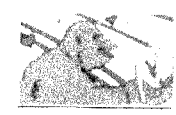


OPERATIONAL MANUAL

TM



STRATA GROUP, INC.

SERVICE / SALES (800) 262-0323
FAX (708) 870-0120

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Street Fighter is a trademark of CAPCOM USA.
Mortal Kombat II is a trademark of MIDWAY Manufacturing Company.

WARRANTY, REPAIR and RETURN POLICY


- 90-day warranty on all electronic components. All warranty periods begin on the date of purchase from Strata Group, Inc.
- There is a minimum \$40.00 service charge for all non-warranty repairs or returns.
- For all servicing return to Strata Group, Inc..
- ANY non-factory repair or attempted repair voids warranty.
- AAMA decal must not be removed from the PCB.

RETURN MERCHANDISE AUTHORIZATION

- All returned merchandise must have a Return Merchandise Authorization (RMA) number marked clearly on the outside of the package.
- You must obtain all RMA numbers from your authorized Strata Group, Inc. distributor. Please have your Strata Group, Inc. serial number available when calling for an RMA number.
- Merchandise returned without an RMA number will not be accepted.
- Advance replacement boards will be shipped to distributors or, at the distributor's request, will be shipped directly to the operator.
- Advance replacement boards will be billed to the distributor until Strata Group, Inc. receives the returned board, at which time a credit will be issued.
- All repairs and/or replacements will be shipped within 24 hours of receipt or request (subject to availability).

FCC REGULATION COMPLIANCE

This equipment 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 uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



BLOODSTORM

TM

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INTRODUCTION

STORYLINE...

The Earth of the distant future is on the brink of chaos. Tensions mount as the leaders of the eight Provinces grow ambitious and wary. Only the High Emperor has been able to keep peace between these radically different nations.

Suddenly and mysteriously, the High Emperor is murdered in his home province. The ancient Province Agreement declares that a new ruler is chosen through honorable combat between the rulers of each province. However, it is painfully clear that this tournament will not have the honor of previous contests.

The champions from each province are blind to the mysterious evil that surrounds the High Emperor's death, and instead only see their opportunity for personal gain, provincial expansion, and race domination that has been handed to them.

The BloodStorm is about to begin.

GAME DESCRIPTION

- 2-Player kit installs easily into any existing 5-button or 6-button control panel configuration.
- Hidden combination moves enhance game play and increase earnings longevity.
- Players can search for dozens of secret enemies, weapons, locations and events.
- Interchangeable weapons and fighter improvements increase game play variety and player strategy.
- Player password system stores individually created fighters for increased repeat play.
- Operator adjustable, violence DIP switch settings suitable for any type of location.
- 2-player simultaneous play with continuous buy-in.
- Complete kit available for all JAMMA compatible cabinets with horizontal mount monitors.

GETTING STARTED

GAME PACKAGE CONTENTS

- (1) PCB assembly
- (1) Connecting Wire Harness (JAMMA)
- (2) Joystick Assemblies
- (12) Button Assemblies
- (1) Marquee Styrene
- (1) Marquee Plexiglas
- (1) Control Panel Overlay
- (1) Set of Side Graphics (4 Pcs., packaged separately)
- (1) Set of Function Labels
- (1) Manual

RECOMMENDED TOOLS and SUPPLIES

Phillips and Slotted Screwdrivers
Socket Set
Wire Cutters and Strippers
Pliers or Channel Locks
Electric Drill with 3/32", 1/4", and 7/16" Bits
1-3/16" Chassis or Sheet Metal Punch
Small File
Razor Knife and Sharp Blades
Straight Edge
Staple Gun and Staples
Soldering Iron and 60/40 Resin Core Solder
Vacuum Cleaner
Assorted Fastening Hardware
Heat Shrink Tubing (3/32", 1/8", and 3/16")
Masking Tape
3-1/2" or 4" Wire Ties
Mild Liquid Soap and Water Solution

IF YOU DO YOUR OWN PAINTING, YOU'LL NEED THESE PAINT SUPPLIES:

- Air Brush or Paint Sprayer
- Paint Roller and Pan
- Paint Brush
- Paint (and Primer)
- Sandpaper
- Putty Knife and Wood Putty

INSTALLATION PREPARATION

BEFORE YOU START...

