040-00001-00

BIG BUCK HUNTER Pro®

RAW THRILLS

27" Dedicated Video Game

Play Mechanix



OPERATOR'S MANUAL

- 1-Safety
- 2-Setup & Operation
- 3-Audits, Adjustments & Diagnostics
- 4-Maintenance, Wiring & Troubleshooting
- 5-Parts

LIFE LIKE VIOLENCE MILD

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For parts or service, contact your local distributor, or:

Betson Enterprises

303 Paterson Plank Road

Carlstadt, New Jersey 07072-2307



Main Phone: (201) 438-1300

Toll Free Phone: (800) 524-2343

Part Phone: (800) 828-2048

Safety Notes



Chapter 1. Safety

Safety instructions apply to operators and service personnel. Read these instructions before preparing the video game machine (VGM) for play. Other safety instructions appear throughout this manual.

▲ **WARNING: TRANSPORTING THE VIDEO GAME MACHINE (VGM).** The VGM contains glass and fragile electronic devices. During transport, use appropriate care. Avoid rough handling.

▲ **WARNING: DISCONNECT POWER.** Before servicing or adjusting the VGM, turn off the power and unplug the VGM. Servicing with the power switched on can damage components and void your warranty.

▲ **WARNING: GROUND GAMES.** Avoid electrical shock! Do not plug in the VGM until you have inspected and properly grounded it. Only plug into a grounded, three-wire outlet. Do not use a "cheater" plug. Do not cut off the ground pin on the line cord.

▲ **WARNING: AVOID ELECTRICAL SHOCKS.** This VGM does not use an isolation transformer. No isolation device separates internal cabinet AC and the external AC line.

▲ **WARNING: HANDLE FLOURESCENT TUBE AND CRT WITH CARE.** If you drop a fluorescent tube or CRT and it breaks, it will implode! Shattered glass can fly eight feet or more from the implosion.

▲ **WARNING: CHECK POWER SELECTOR, LAMP.** Notice the 115/230 VAC selector switch on the power supply. Set this switch for the correct line voltage at the installation site. Verify the fluorescent lamp rating. This rating must match the line voltage at the installation site.

▲ **WARNING: USE PROPER FUSE.** Avoid electrical shock! Replacement fuses must be of the same type as those they replace. Fuse voltage and current ratings must match ratings on the original fuse.

▲ **WARNING: ATTACH CONNECTORS PROPERLY.** Be sure all connectors mate properly. If connectors do not slip in easily, do not force them. Keyed connectors only connect one way. Check for correct orientation.

▲ **WARNING: USE EXTREME CARE WHEN HANDLING PC.** The PC contains sensitive components, such as a hard drive. Do not handle the PC roughly. Before servicing PC components, call your distributor. Ask about the PC warranty.

▲ **WARNING: HAZARD TO EPILEPTICS.** A small portion of the population has an epileptic condition that may cause seizures. Affected persons experience seizures while watching some television pictures or playing certain video games. People who have not had seizures may still have an undetected epileptic condition.

If anyone in your family has experienced epilepsy symptoms (seizures or loss of awareness), consult your physician before using video games.

While children play video games, a parent should observe. Be alert to the following symptoms: Dizziness, altered vision, eye or muscle twitching, involuntary movements, loss of awareness, disorientation, or convulsions. If you or your child experiences these symptoms, *discontinue use immediately* and consult your physician.

CAUTION

- Failure to properly operate this machine could result in malfunction or accident. Before operating your video game device, read this manual. Operate the machine according to instructions in this manual.
- Keep this manual available and ready for use.
- If the machine fails to function properly, immediately turn off the machine. Contact your local distributor. (Your warranty lasts 60 days from your purchase date.)

CAUTION

- For reasons such as performance, this product's specifications might change without notice.
- Federal patent, copyright and other intellectual property laws protect this VGM's content, devices and design.
- Without authorization, you may not reproduce this document or any of its contents.

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Chapter 2. Setup & Operation

Product Specifications

ELECTRICAL POWER

Domestic	120 VAC @ 60 Hz, 5 amps
International Users	230 VAC @ 50 Hz, 2.5 amps
Japan	100 VAC @ 50 Hz, 5 amps

TEMPERATURE
32° F to 100° F
(0° C to 38° C)

HUMIDITY
Must not exceed 95% relative humidity.

27-INCH MODEL, CABINET DIMENSIONS
Height = 76-3/16 inches (1.94 meters)
Depth = 29 inches (0.74 meters)
Width = 29-3/4 inches (0.76 meters)

27-INCH MODEL, CABINET WEIGHT
Weight = 535 lbs. (242.67 kg)



Inspection & Installation

σ **WARNING.** Use extreme care when moving or servicing the game cabinet. Read this manual before you plug in the game.

[ ] 1. Remove the VGM from its shipping crate.

[ ] 2. Place the VGM in a suitable play or service area.

[ ] 3. Make sure that the game cabinet is level. Adjust the leg levelers as necessary. Leveling the cabinet by adjusting leg levelers is a job for two people.

[ ] 4. Check the AC line cord for visible signs of damage. Pay particular attention to the plug and line cord insulation.

[ ] 5. Check for shipping damage to the following:

- Gun assembly: Left and right guns, gun holders, and cable
- Cabinet glass: Marquee and monitor
- Cabinet backdoor
- Cabinet coin door
- Cabinet and gun decals

[ ] 6. Remove the coin door key from the coin return chute.

[ ] 7. Open the top coin door. Locate the key for the backdoor and the cashbox.

[ ] 8. Secure the monitor cabinet to the gun cabinet. Use ¾-inch (20mm) hex bolts from the hardware kit.

[ ] 9. Replace the top cover to the monitor cabinet mating block.

[ ] 10. Plug the game line cord into an AC receptacle.

[ ] 11. On the back of the game cabinet, locate the game AC power switch. The switch is on the bottom left side.

[ ] 12. Turn on the switch. The game's Attract Mode begins after the game finishes loading. Loading takes about a minute.

[ ] 13. If you are unfamiliar with the VGM's game adjustment system, read Chapter 3 of this manual. Then return to this instruction. Otherwise, enter the Main Menu.

[ ] 14. Select System Tests Menu.

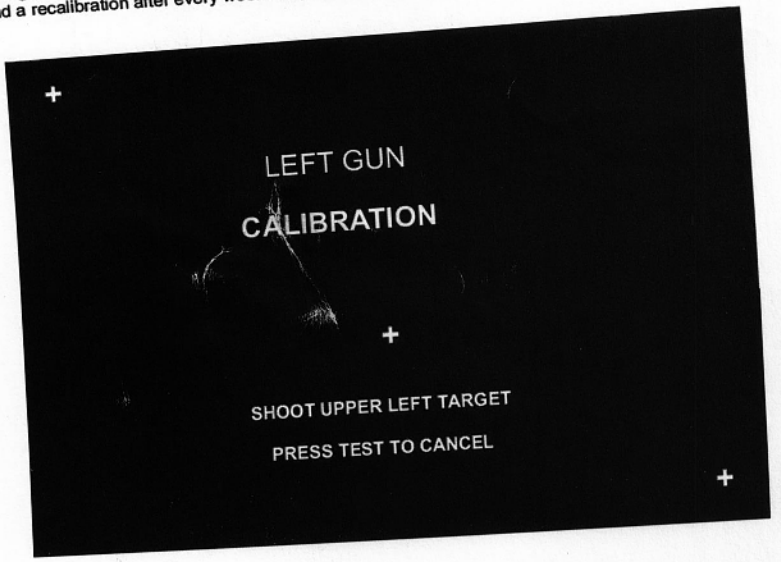
[ ] 15. Select Gun Calibration.

[ ] 16. Calibrate the guns. (For your convenience, the next page is a repeat of the gun calibration procedure.)

[ ] 17. Verify proper VGM operation by running the Switch Test.

Gun Calibration Menu

From the Main Menu, select Gun Calibration. The Gun Calibration Menu opens. As part of VGM setup, you must calibrate the guns. Periodic gun calibration also allows you to optimize and verify gun performance. We recommend a recalibration after every week of operation. Properly calibrated guns improve your collections.



How To Calibrate

NOTICE. During gun calibration, the gun muzzle must be three feet from the monitor. You must calibrate each gun separately. Only the left START button accepts left gun calibration. Only the right START button accepts right gun calibration.

A "+" sign appears in menu's top-left corner. Aim the gun at the "+" sign and shoot. Now, a second "+" sign appears in the menu's bottom-right corner. Again, aim the gun at the "+"sign and shoot. The third "+" sign indicates the precision of your other two settings. The third "+" sign appears in the center of the menu. Shoot at this "+" sign and watch where your bullet lands. You can shoot at this "+" sign several times. If your bullets seem to land too far off the mark, pump the gun. Then repeat the calibration procedure. You can also cancel the calibration by pressing TEST. The TEST button is on the bracket inside the coin door.

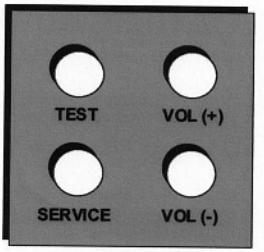
When you're satisfied with your calibration, press the START button for the gun you've fired. For example, to accept calibration for the left gun, press the left START button. With the second gun, repeat the calibration procedure.

Setup Notes

Chapter 3. Adjustments, Audits & Diagnostics

Diagnostic Menu System

Locate the *Service Button Panel.* It mounts inside the coin door area on top of the cash box vault. To access the Diagnostic Menu, press the TEST button.



Menu Navigation

Button	Action
TEST	Enter operator screen
RIGHT START or TEST	Enter or Select item
GUN TRIGGER or LEFT START or VOL DN	Scroll down
GUN PUMP or VOL UP	Scroll up
TEST or EXIT (screen options)	Exit to previous menu

THE EASIEST WAY TO NAVIGATE through menus is to use the guns and START buttons. To move downward through menu rows, click the gun trigger. To move upward through menu rows, snap the gun pump lever. The active row highlights. To select a menu row, click the RIGHT START button.

ON ONE-COLUMN MENUS, clicking RIGHT START usually opens a new menu. To return to the previous menu, highlight EXIT. Then click RIGHT START. When you exit from the Main Menu, the VGM returns to Game Mode.

