

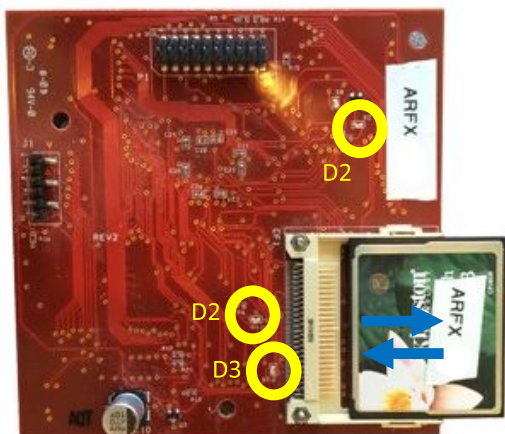
ERROR Codes

Error #	Description
1	Bad or missing Compact Flash Card (Occurs on power up)
2	Zero Count Sensor Error - Check for Balls in Sensor (Occurs only on power up)
3	Sensor 1K (Occurs only on power up)
4	Sensor 2K (Occurs only on power up)
5	Sensor 3K (Occurs only on power up)
6	Sensor 4K (Occurs only on power up)
7	Sensor Left 10K (Occurs only on power up)
8	Sensor Right 10K (Occurs only on power up)
9	Ball Count Sensor Error (Occurs only on power up)
10	Coin 1 Stuck Down (when does it occur)
11	Ticket Error
12	Solenoid Seat Sensor (Occurs only on power up)
FULL	The solenoid will not activate if the zero count sensor is blocked. (Occurs anytime)
SOL	The solenoid is activated but has not reached its end of travel. (Occurs during game play)
TIC	Game owes tickets and is out of tickets. (Occurs during game play)

Description and Possible Solutions For Error Codes

Error 1

No Compact flash card detected. This can be caused by either a corrupted compact flash card, failed compact flash card, or hardware failure on the CPU board. If another machine is available, swap the two compact flash cards then the CPU boards to see if the problem follows. If the problem follows, then the problem is the card. If you have only one game, try these steps:



Step 1: Reseat Compact Flash card — With the power off, pull out the compact flash card and then push it back in. Turn power back on.

Step 2: Look at D2 on the CPU board, is the LED light on constant or is it blinking? If it is blinking, then it is reading the compact flash card. If the light is constant, it cannot read the compact flash card. Replace the CF card.

Step 3: Look at D3 and D2, are they on? If not, D3 is the +5 voltage which is used by the compact flash. D2 is the 3.3 voltage used by the IC's of the CPU board. Replace the CPU board if no power indicators are not on.

Step 4: In rare cases, the CPU board can have D2 and D3 on but still be bad.

Resolving Error 2 :

This sensor detects the balls that are returned back to the ball rail assembly. It works by emitting a beam of light across where the balls travel back into the ball rail assembly. When the beam is broken the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked.

Follow these trouble shooting steps:

STEP 1: Remove the right cover and look at the back of the ball rail channel. You will find a sensor embedded into the cabinet sides.

STEP 2: Observe the status of LED D2 located on the left side. Is the LED On constant? If not, go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the Transmitter board in camera mode. If it doesn't blind the camera then the IRLED has gone bad. At this point replacement is recommended. NOTE: Some hires cameras will filter out the IRLED light, use forward camera mode instead.

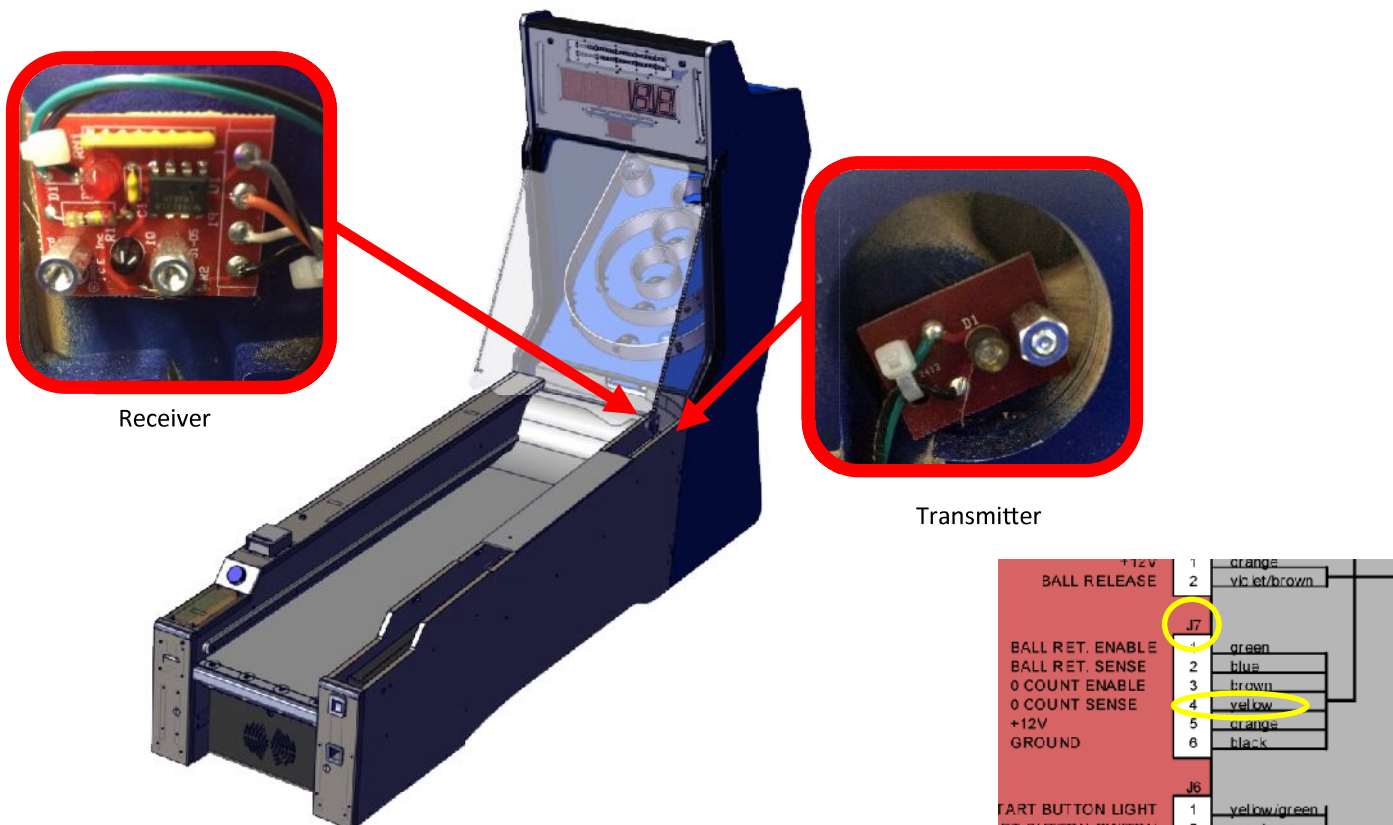
Step 3: Place your hand between the emitter board and receiver board. Did the LED D2 light? If not, using a volt meter set to DC place the red probe on pin 2 of the sensor and place the black probe on pin 4 of the sensor. Is there +12 volts? If not you have a broken connection either in ground or power from the sensor back to the main board.

