# NASCAR® Team Racing

## Standard & Deluxe Cabinets
## Operation & Service Manual

040-0233-01  Rev. B

For Software Version 2.0

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

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# Preface

## Safety

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

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

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

- 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

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

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

## Warnings

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

**If a 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

### NASCAR® Team Racing: *A Full NASCAR® Experience*

#### Game Features

- Race bumper to bumper at speeds over 200 MPH

- Sling-shot your car into winning position by earning draft-boosts.
  Draft off your teammates for extra boost

- Tracks with increasing difficulty let players choose the right play level

- Multi-player mode allows *up to 10 players* to race head-to-head to beat their friends

- Players' Card Reader lets players use a nickname and save their stats



Weight: 475 lbs (215 kg)
Shipped: 565 lbs (256 kg)
Height: 72" (183 cm)
Width: 31" (79 cm)
Depth: 64" (163 cm)

Weight: 580 lbs (250 kg)
Shipped: 695 lbs (315 kg)
Height: 79" (201 cm)
Width: 40" (102 cm)
Depth: 74" (188 cm)
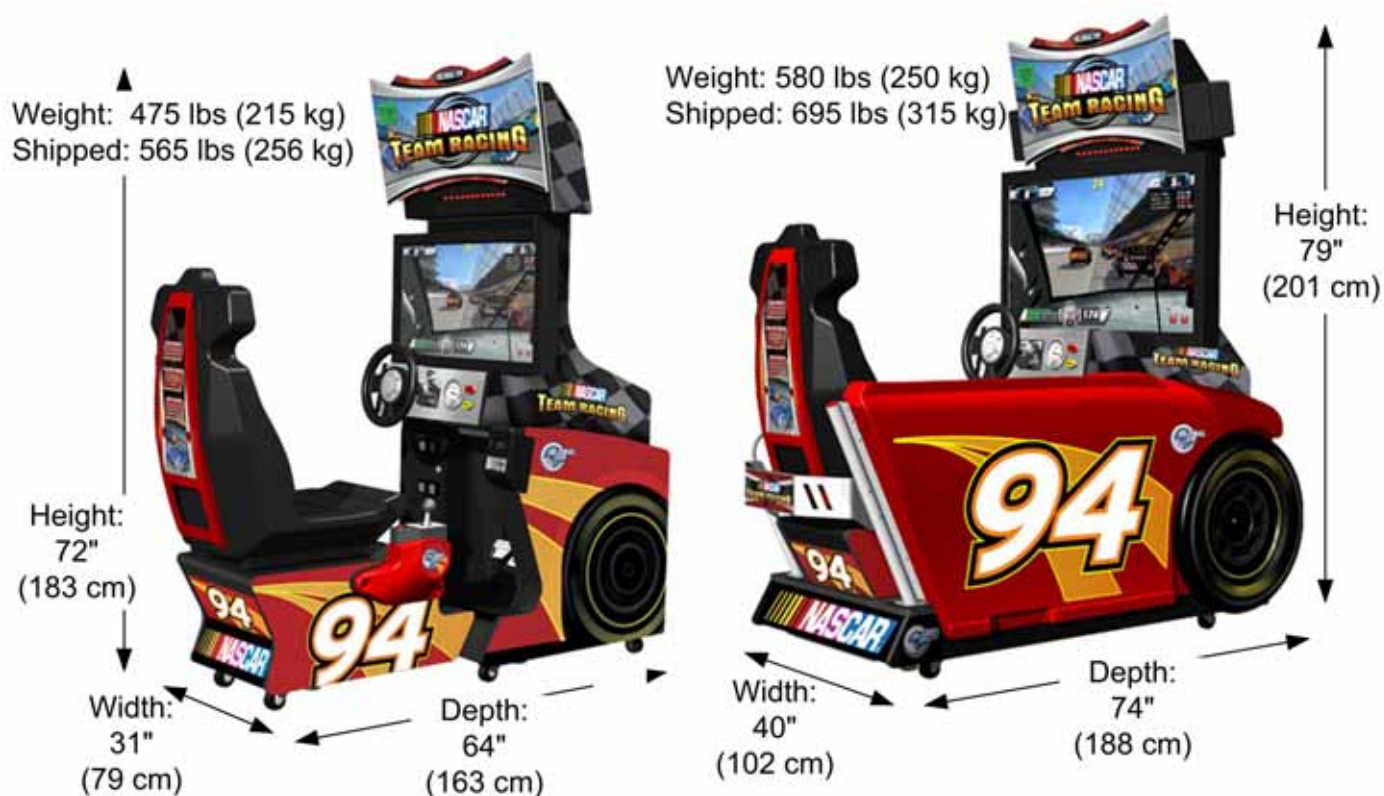
*Figure 1.    Cabinet Dimensions and Weight*

#### Current Requirements (Approximate)

| Voltage | Deluxe Cabinet | | Standard Cabinet | |
|---|---|---|---|---|
| | Inrush | Operating | Inrush | Operating |
| **115 VAC** | 8 Amps | 5 Amps | 6.5 Amps | 4 Amps |
| **230 VAC** | 4 Amps | 3 Amps | 3.5 Amps | 2 Amps |

## Hardware Features

- Dual-core Pentium® computer
- Nvidia® GeForce® graphics
- 1 Gigabyte RAM
- Widescreen LCD monitor
- Supports dollar bill validator

- 6-Channel Surround Sound
- Force-Feedback Steering
- 4-Speed Shifter
- Unique *Racecar* Cabinet Design
- Players' Card Reader

## Game Restart Feature

To keep the software running optimally, the cabinet must be restarted every 24 hours.

For locations that turn their games off every day, no additional restarts are needed.

For locations that leave their games turned on continuously, the software will automatically restart the game once every 24 hours according to the following conditions:

1. If the game has been running continuously for at least 24 hours,
   **and** the game has been in Attract Mode for at least 15 minutes,
   **then** the following screen will be displayed:
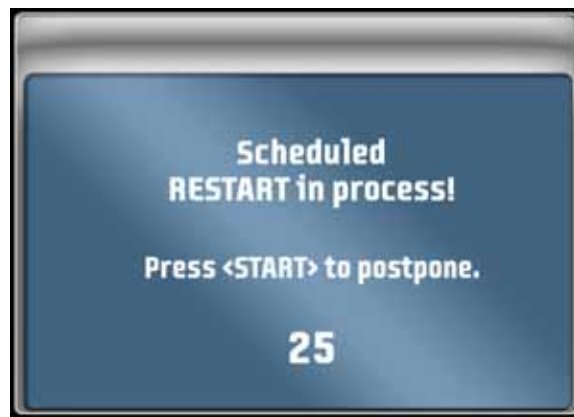


2. The screen will count down for 30 seconds.

   If a user presses the **START** button, the screen will not appear again until the next time the Attract Mode has been running for 15 minutes.

   If nobody presses the **START** button, the game will shut down and restart, which will take about 3 minutes.

3. After the cabinet completes the Restart, the next Restart will be scheduled for 24 hours later. If the initial Restart happens to be scheduled during a busy time for your location, the action of players pressing START to postpone will move the restart to a time that is not busy.

## Chapter 2  —  Installing a New Cabinet

Use the following procedure to set up your game:

1.  Carefully remove the cabinet from the shipping container, giving yourself plenty of space. 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.
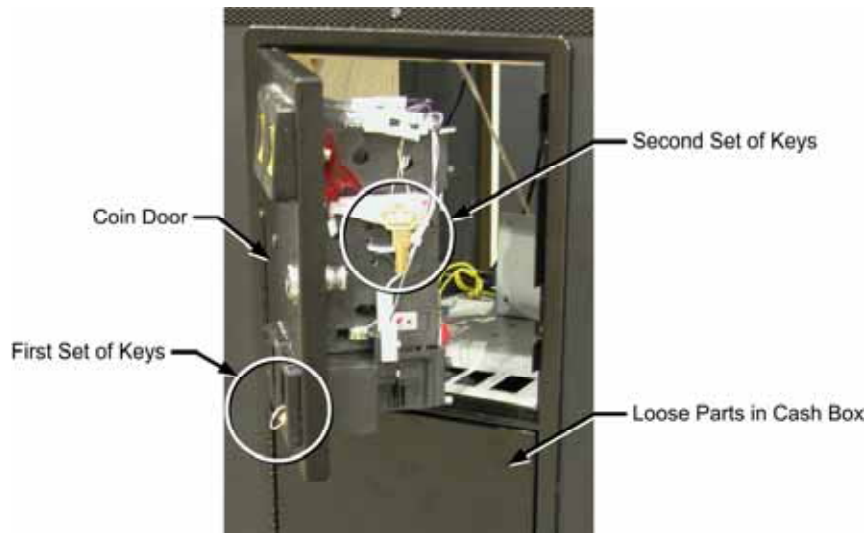


*Figure 2.    Coin Door with Key Location*

3.  Locate the envelope containing manuals, software and accessories; you should find the following items in the envelope:

    - System Manual (This Document)
    - Software Restore Guide
    - System Recovery Disk
    - Game Install Disk
    - Cabinet Number Decals

4.  Open the cash-box door; you should find the following items in the cash box:

    - AC Power Cord
    - OEM Documents
    - CAT-5 Network Cable

5.  Your game cabinet should arrive ready to play, but it is advisable to check inside in case any components have shifted or come loose during shipping.  Remove the three access panels from the back of the cabinet (see page 35), and verify that all components are securely mounted, and all cables and wires are securely connected.  See *Chapter 9  —  Diagrams and Schematics*, beginning on page 76, for wiring and connection diagrams.

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

7.  Power ON the cabinet using the ON/OFF switch located on the lower rear of the cabinet.  Verify that the game boots properly.

    **Note:**  The Steering Wheel will turn as the steering auto calibrates during boot.  Do not touch the wheel during calibration.

8. If the software detects a hardware problem during boot, an error screen will appear. Refer to *Error Message Screens* on page 69 for help with any error screens that may appear.

9. Once the Attract movie starts, play a game to verify that everything works properly.

10. Enter the Operator Menu and set up pricing and other settings.

11. Refer to the section that follows to link cabinets for head-to-head racing.

## Connecting Sections (Standard Only)

1. Insert the seat runners so that they extend out from the cabinet, as shown below. Secure each runner with four (4) 1/4-20 x 1-1/4" hex-head bolts with lock washers and flat washers.



*Figure 3. Installing the Seat Runners*

2. Slide the seat assembly onto the seat runners, leaving enough space to connect the harnesses.

3. Connect the three (3) harness connectors between the cabinet and seat assembly.

4. Slide the seat assembly towards the cabinet while guiding the wire harnesses inside. Attach the seat assembly to the seat runners using four (4) 2-1/4" T-27 Torx screws with 1/4" lock washers and fender washers.

## Marquee Setup

⚠ **WARNING: Keep hands clear of area under marquee as you rotate it into place.**

1. Rotate the marquee up towards the front of the cabinet, as shown in figure Figure 4.

2. Secure the marquee with three (3) 1/4-20 x 1" Torx screws with lock washers and flat washers through the holes in the metal bracket below the marquee, as shown below.
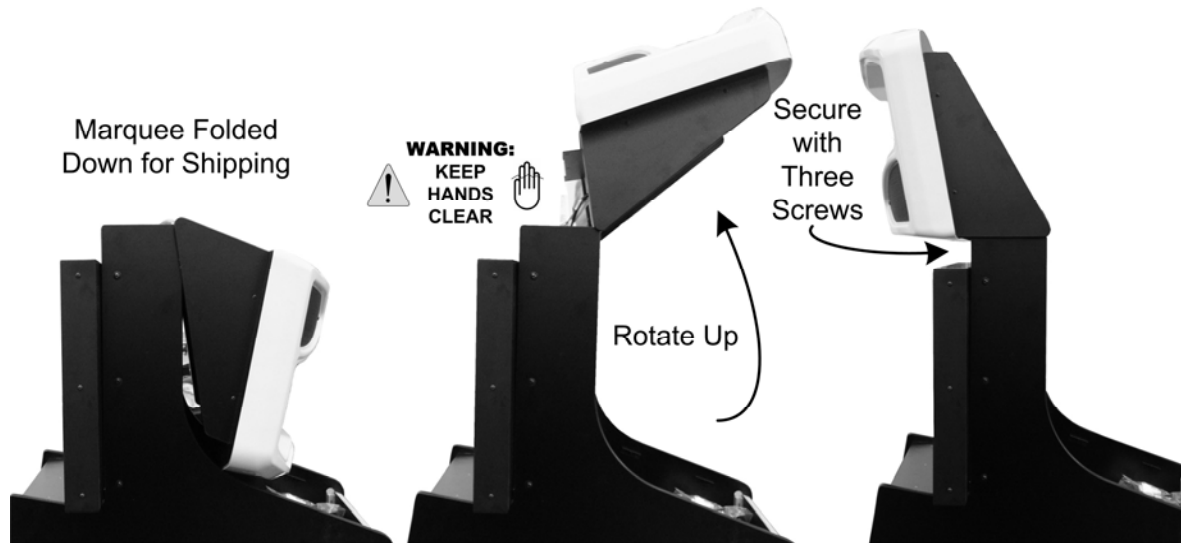


*Figure 4.    Setting up the Marquee*

## Linking Cabinets

You can link **up to Ten Cabinets** for head-to-head competition.  Once the cabinets are linked in hardware and software, the Attract Mode movies will synchronize, and players can choose to play individually or race against other players.  Motion and Non-Motion Cabinets will link.

Each cabinet ships with a CAT-5 Ethernet cable.  Use this cable to link two cabinets directly, or connect it to an Ethernet hub or switch to link more than two cabinets.  A 10/100/1000 Mbps (Gigabit) hub or switch is recommended.  GLOBAL VR has tested linking with the following switches:

• 5-Port Switch:  LINKSYS® SD205          • 16-Port Switch:  D-Link® DSS-16+

**Important:  DO NOT use crossover couplers** to link this game**.**  The motherboard automatically detects a direct connection to another game.  Crossover couplers shipped with older racing games **will not work**.
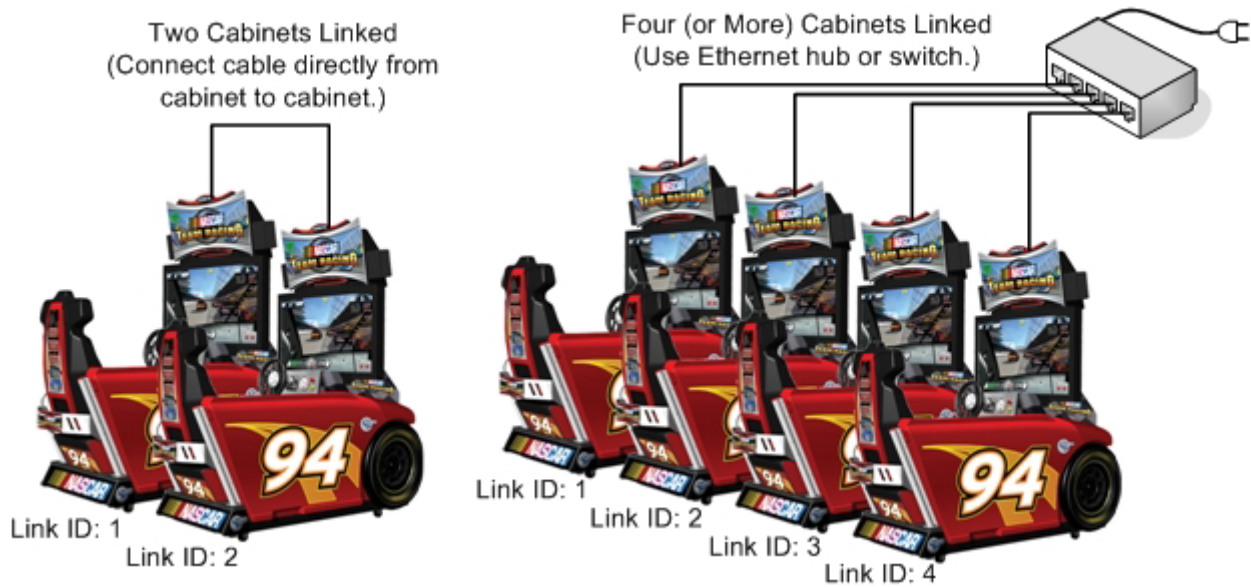
*Figure 5. Linking Cabinets*

1. **Before connecting the Ethernet cables** open the Operator Menu **Machine Settings: Settings** menu on each cabinet and set the Link ID number. Cabinets should be numbered in sequence from left to right, and each cabinet must have a unique number: 1, 2, 3, etc. Exit the Operator Menu to reset the number in the software.

   **Note:** If you skip a number in the cabinet ID sequence, such as numbering cabinets 1, 2, 3, & 5, the skipped number will show up as an empty outline in the **WAITING FOR OTHERS** screen (see page 14).

   **Important:** All linked cabinets must run the same **Software Comm Version**, displayed in the Operator Menu **Machine Info** screen. Software Versions 1.0 and 1.1 have different Comm Versions.

2. Locate the 10' Ethernet cable in the cash box of each cabinet.

3. **To link two cabinets**: Connect one Ethernet cable between the Ethernet ports on the power plate of each cabinet. **DO NOT use a crossover coupler.**

4. **To link more than two cabinets**: Connect an Ethernet cable from the Ethernet port on the power plate of each cabinet to an Ethernet hub or switch (not included) that supports 100 Mbps connection speed. (See recommended switches on the previous page.) **DO NOT use a crossover coupler**. Connect the Hub or Switch to AC power.

## Linking Errors

1. If more than one cabinet has the same Cabinet Link ID number, these cabinets will not link. Repeat Step 1 to correct duplicate Link ID numbers.

   If the software detects a duplicate Link ID number, the *Select A Link ID* menu, shown below, will automatically appear and prompt you to change the number.

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2. Make sure the Game Settings and Coin Settings are the same for all linked cabinets.  (You would have unhappy customers if a setting such as *Winner Gets Free Game* were enabled on some cabinets and disabled on others.)  If the settings listed below are mismatched on a set of linked cabinets, a Blue Dot will appear in the Attract Mode.  Mismatched cabinets will not link, and you will see an explanation of the problem when you enter the Operator Menu.

- Software Comm Version
- Free Game Min Players
- Free Game
- Race Length
- Link ID
- Disabled Tracks
- Disabled Drivers
- Disabled Manual Transmission

A screen like the one below, that shows cabinet 1 running software version 1.5 and cabinet 2 running 2.0, will appear if there is a Software Comm Version mismatch.



## 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.

For a Game Dongle to be recognized correctly, it should be connected before the cabinet is powered ON.  If the software does not recognize the Game Dongle, make sure the Dongle is connected properly, and then power cycle the cabinet to see if this resolves the problem.

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

**Note:** The dongle supplied with the cabinet is specific to the game software version. Future software upgrades may require a new dongle.

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



*Figure 6.    USB Game Dongles*

## Chapter 3 — Driving a Race

This section describes the basics of starting and driving a race.

1. **Select Driver**:  This screen appears after you insert coins and press **START** or the gas pedal.  Turn the Wheel to highlight a driver.  Each screen displays stats about the driver.  Press the Gas Pedal to select.

   **Note:**  If the countdown in the upper right corner reaches **0** on any selection screen, the highlighted item is automatically selected.

   **Select Transmission**:  Turn the wheel to select Automatic or Manual (Stick Shift), and press the Gas Pedal to select.

   **Note:**  Select Track is not available if another driver in a linked cabinet is on the Waiting for Others screen.  In this case you will automatically join that player's race.

2. **Select Track**:  Turn the wheel to select a track.  Each screen displays stats about the track.  Press the Gas Pedal to select.

   Tracks are rated by difficulty, *Normal*, *Hard*, or *Expert*.  Expert and Hard tracks can be locked to keep novice players from selecting them accidentally (see Game Settings:  Settings Menu on page 20).  If tracks are locked, press the ♪ button to unlock.

3. **Waiting for Others**:  If the cabinet is linked, this screen gives other players 30 seconds to join the race.  Press **START** or the Gas Pedal to speed up the countdown.

   Your cabinet will be shown in green, with a pulsing edge, and say *READY*.

   Cabinets shown in blue, that say *AVAILABLE*, are ready for new players to coin up.

   Cabinets shown in orange or yellow, that say *JOINING*, are in the process of joining the race.  Once they join, they will turn green and say *READY*.

   Cabinets shown in gray are in the Operator Menu.

   Cabinets shown only as a white outline are already in a race or not connected.

   **Note:**  If only one driver, track, or transmission type is enabled in software, that selection screen will not appear.

**Note:**  Players cannot start a solo race while the Waiting for Others screen is displayed on a linked cabinet.

Once the race starts, useful information is displayed on the screen, as shown below.



*Figure 7.    Typical Race Screen*

The **DRAFTING** indicator shows when you have accumulated enough draft off the car ahead of you to get a burst of speed to pass.  Once **BOOST READY** lights up, you can slingshot around the car ahead.

When you make it into first place, the **Leader Light** will light up below the marquee.

To quit a game (in a solo race only), press all four control panel buttons at the same time.  (This feature is useful to Operators who want to test the game and then quickly return it to Attract Mode.  It can be Disabled or Enabled from the Operator **Game Settings: Settings** Menu.)

As you drive, you can press the **LOOK BACK** button to see what's happening behind you.

Press the **VIEW** button to change your view of the race.

Press the ♪ button to turn down the music.  Press again to stop the song that is playing.  Press a third time to start a new song.

## Player Login

1.  After coining up, press the music (♪) button to start the registration process.

2.  Follow the onscreen instructions to enter a PIN.

3.  **Optional:**  Insert a magnetic-stripe card (such as a credit card or library card) or a GLOBAL VR Players' SmartCard in the card reader.  The software will use the card to identify you.  No data is copied from the card or written to the card.  Remove your card when prompted.

4.  Enter the nickname you want to use.

5.  When you come back to the same cabinet, or a cabinet linked to it, you can login by pressing ♪ and entering your PIN, or by simply swiping your card.

6.  Once you login, your nickname will be displayed during the race and on the race results screen.

# Chapter 4 — Operator Menu and Game Setup

This chapter describes how to use the Game Operator menu to set up the game, diagnose problems, and view gameplay and earnings statistics.

## Navigating the Operator Menu

1. With the game running in Attract Mode, open the coin door and press the **TEST/BACK** button on the Operator Button Panel to open the Operator **Main Menu**.



*Figure 8.    Operator Button Panel*

2. Use the driving controls to change settings as described below.

3. Once you enter the Operator Menu, use the **VIEW** and ♪ buttons to move up and down through the main list on the left side of the screen.  Pause over a menu item to open the submenu below it, and then use the **VIEW** and ♪ buttons to move through the submenu items.

4. When you move over a submenu item, a blue highlight will appear around the item.  Press the **START** button to open the associated menu or screen.

5. Once you open a menu, use the **VIEW** and ♪ buttons to navigate through the menu items.  Press **START** to select an item and change its setting

6. Some menu items, such as volume levels (see Figure 11 on page 19) use sliders to set numeric values.  A slider, as shown below, will appear when you highlight the item and press **START**. To set the slider, press the **VIEW** and ♪ buttons to increase or decrease the value, and then press **START** again to save the selected value.
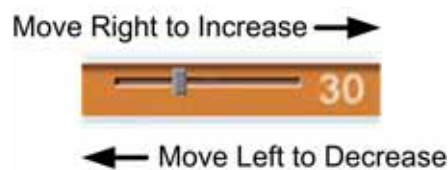


7. Some items use popup menus to select settings, as shown below.  The popup menu will appear when you highlight the item and press **START**.  Press the **VIEW** and ♪ buttons to select from the popup menu, and then press **START** again to save the selected value.



8. When you finish with a menu, press the **LOOK BACK** button to return to the main menu list on the left side of the screen.

9. To exit from the Operator Menu, select **Resume Game** at the bottom of the menu list and press **START**.

**Main Menu**

**Machine Settings**
- Info → Displays hardware and software versions, cabinet registration status, power cycle & maintenance restart times, P2P send/receive times, & GLOBAL VR contact info
- Settings → Lets you set volume, steering feedback strength, whether transmission is selectible, MPH or km/h, and Link ID
- Errors → Lists any errors detected by the software

**Game Settings**
- Settings → Lets you configure *Continue* and *Winner gets Free Game*, lock out expert tracks, set race length, and enable or disable 4-button abort
- Disable Tracks → Lets you enable, lock, or disable each track
- Disable Drivers → Lets you enable or disable each driver in the Select Driver screen
- Game Resets → Lets you reset game settings, statistics, & available credits

**Coin Settings**
- Configuration → Lets you set up pricing, enable free play, enable the service credit switch, and reset credits
- Pricing → Lets you set pricing by mode of play

**Collections**
- Current Earnings → Displays current earnings
- Last Collection → Displays earnings from the previous collection

**Statistics**
- Machine → Displays lifetime earnings and time stats, and average play times
- Game Modes → Displays stats by game mode
- Number of Players → Displays stats about number of players on linked games
- Driver → Displays stats by driver
- Track → Displays stats by track
- Transmission → Displays stats by transmission (automatic or manual)
- Game Time Stats → Displays a graph showing time of each game played
- Continue Stats → Displays a graph showing number of continued games

**Diagnostics**
- Controls → Lets you test controls & coin mechs, and calibrate steering & pedals
- Comm Test → Tests communication between linked cabinets
- Sound Test → Plays sounds to test each speaker
- Monitor Test → Displays monitor test screens
- Monitor Gamma → Adjusts overall brightness of monitor image
- Monitor Vibrance → Adjusts vibrance of monitor image
- Monitor Resolution → Lets you change the monitor resolution
- Card Reader Test → Lets you test the Players' Card Reader
- Motion Test → *Motion Systems Only:* Lets you test the Motion Drive Motors

**Resume Game** → Returns you to the game

*Figure 9.    Operator Menu Flowchart*

**Note:** The **current date and time** is displayed on each menu screen. If you need to change the date or time, refer to *Setting the Date and Time* on page 58. The date and time only appears on Operator Menu screens and does not affect gameplay. Motion Platform Cabinets have additional menu items, including a Motion Test under Diagnostics.