ON TWO-COLUMN MENUS, the RIGHT START button also allows you to change columns. The right column contains settings. Clicking RIGHT START once moves the highlight to the right column. Now use the gun to cycle through values. To save your change, click RIGHT START.

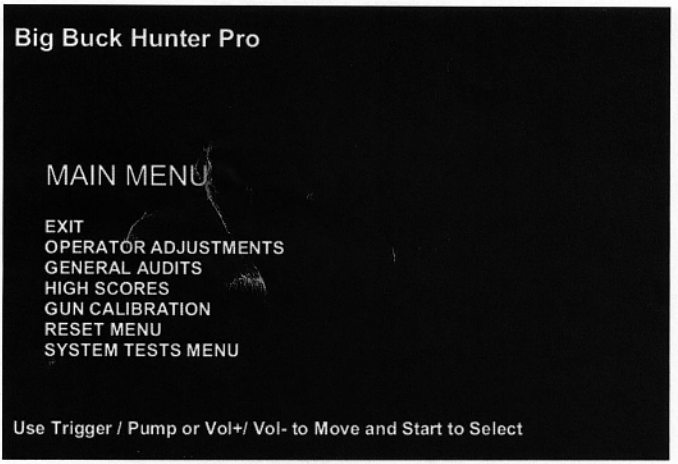
GUN CALIBRATION requires you to use LEFT START to accept left gun calibration. Also in gun calibration, use RIGHT START to accept right gun calibration. Exit rules for some other menus vary. Follow screen directions.

IF THE GUNS FAIL, you can still access the menu system. Use LEFT START or VOL DN instead of TRIGGER. Use VOL UP instead of PUMP. You'll find the VOL buttons inside the coin door, on a switch bracket.

✎ **NOTICE.** This chapter includes special page headings. The headings indicate the menu you're in, plus the one you just came from. The headings also show how many menus you've drilled down. This way, you know which parent menu associates with the submenu you're looking at.

Main Menu

When you press the TEST button, the Main Menu appears. The Main Menu presents a number of selections that you can choose.



Procedure

A BAR APPEARS ON SCREEN and highlights your selection. Use TRIGGER to move the highlight bar up. Use PUMP to move the bar down. To enter your selection, press either START button. After you press START, the screen displays the menu that corresponds to your selection.

THE IDEA IS TO "DRILL DOWN" to a terminal menu. At that menu, you make an adjustment, read audit totals or test part of the VGM.

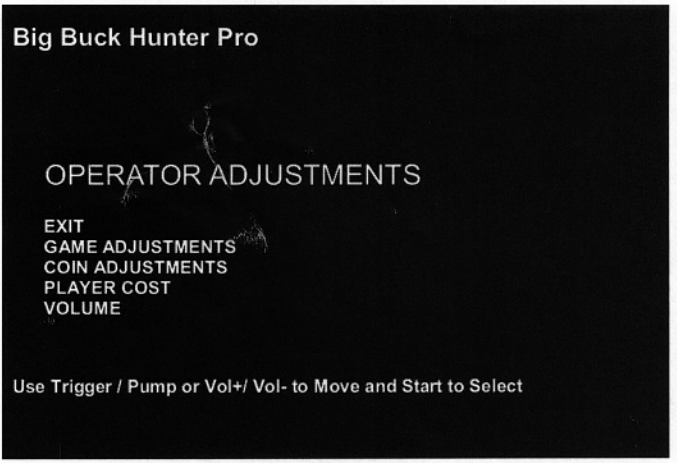
HOW DO YOU KNOW WHERE YOU ARE? How do you know where you've come from? Use the Menu System Map on the next page. This map covers all the submenus below the Main Menu. Also, don't forget the tables at the top of each menu page. These tables indicate each menu's path back to the Main Menu.

Menu System Map

OPERATOR ADJUSTMENTS	GUN CALIBRATION
Game Adjustments Violence Big Buck Girls Skill Level Initials Type Coin Adjustments Freeplay Coin 1 Value Coin 2 Value DBV Value Maximum Credits Player Cost Volume	**[No submenus]**
GENERAL AUDITS	**RESET MENU**
Game Audits System Audits Game Purchase Audits Adventure Purchase Audits Bonus Only Audits Coin Audits	Reset Game Audits Reset Adventure Audits Reset Credits Reset Coin Counters Reset Adjustments Reset High Scores Factory Reset
HIGH SCORES	**SYSTEM TESTS MENU**
Whitetail Adventure Elk Adventure Antelope Adventure Big Horn Sheep Adventure Moose Adventure Whitetail Shootout Elk Shootout Antelope Shootout Sheep Shootout Moose Shootout Perfect Streak Perfect Sites	Version List Switch Test Screen Tests Color Adjustment Screen Adjustment Color Screens Sound Test File Test DIPswitch Settings Start Button Lamps Watchdog Test

Operator Adjustments Menu

From the Main Menu, select Operator Adjustments. The Operator Adjustments Menu opens. From here, you can select gameplay, coinage or sound adjustments. Then go to the selected menu and tailor the game to your installation.



Procedure

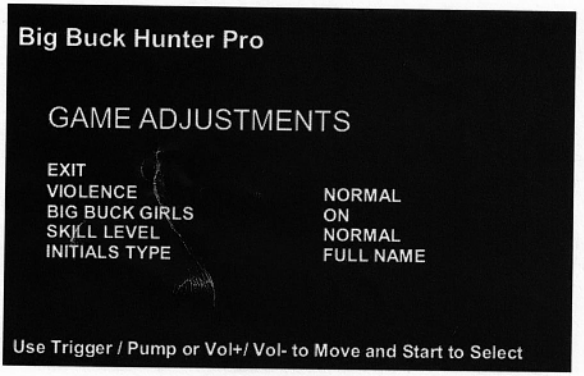
- Select an option with the highlight bar.
- The TRIGGER moves the highlight bar down the left column.
- The PUMP moves the highlight bar up the left column.
- On one-column menus, select an item by pressing START.
- On two-column menus, you can change settings from the right column. Switch to the right column by pressing START.
- On menus with settings, change a setting with the TRIGGER or PUMP.
- To accept the change, press START. The left column becomes active again.

Adjustments Can Improve Collections

Adjustments allow you to customize the gameplay. Each variable on an adjustment menu changes an aspect of gameplay or game appearance. Optimizing these settings should result in ongoing player interest and game earnings. How do you know what works best? You monitor the effects of your adjustments. Compare audit information before and after you make changes. Then you know which changes increase or sustain your earnings.

Game Adjustments Menu

From the Main Menu, select Operator Adjustments. The Game Adjustments Menu opens. From here, you can select several gameplay aspects. You can also make adjustments from this screen.

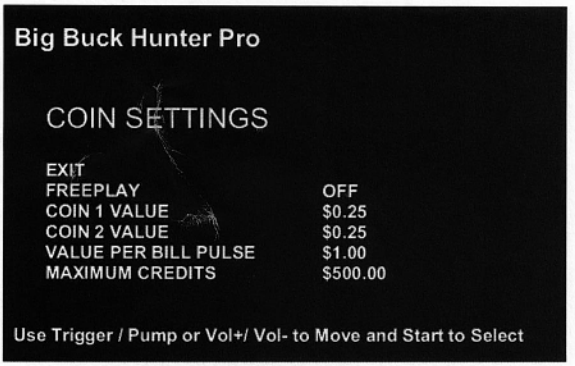


Settings, Defaults & Choices

Setting Name	Description	Default	Choices
Violence	Changes visual effect of hit on animal. • NORMAL. Some blood appears on shot animals. Red star appears on kills. • NO BLOOD. No blood appears on shot animal. In No Blood Mode, small blue star replaces red star on kills.	Normal	No Blood / Normal
Big Buck Girls	Normally, Big Buck Girls appear in Attract Mode and Gameplay Mode. This setting allows operator to permit or eliminate images of Big Buck Girls.	On	• On: Big Buck Girls appear. • Off: No Big Buck Girls appear.
Skill Level	Adjusts level of game difficulty by changing way shotgun reloads after each trigger pull. • EASY. After each trigger pull, shotgun reloads itself without pumping. To fire another shot, pull trigger again. • NORMAL. After each trigger pull, reload by pumping.	Normal	Normal / Easy
Initials Type	Adjusts how player can enter name. • FULL NAME. Players can enter their full names on two screens. First name screen allows up to 13 characters. Last name screen allows up to 15 characters. • INITIALS. Players can enter up to three characters.	Full Name	Full Name / Initials

Coin Settings Menu

From the Operator Adjustments Menu, select Coin Adjustments. The Coin Settings Menu opens. From here, you can select and change coin slot and DBV pricing. These settings *don't* set the game price. Instead, these settings specify the coin type that a coin slot accepts. The smallest acceptable coin is 25 cents. In the US, 25 cents is the typical setting for both coin values. The DBV value is also a multiple of 25 cents. The typical US DBV value is $1.



Settings, Defaults & Choices

Setting Name	Default	Choices
Freeplay	Off	On / Off
Coin 1 Value	$0.25	$0.25 - $63.75 in 25¢ increments
Coin 2 Value	$0.25	$0.25 - $63.75 in 25¢ increments
DBV Value	$1.00	$1, $5, $10 or $20
Maximum Credits	$500.00	$125 - $500

FREEPLAY MODE. This mode requires no coins. Players can start a game just by pressing START. Use the Freeplay Mode for promotions or for noncommercial applications. Freeplay Mode is also very useful for testing the machine. Select Freeplay with the TRIGGER and PUMP. Then save your setting by pressing START.

COIN 1 VALUE & COIN 2 VALUE allow you to set coin slot pricing. With the TRIGGER and PUMP, select Coin 1 Value or Coin 2 Value. The highlight bar indicates option selection. TRIGGER moves the highlight bar down the left column. PUMP moves the highlight bar up the left column. Enter your setting by pressing START. Now, the highlight bar moves to the right column. Here, use TRIGGER and PUMP to make changes. Save your setting by pressing START.

