Contents

General Description ................................................................. 1

5-Pin String Machine ............................................................ 2

10-Pin String Machine ......................................................... 6

Ball Detect .............................................................................. 8

Ball Detect Adjustments ....................................................... 8

5-Pin String Machine Scoring Cycle Sequence of Events ....... 10

First or Second Ball ............................................................. 10

Third Ball ............................................................................. 10

First, Second, and Third Ball Fouls ..................................... 11

10-Pin String Machine Scoring Cycle Sequence of Events ....... 12

First Ball ............................................................................. 12

Second Ball ........................................................................ 12

First or Second Ball Foul ..................................................... 13

Cable Diagrams ..................................................................... 14
A pinsensor is a circuit board that takes the place of an optical scanning device (Model 79, Model 86, or CCD Scanner). In operation, a pinsensor obtains pinfall information by using existing pinsetter deck/table switches of a pair of pinsetters. After reading the switches, the pinsensor sends the information to the scorer console for processing. Pinsensors are available for the 5-Pin String Machine, 10-Pin String Machine, and the Duck Pin String Machine.
The pinsensor for the 5-Pin String Machine comes in four models: the Model M, the Model P, the Model R, and the Model CA-1. The Model M is used for the Mendes (Model 500) String Machine and is mounted on the left lane pinsetter. The Model P is used on the PBS (Model CA-K-800) Pinsetter and is mounted above or below the pin control box. The Model R is used on the Schmid Pinsetter. The Model CA-1 is used on the PBS (Model CA-1) Pinsetter and is mounted on the even lane pinsetter. Refer to the figures titled 5-Pin String Machine Model CA-1 and Model R Pinsensors and 5-Pin String Machine Model M and Model P Pinsensors.
5-Pin String Machine Model M and Model P Pinsensors
In operation, all models work the same. To begin the scoring sequence, a ball detect is used to signal the printed circuit board (PCB). After a preset time delay (selected by jumpers JU1 and JU2), the pinsensor will automatically “take data” by reading the pinswitches of the pinsetter. This information is then sent to the scorer. In the event of a foul, the pinsensor will score appropriately because the foul signal is connected to the PCB.

The PCB includes 12 LEDs (light emitting diode) that can be used to determine if the PCB is operating properly. LEDs 1-5 indicate the pins standing, while LEDs 6 and 7 indicate when a ball detect has been received for the lanes. LED 12 indicates whether the PCB is communicating with the scorer, LEDs 20 and 21 indicate the “take data” time for both lanes, and LEDs 26 and 27 indicate when the pinsetter is sent a set signal.

The function of the components of the 5-Pin String Machine PCBs are:

1. **Scorer Communication (J3)** - Connection to the Pinsetter Controller PCB (J1). This connection provides the clock and data signals that allow the pinsensor and the scorer to communicate.

2. **Ball Detect (J5)** - Input for the ball detector signal for both lanes.

3. **Ball Detect LED (D6)** - This LED lights whenever a ball detect signal for the left lane is received.

4. **Ball Detect LED (D7)** - This LED lights whenever a ball detect signal for the right lane is received.

5. **Foul Detect (J4)** - Input for the foul for both lanes.

6. **Time Delay Jumpers (JU1, JU2)** - Jumpers used to select the amount of time delay between ball detect and “take data.” The value is set at power turn on by the position of these jumpers.

<table>
<thead>
<tr>
<th>Jumper Position</th>
<th>Time Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>JU1 and JU2</td>
<td>2 seconds</td>
</tr>
<tr>
<td>JU2 only</td>
<td>3 seconds</td>
</tr>
<tr>
<td>JU1 only</td>
<td>4 seconds</td>
</tr>
<tr>
<td>No jumpers</td>
<td>5 seconds</td>
</tr>
</tbody>
</table>

7. **Odd Lane Pinsetter - Lane 1 (J1)** - Connection to the odd lane pinsetter. The pinswitch data used to obtain pincount, the reset signal used to determine cycle count, and the set signal used to tell the pinsetter to set five new pins is handled through this connection.
(8) **Even Lane Pinsetter - Lane 2 (J2)** - Connection to the even lane pinsetter. The pinswitch data used to obtain pincount, the reset signal used to determine cycle count, and the set signal used to tell the pinsetter to set five new pins is handled through this connection.

