![UltraPin logo]

UltraPin™
System Manual
040-0122-02 Rev. D

> ➢ **Read this manual before use.**
> ➢ **Keep this manual with the machine at all times.**

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Preface

Safety

Please read this page before preparing your arcade cabinet for game play.

The following safety instructions apply to all game operators and service personnel. Specific warnings and cautions will be included throughout this manual.

Use the following safety guidelines to help protect the system from potential damage and to ensure your personal safety:

- Make sure that the switch on the back of the computer is set to match the AC power in use at your location:
    - 115 volts / 60Hz in most of North and South America and some Far Eastern countries such as Japan, South Korea and Taiwan
    - 230 volts / 50Hz in most of Europe, the Middle East and the Far East
- To help prevent electric shock, plug the system into a properly grounded power source. The AC power cables are equipped with 3-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- To help protect your system from sudden increases and decreases in electrical power, use a surge suppressor, line conditioner or Uninterruptible Power Supply (UPS).
- Be sure nothing rests on the system's cables and that the cables are not located where they can be stepped on or tripped over.
- Keep your system far away from radiators and other heat sources.
- Do not block cooling vents.

Precautions for Game Operation

GLOBAL VR® assumes no liability for injuries incurred while playing our games.

Operators should be aware that certain health and physical conditions may make people susceptible to injury when playing video games, particularly when the game moves or creates a sense of motion.

Warnings

	To avoid electrical shock, unplug the cabinet before performing installation or service procedures.
	GLOBAL VR assumes no liability for any damages or injuries incurred while setting up or servicing the cabinet. Only qualified service personnel should perform installation or service procedures!

Environmental Conditions

Cabinet is intended for indoor use only. Be sure to keep the cabinet dry and maintain operating temperatures of 10°-40°C (50°-104°F).

FCC Notices (United States)

Electromagnetic Interference (EMI) is any signal or emission radiated in free space or conducted along power or signal leads, that endangers the functioning of radio navigation or other safety service, or that seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include, but are not limited to, AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices (including computer systems) contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.

- Relocate the cabinet relative to the receiver.

- Plug the game into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult an experienced radio/television technician for additional suggestions. You may find the FCC Interference Handbook, to be helpful. It is available from the U.S. Government Print Office, Washington, DC 20402.

This device has been tested and complies with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Operation is subject to the following conditions:

- This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

Chapter 1 — Introduction

The Best of Pinball with None of the Hassle!

2006 Innovator Awards Winner

UltraPin brings realistic pinball play to a video game.

- **Patent Pending uShock board** — New I/O card allows players to interact with the cabinet for a totally realistic pinball experience.
- **Player Interaction —** Bump & Nudge the cabinet to affect the ball in play—just like real pinball!
- **Pinball Play —** UltraPin's realistic ball movement matches the feel of the original table.

Hardware Features

- Pentium® Dual Core Computer
- Nvidia® GeForce graphics
- 1 Gigabyte RAM
- 32" TFT LCD Table Monitor
- 19" TFT LCD Backglass Monitor

Current Requirements at 115 VAC:
- Operating: 3 Amps
- Inrush: 5 Amps

Weight: 250 lbs (113 kg)

Height: 75½" (192 cm)

Depth: 50" (127 cm)

Width: 28" (71 cm)

Figure 1.   Cabinet Specifications

Chapter 2 — Installing a New Cabinet

Basic Setup

Use the following procedure to install a new cabinet:

1. Carefully remove the cabinet from the shipping container, giving yourself plenty of space around the cabinet. Inspect the exterior of the cabinet for any damage.

2. Remove the keys from the coin return slot. Open the coin door to locate the second set of keys.

3. Look through the coin door and inspect the interior for any signs of damage. Verify that all cables and major assemblies are secure.

4. Remove the back door from the cabinet and inspect the computer system. Verify that all cables are securely connected to the computer.

5. Place the cabinet on a table or similar surface and attach the legs, as shown below.

Bolt legs to each corner, as shown above.

Figure 2.   Installing the Legs

6. Fold up the Back Box as shown below, and use the large hex wrench, located in the coin box, to tighten the Back Box Lock and secure the Back Box in place.
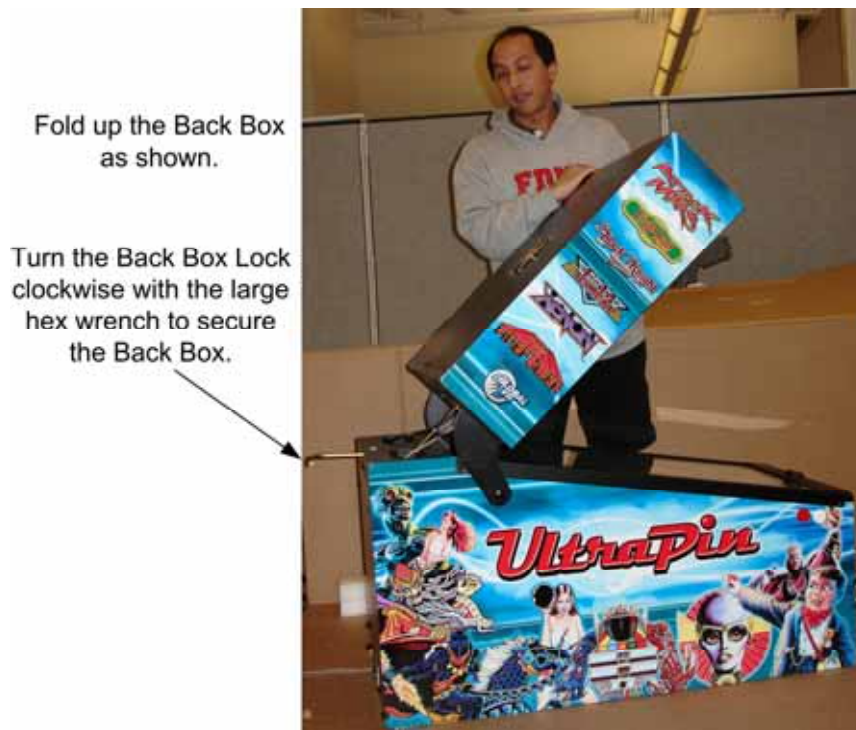
Figure 3.   Securing the Back Box

7. Connect the AC power cord to a grounded (3-terminal) AC wall outlet.

8. Power ON the game by first switching ON the ON/OFF switch on the power plate on the rear, and then switching ON the front ON/OFF switch located under the table near the front right corner.

9. Calibrate the cabinet as described in the sections that follow.

10. Press the **Test** button to open the Operator Menus and set up your game (see *Operator Menu and Game Setup*, starting on page 12.)

Level the Cabinet and Calibrate the uShock Motion Sensor

To make sure that the pinball games play properly, it is important to level the cabinet and calibrate the uShock I/O PCB whenever the cabinet is moved. Failure to do so can cause the ball to lean to one side during gameplay.

Refer to *Physics Engine Settings* on page 20 for a picture and more information about the Physics Engine Settings menu.

1. Set up the cabinet where it will be operating, and make sure that it appears to be physically level.

2. Press the **Test** button, mounted to the inside of the coin door, to open the Operator Menu.

3. Use the Flipper buttons to move the cursor down to **Game Configuration**, and then press the **START** button to open the Game Configuration menu.

4. In the Game Configuration menu, use the Flipper buttons to move the cursor down to **Physics Engine Settings**, and then press the **START** button to open the Physics Engine Settings menu.

5. Press and hold both Flipper buttons for 5 seconds. This will reset the center of gravity for the uShock motion sensor, and tell the motion sensor that the cabinet is now flat and level. (Note that the Min and Max indicators will now be red.)
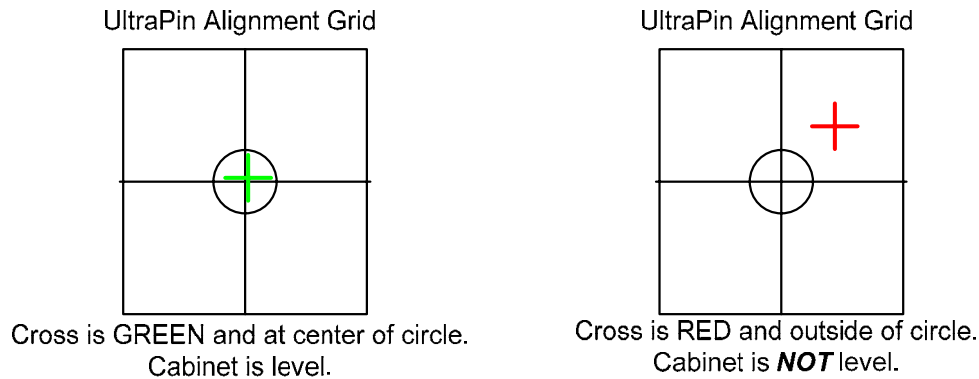
Figure 4.   Physics Engine Alignment Grid Detail

6. Physically nudge the cabinet forward, and right-left. This calibrates the cabinet's full range of motion. The Min and Max indicators will turn from red to green as the calibration is completed.

7. Look at the Alignment Grid in the upper part of the Physics Engine Settings screen (as shown in the figure above). The alignment grid is a square box with a circle at the center, and a crosshair that moves within the grid to indicate when the table is at an angle.

8. Locate the crosshair in the Alignment Grid. When the table is level to within 1 degree, the crosshair will be green, and will appear inside the small circle.

    • If the crosshair is green, and appears inside the circle, proceed to adjust the Nudge and Tilt sensitivity as described in the subsections that follow.

    • If the crosshair is red and appears outside the circle, use the leg levelers to level the table, and then return to step 5 above.

Calibrate the Plunger

1. With the Physics Engine Settings menu open, hold the Plunger button for 3 seconds to reset the plunger calibration. When the reset occurs, a sound will play, all three numbers near the plunger graphic will show the plunger resting point, and the Min and Max values will be red.

2. Pull the plunger all the way back and hold it for 2—3 seconds.

3. Push the plunger full forward and hold pressure on it for 2—3 seconds, and then let go. The numbers next to the plunger graphic will now show the Min (full out) Max (full in) and Current, or resting point positions of the plunger, and the Min and Max values will now be green.

Set the Player Input Sensitivity (Nudge)

Player Input Sensitivity sets how much the ball reacts to players nudging or bumping the cabinet.

Use the Flipper buttons to place the cursor next to **Player Input Sensitivity**, and press the **START** button to adjust the setting.

The graph on the screen shows you how much the ball will react when you nudge or bump the cabinet. Fewer bars means more sensitivity to player input, while more bars means less sensitivity to player input.

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The Input Sensitivity graphic shows a picture of a ball that will move when you bump or shake the cabinet, showing you how the ball in play will behave with the current settings.

Set the Tilt Sensitivity

Note: For best results, set the Player Input Sensitivity first, and then set the Tilt Sensitivity. The Player Input Sensitivity will affect how much the plumb bob moves in the Tilt Sensitivity graphic.

Tilt Sensitivity sets how easy it is for a player to generate a Tilt and lose a ball when they shake or bump the cabinet.

Use the Flipper buttons to place the cursor next to **Tilt Sensitivity**, and press the **START** button to adjust the setting.

The graph on the screen shows you how easy it is to tilt the cabinet. Fewer bars means it is harder to tilt, making game play easier, while more bars means a mild bump or nudge will generate a tilt, making game play harder.

The Tilt Sensitivity graphic on the screen simulates the plumb bob used on a mechanical pinball cabinet. As you increase the sensitivity, the red circle in the graphic gets smaller. When you shake the table, the plumb bob (the small circle with crosshairs in the center of the graphic) moves in response to the table movement. If the plumb bob hits the red circle, a Tilt signal is generated.

Checking the Game Dongle

The cabinet uses a USB game dongle to activate the game software. It connects to a USB port on the back of the computer. If the dongle is missing, the game will not run. When a USB Dongle is installed and working properly, a **red** LED will illuminate inside the dongle.

If the software does not recognize the Game Dongle, make sure the Dongle is connected properly or try a different USB port.

If the dongle should come out while the game is running, a NO DONGLE screen will appear. If this happens, the dongle usually can be re-installed without rebooting the game.

Note: The dongle supplied with the cabinet is specific to the game and software version. Future software upgrades may require you to also upgrade the dongle.

Important: Some of your cabinet information is stored in the dongle, so if you replace your computer, **remove the dongle and keep it with the cabinet**.

Figure 5.   USB Game Dongle

Chapter 3 — Playing a Game

Insert coins, and use the left and right flipper buttons to browse through the available tables. When you reach the table that you want to play, press the **START** button to start the game. While the table loads, the screen displays helpful hints for playing that table.

When the table loads and is ready for play, it will automatically be set for **1 Player**. To add other players, hit the **START** button again. To launch the ball, pull back the plunger (or press the plunger button). During game play, press the Flipper buttons on the side of the cabinet to activate the flippers. Shake or Bump the table to nudge the ball in play, just like a real pinball table—but be careful not to TILT, because this works just like a classic table too!

To exit from a game, press and hold the **EXIT GAME** button for 3 seconds.

If you have credits available when you exit from a game, use the Flipper buttons to select another table to play.

The Game Selection screen lets you cycle through the game list using the Left & Right Flipper buttons. The current selection is displayed above the selection wheel. Press the **START** button to start playing.

While the pinball table loads, a Tips screen is displayed, with game features and tips to help you get a better score!

Chapter 4 — Operator Menu and Game Setup

The Operator Menu screens let you control all of the settings for your UltraPin cabinet. Press the **Test** button inside the coin door (see Figure 7 on page 13) with the game running in Attract Mode to open the Operator Menu.

Note: You must exit any table and be in the Attract Mode before you can open the Operator Menu.

To navigate the menus, use the left and right flipper buttons to move through the list of options on a menu screen. Press the **START** button to select a highlighted option. Once you select an option, use the **START** button or **lower Flipper buttons** to cycle through the available settings. Press the **EXIT GAME** button to exit from a submenu to the previous menu, or to exit from the main menu to the Attract Mode.

For example, do the following to set the Attract Mode Volume:

1. Press the **Test** button to open the Main Menu.
2. In the Main Menu, use the flipper buttons to move the cursor down to **Cabinet Setup**, and press the **START** button to open the submenu.
3. In the Cabinet Setup menu, select **Sound Settings** and press **START** to open the submenu.
4. In the Sound Settings menu select **Attract Mode Volume**.
5. Now use the **lower Flipper buttons** or **START** button to cycle through the available settings.
6. When you reach the desired setting, use the **EXIT GAME** button to exit from each menu.

Main Menu

The **Main Menu** is displayed first when you press the **Test** button. It lets you open submenus where you can adjust settings, run diagnostics, and view statistics. These menus are described in detail in the rest of this chapter.
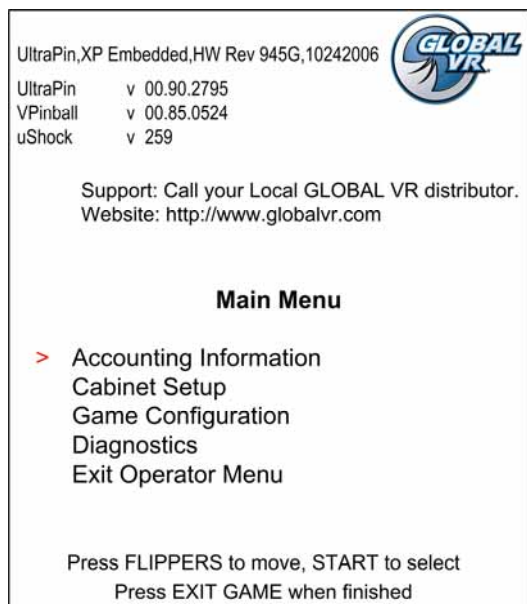
Accounting Information – Lets you view or reset earnings and time reports, or reset credits. (See page 14.)

