



Need for Speed™ Underground **Upgrade Cabinet**

Installation Guide & System Manual for Standard and Deluxe Cabinets 040-0064-01 Rev. B



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Preface

Safety

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

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



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

- Make sure that the switch on the back of the computer is set to match the AC power in use at your location:
 - 115 volts / 60Hz in most of North and South America and some Far Eastern countries such as Japan, South Korea and Taiwan
 - 230 volts / 50Hz in most of Europe, the Middle East and the Far East
- To help prevent electric shock, plug the system into a properly grounded power source. 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

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

Warnings

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

Environmental Conditions

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

FCC Notices (United States)

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

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

- Re-orient the receiving antenna.
- Relocate the cabinet relative to the receiver.
- Plug the game into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult 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

***Need for Speed™ Underground* Description**

Build and race the ultimate urban exotic with *Need for Speed™ Underground*.

Take control of top import street tuners like Toyota Celica, Nissan 350Z, Mitsubishi Eclipse and the exclusive Nissan Skyline GT-R. Play Career and customize your car with licensed aftermarket parts to build your own unique ride.

Force-feedback steering, surround sound and a 6-speed shifter make *Need for Speed™ Underground* a truly engaging driving experience.

Own the Streets

- **Linkable** – allowing up to 4 players to compete in blistering head-to-head competition.
- **Tournament Play** – with National Tournaments and Wednesday Tournament events throughout the US.
- **Career Mode** – allows players to choose their car and compete in a series of 81 races, earning custom performance parts and upgrades along the way. Players can store 4 Careers on one Players' Card!
- **GLOBAL VR® Players' Card Compatible** – thousands of registered players are ready to drive, and new players can purchase a SmartCard format Players' Card to store their data.

***Need for Speed™ Underground* Upgrade**

The *Need for Speed™ Underground* Upgrade Kit is available for existing *Need for Speed™* cabinets. The upgrade kit includes the new *Need for Speed™ Underground* software, 6-speed shifter, Players' Card reader (for Tournament and Career Mode play), NOS button, and new artwork.

Chapter 2 — Upgrading the Cabinet

Need for Speed™ Underground Upgrade Kit Contents

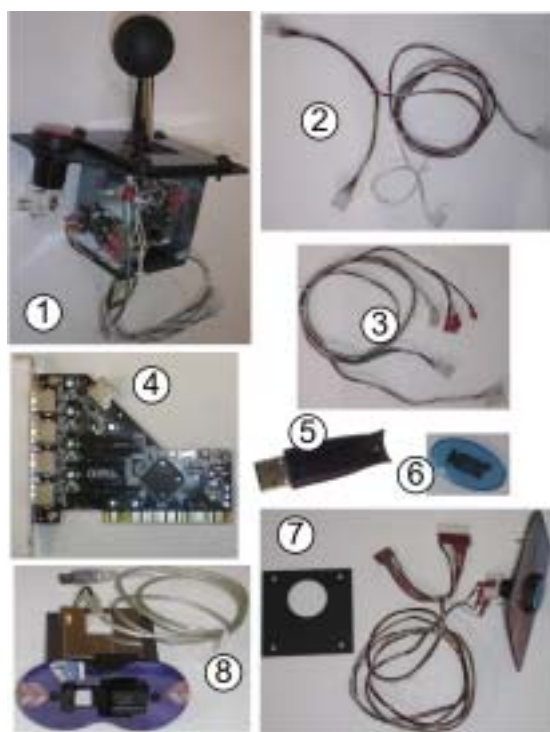
The *Need for Speed™* Underground Upgrade Kit contains the items listed below. For a detailed parts list, refer to Chapter 9 — Replacement Parts on page 85.

Software, Documents, and Artwork:

Description	Part #
System Recovery Disk	050-0070-01
Game Install Disks (2)	050-0071-01
Installation Guide & System Manual (This Document)	040-0064-01
Software Restore Guide	040-0069-01
Serial Number Label	L-0069
Cabinet Artwork (For details, see page 26 for Standard cabinets with 27" monitors, or page 27 for Deluxe cabinets with 39" monitors.)	

Hardware:

Ref	Description	Part #
1	6-Speed Shifter Assembly	45037-00
2	Shifter Harness	115-0060-01
3	Shifter Harness	115-0061-01
4	Four-Port PCI USB Card	08324
5	Game Dongle	USB-KQRTG
6	NOS Button Cover and Graphic	59-6010-12 & HP142201-1998
7	NOS Button Assembly and Back Plate	45044-00 (Std) 45043-00 (Dlx)
8	SmartCard Reader Assembly	45038-00 (Std) 45039-00 (Dlx)
	Telephone Cable (not shown)	TDC207
	Light Kit Assembly (not shown)	45042-00
Note: Standard Cabinet (27" monitor) hardware pictured.		



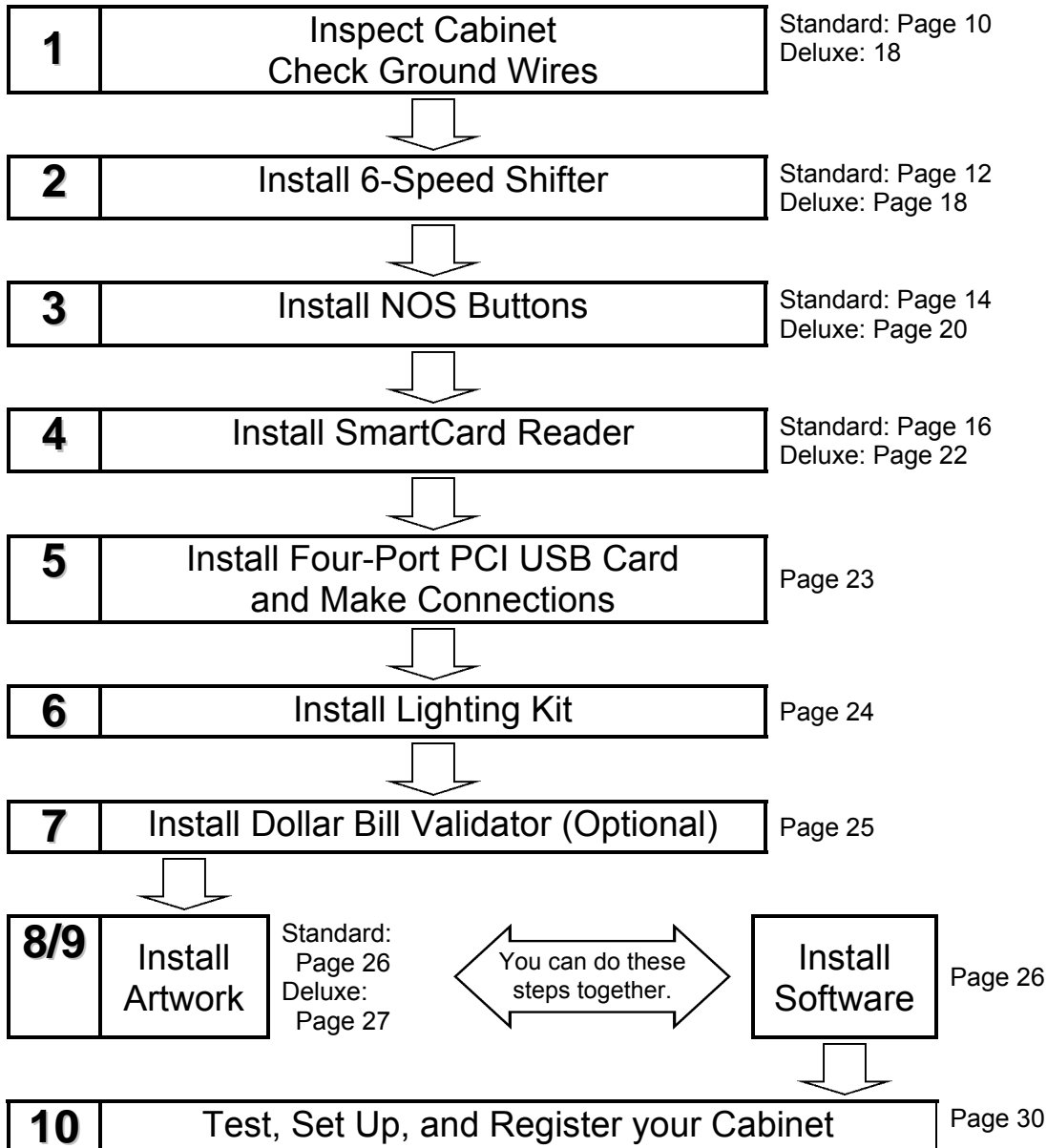
Options:

A Dollar Bill Validator may be installed as an option.

A SmartCard dispenser is available as a separate kit.

Primary Upgrade Steps

Note: **Standard** cabinets have 27" monitors; **Deluxe** cabinets have 39" monitors.



Tools Required

- Screwdriver with assorted Torx[®] Security bits (including T-15 and T-27) and Phillips bits
- Nut drivers
- Exacto[®] knife
- Drill and 3/4" bit (for lighting kit installation)
- Stepladder (optional)

Standard Cabinet Hardware Upgrade

1. Check Power Plate Wiring and Grounding

Your cabinet must be properly wired and grounded to ensure safety and proper operation. Before installing the new equipment, check the wiring as described in this section.

The steps in this section apply only to Standard cabinets. Deluxe cabinets (39" monitors) have a different type of power plate.



WARNING: ELECTRIC SHOCK HAZARD. Disconnect the cabinet power cord before performing the steps in this section.

1. Disconnect the power cord from the cabinet.
2. Remove the four (4) power plate mounting nuts and bolts and remove the power plate.
3. If a grounding wire is connected to any of the power plate mounting bolts, connect that wire to the ground lug on the EMI filter, as described in the next part of this document. **The power plate mounting bolts do not provide an adequate ground.**

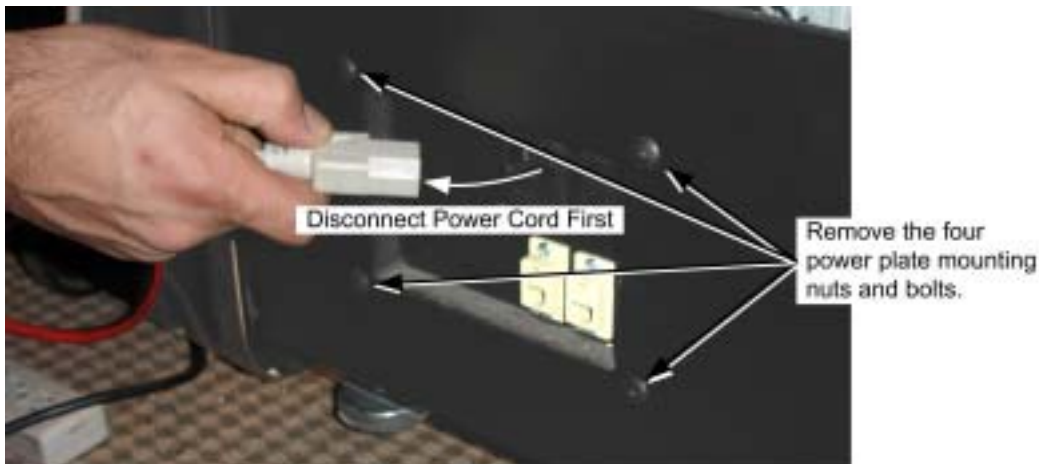


Figure 1. Disconnect Power and Remove Power Plate

4. Refer to Figure 2 and inspect the power plate to make sure that the correct color wire is connected to each connector.

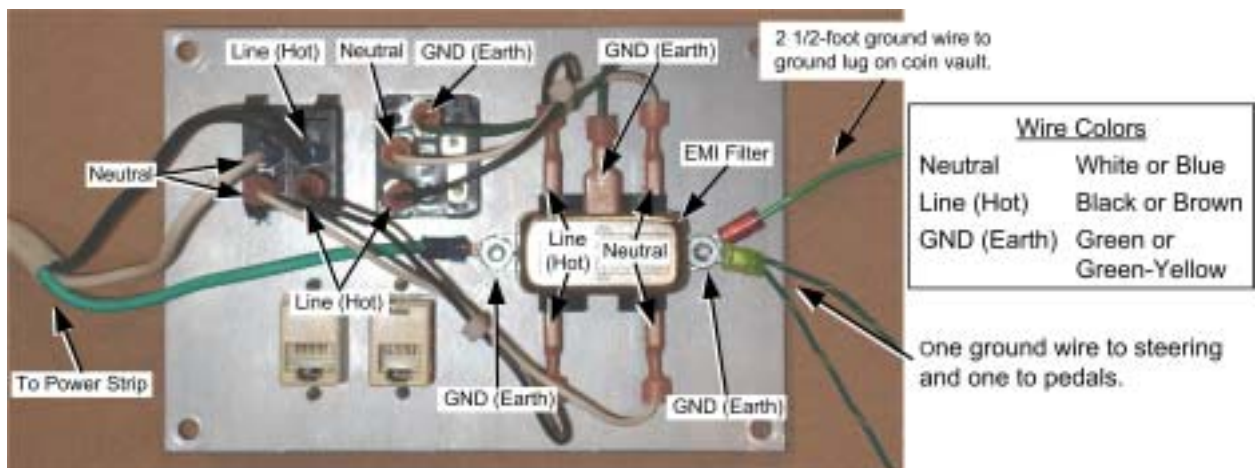


Figure 2. Power Plate Wiring (Inside Cabinet)

5. Confirm that a ground wire is connected from the ground lug on the EMI filter to the ground lug on the coin vault. Make sure this wire is tightly connected.
6. If there is no ground wire from the ground lug on the EMI filter to the ground lug on the coin vault, do the following:
 - a. Install a 2 1/2' ground wire to the lug on the right of the EMI filter, as shown in Figure 2. Use a #8-32 Kep nut to secure it in place. Secure the nut tightly.
 - b. Use a #8-32 Kep nut to secure the other end of the ground wire to the coin vault ground lug, on top of the other ground wires, as shown below. Secure the nut tightly.



Figure 3. Coin Vault Ground Lug

7. This is a good time to make sure that the Ethernet and phone cables are connected from the computer to the appropriate ports on the inside of the power plate. A phone cable is provided in the upgrade kit in case one was not previously installed. Refer to Figure 78 on page 92 for computer connections.
8. Re-install the power plate in the cabinet and secure it with the mounting nuts and bolts removed in step 2. (**Do not** connect ground wires to the mounting bolts.)

2. Install the 6-Speed Shifter

1. Turn off the cabinet and disconnect the power cord.
2. Remove the four (4) Torx bolts from each side of the seat, as shown below, and slide the seat away from the cabinet so that you will be able to reach the harnesses.



Figure 4. Separating Seat from Cabinet

3. Refer to the figure below to make the shifter harness connections described in the steps that follow.

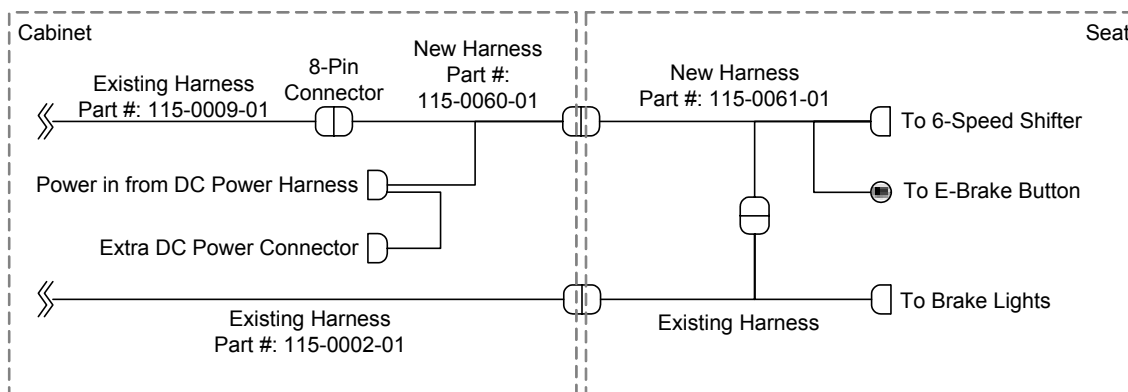
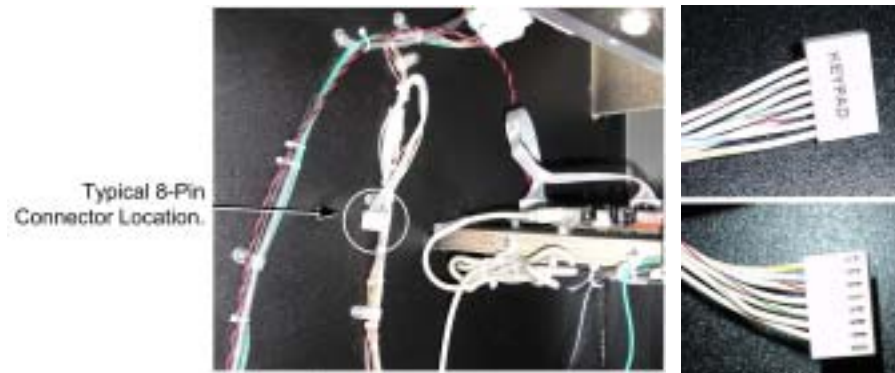


Figure 5. Shifter Harnessing Diagram (Simplified)

4. In the back of the cabinet, locate the unused 8-pin female connector on existing harness part # 115-0009-01. It may be bundled with other harnesses on the cabinet wall to your left. It also may be labeled "KEYPAD" as shown in the figure below.



5. Connect the 8-pin connector to the corresponding connector on harness part #: 115-0060-01 from the kit. Make sure that the **white & yellow** striped wires on the two connectors are aligned.



6. Connect the 4-pin male DC power connector on the new harness (115-0060-01) to a DC power connector in the cabinet. If there is no unused DC connector, disconnect another device and connect it to the Spare DC connector on the new harness.
7. Route the 5-pin connector of the new harness (115-0060-01) through the hole in the bottom of the cabinet, near the back of the pedal assembly, so that you will be able to pull the harness through to the seat assembly. (It is helpful to have a second person spot the harness and pull it through.)
8. At the seat assembly, remove the three (3) Torx bolts from the top plate of the shifter and lift the shifter assembly out of its housing.
9. Disconnect the 6-pin Molex connector from the old shifter and connect it to the corresponding connector on harness part # 115-0061-01 from the kit.
10. Connect the 9-pin Molex connector on the new harness (115-0061-01) to the new 6-speed shifter.
11. Refer to Figure 6 and connect the E-Brake button to the four (4) spade connectors on harness part # 115-0061-01 as described below. Note that the spade connectors for the lamp are a bit wider than those for the micro switch.
 - Connect the red and black wires to the lamp connectors.
 - Connect the white wire to the NO connector on the micro switch.
 - Connect the black wire to the COM connector on the micro switch.

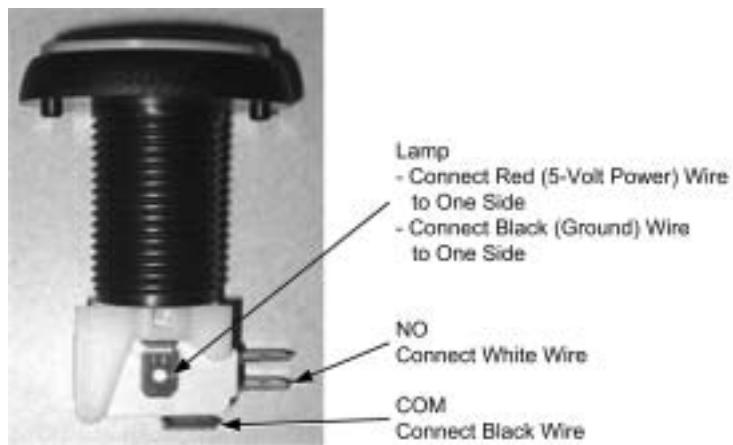


Figure 6. Lighted Button Connections

12. Route the shifter harnesses into the seat, and pull it out in front of the seat. Connect it to the harness you previously routed from the cabinet.
13. Secure the shifter to the housing with the three (3) Torx bolts and washers removed previously.
Note: You may prefer to re-install the seat after finishing the control panel modifications.
14. Slide the seat back into place, being careful not to catch or pull the harnesses.
15. Secure the seat with the bolts and washers removed previously.

3. Install the NOS Buttons and SmartCard Reader

Perform the steps in this section to install the two NOS buttons (used to add a burst of extra speed to the car during a race), and the SmartCard reader (required for Tournaments, Career Mode, and online features).

3.1 Install Left NOS Button

To install the first NOS button, remove the two Torx screws from the button plate on the left side of the driving control panel. Disassemble the Horn button and remove the plastic lens and Horn graphic. Replace them with the blue plastic lens and NOS graphic from the kit. (The new software no longer uses the horn.)

If you prefer, you can gently pry the plastic cap off of the Horn button with a small screwdriver or similar tool, and then press the new graphic and cap into place. If you do this, be careful, as it is easy to damage the button.

3.2 Remove Monitor Bezel and Cover Plates

The second NOS button and the SmartCard reader are installed in the monitor bezel in the locations shown in Figure 9. To install these components, remove the bezel as described below:

1. Remove the three (3) Torx bolts from the control panel and open the control panel, as shown in the picture below.



Figure 7. Opening the Control Panel

2. At the top of the cabinet, remove the six (6) Torx bolts that secure the marquee support bracket, as shown below, and remove the support bracket.
3. Remove the two (2) bolts that secure the bezel to the top of the cabinet, as shown below. Fold the marquee back and slide the bezel straight out from the cabinet.



Figure 8. Removing the Bezel

- From the inside of the bezel, remove the Kep nuts that secure the two cover plates in place, as shown below, and remove the cover plates with the attached artwork.



Figure 9. SmartCard Reader and NOS Button Locations (Standard Cabinet)

Note: A few cabinets do not have the hole pre-cut for the SmartCard reader, and may also have a board behind the bezel that must be cut away to provide clearance for the SmartCard reader. If you need assistance with one of these cabinets, contact Technical Support.

3.3 Install Right NOS Button

- Place the metal plate with the NOS button assembly on the front of the bezel, and install the metal back plate from the inside of the bezel so that the bezel plastic is sandwiched between the two metal plates. Make sure the NOS button graphic is right-side up, and secure the assembly with four (4) Kep nuts.
- Locate harness part # 115-0072-01 from the kit, and connect the spade connectors to the NOS button. Note that the spade connectors for the lamp are a bit wider than those for the micro switch. Connect the **White-Black** micro switch wire to the NO connector and the **Black** wire to the COM connector. The lamp connectors are interchangeable. (See Figure 6 on page 14.)

3.4 Install SmartCard Reader

- Insert the SmartCard reader assembly from the front of the bezel, so the bolts on the faceplate go through the holes in the bezel.
- Make sure the SmartCard reader is installed with the LEDs upward, and secure it with two (2) Kep nuts.

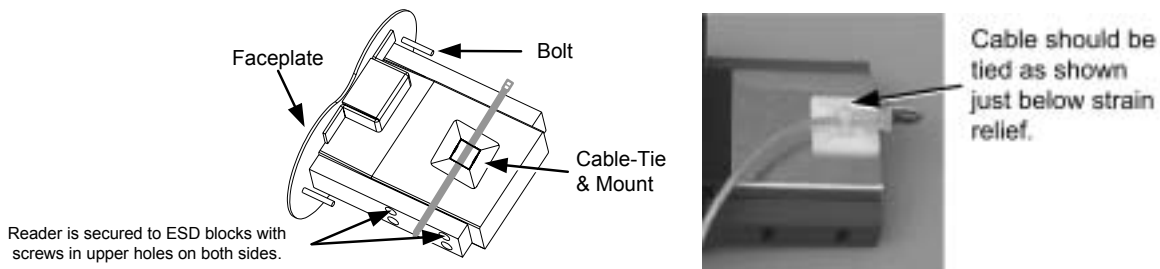


Figure 10. SmartCard Reader Assembly

3.5 Re-Install Bezel and Route Harnesses

- Re-install the bezel on the cabinet, being careful to route the harnesses from the NOS button and SmartCard reader into the cabinet. Secure the bezel with the two (2) bolts at the top of the cabinet. Replace the marquee support bracket and secure it with the 6 (six) bolts.

2. Route the SmartCard reader harness to the system computer. You will be connecting it to the PCI USB card to be installed later.
3. Route the NOS button harness down through the opening into the control panel area, near the other control panel buttons.
4. Locate the harness from the buttons on the left side of the control panel, and follow it to a 15-pin connector.
5. Refer Figure 11 and Figure 12, and disconnect the 15-pin button connector from the cabinet harness (Part # 115-0002-01) and connect it to the new harness from the right NOS button. (The NOS button harness requires a female-to-male adapter that should already be connected.)
6. Connect the other end of the NOS button harness to the cabinet harness that you disconnected in the previous step.