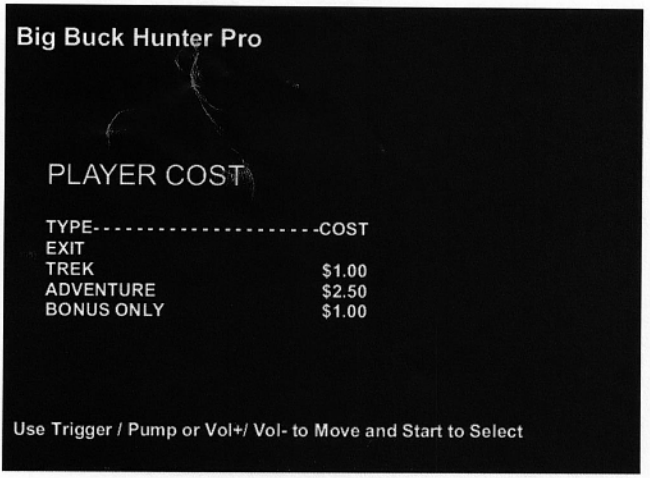
VALUE PER BILL PULSE allows you to set DBV pricing. The bill validator (DBV) translates bills into electronic pulses. This setting determines one bill's value in pulses. The number of pulses is always an integer. The smallest acceptable coin value equals one pulse. In a VGM with US coin mechanisms, one pulse is worth a quarter. Typically, the DBV value is $1.00, or equal to four coins. In that case, the DBV pulses the coin line four times.

MAXIMUM CREDITS is the maximum number of unplayed credits that the VGM allows.

Player Cost Menu

From the Operator Adjustments Menu, select Player Cost. The Player Cost Menu opens. This screen indicates the costs for various levels of play:

- A trek allows the player to hunt at five sites.
- An adventure is three treks.
- A bonus round allows an additional hunting opportunity.

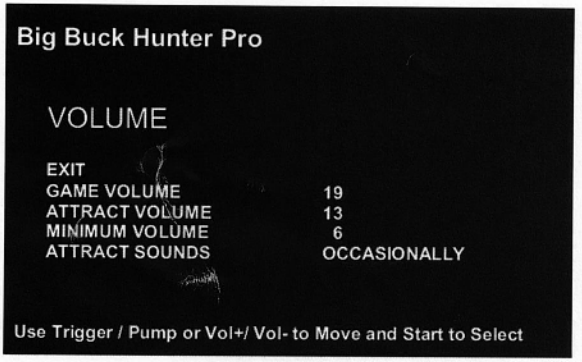


Settings, Defaults & Choices

Setting Name	Default	Choices
Trek	$1.00	$0.25 - $63.75 in 25¢ increments
Adventure	$2.50	$0.25 - $63.75 in 25¢ increments
Bonus Only	$1.00	$0.25 - $63.75 in 25¢ increments

Volume Menu

From the Operator Adjustments Menu, select Volume. The Volume Menu opens. Use this menu to set sound volume levels for game features.



Settings, Defaults & Choices

Setting Name	Default	Choices
Game Volume	18	0 - 31
Attract Volume	13	0 - 31
Minimum Volume	6	0 - 31
Attract Sounds	Occasionally	Off / Occasionally / Always

HOW TO MAKE SETTINGS. Don't look for the volume pot! *Big Buck Hunter® Pro* uses digital volume settings, rather than analog ones. Now, you can separately adjust the volume of Gameplay Mode and Attract Mode. You can make your volume adjustments from the screen. To select a setting from the left column, use either gun's TRIGGER or PUMP. Then switch to the right column by pressing START. Locate the value that you want by using TRIGGER and PUMP. Then save this value by pressing START.

GAME VOLUME allows you to change game sound volume. You can also reduce the volume to zero. The Game Volume setting only affects sound levels during the game.

ATTRACT VOLUME allows you to change Attract Mode sound volume. Attract Mode is the mode of operation between games. This mode advertises the VGM to prospective players.

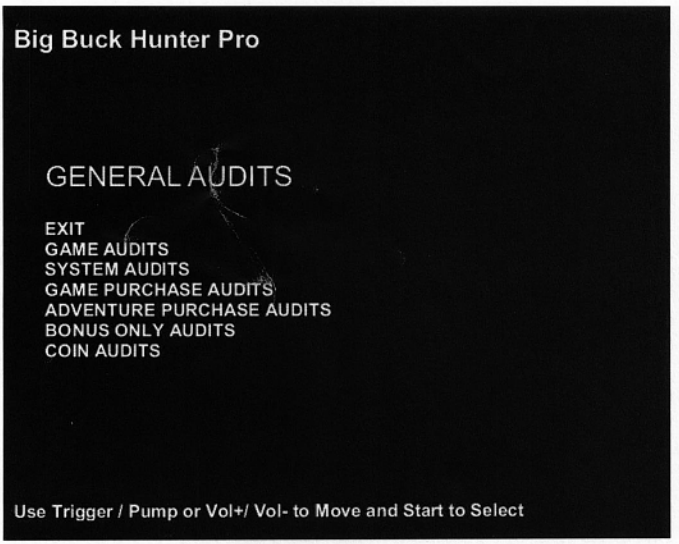
MINIMUM VOLUME is the lowest that you can set any of the other volume settings.

ATTRACT SOUNDS allows you to change how often attract sounds come on. Usually, the location determines the appropriate interval between Attract Mode Sounds. Frequent sounds may be more appropriate to an arcade than to a lobby location.

NOTICE. During gameplay, you can adjust game volume with the VOL+ and VOL- buttons. You'll find them inside the coin door. These buttons also allow you to adjust Attract Mode volume during Attract Mode.

General Audits Menu

From the Main Menu, select General Audits. The General Audits Menu opens. This is the opening screen for the VGM's bookkeeping totals. From here, you can select an audit and go to that audit's menu.

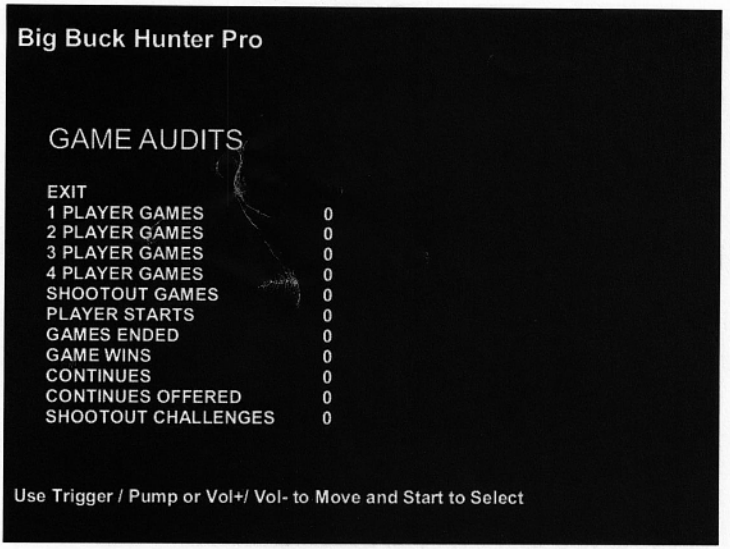


Applications for General Audits

- Use game audit screens to assess game performance.
- Use audit data to determine options such as game difficulty and the free game award.
- Use audits to help you to maximize game earnings.
- Use audit information to help you to find detect intermittent problems.

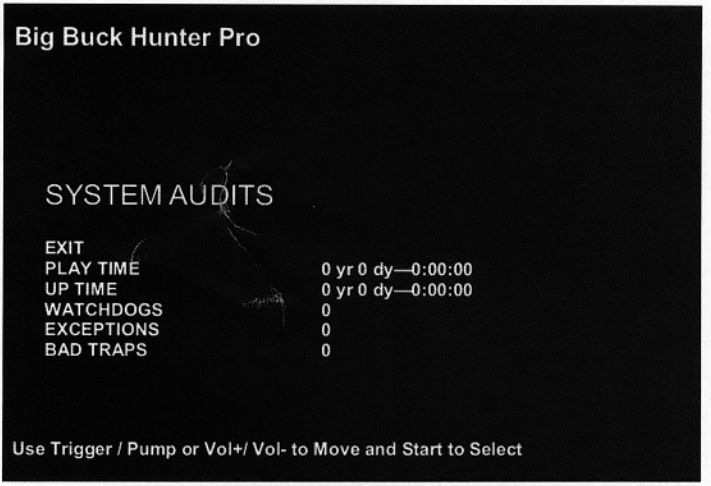
Game Audits Menu

From the General Audits Menu, select Game Audits. The Game Audits Submenu opens.



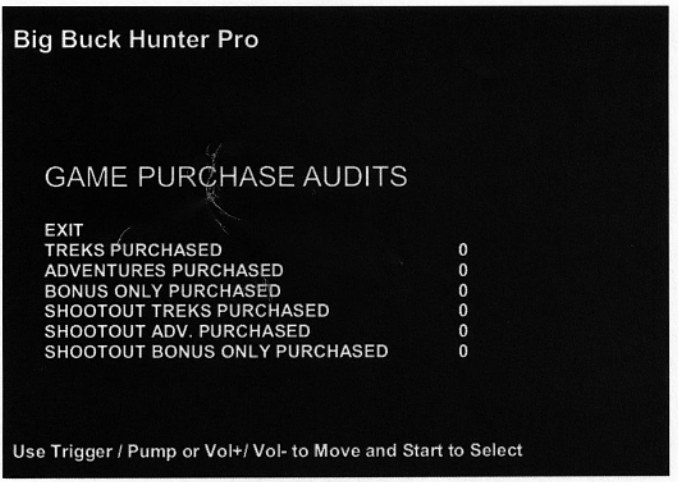
System Audits Menu

From the General Audits Menu, select System Audits. The Game Audits Submenu opens.