Step 4: Measure the white with grey strip wire connected to the receiver with your volt meter set to DC voltage. Is there around 5 volts present? If so, is there still voltage on this wire when you block the sensor? If yes, then replace the sensor.

Step 5: Measure the enable line to ensure the sensor is being turned on. Place the red probe on pin 2 of the sensor and the black probe on pin 1. Is there pulsing 12 volts of DC? If not, you have a connection problem between the main board and sensor.

Step 6: Check the voltage on pin 4 of connector J7 on the main board (the yellow wire). Is there around +5 volts when the sensor is not blocked? If yes does it drop to about nothing when blocked? If yes, replace the main board assembly.

Step 7: If no voltage exists at Pin 4 double check the connector between the sensor itself and the game's harnessing. It will require you to separate the front and back cabinet parts to access the sensor's pigtail harness.



Resolving Error 3 through 6:

These sensors detect the balls that drop through the lower score holes on the playfield. It works by emitting a beam of light across the hole. When the beam is broken by the ball the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked or during the enable check.

Follow these troubleshooting steps:

STEP 1: Open the Playfield's plastic front door and secure it in the up position. Lift the playfield up and secure it in the open position.

STEP 2: Refer to the score sensor error number below to determine the location of the failed sensor. Observe the status of LED D2 located on the receiver side (Right-side). Is the LED On constant? If not go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the transmitter board in camera mode. If it doesn't blind the camera then either the IRLED has gone bad or it is not being enabled. At this point replacement is recommended. NOTE: Some hires cameras will filter out the IRLED light, use forward camera mode instead.

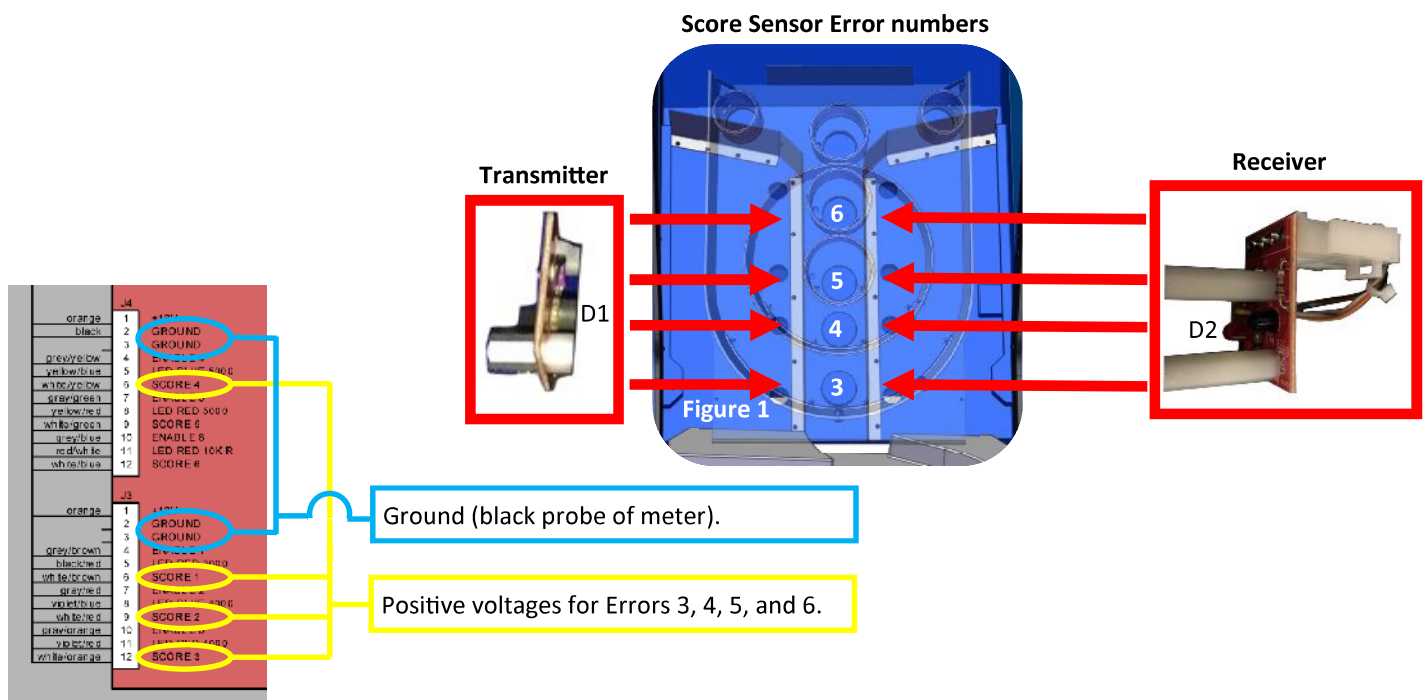
Step 3: Place your hand between the emitter board and receiver board. Did the LED D2 light? If not, using a volt meter set to DC place the red probe on pin 2 of the sensor and place the black probe on pin 4 of the sensor. Is there +12 volts? If not you have a broken connection either in ground or power from the sensor back to the main board.