1. Check to see if all the needed parts have been included in your kit (See GAME PACKAGE CONTENTS.)
2. Do you have the necessary tools? (See RECOMMENDED TOOLS and SUPPLIES.)
3. Do not work with any part of the system plugged in (lights, monitor, or power supply).

The CABINET

Power Requirements:

Make sure the game you have chosen to convert is able to supply all the required voltages for BLOODSTORM.

+5 VDC	5 amps
+12 VDC	2 amps

NOTE

This game requires far less power to operate than most games on the market. Some games regulate their voltages on the main PCB. The output level of many "regulated" switching power supplies actually vary with load. For this reason, the power supply from an old game may not be correctly adjusted for BLOODSTORM. This makes the existing power supply inappropriate and hazardous to your new game. Therefore, it is **very important to adjust the +5 VDC supply WITHOUT connecting the PCB, then readjusting it later, after the PCB has been installed. Measure power on the PC board, across an I.C.. Damage will occur if the power supply is outside the acceptable limits (between 4.8 and 5.5 VDC.)**

Monitor Requirements:

BLOODSTORM requires a monitor in a horizontal mount raster scan with positive or negative composite Sync. It can be difficult to change the monitor from vertical to a horizontal unit. Installation will be easier if you choose a horizontal mount cabinet.

Cabinet Selection:

1. You can choose either a new cabinet or a used cabinet for your BLOODSTORM game. Reusing a cabinet is by far the most cost-effective way to maximize the return of your initial investment. In either case, all you provide is the cabinet with a power supply and monitor. We provide the rest. The end result is a new game at a very low cost.
2. Spend time on the cabinet's appearance (i.e., marquee, control panel, and cabinet graphics). You will raise your profits with the introduction of a new game package, especially if the cabinet looks clean and new.
3. The "new game look" should always apply to the inside of your game as well. A few wire ties and shrink tubing on your harness, some fastening hardware on your

subassemblies, and a sweep with the vacuum cleaner will ensure that glitches do not occur.

5. It is recommended that you cover your control panel with Plexiglas. Now would be a good time to cut it to fit while the dimensions and tools are at hand.

Preparing a used cabinet for BLOODSTORM:

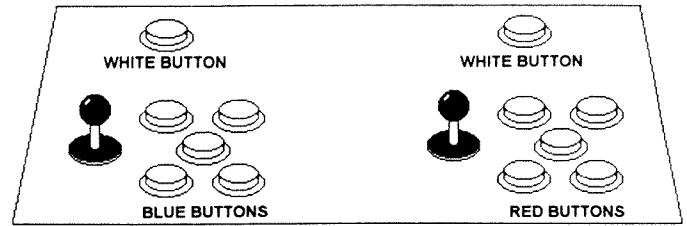
1. Remove the following from the cabinet:
 - Main Logic Board(s)
 - Control Panel
 - Monitor Plexiglas
 - Marquee
 - Cabinet Graphics
2. Thoroughly clean out your cabinet. Remove all the old buttons, joysticks and wires from the control panel and set aside. Remove the original overlay. DO NOT remove monitor and speaker wires.
3. Remove the old graphics and adhesive from the side of the cabinet. Remove adhesive with solvent.
4. For a fresh look, painting is highly recommended. Spray painting gives a better finish, but if an air brush or paint sprayer is unavailable, a roller is second best. Cover all exposed surfaces not to be painted, such as the coin door and monitor.
5. Use a small brush to finish up the details. If you do not have the facilities for painting, try an auto body shop.

The CONTROL PANEL

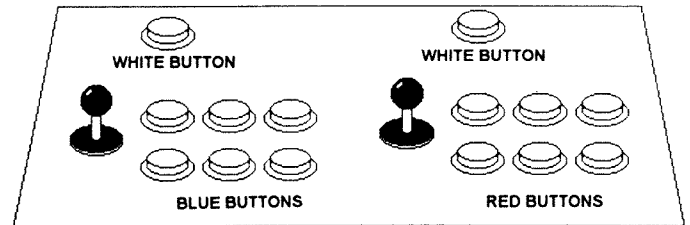
BLOODSTORM comes equipped with graphics that will accommodate a variety of existing game cabinets. Use the die-cut button overlays if you are using a cabinet with 5 buttons per player. The rectangular labels can fit up to 3 buttons across. Use them for a 6-button configuration. Small button labels have also been included for other cabinet layouts. Use these small labels to identify the function of each button. **It is recommended that the 5-button layout be used.**

Preparation:

1. Use the die-cut button labels enclosed in your kit to determine where your new holes will be. Carefully line up the labels and outline any new holes onto your clean panel with a pencil. DO NOT stick the labels to the panel at this time.
2. Drill or punch the holes marked for buttons or bolts. Use a chassis or sheet metal punch for best results on button holes.
3. Use a file to smooth any rough edges on the holes.
4. Fill any old and unused holes with wood or a metal plate.



