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

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

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

DEDICATED SWITCH CIRCUIT

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

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

<table>
<thead>
<tr>
<th>Column</th>
<th>1 Yellow-Brown</th>
<th>2 Yellow-Red</th>
<th>3 Yellow-Orange</th>
<th>4 Yellow-Black</th>
<th>5 Yellow-Green</th>
<th>6 Yellow-Blue</th>
<th>7 Yellow-Violet</th>
<th>8 Yellow-Gray</th>
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<tr>
<td>Row</td>
<td>J121-1 Q96</td>
<td>J121-2 Q100</td>
<td>J121-3 Q95</td>
<td>J121-4 Q93</td>
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<td>J121-6 Q98</td>
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<td>1 Red-Brown</td>
<td>RIGHT BANK TOP</td>
<td>RIGHT LOOP JACKPOT</td>
<td>TROLLS!</td>
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<td>CENTER ARROW</td>
<td>FRANCOIS D'GRIMM</td>
<td>HOWARD HURTZ</td>
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<td>RIGHT JOUST VICTORY</td>
<td>EXTRA BALL</td>
<td>LEFT JOUST VICTORY</td>
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<td>KING OF PAYNE</td>
<td>MAGIC SHIELD</td>
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<td>3 Red-Orange</td>
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<td>LEFT CLASH!</td>
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<td>SIR PSYCHO</td>
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<td>DEFENDER OF DAMSELS</td>
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<td>CATAPOULT MADNESS</td>
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<td>8 Red-Gray</td>
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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.

3-4
### SOLENOID/FLASHER TABLE

<table>
<thead>
<tr>
<th>Sol. No.</th>
<th>Function</th>
<th>Solenoid Type</th>
<th>Voltage Connections</th>
<th>Drive Xistor</th>
<th>Drive Connections</th>
<th>Drive Wire Color</th>
<th>Solenoid Part Number</th>
<th>Flashlamp Type</th>
<th>Playfield Insert</th>
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#### General Illumination

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<th>Sol. No.</th>
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<th>Solenoid Type</th>
<th>Voltage Connections</th>
<th>Drive Xistor</th>
<th>Drive Connections</th>
<th>Drive Wire Color</th>
<th>Solenoid Part Number</th>
<th>Flashlamp Type</th>
<th>Playfield Insert</th>
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#### Flipper Circuits

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#### Motor Circuit

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</table>

*J1XX = POWER DRIVER BOARD

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

*TIEBACK DIODES FOR SOLENOIDS 26 THROUGH 28 ARE AT J109-6, J109-8, AND J109-9 RESPECTIVELY.

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

POWER DRIVER BOARD

J134

1

RED-WHT, +20V

2

BLK-BRN SOLENOID 17 LEFT SIDE LOW FLASHER

3

BLK-RED SOLENOID 18 LEFT RAMP Flasher

4

BLK-ORG SOLENOID 19 LEFT SIDE HIGH FLASHER

5

BLK-YEL SOLENOID 20 RIGHT SIDE HIGH FLASHER

J112

PLAYFIELD

J133

1

RED-WHT, +20V

2

BLK-BRN SOLENOID 17 LEFT SIDE LOW FLASHER

3

BLK-RED SOLENOID 18 LEFT RAMP FLASHER

4

BLK-ORG SOLENOID 19 LEFT SIDE HIGH FLASHER

5

BLK-YEL SOLENOID 20 RIGHT SIDE HIGH FLASHER

6

BLU-GRN SOLENOID 21 RIGHT RAMP FLASHERS

7

BLU-BLK SOLENOID 22 CASTLE RIGHT SIDE FLASHERS

8

BLU-VIO SOLENOID 23 RIGHT SIDE LOW FLASHERS

9

BLU-GRY SOLENOID 24 MOAT FLASHERS

10

BLU-BRN SOLENOID 25 CASTLE LEFT SIDE FLASHERS

J111

J109
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

POWER DRIVER BOARD

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

POWER DRIVER BOARD

- LOWER RIGHT FLIPPER COIL
  - YELLOW-GREEN POWER 090
  - ORANGE-GREEN HOLD 092

- LOWER LEFT FLIPPER COIL
  - YELLOW-BLUE POWER 087
  - ORANGE-BLUE HOLD 089

*LEFT TROLL
- YELLOW-VIOLET POWER 084
- ORANGE-VIOLET HOLD 085

*RIGHT TROLL
- YELLOW-GRAY POWER 081
- ORANGE-GRAY HOLD 083

GRAY-YELLOW +12V

J139

J211

CABINET OPTO SWITCHES
- ORANGE GROUND
  - BLUE-VIOLET L. RIGHT FLIPPER F2 U25A-1
  - BLUE-GRAY L. LEFT FLIPPER F4 U25B-2
  - BLACK-YELLOW U. RIGHT FLIPPER F6 U25C-14
  - BLACK-BLUE U. LEFT FLIPPER FB U25D-13

