS | Flasher | J133-6 | | | Q25 | J111-7 | | | Blu-Vio | #906 | |
| 24 | RIGHT LOOP FLASHER | Flasher | J133-6 | | | Q29 | J111-8 | | | Blu-Gry | #906 | |
| 25 | START TALE FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q16 | J109-1 | J108-1 | | Blu-Brn | #906 | #906 |
| 26 | JET FLASHERS | Gen. Purpose | J133-6 | J134-5 | | Q15 | J109-2 | J108-2 | | Blu-Red | #906 | #906 |
| 27 | TOP LOOP FLASHER | Gen. Purpose | J133-6 | J134-5 | | Q14 | J109-3 | J108-3 | | Blu-Org | #906 | #906 |
| 28 | RAMP FLASHER | Gen. Purpose | J133-6 | | | Q13 | J109-4 | | | Blu-Yel | #906 | |

General Illumination

| | | | | | | | | | | | | |
|----|-----------------------|------|--------|--------|--------|----|---------|--------|--------|---------|-----|------|
| 01 | ILLUMINATION STRING 1 | G.I. | | J106-1 | | Q5 | | J106-7 | | Wht-Brn | #44 | |
| 02 | ILLUMINATION STRING 2 | G.I. | | J106-2 | | Q4 | | J106-8 | | Wht-Org | #44 | |
| 03 | ILLUMINATION STRING 3 | G.I. | | J106-3 | | Q3 | | J106-9 | | Wht-Yel | #44 | |
| 04 | ILLUMINATION STRING 4 | G.I. | J105-5 | | | Q2 | J105-10 | | | Wht-Grn | | #555 |
| 05 | ILLUMINATION STRING 5 | G.I. | J105-6 | | J104-3 | Q1 | J105-11 | | J104-1 | Wht-Vio | | #555 |

| Sol. No. | Function | Voltage Connection | | Drive Transistors | | Drive Connections | | Drive Wire Colors | | Coil Part No. | Coil Colors |
|----------|---------------------|--------------------|------------------|-------------------|------|-------------------|---------|-------------------|---------|---------------|-------------|
| | | Playfield | Power | Power | Hold | Playfield | Power | Power | Hold | | |
| 29 | LOWER RIGHT FLIPPER | Lwr. Rt. Power | J119-1 (Red-Grn) | Q90 | | J120-13 | Yel-Grn | | | FL-11629 | BLUE |
| 30 | | Lwr. Rt. Hold | J119-1 (Red-Grn) | | Q92 | | J120-11 | | Org-Grn | | |
| 31 | LOWER LEFT FLIPPER | Lwr. Lt. Power | J119-4 (Red-Blu) | Q87 | | J120-9 | Yel-Blu | | | FL-11629 | BLUE |
| 32 | | Lwr. Lt. Hold | J119-4 (Red-Blu) | | Q89 | | J120-7 | | Org-Blu | | |
| 33 | LEFT DIVERTER POWER | Upr. Rt. Power | J119-6 (Red-Vio) | Q84 | | J120-6 | Yel-Vio | | | FL-11753 | YELLOW |
| 34 | LEFT DIVERTER HOLD | Upr. Rt. Hold | J119-6 (Red-Vio) | | Q86 | J120-4 | | Org-Vio | | | |
| 35 | VANISH MAGNET | Upr. Lt. Power | J119-8 (Red-Gry) | Q81 | | J120-3 | Yel-Gry | | | 20-10197 | |
| 36 | LOOP POST DIVERTER | Upr. Lt. Hold | J119-8 (Red-Gry) | | Q83 | J120-1 | | Org-Gry | | AE-27-1200 | |