Step 4: Looking at the wiring schematic insert, identify the color wire for pin 3 of the failed sensor. Each sensor in the schematic insert has been labeled by its error number and score value. Measure this wire with your volt meter set to DC voltage. Is there around 5 volts present? If so, then is there still voltage on this wire when you block the sensor? If yes, then replace the sensor.

Step 5: Measure the enable line to ensure the sensor is being turned on. Place the red probe on pin 2 of the sensor and the black probe on pin 1. Is there pulsing 12 volts of DC? If not, you have a connection problem between the main board and sensor.

Step 6: Check the voltage on pin 6 of connector J3 for Error 3, pin 9 of connector J3 for Error 4, pin 12 of connector J3 for Error 5, and pin 6 of connector J4 on the main board. Is there around +5 volts when the sensor is not blocked? If yes does it drop to about nothing when blocked? If yes, replace the main board assembly.

Step 7: If no voltage exists at the Pin double check any connector that is between the sensor itself and the game's main board. It might require you to separate the front and back cabinet parts to access all the wiring.



Resolving Error 7 and 8:

These sensors detect the balls that drop through the upper score holes on the playfield. They score the 10K points. When both sensors are activated the game will give a 5k score. The sensor works by emitting a beam of light across the hole. When the beam is broken by the ball the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked or during enable sequence.

Follow these trouble shooting steps:

STEP 1: Open the Playfield's plastic front door and secure it in the up position. Lift the playfield up and secure it in the open position.

STEP 2: Refer to the score sensor error number (Figure 2 below) to determine the location of the failed sensor. Observe the status of LED D2 located on the receiver side (See figure 3 on the next page). Is the LED On constant? If not go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the transmitter board in camera mode. If it doesn't blind the camera then either the IRLED has gone bad. At this point replacement is recommended. NOTE: Some hires cameras will filter out the IRLED light, use forward camera mode instead.

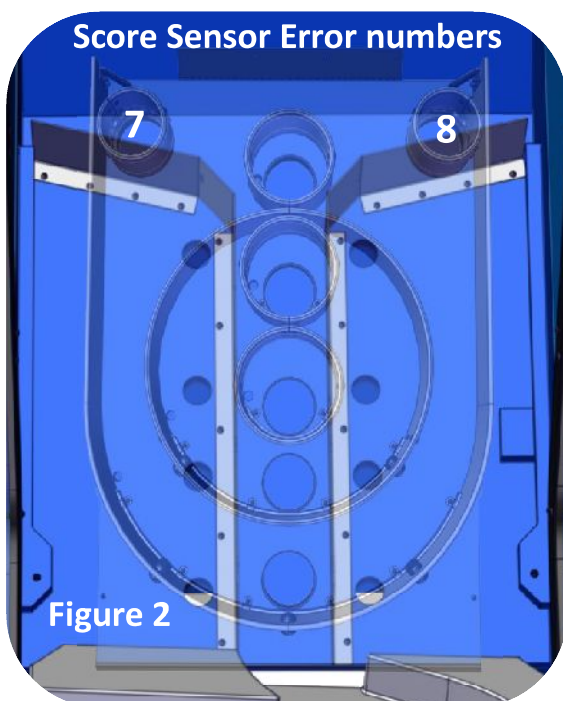
Step 3: Place your hand between the emitter board and receiver board. Did the LED D2 light? If not, using a volt meter set to DC place the red probe on pin 2 of the sensor and place the black probe on pin 4 of the sensor. Is there +12 volts? If not you have a broken connection either in ground or power from the sensor back to the main board.

Step 4: Looking at the wiring schematic insert, identify the color wire for pin 3 of the failed sensor. Each sensor in the schematic insert has been labeled by its error number and score value. Measure this wire with your volt meter set to DC voltage. Is there around 5 volts present? If so then is there still voltage on this wire when you block the sensor? If yes, then replace the sensor.