(9) **Pincount LEDs (D1 - D5)** - Provides an indication of the pins standing at the last “take data.” D1 = pin 1, D2 = pin 2, D3 = pin 3, D4 = pin 4, and D5 = pin 5.

(10) **Power Input (J6)** - Connection for 28VAC input power used to operate the PCB. This power comes from the Pinsetter Interface Box (P2).

(11) **Set LED (D26)** - This LED lights to indicate when the PCB is sending a “set five new pins” signal to the pinsetter for the left lane.

(12) **Set LED (D27)** - This LED lights to indicate when the PCB is sending a “set five new pins” signal to the pinsetter for the right lane.

(13) **Take Data LED Odd Lane (D20)** - This light shows the time delay between ball detect and the “take data” point (set by JU1 and JU2). This LED lights when a ball detect occurs for the left lane and extinguishes at the “take data.”

(14) **Take Data LED Even Lane (D21)** - This light shows the time delay between ball detect and the “take data” point (set by JU1 and JU2). This LED lights when a ball detect occurs for the right lane and extinguishes at the “take data.”

(15) **Transmit LED (D12)** - This LED blinks continuously when the scorer console and the pinsensor are communicating properly.
The pinsensor for the 10-Pin String Machine is referred to as the Model S Pinsensor. It is used on the PBS Pinsetter. In operation, the scoring sequence begins when a ball detect signal enters the PCB. After a preset time delay (as determined by R81 or R82), the pinsensor will automatically "take data" by reading the pinswitches of the pinsetter. This information is then sent to the scorer. In the event of a foul, the pinsensor will score appropriately because the foul signal is connected to the PCB.

The PCB includes seven LEDs that can be used to determine if the PCB is operating properly. LEDs 1-4 show the standing pin count in a binary format, LED 12 indicates whether the PCB is communicating with the scorer, and LEDs 13 and 14 indicate when a ball detect has been received for the lanes. Refer to the figure titled 10-Pin String Machine Model S Printed Circuit Board.
The function of the components of the 10-Pin String Machine Model S PCBs are:

1. **Scorer Communication (J3)** - Connection to the Pinsetter Controller PCB. This connection provides the clock and data signals that allow the pinsensor and the scorer to communicate.

2. **Ball Detect (J5)** - Input for the ball detect signal for both lanes.

3. **Ball Detect LED (D13)** - This LED lights whenever a ball detect signal for the left lane is received.

4. **Ball Detect LED (D14)** - This LED lights whenever a ball detect signal for the right lane is received.

5. **Foul Detect (J4)** - Input for the foul signal for both lanes.

6. **Odd Lane Pinsetter - Lane 1 (J1)** - Connection to the odd lane pinsetter. The pinswitch data used to obtain pincount, the reset signal used to determine cycle count, and the set signal used to tell the pinsetter to set new pins automatically after the second ball is thrown is handled through this connection.

7. **Even Lane Pinsetter - Lane 2 (J2)** - Connection to the odd lane pinsetter. The pinswitch data used to obtain pincount, the reset signal used to determine cycle count, and the set signal used to tell the pinsetter to set new pins after the second ball is thrown is handled through this connection.

8. **Pin Count LEDs (D1 - D4)** - Provides a binary count of the standing pins counted at the last “take data.” D1 = 1, D2 = 2, D3 = 4, and D4 = 8.

9. **Power Input (J6)** - Connection for 28 VAC input power used to operate the PCB. This power comes from the Pinsetter Interface Box.

10. **Take Data Delay (R81, R82)** - Adjustments used to set the time delay from ball detect to “take data.” R81 adjusts the delay for the odd lanes while R82 sets the delay for the even lanes. For proper adjustment, set them so the ball detect LEDs (D13 and D14) stay on for four seconds after the ball detect signal is received.

11. **Transmit LED (D12)** - This LED blinks continuously when the scorer and the pinsensor are communicating properly.
Ball Detect

Models P, M, and S Pinsensors use a ball detect that is an infrared sensing device which operates in a similar manner to the Scanner Ball Detect. The ball detect is made up of two infrared transmitters and receivers, one for each lane. Within each lane unit there are two lenses, one to focus the transmitted infrared beam toward the reflector on the opposite side of the lane, and one to focus the return light from the reflector onto the infrared receiver. A red indicator LED turns on when the infrared beam is blocked. Refer to the figure titled *Pinsensor Ball Detect and Lens*.