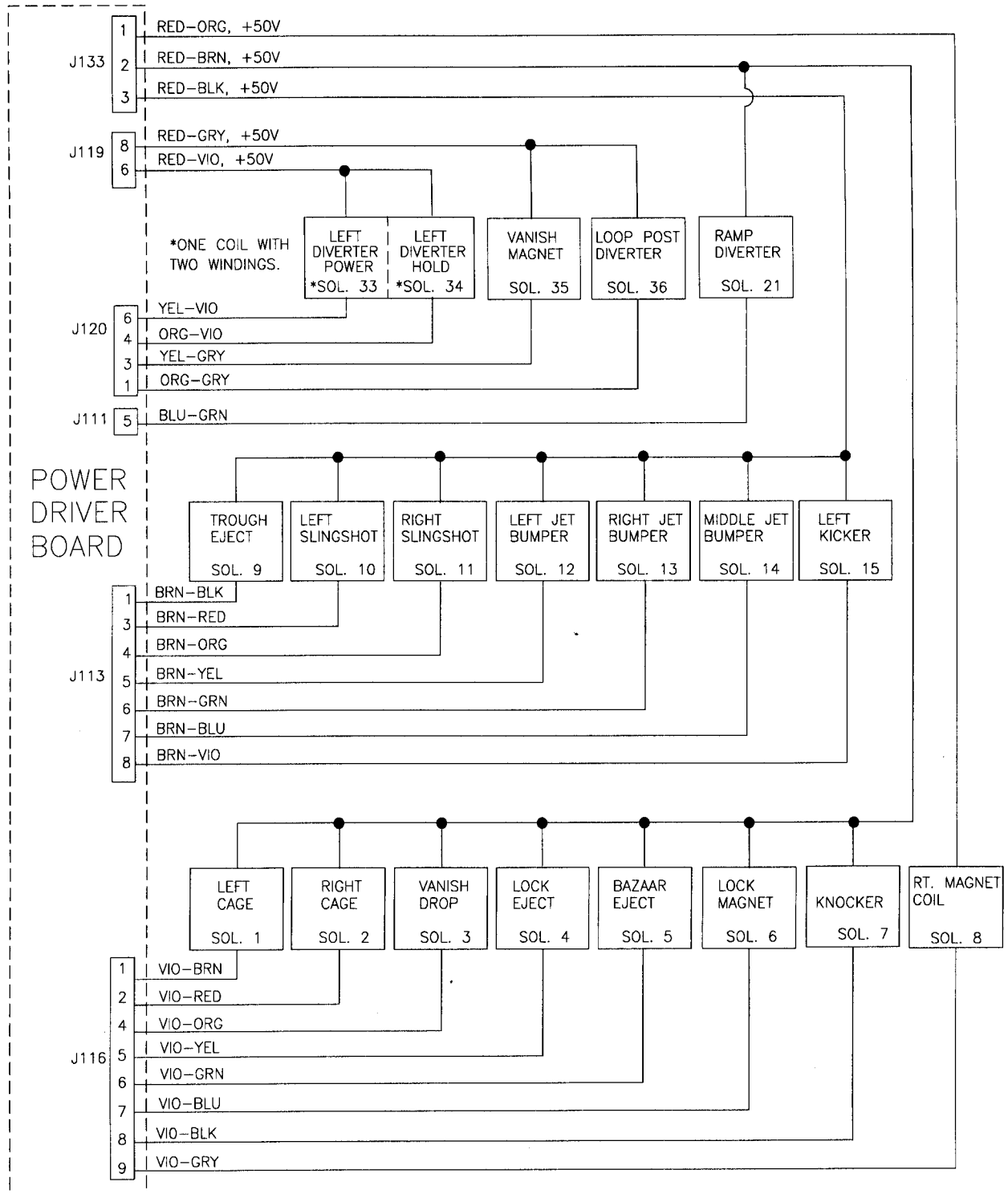
J1XX = POWER DRIVER BOARD

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

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

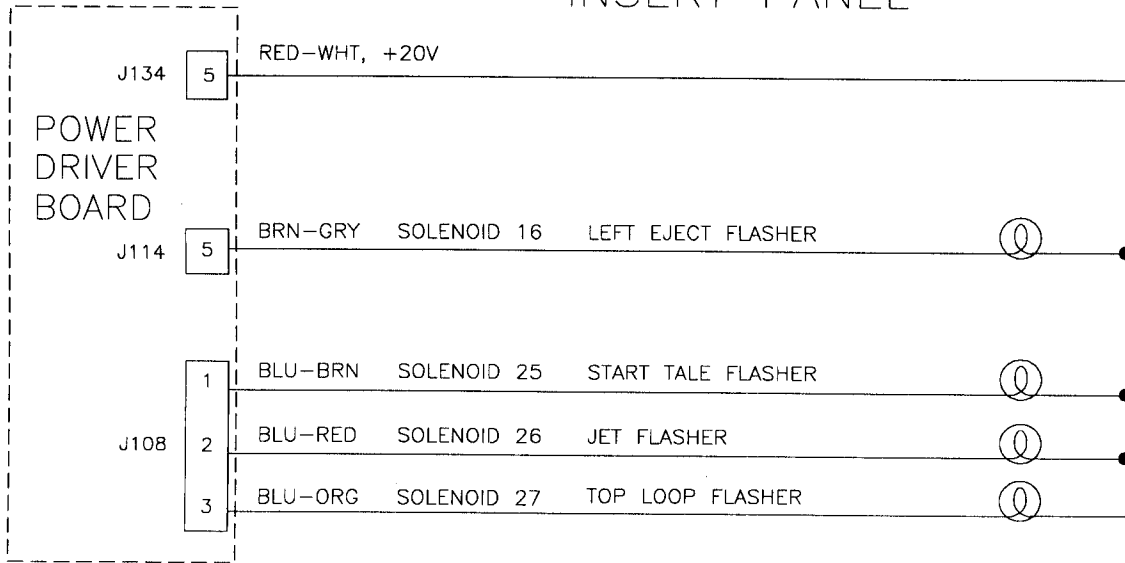
SOLENOID WIRING

COILS

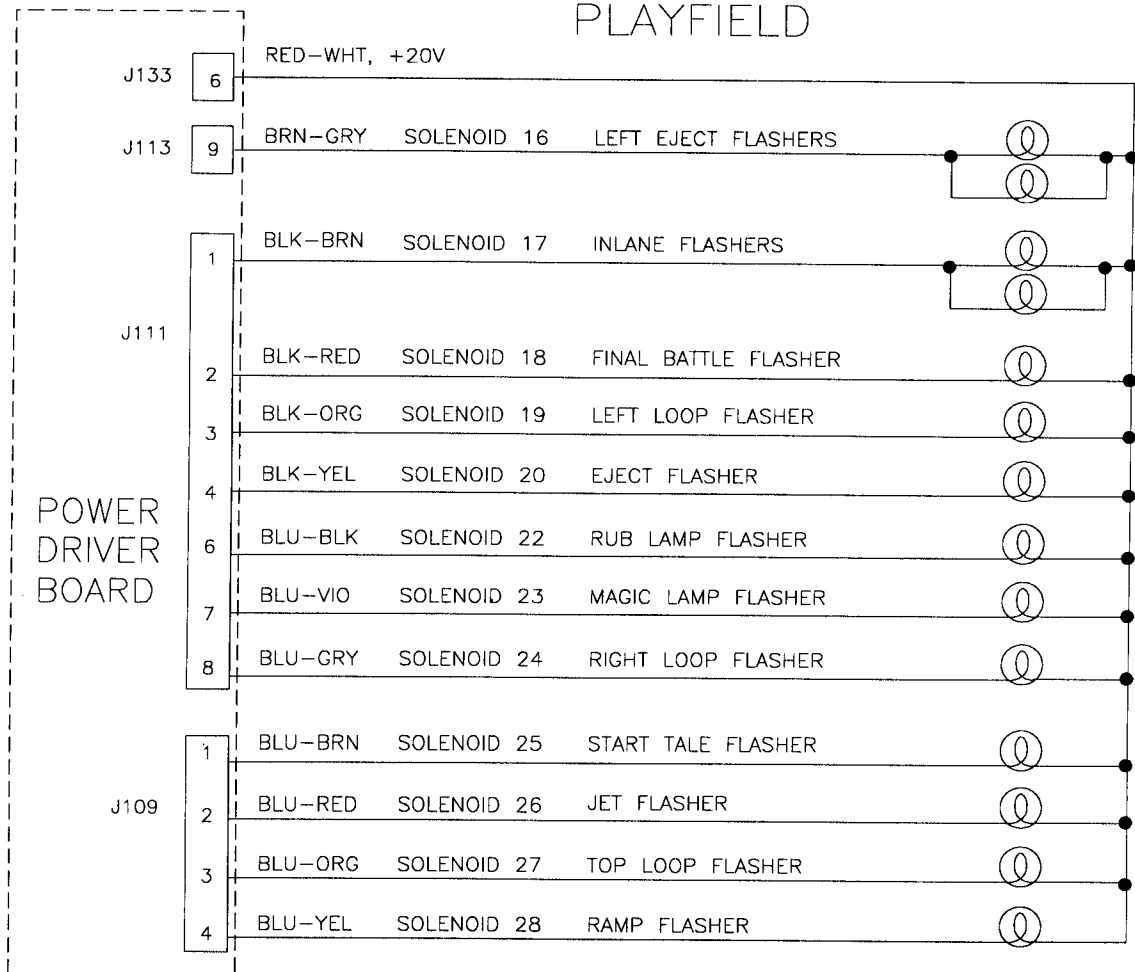


FLASHLAMPS

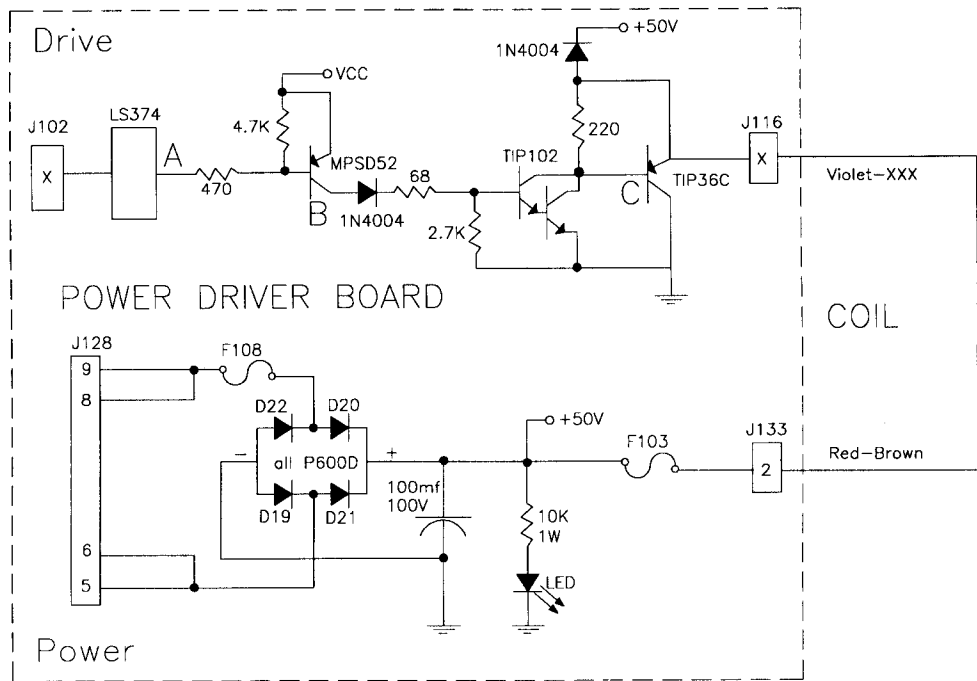
INSERT PANEL



PLAYFIELD

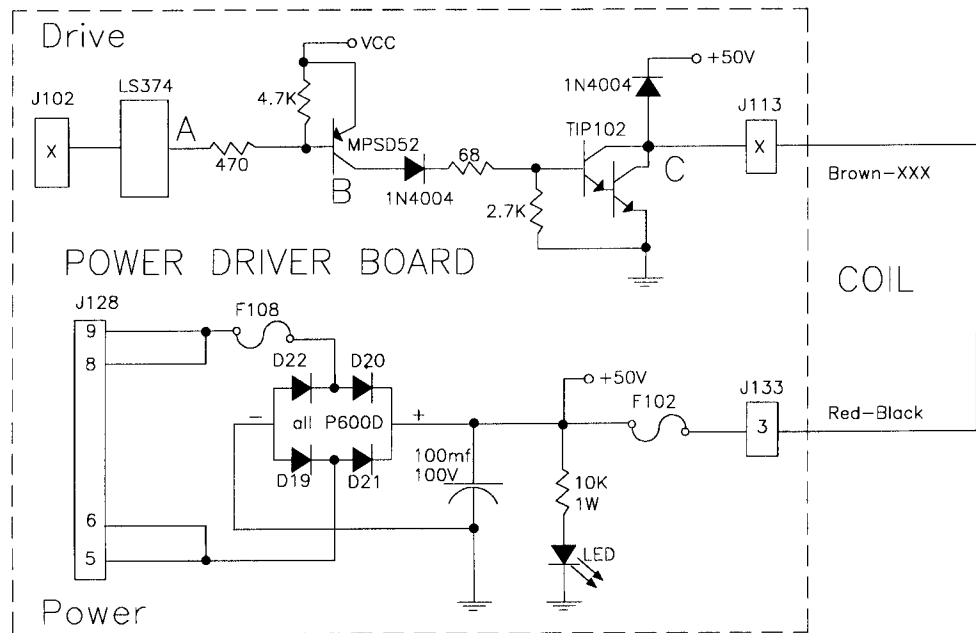


HIGH POWER SOLENOID CIRCUIT



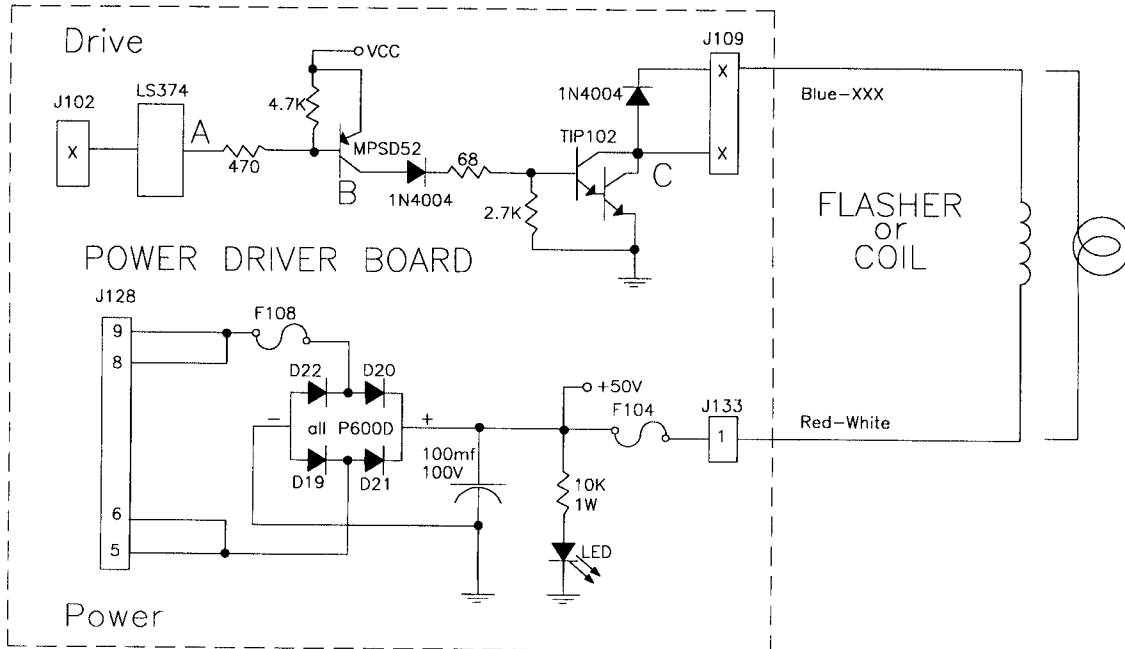
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" causes point "C", the collector of the TIP102 transistor and point "D", the emitter of the TIP36C transistor, to drop low. When point "D" is low,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

LOW POWER SOLENOID CIRCUIT



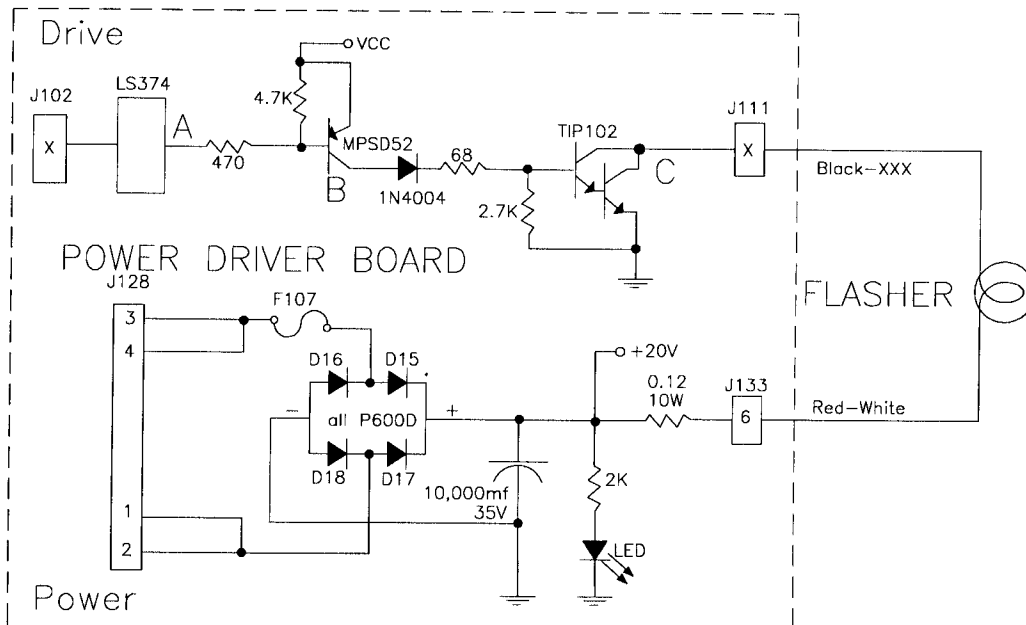
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B", the collector of the 2N5401 transistor, is high. A high at point "B" turns on the TIP102 transistor and causes point "C" to drop low. When point "C" is low the coil is grounded through the transistor and turns on.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

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.

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.

GENERAL ILLUMINATION CIRCUIT

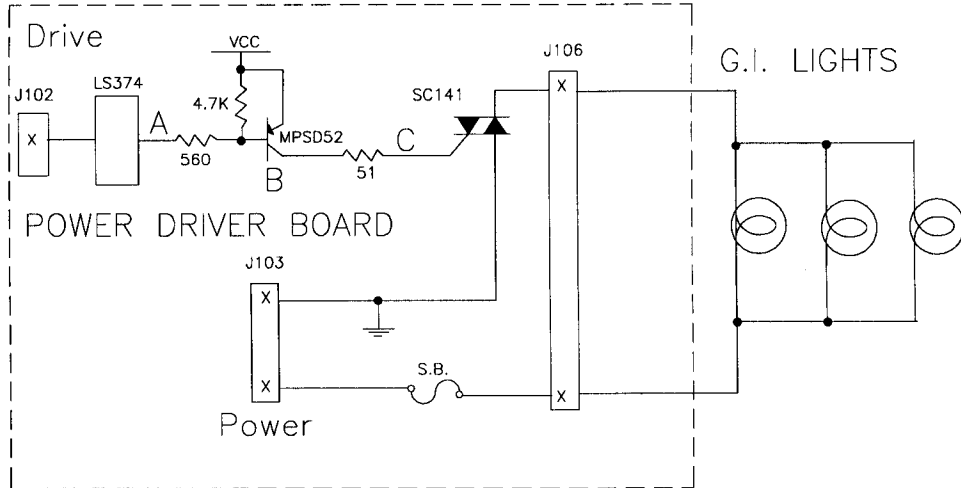


Figure #1

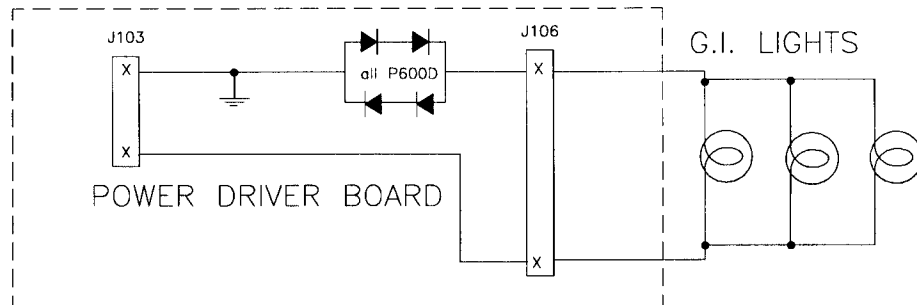
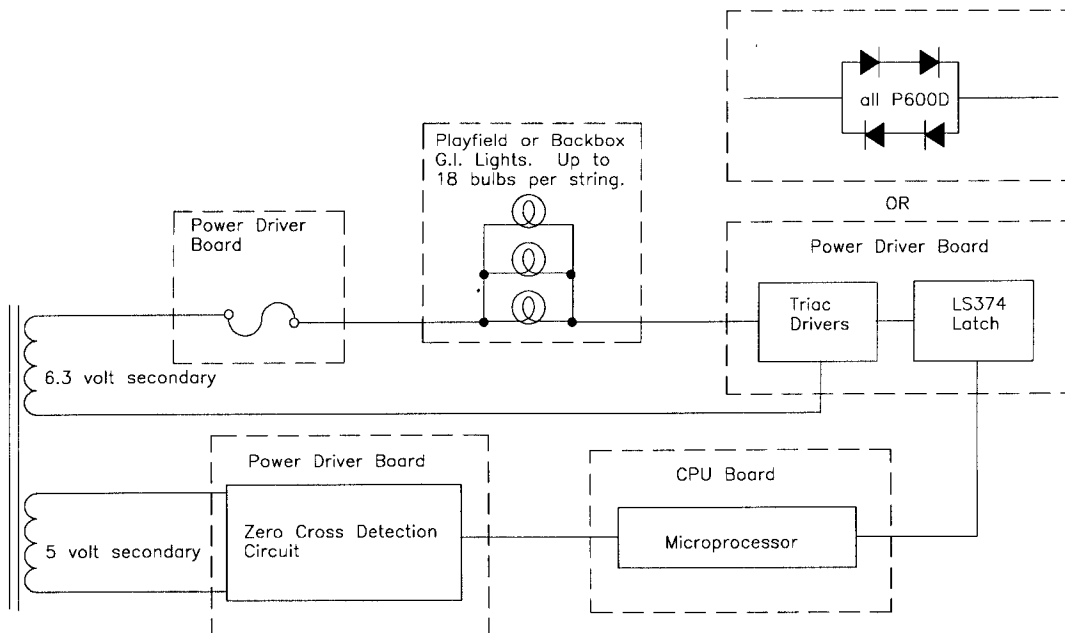