5-BUTTON CONTROL PANEL LAYOUT



6-BUTTON CONTROL PANEL LAYOUT

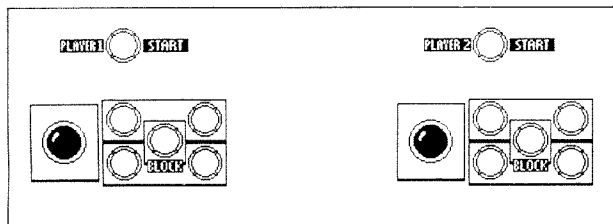
The GRAPHIC OVERLAYS

Control Panel Overlay Installation:

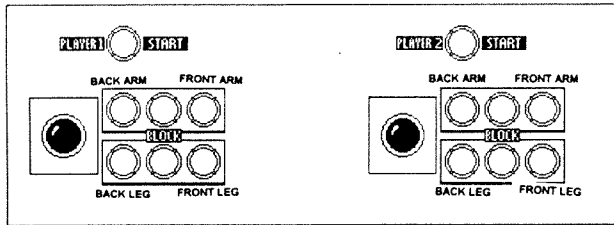
1. Make sure the control panel is clean and free from dust, grease, metal filings, and sawdust. The lexan background overlay provided with BLOODSTORM is oversized to accommodate most control panel sizes. The lexan overlay **must be centered** along its length. Be sure to leave enough excess material above and below the control panel in order to trim it evenly.
2. Remove the protective backing from the lexan overlay. Center the lexan overlay over the control panel and place down gently, making sure to keep it square. Using your hands, press down firmly, starting from the center and smooth the lexan overlay outward, making sure all bubbles have been pressed out for a clean, flat surface.
3. Using a sharp razor knife, trim any excess from the lexan overlay. Carefully pierce through the overlay above each control panel hole that you have marked. Cut out material covering the pre-drilled holes with the razor knife. Be sure to cut the lexan overlay above each hole and trim cleanly and evenly.

Function Labels Overlay Installation:

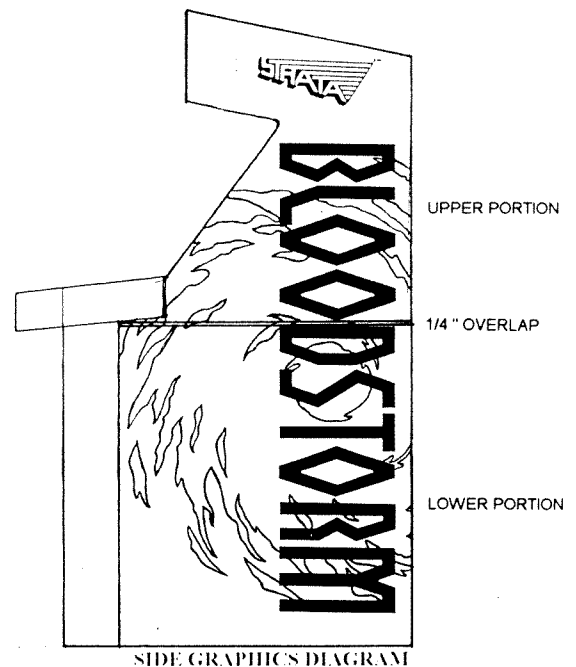
1. Line up the supplied function labels with the corresponding control panel holes. Remove the backing and carefully press into place. Be sure they are straight. Place the BLOODSTORM logo and the Strata logo along the center of the control panel graphics. Refer to the diagram on the next page.



5-BUTTON FUNCTION LABELS LAYOUT



6-BUTTON FUNCTION LABELS LAYOUT



Marquee Installation:

1. If your cabinet needs a new marquee glass, determine the correct size and cut the supplied Plexiglas to fit. Using the old marquee glass as a template, center the Plexiglas on your new marquee graphics, making sure that all the printed images will be visible. Using a razor knife, score the new marquee deeply, following the edges of the old glass. Carefully break off the styrene. Be sure the light behind the marquee works and that the glass is clean on both sides. Now install the marquee graphics and glass securely.