![Pinsensor Ball Detect and Lens](image)

*Pinsensor Ball Detect and Lens*

(1) ADJUSTMENT SCREW  (2) RED INDICATOR LIGHT

When a ball passes through the ball detect beam, a pulse, generated and amplified by the ball detect, is sent to the Pinsensor PCB. The Pinsensor PCB then turns on the pinsensor and enables the scoring sequence for that lane.

**Ball Detect Adjustments**

The ball detect assembly uses an infrared light which cannot be seen without an optical aid. Therefore, it has a red indicator light on the face of the unit that will light when insufficient infrared light is reflected back to it. Refer to the figure titled *Pinsensor Ball Detect and Lens*.
To center the infrared beam on the reflector, use the following steps:

1. With power on to the pinsensor, cover the reflector so the red indicator light on the ball detect unit comes on.

2. Using another reflector, start above the covered reflector and slowly move the second reflector down toward the first while holding it square to the ball detect unit. Continue to move it downward until the red light goes out and note the position of the second reflector. Refer to the figure titled Adjusting Reflector.

3. Repeat the same procedure but start below the covered reflector (in the ball gutter), and move up until the light goes off and note that position.

4. Repeat the same procedure starting from the left of the covered reflector and then from the right until you have located the relative position of the infrared beam.

5. If the beam is not centered on the covered reflector, it can be adjusted with the three adjustment screws in the face of the unit. The top screw moves the beam up and down. A clockwise turn moves the beam down while a counterclockwise turn will move it up. Refer to the figure titled Pinsensor Ball Detect and Lens.

6. The side screws will move the beam left to right.

7. After each adjustment, recheck the beam’s location with the second reflector and the procedure detailed above.
5-Pin String Machine Scoring Cycle Sequence of Events

**First or Second Ball**

1. The bowler delivers the ball. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.)

5. The scorer displays the score.

6. If all pins were knocked down (X or /), the pinsetter sets a new rack and the pinsensor resets itself to first ball.

7. The pinsensor is ready for another ball detect.

**Third Ball**

1. The bowler delivers the ball. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.)

5. The scorer displays the score.

6. If all pins were not knocked down, the pinsensor sends a set signal to the pinsetter to set a full rack of pins.

7. The pinsetter sets a new rack and the pinsensor resets itself to first ball.

8. The pinsensor is ready for another ball detect.
First, Second, and Third Ball Fouls

1. The bowler delivers the ball and fouls. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.) Since a foul occurred, the pinsensor replaces the pincount with a foul score.

5. The scorer displays an “F” and the score.

6. The pinsetter continues its normal cycle.

7. The pinsensor is ready for another ball detect.
10-Pin String Machine Scoring Cycle Sequence of Events

**First Ball**

1. The bowler delivers the ball. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.)

5. The scorer displays the score.

6. The pinsetter continues its normal cycle.

7. The pinsensor is ready for another ball detect.

**Second Ball**

1. The bowler delivers the ball. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.)

5. The scorer displays the score.

6. The pinsensor sends a set signal to the pinsetter if any pin(s) were left standing.

7. The pinsetter sets a full rack of pins.

8. The pinsensor is ready for another ball detect.
First or Second Ball Foul

1. The bowler delivers the ball and fouls. The ball breaks the ball detect light and sends a signal to the pinsensor. (This is indicated on the PCB by the BD LED.)

2. The pinsensor begins the scoring sequence.

3. The pinsetter triggers (only if a pin is knocked down).

4. After a preset time delay, the pinsensor “takes data” by reading the pin switches. (This is indicated on the PCB by the TD LED turning off.) Since a foul occurred, the pinsensor includes the foul with the pincount.

5. The scorer displays an “F” and scores “0”.

6. The pinsetter continues its normal cycle. The pinsensor sends a set signal to the pinsetter if it was a 2nd ball and pins were left standing.