Cabinet Setup – Lets you set pricing, display, sound, and date & time settings, or restore all settings to factory defaults. (See page 15.)

Game Configuration – Lets you view the game list and turn games on or off, adjust game settings, calibrate the table, adjust input (nudge) and tilt sensitivity, or reset high scores. (See page 18.)

Diagnostics – Lets you test the controls, sound, and video. (See page 21.)

Exit Operator Menu – Exits from the Operator Menu and returns to the Attract Mode.

Main Menu			
		View Earnings Report	
		View Time Report	
Accounting Information →		**Reset Report Data**	
		Reset Credits	
		Coin / Credit Settings	
		Display Settings	
Cabinet Setup →		**Sound Settings**	
		Date & Time Settings	
		Reset Factory Defaults	
		Pinball Game List	
		Game Settings	
Game Configuration →		**Physics Engine Settings**	
		Reset High Scores	
		Control Test	
Diagnostics →		**Sound Test**	
		Video Test	
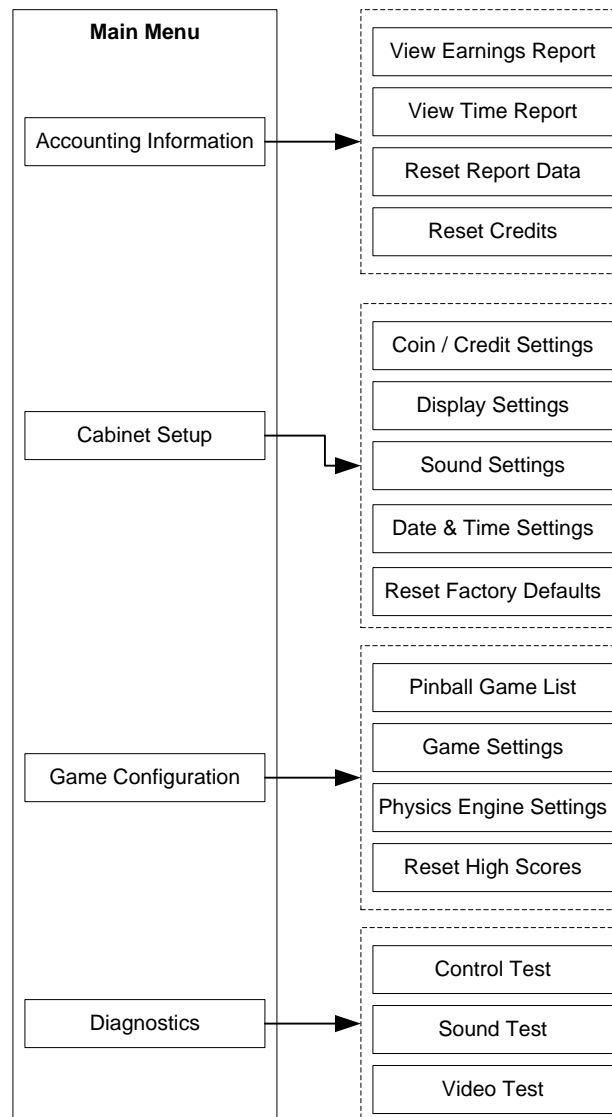
Figure 6.   Operator Menu Flowchart

Figure 7.   Operator Button Panel

Accounting Information Menu

This menu lets you view cabinet statistics and earnings reports.

Accounting Information

Quick Report Data	Since: 06/16/06
Coins	573
Unspent Coins	4
Available Coins	2
Service Coins	1
Credit Awards	3
Extra Ball Awards	-
Most Played Game	Medieval Madness

View Earnings Report
View Time Report
> Reset Report Data   Done
Reset Credits

Press FLIPPERS to move, START to select
Press EXIT GAME when finished

Quick Report Data — Displays cabinet statistics since the last reset.

- **Coins:** Displays total coins that have been inserted in the cabinet.

- **Unspent Coins**: Displays total unspent coins. These occur if the cabinet is reset with credits available, or more than the maximum allowed credits are inserted.

- **Available Coins**: Displays total available coins.

- **Service Coins**: Displays total Service coins, added by pressing the **Service** button on the Operator button panel. These coins are not added to cabinet earnings.

- **Credit Awards**: Displays total credits awarded to players.

- **Extra Ball Awards**: Displays total extra balls awarded to players.

- **Most Played Game**: Displays the game that has been started the most times.

View Earnings Report: Displays Earnings Report (see page 15).

View Time Report: Displays Time Report (see page 15).

Reset Report Data: Press and hold the **START** button for three seconds to reset the current stats in *all* reports. Does not affect Lifetime stats. The screen displays *Done* after a reset.

Reset Credits: Press and hold the **START** button for three seconds to reset available credits (coins) to zero (0). The screen displays *Done* after a reset.

Earnings and Time Reports

These reports display earnings and time statistics since the last reset, and lifetime totals. (Use the Flipper buttons to scroll if the game list is too long to fit on one screen.) When you select **Reset Report Data** from the Accounting Information menu, the current totals are cleared and added to the Lifetime totals.

Note: Current totals are not added to Lifetime totals until you Reset Report Data.

The Earnings Report shows the total Coin Drop and Free Plays for each game.

The Time Report shows the average time each game lasts (in minutes and seconds), and the total play time for each game (in hours and minutes).

Earnings Report

Game	Since: 06/14/06 COINS / FREEPLAY		Lifetime COINS / FREEPLAY	
Attack from Mars	57	-	5	2
F14 Tomcat	35	-	46	7
Medieval Madness	72	-	88	-
Sorcerer	42	-	58	-
Strikes & Spares	39	4	51	5
Xenon	18	-	35	-
Total Earnings	263	4	283	14

Press FLIPPERS to scroll
Press EXIT GAME when finished

Time Report

Game	Since: 06/14/06 AVERAGE / TOTAL MIN:SEC / HR:MIN		Lifetime AVERAGE / TOTAL MIN:SEC / HR:MIN	
Attack from Mars	2:37	2:14	2:45	3:24
F14 Tomcat	3:34	1:35	3:41	2:12
Medieval Madness	3:39	1:26	3:23	3:53
Sorcerer	5:16	1:21	4:36	2:56
Strikes & Spares	3:01	3:02	2:47	4:21
Xenon	3:34	1:22	4:23	2:45
Total Playtime	21:41	11:00	19:55	19:31

Press FLIPPERS to scroll
Press EXIT GAME when finished

Cabinet Setup Menu

Cabinet Setup

> Coin / Credit Settings
  Display Settings
  Sound Settings
  Date & Time Settings
  Reset Factory Defaults

Press FLIPPERS to move, START to select
Press EXIT GAME when finished

Each item in this menu opens a submenu that lets you change cabinet settings. The submenus are described in the subsections that follow.

Coin / Credit Settings – Lets you set up pricing. (See page 16.)

Display Settings – Lets you adjust the appearance of the video. (See page 16.)

Sound Settings – Lets you set volume and special sounds. (See page 17.)

Date & Time Settings – Lets you set the current date and time. (See page 17.)

Reset Factory Defaults – Press and hold the **START** button for three seconds to reset all game settings to factory default settings. Does not affect earnings or gameplay statistics.

Coin / Credit Settings Menu

Coin / Credit Settings

> Display Mode   Money
  Coins per Pulse (Mech)   1
  Coins per Pulse (DBA)   4
  Coins per Credit   2 Coins, 1 Credit
  Bonus Credit   Disabled
  Free Play   Off

$0.00/$0.50

Press FLIPPERS to move, START to change setting
Press EXIT GAME when finished
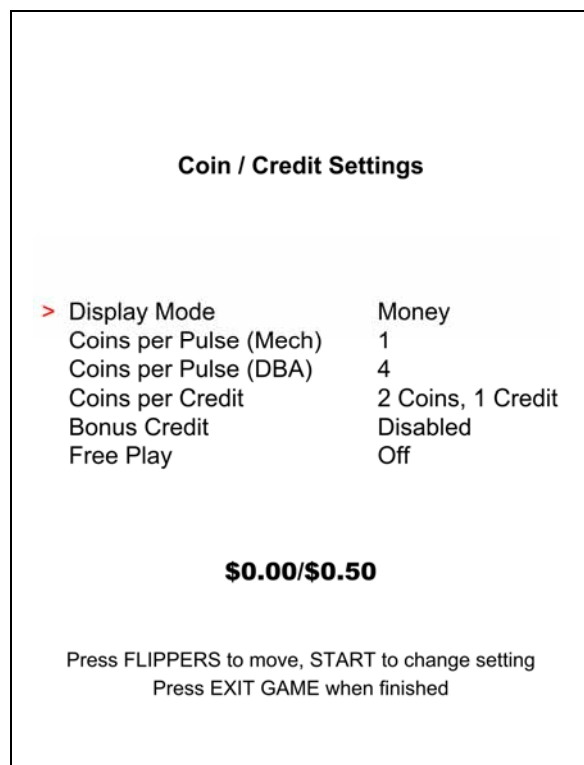
Display Mode – Sets whether pricing is displayed in *Money* or *Credits*. This affects pricing displayed at the bottom of the screen (unless Free Play is On).

Coins per Pulse (Mech) – Sets the coin count per coin mech pulse. *(Range: 1—20)*

Coins per Pulse (DBA) – Sets the coin count per Dollar Bill Acceptor pulse. *(Range: 1—20)*

Coins Per Credit – Sets the number of coins to buy 1 credit. *(Range: 1—20)*

Bonus Credit – Unless disabled, sets the number of inserted coins that award a bonus credit. *(Range: 2—20 or Disabled)*

The current money or credits available, and the price per game, are displayed near the bottom of the screen. If *Display Mode* were set to *Credits* on the screen shown to the left, this display would read: *Credits 0/2*.

Display Settings Menu

This menu lets you adjust the overall appearance of the video. Onscreen graphics help you see how the settings will look. The settings affect both monitors.

Display Settings

Digital Vibrance   Low
Brightness   [||||||]
Contrast   [||||||]
Gamma Correction   [||||||]

Press FLIPPERS to move, START to Select
Press EXIT GAME when finished
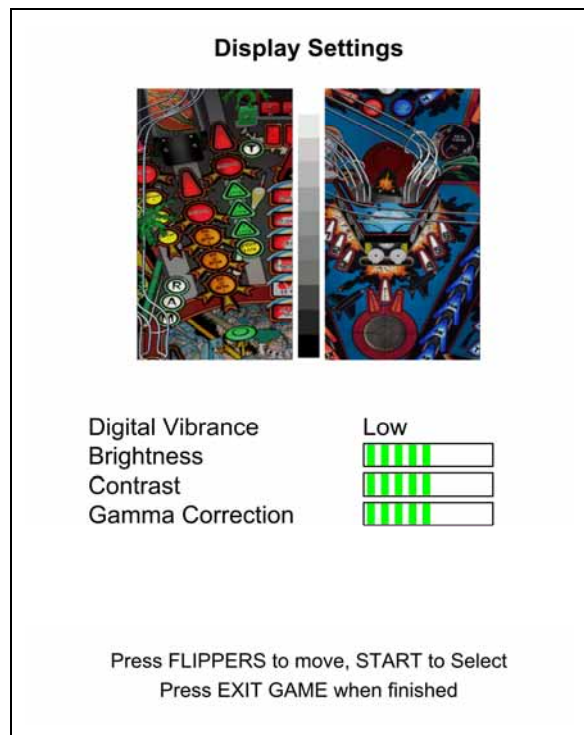
Digital Vibrance – Adds brightness only to the lighter areas of the screen. *(Range: Disabled, low medium, high. Default: Low.)*

Brightness – Adjusts screen brightness by increasing the overall white level. If set too high, images may appear washed out.

Contrast – Adjusts screen contrast.

Gamma Correction – Adjusts the overall brightness of the screen.

Sound Settings Menu

This Menu lets you select sounds for certain functions and set volume levels.

Sound Settings

> Attract Mode Audio   On
  Attract Mode Volume
  Mechanical Volume
  Master Volume
  Table Select Sound   Theme
  Coin Drop Sound   Theme

Press FLIPPERS to move, START to change settings
Press EXIT GAME when finished
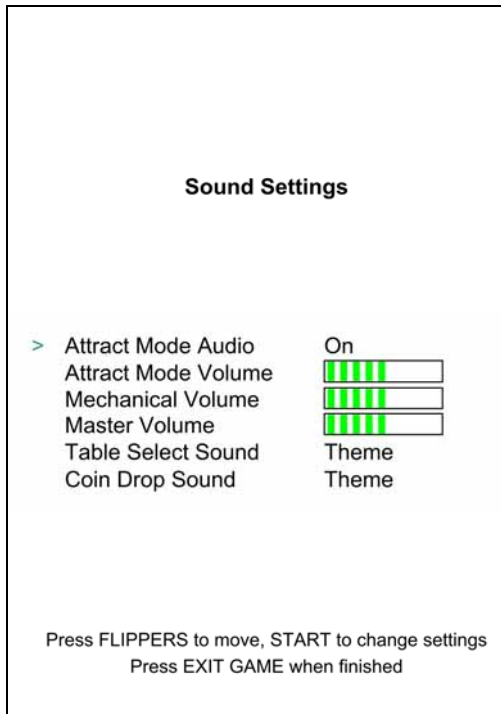
Attract Mode Audio – Turns Attract Mode sound **On** or **Off**.

Attract Mode Volume – Sets Attract Mode volume relative to the Master Volume.

Mechanical Volume – Sets volume for mechanical sound effects like Flippers and Bumpers.

Master Volume – Sets Master Volume for the cabinet. (Effect is the same as using the volume up & down buttons on the Operator Button Panel.)

Table Select Sound – Sets the sound played during Table Select. **Theme** (default) plays sounds from the original table. **Classic** plays mechanical pinball sounds. **Modern** plays modern pinball sounds.

Coin Drop Sound – Sets the Coin Drop sound. **Theme** (default) plays the sound from the original table. **Classic** plays a mechanical sound. **Modern** plays a modern sound.

Date & Time Settings

Date & Time Settings

> System Date   11/08/06
  System Time   20:05:07

Press FLIPPERS to move, START to Select
Press EXIT GAME when finished
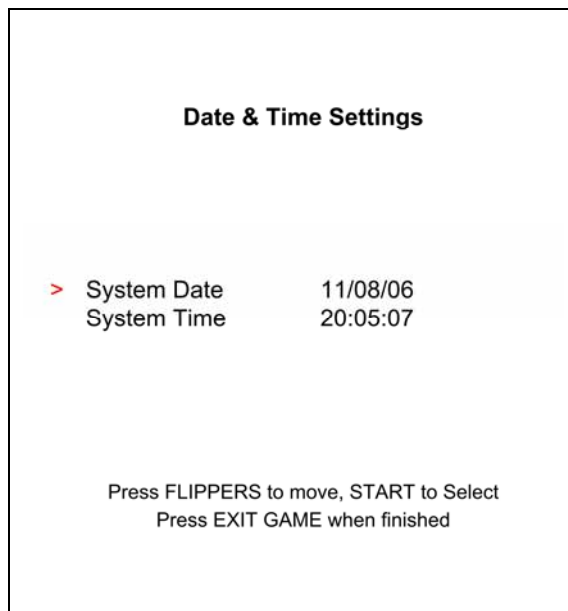
This screen lets you set the current date and time for the system. To keep accounting data accurate, make sure the date and time are correct. The date and time are initially set from the system computer BIOS and may not match the local time zone.