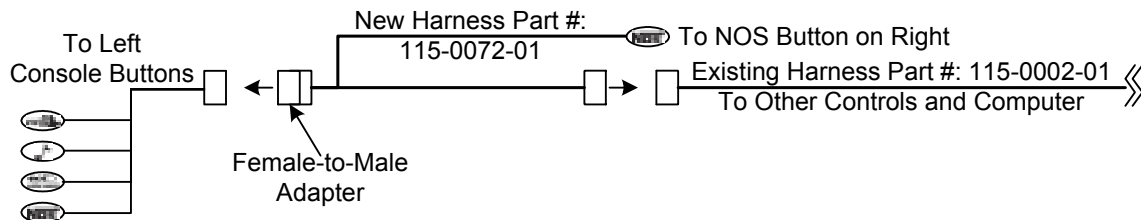


Figure 11. NOS Button Connections Diagram

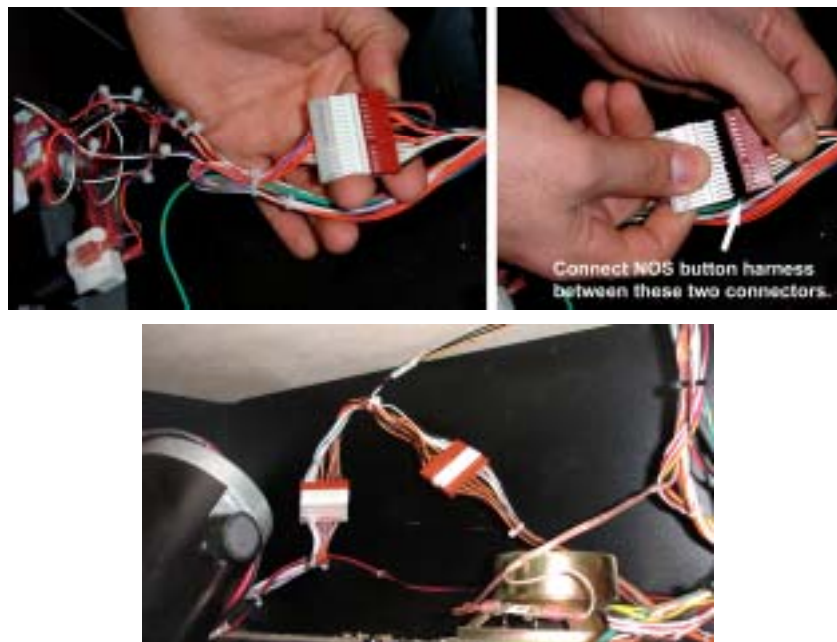


Figure 12. NOS Button Harness Connectors

7. Secure the NOS button harness to the cabinet so that it will not be caught or pulled.
8. Proceed to page 23 to install the PCI USB card and finish the hardware installation.

Deluxe Cabinet Hardware Upgrade

Note: GLOBAL VR® recommends using two people for upgrading the marquee artwork on Deluxe cabinets.

1. Inspect the Cabinet

Before beginning the upgrade, visually inspect the interior of the cabinet. Make sure that all wires and connectors are secure. Make sure that all grounding wires are securely connected to ground lugs.

2. Install the 6-Speed Shifter

1. Turn off the cabinet and disconnect the power cord.
2. Remove the four (4) Torx bolts from each side of the seat, as shown below, and slide the seat away from the cabinet so that you can reach the harnesses.

Note: You may find it is easier to modify the wiring if you also unbolt and separate the driving console from the monitor console.



Figure 13. Separating Seat from Cabinet

3. Refer to the figure below to make the shifter harness connections described in the steps that follow.

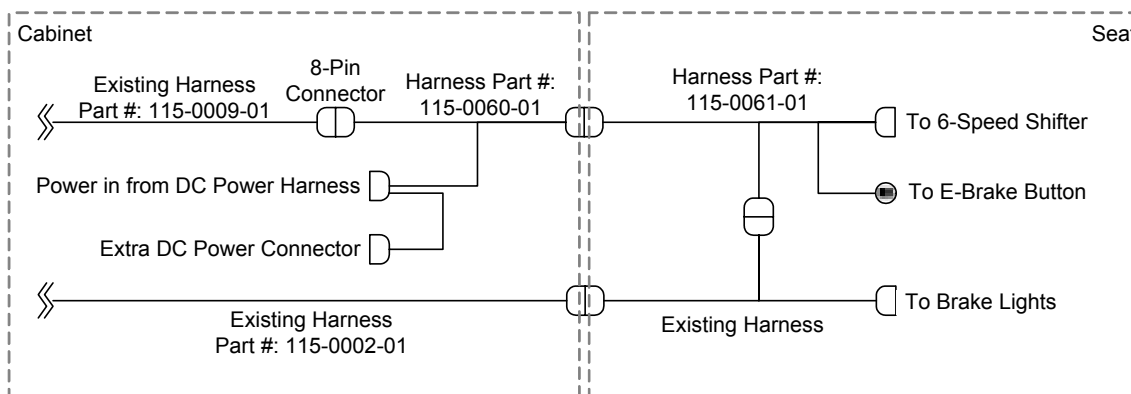
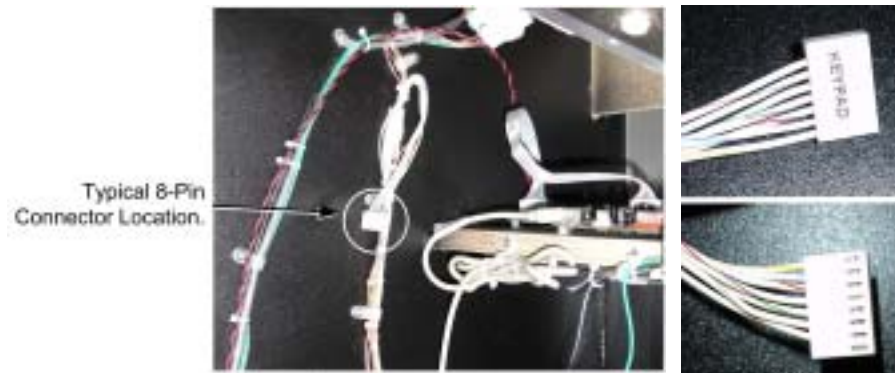


Figure 14. Shifter Harnessing Diagram (Simplified)

4. In the back of the cabinet, locate the unused 8-pin female connector on existing harness part # 115-0009-01. It may be bundled with other harnesses on the cabinet wall to your left. It also may be labeled "KEYPAD" as shown in the figure below.



5. Connect the 8-pin connector to the corresponding connector on harness part # 115-0060-01 from the kit. Make sure that the **white & yellow** striped wires on the two connectors are aligned.



6. Connect the 4-pin male DC power connector on the new harness (115-0060-01) to a DC power connector in the cabinet. If there is no unused DC connector, disconnect another device and connect it to the Spare DC connector on the new harness.
7. Route the 5-pin connector of the new harness (115-0060-01) through the hole in the bottom of the cabinet, and through the bottom of the driving console, so that you will be able to pull the harness through to the seat assembly. (It is helpful to have a second person spot the harness and pull it through.)
8. At the seat assembly, remove the three (3) Torx bolts from the top plate of the shifter and lift the shifter assembly out of its housing.
9. Disconnect the 6-pin Molex connector from the old shifter and connect it to the corresponding connector on harness part # 115-0061-01 from the kit.
10. Connect the 9-pin Molex connector on the new harness (115-0061-01) to the new 6-speed shifter.
11. Refer to Figure 15 and connect the E-Brake button to the four (4) spade connectors on harness part # 115-0061-01 as described below. Note that the spade connectors for the lamp are a bit wider than those for the micro switch.
 - Connect the **Red** and **Black** wires to the lamp connectors.
 - Connect the **White** wire to the NO connector on the micro switch.
 - Connect the **Black** wire to the COM connector on the micro switch.

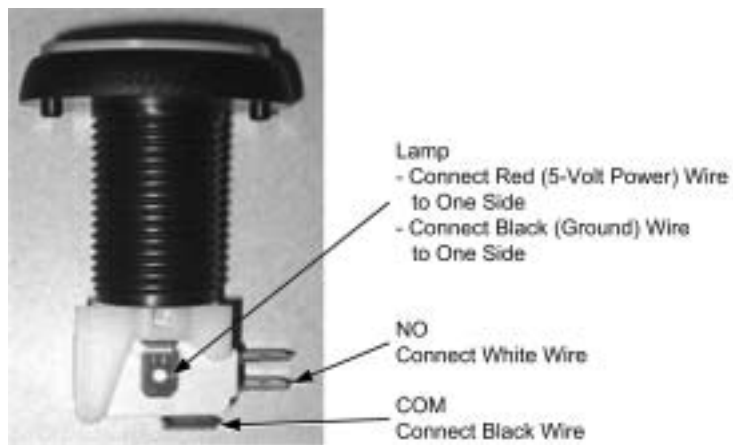


Figure 15. Lighted Button Connections

12. Route the shifter harnesses into the seat, and pull it out in front of the seat. Connect it to the harness you previously routed from the cabinet.
13. Secure the shifter to the housing with the three (3) Torx bolts and washers removed previously.
Note: You may prefer to re-install the seat after finishing the control panel modifications.
14. Slide the seat back into place, being careful not to catch or pull the harnesses.
15. Secure the seat with the bolts and washers removed previously.

3. Install the NOS Buttons

Perform the steps in this section to install the two NOS buttons (used to add a burst of extra speed to the car during a race).

1. To install the first NOS button, remove the two Torx screws from the button plate on the left side of the driving control panel. Disassemble the Horn button and remove the plastic lens and Horn graphic. Replace them with the blue plastic lens and NOS graphic from the kit. (The new software no longer uses the horn.)

If you prefer, you can gently pry the plastic cap off of the Horn button with a small screwdriver or similar tool, and then press the new graphic and cap into place. If you do this, be careful, as it is easy to damage the button.

2. Remove the five (5) Torx bolts that secure the control panel, and pull downward on the steering wheel to open the control panel.

3. The second NOS button and the SmartCard reader are installed in place of the artwork shown below. From inside the control panel, remove the four (4) Kep nuts that secure the metal plate with the artwork in place, as shown below. Remove the metal plate.



Figure 16. NOS Button and SmartCard Reader Location (Deluxe Cabinet)

4. Install the NOS button assembly from the front of the control panel and secure it in place with four (4) Kep nuts. Make sure the NOS graphic is right-side up.

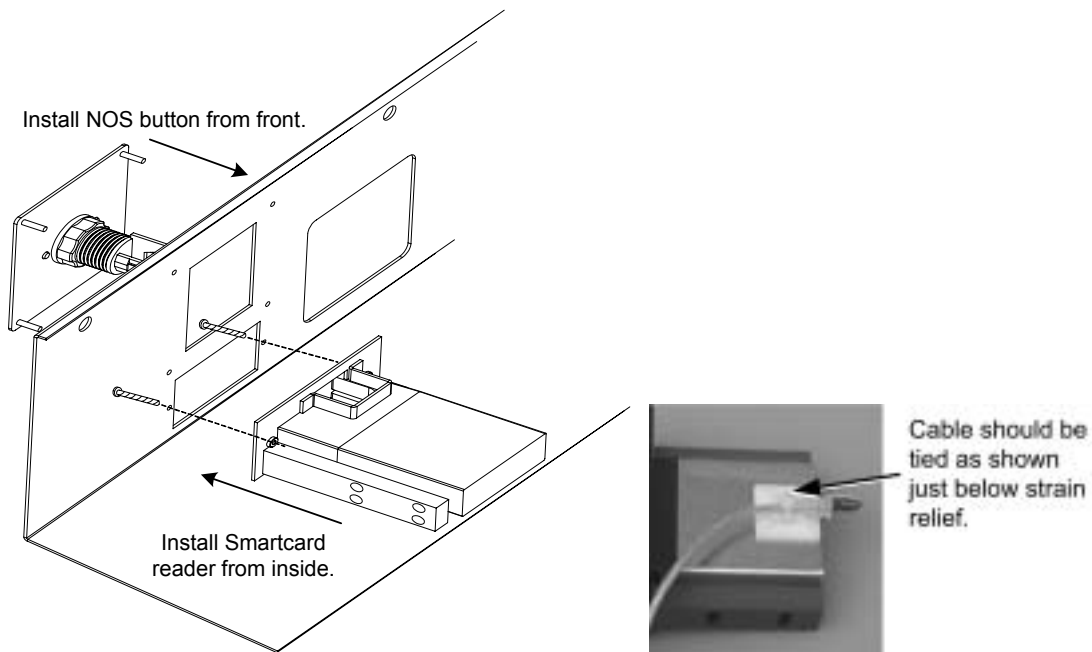


Figure 17. NOS Button and SmartCard Reader Installation (Deluxe Cabinet)

5. Locate harness part # 115-0072-01 from the kit, and connect the spade connectors to the NOS button. Note that the spade connectors for the lamp are a bit wider than those for the micro switch. Connect the White & Black micro switch wire to the NO connector and the Black wire to the COM connector. The lamp connectors are interchangeable. (See Figure 15 on page 20.)
6. Route the harness from the NOS button to the left side of the control panel.
7. Locate the harness from the buttons on the left side of the control panel, and follow it to a 15-pin connector.

8. Refer to Figure 18 and Figure 19, and disconnect the 15-pin button connector from the cabinet harness (Part # 115-0002-01) and connect it to the new harness from the right NOS button. (The NOS button harness requires a female-to-male adapter that should already be connected.)
9. Connect the other end of the NOS button harness to the cabinet harness that you disconnected in the previous step.

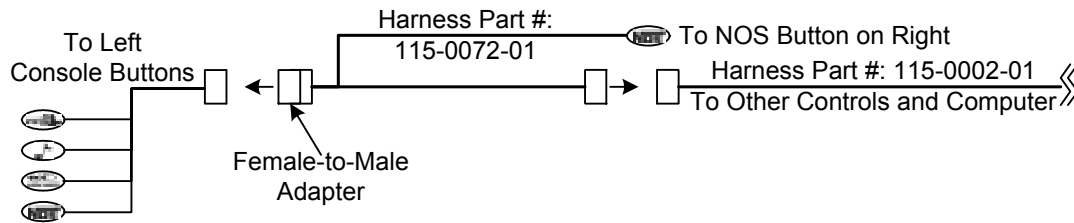


Figure 18. NOS Button Connections Diagram

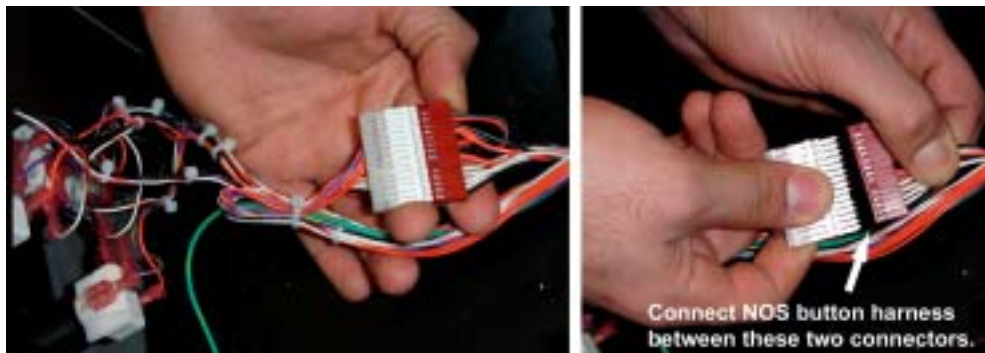


Figure 19. NOS Button Harness Connectors

10. Secure the NOS button harness to the cabinet so that it will not be caught or pulled.

4. Install the SmartCard Reader

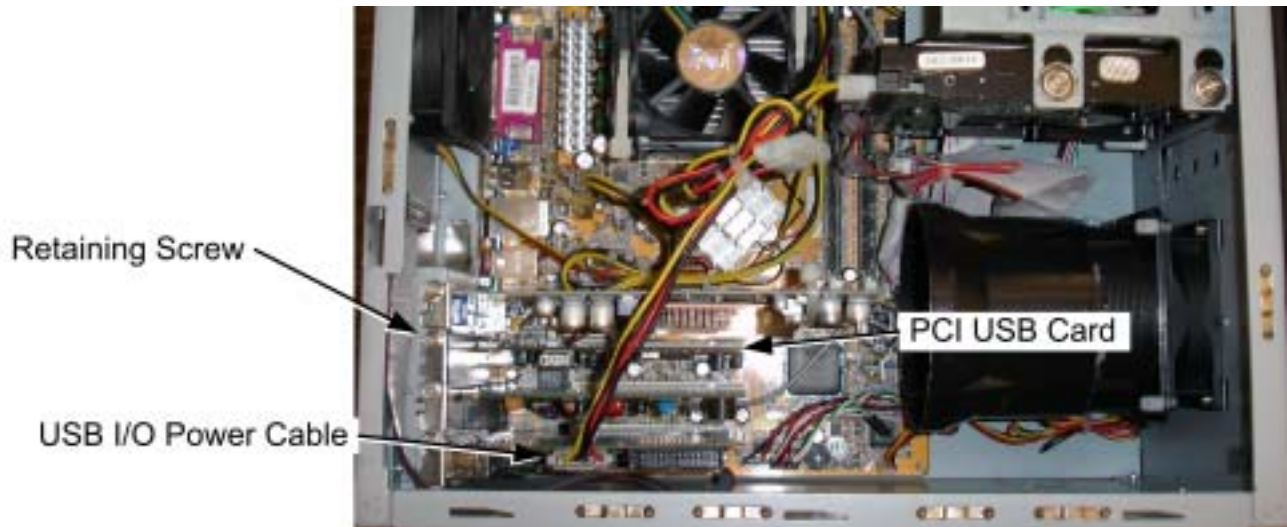
Perform the steps in this section to install the SmartCard reader (required for Tournaments, Career Mode, and online features).

1. Refer to Figure 17 on page 21, and install the SmartCard reader from inside the control panel. Insert two (2) Torx bolts with flat washers through the front of the control panel to secure the SmartCard reader assembly in place. Make sure the SmartCard reader is installed with the LEDs upward.
2. Route the SmartCard reader harness to the system computer. You will be connecting it to the PCI USB card to be installed later.

Install PCI USB Card and Make Connections (All Cabinets)

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

1. Disconnect all cables from the back of the computer, and remove the computer from the cabinet. Place it on a workbench.
2. Remove the side panel from the computer. Refer to the figure below to locate components.



3. Disconnect the power cable from the USB I/O card and move it out of the way.
4. Remove the retaining screw that secures the existing two-port PCI USB card in place and remove the card.
5. Install the four-port PCI USB card and secure it with the screw.
6. Reconnect the power cable to the USB I/O card.
7. Close the computer case and replace it in the cabinet.
8. Refer to Figure 78 on page 92 and reconnect all cables. (The new USB PCI card will be connected to the force-feedback steering card, USB I/O card, SmartCard reader, and USB game dongle, if used.)
9. Connect the SmartCard reader cable to a port on the PCI USB card. Secure the cable to the cabinet so that it will not be caught or pulled.
10. Disconnect the old Game Dongle from the computer. Return it, at your convenience, to GLOBAL VR®, 2350 Zanker Road, San Jose, CA 95131, Attn: Dongle Returns.
11. Connect the new *Need for Speed™ Underground* Game Dongle to the PCI USB card, or the parallel port, depending on which type of dongle you received.

Important: All USB connections must be through the PCI USB card. **Do not use the motherboard USB ports** located above the audio ports (see Figure 78 on page 92).

12. If not already done, connect the phone cable from the kit to the modem **Line In** port (see Figure 78) and the inside of the power plate **Phone In** port. Connect a working analog phone line to the outer **Phone In** port of the power plate. (**Note:** If you prefer, you can connect your phone line directly to the modem **Line In** port by routing it through a hole in the cabinet.)
13. Connect an Ethernet cable from the computer Ethernet port to the power plate Ethernet port.

Install the Lighting Kit

The cold-cathode light assembly is installed under the control panel as shown in Figure 20.

1. Refer to Figure 20, and measure and mark a location for the harness hole, 1" from the rear panel (where the pedals are mounted) and 1-1/4" from the wall of the coin vault.
2. Open the control panel and check to make sure that no cables or components will be damaged when you drill. Drill a 3/4" hole at the location you marked.
3. Place the light assembly against the rear panel and the wall of the coin vault, with the harness running through the hole that you drilled.
4. Tighten the four (4) screws that are partially installed in the light assembly to secure it to the cabinet.

Note: The light assembly will cover a small part of the speaker opening

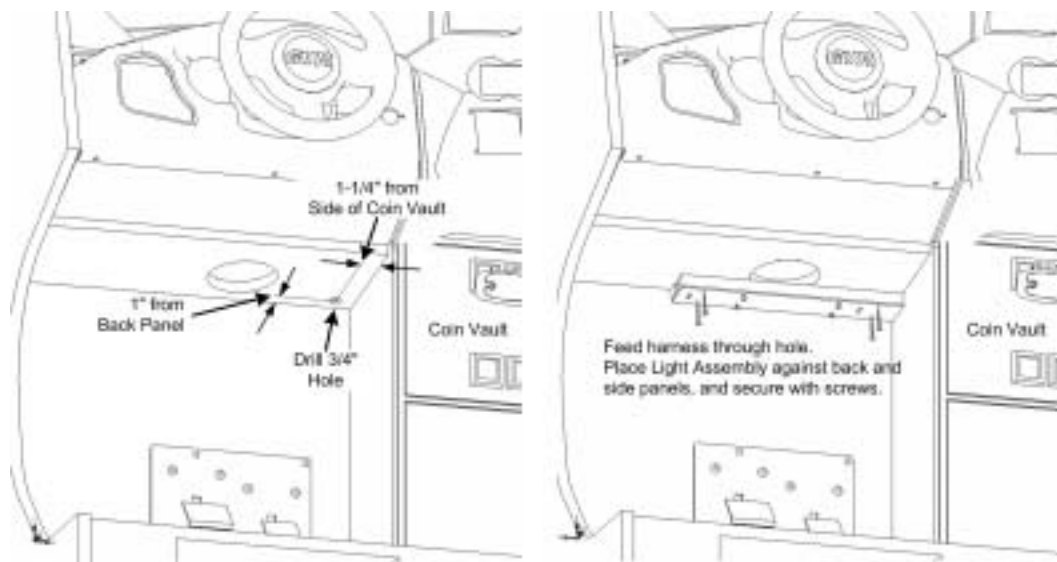


Figure 20. Installing the Light Kit

5. Open the control panel and connect the harness from the light assembly to the power inverter.
6. Run the power harness (part # 115-0073-01) from the power inverter into the cabinet and connect it to the cabinet +5/+12 VDC power harness. Use the spare connector on the power inverter harness if you need to disconnect another device from the power harness.
7. Secure the power inverter inside the control panel using Velcro® or a cable tie.

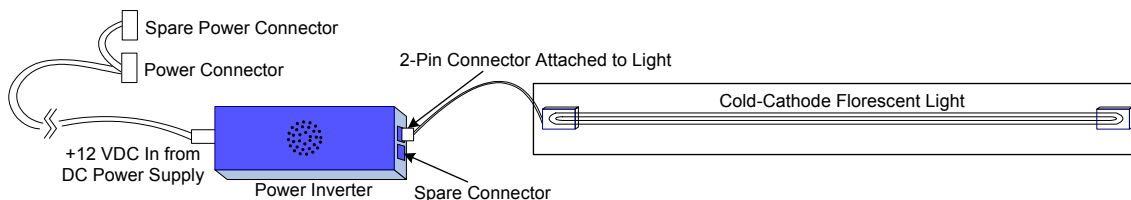


Figure 21. Cold-Cathode Light Wiring

8. Close the control panel and secure it with the screws removed previously.

Install a Dollar Bill Validator (Optional)

Need for Speed™ Underground cabinets support the use of a dollar bill validator (DBV). The DBV is not included in the upgrade kit. Perform the following steps if you wish to install one.

1. Remove the four (4) nuts that secure the metal cover plate on the coin door, and remove the cover plate.
2. Remove the bill stacker from the faceplate of the DBV.
3. Refer to the following figure to set the DBV DIP switches.

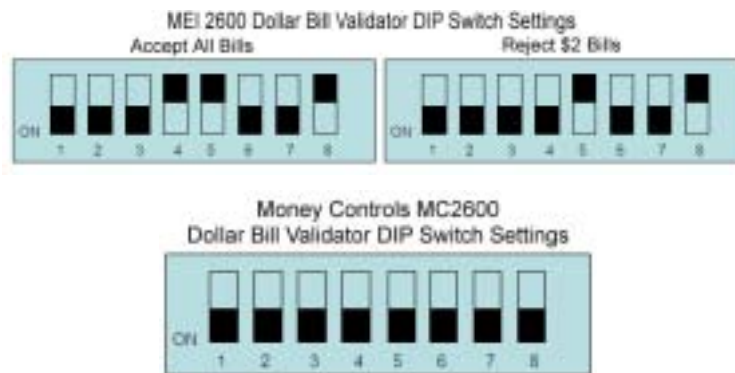


Figure 22. Dollar Bill Validator DIP Switch Settings

4. Install the DBV faceplate in the coin door.
5. If the DBV has a green ground wire, connect the wire to the coin vault ground lug.
Important: The cabinet must be properly grounded for the DBV to work properly.
6. Locate the DBV harness, which should be secured near the Operator button. It has a 9-pin Molex connector and an AC power cord. Connect it to the DBV.
7. Connect the AC power cord from the DBV to the power strip in the cabinet.

