

# THE SINARM

## Operation & Service Manual 47" Deluxe 3D Cabinets

040-0237-01 Rev. B

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- Read this manual before use.
- Keep this manual with the machine at all times.



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## Preface

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### 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:

- Electronic components in the game cabinet run on 115 VAC. The voltage switch on the back of the computer must be set to 115. If you power up the computer outside of the cabinet, set the switch to match the local AC voltage:
  - 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. These 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

- To avoid injury and accidents, people who fall under the following categories should not play the game:
  - Those who need assistance when walking.
  - Those who have high blood pressure or a heart problem.
  - Those who have experienced muscle convulsions or loss of consciousness when playing a video game or similar activities.
  - Those who have trouble in the neck or spinal cord.
  - Intoxicated persons.
  - Pregnant women.
  - Persons susceptible to motion sickness.
  - Persons who do not abide by the warning labels on the game.
- A player who has never been adversely affected by light stimulus might experience dizziness or headache when playing the game. Small children can be especially susceptible to these conditions. Caution guardians of small children to keep watch over their children during play.
- Instruct those who feel sick during play to see a doctor.
- To avoid injury from falling objects, and electric shock due to spilled drinks, instruct players not to place heavy items, food, or drinks on the product.
- To avoid electric shock or short circuit, do not allow customers to put hands and fingers or extraneous matter in the openings of the product.
- To avoid risk of injury from falling, immediately stop customers from leaning against or climbing on the product.
- **Children under the age of 6 should not view the game in 3-D.** For all others, if the 3-D graphics affect you (headache, dizziness or eye strain) you should remove the 3D glasses and **change the game to 2-D by pressing the 3-D button on the control panel.**

## Warnings



**To avoid electrical shock, unplug the cabinet before performing installation or service procedures.**

**If the power cord is damaged, it must be replaced by the equivalent power cord available from GLOBAL VR or your distributor.**



**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 59°—86°F (15°—30°C).

## 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 a Regulatory EMC representative of GLOBAL VR® or 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

---

### An Ordinary Day... An Extraordinary Event

Moscow is in shambles! Our hero must ward off an alien onslaught to save himself and the human race. With each challenge he finds himself becoming more like those he fights—and able to use their powers against them. His decisions will determine the fate of us all.

### Cabinet Specifications



*Figure 1. Cabinet Dimensions & Weight*

### Power Requirements (Approximate)

#### 115 VAC

- Inrush AC Current: 7 Amps
- Operating AC Current: 5 Amps

#### 230 VAC

- Inrush AC Current: 3.5 Amps
- Operating AC Current: 3 Amps

## Chapter 2 — Installing a New Cabinet

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This chapter describes how to install a new cabinet in your location.

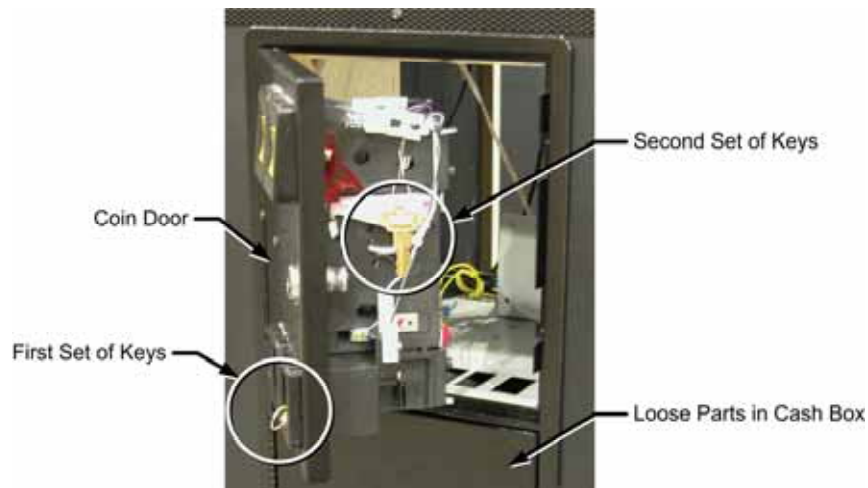
### Tools Required

The exact tools needed may vary depending component variations.

- Screwdriver with assorted bits, including medium Phillips head and T-10 & T-27 Torx® security bits
- Assorted nutdrivers and/or wrenches, including 11/32" & 7/16"
- Wire snips or scissors for clipping cable ties

### Unpack and Inspect

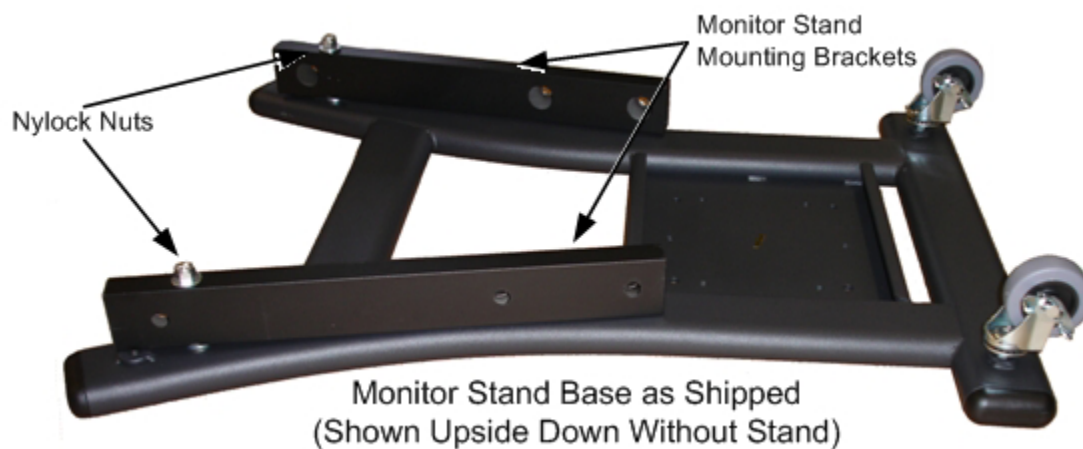
1. Carefully remove the cabinet from the shipping container, giving yourself plenty of space around the cabinet. Inspect the exterior of the cabinet for any damage.
2. Remove the keys from the coin return slot. Open the coin door to locate the second set of keys (see the figure below).



*Figure 2. Coin Door with Key Locations*

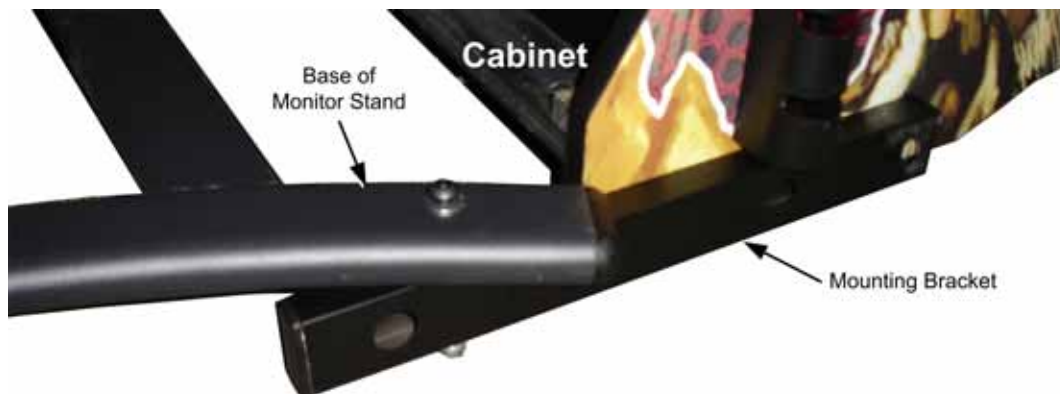
### Secure Monitor Stand to Cabinet

1. Place the cabinet in its operating location and position the monitor stand in front of the cabinet.
2. Locate the four (4) 3/8" x 2" bolts with lock washers. They should be in the coin box.
3. Refer to Figure 3 and rotate the Monitor Stand Mounting Brackets on the Monitor Stand Base so they extend away from the Base. (You may need to loosen the Nylock nut slightly.)



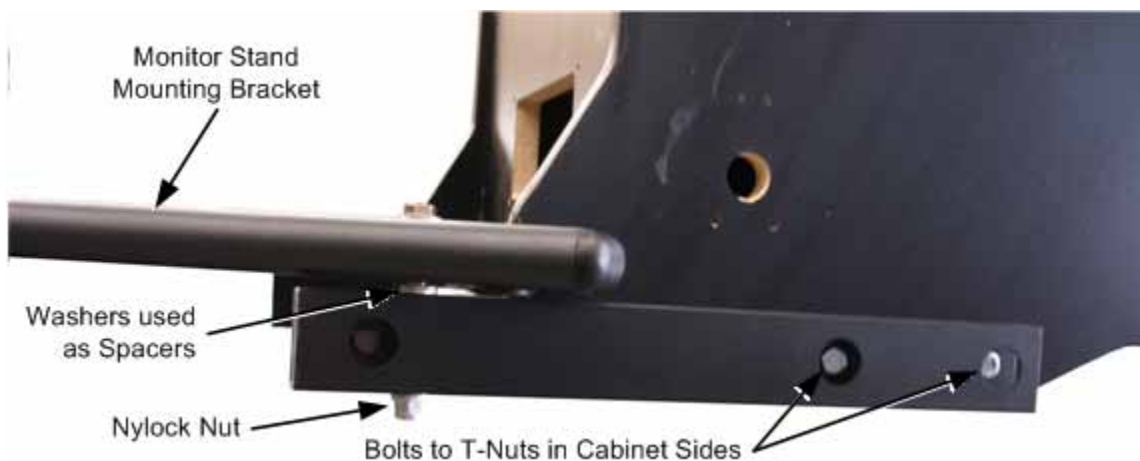
*Figure 3. Mounting Brackets on Monitor Stand Base*

4. Place the stand in front of the cabinet so that each Mounting Bracket extends along the side of the cabinet as shown below.



*Figure 4. Cabinet and Mounting Bracket, Top View*

5. Secure each Mounting Bracket to the cabinet with two (2) 2" bolts with lock washer as shown below. The bolts pass through the holes in the bracket into T-nuts in the cabinet sides.



*Figure 5. Cabinet and Mounting Bracket, Side View*

6. Make sure the Nylock nut on the bottom of the Mounting Bracket is securely tightened.



## Assemble the 3D Marquee

The marquee is made up of three (3) artwork pieces, as shown in the figure below. The Logo is pre-assembled on the "Kain" Topper. You will need to attach the Topper to the Monitor Back Bezel.

**Important:** The marquee must be installed on the monitor stand **before** the monitor is installed.



Figure 6. Marquee Assembled

## Marquee Logo Assembly

The Logo is pre-installed on the topper before the game is shipped. Complete assembly steps are included here for reference and replacement.



Figure 7. Logo & Mounting Hardware

Refer to Figure 7 and perform the following steps to install the logo:

1. Place a #8-32 x 1-3/4" screw through the holes nearest to each end of the logo, and a 2-1/2" screw through the center hole.
2. Slide a spacer over each screw behind the logo, and then insert the screws through the "Kain" Topper so that the logo stands away from the background.
3. Secure each screw behind the Topper with a #8-32 Nylock nut and tighten the nuts enough to hold the logo securely. Be careful not to over tighten or you may deform the Sintra® artwork.

### Securing Topper to Bezel



*Figure 8. Topper Mounting Hardware*

Refer to Figure 6 to identify the marquee artwork pieces, and Figure 8 for the hardware used to secure the "Kain" topper to the Monitor Back Bezel.

1. The logo is secured to the topper with three screws. The center screw is longer than the others and will align with a hole in the upper part of the Monitor Back Bezel. Align the topper and back bezel so that this screw goes through the corresponding hole in the back bezel.
2. Place a fender washer and #8-32 Kep nut on the screw, and then make sure the three (3) other pre-drilled holes in the topper and bezel are aligned. With the three sets of holes aligned, tighten the nut enough to hold the assembly securely.
3. Place a fender washer on each of the three (3) black 1/4-20 x 3/4" screws, and then insert the screws through the holes that you aligned in the previous step. The screw head with fender washer should be on the front side of the artwork. Place a fender washer and Kep nut on each screw behind the bezel, and tighten the nuts enough to hold the assembly securely.

## Install Marquee on Monitor Stand

**Important:** The marquee must be installed on the monitor stand before the monitor is installed.

Refer to Figure 9 and Figure 10, and do the following steps:

1. The game is shipped with the marquee mounting hardware installed on the vertical rails of the monitor stand, as shown in Figure 9. Remove the outermost Kep Nut and Fender Washer from each screw. (Leave one loose Fender Washer in place on each screw.)
2. Place the Sintra Marquee so that the screws go through the four lower holes in the center of the Monitor Back Bezel, as shown in Figure 10.
3. Install a Fender Washer and Kep Nut on each screw so that the marquee is sandwiched between two Fender Washers as shown in Figure 9.
4. Tighten the Kep Nuts enough to hold the marquee securely. Be careful not to over tighten or you may deform the Sintra marquee material.

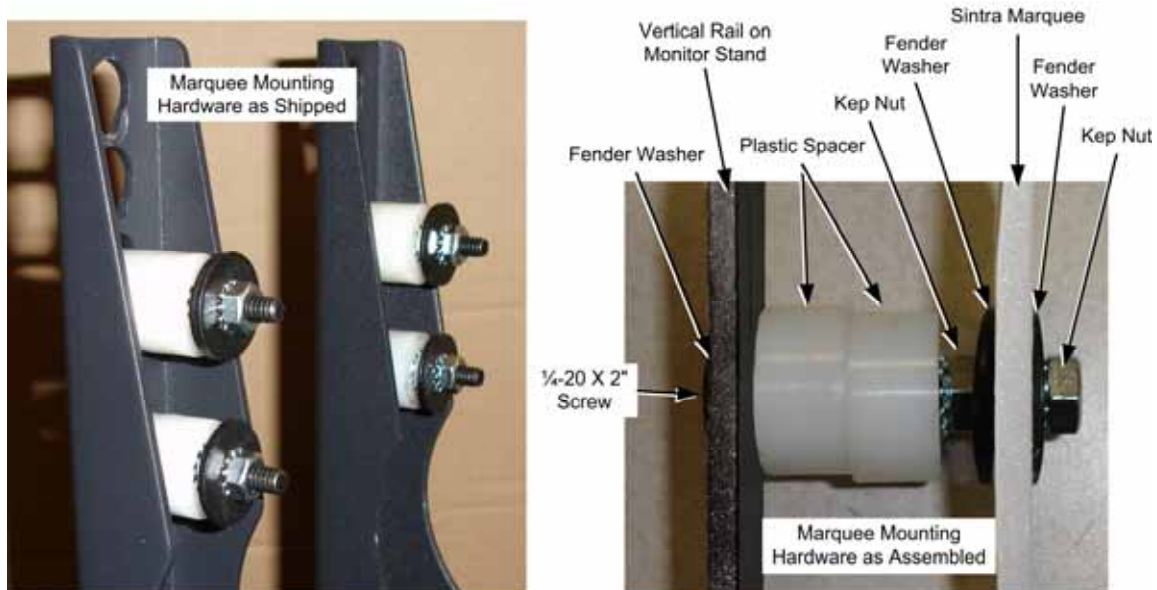


Figure 9. Marquee Mounting Hardware



Figure 10. Marquee as Installed

## Install the optional GVR3D Sign

1. Refer to Figure 11 for the hardware used to mount the GVR3D Sign. Position the GVR3D Sign on the top right corner of the marquee assembly so that the pre-drilled holes align.
2. Place a washer on each of the two (2) #8-32 x 3/4" screws and insert them through the pre-drilled holes. Secure the sign from the back of the marquee assembly with a washer and Kep nut.



*Figure 11: Optional GVR3D Sign and Mounting Hardware*

## Install the Monitor

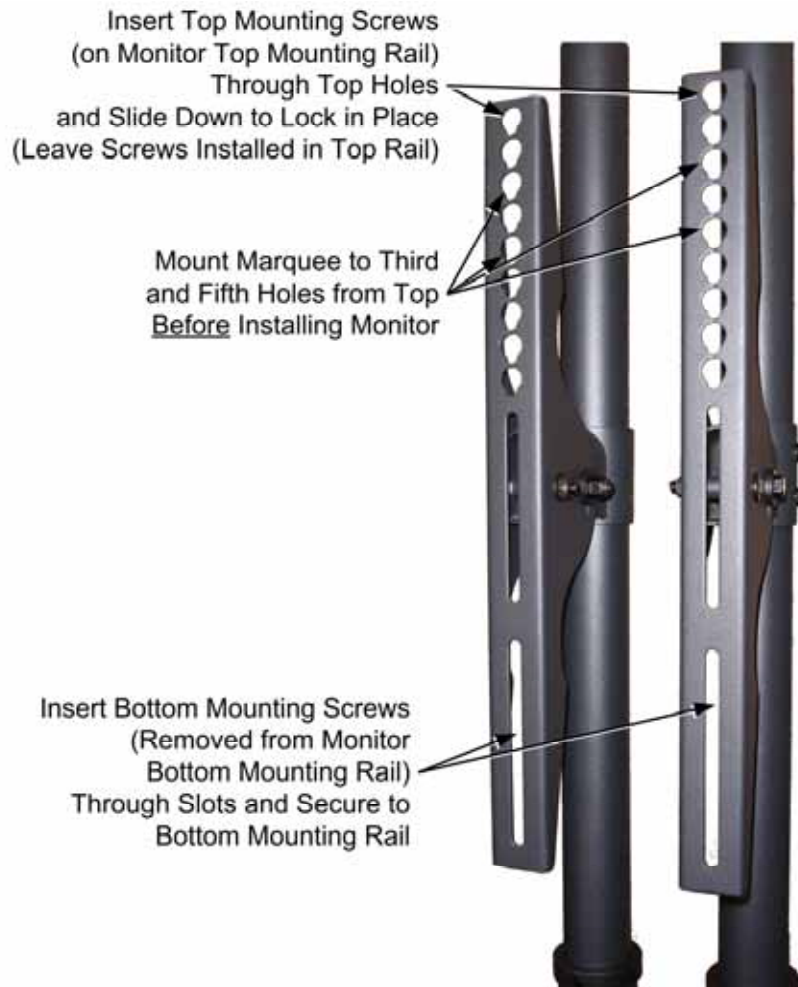
1. Two horizontal mounting rails are pre-installed on the monitor, with two mounting screws in each rail. Remove the screws with flat washers from the bottom rail only. Leave the screws in the top rail, with no washers, in place.



*Figure 12. Top and Bottom Mounting Screws*



2. Place the monitor on the stand so the top mounting screws go through the top hole in each of the vertical rails. They will slide down and lock into place. This puts the monitor at the optimal viewing height. (**Note:** Do not change the height of the tubular supports.)
3. Insert the bottom screws, with flat washers, through the slot in the stand into the holes on the bottom rail and secure.



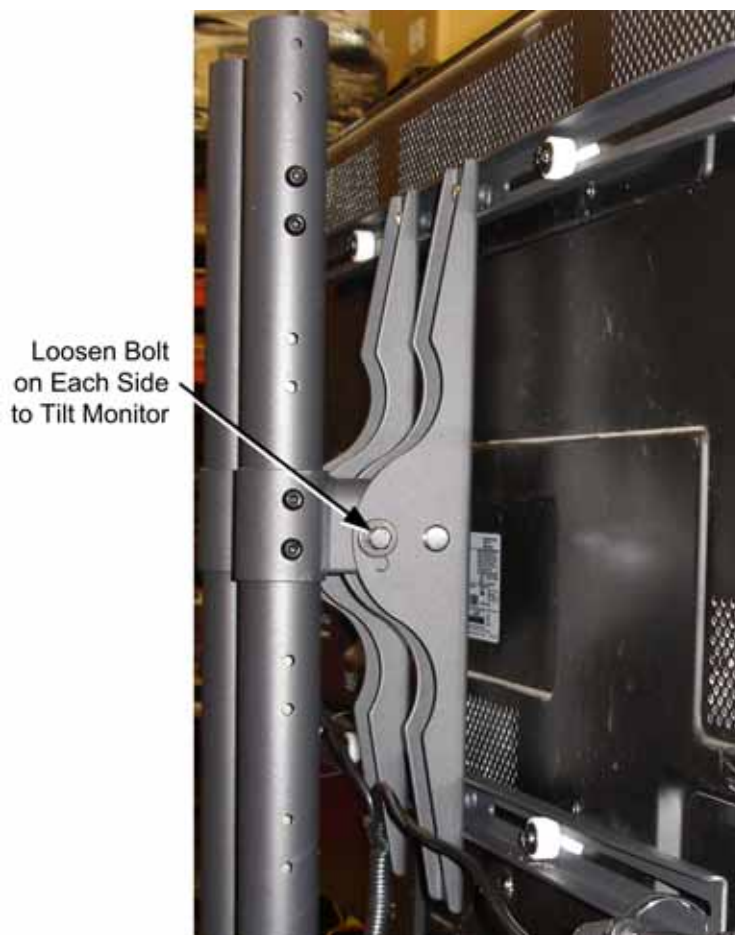
*Figure 13. Vertical Rails on Monitor Stand*

4. Connect the HDMI connector of the HDMI-to-DVI Monitor Cable to the monitor.
5. Connect the Monitor AC Power Cable to the monitor.
6. Route the Marquee DC Power Cable with the two cables from the monitor and secure the cables to the back of one of the vertical tubes of the monitor stand using the included black cable ties.
7. Route the cables into the cabinet through the hole in the cabinet floor.
8. Connect the DVI end of the HDMI-to-DVI Monitor Cable to the System Computer. Connect the Monitor Power Cable to the Power Strip in the cabinet. Connect the Marquee DC Power Harness to the corresponding connector near the opening in the cabinet floor.
9. Connect the Cabinet AC power cord to a grounded outlet and power on the game.
10. Play a game and use both guns to verify everything is working properly.
11. Refer to Chapter 4 for information on using the Operator menus to set up your game and calibrate the guns if needed.