NOTE

Your BLOODSTORM kit comes with two marquees. For most locations and optimal player appeal, use the BLOODSTORM marquee. For those few locations that may find the game name inappropriate, use the THE STORM marquee.

Side Graphics:

1. The sides of the cabinet should be very clean, smooth, and free of any dust or old adhesive, etc.
2. Your BLOODSTORM kit comes with side graphics that will cover the entire side of most game cabinets. Each side consists of two large stickers, an upper portion and a lower portion. The lower portion will be installed first, followed by the upper portion.
3. Note that there are two distinct sets of side graphics, one set for each cabinet side. Refer to the diagram below for the correct orientation of each sticker.
4. Spray the side of the cabinet lightly with a soap and water solution and leave moist. This will help you to position your stickers before they adhere completely.
5. Carefully peel back about 3 inches from the top of the first sticker and fold the backing down. The first sticker should be the lower portion. Do not cut the backing off at this time.
6. Line up the bottom edge and back edge of the sticker with the bottom and back edges of the cabinet and hold in place. Carefully reach up with your hand and smooth down the exposed adhesive at the top of the sticker. Start in the middle and work outward. Be sure that the backing flap is folded under to expose the adhesive.
7. Reach behind the sticker and pull the folded backing flap down another 3 inches. The backing should help to keep the exposed sticker from adhering to the cabinet. Use a soft sided squeegee across the front of the sticker and, starting at the top, pull down with steady and even pressure. As you pull down on the squeegee, the backing should roll evenly down the back of the sticker as the sticker adheres to the cabinet.
8. When in place, squeegee all bubbles or ripples out from behind the decal. For stubborn air bubbles, use a pin or razor knife to pierce the sticker, allowing the air to escape.
9. Find the upper portion sticker for the cabinet side you are working on and repeat the entire process. The upper sticker lines up along the back of the cabinet, and overlaps the bottom sticker about 1/4 inch.
10. When both stickers are applied to the side of the cabinet, you will need to trim the excess with a razor knife. Carefully find the narrow gap between the cabinet and the T-molding and insert your blade. Slowly follow this guide around the perimeter of the cabinet side while cutting the excess sticker.

11. Repeat the entire process once again for the other side of the cabinet.

NOTE

For locations that may find the game name inappropriate, it is recommended that you carefully cut out the word STORM from the bottom stickers and the STRATA logo from the top stickers. Place these elements on a clean, painted cabinet in a pleasing and dynamic position.

WIRING and HARNESS ASSEMBLY

REMEMBER! DO NOT WORK WITH ANY PART OF THE SYSTEM PLUGGED IN (Lights, Monitor, or Power Supply).

NOTE

All switch wires used in this game need to be wired to the normally open connection on the switches. Each switch requires a ground wire on the common connector and the appropriate control or switch wire on the other normally open connector of the switch.

Buttons and Joystick (Control Panel Assembly):

1. Install all buttons on the ground panel as per the control panel configuration.
2. If you are using Plexiglas for added protection, don't forget to place it on the panel before inserting the buttons. The five BLUE buttons are used for PLAYER ONE (left side player) game control buttons. The RED buttons are used for PLAYER TWO (right side player) game control buttons. The two WHITE buttons are used as START buttons.
3. Wire the buttons and joystick to the JAMMA harness by using the wiring diagram on page 18.

NOTE on Street Fighter(tm)

- If you are converting any of the Street Fighter(tm) games using a 6-button configuration, you will have to wire the two middle buttons together. These two middle buttons both become Block buttons. Do the same for both Player One and Player Two controls. The Street Fighter(tm) buttons map to BLOODSTORM buttons in the following manner:

- Jab Punch = Back Arm
- Strong Punch = Block
- Fierce Punch = Front Arm
- Short Kick = Back Leg
- Forward Kick = Block
- Roundhouse Kick = Front Leg

(Refer to the JAMMA Harness Connections diagram for correct wiring of the controls.)

NOTE on Mortal Kombat II(tm)

If you are converting a Mortal Kombat II(tm) cabinet to BLOODSTORM, you will have to change the following:

- Low Punch to Back Leg at JAMMA position 25.
- Low Kick to Front Leg at JAMMA position 26.

(Refer to the JAMMA Harness Connections diagram for correct wiring of the controls.)