Install the Cabinet Artwork

To save time, you may wish to begin the software installation (page 29) and install the artwork while the software installation is running.

Standard Cabinet Artwork

Refer to Figure 24 on page 27 for the locations of graphics on the Standard (27" monitor) cabinet.

1. Peel off the old serial number label on the back of the cabinet, and replace it with the new label.
2. Using a 1/4-20H Security Torx bit, remove the six (6) screws that hold the marquee shield in place.
3. Remove the old artwork and insert the new artwork, part number NFSUK-AW-02, from the kit.
4. Reinstall the shield. Take care not to scratch the shield or artwork during installation.

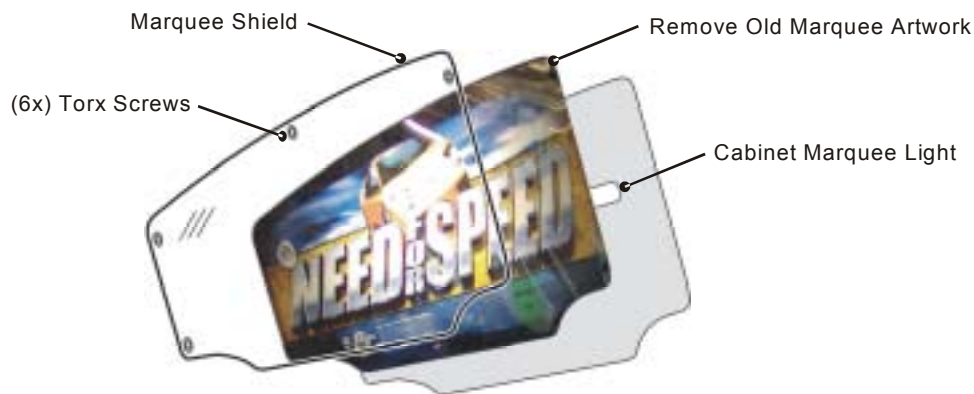


Figure 23. Installing the Marquee Artwork (Standard Cabinet)

5. Refer to Figure 24 and install the artwork with part numbers NFSUK-AW-02, NFSUK-AW-04, and NFSUK-AW-10 in the same way as the marquee artwork, by removing the screws and clear plastic cover at each location on the cabinet.
6. Remove the four (4) screws that secure the seat-back artwork, and install part number NFSUK-AW-12.
7. Remove the old decals. Peel the adhesive backing from each of the new decals and carefully place them as shown in Figure 24. The two side-panel *Underground* graphics (part numbers NFSUK-AW-05 and NFSUK-AW-06) are designed to cover the *Need for Speed*™ logos on the sides of the cabinet. Be sure to push out any air bubbles that form under the graphics.



Figure 24. Graphics Placement (Standard Cabinet)

Deluxe Cabinet Artwork

Refer to Figure 26 for the locations of graphics on the Deluxe (39" monitor) cabinet.

Note: GLOBAL VR® recommends using two people for the marquee artwork upgrade.

1. Peel off the old serial number label on the back of the cabinet, and replace it with the new label.
2. Using a 3/8" nut driver (or large, flat-bladed screwdriver), remove the nine (9) screws that hold the rear, hinged marquee cover plate in place. **Do not** remove the three screws below the hinge.

Caution: Be careful **not** to push the bezel off of the cabinet.

3. Refer to Figure 25, and tilt the marquee cover back on its hinge. You may need a stepladder to access the marquee interior.
4. Using a Philips screwdriver, remove the two top retainer blocks and the two side retainer blocks holding the marquee artwork in place inside the marquee. Leave the bottom block in place. Remove the old artwork.
5. Install the new artwork (part number UGDLX-AW-01). Take care not to scratch the clear shield or artwork during installation.
6. Replace the retainer blocks to hold the artwork in place.
7. Tilt the hinged marquee cover plate back in place and reinstall the screws.

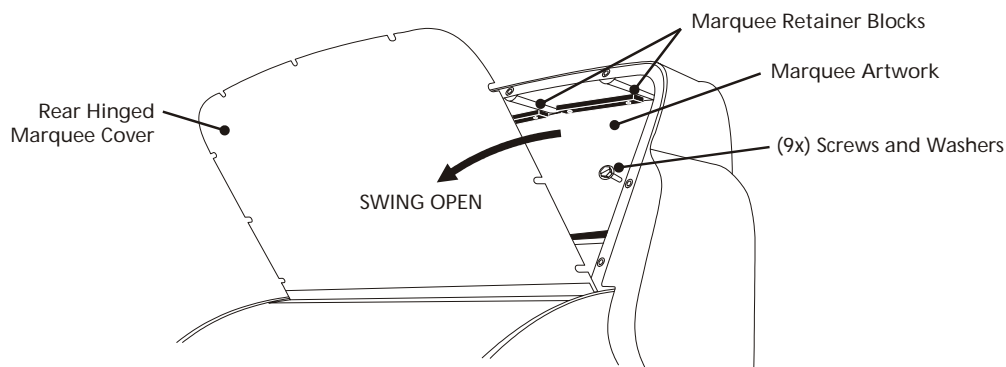


Figure 25. Installing the Marquee Artwork (Deluxe Cabinet)

8. Remove the two (2) screws that secure the artwork on the back of the seat pedestal, and install the artwork with part number NFSUK-AW-02.
9. Remove the four (4) screws that secure the seat-back artwork, and install part number NFSUK-AW-12.
10. Remove the old decals. Peel the adhesive backing from each of the new decals and carefully place them as shown in Figure 26. The two side-panel *Underground* graphics (part numbers UGDLX-AW-04 and UGDLX-AW-05) are designed to cover the *Need for Speed*™ logos on the sides of the cabinet. Be sure to push out any air bubbles that form under the graphics.



Figure 26. Graphics Placement (Deluxe Cabinet)

Install the Software

Note: You may wish to install the cabinet artwork (Standard, page 26, or Deluxe, page 27) while the software installation process is running.

Total installation time is about 30 minutes.

Important: When you use the System Recovery Disk, you will erase all game settings and history for the coin and game audits that are stored in the game software.

Important: All linked cabinets must run the same game software version.

1. Before installing the software, power ON the cabinet and verify that everything is working properly following the hardware upgrade. (Note that the NOS button will function as the horn, and the shifter will not work in six gears with the old software.)
2. Disconnect the Ethernet cable from all linked cabinets if not already done.
3. With the cabinet powered on and the game running, open the coin door and press the red operator button to launch the Operator Menu.
4. From the **Game Operator Menu**, record any settings that you want to restore to the cabinet after the software installation, and any statistics that you want to keep:

Machine Menu: Cabinet Volume _____ Attract Volume _____% Cabinet Link ID# _____

Options Menu: Credit Display _____ Cost/Credits per Play _____

Coin/Game Stats (optional): _____

5. Make sure the new *Need for Speed™ Underground* game dongle is installed in the computer.
6. Insert the **System Recovery Disk** in the CD-ROM 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 the hard-drive image process screen.
7. When the CD has finished running, you will be prompted to remove the CD and reboot the computer. **Do not** insert the Game CD yet! Wait for about 2 minutes while the software finishes the installation.
8. When you see a desktop screen with the GLOBAL VR® logo, the Operating System installation is complete. Insert the CD labeled **Game Install Disk 1 of 2**. The CD will automatically run (wait about 30 seconds). You will see a series of screens as the software copies components and files to the hard drive. The process will take about 10 minutes.
9. When the first CD is complete, the computer will eject the CD and prompt you to insert Disk 2. Insert **Game Install Disk 2 of 2**. The computer will automatically copy the remaining files from Disk 2, and will automatically reboot the computer when finished. You may see a blank screen for about a minute.
10. Once the game has restarted, remove the CD. Keep the System Recovery and Game Install CDs in a safe place in case you need them in the future.
11. When the game starts, it will need to calibrate the gas, brake, and steering pots. The steering will self-calibrate (do not touch the wheel while it is calibrating). When prompted, press and hold the gas and brake for five seconds each to set the calibration limits. Once the calibration is complete, the Attract Mode movie will start.
12. Play one game to finalize the hardware calibration.

Test, Set Up, and Register your Cabinet

1. Refer to Play Control Test on page 53 and test the driving controls. Be sure to test the pedal and steering pots. When you turn the steering wheel or step on the pedals, the change in the numbers displayed onscreen should be smooth and linear, with no jumps. A sudden jump in the number sequence indicates that the pot is worn and should be replaced. Refer to 5 K Ω Steering Pot (Potentiometer) Replacement on page 61, and 5 K Ω Gas and Brake Pot (Potentiometer) Replacement on page 64.
2. Refer to System Test on page 56 and test the SmartCard reader, card dispenser (if installed) and modem (you will need to set up the dial-up information to test the modem, but you should be able to confirm that the modem goes off the hook).
3. If you installed a DBV, verify proper DBV operation with both old and new bills.
4. Refer to Chapter 5 for information on setting up your pricing, audio volume, and other options.
5. For linked cabinets, set the Cabinet Link ID for each cabinet, and then exit from the Operator Menu, before reconnecting the Ethernet cable to the back of the cabinets. Refer to the next section for complete instructions on linking your cabinets for head-to-head racing.
6. Refer to Chapter 4 on page 37 and Register your cabinet to participate in Tournaments and take advantage of online features.

Linking Cabinets

You can link up to four cabinets together 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.

Each cabinet ships with an Ethernet cable and a cross-over coupler. The cross-over coupler is used to link two cabinets. An Ethernet hub is required to link more than two cabinets. If you use broadband instead of dial-up for connecting the cabinets to the Internet to sync with the GLOBAL VR[®] server, you must use a router to link your cabinets. See Figure 80 on page 94 for an example of how to set up your broadband game network.

The table below shows required equipment by type of Internet connection and number of cabinets.

Number of Cabinets	Internet Connection	Linking Equipment Required
2	Dial-up or None	Cross-over coupler (Included with cabinet)
3 or 4	Dial-up or None	Ethernet hub (10/100 Mbps)
2, 3, or 4	Broadband	Ethernet router (Netgear [®] RP614v2 router recommended)

Linking Cabinets Without Broadband



Figure 27. Linking Cabinets Without Broadband

1. **Before connecting the Ethernet cables**, go into the Operator Menu on each cabinet, and set the Cabinet Link ID number, as shown by the arrow in Figure 28. Each cabinet must have a unique number: 1, 2, 3, or 4. Cabinets should be numbered from left to right. Exit the Operator Menu to reset the number in the software. All linked cabinets must run the same software version.
2. Locate the 10' Ethernet cable and Ethernet crossover coupler in the cash box of each cabinet.
3. Connect the Ethernet cable to the Ethernet connector on the power plate of each cabinet.
 - **To link two cabinets:** Connect the two Ethernet cables to one cross-over coupler. **Do not** use two couplers.
 - **To link three or four cabinets:** Connect the Ethernet cables to an Ethernet hub or switch (not included). Connect the hub or switch to AC power and make sure it is powered ON. **Do not** use cross-over couplers with a hub or switch.
4. If more than one cabinet has the same Cabinet Link ID number, each cabinet with a duplicate ID number will display an error message, as shown below. Repeat Step 1 to correct the duplicate Cabinet Link ID numbers.



Figure 28. Checking Link Status

Linking Cabinets that use a Broadband Internet Connection

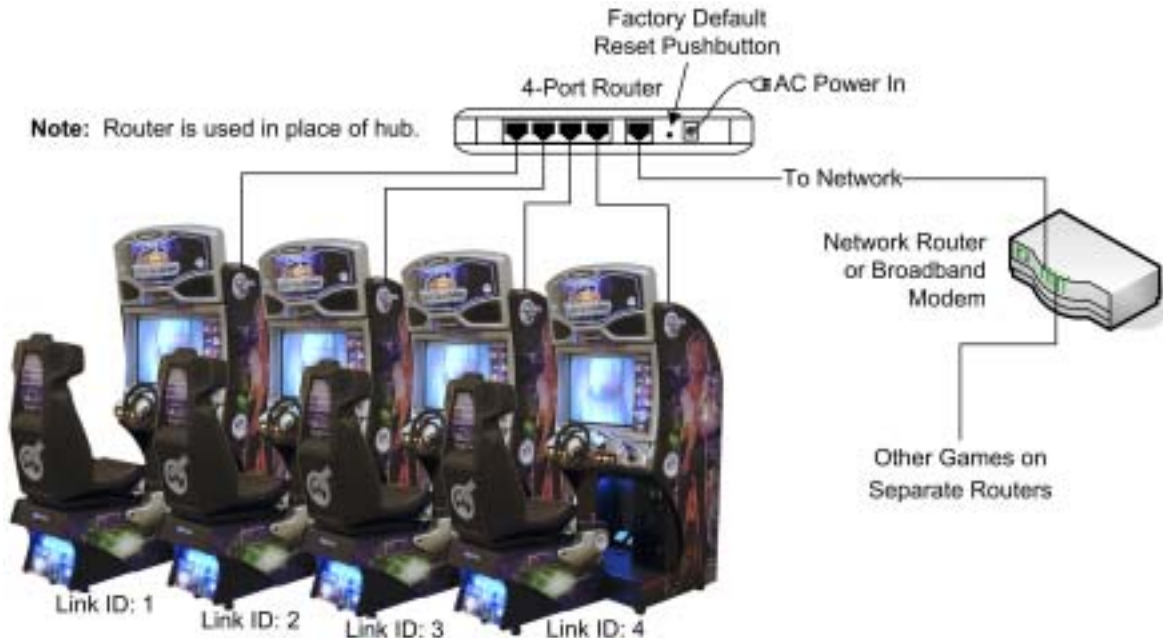


Figure 29. Linking Cabinets with Broadband

This procedure was tested using a Netgear® RP614v2 router. GLOBAL VR® does not offer support for other router brands or models. See Figure 80 on page 94 for an example of how to set up your broadband game network.

Important: Your *Need for Speed™ Underground* cabinets must be connected to a separate router from any other games or devices.

1. **Before connecting the Ethernet cables**, go into the Operator Menu on each cabinet, and set the Cabinet Link ID number, as shown by the arrow in Figure 28. Each cabinet must have a unique number: 1, 2, 3, or 4. Cabinets should be numbered from left to right. Exit the Operator Menu to reset the number in the software. All linked cabinets must run the same software version.
2. Connect your Cable/DSL router to AC power.
3. The router must be configured to Factory Default Settings. If you have used the Router before, or changed its settings, press and hold the reset pushbutton (shown in Figure 29) until the Test LED turns on (about 10 seconds).
4. Connect the Internet port of the router to your network. (Note: The router replaces the hub for systems using broadband.)
5. Connect an Ethernet cable to the Ethernet connector on the power plate of each cabinet, and to router ports 1—4 as shown in Figure 29. Do not use crossover couplers.
6. If more than one cabinet has the same Cabinet Link ID number, each cabinet with a duplicate ID number will display an error message, as shown in Figure 28. Repeat Step 1 to correct the duplicate Cabinet Link ID numbers.
7. Attempt to force a call from the System Test screen of the Game Operator menu of each cabinet, to verify that the connection is working properly.

If the cabinets are able to sync with GLOBAL VR®, you have successfully set up your connections. If a cabinet cannot sync, an error message will be displayed.

Checking the Game Dongle

The cabinet uses a game dongle to activate the game software. Depending on the type of dongle shipped with the game, it connects to either the parallel port or the USB port on the back of the computer. If the dongle is missing, the game will not run.

When a USB Dongle is installed and working properly, a **red** LED will illuminate inside the dongle. A Parallel Dongle does not light up.

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 and software version. Future software upgrades may require you to also upgrade the dongle.

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



Figure 30. Parallel and USB Game Dongles

Connecting an External Monitor

If you wish, you can use the S-video connector on the computer video card to connect an external TV monitor and display the game action outside of the cabinet.

Important: If you install the operating system with the System Restore Disk while a second monitor is connected, an NVIDIA dialog box will appear onscreen after the large GLOBAL VR[®] logo appears at the end of the installation process. When you see this screen, power-cycle the cabinet and then proceed with the game software installation.

If your cabinet has an FX 5700 video card, you cannot use the S-video and VGA ports at the same time. In this case, you must purchase a DVI-to-VGA adapter and use this adapter to connect the cabinet monitor to the DVI port.

Important: Turn the cabinet OFF before making any video connections.

In most cases, the external monitor should not require any special setup. In some cases the Attract Movie may not show up on the screen. If this happens, refer to *External Monitor Troubleshooting* on page 86.

Chapter 3 — Playing a Game

Starting the Game

With the proper number of coins inserted, press the red **Start** button to begin the game. First select your mode of play, Race, Career, or Tournament (see page 36). Next a series of screens will appear, as shown below, allowing you to select options for the game.



Figure 31. Selecting Track and Car Options

1. **Track Select:** Turn the steering wheel to highlight each track displayed at the top of the screen. The track map and difficulty (*Easy*, *Medium*, or *Hard*) are displayed as you highlight each track. Press the gas pedal to select a track.
2. **Car Select:** Turn the steering wheel to highlight each car displayed at the top of the screen, and press the gas pedal to select your car.
3. **Customize:** Turn the steering wheel to highlight each customization shown at the top of the screen. Your car is displayed in each highlighted color. Press the gas pedal to make a selection.
4. **Transmission:** Select either automatic or manual transmission. Manual transmission (using the 6-speed shifter) may result in better speed control and faster race times for experienced drivers. No clutch is used, only the shifter.
5. **Other Options:** At any time during the car, customization, or transmission selection screens, you can press a control panel button for other options. These options are set through pop-up menus that display for five seconds.
 - Press **NOS** to turn AI on or off. In a linked race, any player can turn AI off for all cabinets. Turning AI off removes computer-controlled cars from the track. For a driver racing solo, this also activates **Shadow Attack Mode**, in which the driver races against a shadow of the track leader.
 - Press **Look Back** to turn Handicap (catch-up) on or off (default is on) for one driver only. Handicap helps a driver catch up with other cars.
 - Press **Force-Feeback** to toggle the Force-Feeback level through Light, Medium, or Heavy.

Once you have selected your options, the game will begin to load.

Game Play

As in any driving game, use the Steering Wheel, Gas, Brake and Shifter to control the car.

The **Look Back** button lets you look behind the car. The **View** button toggles the view between inside and outside the car. Tap the **♪** button to turn the music off; tap it again to change songs. Press the **NOS** button for an extra burst of speed—but quantities are limited! Tap the **E-Brake** button to start a drift.



Figure 32. Driving Screen Functions

During the race, useful information is displayed onscreen:

1. Shows the number of the lap you are currently driving, and the total laps to complete the race.
2. Shows your current time for the lap and the best recorded lap time.
3. Shows your position (green triangle) relative to the other cars (red triangles) on a track map.
4. Shows your car's turbo level.
5. Shows the number of seconds you have to cross the next checkpoint. A Shadow Attack icon is displayed above this number if you are in Shadow Attack mode.
6. Shows your position in the race out of the total number of cars.
7. Shows the time gap between you and the leader, or the car behind you if you are in the lead.
8. Shows style points earned for advanced driving techniques.
9. Tachometer, shows your engine RPM in thousands.
10. Shows your current gear. In manual, the gear position in the shift pattern is also displayed.
11. Shows your speed in either km/h or MPH (set in Game Operator menu).

Additional information will appear onscreen depending on the race mode and options selected. At the end of the race, the time and position for each driver is displayed.

Modes of Play

Race Mode (amusement): This is normal racing, requiring no Players' Card or online services. If cabinets are linked, players can race against each other head-to-head.

Using a Players' Card in Race Mode makes another car available for the player to drive. Also, a player can track miles on a Players' Card, and after 300 miles, another car becomes available.

Career Mode: In this mode, players drive a series of races. For each race they finish within a specified time, they win a customization or performance upgrade for their car. Players save their car and points on their Players' SmartCards. Players who complete a career (81 different races) can re-race any Career Mode race. Players can also use their customized Career Mode car in Race Mode.

Tournament Mode: If a cabinet is registered and online, players can compete in tournaments to win cash and prizes. To participate, players need a Players' SmartCard. Check the GLOBAL VR[®] website (www.globalvr.com) for the latest Tournament information.

Operator-Run Local Tournaments

If a cabinet is registered and online, operators can create their own Local Tournaments through the GLOBAL VR[®] website (www.globalvr.com). Operators can set up a local tournament on one cabinet, or on a number of cabinets at any of their locations. They can list the tournaments on the GLOBAL VR[®] website to attract players.

Note: Certain regions have local restrictions on tournament play.

Chapter 4 — Setting Up Tournament Play

Go Online With GLOBAL VR® and Get More From Your Equipment Investment

More Players – Top players find your games through our online Game Locator.

More Free Time – Online equipment management lets you adjust and account without leaving your desk.

More Play Modes – Players at all levels have more ways to enjoy their favorite games.

More Cash – Increased earnings with Tournament Play and other online-only features.

Getting Started

Register with the GLOBAL VR® Tournament System to connect your game cabinets to our online servers. Being online opens Tournament Play and other new play modes for your players and time-saving services for you. Getting started is easy:

1. If you do not have an account with GLOBAL VR®, fax in the Operator Agreement form located in the Registration Pack of the Welcome Kit included with your cabinet or upgrade kit.
2. Connect your cabinet to a phone line or broadband network. See the diagrams on pages 93 and 94 for examples of how to set up your game network. Also see page 32 for important information about using broadband with linked cabinets.
3. Register your cabinet as described below.

Cabinet Registration

You have four options for registering your cabinet:

- **New Operators:** Go to page 38.
- **Existing Operators:**
 - Register through our website: Go to page 38.
 - Obtain a 4-digit registration key if you do not have web access: Go to page 38.
 - Register with your Active **Operator Plus™ SmartCard**: Go to page 42.

Note: For existing operators setting up a cabinet in a new location, it is probably easiest to register through the website.

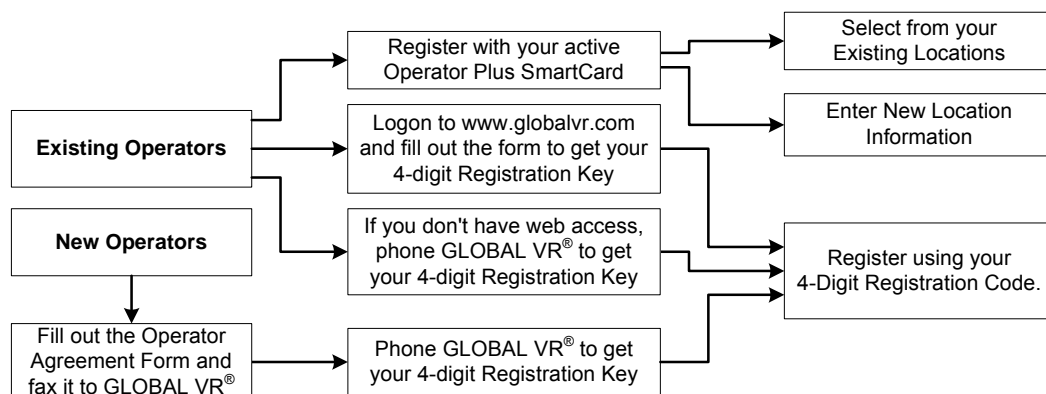








Figure 33. Registration Process Flowchart

Navigating the Registration Screens

Use the driving control panel buttons to navigate the registration screens, as shown below. Also look for onscreen instructions and hints near the bottom of each screen.

Button	Function	Button	Function
	Up		Back or Exit Left (In Some Screens)
	Down		Select Right (In Some Screens)
	Select (In Some Screens)		Right & Left (In Some Screens)

Web Registration for Existing Operators

Perform the following steps to register online if you have an account with GLOBAL VR[®].

Note: You will need to provide the cabinet serial number, found on a label on the back of the cabinet, for each cabinet you wish to register.

1. Go to the GLOBAL VR[®] website, www.globalvr.com.
2. Click the **Operator** tab and login using your Operator ID and password.
3. Click the **MY CABINETS** tab near the top of the page.
4. From the menu on the left side of the Cabinets screen, under **Racing**, select **Registration**.
5. Fill out the Registration Form. In the **Select Existing Location** field, you can select New Location, or one of your existing locations. When you finish the form, click the **Create** button.
6. A Cabinet Registration Confirmation screen will appear. Find your 4-digit **Registration Key** near the top of the page, and write it down. Use this number at the cabinet to complete the registration process and activate your Operator card. (The Registration Key expires after one week.)
7. Repeat the steps above for each cabinet that you wish to register.
8. Proceed to the section titled Register With Your 4-Digit Registration Key, on page 39.