Press and hold the Left or Right Flipper button to increase or decrease the value for the selected setting. The date will increment by day of the month. The time will increment by minute.

Game Configuration Menu

This menu lets you set up table physics, turn games on or off, and reset high scores.
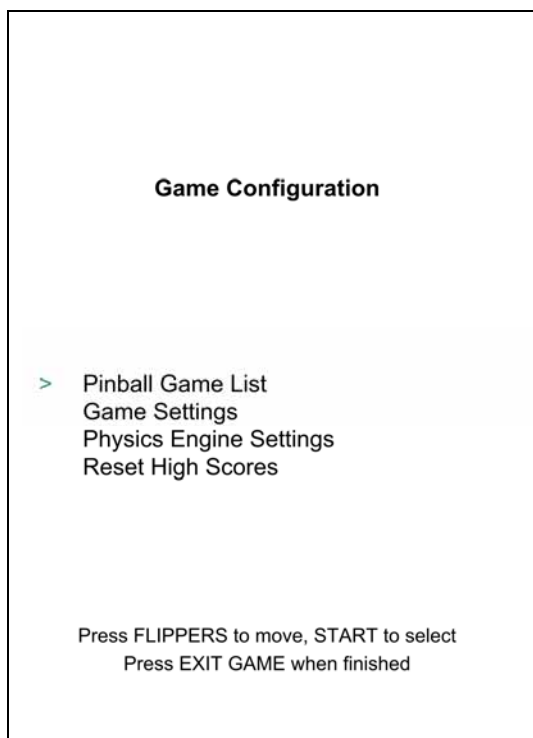
Pinball Game List – Select this to view installed games and to turn games on or off in the Game Selection Menu. (See page 18.)

Game Settings – Lets you set game difficulty, timers, and balls per game. (See page 19.)

Physics Engine Settings – Select this to adjust Tilt and Nudge sensitivity, level the table, and calibrate the Plunger. (See page 20.)

Reset High Scores – Resets high scores saved on the cabinet.

Pinball Game List

This menu lists all of the games installed on the cabinet, whether they are currently On or Off, and the version of the game.

To turn a game **Off** or **On** in the Game Selection Menu, use the flipper buttons to select the game, and then press the **START** button to toggle the game **On** or **Off**.

When a game is set to **Off**, it remains installed, but is not available to players from the Game Selection Menu. To make it available again, simply set it to **On**.

Total Tables displays the number of games set to **On**.

Game Settings Menu

This menu lets you set up game play features. These settings affect all tables on the cabinet, except as noted below.

Game Settings

```
>   Slope Difficulty          Medium
    Outlane Difficulty        Medium
    Balls Per Game            3
    Game Inactive Timeout     3:00
    Table Auto-Select         Disabled
    Auto-Start                On
    Tournament                Off


        Press FLIPPERS to move, START to change setting
                Press EXIT GAME when finished
```

Slope Difficulty – Sets the table slope in software for all games. **Medium** is the default, and sets the slope to the normal table slope for each game. **Easy** reduces the table slope by 1 degree on all tables, making the ball move slower so the game is easier to play. **Hard** increases the table slope by 1 degree on all tables, making the ball move faster so the game is harder to play.

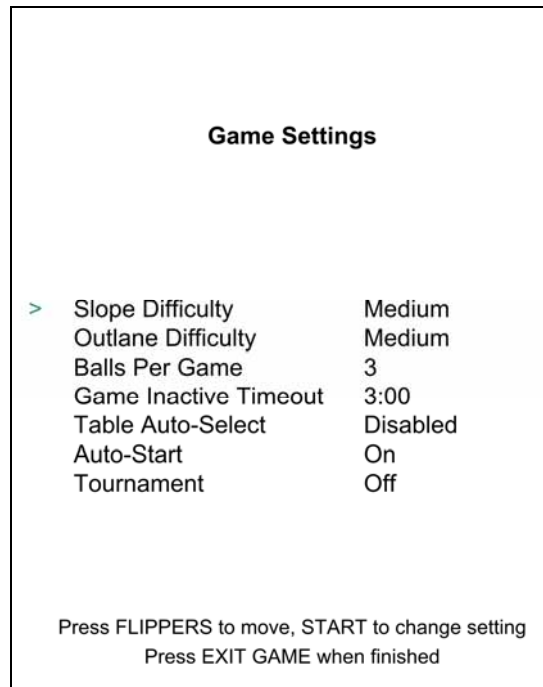**Outlane Difficulty** – Sets how easy it is to lose the ball in the Outlanes. This setting only affects tables that had this feature on the original, mechanical tables. **Medium** is the default, and uses the normal Outlane distance for each table. **Easy** makes it more difficult to lose the ball through the Outlane (easier play). **Hard** makes it easier to lose the ball through the Outlane (harder play).

Balls Per Game – Sets the number of balls per game. *(Options are 3 or 5. Default is 3.)*

Game Inactive Timeout – Unless disabled, once a game ends, that game will remain on the table for the set amount of time before UltraPin returns to the Attract Mode. *(Options are Disabled, or 0:30—15:00.)*

Table Auto-Select – Unless disabled, this sets how long before a game starts automatically when credits are available and the Table Selection Menu is displayed, but there is no player input. *(Options are Disabled, or 0:30—3:00.)*

Auto-Start – If set to **On**, this causes a game selected from the Attract Mode to automatically start Player 1, without requiring the player to press the **START** button.

Tournament – If set to **On**, this puts all tables into Tournament (Pinball Competition) mode, based on original settings for each table. In most cases, this turns off extra ball and replay awards, disables the START button while a game is in play, and allows only one-player games. The Dot Matrix Display will display "TOURNAMENT" periodically during Attract Mode.

Physics Engine Settings

This screen lets you level and calibrate the cabinet, and adjust the Player Input (nudge) and Tilt Sensitivity. These settings affect all games. Refer to *Chapter 6 — Calibration Procedure*, beginning on page 24, for the complete calibration and adjustment procedure.

It is important to calibrate any time you move the cabinet or adjust the leg levelers. The cabinet should also be calibrated regularly as part of routine maintenance. A reminder to calibrate the cabinet will appear onscreen at boot every 30 days, or if the software detects calibration is needed.
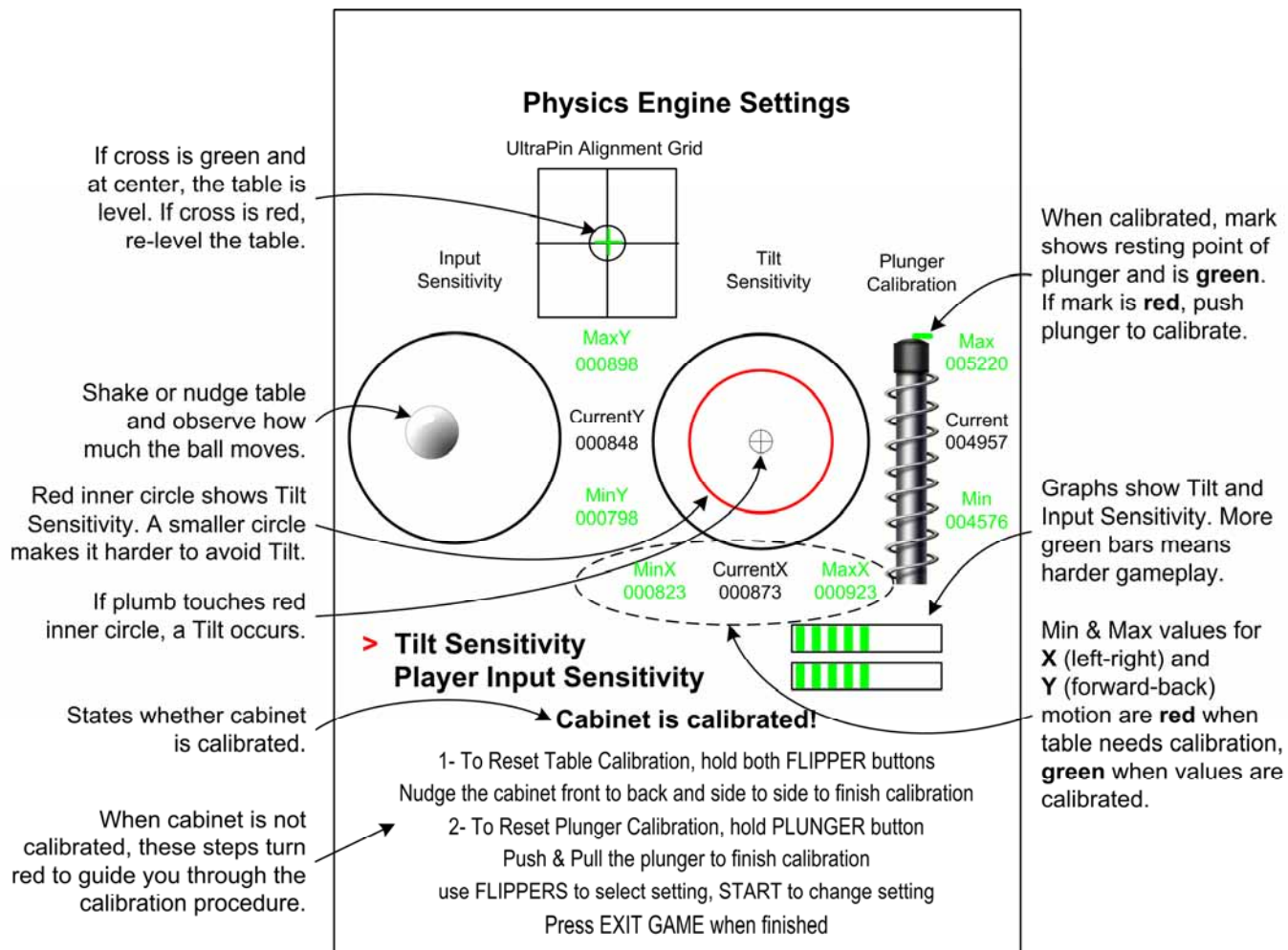
UltraPin Alignment Grid shows whether the cabinet is level. If the crosshair is green and inside the small circle, this means the cabinet is level within 1 degree. If the crosshair is outside the small circle the crosshair will turn red, indicating the cabinet is not level.

Tilt Sensitivity determines how much a player can shake the cabinet before a Tilt signal is activated and the ball is lost in play. To check the setting, shake the cabinet and observe the plumb bob (crosshair) moving within the red circle in the screen graphic. The harder the setting, the smaller the red circle becomes. If the plumb bob hits the red circle, a Tilt occurs.

Player Input Sensitivity (also called Nudge) sets how the ball responds to players bumping or shaking the cabinet.

Plunger Calibration When the plunger is calibrated, the numbers next to the plunger graphic will show the Min (full out) Max (full in) and Current or resting point positions of the plunger.

Diagnostics Menu
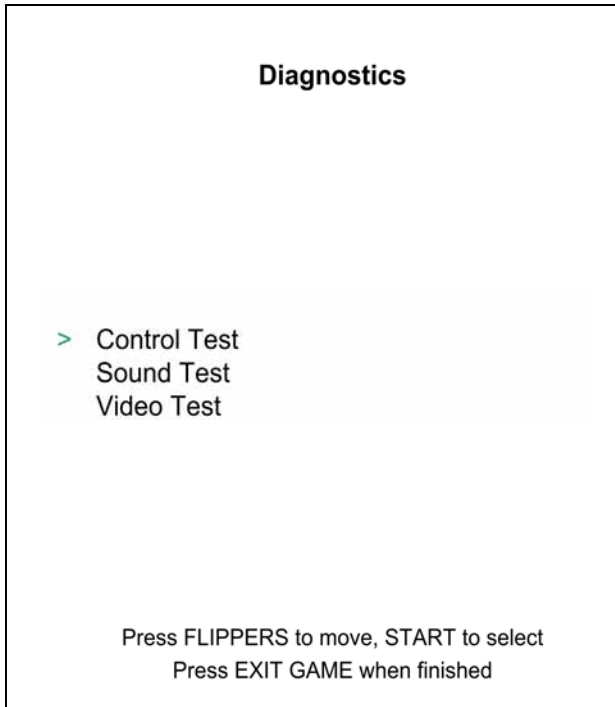
Each item in this menu opens a submenu that lets you test the controls, sound, or video. The submenus are described in the subsections that follow.

Control Test – Lets you test each player control, Operator button, and coin input. (See page 21.)

Sound Test – Lets you test each speaker and the stereo sound. (See page 22.)

Video Test – Provides screens that help you check the monitors. (See page 22.)

(Diagnostics menu screen:)

Diagnostics

> Control Test
> Sound Test
> Video Test

Press FLIPPERS to move, START to select
Press EXIT GAME when finished

Control Test Menu
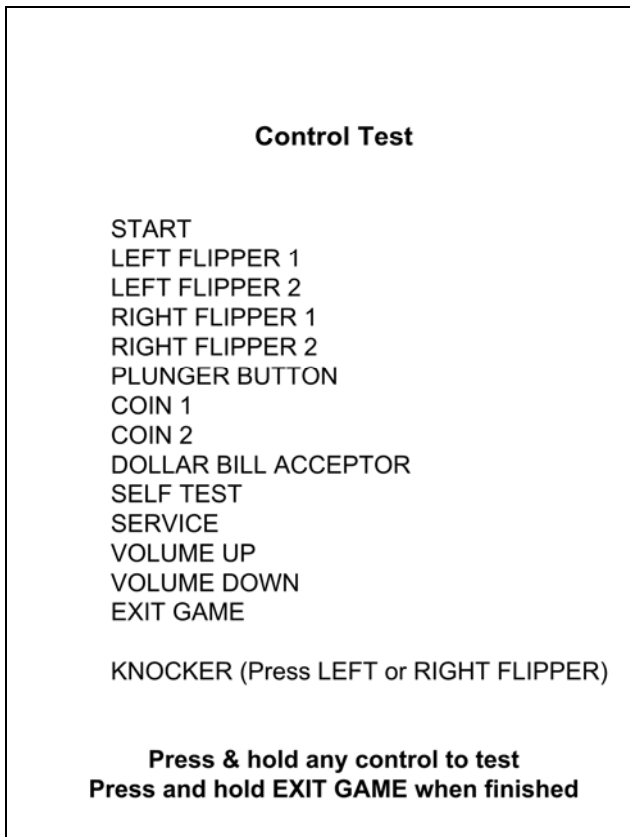
This menu lets you test the player controls, Operator buttons, coin mechs, dollar bill acceptor, and knocker.

Press each button and activate each coin mech in turn. If the device is functioning properly, its name will change color onscreen while the control is activated, and then stay green to indicate it has been tested.

When you activate the flippers, the knocker will sound if it is working properly.

When you finish testing controls, press and hold the **EXIT GAME** button for three seconds to exit from the menu.

(Control Test menu screen:)

Control Test

START
LEFT FLIPPER 1
LEFT FLIPPER 2
RIGHT FLIPPER 1
RIGHT FLIPPER 2
PLUNGER BUTTON
COIN 1
COIN 2
DOLLAR BILL ACCEPTOR
SELF TEST
SERVICE
VOLUME UP
VOLUME DOWN
EXIT GAME

KNOCKER (Press LEFT or RIGHT FLIPPER)

Press & hold any control to test
Press and hold EXIT GAME when finished

Sound Test

Sound Test

> Right Channel
Left Channel
Stereo Test

Press FLIPPERS to move, START to Select
Press EXIT GAME when finished

This menu lets you test the speakers and stereo audio.