## Machine Settings: Info Screen

This screen, displayed when you first enter the Operator Menu, shows important cabinet info.
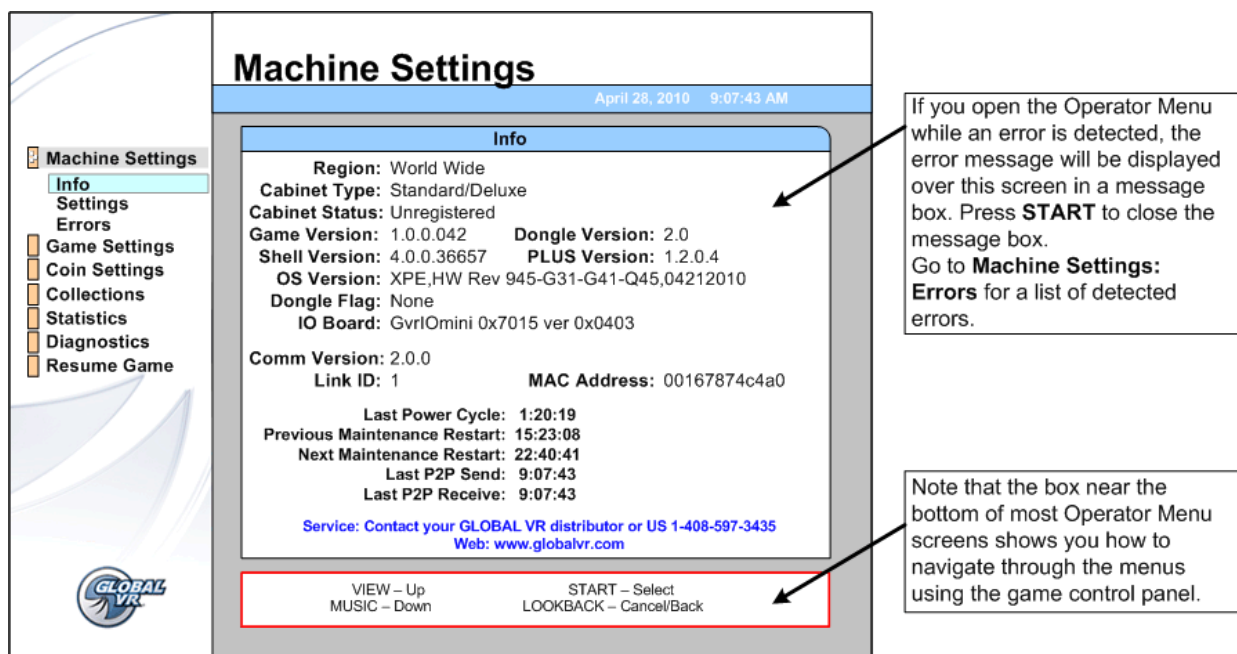


*Figure 10. Machine Info Screen*

| Menu Item | Description |
|---|---|
| Region | Displays the region of operation. |
| Cabinet Type | Displays the cabinet type, Standard/Deluxe or Motion. |
| Cabinet Status | Indicates whether the cabinet is registered. (For possible future development.) |
| Game Version | Displays the installed software game version. |
| Shell Version | Displays the software shell version. |
| OS Version | Displays the operating system version. |
| Dongle Flag | Indicates whether a dongle flag is installed. A dongle flag is generally used to set region-specific requirements. |
| IO Board | Displays the version of the GVR I/O Mini PCB. |
| Dongle Version | Displays the localized version of the software, as read from the Game Dongle. |
| PLUS Version | Displays the PLUS data engine version. |
| Comm Version | Displays the communication software version. |
| Link ID | Displays the Cabinet Link ID. |
| MAC Address | Displays the MAC address of the system computer. This number may be useful to Tech Support for troubleshooting certain cabinet linking problems. |
| 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. |
| Last P2P Send | Displays the time of the last communication sent to other cabinets. |
| Last P2P Receive | Displays the time of the last communication received from another cabinet. |
| Service | Displays the GLOBAL VR Service phone number and website URL. |

## Machine Settings:  Settings Menu

This menu lets you set audio volume, steering feedback strength, enable or disable the service credits switch, and set Link IDs.  It also displays available Service and Paid Credits.
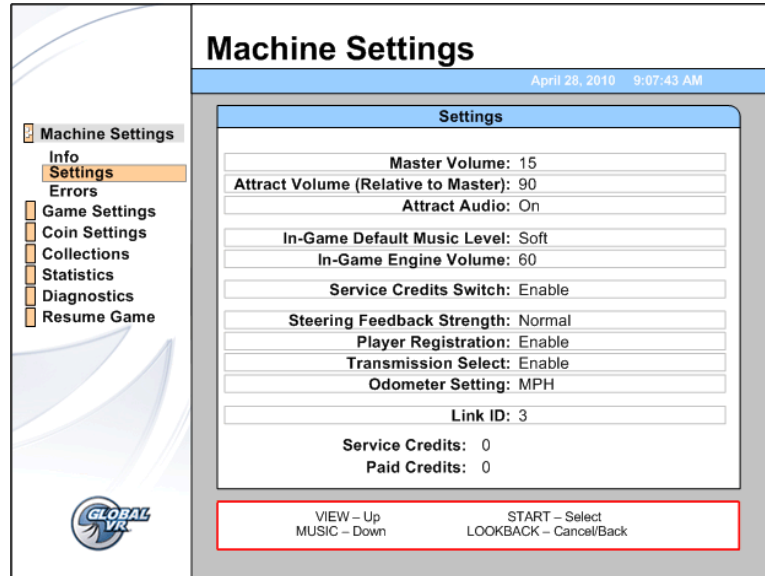


*Figure 11.   Machine Settings Menu*

| 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% of Master Volume. |
| Attract Audio | Sets how often the Attract Mode sound plays. Options are *On*, *Sometimes (1/3)*, or *Off*.  The *Sometimes 1/3* setting plays Attract Audio 1/3 of the time. |
| In-Game Default Music Level | Sets volume of music that plays during the game to *Soft*, *Loud* or *Off*. |
| In-Game Engine Volume | Sets volume of engine noise during the game from 0—100. |
| Service Credits Switch | If enabled, allows you to add Service Credits (for testing the game) using the **SERVICE** button on the Operator Button Panel. Service Credits are counted separately from Paid Credits in the Collections data. |
| Steering Feedback Strength | Sets how strong the Steering force feedback feels. Options are *Normal* or *Light*. |
| Player Registration | If enabled, allows players to create login account to save their stats. |
| Transmission Select | If set to *Disable*, game defaults to Automatic transmission. You can use this setting if the shifter is not working properly. |
| Odometer Setting | Sets odometer to display in *MPH* or *km/h*. |
| Link ID | Sets Cabinet Link ID, used when linking two or more cabinets. <br> **Note:** Link IDs should be sequential from left to right for a set of cabinets. If two cabinets have duplicate link IDs they will not link, and the *Select A Link ID* menu will automatically appear. |
| Service Credits | Displays the number of Service Credits available on the cabinet. |
| Paid Credits | Displays the number of Paid Credits currently available on the cabinet. |

**Note:**  Motion Cabinets have an additional setting for Motion Platform Strength.

## Machine Settings: Errors Screen

The Errors screen displays a list of any errors detected by the software. See page 69 for information on specific Error Messages.

## Game Settings: Settings Menu

This menu lets you set up Play Again and Continue pricing, Free Game awards to winners, race length, and lock out Expert and Hard tracks.

Whenever you change a setting on this screen, it is a good practice to select **Reset Highscore Data** from the **Game Settings: Game Resets** menu.
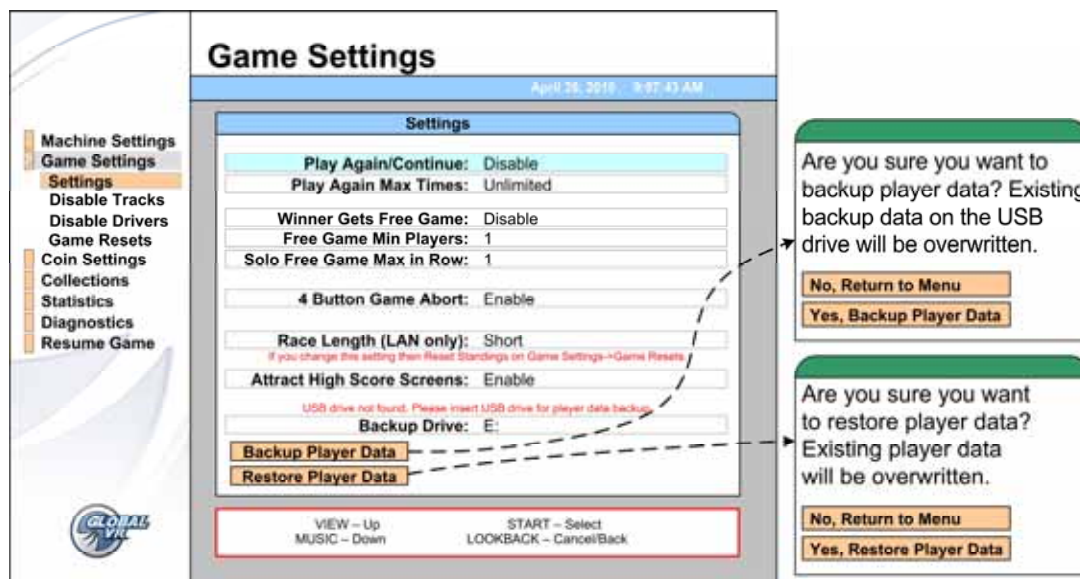


*Figure 12.    Game Settings Menu*

| Menu Item | Description |
|---|---|
| Play Again/Continue | If set to *Enable*, allows you to set different pricing to start playing or continue (play again). Set the pricing from **Coin Settings: Pricing**. |
| Play Again Max Times | Lets you set the maximum number of times a player can use *Continue*. Options are *1*, *2*, or *Unlimited*. |
| Winner Gets Free Game | If enabled, the winner of a race gets a free game. <br> **Note:** Installing *Patch A* will remove this option. |
| Free Game Min Players | If Winner Gets Free Game is enabled, this sets the minimum number of players required for the free game to be awarded. Options are *1—10*. |
| Solo Free Game Max in Row | If Winner Gets Free Game is enabled, and Free Game Min Players is set to *1*, this sets the maximum number of times in a row the free game can be awarded. Options are *1—3 Times*. |
| 4 Button Game Abort | If set to *Enable*, a solo race can be aborted by pressing all four control panel buttons at the same time. |
| Race Length (LAN only) | If set to *Short*, this shortens the length of all races by reducing the number of laps in a race. The number of laps per race varies by track. Options are *Long* and *Short*. If you change this setting, you should also Reset Highscore Data from the **Game Settings: Game Resets** menu. |
| Attract High Score Screen | If set to *Enable*, high scores are displayed during Attract Mode. |

| Menu Item | Description |
| --- | --- |
| Backup Drive | Selects drive letter for USB backup drive. See the sections that follow for more information. |
| Backup Player Data | Writes player data to a USB drive. (See below for details.) |
| Restore Player Data | Restores player data saved to a USB drive. (See next page for details.) |

## Backing Up and Restoring Player Data

NASCAR® Team Racing saves player data in the System Computer. If cabinets are linked, player data is shared between the cabinets. No data is written to Players' Cards.

To keep Player Data safe, you can back it up on any standard USB Flash Drive that works with Windows®. (Do not use a Flash Drive that requires special drivers to be installed on the computer.)

**Important:** GLOBAL VR recommends that you have at least 64 MB of free space on your drive before you back up data. The data will be stored in a folder called "NASCAR_BACKUP". You can copy the folder to a computer for safe keeping if you wish. The folder will contain the three files listed below:

careerprofile.tbl
careerprofilecard.tbl
gameresult.tbl

Since Player Data is shared between linked cabinets, you only need to back up the data from one cabinet in a linked set. If you wish, you can install a USB Extension Cable, as described on page 22, to make it easier to connect the drive.

When you Restore Player Data, the data from the USB drive will replace the data on the cabinet. If the cabinet is not linked, the existing data is lost. If the cabinet is linked, the data is merged with the data on the other cabinets, and no data is lost.

**Important:** Always backup the player data before installing software. When you run the System Recovery Disk you will erase all player data.

## Backing Up Player Data

1. Open **Game Settings: Settings** in the Operator Menu. If your Flash Drive is not connected, you will see the Drive Not Connected message onscreen.

2. If your Flash Drive has more than one partition, scroll down to **Backup Drive:** on the **Game Settings: Settings** screen, and select the drive letter to use. (If you are not sure whether your drive has partitions, try using the default Drive **E:** first.)

3. Connect the USB Flash Drive to the computer, if not already done.

   **Note:** If you connect the drive when the Game Settings: Settings menu is open, the Drive Not Connected message will remain onscreen, but the drive will still work normally. To clear the message, exit from the **Game Settings: Settings** menu and then return.

4. Use the ♪ button to highlight the **Backup Player Data** button, and press **START**.

5. When the dialog box appears, use the ♪ button to highlight **Yes, Backup Player Data**, and press **START**. When the backup is finished, "Done, Successful Backup" will appear onscreen. Press **START** to close the message box.

If you see an error message, make sure write-protection is off for the drive (if applicable), and try a different letter under **Backup Drive:**.

6. Remove the drive and keep the data in a safe place.

## Restoring Player Data

1. Open **Game Settings: Settings** in the Operator Menu.

2. Connect the USB drive with the data files to the computer, if not already done.

3. Use the ♪ button to highlight **Restore Player Data**, and press **START**.

4. When the dialog box appears, use the ♪ **button to highlight** the **Yes, Restore Player Data** button, and press **START**. When restore is finished, "Done, Successful Restore" will appear onscreen. Press **START** to close the message box.

5. You can safely remove the drive now. The player data is now restored. If the cabinet is linked, the data will be merged with the existing data on the linked cabinets shortly.

## Installing a USB Extension Cable

For your convenience, you can run a USB cable from the computer to the area inside the coin door and use it to backup player data. Use a standard USB "A" Extension Cable, 3' or longer. Either USB 1.1 or 2.0 is fine.

Connect one end of the cable to the computer and run the other into the area inside the coin door. Secure it in a convenient location with a cable tie or adhesive Velcro®. Make sure the cable won't get caught in the door or interfere with the coin mechs.

Now you can open the coin door and easily backup player data.

## Game Settings: Disable Tracks or Drivers Menus

These screens allow you to disable or enable any tracks or drivers. Disabled tracks and drivers do not show up in the selection screens.

You can also set tracks to **Lock**. If you do this, players have to press the ♪ button to select these tracks. Hard and Expert tracks are set to Lock by default to prevent novice players from accidentally selecting them from the Track Select screen.

If only one track is enabled, the game will skip the Select Track screen when a player starts a game; if only one driver is enabled, the game will skip the Select Driver screen.

If only one track is enabled, the software ignores the Expert Track Lockout setting (set in the Game Settings: Settings menu).

**Note:** Linked cabinets must have the same tracks and drivers available. If linked cabinets do not have the same tracks and/or drivers available, a blue dot will appear in the lower right corner of the Attract screen to indicate a Cabinet Mismatch, and the games will not link.
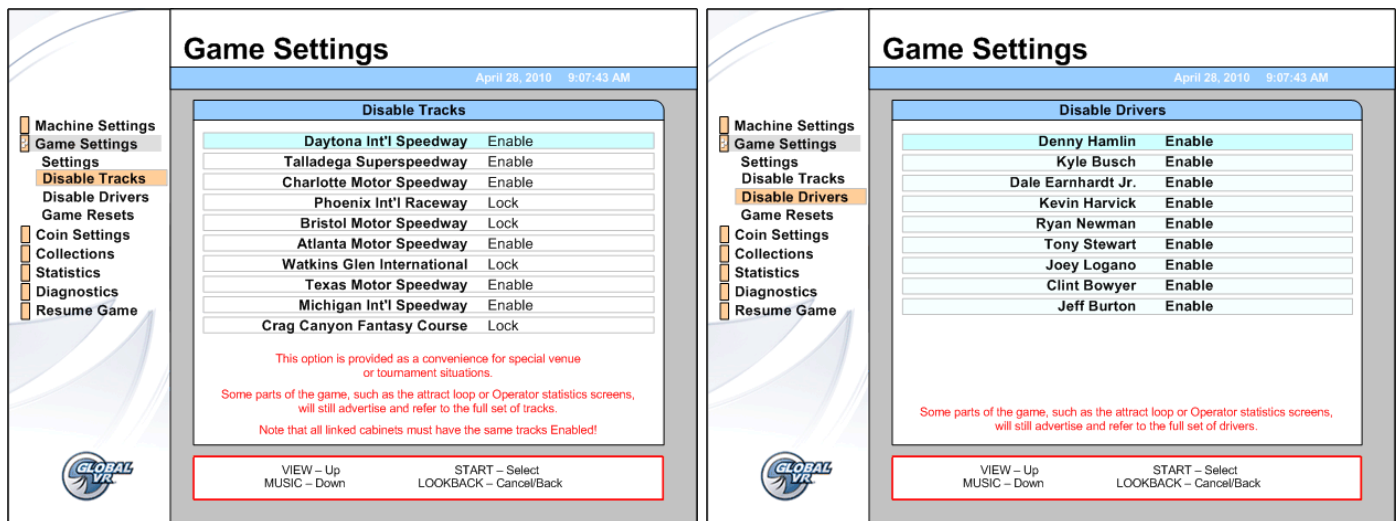


*Figure 13.   Disable Tracks and Disable Drivers Menus*

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## Game Settings: Game Resets Menu

This menu lets you restore factory default settings, or reset cabinet statistics, highscore data, 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.
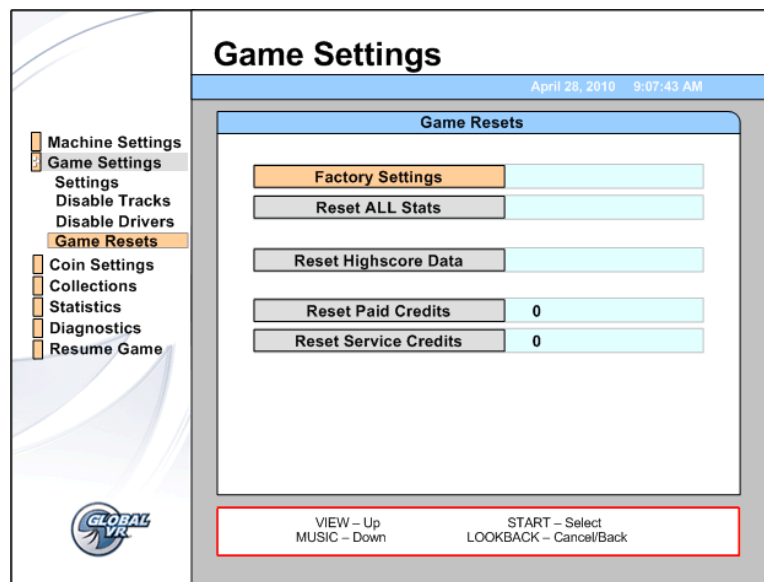


*Figure 14.   Game Resets Menu*

| Menu Item | Description |
|---|---|
| Factory Settings | Returns all the Game settings to the default factory settings. Does not affect records and statistics. |
| Reset ALL Stats | Resets all game play Statistics. Does not affect the Lifetime Totals. |
| Reset Highscore Data | Resets the High Score screens showing top racers. |
| 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 **Collections** screens. |
| Reset Service Credits | Resets available Service Credits to 0. Does not affect Paid Credits. The number next to the button shows available credits. |

## Coin Settings:  Configuration Menu

This menu lets you turn free play on or off, set the money display prompt, and reset credits.
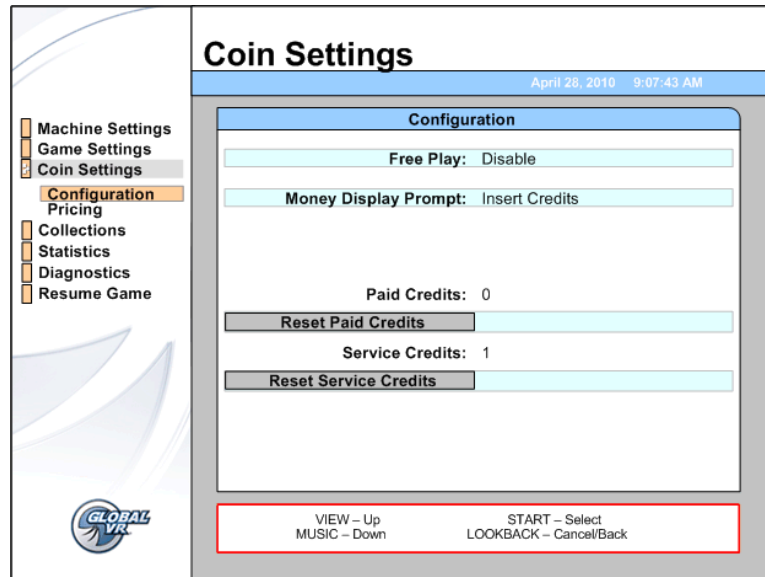


*Figure 15.   Coin Settings: Configuration Menu*

| Menu Item | Description |
|---|---|
| Free Play | Sets Free Play to *Enable* or *Disable*. |
| Money Display Prompt | Sets the onscreen prompt to *Insert Coins*, *Insert Credits*, *Insert Bills*, *Insert Tokens*, *Insert Money*, or *Swipe Card*. |
| Paid Credits | Displays the number of coin-drop 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 **Collections** screens. |
| Service Credits | Displays the number of Service Credits currently available. |
| Reset Service Credits | Resets available Service Credits to 0. |

## Coin Settings: Pricing Menu

This menu lets you set pricing to start or continue a game.
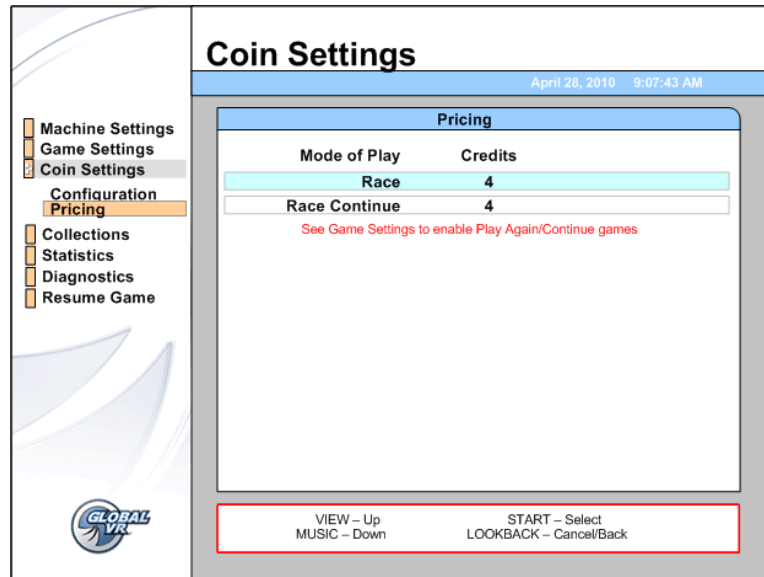


*Figure 16.   Coin Setting: Pricing Menu*

| Menu Item | Default | Description |
|---|---|---|
| Race | 4 | Lets you set the number of credits required to start a new game. Options are *1—50*. |
| Race Continue | 3 | Lets you set the number of credits required to continue a game (play again). Options are *1—50*.<br><br>Play Again/Continue must be Enabled in the **Game Settings: Settings** menu to use this feature. |

## Collections Screens

The **Current Earnings** screen displays earnings and Service Credits entered for the current period. To end the current period, select **Reset Bookkeeping**, press **START**, and confirm your selection in the pop-up menu that appears.

When you select **Reset Bookkeeping** all amounts are reset to zero (0) out 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 28.



*Figure 17.   Collections Screens*

## Statistics Screens

The Statistics screens allow the operator to view the game play 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.

**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 when 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.

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

**Statistics: Game Modes** displays the total number of games played and continued for solo and multiplayer (linked cabinet) races. Shows Total for the current period, and Lifetime Total.