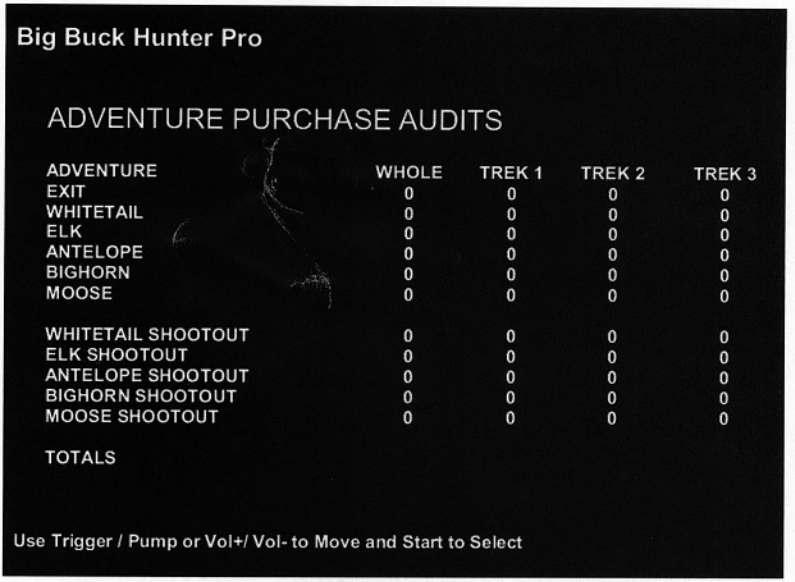
Game Purchase Audits Menu

From the General Audits Menu, select Game Purchase Audits. The Game Purchase Audits Menu opens.



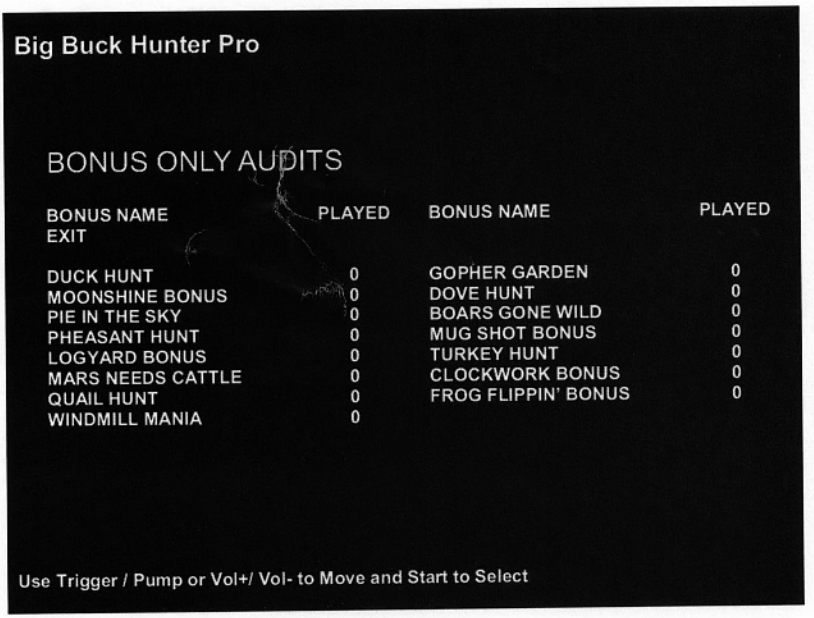
Adventure Purchase Audits Menu

From the General Audits Menu, select Adventure Purchase Audits. The Adventure Purchase Audits Menu opens.



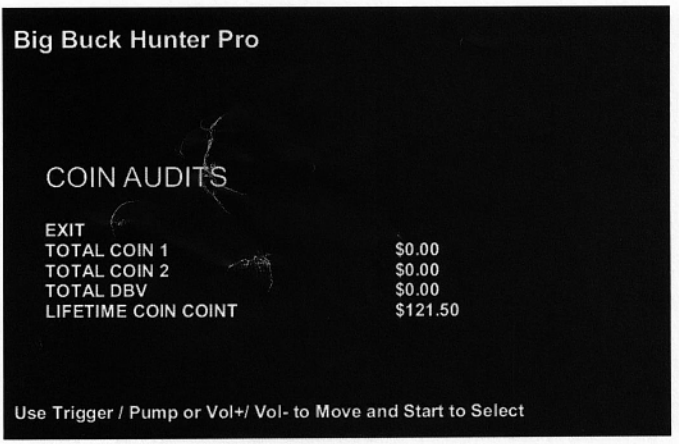
Bonus Only Audits Menu

From the General Audits Menu, select Bonus Only Audits. The Bonus Only Audits Menu opens.



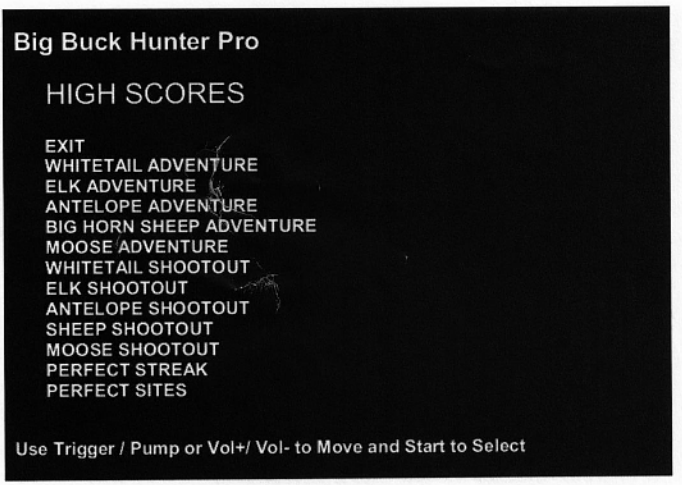
Coin Audits Menu

From the General Audits Menu, select Coin Audits. The Coin Audits Menu opens.



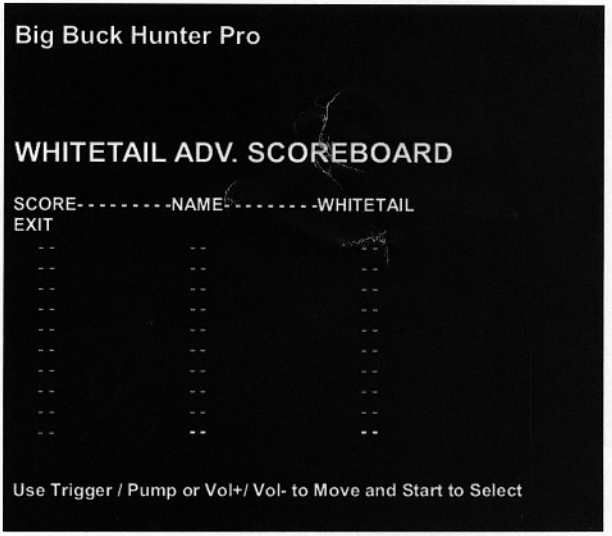
High Scores Menu

From the Main Menu, select High Scores. The High Scores Menu opens. From this menu, you can view high scores from each type of Big Buck Hunter® Pro game.



Whitetail Adventure Scoreboard

From the High Scores Menu, Whitetail Adv Scoreboard. The Whitetail Adv Menu opens. From this menu, you can view high scores from each type of Big Buck Hunter® Pro game.



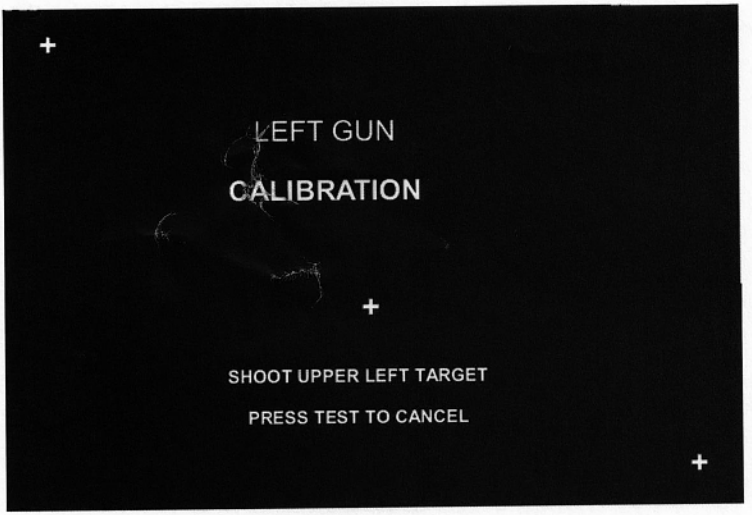
Other Scoreboards

You can access eleven more other scoreboards from the High Scores Menu...

- Elk Adventure Scoreboard
- Antelope Adventure Scoreboard
- Big Horn Sheep Adventure Scoreboard
- Moose Adventure Scoreboard
- Whitetail Shootout Scoreboard
- Elk Shootout Scoreboard
- Antelope Shootout Scoreboard
- Sheep Shootout Scoreboard
- Moose Shootout Scoreboard
- Perfect Streak Scoreboard
- Perfect Site Scoreboard

Gun Calibration Menu

From the Main Menu, select Gun Calibration. The Gun Calibration Menu opens. As part of VGM setup, you must calibrate the guns. Periodic gun calibration also allows you to optimize and verify gun performance. We recommend a recalibration after every week of operation. Properly calibrated guns improve your collections.



How To Calibrate

NOTICE. During gun calibration, the gun muzzle must be three feet from the monitor. You must calibrate each gun separately. Only the left START button accepts left gun calibration. Only the right START button accepts right gun calibration.

A "+" sign appears in menu's top-left corner. Aim the gun at the "+" sign and shoot. Now, a second "+" sign appears in the menu's bottom-right corner. Again, aim the gun at the "+"sign and shoot. The third "+" sign indicates the precision of your other two settings. The third "+" sign appears in the center of the menu. Shoot at this "+" sign and watch where your bullet lands. You can shoot at this "+" sign several times. If your bullets seem to land too far off the mark, pump the gun. Then repeat the calibration procedure. You can also cancel the calibration by pressing TEST. The TEST button is on the bracket inside the coin door.

When you're satisfied with your calibration, press the START button for the gun you've fired. For example, to accept calibration for the left gun, press the left START button. With the second gun, repeat the calibration procedure.