Select each item and press the **START** button. The name of the selected test will change color while the test runs, and you will hear sound from the corresponding speaker if it is working. For the Stereo Test, you will hear all of the speakers working together.

Note: The subwoofer in the bottom of the cabinet plays along with the speakers.

Video Test

Video Test

> Color Bars
Convergence
Black
White
Red
Green
Blue

Press FLIPPERS to move, START to select
Press EXIT GAME when finished
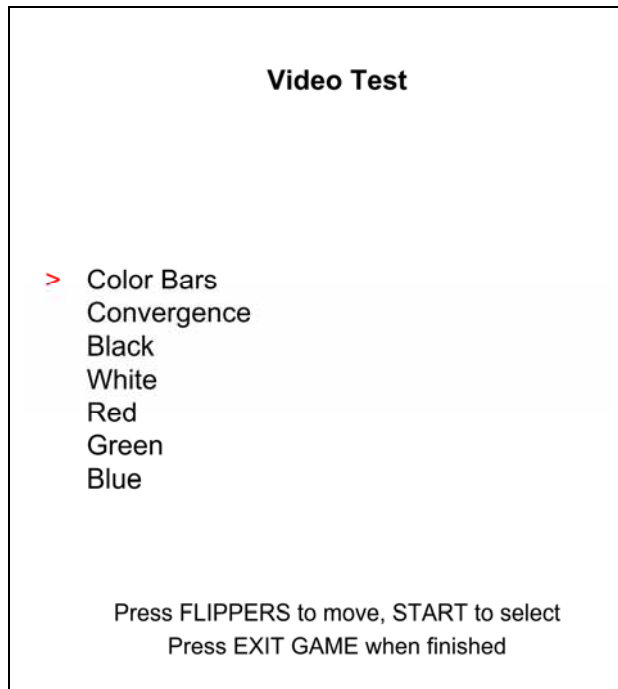
This menu opens screens that let you check the video. The LCD monitors are self-adjusting and should not require adjustments. If you notice video problems, contact Tech Support (see the back page of this manual).

Convergence displays a screen with lines and circles to help you adjust screen geometry.

The other screens help you adjust the color settings.

Press **EXIT GAME** to close any video test screen.

Chapter 5 — Software Restoration

1. With the UltraPin cabinet powered ON, insert the **SYSTEM RECOVERY DISK** in the CD-ROM drive of the system computer. The best way to reach the drive is through the coin door.

2. With the **SYSTEM RECOVERY DISK** in the drive, turn the cabinet OFF, wait 5 seconds, and then turn it ON. The computer will boot from the CD, and you will see a software installation progress bar on the screen as the Operating System is installed.

3. When the CD is finished, you will see a message on the screen asking you to remove the CD and then reboot the computer by turning the cabinet OFF, waiting 5 seconds, and then turning it back ON. (**Do not** insert the GAME INSTALL DISK yet!)

4. When you turn the cabinet back on, the computer will finish the installation process. You will see a message onscreen confirming that the computer is FINALIZING SETTINGS. The computer will automatically reboot once this process is finished.

5. When the computer reboots, you will briefly see a message asking you to insert the GAME INSTALL CD, followed by the GLOBAL VR logo. (The message only stays on screen for about 20 seconds and then disappears.)

6. Insert the **GAME INSTALL DISK**. The CD should run automatically and begin to copy files to the hard-drive. Once this process has completed, the computer will automatically reboot.

   When the computer reboots and Attract Mode starts, the software installation is completed. Remove the CD from the drive. Keep the CDs in a safe place for future use.

7. If you have an Expansion Game Pack CD, insert the CD in the drive. The disk will run automatically, and then the computer will reboot and Attract Mode will start. Repeat this step for each additional Game Pack CD that was previously installed.

   Note: The games in Expansion Packs will only run if the Game Dongle contains the Expansion Pack authorization code. This code is copied from the Expansion Dongle when the Expansion Pack is first installed.

8. Refer to the *Calibration Procedure* on the next page and calibrate the game.

   Important: All calibration settings are returned to factory defaults when the software is installed. You must follow the Calibration Procedure or the games will not play properly.

9. Set up your volume, coin, and gameplay settings in the Operator Menu (see Chapter 4).

10. Play each game to verify proper operation.

Chapter 6 — Calibration Procedure

Perform the steps in this chapter any time you move the cabinet, adjust the leg levelers, or install software. Also perform these steps as part of routine maintenance to make sure your games play properly. A reminder to calibrate the cabinet will appear onscreen at boot every 30 days, or any time the software detects that the cabinet needs calibration. The words "**Cabinet is not calibrated**" will appear in red on the Physics Engine Settings screen when the cabinet needs calibrating, and will change to "**Cabinet is calibrated**" after calibration.

The calibration steps are printed near the bottom of the Physics Engine Settings screen for reference. As you perform the procedure, the next step will turn red to guide you through the process. The calibration steps are described in more detail in the subsections of this chapter.

If a cabinet is out of calibration, the ball may lean to one side, or the plunger may not work properly. Refer to *Physics Engine Settings* on page 20 for more information.
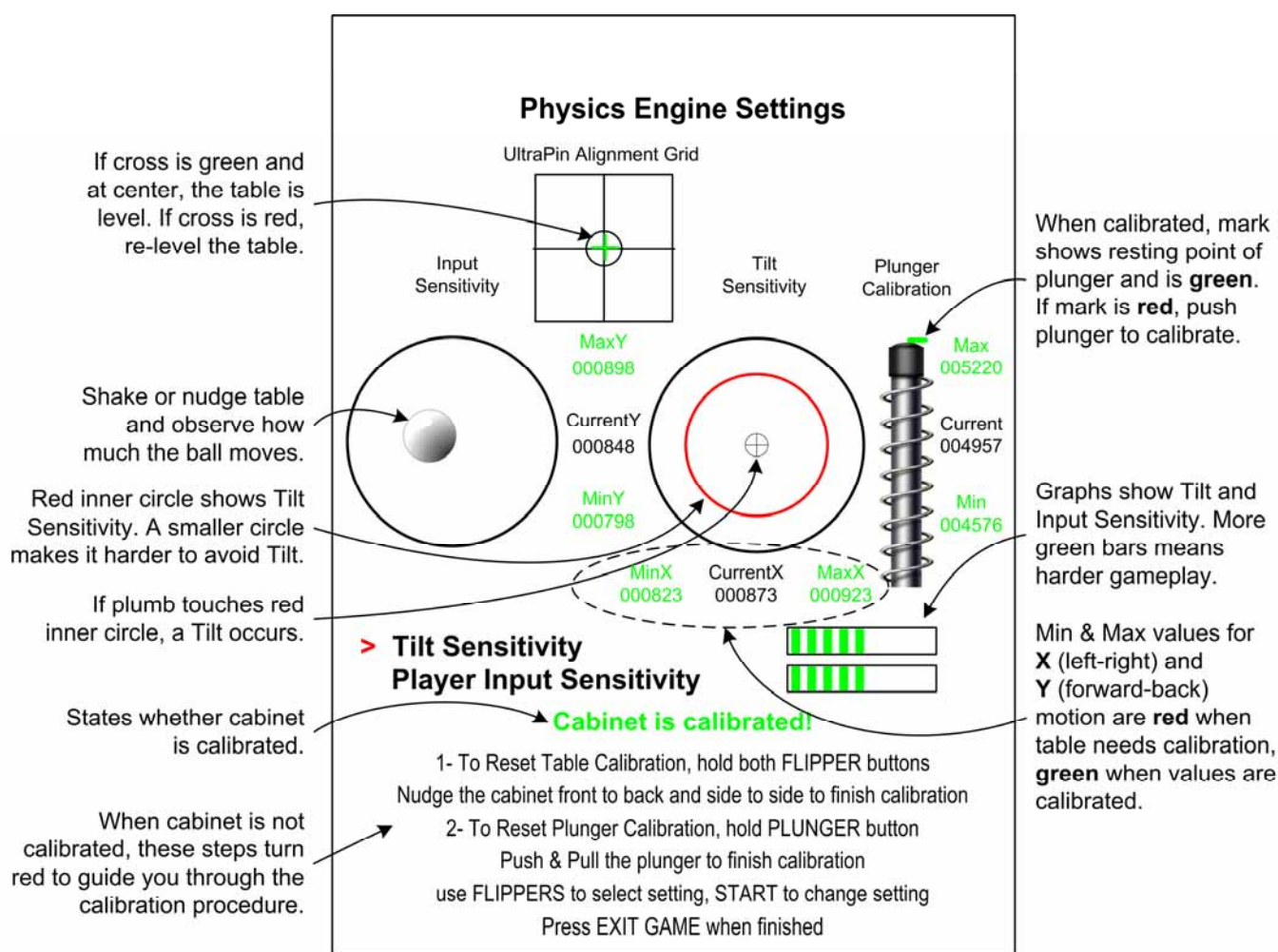
Level the Cabinet and Calibrate the uShock Motion Sensor

1. Make sure that the cabinet appears to be physically level.

2. Press the **Test** button, mounted to the inside of the coin door, to open the Operator Menu.

3. Use the Flipper buttons to move the cursor down to **Game Configuration**, and then press the **START** button to open the Game Configuration menu.

4. In the **Game Configuration** menu, use the Flipper buttons to move the cursor down to **Physics Engine Settings**, and then press the **START** button to open the **Physics Engine Settings** menu.

5. Press and hold both Flipper buttons for 5 seconds. This will reset the center of gravity for the uShock motion sensor, and tell the motion sensor that the cabinet is now flat and level. You will see a countdown onscreen, and a sound will play when the reset occurs.

6. After resetting, the Min and Max values on the screen will be **red**. Shake the table forward-back and left-right until these values turn **green** to complete the calibration. The X values indicate side-to-side motion, and the Y values indicate forward-to-back motion.

7. Look at the Alignment Grid in the upper part of the Physics Engine Settings screen. The alignment grid is a square box with a circle at the center, and a crosshair that moves within the grid to indicate when the table is at an angle.
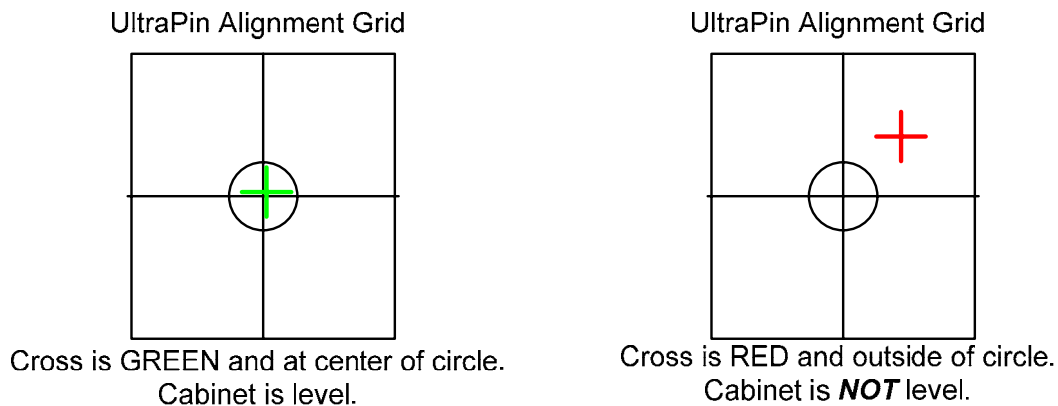
Figure 8.   Physics Engine Alignment Grid Detail

8. Locate the crosshair in the Alignment Grid. When the table is level to within 1 degree, the crosshair will be green, and will appear inside the small circle.

    *   If the crosshair is green, and appears inside the circle, proceed to adjust the Nudge and Tilt sensitivity as described in the subsections that follow.

    *   If the crosshair is red and appears outside the circle, use the leg levelers to level the table, and then return to step 5 above.

Calibrate the Plunger

1. With the Physics Engine Settings menu open, hold the Plunger button for 3 seconds to reset the plunger calibration. When the reset occurs, a sound will play, and all three numbers near the plunger graphic will show the plunger resting point.

2. Pull the plunger all the way back and hold it for 2—3 seconds.

3. Push the plunger full forward and hold pressure on it for 2—3 seconds, and then let go. The numbers next to the plunger graphic will now show the Min (full out) Max (full in) and Current, or resting point positions of the plunger.

Set the Player Input Sensitivity (Nudge)

Player Input Sensitivity sets how much the ball reacts to player nudging or bumping the cabinet.

Use the Flipper buttons to place the cursor next to **Player Input Sensitivity**, and press the **START** button to adjust the setting.

The Input Sensitivity scale on the screen shows you how much the ball will react when you nudge or bump the cabinet. Fewer bars means more sensitivity to player input, while more bars means less sensitivity to player input.

The Input Sensitivity graphic shows a picture of a ball that will move when you bump or shake the cabinet, showing you how the ball in play will behave with the current settings.

Set the Tilt Sensitivity

Tilt Sensitivity sets how easy it is for a player to generate a Tilt and lose a ball when they shake or bump the cabinet.

Use the Flipper buttons to place the cursor next to **Tilt Sensitivity**, and press the **START** button to adjust the setting.

The Tilt Sensitivity scale on the screen shows you how easy it is to tilt the cabinet. Fewer bars means it is harder to tilt, making game play easier, while more bars means a mild bump or nudge will generate a tilt, making game play harder.

The Tilt Sensitivity graphic on the screen simulates the plumb bob used on a mechanical pinball cabinet. As you increase the sensitivity, the red circle in the graphic gets smaller. When you shake the table, the plumb bob (illustrated by the small circle with crosshairs in the center of the graphic) moves in response to the table movement. If the plumb bob hits the red circle, a Tilt signal is generated.

Note: For best results, set the Player Input Sensitivity first, and then set the Tilt Sensitivity. The Player Input Sensitivity will adjust how much the plumb bob moves on the Tilt.

Chapter 7 — Service and Repair

⚠️ CAUTION: GLOBAL VR assumes no liability for any damage or injuries incurred while servicing the cabinet. Only qualified service personnel should perform service and installation of cabinet hardware.

To prevent electrostatic discharge (ESD) damage, handle PCBs by the edges only and use a grounding wrist strap or similar precaution.

Please read the service instructions before working on the cabinet.

⚡ **DANGER** Always turn the cabinet OFF and disconnect the AC power cord before performing any repair work.

Removing the Marquee Backglass

The marquee backglass must be removed to service the speakers, cold-cathode florescent lights, knocker, backglass monitor, or ATX DC power supply.

Caution: Brace the glass so it doesn't fall forward when you remove the upper retaining bracket.

1. Remove the three (3) screws from the upper retaining bracket, as shown by the arrows in Figure 9, and remove the retaining bracket.

2. Remove the glass and place it in a safe place.

Figure 9.   Removing the Backglass Marquee and Speaker Panel

Removing the Speaker Panel Assembly

The speakers and speaker grill assembly are removed as one piece.

1. Disconnect the AC Power Cord.

2. Remove the Marquee Backglass as described in the previous section.

3. Remove the four (4) screws from the corners of the speaker panel, as shown by the circles in Figure 9. Carefully move the panel out enough to reach the speaker wires.

4. Disconnect the wires from the speakers, noting which terminal each wire is connected to, and remove the speaker panel assembly.

Backglass Monitor Replacement

1. Disconnect the AC Power Cord.

2. Remove the Backglass Marquee and Speaker Panel Assembly as described in the previous sections.

3. Remove the four (4) screws that secure the monitor mounting brackets to the cabinet.

4. Carefully lift the LCD monitor out of the cabinet, and disconnect the VGA and power cables from the back of the monitor.