## Adjust the Monitor

For optimal 3D viewing the monitor should be tilted slightly, so that the bottom edge of the monitor is just a little bit closer to the cabinet.

1. With the game running, press the operator Test/Back button to open the Operator Menu. Use the gun triggers to select Diagnostics: Monitor 3D Test and press the Player 2 Start button to open the test screen.
2. If you look at the screen without 3D glasses, you will see double white lines across the test screen background. Put on 3D glasses and you should see single lines. If you see double lines, tilt the monitor until most of the lines are single. Adjust the angle for optimal 3D viewing for players.
3. To tilt the monitor, locate the bolt that extends through the curved channel on the outer side of each vertical rail, as shown below. Loosen the two bolts just enough to tilt the monitor. Tighten the bolts once the monitor is positioned correctly.

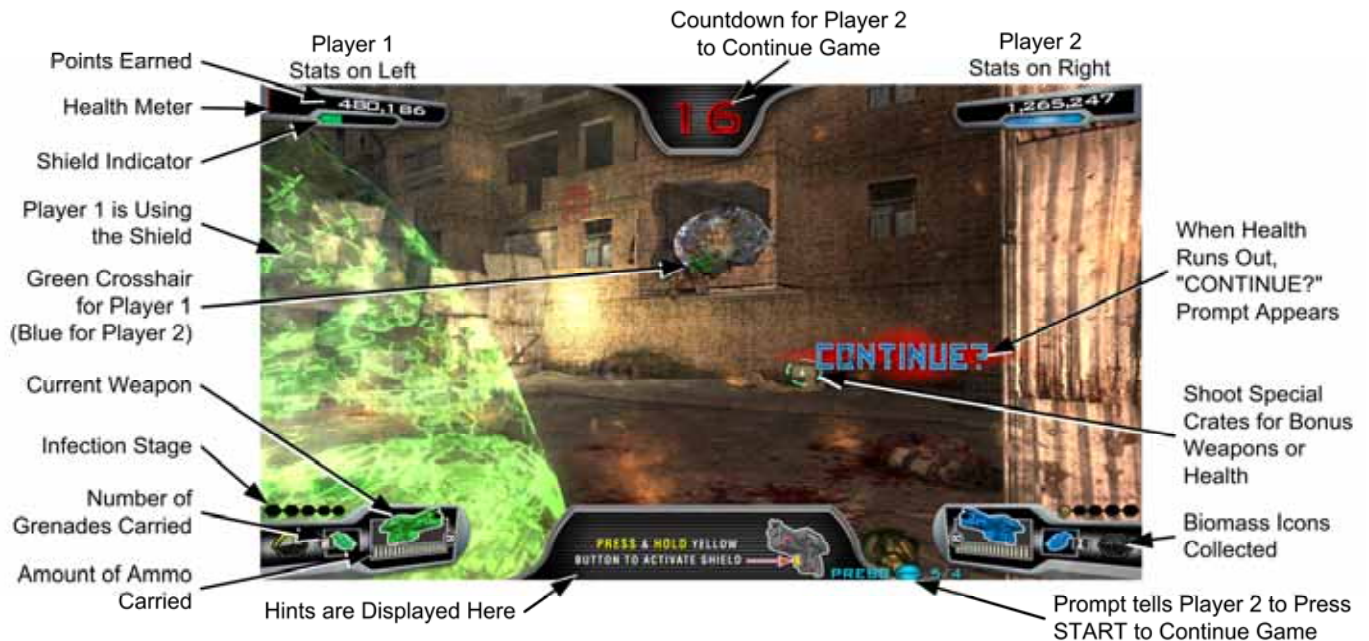


*Figure 14. Tilting the Monitor*

## Optional Yellow Ratings Label

You can set the game to either **Red Label** (more blood & gore) or **Yellow Label** (less gore and you can't shoot humans) in **Game Settings: Settings** in the Operator Menu. If you operate the game in Yellow Label Mode, apply the Yellow Label Decal included with the game over the Red Label printed on the marquee.

## Chapter 3 — Playing a Game



1. Insert coins and press the **START** button for the gun you want to use.
2. Press the **3D** button to turn 3D mode off or on.
3. Select a level from the menu. (You can only select the *Kolossus* level after completing all of the other levels.)
4. As you automatically move through the game, squeeze the trigger to shoot the monsters. Shoot upgrades such as grenades, ammo, health packs, and biomass crates. Shoot crates to reveal more upgrades. Shoot explosive barrels and tanks to blow up monsters. Press the round button on the gun to throw grenades. Press the rectangular button on the gun to activate a shield to protect yourself.
5. Don't shoot the humans! Hitting them lowers your score. (**Note:** Operators can switch between Red and Yellow Label in the Game Settings menu. In Yellow Label mode you cannot shoot the humans.)
6. Shoot the yellow biomass crates to upgrade to the special alien weapon. Hit five biomass icons for the Infection Bonus. When you reach Infection Stage 5 you keep the alien weapon for the rest of the game.
7. Locate secret rooms for special surprises.  
(**Hint:** Shooting green barrels will unlock some of the secret rooms.)
8. When your game is about to end, a countdown appears at the top of the screen. To continue the game, insert coins if needed and press your **START** button.

## Chapter 4 — Operator Menu and Game Setup

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This chapter describes the Game Operator menus, their functions, and various settings. These menus let you set up the game, diagnose problems, and view gameplay and earnings statistics.

### Navigating the Menus

**Note:** You will see a list of navigation functions near the bottom of each screen.

1. Open the coin door and press the **TEST** button to open the Operator Menu.
2. Use the gun triggers or the Operator **UP** and **DOWN** buttons to move up or down through the Main Menu list on the left side of the screen. Pause over a menu item to open the submenu below it. Press the **Player 2 START** button to select a highlighted submenu.
4. Once you select a submenu, use the triggers to move through the menu items. Press the **Player 2 START** button to select a highlighted menu item, and then use the triggers to change the setting. Press the **Player 1 START** button to save the setting and go back to the menu items, or to exit to the Main Menu.
5. To exit from the Operator Menu, use the triggers to highlight **Resume Game** at the bottom of the Main Menu list and press the **Player 2 START** button.



*Figure 15. Operator Button Panel*



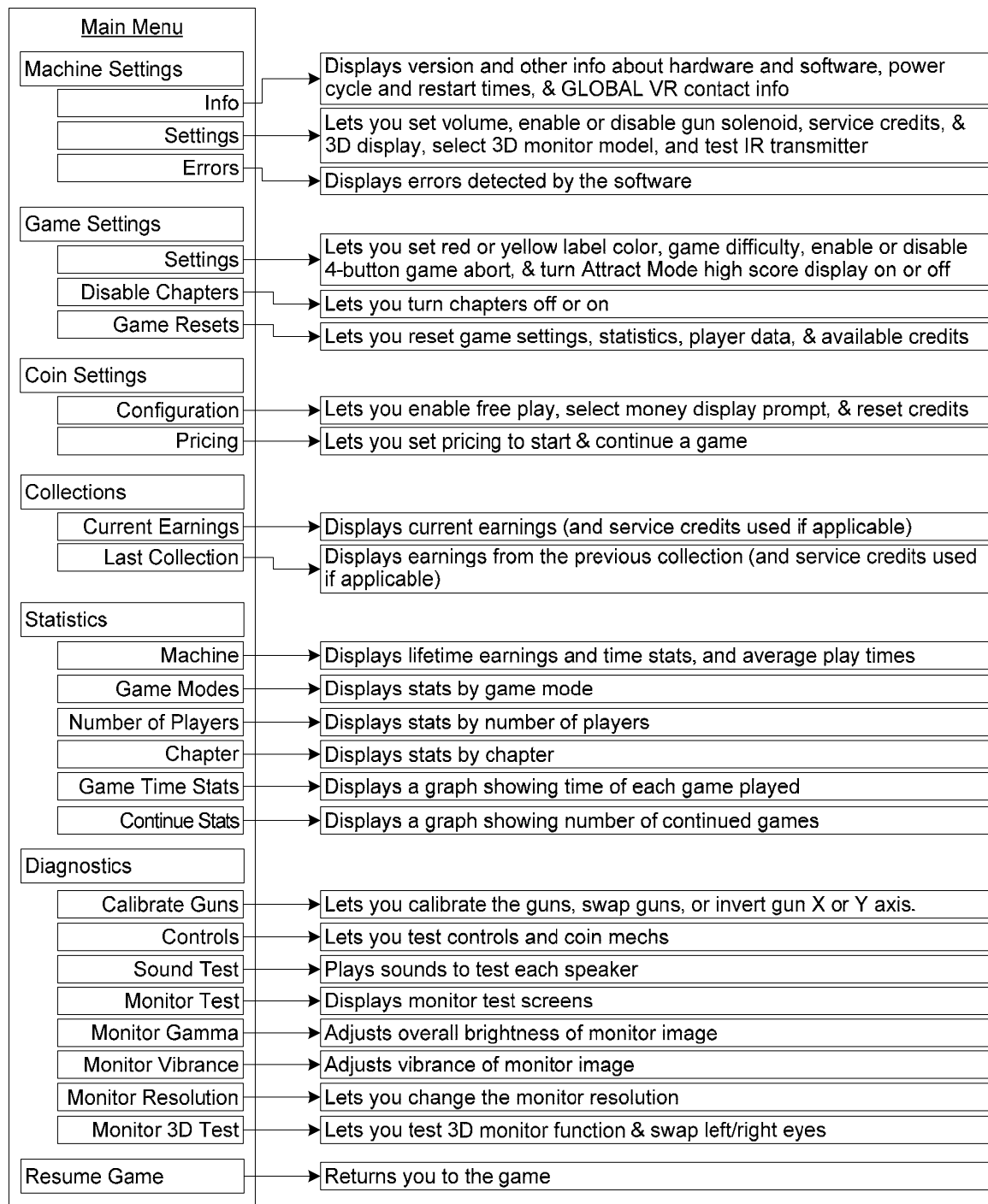


Figure 16. The Swarm Menu Flowchart

## Machine Info Screen

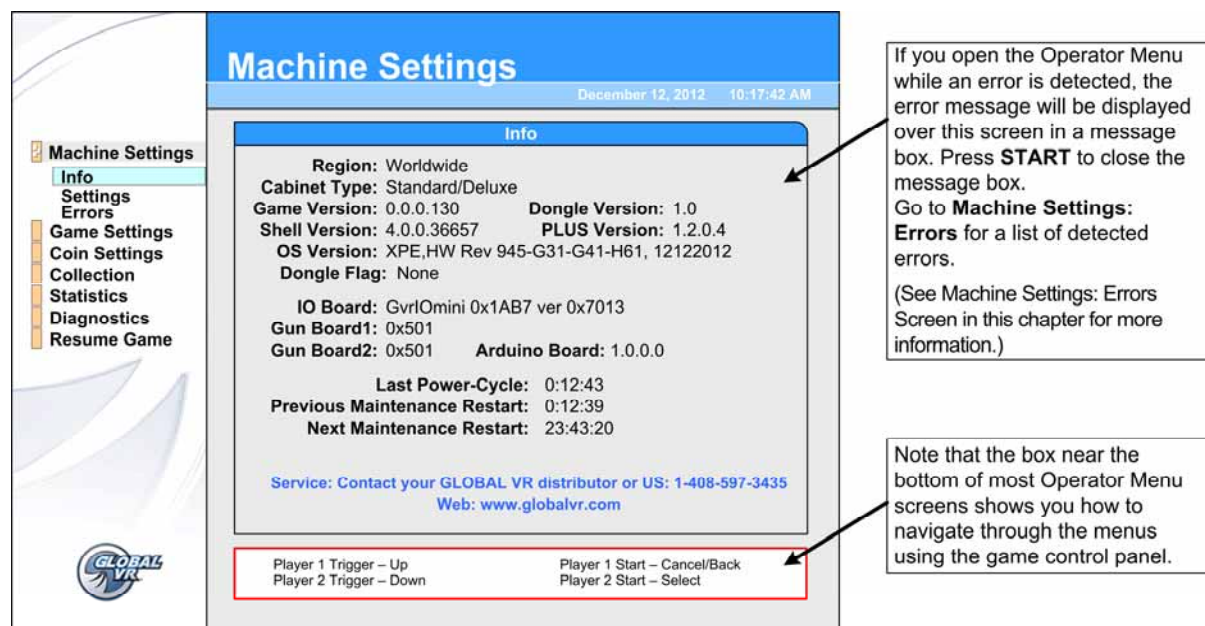


Figure 17. Machine Info Screen

Menu Item	Description
Region	Displays the region or country of operation.
Cabinet Type	Displays the cabinet type as set by the Game Dongle.
Game Version	Displays the software game version.
Shell Version	Displays the software shell version.
OS Version	Displays the operating system version.
Dongle Flag	Not used with this game. Always says "None."
Dongle Version	Displays the localized version of the software, as read from the Game Dongle.
PLUS Version	Displays the PLUS data engine version.
IO Board	Displays the version of the GVRI/O Mini PCB Installed.
Gun Board1	Displays the version of the gun PCB Installed in Gun 1.
Gun Board2	Displays the version of the gun PCB Installed in Gun 2.
Last Power-Cycle	Displays the amount of time since the cabinet was last powered on.
Previous Maintenance Restart	Displays the amount of time since the cabinet did an automatic maintenance restart.
Next Maintenance Restart	Displays the amount of time until the cabinet does an automatic maintenance restart.

## Machine Settings: Settings Menu

The Machine Settings: Settings menu lets you set up the cabinet hardware.

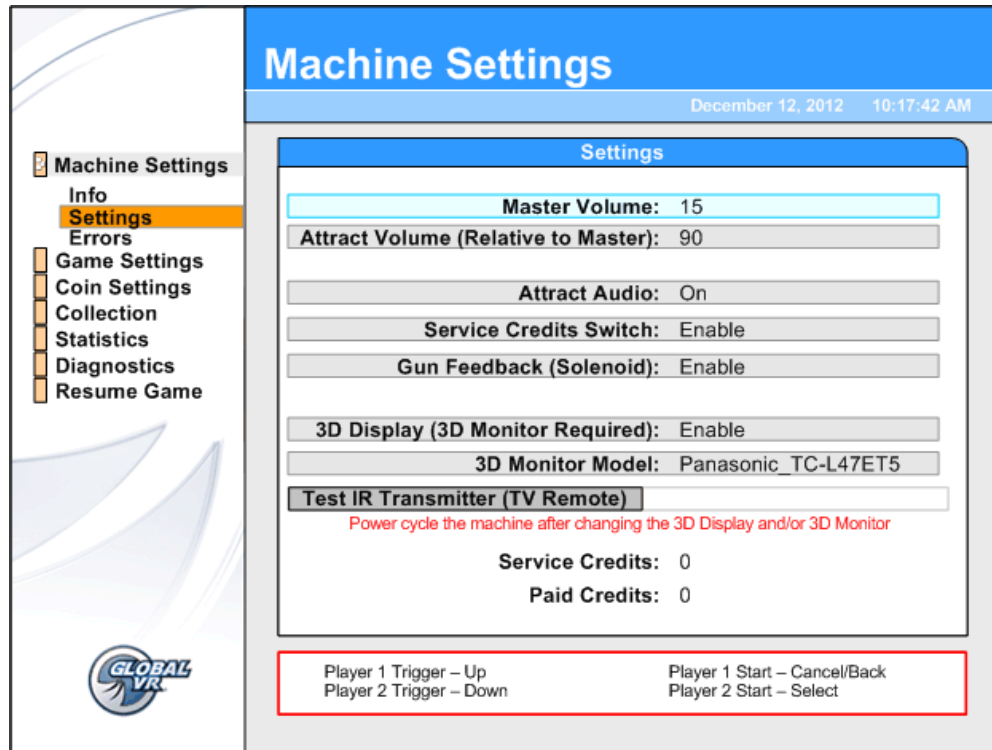


Figure 18. Game Settings Menu

Menu Item	Description
Master Volume	Sets the overall cabinet volume from 0—100.
Attract Volume (Relative to Master)	Sets the Attract Mode volume from 0—100 percent of Master Volume.
Attract Audio	Sets how often the Attract Mode sound plays. Options are <i>On</i> , <i>Sometimes (1/3)</i> , or <i>Off</i> . The <i>Sometimes 1/3</i> setting plays Attract Audio 1/3 of the time.
Service Credits Switch	If set to <i>Enable</i> , lets you add Service Credits by pressing the <b>SERVICE</b> button on the Operator Button Panel during Attract Mode. Service Credits can be used for testing gameplay, and are counted separately from Paid Credits in the collection statistics screens.
Gun Feedback (Solenoid)	Sets whether to use the Gun Feedback Solenoid.
3D Display (3D Monitor Required)	Set to <i>Enable</i> to turn on 3D display on systems with a 3D monitor. Players can turn 3D on and off with the 3D button on the control panel. Power cycle the game if you change this setting.
3D Monitor Model	Displays a list of 3D monitors approved for the installed software version. Select the model in use or the 3D may not perform properly. Power cycle the game if you change this setting.
Test IR Transmitter (TV Remote)	Applies only to games with an IR transmitter installed. Select the button to run the test, and then press Player 2 <b>START</b> button again to confirm.
Service Credits	Shows how many Service Credits are currently available. <i>Service Credits Switch</i> must be set to <i>Enable</i> in this menu to add Service Credits with the Operator <b>SERVICE</b> button.
Paid Credits	Shows how many Paid Credits are currently available on the cabinet.

## Machine Settings: Errors Screen

The Errors screen displays certain hardware and software errors detected by the system software. Some errors cause a message to be displayed at boot. Non-critical boot error messages such as "There is a CD in the Drive" will time-out after 30 seconds. Critical errors, such as *Dongle Missing* or *Invalid*, will prevent the game from booting.

If you open the Operator Menu while an error is detected, a message box will appear with the error message. Press **START** to close the message box. Open the Errors Screen for a list of any detected errors. For more information see *Error Messages* in the *Troubleshooting* section on page 65.

## Game Settings: Settings Menu

This menu lets you set up game-play options.

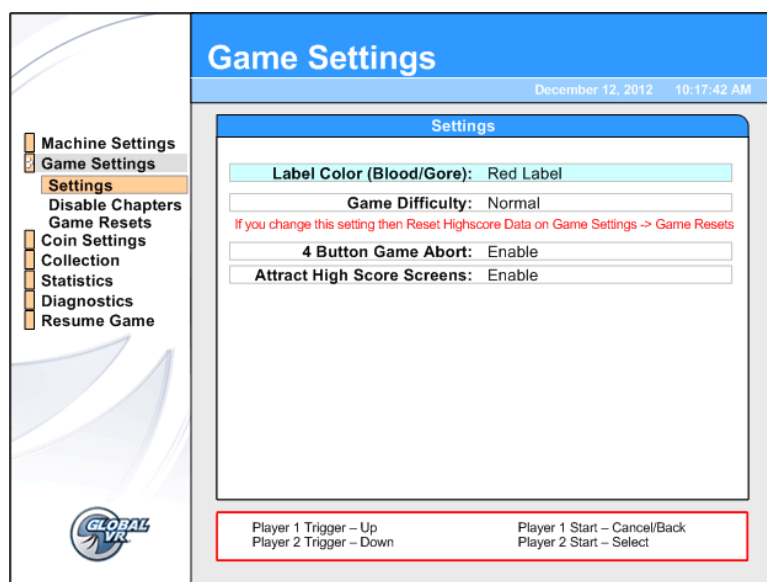


Figure 19. Game Settings Menu

Menu Item	Description
Label Color (Blood/Gore)	Sets the game to either Red Label or Yellow Label. Red label has a lot of blood and gore, and you can shoot the human soldiers. Yellow Label has no blood, a low amount of gore, and you cannot shoot the humans.
Game Difficulty	Changes the average time per buy-in time. Games are shorter with <i>Hard</i> setting and longer with <i>Easy</i> setting.
4 Button Game Abort	If set to <i>Enable</i> , a game can be aborted by pressing both <b>START</b> buttons plus the trigger and Shield (rectangular) button on one gun at the same time.
Attract High Score Screens	Sets whether to display high scores during Attract Mode.

## Game Settings: Disable Chapters Menu

This screen allows you to **Disable** or **Enable** any chapters. Disabled chapters may still be seen in the Attract Movie.

The Enable setting for the Kolossus level, **Enable – Finish all levels**, requires players to complete all of the other levels before they can select Kolossus.

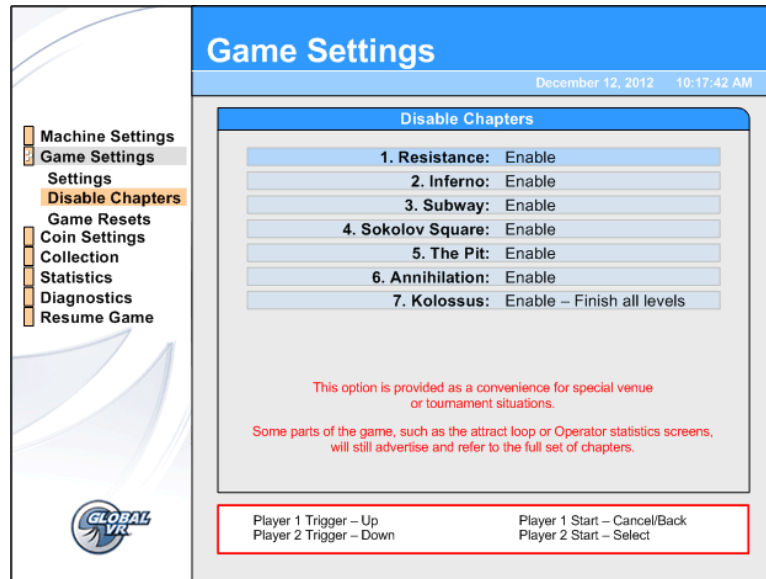


Figure 20. Disable Chapters Menu

## Game Settings: Game Resets Menu

This menu lets you restore factory default settings, or reset cabinet statistics, standings, or available credits. When you select any reset button except Reset Credits, a confirmation box will appear, allowing you to accept or cancel your reset selection.