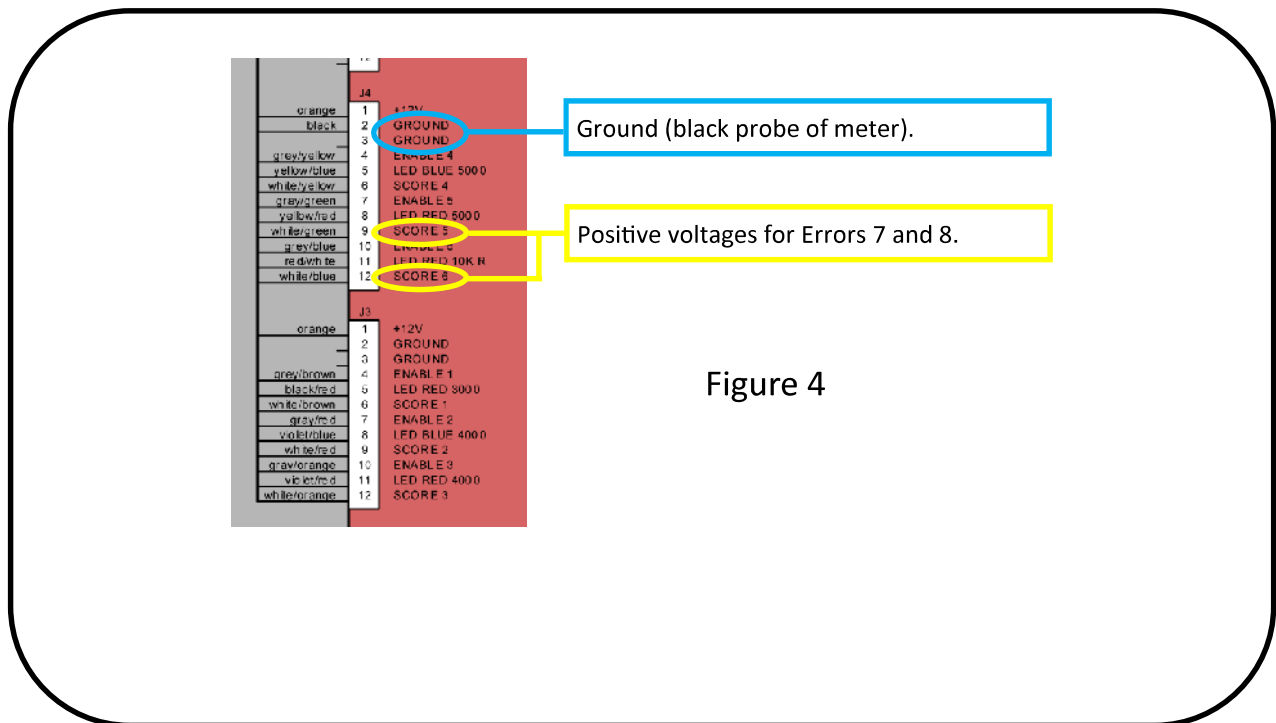
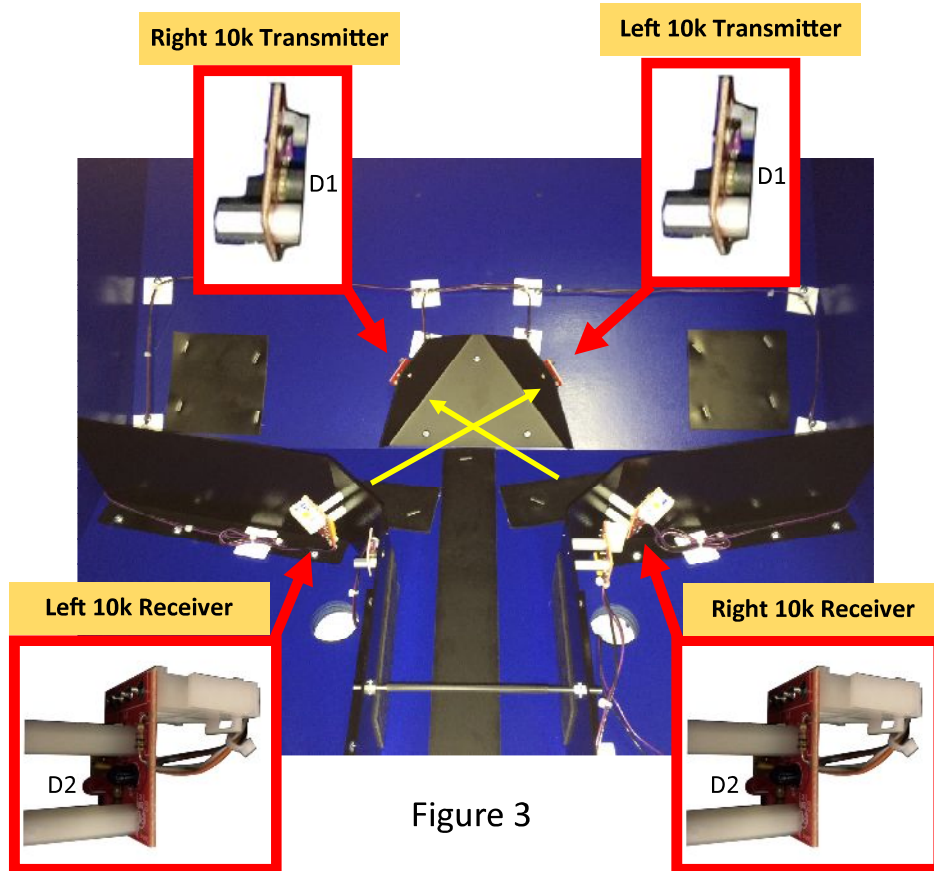
Step 5: Measure the enable line to ensure the sensor is being turned on. Place the red probe on pin 2 of the sensor and the black probe on pin 1. Is there pulsing 12 volts of DC? If not, you have a connection problem between the main board and sensor.