7. The pinsensor is ready for another ball detect.

NOTE: On first ball foul cycles, the bowler must manually set pins if pins were left standing.
Model P 5-String Interface Schmid (PBS) Block Diagram

1. SCHMID (PBS) PIN CONTROL BOX
   1 PAIR OF LANES
2. MODEL P INTERFACE BOX (57-215351-400)
3. PINSETTER INTERFACE
4. FOUL
5. BALL DETECT (57-214921-000)
6. J2 - LANE B
Model R 5-Pin String Interface Schmid Block Diagram

(1) LANE 1 PINSETTER  (2) LANE 2 PINSETTER  (3) PINSETTER INTERFACE
(4) FOUL            (5) BALL DETECT (57-214921-000)    (6) MODEL R INTERFACE BOX
Model M Pinsensor Block Diagram

(1) LANE 1 AUTOMATIC PINSETTER
(4) MODEL M INTERFACE BOX (PINSENSOR)
(7) BALL DETECT (57-214921-000)
(9) LANE 2 AUTOMATIC PINSETTER

(2) TO POWER BOX
(5) PINSETTER INTERFACE BOX
(8) TO PIN SWITCHES

(3) TO PNEUMATIC CONTROL
(6) FOUL
(8) TO PIN SWITCHES
Model S 10-Pin String Block Diagram

(1) LOW VOLTAGE BOX - LANE 1
(4) PINSETTER INTERFACE
(7) LOW VOLTAGE BOX LANE 2
(2) TO HIGH VOLTAGE PLUG (57-215044-000)
(5) FOUL UNIT
(8) TO BOWLER CONTROL (57-215038-000)
(3) MODEL S PINSENSOR
(6) BALL DETECT (57-214921-000)
Model CA-1 Pinsensor Block Diagram

(1) LOW VOLTAGE BOX - LANE 1
(2) TO B2 PCB
(3) TO MOTHERBOARD
(4) CA-1 INTERFACE BOX (PINSENSOR)
(5) PINSETTER INTERFACE
(6) FOUL
(7) LOW VOLTAGE BOX - LANE 2
(8) BALL DETECT (57-214921-000)
Lane Data - Model P String Machine Interface Cable (Part No. 57-215037-000)

(1) TO (57-215235-000) STRING MACHINE INTERFACE PRINTED CIRCUIT BOARD
(4) NO CONNECTION
(7) RESET
(2) TO (57-215038-000) LANE DATA INTERFACE CABLE ASSEMBLY
(5) +26 VOLTS
(3) TO HIGH VOLTAGE BOX CONNECTOR

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
String Machine Lane Data Interface Cable (Part No. 57-215038-000)

(1) TO BOWLER CONTROL

(2) TO LANE DATA CABLE ASSEMBLY (57-215037-000)

Ball Detect String Machine Interface Cable (Part No. 57-215230-000)

(1) TO J5 ON ALL STRING MACHINES INTERFACE PRINTED CIRCUIT BOARD

(2) LEFT BALL DETECT

(3) RIGHT BALL DETECT

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Foul String Machine Interface Cable (Part No. 57-215231-000)

(1) TO FOUL PICKUP
(2) LEFT FOUL
(3) GROUND
(4) RIGHT FOUL
(5) TO J4 ON ALL STRING MACHINES INTERFACE PRINTED CIRCUIT BOARD
(6) NO CONNECTION

10-Pin String Machine - Model S Reset Interface Cable (Part No. 57-215232-000)

(1) TO LANE DATA CABLE ASSEMBLY (57-215037-000)

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Pin Data Model M 5-Pin String Interface Cable (Part No. 57-215265-000)

(1) TO PIN SWITCH CABLE ASSEMBLY (57-215266-000)
(4) PIN 1
(7) GROUND
(10) SW1 - PIN 1
(2) PIN 5
(5) PIN 2
(8) SW4 - PIN 4
(11) SW3 - PIN 3
(3) PIN 3
(6) PIN 4
(9) SW2 - PIN 2
(12) SW5 - PIN 5

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Lane 2 Automatic Pinsetter Model M 5-Pin String Interface Cable  (Part No. 57-215266-000)

(1) PNEUMATIC CONTROL
(2) POWER BOX
(3) NO CONNECTION
(4) TO V-NS
(5) 24 VOLS ALTERNATING CURRENT FROM SET SWITCH
(6) 24 VOLS ALTERNATING CURRENT RETURN
(7) 24 VOLTS ALTERNATING CURRENT POWER
(8) PIN 1
(9) PIN 2
(10) PIN 3
(11) PIN 4
(12) PIN 5
(13) GROUND
(14) PIN SWITCHES
(15) TO J2 ON MODEL M 5-PIN STRING INTERFACE (57-215213-4XX)

