

THE S M A R M

Universal 2D Conversion Kit Instructions 040-0259-01

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



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Chapter 1 — Introduction

This kit lets you convert an existing game cabinet to **The Swarm**. The conversion procedure should be performed only by an experienced technician. Since cabinet styles vary widely, the steps in this document should be used as general guidelines for the conversion procedure. Your steps may vary. Please read the instructions before beginning the procedure, and follow all precautions in this document. Please keep this document with your cabinet for future reference.

Warnings & Cautions



To avoid electrical shock, unplug the cabinet before performing conversion, 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 converting, setting up, or servicing the cabinet. Conversion procedures should be performed **ONLY** by experienced technicians.



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

Power must be off when connecting or disconnecting PCBs or guns. Hot connecting will damage the PCBs.

Please read all instructions before beginning the conversion.

1.1 Conversion Requirements

For successful conversion, the cabinet must have the following:

- HD Monitor (16:9 Widescreen Aspect Ratio) with DVI Video Cable
- AC Power Distribution
- DC Power Supply if Coin Doors use 5 VDC
- Left and Right Audio Speakers

Note: If your existing Audio Amp provides acceptable stereo sound quality and uses a standard 3.5 mm mini phone plug for audio input, you can keep your audio wiring intact and connect the audio out from the computer to the existing Audio Amp.

- Control Panel area suitable to mount a new control panel approximately 36" wide x 15" deep for Guns and Start Buttons.
- Coin Mechs (dollar bill validator is also supported)

1.2 Conversion Kit Contents

Note: Some part numbers may vary due to revisions.

Primary Components (Not Shown to Scale)

Ref	Description	Qty	Part Number
1	GVRI/O Mini PCB	1	990-0014-02
2	PCB Mounting Feet	1	49-1019-00
3	USB Game Dongle	1	USB-KQRTG-HL-SWM
4	Green Start Button	1	59-6584-8222233
5	Blue Start Button	1	59-6584-8222232
6	System Computer Assembly, with AC Power Cord (The Swarm Software Pre-Installed)	1	45085-00
7	USB Cable, 6', Type A Male to Type B Male	1	USB-AB06MM
8	Stereo Audio Cable, 3.5mm, 6', M-M	1	96-0539-00
9	Control Panel Housing	1	26091-00
10	Gun Assembly	2	NA
11	AC Ventilation Fan with Grill & Power Cord	1	115-0025-01
12	AC Power Strip/Surge Suppressor	1	23-1913-00
13	DC Power Supply (+12/+24 VDC) with mounting brackets and screws	1	44-0600
14	USB Extension Cable, 6', A Plug/A Jack	2	USB-EXT-6
15	Control Base Cover	2	37102-00
16	Operator Button Panel (with Harness, not shown)	1	990-0020-01
17	Upper Gun Base Cover	2	37105-01
18	Lower Gun Base Cover	2	37104-01
--	Wood Control Panel Base (Not Shown)	1	25206-00
--	Clear Plastic Cover Panel for Instruction Panel Artwork (Not Shown)		



Miscellaneous Hardware

Ref	Description	Qty	
1	#8-32 x 1/2" pan head screw (black)	14	
2	#8 flat washer (black)	14	
3	¼-20 x 3/4" pan head screw (black)	10	
4	¼" flat washer (black)	10	
5	¼" lock washer (black)	10	
6	#8 x 3/4" wood screw (black)	8	
7	#10 fender washer (black)	8	
8	#8-32 x 3" bolts	4	
9	#8 flat washer	8	
10	#8-32 Kep nut	4	
11	#10 x 3/4" wood screw	2	
12	#10 fender washer	2	
13	¼-20 x 2" bolt	4	
14	¼" flat washer	16	
15	¼-20 Kep nut	12	
16	#8 x 5/8" wood screw	4	
17	Butt Splice, 22-18 AWG	5	
--	Computer mounting strap, two pieces (Part # 60039-00)	1	
--	Adhesive Velcro, one large & one small piece	--	

Harnesses

Description	Qty	Part Number
Cable, AC Power Strip to DC Power Supply	1	115-0008-01
Audio Harness, GVRI/O Mini PCB to Speakers	1	115-0100-01
DC Power to GVRI/O Mini PCB	1	115-0079-01
Main Wiring Harness	1	115-0095-01
Start Button Harness	1	115-0096-01
24 VDC Gun Power Harness W/ Fuse	1	115-0097-01
Earth/Ground Cable	1	115-0099-01

Documents & Software

Description	Qty	Part Number
Universal Conversion Kit Instructions (This Document)	1	040-0259-01
Operation Instructions for Kit Systems	1	040-0258-01
Service Instructions for Universal Kit Systems	1	040-0260-01
Leveling a Sloped Control Panel for Conversion Kit Systems	1	040-0251-01
Software Restore Guide	1	040-0238-01
Software, Game Install Disk	1	050-0219-01
Software, System Recovery Disk	1	050-0220-01

Cabinet Labels

Description	Qty	Part Number
Cabinet Serial Number	1	L-0177
For Indoor Use Only	1	L-0004
Disconnect Power Supply Before Servicing	1	L-0006
Shock Hazard Do Not Open	1	L-0133

Cabinet Artwork

Description	Qty	Part Number
Artwork, Backlit Styrene Instruction Panel	1	SWM-AW-04
Decal, Lower Gun Base, Player 1	1	SWM-AW-06
Decal, Lower Gun Base, Player 2	1	SWM-AW-07
Decal, Upper Gun Base, Player 1	1	SWM-AW-08
Decal, Upper Gun Base, Player 2	1	SWM-AW-09
Decal, Side Panel	2	SWM-AW-10
Decal, Yellow Ratings Label	1	AW-YELLOW-LABEL-KITS
Decal, Swarm Logo	2	SWMKIT-AW-03
Artwork, Backlit Marquee	1	SWMUKIT-AW-01
New Game Sign	1	NTR-AW-06



Figure 1. Example of Finished Cabinet

1.3 Tools Required

Tools needed may vary depending on cabinet used and 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, stripper, and crimper
- Exacto[®] knife
- Assorted cable ties and/or clips for securing wires
- 4-1/2" Hole Saw or Jig Saw to cut hole for Ventilation Fan
- Drill with assorted bits, including 1" or larger, 1/4" and 7/32"
- Black paint (if you wish to touch up cabinet or paint underside of control panel)
- Vinyl Application Squeegee (or Similar Tool) for Smoothing Decals

1.4 General Conversion Steps

This document provides general guidelines for converting your cabinet. Your steps may vary depending on the cabinet used.

- Remove old wiring and electronics (keep power distribution, grounds, coin door harness, and any other components you wish to use) and clean the cabinet
- Mount Control Panel Base
- Assemble Control Panel
- Install new wiring, PCB, and System Computer
- Install artwork
- Calibrate guns and test game

Chapter 2 — Conversion Procedure

This document provides general guidelines for converting your cabinet. Your exact steps will vary depending on the cabinet used.

Please heed all Warnings & Cautions on page 3.

2.1 Remove Old Components and Clean Cabinet

Important: The Swarm Conversion Kit uses the existing Power Distribution Wiring. Be sure to leave AC (and DC if applicable) power wiring in place.

1. Turn off the cabinet and disconnect the AC power cord.
2. Remove old electronics and harnesses from the cabinet. Keep power wiring for lighting, coin mechs, and dollar bill validator (if installed). If the cabinet has a +5/+12 VDC power supply, you can keep it to power existing coin mechs, fans, and/or audio amp, and the GVRI/O mini PCB.

