

Trouble shooting Shooter issues:

Theory of Operation:

The game uses a mechanical plunger that has an optic sensor to fire a solenoid which will launch a ball at the screen. The plunger sensor determines the position of the plunger. When the plunger is in the rest position the sensor will output to the I/O board +5 VDC to connector P8, pin 6 (gray/violet wire). When the plunger is pulled away from the sensor the voltage will drop to 0 volts. Once the plunger is returned to the rest position the voltage will be back at +5 VDC. This sequence informs the game to launch a ball.

There is also a ball cup optic sensor to determine if a ball has been loaded into the ball tray. This sensor will be at +5 VDC when no ball is present. When a ball has been loaded the sensor will be at 0 VDC. This can be checked at the I/O board's connector 8, pin 2 (gray/orange wire). If for any reason this sensor doesn't detect a ball present, it will interrupt the process of firing the solenoid in order to load a ball.

Once the game has sensed the state change on the plunger sensor and at the same time senses that a ball is waiting in the ball tray it will output from the I/O board at connector J3, pin 1 (yellow/violet wire) a 5 VDC pulse to the high voltage board. The high voltage board combines two 48 VDC power supplies in order to output 90 volts of DC power to the solenoid. The high voltage power supply releases the stored voltage to the solenoid once it detects this 5 VDC pulse at connector J3, pin 1.

Trouble Shooting:

Shooter will not fire:

- 1) Check plunger ball tray sensor – 0V when blocked, +5 VDC when not.
- 2) Check plunger - +5 VDC at rest, 0 VDC when pulled.
- 3) Output from I/O present?
 - a. Touch a jumper at the I/O board from J3, pin 1 to P2, pin 8 to test fire.
 - i. No fire? Try b.
 - b. Touch Vref for X/Y pot at drawer connector (pin 5 of red connector) to pin 9 (yellow/violet wire) to test fire.
 - i. No fire? Touch +5 to J3, pin 1.
 - ii. No fire again? Test both 48 VDC power supplies.
 1. Good? Replace high voltage board
 2. Check solenoid.