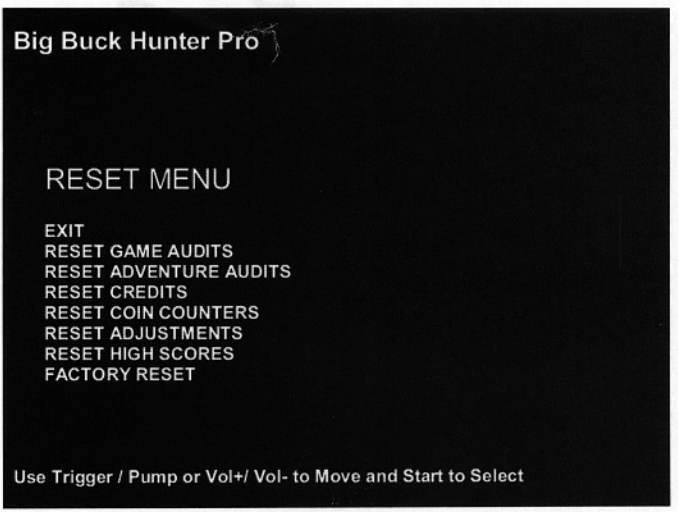
Reset Menu

From the Main Menu, select PM Net. The PM Net Menu opens. This menu helps you to find which aspect of the VGM that you want to reset:

- Audits
- Credits
- Counters
- Adjustments
- Scores
- All of the above

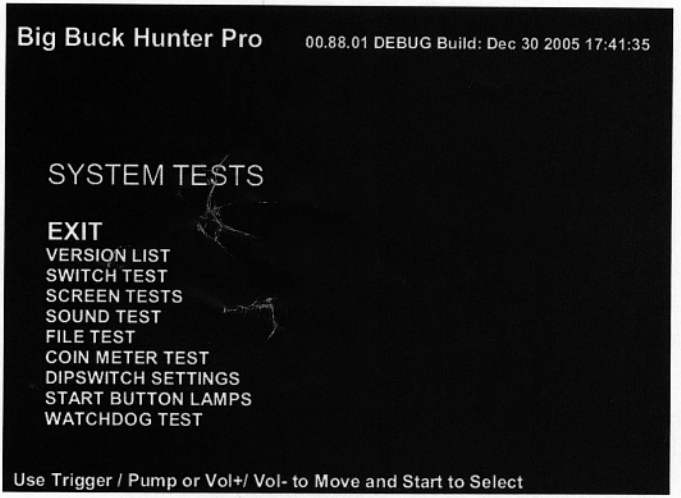
Factory Reset

Maybe you just want to reset everything. Then choose Factory Reset. Use TRIGGER and PUMP to select Factory Restore. Then enter your setting by pressing START. Factory Reset causes game adjustments to revert back to the settings that the manufacturer recommends. The reset also clears audit data. After the reset, you must recalibrate the gun.



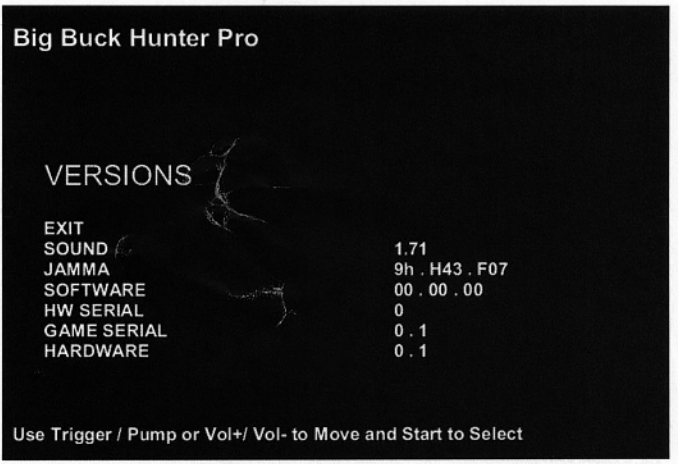
System Tests Menu

From the Main Menu, select System Tests. The System Tests Menu opens. From this menu, select menus that verify your system version and check peripherals.



Versions Menu

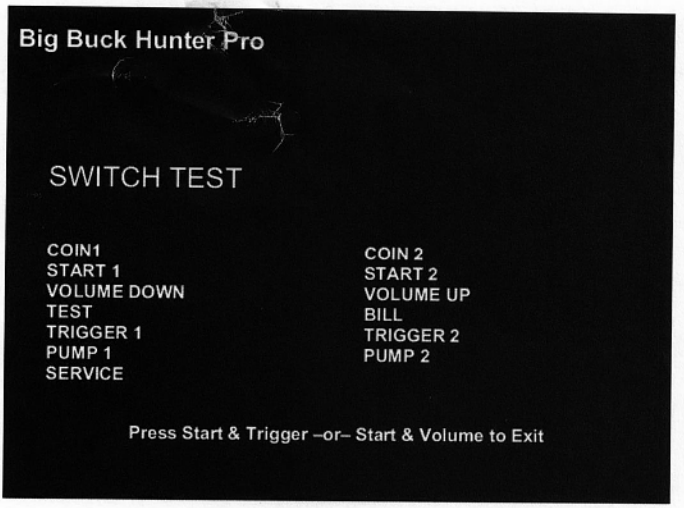
From the System Tests Menu, select Version List. The Versions Menu opens. Use this menu to check your VGM's hardware and software versions.



Switch Test Menu

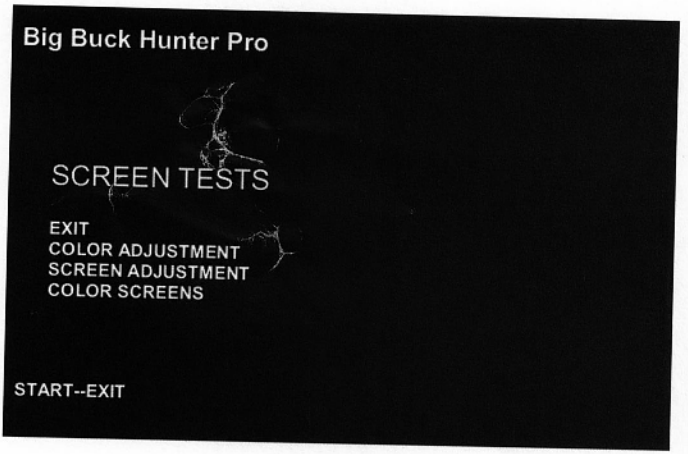
From the System Tests Menu, select Switch Test. The Switch Test Menu opens. Use this menu to check input switch performance. The test screen highlights each switch that you activate. The VGM also sounds a "switch active" alert.

NOTICE: EXIT PROCEDURE. The Switch Test Menu uses a unique exit procedure. Due to the ongoing diagnostic routine, the procedure has to be different. The menu checks all the switches that you normally use for navigation. To exit, simultaneously press the either START button and either gun trigger. Exiting returns you to the Main Menu.



Monitor Test Menu

From the System Tests Menu, select Screen Tests. The Screen Tests Menu opens. To perform verify VGM color performance and adjust the monitor, select Color Adjustment.



Color Adjustment Menu

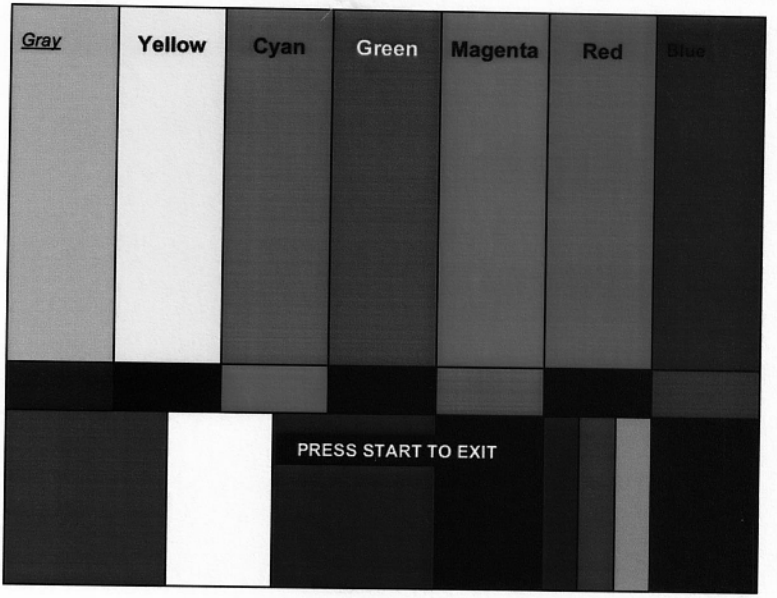
From the Monitor Test Menu, select Color Adjustment. The Color Adjustment Menu opens. To exit, press START.

Color Adjustment isn't really a menu. Actually, it's a special, color bars screen. In the monochrome illustration below, we label the colors that you'll see. These labels don't appear on the screen.

Uses for the Color Adjustment Menu

Check the color bars for missing colors. Missing colors can be cause for adjustments. On the other hand, missing colors might indicate serious trouble. The monitor isn't the only cause for missing colors. You might have a bad video RAM in your VGM computer. Inside the monitor, a bad gun or bad gun drive transistor could be the culprit. Here are some other uses for the color bars...

- Peak the brightness and black level
- Balance the red, green and blue drives
- Check purity problems (color contamination)
- Adjust convergence (particularly static convergence)
- Compensate for barrel or pincushion distortion
- Adjust size controls
- Check for plumb lines (straight yoke)
- Test for video noise sources (bad cables, etc.)



Screen Adjustment Menu

From the Monitor Test Menu, select Screen Adjustment. The Screen Adjustment Menu opens. This is a crosshatch screen.

WIDTH & HEIGHT. The crosshatch grid helps you to adjust the monitor height and width controls. Adjust them until the grid fills the screen. Keep all the lines visible, though. If part of the grid goes off the screen, then the game image will, too. To exit from this screen, press START.

STATIC CONVERGENCE & PURITY. A crosshatch pattern is also useful when you're converging the beams. All the lines must be white. Otherwise, you have convergence or purity problem. Slight color tinges at the extreme edges of the screen are okay, though. Check your monitor manual for adjustment instructions.

BRIGHTNESS. Also make sure that the bars are a fairly strong white. If they aren't, then you should adjust the raster brightness or pedestal control. Also adjust this control if you find retrace lines across the grid.

FOCUS. Bars with fuzzy edges indicate a focus problem. Adjust the focus control for best sharpness.



Color Screens

From the Monitor Test Menu, select Color Screens. Color screens are solid, one-color images. You can cycle through screens with the START button. Pressing start once more cause you to exit. You'll find five screens...