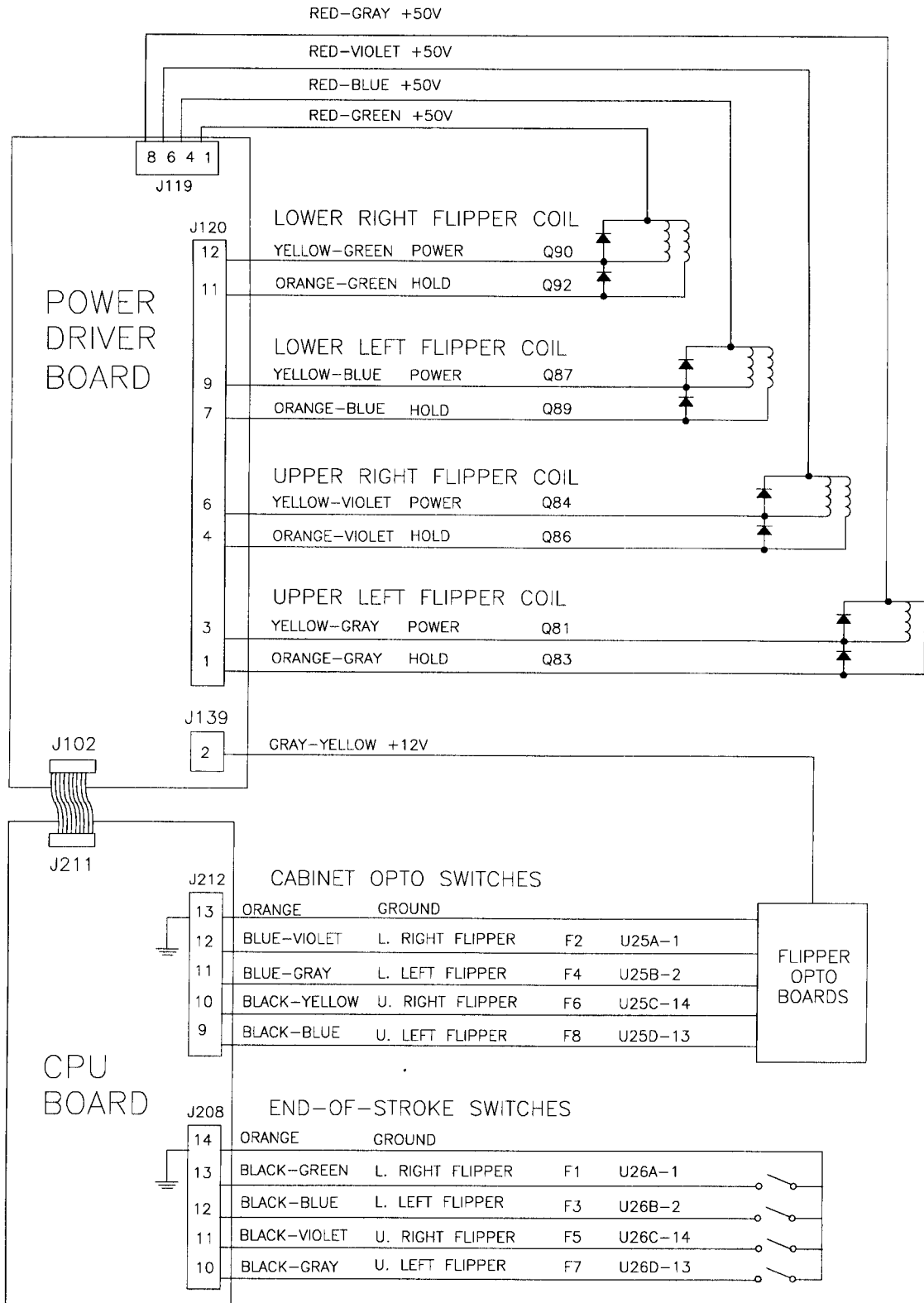
Figure #2

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

BLOCK DIAGRAM OF GENERAL ILLUMINATION CIRCUIT



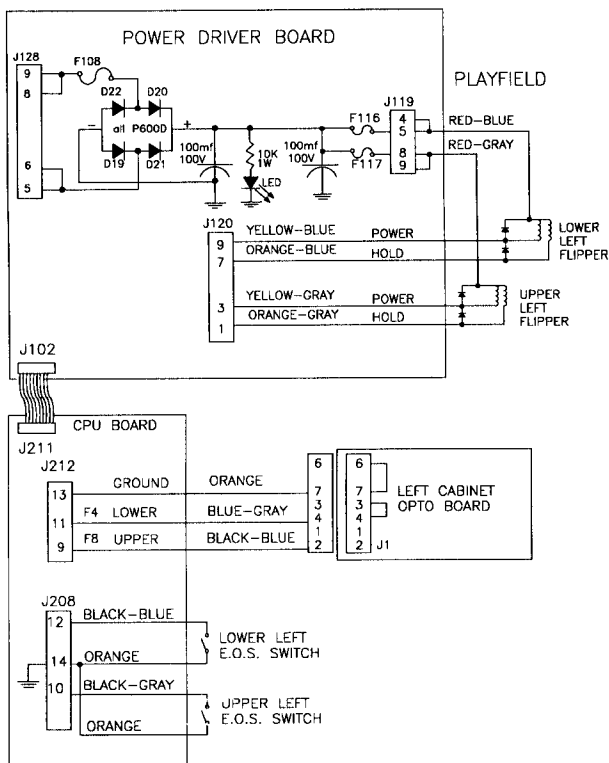
FLIPPER CIRCUIT DIAGRAM



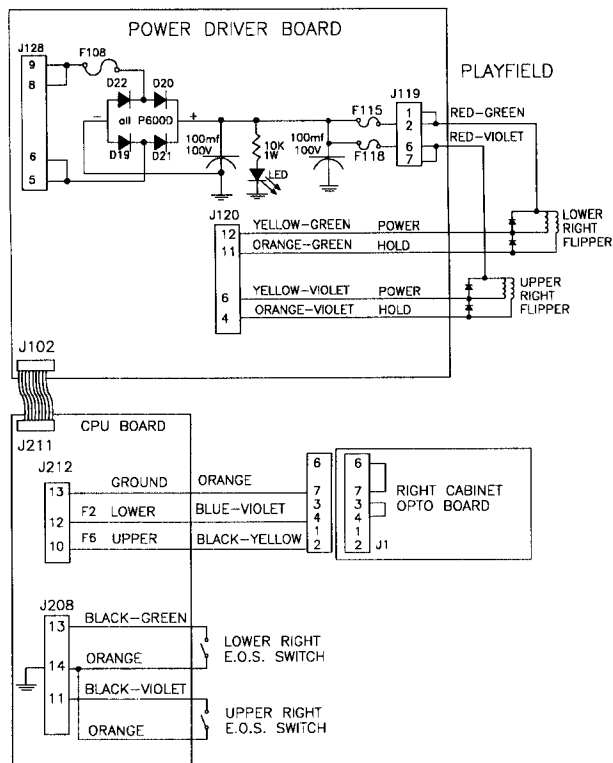
The upper right flipper coil power and hold circuits are used for the Left Diverter. The upper left flipper coil power circuit is used for the Vanish Magnet. The upper left flipper hold circuit is used for the Loop Post Diverter.

FLIPPER COIL CIRCUITS

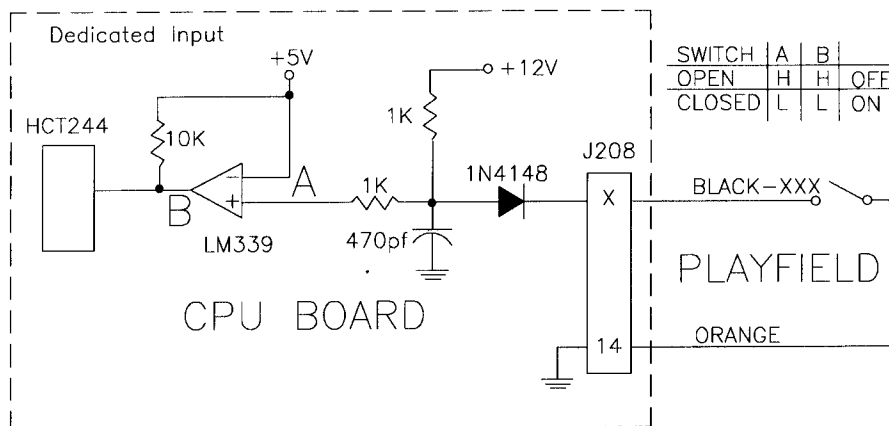
LEFT FLIPPER CIRCUIT



RIGHT FLIPPER CIRCUIT



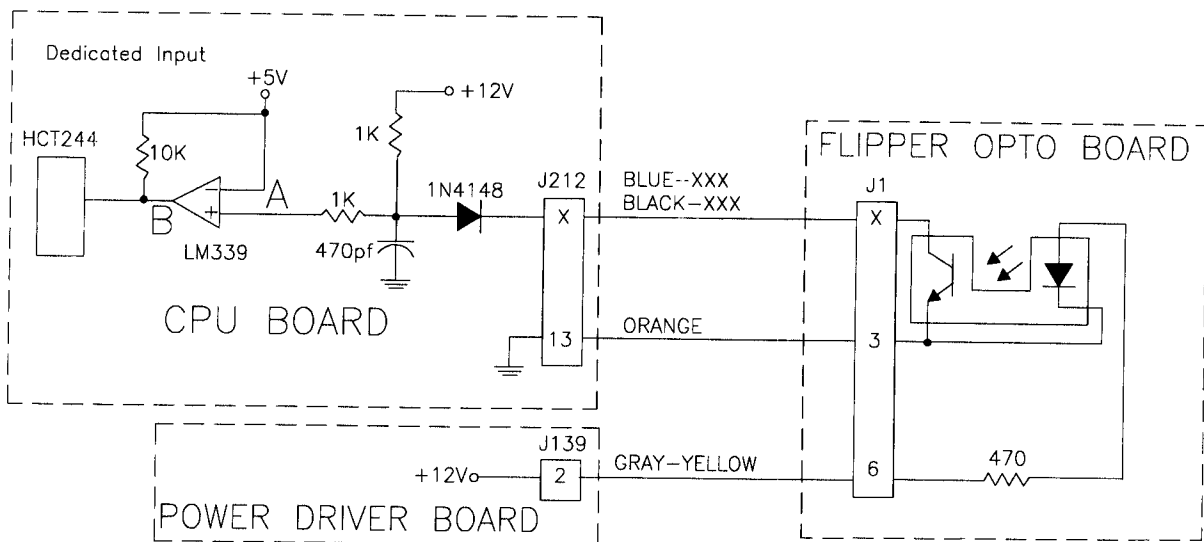
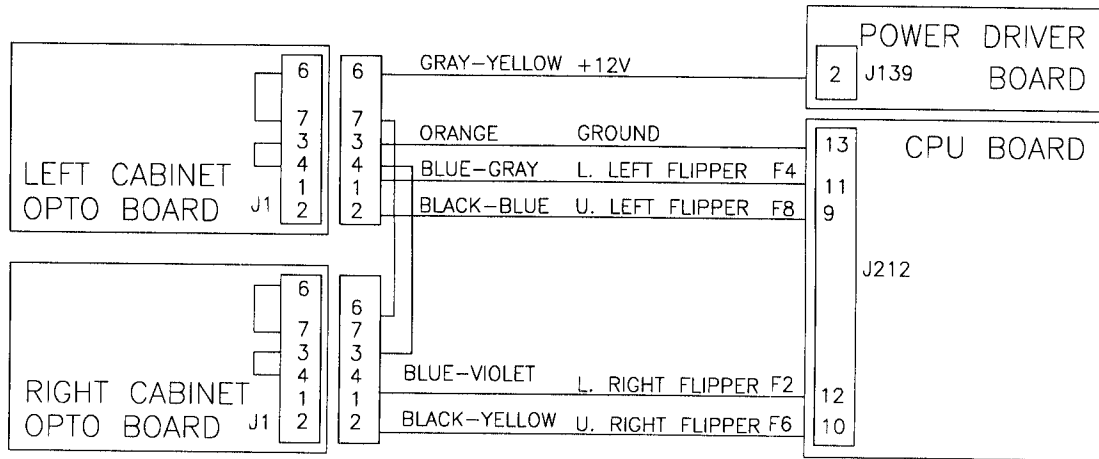
FLIPPER END-OF-STROKE SWITCH CIRCUIT