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

**Statistics: Drivers** displays the number of games played using each driver for the current period, and Lifetime Total.
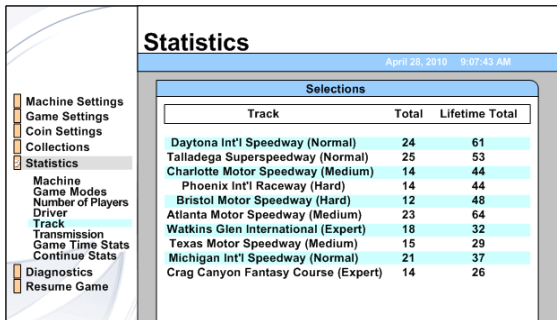


**Statistics: Track** displays the number of games played using each track for the current period, and Lifetime Total.
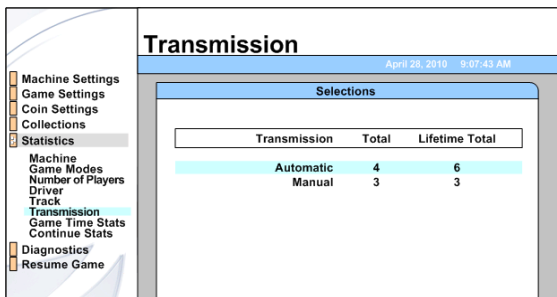


**Statistics: Transmission** displays the number of games played with Manual and Automatic transmissions for the current period, and Lifetime Total.
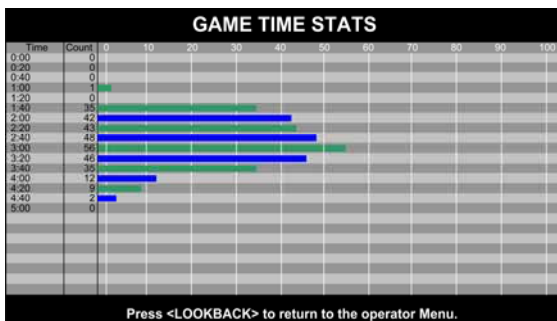


**Statistics: Game Time Stats** displays a graph showing how long the games last. For example, in the graph below, 85 games lasted between 3 minutes, 20 seconds, and 3 minutes 39 seconds; only one game lasted over 4 minutes 40 seconds.

Press the **LOOK BACK** button to exit this screen.
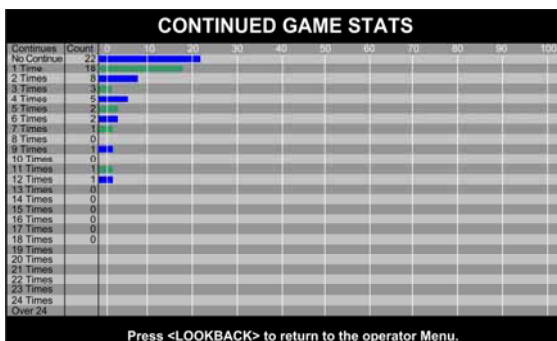


**Statistics: Continued Game Stats** displays a graph showing how many times players Continued after a game ended. For example, in the graph below, 12 players continued once, and 5 players continued twice.

Press the **LOOK BACK** button to exit this screen.

## Diagnostics:  Play Control Test

The Diagnostics menus help you test cabinet hardware and adjust the monitor.



**Note:** On Motion Cabinets you will also see the **Emergency Stop** button on this screen.

The Play Control Test menu lets you test driving controls, operator buttons, and coin mechs, as described below.  To exit from this menu, press the **START** and **VIEW** buttons together.  If you see a ⊘ symbol displayed over a component, it was not detected by the software and may be disconnected; check the wiring for this component.

- **Buttons**:  When you press a control panel or Operator button, its picture should highlight on the screen.  The dot next to each button will be yellow until the button is pressed, and green after it is pressed.  A red dot means the button is stuck in the ON position.

- **Steering Wheel**:  When you turn the steering wheel, the graphic should rotate, and the numbers next to the graphic should change to indicate the steering wheel position.  Full left position should be about -*127* and full right position should be about *127*.  As you turn the wheel, the changing numbers should be smooth and linear.  A sudden jump in the numbers, or a different range of numbers, can indicate a bad pot or a loose steering column set screw.

- **Gas & Brake Pedal**:  The numbers displayed next to the pedals show the pot value when the pedal is full up, full down, and the current value.  When you step on the pedals, the number shown for the current position should change.  The difference between the full up and full down values should be about 80 (±5).  As you press and release the pedals, the changing numbers should be smooth and linear.  A sudden jump in the numbers can indicate a bad pot or a loose set screw on the pedal assembly.

- **Calibrating the Steering and Pedals**:  To calibrate the steering wheel and pedals, press the **START** and ♪ buttons together to reset the pots to 0.  A ⊘ symbol will appear over the pictures of the pedals and wheel.  Turn the steering wheel all the way to the left and the right to set the pot limits.  Press each pedal all the way down to set the pot limits.

- **Shifter**:  When you shift through the gears, the shifter in the graphic should move to the correct position.

- **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 coins inserted.  If the name of the mech stays green, this indicates it is stuck in the ON position. (**Note:** Typically, Coin 1 is the two coin mechs, and Coin 2 is the optional bill validator.)

- **START Button and Leader Light**:  The **START** button and Leader Light should blink while the **Play Control Test** menu is open.  If either one fails to blink, check the bulb and wiring.

## Diagnostics: Comm Test

This screen shows the status of all linked cabinets, as well as their Comm version and region.
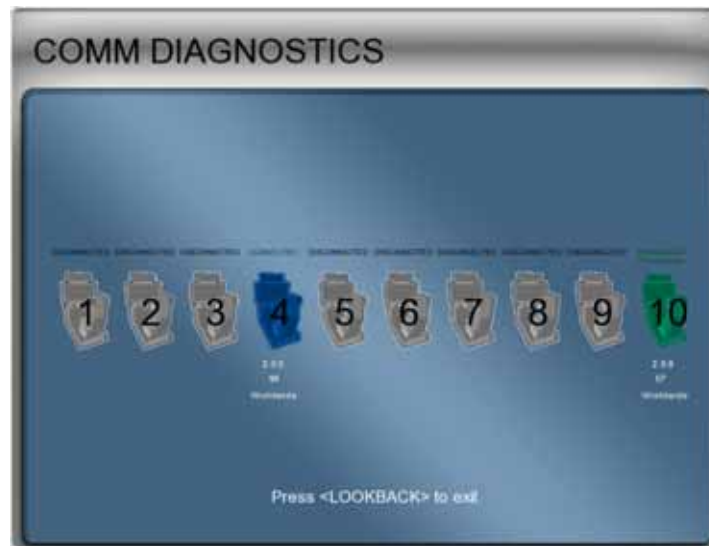


## Diagnostics: Sound Test

The Sound Test menu tests the speakers and subwoofer.



Once you enter the sound test, each speaker will play a sound while the graphic indicates the speaker that should be playing, and the onscreen text displays the name of the speaker. The subwoofer will make a low rumbling sound like an engine when it is being tested.

Press the ♪ button at any time to pause or resume the test.

The test will repeat until you press the **LOOK BACK** button to exit.

If any sound comes from the wrong speaker, or any speakers are not working, check the connections to the speakers, audio amp, and PC (see *Audio Amp and Speakers Service* on page 44). Refer to *Audio Troubleshooting* on page 64 for more information on fixing audio problems.

## Diagnostics:  Card Reader Test

This screen lets you test the Card Reader.

Open this screen and insert either a magnetic-stripe card (use a credit card, GLOBAL VR Operator or Players' SmartCard, or any similar card with a name).  If the Card reader is working properly, the screen will confirm that the card was read successfully.
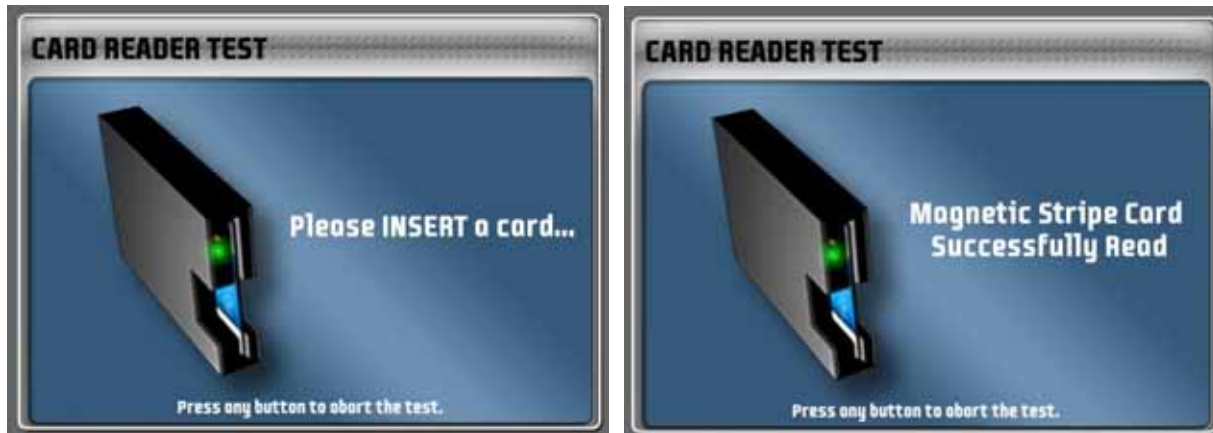
## Diagnostics:  Monitor Adjustment Screens

Each of the screens shown below will assist you with fine tuning the monitor.
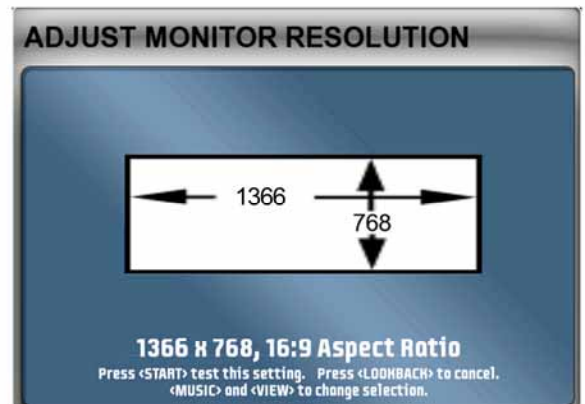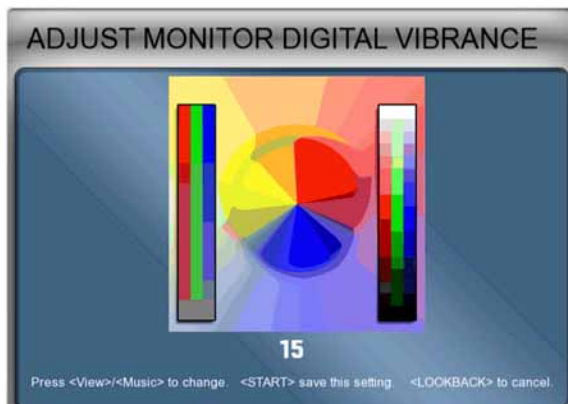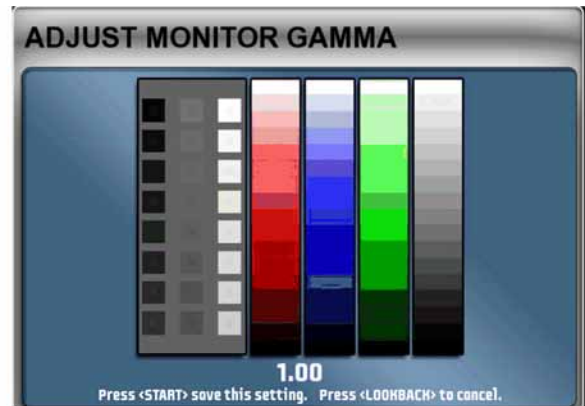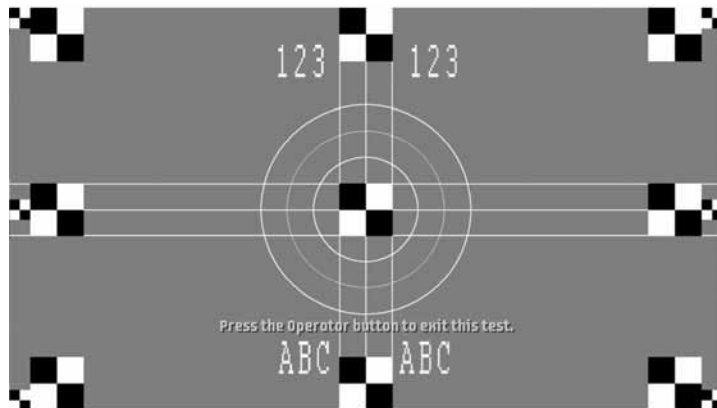








- **Monitor Test:**  When you select this menu item, it opens a series of screens designed to help you check monitor performance.  Press any control panel button to cycle through a series of screens to test color and geometric alignment.  Press the Operator **TEST/BACK** button to exit.

- **Monitor Gamma:**  This screen lets you adjust the overall screen brightness.  Press **VIEW** or ♪ to raise or lower the gamma value.  To exit without making changes, press **LOOK BACK**.  To exit and keep the new setting, press **START**.

- **Monitor Vibrance:**  This screen lets you adjust the overall vividness, or saturation, of the colors.  Press **VIEW** or ♪ to raise or lower the vibrance level.  To exit without making changes, press **LOOK BACK**.  To exit and keep the new setting, press **START**.

- **Monitor Resolution:**  This screen lets you change the monitor resolution.  This feature is provided to enhance compatibility with a variety of monitors.  Normally, the software detects and sets up the optimal monitor resolution automatically.

  To change the resolution, press ♪ or **VIEW** to cycle through the available options, and then press **START** to test the selected resolution.  You will be prompted to press **START** again to keep the setting.  Press **LOOK BACK** to exit without making any changes.

# Chapter 5 — Software Restoration

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

**Important:** The System Recovery and Game Install disks must be the same software version.

**Important:** When you use the System Recovery Disk, you will erase all game settings, statistics, and collections data stored in the game software. It is advisable to contact Technical Support before using the System Recovery Disk to resolve a problem.

## Restore Operating System with the System Recovery Disk

**Note:** Be careful not to scrape the CDs as you put them in the tray. Dirt or scratches on the surface of a CD can cause the software installation to fail.

1. Insert the **System Recovery Disk** in the drive and power the cabinet OFF and then ON. When the computer reboots, the CD should run automatically (wait about 30 seconds). You will see messages onscreen as files are copied to the hard drive.

2. After about 5 minutes, when prompted, remove the CD and reboot the computer. Do not insert the Game Install disk yet!

3. Wait for about 5—6 minutes while the software finishes the installation and reboots the computer. When the process is complete, you will briefly see a message saying "NASCAR OS Installation is Complete." Proceed to run the Game Install disk.

**Note:** If you are not sure whether the Operating System installation process is complete, it is OK to insert the Game Install disk. The disk will not run if the Operating System installation is not complete, and you will need to eject it and insert it again once the process finishes.

## Run the Game Install Disk

**Important:** All linked cabinets must run the same **Comm Version**, displayed in the Operator Menu **Machine Info** screen.

1. With the cabinet powered ON and the computer booted, insert the CD labeled **Game Install**. The CD will automatically run (wait about 30 seconds). The Install Shield Wizard will appear as the software copies files to the hard drive.

2. After about 7—8 minutes, the computer will automatically reboot. A screen will appear saying "There is a CD in the Drive." Remove the CD and press the **START** button to continue. Keep both CDs in a safe place in case you need them in the future.

3. The "Calibrate the Accelerator and Brake" screen will appear. Press each pedal fully to the floor to set the pot limits.

4. Next, the steering will auto calibrate. Do not touch the wheel as it turns to set the pot limits.

5. If the software detects another cabinet with the same Link ID Number, the Select a Link ID screen will appear and prompt you to change the ID. (**Note:** If you install software on linked cabinets simultaneously, the first one finished will automatically be assigned Link ID #1, so you may need to change it in the Operator Menu.)

6. Once the Attract Movie begins, play a game to verify proper operation.

7. Open the Operator Menu and set the sound volume levels, pricing, and other Operator settings.

# Chapter 6 — Service and Repair

> **CAUTION: GLOBAL VR assumes no liability for any damage or injuries incurred while servicing the cabinet. Only qualified service personnel should perform service and installation of cabinet hardware.**
>
> **To prevent electrostatic discharge (ESD) damage, handle PCBs by the edges only and use a grounding wrist strap or similar precaution.**
>
> **Please read the service instructions before working on the cabinet.**

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

## Access Panels on Cabinet Rear

Use the three access panels on the rear of the cabinet, shown in Figure 18, to service internal components.

**Monitor Access Door**: Open to access LCD monitor, monitor power supply, and cooling fan.

**Electronics Access Panel**: Remove four (4) Torx® screws to open and *check under the hood*. Open to access Audio Amp PCB, GVRI/O Mini PCB, Force-Feedback Steering PCB, and associated DC power supplies.

**Rear Door**: Open to access Computer and AC Power Distribution components.

**Note:** Procedures in this chapter are the same for Deluxe and Standard cabinets unless noted.

*Figure 18.   Cabinet Rear*

## Opening the Control Panel

To service the control panel buttons or steering assembly, do the following to remove the control panel from the front of the cabinet:

1. Disconnect the cabinet from AC power.

2. To protect the steering pot, remove the Electronics Access Panel and reach through to disconnect the pot harness. This prevents the risk of breaking the pot if the wires are pulled.

3. Remove the three (3) screws above and three (3) screws below the control panel.

4. Grip the Steering Wheel and use it to carefully pull the control panel assembly straight out from the cabinet. Be careful not to pull the wires. The wire harnesses should be long enough for you to place the assembly in your lap as you sit in the driver's seat.

5. Disconnect the harness connectors from the steering motor and button harness.

## Force-Feedback Steering System Service

The major components of the force-feedback steering system are listed below. Figure 19 shows the harness connections. See Figure 38 on page 73 for an exploded-view drawing of the steering wheel and motor assembly, showing the parts in detail.

- Steering Wheel
- Steering Motor
- Force-Feedback PCB (part # 990-0040-01)
- +24 VDC Power Supply
- 5 KΩ Steering Pot (Potentiometer)

The Force-Feedback PCB manages communications between the 5 KΩ steering pot and the computer (via a USB connection). The steering pot sends the computer the steering wheel position as the player drives, and the computer sends back instructions for controlling the steering motor by regulating the power. The force-feedback steering motor is powered by the +24 VDC power supply via the Force-Feedback PCB.

> ⚠ **CAUTION: Do not connect the power supply directly to the steering motor. Doing this will damage the motor and the power supply.**

A faulty cable or steering-system component can cause steering problems. Refer to *Control Troubleshooting* on page 65 for help with diagnosing steering problems.
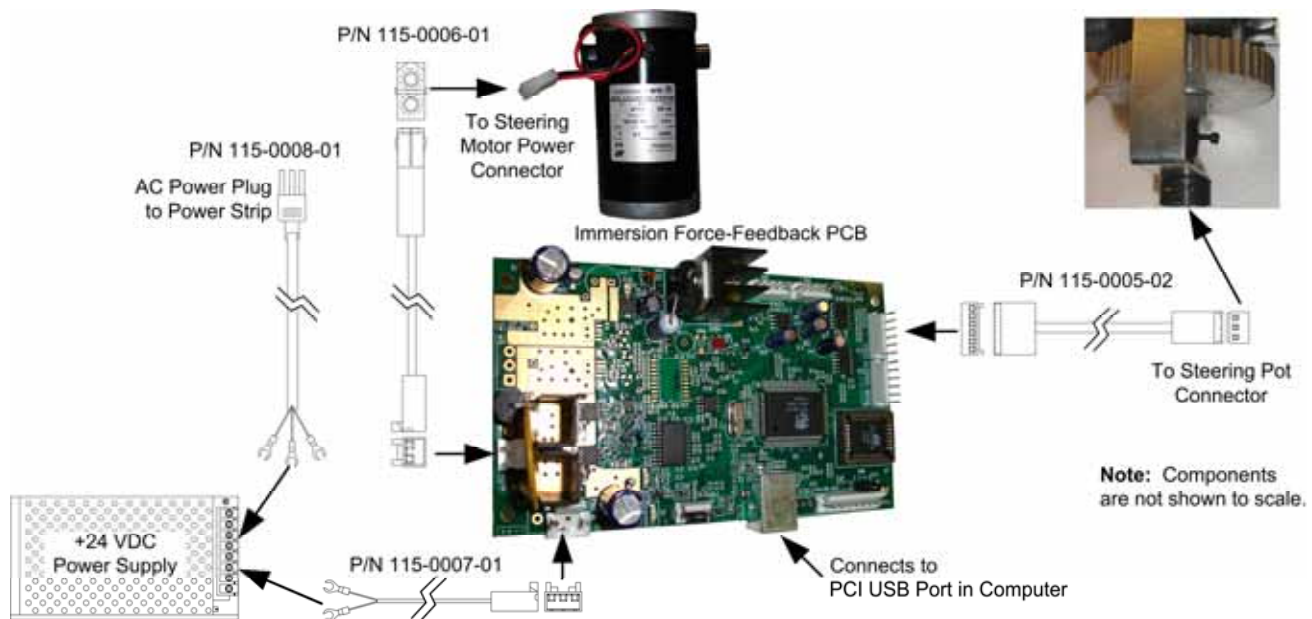


*Figure 19.   Force-Feedback Steering System Harnessing Diagram*

## 5 KΩ Steering Pot (Potentiometer) Replacement

To test a pot, use the **Diagnostics: Play Control Test** screen in the Operator Menu (see page 30). While turning the wheel, the change in the numbers displayed onscreen should be smooth and linear, with no jumps. You can also power off the game and test resistance at the pot. While turning the wheel, you should see a steady linear increase or decrease in resistance, with no jumps. Jumps could indicate a bad pot or a loose steering column set screw. Use Loctite® on the set screw to ensure it is secure.

To replace a pot, refer to Figure 20 and perform the following steps:

1.  Open the control panel as described on page 35.

2.  Using a 7/64 Allan wrench, loosen the set screw from the steering column and remove the bracket with the 5 KΩ steering pot attached.

3.  Using a 1/2-inch wrench, remove the nut and lock washer from the bracket and remove the pot.

4.  Reverse these steps to install the new pot. Install the pot with the plastic pin through the small hole in the bracket, as shown in Figure 20 below. Use Loctite to ensure the set screw is secure.

5.  Calibrate the steering from the Play Control Test in the Operator Menu after replacing the pot.
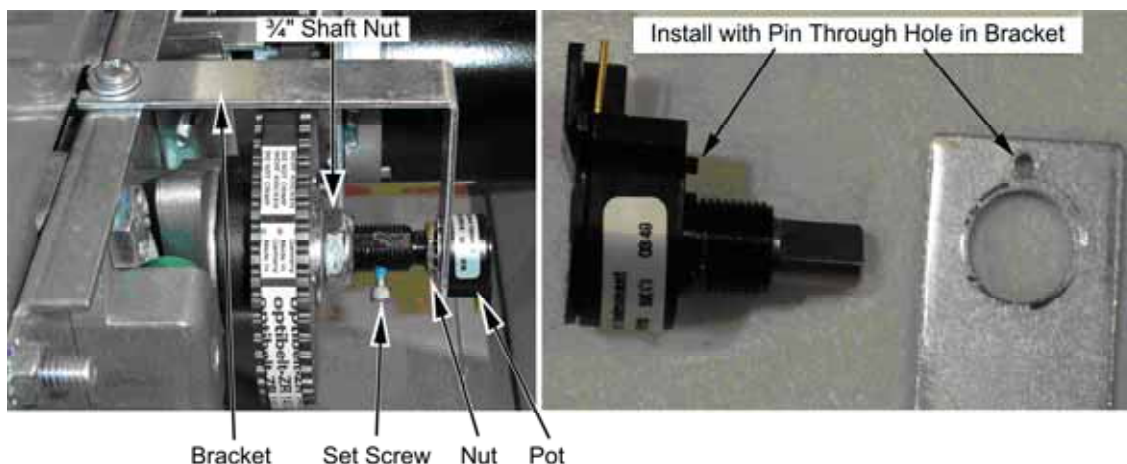


*Figure 20.   Replacing the 5 KΩ Steering Pot*

## Force-Feedback Belt or Steering Motor Replacement

It is a good practice to inspect the steering belt and gears periodically. Always replace a belt that looks stretched, cracked, or worn. Replace a gear that looks worn.

Refer to Figure 20 above, and Figure 21, and perform the following steps to remove the force-feedback belt for repair. Always replace the belt if it looks cracked or worn.

1.  Open the control panel as described on page 35.

2.  Using a 7/64 Allan wrench, loosen the set screw from the steering column and remove the bracket with the pot attached (see Figure 20).

3.  Loosen the four (4) 3/8" motor mount Kep nuts that secure the steering motor to the frame (see Figure 21).

4.  Using a 10mm socket wrench, loosen the belt tension adjustment bolt several turns until you can slip the belt off of the motor and steering gears (see Figure 21).

5. Inspect the motor gear (the small gear) for wear. A worn gear can quickly wear out a belt. Make sure the two gears are aligned to prevent stress on the belt. Use Loctite on the set screws to ensure they are secure.

6. To replace the motor, remove the four (4) 3/8" Kep nuts that you loosened in step 2, and remove the motor.

7. Reverse these steps to re-install the motor and belt. Adjust the belt tension as described below.

## Force-Feedback Belt Tension Adjustment

The belt tension should be adjusted on a new cabinet after one month of initial operation. After that it should be adjusted every 60—90 days for optimal performance. Inspect the gears for wear at the same time. A worn motor gear can wear out a belt.