Step 6: Check the voltage on pin 9 of connector J4 for Error 6 and pin 12 of connector J4 for Error 7 on the main board (See figure 4). Is there around +5 volts when the sensor is not blocked? If yes does it drop to about nothing when blocked? If yes, replace the main board assembly.

Step 7: If no voltage exists at the Pin double check any connector that is between the sensor itself and the game's main board. It might require you to separate the front and back cabinet parts to access all the wiring.



Resolving Error 7 and 8 Continued:



Resolving Error 9:

This sensor detects the balls that exit the ball rail assembly. The sensor works by emitting a beam of light across the path where the balls exit. When the beam is broken by the ball the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked.

Follow these trouble shooting steps:

STEP 1: Remove the right cover and look at the back of the ball rail channel. The sensor is located in front of the solenoid. See Figure 5.

STEP 2: Observe the status of LED D2 located on the receiver side (See figure 5). Is the LED On constant? If not go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the transmitter board in camera mode. If it doesn't blind the camera then either the IRLED has gone bad or it is not being enabled. At this point replacement is recommended. Resolving Error 9:

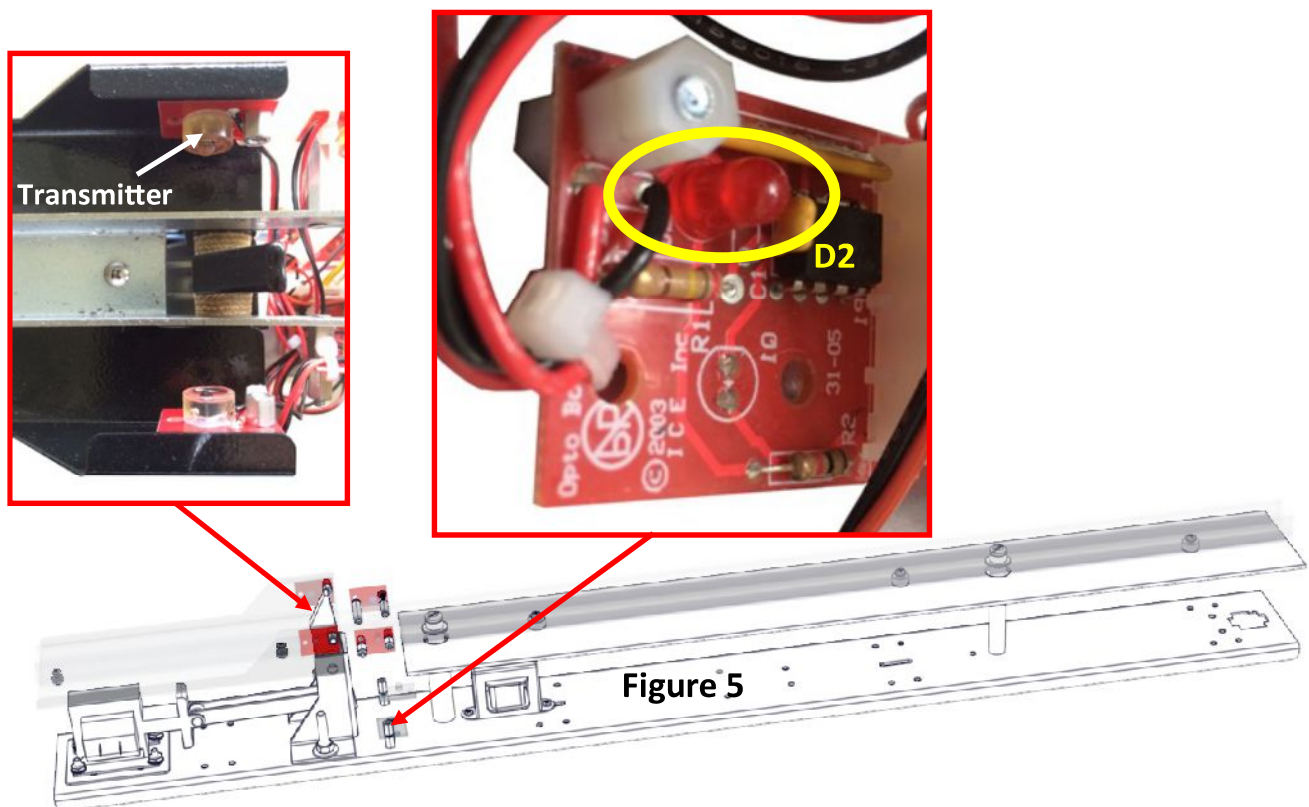
This sensor detects the balls that exit the ball rail assembly. The sensor works by emitting a beam of light across the path where the balls exit. When the beam is broken by the ball the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked.