Note: If your existing Audio Amp provides acceptable stereo sound quality and uses a standard 3.5 mm mini phone plug for audio input, you can keep your audio wiring intact and connect the audio out from the computer to the existing Audio Amp.

Keep any reusable cable clips and ties for securing the new wiring.

3. Remove any decals that are not in good condition, and any proprietary labeling from the cabinet. Clean the cabinet well so the new artwork will adhere properly. You may wish to apply a fresh coat of black paint to the cabinet.

2.2 Set Up the AC Power

The kit uses an AC power strip/surge suppressor to power all components in the cabinet. The steps below provide a quick and easy method for setting up AC power, but if you prefer you can splice the power strip/surge suppressor into your existing AC power distribution.

1. Route your existing cabinet power cord to the inside of the cabinet and connect it to the power strip.
2. Route the power cord from the power strip out of the cabinet. This will now be the cabinet power cord.
3. Secure the power strip inside the cabinet using the strip of adhesive Velcro from the kit.

2.3 Install Earth/Ground Harness

Locate the terminal on the Earth/Ground Cable (Part # 115-0099-01) that is connected to multiple wires, and secure it to the ground lug on the AC power plate (or another secure earth/ground in the cabinet).

The cable has four more terminals. Two must connect to the ground lugs on the gun assemblies, one connects to the GVRI/O Mini PCB, and the other can be used to ground the coin door. (It is very important that these components are properly grounded.)

Note: Ground connections to the Guns and GVRI/O Mini PCB are described later in this document.

2.4 Install the Control Panel Base

The exact procedure for mounting the control panel to the cabinet will vary depending on your cabinet. You may need to alter the existing woodwork to properly mount the control panel. Test fit all components before securing the Control Panel Base in place.

A level control panel is recommended for optimal gameplay. For cabinets with a sloping control panel, such as many golf and bowling cabinets, refer to the document *Leveling a Sloped Control Panel for GLOBAL VR Conversion Kits* (Part #: 040-0251-01), included in the kit.

Refer to Figure 2 and be sure to consider the following points:

- GLOBAL VR recommends bolting the control panel to a flat surface using the four (4) ¼-20 x 2" bolts with two flat washers and Kep nut included in the kit. If this does not work with your cabinet you may use a different method.
- Make sure that the area below each gun is clear, as shown in Figure 2.
 - The holes labeled "Holes for Gun Mounting Posts" in Figure 2 are for the four threaded mounting posts on each gun base. You will need to thread washers and nuts on these mounting posts. (The posts are not long enough to extend through two sheets of wood.)
 - The area labeled "Opening for Gun Base & Harnesses" in Figure 2 must be clear for the gun harnesses and gun base.
- The gun harnesses will extend through the holes in the control panel and must be routed into the cabinet. You may need to cut holes in the cabinet to route these harnesses.
- The two control base covers in the kit are provided to cover the area below the guns, with the mounting posts and harnesses, once the guns are installed. The way the covers are installed will vary depending on how far the control panel base extends beyond the width of the cabinet. You may prefer to improvise different covers for this area.
- The plastic Control Panel Housing fits around the wooden Control Panel Base like a glove. Make sure there is adequate clearance for the housing and the guns.
- Make sure that the angle and distance between the guns and monitor will allow both players to shoot at all areas of the monitor.
- Make sure that you have a good location to drill a hole for the Start Button Harness near the center of the Control panel Base.
- You may wish to paint any areas of the underside of the control panel that will be visible with black paint.

Once you are satisfied with the placement of components, perform the following steps:

1. Determine the best location for the four mounting bolts, and then drill four (4) ¼" holes through the wood control panel and the flat surface below.
2. Insert a ¼-20 x 2" bolt in each hole, with a flat washer above and below the surface, and secure it with a Kep nut.
3. Drill a hole, 1" diameter or larger, near the center of the control panel for the Start Button Harness.

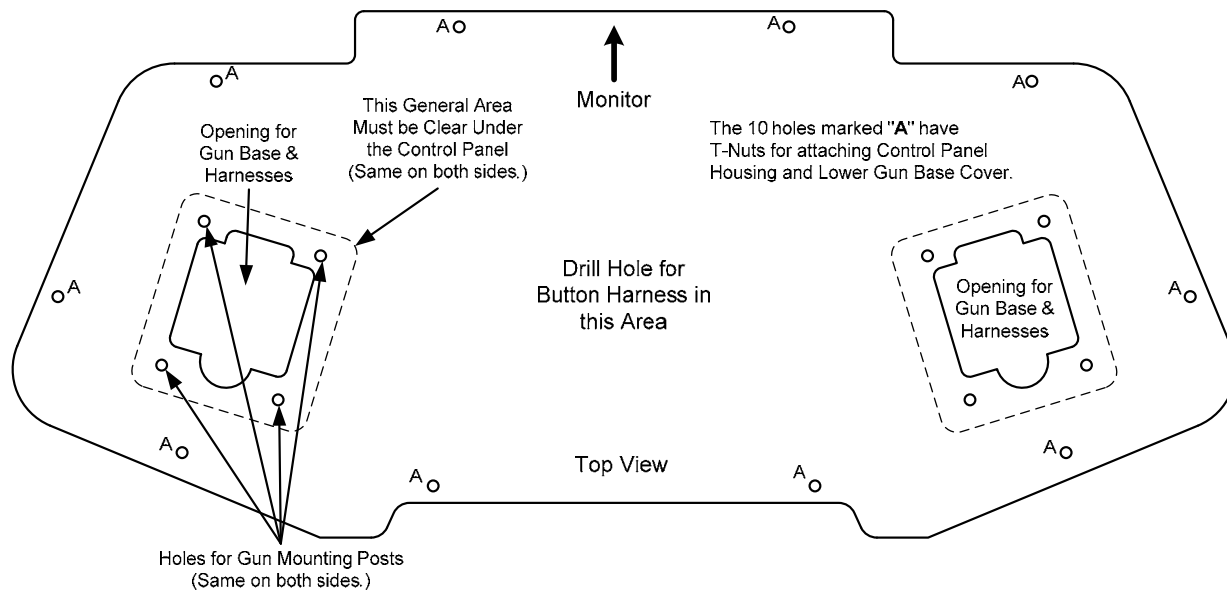


Figure 2. Control Panel Base

2.5 Assemble the Control Panel

Notes: Some assembly steps in this section may have been performed before the kit shipped.

Refer to Figure 4 for a picture of a finished control panel.

Remove protective sheets from the decals and instruction panel plastic.