1. Tighten the tension adjustment bolt on the motor assembly, shown in Figure 21, until the belt is fully stretched, and then loosen the bolt by ½ turn.

2. Calibrate the steering from the Operator Menu after servicing the belt or motor.
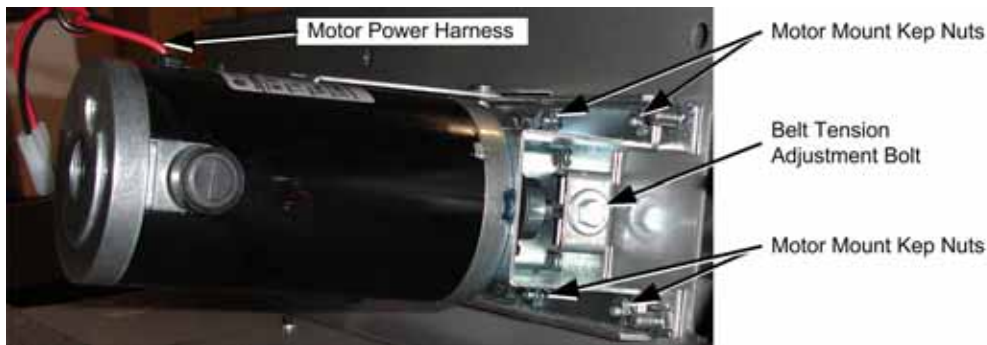


*Figure 21.   Servicing the Steering Motor*

## Force-Feedback PCB Replacement

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

If the steering pulls to one side, this could indicate a bad force-feedback PCB or reversed wires between the steering pot and the PCB. Use the following steps to replace the PCB.

1. Disconnect the cabinet from AC power.

2. Remove the electronics access panel (see page 35).

3. Disconnect all cables from the PCB.

4. Remove the four screws that secure the PCB to the mounting feet.

5. Reverse these steps to install the new PCB. Make sure there is some clearance between the PCB components and the cabinet wall to allow air to circulate around the components.

6. Calibrate steering from **Diagnostics:  Play Control Test** in the Operator Menu (see page 30).

## Driving Control Panel Button Service

The buttons on the cabinets are illuminated with 5-volt C555 bulbs. Refer to Figure 22 and perform the following steps to replace a button bulb or micro switch:

1. Disconnect the cabinet from AC power.

2. Open the control panel as described on page 35 to access the buttons.

3. When connecting the wires to the micro switch and bulb, refer to the labels on the wires and make sure the connections are correct. See Figure 22 for more information.

> ⚠️ **CAUTION: Do not connect the 5-volt lamp power wire to the micro switch. This can damage the GVRI/O Mini PCB.**



*Figure 22. Replacing Button Lamps*

## Pedal Assembly Service

Perform the following steps to remove the pedal assembly. It is removed and installed as one unit. See Figure 37 on page 72 for an exploded view of the assembly with parts list.

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

2. From inside the cabinet, remove the four (4) 1/4-20 Security Torx bolts that secure the pedal assembly to the cabinet, as shown by the arrows in the picture below.

3. Carefully pull the pedal assembly straight out of the cabinet, being careful not to pull the wires.

4. Disconnect the pedal harness from the main harness.

5. Disconnect the ground wire from the pedal assembly frame.

6. Reverse these steps to install the pedal assembly.

7. After servicing, calibrate the pedals from **Diagnostics: Play Control Test** in the Operator Menu.

**Important:** Be sure to replace the ground wire. It is needed to ensure proper pedal function.
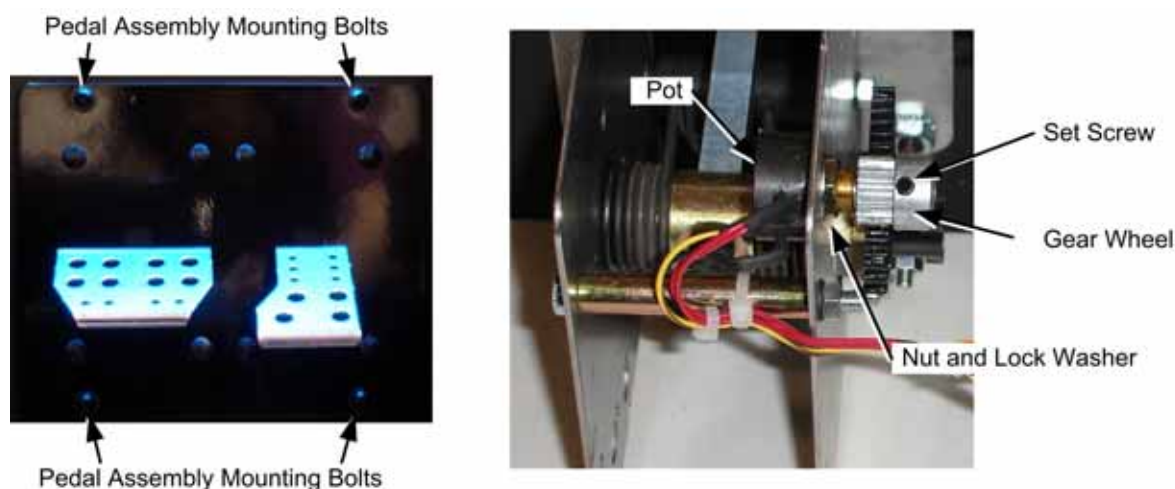
*Figure 23.   Pedal Assembly Details*

## 5 KΩ Gas and Brake Pot (Potentiometer) Replacement

To test a pot, use the **Diagnostics:  Play Control Test** screen in the Operator Menu (see page 30).  When you press and release the pedals, you should see a steady increase or decrease in the numbers displayed onscreen, with no jumps.

You can also power off the game and test resistance at the pot.  When you press and release the pedals, you should see a steady linear increase or decrease in resistance, with no jumps.

To replace a pot, refer to Figure 23 and perform the following steps:

1.  Remove the pedals from the cabinet as described in the previous section.

2.  Using a 7/64 Allen wrench, loosen the set screw from the gear wheel and remove the gear wheel, as shown in Figure 23.

3.  Using a 1/2" wrench, remove the nut and lock washer that secure the pot to the frame.

4.  Install the new pot with the same orientation.  Make sure that the plastic keys on the pot match with the metal.

5.  Re-install the lock washer and nut, being careful not to over-tighten.

6.  Re-install the gear wheel and tighten the set screw.  Use Loctite to ensure the set screw is secure.

7.  Calibrate the pedals from **Diagnostics:  Play Control Test** in the Operator Menu after replacing the pot (see page 30).

## Four-Speed Shifter Service

Perform the following steps to remove the shifter for replacement or repair.

1. Remove the four (4) T-10H Security Torx screws from the top of the shifter assembly and carefully pull the shifter up out of the housing.

2. Disconnect the Molex connector from the shifter harness.

3. Reverse these steps to install the new shifter.

4. After service, test the shifter from **Diagnostics: Play Control Test** in the Operator Menu.

**Important:** Make sure no wires are pinched in the shifter housing. Pinched wires can cause incorrect gear readings.

## Shifter Micro Switch Replacement

The shifter uses one mini micro switch (part #: 95-4118-00) for each gear. If the shifter is not working in one gear, check the micro switch for that gear.

1. Remove the shifter as described in the previous section.

2. Put the shifter in the gear that is not working and look at the bottom of the assembly to see which micro switch is being actuated for that gear.

3. Check for any wires that may be disconnected from the micro switch in case this is the problem.

4. To replace the micro switch, remove the four (4) screws that secure the bottom plate to the shifter and remove the plate. Be careful not to lose the spacers between the plate and the shifter.

5. Disconnect the wires from the old micro switch and install them to the same terminals on the new micro switch.

6. Remove the two screws that secure the old micro switch to the assembly and install the new micro switch.

7. Reverse these steps to assemble and install the shifter.

8. After service, test the shifter from **Diagnostics: Play Control Test** in the Operator Menu.

## GVRI/O Mini PCB Service

The GVRI/O MINI PCB relays signals between the system computer and all controls except for the steering. Each connector on the GVRI/O MINI PCB is keyed to fit only to the correct harness connector. Refer to the picture below to locate the connectors on the PCB. See Figure 44 on page 79 for detailed wiring information.

The GVRI/O MINI PCB should always be connected to a PCI USB port, **not** a motherboard USB port, to minimize the possibility of static shock.

Jumpers must be placed in positions **1** and **3** of **J5 – Mode Select** (Car Controller Mode).

⚠ **CAUTION: Disconnect the cabinet from AC power before changing any connections to the GVRI/O MINI PCB.**
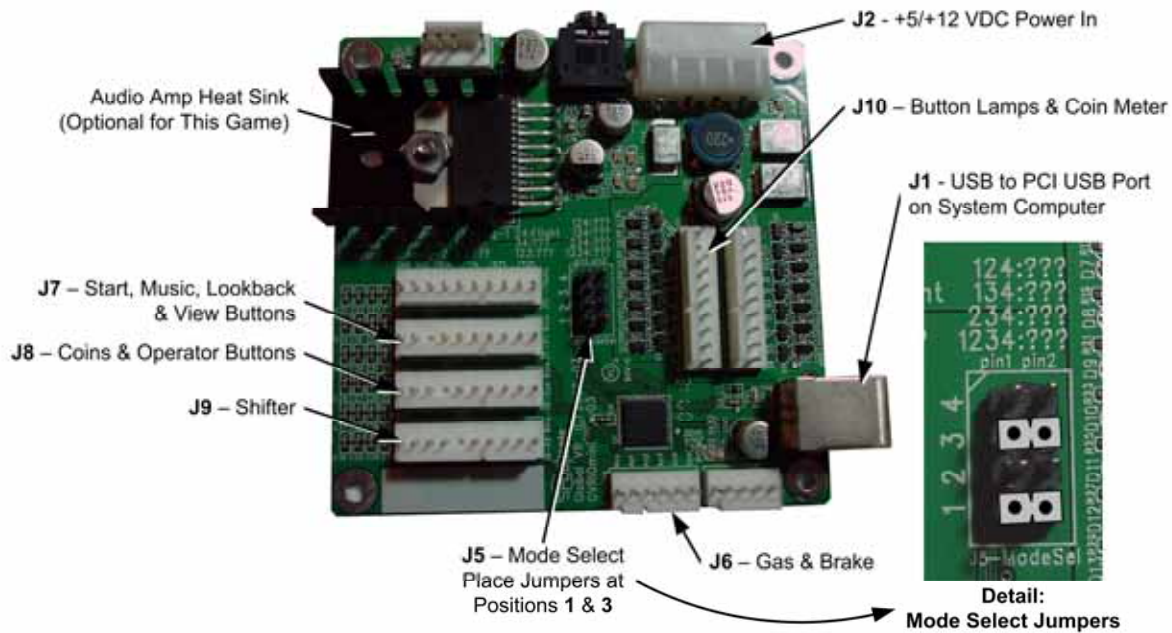


*Figure 24.    GVRI/O Mini PCB*

Perform the following steps to replace the GVRI/O Mini PCB:

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

1. Disconnect the cabinet AC Power Cord.

2. Remove the electronics access panel (see page 35).

3. Make sure that all wire harnesses are labeled for ease of reconnection, and then disconnect them from the PCB.

4. Remove the four screws that secure the PCB to the mounting feet.

5. Check the new PCB and make sure jumpers are installed in positions **1** and **3** of **J5 – Mode Select**. The controls will not work properly if the jumpers are not installed.

6. Reverse these steps to install the new PCB.

## Seat Slide Assembly Replacement

To replace the slide assembly, refer to Figure 25 and perform the following steps:
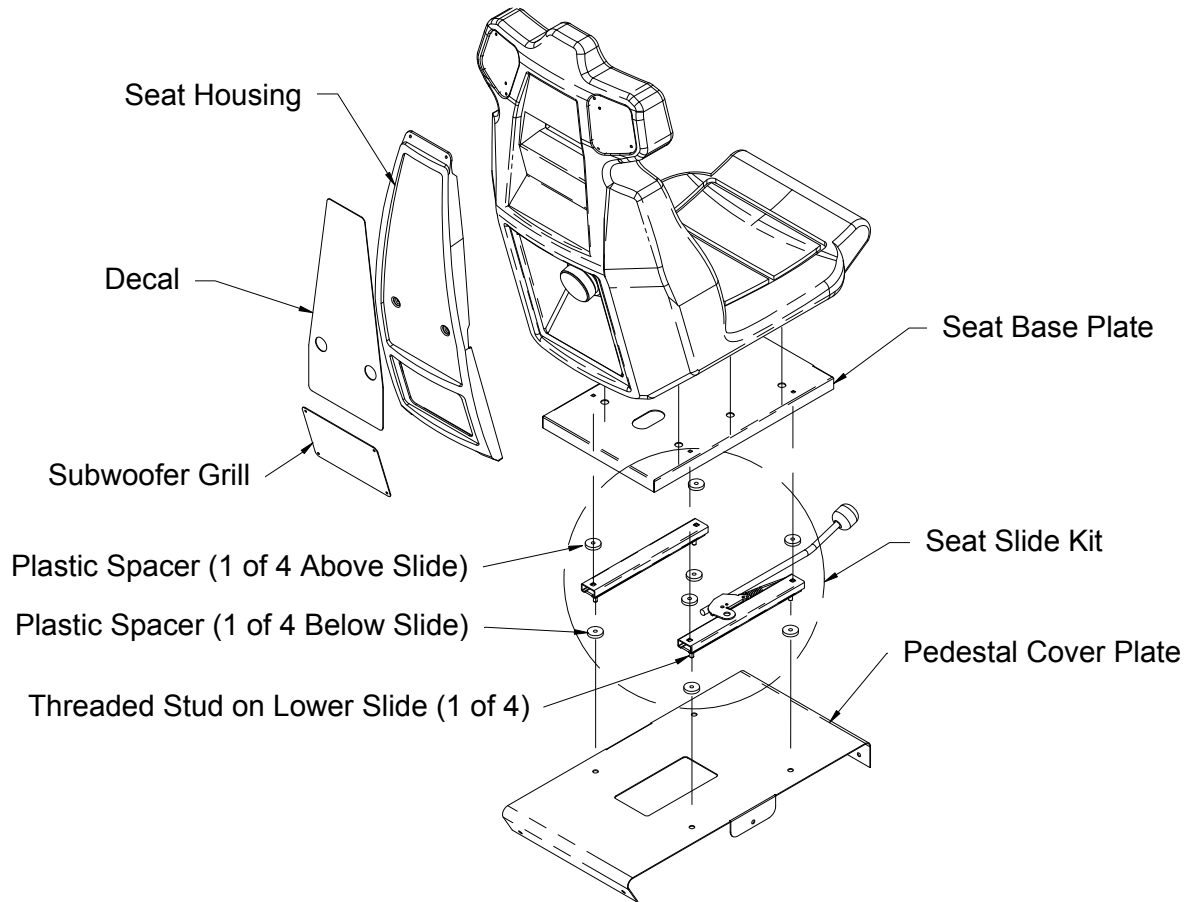


*Figure 25.    Seat Slide Assembly Replacement*

1. Remove the six (6) Torx bolts that secure the pedestal cover plate to the wooden pedestal.

2. Carefully lift the seat assembly and place it on its side.  Be careful not to pull the speaker wires that run from the pedestal into the seat.  You may need to reach inside the pedestal and snip wire ties to create slack in the wires.

3. Remove the four (4) nuts and flat washers from the bottom of the pedestal cover plate and remove the cover plate, and the four (4) plastic spacers from the seat assembly.  Note the placement of each component.

4. Remove the four (4) nuts and flat washers that secure the slide assembly to the seat base plate. Move the lower slides to each side to access all four nuts.

   **Note:**  When reassembling, be careful to install the four (4) plastic spacers above and below the slide assembly.  A missing spacer will cause the seat to wobble and may cause damage. If necessary, flat washers stacked to equal the thickness of the spacer can be used to replace a lost spacer.

5. Reverse these steps to re-assemble the seat. Use the following specs when tightening the nuts to prevent the seat from gradually becoming loose due to motion during gameplay:

- Seat Base Plate to Slide Assembly: Either replace the ¼-20 flange nuts with ¼ Nylock nuts, **or** apply Loctite 242® Threadlocker Blue (or a comparable product) to the threads. Tighten the nuts to 4–6 ft lbs (48–72 in lbs).

- Pedestal Cover Plate to Slide Assembly: Either replace the 5/16-18 flange nuts with 5/16 Nylock nuts, **or** apply Loctite 242 Threadlocker Blue (or a comparable product) to the threads. Tighten the nuts to 9–12 ft lbs (108–144 in lbs).

**Important:** Loctite can damage plastics. Be careful not to get the Loctite on the plastic seat, and **do not** use Loctite with Nylock nuts.

## Audio Amp and Speakers Service

The Audio Amp supports 6-channel 5.1 Surround Sound. The Audio Amp is powered by the +5/+12 volt DC power supply through a standard PC power connector.

The volume level for each channel on the Audio Amp can be manually adjusted using a small screwdriver to turn the pots, shown in Figure 26. For the subwoofer channel, turn the pot clockwise all the way for maximum volume. For the other channels, turn the pot counterclockwise to turn the volume levels all the way down, and then turn the pot 1/5 of a turn clockwise to bring the volume levels up. Fine-tune the sound levels for your location from this point.

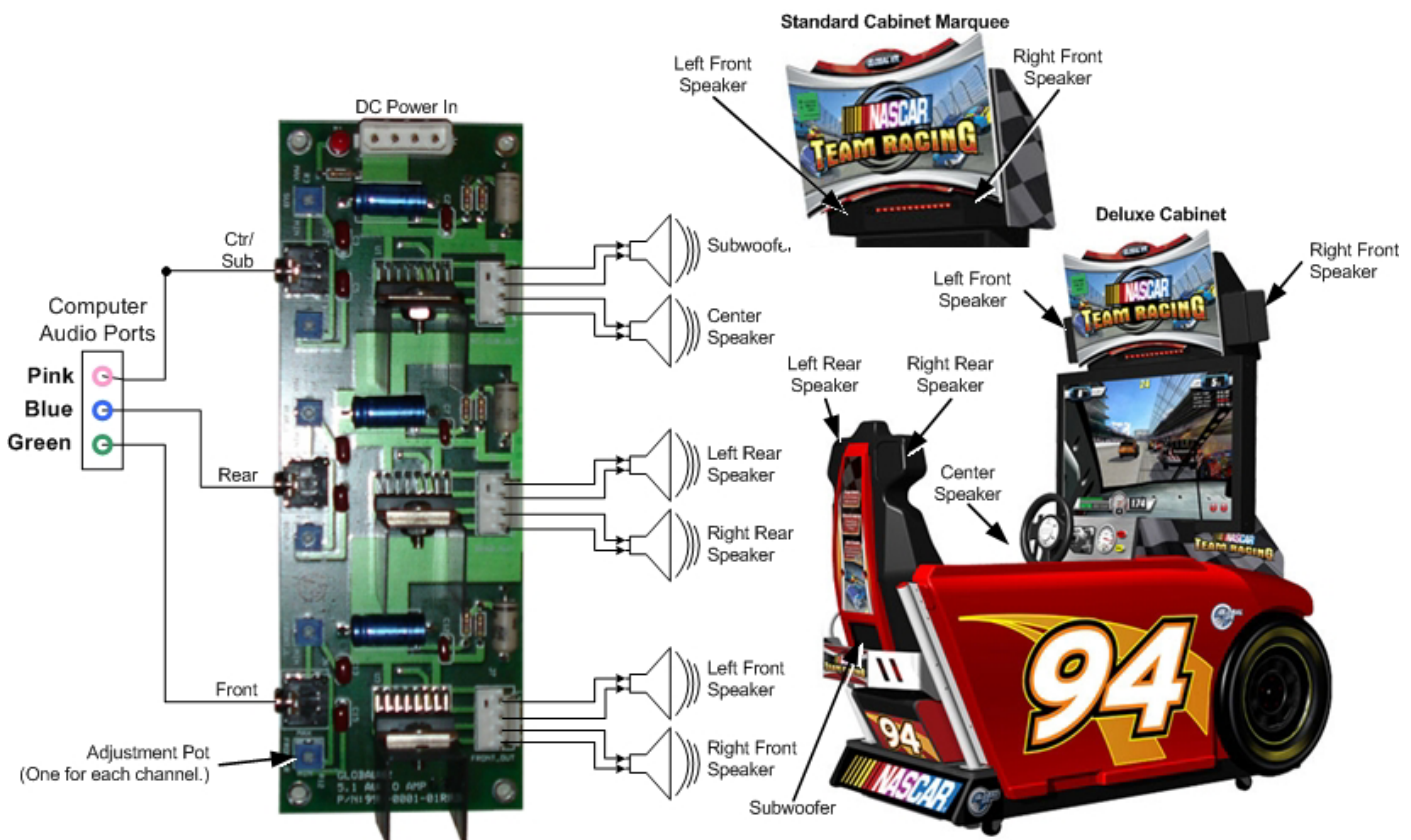Use the **Diagnostics: Sound Test** screen in the Operator Menu to test the speakers.



*Figure 26.   Audio Amp and Speakers*

Three 3.5 mm stereo audio cables connect the computer audio ports to the audio amp. Each audio port on the computer is color coded to help identify the channel. See Figure 46 on page 81 for a diagram of the computer audio ports.

- The **green** audio port is for front speakers, left and right.

- The **blue** audio port is for rear speakers, left and right.

- The **red** audio port is for center channel and bass speaker (subwoofer).

Each speaker is connected to the corresponding speaker output on the audio amp. Figure 26 on page 44 shows the location of each speaker.

## Audio Amp PCB Replacement

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

1. Disconnect the cabinet AC Power Cord.

2. Remove the electronics access panel (see page 35).

3. Disconnect the power harness, speaker wires, and 3.5mm audio cables from the audio amp PCB. Make sure all connectors are labeled to make it easy to reconnect them properly.

4. Use a small Phillips screwdriver to remove the four (4) screws holding the PCB to the mounting feet.

   **Note:** Always keep the audio amp PCB inside an ESD anti-static bag when not installed in the cabinet to prevent electrostatic damage.

5. Reverse these steps to re-install the audio amp PCB.

## Front (Marquee) Speaker Replacement (Deluxe)

Refer to Figure 34 on page 56 for an exploded view of the marquee and speakers. The front speakers are mounted below the marquee. Do the following to replace a speaker:

1. Remove the six (6) Torx screws that secure the marquee artwork and clear plastic in place and remove the artwork and clear plastic.

2. Disconnect the speaker harness connector inside the marquee.

3. Remove the nuts from the two (2) speaker mounting bolts and remove the speaker with its mounting bracket. Be careful not to pull the speaker wires.

4. Remove the screws that secure the mounting bracket to the speaker.

5. Remove the wires from the speaker and install them to the same connectors on the new speaker.

6. Reverse these steps to install the new speaker.

### Front (Marquee) Speaker Replacement (Standard)

The front speakers are located behind the grills on each side of the marquee. Do the following to replace a front speaker:

1. Remove the six (6) Torx screws that secure the marquee artwork and clear plastic in place and remove the artwork and plastic.

2. Inside the marquee, remove the bolts that secure the plastic marquee housing in place.

3. Remove the four (4) screws that secure the speaker to the cabinet.

4. Remove the wires from the speaker and install them to the same connectors on the new speaker.

5. Reverse these steps to re-install the speaker.

### Center Speaker Replacement

The center speaker is located near the pedals on the right side wall. Do the following to replace the center speaker:

1. Remove the four (4) Torx security screws that secure the speaker grill in place.

2. Remove the four (4) Phillips screws that secure the speaker in place.

3. Remove the wires from the speaker and install them to the same terminals of the new speaker.

4. Reverse these steps to install the new speaker.

### Rear (Seat) Speaker or Subwoofer Replacement

The rear speakers are located behind the two small grills at the top rear of the seat. On Deluxe cabinets, the subwoofer is located behind the molded red plastic housing on the back of the seat. On Standard cabinets, the subwoofer is located behind the grill on the back of the seat, .

1. **To replace the Subwoofer**, remove the six (6) Torx screws that secure the molded red plastic housing on the back of the seat, and remove the housing. Skip to step 3.

2. **To replace the left or right rear speaker**, remove the four (4) 1/4-20H Torx security screws that secure the speaker grill to the back of the seat.

3. Remove the four (4) screws that secure the speaker or subwoofer to the seat.

4. Remove the wires from the speaker or subwoofer and install them to the same terminals on the new speaker or subwoofer.

5. Reverse these steps to install the new speaker or subwoofer.

## Computer Replacement

⚠ **CAUTION: The computer is serviced as one unit. YOU WILL VOID YOUR WARRANTY if you open the computer without direct authorization from the GLOBAL VR Technical Support staff.**

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

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

2. Disconnect all of the cables from the computer.

3. Remove the Game Dongle and keep it with your cabinet. **Do not** ship the Game Dongle with the computer. It contains information that needs to stay with the cabinet.

4. Unbuckle the strap that secures the computer in place and remove the computer.

5. Reverse these steps to install the new computer. Make sure that the computer air vents are not blocked. There is an air vent under the bottom front panel of the computer that is easily blocked by padding or debris. Be sure to reconnect your Game Dongle.

