

# Williams System 8

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Click to go back to the Williams solid state repair guides index ([http://pinwiki.com/wiki/index.php?title=Williams\\_Repair\\_Guides](http://pinwiki.com/wiki/index.php?title=Williams_Repair_Guides)) .

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## 1 Introduction

The Williams System 8 boardset was used in 1984 with only two games, the pitch and bat Pennant Fever and Still Crazy, a novelty game. Combining the driver board, sound board, and cpu directly onto one board eliminated several design deficiencies of the earlier System 3-7 boardsets; mainly the 40 pin interconnector, and extra wiring harness interboard connectors.

System 8 is very similar to its successor (System 9), but it is more of a "slimmed down" version. There are a total of 8 controlled solenoids versus the 16 used with the system 9 boardset. Another distinct difference is system 8 hardware does not utilize special solenoids. System 8 also lacks the connector for a speech daughterboard.

Although System 8 is capable of driving four 7-digit displays and one 4 digit display, only two 7-digit displays are used with Pennant Fever and one 7-digit display is used with Still Crazy. Therefore, master display boards are not used on either game. Both the lamp and switch matrices are 8 x 8 in size, but neither Pennant Fever nor Still Crazy use many switches in their matrices.



Williams System 8 Board Set

## 2 Games

Title	Date of Release	Model #	Other Boards	Notes
Pennant Fever	05-1984	526	CPU rev A	Pitch and Bat
Still Crazy	06-1984	534	CPU rev X1	Novelty Vertical Pinball

## 3 Technical Info

### 3.1 CPU Driver Board



System 8 CPU rev A (Pennant Fever)



System 8 CPU rev X1 (Still Crazy)

## 3.2 Power Supply



System 8 Power Supply

The System 8 power supply is identical to a System 7 and System 9 power supply.

## 4 Problems and Solutions

### 4.1 Power Problems

### 4.2 MPU boot issues

#### 4.2.1 Relocating the battery from the MPU board

Use the same procedure as detailed in the System 9 section, here ([http://www.pinwiki.com/wiki/index.php?title=Williams\\_System\\_9\\_-\\_11#Relocating\\_the\\_battery\\_from\\_the\\_System\\_9\\_MPU\\_board](http://www.pinwiki.com/wiki/index.php?title=Williams_System_9_-_11#Relocating_the_battery_from_the_System_9_MPU_board)).

#### 4.2.2 Repairing Alkaline Corrosion

Use the same procedure as detailed in the System 11 section, here ([http://www.pinwiki.com/wiki/index.php?title=Williams\\_System\\_9\\_-\\_11#Repairing\\_Alkaline\\_Corrosion](http://www.pinwiki.com/wiki/index.php?title=Williams_System_9_-_11#Repairing_Alkaline_Corrosion)) .

### 4.2.3 Connecting a logic probe to the MPU



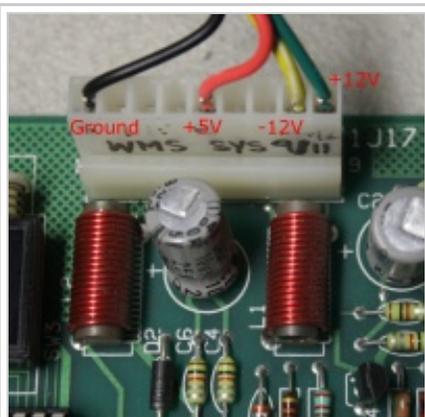
Connect the +5V lead of your logic probe to the top of C6.

The System 8 MPU lacks test points. Argh!

To connect a logic probe, pick up +5V at the top lead of capacitor C6 (a trace extends down from the larger electrolytic cap at C5). Pick up ground at pin 9 of 1J5.

Of course, +5v and ground can always be acquired at any one of the bypass capacitors, which are located at most every chip, and simply labeled as "B".

### 4.2.4 Using a PC Power Supply For Bench Testing



Powering the System 8 MPU on the bench with an old PC power supply.

For full operation a System 8 MPU requires +5V, +12V, -12V DC and ground. However, -12V is only required for the sound amplifier, so that voltage may be omitted for non-sound-related testing.

Connect...

- Ground to pin 1, 2, or 3
- +5VDC to pin 4, 5, or 6
- -12VDC to pin 8
- +12VDC to pin 9

## 4.3 Game resets

## 4.4 Solenoid problems

this is a stub

## 4.5 Lamp problems

### 4.5.1 Lamp Matrix Row and Column Testing

## 4.6 Switch problems

### 4.6.1 Switch Matrix Row and Column Testing

## 4.7 Display problems

WARNING: This circuit uses high voltages. Don't continue, unless you are confident in your diagnostic abilities.

## 4.8 Sound problems



The System 8 MPU creates sound on the MPU itself, much like the baseline version of the System 11 MPU.

### General System 8 Sound Subsystem Theory of Operation

- The sound subsystem consists of a 6808/2 processor, 6821 PIA, 1408 DAC, and finally a TDA2002 amplifier.
  - Sounds are conveyed to the sound subsystem by the main processor via the input ports of the 6821 PIA at IC13.
  - The 6808 at IC11 reads the PIA input port then pulls the appropriate sound file from the sound ROM at IC49.
  - The 6808 sends the sound data back to the 6821s second set of output ports, which are attached to the 1408 digital-to-analog converter.
- A remotely located volume pot may be used to adjust volume levels.
  - The analog audio is then presented to the TDA2002 for final amplification.
  - The amplified audio is presented to the single 8 ohm cabinet speaker.

Pennant fever makes only 8 sounds.

1. "Charge" bugle theme
2. Organ music, "The Lone Ranger" theme
3. "You're out!"
4. "Boooo!"
5. "Strike One"
6. "Strike Two"
7. "All right!"

Pressing switch 3 on the MPU should cause the sound system to play "FirePower-like" sounds continuously until power to the game is turned off.

Note that the sound subsystem can be configured to use either a 6808 or a 6802 microprocessor.

To use a 6808, jumper W1 should be in, W2 out.

To use a 6802, jumper W1 should be out, W2 in.

# 5 Repair Logs

Did you do a repair? Log it here as a possible solution for others.

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