5. Remove the screws that secure the mounting brackets to the monitor and install the brackets on the new monitor.

6. Reverse these steps to install the new monitor.

Knocker Replacement

1. Disconnect the AC Power Cord.

2. Remove the backglass Marquee as described on page 27.

3. Disconnect the knocker from the ATX DC power supply and uShock I/O PCB.

4. Remove the screws that secure the knocker mounting bracket to the cabinet.

5. Reverse these steps to install the new knocker.

Cold-Cathode Florescent Light Service

The marquee artwork is lit by a pair of dual cold-cathode florescent light sets. To access the cold-cathode lights, remove the backglass Marquee as described on page 27.

Each pair of light tubes is powered by +12 VDC to a power inverter. If both lights in a set fail, make sure the power connector is firmly attached to the power inverter and the ATX DC power supply connector. Connect the lights to another power inverter to test them.

The light tubes and inverters are held in place by screw-down cable ties. To replace a light tube or inverter, disconnect the component and remove the screws that hold it in place. Secure the replacement component with screw-down cable ties and replace the connectors.

Note: Make sure the on/off switch on the cold cathode harness is in the on (I) position.
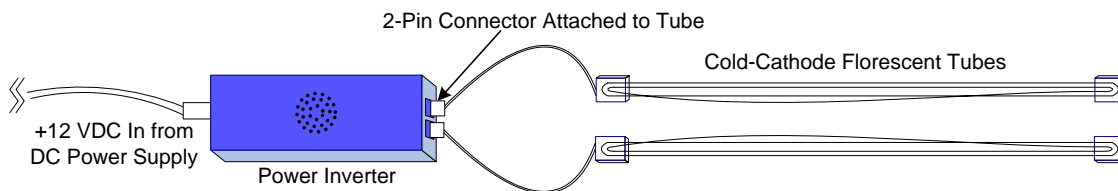

Figure 10.   Dual Cold-Cathode Light Set

Speaker Service

The two speakers are located to the left and right of the backglass monitor. To inspect the front or cone of a speaker, remove the four screws that secure the speaker grill in place. To replace a speaker, do the following:

1. Remove the Speaker Panel Assembly as described on page 27.

2. Remove the four screws that secure the speaker to the panel and remove the speaker.

3. Reverse these steps to install the new speaker. Be sure to install the speaker wires to the same terminals on the replacement speaker.

Subwoofer Service

The subwoofer is mounted to the bottom of the cabinet.

1. To replace the subwoofer, reach through the coin door and remove the four screws that secure the subwoofer in place.

2. Disconnect the wires and install them to the same terminals on the replacement subwoofer, and secure the subwoofer with the screws removed previously.

Plunger Service

Important: You cannot use a regular pinball plunger spring in this cabinet. Use only HAPP Controls part #: 95-2802-00. Others will not work.

1. Disconnect the cabinet from AC power.

2. Reach through the coin door and disconnect the plunger harness from the uShock PCB.

3. Remove the three (3) screws that secure the plunger assembly to the cabinet.

4. Remove the assembly through the front of the cabinet.

5. Reverse these steps to install the new plunger.

6. Calibrate the plunger as described on page 26.

Table Monitor Replacement

1. Reach through the coin door and release the two latches that secure the lockdown bar in place at the front of the cabinet. The latches are on the inside walls near the flipper buttons.

2. Remove the lockdown bar and disconnect the wires from the EXIT GAME button.

3. Carefully slide the table glass off of the front of the table.

4. Remove the bezel from on top of the monitor.

5. Reach through the coin door and remove the three (3) screws from the monitor front mounting bracket.

6. Remove the rear door from the cabinet, and then reach in and remove the three (3) screws from the monitor rear mounting bracket.

7. Carefully lift the monitor and disconnect the power and video cables from the back of the monitor.

8. Reverse these steps to install the new monitor.

Updating the Pricing Label

If you wish to change the pricing label on the table monitor bezel, Avery® label #8161 is the correct size. Perform the first two steps of the *Table Monitor Replacement* procedure above to access the bezel.

Button Service

Lighted Buttons

The **START, PLUNGER** and **EXIT GAME** buttons are lit by 12-volt LED Bulbs. Refer to Figure 11 and perform the following steps to replace the buttons, lamps, or micro switches:

1. Disconnect the cabinet from AC power.

2. Open the coin door to access the buttons.

3. To remove a micro switch, gently rock it to the side and remove it from the housing. Remove the wires and install them on the same connectors on the new micro switch.

4. To remove the lamp and micro switch, gently twist the white plastic lamp housing a few degrees to unlock it from the button housing.

5. To remove the button from the cabinet, unscrew the retaining ring.

6. To remove a lamp from the housing for replacement, pull it straight out of the lamp housing.

7. Reverse these steps to install the replacement button, lamp, and micro switch. Refer to the figure below for wire connection details.

   Caution: Do not connect the 12-volt lamp power wire to the micro switch. This could damage the uShock I/O PCB.

8. After servicing any buttons, run the Controls Test from the Operator Menu Diagnostics screen to verify proper operation.
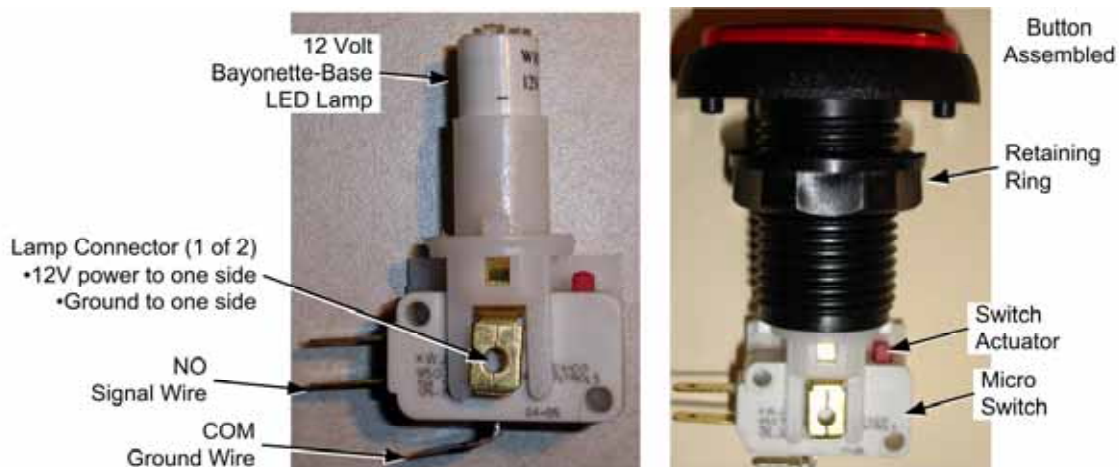
Figure 11.   Lighted Button Assembly

Flipper Buttons

The flipper buttons are standard arcade buttons with micro switches. Perform the following steps to replace the micro switches or the buttons:

1. Disconnect the cabinet from AC power.

2. Open the coin door to access the buttons.

3. Gently press the plastic micro switch to the side to release it from the button housing.

4. Disconnect the two wires from the micro switch.

5. To remove the button, unscrew the retaining ring.

6. Reverse these steps to install the replacement button and micro switch. Connect the black-white ground wire to the COM connector on the bottom of the switch housing, and the signal wire to the NO connector, as shown in the figure below:
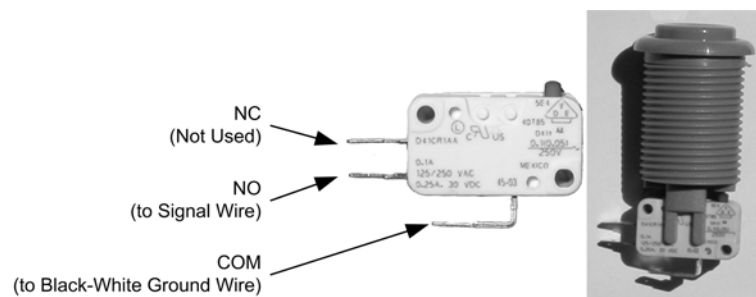
Figure 12.   Flipper Button and Micro Switch

7. After servicing any buttons, run the Controls Test from the Operator Menu Diagnostics screen to verify proper operation.

Computer Replacement

CAUTION

The computer is serviced as one unit. YOU WILL VOID YOUR WARRANTY if you open the computer without direct authorization from the GLOBAL VR technical support staff.

Shipping the computer without enough padding can VOID THE WARRANTY if the computer is visibly damaged from shipping.

Perform the following steps to remove the computer from the cabinet:

1. Disconnect the cabinet from AC power and then remove the rear door.

2. Disconnect all of the cables from the computer.

3. Remove the Game Dongle and keep it with your cabinet. Do not ship the game dongle with the computer.

4. Note the position of the computer for re-installation. Remove the four (4) screws from the bracket that secures the computer in place, and carefully remove the computer from the cabinet.

5. Reverse these steps to install the new computer. Make sure that all computer air vents are clear so air can flow freely.

When shipping the computer, always use plenty of padding and protection. GLOBAL VR recommends shipping the computer in a box with three inches of foam padding on all sides.

Coin Mech Replacement

Perform the following steps to remove the coin mech. You can replace the coin mech with any standard arcade coin mech.

1. Unscrew the thumbscrews on the latches as shown by the arrows in step 1 of the figure below.

2. Slide the latches apart from each other and remove the Coin Mech as shown in steps 2 and 3.

3. Reverse these steps to re-install a coin mech. It is important to verify the operation of the newly installed coin mech with both good and bad coins.
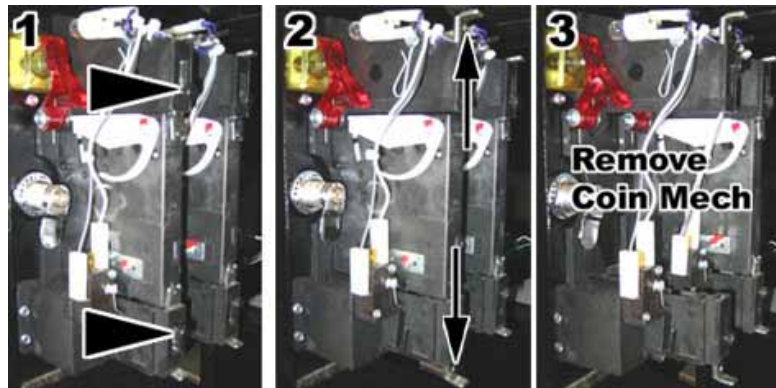
Figure 13.   Servicing the Coin Mech

Coin Meter Replacement

The coin meter is mounted under the shelf for the uShock I/O PCB. It receives power via the uShock I/O PCB. If the coin meter stops working, first check the 5A fuses on the uShock I/O PCB and replace if blown. Perform the following steps to replace the coin meter:

1. Turn the cabinet OFF and disconnect the AC power cord.

2. Remove the two Phillips screws securing the coin meter to the cabinet and remove the coin meter.

3. Cut the two wires from the coin meter.

4. Strip the wires and use two butt splices to connect them to the new coin meter.

5. Secure the new coin meter with the two screws removed previously.

Power Distribution Service

Important: There are two external ON/OFF switches on the cabinet, one on the power plate, and one under the table near the front on the right, as on traditional pinball tables. Both switches must be ON for the game to power on.

The AC power plate on the back of the cabinet provides the external AC power connection. An AC EMI Filter in the power plate removes electrical noise that can cause interference with the hardware inside the cabinet. The power plate has an ON/OFF switch and a 6 Amp Slo Blo fuse.

AC power from the power plate is connected to an ON/OFF switch under the table at the front right side. There is also a fuse in the switch assembly

Power from the front ON/Off switch is routed to an AC power strip/surge suppressor that provides power to all cabinet components.

Caution: The cabinet must be connected to a secure ground to function properly.

Ground wires must be securely connected to a ground lug on the power plate, as shown below and in Figure 17 on page 44. **Do not** ground to the power plate mounting bolts.
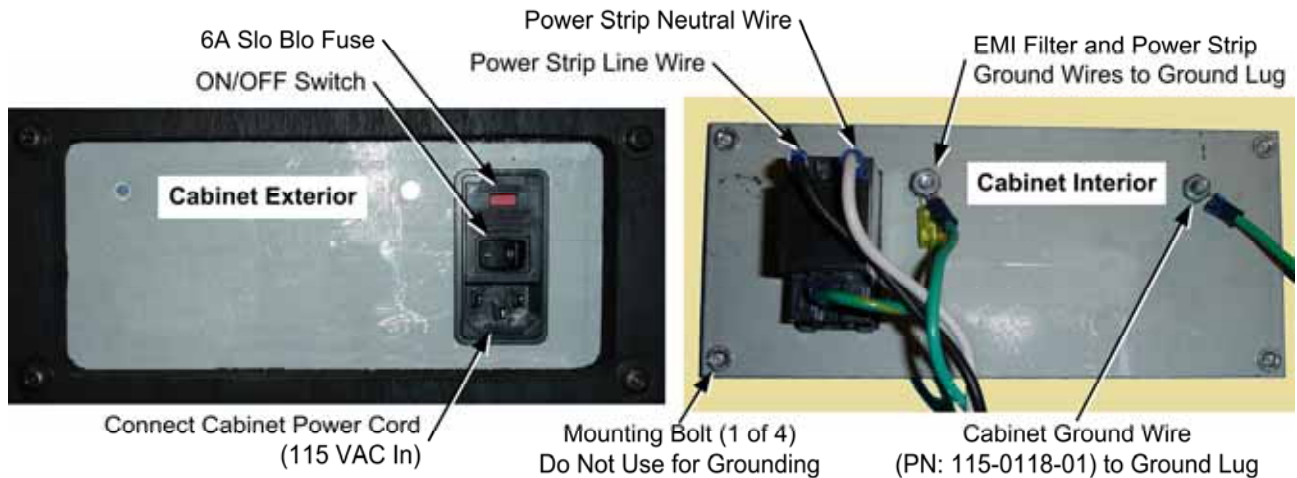
Figure 14.   AC Power Plate
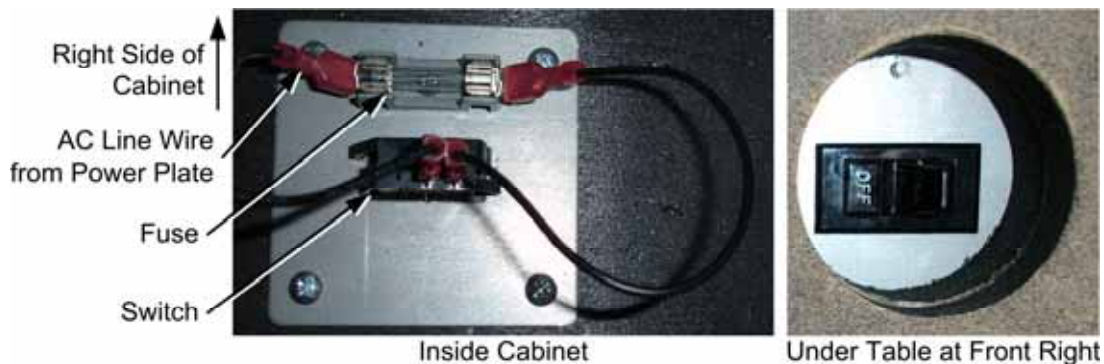
Figure 15.   Front ON/OFF Switch

AC Power Strip Service

 Disconnect the cabinet from AC power before servicing the AC power strip.

The AC power strip provides power to all of the components in the cabinet. If the cabinet has no power, make sure the ON/OFF switch on the power strip is ON and the LED is lit. Check the fuses in the power plate and front ON/OFF switch. Also make sure both ON/OFF switches are ON and the AC wall outlet has power.