Follow these trouble shooting steps:

STEP 1: Remove the right cover and look at the back of the ball rail channel. The sensor is located in front of the solenoid. See Figure 5.

STEP 2: Observe the status of LED D2 located on the receiver side (See figure 5). Is the LED On constant? If not go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the transmitter board in camera mode. If it doesn't blind the camera then either the IRLED has gone bad or it is not being enabled. At this point replacement is recommended.

STEP 3: Place your hand between the emitter board and receiver board. Did the LED D2 light? If not, using a volt meter set to DC place the red probe on pin 2 of the sensor and place the black probe on pin 4 of the sensor. Is there +12 volts? If not you have a broken connection either in ground or power from the sensor back to the main board.



Resolving Error 10:

This error occurs when the Coin line is shorted to ground.

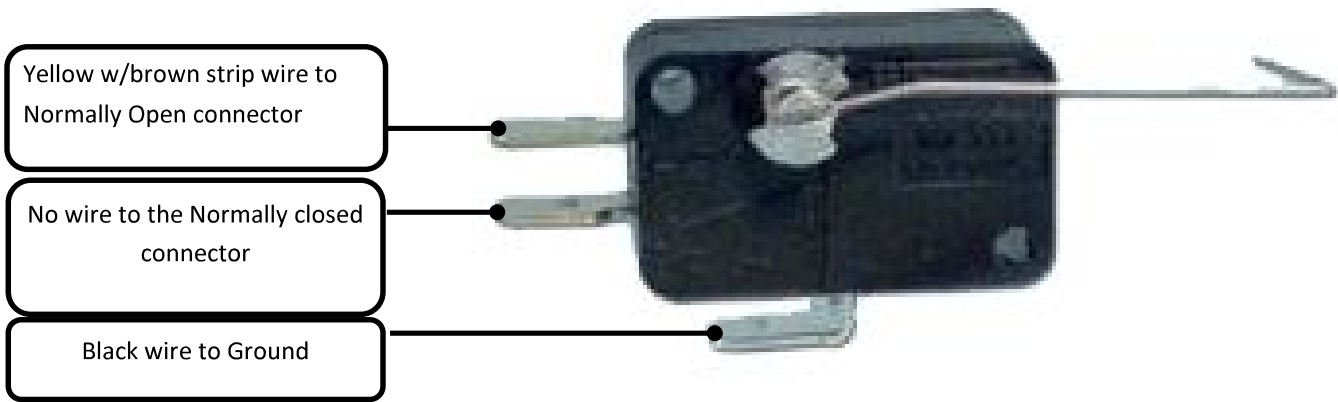
Follow these trouble shooting steps:

STEP 1: Slide the coin drawer open and inspect the coin switch. Is the yellow w/brown strip wire and the black wire connected as shown below? If not, correct it.

STEP 2: With a volt meter set to DC voltage, place the red probe to the yellow w/brown strip wire and place the black probe to the black wire. Is there voltage present. If yes, skip Step 3. You have an open connection from the main board to the switch.

Step 3: Unplug J9 on the main board. Did the error clear? If so, you have a shorted wire harness going to the coin switch or DBV harness coin switch, or a defective DBV unit. Find the short or replace the DBV unit.

Step 4: With the volt meter, check Pin 2 of J9 (with J9 still unplugged) with the red probe and Pin 1 of J9 with the black probe for +5 volts DC. If missing replace the main board assembly.



Resolving Error 11:

This can be a result of either the ticket dispenser having no tickets, defective ticket dispenser, broken wire, or bad main board assembly. Follow these trouble shooting steps:

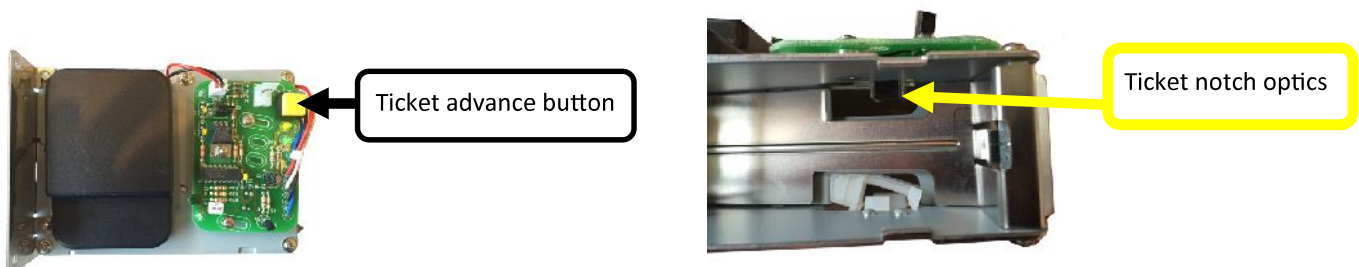
STEP 1: Slide the ticket drawer open and check for tickets. Load tickets into the ticket dispenser if empty.

STEP 2: With a meter set to DC voltage place the red probe to the violet/blue wire and touch the black probe to the black wire on the ticket dispenser. Press the ticket advance button to dispense a ticket. Is there voltage while a ticket blocks the ticket notch optics? If yes, skip Step 3. Move the red probe to pin 4 of the ticket dispenser (red wire). Is there +12 volts present? If not, you have an open connection from the ticket dispenser and main board.

Step 3: Before you replace the ticket dispenser check the ticket notch optics for debris. If no debris are found, then replace.