Registration for Existing Operators without Web Access

Perform the following steps if you have an account with GLOBAL VR[®] but no Web access.

Note: You will need to provide the cabinet serial number, found on a label on the back of the cabinet, for each cabinet you wish to register.

1. Phone GLOBAL VR[®] Tournament Support, at 408.597.3429, to receive a 4-digit cabinet registration key for each cabinet that you wish to register.
2. Proceed to the section titled Register With Your 4-Digit Registration Key, on page 39.

Registration for New Operators

If you are a new operator and do not have a GLOBAL VR[®] Operator Account, perform the following steps to get your cabinet registered and online:

1. Fill out Operator Agreement form, located in the Registration Pack of the Welcome Kit included with your cabinet or upgrade kit. Fax the form to GLOBAL VR[®] at 408.597.3439.

Note: When you phone Tournament Support, you will need to provide the cabinet serial number, found on a label on the back of the cabinet, for each cabinet you wish to register.

2. Phone GLOBAL VR[®] Tournament Support, at 408.597. 3429, to complete the registration process and create your Operator Account. You will receive the following:
 - A 4-digit registration key for each cabinet you are registering. You will use the registration key at the cabinet to complete the registration process and activate your Operator card. (The 4-digit registration key expires after one week.)
 - An Operator ID and password. Use these in the future to logon to our website to get your 4-digit registration key for cabinet registration. Your ID also gives you access to the **Global Impact Operator's Online Store**.
3. Proceed to the section titled Register With Your 4-Digit Registration Key, that follows.

Register With Your 4-Digit Registration Key

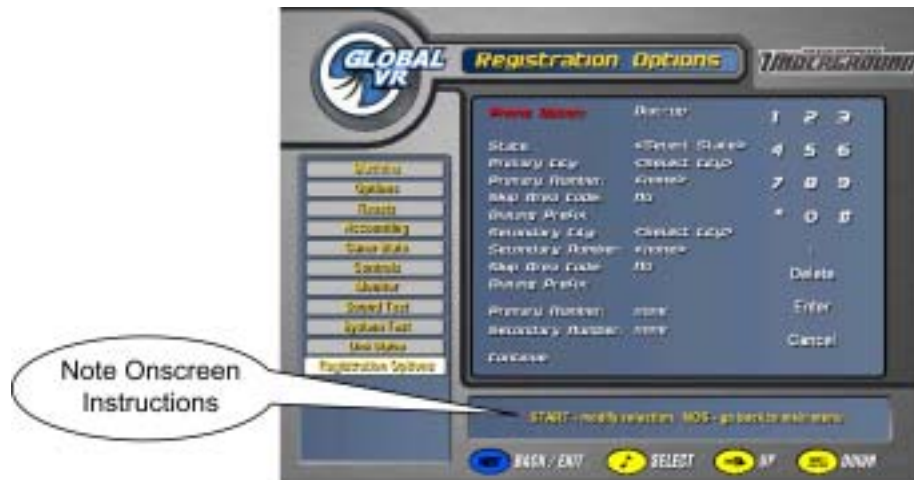
1. Press the Operator button inside the coin door and select **Registration Options** from the Game Operator Menu. The Registration screen will appear.
2. Press the **1** button to enter the Registration screen. Select **Cabinet Registration** and press the **1** button again to begin the registration process.



3. Read the Acknowledgement screen, select Agree, and then press the **1** button to continue. You must select **Agree** to continue with registration.

4. The Dial-up Phone settings screen will appear next. **Phone Option** is set to **Dial-up** as default.

To use a broadband connection, press **J** with **Phone Option** selected, and then press **VIEW** and **LOOK BACK** to toggle between **Broadband** and **Dial-up**. Press **J** to select. If using Broadband, skip to step 0.



5. To use a dial-up phone line, keep **Dial-up** as the Phone Option, and use the buttons to set the dial-up properties as described below:

- a. Use **VIEW** and **LOOK BACK** to select **State** and press **J**. Use **VIEW** and **LOOK BACK** to scroll through the list of states. Press **J** to select your state from the list.
- b. Use **VIEW** and **LOOK BACK** to select Primary City and press **J**. Use **VIEW** and **LOOK BACK** to scroll through the list of cities. Press **J** to select your city or the city closest to the cabinet location.

Hint: Press the gas pedal while scrolling the list of cities to jump to the next letter.

- c. Use **VIEW** and **LOOK BACK** to select Primary Number and press **J**. Use **VIEW** and **LOOK BACK** to scroll through the list of phone numbers for your city. Press **J** to select a local phone number.
- d. Select **Yes** for **Skip Area Code** unless the area code for the selected number is different from the line the cabinet will be using. (If the cabinet needs to dial an area code, you will also need to enter a “1” as a dialing prefix in the next step.)
- e. If you need to dial a number (such as “9”) to call outside of your location, or if your modem will be dialing an area code and needs to dial a “1” first, select **Dialing Prefix** and press **J**. This will select the onscreen keypad.

Use **VIEW**, **LOOK BACK**, **J**, and **NOS**, to select each number from the onscreen keypad, and press **START** to enter it. Select the comma (,) to insert a pause in the dialing. To make a correction, select **DELETE** on the onscreen number pad and press **START**. When you are finished, select **ENTER** on the number pad and press **START**.

- f. Repeat Steps b—e for the Secondary City. (If your Primary City has more than one dial-up number, select the same city and a different number.) The computer will use this dial-up number as a backup if it cannot reach the primary number.
- g. When you finish, the Primary and Secondary numbers will be displayed onscreen, with the dialing prefix and area code, if entered. Check the entries, and use the buttons to return to

any entry that you wish to change. When you are finished, Use **VIEW** and **LOOK BACK** to select **Continue**, and press **♪**.

6. The Time Zone screen will appear next. Use **VIEW** and **LOOK BACK** to select your time zone and press **♪**.
7. The Select Registration Method screen will appear next. Select **Register with a 4-Digit Code** and press **♪**.



8. On the Enter your 4-digit code screen, use **VIEW**, **LOOK BACK**, **♪**, and **NOS**, and/or steering wheel, to select each number from the onscreen keypad, and press **START** to enter it. If you make a mistake, select **Delete** and press **START**.
9. When you are finished, select **Enter** and press **START**.

You will see "Connecting..." followed by "In progress..."

When the process finishes, you will see "Registration Successful." Your cabinet is now registered.

Important: If you never see the Registration Successful screen, this can indicate a problem with registration, possibly an interrupted modem connection. Select Force Call from the Registration Options screen to make sure that your cabinet is able to sync with GLOBAL VR®, and to finalize registration.

10. After registration, you will be prompted to insert your Operator card to activate it. When the **Card Activation Successful** screen appears, your SmartCard will be active and can be used to register other cabinets. You can skip this step if you do not wish to activate a card at this time. You can activate an Operator Card at any time from the Registration Options screen.

Note: Inserting your active Operator card in a registered cabinet will automatically open the Operator menu.

Your cabinet is now registered. It is a good idea to set the sync time on the Registration Options screen so that your cabinets call in to GLOBAL VR® at different times. Also make sure the cabinet will be powered on at the selected sync time.

Register with an Active Operator Card

If you already have an account with GLOBAL VR®, you can use your Operator Card to register immediately.

1. Press the Operator button inside the coin door and select **Registration Options** from the Game Operator Menu. The Registration screen will appear.
2. Press the **♪** button to enter the Registration screen. Select **Cabinet Registration** and press the **♪** button again to begin the registration process.



3. Read the Acknowledgement screen, select **Agree**, and then press the **♪** button to continue. You must select **Agree** to continue with registration.
4. The Dial-up Phone settings screen will appear next. **Phone Option** is set to **Dial-up** as default.

To use a broadband connection, press **♪** with **Phone Option** selected, and then press **VIEW** and **LOOK BACK** to toggle between **Broadband** and **Dial-up**. Press **♪** to select. If using Broadband, skip to step 0.



5. To use a dial-up phone line, keep **Dial-up** as the Phone Option, and use the buttons to set the dial-up properties as described below:
 - a. Use **VIEW** and **LOOK BACK** to select **State** and press **♪**. Use **VIEW** and **LOOK BACK** to scroll through the list of states. Press **♪** to select your state from the list.

- b. Use **VIEW** and **LOOK BACK** to select Primary City and press **↵**. Use **VIEW** and **LOOK BACK** to scroll through the list of cities. Press **↵** to select your city or the city closest to the cabinet location.

Hint: Press the gas pedal while scrolling the list of cities to jump to the next letter.

- c. Use **VIEW** and **LOOK BACK** to select Primary Number and press **↵**. Use **VIEW** and **LOOK BACK** to scroll through the list of phone numbers for your city. Press **↵** to select a local phone number.
- d. Select **Yes** for **Skip Area Code** unless the area code for the selected number is different from the line the cabinet will be using. (If the cabinet needs to dial an area code, you will also need to enter a “1” as a dialing prefix in the next step.)
- e. If you need to dial a number (such as “9”) to call outside of your location, or if your modem will be dialing an area code and needs to dial a “1” first, select **Dialing Prefix** and press **↵**. This will select the onscreen keypad.

Use **VIEW**, **LOOK BACK**, **↵**, and **NOS**, to select each number from the onscreen keypad, and press **START** to enter it. Select the comma (,) to insert a pause in the dialing. To make a correction, select **DELETE** on the onscreen number pad and press **START**. When you are finished, select **ENTER** on the number pad and press **START**.

- f. Repeat Steps b—e for the Secondary City. (If your Primary City has more than one dial-up number, select the same city and a different number.) The computer will use this dial-up number as a backup if it cannot reach the primary number.
 - g. When you finish, the Primary and Secondary numbers will be displayed onscreen, with the dialing prefix and area code, if entered. Check the entries, and use the buttons to return to any entry that you wish to change. When you are finished, Use **VIEW** and **LOOK BACK** to select **Continue**, and press **↵**.
6. The Time Zone screen will appear next. Use **VIEW** and **LOOK BACK** to select your time zone and press **↵**.
 7. The Select Registration Method screen will appear next. Select **Register with Operator Card** and press **↵**.



8. When you are prompted, insert your **Operator Card**. The SmartCard reader will read the card automatically. You will see "Connecting..." onscreen for a about a minute, followed by "Disconnecting... 100% Complete" when the process has finished.

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10. Use **VIEW** and **LOOK BACK** to scroll through the list, and press **J** to select your location.
11. The next screen will prompt you to enter your cabinet serial number (find this number, starting with "GVR" on a sticker on the back of the cabinet). Use the buttons and/or steering wheel to navigate the onscreen keyboard to select each character. Press **Start** to enter each character. Select **Done** and press **Start** when finished.

Important: If you never see the Registration Successful screen, this can indicate a problem with registration, possibly an interrupted modem connection. Select Force Call from the Registration Options screen to make sure that your cabinet is able to sync with GLOBAL VR®.

Once your cabinet is registered, the Operator menu will open automatically when you insert your active Operator card.



Manually Entering your Location

1. If your location is not in the list on the Select Cabinet Location screen, select **New Location** and press **J**. The next screen will show a list of fields requesting information about your location. When you enter this screen, the first field will be pre-selected.



2. Use the **VIEW**, **LOOK BACK**, **J**, and **NOS** buttons and/or steering wheel to navigate the onscreen keyboard, and press **START** to enter each selected character. To make a correction, select the **Backspace** key on the onscreen keyboard and press **START**. When you are finished, select **ENTER** on the onscreen keyboard and press **START**.
3. For Location Type and State, use **VIEW** and **LOOK BACK** to scroll through a list of options and press **START** to select.
4. When you have filled in all of the fields, select **DONE** from the onscreen keyboard and press **Start**. (If you press **Done** before filling out all required fields, the next field that needs information will become selected.)

You will see "Connecting..." onscreen, followed by "In Progress...". When the process finishes, you will see "Registration Successful." Press any key to return to the Operator Menu.

Important: If you never see the Registration Successful screen, this can indicate a problem with registration, possibly an interrupted modem connection. Select Force Call from the Registration Options screen to make sure that your cabinet is able to sync with GLOBAL VR®.

Your cabinet is now registered. It is a good idea to set the sync time on the Registration Options screen so that your cabinets call in to GLOBAL VR® at different times. Also make sure the cabinet will be powered on at the selected sync time.

Chapter 5 — Operator Menu and Game Setup





This chapter describes how to use the Game Operator menu to set up the game or diagnose problems. All game audits, settings, registration, and control diagnostics are accessed from the Game Operator Menu.

Version 1.1 of the software added an Accounting menu with several useful new accounting features. Also, certain Game Operator menu functions were moved to different screens than in earlier software. The Operator Menu screens are described in detail on the following pages. Refer to *Game Operator Menu Flowchart*, on the following page, for a list of the Game Operator menu screens and available settings.

Press the **red** operator button behind the coin mech door to enter the Game Operator menu.

Navigating Through the Game Operator Menu Screens








Use the buttons on the driving control panel to navigate, select, and change options, as described in the table below. Onscreen instructions will provide additional information on using each menu.

Button	Function	Comments
	Up	Scroll through lists or settings.
	Down	
	Select	Confirm a setting.
	Back or Exit	Navigate back to the menu list or exit the menu.

The following is an example of how to change a menu option:



Figure 34. Setting Cabinet Volume

1. Use the  and  buttons to navigate and highlight a menu option.
2. Press the  button to select the highlighted option. The game option will turn to red when it is selected.
3. Use the  and  buttons to rotate through the available settings for the selected option, as shown by the arrows in steps 2 and 3 of the picture above.
4. When you reach the setting you want, press the  button again. The game option will now turn back to yellow, and will display the new setting, as shown in step 4 of the picture above.
5. Press the  button to go back to the main menu.

The flowchart below shows the function of each menu in the Game Operator Menu.

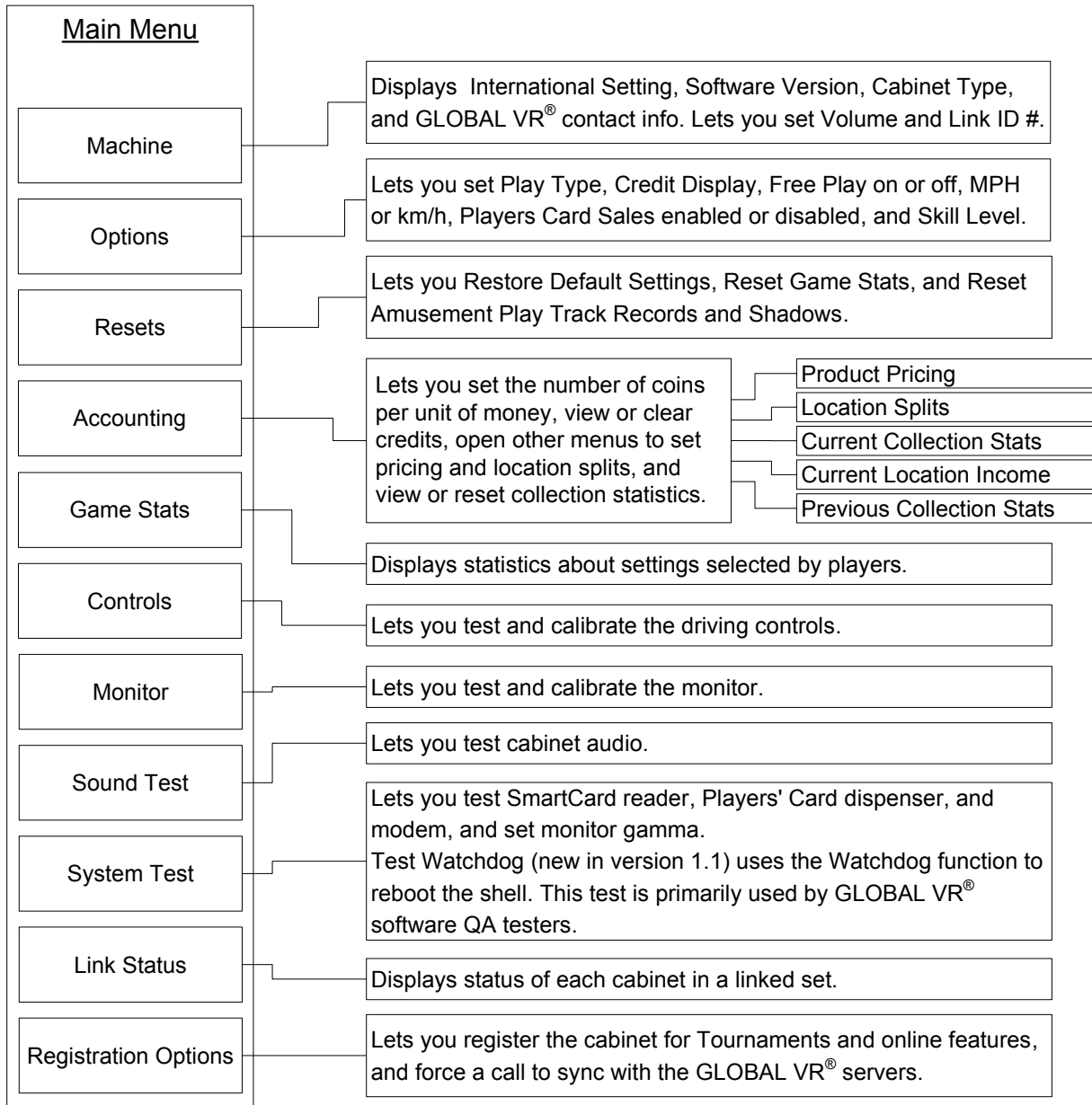


Figure 35. Game Operator Menu Flowchart

Machine Information Menu



Figure 36. Machine Information Screen

The Machine Information menu is the default screen displayed when you press the Operator Button. It displays important information about the cabinet.

Menu Item	Description	Default Value (as applicable)
International Setting	Displays international location (e.g. USA or UK) as read from the game dongle.	(Set by Dongle)
Game Version	Displays the game software version installed.	
OS Version	Displays the operating system software version installed.	
Cabinet Type	Displays cabinet type (Sit-Down or Up-Right).	(Set by Dongle)
Cabinet Volume Setting	Sets the game audio volume form 0—100% in increments of 5.	55%
Attract Volume	Sets the Attract mode audio volume as a percentage of cabinet volume.	95%
Attract Sound Mode	Sets Attract mode sound to Always, Sometimes, or Never. The <i>Sometimes</i> setting will play sound in attract mode one third of the time.	Always
Cabinet Link ID#	Sets the ID number used for linking cabinets. Each linked cabinet must have a unique Cabinet Link ID number (1, 2, 3, or 4).	1
Contact Info	Displays GLOBAL VR® contact information.	

Game and Coin Options Menu



Figure 37. Game and Coin Options Screen

The Game and Coin Options menu is used to set up the type of money or credits used at your location, game pricing, and game-play difficulty.

Menu Item	Description	Default Value (as applicable)
Play Type	Sets Play Type to Player's Choice or Race Only. (Race Only disables Tournament and Career modes.)	Player's Choice
Credit Display	Sets whether <i>Money</i> or <i>Credits</i> are used to play the cabinet. (This setting affects the display of other items.)	Money
Free Play	Sets free play <i>ON</i> or <i>OFF</i> .	OFF
Display Speed in	Sets the speedometer to MPH or km/h.	MPH
Players' Card Sales	Sets Players' Card sales to Enabled or Disabled. This gives Operators the option of allowing card sales only from cabinets with dispensers.	Enabled
Skill Level (Checkpoint Difficulty)	Lets you set the Skill Level , by track, from A (easiest) through E (hardest). Easier settings mean players have more time to reach each checkpoint; harder settings mean less time. # Laps/Drags lets you set how many laps or drags players get for each racetrack. Options are 1–5.	C (Medium) # Laps/Drags varies by track

Reset Stats/Settings Screen



Figure 38. Reset Stats/Settings Menu

Menu Item	Description
Restore Default Settings	Sets the cabinet to the factory default settings. Settings that are reset include Credit Display, Coins per \$, Cost Per Play, Game Volume, Attract Volume, and Skill Level.
Reset Collection Stats	Resets the Coin Statistics for the cabinet.
Reset Game Stats	Resets the Game Statistics for the cabinet.
Reset Amusement Track Records & Shadows	Resets the amusement (Race mode) track records and shadows. Tournament records are not affected. You can select Reset All Tracks , or reset tracks individually.

Accounting Screens

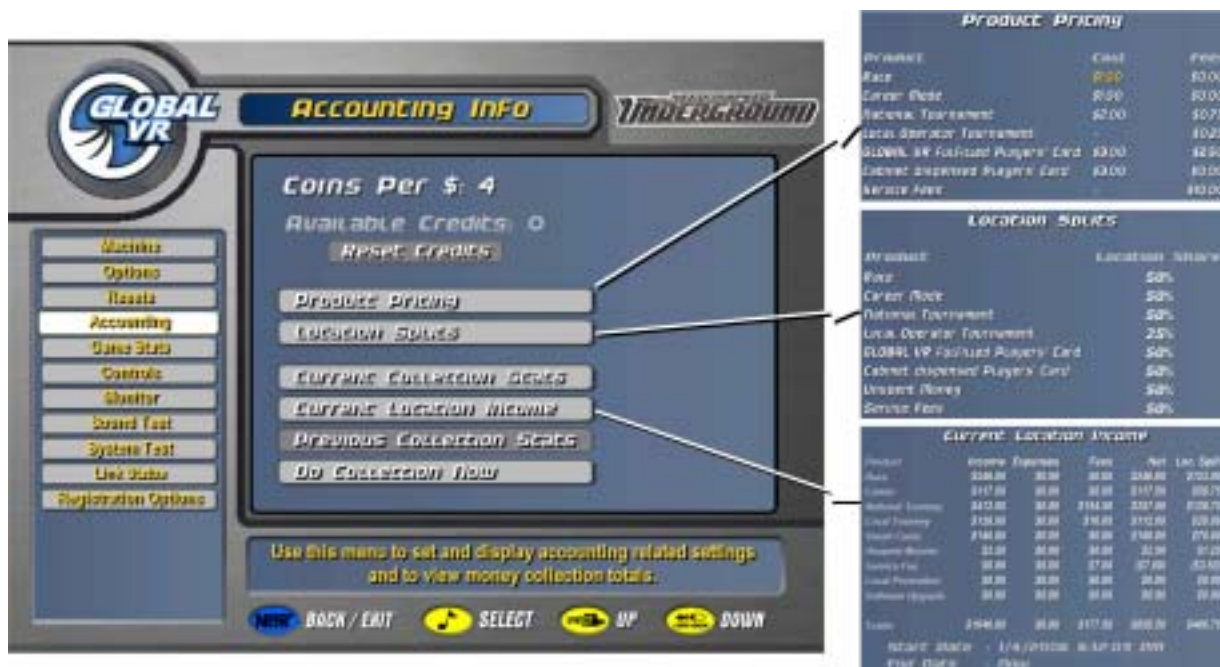


Figure 39. Accounting Info Screens

Menu Item	Description
Coins Per \$ (Symbol varies internationally)	Sets how many coin drops it takes to reach a unit of money, typically 4 in the US (4 quarters per \$) or 1 in the UK and Europe.
Available Credits	Displays the number of credits inserted.
Reset Credits	Highlight and select this button to reset the Available Credits to 0.
Product Pricing	Brings up the Product Pricing screen where you can set the price for each mode of play and Players' Cards (either dispensed or fulfilled by GLOBAL VR® via mail). Also displays applicable fees paid to GLOBAL VR®.
Location Splits	Brings up the Location Splits screen that displays the location's share of income for each mode of play, Players' Card sales, and unspent money, plus the location's share of fees paid to GLOBAL VR®. Note that in the example above, all items are set to 50% (50/50 split) except Local Operator Tournament, which is set to pay the location 25%.
Current Collection Stats	Brings up the Current Collection Stats screen, which displays income, expenses, fees, and net earnings for each mode of play. It also displays the start date for the current stats.
Current Location Income	Brings up the Current Location Income screen, which displays all of the information in Current Collection Stats, plus the Location Split calculations. Note that in the example above, the location gets 50% of income and pays 50% of fees in all categories except Local Tourney. For this item, the Operator has set the Location Share at 25% on the Location Split screen.
Previous Collection Stats	Brings up the Previous Collection Stats screen, which was saved last time Do Collection Now was selected. It also displays the start and end dates for the displayed stats. Operators can view past Collection Stats for their online cabinets running software version 1.1 or later by logging in to www.globalvr.com .
Do Collection Now	Deletes the Previous Collection Stats and replaces them with the current collection stats. Resets all Current Collection Stats to 0.00.

GLOBAL VR

Accounting Info

Current Location Income

Product	Income	Expenses	Profit	Net	Loc. Split
Mushrooms	\$248.00	\$0.00	\$0.00	\$248.00	\$124.00
Opium	\$117.50	\$0.00	\$0.00	\$117.50	\$58.75
Herbs	\$412.00	\$0.00	\$154.50	\$257.50	\$128.75
Local Tourism	\$128.00	\$0.00	\$18.00	\$110.00	\$55.00
Secret Caves	\$148.00	\$0.00	\$0.00	\$148.00	\$74.00
Unexplored Ruins	\$2.50	\$0.00	\$0.00	\$2.50	\$1.25
Service Fee	\$0.00	\$0.00	\$7.50	(\$7.50)	(\$3.75)
Local Protection	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Software Upgrade	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$1048.00	\$0.00	\$172.50	\$885.50	\$442.75

Start Date : 1/4/2006 6:12:03 AM
End Date : floor

Press NOB to edit this panel.