CPU BOARD

J208

END-OF-STROKE SWITCHES
- ORANGE GROUND
  - BLACK-GREEN L. RIGHT FLIPPER F1 U26A-1
  - BLACK-BLUE L. LEFT FLIPPER F3 U26B-2
  - BLACK-VIOLET *BASKET MADE OPTO F5 U26C-14
  - BLACK-GRAY *BASKET HOLD F7 U26D-13

* The UPPER RIGHT FLIPPER circuit is used for the LEFT TROLL. The UPPER LEFT FLIPPER circuit is used for the RIGHT TROLL.
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.
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.
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
Motor Driver EMI w/Brake Board Assembly
A-21708-1
(FOR DRAWBRIDGE UP/DOWN MOTOR)

J1-1 BRN-WHT  Solenoid #37 drive from Power Driver Board J110-1
J1-2 KEY
J1-3 GRY-YEL  +12V from Power Driver Board J139-2
J1-4 BLK  Ground from Power Driver Board J139-3
J2-1 RED  Power to DRAWBRIDGE MOTOR solenoid #37
J2-2 BLK  Ground to DRAWBRIDGE MOTOR solenoid #37

Motor Driver EMI w/Brake Schematic

Drawbridge Motor Circuit Wiring Diagram

POWER DRIVER BOARD J139
J110

3 3 BLK, 4 GRY-YEL  +12V
2 1 BRN-WHT

1 1 J1
4 J2
3 MOTOR DRIVER EMI BOARD

RED
BLK

SOL. 37 DRAWBRIDGE MOTOR
**Trough IR LED Board Assembly**
*(transmitter - green board)*

A-18617-1

---

**J1-1** N/C
**J1-2** N/C
**J1-3** GRY-GRN,
**J1-4** GRY-BLK,
**J1-5** GRY-ORG,
**J1-6** GRY-RED,
**J1-7** GRY-BRN,
**J1-8** KEY
**J1-9** BLK,

For TROUGH BALL 4 switch #35 from 10-Opto Switch Board J1-3
For TROUGH BALL 3 switch #34 from 10-Opto Switch Board J1-4
For TROUGH BALL 2 switch #33 from 10-Opto Switch Board J1-5
For TROUGH BALL 1 switch #32 from 10-Opto Switch Board J1-6
For TROUGH EJECT switch #31 from 10-Opto Switch Board J1-7

Ground from 10-Opto Switch Board J1-9
Trough IR Photo Transistor Board Assembly
(receiver - blue board)
A-18618-1

J1-1  GRY-YEL,   +12V from 10-Opto Switch Board J2-9
J1-2  KEY
J1-3  ORG-BRN,   For TROUGH EJECT switch #31 from 10-Opto Switch Board J2-8
J1-4  ORG-RED,   For TROUGH BALL 1 switch #32 from 10-Opto Switch Board J2-7
J1-5  ORG-BLK,   For TROUGH BALL 2 switch #33 from 10-Opto Switch Board J2-5
J1-6  ORG-YEL,   For TROUGH BALL 3 switch #34 from 10-Opto Switch Board J2-4
J1-7  ORG-GRN,   For TROUGH BALL 4 switch #35 from 10-Opto Switch Board J2-3
J1-8  N/C
J1-9  N/C
10-Opto Switch Board Assembly
A-18159.1
(FOR BALL TROUGH, MOAT ENTER, LEFT POPPER, AND CASTLE GATE OPTO SWITCHES)