1. Install the Instruction Panel Artwork and clear plastic in the Control Panel Housing with four (4) #8-32 x 1/2" black pan head tamper-proof screws. Be careful not to over-tighten or you may deform the plastic. (If desired, you can install LED Lighting to the Control Panel Base under the Instruction Panel for backlight illumination.)
2. Apply the Button Panel Decal to the Control Panel Housing.
3. Refer to Figure 3 and Figure 4, and install the Player 1 (green) and Player 2 (blue) Start Buttons and micro switches into the Control Panel Housing.
4. Connect the Start Button Harness (Part # 115-0096-01) to the button connectors, referring to Figure 3 and the labels on the harness connectors. Below is a key to the labels:

Label	Description	Wire Color
ST1 SW	START 1 Signal	White / Black stripe
ST1 GRND	START 1 Ground	Black / White stripe
LT1 12V	START 1 Lamp Power	Yellow
LT1 GRND	START 1 Lamp Ground	Black / White stripe
ST2 SW	START 2 Signal	White / Brown stripe
ST2 GRND	START 2 Ground	Black / White stripe
LT2 12V	START 2 Lamp Power	Yellow
LT2 GRND	START 2 Lamp Ground	Black / White stripe

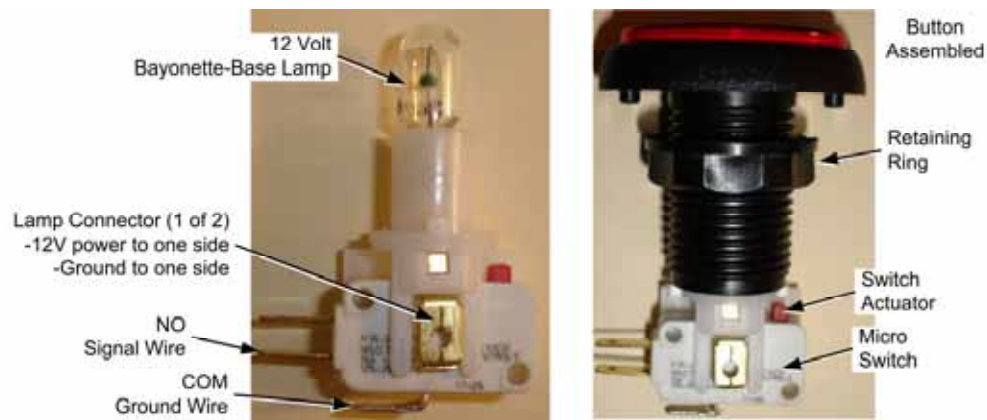


Figure 3. Start Button Assembly



Figure 4. Control Panel Artwork Placement

5. Place the plastic Control Panel Housing over the wood Control Panel Base and route the Start Button Harness into the cabinet.
6. Secure the plastic Control Panel Housing to the T-Nuts installed in the Control Panel Base with the eight (8) ¼-20 x 3/4" black pan head screws with black flat washer and lock washer. (Install with lock washer first and flat washer against the plastic.)
7. Slide each gun into the Control Panel Housing as shown in Figure 5 and place it on the Control Panel Base with the threaded mounting studs extending through the holes in the wood. Secure each gun below the Wood Control Panel Base with four (4) ¼-20 Kep nuts with flat washers.
8. Secure a terminal on the Earth/Ground Cable (Part # 115-0099-01) to the ground lug on the base plate of each gun with the #8-32 Kep nut already installed on the ground lug.
9. Route the gun harnesses into the cabinet. If needed, install each Control Base Cover in place to cover the area below the guns and secure with black wood screws and fender washers.

10. Apply the Decals to the Gun Base Covers as shown in Figure 4.
11. Secure each Upper Gun Base Cover to the Control Panel Housing using two (2) #8-32 x 1/2" black tamper-proof pan head screws with #8 flat washers, and one (1) 1/4-20 x 3/4" black tamper-proof pan head screw with 1/4" lock washer and flat washer.
12. Secure each Lower Gun Base Cover to the Control Panel Housing using three (3) #8-32 x 1/2" black tamper-proof pan head screws with #8 flat washers.

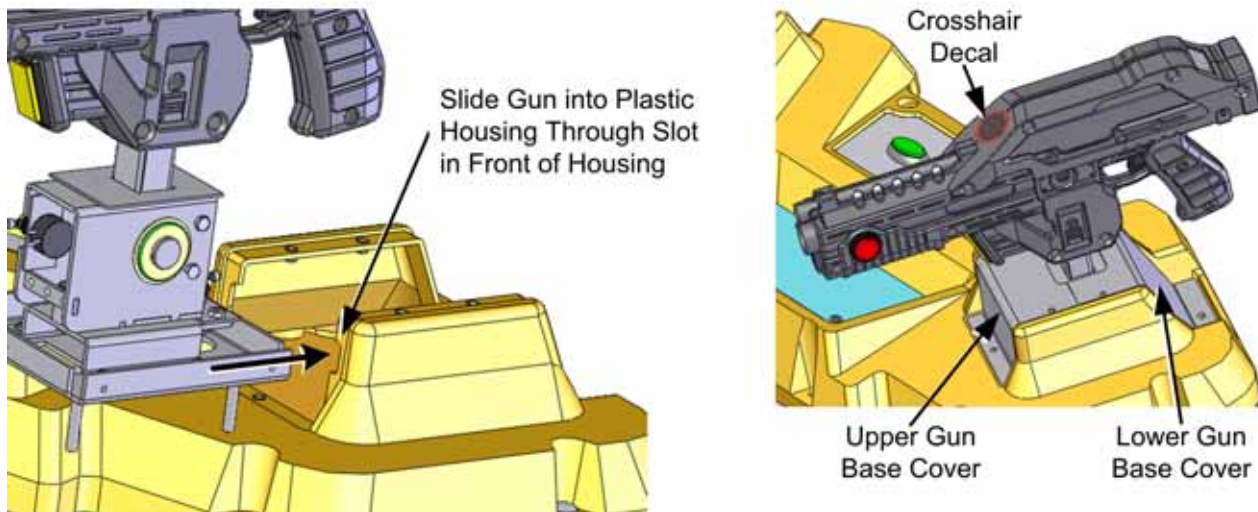


Figure 5. Install Guns & Gun Base Covers

2.6 Install the +12/+24 VDC Power Supply

The +12/+24 VDC Power Supply provides 24 VDC power to the guns and 12 VDC power to the GVR I/O Mini PCB.

If the cabinet has an existing +5/+12 VDC power supply, GLOBAL VR recommends that you use it to power the GVR I/O Mini PCB and any other applicable components. You **must** keep the existing power supply if your cabinet has a 5-Volt Coin Door.

Refer to Figure 6 for a diagram of connections to the Power Supply.

1. Locate the mounting bracket packaged with the power supply and secure it to the power supply with the included screws. You will use this bracket to secure the power supply in the cabinet.
2. Connect the Gun Power Harness (Part # 115-0097-01) to the power supply terminals as follows:
 - **Black Wire: GND** ● **Yellow Wire: +12V** ● **Red Wire: +24V**
3. If you are using the +12/+24 VDC Power Supply to provide +12 VDC to the GVRI/O PCB, connect the +12 VDC Harness (Part # 115-0079-01) to the power supply terminals as follows:
 - **Black Wires (Both): GND** ● **Yellow Wire: +12V** ● **Red Wire: Not Used**
4. Connect the AC Power Harness (Part # 115-0008-01) to the power supply terminals as follows:
 - **Green Wire: FG** ● **Black Wire: AC L** ● **White Wire: AC N**
5. Install the Power Supply in a location where there is good air circulation and the harnesses will reach the components. Secure it in place using the mounting bracket and two (2) #8 x 5/8" woodscrews.