BACK / EXIT **SELECT** **UP** **DOWN**

The Current Location Income screen, accessed via the Accounting menu, is a useful tool for operators who split the cabinet income with a location. The Operator sets the location's share of each income and expense item in the Location Splits screen, and the software calculates the location's split based on these settings. The example above shows 50/50 splits for everything except Local Tourney, which is set to give the location 25%.


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The Game Statistics menu lets you cycle through three screens with statistics about the options players have selected in Race mode, and their average times for each track. The screens are: Car and Track, Average Times, and Game Features Usage. Press **View** or **Look Back** to move through the pages. You can reset the Game Statistics through the Resets menu.

Play Control Test Screen



Figure 42. Play Control Test Screen

The Play Control Test screen displays pictures of each driving control, and allows you to test each control, as described below. To exit from this menu, press the **Start** and **View** buttons together. If a component is not detected, a  symbol will be displayed over it, as shown above.

- **Buttons:** When you press a control panel button, it will light up on the screen.
- **SmartCard Reader:** Indicates whether a SmartCard reader is installed and working.
- **SmartCard Dispenser:** Indicates whether a dispenser is installed and working.
- **Steering Wheel:** When you turn the steering wheel to the left or right, the numbers above 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 number change should be smooth and linear. A sudden jump in the numbers, or a different range of numbers, can indicate a bad pot.
- **Gas & Brake Pedal:** When you step on the pedals you will see the same action on-screen. The numbers displayed near the pedals show the value when the pedal is full up, full down, and the current value. The difference between the full up and full down values should be about 80 (± 5). As you press and release the pedals, the number change should be smooth and linear. A sudden jump in the numbers can indicate a bad pot.
- **Calibration:** To calibrate the steering wheel and pedals, press the Start and NOS buttons together. The steering wheel will turn by itself during calibration; do not touch it during this process. When prompted, step on the gas and brake pedals to calibrate them.
- **Shifter:** When you shift through the gears, the current gear number appears on the screen. The screen also displays which shifter micro switches are actuated for each gear. For example, "2 LT DN" means the left and down micro switches are actuated in gear 2. "3 UP" means that only the up micro switch is actuated in gear 3. For more information, refer to *Six-Speed Shifter Micro Switch Service* on page 65.
- **E-Brake:** If you press the E-Brake button, it will light up on the screen.
- **Credits:** When you insert money into the coin mech or bill validator, the word "CREDITS" will flash, and "OK" will highlight on the screen.
- **Nytric Card Version:** Indicates version of Nytric USB/I/O card installed in the computer.
- **Start Button, Leader Light and Brake Light:** When you enter the Controls Menu, the Start button, Leader Light and Brake Lights on the cabinet will blink for several seconds. If any of these lights fails to blink, check the bulb and wiring for the light.

Monitor Calibration Screen



Figure 43. Monitor Calibration Test Screen

Press the **SELECT** button to start the monitor calibration test, and the **View** or **Look Back** button to scroll through the screens. To exit the Monitor Calibration Test, press the **NOS** button or the Operator button.

The monitor calibration test cycles through a series of monitor calibration screens. Various screens are designed to help you align the horizontal or vertical sync, or adjust the white balance and color hues.

Use the monitor remote control board buttons to adjust the monitor. The board is located next to the Operator button. Use the buttons on the monitor control panel to access a series of menus allowing you to adjust the display size, color, and quality.

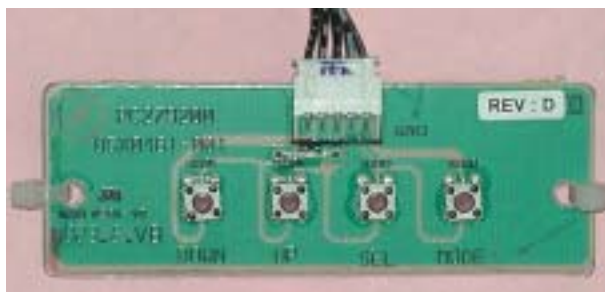



Figure 44. Monitor Remote Control Board

Sound Test



Figure 45. Sound Test Screen

The Sound Test menu tests the speakers. Once you press the  button to enter the sound test, each speaker will call out its name, one at a time. You should hear the words “Front Left Channel” from the left front speaker, followed by “Center Channel” from the center, and so on. The subwoofer will emit a thumping sound. The Sound Test will continue to automatically rotate through each speaker until you press the **NOS** button to exit the test. While the sound test is running, the picture on the screen shows the location of each speaker as it is tested.

Press the **View** or **Look Back** button to stop the sound rotation and test one speaker at a time. Press **View** to rotate to the next speaker, or **Look Back** to rotate to the previous speaker. Press the **NOS** button to exit the test.

If any sound comes from the wrong speaker, or any speakers are not working, check the connections to the audio amp (see Figure 61 on page 69).

Refer to Audio Amp and Speakers Service on page 69 for more information on fixing audio problems.

System Test



Figure 46. System Test Screen

- **Set Video Gamma:** Adjusts the overall brightness of the video. Default is 1.00.
- **Test Card Reader:** Insert an Operator or Players' SmartCard, and then select this option. If the SmartCard reader is working properly, the screen will indicate the type of card inserted and the card number. For Players' Cards, the name of the owner will also be shown. This can be useful for finding the owners of lost cards.
- **Test Card Dispenser:** If a card dispenser is installed, select this option to dispense a card and confirm the dispenser is working.
- **Test Modem:** Forces a call to verify modem function. The screen will indicate whether the modem connected successfully. (For online cabinets only.)
- **Test Watchdog:** Uses the Watchdog function to reboot the shell. This test is primarily used by GLOBAL VR[®] software QA testers.

Link Status



Figure 47. Cabinet Link Status Screen

This screen shows the link status of each cabinet in a linked set. The cabinet you are using to view the Link Status screen will be shown as **BUSY**, while the other cabinets will be shown as either **AVAILABLE** or **BUSY** if they are linked properly, or **UNCONNECTED** if they are not linked.

For example, in the picture above:

- Cabinet 1 is **not** linked properly, **or** Link ID 1 is not being used.
- Cabinet 2 is linked properly, and is busy because the Operator is viewing the menu.
- Cabinet 3 is linked properly, and is busy because a player is driving a race.
- Cabinet 4 is linked properly, and is available for play.

Registration Options

The Registration Options screen allows you to register, unregister, or change the settings the cabinet uses for syncing with GLOBAL VR. This screen also provides valuable information about a registered cabinet. Refer to Chapter 4, starting on page 37, for registration instructions.



Figure 48. Registration Options Screen

Buttons

- **Cabinet Registration or Unregister Cabinet:** This button will change depending on whether your cabinet is registered. If you restore the software using the System Recovery disk, this button will change to **Cabinet Restore**. Selecting the **Cabinet Restore** button will cause the cabinet to call in to GLOBAL VR® and use information stored in your game dongle to retrieve your registration settings.
- **Force Call:** This button causes the cabinet to call in to GLOBAL VR®. Use this if the cabinet fails to sync at the normal time, or to test your connection.
- **Edit Dial-In Numbers:** Use this button to change the phone number the cabinet uses to connect to the Internet, or to switch between dial-up and broadband. If you have repeated connection problems, try a different local number.
- **Activate Operator Card:** Use this button to activate an inactive Operator Card.
- **Call Sync Log:** Select this to view the list of calls the cabinet has made to GLOBAL VR®, and confirm call success or get information about modem errors.
- **Sync Time:** Select this button to change the time the cabinet syncs with GLOBAL VR®. Select a time when the cabinet is powered ON, but not used heavily, and stagger the time so that all of your cabinets do not try to dial in at the same time.
- **Time Zone:** Displays the selected time zone and allows you to change it.

Informational Text

- The upper right side of the screen shows the Cabinet Registration Status, Cabinet ID Number used for your account, and Cabinet Serial Number.
- The lower part of the window shows information about the last call made by the cabinet to GLOBAL VR®. If there was a problem syncing, the Modem Error Code may help you solve the problem. Refer to *Connection Troubleshooting* on page 85 for more information.

Chapter 6 — System Recovery and Game Install CDs



Follow the instructions below if you need to re-install the *Need for Speed™ Underground* software on your cabinet. **Total installation time is about 30 minutes.**

Using the System Recovery CD

Important: When you use the System Recovery Disk, you will erase all game settings and history for the coin and game audits that are stored in the game software. It is advisable to contact Technical Support before using the System Recovery Disk to resolve a problem.

1. If the cabinet is linked, disconnect the Ethernet cable from the back of the cabinet.
2. If the cabinet is registered, select **Force Call** to upload Tournament scores and accounting data.
3. Insert the **System Recovery Disk** in the CD-ROM 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 the hard-drive image process screen.
4. When prompted, remove the CD and reboot the computer. **Do not** insert the Game CD yet! Wait for about 2 minutes while the software finishes the installation. When you see a desktop screen with the GLOBAL VR® logo, the Operating System installation is complete. Proceed to run the **Game Install** CDs.

Using the Game Install CDs

Important: All linked cabinets must run the same game software version.

1. With the cabinet powered ON and the computer booted, insert the CD labeled **Game Install Disk 1 of 2**. The CD will automatically run (wait about 30 seconds). You will see a series of screens as the software copies components and files to the hard drive. The process will take about 10 minutes.
2. When the first CD is complete, the computer will eject the CD and prompt you to insert Disk 2. Insert **Game Install Disk 2 of 2**. The computer will automatically copy the remaining files from Disk 2 and reboot the computer when finished. You may see a blank screen for about a minute.
3. Once the game has restarted, remove the CD. Keep the System Recovery and Game Install CDs in a safe place in case you need them in the future.
4. When the game starts it will need to calibrate the gas, brake, and steering pots. The steering will self-calibrate (do not touch the wheel while it is calibrating). When prompted, press and hold the gas and brake for five seconds to set the calibration limits. Once the calibration is complete, the attract movie will begin. Start and play one game to finalize hardware calibration.
5. Once the software install is complete, press the Operator button and set the sound volume levels, cabinet Link ID Numbers, and other Operator settings. Reconnect the Ethernet cable if used.
6. For registered cabinets, select **System Recovery** from the Registration Options screen of the Operator Menu. Follow the onscreen instructions. The cabinet will call in to GLOBAL VR® and retrieve the registration information using the ID stored in the game dongle.

Chapter 7 — Service and Repair

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

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

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.

Opening the Control Panel

To gain access to the Steering Motor and buttons, remove the three (3) T-25H Security Torx bolts (plus two (2) additional bolts for Deluxe cabinets, not shown) from the Driving Control Panel bezel, as shown by the arrows in the picture below. The Driving Control Panel assembly is mounted to a hinge and will fold down.



Figure 49. Opening the Control Panel

Force-Feedback Steering System Service

The major components of the steering system are listed below. The figure that follows shows the harnessing of the force-feedback steering system.

- Steering Wheel
- Force-Feedback PCB (Blue Board, part # COEM-6040-245)*
- Force-Feedback Motor Controller PCB (Green Board, part # COEM-6052)*
- +24 VDC Power Supply
- Steering Motor
- 5 K Ω Steering Pot (Potentiometer)

*A single-PCB Force-Feedback system is now available. This single board (Part #: COEM-GCE-H2P5A) is completely interchangeable with the dual-PCB system. If you receive the single board as a replacement part, remove both existing PCBs and the ribbon cable.

The force-feedback steering system is powered by the +24 VDC power supply. The power supply connects to the Force-Feedback PCB. The PCB routes the power to the force-feedback steering motor.

Caution: Do not connect the power supply directly to the steering motor. Doing this will damage the motor and the power supply.

The Force-Feedback Motor Controller PCB is connected to the Force-Feedback PCB, the computer USB port, and the 5 K Ω steering pot. This card manages communications between the steering pot, the computer, and the force-feedback card. 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.

A faulty cable or steering-system component can cause steering problems. Refer to the Control Troubleshooting table on page 82 for help with diagnosing steering problems.

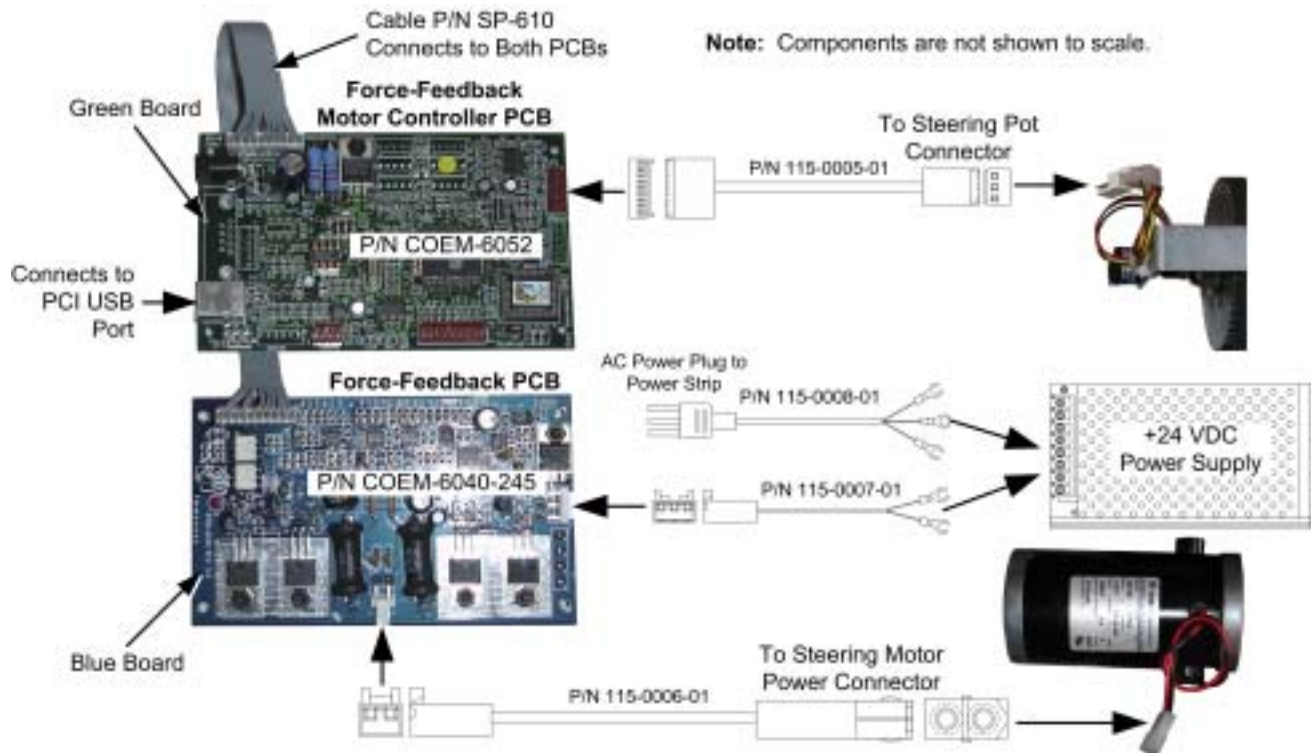


Figure 50. Force-Feedback Steering System Harnessing Diagram

5 K Ω Steering Pot (Potentiometer) Replacement

To test a pot, use the Play Control Test in the Operator Menu (see page 53). 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.

To replace a pot, refer to Figure 51 and perform the following steps:

1. Using a 7/64 Allan wrench, loosen the set screw from the steering column and remove the bracket with the 5 K Ω steering pot attached.
2. Using a 1/2-inch wrench, remove the nut and lock washer from the bracket and remove the pot.

3. 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 51 below.
4. Calibrate the steering from the Play Control Test in the Operator Menu after replacing the pot.

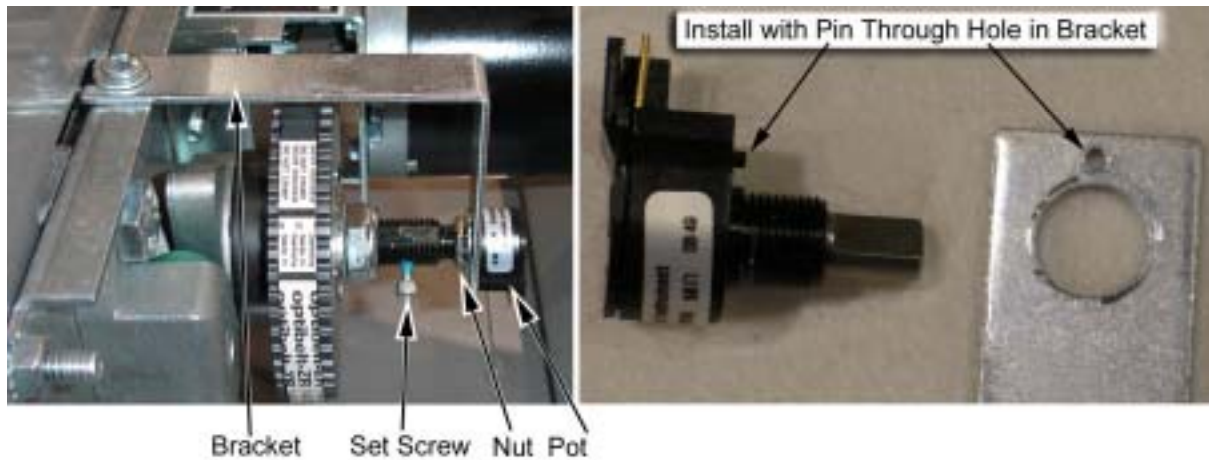


Figure 51. Replacing the 5 K Ω Steering Pot

Force-Feedback Belt or Motor Replacement

Refer to Figure 51 above, and Figure 52 below, and perform the following steps to remove the force-feedback belt for repair. Always replace the belt if it looks cracked or worn.

1. Using a 7/64 Allan wrench, loosen the set screw from the steering column and remove the bracket with the pot attached (see Figure 51).
2. Loosen the four (4) 3/8" motor mount Kep nuts that secure the steering motor to the frame (see Figure 52).
3. 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 52).
4. To replace the motor, remove the four (4) 3/8" Kep nuts that you loosened in step 2, and remove the motor.
5. Reverse these steps to re-install the motor and belt. When installing the belt, tighten the tension adjustment bolt until the belt is fully stretched, and then loosen the bolt by 1/2 turn.
6. Calibrate the steering from the Operator Menu after servicing the belt or motor.



Figure 52. 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 motor controller PCB. Use the following steps to replace one or both force-feedback PCBs.

Important: Part # COEM-GCE-H2P5A is a single-PCB system that replaces **both** COEM-6052 and COEM-6040-245.

1. Disconnect the cabinet from AC power.
2. Disconnect all cables from the PCB.
3. Remove the four screws that secure the PCB to the cabinet.
4. Reverse these steps to install the new PCB.
5. Calibrate all analog inputs from the Operator Menu after replacing the PCBs.

Driving Control Panel Button Service

The buttons on the cabinets are illuminated with 5-volt C555 bulbs. Refer to Figure 53 and perform the following steps to replace the button bulbs and micro switches:

1. Disconnect the cabinet from AC power.
2. Open the driving control panel assembly as described on page 60.
3. To remove a micro switch, gently rock it to the side and remove it from the housing. Remove the wires and install them on the same connectors on the new micro switch.
4. To replace a bulb, gently rock the white plastic bulb housing from side to side to pop it out of the button housing.
5. To remove a bulb, pull it straight out of the bulb housing.

Caution: Do not connect the 5-volt lamp power wire to the micro switch. This can damage the USB I/O card in the computer.

6. When connecting the wiring to the micro switch and bulb, refer to the labels on the wires to make sure the connections are correct.



Figure 53. Replacing Button Lamps

Pedal Assembly Service

Perform the following steps to remove the pedal assembly. It is removed and installed as one unit.

1. From inside the cabinet, disconnect the pedal cable assembly from the wire harness, as shown by the arrow in the picture below.
2. Remove the four (4) 1/4-20H Security Torx bolts, as shown by the arrows in the picture below.
3. Pull the pedal assembly towards the seat to remove.

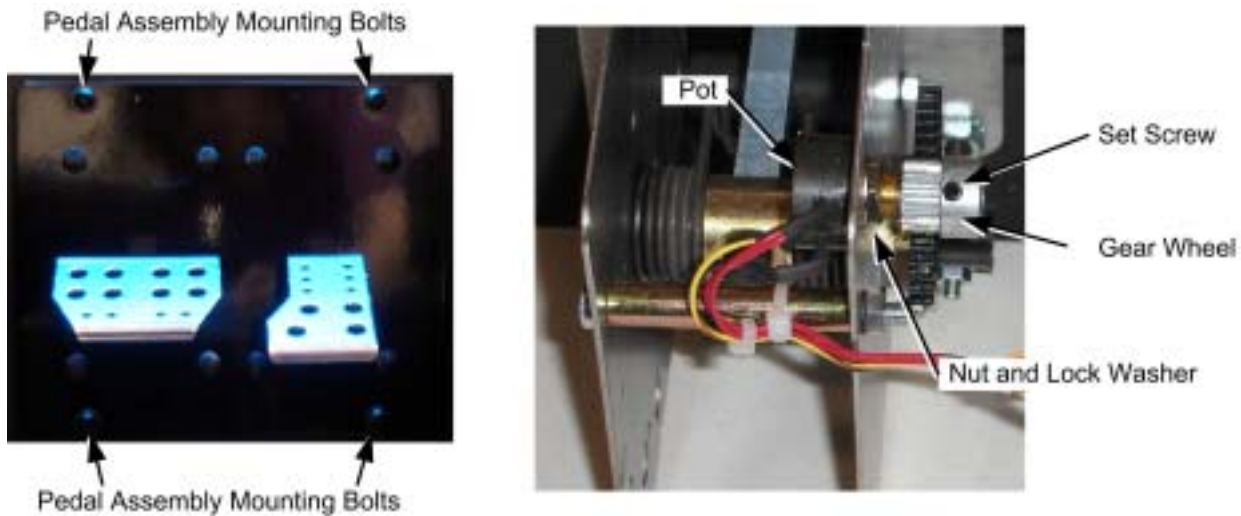


Figure 54. Pedal Assembly Details

5 K Ω Gas and Brake Pot (Potentiometer) Replacement

To test a pot, use the Play Control Test in the Operator Menu (see page 53). 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 54 above and perform the following steps:

1. Using a 7/64 Allen wrench, loosen the set screw from the gear wheel and remove the gear wheel, as shown in the picture above.
2. Using a 1/2" wrench, remove the nut and lock washer that secure the pot to the frame.
3. Install the new pot with the same orientation. Make sure that the plastic keys on the pot match with the metal.
4. Re-install the lock washer and nut, being careful not to over-tighten.
5. Re-install the gear wheel and tighten the set screw.
6. Calibrate all analog inputs from the Play Control Test in the Operator Menu after replacing the pot.

Six-Speed Shifter and E-Brake Service

The sections that follow describe repair and replacement of the six-speed shifter.

Six-Speed Shifter Replacement

Perform the following steps to remove the shifter from the seat 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.
3. Reverse these steps to re-install the shifter.

Six-Speed Shifter Micro Switch Service

The shifter uses four miniature micro switches to relay the shifter position to the computer.

Figure 55 shows micro switch placement, and which micro switches are actuated for each gear.

By using the chart, you can determine which switch may be faulty. For example, if gears 1 and 2 stop working, the problem is probably with the Left micro switch.

The Controls screen in the Operator Menu also displays which micro switches are actuated as you shift through the pattern.