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

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

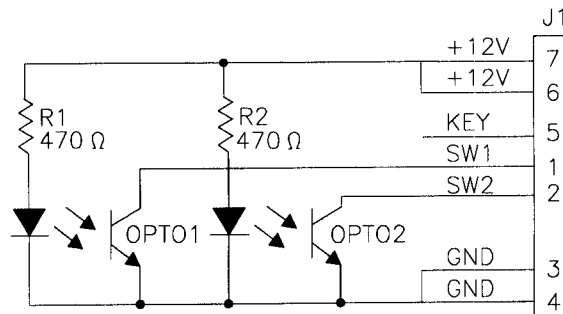
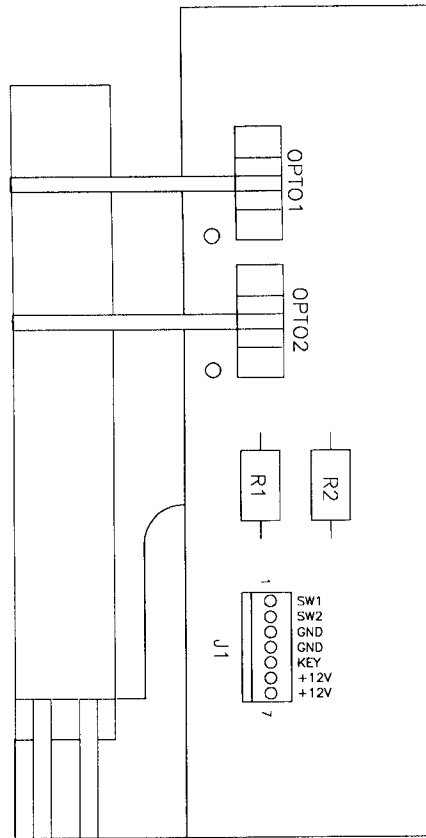
FLIPPER CABINET SWITCH CIRCUITS



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

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

FLIPPER OPTO BOARD ASSEMBLY A-17316



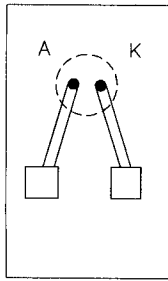
Left Flipper Opto Board Assembly

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

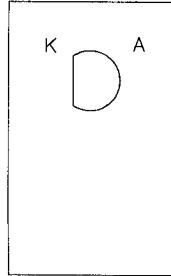
Right Flipper Opto Board Assembly

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

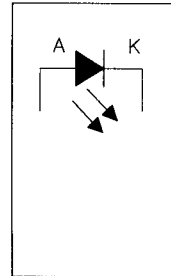
**LED BOARD ASSEMBLY
A-16908
(TRANSMITTER-GREEN BOARD)**



solder side

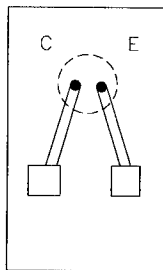


component side

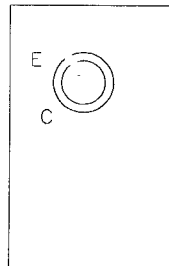


schematic

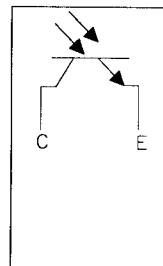
**PHOTO TRANSISTOR BOARD ASSEMBLY
A-16909
(RECEIVER-BLUE BOARD)**



solder side



component side



schematic

TYPICAL CIRCUIT DIAGRAM

LED BOARD
Transmitter
1.0-1.4 volts

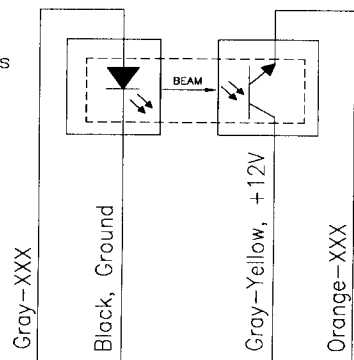
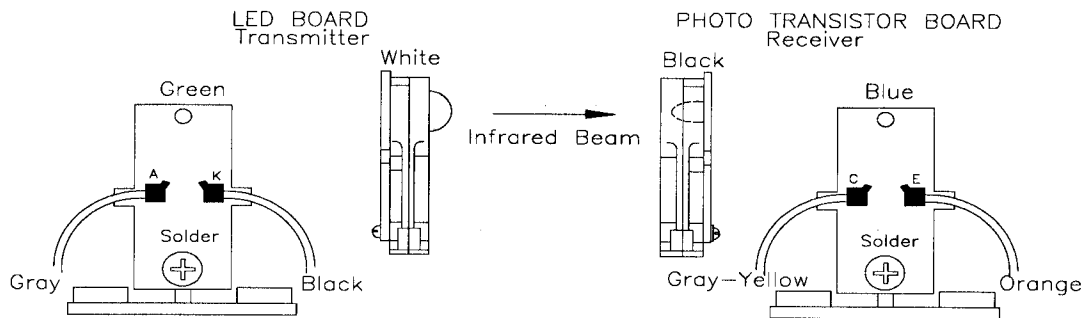
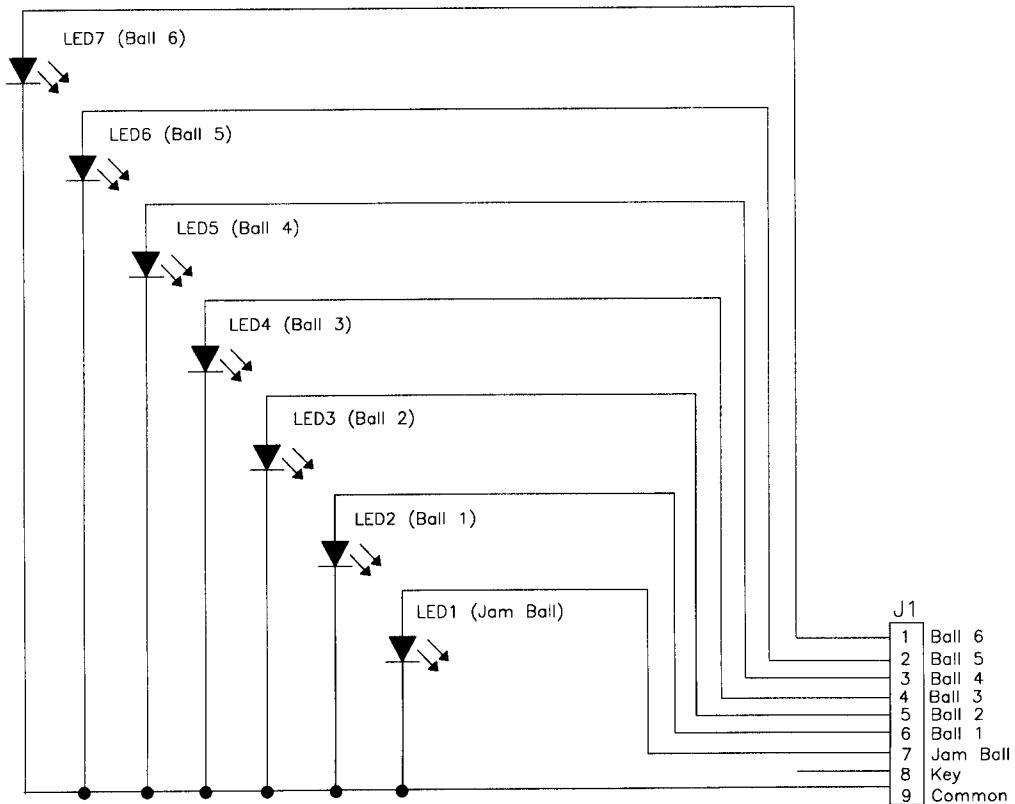
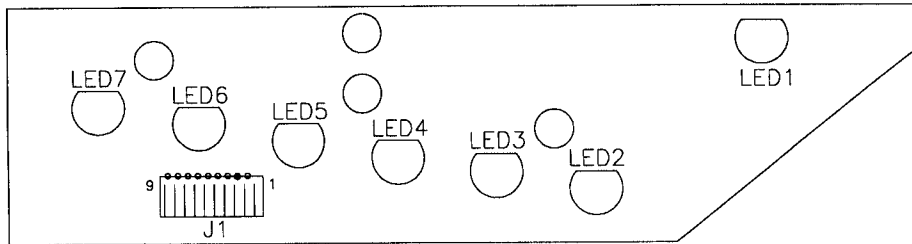


PHOTO TRANSISTOR BOARD
Receiver
0.1-0.7 volts unblocked
11-13 volts blocked

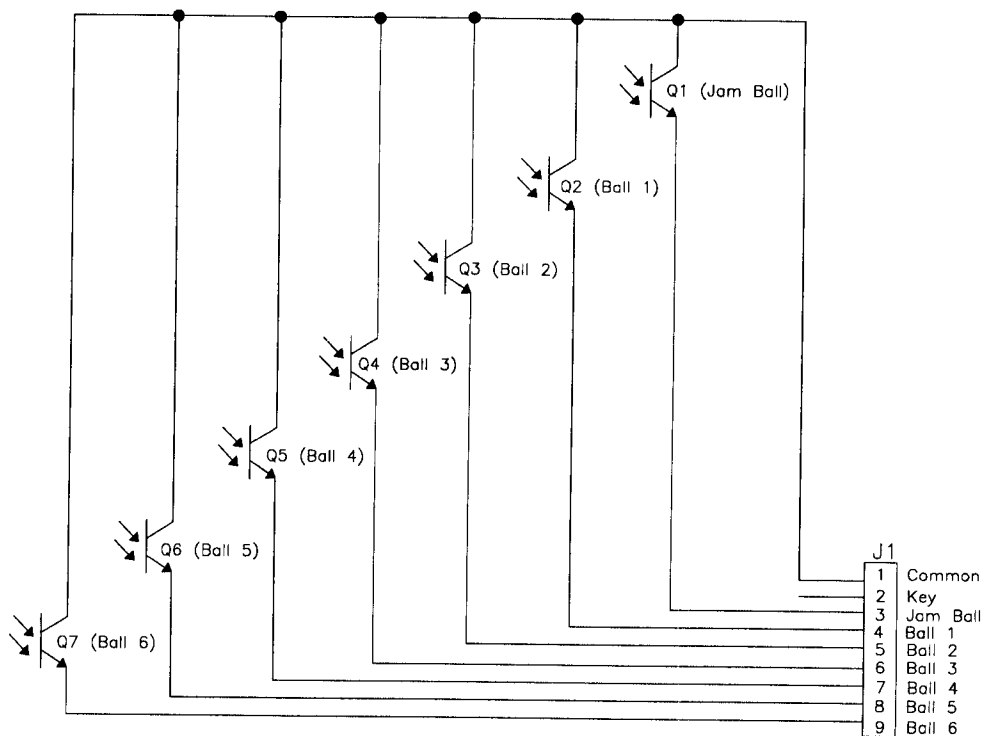
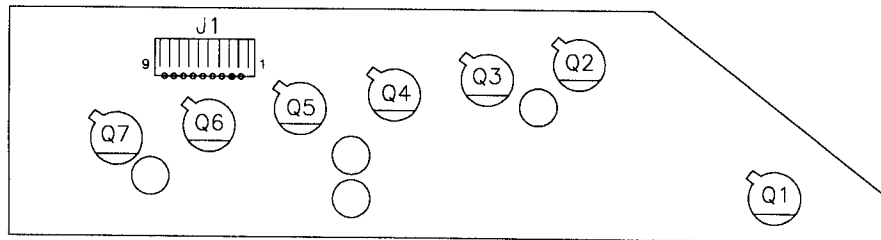