6. After replacing a computer, you must calibrate the pedals (see page 30).

7. Set up your cabinet from the Operator Menu, and play a game to verify proper operation.

> ⚠ **CAUTION: When shipping the computer, always use plenty of padding and protection. GLOBAL VR recommends shipping the computer in a box with three inches of foam padding on all sides. Shipping the computer without enough padding can VOID THE WARRANTY if the computer is visibly damaged from shipping.**

## LCD Monitor Assembly Service (Deluxe)

The 42" LCD Monitor is connected to an LCD Control PCB that provides the signal, power, and data to the monitor. The monitor is encased in a metal bezel and backbox assembly with a glass display shield to protect the LCD panel. The Control PCB is mounted to the backbox inside the cabinet. Power is provided by a dedicated 24 VDC power supply that connects to the Control PCB and the AC power strip. The sections that follow provide replacement procedures for LCD Monitor Assembly components. Figure 27 shows an exploded view of monitor assembly.

**Note:** If the monitor does not work, make sure the three harnesses between the control PCB and LCD panel are connected properly. Also check the DVI video cable and power connection.
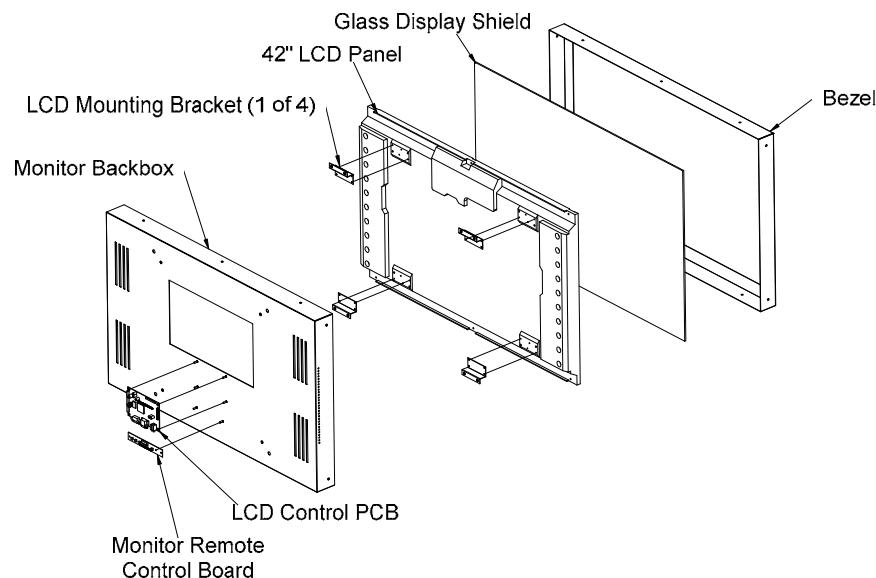


*Figure 27.   Monitor Assembly Exploded View (Deluxe)*

## Glass Display Shield Replacement (Deluxe)

Perform the following steps if you need to remove the glass display shield for cleaning or replacement:

1. Remove the five (5) screws, shown by the arrows in the picture below, from the LCD front cover bracket below the front of the monitor and remove the bracket.



*Figure 28.   LCD Front Cover Bracket*

2. Remove the seven (7) screws that secure the bezel in place around the front of the monitor.

3. Carefully lift the bezel and glass away from the monitor.

4. Reverse these steps to replace the bezel and glass.

## Monitor Replacement (Deluxe)

 **SHOCK HAZARD.  Disconnect the AC power cord before performing the following procedure.**

1. Disconnect the cabinet from AC power.

2. Refer to Figure 28 and remove the five (5) screws from the LCD front cover bracket below the front of the monitor.  Remove the bracket.

3. Remove the Monitor Access Door behind the monitor.

4. Disconnect the video cable from the back of the LCD Control PCB.

5. Disconnect the monitor DC power wires from the monitor power supply terminals (you *do not* need to disconnect the AC wires from the power strip).

6. Remove the two (2) Phillips screws that secure the DC power supply in place so you can move it out of the way to reach the monitor mounting bolts.

7. Remove the four (4) bolts that secure the monitor backbox to the mounting brackets inside the cabinet. The picture below shows the locations of the bolts inside the cabinet
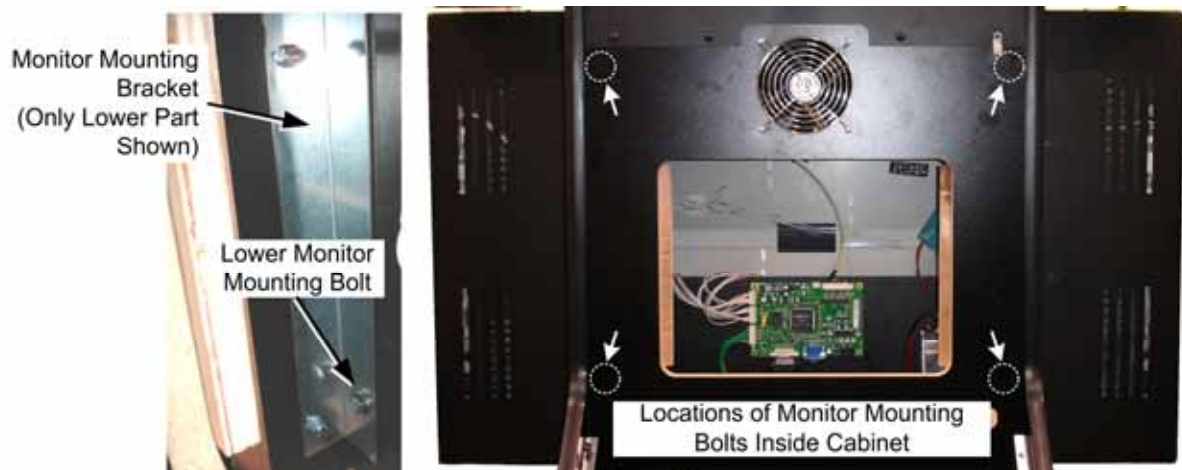


*Figure 29.   Monitor Mounting Bolts (Deluxe)*

8. Carefully lift the monitor, bezel, and glass out of the cabinet as one unit. This is easiest to do with a person on each side of the assembly.

9. Place the LCD monitor assembly face down on a safe working surface.

10. Refer to Figure 30 for monitor assembly components. Carefully disconnect the three wire harnesses that connect the LCD panel to the LCD Control PCB on the back of the assembly.
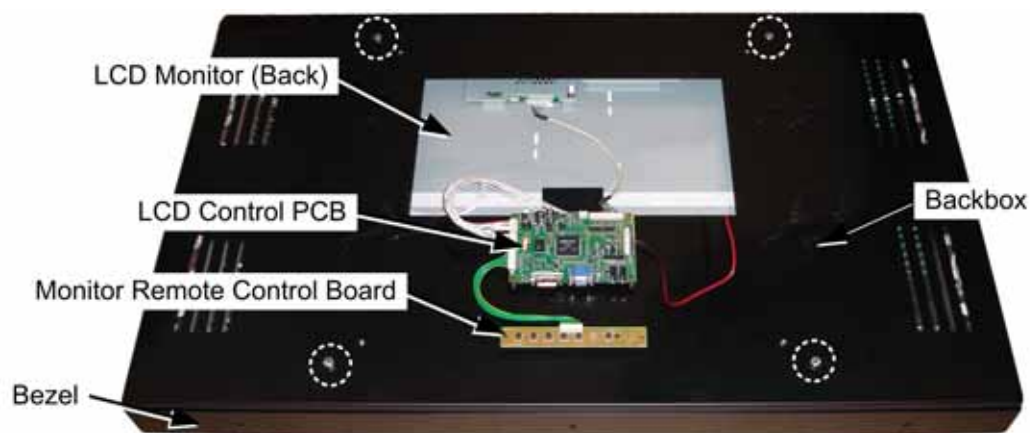


*Figure 30.   Monitor and Backbox Components (Deluxe)*

11. Remove the seven (7) screws that secure the bezel in place around the front of the monitor.

12. Remove the four (4) bolts from the back of the backbox (shown by the circles in Figure 30) and lift off the backbox with the attached LCD Control PCB.

13. Lift the LCD panel out of the bezel.

14. Reverse these steps to install the new LCD monitor. Read the caution below and refer to Figure 31 to avoid breaking the LCD Control PCB connector.

> ⚠ **CAUTION:  It is very EASY TO BREAK the plastic housing around the connector on the LCD Control PCB.  Align the connector carefully, and gently push straight in with your thumbs on both sides.  DO NOT FORCE.  Pressing too hard can break the plastic.  See Figure 31 for the correct way to connect the harness.**

## Monitor Control PCB Replacement (Deluxe)

⚡ **DANGER** **SHOCK HAZARD. Disconnect the AC power cord before performing the following procedure.**

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

1. Disconnect the cabinet from AC power.

2. Remove the Monitor Access Door behind the monitor.

3. Refer to Figure 30 to identify monitor assembly components. Carefully disconnect all of the cables and wire harnesses from the Control PCB. (Depending on the PCB model, you may need to remove the PCB from the backbox before you can disconnect the power harness.)

4. Remove the four (4) screws that secure the PCB to the monitor backbox and remove the PCB.

5. Reverse these steps to install the new PCB. Read the caution below and refer to Figure 31 to avoid breaking the LCD Control PCB connector.

⚠ **CAUTION: It is very EASY TO BREAK the plastic housing around the connector on the LCD Control PCB. Align the connector carefully, and gently push straight in with your thumbs on both sides. DO NOT FORCE. Pressing too hard can break the plastic. See Figure 31 for the correct way to connect the harness.**
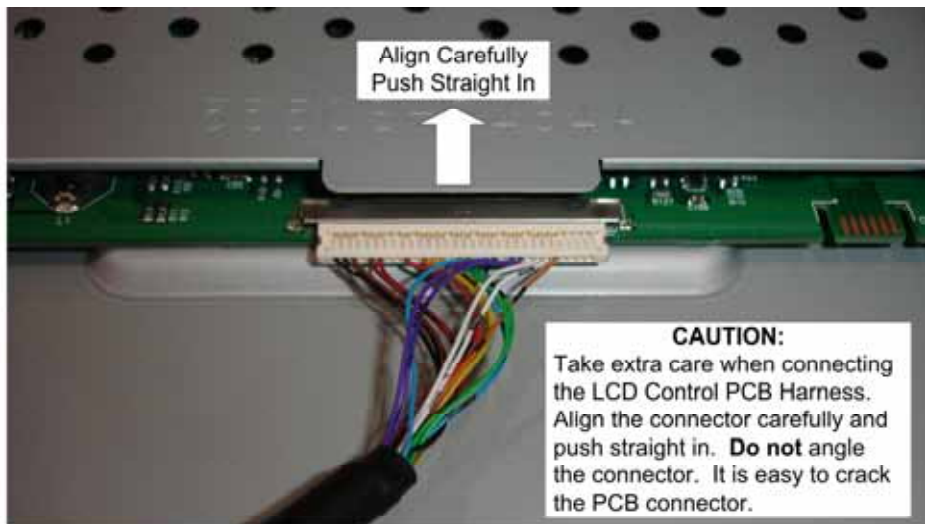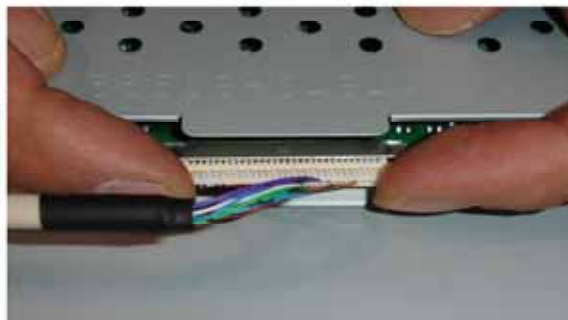


*Figure 31. Connecting the LCD Control PCB Harness*

### Monitor Power Supply Replacement (Deluxe)

⚠ **DANGER** **SHOCK HAZARD. Disconnect the AC power cord before performing the following procedure.**

1. Disconnect the cabinet from AC power.

2. Remove the Monitor Access Door behind the monitor.

3. Make sure all wires connected to the power supply are properly labeled for easy reconnection, and then disconnect them from the terminals.

4. Remove the two (2) screws that secure the power supply mounting bracket to the cabinet and remove the power supply from the cabinet.

5. Remove the mounting bracket from the power supply and install it on the new power supply.

6. Reverse the removal steps to install the new power supply.

**Note:** If the monitor does not work, verify the power supply is putting out +24 VDC.

## Monitor Service (Standard)

The 32" LCD Monitor is connected to an LCD Control PCB that provides the signal, power, and data to the monitor. The monitor is encased in a metal frame with a glass display shield to protect the LCD panel. The LCD Control PCB and Monitor Power Supply are mounted to the back of the LCD assembly. The Monitor Power Supply connects to the AC Power Strip. The sections that follow provide replacement procedures for components of the LCD Monitor Assembly.

**Note:** If the monitor does not work, make sure the harnesses between the control PCB and LCD panel are connected properly. Also check the DVI video cable and power connection.

### Monitor Display Shield Replacement (Standard)

1. Disconnect the cabinet from AC power.

2. Remove the screws from the sides of the monitor frame.

3. Carefully remove the frame and glass. Be aware that the glass is **not** secured to the frame.

4. Reverse these steps to install the new glass display shield.

### Monitor Replacement (Standard)

⚠ **DANGER** **SHOCK HAZARD. Disconnect the AC power cord before performing the following procedure.**

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

1. Remove the Display Shield and Frame as described in the previous section.

2. Remove the Monitor Access Door behind the monitor.

3. Disconnect the video cable from the back of the LCD Control PCB.

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4. Check the power cord that connects to the power supply on the back of the monitor. Make sure it has enough slack so you can move the monitor out to disconnect the wires from the terminals. If necessary, snip some cable ties to create enough slack in the power cord.

5. Remove the four (4) bolts that secure the monitor L-brackets to the cabinet and carefully lay the monitor down above the control panel so you can access the power supply terminals.

6. Disconnect the wires from the power supply terminals, making sure they are labeled for proper reconnection.

> ⚠ **CAUTION: It is very EASY TO BREAK the plastic housing around the connector on the LCD Control PCB. Align the connector carefully, and gently push straight in with your thumbs on both sides. DO NOT FORCE. Pressing too hard can break the plastic. See Figure 31 for the correct way to connect the harness.**

7. Place the LCD panel on a work surface and carefully disconnect the wire harnesses from the LCD Control PCB and Power Supply.

8. Remove the L-Brackets, LCD Control PCB, and Power Supply, and install them on the new monitor.

9. Carefully reconnect the harnesses between the LCD panel and the LCD Control PCB and Power Supply.

10. Reverse the removal steps to install the new monitor.

## Monitor Control PCB Replacement (Standard)

Perform the steps under *Monitor Replacement (Standard)*, above, but remove and replace only the LCD Control PCB from the monitor assembly. Be sure to see Figure 31 on page 50 for the correct way to connect the Control PCB Harness to avoid breaking the connector.

## Monitor Power Supply Replacement (Standard)

Perform the steps under *Monitor Replacement (Standard)*, above, but remove and replace only the Monitor Power Supply from the monitor assembly.

## Coin Mech Replacement

Perform the following steps to remove a coin mech. You can replace a 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.
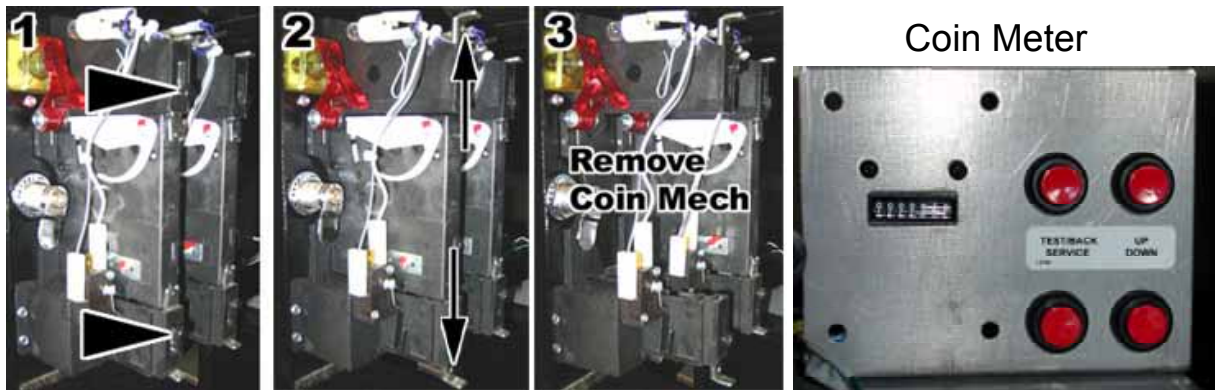


Coin Meter

*Figure 32.    Servicing the Coin Mech and Coin Meter*

## Coin Meter Replacement

The coin meter is mounted to the operator button panel. Perform the following steps to remove the coin meter:

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

2. Remove the two Phillips screws holding the coin meter to the operator button panel 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 to connect the wires to the new coin meter.

5. Use the two screws to install the new coin meter.

## Power Distribution Service

### AC Power Plate

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

AC power from the power plate is routed through a power transformer to an AC power strip/surge suppressor that provides power to all cabinet components.

> ⚠ **CAUTION: The cabinet must be connected to a secure ground to function properly.**

Ground wires from system components must be securely connected to the ground lug on the power plate, as shown in Figure 33. Components must **not** be grounded to the power plate mounting bolts.

The **Ethernet** port on the power plate is connected to the Ethernet port on the system computer. It is used for linking cabinets.
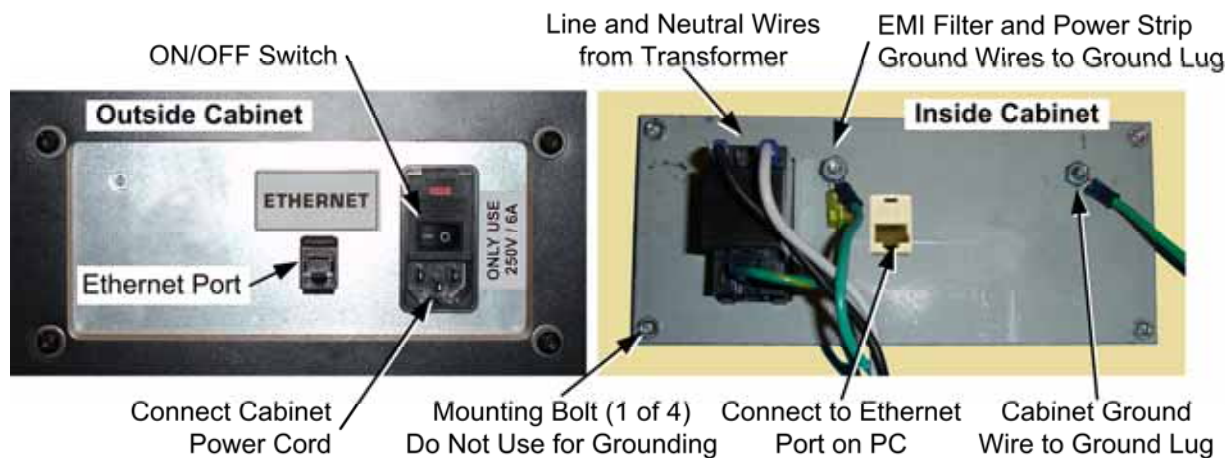


*Figure 33. AC Power Plate*

### AC Power Strip Replacement

> ⚡ **DANGER** **SHOCK HAZARD. Disconnect the AC power cord before performing the following procedure.**

The AC power strip provides power to all of the components in the cabinet. Perform the following steps to replace the power strip:

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

2. Remove the rear door from the cabinet.

3. Disconnect all components from the power strip.

4. Disconnect the power strip Neutral and Line wires from the power transformer.

5. Disconnect the power strip Ground wire from the AC Power Plate ground lug.

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

7. Replace the power strip with an appropriate unit from GLOBAL VR®. Do not use a different power strip. Be sure to connect each wire to the correct terminal. (See Figure 41 on page 76.)

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

## DC Power Supplies (+24 and +5/+12 VDC)

The cabinet has three DC power supplies (*NOT* including the power supply inside the computer).

- +24 VDC supply powers the Force-Feedback Steering System.

    **Important:** Connect **only** the steering components to this +24 VDC Power Supply. **Do not use** the +12 VDC Terminals on the Steering Power Supply.

- +5/+12 VDC supply powers the Audio Amp, GVRI/O Mini PCB, and lighting components.

- +24 VDC supply powers LCD monitor. See *Monitor Power Supply Replacement* on page 51 for replacement procedures.

Perform the following steps to replace a DC power supply (except for the monitor power supply):

> ⚡ **SHOCK HAZARD. Disconnect the AC power cord before performing the following procedure.**
> **If a power cord is damaged, it must be replaced by the equivalent power cord available from GLOBAL VR or your distributor.**
> **DANGER**

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

2. Remove the electronics access panel (see page 35).

3. Disconnect the wires from the DC power supply terminals.

4. Remove the two (2) Phillips screws holding the power supply to the cabinet. Be careful not to remove the screw that secures the terminal plate to the DC power supply.

5. Reverse the removal steps to install the new power supply. Check the labels on each wire and be sure to connect them to the correct terminals. See Figure 41 on page 76 for connection details.

6. Before connecting the DC output wires, connect a volt meter and adjust the output voltage from the pot on the front of the power supply as follows:

    - **+5/+12 VDC power supply**: Set the +5VDC output between +5.05 and +5.1 VDC.

    - **+24 VDC power supply**: Set the +24 VDC output to +24 VDC.

## Leader Light Replacement

A 14" LED Light Tube is used for the leader light.

1. Remove the four (4) Torx screws that secure the plastic Leader Light cover in place.

2. **Deluxe Only**: Remove the two (2) Torx screws at the left and right of the light.

3. Snip the cable ties that secure the LED light tube to the cabinet.

4. Disconnect the LED light tube power connector from the power harness and remove the light tube from the cabinet.

5. Reverse these steps to install the new Leader Light.

## Marquee Florescent Light Service

Refer to Figure 34; florescent light service is the same for standard and deluxe cabinets.  The Marquee is lighted by an 18" florescent fixture.  To replace only the florescent tube, perform the first two steps below and then replace the tube.

Do the following to replace a florescent fixture:

1.  Disconnect the cabinet from AC power.

2.  Remove the six (6) Torx screws that secure the marquee artwork and clear plastic in place and remove the artwork and clear plastic.

3.  Disconnect the AC power connector from the fixture.

4.  Remove the two Phillips screws that secure the fixture to the cabinet and remove the fixture.

5.  Reverse these steps to install the new fixture.  Replace the fixture only with a comparable unit from GLOBAL VR.
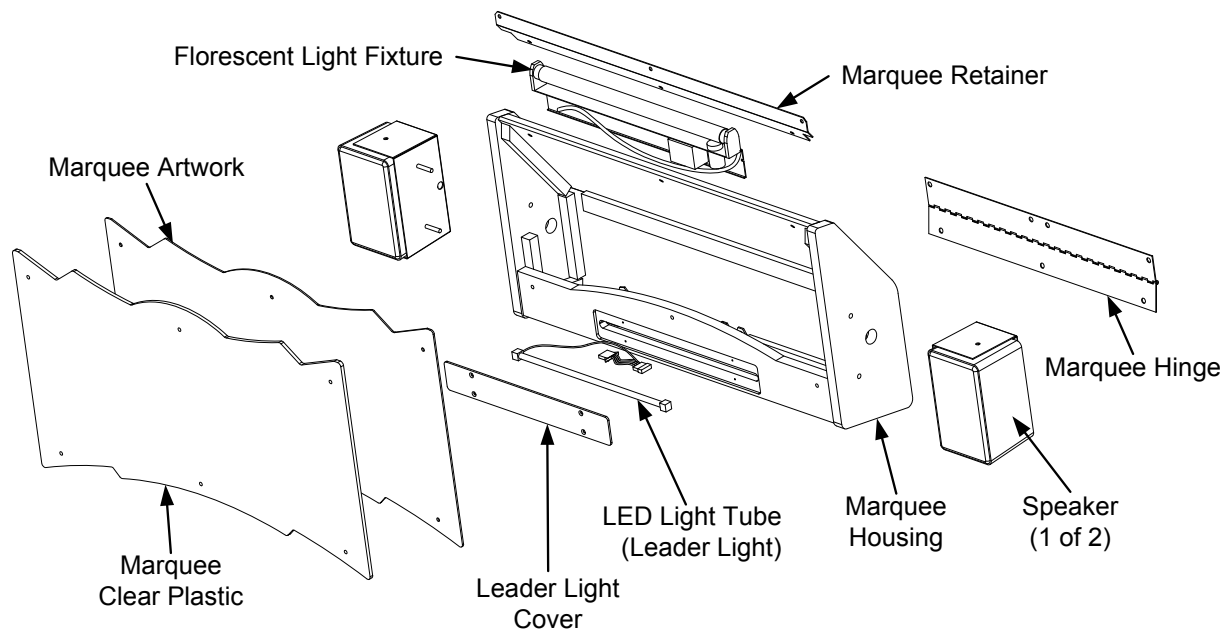


*Figure 34.    Marquee Assembly Exploded View (Deluxe)*

## Cold-Cathode Florescent Light Service

Cold-Cathode Florescent Lights (CCFLs) are used to add dramatic lighting effects to the cabinet. 12" red CCFLs are installed below the control panel and under the back of the cabinet.