BRN=BROWN, BLK=BLACK, RED=RED, GRN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Lane 1 Automatic Pinsetter Model M 5-Pin String Interface Cable (Part No. 57-215267-000)

(1) PNEUMATIC CONTROL
(2) NO CONNECTION
(3) POWER BOX
(4) TO V-NS
(5) 24 VOLTS ALTERNATING CURRENT FROM SET SWITCH
(6) 24 VOLTS ALTERNATING CURRENT RETURN
(7) 24 VOLTS ALTERNATING CURRENT POWER
(8) PIN 1
(9) PIN 2
(10) PIN 3
(11) PIN 4
(12) PIN 5
(13) GND
(14) TO J1 ON MODEL M 5-PIN STRING INTERFACE (57-215213-4XX)
(15) PIN SWITCHES

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Automatic Pinsetter Cable Model P 5-Pin String Cable (Part No. 57-215325-000)

(1) TO MODEL P 5-PIN STRING CONTROL BOX
(2) TO J1 ON MODEL P INTERFACE PRINTED CIRCUIT BOARD (57-215299-4XX)
(3) TO J2 ON MODEL P INTERFACE PRINTED CIRCUIT BOARD (57-215299-4XX)

(1) BLK
(2) RED
(3) WHT
(4) GRN
(5) ORN
(6) YEL
(7) VIO
(8) GRY
(9) BRN
(10) BLK
(11) RED
(12) WHT
(13) GRN
(14) ORN
(15) YEL
(16) VIO
(17) GRY
(18) BLK
(19) RED
(20) WHT
(21) GRN
(22) ORN
(23) YEL
(24) VIO
(25) GRY

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Automatic Pinsetter Wire Harness Model P 5-Pin String Cable (Part No. 57-215326-000)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LANE 2 PIN CONTROL PR-3</td>
</tr>
<tr>
<td>2</td>
<td>LANE 1 PIN CONTROL PR-3</td>
</tr>
<tr>
<td>3</td>
<td>MOTOR CONTROL PR-2</td>
</tr>
<tr>
<td>4</td>
<td>POWER SUPPLY PR-1</td>
</tr>
<tr>
<td>5</td>
<td>PIN 5</td>
</tr>
<tr>
<td>6</td>
<td>COUNTER 1</td>
</tr>
<tr>
<td>7</td>
<td>+26 VOLTS</td>
</tr>
<tr>
<td>8</td>
<td>PIN 4</td>
</tr>
<tr>
<td>9</td>
<td>LANE 1 PIN 5</td>
</tr>
<tr>
<td>10</td>
<td>SET SWITCH 1</td>
</tr>
<tr>
<td>11</td>
<td>PIN 3</td>
</tr>
<tr>
<td>12</td>
<td>SET 1</td>
</tr>
<tr>
<td>13</td>
<td>GROUND</td>
</tr>
<tr>
<td>14</td>
<td>PIN 2</td>
</tr>
<tr>
<td>15</td>
<td>COUNTER 2</td>
</tr>
<tr>
<td>16</td>
<td>PIN 1</td>
</tr>
<tr>
<td>17</td>
<td>SET SWITCH 2</td>
</tr>
<tr>
<td>18</td>
<td>PIN 1</td>
</tr>
<tr>
<td>19</td>
<td>LANE 1 PIN 1</td>
</tr>
<tr>
<td>20</td>
<td>LANE 1 PIN 2</td>
</tr>
<tr>
<td>21</td>
<td>LANE 1 PIN 3</td>
</tr>
<tr>
<td>22</td>
<td>LANE 1 PIN 4</td>
</tr>
<tr>
<td>23</td>
<td>LANE 2 PIN 1</td>
</tr>
<tr>
<td>24</td>
<td>LANE 2 PIN 2</td>
</tr>
<tr>
<td>25</td>
<td>LANE 2 PIN 3</td>
</tr>
</tbody>
</table>

Signal Cable (Part No. 57-215578-000)

(1) TO RELAY PCB (57-215580-000)