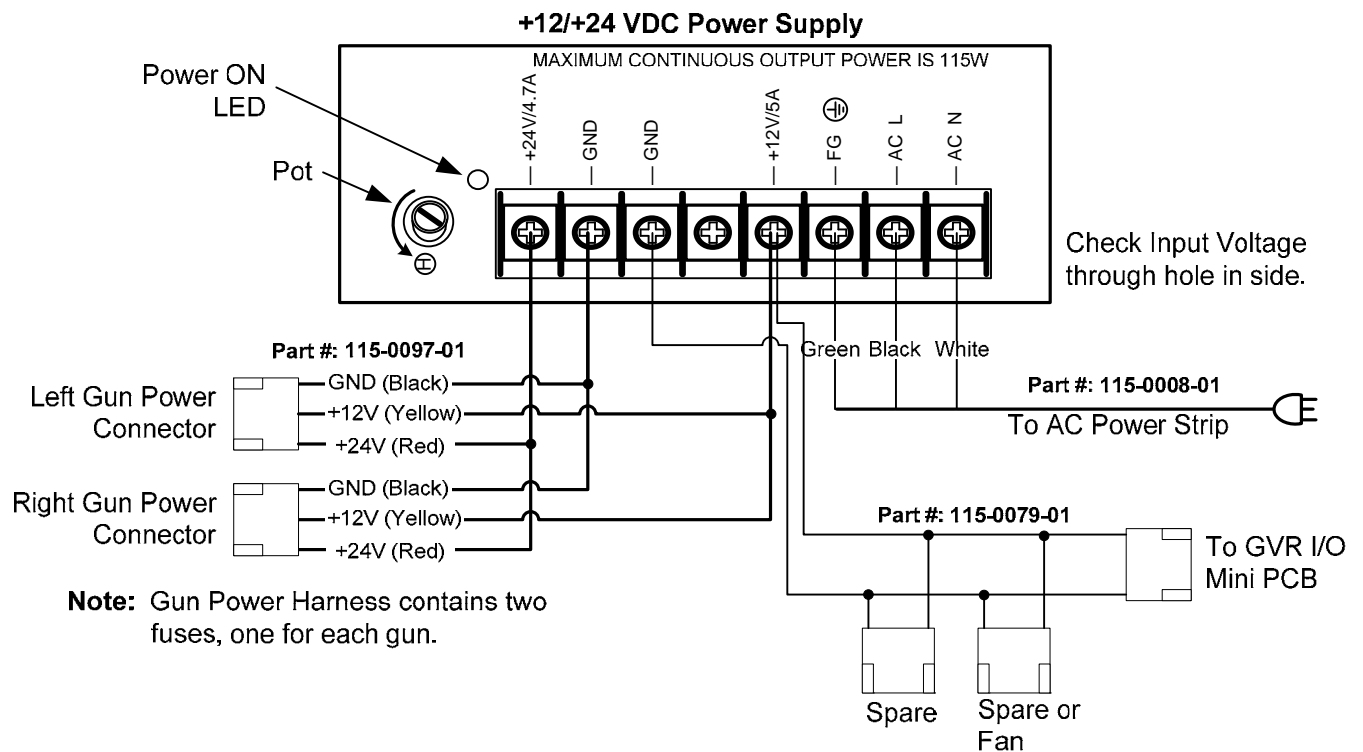


Figure 6. +12/+24 VDC Power Supply Connections

2.7 Install the Ventilation Fan

The cabinet must have adequate ventilation to prevent the system computer from overheating. Do the following to install the ventilation fan from the kit in the back of the cabinet:

Note: A 12-volt fan, powered by the DC power supply, can be used but may cause audio noise.

1. Install the fan behind existing ventilation holes, or cut a 4.5" diameter hole in the back of the cabinet. Use the included grill as needed. Using the fan as a template, drill four 7/32" holes for the fan mounting bolts. Secure the fan to the cabinet with four (4) #8-32 x 3" screws with two #8 flat washers and Kep nuts. (Place a flat washer on each side of the fan.)
2. Connect the power cord to the fan and the AC power strip.
3. If the fan is in the **lower** part of the cabinet, make sure it draws air **into** the cabinet. If the fan is in the **upper** part of the cabinet, make sure it blows air **out of** the cabinet.



Figure 7. Installing the Ventilation Fan

2.8 Install the Computer

1. Place the computer in the cabinet so that there is at least a 6-inch clearance in front so the DVD-ROM drive can open. If possible, place the computer so that you can reach the rear panel connectors through the back door, and the DVD-ROM drive through the coin door.
2. The computer should be placed against the side wall. If a cleat along the bottom of the cabinet prevents putting the computer firmly against the wall, install a piece of wood of the same width to support the top of the computer and keep it from wobbling sideways. For extra protection, you can install a sheet of dense packing foam under and at the side of the computer.
3. Refer to Figure 8 for an example of how to secure the computer with the mounting strap. Using two (2) #10 x 3/4" wood screws with fender washers, secure the ends of the strap as close as possible to the top and side of the computer. Make sure the two parts of the strap are lined up so they will buckle near the center of the computer. Buckle and tighten the strap.

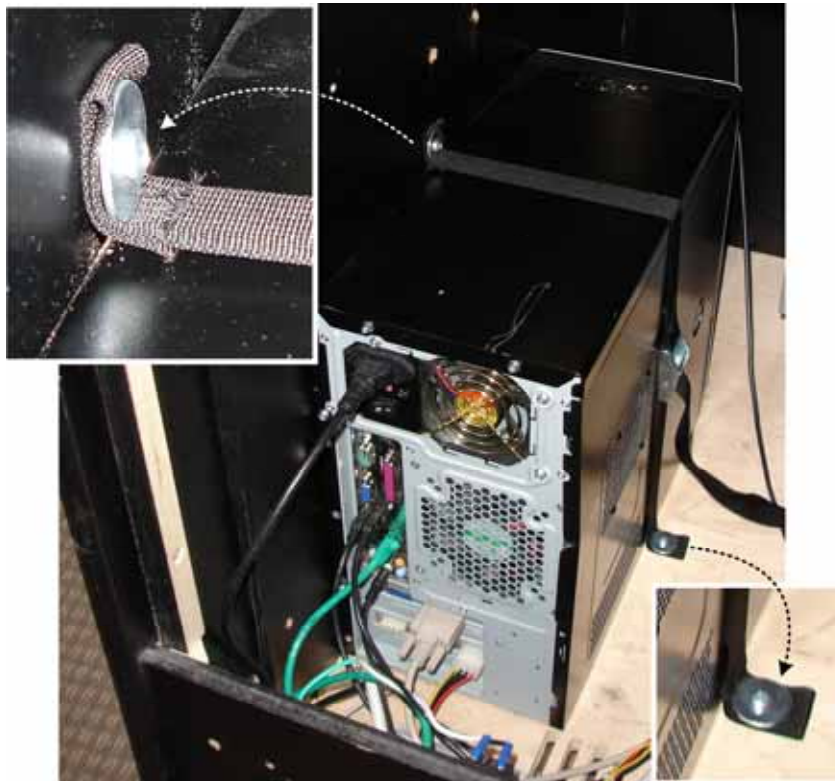


Figure 8. Securing the Computer

2.9 Install Operator Button Panel and Connect Coin Door

Refer to Figure 12 on page 23 to see how the operator buttons and coin door components connect to the Main Harness from the kit.

If your cabinet already has an Operator Button Panel with four buttons, you may be able to connect directly to the Main Harness in the kit. In most cases you will need to use the Operator Button Panel and harness from the kit, and splice the leads to the coin door components as described in the table below.

1. Connect the 9-pin Molex connector from the Operator Button Panel harness to the corresponding connector on the main harness (Part # 115-0095-01).
2. Connect the 6-pin Molex connector from the Operator Button Panel harness to the corresponding connector on the main harness.