Trough IR LED Board Assembly (transmitter-green board) A-18617-1



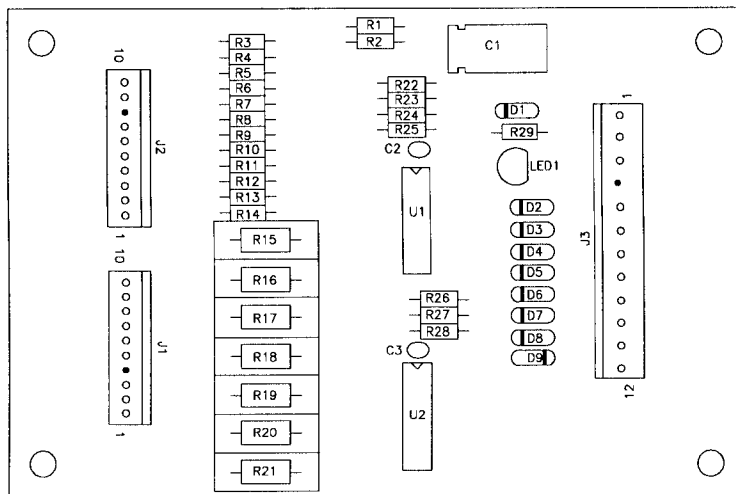
- J1-1 N/C
- J1-2 N/C
- J1-3 GRY-GRN, LED 5, to 7-Opto Switch Board J1-3
- J1-4 GRY-BLK, LED 4, to 7-Opto Switch Board J1-5
- J1-5 GRY-ORG, LED 3, to 7-Opto Switch Board J1-6
- J1-6 GRY-RED, LED 2, to 7-Opto Switch Board J1-7
- J1-7 GRY-BRN, LED 1, to 7-Opto Switch Board J1-8
- J1-8 Key
- J1-9 BLK, ground, to 7-Opto Switch Board J1-9

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



- J1-1 GRY-YEL, +12V, to 7-Opto Switch Board J2-9
- J1-2 Key
- J1-3 ORG-BRN, Photo Transistor 1, to 7-Opto Switch Board J2-7
- J1-4 ORG-RED, Photo Transistor 2, to 7-Opto Switch Board J2-6
- J1-5 ORG-BLK, Photo Transistor 3, to 7-Opto Switch Board J2-5
- J1-6 ORG-YEL, Photo Transistor 4, to 7-Opto Switch Board J2-4
- J1-7 ORG-GRN, Photo Transistor 5, to 7-Opto Switch Board J2-3
- J1-8 N/C
- J1-9 N/C

7-Opto Switch Board Assembly A-15576

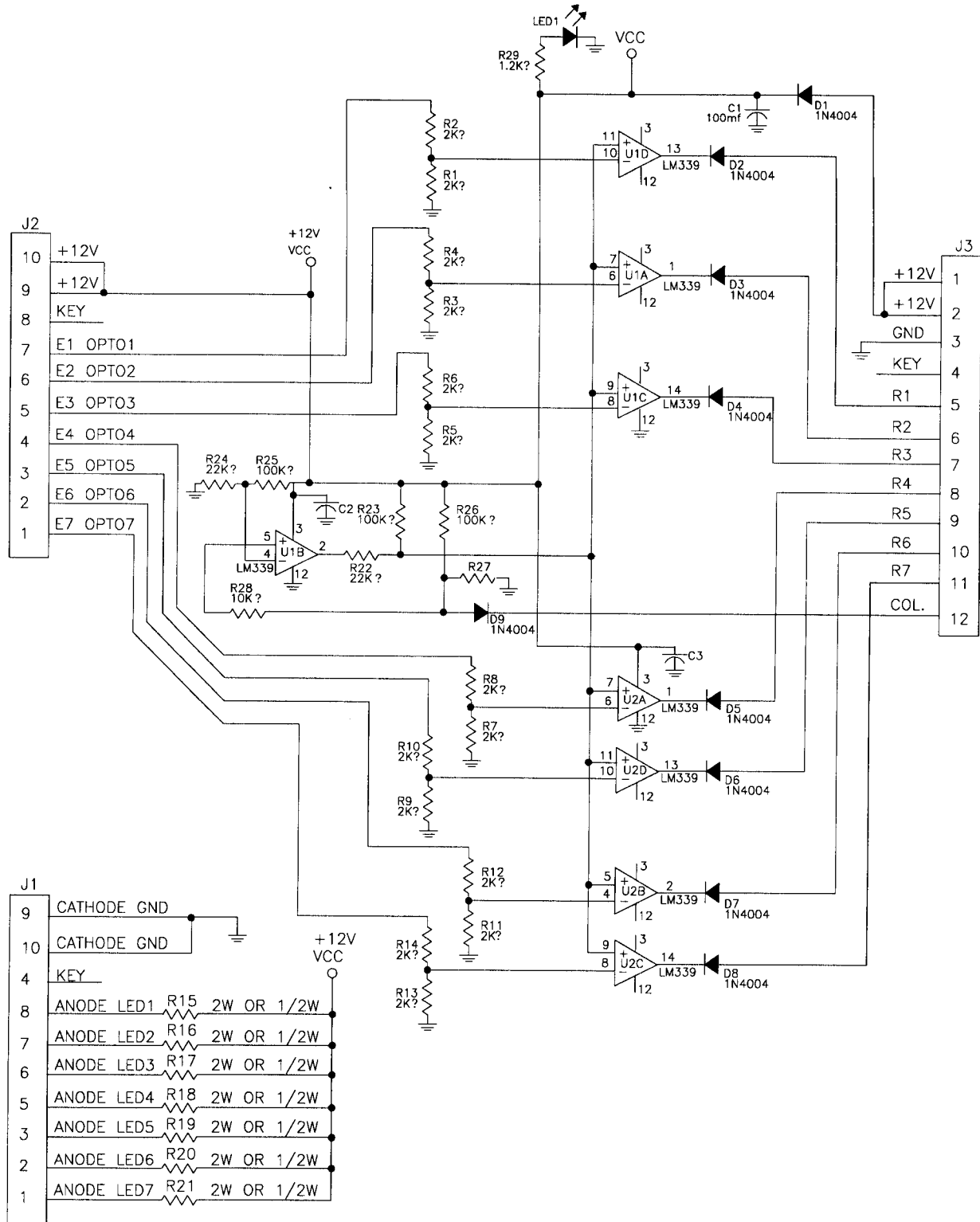


J1-1 GRY-VIO, to switch 37 Right Cage LED board
 J1-2 GRY-BLU, to switch 36 Left Cage LED board
 J1-3 GRY-GRN, to Trough LED board J1-3
 J1-4 KEY
 J1-5 GRY-BLK, to Trough LED board J1-4
 J1-6 GRY-ORG, to Trough LED board J1-5
 J1-7 GRY-RED, to Trough LED board J1-6
 J1-8 GRY-BRN, to, Trough LED board J1-7
 J1-9 BLK, ground to Trough LED board J1-9
 J1-10 N/C

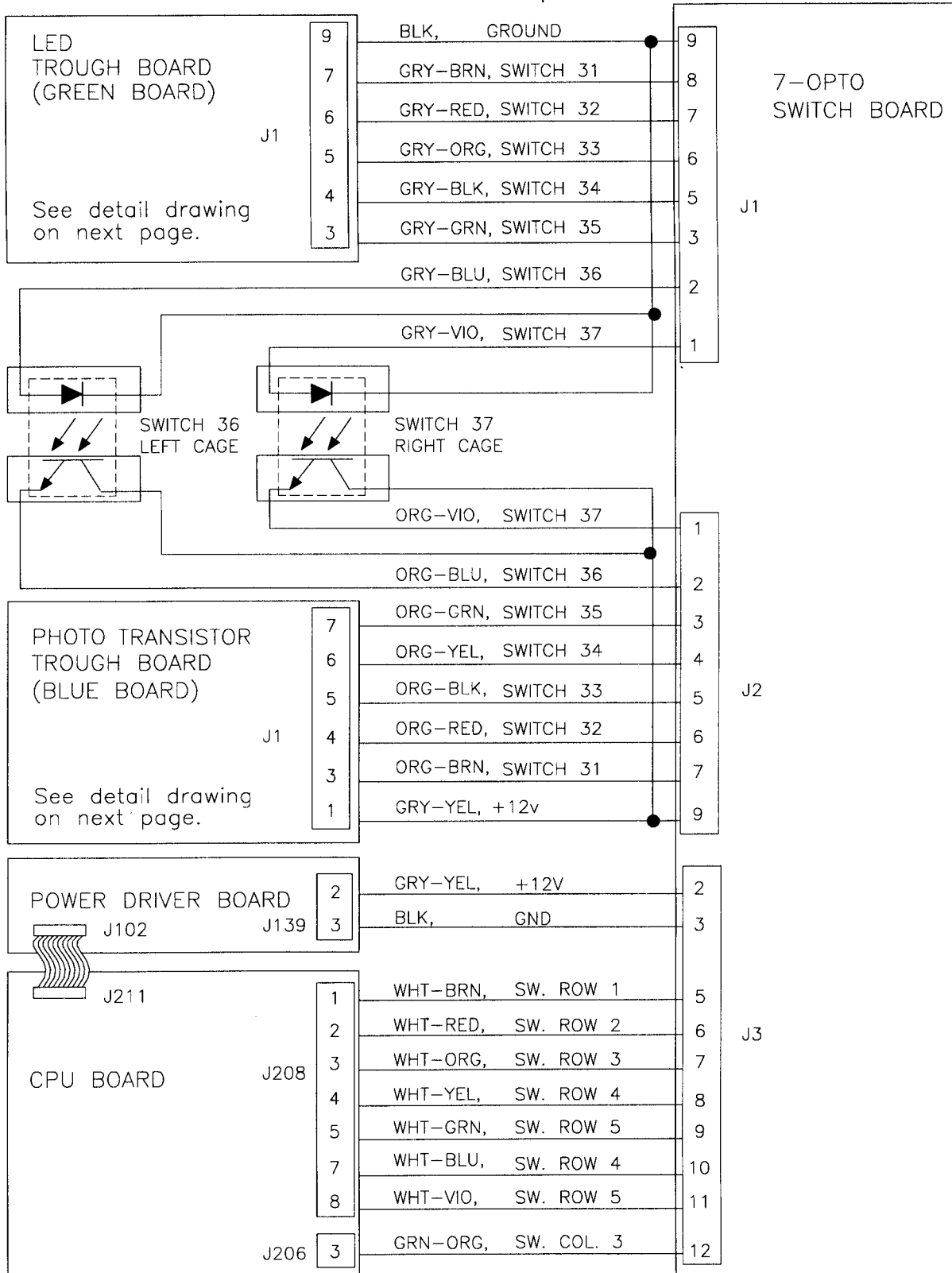
J2-1 ORG-VIO, to switch 37 Right Cage Photo Transistor board
 J2-2 ORG-BLU, to switch 36 Left Cage Photo Transistor board
 J2-3 ORG-GRN, to Trough Photo Transistor board J1-7
 J2-4 ORG-YEL, to Trough Photo Transistor board J1-6
 J2-5 ORG-BLK, to Trough Photo Transistor board J1-5
 J2-6 ORN-RED, to Trough Photo Transistor board J1-4
 J2-7 ORG-BRN, to Trough Photo Transistor board J1-3
 J2-8 KEY
 J2-9 GRY-YEL, +12V to Trough Photo Transistor board J1-1
 J2-10 N/C

J3-1 N/C
 J3-2 GRY-YEL, +12V, from Power Driver board J139-2
 J3-3 BLK, ground from Power Driver board J139-3
 J3-4 KEY
 J3-5 WHT-BRN, switch row 1 from CPU board J208-1
 J3-6 WHT-RED, switch row 2 from CPU board J208-2
 J3-7 WHT-ORG, switch row 3 from CPU board J208-3
 J3-8 WHT-YEL, switch row 4 from CPU board J208-4
 J3-9 WHT-GRN, switch row 5 from CPU board J208-5
 J3-10 WHT-BLU switch row 6 from CPU board J208-7
 J3-11 WHT-VIO switch row 7 from CPU board J208-8
 J3-12 GRN-ORG, switch row 3 from CPU board J206-3