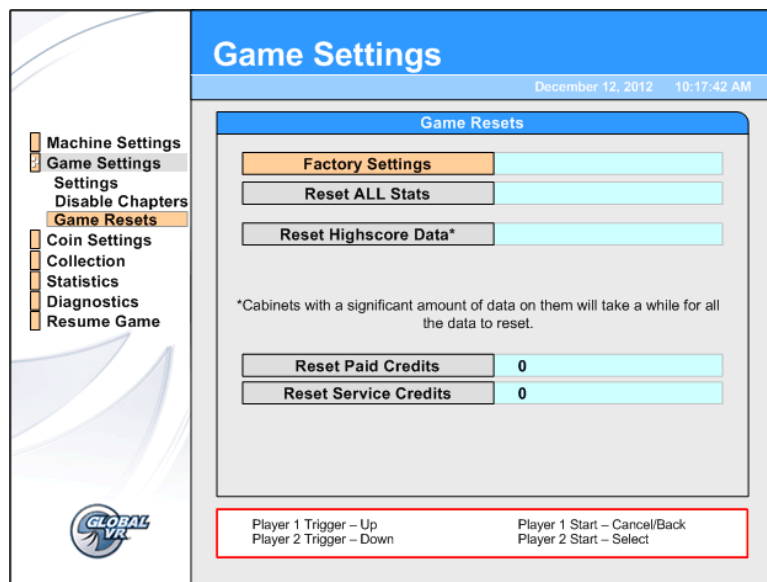


Figure 21. Game Resets Menu

Menu Item	Description
Factory Settings	Returns all of the Game Settings to the default factory settings. Does not affect records and statistics.
Reset ALL Stats	Resets all gameplay Statistics. Does not affect the Lifetime Totals.
Reset Highscore Data	Clears High Score data stored in the computer. A confirmation prompt will appear after you select.
Reset Paid Credits	Resets available Paid Credits to 0. Does not affect Service Credits. The number next to the button shows available Paid Credits. Any Paid Credits displayed when you reset are counted as Unspent Monies in the <b>Collections</b> screens.
Reset Service Credits	Resets available Service Credits to 0. Does not affect Paid Credits. The number next to the button shows available Service Credits.

## Coin Settings: Configuration Menu

This menu lets you turn free play on or off, select the Money Display Prompt, and reset credits.

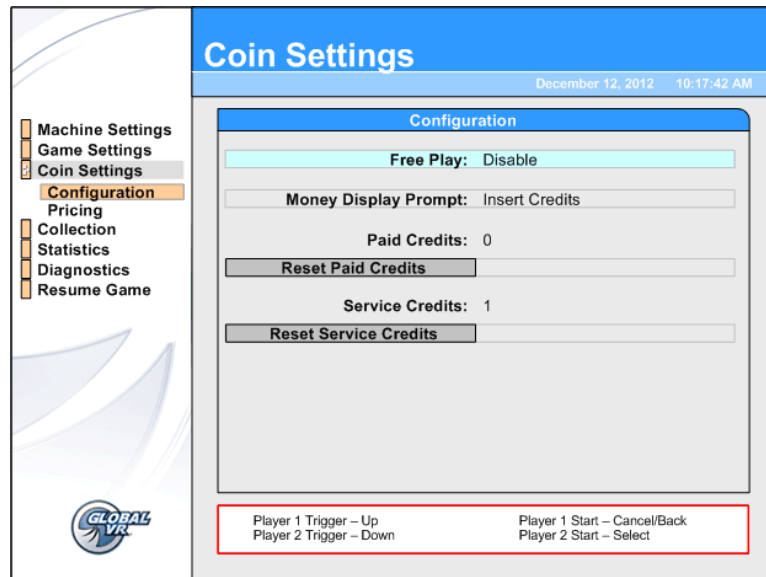


Figure 22. Coin Settings: Configuration Menu

Menu Item	Description
Free Play	Sets Free Play to <i>Enable</i> or <i>Disable</i> .
Money Display Prompt	Sets the Money Display Prompt to <i>Insert Coins</i> , <i>Insert Credits</i> , <i>Insert Bills</i> , <i>Insert Tokens</i> , <i>Insert Money</i> , or <i>Swipe Card</i> .
Paid Credits	Displays the number of paid credits currently available.
Reset Paid Credits	Resets available Paid Credits To 0. Does not affect Service Credits. The number next to the button shows available credits. Any Paid Credits displayed when you reset are counted as Unspent Monies in the <b>Collections</b> screens. (There is no confirmation prompt.)
Service Credits	Displays the number of Service Credits currently available.
Reset Service Credits	Resets available Service Credits to 0. (There is no confirmation prompt.)

### Coin Settings: Pricing Menu

This menu lets you set the number of credits required to start a game.

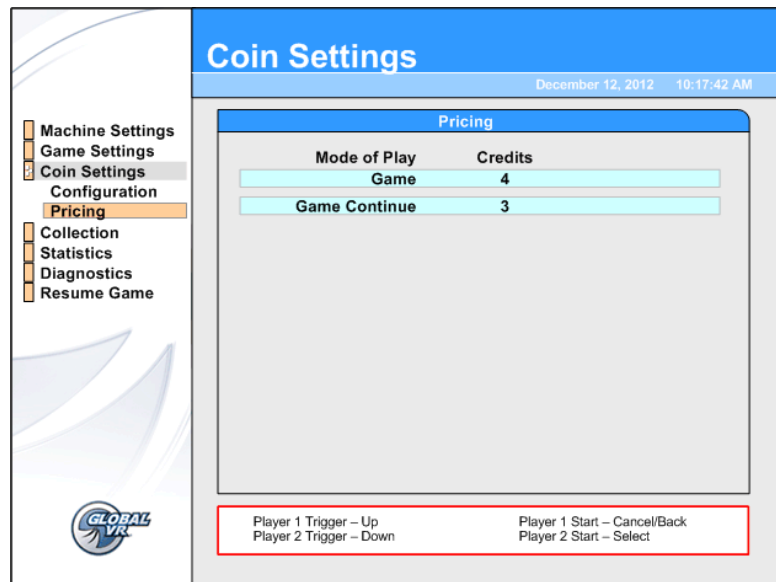


Figure 23. Coin Setting: Pricing Menu

Menu Item	Default	Description
Game	4	Lets you set the number of credits required to start a game. Options are 1—50.
Game Continue	4	Lets you set the number of credits required to continue a game. Options are 1—50.



## Collections Screens

The **Current Earnings** screen displays Earnings and Service Credits for the current period. Earnings are displayed in Credits only.

When you select **Reset Bookkeeping**, and then confirm in the confirmation box that appears, all amounts are reset to zero (0) in the Current Earnings screen, and the data is moved to the **Last Collection** screen.

Lifetime Earnings and Lifetime Average Weekly Earnings are displayed on the **Statistics: Machine** screen described on page 26.

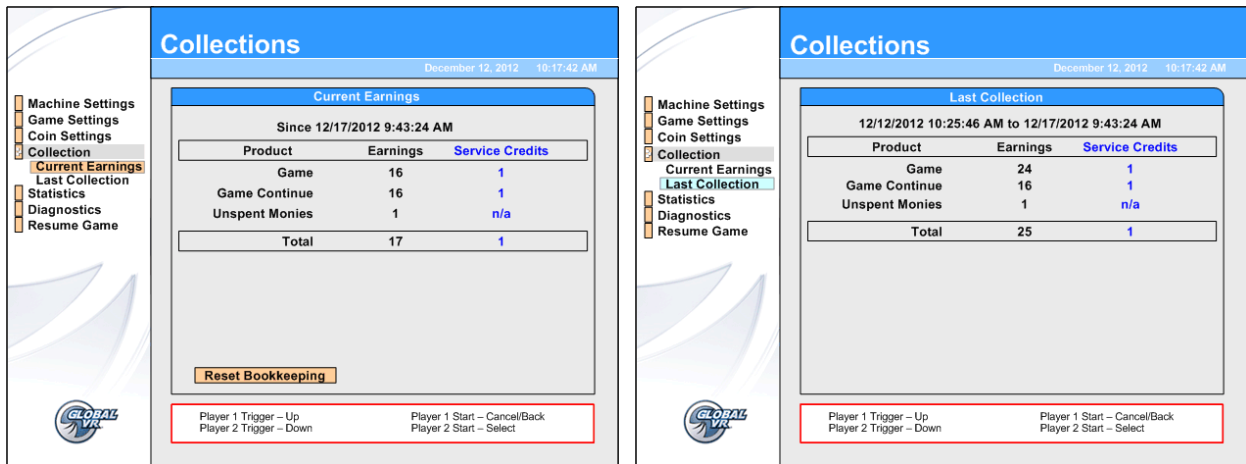


Figure 24. Collections Screens

## Statistics Screens

The Statistics screens allow the operator to view the gameplay statistics collected by the cabinet. The lifetime totals are never reset unless the operating system is restored using the System Recovery Disk. To reset the current Total for any screen, use the **Game Settings: Game Resets** menu described on page 21.

**Note:** Running the System Recovery Disk clears all statistics.

Statistics	
December 12, 2012 10:17:42 AM	
<b>Machine</b>	
Lifetime Earnings:	120
Lifetime Avg. Weekly Earnings:	n/a
Lifetime Duration:	Since December 12, 2012
Lifetime Time in Play:	14:00:25
Lifetime Average Play Time:	3 minutes 2 seconds
Time in Play:	12:00:25
Average Play Time:	2 minutes 59 seconds
Lowest Play Time:	0 minutes 32 seconds
Longest Play Time:	3 minutes 16 seconds
Average Buy-In Time (seconds):	287.91204986452098
Up Time:	2 days 12:15:35
Player 1 Trigger - Up Player 2 Trigger - Down Player 1 Start - Cancel/Back Player 2 Start - Select	

**Statistics: Machine** displays general statistics about the cabinet.

**Lifetime Earnings** — total earnings for cabinet.

**Lifetime Avg. Weekly Earnings** — earnings per week averaged over cabinet lifetime.

**Lifetime Duration** — the date the operating system was installed. This is updated if you run the System Recovery Disk.

**Lifetime Time in Play** — total time the cabinet has spent being played.

**Lifetime Average Play Time** — lifetime average length of a game.

**Time in Play** — total time the cabinet has spent being played since the last reset.

**Average Play Time** — average length of a game since the last reset.

**Lowest Play Time** — shortest game ever played since the last reset.

**Longest Play Time** — longest game ever played since the last reset.

**Average Buy-In Time** — The average play time per coin-up.

**Up Time** — total time the cabinet has been turned on since the last reset.

# Statistics

December 12, 2012 10:17:42 AM

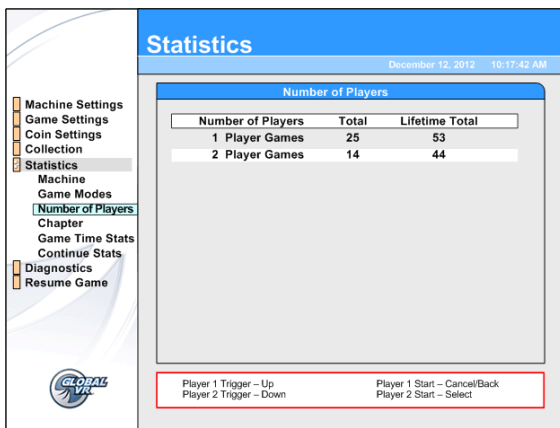
## Game Modes

Game Mode	Paid Games	Free Play	Total	Lifetime Total
Game Start	32	64	231	324
Game Continue	14	38	65	98

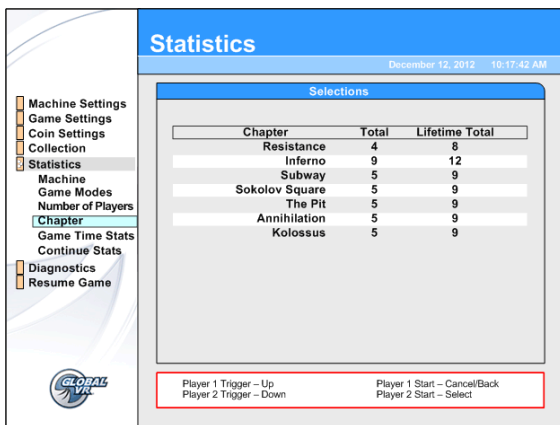
Player 1 Trigger - Up  
Player 2 Trigger - Down

Player 1 Start - Cancel/Back  
Player 2 Start - Select

**Statistics: Game Modes** displays the total number of games played and games continued. Shows Total for the current period, and Lifetime Total.



**Statistics: Number of Players** displays games played by the number of players per game. Shows Total for the current period, and Lifetime Total.



**Statistics: Chapter** displays the number of games played in each chapter for the current period, and Lifetime Total.



**Statistics: Game Time Stats** displays a graph showing how long the games last. For example, in the graph at the left, 42 games lasted over 2 minutes, but less than 2 minutes and 20 seconds. Only 1 game lasted less than 1 minute and 20 seconds.

Press a **START** button to exit this screen.



**Statistics: Continued Game Stats** displays a graph showing how many times players Continued after a game ended. For example, in the graph at the left, 18 players continued once, and 8 players continued twice.

Press a **START** button to exit this screen.

## Diagnostics: Gun Calibration Screen

The Gun Calibration screen lets you calibrate the guns, swap the left and right guns, or swap the X or Y axis of either gun.

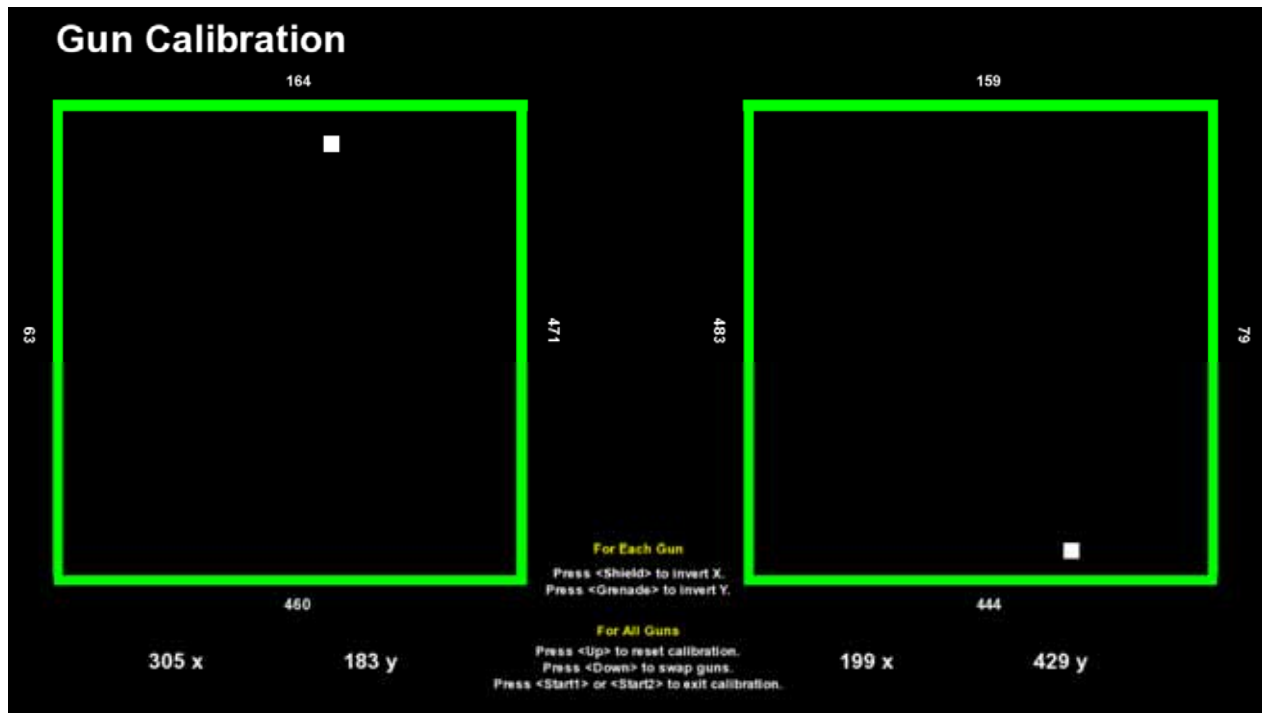


Figure 25. Gun Calibration Screen

The Gun Calibration screen has two large squares, one to represent the screen position of each gun (the squares do not correspond to the screen aspect ratio). When you move a gun, the small block inside the corresponding square will move with the motion of the gun.

The numbers on the sides of the squares show the pot value for the gun at its farthest position in that direction.

The numbers below each square show the pot value for the current position of the gun on the X and Y axis. These numbers should change as you move the gun.

Squeezing a trigger with this screen displayed will fire the gun recoil solenoid.

- **Calibrating the Guns:** Press the Operator **Up** button to reset the calibration. The sides of the Gun 1 and Gun 2 squares will turn red. Move each gun to the farthest point on each axis and the corresponding side of the square will turn green to indicate the gun is calibrated on that axis.
- **Swap Guns:** If the software sees Gun 1 as Gun 2 and vice versa, press the Operator **Down** button to swap the guns.
- **Invert Gun X or Y Axis:** If the X or Y axis for a gun is inverted in the software, the gun will appear to move the wrong direction. For example, if the X axis is inverted, the small block on the screen will move up when you move the gun down.

**To invert the X axis** (side-to-side), press the **Shield** (rectangular) button on the gun.

**To invert the Y axis** (up and down), press the **Grenade** (round) button on the gun.

## Diagnostics: Play Control Test

The Play Control Test menu lets you test the player controls, operator buttons, and coin mechs, as described below. See the *Troubleshooting*, and *Service and Repair* sections of this manual for help fixing problems.

Press both **START** buttons together to exit from this menu.



Figure 26. Play Control Test Menu

- **Testing Buttons and Triggers:** When you press a button on the control panel, gun, or Operator panel, its picture should highlight on the screen. The dot next to each button should be yellow until the button is pressed, and stay green after it is pressed. A red dot means the button is stuck in the ON position.
- **Test Gun LED Display:** Press the **START** button and the gun **Shield** (rectangular) button together to cycle the LED display on the gun.
- **Testing Coin Mechs:** When you activate a coin mech, its name (Coin 1 or Coin 2) should turn from white to green, and the number should increment to indicate the number of credits inserted. If the name of the mech stays green, this indicates it is stuck in the ON position. (**Note:** Typically, Coin 1 is used for both coin mechs, and Coin 2 is for the optional dollar bill validator.)

**Note:** The picture of the gun is only to illustrate the location of each button; buttons in this picture do not highlight when you press a button.

## Diagnostics: Sound Test

This screen tests the speakers. You will hear "left audio channel" when the left speaker image is highlighted onscreen, "right audio channel" when the right speaker image is highlighted, and a low rumbling sound when the center speaker/subwoofer is highlighted.

If there are audio problems, check the connections to the speakers, audio amp on the GVRI/O mini PCB, and PC. Also inspect the speakers for any physical damage. Please see *Audio System Service* on page 35 for more information.

**Note:** The center speaker is jumpered to the left and right speakers, so you should hear both the left and right audio channels from the center speaker, and the center speaker sound from the left and right speakers as well.

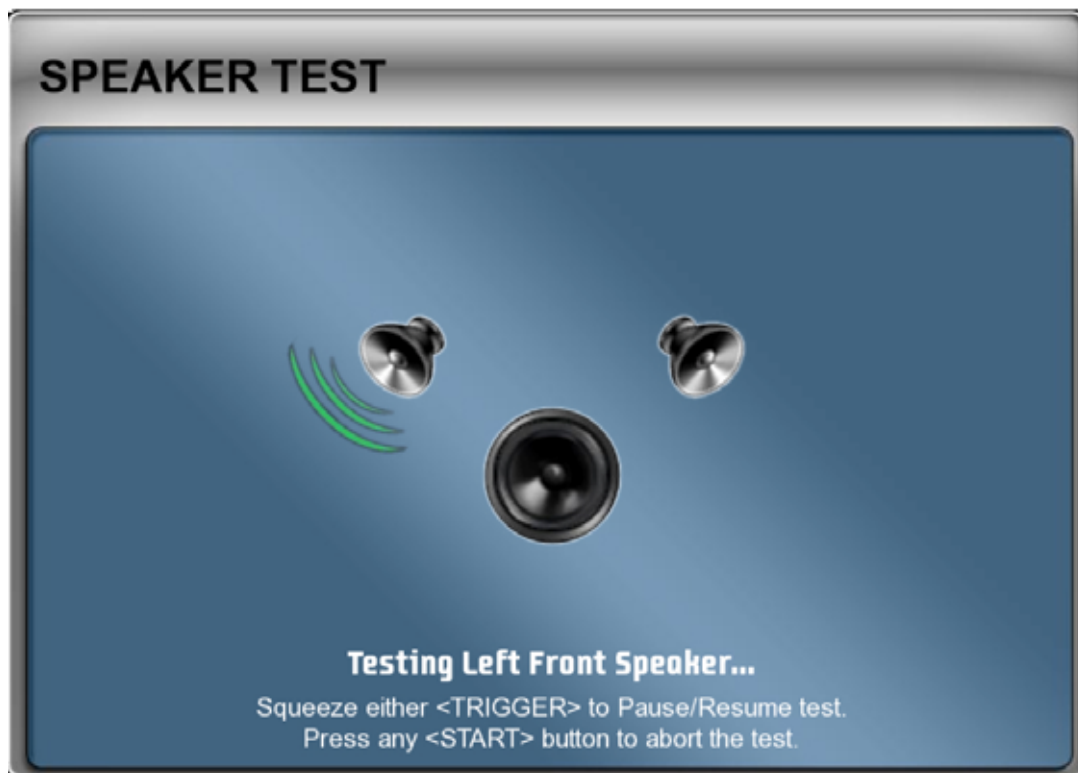


Figure 27. Sound Test Screen

## Diagnostics: Monitor Test Screens

The game has various screens to assist you with fine tuning the monitor.