Step 4: With a volt meter, check Pin 1 of J8 with the red probe on the main board assembly and Pin 1 of J9 with the black probe on the main board assembly for +5 volts of DC each time a ticket is dispensed. If no voltage (pulse) is present as tickets are dispensed, then the harness from the ticket dispenser to the main board is bad.

Step 5: Replace the main board assembly.



Resolving Error 12:

This sensor detects when the solenoid has fully pushed the ball release lever down. The sensor works by emitting a beam of light across where the ball release level is fully down. When the beam is broken by the lever the sensor detects the loss of the beam and sends a signal back to the main board. When working properly, D2 LED will only light when the beam is blocked.

Follow these trouble shooting steps:

STEP 1: Remove the right cover and look where the solenoid is on the ball rail assembly. The sensor is located in back of the solenoid. See Figure 6.

STEP 2: Observe the status of LED D2 located on the receiver side (See figure 6). Is the LED On constant? If not go to step 3. If so, then it is possible D1 LED is not emitting a beam. You cannot see this beam with your eyes. If you have a cell phone with a camera option, point your phone at D1 on the transmitter board in camera mode. If it doesn't blind the camera then either the IRLED has gone bad or it is not being enabled. At this point replacement is recommended.

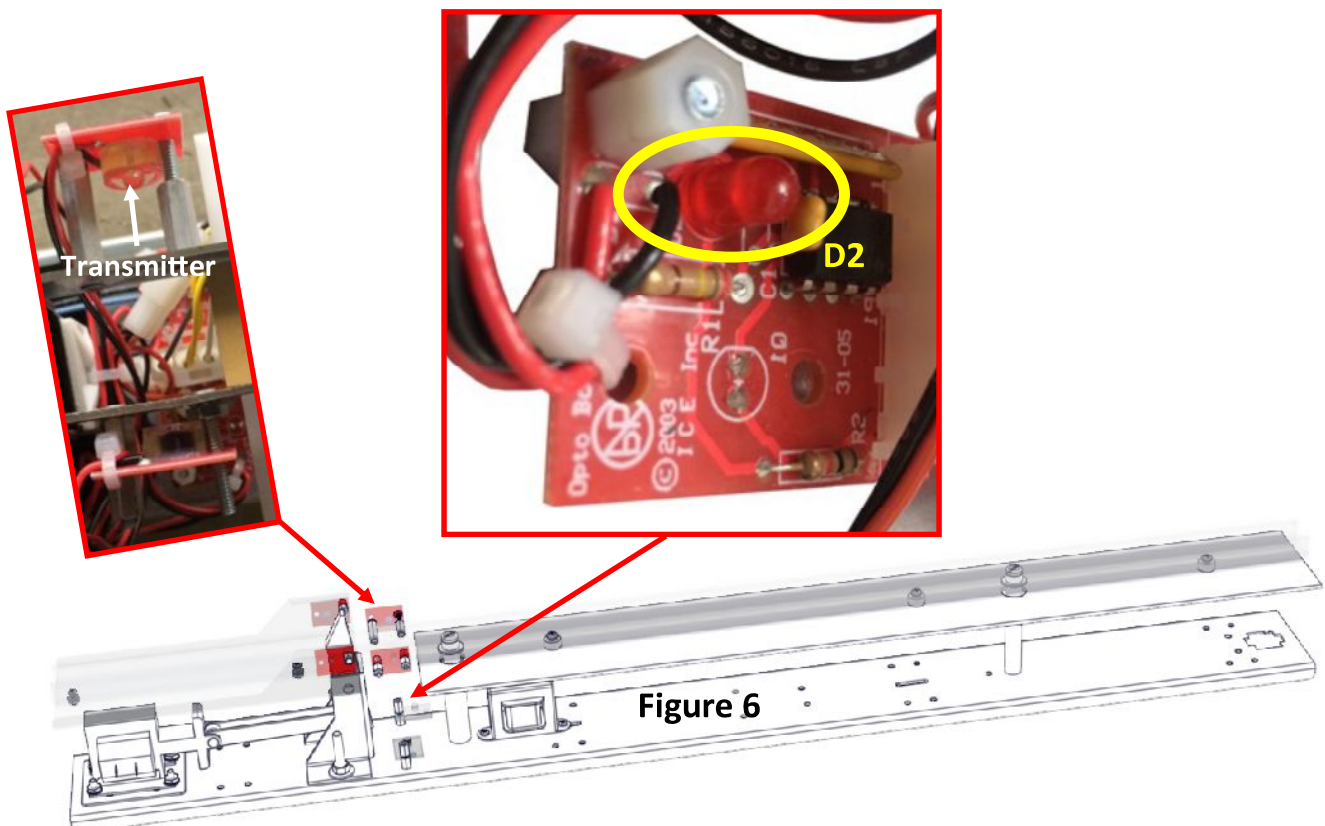
STEP 3: Place your hand between the emitter board and receiver board. Did the LED D2 light? If not, using a volt meter set to DC place the red probe on pin 2 of the sensor and place the black probe on pin 4 of the sensor. Is there +12 volts? If not you have a broken connection either in ground or power from the sensor back to the main board.

STEP 4: Measure the white wire (see Figure 6) with your volt meter set to DC voltage. Is there around 5 volts present? If so then is there still voltage on this wire when you block the sensor? If yes, then replace the sensor.