Perform the following steps to replace the power strip:

1. Turn the cabinet OFF and disconnect the AC power cord.

2. Disconnect all components from the power strip.

3. Disconnect the power strip Neutral and Ground wires from the AC power plate terminals.

4. Disconnect the power strip Line wire from the front ON/OFF switch.

5. Remove the power strip; it is held in place with Velcro®.

6. Replace the power strip with an appropriate unit from GLOBAL VR (part # 49-0963-40). Do not attempt to use a different power strip. Be sure to connect each wire to the correct terminal as shown in Figure 14.

> ⚠ **Caution: Be sure to connect each wire to the correct terminal. The ground wire must be securely connected to the ground lug on the power plate or the game will not function properly.**

ATX DC Power Supply Replacement

The ATX DC Power Supply provides +5 and +12 VDC power to the cold cathode lights, ventilation fans, uShock PCB, knocker, lighted buttons, and backglass monitor. Do the following to replace the ATX DC power supply:

1. Disconnect the AC Power Cord.

2. Remove the Backglass Marquee and Speaker Panel Assembly as described on page 27.

3. Disconnect the AC power cord from the power supply.

4. Disconnect all of the DC power connectors from cabinet components.

5. Remove the screws that secure the power supply mounting bracket to the cabinet.

6. Remove the power supply, and then remove the mounting bracket from the power supply.

7. Reverse these steps to install the new power supply.

24 VDC Power Supply Replacement

> ⚡ **DANGER** **Disconnect the cabinet from AC power before servicing the 24 VDC Power Supply.**

The 24 VDC power supply provides power to the table monitor. Perform the following steps to replace the 24 VDC power supply:

1. Turn the cabinet OFF and disconnect the AC power cord.

2. Remove the screws that secure the power supply mounting bracket to the cabinet.

3. Remove the screws that secure the mounting bracket to the power supply and install it on the new power supply.

4. Disconnect the wires from the terminals on the power supply and connect them to the same terminals on the new power supply.

5. Secure the power supply mounting bracket to the cabinet.

The uShock I/O PCB Service

The uShock I/O PCB uses a motion sensor to set the angle of the playing field and detect when players bump or tilt the cabinet. This allows the UltraPin to simulate the effect of playing a traditional mechanical pinball table.

The uShock I/O PCB also relays all signals between the player controls and System Computer. Two 5 Amp fuses on the PCB protect the audio and signal outputs (J6, J8, and J10).

The uShock I/O PCB must be mounted flat and level with the bottom of the cabinet. The X-axis arrow, printed on the card, must point towards the front of the cabinet, and the Y axis arrow must point towards the right side of the cabinet. If the card is not aligned this way, the game will not work correctly. Do not mount the PCB to a side wall or leave it loose inside the cabinet, or it will not work. For best results, the PCB should be mounted near the front of the cabinet. Dedicated cabinets have as shelf for the PCB. You can access the PCB through the coin door.

The figure below shows the PCB connectors. Refer to Figure 18 on page 45 for detailed information on wiring between the uShock I/O PCB and other components.
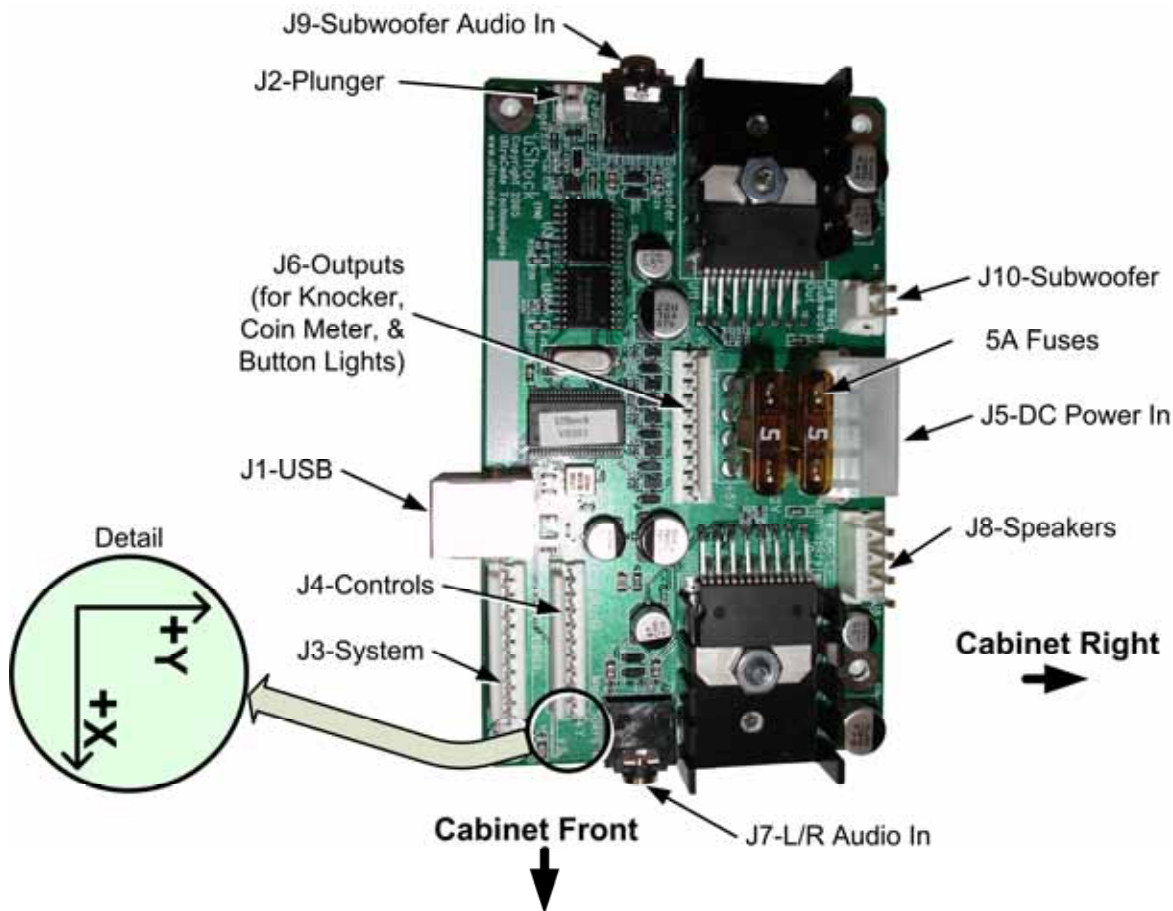
Figure 16.   uShock I/O PCB

uShock I/O PCB Replacement

1. Disconnect the cabinet from AC power.

2. Reach through the coin door and disconnect all wires from the uShock I/O PCB, making note of their positions for reattachment.

3. Remove the four (4) screws that secure the PCB to the shelf. Be careful not to lose the spacers.

4. Reverse these steps to install the new PCB. Make sure each screw passes through a plastic spacer. (there must be a spacer under each corner of the PCB.)

5. Calibrate the new uShock PCB as described in Chapter 6, starting on page 24.

Setting the Computer BIOS (CMOS)

This procedure applies only to the Gigabyte GA-945GM-S2 Motherboard.

If you are comfortable using the CMOS Setup Utility, press the **DEL** key during boot to enter the CMOS Setup Utility, select **Load Optimized Defaults** from the Main Menu, and then change the settings shown in the table below. Otherwise, refer to the detailed instructions that follow.

Menu	Item	Setting
Standard CMOS Features	Halt On	No Errors
Advanced BIOS Features	First Boot Device	CDROM
	Second Boot Device	Hard Disk
	Third Boot Device	Disabled
Power Management Setup	AC Back Function	Full On

Important: Your screens may not look exactly like the screens shown below, and some settings shown on the screens below may be different from your system. **Do not change any settings that are not specifically described in this document.**

1. Press the **DEL** key during boot. The CMOS Setup Utility Main Menu will appear:

2. Use the Arrow keys (↑↓→←) to select **Load Optimized Defaults**, and press **Enter**.
   Press **Y** and **Enter** when prompted to confirm the change.

3. Use the Arrow keys to highlight **Standard CMOS Features**, and then press **Enter**.
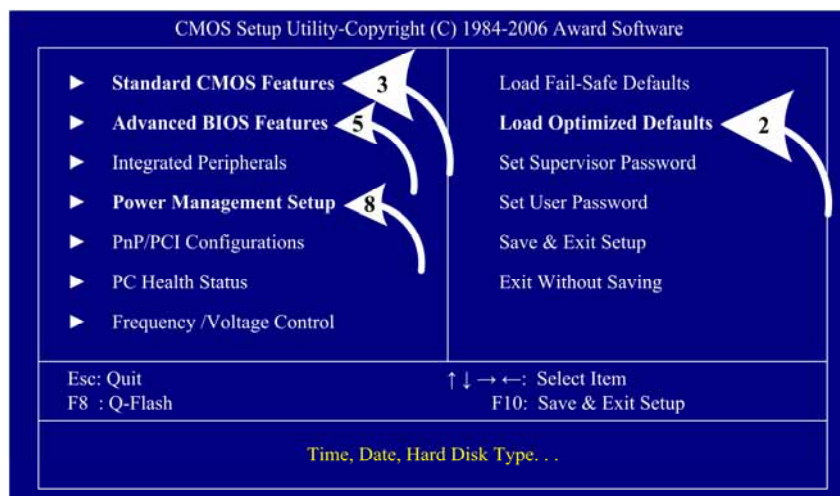
A screen similar to the following will appear:

4. Use the Arrow keys to highlight the setting for **Halt On** and press **Enter**.
   Use the **Page Up** and **Page Down** keys to change the setting to **No Errors**.

   Press **ESC** to go back to the Main Menu.
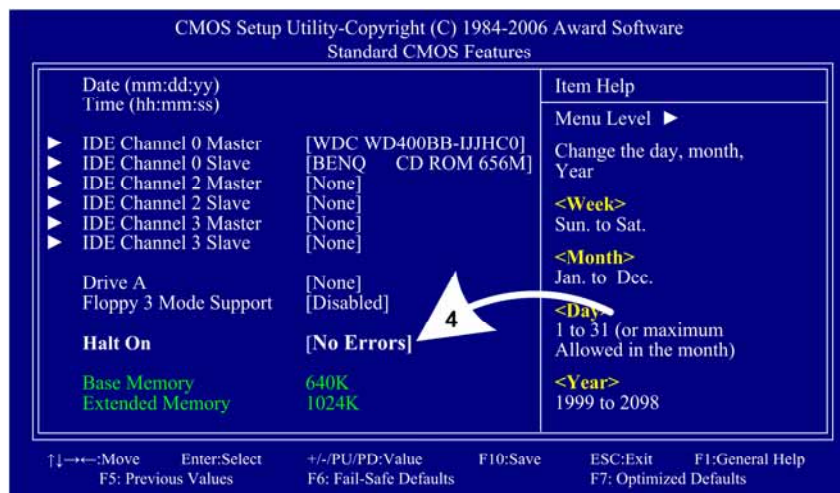
5. Now use the Arrow keys to highlight **Advanced BIOS Features** and press **Enter**. A screen similar to the following will appear:

6. Use the Arrow keys to highlight the setting for **First Boot Device** and press **Enter**. Use the **Page Up** and **Page Down** keys to change the setting to **CDROM**.

7. Set **Second Boot Device** to **Hard Disk** and **Third Boot Device** to **Disabled** the same way. Press **ESC** to go back to the Main Menu.
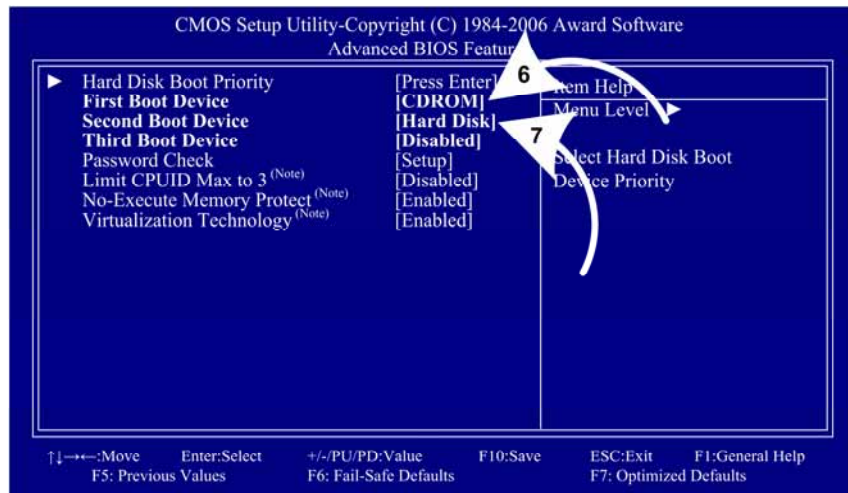
8. Now use the Arrow keys to highlight **Power Management Setup** and press **Enter**. A screen similar to the following will appear:

9. Use the Arrow keys to highlight the setting for **AC Back Function** and press **Enter**. Use the **Page Up** and **Page Down** keys to change the setting to **Full-On**.
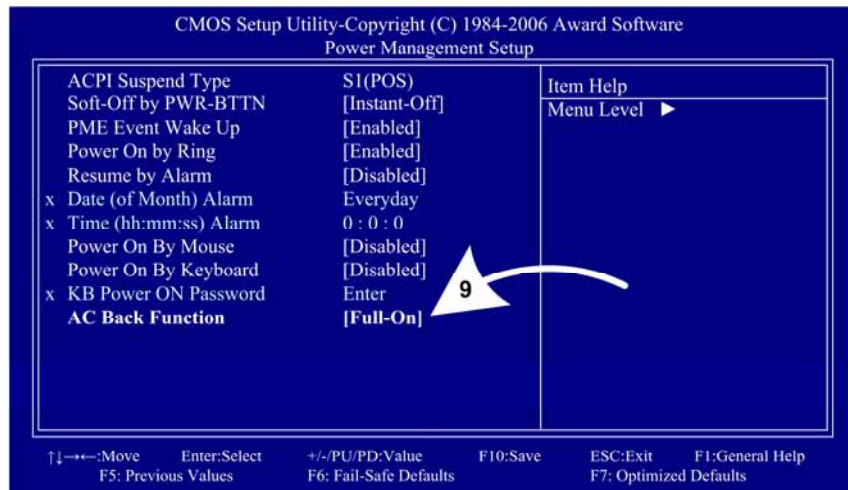
10. Now that all settings are correct, press **F10**. The following prompt will appear:

Save to CMOS and EXIT (Y/N) Y

11. Make sure "**Y**" shows at the end of the prompt (use the arrow keys to select, if necessary), and press **Enter** to save the settings and exit.