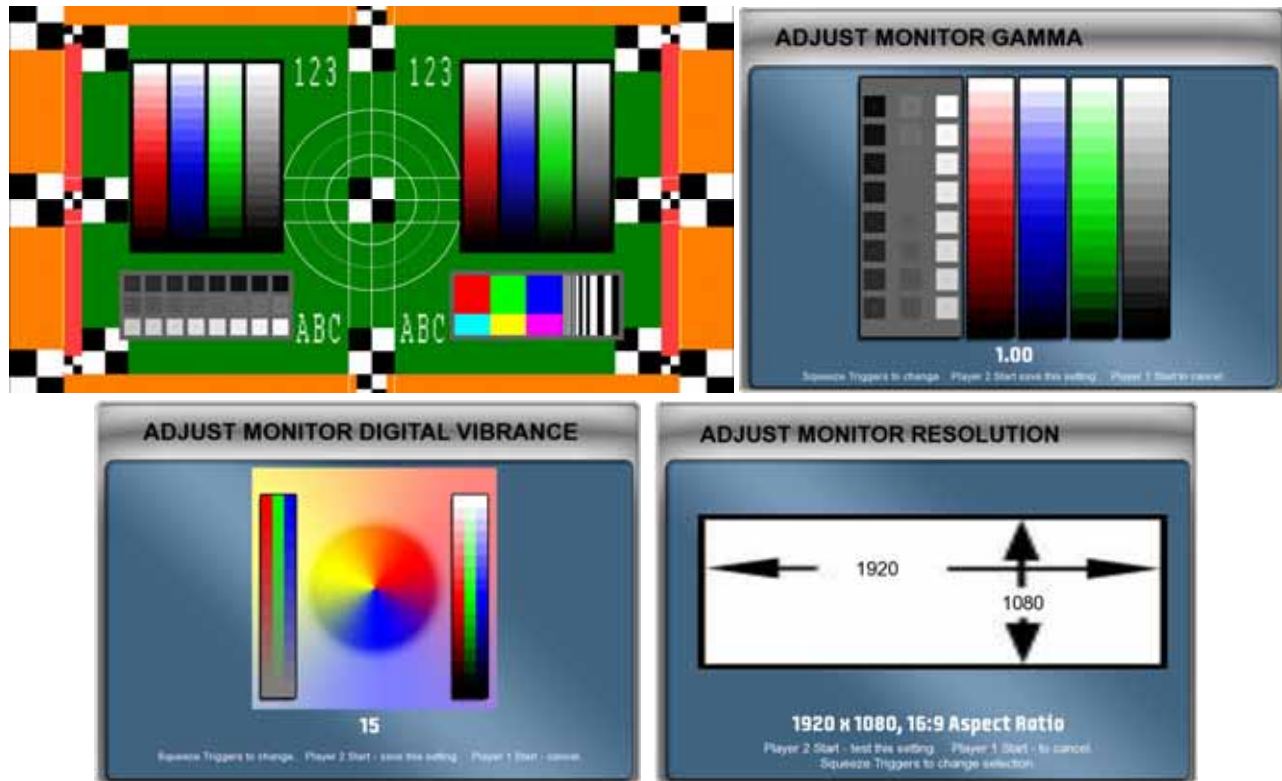


Figure 28. Monitor Test and Adjustment Screens

- **Monitor Test:** When you select this menu item, it opens a series of screens designed to help you check monitor color and geometric alignment. Squeeze a trigger to open the next screen. Press a **START** button to exit back to the main menu.
- **Monitor Gamma:** This screen lets you adjust the overall screen brightness. Squeeze a trigger to change the gamma value. To exit without making changes, press **Player 1 START**. To exit and keep the new setting, press **Player 2 START**.
- **Monitor Vibrance:** This screen lets you adjust the overall vividness, or saturation, of the colors. Squeeze a trigger to change the vibrance level. To exit without making changes, press **Player 1 START**. To exit and keep the new setting, press **Player 2 START**.
- **Adjust Monitor Resolution:** This screen lets you change the monitor resolution. This feature is provided to enhance compatibility with a variety of monitors. In most cases, the software detects and sets up the optimal monitor resolution automatically. (Setting a different resolution may adversely affect performance.)

If you see a message that says "Unsupported Monitor" you will need to set the resolution manually.

**Squeeze a trigger to select a different resolution.** Press **Player 2 START** to test the new setting. Press **Player 1 START** to exit without changing the resolution.

**Important:** For 3D Operation, use a monitor approved by GLOBAL VR or results may not be acceptable.



## Diagnostics: GVR 3D Test

This screen lets you test the 3D performance.

When you put on 3D glasses, your right eye should see a blue box (as shown below) and your left eye should see a red box. If the boxes are reversed, pull a gun trigger to swap the left and right eyes.

Press the **3D** button on the control panel to turn 3D on or off.

Press a **START** button to exit this screen.

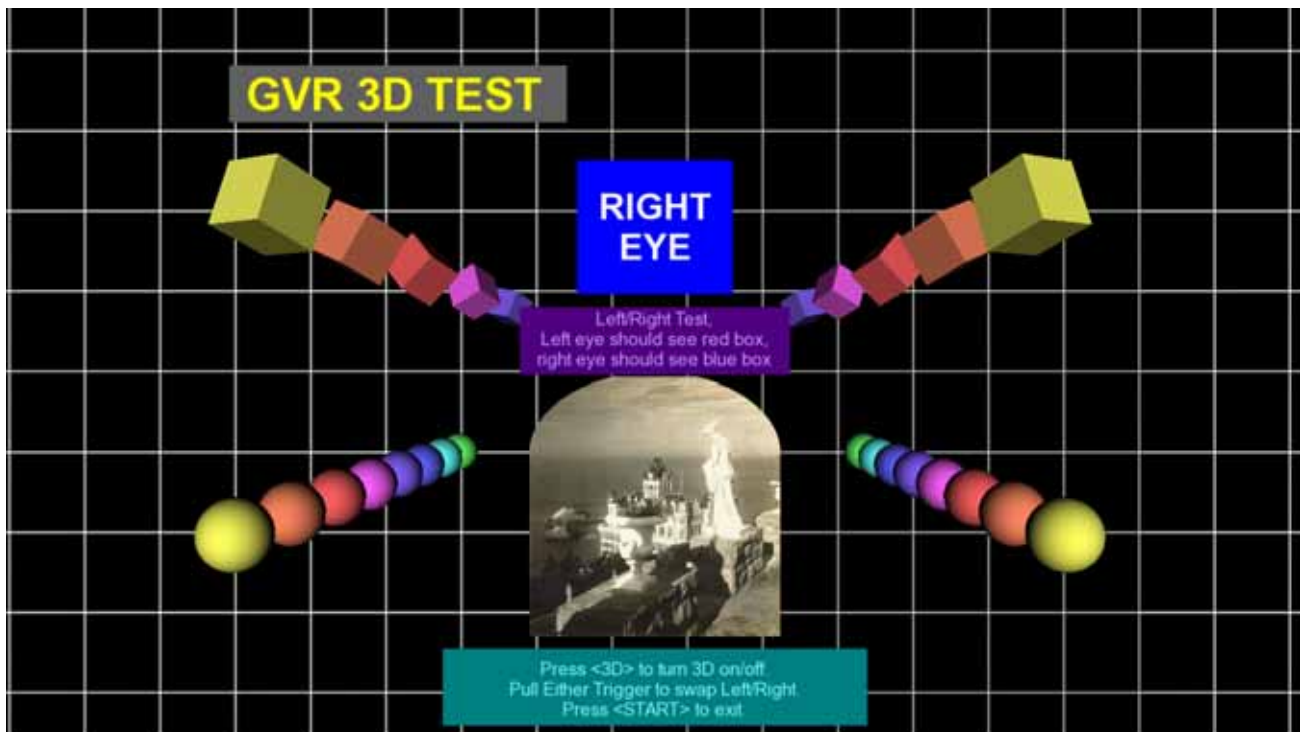
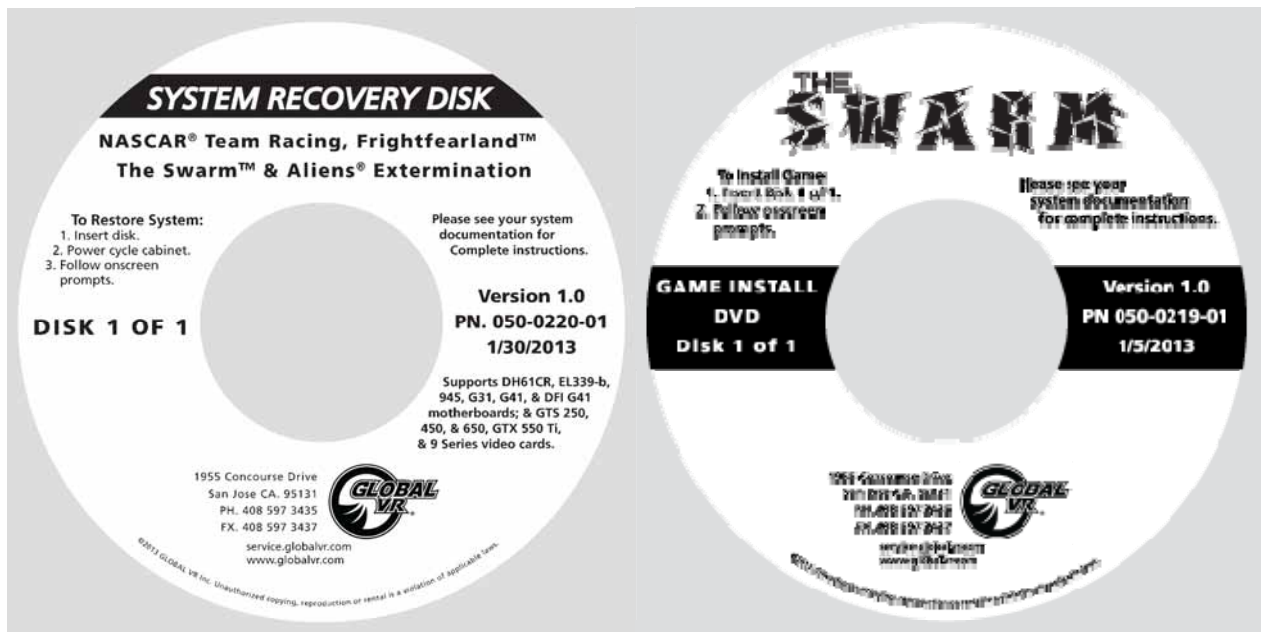


Figure 29. GVR 3D Test Screen



## Chapter 5 — Software Restoration



Follow the instructions below if you need to re-install software on your cabinet.  
Typical installation time is about 20 – 25 minutes.

**Important:** When you use the System Recovery Disk you will erase ALL game settings and statistics, including earnings. It is advisable to contact Technical Support before using the System Recovery Disk to resolve a problem.

### Run the System Recovery Disk

1. With the cabinet powered ON, open the DVD-ROM drive and insert the DVD labeled **System Recovery Disk**. Power the cabinet OFF and then ON. The computer will boot from the DVD, and you will see the installer screen on the monitor.
2. After about 5 minutes, when you are prompted, remove the DVD and turn the cabinet OFF and then ON. (**Do not** insert the Game Install Disk yet!)
3. When the computer reboots, you will see the GLOBAL VR logo followed by a series of processing screens. After a few minutes the computer will reboot again and then finalize the OS installation. After about 5 minutes the DVD-ROM drive will open and you will be prompted to Insert Game Disk 1. Proceed to *Run the Game Install Disk*.

### Run the Game Install Disk

1. Insert the DVD labeled **Game Install Disk 1 of 1**. The computer will read the DVD automatically (do not reboot). You will see the messages onscreen as the software installs files and the database. After about 10 minutes the computer will reboot.

**Note:** If you do not have a 3D monitor, you will see two images onscreen (split screen) until you change the 3D setting in the Operator Menu after the software installation completes.

2. The computer takes about 2 minutes to boot, and then you will see a screen saying "There is a CD in the Drive." Remove the disk and press a **START** button.

3. The Gun Calibration Screen will appear next. Move each gun to the farthest point on each axis and the corresponding side of the square will turn green to indicate the gun is calibrated on that axis. (See *Diagnostics: Gun Calibration Screen* on page 28 for more information.)  
If necessary, press the Shield or Grenade button to invert the X or Y axis of a gun. If the software sees Gun 1 as Gun 2 and vice versa, press the Operator **Down** button to swap the guns. Press either **START** button to exit from the calibration screen.
4. The Attract Movie will now start. If you are using a 2D monitor, open **Machine Settings: Settings** in the Operator Menu and set **3D Display** to **Disabled**.
5. Play a game and use both guns to verify proper operation. (Press the **SERVICE/SELECT** button in Attract Mode to insert Service Credits for testing the game.)
6. Use the Operator Menus to change settings as desired (see Chapter 4 for detailed information on using the Operator Menus).

## Chapter 6 — Service and Repair

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**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.

---



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

---

### Setup Instructions for Panasonic 3D TV

**Note:** These instructions are specific to Panasonic TV Model No. **TC-L47ET5**.

If you are experiencing a problem with the TV, GLOBAL VR recommends resetting the TV to factory defaults and then re-entering all of the settings as described in this section.

Use the remote control and follow the steps below. General instructions for navigating the menus with the remote control are as follows:

- Use the  $\Delta \nabla$  buttons on the remote control to highlight an item in a menu.
- Use the  $\triangleleft \triangleright$  buttons to change the setting for the highlighted item.
- Press the **OK** button to open a submenu or save a setting.
- Press the **Return** button to exit from a menu or submenu.

**Note:** Highlighted items are **Yellow** on the menu screens.

1. Before setting up the monitor, the System Computer must be in 1080p and 3D Mode. Press the **Test/Back** button on the Operator Button Panel inside the coin door and confirm or set the following in the Operator Menu:
  - In **Machine Settings: Settings** set **3D Display** to **Enable**
  - In **Diagnostics: Monitor Resolution** set resolution to **1920 x 1080**
2. Press the **MENU** button on the remote control to open the Main menu.
3. Highlight **Setup** in the Main menu and press **OK** to open the Setup menu.
4. Use the  $\nabla$  button to scroll down to **Reset to defaults** (it is off-screen when you open the menu) and press **OK**. You will be prompted to create a password. (This is a temporary password that will not be saved by the TV.) Enter a simple 4-digit password (such as 1-1-1-1) with the remote control keys and press **OK**. Enter the password again in the confirmation screen and press **OK**.
5. When you see the **Reset to Defaults** prompt, highlight **Yes** and press **OK**.

6. After you reset the defaults, the following Setup Screens will appear. On each screen, select the setting described below and press **OK** to go to the next screen. To go back a screen, press the **Return** button.

Screen	Setting
Select your language.	English
Select Country where this TV is being used.	U.S.A. (Set this even if located elsewhere.)
Select your viewing environment.	Home Use
Do you use a cable, satellite, or fiber optic box with this TV?	Yes
Which wiring method is used to connect your box to the TV?	AV IN
What is connected to HDMI 1?	Leave all entries on this screen blank. Use the ▽ key to highlight <b>Next</b> and press <b>OK</b>
Network Settings	Set Later
Set clock	Use the ▽ key to highlight <b>Next</b> and press <b>OK</b> . (The game does not use TV date and time settings.)

7. When you see the **Setup is complete** message, press **OK** to exit.
8. Press the **3D** button the remote control to put the TV in 3D mode. Read the 3D warning message. Where it says, "Would you like to display this message again later?" Highlight **No** and press **OK**.
9. Press the **MENU** button on the remote control to open the Main menu again.  
**Note:** The picture must be set to 3D before doing step 10.
10. Highlight **Picture** in the Main menu and press **OK**. Use the ▽ button to scroll down to **Aspect adjustments** (it is off-screen when you open the menu) and press **OK**. Do the following steps in the Aspect Adjustments menu:
- Use the ◀ ▶ buttons to set **Screen Format** to **FULL**.
  - Use the ◀ ▶ buttons to set HD Size to Size 2 (**Note:** The TV will hide the menu when you highlight this setting so you can see how your selection looks. If you do not set Size 2 the Insert Coins message will be off-screen).
  - Press **Return** to go back to the Picture menu.
11. Highlight **Picture mode** in the Picture menu and use the ◀ ▶ buttons to set it to **Vivid**.
12. Press **Return** to go back to the Main menu.
13. Highlight **Setup** in the Main menu and press **OK** to open the Setup menu.
14. Highlight **3D Settings** in the Setup menu and press **OK**. Do the following steps in the 3D Settings menu:
- Use the ◀ ▶ buttons to set **Auto Detect 3D** to **Auto 2**.
  - Use the ◀ ▶ buttons to set **3D Signal Notification** to **Off**.
  - Press **Return** to go back to the Setup menu.

15. Use the  $\nabla$  button to scroll down to **Advanced setup** (it is off-screen when you open the menu) in the Setup menu and press **OK**. Do the following steps in the Advanced Setup menu.
  - Use the  $\triangleleft \triangleright$  buttons to set **Auto power on** to **Yes**.
  - Use the  $\triangleleft \triangleright$  buttons to set **VIERA Connect Banner** to **Off**.
16. TV Setup is now complete. Press the **EXIT** button on the remote to close the menu.

## Audio System Service

The Audio Amp is part of the GVRI/O Mini PCB. The Audio In connector is labeled **J3**, and the Speaker connector is labeled **J4**. See Figure 38 on page 45 for an illustration of the PCB. The center speaker is jumpered to the left and right channels as shown below.

If you need to replace the GVRI/O Mini PCB, see page 44.

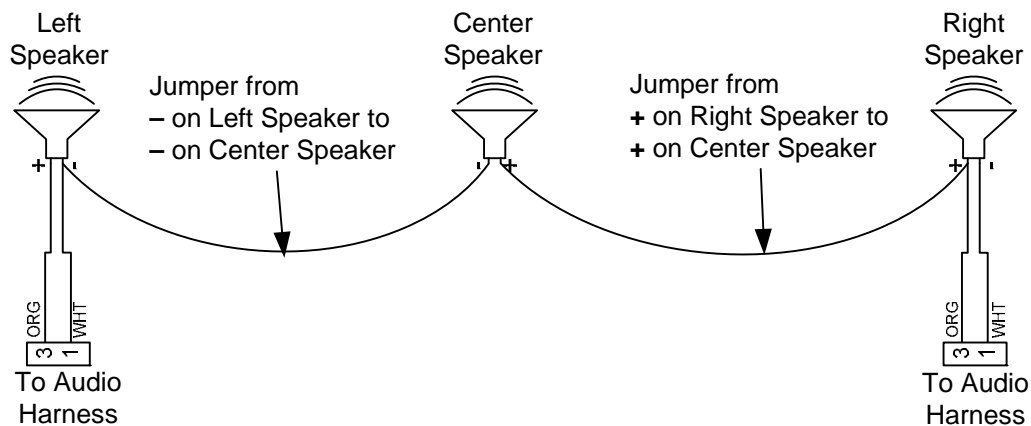


Figure 30. Audio Speaker Connections

## Speaker Replacement

All three speakers are located behind metal grills. Do the following to replace a speaker:

1. Remove the four (4) Torx<sup>®</sup> security screws that secure the speaker grill to the cabinet.
2. Remove the four (4) screws that secure the speaker to the cabinet.
3. Remove the wires from the speaker and install them to the same connectors on the new speaker.
4. Reverse these steps to re-install the speaker.
5. Run the **Sound Test** from **System Tests** in the Operator Menu to verify proper operation.

## Gun Service



**Disconnect the cabinet from AC power before servicing guns. Hot-plugging any connector may damage the gun PCB and/or GVRI/O Mini PCB.**

The subsections that follow describe steps for testing and replacing the gun components.

The gun body contains micro switches for the trigger and the two buttons, and a coil and plunger assembly that creates the force-feedback recoil effect when the gun is fired. To service these parts, you need to open the gun case. See Figure 32 for a view of the open gun assembly.

The base of the gun contains pots that relay the gun position to the computer. If the gun position is not being read properly, refer to the gun pot service steps on page 42. You **do not** need to open the gun case to test or replace the pots.

## Gun Power Harness and Fuses



### CAUTION

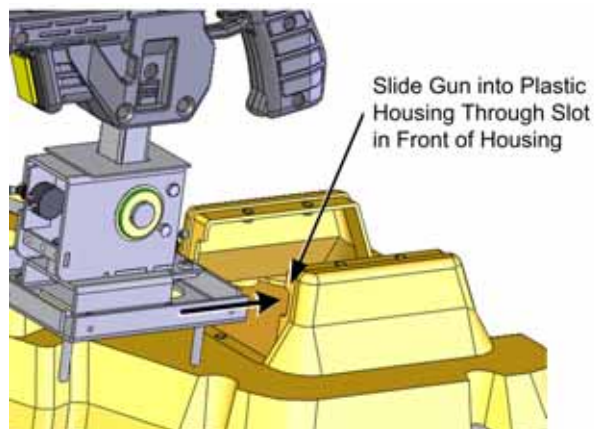
**Turn off the cabinet AC power before replacing a fuse or you may damage the PCBs.**

The gun power harness carries +12 VDC for the lights in the guns, and +24 VDC for the gun recoil. There is a fuse on the 24 VDC wire to each gun. If recoil is not working on a gun, check the fuse and replace if necessary. Replace with a MDL 2.5A Slo Blo fuse (part #: BK/MDL-2-1/2).

## Gun Replacement

Do the following to remove and replace a gun:

1. Turn off the cabinet and disconnect the AC power cord.
2. Remove gun base and control base covers.
3. Disconnect the gun power harness from the 3-pin Molex connector.
4. Disconnect the gun USB cable from the USB extension cable.
5. Remove the Kep nut from the ground stud on the gun base plate and disconnect the cabinet earth-ground wire.
6. Remove the four (4) Kep nuts and flat washers from the gun mounting posts below the control panel base.
7. Lift the gun and slide it out of the slot in the plastic housing, toward the monitor.
8. Reverse these steps to install a gun. Secure the cabinet earth-ground wire with the gun ground wire to the ground lug on the gun base plate using the #8-32 Kep nut.