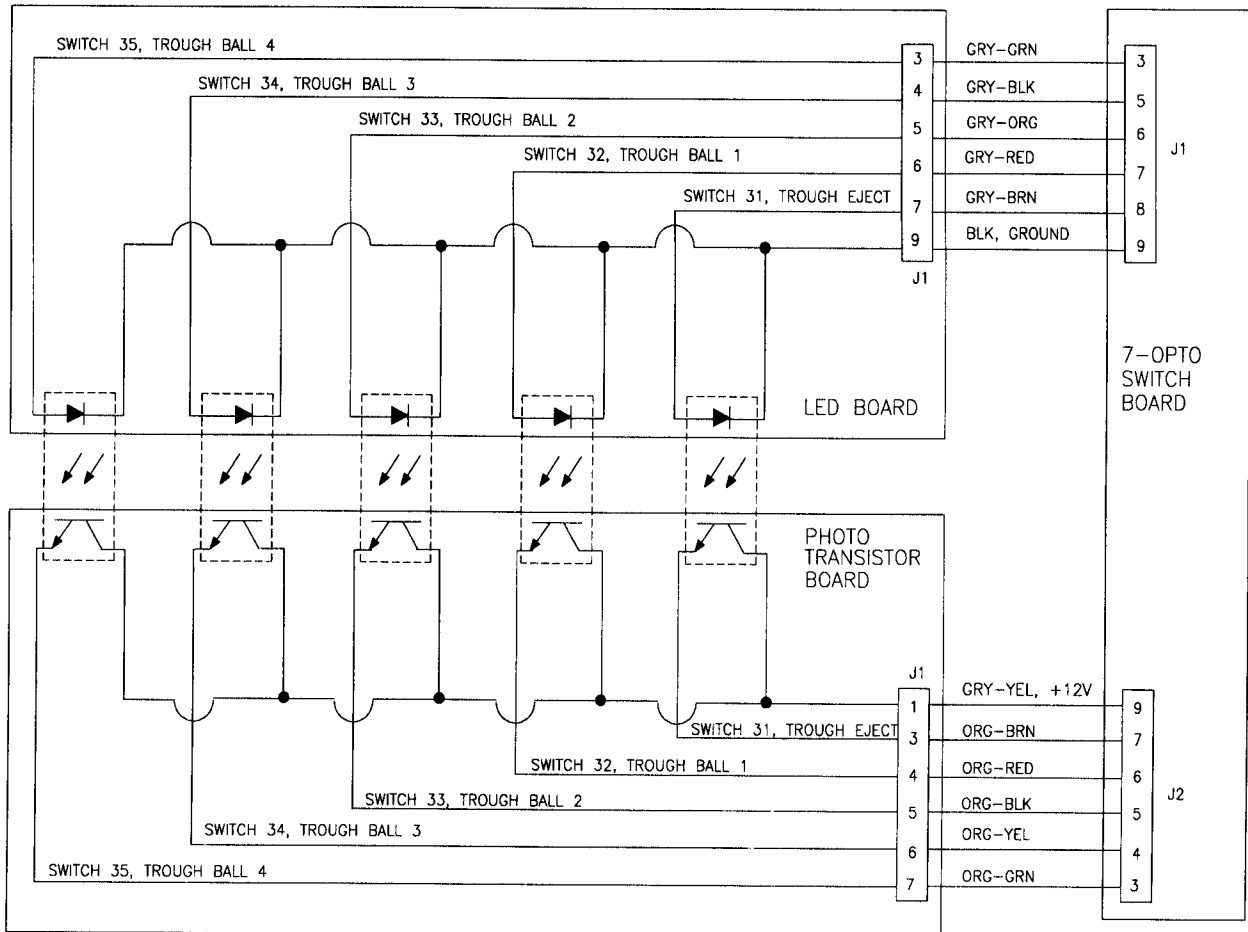
7-Opto Switch Board Schematic A-15576



Playfield Opto Switches Wiring Diagram

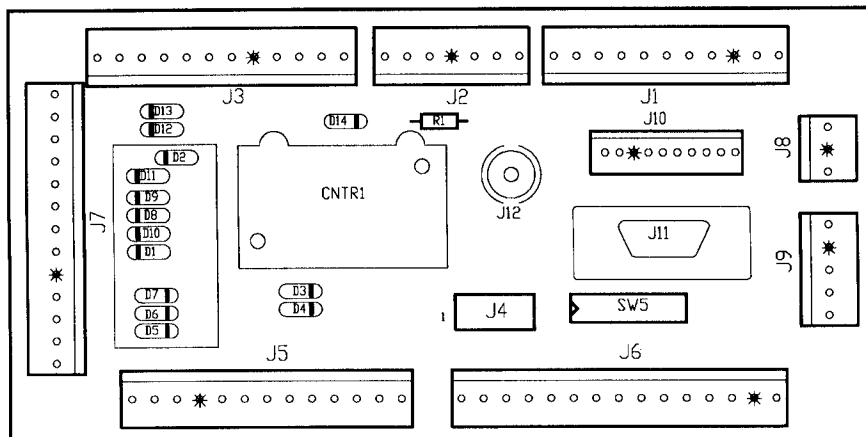


Trough Opto Switches Wiring Diagram



THE BALL ROLLS BETWEEN THE LED BOARD AND THE PHOTO TRANSISTOR BOARD, BREAKING THE BEAM. WHEN THE BEAM IS BROKEN THE SWITCH IS MADE.

Coin Door Interface Board A-20580



J1-1 Orange-Gray, ded. switch row 8 from 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 J141-3
 J2-2 Gray-Yellow, +12vac for Power Driver Board J141-2
 J2-3 White-Violet, G.I. 6.8vac from Power Driver J104-1
 J2-4 Key
 J2-5 Violet, G.I. from Power Driver Board J104-3
 J2-6 N/C
 J2-7 Black-White, signal for coin meter from Power Driver board J139-5

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 J122-3
 J3-9 Red-Blue, lamp row 6 from Power Driver J125-7
 J3-10 Red-Violet, lamp row 7 from Power Driver J125-8
 J3-11 Red-Gray, lamp row 8 from Power Driver J125-9

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

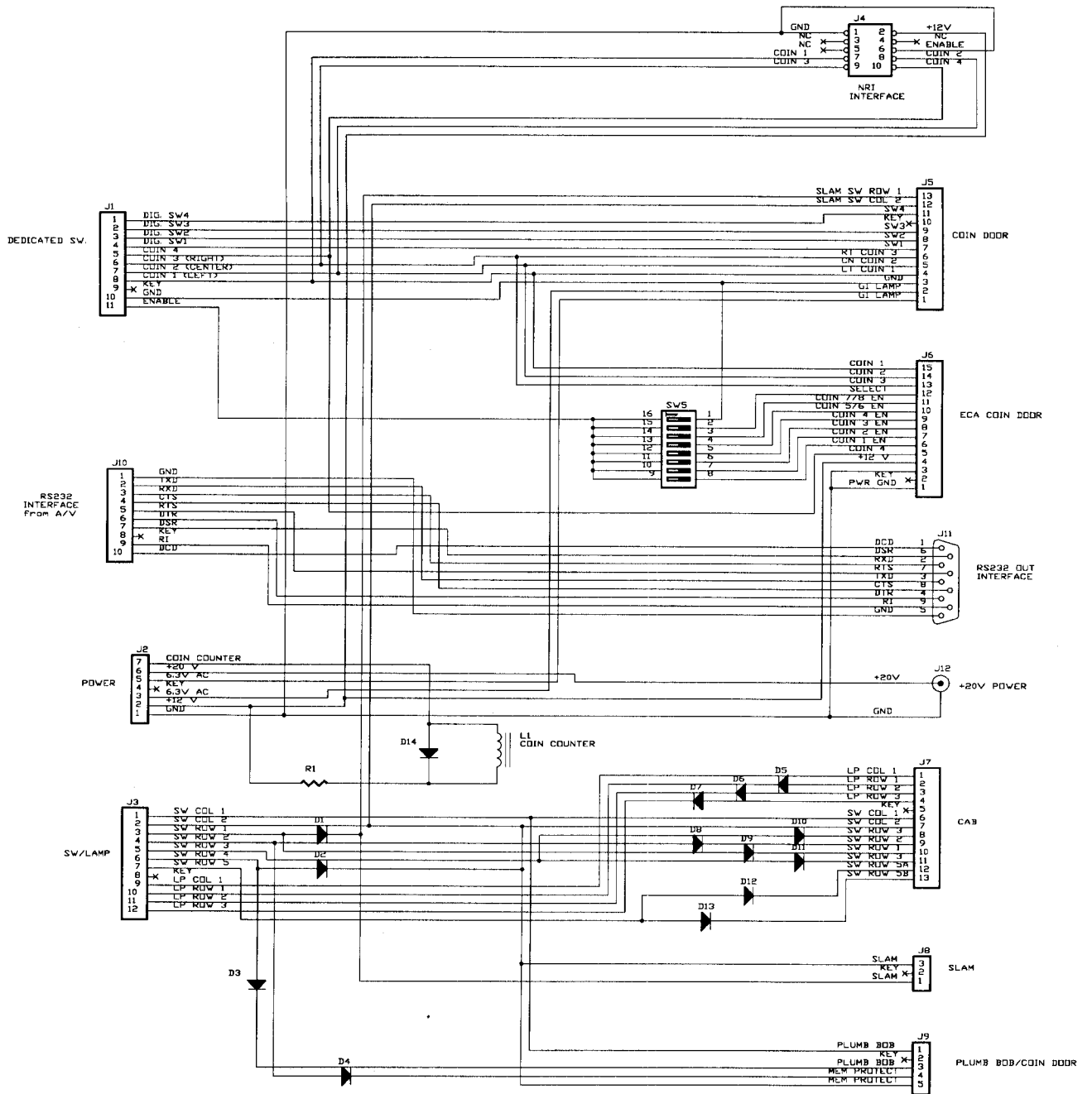
J7-1 Yellow-Gray, lamp column 8 to cabinet
 J7-2 N/C
 J7-3 N/C
 J7-4 Red-Gray, lamp row 8 to cabinet
 J7-5 Key
 J7-6 Green-Brown, switch column 1 to cabinet
 J7-7 N/C
 J7-8 N/C
 J7-9 N/C
 J7-10 N/C
 J7-11 White-Orange, switch row 3 to cabinet
 J7-12 N/C
 J7-13 N/C

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

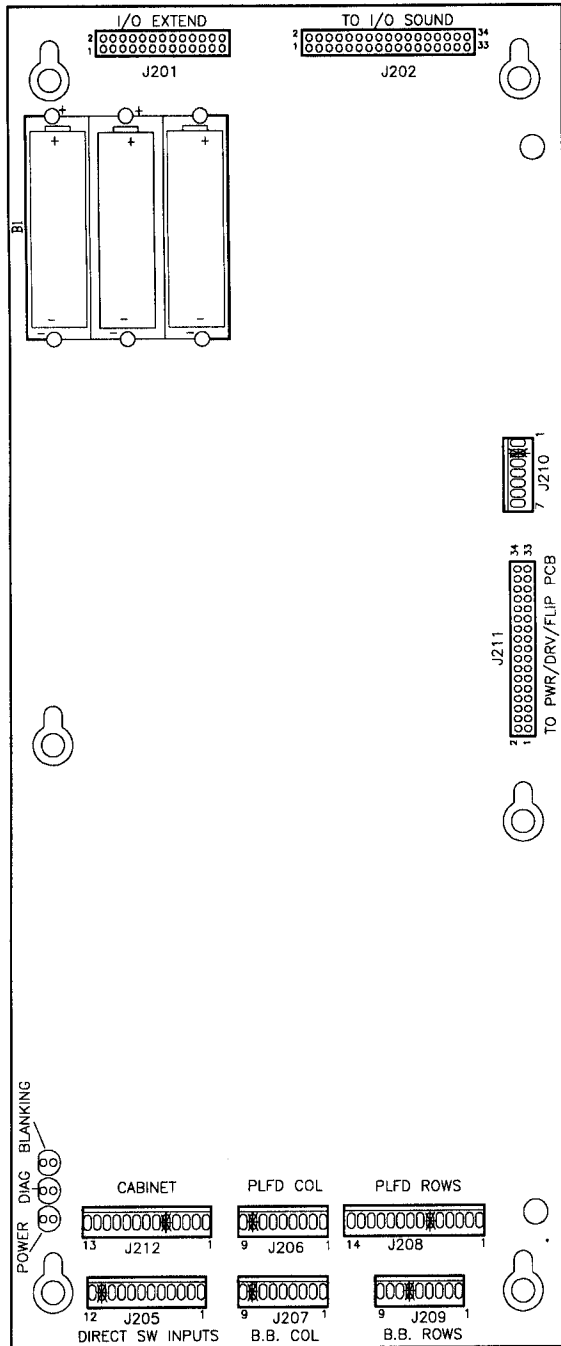
J10, Ribbon cable to cash flow coin mechanism.