NOTE

If you plan on re-using an existing JAMMA harness, you may have to add up to four wires to the JAMMA connector. You can remove these wires from the supplied JAMMA harness in your BLOODSTORM kit.

(Refer to the JAMMA Harness Connections diagram for correct wiring of the controls.)

Printed Circuit Board (PCB):

1. Mount the PCB to the side of the cabinet with the connector toward the top of the drawer. This will keep the wire harness from slipping off due to vibration. Mark and drill pilot holes (3/32") onto the cabinet side, being careful not to drill through to the outside. Attach the PCB standoffs to the cabinet using wood screws and spacers -- snug but not too tight or the board may warp or crack. Be sure the board is not being flexed in any way.

Wire Harness:

1. If you are installing BLOODSTORM into a Dynamo cabinet with a pre-installed JAMMA harness, you will notice that it does not have a wire for the test switch. You will have to add a contact to the edge connector at the proper position (position 15). Some cabinets (Dynamo included) have only one coin switch input and the coin switches are wired together. Connect the designated wires to the coin switches separately.
2. Attach the wire harness connector to the PCB. This connector should be keyed and labeled "COMPONENT SIDE". Be sure it is mounted correctly. **WARNING! - Plugging the JAMMA connector in backwards will cause damage to the PCB.**
3. It is best to use connectors (not supplied) whenever joining a set of harness wires to a subassembly. If you choose to solder wires together, follow this procedure:
 - a. Strip off about 1/2" of insulation from the wire.
 - b. Slide a piece of heat-shrink tubing over the end.
 - c. Do not leave a lot of excess wire spooled up in your cabinet. Cut the wires to the length you need plus a few extra inches. Leave enough for proper cable dressing -- do not make it stretch across the inside of the cabinet.
 - d. Solder the new wire to the original wire. Use a straight in-line splice.
 - e. Melt the heat-shrink over the splice.

NOTE

This game uses the JAMMA standard wiring harness. Therefore, if the cabinet you are using is not equipped with a JAMMA harness, you may want to change it.

Power Wires:

1. Connect the wires that are designated for your power supply. You will need a supply of +5 vdc, and +12 vdc. The +5 vdc must be regulated to within 5% (+ or - 0.25 vdc). The +12 vdc may be unregulated but should not stray too far or the sound may be affected. If the cabinet's supply does not provide these voltages, it will have to be replaced. A switching-type supply is recommended.
2. You will notice that you have more than one wire for each voltage. Use all wires supplied on the harness. This will ensure better power transmission and prevent overloading of the edge connector pads.
3. Tin all power supply wires before connecting them to the power supply. Loose strands may short out the supply. For best results, connect spade lugs to the ends of the power wires and attach to the screw terminals of the power supply.

Monitor Wires:

You will be connecting the RED, GREEN, and BLUE video drives along with the composite Sync and video GROUND wires.

Sync:

This is the recommended approach for a Wells-Gardener monitor and should work with some others as well.

1. This game generates a composite Sync signal which is accepted by most monitors. A DIP switch (Dip switch 4) on the logic board allows you to choose between positive and negative composite Sync. Most monitors require negative Sync. If your monitor requires positive Sync, flip the switch towards the OFF position.
2. If your monitor does not have a composite Sync input but has separate horizontal and vertical Sync inputs, try connecting the composite Sync signal from the PCB to the negative horizontal Sync signal on the monitor. This should produce a satisfactory result, although some adjustment of the monitor's Sync controls may be necessary.

Coin Doors, Test Switch and Service Button Wiring:

1. Wire the coin doors and the test / service switch(es) as per the JAMMA HARNESS CONNECTIONS information on page 18.

2. Connect the door lamps to the +12 vdc supply. Some games have separate power supply outputs for the lamps.
3. Install a test switch (not included) somewhere convenient inside the coin door area. This switch allows you to enter adjustables, run diagnostics, and see or clear audits. Make it readily accessible through the coin door. Wire it to the Test wire on the JAMMA Harness.
4. Install a service switch (not included) somewhere convenient inside the coin door area. This switch allows you to give credits to players without affecting the game's credit audits or coin meters. Example: A player puts in a coin and gets no credit, the operator can then push the service button and a credit is given to the player without affecting the game's AUDITS and coin meter.
5. Clean and lubricate your coin mechs.

Final Check:

1. Check the game inside and out for any imperfections. Secure any loose wiring or fastening hardware.
2. Make sure the coin door is tight and the coin mechs are well adjusted.
3. Make sure all assemblies are firmly attached. Anything that is not mounted securely will rattle when the game is played. This game makes use of low-frequency sounds which can cause any loose joints to rattle.