## Opening the Gun Case

**Note:** If you wish, you can leave the gun on the cabinet while opening the case and servicing internal components.

Open the gun case to service the trigger, buttons, and coil assembly. You **do not** need to open the case to service the pots that aim the gun (see page 42). See Figure 32 for a view of the open gun assembly.

1. Turn off the cabinet and disconnect the AC Power Cord.
2. To open the gun case, first remove the 12 Torx security screws shown by the single arrows in the picture below, and remove the corresponding nuts from the other side of the gun.
3. Remove the four screws shown by the double arrows in the picture below. These screw into the frame, so there are no nuts to remove.
4. Carefully remove the left side cover from the gun, being careful not to pull the wires from the round red button on the cover. The wires are long enough that you can set the cover on the control panel near the gun without disconnecting the wires if the gun is still on the cabinet.



Figure 31. Gun Case Screws



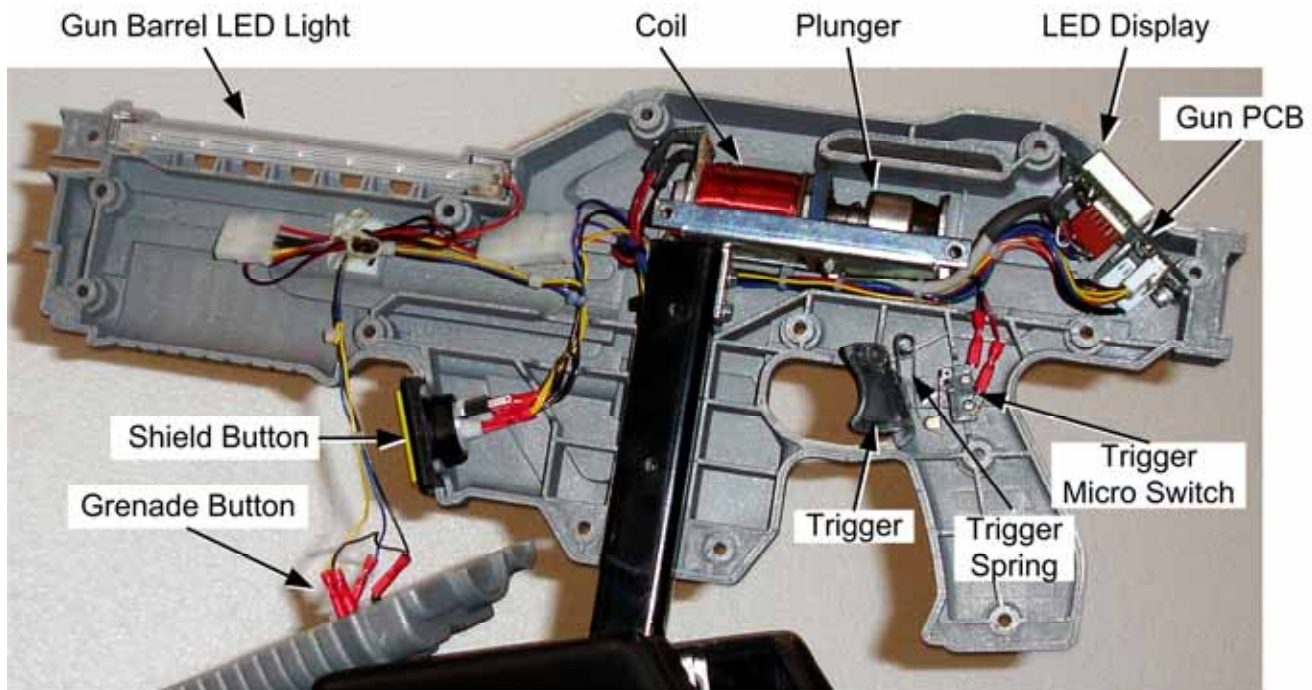


Figure 32. Gun Internal Parts

### Closing the Gun Case

1. To close the gun case, first align the slots that fit around the gun PCB (the small PCB with the LED display shown in Figure 37), and then carefully put the two halves together. Make sure no wires or components get caught or pinched. Pay special attention to the area around the trigger and spring, the wires coming out of the frame shaft, and the wires attached to the coil and gun barrel LED light.
2. Insert the four (4) 3/8" x #10-32 screws shown with the double arrows in Figure 31. Partially tighten all four screws, verify the case is mating properly, and then tighten the screws snugly.
3. Check the trigger to make sure it works properly. The trigger or spring could shift while you are assembling the case.
4. Replace the remaining #8-32 screws and nuts, shown by the single arrows above, and tighten snugly. The screw at the top of the muzzle end is 3/4" long, and the two screws in the handle are 1" long, as shown above. All of the other screws are 1 1/4" long.

### Gun Trigger Service

To replace the trigger spring, open the gun case as described on page 39, and refer to Figure 33 for the placement of the spring in the gun housing.

Install the plastic trigger so it presses against the spring, and the bottom part of the trigger will press the switch actuator when a player pulls the trigger.

To replace the micro switch, remove the two screws that secure the switch in place. Remove the two wires and install them on the same terminals on the replacement switch.

Be sure to connect the signal wire to the **NO** connector (middle connector) and the black ground wire to the **C** connector, as shown in Figure 33.



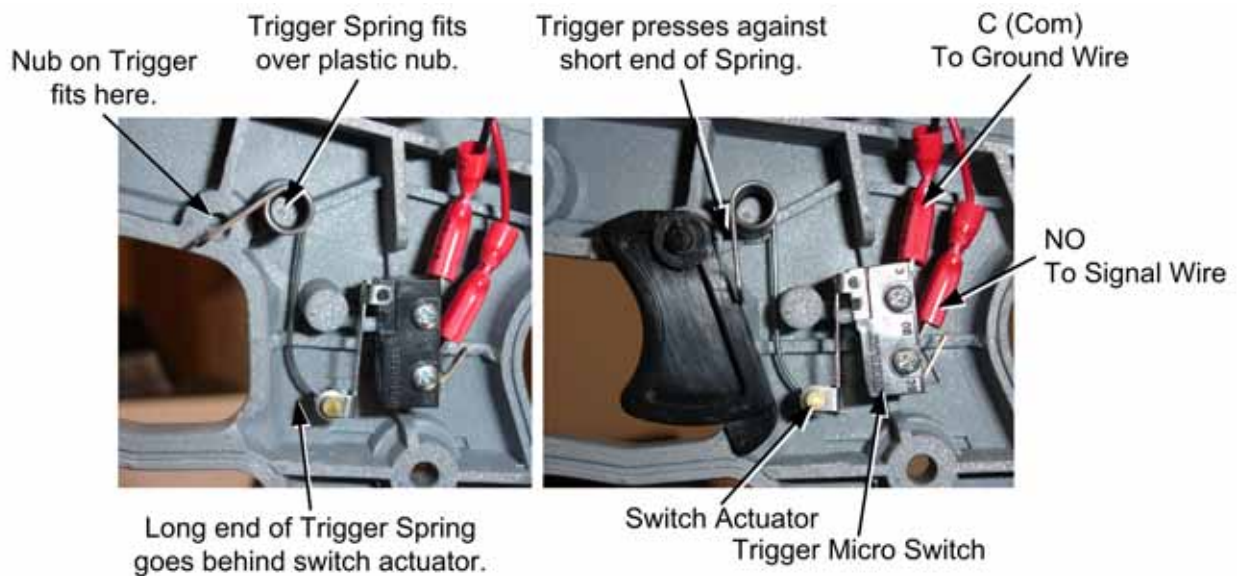


Figure 33. Gun Trigger Assembly

### Gun Button Service

If you replace a button micro switch, be sure to connect the signal wire to the **NO** connector (middle connector) and the black ground wire to the **C** connector. If you connect the wires differently the button will not work. The button lights are powered by +12 VDC from the gun power harness.

To replace the light bulb, pull the lamp assembly straight out of the button housing, and then pull the bulb straight out of the lamp housing. The two lamp wires are interchangeable and can connect to either terminal on the lamp housing.

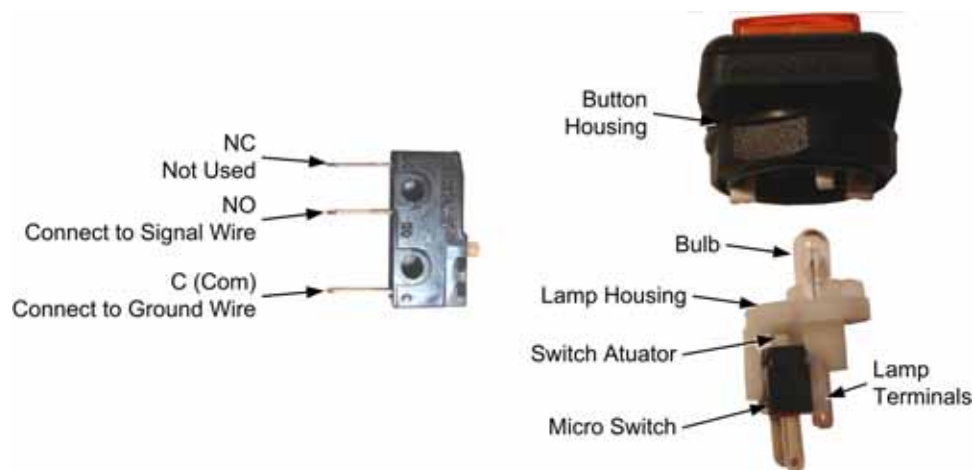


Figure 34. Gun Button, Lamp, and Micro Switch

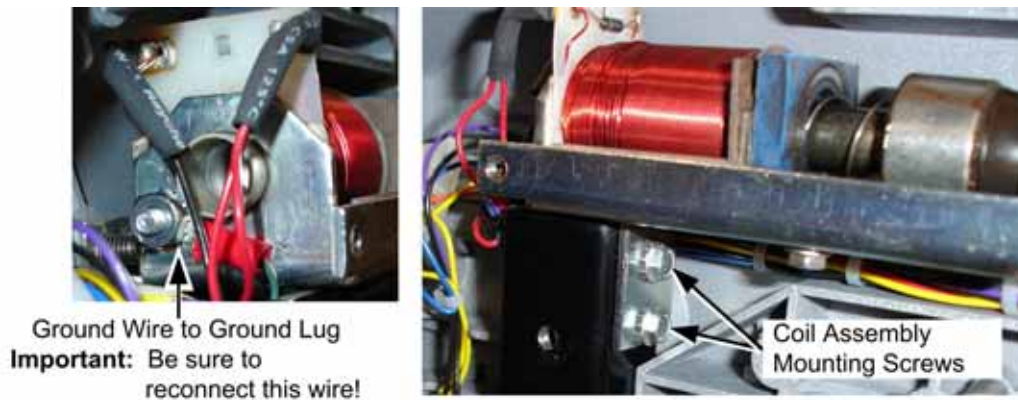
## Gun Coil Assembly Service

The coil assembly provides the force-feedback recoil when the gun is fired. Perform the following steps to replace components of the coil assembly:

1. Open the gun case as described on page 38.
2. Remove the two screws shown below from the right side of the gun.



3. Remove the nut that secures the ground wire to the ground lug on the side of the coil assembly mounting plate, as shown below.
4. Remove the two screws that secure the coil assembly mounting plate to the gun shaft, as shown below.



*Figure 35. Gun Coil Assembly Service*

5. Reverse these steps to re-install the coil assembly. Be sure to secure the ground wire to the ground lug on the coil assembly mounting plate.

## Gun Pot and Gear Service

Each gun has two 5K $\Omega$  pots that measure the movement of the gun on the X-axis (left and right) and Y-axis (up and down). The X-axis pot is located under the gun base below the trigger. The Y-axis pot is located on the side of the gun base.

Open **Calibrate Guns** from **Diagnostics** in the Operator menu (see page 28) to test gun motion. The numbers displayed below each square on the screen show the pot value for the current position of the corresponding gun on the X and Y axis. When you move the gun, you should see a steady linear increase or decrease in the numbers displayed, with no jumps.

If a gun is not installed on a cabinet, you can test a pot by checking resistance with a meter as you move the gun.

Refer to Figure 36 for gun base components, and perform the following steps to replace a pot or gear shaft:

1. Remove the six (6) Torx security screws that secure the front and rear metal covers over the gun base, and remove the covers.
2. Remove the two mounting nuts and the metal mounting plate with the pot or gear to be replaced.
3. Use an Allen wrench to loosen the set screw from the gear shaft, and remove the gear shaft from the mounting plate. Replace gear if it is worn or cracked.
4. Using a 1/2" wrench, remove the nut and lock washer that secure the pot to the mounting plate.
5. De-solder the wires from the pot and solder them to the same terminals on the replacement pot.
6. Install the new 5K $\Omega$  pot with the same orientation. Make sure that the plastic keys on the pot mate properly with the metal.
7. Re-install the lock washer and nut, being careful not to over-tighten.
8. Re-install the gear shaft and tighten the set screw.
9. Calibrate the gun using **Calibrate Guns** from **Diagnostics** in the Operator menu (see page 28) after servicing a gun.

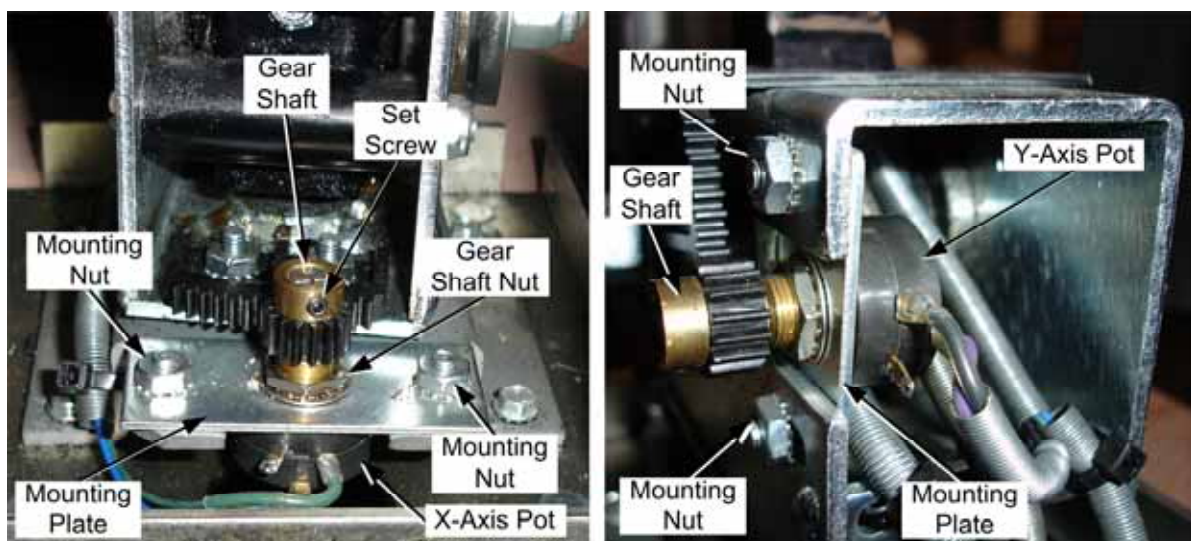


Figure 36. Gun Pot Replacement

## The Gun PCB

The Gun PCB routes all signals within the gun, and between the gun and the system computer. It also has an LED display. Each connector on the Gun PCB is keyed to fit only to the correct harness connector. Refer to Figure 37 to locate the connectors on the PCB (layout varies depending on PCB version). See Figure 51 on page 67 for detailed gun wiring information.

To replace the PCB, open the gun case as described on page 38. Slide the PCB out of the case and disconnect all connectors. Replace PCB version 1.x with version 1.8; replace PCB version 5.01 only with version 5.01 or later.



**Disconnect the cabinet from AC power before making any connections to the Gun PCB. Hot-plugging any connector will damage the PCB.**

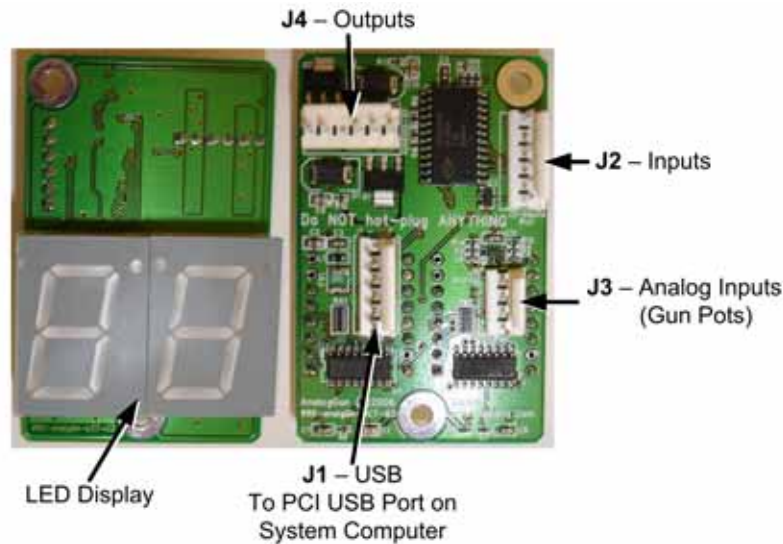


Figure 37. Gun PCB, Version 5.01

## The GVRI/O Mini PCB

The GVRI/O Mini PCB relays the signals between the system computer and game components. It also contains the Audio Amp. Each connector on the PCB is keyed to fit only to the correct harness connector.

The PCB must be programmed with the correct firmware. The firmware version is displayed in the Operator Menu under System Information.

The Swarm, Frightfearland, Paradise Lost, and Aliens® Extermination use the same firmware, so PCBs can be swapped between these games. PCBs used in other games are not compatible with The Swarm. (For PCB versions 00 and 01, place a jumper across pins 4 & 5 of J5 – Mode Select. For versions 02 and 04 place a jumper at position 2 as shown in Figure 38.)

**Note:** Some older PCBs do not have an Audio Amp.

Check the Hardware Reference page on <http://service.globalvr.com> for detailed information on the various PCB versions.

See the figure below to identify the PCB connectors. See Figure 50 on page 66 for detailed wiring information. (Layout varies for other PCB versions.)



**CAUTION**

**Disconnect the cabinet from AC power before making any connections to the PCB or you may damage the PCB.**



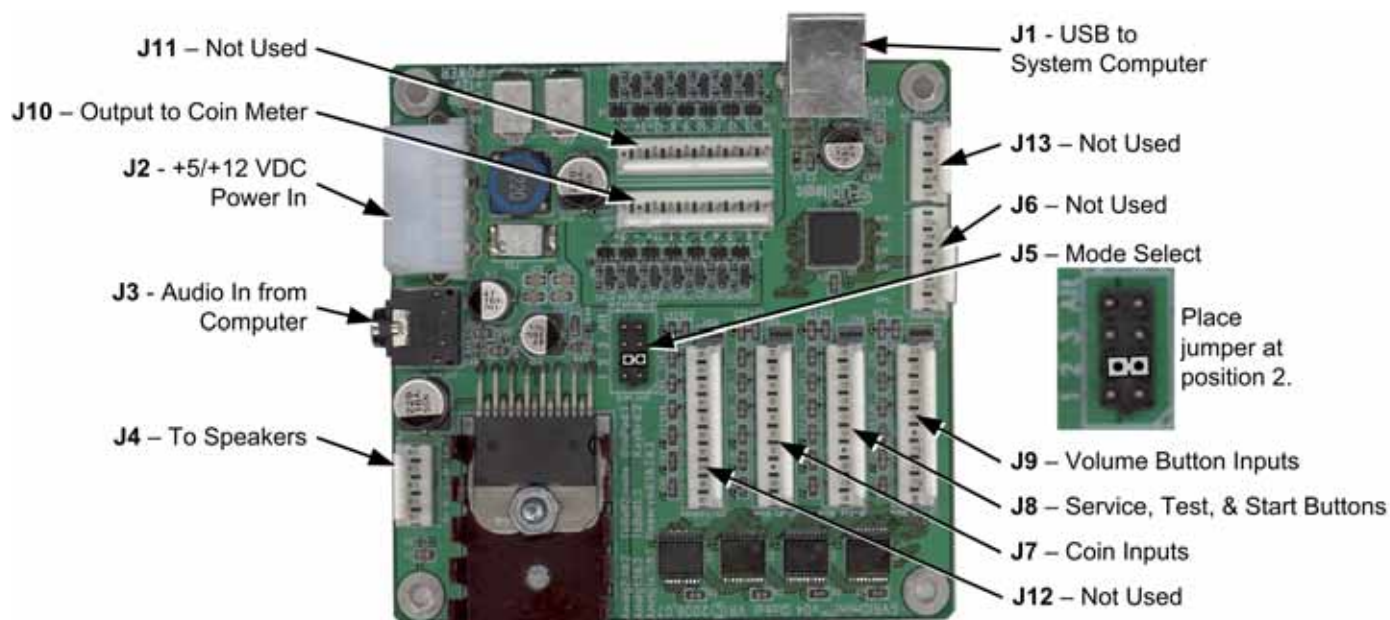


Figure 38. GVRI/O Mini PCB, Version 04

## Start or 3D Button Service

The Start and 3D buttons are illuminated with 12-volt lamps. Refer to Figure 39 and perform the following steps to replace the buttons, lamps, and micro switches:

1. Disconnect the cabinet from AC power.
2. Open the coin door and reach up under the control panel 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 housing, gently turn the white plastic housing counterclockwise a small amount to pop it out of the button housing.
5. To remove the button and housing from the control panel, unscrew the retaining ring from under the control panel.
6. To remove a lamp from the housing for replacement, pull it straight out of the lamp housing.
7. When connecting the wiring to the micro switch and lamp, refer to the labels on the wires and Figure 39 to make sure the connections are correct.



**CAUTION**

**Do not connect the 12-volt lamp power wire to the micro switch.**

**Doing so could damage the GVRI/O Mini PCB.**

8. Reverse these steps to re-install the button components. Connect the 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. **Do not** use the NC connector.