J1-1  ORG-VIO, To CASTLE GATE switch #37 Photo Transistor Board
J1-2  ORG-BLU, To LEFT POPPER switch #36 Photo Transistor Board
J1-3  ORG-GRN, To Ball Trough Photo Transistor Board for TROUGH BALL 4 switch #35
J1-4  ORG-YEL, To Ball Trough Photo Transistor Board for TROUGH BALL 3 switch #34
J1-5  ORG-BLK, To Ball Trough Photo Transistor Board for TROUGH BALL 2 switch #33
J1-6  KEY
J1-7  ORG-RED, To Ball Trough Photo Transistor Board for TROUGH BALL 1 switch #32
J1-8  ORG-BRN, To Ball Trough Photo Transistor Board for TROUGH EJECT switch #31
J1-9  GRY-YEL, +12V to the above listed Photo Transistor Boards

J2-1  GRY-VIO, To CASTLE GATE switch #37 LED Board
J2-2  GRY-BLU, To LEFT POPPER switch #36 LED Board
J2-3  GRY-GRN, To Ball Trough LED Board for TROUGH BALL 4 switch #35
J2-4  GRY-BLK, To Ball Trough LED Board for TROUGH BALL 3 switch #34
J2-5  GRY-ORG, To Ball Trough LED Board for TROUGH BALL 2 switch #33
J2-6  GRY-RED, To Ball Trough LED Board for TROUGH BALL 1 switch #32
J2-7  GRY-BRN, To Ball Trough LED Board for TROUGH EJECT switch #31
J2-8  KEY
J2-9  BLK, Ground to the above listed LED Boards

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

J4  NOT USED
J5  NOT USED

J6-1  GRN-BRN, To MOAT ENTER switch #41 LED Board
J6-2  KEY
J6-3  BLK, Ground to MOAT ENTER switch #41 LED Board
J6-4  GRY-YEL, +12V to MOAT ENTER switch #41 Photo Transistor Board
J6-5  WHT-BRN, To MOAT ENTER switch #41 Photo Transistor Board
10-Opto Switch Board Schematic
A-18159.1
(FOR BALL TROUGH, MOAT ENTER, LEFT POPPER, AND CASTLE GATE OPTO SWITCHES)

Ball Trough Opto Switches Wiring Diagram

Moat Enter, Left Popper, and Castle Gate Opto Switches Wiring Diagram
LED BOARD ASSEMBLY
A-16908
(TRANSMITTER-GREEN BOARD)

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

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

3-21
Coin Door Interface Board
A-20580

J1-1 ORG-GRY Dedicated sw row #8 from CPU J205-9.
J1-2 ORG-VIO Dedicated sw row #7 from CPU J205-8.
J1-3 ORG-BLU Dedicated sw row #6 from CPU J205-7.
J1-4 ORG-GRN Dedicated sw row #5 from CPU J205-6.
J1-5 ORG-YEL Dedicated sw row #4 from CPU J205-4.
J1-6 ORG-BLK Dedicated sw row #3 from CPU J205-3.
J1-7 ORG-RED Dedicated sw row #2 from CPU J205-2.
J1-8 ORG-BRN Dedicated sw row #1 from CPU J205-1.
J1-9 KEY
J1-10 BLK Ground from CPU J205-10
J1-11 ORG-WHT Switch enable from CPU J205-12.

J2-1 BLK Ground from Power Driver board J141-3.
J2-3 WHT-VIO 6.8VAC from Power Driver board J104-1.
J2-4 KEY
J2-5 VIO For G.I. from Power Driver board J104-3.
J2-6 N/C
J2-7 BLK-WHT Signal for coin meter from Power Driver board J139-5.

J3-1 GRN-BRN Switch column #1 from CPU J212-1.
J3-2 GRN-RED Switch column #2 from CPU J212-2.
J3-3 WHT-BRN Switch row #1 from CPU J212-4.
J3-4 WHT-RED Switch row #2 from CPU J212-5.
J3-5 WHT-ORG Switch row #3 from CPU J212-6.
J3-6 WHT-YEL Switch row #4 from CPU J212-7.
J3-7 KEY
J3-8 YEL-GRY Lamp col #8 from Pwr Dvr brd J122-3.
J3-9 RED-BLU Lamp row #6 from Pwr Dvr brd J125-7.
J3-10 RED-VIO Lamp row #7 from Pwr Dvr brd J125-8.
J3-11 RED-GRY Lamp row #8 from Pwr Dvr brd J125-9.