Coin Door Interface Board Schematic A-20580



Security CPU Board Assembly

A-20119-50047



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

J202, 34-pin ribbon cable, data to/from 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 N/C
 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 KEY
 J205-12 Orange-White, switch enable, to Coin Door Brd J1-11

J206-1 Green-Brown, switch column 1, to playfield switches
 J206-2 Green-Red, switch column 2, to playfield switches
 J206-3 Green-Orange, switch column 3, to playfield switches
 J206-4 Green-Yellow, switch column 4, to playfield switches
 J206-5 Green-Black, switch column 5, to playfield switches
 J206-6 Green-Blue, switch column 6, to playfield switches
 J206-7 N/C
 J206-8 Key
 J206-9 N/C

J207- Not Used

J208-1 White-Brown, switch row 1, to playfield switches
 J208-2 White-Red, switch row 2, to playfield switches
 J208-3 White-Orange, switch row 3, to playfield switches
 J208-4 White-Yellow, switch row 4, to playfield switches
 J208-5 White-Green, switch row 5, to playfield switches
 J208-6 Key
 J208-7 White-Blue, switch row 6, to playfield switches
 J208-8 White-Violet, switch row 7, to playfield switches
 J208-9 White-Gray, switch row 8, to playfield switches
 J208-10 N/C
 J208-11 N/C
 J208-12 Black-Blue, F3, to lower left E.O.S. switch
 J208-13 Black-Green, F1, to lower right E.O.S. switch
 J208-14 Orange, ground to E.O.S. switches

J209- Not Used

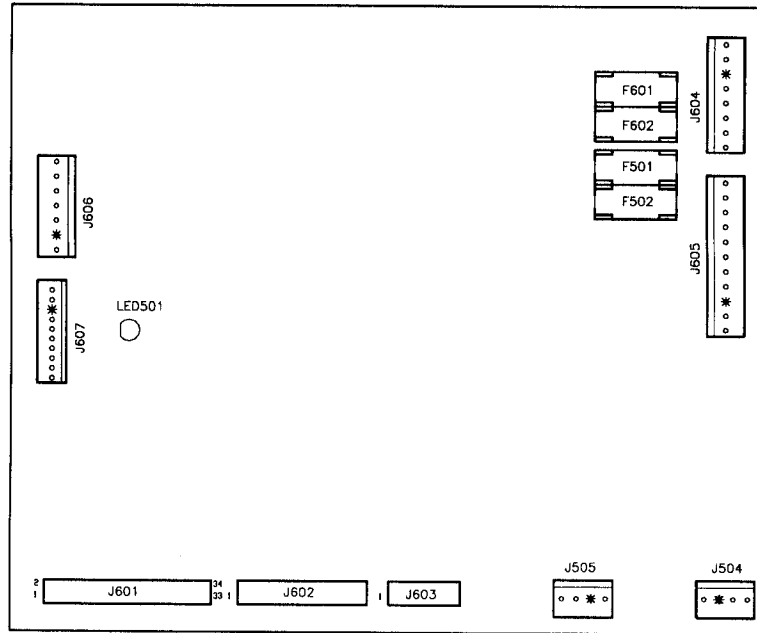
J210-1 Black, ground, from Power Driver Board J101-5,7
 J210-2 Key
 J210-3 Black, ground, from Power Driver Board J101-5, 7
 J210-4 Gray, +5V, from Power Driver Board J101-3, 4
 J210-5 Gray, +5V, from Power Driver Board J101-3, 4
 J210-6 Gray-Green, +12V, from Power Driver Board J101-1, 2
 J210-7 Gray-Green, +12V, from Power Driver Board J101-1, 2

J211, 34-pin ribbon cable, data to/from J102

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
 J212-9 Black-Blue, F8, to left flipper opto board J1-1
 J212-10 Black-Yellow, F6, to right flipper opto board J1-1
 J212-11 Blue-Gray, F4, to left flipper opto board J1-2
 J212-12 Blue-Violet, F2, to right flipper opto board J1-2
 J212-13 Orange, Ground to left flipper opto board J1-4

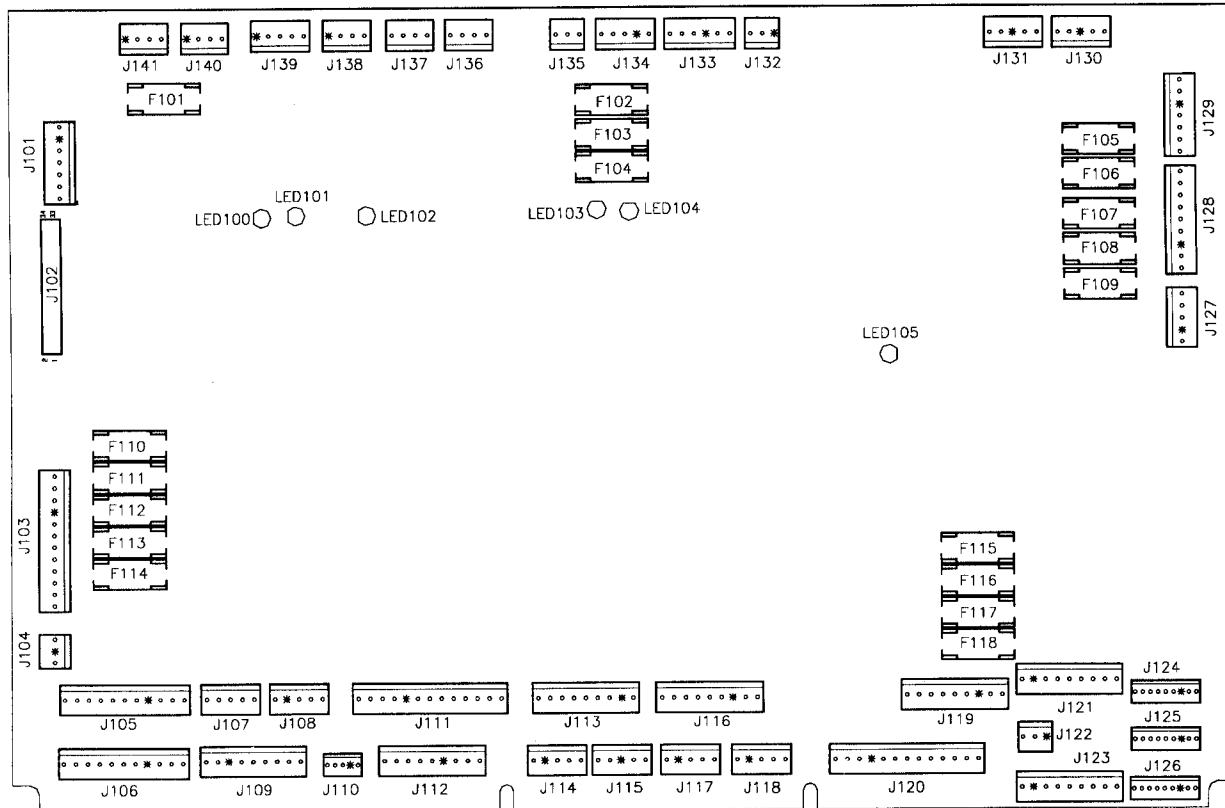
Audio Visual Board Assembly

A-20516-50047



| | | | |
|---------|---|--------|---------------------------------|
| J601 | 34-pin ribbon cable, data to CPU J202 | J504-1 | Black-Yellow, signal to speaker |
| J602 | 26-pin ribbon cable, data to CPU J201 | J504-2 | Key |
| J603 | 14-pin ribbon cable, data to/from dot matrix display driver | J504-3 | N/C |
| J604-1 | Orange, -125V to display driver pin 1 | J504-4 | Black, signal to speaker |
| J604-2 | Blue, -113V to display driver pin 2 | J505-1 | Black-Yellow, signal to speaker |
| J604-3 | Key | J505-2 | N/C |
| J604-4 | Black, ground to display driver pin 4 | J505-3 | Key |
| J604-5 | Black, ground to display driver pin 5 | J505-4 | Black, signal to speaker |
| J604-6 | Gray, +5V to display driver pin 6 | | |
| J604-7 | Gray-Yellow, +12 to display driver pin 7 | | |
| J604-8 | Brown, +62 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 | Violet, 100VAC from transformer secondary | | |
| J605-5 | Gray-White, 18VAC from transformer secondary | | |
| J605-6 | Gray-White, loop from J605-5 | | |
| J605-7 | Gray, 18VAC from transformer secondary | | |
| J605-8 | Gray, loop from J605-7 | | |
| J605-9 | Key | | |
| J605-10 | Gray-Green, 18VAC from transformer secondary | | |
| J605-11 | Gray-Green, 18VAC loop from J605-10 | | |
| J606-1 | Black, ground from power driver board J101-7 | | |
| J606-2 | Key | | |
| J606-3 | Black, ground from power driver board J101-5 | | |
| J606-4 | Gray, +5V from power driver board J101-4 | | |
| J606-5 | Gray, +5V from power driver board J101-3 | | |
| J606-6 | Gray-Green, +12V from power driver board J101-2 | | |
| J606-7 | Gray-Green, +12V from power driver board J101-1 | | |
| J607 | Not Used | | |

Power Driver Board Assembly A-20028



- J101-1 Gray-Green, +12V to J210-6, 7; J606-1
- J101-2 Gray-Green, +12V to J210-6, 7; J606-2
- J101-3 Gray, +5V to J210-4, 5; J3-1,3; J606-3
- J101-4 Gray, +5V to J210-4, 5; J3-1,3; J606-4
- J101-5 Black, ground to J210-1, 3; J606-5
- J101-6 Key
- J101-7 Black, ground to J210-1,3; J606-7

- J102, 34-pin ribbon cable, data to/from CPU J211

- J103-1 Yellow-White, 6.8Vac from xformer secondary
- J103-2 White-Brown, 6.8Vac from xformer secondary
- J103-3 White-Brown, 6.8Vac from xformer secondary
- J103-4 White-Orange, 6.8Vac from xformer secondary
- J103-5 White-Yellow, 6.8Vac from xformer secondary
- J103-6 White-Yellow, 6.8Vac from xformer secondary
- J103-7 Orange, 6.8Vac from xformer secondary
- J103-8 Orange, 6.8Vac from xformer secondary
- J103-9 Key
- J103-10 Green, 6.8Vac from xformer secondary
- J103-11 Brown, 6.8Vac from xformer secondary
- J103-12 Brown, 6.8Vac from xformer secondary

- J104-1 Violet, return, G.I. to Coin Door Board J2-3
- J104-2 Key
- J104-3 White-Violet, 6.8Vac, G.I. to Coin Door BrdJ2-5

- J105-1 N/C
- J105-2 N/C
- J105-3 N/C
- J105-4 Key
- J105-5 Green, return, G.I. to insert panel
- J105-6 Violet, return, G.I. to insert panel
- J105-7 N/C
- J105-8 N/C
- J105-9 N/C
- J105-10 White-Green, 6.8Vac, G.I. to insert panel
- J105-11 White-Violet, 6.8Vac, G.I. to inset panel

- J106-1 Brown, return, G.I. to playfield
- J106-2 Orange, return, G.I. to playfield
- J106-3 Yellow, return, G.I. to playfield
- J106-4 Key
- J106-5 N/C
- J106-6 N/C
- J106-7 White-Brown, 6.8Vac, G.I. to playfield
- J106-8 White-Orange, 6.8Vac, G.I. to playfield
- J106-9 White-Yellow, 6.8Vac, G.I. to playfield
- J106-10 N/C
- J106-11 N/C

- J107-Not Used

Power Driver Board Continued...

J108-1 Blue-Brown, solenoid 25 drive to insert panel flasher
J108-2 Blue-Red, solenoid 26 drive to insert panel flasher
J108-3 Blue-Orange, solenoid 27 drive to insert panel flasher
J108-4 Key
J108-5 N/C

J109-1 Blue-Brown, solenoid 25 drive to playfield flasher
J109-2 Blue-Red, solenoid 26 drive to playfield flasher
J109-3 Blue-Orange, solenoid 27 drive to playfield flasher
J109-4 Blue-Yellow, solenoid 28 drive to playfield flasher
J109-5 N/C
J109-6 N/C
J109-7 Key
J109-8 N/C
J109-9 N/C

J110- Not Used

J111-1 Black-Brown, solenoid 17 drive to playfield flasher
J111-2 Black-Red, solenoid 18 drive to playfield flasher
J111-3 Black-Orange, solenoid 19 drive to playfield flasher
J111-4 Black-Yellow, solenoid 20 drive to playfield flasher
J111-5 Blue-Green, solenoid 21 drive to playfield coil
J111-6 Blue-Black, solenoid 22 drive to playfield flasher
J111-7 Blue-Violet, solenoid 23 drive to playfield flasher
J111-8 Blue-Gray, solenoid 24 drive to playfield flasher
J111-9 Key
J111-10 N/C
J111-11 N/C
J111-12 Red-Orange, tieback diode for solenoid 21
J111-13 N/C

J112-Not Used

J113-1 Brown-Black, solenoid 9 drive to playfield coil
J113-2 Key
J113-3 Brown-Red, solenoid 10 drive to playfield coil
J113-4 Brown-Orange, solenoid 11 drive to playfield coil
J113-5 Brown-Yellow, solenoid 12 drive to playfield coil
J113-6 Brown-Green, solenoid 13 drive to playfield coil
J113-7 Brown-Blue, solenoid 14 drive to playfield coil
J113-8 Brown-Violet, solenoid 15 drive to playfield coil
J113-9 Brown-Gray, solenoid 16 drive to playfield flasher

J114-1 N/C
J114-2 N/C
J114-3 N/C
J114-4 Key
J114-5 Brown-Gray, solenoid 16 drive to insert panel flasher

J115- Not Used

J116-1 Violet-Brown, solenoid 1 drive to playfield coil
J116-2 Violet-Red, solenoid 2 drive to playfield coil
J116-3 Key
J116-4 Violet-Orange, solenoid 3 drive to playfield coil
J116-5 Violet-Yellow, solenoid 4 drive to playfield coil
J116-6 Violet-Green, solenoid 5 drive to playfield coil
J116-7 Violet-Blue, solenoid 6 drive to playfield coil
J116-8 Violet-Black, solenoid 7 drive to backbox coil
J116-9 Violet-Gray, solenoid 8 drive to playfield coil