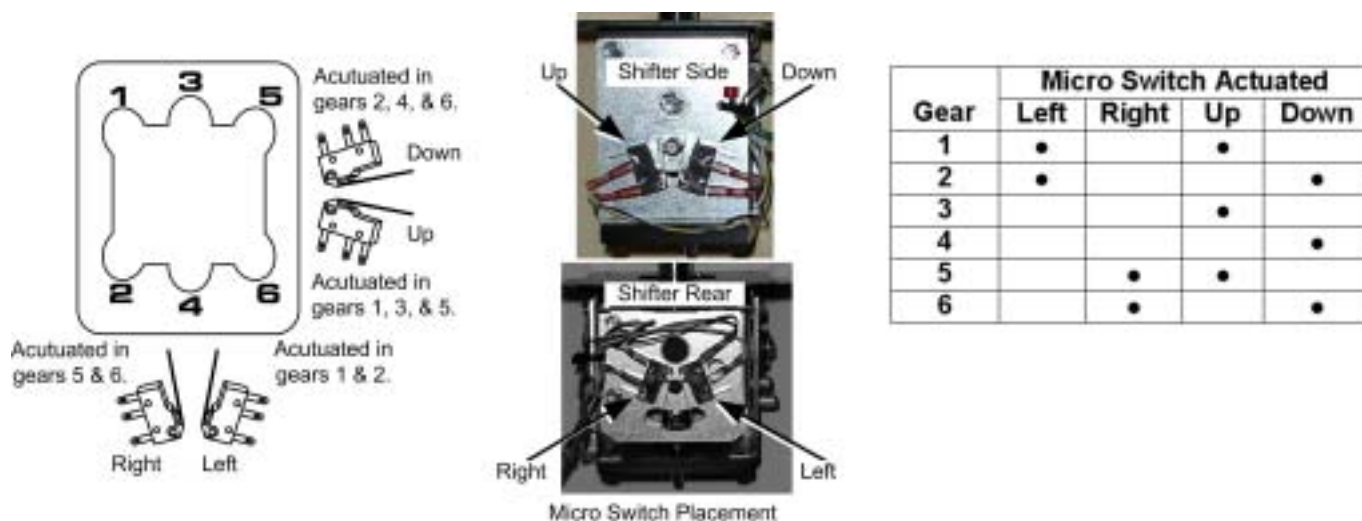


Figure 55. Shifter Pattern and Micro Switch Actuation

Perform the following steps to replace a micro switch:

1. Remove the shifter assembly from the housing as described on page 65.
2. Disconnect the two wires from the micro switch.
3. Remove the two screws that secure the micro switch to the shifter and remove the switch.
4. Reverse these steps to install the new micro switch.

Shifter Bottom Plate Replacement

If the shifter does not go into certain gears, or slips out of gear, the bottom plate may be worn. Perform the following steps to replace the bottom plate:

1. Remove the shifter assembly from the housing as described on page 65.

2. Remove the four screws that secure the bottom plate and remove the plate.
3. Reverse these steps to install the new bottom plate.

E-Brake Button Service

1. Remove the shifter assembly from the housing as described on page 65.
2. To replace the button or change the bulb, refer to Driving Control Panel Button Service on page 63. The E-Brake button is assembled the same as the control panel buttons.

Wells-Gardner® Monitor Replacement

Perform the steps that follow to remove the monitor from the cabinet for service or replacement. Be sure to follow all safety precautions while working with a monitor.

Tip: When removing the monitor from the cabinet, it is always best to have two people to support the weight of the monitor.

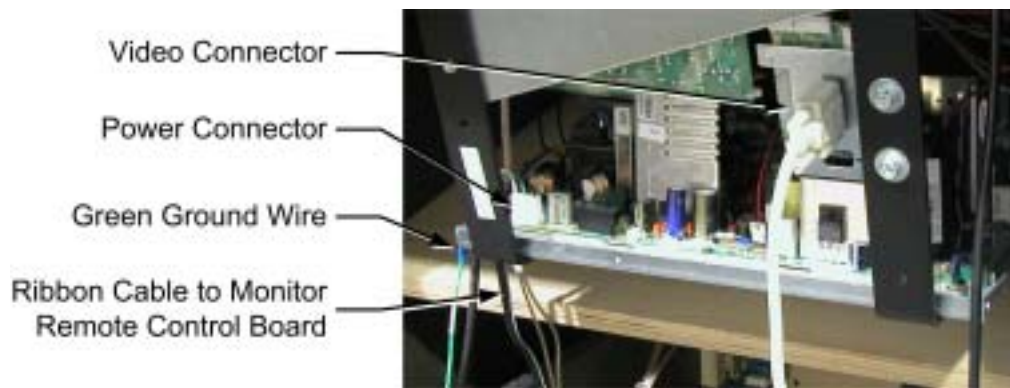


Figure 56. Cable Connections to the Monitor Chassis

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Refer to Figure 56 and disconnect the following cables:
 - VGA Video cable from the back of the Monitor.
 - Monitor remote control board cable from the board mounted near the Operator button. Coil this cable and tie it to the monitor to prevent it catching while the monitor is being removed.
 - Power cable that connects to the monitor chassis PCB, located on your left as you face the monitor rear.
 - **Green** ground wire from the monitor frame near the power connection.
3. Inspect the disconnected cables and monitor frame to make sure that there are no wire ties holding the monitor to the cabinet.
4. Open the driving control panel (see Opening the Control Panel on page 60).
5. Remove the three screws from the marquee support brace and fold the marquee down on its hinge.
6. Remove the two (2) #10 x .75 wood screws that secure the monitor bezel to the top of the cabinet and remove the monitor bezel.

7. Remove the four (4) 1/4-20 monitor mounting nuts, as shown in Figure 57.



Figure 57. Monitor Mounting Nut Locations



DANGER: Components in the monitor chassis can be charged with a VERY HIGH VOLTAGE even when powered OFF.

The monitor is very heavy. Two-person lifting is advised.

8. Carefully remove the monitor through the front of the cabinet and set it in a safe place. Most of the weight of the monitor is in the CRT at the front of the monitor.
9. Reverse these steps to re-install the monitor. Always clean the front of the CRT and the clear display shield before re-installing.
10. After replacing a monitor, run the Monitor Calibration Test from the Operator Menu Diagnostics to verify proper operation (see Monitor Calibration on page 54).

Wells-Gardner® Monitor Chassis PCB Removal

You can uninstall the monitor chassis PCB if you should have problems with just the PCB.

Caution: Only a certified technician should attempt to remove or service the Monitor PCB. GLOBAL VR® assumes no responsibility for damage while removing the PCB.

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

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Remove the four nuts that hold the monitor chassis to the monitor frame.
3. Remove the two 4/40 Jack nuts that hold the video signal PCB to the monitor frame. See the figure below.

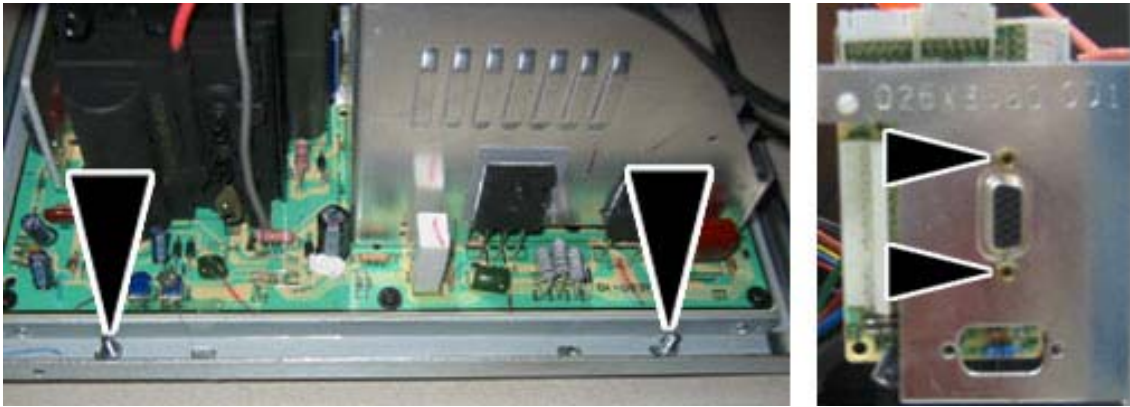


Figure 58. Removing the Monitor PCB Mounting Hardware

4. Disconnect the Chassis Neck PCB from Chassis Tube Neck of the CRT by pulling back on the Chassis Neck PCB. You will need to slide the Chassis Neck PCB to the side to clear the Chassis Tube Neck.



DANGER: The Second Anode Lead (H.V. CRT Feed) can be charged with a VERY HIGH VOLTAGE even when powered OFF.

5. Disconnect the second anode lead that connects to the CRT just above the Chassis Tube. Be very careful as the second anode lead can be charged with a VERY HIGH VOLTAGE even when powered OFF. Pinch the gray rubber flange and slightly push in to un-hook the metal prongs that hold the second anode lead to the CRT, shown by the arrows in the picture below.

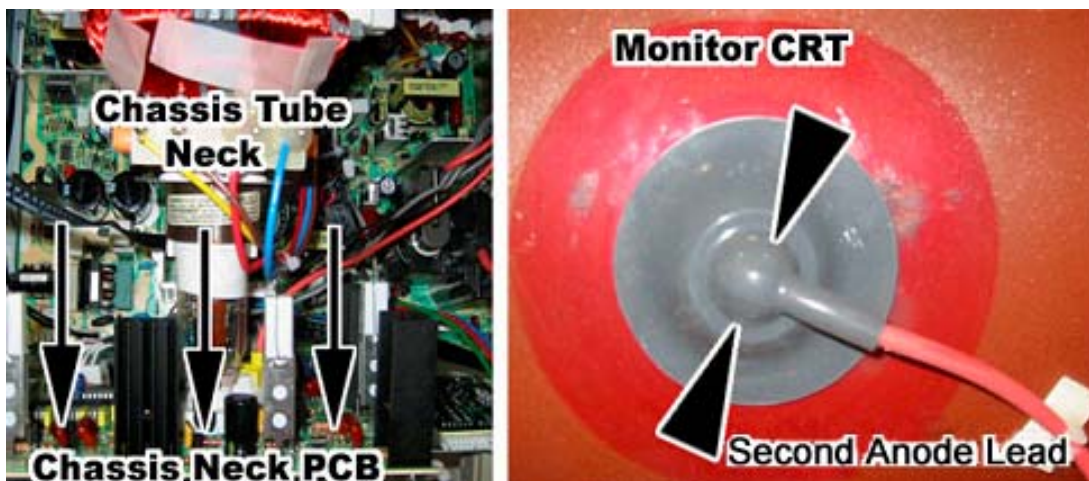


Figure 59. Disconnecting the Chassis Neck PCB and Second Anode Lead

6. Refer to Figure 60 to disconnect the next three cables:
 - a. Disconnect the CRT 2-wire ground cable that connects to the Chassis Monitor PCB (Item 1 below).
 - b. Disconnect the CRT 2-wire ground cable that connects to the Chassis Neck PCB (Item 2 below).

- c. Disconnect the Color and Sync 4-wire cable that connects from the Chassis Tube Neck to the Monitor chassis PCB (Item 3 below). Note the color alignment of this connector for installing the new monitor chassis PCB.



Figure 60. Monitor PCB Cables

7. You can now slide the monitor chassis PCB and other PCBs out the side of the monitor chassis as one unit.

Audio Amp and Speakers Service

The u5.1 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. A fuse is installed on the board to help prevent electrical damage to the board.

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 61. For best results, turn each pot counterclockwise to turn the volume levels all the way down. Next, turn each pot 1/5 of a turn clockwise to bring the audio levels up. You can fine-tune the sound levels for your location from this point.

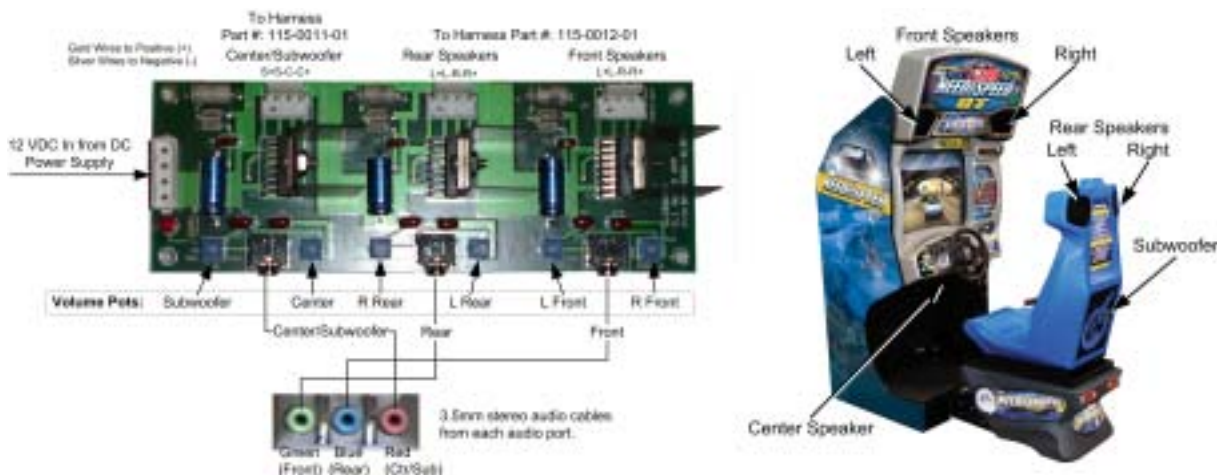


Figure 61. Audio Amp Connections, Volume Adjustment, and Speaker Location

Three 3.5mm 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.

- The green audio port is front speakers, left and right.
- The blue (middle) audio port is rear speakers, left and right.
- The red audio port is center channel and bass speaker (subwoofer).

Each speaker is connected to the corresponding speaker output on the audio amp. The figure above 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 power harness, speaker wires, and 3.5mm audio cables from the audio amp PCB.
2. Use a small Phillips screwdriver to remove the four (4) screws holding the PCB to the cabinet. Always keep the audio amp PCB inside an ESD anti-static bag when not installed in the cabinet to prevent electrical damage.
3. Reverse the steps to re-install the audio amp PCB.

Front (Marquee) Speaker Replacement

The front speakers are located on either side of the marquee.

1. Remove the four (4) 1/4-20H Torx security screws that secure the speaker grill to the cabinet.
2. Remove the four (4) screws that secure the speaker to the cabinet.
3. Remove the wires from the speaker and install them to the same connectors on the replacement speaker.
4. Reverse these steps to re-install the speaker.

Center Speaker Replacement

The center speaker is located behind the control panel.

1. Open the control panel as described on page 60.
2. Remove the four (4) 1/4-20H Torx security screws that secure the speaker to the cabinet.
3. Remove the wires from the speaker and install them to the same connectors on the replacement speaker.
4. Reverse the steps to re-install the speaker.

Rear (Seat) Speaker or Subwoofer Replacement

The rear speakers are located behind the two small grills at the top rear of the seat. The subwoofer is located behind the large grill at the center rear of the seat.

1. Remove the six (6) 1/4-20H Torx security screws that secure the speaker grill to the back of the seat.
2. Remove the four (4) screws that secure the speaker or subwoofer to the seat.
3. Remove the wires from the speaker or subwoofer and install them to the same connectors on the replacement speaker or subwoofer.
4. Reverse the steps to re-install the 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.
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. To remove the computer from the cabinet, use a 7/16" wrench to unscrew the four (4) ¼ -20 x 1" bolts from underneath the computer as shown by the arrows in the figure below.



Figure 62. Unbolting the Computer

5. Reverse these steps to replace the 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, be sure to calibrate the pedals and steering (see page 53). Set up your cabinet from the Operator Menu (see Chapter 5).
7. If your cabinet is registered, select **System Recovery** from the Registration Options screen of the Operator Menu. Follow the onscreen instructions. The cabinet will call in to GLOBAL VR[®] and retrieve the registration information using the ID stored in the game dongle.

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.

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

Coin Mech Replacement

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

1. Unscrew the thumbscrews on the latches as shown by the arrows in step 1 of the figure below.
2. Slide the latches apart from each other and remove the Coin Mech as shown in steps 2 and 3.
3. Reverse these steps to re-install a coin mech. It is important to verify the operation of the newly installed coin mech with both good and bad coins.

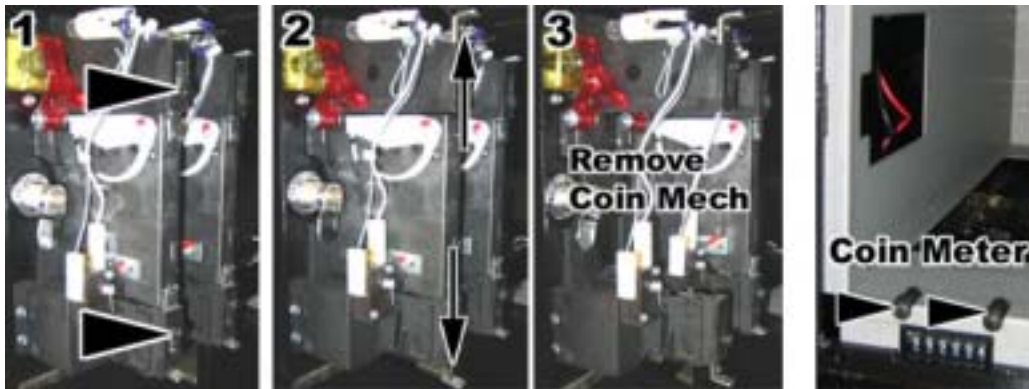


Figure 63. Servicing the Coin Mech and Coin Meter

Coin Meter Replacement

The coin meter is located in the bottom left-hand corner of the cash box. 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 cabinet and remove the coin meter.
3. Cut the two wires from the coin meter and strip the ends of the wires to attach the new meter.
4. Use two butt splices to connect the wires to the new coin meter.
5. Use the two screws to install the new coin meter.

Dollar Bill Validator Replacement

1. Disconnect the dollar bill validator control harness and ground wire from the cabinet.
2. Remove the cash box from the dollar bill validator.
3. Remove the four nuts that hold the dollar bill validator in place.
4. Reverse these steps to install a new unit. Make sure that the dollar bill validator ground wire is connected to the cabinet and the cabinet is properly grounded or the unit will not work properly.
5. Refer to the following figure to set the DIP switches.

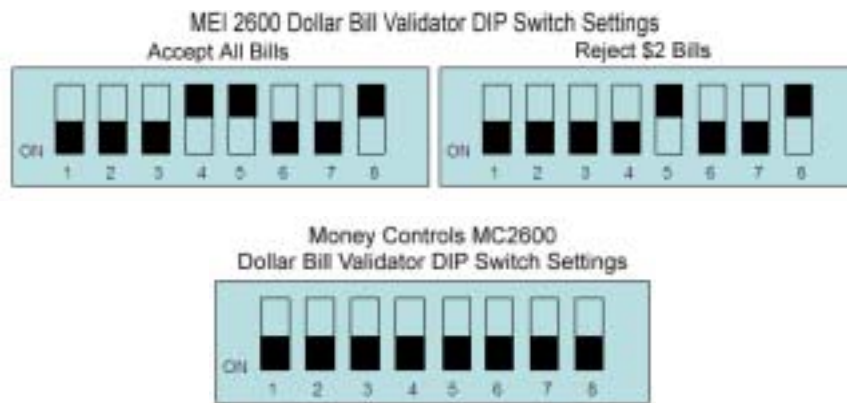


Figure 64. Dollar Bill Validator DIP Switch Settings

SmartCard Reader Replacement

For Standard cabinets, it is necessary to remove the bezel to replace the SmartCard reader. For Deluxe cabinets, you need only open the control panel. The SmartCard reader is mounted to two plastic blocks that are designed to minimize ESD interference. Perform the following steps to replace the SmartCard reader:

1. For Deluxe cabinets, open the control panel as described on page 60.
2. For Standard cabinets, remove the bezel as described in the first two steps of Section 3.2, on page 15.
3. Snip the cable tie that secures the cable to the top of the assembly, and disconnect the cable from the SmartCard reader.
4. Remove the four (4) screws that secure the SmartCard reader to the ESD-protective blocks.
5. Slide the SmartCard reader out of the control panel.
6. Reverse these steps to install the new SmartCard reader.

SmartCard Dispenser Service

Important: The dispenser will not work unless it is fully closed and in a vertical position (no more than a 5-degree angle), with the back cover in place. If you reboot the computer only, rather than power cycling the cabinet, the dispenser may dispense a card.

Perform the following steps to open the dispenser to refill or count the SmartCards.

1. Open the SmartCard dispenser door with the key; it will rotate downward on a hinge.
2. Slide and lift the back panel as shown below.
3. Insert SmartCards as shown, with the magnetic stripe down. The dispenser will hold up to 185 SmartCards.
4. Reverse these steps to close the dispenser.

SmartCard Dispenser Replacement

1. To remove the dispenser from the cabinet, disconnect the wire harness and remove the four Kep nuts that secure the dispenser to the door.
2. When you re-install the dispenser, the plastic lip around the card slot must line up with the hole in the door. When properly installed, the plastic around the slot is flush with the face of the door.

Important: An inverting transistor is built into the card dispenser harness. To ensure proper operation, replace the harness with the same part number only.

After servicing the SmartCard dispenser, always test it from the System Test in the Operator Menu.

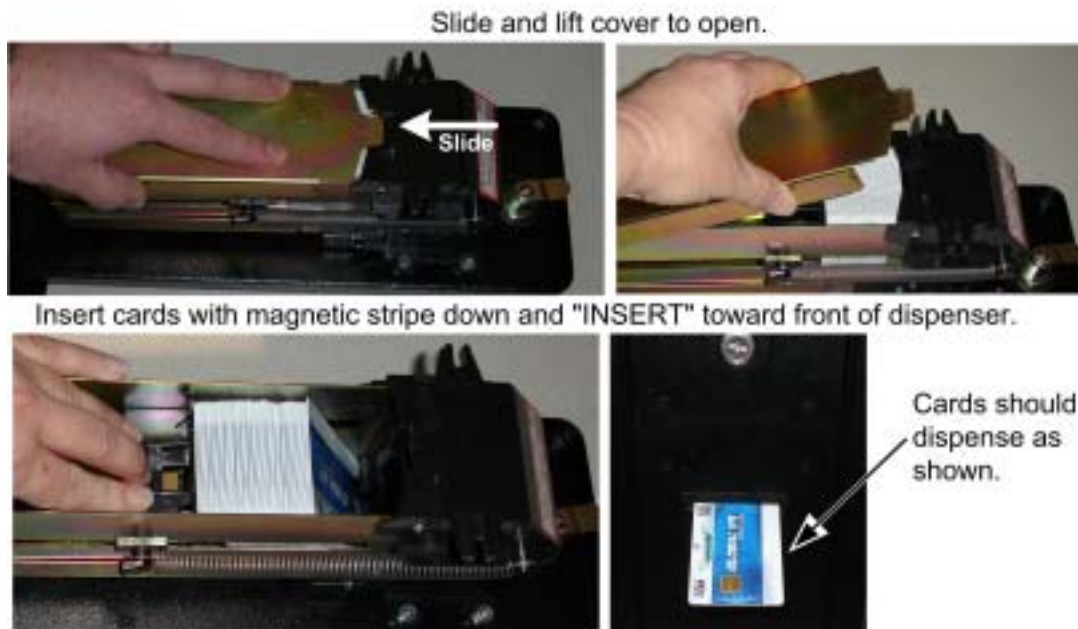


Figure 65. Filling the SmartCard Dispenser

Power Distribution Service

AC Power Plate (Standard Cabinets)

The AC power plate provides the external AC power, modem (phone), and Ethernet connections.

AC power from the power plate is connected to a 6-outlet AC power strip/surge suppressor in the cabinet. An AC EMI Filter in the AC power plate removes the electrical noise that can cause interference with the hardware inside the cabinet.

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 66. Components must **not** be grounded to the power plate mounting bolts.

The **Ethernet** and **Phone** ports on the power plate must be connected to the appropriate ports on the system computer (see Figure 78 on page 92 for computer connections).

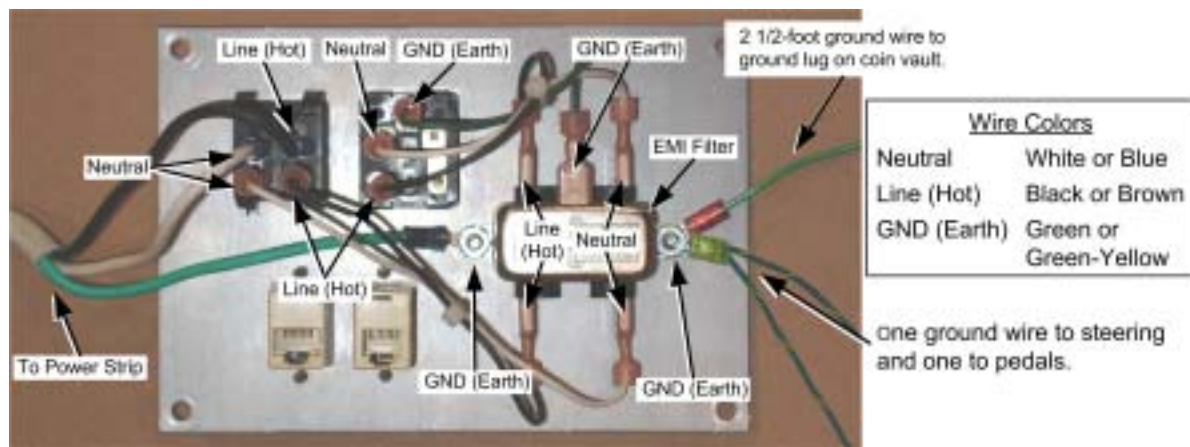


Figure 66. AC Power Plate Connections

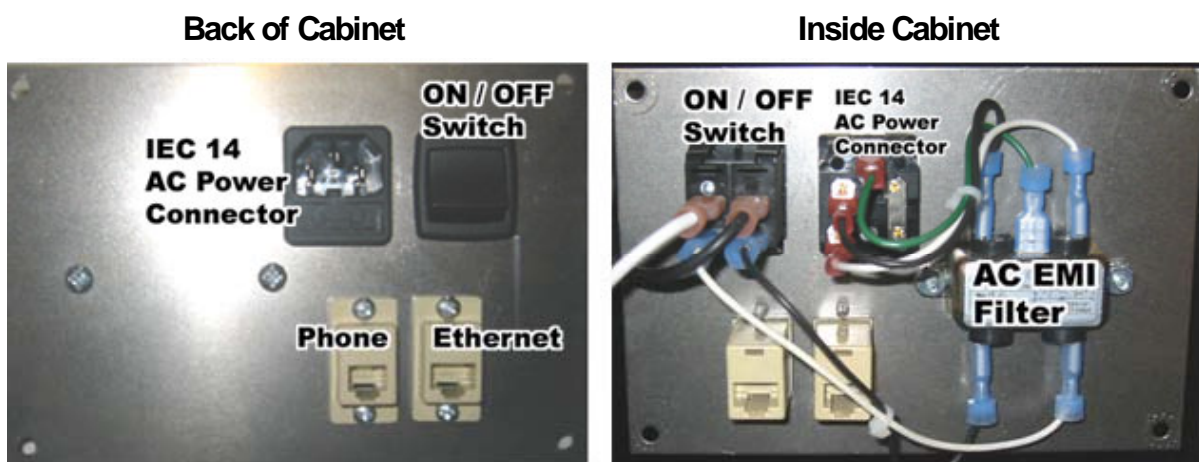


Figure 67. AC Power Plate

AC Power Strip Replacement

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. Disconnect all components from the power strip.
3. Disconnect the power strip from the AC power plate terminals.
4. Remove the power strip; it is held in place with Velcro®.
5. Replace the power strip with an appropriate unit from GLOBAL VR®. Do not attempt to use a different power strip. Be sure to connect each wire to the correct terminal. (See Figure 68 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 may not function properly.