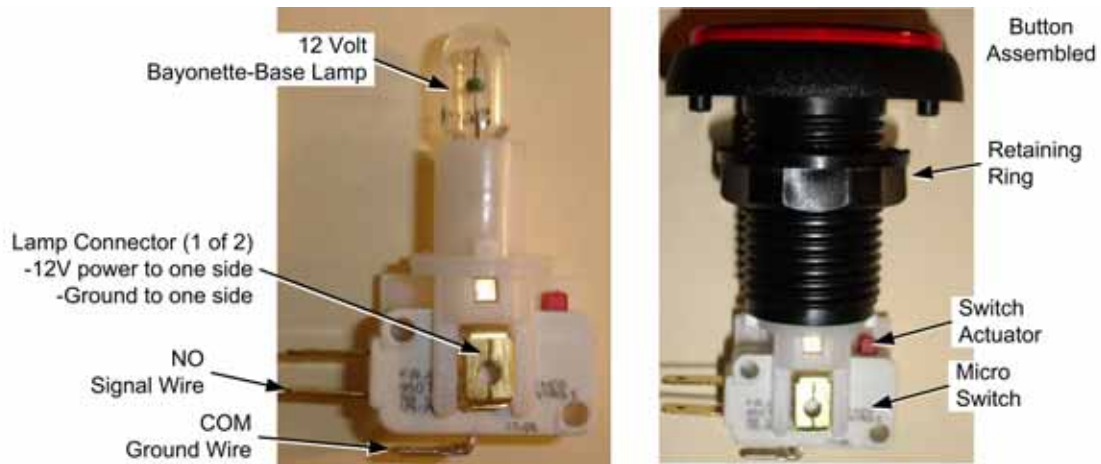


Figure 39. Start Button Assembly

## The IR Emitter Assembly (Optional)

The IR Emitter Assembly allows the software to send remote control signals to the TV. It is used to switch certain TV models to 3D Mode. It also allows for future development with different TV models. The Emitter PCB can connect to either a motherboard or PCI USB port in the System Computer.

### IR Emitter Assembly for The Swarm Cabinets

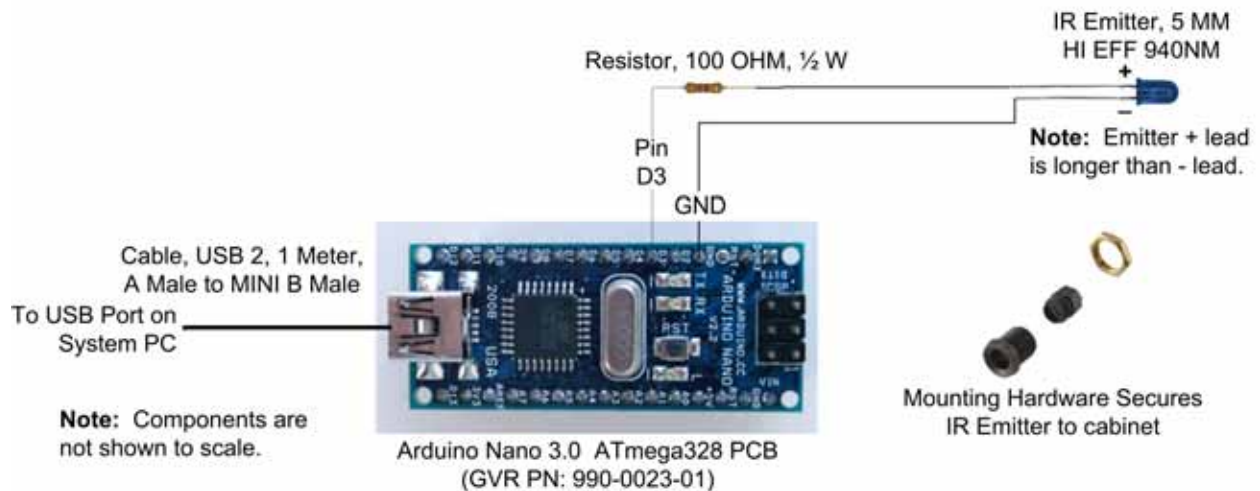


Figure 40. IR Emitter Assembly

## HD Monitor Service

The HD Monitor is a stand-alone TV with an internal power supply. If problems occur with the HD Monitor it must be replaced or returned for service. The monitor has no user-serviceable internal parts. If your game is under warranty, contact your distributor to get an RMA.

**Important:** Replace a 3D monitor only with a 3D monitor approved by GLOBAL VR.



### WARNING

**Three People are required to safely remove and re-install the Monitor, two people to lift and hold the monitor while a third removes or installs the mounting screws.**

The monitor is mounted to the vertical rails on the tubular monitor stand with four screws that attach to the top and bottom rails installed on the back of the monitor (shown in Figure 41). Remove the monitor with the top and bottom rails attached and then remove these two rails from the monitor.

1. Disconnect the power and HDMI video cables from the monitor. (If a cable clip has been installed to secure the power cable in place, carefully pry it off.)
2. Remove the two (2) mounting screws with flat washers that secure the bottom rail to the vertical rails.
3. With two people supporting the monitor, loosen the two (2) screws in the top rail and carefully lift the monitor up enough to slide the screws out of the rail.
4. Remove the screws that secure the top and bottom mounting rails to the monitor and install them on the replacement monitor.
5. Reverse the removal steps to install the new monitor. For detailed instructions, see *Install the Monitor* on page 12.



Figure 41. Top and Bottom Rails and Mounting Screws



## 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.

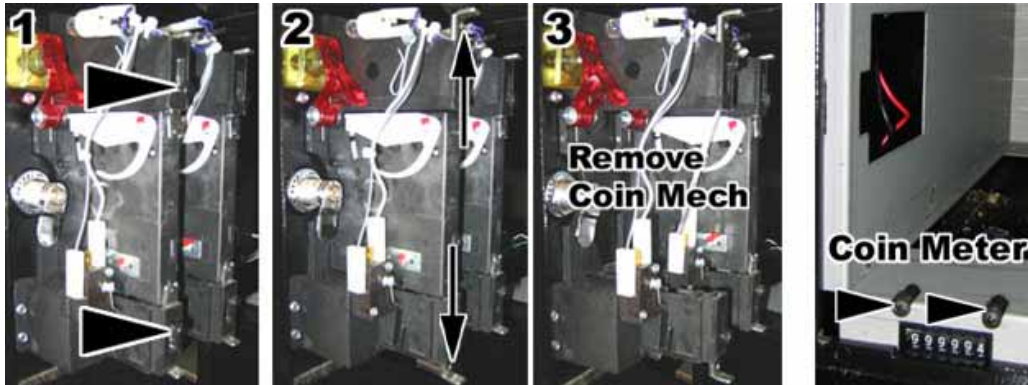


Figure 42. Servicing the Coin Mech and Coin Meter

## Coin Meter Replacement

The coin meter is located in the bottom left-hand corner of the coin vault. It receives the coin count signal through the GVRI/O Mini PCB. Do 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 and strip the ends of the wires to attach the new meter.
4. Use two butt splices or your preferred splicing method to connect the wires to the new coin meter.
5. Secure the new coin meter with the two screws removed previously.

## Power Distribution Service



To avoid electrical shock, unplug the cabinet before servicing the AC Power Plate, Power Strip, DC Power Supplies, or other Power Distribution components.

### AC Power Plate

The AC power plate 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.

AC power from the power plate is connected to a 7-outlet AC power strip/surge suppressor in the cabinet.



The cabinet must be connected to a secure ground to function properly. Ground wires from system components must be securely connected to the ground lug on the power plate, as shown below and in Figure 52 on page 68. Components must not be grounded to the power plate mounting bolts.

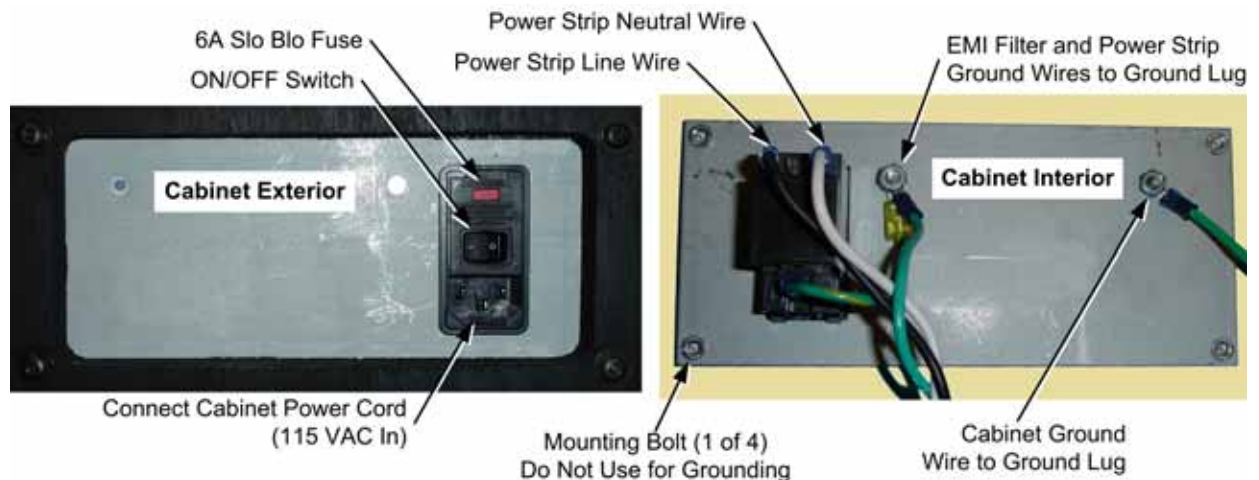


Figure 43. AC Power Plate

### AC Power Strip Replacement

The AC power strip provides power and surge protection to all of the components in the cabinet. If the cabinet has no power, check the 6A Slo Blo fuse in the power plate (see Figure 43 for fuse location) and replace if blown. Also make sure the power strip is turned on. Perform the following steps to replace the power strip:



Be sure to connect each wire to the correct terminal on the AC Power Plate. The ground wire must be securely connected to the ground lug on the power plate or the game will not function properly.

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Disconnect all components from the power strip.

3. Disconnect the power strip wires from the AC power plate terminals shown in Figure 43.
4. Remove the power strip; it is held in place with Velcro® or screw-down cable ties.
5. 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 (see Figure 43 on page 49, and Figure 52 on page 68).

## DC Power Supply Replacement

DC power supplies provide +24-volt power to the gun coils, and +12-volt power to the lighting, PCBs, and other components as applicable.

Most cabinets have a +12/+24-volt power supply and a +5/+12-volt power supply. The +5/+12-volt power supply has a resistor connected to the 5-volt line to keep a small power draw on the line and prevent the power supply from switching off. In some cabinets a single power supply may be used to provide +12 and +24-volt power. Replace a power supply only with a comparable unit from GLOBAL VR.

Refer to Figure 52 on page 68 for a diagram and do the following to replace a power supply:

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Make sure that all wires connected to the DC power supply are properly labeled for easy re-assembly, and then use a screwdriver to disconnect the wires from the terminals on the DC power supply.
3. Remove the two (2) screws that secure the power supply to the cabinet.
4. When replacing the +5/+12-volt power supply, adjust the +5V output to 5.4V **before** connecting the power supply to the cabinet harnesses (use 5.2V if the power supply is connected). If the voltage is too high it will damage electronic components. If it is too low, the game will not work properly.
5. Install the mounting bracket to the new power supply, if applicable, and reverse the removal steps to install the power supply. Be sure to connect the wires to the correct terminals.

## Cabinet Lighting

Cabinet lighting may consist of LED Light Tubes, LED Strip Lights, Cold-Cathode Fluorescent Lights (CCFLs), or a combination of lighting types. This section contains general replacement procedures for the various types of lighting.

**Important: Do not replace LED lights with CCFLs.** CCFLs draw more power, which may interfere with proper game operation. It is OK to replace CCFLs with LEDs.

### Cabinet Lighting Locations and Colors (may vary with cabinet revisions):

- The instruction panel in the control panel is lit by white lights.
- The area under the guns is lit by blue lights.
- The Kick Panel is lit by a red light.
- The sides of the cabinet have red lights under metal covers.
- The area under the center speaker grill is lit by a red light.
- The area below the front of the control panel is lit by a red light.
- The area under the front of the cabinet is lit by a red light that shines on the floor.
- The Marquee is lit by red lights.

## Light Replacement

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**To avoid electrical shock, unplug the cabinet before servicing the lighting components.**

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The following are general steps for replacing an LED or CCFL light. See the sections that follow for detailed information about each type of light.

**Important: Do not replace LED lights with CCFLs.** CCFLs draw more power, which may interfere with proper game operation. It is OK to replace CCFLs with LEDs.

1. Turn off the cabinet and disconnect the AC power cord.
2. If the light is under a cover or speaker grill, remove the screws securing the cover or grill.
3. If the light has a 4-pin PC power connector, disconnect it from the power harness.
4. If the light is spliced or soldered to the power harness, or you are replacing a light with a connector with a light with wire leads, snip the wires from the cabinet power harness and splice them to the wires from the new light.
5. Snip any cable ties that secure the light in place, or carefully pry off the light if secured with adhesive.
6. Install the new light by reversing the removal steps.

### LED Light Tubes

LED Light Tubes connect to 12-volt power through a 4-pin PC power connector to a cabinet power harness. They are usually secured in place by cable ties.

### LED Strip Lights

LED Strip Lights connect to 12 Volt DC Power and Ground through the cabinet DC Power Harness. There are two types, Multi-Color and Single-Color.

**Single-Color LED Strip**, shown in Figure 44, emits only one color. It has one terminal for 12 VDC power and one for ground.

**Multi-Color LED Strip**, shown in Figure 45, can be red, blue, green, or a mix, depending on which terminal is connected to ground (R, G, or B). For white light, ground all three color terminals.

LED Strips can be cut to the length needed, but **cut only on the white cut line** between the terminals, as shown in Figure 44. Each segment contains three (3) LEDs.

Power and ground leads can be soldered to either end of the LED strip.

Secure the LED strip in place with the double-stick tape pre-installed on the back of the strip.

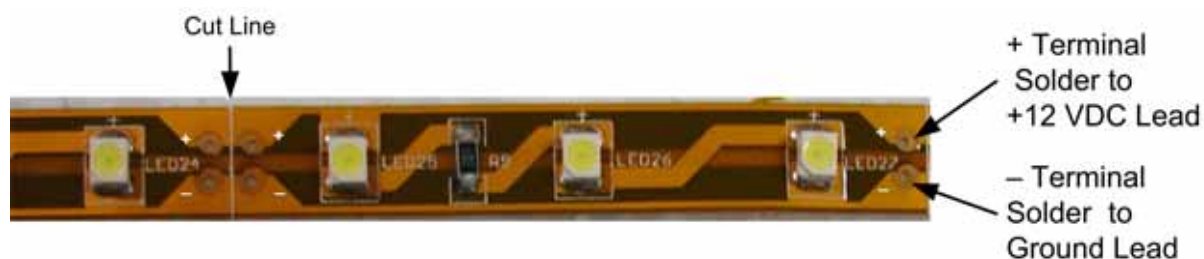


Figure 44. Single-Color LED Strip Light



Figure 45. Multi-Color LED Strip Light

### Cold-Cathode Florescent Lights (CCFLs)

Figure 46 shows CCFL wiring. The CCFL tubes are held in place with cable ties. The Power Inverter is held in place by Velcro or cable ties.

**Note:** If both lights in a CCFL set fail, make sure the power connector is firmly attached to the power inverter. Connect the lights to another power inverter to test them. Replace the power inverter if faulty; it is held in place with Velcro and/or cable ties.

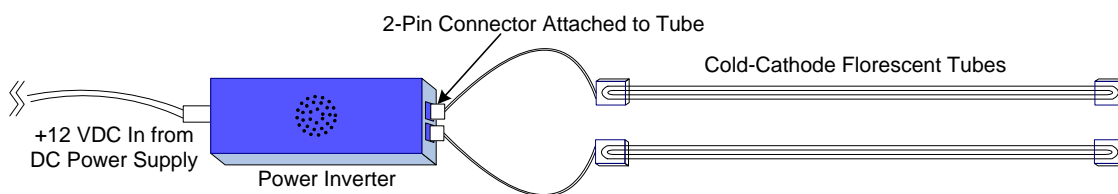


Figure 46. Cold-Cathode Light Detail

## Setting the Computer BIOS (CMOS), DH61CR Motherboard

**This procedure applies only to systems with the Intel® DH61CR Motherboard.** If your System Computer has a different motherboard, check <http://service.globalvr.com> for updated information.

If you are comfortable using the CMOS Setup Utility, connect a keyboard to the computer and press the **F2** key during boot to run the utility. Press **F9** or select **Load BIOS Defaults** from the **Exit Menu**, press **Y** to confirm, and then change the settings shown in the table below. For more help, refer to the detailed instructions that follow.

Menu	Submenu (If Applicable)	Item	Setting
Press <b>F9</b> to <b>Load BIOS Defaults</b>			
Main		System Date	Set to Current Date
		System Time	Set to Local Time
Configuration	SATA Drives	Chipset SATA Mode	IDE
Power		After Power Failure	Power On
Boot		Boot Device Priority	Optical Drives Removable Drive Hard Disk Drives Network

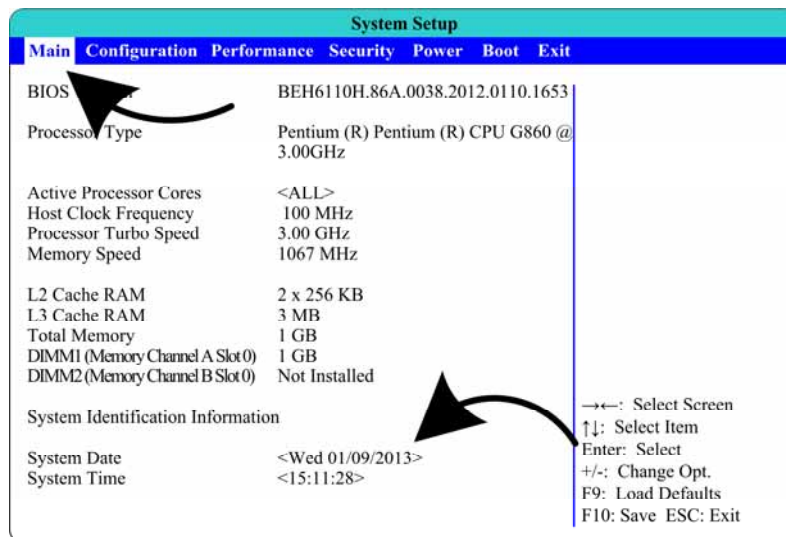
**Important:** Your screens may not look exactly like the screens shown in this document, and some settings shown on the screens examples may be different from your system.

**Do not change any settings that are not specifically described in this document.**

**Note:** Use the left and right arrow keys (→←) to move between the menus listed at the top of the screen, and the up and down arrow keys (↑↓) to move up and down between menu items. Use the + and – keys to change settings for selected items.

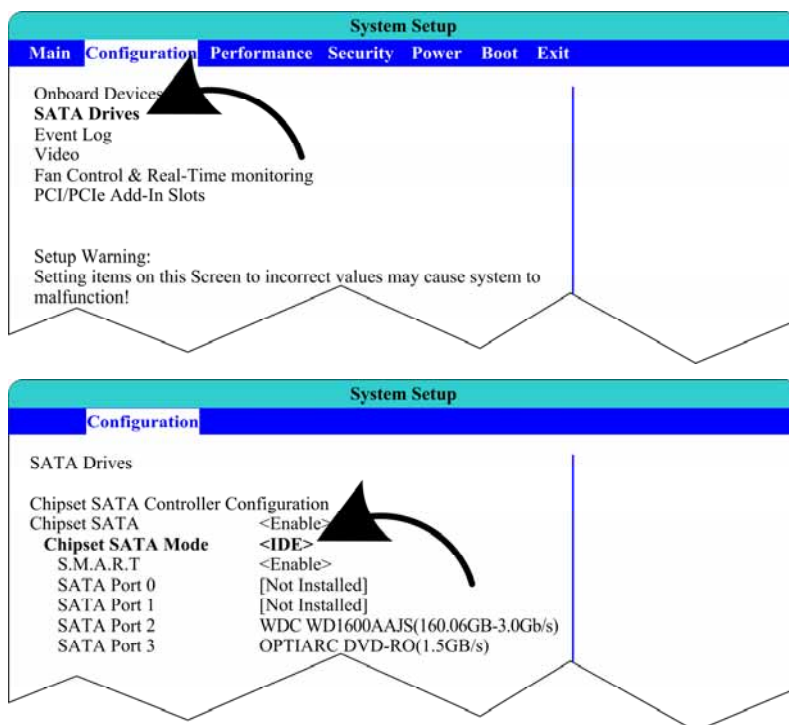
1. Press the **F2** key during boot. The System Setup Utility Main Menu will appear.
2. Press the **F9** key to Load Bios Defaults, and then press **Y** to confirm. Now change the BIOS settings described on the following pages.

3. Use the left and right arrow keys (→←) to select the **Main** menu if not already selected.
4. Use the up and down arrow keys (↑↓) to select **System Date**. The month will be highlighted.
5. Use the + and – keys to set the month. Press the **Tab** key to move to the day, and set it the same way. Repeat for the year.
6. Use the up and down arrow keys (↑↓) to select **System Time**, and then use the +, –, and **Tab** keys to set the time the same way you set the date.



7. Use the left and right arrow keys (→←) to select the **Configuration** menu.
8. Use the up and down arrow keys (↑↓) to select **SATA Drives**, and press **Enter**.
9. The SATA Drives Configuration screen will open. Use the up and down arrow keys (↑↓) to select **Chipset SATA MODE**, and then use the (+-) keys to change the setting to **IDE**.