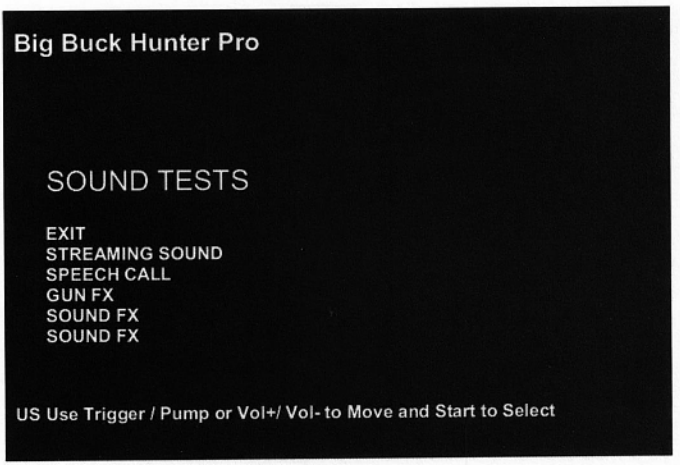
- Black
- White
- Red
- Green
- Blue

The color screens help you to adjust color drive controls for proper intensity. You can use the red, blue and green screens to test for a dead picture tube gun. When setting the pedestal (black level) control, use the black screen. Put up the white screen for brightness adjustments and to help you balance color output.

Sound Tests Menu

From the System Tests Menu, select Sound Test. The Sound Tests Menu opens. Use this menu to check sound volume and quality.

Missing sounds indicate digital flaws. Distorted sounds suggest analog flaws. The lack of sound implies disconnected or bad cables, speakers or amplifiers. Of course, for a sound test to be valid, the rest of the game must operate.



- **STREAMING SOUND is a sample of the game music.**
- **SPEECH CALL includes talking commentary.**
- **GUN FX is the shotgun blast.**
- **SOUND FX is a whistle.**
- **SOUND FX (2ND ONE) is a guitar riff.**

Main Menu
System Tests Menu
File Test Menu

File Test Menu

From the System Tests Menu, select File Test. The File Test Menu opens. This menu runs a checksum test of system memory. Afterward, an onscreen message informs you of file status. If the memory is good, you can proceed with the next test. Otherwise, proceed to *Chapter 4, Maintenance, Wiring & Troubleshooting*. Run a hard drive recovery.

◉ CAUTION
If your VGM fails the file test, *don't proceed* with system tests. Corrupt files (detected "errors") affect gameplay and the results of the other tests. If file errors result from failing power circuits, continued operation might cause further damage.

Main Menu
System Tests Menu
Coin Meter Test

Coin Meter Test

From the System Tests Menu, select Coin Meter Test. No menu opens. For this test, the System Tests Menu is the bottom-level menu. Watch your VGM's mechanical coin meter. You'll find this meter on the switch bracket behind the coin door. When you select Coin Meter Test, the meter should increment by one count. If it does, then the meter is okay. If the meter doesn't click, then it probably isn't receiving a pulse from the VGM. Troubleshoot the problem. If the meter clicks, but doesn't increment, replace the meter.

Main Menu
System Tests Menu
DIP Switch Settings Menu

DIP Switch Settings Menu

From the System Tests Menu, select DIP Switch Settings. The DIP Switch Settings Menu opens. Use this menu to check settings of the I/O Board DIP switches. For normal operation, all eight switches must be off.

Main Menu
System Tests Menu
Start Button Lamps Menu

Start Button Lamps Menu

From the System Tests Menu, select Start Button Lamps. The Start Button Lamps Menu opens. Use this menu to check for burned out START button LEDs. The test blinks the LEDs. Replace failed parts.

Main Menu
System Tests Menu
Watchdog Test Menu

Watchdog Tests Menu

From the System Tests Menu, select Watchdog Test. The Watchdog Test Menu opens. Use this menu to test the Watchdog circuit. This circuit protects the VGM against screen freezes (loops). After a countdown, the Watchdog Test resets the VGM. To exit before the reset, use PUMP, TRIGGER, START or either VOLUME button. If the test succeeds, the game resets normally. If the test fails, the reset process loops or ends abnormally. If you encounter a failure mode, troubleshoot the VGM or call for service.

Adjustments, Audits & Diagnostics Notes

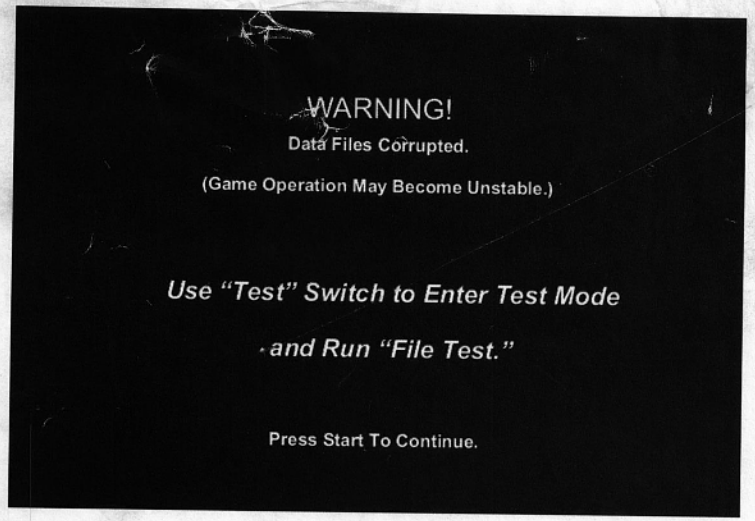
Chapter 4. Maintenance, Wiring & Troubleshooting

Hard Drive Recovery

NOTICE. Big Buck Hunter® Pro ships with a recovery DVD. Hard drives occasionally fail. If your disk fails, restore hard drive data by following this procedure. Have the recovery DVD ready. Avoid rough handling of the PC or DVD. Check the Troubleshooting Guide in this document.

HERE ARE SOME SYMPTOMS of a bad hard drive:

- Hard Drive Test reports "bad" or "missing" files.
- The game fails to finish loading.
- After you cycle power or reset the VGM, the VGM reports a boot error.
- The VGM prompts you to insert a boot DVD.
- Erratic Game Mode or Attract Mode.



CORRUPT FILE SCREEN. If you see the above screen, your VGM computer has corrupt files. To determine which files are corrupt, you can run the File Test. (See *Chapter 3, Audits, Adjustments & Diagnostics.)* The File Test can't repair corrupt files, though. The only solution is to perform a system recovery.

Hard Drive Recovery Procedure

[ ] 1. From the back of the VGM, check the I/O board. The I/O Board must connect to the serial cable from the PC.
[ ] 2. Verify that the I/O Board has power.
[ ] 3. Find the I/O Board DIP switch bank. The bank is the size of a 16-pin, DIP IC. The bank has eight switches.
[ ] 4. Disable the watchdog timer by setting DIP Switch 8 to the on position. You can use a pen or pencil tip to toggle the switch. A jeweler's screwdriver also makes a good DIP switch setting tool.
[ ] 5. To access the PC, open the coin door.
[ ] 6. Open the DVD tray by pressing the button on the DVD drive.
[ ] 7. Insert the recovery disk into the tray.

[ ] 8. Close the DVD tray by pressing the button on the DVD drive.
[ ] 9. Turn off the PC by pressing the power button once.
[ ] 10. Turn on the PC by pressing the power button once. *The disk recovery process begins automatically.* Recovery may take 30 to 40 minutes.
[ ] 11. Look for a message at the bottom of the screen. When the recovery is over, the message prompts you to remove your disk. Open the DVD tray by pressing the DVD drive button. Remove the recovery disk. Store it safely.
[ ] 12. Turn DIP Switch 8 back to the off position.
[ ] 13. Turn off the PC by pressing the power button once.
[ ] 14. Turn on the PC by pressing the power button once.

> **CAUTION.** During the following process, don't interrupt power or reset the game!

[ ] 15. The VGM should initiate a normal startup sequence. In that case, the game initializes and loads. The process takes about five minutes. When the game enters Attract Mode, the hard drive recovery process is complete. If the process seems abnormal, troubleshoot the VGM or call for service.
[ ] 16. Proceed with gun calibration and make necessary game adjustments. See *Chapter 3, Diagnostics, Audits & Adjustments* in this manual.

BIOS Power Management Setting

> **NOTICE.** Big Buck Hunter® Pro ships with the correct BIOS settings. Making BIOS changes besides what we describe below may adversely affect game functions.

This BIOS setting allows the PC to automatically power up. With the setting enabled, the PC can power up when it detects AC power. Automatic power-up eliminates the need to manually turn on the PC after power disruption.

BIOS Procedure

[ ] 1. Turn the game off.

[ ] 2. Connect a PS/2 or serial keyboard to the PC.

[ ] 3. Hold down the DELETE key. While holding, turn on the PC. The BIOS menu screen appears. Make the adjustments on this table...

Adjustment	Set Adjustment to...
• Standard CMOS Features > Drive A	[none]
• Standard CMOS Features > HALT ON	[No Errors]
• Advanced BIOS Features > Boot Sequence	1st) CDROM; 2nd) Hard Disk
• Advanced BIOS Features > APIC Mode	Disabled
• Advanced Chipset Features > Frame Buffer	[16M]
• Advanced Chipset Features > PMU > CPU Frequency	[200.0]
• Power Management Setup > PWRON After PWR-Fail	[On]

[ ] 4. To save and exit, follow the instructions on the BIOS screen. The PC resets and loads the game.

Monitor Adjustments

▲ WARNING: Extremely high voltage is present in the monitor. The monitor contains no user serviceable parts. Do not attempt to service the monitor.

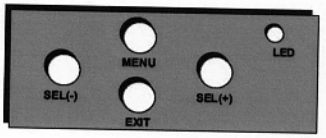
Big Buck Hunter® Pro uses gun optic boards. Instead of shooting, these boards detect monitor pixels. Reliable gun operation depends on display quality.

Familiarize yourself with monitor settings. Settings differ slightly between manufacturers and even between displays of the same manufacturer. Display adjustments can compensate to some extent for factors such display aging. The information below serves as a reference. In many cases, settings may not be practical.