Step 5: Measure the enable line to ensure the sensor is being turned on. Place the red probe on pin 2 of the sensor and the black probe on pin 1. Is there pulsing 12 volts of DC? If not, you have a connection problem between the main board and sensor.

STEP 6: Check the voltage on pin 6 of connector J5 on the main board (the white wire). Is there around +5 volts when the sensor is not blocked? If yes does it drop to about nothing when blocked? If yes, see solenoid trouble shooting to continue.

STEP 7: If no voltage exists at Pin 6 double check the connections between the sensor itself and the game's harnessing.



Resolving Error FULL:

The game will display the word "FULL" on the score display and not dispense any balls. This occurs when the 0 count sensor is blocked or defective. If more than 15 balls are used in the game, the balls will back up and block the 0 count sensor.

Follow these trouble shooting steps:

STEP 1: Visually inspect for balls protruding out the ball rail assembly back onto the playfield. If more than 9 balls are present, it is recommended to remove them from play.

STEP 2: If no balls are blocking the 0 count sensor see previous section "Resolving Error 2".

Resolving Error SOL:

The game will display the word "SOL" on the score display and not dispense any balls if it doesn't see the SOL sensor being activated. This will occur when the solenoid cannot fully engage and block the SOL sensor. It can be caused by either the solenoid over heating, physically blocked, wiring, bad relay board, or bad main board assembly.

Follow these trouble shooting steps:

STEP 1: Remove the ball rail cover and see if there is any foreign objects is blocking the ball release lever from moving. If so, remove.

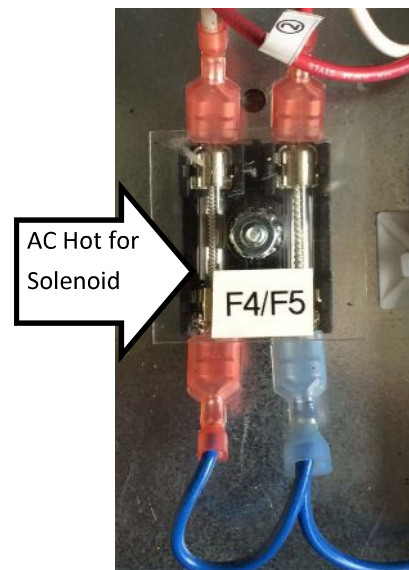
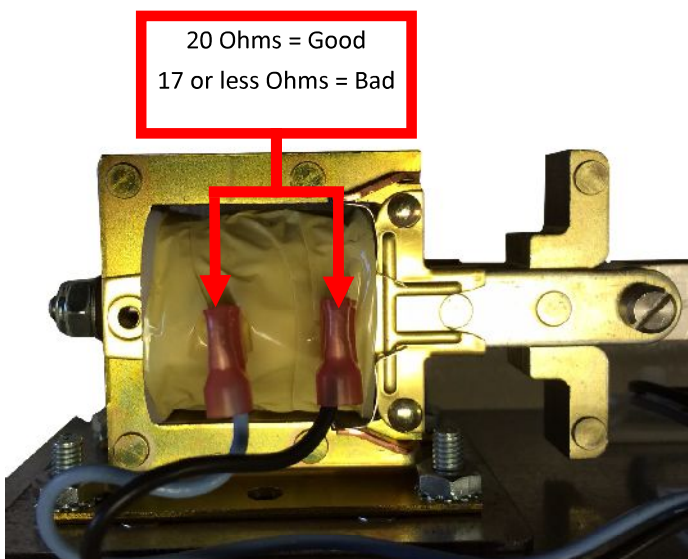
STEP 2: If more than 12 balls are in the ball rail assembly, remove the balls in rail assembly. Lift the ball rail out and place your hand on the solenoid. If the solenoid is hot, allow it to cool down.

STEP 3: With a meter set to ohms, measure the solenoid's resistance. It should read around 20 ohms. If the resistance is higher, it has been thermally damaged, replace.

STEP 4: If less than 17 ohms, replace and continue to Step 5.

STEP 5: Turn the game power off. Slide the main board assembly tray open and with your meter measure the fuse at F4. If opened, replace with same type.

STEP 6: Replace ball rail assembly and turn the game power back on. If the game now shows error 12 see "Resolving Solenoid Issues" and not Resolving Error 12.



Resolving Solenoid Issues:

**** WARNING **** You will be measuring 110 Volts of AC power. Only a qualified technician should continue following these steps.

If you have an error 12 on power up but the SOL sensor tests fine and all wiring has been confirmed to the SOL sensor then follow these steps:

Step 1: Using a volt meter set to DC voltages put the red probe on Pin 3 (+) and the black probe on Pin 4 (-). The wires have labels stating their pin connections. Now start a game. Did the meter read +12 volts? If so, switch your volt meter to AC voltage. Move the black probe to Pin 1 of the relay. Move the red probe to pin 2 of the relay. Is there 110v of AC voltage? Start a game. Did the voltage drop to hardly nothing? If not, go to step 4.

Step 2: If there was no +12 of DC voltage present across Pins 3 and 4 of the relay, put the red probe on pin 1 of J18 on the main board assembly and the black probe on pin 2 of J18 on the main board assembly. Is there +12 volts now? If not, replace the main board assembly. If so, carefully check the wiring for damage or connection issues.

Step 3: If no 110V of AC was present at pins 1 and 2 then check the fuse at F4. If open then replace with same type and re-test.

Step 4: If the 110 of AC voltage didn't drop to hardly nothing, replace the relay.