(2) TO AUTOMATIC PINSETTER STATE OR CYCLE SWITCH (FOR MORE INFORMATION, SEE INSTRUCTION GUIDE 57-900277-000)

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Low Voltage Box CA-1 5-Pin String Cable (Part No. 57-215590-000)

(1) J4-9 OR COUNTER-4
(4) B1 +15
(7) B2 PIN 8
(10) TO PIGTAIL ON LOW VOLTAGE BOX
(13) PIN 3
(16) COUNTER
(19) +15 VOLTS
(22) DISABLE
(2) J2-3
(5) B1 COMMON
(8) LANE 1 24 VOLTS ALTERNATING CURRENT
(11) PIN 1
(14) PIN 4
(17) SET SWITCH
(20) COMMON
(23) 24 VOLTS ALTERNATING CURRENT
(3) WIRES FROM 3
(6) B1 B1
(9) LANE 2 24 VOLTS ALTERNATING CURRENT
(12) PIN 2
(15) PIN 5
(18) SET
(21) +30 VOLTS
(24) TO INTERFACE CABLE (CA-1)

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Pigtail Model CA-1  (Part No. 57-215591-000)

1. TO LOW VOLTAGE BOX CABLE
2. STRIP AND TIN PER ES-2207
3. PIN 1
4. PIN 2
5. PIN 3
6. PIN 4
7. PIN 5

Lane 1 Interface Model CA-1 5-Pin String (Part No. 57-215592-000)

1. TO J1 ON MODEL CA-1 PRINTED CIRCUIT BOARD
2. TO (57-215607-000)
3. TO LOW VOLTAGE BOX CABLE
4. PIN 1
5. PIN 2
6. PIN 3
7. PIN 4
8. PIN 5
9. COUNTER
10. SET SWITCH
11. SET
12. +15 VOLTS
13. COMMON
14. +30 VOLTS
15. DISABLE
16. 24 VOLTS ALTERNATING CURRENT
17. NO CONNECTION

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Lane 2 Interface Model CA-1 5-Pin String (Part No. 57-215606-000)

(1) TO J2 ON MODEL CA-1 PRINTED CIRCUIT BOARD
(2) TO (57-215607-000)
(3) TO LOW VOLTAGE BOX CABLE
(4) PIN 1
(5) PIN 2
(6) PIN 3
(7) PIN 4
(8) PIN 5
(9) COUNTER
(10) SET SWITCH
(11) SET
(12) +15V
(13) COM
(14) +30V
(15) DISABLE
(16) 24 VOLTS ALTERNATING CURRENT
(17) NO CONNECTION

Model CA-1 Lane On Cable (Part No. 57-215607-000)

(1) TO P3 ON (57-215396-000)
(2) TO (57-215592-000)

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL= YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Pinsetter Interface to String Machine (Part No. 57-300024-000)

(1) TRANSMIT  
(4) GROUND  
(7) TO J1 PINSETTER INTERFACE PRINTED CIRCUIT BOARD

(2) RECEIVE  
(5) 28 VOLTS ALTERNATING CURRENT  

(3) SCANNER CLOCK  
(6) 28 VOLTS ALTERNATING CURRENT RETURN  

(8) TO J3 ON STRING PINSETTER  
(9) TO J6 ON STRING PINSETTER

Universal Interface Adapter (Part No. 57-300376-000)

(1) TO J10 PINSETTER INTERFACE PRINTED CIRCUIT BOARD  
(4) POWER +  
(7) CYCLE COUNT -

(2) TO AUTOMATIC PINSETTER POWER  
(5) POWER -

(3) TO AUTOMATIC PINSETTER CYCLE COUNT  
(6) CYCLE COUNT +

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE
Optical Trigger & Foul (Long) Cable (Part No. 68-100043-000)

(1) TO J1-GS ON GAMESETTER PCB
    (47-142815-000)

(2) TO LEFT BALL APPROACH

(3) TO RIGHT BALL APPROACH

(4) TO LEFT FOUL SENSOR

(5) TO RIGHT FOUL SENSOR

(6) NO CONNECTION

BRN=BROWN, BLK=BLACK, RED=RED, ORN=ORANGE, YEL=YELLOW, GRN=GREEN, BLU=BLUE, VIO=VIOLET, GRY=GREY, WHT=WHITE