DC Power Supplies

The cabinet has two DC power supplies. The +24 VDC supply powers the force-feedback steering system. The External PC Power Supply provides +5/+12 VDC for the audio amp, brake

lights, illuminated buttons, and cold cathode light. If your cabinet loses audio and lighting at the same time, it is likely that there is a problem with the External PC Power Supply.

+24 VDC Power Supply Replacement:

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Unplug the power supply from the power strip.
3. Disconnect the wires from the power supply terminals.
4. Remove the two Phillips screws holding the power supply to the cabinet. Be careful not to remove the screw that secures the terminal plate to the power supply.
5. Reverse these steps to install the new power supply. Check the labels on each wire and be sure to connect them to the correct terminals, as shown below.

Important: Do not connect any components other than the Force-Feedback PCB to this power supply. Doing so can stop the steering from working properly.

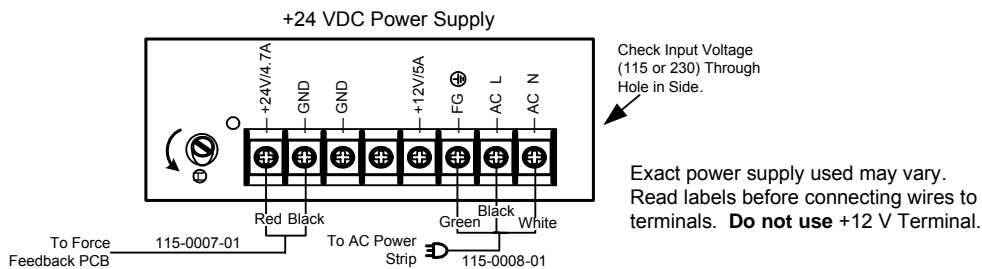


Figure 68. +24 VDC Power Supply Connections

External PC Power Supply Replacement:

1. Disconnect the AC power cord.
2. Disconnect the two +5/+12 VDC power harnesses.
3. Lift the power supply out. It is held to the cabinet with Velcro®.

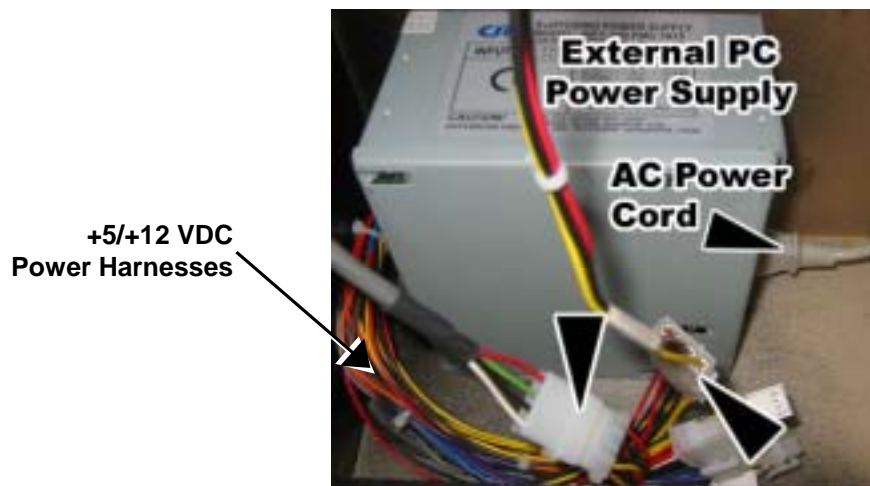


Figure 69. External PC Power Supply Connections

Cabinet Lighting Service

The cabinet lighting consists of a florescent fixture behind the marquee artwork, a light bulb behind the LEADER artwork, two brake lights, and a cold-cathode florescent light installed under the driving control panel with the upgrade kit.



Figure 70. Accessing the Marquee Light, Leader Light, and Speakers

Marquee Florescent Light Service

1. Use a 1/4-20H Security Torx bit to remove the six (6) screws that secure the marquee artwork and clear plastic in place.
2. Replace the florescent tube with another 18" florescent tube.
3. To remove the fixture, disconnect the cabinet from AC power. Disconnect the AC power cord from the fixture. Remove the two Phillips screws that secure the fixture to the cabinet and remove the fixture.
4. Replace the fixture with part # 49-1001-00.

Leader Light Service

The leader light uses a mini 12V bayonet-base bulb. To replace the bulb in the leader light, remove the four (4) Torx screws that secure the LEADER artwork in place and remove the artwork. Carefully push the bulb inward and rotate counterclockwise 1/4 turn to remove.

To install a new bulb, align the bulb with the socket, push inward, and rotate clockwise 1/4 turn. Re-install the artwork with the four screws removed previously.

Brake Light Replacement

1. Remove the two (2) T-15 Torx Security screws that secure the brake light in place.
2. Remove the chrome trim and the light assembly.
3. Disconnect the harness from the light. (Make sure the harness doesn't fall into the pedestal.)
4. Reverse these steps to install the new brake light.

Cold-Cathode Light Service

1. Unscrew the four (4) Torx screws closest to the ends of the light assembly. (You do not have to remove the screws from the light assembly, just unscrew them enough to free the light assembly from the cabinet.)
2. Snip the cable tie that secures the cold-cathode tube to the light assembly and remove the tube.
3. Open the control panel and disconnect the old tube from the power inverter.
4. Reverse these steps to install the new tube and replace the light assembly.

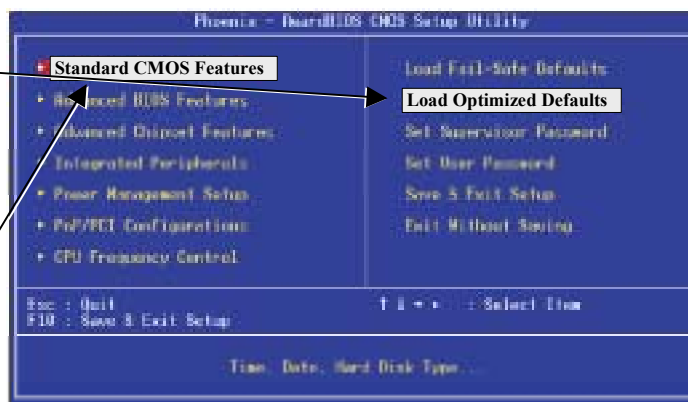
Setting the Computer BIOS (CMOS)

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

1. Press the **DEL** key during boot. The CMOS Setup Utility Main Menu will appear:
2. Use the Arrow keys ($\uparrow\downarrow\rightarrow\leftarrow$) to select **Load Optimized Defaults**, and press **Enter**. Press **Y** and **Enter** when prompted to confirm the change.

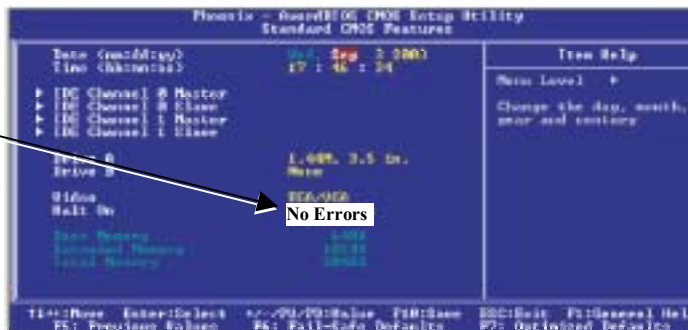
Note: Step 2 ensures that most settings are correct. The others are described in this document.

3. Use the Arrow keys to highlight **Standard CMOS Features**, and then press **Enter**.



A screen similar to the following will appear:

4. Use the Arrow keys to highlight the setting for **Halt On**. Use the **Page Up** and **Page Down** keys to change the setting to **No Errors**. Press **ESC** to go back to the Main Menu.



5. Now use the Arrow keys to highlight **Advanced BIOS Features** and press **Enter**. A screen similar to the following will appear:

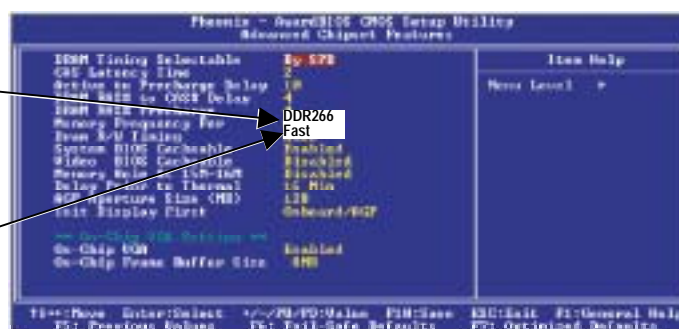
6. Use the Arrow keys to highlight the setting for **First Boot Device**. Use the **Page Up** and **Page Down** keys to change the setting to **CDROM**.



7. Set **Second Boot Device** to **HDD-0** and **Third Boot Device** to **Disabled** the same way. Press **ESC** to go back to the Main Menu.

8. Now use the Arrow keys to highlight **Advanced Chipset Features** and press **Enter**. A screen similar to the following will appear:

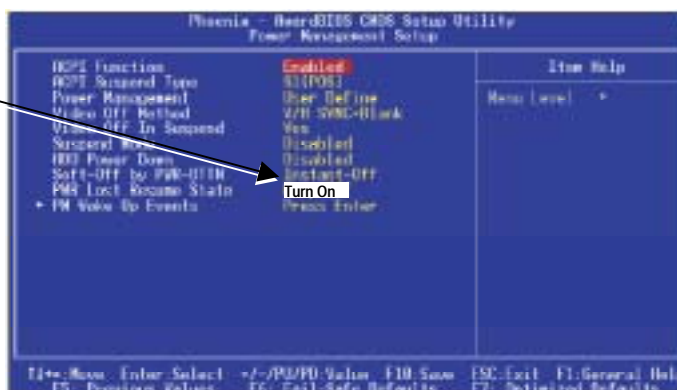
9. Use the Arrow keys to highlight the setting for **Memory Frequency For.** Use the **Page Up** and **Page Down** keys to change the setting to **DDR266**.



10. Use the Arrow keys to highlight the setting for **Dram R/W Timing**. Use the **Page Up** and **Page Down** keys to change the setting to **Fast**.

11. Now use the Arrow keys to highlight **Power Management Setup** and press **Enter**. A screen similar to the following will appear:

12. Use the Arrow keys to highlight the setting for **PWR Loss Resume State**. Use the **Page Up** and **Page Down** keys to change the setting to **Turn On**.



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

Save to CMOS and EXIT (Y/N) Y

14. Make sure "Y" shows at the end of the prompt (if "N" shows, the settings will not be saved), and press **Enter** to save the settings and exit.

Chapter 8 — Troubleshooting

Video Troubleshooting

Problem	Cause	Possible Solution
No picture on monitor	Power problem	Verify the AC power connection to the monitor. You can verify that the monitor has power by looking for a small glow in the neck of the CRT.
	Loose or faulty video cable	Verify that the video cable is firmly connected from the monitor to the video card on the computer. While the monitor is powered ON, disconnect the video cable. You should see a message on-screen saying <i>No Signal</i> to verify the monitor is working. Check the video cable and make sure it is not pinched or frayed.
	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.
	Faulty monitor chassis PCB	Verify that the fuses on the monitor chassis PCB are good and that all connections are firm.
Picture is dim or faded	Gamma needs adjustment	Use the monitor remote control board to adjust the brightness and contrast settings. Adjust the monitor gamma setting from the Operator Menu to increase overall brightness (see page 56).
Color is poor	Color needs adjustment	Use the monitor remote control board to adjust the red, green, and blue color settings.
Picture is misaligned	Geometry needs adjustment	Use the monitor remote control board to adjust the picture height and width as well as other geometric adjustments.
No video and no audio (Note: It may take nearly 2-1/2 minutes to boot and start the game.)	No power to computer	Verify the computer is ON by the green LED on the front of the computer. Verify the line voltage switch on the back of the computer is set to the correct voltage for your area: 115V or 230V. Make sure the AC power cord is firmly connected to the computer and the power strip. Turn off the power strip, wait 20 seconds, and then turn it back on to reboot the computer.
	Corrupted software	Reload the software from the System Restore CDs. If you continue to have problems after you reload the software, you may have a faulty hard drive.
	Faulty hard drive	If you continue to have problems after you reload the software, you may have a faulty hard drive. Contact Technical Support.

Problem	Cause	Possible Solution
Poor picture	Monitor connected to wrong port	The monitor must be connected to the VGA Video port on the video card, not to the video port in the computer motherboard. Make sure that the monitor video cable is connected to the VGA Video port located below the audio connectors (see Figure 78 on page 92).

Audio Troubleshooting

Problem	Cause	Possible Solution
No audio	Volume set too low	Enter the Operator Menu and adjust Audio Settings to raise the volume. Verify that the Master Volume is set high enough. Verify the volume is not turned all the way down at the Audio Amp PCB (see Figure 61 on page 69).
	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 Figure 61 on page 69 for audio wiring.)
	Blown speakers	Remove the grills and inspect each speaker for visible damage. Run the Speakers Test from the Operator Menu to verify each speaker is working.
	Faulty audio amp PCB	You can verify the Audio Amp PCB is working by installing it into another working cabinet. If that is unavailable to you, plug a simple computer speaker into the audio ports on the computer and verify that sound is working at the computer.
Poor sound from one or more speakers	Blown speakers	Remove the grills and inspect each speaker for visible damage. Run the Speakers 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 Figure 61 on page 69 for audio wiring.)
	Faulty audio amp PCB	You can verify the Audio Amp PCB is working by installing it into another working cabinet. If that is unavailable to you, plug a simple computer speaker into the audio ports on the computer and verify that sound is working at the computer.
	Faulty wiring	Verify that all the wires are firmly connected to each speaker and the Audio Amp PCB. Verify that no wires are frayed or improperly shorting to ground.
Audio hum	Faulty power supply	A constant low hum in the speakers can be caused by a faulty 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. Verify that the wires are connected to the correct spades on the micro switch.
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to each button and the USB I/O Extreme PCB. Verify that no wires are frayed or improperly shorting to ground.
	Faulty USB I/O PCB	Make sure that all connections to the PCB are firm. Replace PCB if faulty.
Steering pulls to one side	Faulty force-feedback PCB	Verify that the force-feedback PCBs are getting 24 volts DC power. Test the PCBs in a working cabinet.
	Faulty steering motor	Test the motor in a working cabinet.
	Faulty force-feedback power supply	Use a volt meter to verify that the force-feedback power supply is putting out 24 volts DC.
Sloppy or poor steering	Poor calibration	Calibrate the steering from the Play Control Test in the Operator Menu.
	Faulty 5 K Ω steering pot	Run the steering wheel calibration test from the Operator Menu. Replace pot if faulty (see page 61).
	Loose or worn drive belt	Turn off the cabinet. Open the driving control panel and check the belt on the steering motor and steering column. Check for loose or worn parts on the force-feedback assembly (see page 60).
	Faulty force-feedback PCB	Verify that the PCBs are getting 24 volts DC power. Verify the 7.5-amp fuse on the back of the power PCB is not blown. Test the PCBs on a working cabinet. Calibrate the steering from the Play Control Test in the Operator Menu.
No force-feedback in the steering wheel	Faulty steering motor	Test the motor in a working cabinet.
	Faulty force-feedback power supply	Use a voltmeter to verify that the force-feedback power supply is putting out 24 volts DC.
	Steering motor not properly grounded	Make sure the steering motor frame is properly grounded. Static shock can stop the steering wheel from responding during game play. Power the cabinet Off and then ON to correct this problem.
	Faulty force-feedback PCB	Verify that the PCBs are getting 24 volts DC power. Verify the 7.5-amp fuse on the back of the power PCB is not blown. Test the PCBs on a working cabinet.

Problem	Cause	Possible Solution
	Force-feedback connected to wrong USB port	The force-feedback card must be connected to a PCI USB port, not to a motherboard USB port. See Figure 78 on page 92 for a diagram of the computer ports.
Steering does not auto-calibrate	Faulty USB cable or PCI USB card	Test by connecting to one of the USB ports on the computer motherboard and rebooting twice. Re-connect to the PCI USB port and reboot after testing to avoid intermittent steering loss during game play.
	Faulty force-feedback PCBs	Verify that the PCBs are getting 24 volts DC power. Verify the 7.5-amp fuse on the back of the power PCB is not blown. Test the PCBs on a working cabinet.
Steering wheel shakes	Faulty 5 K Ω steering pot	Test pot for smooth resistance. If you replace the pot, be sure to calibrate it from the Play Control Test in the Operator Menu.
Steering stops working (Intermittent)	USB cable in wrong port	The USB cable must be connected to the PCI USB port, not the USB port on the computer motherboard (see Figure 78 on page 92).
Shifter does not work in some gears	Faulty micro switch or switches	Replace the faulty micro switch. See the Play Controls screen in the Operator menu, or page 65 of this manual to determine which micro switch to replace.
Shifter does not work	Faulty USB I/O PCB	Make sure that all connections to the PCB are firm. Replace PCB if faulty.
Gas and brake do not work properly	Pedals out of calibration	Calibrate the pedals from 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 K Ω pot	Test pot for smooth resistance. If you replace the pot, be sure to calibrate it from the Play Control Test in the Operator Menu.

Cabinet Linking Troubleshooting

Problem	Cause	Possible Solution
Cabinet will not connect	Faulty wiring	Verify that an 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 to verify a good hardware connection. If you are using an Ethernet hub, verify the LEDs light for each Ethernet port used.
	Wrong hardware being used	A crossover coupler can only be used to link two cabinets. When linking 3 or more cabinets, use a hub.
Cabinet does not link in software	Duplicate linking ID numbers	If you get a duplicate Link ID number error on-screen, go into the Operator menu and correct the Link ID number for each cabinet that displays the error message. Each cabinet in the networked group must have a unique link ID number.

Problem	Cause	Possible Solution
	Faulty wiring	Verify that an 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 to verify a good hardware connection. If you are using an Ethernet hub, verify the LEDs light for each Ethernet port used.
	No cross-over coupler	To connect two cabinets, you must use one cross-over coupler (or hub). Do not run an Ethernet cable between two cabinets without a coupler.
	Faulty Ethernet hub	Verify the LEDs on the Ethernet hub are lit for each port used. If possible, verify the Ethernet hub is working by connecting it to a known working computer network or set of linked cabinets.
	Mixed software version	Verify that all cabinets are running the same software version.
	System needs reboot	For linked cabinets to recognize each other, it is very important to reboot all cabinets in the group when adding or removing linked cabinets, or changing the cabinet link ID numbers.

Miscellaneous Troubleshooting

Problem	Cause	Possible Solution
No power	Power strip not plugged in or turned off	Make sure the power indicator light on the power strip is on. If it is off, make sure the connections to the AC power plate terminals are firm and the power strip ON/OFF switch is ON.
	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 (Important: If a USB dongle is used, it must be connected to a PCI USB port, not a motherboard USB port.)	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. (USB dongles illuminate when recognized by the computer. Parallel dongles do not.) Contact Tech Support if you need to order a new dongle.
	Faulty USB or parallel port	If you try a different game dongle and reboot the game, but the dongle still is not recognized, contact Tech Support.
Cabinet gets very warm	Faulty ventilation fan	Verify that the exhaust fan is working. It is located under the vents at the top 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 can flow freely.
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.
Improper number of credits given when coins or bills are inserted	Incorrect setting in Operator Menu	Adjust settings from the Operator Menu.
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to the coin mech and bill validator. Verify that no wires are frayed or improperly shorting to ground.
	Faulty coin mech	Repair or replace the coin mech.
	Faulty bill validator	Repair or replace the bill validator.
Game will not accept coins or bills	Faulty coin mech	Verify the coin mech is not jammed. Make sure the coin mech is properly aligned and latched to the coin door.
	Faulty bill validator	Verify the bill validator is powered on and working. If the bill validator is faulty it will usually blink an error code on the inside of the coin door.
Bill validator rejects too many bills	Poor ground	Verify the cabinet is properly grounded and the bill validator is properly connected to ground.

Connection Troubleshooting


If the cabinet fails to connect with the Tournament Server due to a problem with the dial-up modem or the broadband connection, the cabinet will display an error message onscreen. The table below lists the more common errors and solutions.

If you cannot resolve a connection problem, contact Technical Support. Please have the modem error code, dial-up phone number the computer is using, and the game serial number ready for the GLOBAL VR[®] technical support representative.

Modem Error Message	Cause	Possible Solution
General RAS Failure	Modem failed to connect	Make sure you have a working analog phone line connected to the LINE port on the modem. If the problem continues, select a different phone number in the dial-up settings.
No Dial Tone – Please try again	Phone line connected to wrong modem port	If you can hear the phone go off the hook, make sure the phone line is connected to the correct port on the modem (see Figure 78 on page 92).
	Phone line not working	Connect a telephone to the line to make sure it is working.
The line is busy – Please check phone line and try again	Phone line is busy	Try again later. If the problem persists, select a different dial-up number.
Failed to deserialize – Please contact GlobalVR Support	Problem syncing with server	Contact GLOBAL VR [®] Technical Support
Broadband Error Messages		
Error Communicating with Server. Please try again later (4001)	Broadband connection problem	Check all connections and make sure your network is functioning properly.

External Monitor Troubleshooting

Refer to the following information if you have problems using an external monitor to display the cabinet video outside of the cabinet. The exact appearance of the dialog boxes and settings will vary depending on the video card installed in your computer.

1. Power the cabinet OFF and connect the PS/2 keyboard to the purple PS/2 port on the back of the computer. Turn the cabinet power ON, and let the game boot up.
2. With the game running in Attract mode, press the Windows flag key  on the keyboard (between the Ctrl and Alt keys). This will launch the Windows Start Menu.
3. Use the arrow keys to select GVR Shutdown and press Enter. This will shut down the game shell and allow you to access Windows features.
4. Use the arrow keys to select Display Properties, and press Enter. This will launch the Display Properties Window.
5. Use the arrow keys to select the **Settings** tab.