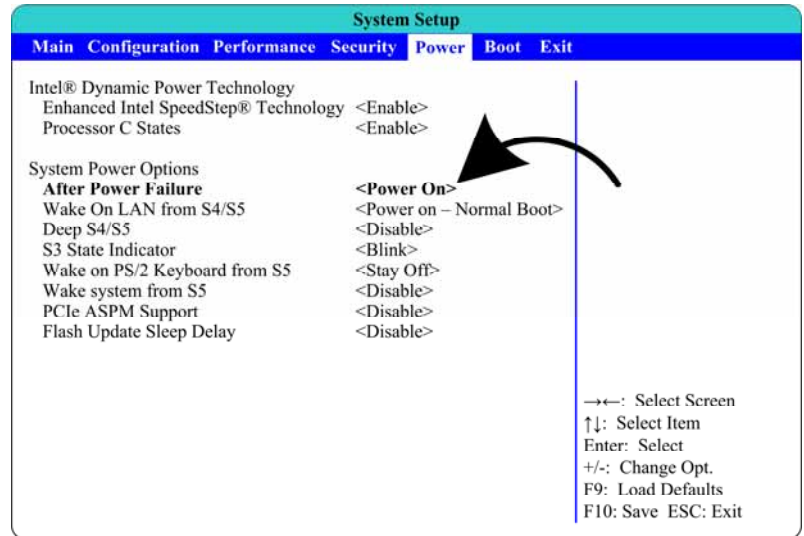
**Note:** If this setting is wrong, the computer may continuously reboot.





10. Use the left and right arrow keys (→←) to select the **Power** menu.

11. Use the up and down arrow keys (↑↓) to select **After Power Failure**, and then use the (+-) keys to change the setting to **Power On**.



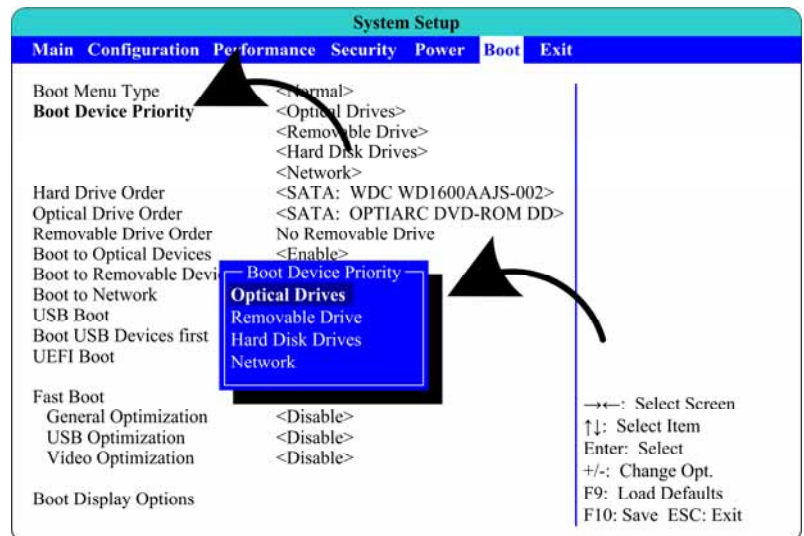
12. Use the left and right arrow keys (→←) to select the **Boot** menu.

13. Use the up and down arrow keys (↑↓) to select **Boot Device Priority**, and press **Enter**.

14. A pop-up window will appear listing available drives. Use the up and down arrow keys (↑↓) to select **Optical Drives**, and then use the (+-) keys to move it to the top of the list.

15. Use the up and down arrow keys (↑↓) to select **Removable Drive**, and then use the (+-) keys to move it to the second position.

16. If necessary, use the up and down arrow keys (↑↓) to select **Hard Disk Drives**, and then use the (+-) keys to move it to the third position, and then press **Enter**.



17. Now that all settings are correct, press **F10**. The following prompt will appear:



18. Make sure **Yes** is selected (use the arrow keys to select if necessary) and press **Enter**.

## Chapter 7 — Replacement Parts

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Please reference these part numbers when contacting GLOBAL VR service or your distributor for replacements. Buy parts at our Online Store, <http://parts.globalvr.com>.

### Documents and Software

Part Number	Qty	Item Description
040-0237-01	1	Operation & Service Manual (This Document)
040-0238-01	1	Software Restore Guide
040-0255-01	1	Installing the Swarm Deluxe 3D Cabinet
050-0218-01*	1	System Recovery Disk (1 DVD)
050-0219-01*	1	Game Install Disk (1 DVD)

\*Part numbers may change due to software revisions.

### Cables

Part Number	Qty	Item Description
115-0008-01	2	Power Cord for DC Power Supply
115-0049-01	1	Power Plate ground cable, 3.5"
115-0095-02	1	Coin Door Harness
115-0096-02	1	Start Button Harness
115-0097-01	2	Gun Power Cable with 2.5 A Fuse
115-0098-01	1	12 VDC Power Harness, Lights
115-0099-01	1	Ground wire, Gun to Coin Vault
115-0113-01	1	Load resistor and cable assembly for 5/12 VDC Power Supply
115-0119-01	2	Speaker Connector Harness
115-0122-01	1	12 VDC Power Harness
115-0168-01	1	Transformer Harness (230 VAC Cabinet Only)
115-0217-01	1	Audio Harness (Amp to Speaker Connector Harness)
115-0231-01	2	AC Power Cord, for Cabinet or Computer
115-0232-01	1	Video Cable, 10', HDMI to DVI
96-0539-00	1	Stereo Cable, 3.5mm, 6'
USB-AB06MM	1	USB Cable, 6'
USB-EXT-6	2	USB Extension Cable, 6', USB 2.0, A Plug/A Jack

### Cabinet Functional Components

Part Number	Qty	Item Description
0001.2512	1	Fuse, 6 Amp, 5mm X 20mm, Power Entry Module
TCL47ET5	1	47" 3D Monitor Assembly
115-0025-01	1	Cabinet Ventilation Fan, AC, with Power Cord
2-30-2434	1	Power Transformer (230 VAC Cabinet Only)
37117-01	1	Power Plate
44-0600	1	Power Supply, 24 Volt (Guns)
44-1100-01	1	Power Supply, 5/12 VDC 115 W (Lighting, PCBs)
45085-00	1	System Computer Assembly
49-0963-40	1	7-Outlet Power Strip, Surge Protector, 15 Amps, 1500 Joules

Part Number	Qty	Item Description
54-0004-SWM3D	1	3D On/Off Button
59-6584-8222232	1	Start Button, Blue
59-6584-8332233	1	Start Button, Green
60039-00	1	Computer Mounting Strap
990-0014-02	1	GVRI/O Mini PCB, v04 (Must be programmed with correct firmware.)
BK/MDL-2-1/2	2	Fuse, 250 V, 2.5 Amp, Gun Power Harness
CCM1600-ND	1	Power Entry Module with EMI Filter, Power Plate
USB-KQRTG-HL-SWM	1	USB Game Dongle (Exchange Only)
3D-GLASSES-TETH	2	3D Glasses, Tethered to Cabinet
P4RD-3D-GLASSES	10	3D Glasses, Printed Cardboard
<b>Speakers</b>		
50-9005-00	2	Speaker, 5", 12 Watt, 8 Ohm, Shielded
5555-15142-00	1	8" Speaker
<b>Cabinet Lighting (lighting used may vary)</b>		
CCFL2R		Cold Cathode Light Kit, 12", Red (Kick Panel Lighting)
CCFL62W		Cold Cathode Light Kit, Dual 6", White (Instruction Panel)
CCFL62BU		Cold Cathode Light Kit, Dual 6", Blue (Under Control Panel)
METL12BU		LED Light Tube, Blue, 12"
METL14R		LED Light Tube, Red, 14"
5050-LED-RGB		LED Strip Light, RGB

## Metal & Plastic

Part Number	Qty	Item Description
26091-00	1	Plastic Control Panel Housing
26094-00	1	Instruction Panel Clear Plastic
26191-YEL	1	Plastic Control Base Panel, Transparent Yellow
26193-YEL	1	Plastic Kick Panel, Transparent Yellow
37364-00	1	Center Speaker Grill
37365-00	2	Left & Right Speaker Grill
37104-01	2	Gun Base Cover, Front
37105-01	2	Gun Base Cover, Back
37358-00	1	Bracket, Cabinet Base, Supports Monitor Stand Mounting Bracket
37359-00	2	Mounting Bracket, Monitor Stand to Cabinet
MBTVSBKB	1	Monitor Stand

## Gun Parts

Also see the *Gun Exploded View* and *Cabinet Artwork* illustrations on the pages that follow.

Part Number	Qty per Gun	Item Description
26090-01	1	Gun Housing, Left
26090-02	1	Gun Housing, Right
96-0799-20	1	Gun Assembly
METL6R	1	LED Light Tube, Red
990-0012-02	1	Gun PCB

## Gun Exploded-View Parts

Ref #	Qty	Part Number	Item Description
1	1	96-4901-00	BOTTOM PLATE F/WMS ANALOG GUN
2	1	96-4937-00	BRACKET F/SWIVEL BASE ASSY.
3	1	96-4934-00	BRACKET PIVOT BOX & SHAFT ASSY.
4	1	96-4902-00	BRACKET HANDLE WELDED
5	1	96-4915-00	BRKT COIL MTG
6	1	96-4923-00	SHAFT 5/8 DIA.
7	1	96-4908-00	DISC PLASTIC WASHER
8	1	96-4907-00	GEAR SEGMENT W/HUB
9	1	96-4960-00	SPACER SEGMENT GEAR
10	1	43-0232-00	NUT, HEX NYLOCK 1/2-20
11	1	43-0055-00	WASHER, FLAT 1/2 SAE
12	7	42-0082-00	NUT, KEPS #8-32
13	8	43-0252-00	SCREW, #8-32 x 3/8 HEX HEAD
14	1	43-0003-00	3/8 SAE FLAT WASHER ZNC PLTD
15	1	43-0092-00	NUT 3/8-16 NYLOCK
16	1	43-0280-00	HEX HEAD CAP SCREW #10-32 X 1-1/4
17	2	43-0037-00	LOCKWASHER, EXT #10
18	3	43-0253-00	NUT HEX #10-32 JAM NYLOCK ZINC PLATED
19	1	96-4900-00	COIL RETAINING BRACKET
20	1	96-4938-00	INSULATOR
21	1	96-4904-00	BRACKET POT MTG HORIZONTAL
22	1	96-4913-00	BRKT POT MTG VERTICAL
23	1	96-4936-00	PLUNGER F/SOLENOID
24	1	96-4931-00	SPRING COMPRESSION
25	1	96-4971-00	BUMPER SOLENOID STOP
26	1	96-4921-00	GEAR SEGMENT HUBLESS
27	2	43-6972-00	SPACER F/BUMPER
28	1	43-0188-00	SCREW, #8-32 x 3/8" HEX WASHER HD
29	2	43-0254-00	SCREW #10-32 X 2.25 HEX HD ZINC
30	4	96-4920-00	BEARING .625 BORE
31	2	96-4917-00	GEAR 32DP 16T .25" BORE .5" L.
32	1	96-4970-00	REAR BUMPER PAD
33	1	96-4911-00	BUMPER 3/4 DIA.
34	2	96-4919-00	BUMPER 5/8 DIA. VERTICAL
35	1	96-4935-00	COIL WITH TUBING
36	2	96-4973-00	PAD ADHESIVE FOAM TAPE
37	2	96-4916-00	LONG LIFE POT W/NUT & WSHR 5K
38	1	43-0223-00	E-RING 3/8 DIA SHAFT
39	1	FI-0229-GVR	GUN HALF, LEFT, FROM GVR
40	1	FI-0230-GVR	GUN HALF, RIGHT, FROM GVR
41	1	95-4142-00	SWITCH ASSY BALL DETECT
42	1	54V-0004-20	IPB SM CIR RED CAP 14V73 VLT LAMP ASSY
43	1	96-2515-06	TRIGGER BLACK NEW STYLE
44	1	96-0005-00	SPRING, TRIGGER RETURN
45	1	57-2000-55	PUSHBUTTON, RECTANGULAR YELLOW, WITH LAMP
46	11	4008-01100-16	SCREW #8-32 X 1" BH TORX
47	8	43-1130-00	SCREW #10-32 X 3/8" BUTTON HD TORX T-P
48	14	43-0211-00	NUT, #8-32 NYLOK
49	1	43-2318-00	SCREW #8-32 X 5/8 BHMS TORX
50	2	43-2317-00	SCREW #8-32 X 7/8 BHMS TORX
51	2	43-0172 00	SCREW, #2 X 1/2 TYPE B. PPH

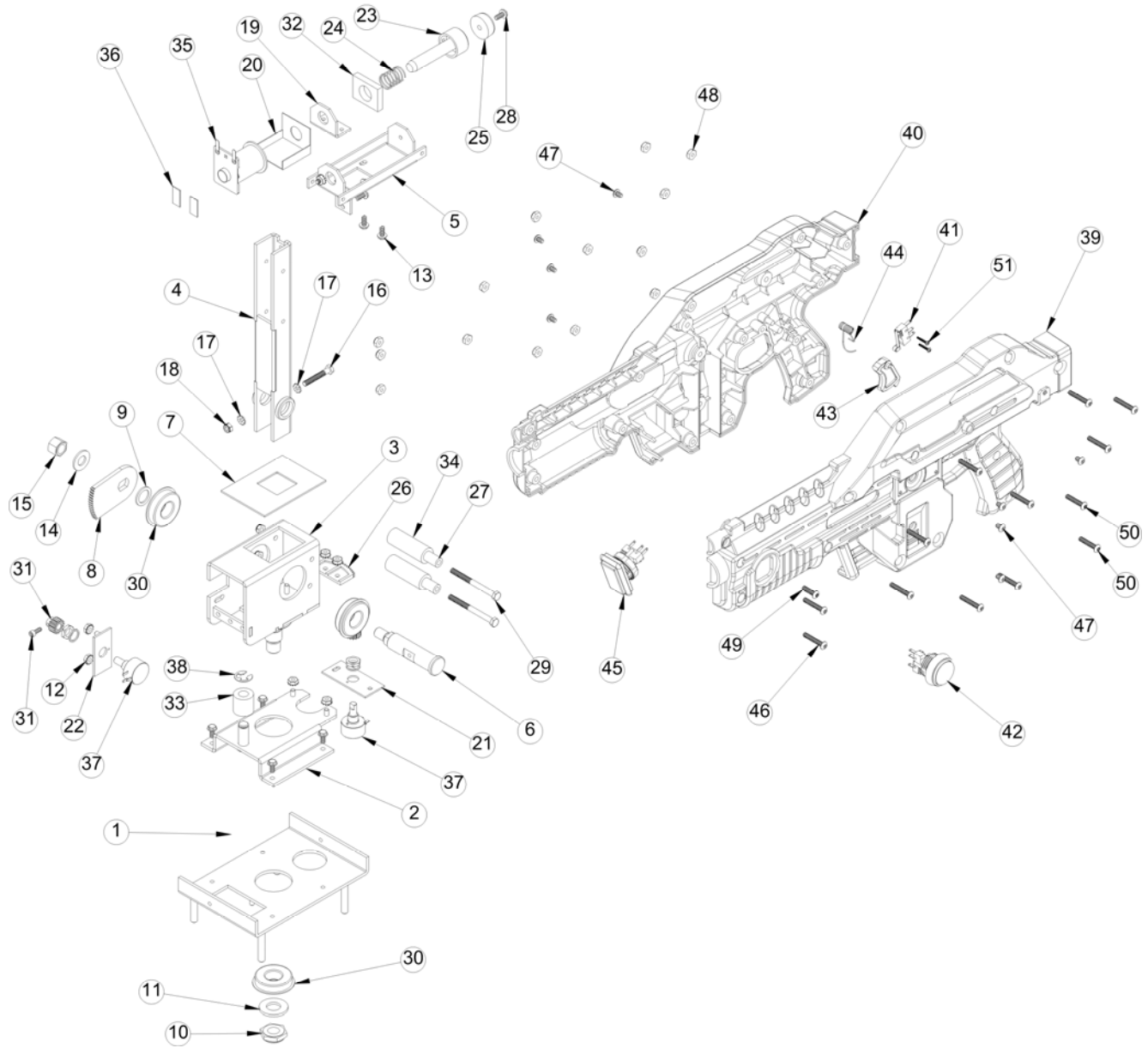


Figure 47. Gun Exploded-View Drawing

## Cabinet Artwork



Figure 48. Cabinet Artwork with Part Numbers

## Chapter 8 — Troubleshooting

### Video Troubleshooting

Problem	Cause	Possible Solution
No picture or Corrupted picture on monitor	Power problem	Check the power cord between the monitor and power strip.
	Loose or faulty video cable	Verify that the digital video cable is firmly connected from the monitor to the computer. While the monitor is powered ON, disconnect the video cable. You should briefly see a message on-screen saying <i>No Signal</i> (or similar wording) if the monitor is working. Check the digital video cable and make sure it is not pinched or frayed. Connect the cable to a different monitor to verify the signal.
	Loose or faulty video card in computer	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. If instructed by Technical Support, open the computer and check the following: <ul style="list-style-type: none"> <li>• Make sure the video card is seated properly in the motherboard. Reseat the video card if loose.</li> <li>• Check the power connector to the video card inside the computer. Make sure it is connected properly and is not connected backwards.</li> <li>• Power on the computer and make sure the fan on the video card is spinning fast.</li> </ul>
No video and no audio	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 115V. 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. If the computer does not turn on, press the button on the front of the case to turn it on and make sure <i>After Power Failure</i> in the BIOS is set to <i>Power On</i> (see <i>Setting the Computer BIOS (CMOS)</i> on page 53).
	Corrupted software	Reload the software from the disks. 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.
Picture is dim or faded	Video output needs adjustment	Make adjustments in <b>Diagnostics: Monitor Gamma</b> and <b>Monitor Vibrance</b> in the Operator Menu. Also use the monitor Remote Control to adjust the monitor settings.
Picture color is poor	Color needs adjustment	Use the monitor Remote Control to adjust the red, green, and blue color settings. Use the Color Bar Screen under <b>Diagnostics: Monitor Test</b> in the Operator Menu to aid with color adjustments.



Problem	Cause	Possible Solution
Picture geometry (height or width) is misaligned	Geometry needs adjustment	Use the monitor Remote Control to adjust the picture height, width, and position. Use the Cross Hatch Screen under <b>Diagnostics: Monitor Test</b> in the Operator Menu to aid with the adjustments.
<b>3D Troubleshooting</b>		
<b>Note:</b> Refer to <i>Setup Instructions for Panasonic 3D TV</i> on page 35 to clear and re-enter all TV settings. These steps should solve most display problems. For other TVs refer to separate documentation.		
No 3D	3D turned off in Operator Menu	Set <b>3D Display</b> to <b>Enable</b> under <b>Machine Settings: Settings</b> in the Operator Menu.
	3D turned off by player	Press <b>3D</b> button on control panel.
	TV is in 2D Mode	Press <b>3D</b> button on TV Remote Control.
	Unsupported monitor	<i>The Swarm</i> requires a Circular Polarized 3D (Real D Compatible) monitor approved by GLOBAL VR.
Two images, one above the other, on screen	2D Monitor, or 3D turned off in monitor settings	Make sure the 3D monitor is set to display in 3D. If using a 2D monitor, set <b>3D Display</b> to <b>Disable</b> under <b>Machine Settings: Settings</b> in the Operator Menu.
Double image seen with 3D glasses	Left/Right eye swapped	Open <b>Diagnostics: Monitor 3D Test</b> in the Operator Menu and pull a gun trigger to swap left and right eyes.
	Wrong 3D glasses	<i>The Swarm</i> requires "Real D" compatible 3D glasses.

### Audio Troubleshooting

Problem	Cause	Possible Solution
No audio or Poor sound from one or more speakers	Volume set too low	Set the volume in <b>Machine Settings: Settings</b> in the Operator Menu.
	Faulty wiring	Verify that all the wires are firmly connected to the speakers, GVRI/O PCB, and <b>green</b> computer audio port. Verify that no wires are frayed or shorting to ground.
	Blown speakers	Remove the grills and inspect each speaker for visible damage. Use <b>Diagnostics: Sound Test</b> 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 affected speaker.
	Faulty Audio Amp on GVRI/O PCB	To verify audio is working at the computer, connect stereo headphones to the <b>green</b> computer audio port.
Audio hum	Faulty power supply	A constant low hum in the speakers can be caused by a faulty power supply, either 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.
REALTEK audio settings screen appears	This screen will appear if you make an audio connection with the game running	Make sure the audio cable is connected from the <b>green</b> audio port in the computer to the GVRI/O Mini PCB. Power cycle the game to close the REALTEK screen.

## Gun Troubleshooting



### CAUTION

Disconnect the cabinet AC power cord before disconnecting or connecting any gun cables. Failure to do so may damage the gun PCB.

Problem	Cause	Possible Solution
No force-feedback recoil in gun	Faulty DC power supply	Make sure the DC power supply is putting out +24 VDC.
	Solenoid turned off	Set <b>Gun Feedback (Solenoid)</b> to <b>Enable</b> under <b>Machine Settings: Settings</b> in the Operator Menu.
	Faulty coil	Check wiring inside gun. Replace force-feedback coil if faulty as described on page 42.
Force-Feedback recoil and LED flash in the wrong gun	Gun wiring is reversed	To compensate, swap the guns in the <b>Diagnostics: Calibrate Guns</b> screen in the Operator Menu.
Gun crosshair moves the wrong direction onscreen	Reversed wiring or inverted axis	Invert the X or Y axis under <b>Diagnostics: Calibrate Guns</b> in the Operator Menu.
Gun aims improperly or does not cover screen	Gun is out of calibration	Calibrate guns under <b>Diagnostics: Calibrate Guns</b> in the Operator Menu.
	Faulty pot or gear	Check gun pots and gears and replace if faulty (see <i>Gun Pot and Gear Service</i> on page 42).
A button or trigger does not work	Faulty micro switch or wiring	Check micro switch inside gun. Check wiring. Make sure no wires are pinched in the gun case. See <i>Gun Service</i> starting on page 37.
No lights on gun	Check +12 VDC power	Check wiring and make sure the +12/+24 VDC power supply is putting out +12 VDC.
Fuses blow	Pinched wires	Make sure no wires are pinched by the gun case.
	Faulty power supply	Test voltage output and replace power supply if faulty.
LED readout on gun not working or looks strange	Faulty Gun PCB	Check all connections to the Gun PCB (it is powered by +5 VDC from the USB connection). Replace PCB if faulty. See page 43 for more information.