Each CCFL set is made up of two light tubes and a power inverter. The power inverter is connected to +12 VDC power (see Figure 35). If both of the lights in a set fail, the problem is most likely a faulty power inverter or loose power connection. Make sure the power connector is firmly attached to the power inverter. Swap the power inverter with a known good inverter as a test before changing the light tubes.

If you replace an inverter, and the replacement set has a power switch, make sure it is switched ON. Install the inverter it so that the vents (the circle of small holes) on the case are not covered.
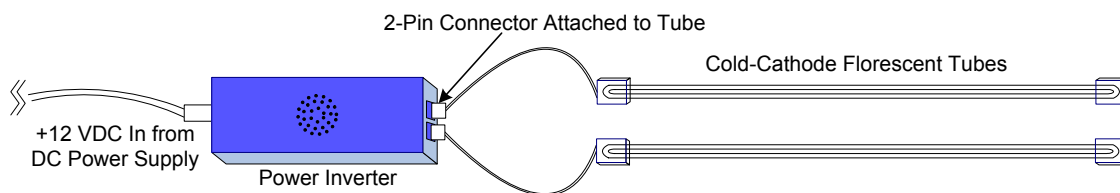


*Figure 35.   Cold-Cathode Light Detail*

### CCFLs Below Control Panel

To check the power inverter, remove the electronics access panel (see page 35); the inverter should be located in the area above the light tubes, and secured in place with Velcro.

To replace a light tube, remove the four (4) Torx screws that secure the clear plastic panel with the lights under the control panel. The light tubes are secured to the plastic panel with cable ties.

### CCFLs at Cabinet Rear

The power inverter is located inside the seat pedestal. If you need to change a light tube, you will have to remove the seat to disconnect the light from the inverter.

1.  To access the power inverter, remove the six (6) Torx bolts that secure the seat pedestal cover plate to the wooden pedestal, and carefully move the seat enough to reach inside.

2.  If you need to replace a light tube, disconnect the light from the power inverter.

3.  Remove the four (4) Torx screws that secure the clear plastic panel with the lights under the cabinet. The light tubes are secured to the plastic panel with cable ties.

## Setting the Date and Time

**Note:** The date and time are not displayed on any gameplay screens, but are shown in the Operator menus, including collections screens.

**Important:** Be careful not to change any other settings in the CMOS Setup Utility menu.

1. Connect a keyboard to the system computer and power cycle the game. Press the **F2** key during boot to run Setup. The System Setup Utility Main Menu will appear.

2. Use the up and down arrow keys (↑↓) to select **System Date** on the menu screen. The month will be highlighted.

3. 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.

4. 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.

5. When finished, press **F10** on the keyboard. The following prompt will appear:



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

## Setting the Computer BIOS (CMOS)

**This procedure applies only to systems with the Intel DG41TY Motherboard.** If your system has a different motherboard, check **http://service.globalvr.com** for updated information.

If you are comfortable using the System Setup Utility, connect a keyboard to the computer and press the **F2** key during boot to run the Utility, select **Load Optimal Defaults** from the Main Menu, 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 |
|---|---|---|---|
| Exit | | Load Optimal Defaults | |
| Main | | System Date | Set to Current Date |
| | | System Time | Set to Local Time |
| Advanced | Boot Configuration | CPU Fan Control | Disable |
| | | System Fan Control | Disable |
| | | Display F10 to Enter Boot Menu | Disable |
| | Floppy Configuration | Diskette Controller | Disabled |
| Power | | After Power Failure | Power On |
| | | Processor Power Management | Disable |
| Boot | | Boot Device Priority | CD/DVD-ROM drive Hard Disk Drive Floppy Drive Ethernet |
| | | Boot to Network | Disable |

**Important:** Your screens may not look exactly like the screens shown in this document, and some settings shown on the screens pictures 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. Use the left and right arrow keys (→←) to select the **Exit** menu.

3. Use the up and down arrow keys (↑↓) to select **Load Optimal Defaults**, and press **Enter**. A confirmation box will appear. With **Yes** selected, press **Enter**.
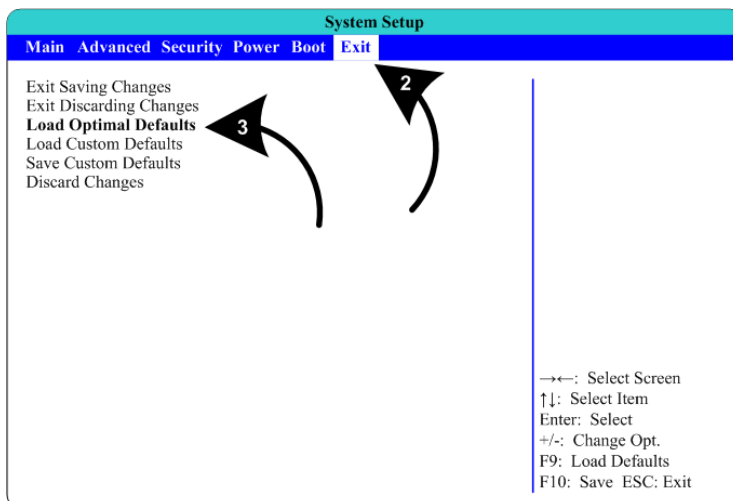


4. Use the left and right arrow keys (→←) to select the **Main** menu.

5. Use the up and down arrow keys (↑↓) to select **System Date**. The month will be highlighted.

6. 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.

7. 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.
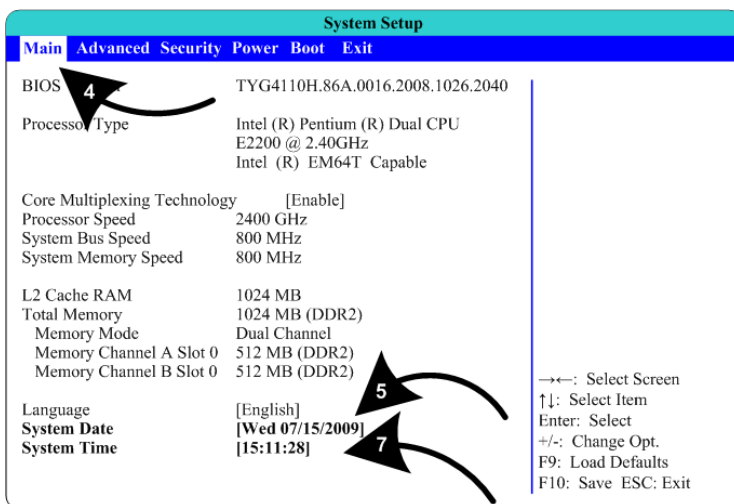


8. Use the left and right arrow keys (→←) to select the **Advanced** menu.

9. Use the up and down arrow keys (↑↓) to select **Boot Configuration,** and press **Enter**. The **Boot Configuration** menu will appear.
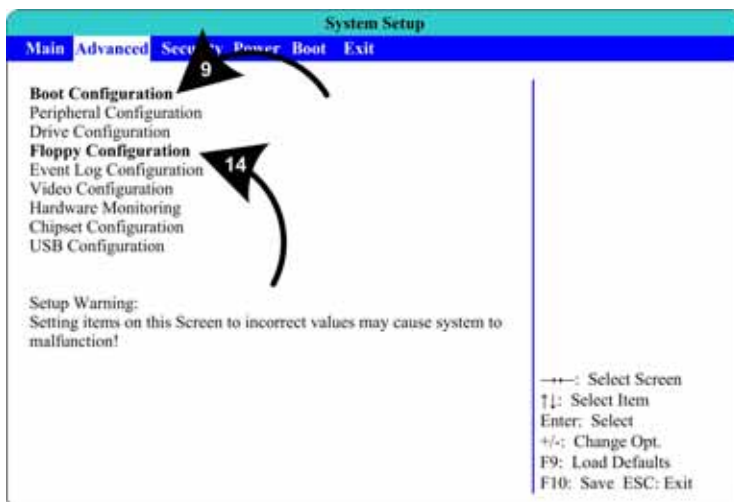
10. Use the up and down arrow keys (↑↓) to select **CPU Fan Control**, and then use the (**+-**) keys to change the setting to **Disable**.

11. Use the up and down arrow keys (↑↓) to select **System Fan Control**, and then use the (**+-**) keys to change the setting to **Disable**.



12. Use the up and down arrow keys (↑↓) to select **Display F10 to Enter Boot Menu**, and then use the (**+-**) keys to change the setting to **Disable**.

13. Press the **Esc** key to exit back to the **Advanced** menu.



14. Use the up and down arrow keys (↑↓) to select **Floppy Configuration,** and press **Enter**.

15. Follow the same steps as before to select **Diskette Controller** and change the setting to **Disable**.

16. Press the **Esc** key to exit back to the **Advanced** menu.

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

18. Use the up and down arrow keys (↑↓) to select **After Power Failure,** and then use the (**+-**) keys to change the setting to **Power On**.
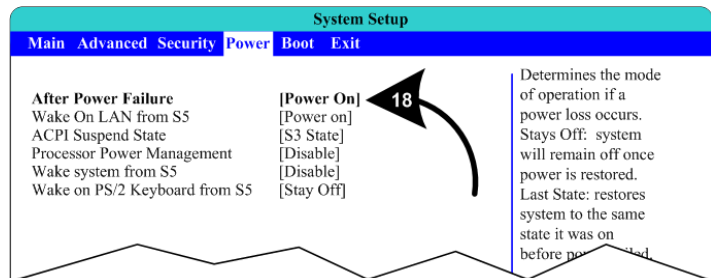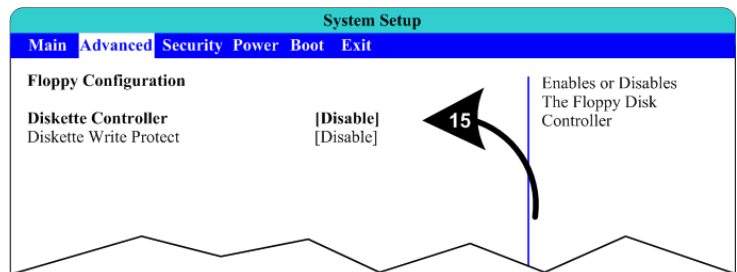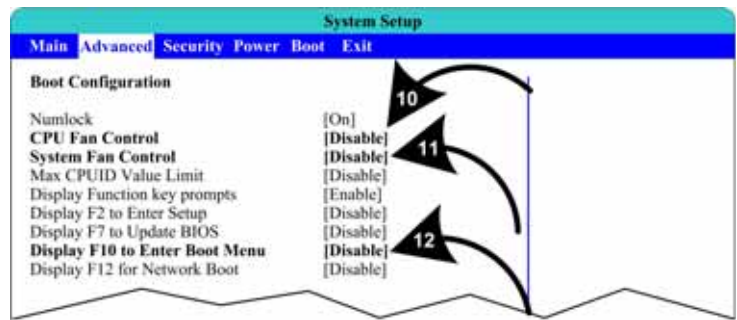
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19. Use the left and right arrow keys (→←) to select the **Boot** menu.

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

21. A pop-up window will appear listing available drives. Use the up and down arrow keys (↑↓) to select **CD/DVD-ROM Drive**, and then use the (**+-**) keys to move the drive to the top of the list.

22. Use the up and down arrow keys (↑↓) to select **Hard Disk Drive**, and then use the (**+-**) keys to move the drive to the second position. Press **Enter**.

23. Use the up and down arrow keys (↑↓) to select **Boot to Network,** and then use the (**+-**) keys to change the setting to **Disable**.

```
                        System Setup
  Main  Advanced  Security  Power  Boot  Exit

  Boot Menu Type              [Normal]
  Boot Device Priority        [CD/DVD-ROM Drive]      20
                              [Hard Disk Drive]
                              [Ethernet]
                              [Floppy Drive]
  Hard Drive Order            [SATA: WDC WD800J]
  CD/DVD-ROM Dr┌ Boot Device Priority ┐A: OPTIARC DV]
  Removable Drive │CD/DVD-ROM Drive     │novable Drive
  Boot to Optical De│Hard Disk Drive      │e]
  Boot to Removable │Floppy Drive         │e]
  Boot to Network   │Ethernet             │e]
  USB Boot          └─────────────────────┘e]
  ZIP Emulation Typ                     y]
  Boot USB Devices first      [Disable]
  USB Mass Storage Emulation Type  [Auto]
  UEFI Boot                   [Disable]

                                    →←: Select Screen
                                    ↑↓: Select Item
                                    Enter: Select
                                    +/-: Change Opt.
                                    F9: Load Defaults
                                    F10: Save  ESC: Exit
```

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

```
 ┌─── Save & Exit Setup ───┐
 │ Save Configuration and exit? │
 │  [Yes]          No        │
 └─────────────────────────┘
```

25. Make sure **Yes** is selected (use the arrow keys to select if necessary) and press **Enter**.
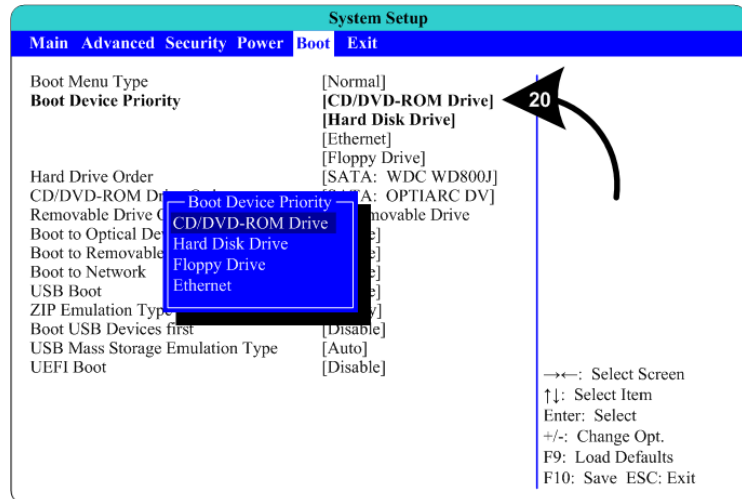
# Chapter 7 — Troubleshooting

## Video Troubleshooting

| Problem | Cause | Possible Solution |
|---|---|---|
| No picture<br>or<br>Corrupted picture on monitor<br><br>You hear the audio | Power problem | Check the Power On LED on the monitor power supply. Make sure the power cord is connected to the power strip and the power strip is on. |
| | Loose or faulty video cable | Verify that the video cable is firmly connected from the monitor to the video card in the computer. While the monitor is powered ON, disconnect the video cable. You should briefly see a message on-screen saying *No Input Signal* if the monitor is working. Check the video cable and make sure it is not pinched or frayed. Connect the cable to a different monitor to verify video output. |
| | Loose or faulty connections between LCD Panel and Control PCB | Make sure that all harnesses between the control PCB and LCD panel are connected properly. Check the DVI video cable and power connection.<br>Make sure the LCD Control PCB connector is properly connected and not cracked or broken (see Figure 31).<br>If you hear Alert beeps from the System PC, contact Technical Support for assistance. |
| | Loose or faulty video card | 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.<br>If instructed by Technical Support, open the computer and check the following:<br>• Make sure the video card is seated properly in the motherboard. Reseat the video card.<br>• Check the power connector to the video card inside the computer. Make sure it is connected properly and is not connected backwards.<br>• Power on the computer and make sure the fan on the video card is spinning fast. |
| No video and no audio<br><br>**Note:** It takes about 3 minutes to boot and start the game. | BIOS setting has changed | If the computer does not power on, make sure the On/Off switch on the back of the computer is in the On (I) position and *After Power Failure* in the BIOS is set to *Power On* (see page 58 for BIOS Settings). |
| | 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.<br>If you have checked all power connections, and the fan in the computer power supply does not come on, the computer power supply may be bad. |

| Problem | Cause | Possible Solution |
|---|---|---|
| No video and no audio (continued) | Corrupted software or Faulty hard drive | Reload the software from the CDs. If you continue to have problems, you may have a faulty hard drive. Contact Technical Support. |
| Picture is dim or faded | Gamma and/or Vibrance needs adjustment | Adjust the monitor Gamma and/or Vibrance setting from the Operator Menu **Diagnostics** screens (see page 33). If this does not give adequate results, increase brightness using the monitor remote control board mounted to the back of the monitor. |
| Red or green horizontal lines on monitor | Faulty LCD control PCB | Contact Technical Support for assistance. |

## Audio Troubleshooting

| Problem | Cause | Possible Solution |
|---|---|---|
| No audio | Volume set too low | Use the **VOL UP** button on the Operator Button Panel to raise the volume. Check audio settings in the Operator Menu **Machine Settings: Settings** menu, and verify that the Master Volume is set high enough. Verify the volume pots are not turned all the way down on the Audio Amp PCB (see Figure 26 on page 44). |
| | Faulty wiring | Turn off the game. Verify that all the wires are firmly connected to the speakers and Audio Amp PCB. Verify that each wire is connected to the correct port. Verify that no wires are frayed or improperly shorting to ground. (See *Audio Amp and Speakers Service* on page 44.) |
| | Blown speakers | Remove the grills and inspect each speaker for visible damage. Run **Diagnostics: Sound Test** from the Operator Menu to verify each speaker is working. |
| | Faulty audio amp PCB | To verify audio is working at the computer, connect stereo headphones to each computer audio port. Test the Audio Amp PCB in another cabinet. |
| Poor sound from one or more speakers | Blown speakers | Remove the grills and inspect each speaker for visible damage. Run **Diagnostics: Sound Test** from the Operator Menu to verify each speaker is working. |
| | Reversed wires | A weak or low muffled sound is a sign of reversed speaker wires. Check for reversed wires on each speaker. (See *Audio Amp and Speakers Service* on page 44.) |
| | Faulty audio amp PCB | To verify audio is working at the computer, connect stereo headphones to each computer audio port. Test the Audio Amp PCB in another working cabinet. |
| | Faulty wiring | Turn off the game. Verify that all the wires are firmly connected to the speakers and Audio Amp PCB. Verify that each wire is connected to the correct port. Verify that no wires are frayed or improperly shorting to ground. (See *Audio Amp and Speakers Service* on page 44.) |
| Audio hum | Fault in AC Wiring | A constant low hum in the speakers can be caused by a ground loop, or reversed AC line and neutral wires to a component such as a power supply. |

## Control Troubleshooting

| Problem | Cause | Possible Solution |
|---|---|---|
| Buttons do not work | Faulty micro switch | Replace the micro switch on the button and re-test. |
| | Faulty wiring | Disconnect the cabinet from AC power. Verify that all wires are firmly connected to each button and the GVRI/O Mini PCB. Verify that the wires are connected to the correct spades on the button micro switch (see Figure 22 on page 39). Verify that no wires are frayed or improperly shorting to ground. <br> Check for broken wires at cable-tie points. |
| | Faulty GVRI/O Mini PCB | Make sure that all connections to the PCB are firm. Replace PCB if faulty (see page 42). |
| Buttons and Pedals do not work | GVRI/O Mini PCB jumpered incorrectly | Make sure jumpers are installed in positions **1** & **3** of **J5–Mode Select** on the GVRI/O Mini PCB (page 42). |
| Steering pulls to one side | Faulty Force-Feedback PCB | Verify that the force-feedback PCB is getting +24 VDC power.  Test the PCB in a working cabinet. |
| | Faulty motor | Test the steering motor in a working cabinet. |
| | Faulty 24 VDC power supply | Use a volt meter to verify that the force-feedback power supply is putting out +24 VDC. |
| | Pot wires reversed | Check the wires between the steering pot and Force Feedback PCB. |
| Sloppy or poor steering | Poor calibration | Calibrate the steering from **Diagnostics: Play Control Test** in the Operator Menu. |
| | Faulty 5 KΩ steering pot | Test calibration from **Diagnostics: Play Control Test** in the Operator Menu. Replace pot if faulty (see page 37). |
| | Loose set screw | Check the set screws in the steering assembly. |
| | Loose shaft nut | Tighten the 3/4" shaft nut shown in Figure 20. |
| | Loose or worn drive belt | Turn off the cabinet. Open the driving control panel and check the belt on the steering motor. Also check for loose or worn gears (see page 37). |
| | Faulty Force-Feedback PCB | Verify that the PCB is getting +24 VDC power. Test the PCB in a working cabinet. Calibrate the steering from **Diagnostics: Play Control Test** in the Operator Menu. |
| Steering does not auto-calibrate | Faulty USB cable or PCI USB card | Test by connecting to a motherboard USB port. You may need to reboot twice for Windows to find the device. Also try a new USB cable. After testing, re-connect to a PCI USB port to minimize the risk of intermittent steering loss due to static shock (again, reboot twice). |
| | Faulty Force-Feedback PCB | Verify that the PCB is getting +24 VDC power. Test the PCB in a working cabinet. |
| Steering wheel shakes | Faulty 5 KΩ steering pot | Test pot for smooth resistance. If you replace the pot, be sure to calibrate it from **Diagnostics:  Play Control Test** in the Operator Menu. |

| Problem | Cause | Possible Solution |
|---|---|---|
| Steering stops working (Intermittent) | Force-Feedback PCB connected to wrong USB port | To minimize the risk static shock, the force-feedback PCB should be connected to a PCI USB port, **not** to a motherboard USB port. Static shock can cause intermittent steering feedback failure. See Figure 46 on page 81 for a diagram of the computer ports. |
| No force-feedback in the steering | Belt is broken | Replace belt (see page 37). |
| | Motor gear is worn | Inspect the motor gear and replace if worn. |
| | Faulty motor | Test the steering motor in a working cabinet. |
| | Faulty 24 VDC power supply | Use a voltmeter to verify that the power supply is putting out +24 VDC. |
| | Steering motor not properly grounded | Make sure the steering motor frame is properly grounded to help minimize the risk of static shock. |
| | Faulty Force-Feedback PCB | Verify that the PCB is getting +24 VDC power. Test the PCB in a working cabinet. |
| | Force-Feedback PCB connected to wrong USB port | To minimize the risk static shock, the force-feedback PCB should be connected to a PCI USB port, **not** to a motherboard USB port. Static shock can cause intermittent steering feedback failure. See Figure 46 on page 81 for a diagram of the computer ports. |
| Shifter does not work in one gear | Faulty micro switch | Replace the faulty micro switch. See *Four-Speed Shifter Service* on page 41. |
| | Pinched wire | Make sure wires are not pinched by the shifter housing. |
| Shifter goes into wrong gear | Wires are switched or pinched | Make sure all wires are connected to correct micro switches and are not pinched by the shifter housing. |
| Shifter does not work | Faulty GVRI/O Mini PCB | Check wiring between the shifter and GVRI/O Mini PCB. Replace PCB if faulty. |
| Gas or brake does not work properly | Pot is out of calibration | Calibrate the pedals from **Diagnostics: Play Control Test** in the Operator Menu. If you replace a pot or the computer, always recalibrate the pedals. (Pedals **do not** auto-calibrate when you reboot the game.) |
| | Faulty 5 KΩ pot | Test the pot for smooth resistance. If you replace the pot, be sure to calibrate the pedals from **Diagnostics: Play Control Test** in the Operator Menu. |
| | Loose set screw | A loose set screw can cause the pedal to work only on a partial range of its motion. Tighten the set screw. |
| Feels like brake is always on during game | Dead spot in the brake pot | Test the brake pot and replace if bad. See page 40. |

## Cabinet Linking Troubleshooting

| Problem | Cause | Possible Solution |
|---------|-------|-------------------|
| Cabinet will not link | Faulty wiring | Verify that a CAT-5 or better Ethernet cable is connected between the Ethernet port on the AC Power Plate and the computer. While the cabinet is powered on and connected to another cabinet, verify the green LED on the Ethernet card is lit. If you are using an Ethernet hub or switch, verify green LEDs on the hub or switch light for each Ethernet port that is connected. **Note:** CAT-5 cables have 8 wires. |
| | Incompatible coupler used | Do not use a crossover coupler to link this game. |
| Cabinet does not link in software | Duplicate Link ID numbers | A cabinet with a duplicate Link ID number will display the *Select A Link ID* menu. You can also check or change the Link ID from the Operator menu **Machine Settings: Settings** screen. Each cabinet in a linked group must have a unique Link ID number. |
| | Faulty Ethernet hub or switch | Verify the LEDs on the Ethernet hub or switch are lit for each port used. If possible, verify the hub or switch is working by connecting it to a known working computer network or set of linked cabinets. |
| | Hub or switch is not 10/100/1000 Mbps | Use a 10/100/1000 Mbps (Gigabit) hub or switch to link more than two cabinets. |
| | Mixed Software Comm Versions | Verify that all cabinets are running the same Comm Version. (Shown in **Machine Settings: Info** screen.) |
| | Cabinet Mismatch | Game and Cabinet settings must be the same on all linked cabinets. See *Linking Errors* on page 11 for more information. |