J117- Not Used

J118- Not Used

J119-1 Red-Green, +50V to lower right flipper coil
J119-2 Red-Green, loop from J119-1
J119-3 Key
J119-4 Red-Blue, loop from J119-5
J119-5 Red-Blue, +50V to lower left flipper coil
J119-6 Red-Violet, +50V to solenoids 33 and 34
J119-7 Red-Violet, loop from J119-6
J119-8 Red-Gray, +50V to solenoids 35 and 36
J119-9 Red-Gray, Loop from J119-8

J120-1 Orange-Gray, solenoid 36 drive to coil
J120-2 N/C
J120-3 Yellow-Gray, solenoid 35 drive to coil
J120-4 Orange-Violet, solenoid 34 drive to coil
J120-5 N/C
J120-6 Yellow-Violet, solenoid 33 drive to coil
J120-7 Orange-Blue, holding, lower left flipper coil
J120-8 N/C
J120-9 Yellow-Blue, power, lower left flipper coil
J120-10 Key
J120-11 Orange-Green, holding, lower right flipper coil
J120-12 N/C
J120-13 Yellow-Green, power, lower right flipper coil

J121-Not Used

J122-1 Key
J122-2 N/C
J122-3 Yellow-Gray, lamp column 8 to cabinet

J123-1 Yellow-Brown, lamp column 1 to playfield
J123-2 Yellow-Red, lamp column 2 to playfield
J123-3 Yellow-Orange, lamp column 3 to playfield
J123-4 Yellow-Black, lamp column 4 to playfield
J123-5 Yellow-Green, lamp column 5 to playfield
J123-6 Yellow-Blue, lamp column 6 to playfield
J123-7 Yellow-Violet, lamp column 7 to playfield
J123-8 Key
J123-9 Yellow-Gray, lamp column 8 to playfield

J124-Not Used

Power Driver Board Continued...

J125-1 Red-Brown, lamp row 1 to playfield
J125-2 Red-Black, lamp row 2 to playfield
J125-3 Key
J125-4 Red-Orange, lamp row 3 to playfield
J125-5 Red-Yellow, lamp row 4 to playfield
J125-6 Red-Green, lamp row 5 to playfield
J125-7 Red-Blue, lamp row 6 to playfield
J125-8 Red-Violet, lamp row 7 to playfield
J125-9 Red-Gray, lamp row 8 to playfield

J126-1 N/C
J126-2 N/C
J126-3 Key
J126-4 N/C
J126-5 N/C
J126-6 N/C
J126-7 Red-Blue, lamp row 6 to cabinet
J126-8 Red-Violet, lamp row 7 to cabinet
J126-9 Red-Gray, lamp row 8 to cabinet

J127-1 White-Green, 9.8Vac from xformer secondary
J127-2 White-Green, 9.8Vac loop from J112-1
J127-3 White-Green, 9.8Vac from xformer secondary
J127-4 Keys
J127-5 White-Green, 9.8VAC loop from J112-3

J128-1 White-Red, 16Vac loop from J102-2
J128-2 White-Red, 16Vac from xformer secondary
J128-3 White-Red, 16Vac loop from J102-4
J128-4 White-Red, 16Vac from xformer secondary
J128-5 Black-Yellow, 16Vac loop from J102-6
J128-6 Black-Yellow, 16Vac from xformer secondary
J128-7 Key
J128-8 Black-Yellow, 16Vac loop from J102-9
J128-9 Black-Yellow, 16Vac from xformer secondary

J129-1 Red, 9Vac from xformer secondary
J129-2 Red, 9Vac from transformer secondary
J129-3 Key
J129-4 Blue-White, 13Vac from xformer secondary
J129-5 Blue-White, 13Vac loop from J101-4
J129-6 Blue-White, 13Vac from xformer secondary
J129-7 Blue-White, 13Vac loop from J101-6

J130-Not Used

J131-Not Used

J132-Not Used

J133-1 Red-Orange, +50V to coils
J133-2 Red-Brown, +50V to coils
J133-3 Red-Black, +50V to coils
J133-4 Key
J133-5 N/C
J133-6 Red-White, +20V to playfield flasher

J134-1 N/C
J134-2 N/C
J134-3 N/C
J135-4 Key
J134-5 Red-White, +20V to insert panel flasher

J135- Not Used

J136- Not Used

J137- Not Used

J138- Not Used

J139-1 Key

J139-2 Gray-Yellow, +12V to playfield boards

J139-3 Black, ground to playfield boards

J139-4 N/C

J139-5 Black-White, signal for coin meter to Coin Door Interface board J2-7.

J140-Not Used

J141-1 Key

J141-2 Gray-Yellow, +12V to Coin Door Board J2-2

J141-3 Black, ground to Coin Door Board J2-1

J141-4 N/C

LAMP MATRIX

Yellow (B+) → Red

| Column Row | 1 Yellow-Brown J121-1 Q96 | 2 Yellow-Red J121-2 Q100 | 3 Yellow-Orange J121-3 Q95 | 4 Yellow-Black J121-4 Q99 | 5 Yellow-Green J121-5 Q94 | 6 Yellow-Blue J121-6 Q98 | 7 Yellow-Violet J121-7 Q93 | 8 Yellow-Gray J121-9 Q97 |
|--------------------------------|------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|
| 1 Red-Brown J125-1 Q104 | JEWEL 1 (LEFT) 11 | JACKPOT 21 | MAGIC CARPET 31 | SMOKE 6 41 | SMOKE 14 (TOP) 51 | MAKE A WISH 61 | ACTION 2 71 | EXTRA BALL 81 |
| 2 Red-Black J125-2 Q108 | JEWEL 2 12 | (G)ENIE 22 | ACTION 3 32 | SMOKE 7 42 | LAMP-15 52 | (B)AZAAR 62 | LEFT LOCK 72 | ACTION 5 82 |
| 3 Red-Orange J125-4 Q103 | JEWEL 3 13 | G(E)NIE 23 | RAMP ARROW RIGHT 33 | SMOKE 8 43 | LAMP-30 53 | B(A)ZAAR 63 | HAREM ADVANCE 73 | RIGHT LOCK 83 |
| 4 Red-Yellow J125-5 Q107 | JEWEL 4 14 | GE(N)IE 24 | RAMP ARROW LEFT 34 | SMOKE 9 44 | LAMP-60 54 | BA(Z)AAR 64 | LEFT TIGER LOOP 74 | RIGHT TIGER LOOP 84 |
| 5 Red-Green J125-6 Q102 | JEWEL 5 15 | GEN(I)E 25 | SMOKE 1 (BOTTOM) 35 | SMOKE 10 45 | SMOKE 4 55 | BAZ(A)AR 65 | ACTION 1 75 | CAPTIVE BALL RIGHT 85 |
| 6 Red-Blue J125-7 Q106 | JEWEL 6 16 | GENI(E) 26 | SMOKE 2 36 | SMOKE 11 46 | SMOKE 5 56 | BAZA(A)R 66 | WISH 1 76 | ACTION 4 86 |
| 7 Red-Violet J125-8 Q101 | JEWEL 7 (RIGHT) 17 | MULTIBALL 27 | SMOKE 3 37 | SMOKE 12 47 | SHOOT STAR RIGHT 57 | BAZAA(R) 67 | WISH 2 77 | CAPTIVE BALL LEFT 87 |
| 8 Red-Gray J125-9 Q105 | SHOOT AGAIN 18 | OUTLANE SPECIAL 28 | AMULET 38 | SMOKE 13 48 | SHOOT STAR LEFT 58 | CENTER LOCK 68 | WISH 3 78 | START BUTTON 88 |

J1XX = Power Driver Board

SWITCH MATRIX

White → Green

| Dedicated Grounded Switches | Column Row | 1 Green-Brown J206-1 U20-18 | 2 Green-Red J206-2 U20-17 | 3 Green-Orange J206-3 U20-16 | 4 Green-Yellow J206-4 U20-15 | 5 Green-Black J206-5 U20-14 | 6 Green-Blue J206-6 U20-13 | 7 Green-Violet J206-7 U20-12 | 8 Green-Gray J206-9 U20-11 | Flipper Grounded Switches |
|---|--------------------------------------|--------------------------------------|------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|--|
| Orange-Brown J205-1 Left Coin Chute U17-5 D1 | 1 White-Brown J208-1 U18-11 | HAREM PASSAGE 11 | SLAM TILT 21 | TROUGH EJECT 31 | RAMP MADE LEFT 41 | LEFT SLING 51 | LEFT STANDUPS 61 | NOT USED 71 | NOT USED 81 | Black-Green J208-13 Lower Right Flipper E.O.S. F1 |
| Orange-Red J205-2 Center Coin Chute U17-7 D2 | 2 White-Red J208-2 U18-9 | VANISH TUNNEL 12 | COIN DOOR CLOSED 22 | TROUGH BALL 1 32 | GENIE TARGET 42 | RIGHT SLING 52 | RIGHT STANDUPS 62 | NOT USED 72 | NOT USED 82 | Blue-Violet J212-12 Lower Right Flipper Opto F2 |
| Orange-Black J205-3 Right Coin Chute U17-11 D3 | 3 White-Orange J208-3 U18-5 | START BUTTON 13 | GENIE STANDUP TARGET 23 | TROUGH BALL 2 33 | LEFT LOOP 43 | LEFT JET 53 | TOP SKILL 63 | NOT USED 73 | NOT USED 83 | Black-Blue J208-12 Lower Left Flipper E.O.S. F3 |
| Orange-Yellow J205-4 4th Coin Chute U17-9 D4 | 4 White-Yellow J208-4 U18-7 | PLUMB BOB TILT 14 | ALWAYS CLOSED 24 | TROUGH BALL 3 34 | INNER LOOP LEFT 44 | RIGHT JET 54 | MIDDLE SKILL 64 | NOT USED 74 | NOT USED 84 | Blue-Gray J212-11 Lower Left Flipper Opto F4 |
| Orange-Green J205-6 U16-9 Normal Test Function Brv Crdts Escape D5 | 5 White-Green J208-5 U19-11 | RAMP ENTER 15 | BAZAAR EJECT 25 | TROUGH BALL 4 35 | INNER LOOP RIGHT 45 | MIDDLE JET 55 | BOTTOM SKILL 65 | NOT USED 75 | NOT USED 85 | Black-Violet J208-11 Upper Right Flipper E.O.S. F5 |
| Orange-Blue J205-7 U16-11 Normal Test Function Volume Dn Down D6 | 6 White-Blue J208-7 U19-9 | LEFT OUTLANE 16 | LEFT INLANE 26 | LEFT CAGE OPTO 36 | MINI STANDUPS 46 | LAMP SPIN CCW 56 | LOCK 1 (BOTTOM) 66 | NOT USED 76 | NOT USED 86 | Black-Yellow J212-10 Upper Right Flipper Opto F6 |
| Orange-Violet J205-8 U16-7 Normal Test Function Volume Up Up D7 | 7 White-Violet J208-8 U19-5 | RIGHT INLANE 17 | RIGHT OUTLANE 27 | RIGHT CAGE OPTO 37 | RAMP MADE RIGHT 47 | LAMP SPIN CW 57 | LOCK 2 (MIDDLE) 67 | NOT USED 77 | NOT USED 87 | Black-Gray J208-10 Upper Left Flipper E.O.S. F7 |
| Orange-Gray J205-9 U16-5 Normal Test Function Begin Test Enter D8 | 8 White-Gray J208-9 U19-7 | BALL SHOOTER 18 | LEFT WIRE MAKE 28 | LEFT EJECT 38 | RIGHT CAPTIVE BALL 48 | LEFT CAPTIVE BALL 58 | LOCK 3 (TOP) 68 | NOT USED 78 | NOT USED 88 | Black-Blue J212-9 Upper Left Flipper Opto F8 |

J2XX = CPU B

= 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.

SUBSTITUTE PART OR EQUIPMENT MODIFICATIONS may void FCC/CANADA Type Acceptance.

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WARNING

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

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

RF Interference Notice

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

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

FCC/CANADA STICKER. Check the back of your game to verify that an FCC/CANADA certification sticker was attached to your game at the factory. All games that leave the WILLIAMS plant have been tested and found to comply with FCC/CANADA Rules. Because the sticker is proof of this fact, legal repercussions to the owner and distributor may result, if the sticker is missing. If you receive a game that has no FCC/CANADA sticker, call WILLIAMS for advice or write us a note on your Game Registration Card. Be sure that the card bears your game's serial number.

For Service...
Call your authorized Williams Distributor

Williams Electronics Games, Inc.
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**CAUTION: Transport this game ONLY
with the hinged backbox DOWN!**