Chapter 8 — Replacement Parts

Documents & Software

Item Number	Qty	Item Description
040-0122-01	1	System Manual
040-0135-01	1	Software Restore Guide
050-0092-01	1	System Recovery Disk (1 CD)
050-0093-01	1	Game Install Disk (1 CD)

Cables

Item Number	Qty	Item Description
115-0049-01	1	Power Plate ground cable, 3.5" long
115-0104-01	1	Wire Harness, EXIT GAME Button Lamp & Coin Lamps
115-0105-01	1	LCD Monitor Power Cable
115-0107-01	1	DC Power Extension Cable, 5'
115-0108-01	1	Front & Bass Speaker Harness
115-0109-01	1	J3 Wire Harness
115-0110-01	1	J4 Wire Harness
115-0111-01	1	Knocker Harness
115-0112-01	1	J6 Wire Harness
115-0115-01	1	AC Power Harness
115-AUDMINI-CBL	2	Audio Cable, 3.5 Mini-Stereo, 6'
115-DVINPUT-CBL	1	Digital Video Cable
115-USB06AB-CBL	1	USB Cable, A/B Male to Male 6'
115-USB6AA-CBL	1	USB Cable A/A Male to Female 6'
80-0213-00	2	AC Power Cord, 6'
V-0606	1	VGA Cable, 6'
115-0082-00	1	Cable for Power Transformer (If Used)

Cabinet Components

Item Number	Qty	Item Description
0001.2512	1	Fuse, 6 Amp, 5mm X 20mm (Front ON/OFF Switch)
283-2025-ND		Fuse, 6 Amp, Slo Blow, 250 V (Power Plate)
01-0045-LBH	2	4" Speaker Grill
137656PS	1	Power Supply, 24 VDC, 10 Amp
285-ATX250W-SPA	1	Power Supply, ATX, 250W w/ SJT CORD
303360CM	1	Table Cooling Fan, 115 VAC
37117-01	1	Power Plate
CCM1600-ND	1	Power Entry Module with EMI Filter
2-30-2434	1	Power Transformer (If Used)
40-0696-24	1	Coin Door Assembly
42-0535-00	1	Coin Box
42-0536-00	1	Coin Box Lid
42-0756-07	1	Coin Meter, 5 Volts
49-0963-40	1	Power Strip, 7-Outlet, Surge Protected
50-9005-00	3	Speaker, 5", 12 Watt, 8 Ohm, Shielded
54-L004-510H1008	1	EXIT GAME Button
58-9100-LG	2	Flipper Button, Red, with micro switch
58-9111-LG	2	Flipper Button, White, with micro switch
75-L012-2552230	1	START Button Assembly with micro switch
75-L012-655H2234	1	PLUNGER Button Assembly with micro switch
80-0006-20	2	Fan Grill, 120mm
85-LTA320W2-L14-5G	1	Monitor, 32" LCD, Table Monitor

Item Number	Qty	Item Description
95-0984-00	1	Knocker (Kicker) Assembly
95-2802-00	1	Plunger Assembly (Electronic Pinball Shooter)
990-USHOCK-UCT	1	uShock PCB
CCFL2W	2	Cold Cathode Fluorescent Light Kit, Dual 12", White
EI-190AU-L01	1	Monitor, 19" TFT LCD, Backglass Monitor
F-1238M12B REV. A	1	Backglass Cooling Fan, 2400 RPM, 12 VDC
USB-KQRTG-HL	1	USB Game Dongle

Computer Components

Item Number	Qty	Item Description
45068-00	1	Computer Assembly
300-40GB3.5-ATA	1	Hard Drive, 3.5 Inch, ATA100, 40GB
BX80553930	1	CPU, Dual Core 3.0 2X2M 800MHZ
CDU5225-B2S	1	CD-ROM Drive, IDE
EN7600GS	1	Video Card, ASUS 7600GS, PCX 512M HDTV DVI
GA-945GM-S2	1	Motherboard, GA/LGA775/945G/CONROE/AVL/MATX
T6UA512C5	2	Memory, STT DDR2-667, 512M/64X8 S-Rigid

Chapter 9 — Troubleshooting

General Troubleshooting

Problem	Cause	Possible Solution
Game does not power on	One of the ON/OFF switches is OFF	Check both ON/OFF switches. One is on the power plate on the back of the cabinet; one is under the table near the front right corner. Both switches must be ON.
	Blown fuse	Check the fuses in the power plate and front ON/OFF switch.
	AC outlet not working	Make sure the AC outlet has power and the breaker is ON.
	Power strip not plugged in or turned off	Make sure the power indicator light on the power strip is on. If it is off, make sure the connections to the AC power plate and front ON/OFF switch terminals are secure and the power strip ON/OFF switch is ON.
	Cabinet not connected to AC	Make sure the AC power cord is firmly connected to the power plate and an active AC outlet.
Game dongle not found by system computer	Game dongle not connected	Connect the game dongle. Power the cabinet off and then on.
	Faulty game dongle or wrong dongle version	Make sure the dongle is connected properly. USB dongles illuminate when recognized by the computer. Contact Tech Support if you need a new dongle.
	Faulty port	Try a different USB port. If you have another UltraPin running the same software version, use the dongle from that cabinet to test the port. Contact Tech Support for additional assistance.
Cabinet gets very warm	Faulty ventilation fan	Verify that the two ventilation fans are getting power and working. One is located in the rear wall of the Back Box and is powered by the ATX DC power supply. The other is under the table, and is powered by the AC power strip. Make sure both fans are blowing warm air out of the cabinet. Replace any fan that is worn or spinning slowly.
	Cabinet ventilation holes are blocked	Make sure you have proper clearance between the cabinet rear and the wall. Make sure all ventilation holes are clear of dust and debris and that air can flow freely.
Backglass marquee does not light or is intermittent	Faulty cold cathode florescent lights	Refer to *Cold-Cathode Florescent Light Service* on page 28 for information on checking and replacing the lights. Check the ATX DC power supply.
Improper number of credits given when coins or bills are inserted	Incorrect setting in Operator Menu	Adjust settings in the Operator Menu Coin / Credit Settings screen.
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to the coin mech and bill validator, and any ground wires are properly connected. Verify that no wires are frayed or improperly shorting to ground.
	Faulty coin mech	Verify the coin mech is not jammed. Make sure the coin mech is properly aligned and latched to the coin door. Repair or replace if faulty.
	Incompatible Dollar Bill Acceptor	GLOBAL VR recommends Mars or Coinco Dollar Bill Acceptors. Some other brands may give the wrong number of credits or add credits randomly.
No video on backglass, no lights, and no audio	Faulty ATX DC power supply	Make sure the AC power cable is connected to the ATX DC power supply and AC power strip, and the power supply ON/OFF is in the on (I) position.

Control Troubleshooting

Problem	Cause	Possible Solution
Buttons do not work Audio **does** work	Faulty micro switch	Replace the micro switch on the button and re-test. Verify that the wires are connected to the correct spades on the micro switch (see Figure 11 on page 30).
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to each button and the uShock I/O PCB. Verify that no wires are frayed or improperly shorting to ground. Verify that wires are connected to the correct spades on the micro switches.
	Faulty uShock I/O PCB	Make sure that all connections to the uShock I/O PCB are secure. Replace PCB if faulty.
	uShock PCB connected to faulty USB port	To test a USB port, turn off the game, disconnect the device from the port, and then connect the game dongle to the port. Reboot the game. A *No Dongle* message indicates the port is bad. If the game starts, the port is working. After the test, reconnect all devices to the correct USB ports and reboot.
Buttons do not work & audio does not work	Faulty uShock I/O PCB	Replace the PCB.
Plunger is not shooting properly.	Plunger is not calibrated	Recalibrate table and plunger in Physics Engine Settings. (A message will appear after exiting a table and during boot-up when calibration is needed.)
Different pulls on plunger launch the ball at full strength	Emulates original Attack from Mars and Medieval Madness tables	These tables used a button-activated solenoid kicker to launch balls. To emulate this, the UltraPin mechanical plunger will fire the ball at the same strength for any pull of 25% and up for these games.

Video Troubleshooting

Problem	Cause	Possible Solution
Poor picture on Backglass monitor	Monitor connected to wrong port	The backglass monitor must be connected to the VGA Video port on the video card. **Do not use** the VGA port on the motherboard.
Picture is dim or faded	Display needs adjustment	Use the Display Settings menu in the Operator Menu to adjust the picture (see page 16). If you cannot get adequate adjustment from the Menu, you can use the monitor remote control boards for additional adjustments. The backglass board is located behind the marquee near the monitor. The table board is mounted to the back of the monitor and can be accessed through the coin door.
No picture or corrupted picture on monitor	Power problem	Check the DC power connection to the monitor.
	Loose or faulty video cable (Only one monitor affected)	Verify the video cable is firmly connected from the monitor to the video card in the computer. While the monitor is powered ON, disconnect the video cable. You should briefly see a message on-screen saying *No Signal* if the monitor is working. Check the video cable and make sure it is not pinched or frayed.

Problem	Cause	Possible Solution
	Loose or faulty video card (Both monitors affected)	When the computer boots up, it performs a PC self-diagnostic test. If you hear 3 beeps from the computer, this indicates a problem with the video card. If the video card is faulty, contact Technical Support. Try the following if directed by Technical Support: • Reseat the video card in the motherboard. • Check the power connector to the video card inside the computer. Make sure it is connected properly and is not connected backwards. • Power on and make sure the fan on the video card is spinning fast.
No picture or corrupted picture (continued)	Power supply not connected or not working	Make sure the DC power supply for the monitor is working and the connection is secure.
No video and no audio Cabinet lights work	No power to computer	• Verify the computer is ON by the LED on the front of the computer. • Verify the line voltage switch on the back of the computer is set to the correct voltage for your area, 115V or 230V. • Make sure the AC power cord is firmly connected to the computer and the power strip, and the power strip LED is on. • Turn off the power strip, wait 20 seconds, and then turn it back on to reboot the computer. If the computer does not power on, make sure the On/Off switch on the back of the computer is in the On (I) position, and make sure that *AC Back Function* in the BIOS is set to *Full On* (see page 36).
	Corrupted software	Reload the software from the CDs. If you continue to have problems, you may have a faulty hard drive.
	Faulty hard drive	If you continue to have problems after you reload the software, you may have a faulty hard drive. Contact Technical Support.
No video on backglass, no lights, and no audio	Faulty ATX DC power supply	Make sure the AC power cable is connected to the ATX DC power supply and AC power strip, and the power supply ON/OFF is in the on (I) position.
Table image appears on Backglass monitor	Monitors confused in video drivers	Power OFF the cabinet, disconnect the Backglass monitor cable from the computer, and power ON the cabinet with only the Table monitor connected. Verify the Table image displays normally, then turn off cabinet and reconnect Backglass monitor. If problem persists, check connections and video cables and restore software.

Audio Troubleshooting

Problem	Cause	Possible Solution
No audio or	Volume set too low	Use the **VOL UP** button on the Operator Button Panel to raise the volume.
Poor sound from one or more speakers	Faulty wiring	Verify that all the wires are firmly connected to the speakers and the correct connectors on the uShock I/O PCB and computer. Speakers connect to green computer audio port. Subwoofer connects to red computer audio port.

Problem	Cause	Possible Solution
	Blown speakers	Remove the grill and inspect the speaker for visible damage. Run the Sound Test from Diagnostics in the Operator Menu to verify each speaker is working.
	Reversed wires	A weak or low muffled sound is a sign of reversed speaker wires. Check for reversed wires on each speaker.
	Faulty uShock I/O PCB	To verify audio is working at the computer, connect stereo headphones to the computer audio ports.
Audio hum	Faulty power supply	A constant low hum in the speakers can be caused by a faulty power supply. This could be one of the external DC power supplies or the computer power supply.
	Open ground	Check all ground wires in the cabinet. Make sure the AC wall outlet is properly grounded.
Mechanical sounds (flipper, bumper, etc.) are too loud or soft	Mechanical sound effects volume setting	Set the Mechanical Volume in the Operator Menu Cabinet Setup > Sound Settings screen.

Software Troubleshooting

Problem	Cause	Possible Solution
Table doesn't exit when I press EXIT GAME button	Must press and hold	Player must press and hold the EXIT GAME button for 3 seconds to exit from a table.
Table tilts immediately after starting a game.	Cabinet is not calibrated.	Recalibrate table and plunger in Physics Engine Settings. (A message will appear after exiting a table and during boot-up when calibration is needed.)
Tables tilt too easy or too hard	Tilt sensitivity needs adjustment	Adjust the Tilt Sensitivity in Operator Menu Game Configuration > Physics Engine Settings screen.
Check Calibration message still appears after calibration	Either the table or plunger is not properly calibrated	These steps are easy to forget during calibration: • After resetting, shake the cabinet front to back and side to side. • While calibrating the plunger, push and pull the plunger to its maximum extents. • If you don't see the "Table is Calibrated" message, your cabinet is not calibrated.
I can't exit from the Pinball Game List in the Operator Menu	All tables are disabled	The software will not let you exit from the Pinball Game List page unless at least one table is enabled.
I want to change features like Awards and High Scores	These features cannot be changed	Replay Awards and Specials are set to Extra Ball. All High Scores award one credit.
Tables exit without any input after a certain amount of time	Game Inactive Timeout is enabled	The Game Inactive Timeout option in the Operator Menu Game Configuration > Game Settings screen will cause tables to exit in the set time if there is no player input. This feature can be disabled, or set from 3—15 minutes.

Error Messages

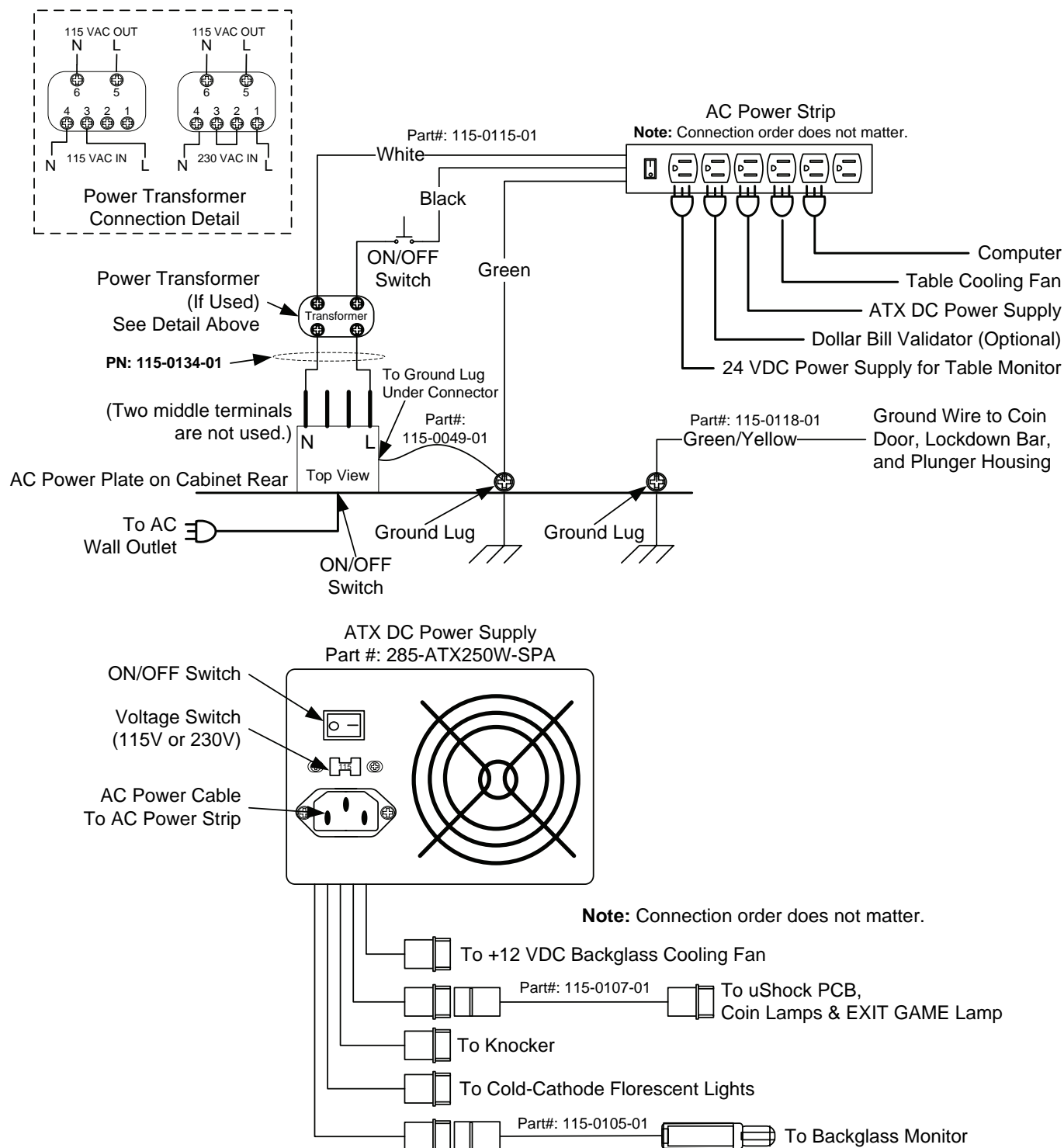| Message	Solution
uShock board not found.	Reconnect the uShock board to the PC with the USB cable.
Dongle not found.	Insert USB dongle into a functional USB port on the PC.
Invalid dongle found.	Insert correct USB dongle into a functional USB port on the PC.
Check calibration in Physics Engine Settings.	Recalibrate table and plunger in Physics Engine Settings.