INITIAL POWER-UP

1. Attach JAMMA Harness. Plug in the game and turn it on.
2. Look and smell for smoke (TURN IT OFF IMMEDIATELY IF ANY IS NOTICED).

NOTE

Readjust the +5 Volt supply. Adjust the +5 Volt supply so that you read 5.2 Volts across an I.C. on the circuit board. If measured at the power supply, the reading will be about 5.5 volts at the power supply outputs.

3. Make sure the yellow LED on the Sound PCB is flashing. If not, something is wrong, turn off the game.
4. Listen for sound. A few notes or some speech should play on power up.
5. If you do not hear any sounds and the yellow LED is flashing, try turning up the volume and check the speaker connections. Dropping a coin through a coin switch should cause a sound.

6. Look at the image on the monitor. If it is not in Sync and you cannot stop it from rolling by adjusting the monitor's Sync controls, try flipping Dip switch 4 on the logic board.
7. How is the picture? Is it centered or is it too bright or too dim? Is it in focus? Adjust your monitor to get the best picture possible.

NOTE

Check your monitor manual to make adjustments. Some test patterns are available through the game's system tests by pressing the Test switch. Use them when making any adjustments. (See "SYSTEM TESTS" information on page 11. Proper monitor adjustment is very important.)

8. Try all coin switches. Drop quarters or tokens through to check the coin mechs. Make sure the game is adding credits. You can use the Player Control Tests by pressing the test switch and entering the System Tests Menu. Do all of the joysticks and push buttons work? Try playing the game with the volume up and listen for rattling as you play. Tighten anything that is making noise.
9. Upon initial power-up, the game will initialize to factory default settings. These settings affect game elements such as number of credits per coin, difficulty settings, etc. The "OPERATOR MODE" section will describe how to alter these settings and view the system audits or run system tests.

DIP SWITCH SETTINGS

SETTING THE DIP SWITCH

- Dip switch 4 (ON): Negative Video Sync
- Dip switch 4 (OFF): Positive Video Sync
- Dip switch 3 (ON): Screen Upright
- Dip switch 3 (OFF): Screen Flip
- Dip switch 2 (ON): Violence ON
- Dip switch 2 (OFF): Violence OFF
- Dip switch 1 (ON): Test Mode Normal
- Dip switch 1 (OFF): Strata Test Mode

NOTE

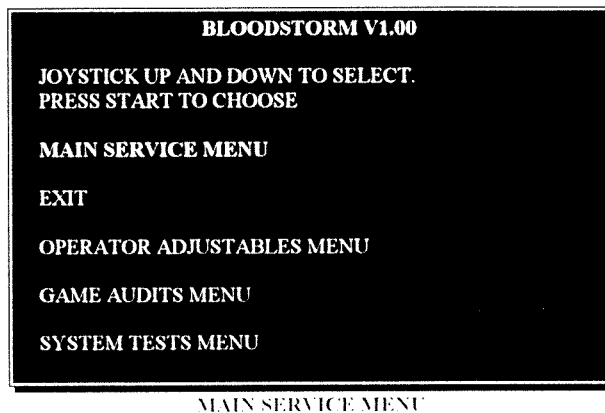
Dip switch 2 allows for the violence of the BLOODSTORM game to be altered to suit your location. If violence OFF is set using dip switch 2, the game will not display blood or dismemberment of any kind. If violence ON is set using dip switch 2, a number of options are available from the operator adjustables menu accessed in the test mode. See page 9, Violence Settings, for more details.

STRATA TEST MODE

To enter Strata Test Mode, press the Test Button, located just inside the coin door. When the Test Button is pressed or DIP Switch 1 is flipped to the OFF position, the screen displays the Main Service Menu.

NOTE

If you used the DIP switch to enter the TEST MODE, you will need to flip the DIP switch back to the ON position in order to return to the game.



The Main Service Menu allows you to enter into three different areas:

OPERATOR ADJUSTABLES is used for customizing your game for your location. Some of the features in Operator Adjustables are number of coins per game, sounds on or off when no one is playing, difficulty settings, etc.

GAME AUDITS allows you to check your game's overall earnings, game times, game scores, etc. The Audits can be reset through this menu as well.