J4 NOT USED
J4 Return to coin door.
J5-1 VIO 6.8VAC for G.I. to coin door.
J5-2 WHT-VIO Ground to coin door.
J5-3 ORG-BRN Dedicated switch row #1 to coin door.
J5-4 ORG-RED Dedicated switch row #2 to coin door.
J5-5 ORG-BLK Dedicated switch row #3 to coin door.
J5-6 ORG-GRN Dedicated switch row #5 to coin door.
J5-7 ORG-BLU Dedicated switch row #6 to coin door.
J5-8 ORG-VIO Dedicated switch row #7 to coin door.
J5-9 KEY
J5-10 GRN-RED Switch column #2 to coin door Slam Tilt.
J5-11 ORG-GRY Dedicated switch row #8 to coin door.
J5-12 WHT-BRN Switch row #1 to coin door Slam Tilt.
J5-13 GRN-BRN Switch row #1 to cabinet.

J6 NOT USED
J6 Lamp column #8 to cabinet.
J7-1 YEL-GRY Lamp row #6 to cabinet.
J7-2 RED-GRY Lamp row #8 to cabinet.
J7-3 KEY
J7-4 GRN-BRN Switch column #1 to cabinet.
J7-5 N/C
J7-6 WHT-BRN Switch row #1 to cabinet.
J7-7 N/C
J7-8 WHT-ORG Switch row #3 to cabinet.
J7-9 N/C
J7-10 N/C
J7-11 N/C
J7-12 N/C
J7-13 N/C
J8-1 WHT Switch row to cabinet for Slam tilt.
J8-2 KEY
J8-3 GRN Switch column to cabinet for Slam Tilt.
J9-1 WHT-YEL Switch row #4 to Plumb Bob Tilt.
J9-2 KEY
J9-3 GRN-BRN Switch column #1 to Plumb Bob Tilt.
J9-4 WHT-RED Switch row #2 to Interlock Switch.
J9-5 GRN-RED Switch column #2 to Interlock Switch.
J10 Ribbon cable To cash flow mechanism (if used).
Security CPU Board Assembly
A-21377-50059

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  NOT USED
J206-1 GRN-BRN  Switch column #1 to playfield switches.
J206-2 GRN-RED  Switch column #2 to playfield switches.
J206-3 GRN-ORG  Switch column #3 to playfield switches.
J206-4 GRN-WHT  Switch column #4 to playfield switches.
J206-5 GRN-BLK  Switch column #5 to playfield switches.
J206-6 GRN-BLU  Switch column #6 to playfield switches.
J206-7 GRN-VIO  Switch column #7 to playfield switches.
J206-8 KEY  N/C
J206-9
J207  NOT USED
J208-1 WHT-BRN  Switch row #1 to playfield switches.
J208-2 WHT-RED  Switch row #2 to playfield switches.
J208-3 WHT-ORG  Switch row #3 to playfield switches.
J208-4 WHT-YEL  Switch row #4 to playfield switches.
J208-5 WHT-GRN  Switch row #5 to playfield switches.
J208-6 KEY  N/C
J208-7 WHT-BLU  Switch row #6 to playfield switches.
J208-8 WHT-VIO  Switch row #7 to playfield switches.
J208-9 WHT-GRY  Switch row #8 to playfield switches.
J208-10 N/C
J208-11 N/C
J208-12 BLK-BLU  To lower left E.O.S. switch #F3.
J208-13 BLK-GRN  To lower right E.O.S. switch #F1.
J208-14 ORG  E.O.S. switch ground.
J209  NOT USED
J210-1 BLK  Ground from Power Driver brd J101-5, 7.
J210-2 KEY
J210-3 BLK  Ground from Power Driver brd J101-5, 7.
J210-4 GRY  +5V from Power Driver board J101-3, 4.
J210-5 GRY  +5V from Power Driver board J101-3, 4.
J210-6 GRY-GRN  +12V from Power Driver board J101-1, 2.
J210-7 GRY-GRN  +12V from Power Driver board J101-1, 2.
J211  34-pin ribbon cable  Data to/from J102.
J212-1 GRN-BRN  Switch col. #1 to Coin Door board J3-1.
J212-2 GRN-RED  Switch col. #2 to Coin Door board J3-2.
J212-3 N/C
J212-4 WHT-BRN  Switch row #1 to Coin Door board J3-3.
J212-5 KEY
J212-6 WHT-RED  Switch row #2 to Coin Door board J3-4.
J212-7 WHT-ORG  Switch row #3 to Coin Door board J3-5.
J212-8 WHT-YEL  Switch row #4 to Coin Door board J3-6.
J212-9 BLK-BLU  To switch #F8 left flipper opto brd J1-1.
J212-10 BLK-YEL  To switch #F6 right flipper opto brd J1-1.
J212-11 BLU-GRY  To switch #F4 left flipper opto brd J1-2.
J212-12 BLU-VIO  To switch #F2 right flipper opto brd J1-2.
J212-13 ORG  Ground to left flipper opto board J1-4.