## Miscellaneous Troubleshooting

| Problem | Cause | Possible Solution |
|---|---|---|
| No power | Power strip not plugged in or turned off | Make sure the power strip ON/OFF switch is ON, and the light on the power strip is on. If the light is off, make sure the connections to the AC power plate and power transformer terminals are secure. |
|  | Cabinet not connected 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. |
| Game Dongle not found by system computer | Game Dongle not connected | Make sure the Game Dongle is securely connected. Power the cabinet off and then on. |
|  | Faulty Game Dongle | Make sure the dongle is connected properly. It will light-up red when recognized by the computer.) Contact Tech Support to exchange a faulty dongle. |
|  | Faulty USB port | Test the dongle in a PCI USB port. |
| Cabinet gets very warm | Faulty ventilation fan | Verify that the ventilation fan is working. It is located above the monitor access door on the back of the cabinet. Replace the fan if it is worn or spinning slowly. |
|  | Cabinet ventilation holes are blocked | Make sure you have proper clearance between the cabinet rear and the wall. Make sure the vent holes are clear of dust and debris and that air is freely blowing out of the cabinet. |
| Marquee lamp does not light or is intermittent | Faulty florescent tube | Check the florescent tube for darkened or cracked end. Replace the florescent tube if it looks worn. |
|  | Faulty florescent fixture | Verify the florescent tube pins make a good connection with the lamp fixture. Check the ballast for proper operation. Replace fixture if faulty. |
| Wrong Date or Time in Menus | Set date or time needs to be set | Refer to *Setting the Date and Time* on page 58. |
| Game will not accept coins | Faulty coin mech | Verify the coin mech is not jammed and is properly aligned and latched to the coin door. |
|  | Faulty ground wire | Check the ground wire to the coin door. |
| Wrong number of credits shown | Incorrect setting | Adjust settings from the Operator Menu. |
|  | Faulty wiring | Disconnect cabinet power cord. Check all coin mech wiring. Verify no wires are frayed or shorting to ground. |
| Optional DBA not working | Incorrect dipswitch setting | Set dipswitches for Long Pulse or Gaming (*not* Short Pulse or Vending). |
| Some tracks and drivers missing | Tracks or drivers are disabled | Check the Disable Tracks and Disable Drivers screens in the Operator Menu. |

## Error Message Screens

The messages below may appear at boot if the software detects a hardware problem.

| Boot Error Message | Explanation and Solution |
|---|---|
| Dongle Missing or Invalid | Make sure the USB Game Dongle is firmly connected. |
| Invalid Dongle: Incorrect Game Version | Dongle does not match game version. If you upgrade the software, be sure you connect the corresponding Game Dongle. |
| There is a CD in the Drive | Eject the CD from the drive. Press the **START** button to continue to boot the game. |
| Error Detected with GVRIO Board | The GVRI/O Mini PCB is either disconnected or malfunctioning, or the USB port or cable is faulty. Check all connections to the PCB. Test in a different USB port and with a different USB cable. Replace the PCB if faulty. Make sure jumpers are installed in positions **1** & **3** of **J5—Mode Select** (see page 42). |
| Incorrect GVRIO Board | The screen will display the revision numbers of the GVRI/O Mini PCB installed, and the one required. Contact your distributor to order the correct GVRI/O Mini PCB. |
| Duplicate Link ID  Please Select a New Link ID | The cabinet has the same Link ID as another cabinet. Turn the steering wheel to select a different Link ID from the numbers displayed. Numbers displayed in **gray** are available. Turn the wheel to select an ID and press the **START** button. Remember to number your cabinets in sequence from left to right. |
| Steering Auto Calibration failed. Please turn the wheel all he way to the left and all the way to the right | The software detected a problem with steering. Once you turn the wheel, the software will determine whether the problem is with the steering pot or the force-feedback. If the problem is with the force feedback, you will be given the option to start the system without force feedback. If the steering pot is not working, the game cannot be started. See page 36 for steering service. |
| **Attract Mode Error Messages** | **Explanation and Solution** |
| A **Red Dot** appears in the lower right corner of the Attract Screen | Indicates hardware error, usually with a button, gas or brake pot, or steering. Explanation is displayed on **Machine Settings: Info** screen in Operator Menu. |
| A **Blue Dot** appears in the lower right corner of the Attract Screen | Indicates Cabinet Mismatch error in linked cabinets. Explanation is displayed on **Machine Settings: Info** screen. The following conditions will cause a Blue Dot error message:<br>• **Winner Gets Free Game** not set the same on all cabinets<br>• **Free Game Min Players** not set the same on all cabinets<br>• **Race Length** not set the same on all cabinets<br>• Duplicate Cabinet Link ID<br>• Different Software Comm Version on one or more cabinets<br>• Different Tracks Disabled<br>• Different Region (Set by Game Dongle) |

# Chapter 8 — Replacement Parts

If you need replacement parts, please reference these part numbers when contacting GLOBAL VR® technical support or your distributor.

**Notes:** Part numbers may change due to hardware or software revisions.
Parts are for both Standard and Deluxe cabinets except as noted.
**Qty** column refers to quantity used per cabinet, with quantities for Deluxe (DLX) and Standard (STD) shown as applicable.

## Documents and Software

| Part Number | Qty | Description |
|---|---|---|
| 040-0233-01 | 1 | Operation & Service Manual |
| 040-0234-01 | 1 | Software Restore Guide |
| 050-0185-01 | 1 | System Recovery Disk |
| 050-0186-01 | 1 | Game Install Disk |

## Cables

| Part Number | Qty | Description |
|---|---|---|
| 115-0005-02 | 1 | Cable, Steering to Force-Feedback PCB |
| 115-0006-01 | 1 | Cable, Steering Motor to Force-Feedback PCB |
| 115-0007-01 | 1 | Cable, +24VDC to Force-Feedback PCB |
| 115-0008-01 | 2 | Cable, 110VAC to Power Supply (PCBs, Lighting, & Steering Power) |
| 115-0119-01 | 2 | Cable, Audio to Front Speakers (Deluxe) |
| 115-0145-01 | 1 | Cable, Audio Amp to Seat Harness |
| 115-0146-01 | 1 | Cable, Main Harness, GVRI/O, Power, USB |
| 115-0148-01 | 1 | Cable, Control Panel, Switches, Lights (Deluxe) |
| 115-0149-01 | 1 | Cable, Shifter, Switch, Light (Deluxe) |
| 115-0150-01 | 1 | Cable, Outputs, Leader Light, Start Button Lamp, Coin Mechs (Deluxe) |
| 115-0151-01 | 1 | Cable, +5/+12 VDC Power Harness (Deluxe) |
| 115-0152-01 | 1 | Cable, Coin Door and Operator Buttons |
| 115-0153-01 | 1 | Cable, Floor Light Power Harness |
| 115-0154-01 | 1 | Cable, Marquee Florescent Light Power Cord (Deluxe) |
| 115-0155-01 | 1 | Cable, Front Speaker Audio Harness (Deluxe) |
| 115-0157-01 | 1 | Cable, Marquee Florescent Light Power Cable |
| 115-0161-01 | 1 | Cable, AC Power to Marquee Lights (Standard) |
| 115-0163-01 | 1 | Cable, 4-Speed Shifter Interconnect (Deluxe) |
| 115-0167-01 | 1 | Cable, Ground, Brake Pedal |
| 115-0201-01 | 1 | Cable, Marquee, Front Speakers, Leader Light Extension (Standard) |
| 115-0202-01 | 1 | Cable, AC Power, Marquee Light Extension (Standard) |
| 115-0203-01 | 1 | Cable, Coin Meter, Start Lamp, Brake Light (Standard) |
| 115-0204-01 | 1 | Cable, Under Seat Light (Standard) |
| 115-0205-01 | 1 | Cable, to Under Seat Light (Standard) |
| 115-0208-01 | 1 | Cable, Control Panel Harness (Standard) |
| 115-0211-01 | 2 | Cable, Shifter Extension (Standard) |
| 115-0215-01 | 1 | Cable, Marquee, Front Speakers, Leader Light-(Standard) |
| 96-0539-00 | 3 | Cable, Stereo, 3.5 mm 6' |
| TRD855BL-5 | 2 | Cable, RJ-45 CAT 5E PATCH Cable, 5 FEET LONG |
| USB-AB06MM | 2 | Cable, USB Cable 6FT,USB2-ABO6 |
| 115-9635-01 REV A | 1 | Cable, Ethernet, CAT 5, 10' |
| 80-0213-00 | 2 | POWER CORD 6', SJT UL recognized |

## Cabinet Hardware

| Part Number | Qty | Description |
|---|---|---|
| **Electronics** | | |
| 45084-00 | 1 | Computer Assembly |
| 990-0014-NS | 1 | GVRI/O Mini PCB |
| 44-0600 | 1 | Power Supply, 24 Volt (Steering) |
| 44-1100-01 | 1 | Power Supply, 5V/12V 115 W (PCBs & Lights) |
| 45007-00 | 1 | Power Plate Assembly |
| 49-0963-40 | 1 | Power Strip, 7-Outlet Surge Protect, 6' 15 AMP, 1500Joules |
| (Purchase Locally) | 1 | Power Plate Fuse, 6A, 5mm X 20mm, Slo-Blo |
| 115-0025-01 | 1 | Fan, Grill, & Cord Assembly, 110 VAC (115 VAC Systems Only) |
| 12V-FAN-QCA | 1 | Fan, Grill, & Cord Assembly, 12 VDC (230 VAC Systems Only) |
| 137657 | 1 | Power Supply, 24 VDC, 10 A |
| USB-KQRTG-HL-NAS2.0-WW | 1 | Game Dongle (Exchange Only) |
| **Monitor** | | |
| EI-420W02-001-AOD | 1 | 42" LCD Monitor with Control PCB (Deluxe) |
| 85-LTA320W2-L14-5G | 1 | 32" LCD Monitor with Control PCB (Standard) |
| 26126-00 | 1 | 42" Glass Display Shield (Deluxe) |
| 26138-00 | 1 | 32" Glass Display Shield (Standard) |
| **Driving Controls** | | |
| 50-0102-14 | 1 | Steering Assembly, with motor & wheel (See Figure 38 on page 73) |
| 68086925 | 4 | Acorn Nut, M10x1.5, Zinc, to Mount Steering Assembly |
| COEM-GCE-H2P5A-HF | 1 | Immersion Force-Feedback PCB |
| 50-0413-00 | 1 | Dual Pedal Assembly (See Figure 37 on page 72 for Details) |
| 59-6004-800H1628 | 1 | START button assembly |
| 59-6004-855H1625 | 1 | VIEW button assembly |
| 59-6004-855H1626 | 1 | MUSIC (♪) button assembly |
| 59-6004-855H1648 | 1 | LOOK BACK Button Assembly |
| 50-8496-NAS2 | 1 | 4-Speed Shifter (See Figure 36 on page 72 for Details) |
| 95-4118-00 | 4 | Micro Switch for 4-Speed Shifter |
| **Lighting** | | |
| 49-1001-00 | 1 | Florescent Light Fixture, 18" (Order with PN 115-0157-01 Installed) |
| METL14R | 1 DLX 2 STD | LED Light Tube, Red, 14", 12VDC |
| CCFL2R | 2 | Red CCFL Kit |
| 26146-00 | 2 DLX 1 STD | Housing for CCFLs Under Control Panel & Cabinet Rear |
| **Audio** | | |
| 50-9986-00 | 1 | Speaker Pair, 3-Way, 50 Watt (Front Speakers, Deluxe) |
| 50-9005-00 | 1 DLX 3 STD | 5.25" Speaker, used for Front and Center Speakers on Standard, and Center Speaker on Deluxe. |
| 990-0001-01 | 1 | 5.1 Audio Amp PCB |
| **Miscellaneous** | | |
| 4491K17 | 3 | Polyethylene Plug, 1.284" x 1.175" for Tube Ends (Deluxe) |
| 40-6000-08 | 1 | Coin Door Assembly, Over-Under, 2 Mechs, DBV Cut-Out |
| 50-0244-NDNC | 1 | Seat Assembly, with Speakers and Harness |
| 50-0400-00 | 1 | Seat Slide Kit |
| 60039-00 | 1 | Computer Mounting Strap |

## Shifter Assembly

| ITEM NO. | QTY. | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 96-0094-00 | BASE PLATE 4 SPD SHFT BLK |
| 2 | 1 | 96-0095-00 | SIDE BRACKET W/PIN CLR ZNC PLT |
| 3 | 1 | 96-0084-00 | GATE BLOCK UPPER MOLDED |
| 4 | 1 | 96-0092-00 | SIDE BRACKET NO PIN CLR ZNC PLT |
| 5 | 1 | 96-0088-00 | GATE BLOCK LOWER MOLDED |
| 6 | 1 | 50-8390-00 | INNER BOX A, SUB ASSY, PLT |
| 7 | 1 | 50-8418-00 | INNER BOX, B, ASSY |
| 8 | 1 | 50-8346-00 | TRUNNION, FOR I.L. TURBO SHIFTER |
| 9 | 1 | 96-0090-00 | KNOB & SHAFT ASSY 1-3/4 BLK BALL KNOB |
| 10 | 1 | 50-8299-00 | ANCHOR PIN, HANDLE BLK OXD. |
| 11 | 1 | 96-0085-00 | RETAINER PLATE |
| 12 | 4 | 96-0089-00 | ACTUATOR, SPRING STEEL |
| 13 | 4 | 95-1807-00 | DB STYLE MINATURE SWITCH |
| 14 | 6 | 43-0133-00 | #14S BRS FLAT WSH .26X.56X.04 |
| 15 | 4 | 43-0118-00 | E-RING, 1/4" SHAFT DIA |
| 16 | 1 | 50-8414-00 | TOP PLATE, SCREENED, 4-SPD SHFT, RED |
| 17 | 1 | 50-8422-00 | GUIDE WASHER, 4 SPD SHIFTER |
| 18 | 2 | 50-8406-00 | BUSHING, NYLINER, F/.078 THK MAT. |
| 19 | 2 | 50-8491-00 | BUSHING NYLINER F/.072/.135 THK MAT. |
| 20 | 4 | 43-0307-00 | SCREW, 8-32X3/4 PH P. H. MS |
| 21 | 8 | 43-0252-00 | SCREW, #8-32 x 3/8 HEX HEAD |
| 22 | 2 | 43-0134-00 | SCREW, 8-32X5/16" PH HD MS W/SEMS E-WSH |
| 23 | 1 | 50-8118-00 | E-RING FOR GEAR SHIFTER M15 |
| 24 | 2 | 50-8294-00 | SPRING, HAIRPIN, HLR SHFTR, SHORT |

NOTES:
NOT SHOWN 90-1013-00 (TIE WRAP 4" LENGTH)
Drawing © Happ Controls.
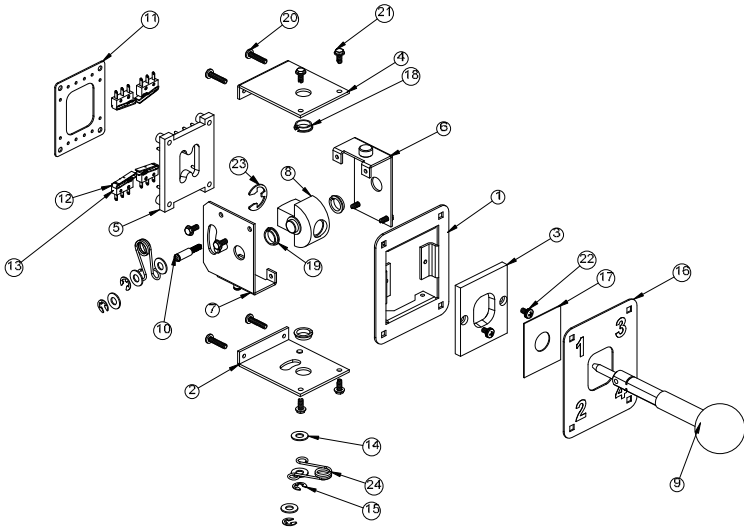


*Figure 36.    Shifter Assembly Exploded View and Parts*

## Pedal Assembly

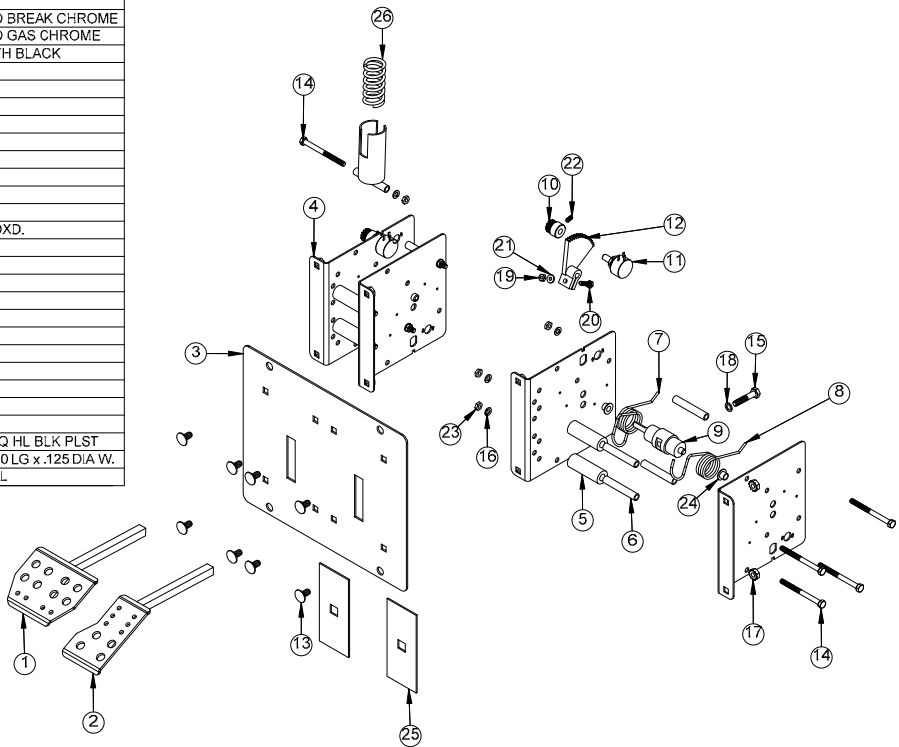| ITEM NO | QTY. | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 95-2534-00 | PEDAL & BEAM ASSY PERFORATED BREAK CHROME |
| 2 | 1 | 95-2520-00 | PEDAL & BEAM ASSY PERFORATED GAS CHROME |
| 3 | 1 | 50-8372-90 | PEDAL FRONT PLATE DUAL SMOOTH BLACK |
| 4 | 4 | 50-2588-00 | SIDE PLATE RIGHT & LEFT |
| 5 | 4 | 50-8171-00 | BUMPER |
| 6 | 8 | 50-8170-00 | SPACER, TUBE |
| 7 | 1 | 50-8042-00 | SPRING F/PEDAL, RH HELIX |
| 8 | 2 | 50-8049-00 | SPRING F/PEDAL, LH HELIX |
| 9 | 2 | 50-2979-00 | PIVOT SHAFT, PAINTLOC |
| 10 | 2 | 50-8069-02 | GEAR, 1MOD, 12T, .25 BORE |
| 11 | 2 | 96-4916-00 | LONG LIFE POT W/NUT & WSHR 5K |
| 12 | 2 | 95-0925-00 | GEAR SEG 1MOD 80T |
| 13 | 8 | 43-0726-00 | CARRIAGE BOLT, 1/4-20 X .50 BLK OXD. |
| 14 | 9 | 43-0075-00 | SCREW, M5 X 60MM HHCS |
| 15 | 2 | 43-0269-00 | SCREW, M6 X 30MM HHCS |
| 16 | 9 | 43-0068-00 | LOCKWASHER, M5 RIBBED |
| 17 | 8 | 90-1209 00 | 1/4-20 HEX NUT W/KEPS |
| 18 | 2 | 43-0983-00 | LOCKWASHER M6 RIBBED |
| 19 | 2 | 43-0050-00 | HEX NUT M4 |
| 20 | 2 | 43-0051-00 | SCREW, M4 X 16 MM HHCS |
| 21 | 4 | 43-0198-00 | WASHER, M4 FLAT WSH DIN 125A |
| 22 | 2 | 43-0277-00 | SET SCREW, M4X8MM CUP POINT |
| 23 | 9 | 43-0125-00 | NUT M5 |
| 24 | 4 | 50-2587-00 | BUSHING .35 DIA 5/16 O.D. |
| 25 | 2 | 50-0097-00 | WASHER GUIDE 4.38 X 1.75 W/.44 SQ HL BLK PLST |
| 26 | 1 | 50-0008-00 | COMPRESSION SPRING .94 OD X 2.00 LG x .125 DIA W. |
| 27 | 1 | 50-0011-00 | CYLINDER & TUBE ASSY., I.T. PEDAL |

Drawing © Happ Controls



*Figure 37.    Pedal Assembly Exploded View and Parts*

## Steering Assembly

| ITEM NO | QTY | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 43-0341-00 | SCREW, 1/4-28 X 1 SHCS |
| 2 | 1 | 50-4014-00 | SHAFT, 270 DEG. ACTIVE WHEEL |
| 3 | 1 | 43-0305-00 | KEY, 3/16 SQ. X .74 |
| 4 | 2 | 43-0232-00 | NUT, HEX NYLOCK 1/2-20 |
| 5 | 1 | 43-0340-00 | LOCKWASHER, EXT. M12 |
| 6 | 1 | 50-2092-00 | KEY, SHAFT 4MM x 4MM x 25MM |
| 7 | 1 | 43-1170-00 | SCREW, #6-32 x 3/8" SHCS |
| 8 | 1 | 50-4043-00 | MOTOR & CONNECTOR ASY. |
| 9 | 1 | 50-4016-00 | WHEEL MTG. BRACKET |
| 10 | 1 | 50-8129-00 | BEARING HOUSING |
| 11 | 2 | 50-8130-00 | BEARING, .59 ID X 1.259 OD |
| 12 | 1 | 50-8455-00 | MOTOR MTG. BRACKET |
| 13 | 1 | 50-2659-00 | BEARING SPACER |
| 14 | 1 | 50-4040-PL | PULLEY, 16T 1/5 PITCH, PLASTIC |
| 15 | 4 | 43-0188-00 | SCREW, #8-32 x 3/8" HEX WASHER HD |
| 16 | 4 | 43-0576-00 | SCREW, M6 x 60MM HHCS |
| 17 | 1 | 90-1208-00 | FLAT WASHER, 1/4 I.D. |
| 18 | 1 | 50-2545-00 | BRACKET, BELT TENSIONER |
| 19 | 4 | 42-0093-00 | NUT 10-32 HEX W/SEMS, ZINC PLTD |
| 20 | 2 | 43-0117-00 | HEX HD CAP SCREW M10x30,GR 8.8 |
| 21 | 2 | 43-0978-00 | SCREW, M10 x 40MM HHCS |
| 22 | 1 | 50-8145-00 | DIE CAST WHEEL STOP, W/BUMPERS |
| 23 | 4 | 43-0034-00 | LOCKWASHER M10 RIBBED |
| 24 | 4 | 43-0035-00 | NUT HEX M10 |
| 25 | 1 | 50-4045-PL | STOPPER PIE CAM & PLASTIC PULLEY |
| 26 | 1 | 50-4041-00 | TIMING BELT, BLACK 3/8" WIDE |
| 27 | 1 | 50-2670-00 | 5K POT, NEI "SENSORCUBE" |
| 28 | 1 | 43-0018-00 | LOCKWASHER, INT. 3/8" x 9/16" |
| 29 | 1 | 43-0014-00 | HEX NUT 3/8"-24 X 3/32 THK |
| 30 | 1 | 50-4018-00 | POT. MTG. BRACKET |
| 31 | 1 | 50-4032-00 | SPACER, POT MTG. BRACKET |
| 32 | 1 | 43-0184-00 | SCREW, #10-32 x 3/8" PHPNHD |
| 33 | 1 | 43-0995-00 | #10 FLAT WASHER |
| 34 | 1 | 43-0735-00 | SCREW, M4 X 12 SHCS |
| 35 | 1 | 50-2511-00 | ATARI GAMES PATENT DECAL |
| 37 | 1 | 50-2525-00 | SPLIT HUB FOR 5/8" SHAFT & 1/4-20 TAP |
| 38 | 1 | 50-1035-00HD | HOOP, SOFT RUBBER TYPE 60 DUROM |
| 39 | 1 | 50-2715-00 | CAP WITH CHECKERED FLAGS LOGO |
| 40 | 3 | 43-0328-00 | SCREW, 1/4-20 X .75" SOCKET HD CAP B.O. |
| 41 | 6 | 43-0284-00 | SCREW, 8-32 X 1/2 TORX TP B.H. |
| 42 | 1 | 43-1554-00 | STAR WASHER M14 EXTERNAL TOOTH |
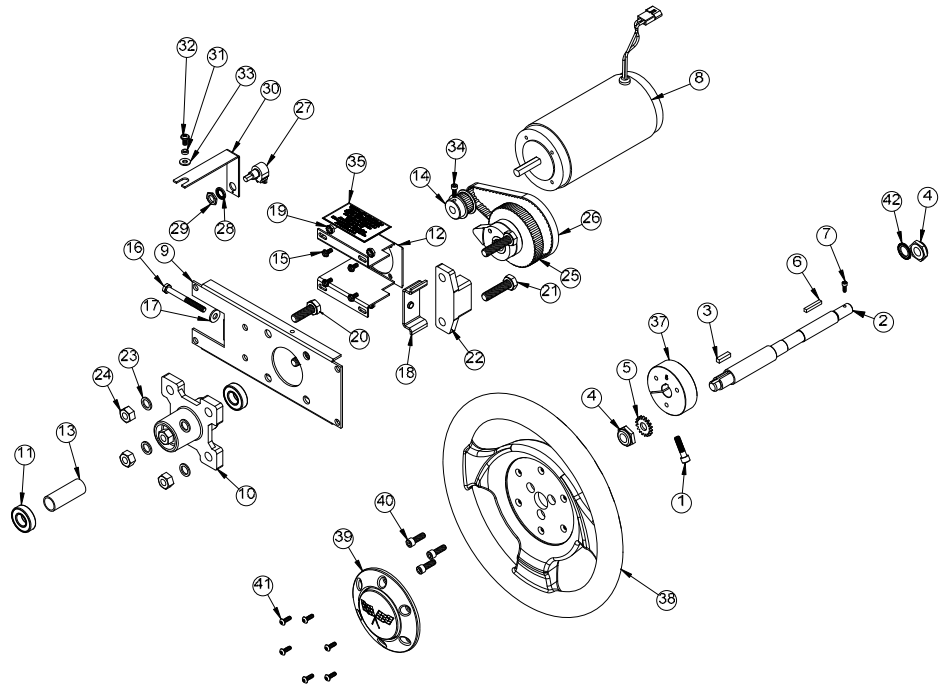


*Figure 38.   Steering Assembly Exploded View and Parts*

## Artwork and Exterior Plastic Parts (Standard)



NTR-AW-01
Backlit Marquee Artwork

NTRSTD-AW-03
L & R Marquee Side Decal
(1 of 2)

NTR-AW-03
Dashboard Decal

26134-00
Rear Seat Housing

NTR-AW-05
4-Speed Shifter
Decal

NTRSTD-AW-02
Right Side Control Panel Decal

NTRSTD-AW-01
Left Side Control Panel Decal
(on Other Side)

NTR-AW-02
Seat Back Decal

NTR-AW-04
Card Reader Decal

NTRSTD-AW-05
Right Side Panel Decal

NTRSTD-AW-04
Left Side Panel Decal
(on Other Side)

NTRSTD-AW-08
Seat Pedestal Rear Decal

NTRSTD-AW-09
Lower Rear Seat
Pedestal Decal

NTRSTD-AW-10
Shifter Housing Decal

NTRSTD-AW-07
Right Side Seat Pedestal Decal

26005-RED
Plastic Shifter Housing

NTRSTD-AW-06
Left Side Seat Pedestal Decal
(on Other Side)

*Figure 39.    Standard Cabinet Artwork*

## Artwork and Exterior Plastic Parts (Deluxe)

NTR-AW-01
Backlit Marquee Artwork

NTR-AW-05
4-Speed Shifter Decal
(Not Shown)

NTR-AW-04
Card Reader Decal
(Not Shown)

26134-00
Rear Seat Housing

NTR-AW-02
Seat Back Decal

NTR-AW-03
Dashboard Decal

NTRDLX-AW-02
Right Control Panel Side
Decal

NTRDLX-AW-01
Left Control Panel Side
Decal (on Other Side)

NTRDLX-AW-09
Rear Metal Decal

NTRDLX-AW-04
Right Side Panel
Decal

NTRDLX-AW-06
Rear Seat
Pedestal Decal

NTRDLX-AW-07
Rear Lower Base
Decal

NTRK-AW-03
GLOBAL VR Logo Decal
(1 of 4)
(Also place on other side.)