SYSTEM TESTS verifies the operation of the hardware, controls, and monitor through easy and automatic procedures accessed through these menus.

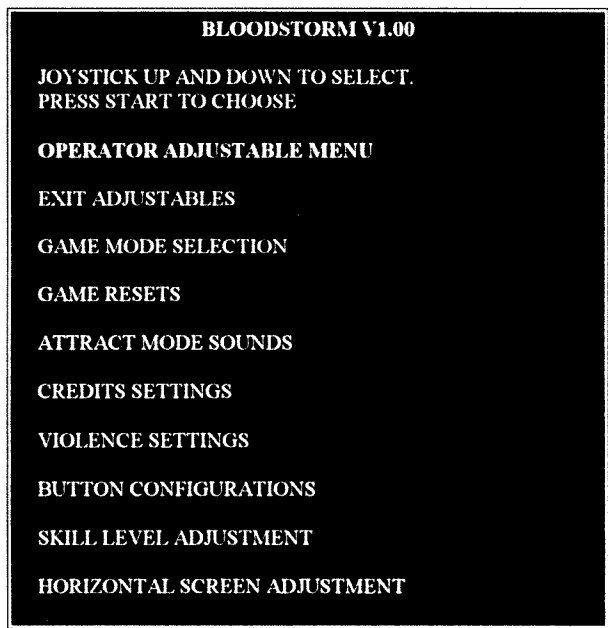
To exit any of these tests and return the game to its normal state, use any player joystick to highlight the line that says EXIT and press any player start button.

COLOR KEY NOTE:

For easy identification, all test screens have been color coded. Items displayed in GREEN are the Menu titles. This is the name of the menu that is currently displayed. Items appearing in YELLOW are the menu's instructions. The BLUE items are choices available in this menu. The WHITE item is the selection that is currently highlighted. If RED is ever displayed, there is a problem with that item and it should be corrected.

OPERATOR ADJUSTABLES

The Operator Adjustables section is accessed through the Main Service Menu. From the Main Service Menu, move any player joystick down until the word **OPERATOR ADJUSTABLES MENU** appears in white letters. Now press any player start button, and the Operator Adjustables Menu will appear on the screen.

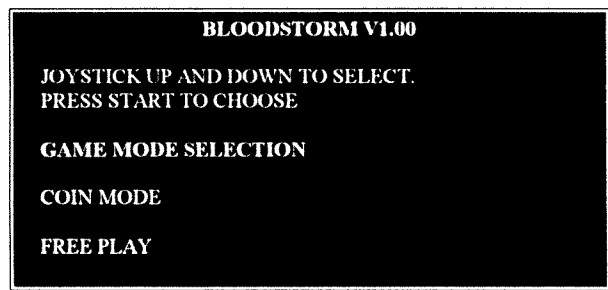


OPERATOR ADJUSTABLES MENU

As you can see, there are many possible customizing procedures that you can control. Below is a brief description of each adjustable function and what the screen looks like when displayed. Remember, to select an item from any menu, use any player joystick to highlight the item in white, and then press any player start button.

Game Mode Selection:

This menu allows you to place the game in standard Coin Mode, or choose Free Play.



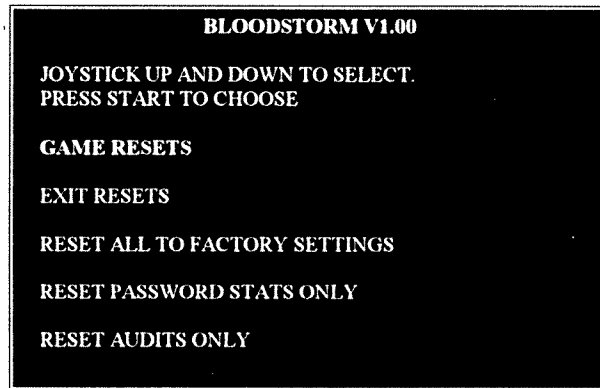
GAME MODE SELECTION SCREEN

In **COIN MODE**, the game will only work if coins are deposited into the game.

In **FREE PLAY**, coins are not needed for play, and the Start buttons are always active.

Game Resets:

The Game Resets Menu will cancel or zero out any custom features or bookkeeping figures that are no longer wanted.