J205-1 ORG-BRN  Dedicated sw row #1 to Coin Door brd J1-8.
J205-2 ORG-RED  Dedicated sw row #2 to Coin Door brd J1-7.
J205-3 ORG-BLK  Dedicated sw row #3 to Coin Door brd J1-6.
J205-4 ORG-YEL  Dedicated sw row #4 to Coin Door brd J1-5.
J205-5 N/C
J205-6 ORG-GRN  Dedicated sw row #5 to Coin Door brd J1-4.
J205-7 ORG-BLU  Dedicated sw row #6 to Coin Door brd J1-3.
J205-8 ORG-VIO  Dedicated sw row #7 to Coin Door brd J1-2.
J205-9 ORG-GRY  Dedicated sw row #8 to Coin Door brd J1-1.
J205-10 BLK  Ground to Coin Door board J1-10.
J205-11 KEY
J205-12 ORG-WHT  Switch enable to Coin Door brd J1-11.
```
<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>J601</td>
<td>34-pin ribbon cable Data to/from CPU J202.</td>
</tr>
<tr>
<td>J602</td>
<td>26-pin ribbon cable Data to/from CPU J201.</td>
</tr>
<tr>
<td>J603</td>
<td>14-pin ribbon cable Data to/from Dot Matrix Display Driver board.</td>
</tr>
<tr>
<td>J604-1</td>
<td>ORG -125V to display driver pin 1.</td>
</tr>
<tr>
<td>J604-2</td>
<td>BLU -113V to display driver pin 2.</td>
</tr>
<tr>
<td>J604-3</td>
<td>KEY</td>
</tr>
<tr>
<td>J604-4</td>
<td>BLK Ground to display driver pin 4.</td>
</tr>
<tr>
<td>J604-5</td>
<td>BLK Ground to display driver pin 5.</td>
</tr>
<tr>
<td>J604-6</td>
<td>GRY +5V to display driver pin 6.</td>
</tr>
<tr>
<td>J604-7</td>
<td>GRY-YEL +12V to display driver pin 7.</td>
</tr>
<tr>
<td>J604-8</td>
<td>BRN +62 to display driver pin 8.</td>
</tr>
<tr>
<td>J605-1</td>
<td>WHT 80VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-2</td>
<td>WHT 80VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-3</td>
<td>VIO 100VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-4</td>
<td>VIO 100VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-5</td>
<td>GRY-WHT 18VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-6</td>
<td>GRY-WHT Loop from J605-7.</td>
</tr>
<tr>
<td>J605-7</td>
<td>GRY 18VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-8</td>
<td>GRY Loop from J605-7.</td>
</tr>
<tr>
<td>J605-9</td>
<td>KEY</td>
</tr>
<tr>
<td>J605-10</td>
<td>GRY-GRN 18VAC from transformer secondary.</td>
</tr>
<tr>
<td>J605-11</td>
<td>GRY-GRN Loop from J605-10.</td>
</tr>
<tr>
<td>J606-1</td>
<td>BLK Ground from Power Driver brd J101-7.</td>
</tr>
<tr>
<td>J606-2</td>
<td>KEY</td>
</tr>
<tr>
<td>J606-3</td>
<td>BLK Ground from Power Driver brd J101-5.</td>
</tr>
<tr>
<td>J606-4</td>
<td>GRY +5V from Power Driver board J101-4.</td>
</tr>
<tr>
<td>J606-5</td>
<td>GRY +5V from Power Driver board J101-3.</td>
</tr>
<tr>
<td>J606-6</td>
<td>GRY-GRN +12V from Power Driver board J101-2.</td>
</tr>
<tr>
<td>J606-7</td>
<td>GRY-GRN +12V from Power Driver board J101-1.</td>
</tr>
<tr>
<td>J607</td>
<td>NOT USED</td>
</tr>
</tbody>
</table>
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Audio Visual Board Assembly
A-20516-50059

3-25
Power Driver Board Assembly
A-20028

J101-1 GRY-GRN +12V to J210-6, 7; J606-1.
J101-2 GRY-GRN +12V to J210-6, 7; J606-2.
J101-3 GRY +5V to J210-4, 5; J3-1, 3; J606-3.
J101-4 GRY +5V to J210-4, 5; J3-1, 3; J606-4.
J101-5 BLK Ground to J210-1, 3; J606-5.