Important: If your coin door has 5-volt lamps or coin counter you must connect them to +5 VDC from your existing power supply and connect only the ground leads on the harness from the kit.

3. Splice the leads on the Operator Button Panel harness to the appropriate coin door components using the butt splices from the kit or your preferred splicing method.
4. Use adhesive Velcro to secure the Operator Button Panel to a convenient location inside the coin door.

Label	Description	Wire Color
12V Lamp*	+12 VDC to Coin Lamps	Yellow
12V CC*	+12 VDC to Coin Counter	Red
GND CC	Coin Counter Ground	White / Brown stripe
Switch GND	Coin Mech Ground	Black / White stripe
Lamp GND	Coin Lamp Ground	Black / White stripe
Coin 1	Coin 1 Signal	White / Red stripe
Coin 2	Coin 2 Signal	White / Orange stripe

*If your coin door uses +5 VDC coin counter and lamps, do not connect these leads.

2.10 Install the GVRI/O Mini PCB

The GVRI/O Mini PCB routes all signals between the controls and System Computer, and also contains the Audio Amp. The PCB requires +12 VDC power through a 4-pin PC Power Connector.

1. Find a good location in the cabinet to mount the GVRI/O Mini PCB. Make sure that all harnesses will reach the PCB and the PCB will not be exposed to excessive heat. (If you install on a wall, placing the PCB so the USB connector faces up will help keep the USB cable securely connected.)
2. Mount the PCB with the plastic feet from the kit, securing a terminal of the Earth/Ground Cable (Part # 115-0099-01) under one of the screws so it is between the screw head and the PCB.

2.11 Make Remaining Connections

Caution: Power must be **OFF** when making connections.

Note: Connectors on the GVRI/O Mini PCB are keyed to accept only the correct connector.

Refer to Figure 9 for connections to the GVRI/O Mini PCB. Also see Figure 12 and Figure 13 on pages 22 and 24 for detailed wiring diagrams. Refer to Figure 14 on page 25 for a diagram of ports on the back of the computer.

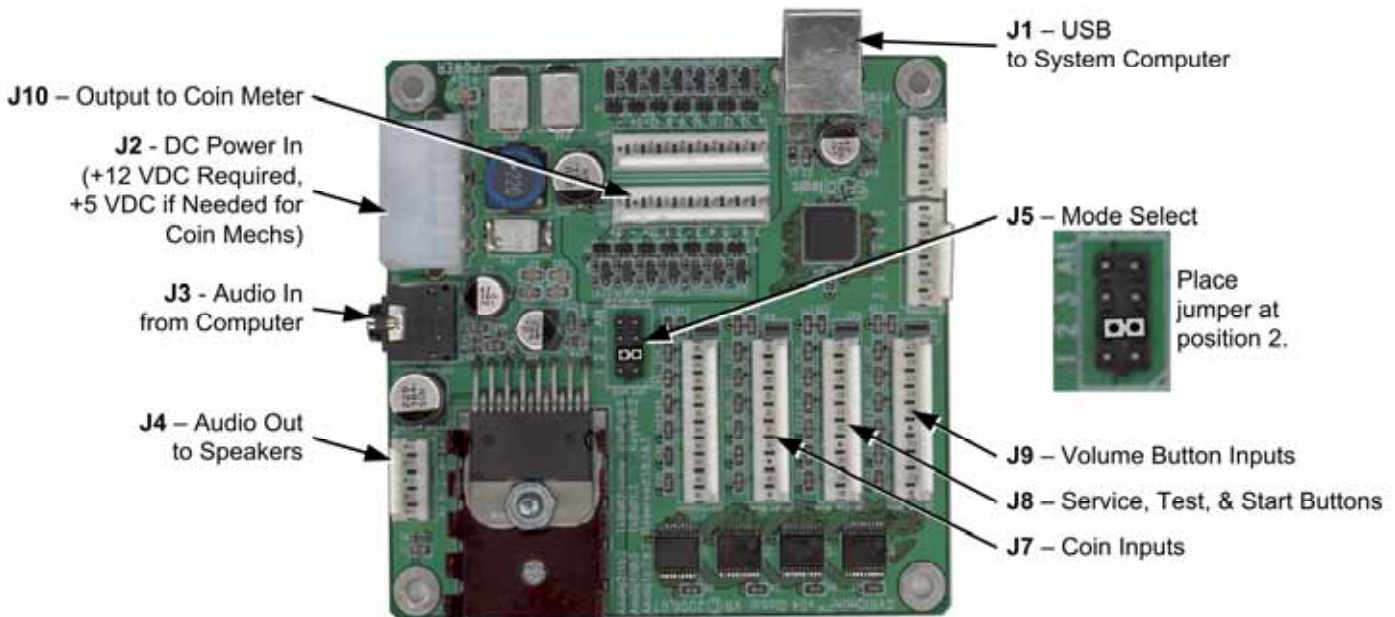


Figure 9. GVRI/O Mini PCB, Version 04

1. Verify that the Ground Cable (Part # 115-0099-01) is secured to the following:
 - Secure earth/ground (usually on AC power plate)
 - GVRI/O Mini PCB
 - Ground lug on mounting plate of each gun
2. Make sure the coin door is properly grounded.
3. Make sure a jumper is installed at position 2 of **J5** on the GVRI/O Mini PCB.
4. Connect the Main Harness (Part # 115-0095-01) as follows:
 - a. Connect the **START BUTTONS** connector of the Main Harness to the Start Button Harness.
 - b. Connect **J7** of the Main Harness to **J7** on the GVRI/O Mini PCB.
 - c. Connect **J8** of the Main Harness to **J8** on the GVRI/O Mini PCB.
 - d. Connect **J9** of the Main Harness to **J9** on the GVRI/O Mini PCB.
 - e. Connect **J10** of the Main Harness to **J10** on the GVRI/O Mini PCB.
5. Connect a 4-Pin PC Power Connector from the DC Power Harness to **J2** on the GVRI/O Mini PCB.
6. Connect the Audio Harness (Part # 115-0100-01) to the speakers and **J4** on the GVRI/O Mini PCB.

7. Connect the USB cable (Part # USB-AB06MM) from the first (left-hand) PCI USB port in the computer to **J1** on the GVRI/O Mini PCB.
(**Do Not** use a motherboard USB port to prevent static shock to the PCB.)
8. Connect the 3.5 mm audio cable from the **Green** audio out port on the computer to **J3** on the GVRI/O Mini PCB (or to the existing audio amp if you are using it).
9. Connect the Gun Power Harness from the power supply to the corresponding connectors from the guns.
10. Connect the video cable from the monitor to the DVI port on the video card in the computer.
Important: Do not use the motherboard video ports or you will get poor-quality video.
11. Connect a USB Extension Cable (Part # USB-EXT-6) to each gun cable and then connect the cable from **Player 1 gun** to the second USB port from the left, and **Player 2 gun** to the third USB port from the left on the PCI USB card in the computer. (**Do Not** use motherboard USB ports to prevent static shock.)
12. Connect the computer power cord to the computer and the AC power strip.
13. Use wire ties to secure the cables and harnesses in the cabinet. Make sure wires are positioned where they will not be pinched or pulled. If you left old harnesses in the cabinet that are no longer used, bundle and tie them out of the way.