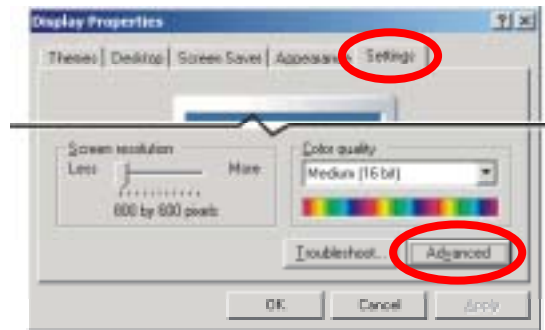


Figure 71. Selecting the Settings Tab in the Display Control Panel

6. Use the **Tab** key select the **Advanced** button, and press **Enter**. The monitor and video card properties window will be displayed:



Figure 72. Selecting the Video Card Name Tab

- Use the **Tab** and arrow keys to move to the **GeForce4** tab. (The exact name of the video card will vary depending on the video card installed). A window like the following will be displayed:

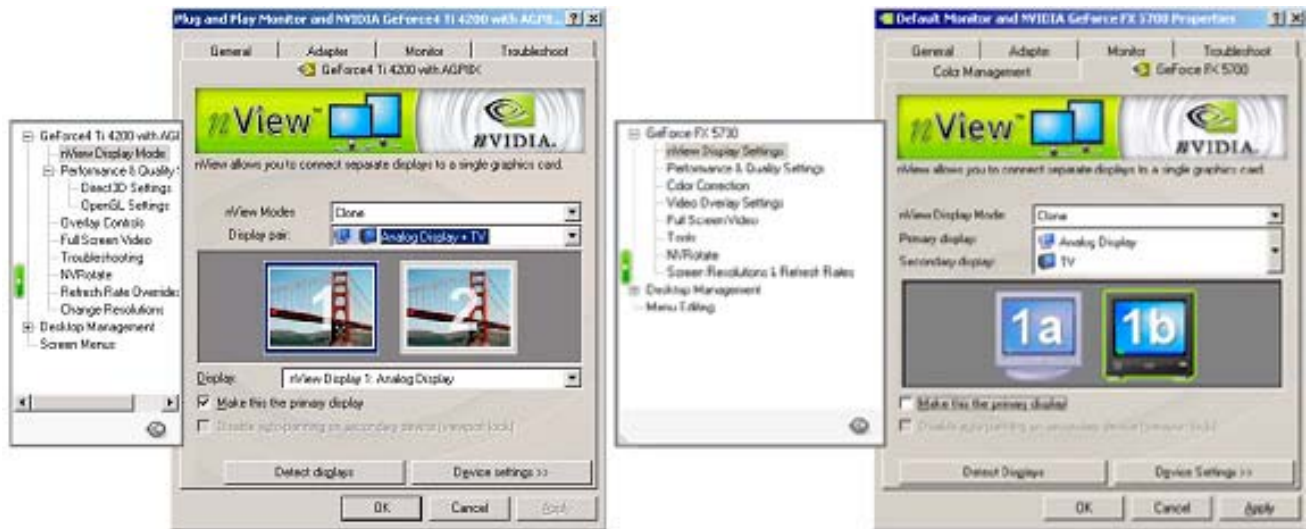


Figure 73. Choosing a Display Pair with Cloning

- Use the **Tab** and cursor keys to select **nView Display Mode** in the menu at the left. Change the **nView Modes** option to "**Clone**", and the **Display pair:** option to "**Analog Display + TV**".
- If the screen has two lines in the field below nView Modes, set **Primary display:** to **Analog Display** and **Secondary display:** to **TV**.
- Select the image of the TV in the graphic below the nView Display Mode fields and then press **Tab** to select **Device Settings >>**. Press **Enter**.
- Press the down arrow to select **TV format** in the context menu that appears.
- In the second context menu, select **Advanced**.
- Select either **Composite Video Out** or **S-Video Out** from the **Video Output format** dropdown menu.
- After making these changes, select **OK** in the monitor and video card properties window, and then press **Enter**.

You should now see the video image displayed on both the internal and external monitor. You will also see the following dialog box displayed:

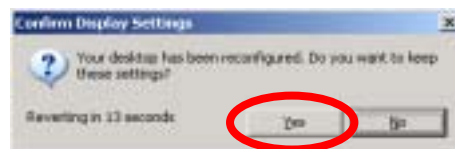


Figure 74. Confirming Display Settings

- If everything looks correct, press the **Tab** key to select **Yes**, and then press **Enter**. This will save the settings.
- If you do not see the image in the external monitor, check the S-Video cable, and check that the external monitor is set to receive video from the S-Video input.
- When you finish changing display settings, power the cabinet OFF, and disconnect the keyboard from the computer.

Chapter 9 — Replacement Parts

Documents and Software

Part #	Description	Cabinet
040-0064-01	Upgrade Instructions	Both
040-0069-01	Software Restore Guide	Both
050-0070-01*	System Recovery Disk	Both
050-0083-01*	Game Install Disks (2)	Both

*Part number may change due to new software versions.

Upgrade Kit Parts

Part #	Description	Cabinet
37041-00	NOS Button Plate	Standard
37042-00	NOS Backing Plate	Standard
115-0072-01	Cable, Secondary NOS Button	Both
45037-00	6-Speed Shifter Assembly	Both
45038-00	SmartCard Reader Assembly, Standard	Standard
45039-00	SmartCard Reader Assembly, Deluxe	Deluxe
26068-00	SmartCard Reader ESD Isolation Blocks	Both
37064-00	SmartCard Reader Mounting Plate, Standard	Standard
37063-00	SmartCard Reader Mounting Plate, Deluxe	Deluxe
SCR28I-S033U	SmartCard Reader (Without Mounting Assembly)	Both
115-0060-01	Cable, 6-Speed Shifter, Cabinet to Seat	Both
115-0061-01	Cable, 6-Speed Shifter, Seat to Shifter	Both
54-0006-200H1985	E-Brake Pushbutton	Both
NFSU-AW-14	Shifter Top Plate Decal	Both
59-6004-822H1998	NOS Button	Both
59-6010-12	NOS Button Cap Only	Both
HP142201-1998	NOS Button Graphic Only	Both
USB-KQRTG	Game Dongle	Both
08324	Four-Port PCI USB Card	Both

For **Cabinet Artwork**, refer to Figure 24 on page 27 for Standard Cabinets (27" monitor), or Figure 26 on page 28 for Deluxe Cabinets (39" monitor).

Existing Cabinet Parts

Part Number	Description
50-2978-00	Dual Pedal Assembly
50-4043-00	Steering Motor, +24 VDC
50-4041-00	Steering Wheel Pulley Belt
50-0102-00	Steering Wheel With GLOBAL VR [®] Cap
50-1035-00	Steering Wheel
50-0230-01	Steering Wheel Cap

Part Number	Description
COEM-6040-245*	Force-Feedback Motor Controller PCB (blue board)
COEM-6052*	Force-Feedback PCB (green board)
SP-610*	Cable, Force-Feedback PCB Interconnect
COEM-GCE-H2P5A*	Force-Feedback PCB (single-board system)
47-4310	Betson PCB Cable
47-4311	Betson PCB
USBIO	USB I/O 1.5 Game Card (Bad Game Card Exchange Only)
08335	PCI USB 2.0 Card
PS-ATX1140H	Computer Power Supply, 400 Watt, 2 Fans
44-0600	+24 VDC Power Supply
50-9005-00	Speaker, Center Channel Shielded
5555-15142-00	Speaker, Sub Woofer
5555-16234-00	Speaker, 3" Rear Channel
5555-15098-00	Speaker, 5.5" Shielded Front Channel
80-0426-00	Cooling Fan, 12 Volt
50-2670-00	5 K Pot, 3/8 Shaft
50-2692-00	Seat Slide Left/Right
04-13160	Seat (Only)
01-15369	Seat Brackets
DSP5250AT	Bottom Of Game
01-15079-0	Marquee Support Bracket
990-0105-01	Audio Amp, u5.1
WGM2792-U0TS42A	Monitor, 27" Wells-Gardner, D9200 SVGA
WGM3992-U2GS10D	Monitor, Wells-Gardner®, 39"
CHASSIS-27D9200	Monitor Chassis PCB, D9200 WG2792
45035-00	System Computer

*COEM-6052, COEM-6040-245, and SP-610 can all be replaced by COEM-GCE-H2P5A.

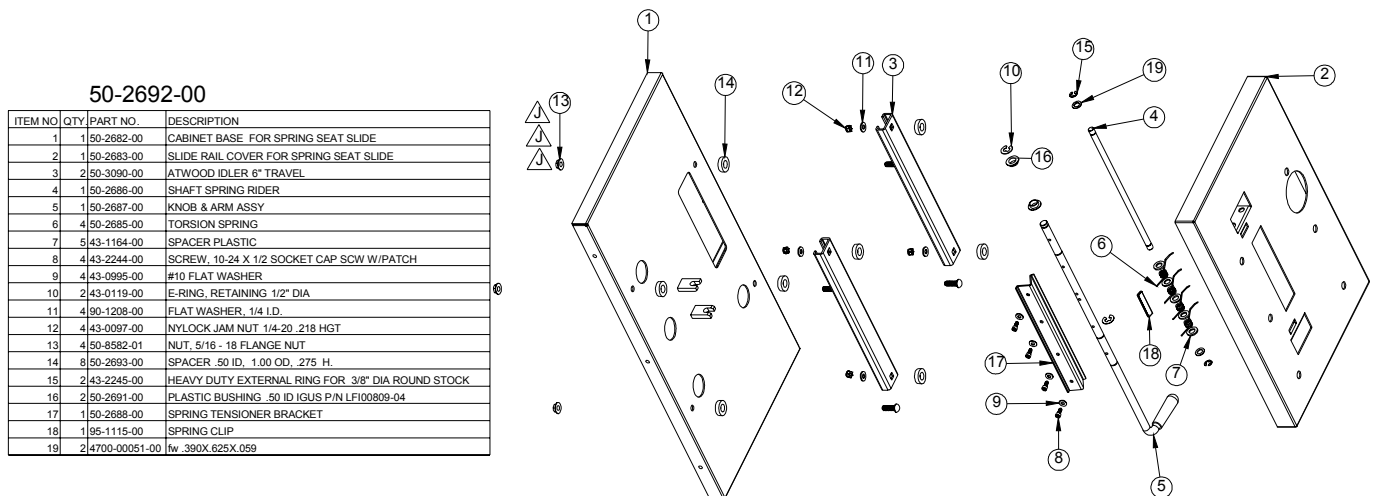


Figure 75. Seat Assembly Parts

System Computer

PCI USB Port

USB I/O Extreme Card

USB

DB37

DB25

VGA Port

Audio Front (Green)

Audio Rear (Blue)

Audio Center/Subwoofer (Red)

PCI USB Port

SmartCard Dispenser (If Used)

Part #: USB-AB06MM

Part #: 115-0081-01¹

Part #: 115-0075-01¹

To SmartCard Dispenser

+5/+12 VDC Out

+5/+12 VDC In

Part #: 115-0002-01

Pedal Assembly

To Brake Pot

To Gas Pot

Marquee

To Marquee Florescent Light

To Leader Light

To Marquee Left Speaker

To Marquee Right Speaker

To Seat Left Speaker

To Seat Right Speaker

To Subwoofer

Force-Feedback Steering

Force-Feedback Motor Controller

Part #: COEM-6040-245²

J2

J6

J5

Force-Feedback Card

Part #: COEM-6052²

J3

Motor Ctrl Out

24 VDC In

Part #: 115-0005-01

To Steering Pot

Part #: 115-0006-01

Motor Ctrl Out to Steering Motor

Part #: 115-0007-01

+24 VDC Power Supply

To Power Strip

Seat Assembly (Controls)

Part #: 115-0009-01

To Front Speaker Harness

To +5/+12 VDC Power Harness

To Coin Mech Harness

To Start Button & Start Lamp

Part #: 115-0060-01

+5/+12 VDC Power

Part #: 115-0061-01

To 6-Speed Shifter

To E-Brake Button

To Brake Lights

Part #: 115-0072-01

To NOS Button on Right

To Left Console Buttons

Audio Amp PCB

Front Audio In

Front Speakers

Rear Audio In

Rear Speakers

Ctr/Sub Audio In

Center/Subwoofer

To AC Power

Part #: 115-0012-01

Part #: 115-0011-01

Part #: 115-0066-01

To Cabinet Center Speaker

Leader Light

To Smartcard Reader

Dongle

USB Hub

²Part numbers COEM-6040-245 and COEM-6052 can be replaced with **COEM-GCE-H2P5A**. (Single PCB replaces both.)

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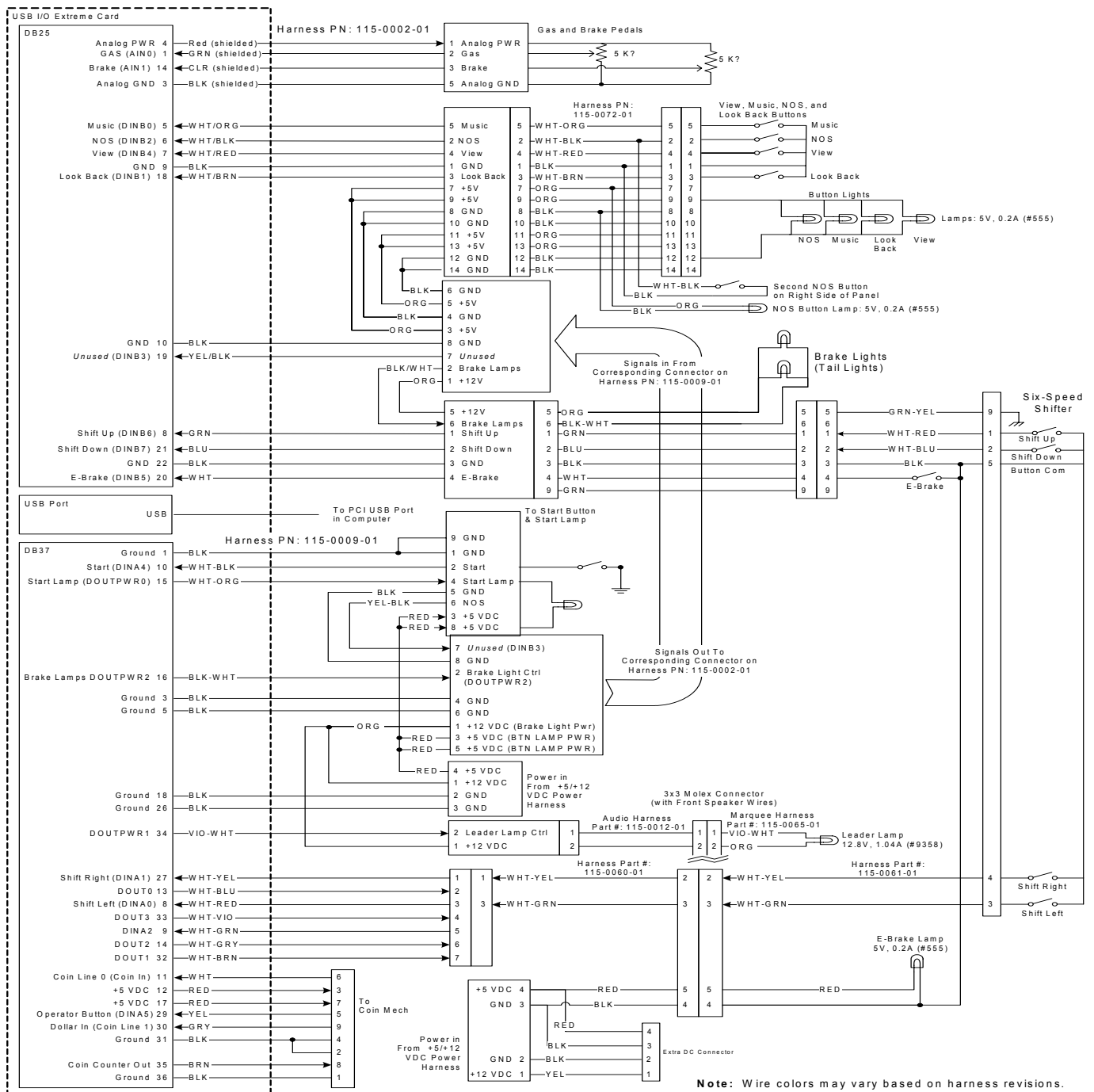


Figure 77. Detailed Wiring Diagram

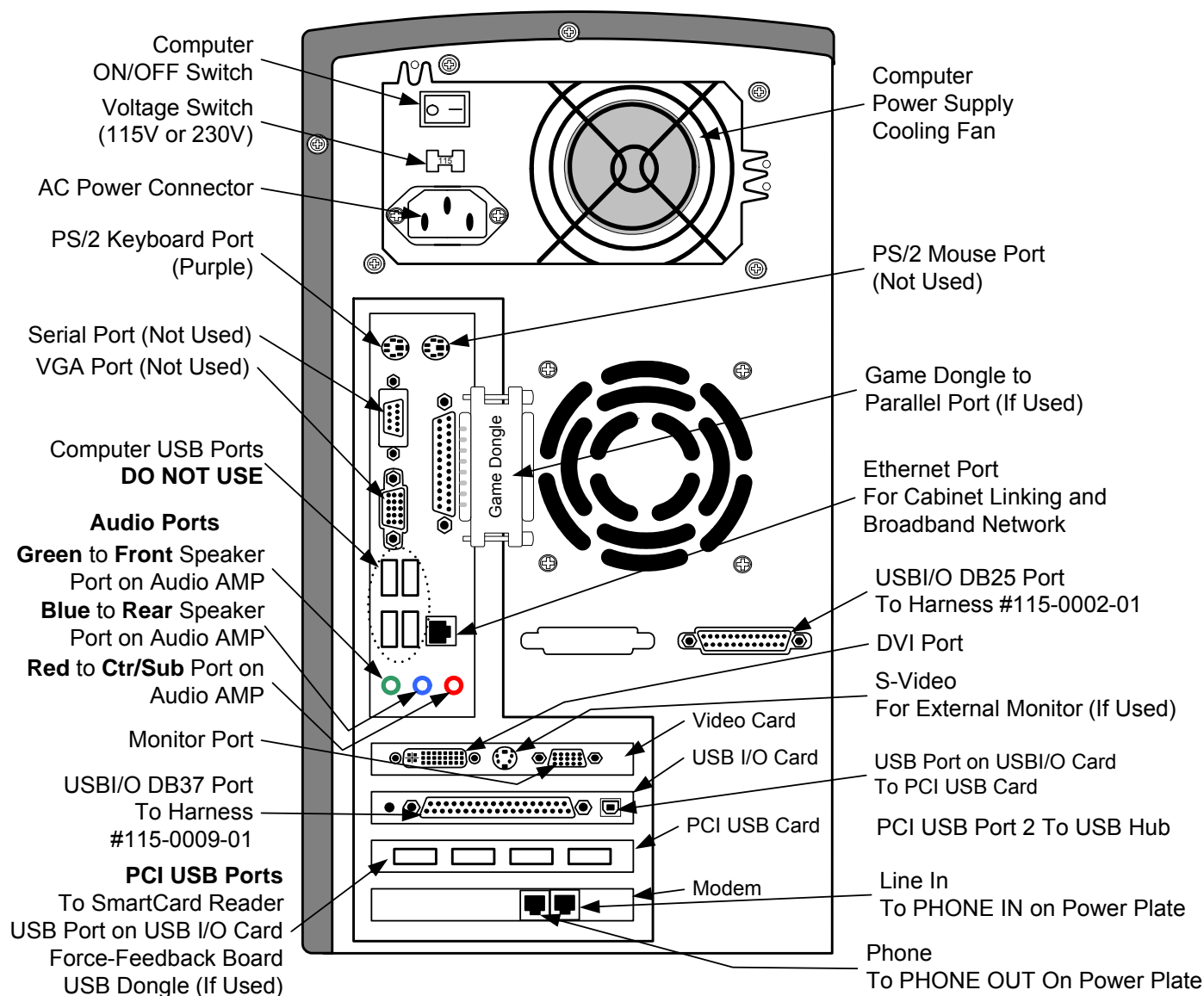


Figure 78. Computer Rear Panel Connections

Typical Dial-Up Network

Important: Only one device at a time can use a standard phone line. Make sure games that share a phone line call in at different times.

Do not connect a phone line to an Ethernet port or your phone system may malfunction.



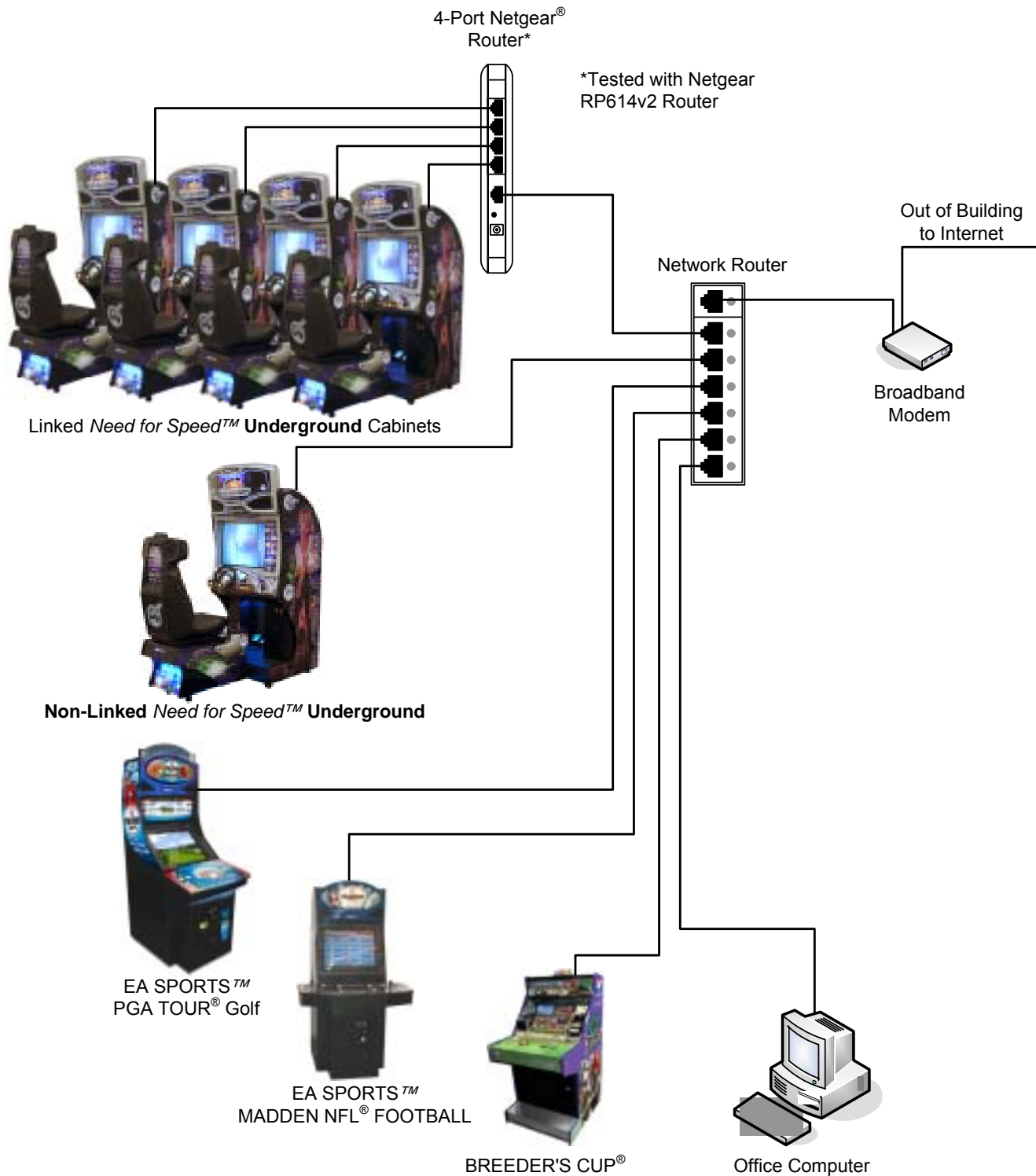
Note: Devices can be connected to splitters in **any combination**.

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040-0113-02

Figure 79. Setting up a Dial-up Game Network

Typical Broadband Network



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040-0113-01

Figure 80. Setting up a Broadband Game Network

Warranty Service

If at some point you require warranty service, contact your distributor. If the technical support staff determines that your game is defective, a Return Merchandise Authorization (RMA) number will be issued.

Warranty Information

LIMITED WARRANTY

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

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

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

- Purchaser believes that the Product is defective in material or workmanship and promptly notifies GLOBAL VR® in writing with an explanation of the claim;
- All claims for warranty service are made within the warranty period;
- Products are returned adequately packed and freight prepaid to GLOBAL VR®'s designated service center;
- GLOBAL VR®'s inspection or test of the Product verifies to GLOBAL VR®'s satisfaction that the alleged defect(s) existed and were not caused by accident, misuse, neglect, unauthorized or attempted repair or testing, unauthorized modification, incorrect installation, vandalism, failure to follow the maintenance schedule or procedures; or operation in out-of-specification environmental conditions.

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

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

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

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Technical Support

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 following background information to aid our technical support process:

- Cabinet Serial Number (found on the back of the cabinet). Write your serial number below for easy reference.

Cabinet Serial Number: _____

- 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 | For Online Cabinets: |
| • Game and OS version numbers
(From the Machine Information screen.) | • Cabinet ID
(From the Registration Options screen.) |
| • Date of latest install or upgrade | • Date of last successful sync
(From the Registration Options screen.) |
| • Any changes made to the system | |
| • For game-play issues, the game mode and
number of players | |

Service & Parts	Tournament Support
Hours: 7:00 AM–5:00 PM Pacific Time Monday–Friday	Hours: 8:30 AM–7:00 PM Pacific Time Monday–Friday
Phone: 408.597.3435	Phone: 408.597.3429
Fax: 408.597.3437	Fax: 408.597.3439
E-mail: techsupport@globalvr.com	E-mail: tournament@globalvr.com
Tournament Billing: 408.597-3400, and ask for Tournament Billing	

Find technical documents and service bulletins online at: <http://service.globalvr.com>

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