J101-6 KEY Ground to J210-1, 3; J606-5.
J101-7 BLK Ground to J210-1, 3; J606-7.
J102 34-pin ribbon cable Data to/from CPU J211.

J103-1 YEL-WHT 6.8Vac from transformer secondary.
J103-2 WHT-BRN 6.8Vac from transformer secondary.
J103-3 WHT-BRN 6.8Vac from transformer secondary.
J103-4 WHT-ORG 6.8Vac from transformer secondary.
J103-5 WHT-YEL 6.8Vac from transformer secondary.
J103-6 WHT-YEL 6.8Vac from transformer secondary.
J103-7 ORG 6.8Vac from transformer secondary.
J103-8 ORG 6.8Vac from transformer secondary.
J103-9 KEY 6.8Vac from transformer secondary.
J103-10 GRN 6.8Vac from transformer secondary.
J103-11 BRN 6.8Vac from transformer secondary.
J103-12 BRN 6.8Vac from transformer secondary.

J104-1 VIO Return for G.I. to Coin Door board J2-3.
J104-2 KEY Return for G.I. to Coin Door board J2-3.
J104-3 WHT-VIO 6.8VAC for G.I. to Coin Door brd J2-5.

J105-1 BRN Return for G.I. to insert panel.
J105-2 ORG Return for G.I. to insert panel.
J105-3 YEL Return for G.I. to insert panel.
J105-4 KEY Return for G.I. to insert panel.
J105-5 N/C Return for G.I. to insert panel.
J105-6 N/C Return for G.I. to insert panel.
J105-7 WHT-BRN 6.8VAC for G.I. to insert panel.
J105-8 WHT-ORG 6.8VAC for G.I. to insert panel.
J105-9 WHT-YEL 6.8VAC for G.I. to insert panel.
J105-10 N/C Return for G.I. to playfield.
J105-11 N/C Return for G.I. to playfield.
J106-1 BRN Return for G.I. to playfield.
J106-2 N/C Return for G.I. to playfield.
J106-3 N/C Return for G.I. to playfield.
J106-4 KEY Return for G.I. to playfield.
J106-5 GRN Return for G.I. to playfield.
J106-6 VIO Return for G.I. to playfield.
J106-7 WHT-BRN 6.8VAC for G.I. to playfield.
J106-8 N/C Return for G.I. to playfield.
J106-9 N/C Return for G.I. to playfield.
J106-10 WHT-GRN 6.8VAC for G.I. to playfield.
J106-11 WHT-VIO 6.8VAC for G.I. to playfield.

J107 NOT USED
J108 NOT USED
| J109-1 | BLU-BRN | For solenoid #25 drive to Moat Flashers. | J119-1 | RED-GRN | +50V to lower right flipper coil. |
| J109-2 | BLU-RED | For std #26 drive to Tower Lock Post. | J119-2 | RED-GRN | Loop from J119-1. |
| J109-3 | BLU-ORG | For solenoid #27 drive to Right Gate. | J119-3 | KEY | |
| J109-4 | BLU-YEL | For solenoid #28 drive to Left Gate. | J119-4 | RED-BLU | Loop from J119-5. |
| J109-5 | N/C | | J119-5 | RED-BLU | +50V to lower left flipper coil. |
| J109-6 | RED-ORG | Tieback diode | J119-6 | RED-VIO | Loop from J119-7. |
| J109-7 | KEY | | J119-7 | RED-VIO | +50V to Left Trol. |
| J110-1 | BRN-WHT | For solenoid #37 drive to High Current Driver board. | J120-1 | ORG-GRY | For sol. #36 hold drive to Right Trol. |
| J110-2 | KEY | | J120-2 | N/C | |
| J110-3 | N/C | | J120-3 | YEL-GRY | For sol. #35 power drive to Right Trol. |
| J110-4 | N/C | | J120-4 | N/C | |
| J110-5 | N/C | | J120-5 | ORG-VIO | For sol. #34 hold drive to Left Trol. |
| J111-1 | BLK-BRN | For solenoid #17 drive to playfield flasher. | J120-6 | YEL-VIO | For sol. #33 power drive to Left Trol. |
| J111-2 | BLK-RED | For solenoid #18 drive to playfield flasher. | J120-7 | ORG-BLU | For sol. #32 hold drive to low left flipper. |