Note: The technical part of the conversion is now complete. You can power on and test the cabinet now, as described in Section 2.15 on page 19. You will see two images on the screen until you set the game to 2D Mode.

2.12 Apply the Cabinet Decals

1. Refer to Figure 10 on page 18 and position a Side Panel Decal on each side of the cabinet so it is straight and in the same position on both sides. If the cabinet has carriage bolts on the sides, avoid applying the decals over the carriage bolts. Peel off the backing paper and apply the decal, carefully pushing out any air bubbles.
2. Use a new Exacto knife to trim any excess material from the decal, using the outside edge of the cabinet as a guide.
3. Apply a Logo Decal to each side panel in a visibly pleasing location.
4. If you wish, order additional Side Panel Decals to dress up the front of your cabinet, as shown in Figure 10. Decals and other parts and supplies are available from our online store, <http://parts.globalvr.com>.



Figure 10. Cabinet Artwork Placement

2.13 Install the Marquee Artwork

1. Remove the screws for the top bracket that holds the marquee glass and artwork to the cabinet, and remove the glass and old artwork. (This step may vary depending on the cabinet used.)
2. Clean both sides of the marquee glass.
3. Use the glass as a guide to trim the graphic to fit the marquee.
4. If you will be running the game in Yellow-Label Mode, apply the Yellow Ratings Label decal over the red label printed on the marquee artwork.
5. Re-install the glass with the new artwork, and re-install the top bracket.

2.14 Apply the Rear Cabinet Labels

Place the serial number and safety labels on the back of the cabinet as described below:

1. Place the Cabinet Serial Number sticker in the upper left-hand area. (You will need this number if you contact GLOBAL VR Service.)
2. Place the FOR INDOOR USE ONLY, DISCONNECT FROM POWER SUPPLY BEFORE SERVICING, and SHOCK HAZARD labels just above the cabinet rear door.
3. For 110-Volt Cabinets Only, place the 110 VOLTS label close to where the AC power cord enters the cabinet.



2.15 Install the New Game Sign

Install the New Game Sign from the kit behind the marquee or the monitor so the "NEW" starburst is visible above the cabinet.

2.16 Calibrate Guns, Test and Set Up the Game

Note: You will see two images on the screen until you set the game to 2D Mode in Step 3.

Refer to *The Swarm Operation Manual for Kit Systems* (part # 040-0243-01) for detailed instructions on using the Operator Menu to set up and test your game.

1. Power on the game. The Gun Calibration screen should appear the first time you power on the cabinet. If it does not, you can select it from the Operator Menu.
2. In the Gun Calibration screen, move each gun to the farthest point on each axis so that the corresponding side of the square turns green. This indicates that the gun is calibrated on that axis. (See your Operation Manual for more information.)
 - If a gun seems to move the wrong direction, press the **Shield** or **Grenade** button on the gun to invert the X or Y axis.
 - 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 Gun Calibration screen.
3. The Attract Movie will now start. Open **Machine Settings: Settings** in the Operator Menu and set **3D Display** to **Disabled**.
4. Use the Operator Menus to set the date and time, pricing, and any other desired settings.
5. If you will be operating the game in **Yellow Label** mode (less gore and you can't shoot humans), change the setting in **Game Settings: Settings** in the Operator Menu.
6. 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.)

Chapter 3 — Kit Troubleshooting

This table lists issues that are most likely to occur after assembling a kit system. Please see *Troubleshooting in The Swarm Operation Manual for Kit Systems* for additional troubleshooting tables.

Problem	Possible Cause	Possible Solution
No image on monitor	Wrong type of monitor	The Swarm will only run with a 16:9 aspect ratio (widescreen) monitor.
	No power to monitor	Make sure the monitor is connected to AC power.
	Bad video cable	Make sure the video cable is firmly connected to the monitor and a DVI port on the video card (not the motherboard) in the system computer. Make sure cable is not kinked or frayed. Replace with a new cable.
Two images seen on screen	Game is in 3D mode	Open Machine Settings: Settings in the Operator Menu and set 3D Display to Disabled .
No audio	Bad connections	Make sure the audio cable is connected from the green audio out port on the system computer to the GVRI/O Mini PCB or separate audio amp. Make sure speakers are properly wired to the GVRI/O Mini PCB or separate audio amp. Connect headphones the green audio out port to test audio output from the computer.
	Volume set too low	Set volume from Sound Options in the Operator Menu. Check volume pot on separate audio amp if applicable.
Guns are not working	No power to guns	Make sure the guns are properly connected to +12 and +24 VDC from the power supply and the power supply is properly connected to AC power. Make sure fuses in gun power harnesses are not blown. Note: Gun lights require +12 VDC from the power supply. Force-feedback requires +24 VDC from the power supply.
	Bad USB connection	Make sure the guns are connected to PCI USB ports, not motherboard USB ports. (Turn off cabinet before changing USB connectors.) Check connections to USB extension cables.
Force-Feedback recoil and LED flash in the wrong gun	Gun wiring is reversed	To compensate, set <i>GUN I/O SWAP</i> to <i>ON</i> under Game Options in the Operator Menu.
Start Buttons do not work	Bad connections	Make sure wires are connected to the correct spades on the button micro switches (see Figure 3). Check the Main Harness connections to J8 on the GVRI/O Mini PCB and the button harness.