Setting	Adjustment
Brightness	**Function:** Background brightness or black level. **Set Level:** Black background should appear dark and not gray.
Contrast	**Function:** Definition or sharpness of character against background. **Set Level:** Outer edges of character or text should not distort.
H-Position	**Function:** Horizontal position. Side-to-side centering. **Set Level:** From side to side, picture should center properly.
H-Size	**Function:** Horizontal Size. Side-to-side dimension. **Set Level:** From side to side, picture should fill CRT frame.
V-Position	**Function:** Vertical Position. Up and down centering. **Set Level:** Picture should center in up and down direction.
V-Size	**Function:** Vertical Size. Up and down dimension. **Set Level:** From top to bottom, picture should fill CRT frame.
Pin Cushion	**Function:** Degree of straightness along vertical sides of picture. **Set Level:** Both sides of picture should be straight, without bowing in or out.
Degauss	**Function:** When active, demagnetizes picture tube. Degaussing eliminates picture discoloration from magnetic disturbance around picture tube.

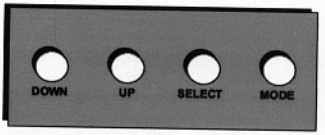
You adjust digital displays with a button-type remote adjustment board. Below are diagrams for Neotec and Wells Gardner 27" digital displays:

Neotec® Remote



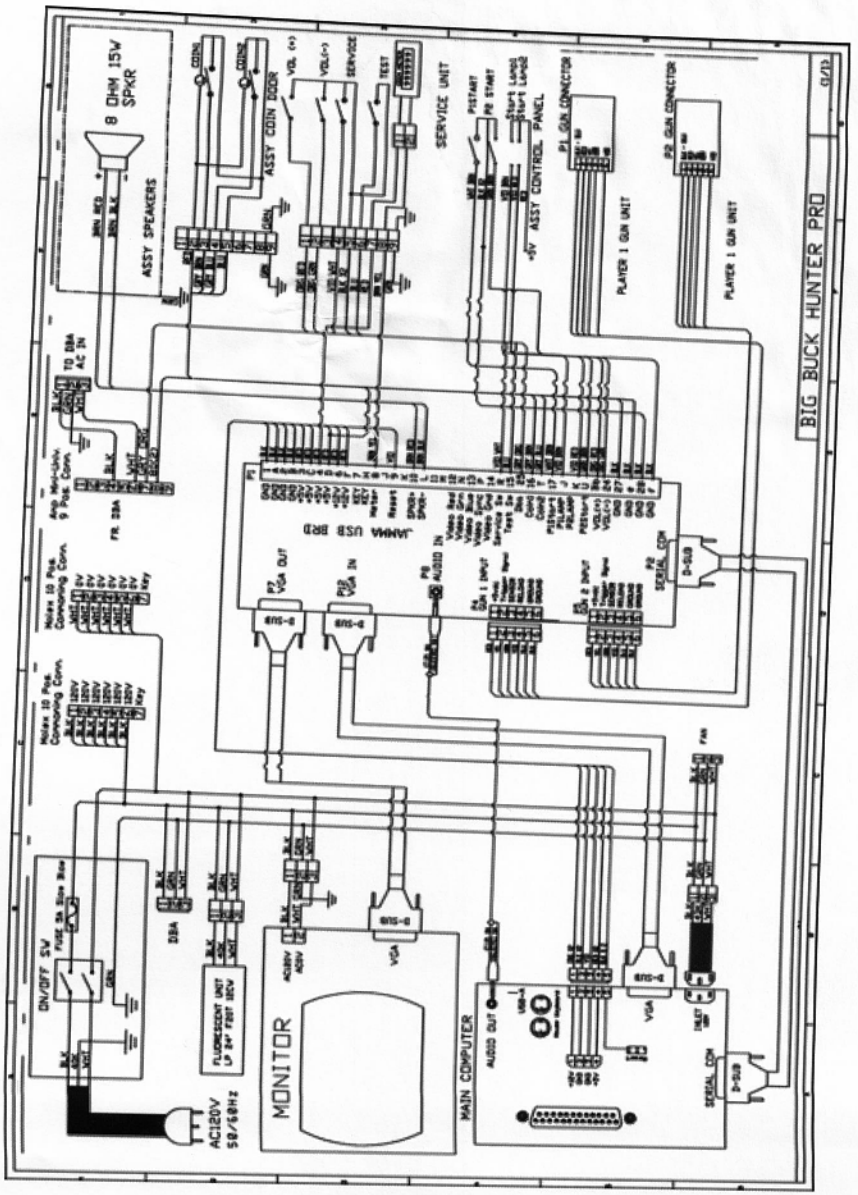
Menu: Open display adjustment menu.
Sel(-): Move down.
Sel(+): Move up.
Exit: Save changes and exit.

Wells-Gardner® Remote



Down: Move down.
Up: Move up.
Select: Choose setting to adjust.
Mode: Exit to adjustment menu.

Cabinet Wiring



JAMMA I/O Board Connection Table

JAMMA EDGE CONNECTOR COMPONENT SIDE		
FUNCTION	WIRE COLOR	PIN
GROUND	BLK	1
GROUND	BLK	2
5 VOLTS	RED	3
5 VOLTS	RED	4
		5
12 VOLTS	ORANGE	6
12 VOLTS	ORANGE	7
COIN METER	BROWN YELLOW	8
RESET	VIOLET	9
		10
SPEAKER (+)	BROWN RED	11
		12
		13
		14
TEST	BLUE	15
COIN 1	GRY BROWN	16
P1 START	WHITE BROWN	17
		18
		19
		20
		21
		22
		23
VOLUME (+)	ORANGE RED	24
DBV	GRAY ORANGE	25
		26
GROUND	BLK	27
GROUND	BLK	28

JAMMA EDGE CONNECTOR SOLDER SIDE		
PIN	WIRE COLOR	FUNCTION
A	BLK	GROUND
B	BLK	GROUND
C	RED	5 VOLTS
D	RED	5 VOLTS
E		
F	ORANGE	12 VOLTS
H	ORANGE	12 VOLTS
J	VIOLET BROWN	P1 LAMP
K	VIOLET RED	P2 LAMP
L		
M	BROWN BLACK	SPEAKER (-)
N		
P		
R	VIOLET WHITE	SERVICE
S		
T	GRY BLUE	COIN 2
U	GRN BROWN	P2 START
V		
W		
X		
Y		
Z		
a		
b	ORANGE GREEN	VOLUME (-)
c		
d		
e	BLK	GROUND
f	BLK	GROUND

Shotgun I/O Board Connection Table

PLAYER 1		P4
FUNCTION	WIRE COLOR	PIN
5 VOLTS	RED	1
TRIGGER	YELLOW	2
SENSOR	GREEN	3
PUMP	VIOLET	4
GROUND	BLUE	5
GROUND	BLACK	6

P5	PLAYER 2	
PIN	WIRE COLOR	FUNCTION
1	RED	5 VOLTS
2	YELLOW	TRIGGER
3	GREEN	SENSOR
4	VIOLET	PUMP
5	BLUE	GROUND
6	BLACK	GROUND

Troubleshooting Guide

▲ **WARNING.** With power on, do not connect or disconnect cables or connectors on this VGM. Otherwise, you might damage the VGM.