NTRDLX-AW-10
GLOBAL VR Tire Decal
(1 of 4)

NTRDLX-AW-05
Left & Right Seat
Pedestal Decal
(1 of 2, Not Shown)

NTRDLX-AW-03
Left Side Panel Decal
(Not Shown)

NTRDLX-AW-08
Left Base & Fender
Logo Decal
(1 of 3, Not Shown)

*Figure 40.   Deluxe Cabinet Artwork*

# Chapter 9 — Diagrams and Schematics
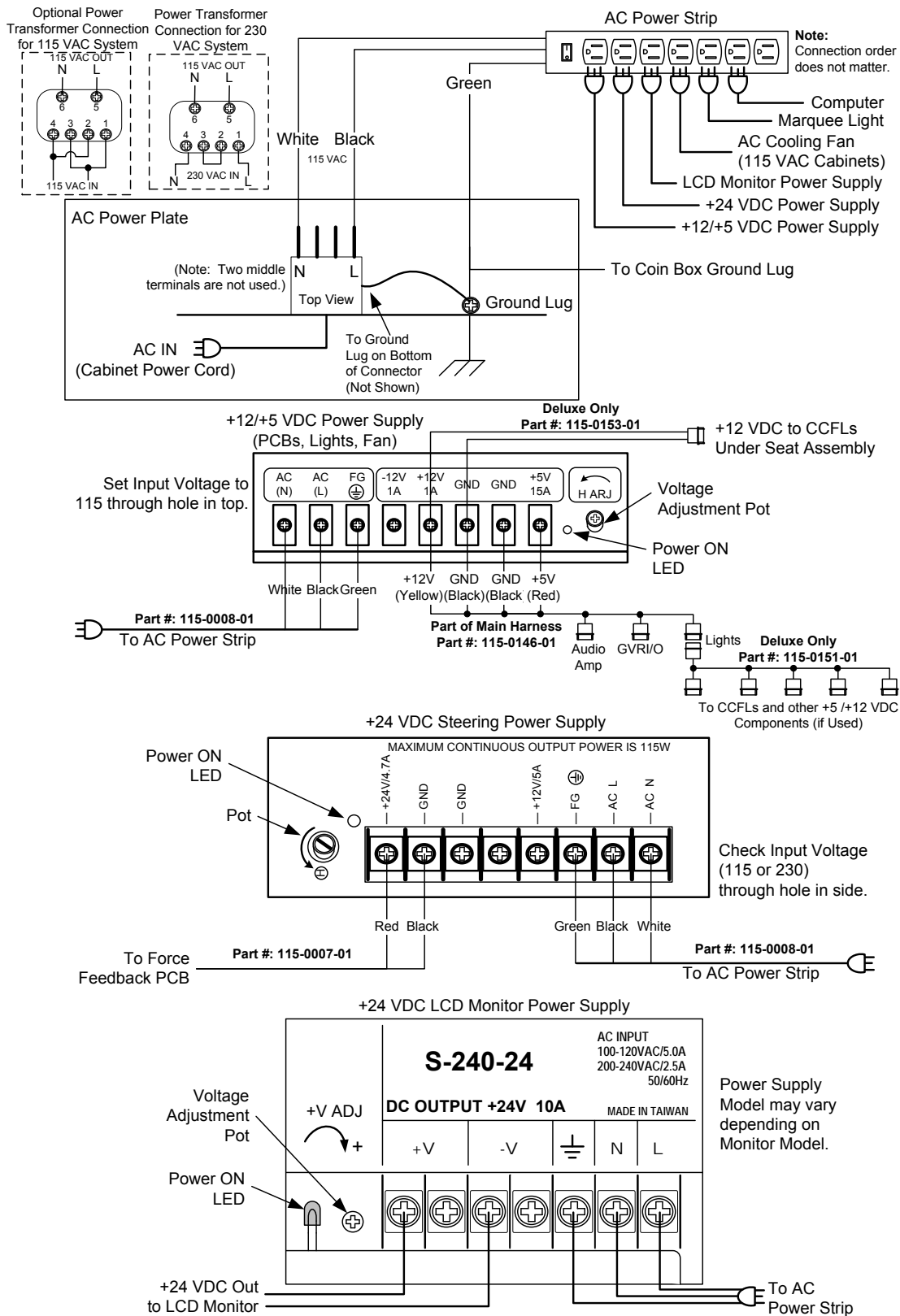


*Figure 41. Power Distribution Diagram*
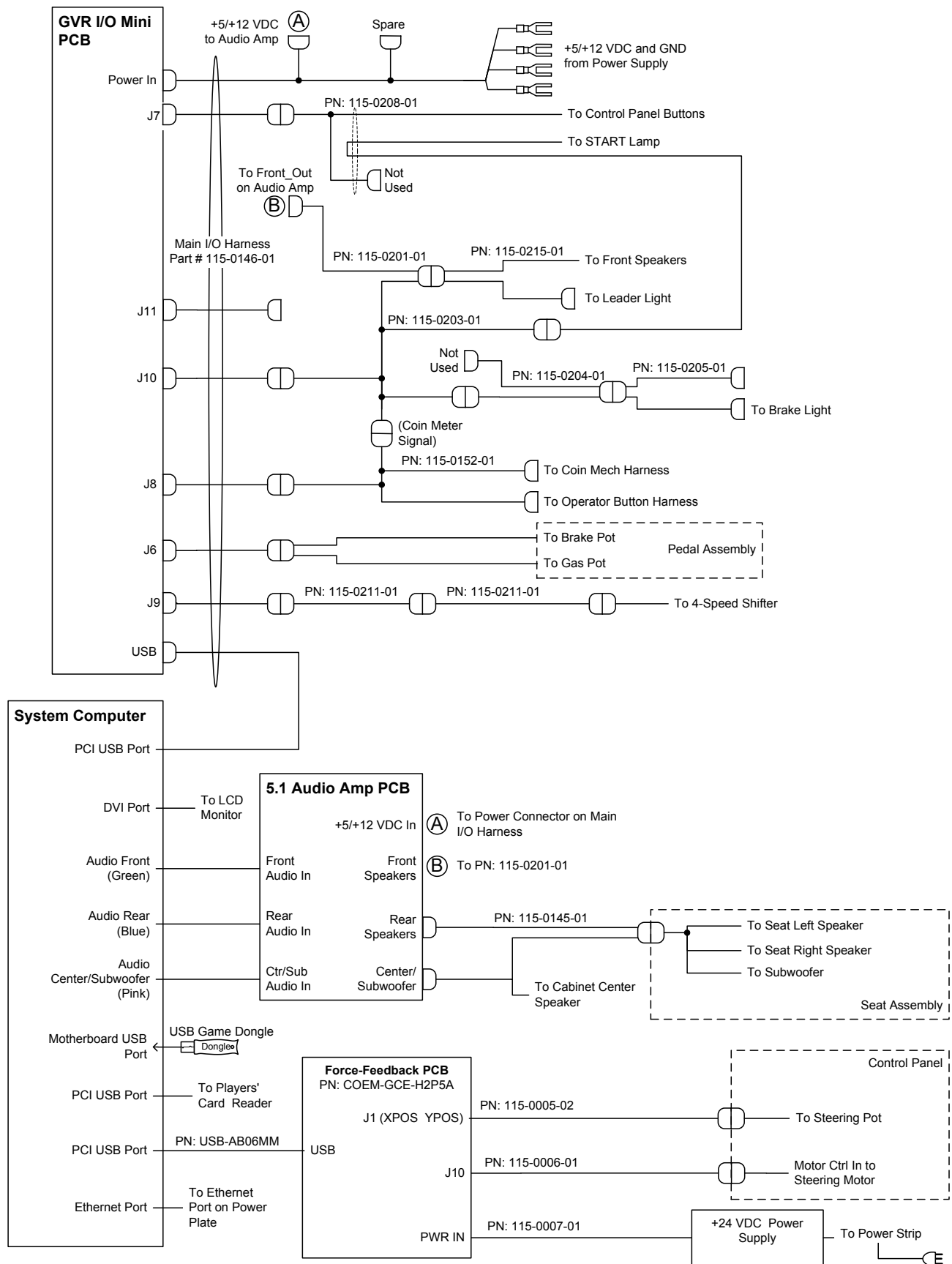
*Figure 42.   Simplified Wiring Diagram (Standard)*
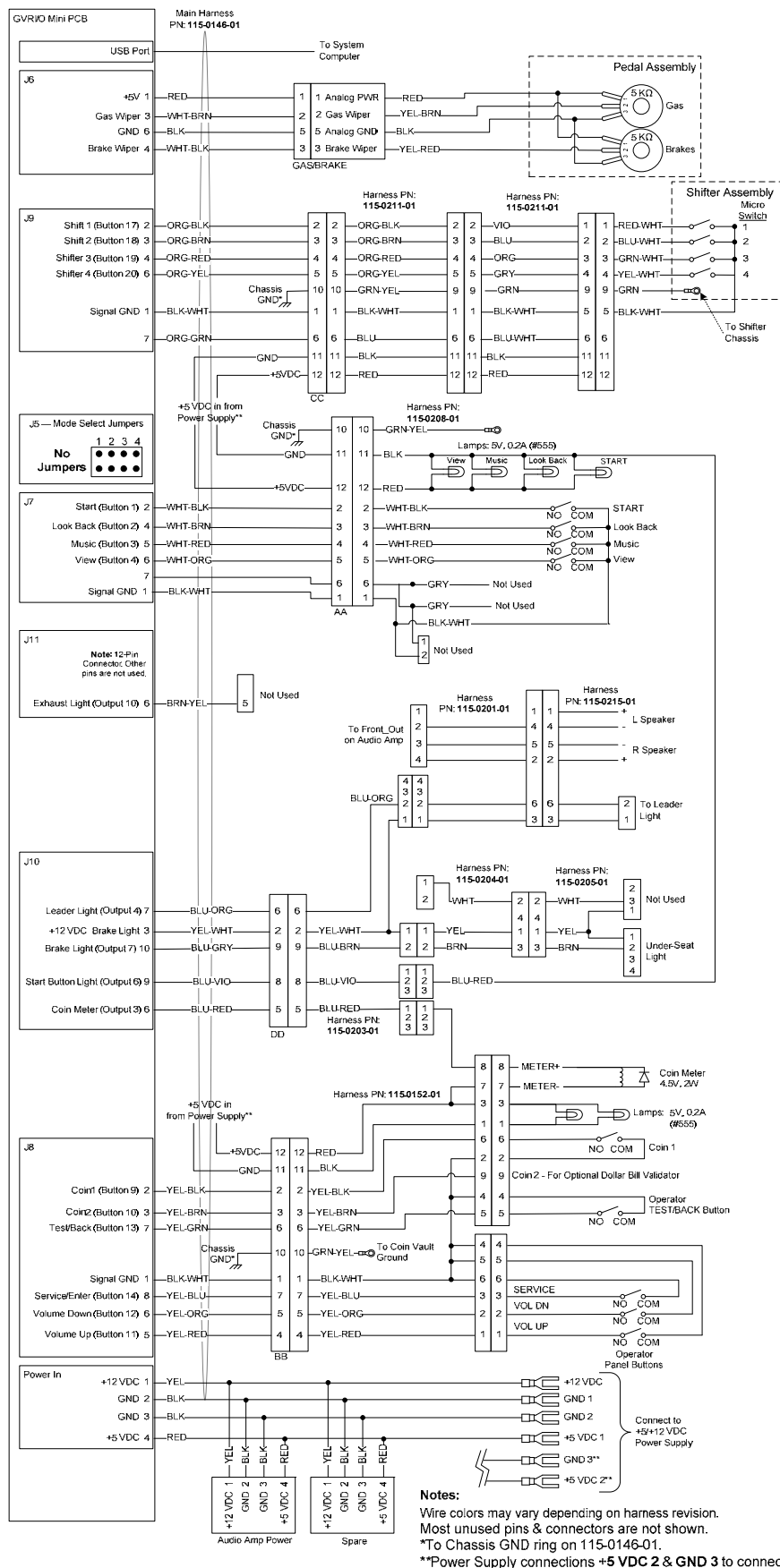
*Figure 43. Detailed Wiring Diagram (Standard)*
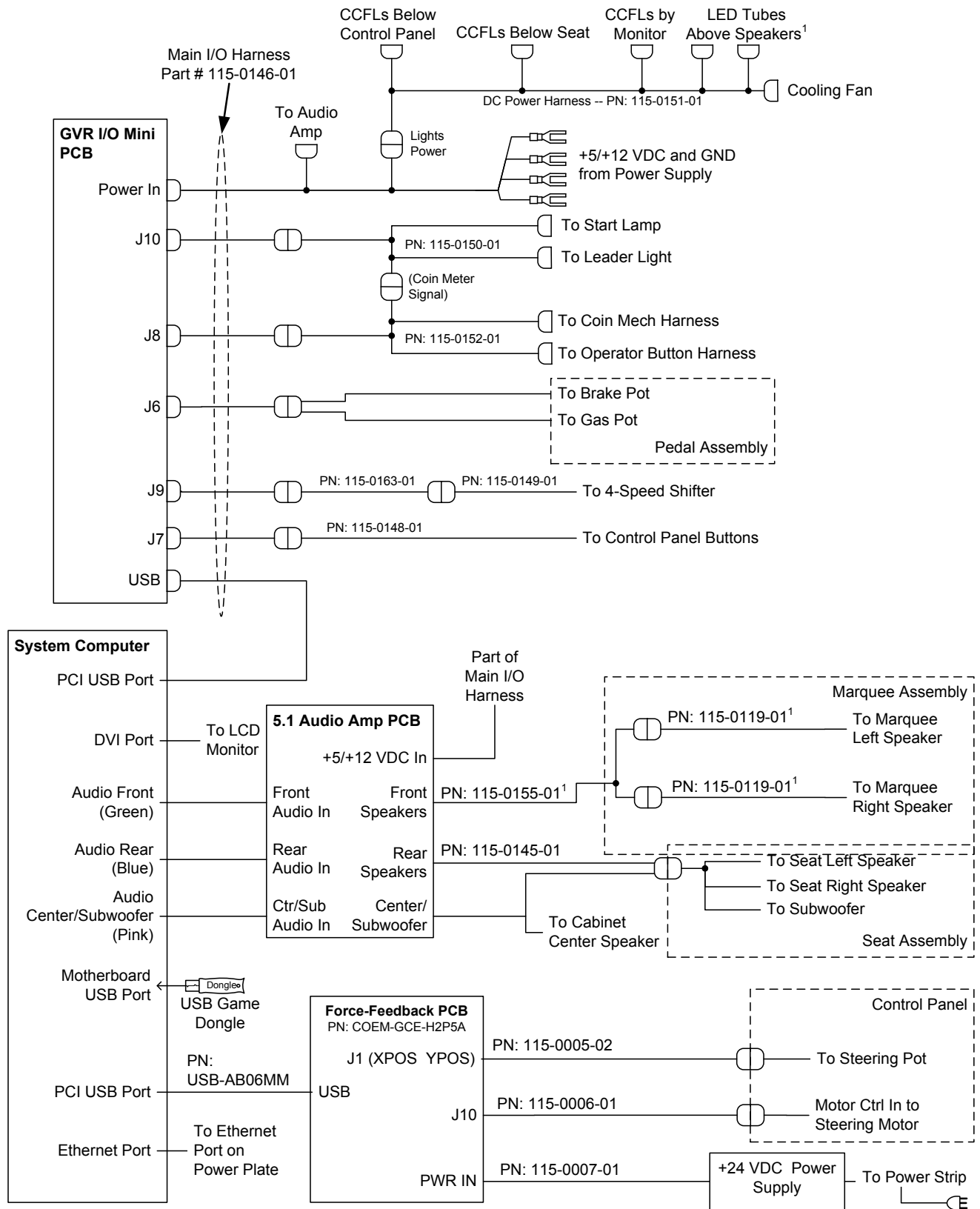
*Figure 44.  Simplified Wiring Diagram (Deluxe)*
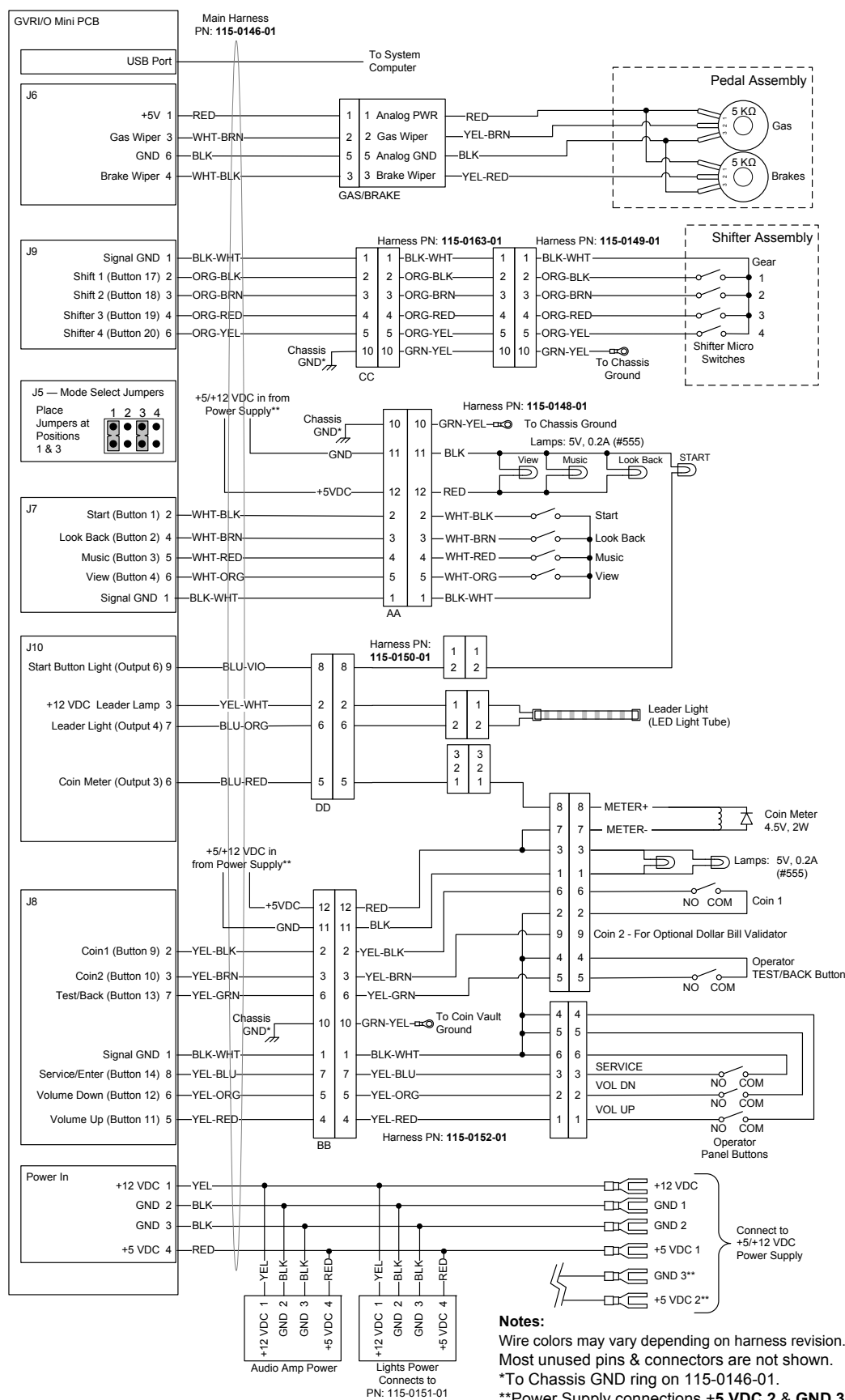
*Figure 45.   Detailed Wiring Diagram (Deluxe)*

## PC Rear with Intel DG41TY Motherboard

AC Power Connector

Computer
Power Supply

Computer
ON/OFF Switch

PS/2 Keyboard Port
(Purple)

Case Cooling
Fan

USB Ports to
Game Dongle

Game Dongle

Audio Ports to Audio Amp:
- **Red** – Center/Subwoofer
- **Green** - Front Speakers
- **Blue** - Rear Speakers

Ethernet Port
Connect to
Ethernet Port in
AC Power Plate
for Linking
Cabinets

DVI Port
to Monitor

Video Card

PCI USB Port to
- GVRI/O PCB
- Force-Feedback
Steering PCB
- Mini-Motion PCB

PCI USB
Card

*Figure 46.    Computer Rear Panel Diagram*

# Warranty Service

If you should require warranty service, please contact your authorized GLOBAL VR® distributor.

## LIMITED WARRANTY

LIMITED WARRANTY for NASCAR® Team Racing  (North America Only)

GLOBAL VR® warrants that its computer circuit boards, hard drives, power supplies, monitors, displays, controls, sensors, and mechanical structures are free from defects in materials and workmanship under normal use and service for a period of ninety (90) days from the date of sale.  The warranty period for LCD panels and Immersion® Force-Feedback PCBs is 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 only shall be in effect for a period of ninety (90) days following the repair or replacement of that part or the remaining period of the Product parts warranty, whichever is greater.

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

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

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON GLOBAL VR®'S PART, EXCEPT FOR ANY EXPRESS WARRANTY SET FORTH IN A WRITTEN CONTRACT BETWEEN GLOBAL VR® AND PURCHASER CONTAINING SPECIFIC TERMS WHICH SUPERSEDE THE TERMS HEREIN.  THIS WARRANTY DOES NOT AUTHORIZE ANY OTHER PERSON TO ASSUME OTHER LIABILITIES, IF ANY, CONNECTED WITH THE SALE OF PRODUCTS BY GLOBAL VR®.

## Legal Notices

# Technical Support

## Service & Parts

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

**Phone:** 408.597.3435

**Fax:** 408.597.3437

**E-mail:** techsupport@globalvr.com

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

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

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

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

- Cabinet Serial Number: _____

- Game Version (from Operator Menu): _____

- OS Version (from Operator Menu): _____

- Dongle Version (from Operator Menu): _____

- IO 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 install or upgrade
- For game-play issues, the game mode and number of players

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