Chapter 4 — Diagrams and Schematics

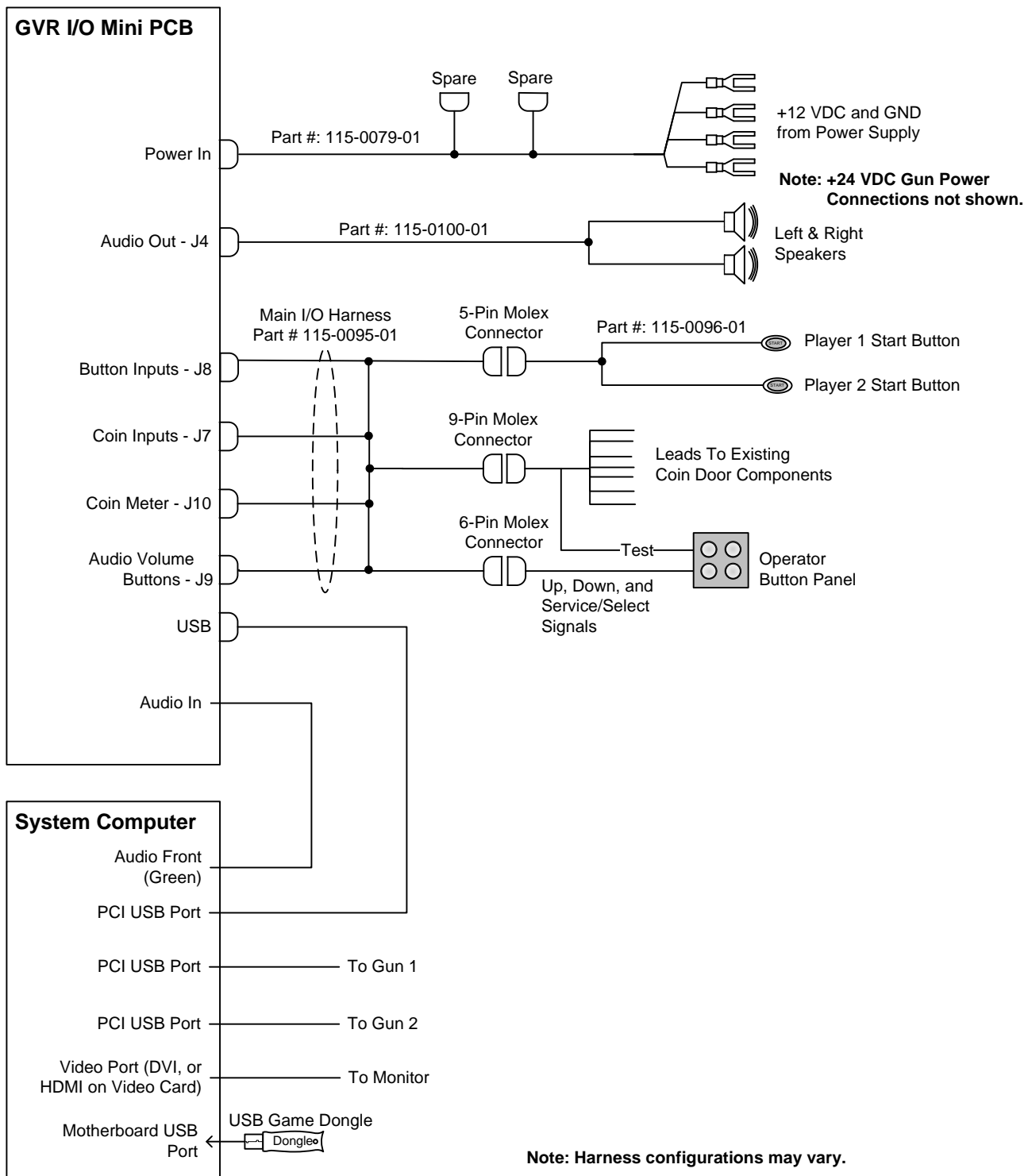
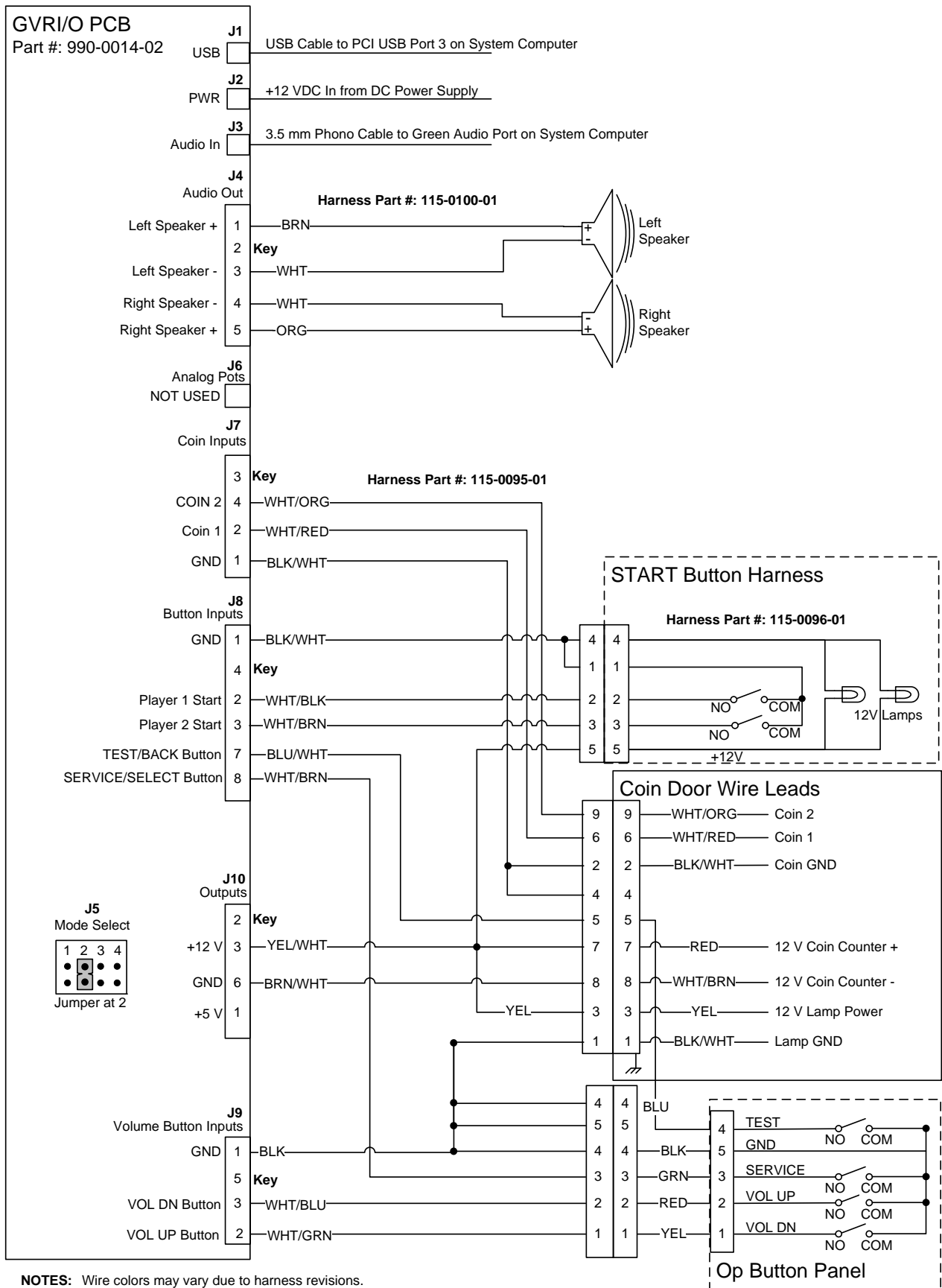
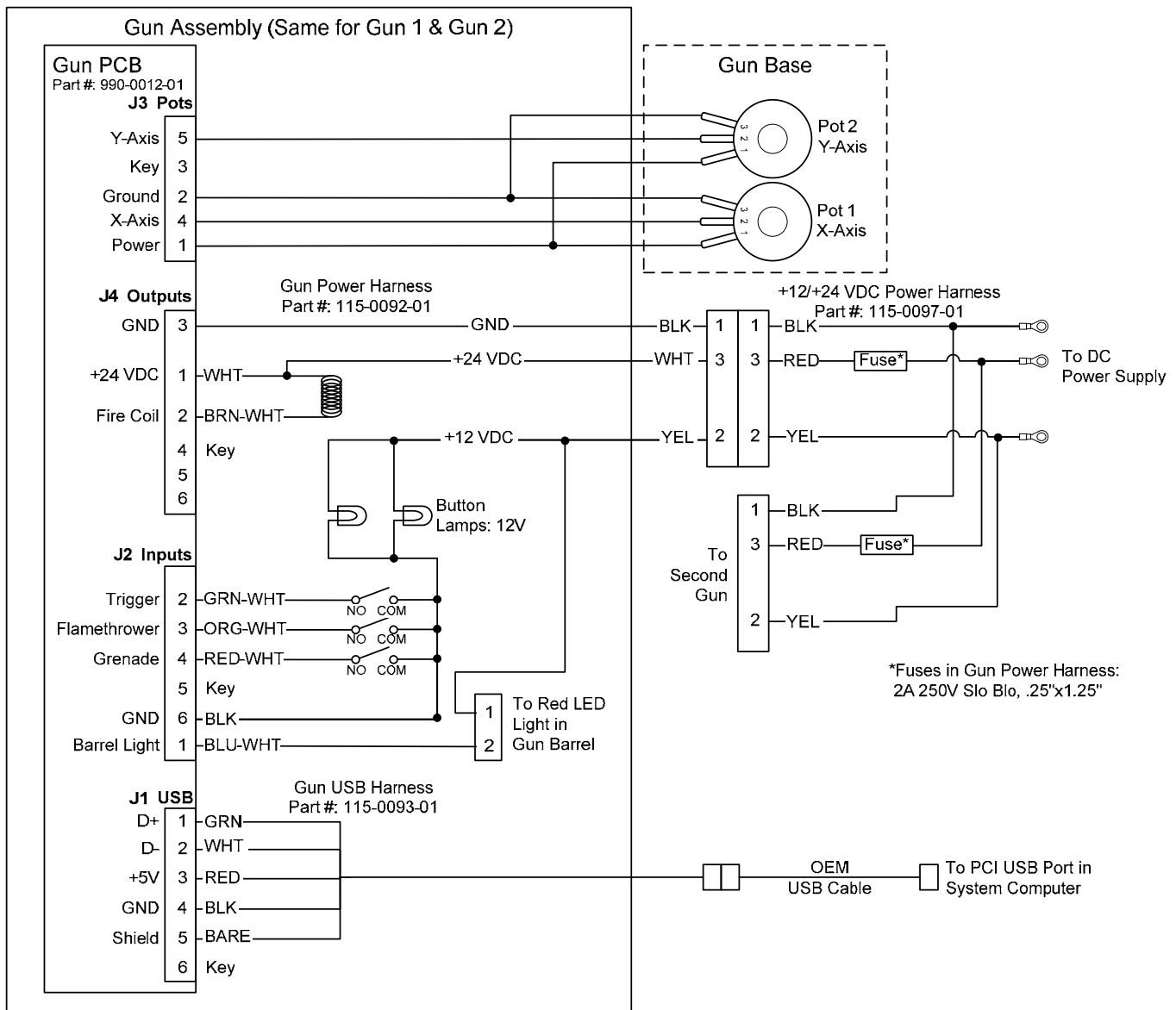