Chapter 10 — Diagrams and Schematics

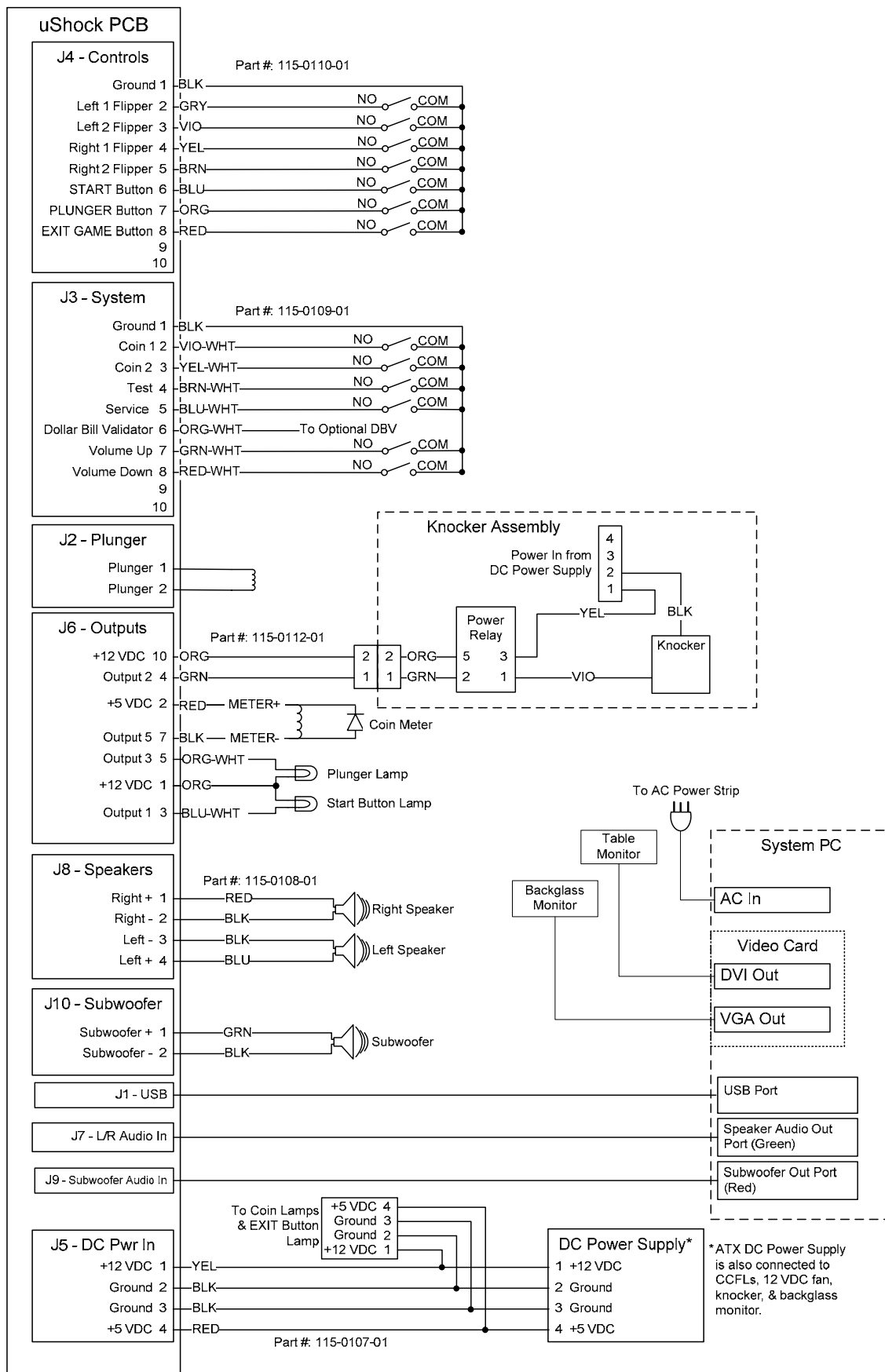*Figure 17.   Power Distribution Diagram*

uShock PCB

J4 - Controls

Part #: 115-0110-01

Ground 1	BLK	
Left 1 Flipper 2	GRY	NO COM
Left 2 Flipper 3	VIO	NO COM
Right 1 Flipper 4	YEL	NO COM
Right 2 Flipper 5	BRN	NO COM
START Button 6	BLU	NO COM
PLUNGER Button 7	ORG	NO COM
EXIT GAME Button 8	RED	NO COM
9		
10		

J3 - System

Part #: 115-0109-01

Ground 1	BLK	
Coin 1 2	VIO-WHT	NO COM
Coin 2 3	YEL-WHT	NO COM
Test 4	BRN-WHT	NO COM
Service 5	BLU-WHT	NO COM
Dollar Bill Validator 6	ORG-WHT	To Optional DBV
Volume Up 7	GRN-WHT	NO COM
Volume Down 8	RED-WHT	NO COM
9		
10		

J2 - Plunger

Plunger 1
Plunger 2

Knocker Assembly

Power In from DC Power Supply
4 3 2 1

YEL   BLK

Knocker

J6 - Outputs

Part #: 115-0112-01

+12 VDC 10	ORG	2 2 ORG Power Relay 5 3
Output 2 4	GRN	1 1 GRN 2 1 VIO
+5 VDC 2	RED — METER+	
Output 5 7	BLK — METER-	Coin Meter
Output 3 5	ORG-WHT	Plunger Lamp
+12 VDC 1	ORG	
Output 1 3	BLU-WHT	Start Button Lamp

To AC Power Strip

Table Monitor

Backglass Monitor

System PC

AC In

Video Card

DVI Out

VGA Out

J8 - Speakers

Part #: 115-0108-01

Right + 1	RED	Right Speaker
Right - 2	BLK	
Left - 3	BLK	Left Speaker
Left + 4	BLU	

J10 - Subwoofer

Subwoofer + 1	GRN	Subwoofer
Subwoofer - 2	BLK	

J1 - USB — USB Port

J7 - L/R Audio In — Speaker Audio Out Port (Green)

J9 - Subwoofer Audio In — Subwoofer Out Port (Red)

To Coin Lamps & EXIT Button Lamp
+5 VDC 4
Ground 3
Ground 2
+12 VDC 1

DC Power Supply*

1 +12 VDC
2 Ground
3 Ground
4 +5 VDC

*ATX DC Power Supply is also connected to CCFLs, 12 VDC fan, knocker, & backglass monitor.

J5 - DC Pwr In

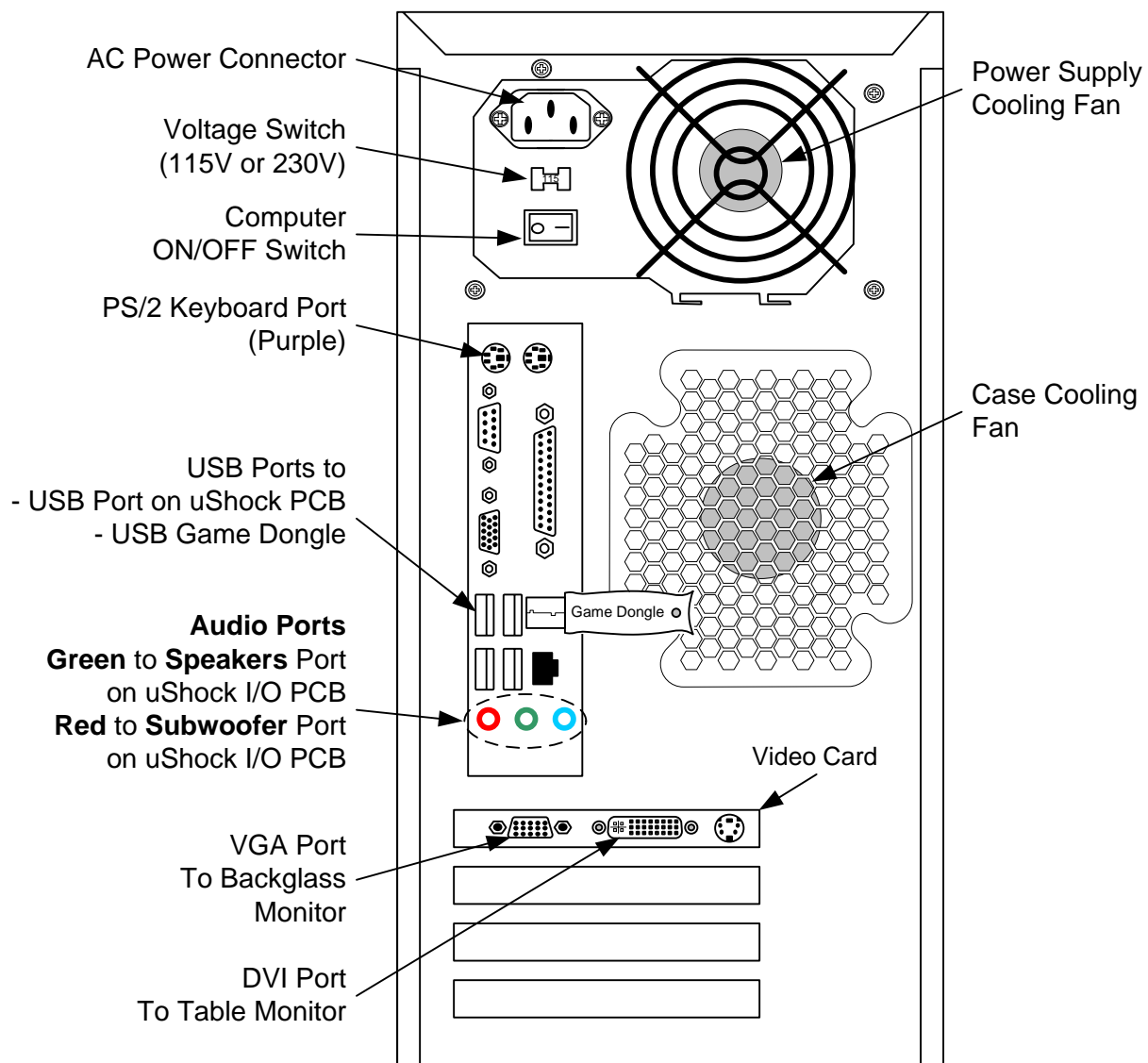|		
+12 VDC 1	YEL	
Ground 2	BLK	
Ground 3	BLK	
+5 VDC 4	RED	

Part #: 115-0107-01

Figure 18.   Detailed Wiring Diagram

Figure 19.   PC Rear Panel Connectors

Warranty Service

If at some point you require warranty service, contact your authorized GLOBAL VR distributor.

LIMITED WARRANTY

GLOBAL VR® warrants that its computer circuit boards, hard drives, power supplies, monitors, displays, controls, sensors, and mechanical structures are free from defects in materials and workmanship under normal use and service for a period of ninety (90) days from the date of shipment.

All software and accompanying documentation furnished with, or as part of the Product, is supplied "AS IS" with no warranty of any kind except where expressly provided otherwise in any documentation or license agreement furnished with the Product.

During the warranty period, GLOBAL VR® will, at no charge, repair the Product, provided:

- Purchaser believes that the Product is defective in material or workmanship and promptly notifies GLOBAL VR® in writing with an explanation of the claim;

- All claims for warranty service are made within the warranty period;

- Products are returned adequately packed and freight prepaid to GLOBAL VR®'s designated service center;

- GLOBAL VR®'s inspection or test of the Product verifies to GLOBAL VR®'s satisfaction that the alleged defect(s) existed and were not caused by accident, misuse, neglect, unauthorized or attempted repair or testing, unauthorized modification, incorrect installation, vandalism, failure to follow the maintenance schedule or procedures; or operation in out-of-specification environmental conditions.

GLOBAL VR® will return the repaired Product freight prepaid to the Purchaser. All freight costs associated with replacement of warranty parts after expiration of the original warranty period are the responsibility of the Purchaser. GLOBAL VR® is not obligated to provide the Purchaser with a substitute unit or on-site service during the warranty period or at any time. If after investigation GLOBAL VR® determines that the reported problem was not covered by the warranty, Purchaser shall pay GLOBAL VR® for the cost of investigating the problem at its then prevailing per incident billing rate. No repair or replacement of any Product or part therein shall extend the warranty period as to the entire Product. The warranty on the repaired part only shall be in effect for a period of ninety (90) days following the repair or replacement of that part or the remaining period of the Product parts warranty, whichever is greater.

Purchaser's exclusive remedy and GLOBAL VR®'s sole obligation is to supply or pay for all labor necessary to repair any Product found to be defective within the warranty period and to supply, at no extra charge, new or rebuilt replacements for defective parts. If repair or replacement fails to remedy the defect, then, and only in such event, shall GLOBAL VR® refund to Purchaser the purchase price for said Product. Purchaser's failure to make a claim as provided above or continued use of the Product shall constitute an unqualified acceptance of said Product and a waiver by Purchaser of all claims thereto.

IN NO EVENT SHALL GLOBAL VR® BE LIABLE FOR LOSS OF PROFITS, LOSS OF USE, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM OPERATION OF THE GAME IN ANY CONDITION. GLOBAL VR® SHALL NOT BE RESPONSIBLE FOR THE SUITABILITY, PERFORMANCE, OR SAFETY OF ANY NON- GLOBAL VR® PART OR ANY MODIFICATION PERFORMED BY ANY PRODUCT DISTRIBUTOR UNLESS SUCH WORK IS EXPRESSLY AUTHORIZED IN ADVANCE BY GLOBAL VR®.

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Technical Support

Service & Parts

Hours: 7:00AM–5:00PM Pacific Time, Monday–Friday

Phone: 408.597.3435

Fax: 408.597.3437

E-mail: techsupport@globalvr.com

Website: http://service.globalvr.com

Extended Service Hours: Monday–Friday 5pm—Midnight
Saturday & Sunday 7:00am—Midnight Pacific Time

Free telephone, e-mail, and online support are provided for systems during the warranty period. GLOBAL VR Technical Support can help you troubleshoot problems and diagnose defective parts. We can also answer questions about the operation of your game.

When you contact Technical Support, please provide the information listed below, as applicable, to assist the Technical Support representative in solving your problem quickly. For your convenience, space is provided to write important numbers.

- Cabinet Serial Number: _____

- Version and Build from Operator Menu: _____

- Proof of Purchase information

- Your mailing address and telephone number

- A summary of the question or a detailed description of the problem

- Specific error message

- Date of latest install or upgrade

- Any changes made to the system

- For game-play issues, the table and number of players

To comment on this document, please e-mail: techpubs@globalvr.com