Problem	Cause	Possible Solution
Gun(s) not working or Missing gun(s) message at boot	Faulty wiring	Verify that all wires are firmly connected and no wires are frayed or improperly shorting to ground.
	Disconnected USB or DC power	Check all power and USB connections. If all gun lights are off, this indicates a problem with +12 VDC power.
	Blown fuse in gun power harness	Check the fuses (MDL 2A Slo Blo) in the gun power harness.
	Gun(s) connected to faulty USB port	To test a USB port, power OFF the cabinet, disconnect the device from the port, and then connect the game dongle to the port. Reboot the game. A <i>No Dongle</i> message indicates the port is bad. If the game starts, the port is working. After the test, power OFF the cabinet, reconnect all devices to the correct USB ports, and reboot. See Figure 53 on page 69 for PC connection information. <b>Important:</b> Disconnect power before changing any USB connections.
	Faulty power supply	Verify +12/+24 VDC power supply is putting out the correct voltages.

### Miscellaneous Troubleshooting

Problem	Cause	Possible Solution
No power	Power strip not plugged in or turned off	Make sure power indicator light on the power strip is on. If it is off, make sure the connections to the AC Power Plate are secure and the power strip ON/OFF switch is ON.
	Cabinet not connected to AC power or turned off	Make sure the AC power cord is firmly connected to the power plate and an active AC outlet, and the cabinet ON/OFF switch is ON.
	Blown fuse in power plate	Check the fuse in the power entry module in the power plate (see <i>AC Power Plate</i> on page 49).
Cabinet gets very warm	Faulty ventilation fan	Verify that the ventilation fan is working. Replace a fan if it is worn or spinning slowly. Check fan power connections.
	Cabinet ventilation holes are blocked	Make sure you have proper clearance between cabinet rear and the wall. Make sure the vent holes are clear of dust and debris and that air is blowing out of the cabinet.
CCFL and/or LED light(s) are not on	Power disconnected	Check power connections. If many lights are off, check connections to the +5/+12 VDC power supply and make sure it is putting out +12 VDC.
	Blown light or CCFL power inverter	Replace the light or CCFL power inverter (see page 50). If both CCFLs in a set are off, try replacing the inverter first.
Wrong number of credits given when coins or bills are inserted	Incorrect setting in Operator Menu	Adjust setting under <b>Coin Settings: Pricing</b> in the Operator Menu.
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to the coin mech and bill validator, and 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 (see page 48).
Game repeatedly reboots	Wrong SATA Drives BIOS setting	Make sure <i>Chipset SATA Mode</i> in the BIOS is set to <i>IDE</i> (see <i>Setting the Computer BIOS (CMOS)</i> on page 53).

## Error Messages

The messages below will appear at boot if the software does not detect the devices.

Problem	Cause	Possible Solution
ERROR DETECTED Missing GVRI/O PCB	GVRI/O Mini PCB is disconnected	Power OFF the cabinet and then connect the USB cable from the I/O PCB to the first port on the USB card in the computer (see Figure 53 on page 69).
	Faulty USB port or card	Power OFF the cabinet and connect the I/O PCB to a motherboard USB port for testing.
Missing guns – No guns found  <b>or</b>  One gun is missing  <b>Note:</b> You can operate the game with only one gun, but disconnect the corresponding Start button.	Gun(s) not connected	Power OFF the cabinet and then connect the gun(s) to the correct port(s) on the USB card (see Figure 53 on page 69).
	USB or DC power wiring disconnected or faulty	Verify that all wires are firmly connected and no wires are frayed or improperly shorting to ground. If all gun lights are off, this indicates a problem with +12 VDC power from the +12/+24 VDC power supply.
	Faulty USB port or card	Power OFF the cabinet and then connect the gun to a motherboard USB port for testing.
	Blown fuse in gun power harness	Power OFF the cabinet and then check the MDL 2.5A Slo Blo fuses in the gun power harness.
	Faulty power supply	Verify the +12/+24 VDC power supply is putting out 24 VDC.
Dongle Missing or Invalid	Game dongle not connected	Connect the game dongle to a motherboard USB port.
	Faulty game dongle or wrong dongle version	Make sure the game dongle is connected properly. USB dongles illuminate when recognized by the computer. Contact Tech Support if you need to order a new dongle.
	Faulty USB port	Test the game dongle in a different USB port.

## Checking the Game Dongle

The cabinet uses a Game Dongle to activate the game software. If the dongle is missing, the game will not run. When a USB Game Dongle is installed and working properly, a **red** LED will illuminate inside the dongle.

If the dongle is disconnected at boot, an error message will appear and the game will not start. If the dongle becomes disconnected while the cabinet is running, an error message will appear onscreen and the game controls will stop working. The game will run once the dongle is reconnected.

**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 49. USB Game Dongle

## Chapter 9 — Diagrams and Schematics

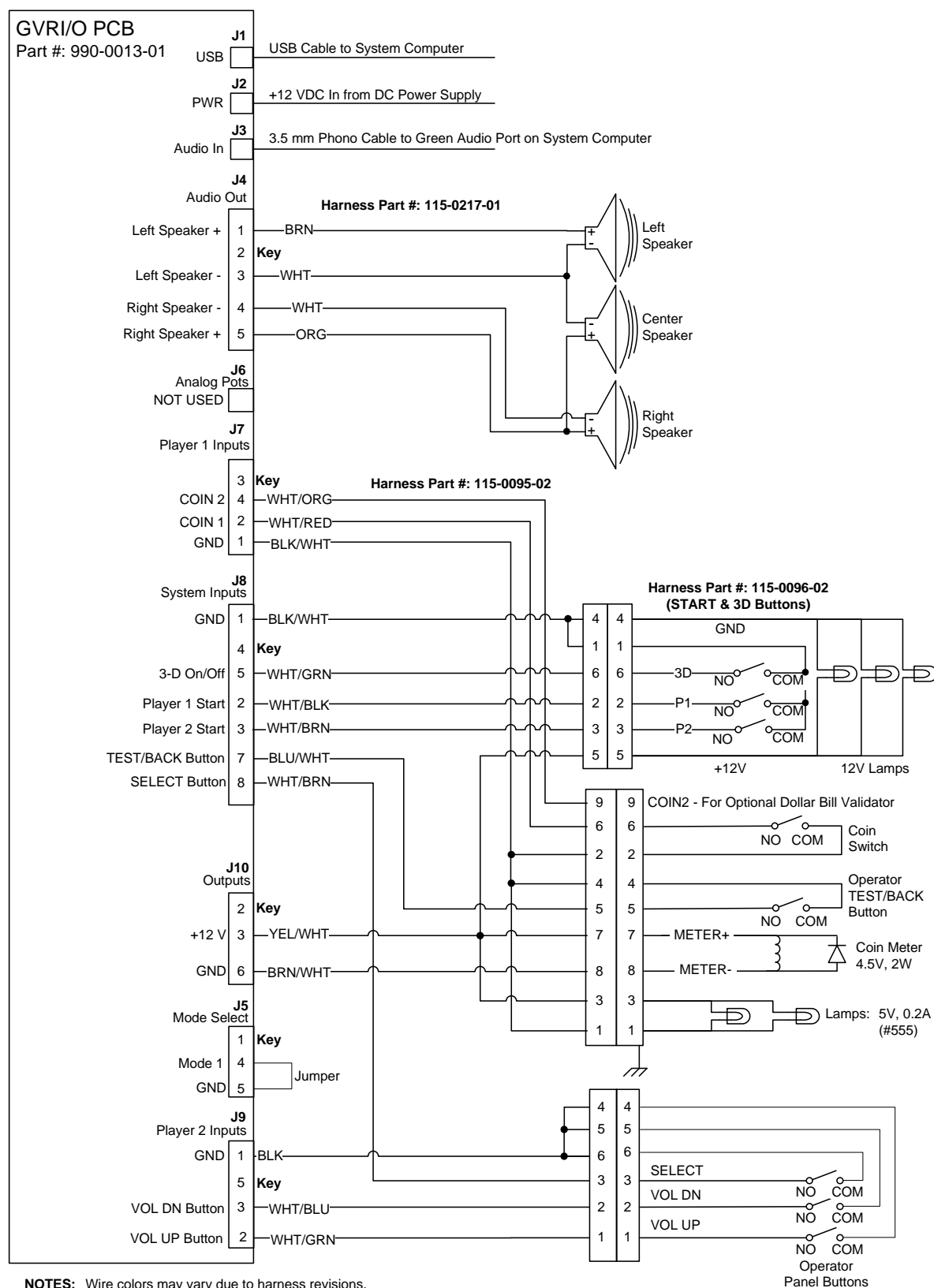
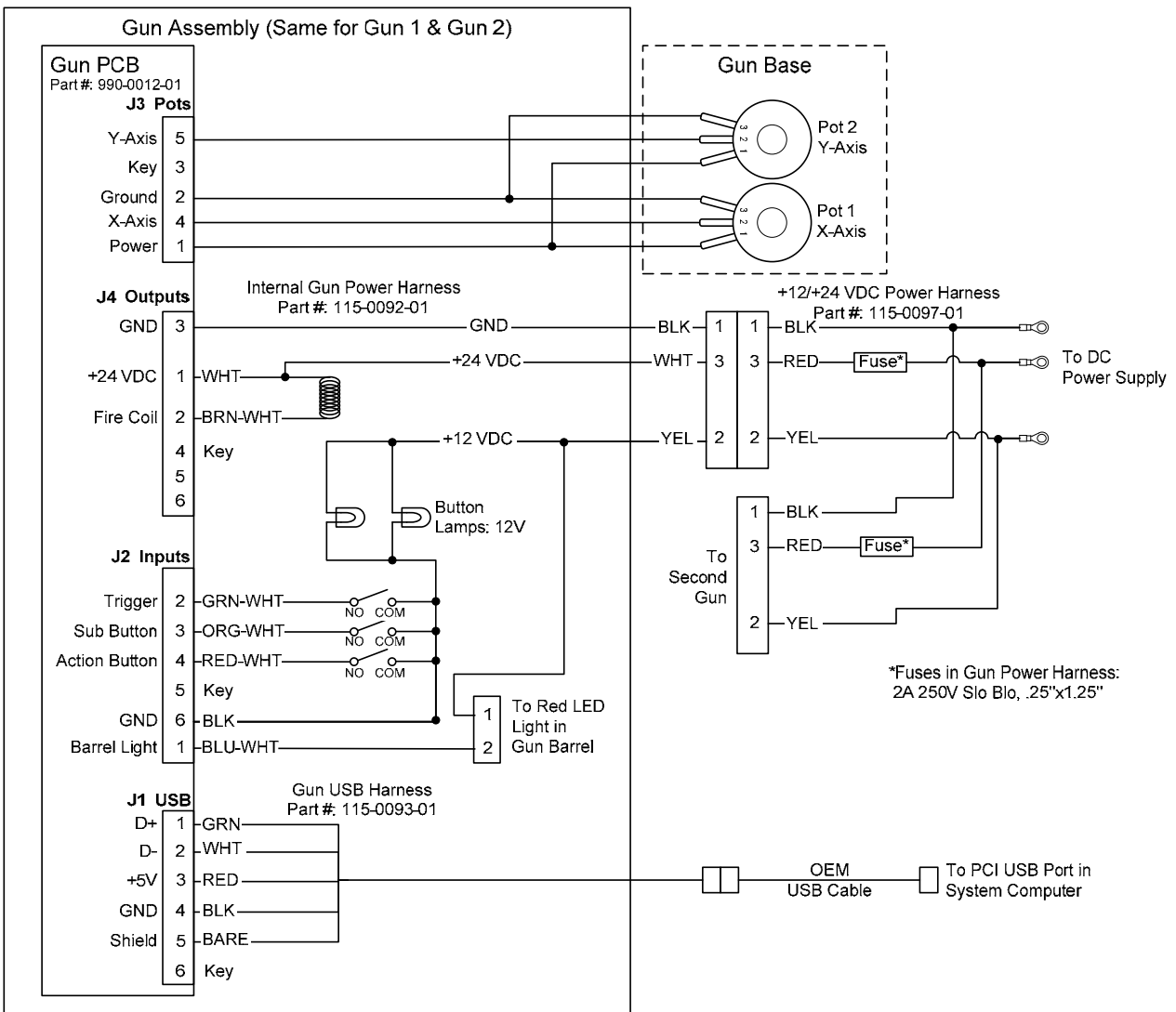


Figure 50. GVRI/O Wiring Diagram



**NOTE:** Wire colors may vary due to harness revisions.



**CAUTION**

**Turn off the Cabinet AC Power before changing any USB connections or you will damage the PCBs.**

*Figure 51. Gun Wiring Diagram*

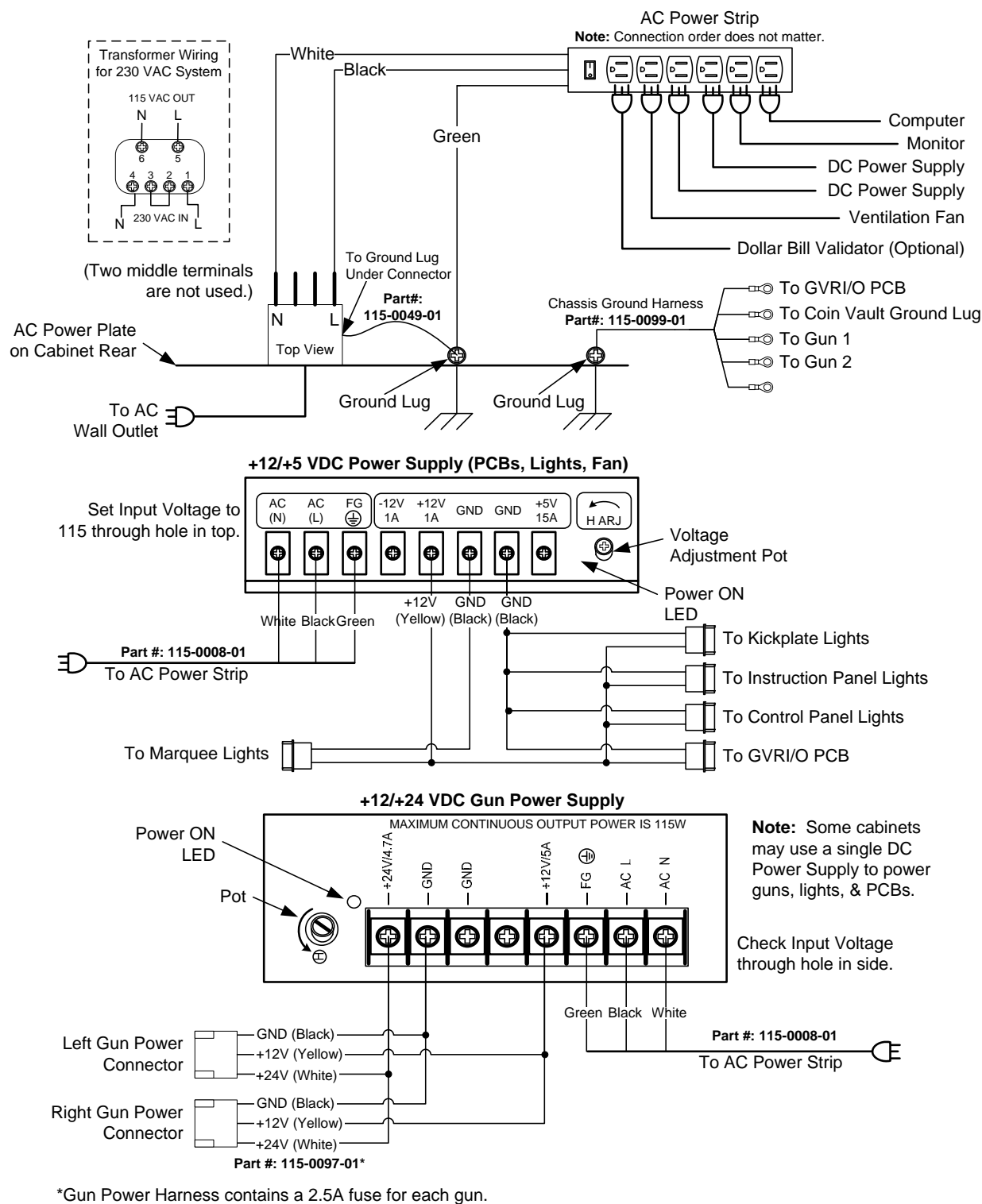


Figure 52. Power Distribution Diagram



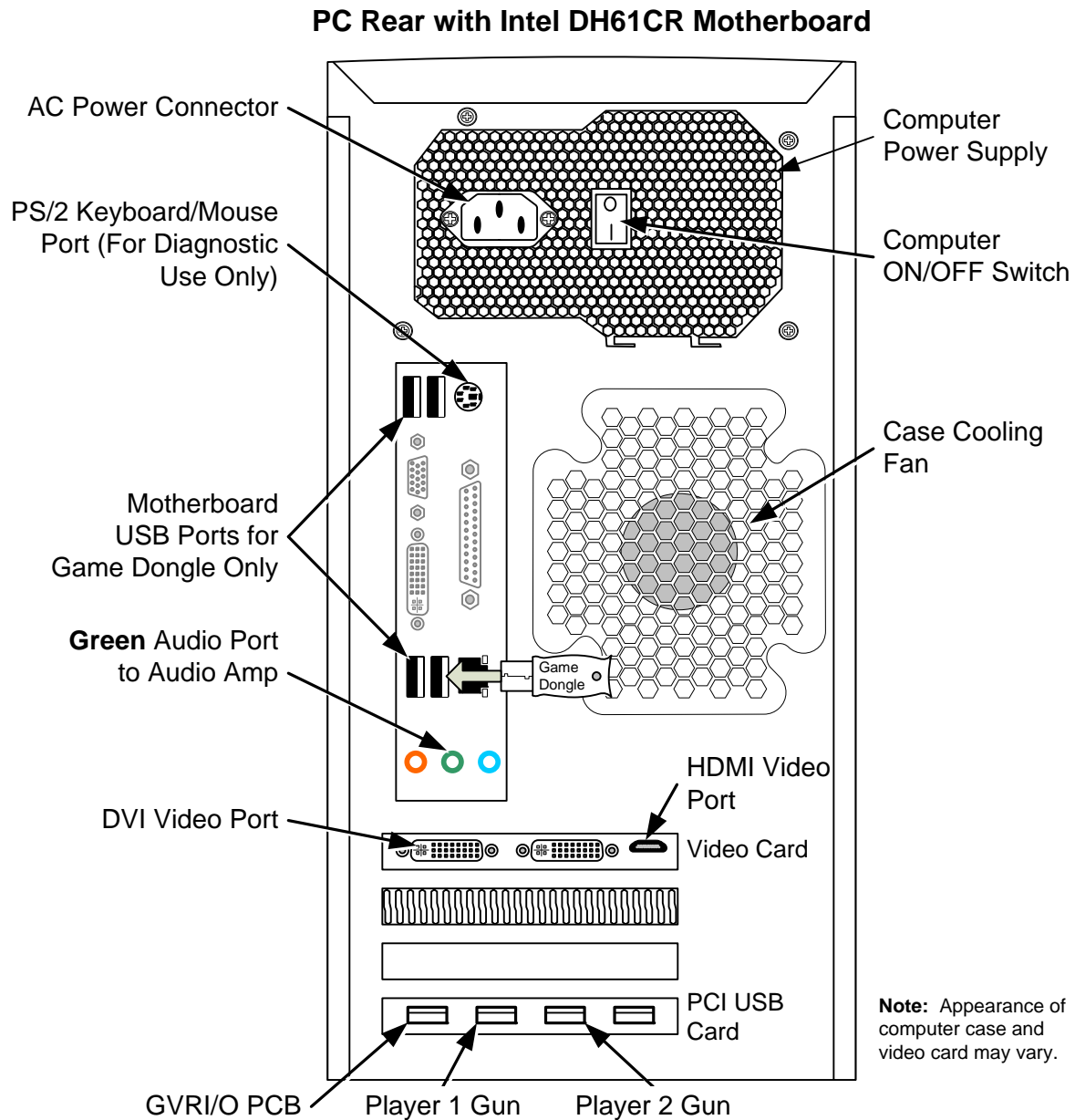


Figure 53. Computer Rear Panel Diagram (DH61CR Motherboard)

## Warranty Service

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

### Warranty Information

LIMITED WARRANTY FOR THE SWARM (North America Only)

GLOBAL VR® warrants that its Major Electronic Components are free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of sale.

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 shall be in effect for the remainder of the original warranty period, but will not exceed the original warranty period.

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

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## Service & Parts

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

**Phone:** 408.597.3435

**Fax:** 408.597.3437

**E-mail:** [techsupport@globalvr.com](mailto:techsupport@globalvr.com)

**Parts E-mail:** [servicesupport@globalvr.com](mailto:servicesupport@globalvr.com)

**Website:** <http://service.globalvr.com>

Free telephone, e-mail, and online support are provided for systems during the warranty period. GLOBAL VR<sup>®</sup> 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 to assist the Technical Support representative in solving your problem quickly. For your convenience, space is provided to write important numbers.

- Cabinet Serial Number: \_\_\_\_\_
- Build Number (from Operator Menu): \_\_\_\_\_
- I/O Board Version (from Operator Menu): \_\_\_\_\_
- Your mailing address and telephone number.
- A summary of the question or a detailed description of the problem with your cabinet.

The additional information listed below, as applicable, may assist Technical Support in solving your problem quickly.

- |                                  |   |
|----------------------------------|---|
| • Specific error message         | • Date of latest software install or upgrade                |
| • Any changes made to the system | • For game-play issues, the game mode and number of players |

To comment on this manual, please e-mail: [techpubs@globalvr.com](mailto:techpubs@globalvr.com)