| J111-3 | BLK-ORG | For solenoid #19 drive to playfield flasher. | J120-8 | N/C | |
| J111-4 | BLK-YEL | For solenoid #20 drive to playfield flasher. | J120-9 | YEL-BLU | For sol. #31 power drive to low left flipper. |
| J111-5 | BLU-GRN | For solenoid #21 drive to playfield flasher. | J120-10 | KEY | |
| J111-6 | BLU-BLK | For solenoid #22 drive to playfield flasher. | J120-11 | ORG-GRN | For sol. #30 hold drive to low right flipper. |
| J111-7 | BLU-VIO | For solenoid #23 drive to playfield flasher. | J120-12 | N/C | |
| J111-8 | BLU-GRY | For solenoid #24 drive to playfield flasher. | J120-13 | YEL-GRN | For sol. #29 power drive to low right flipper. |
| J111-9 | KEY | | J121 | NOT USED | |
| J111-10 | N/C | | J122-1 | KEY | |
| J111-11 | N/C | | J122-2 | N/C | |
| J111-12 | N/C | | J122-3 | YEL-GRY | For lamp column #8 to cabinet. |
| J111-13 | N/C | | J122-4 | N/C | |
| J112-1 | BLK-BRN | For solenoid #17 drive to playfield flasher. | J123-1 | YEL-BRN | For lamp column #1 to playfield. |
| J112-2 | BLK-RED | For solenoid #18 drive to playfield flasher. | J123-2 | YEL-RED | For lamp column #2 to playfield. |
| J112-3 | BLK-ORG | For solenoid #19 drive to playfield flasher. | J123-3 | YEL-ORG | For lamp column #3 to playfield. |
| J112-4 | KEY | | J123-4 | YEL-BLK | For lamp column #4 to playfield. |
| J112-5 | BLK-YEL | For solenoid #20 drive to playfield flasher. | J123-5 | YEL-GRN | For lamp column #5 to playfield. |
| J112-6 | N/C | | J123-6 | YEL-BLU | For lamp column #6 to playfield. |
| J112-7 | N/C | | J123-7 | YEL-VIO | For lamp column #7 to playfield. |
| J112-8 | N/C | | J123-8 | KEY | |
| J112-9 | N/C | | J123-9 | YEL-GRY | For lamp column #8 to playfield. |
| J113-1 | BRN-BLK | For solenoid #9 drive to playfield coil. | J124-1 | RED-BRN | For lamp row #1 to playfield. |
| J113-2 | KEY | | J124-2 | RED-BLK | For lamp row #2 to playfield. |
| J113-3 | BRN-RED | For solenoid #10 drive to playfield coil. | J124-3 | KEY | |
| J113-4 | BRN-ORG | For solenoid #11 drive to playfield coil. | J124-4 | RED-ORG | For lamp row #3 to playfield. |
| J113-5 | BRN-YEL | For solenoid #12 drive to playfield coil. | J124-5 | RED-YEL | For lamp row #4 to playfield. |
| J113-6 | BRN-GRN | For solenoid #13 drive to playfield coil. | J124-6 | RED-GRN | For lamp row #5 to playfield. |
| J113-7 | BRN-BLU | For solenoid #14 drive to playfield coil. | J124-7 | RED-BLU | For lamp row #6 to playfield. |
| J113-8 | BRN-VIO | For solenoid #15 drive to playfield coil. | J124-8 | RED-VIO | For lamp row #7 to playfield. |
| J113-9 | BRN-GRY | For solenoid #16 drive to playfield coil. | J124-9 | RED-GRY | For lamp row #8 to playfield. |
| J114 | NOT USED | | J125-1 | N/C | |
| J115 | NOT USED | | J125-2 | N/C | |
| J116-1 | VIO-BRN | For solenoid #1 drive to playfield coil. | J125-3 | KEY | |
| J116-2 | VIO-RED | For solenoid #2 drive to playfield coil. | J125-4 | N/C | |
| J116-3 | VIO-KEY | | J125-5 | N/C | |
| J116-4 | VIO-ORG | For solenoid #3 drive to playfield coil. | J125-6 | N/C | |
| J116-5 | VIO-YEL | For solenoid #4 drive to playfield coil. | J125-7 | RED-BLU | For lamp row #6 to coin door board J3-9. |