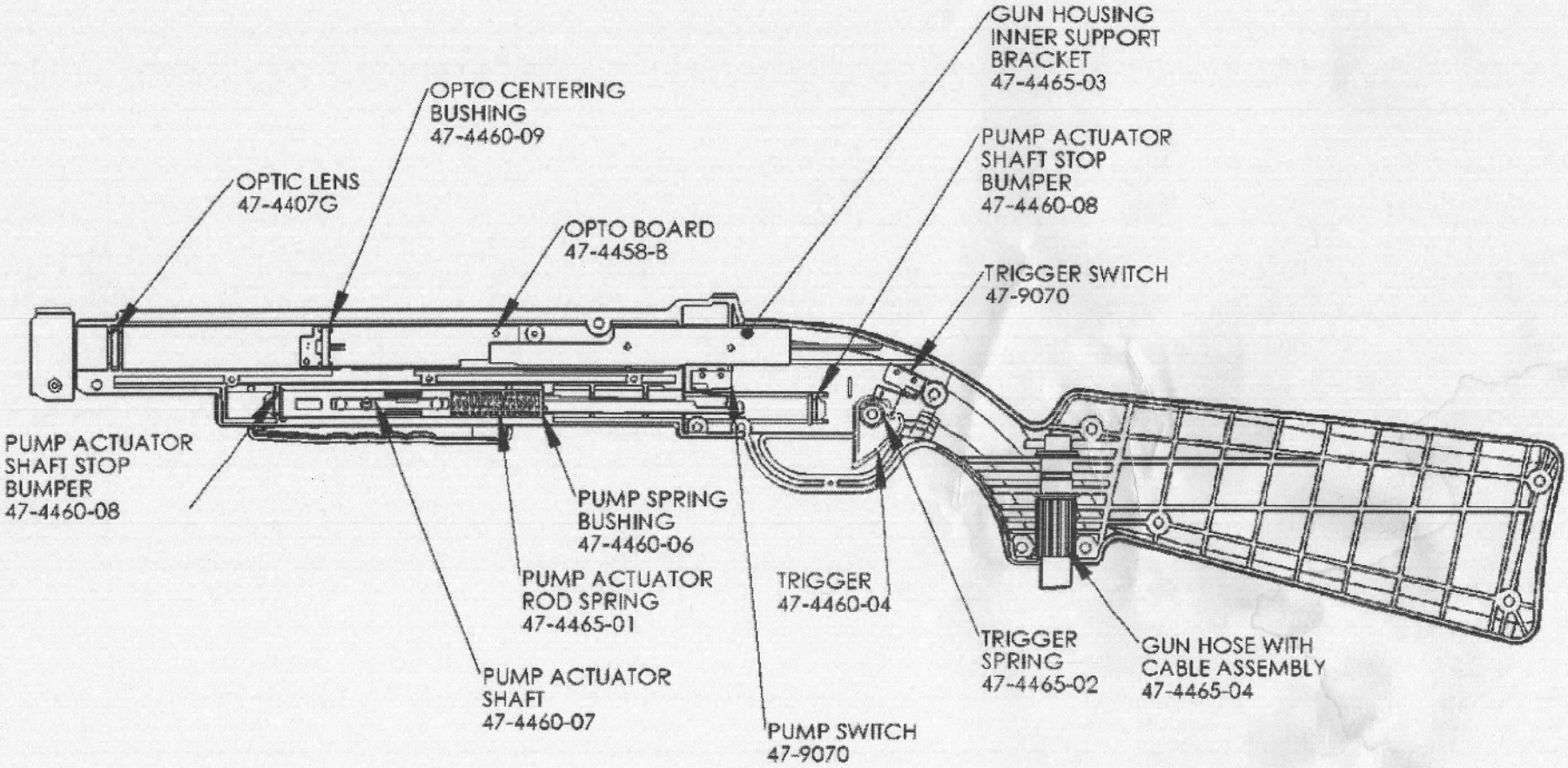
Main System Troubleshooting Table

SYMPTOM	CAUSE	WHAT TO DO
VGM doesn't power up.	VGM has no power.	Plug game into receptacle.
	VGM is off.	Turn on main power switch
	VGM fuse blew.	Check game fuse.
	No power to receptacle.	Plug game into powered receptacle.
	PC power switch is off.	Turn PC power switch on.
	Wrong PC BIOS setting.	See *Power Management Setting (BIOS).*
"No Signal" displays.	Loose video cable.	Secure video connector.
	PC is off.	Switch on power to PC.
No video display	No power to video display.	Connect power to video display.
		See *VGM will not power up.*
No sound	Disconnected audio cable.	Connect audio cable.
	Disconnected speaker.	Connect speaker.
"Connect I/O" appears on screen.	Disconnected serial connector.	[ ] 1. Check serial cable from PC to I/O board. [ ] 2. Perform hard drive recovery.
	Missing or inadequate power to I/O Board.	[ ] 1. Check DC power to I/O Board. [ ] 2. Restore I/O Board power.
	Bad I/O Board	Replace I/O Board.
VGM doesn't load.	New hard drive	[ ] 1. Cycle power by unplugging VGM. [ ] 2. In this chapter, go to *Hard Drive Recovery*. Perform hard drive recovery.
	Corrupt hard drive data.	In this chapter, go to *Hard Drive Recovery*. Perform hard drive recovery.
"Insert Dongle" appears on screen.	Disconnected or loose dongle.	Securely reseat dongle.
Screen action freezes.	Loose dongle.	Securely reseat dongle.
	Poor ventilation.	Clean out fan and air vent obstructions.
	Disconnected fan	Reconnect fan.
	Dead fan	Replace fan.
	Loose serial cable.	Remove and reinsert both ends of serial cable.
	Failing or Bad Power Supply.	[ ] 1. Check power supply output. [ ] 2. If supply is bad, replace it.
VGM resets.	Low DC voltage.	[ ] 1. Check for proper voltage (+5V and +12V). [ ] 2. If supply is bad, replace it.
	Door lamp has wrong rating.	Replace lamp with 12-volt lamp. Only use 12-volt lamps.
	Cabinet/PC temperature is too high.	[ ] 1. Clean out fan and air vent obstructions. [ ] 2. If fan has become unconnected, reconnect fan. [ ] 3. If fan failed, replace it.
	Corrupt hard drive data.	In this chapter, go to *Hard Drive Recovery*. Perform hard drive recovery.

Gun Troubleshooting Table

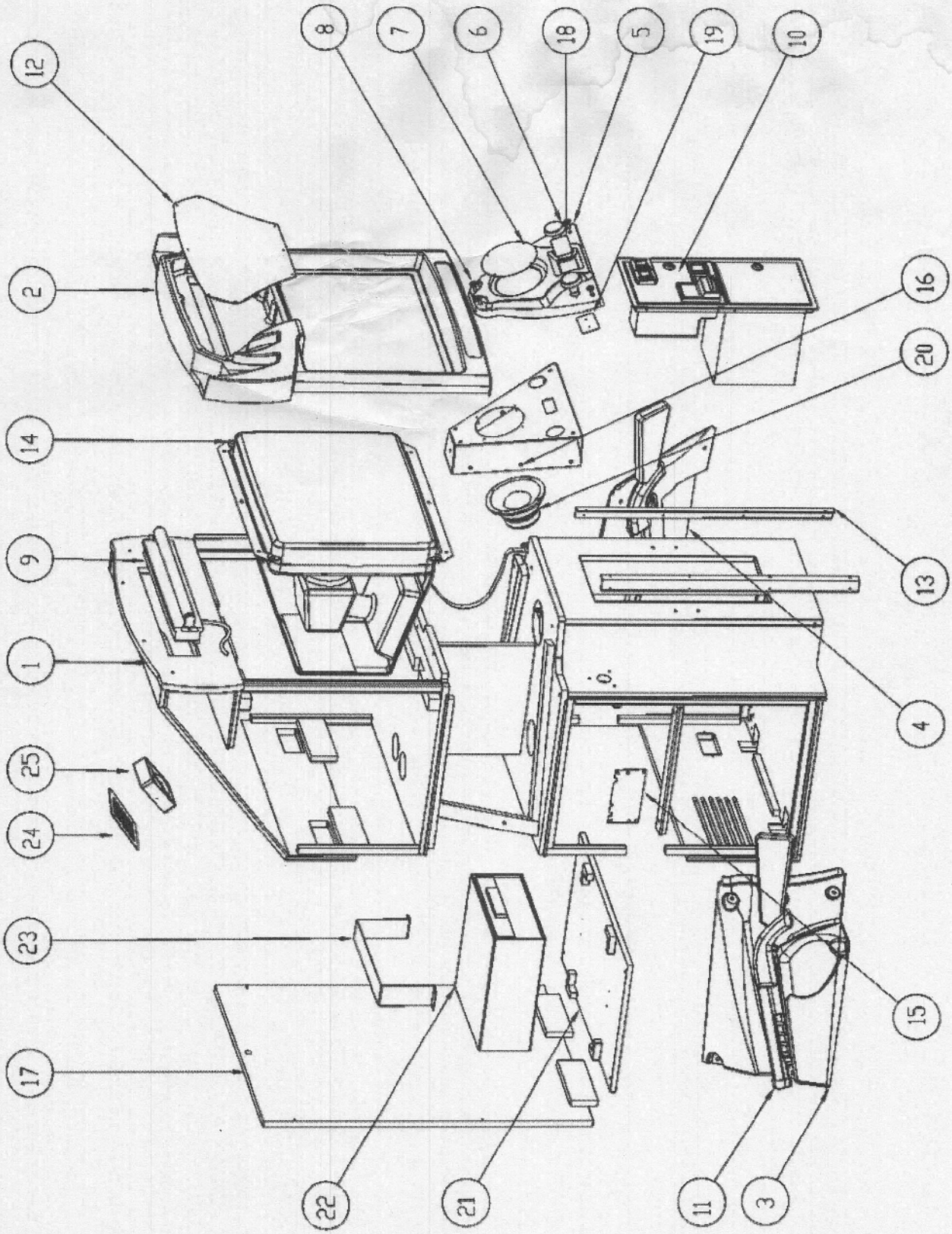
SYMPTOM	CAUSE	WHAT TO DO
One or both guns fail to hit targets.	Dirty screen on monitor.	Clean monitor screen.
	Gun is out of calibration.	Following instructions at *Chapter 3, Diagnostics, Audits & Adjustments,* calibrate gun.
	Display is out of adjustment.	Adjust picture. See *Monitor Adjustments* in this chapter.
	Lighting or sun glare on screen.	Turn off room lights to eliminate glare on monitor.
Intermittent or non-functional guns	Dirty optics.	Clean lens. Don't apply cleaner directly into gun barrel.
	Disconnected gun.	Reconnect gun.
	Loose or missing parts.	Inspect gun. Replace parts or gun.
	Faulty gun cable, gun circuit board or gun.	Replace gun or service damaged part.
	Bad cabinet cable between gun cable and I/O Board	Replace cable.
	Bad I/O Board	[ ] 1. Test board by swapping it with new, good board. [ ] 2. If new board solves problem, replace I/O Board.

Maintenance, Wiring & Troubleshooting Notes


GUN HOUSING
INNER SUPPORT
BRACKET
47-4465-03
OPTO CENTERING
BUSHING
47-4460-09
PUMP ACTUATOR
SHAFT STOP
BUMPER
47-4460-08
OPTIC LENS
47-4407G
OPTO BOARD
47-4458-8
TRIGGER SWITCH
47-9070
PUMP ACTUATOR
SHAFT STOP
BUMPER
47-4460-08
PUMP SPRING
BUSHING
47-4460-06
PUMP ACTUATOR
ROD SPRING
47-4465-01
TRIGGER
47-4460-04
TRIGGER
SPRING
47-4465-02
GUN HOSE WITH
CABLE ASSEMBLY
47-4465-04
PUMP ACTUATOR
SHAFT
47-4460-07
PUMP SWITCH
47-9070

Parts Notes

VGM Cabinet Parts



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	601-00012-01	BBHP CABINET	1
2	603-00015-01	BEZEL	1
3	603-00017-01	BBHP GUN HOLDER LEFT	1
4	603-00016-01	BBHP GUN HOLDER RIGHT	1
5	603-00018-01	CONTROL PANEL VAC FORM	1
6	702-00008-01/ 702-00008-01	ORANGE BTN ASSY/GREEN BTN ASSY	2
7	600-00018-01	SPEAKER GRILL	1
8	#25-20X1 TORX	HARDWARE	6
9	812-00002-01	18" flourescent light	1
10	800-00005-00	MID WIDTH O/U DOOR ASSY	1
11	820-00003-00/820-00002-00	GREEN/ORANGE SHOTGUN BBHP	2
12	600-00017-01	BBHP MARQUEE PLEXI	1
13	602-00011-00	CORNER ANGLE BRACKET	2
14	809-00002-00	27"FLAT VGA DISPLAY	1
15	500-00001-01	BBHP I/O BOARD	1
16	602-00010-00	METAL CONTROL PANEL	1
17	601-00012-01_	BBH PRO 27" CABINET (BACK DOOR)	1
18	602-00008-00	CARD READER FACEPLATE	1
19	602-00009-00	CARD READER BACKPLATE	1
20	807-00002-00	SPEAKER 6.5" WOOFER	1
21	601-00012-01	BBH PRO 27" CABINET (PC SHELF)	1
22	650-00001-01	BBHP PC	1
23	2-1-16-00-00-06	BRACKET CPU MOUNT	1
24	800-00002-01	VENT FAN LOUVRE	1
25	820-00001-00	120VAC VENT FAN	1

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