

# Gulf Pinball

## Installation Instructions

### Williams AS-2518-66 Solenoid Expander Board

This board replaces the original part AS-2516-66 board. There were 2 versions of this board:

1. **With jumper:** Jumper connects a wire connecting pin 4 of the relay to pin 9. This adds +43vdc onto the K1 relay moveable contact. Most games require the jumper which in the new board is located to the left of the orange relay K1. On the original board it is below the relay. Games known to use the jumper version are:
  - Black Belt
  - BMX
  - Eight Ball Deluxe & Eight Ball Deluxe LE
  - Elektra
  - Fathom
  - Medusa
  - Mr. & Mrs. Pacman
  - Special Forces & Special Forces Girl
  - Vector
2. **No Jumper:** A few games do not use the jumper....so if you encounter one by looking at the board and it doesn't have a jumper, cut off the one on the new board using wire cutters. This jumper may be **either** a wire (see pic) or it may look like a resistor with a black stripe in the middle. It has zero ohm value. Cut whichever you find and separate the leads so they do not touch each other. No jumper games include:
  - Black Pyramid
  - Centaur and Centaur II
  - Fireball Classic
  - Speakeasy & Speakeasy IV
3. **Best to read the manual and schematic or look at the original board to determine jumper or no jumper and copy what you find in your game.**