| J116-6 | VIO-GRN | For solenoid #5 drive to playfield coil. | J125-8 | RED-VIO | For lamp row #7 to coin door brd J3-10. |
| J116-7 | VIO-BLU | For solenoid #6 drive to playfield coil. | J125-9 | RED-GRY | For lamp row #8 to coin door brd J3-11. |
| J116-8 | VIO-BLK | For solenoid #7 drive to playfield coil. | J126 | NOT USED | |
| J116-9 | VIO-GRY | For solenoid #8 drive to playfield coil. | J127-1 | WHT-GRN | 9.8VAC from transformer secondary. |
| J117 | NOT USED | | J127-2 | WHT-GRN | 9.8VAC loop from J127-1. |
| J118 | NOT USED | | J127-3 | WHT-GRN | 9.8VAC from transformer secondary. |
| | | | J127-4 | KEY | |
| | | | J127-5 | WHT-GRN | 9.8VAC loop from J127-3. |
Power Driver Board Continued...

J128-1 WHT-RED 16VAC loop from J128-2.
J128-2 WHT-RED 16VAC from transformer secondary.
J128-3 WHT-RED 16VAC loop from J128-4.
J128-4 WHT-RED 16VAC from transformer secondary.
J128-5 BLK-YEL 16VAC loop from J128-6.
J128-6 BLK-YEL 16VAC from transformer secondary.
J128-7 KEY
J128-8 BLK-YEL 16VAC loop from J128-9.
J128-9 BLK-YEL 16VAC from transformer secondary.

J129-1 RED 9VAC from transformer secondary.
J129-2 RED 9VAC from transformer secondary.
J129-3 KEY
J129-4 BLU-WHT 13VAC from transformer secondary.
J129-5 BLU-WHT 13VAC loop from J129-4.
J129-6 BLU-WHT 13VAC from transformer secondary.
J129-7 BLU-WHT 13VAC loop from J129-6.

J130 NOT USED

J131 NOT USED

J132 NOT USED

J133-1 RED-ORG +50V to coils.
J133-2 RED-BRN +50V to coils.
J133-3 RED-BLK +50V to coils.
J133-4 KEY
J133-5 N/C
J133-6 RED-WHT +20V to playfield flashers.

J134-1 N/C
J134-2 N/C
J134-3 N/C
J134-4 KEY
J134-5 RED-WHT +20V to insert panel flashers.

J135 NOT USED

J136 NOT USED

J137 NOT USED

J138 NOT USED

J139-1 KEY
J139-2 GRY-YEL +12V to playfield PC boards.
J139-3 BLK Ground to playfield PC boards.
J139-4 N/C
J139-5 BLK-WHT Signal for coin meter to coin door brd J2-7.

J140-1 KEY
J140-2 GRY-YEL +12V
J140-3 BLK Ground
J140-4 N/C

J141-1 KEY
J141-2 GRY-YEL +12V to Coin Door board J2-2.
J141-3 BLK Ground to Coin Door board J2-1.
J141-4 N/C
**LAMP MATRIX**

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<td>Yellow</td>
<td>Black</td>
<td>Orange</td>
<td>Green</td>
<td>Blue</td>
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<td>J21-4</td>
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**SWITCH MATRIX**

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<tbody>
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<td>Column</td>
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<td>Green-Red</td>
<td>Green-Orange</td>
<td>Green-White</td>
<td>Green-Black</td>
<td>Green-Blue</td>
<td>Green-Violet</td>
<td>Green-Gray</td>
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</tbody>
</table>

**Flapper Grounded Switches**

- Black-Green J20-13
- Black-Red J20-15
- Blue-Violet J21-10
- Blue-Gray J21-11
- Black-White J20-11
- Black-Orange J20-12
- Black-Yellow J20-17
- Black-Gray J20-10

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**Notes**

- JXX = Power Driver Board
- JXX- CPU BOARD
- OPTO, TYPICALLY CLOSED