Figure 11. Simplified Wiring Diagram



NOTES: Wire colors may vary due to harness revisions.
Unused pins are not shown.

Figure 12. GVRI/O Mini PCB Wiring Diagram



NOTE: Wire colors may vary due to harness revisions.

Caution: Disconnect power before changing any USB connections or you will damage the PCBs.

Figure 13. Gun Wiring Diagram

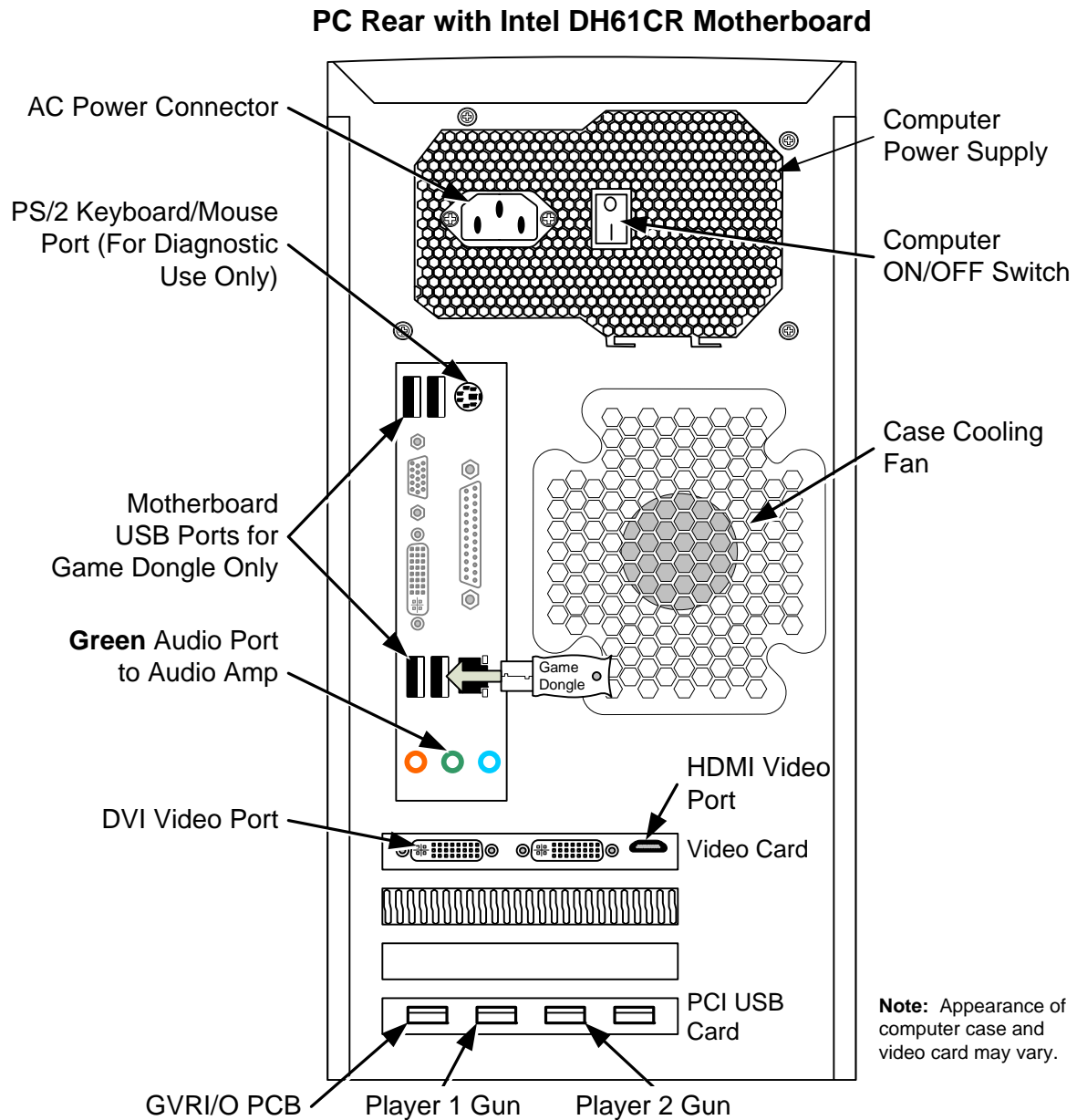


Figure 14. Computer Rear Panel Diagram (DH61CR Motherboard)

Conversion Kit Warranty Information

Warranty Service

If you should require warranty service, please contact your authorized GLOBAL VR[®] distributor. If the technical support staff determines that parts in your conversion kit are defective, a Return Merchandise Authorization (RMA) number will be issued.

LIMITED WARRANTY

LIMITED WARRANTY FOR **The Swarm Universal Conversion Kit** (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

Service & Parts

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

Phone: 408.597.3435

Fax: 408.597.3437

E-mail: techsupport@globalvr.com

Parts E-mail: servicesupport@globalvr.com

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

Online Store: <http://parts.globalvr.com>

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

When you contact Technical Support, please provide the information listed below 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
- Any changes made to the system
- Date of latest software install or upgrade
- For game-play issues, the game mode and number of players

Visit the **GLOBAL VR Online Store:** <http://parts.globalvr.com> to buy replacement graphics and other parts and supplies to keep your games running and looking their best.

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