GAME RESETS SCREEN

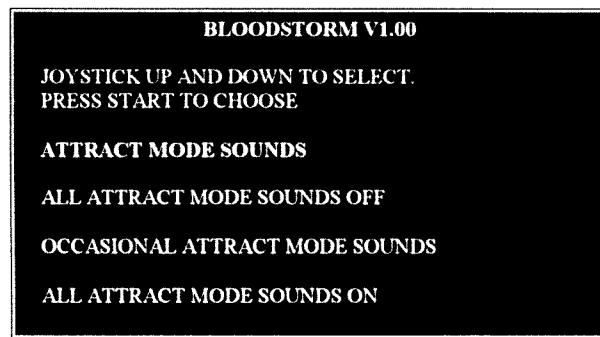
RESET ALL TO FACTORY SETTINGS will change the game back to the way the game was pre-set when new. Any custom features such as Free Play and Skill Levels will be changed back to the original settings set at the factory.

RESET PASSWORD STATS ONLY is used to erase all of the passwords stored in memory.

RESET AUDITS ONLY is used when all of your bookkeeping and statistics have been gathered from the Audits section, and are no longer needed. If you like to gather all of your accounting information each week, or after each collection, it is a good practice to reset all of the audits so your coin count will match the audit information.

Attract Mode Sounds:

This menu is used to adjust the sounds that are heard while no one is playing the game.



ATTRACT MODE SOUNDS MENU

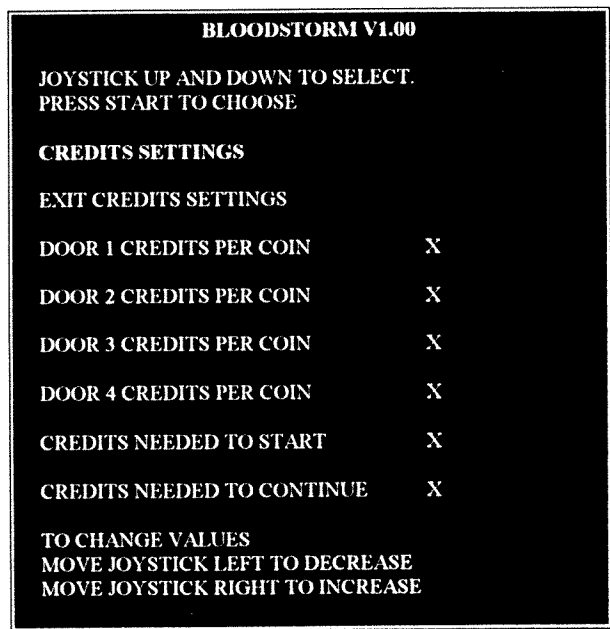
ALL ATTRACT MODE SOUNDS OFF will not allow any sounds to be played during the attract mode.

OCCASIONAL ATTRACT MODE SOUNDS plays sounds about every ten to twelve times the attract mode is repeated.

ALL ATTRACT MODE SOUNDS ON will play sounds during every attract cycle.

Credits Settings:

This menu allows you to change the number of coins needed to play BLOODSTORM.



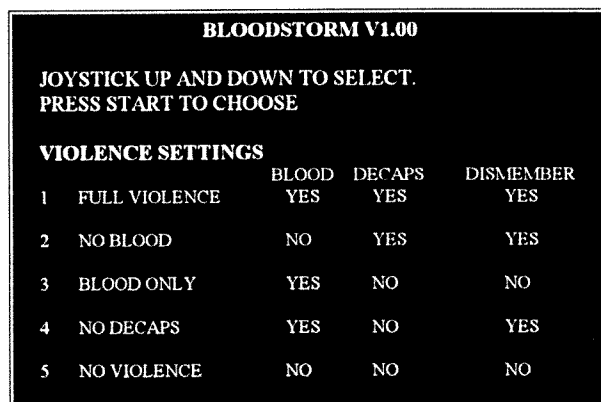
CREDIT SETTING SCREEN

You can set each coin door at different credit values by highlighting : **DOOR 1 CREDITS PER COIN** for coin door 1, **DOOR 2 CREDITS PER COIN** for coin door 2, etc.. Moving the Player 1 joystick left or right will change the number of credits that each coin represents.

CREDITS NEEDED TO START will adjust the number of credits it takes for a player to begin a game. For example, the factory setting is 1 coin per credit, but it takes two credits to begin a game. Therefore, two coins are needed to begin a game. If you want the number of credits needed to continue a game already in progress to be different than the number of credits needed for the initial game start, you can set the new value using **CREDITS NEEDED TO CONTINUE**.

Violence Settings:

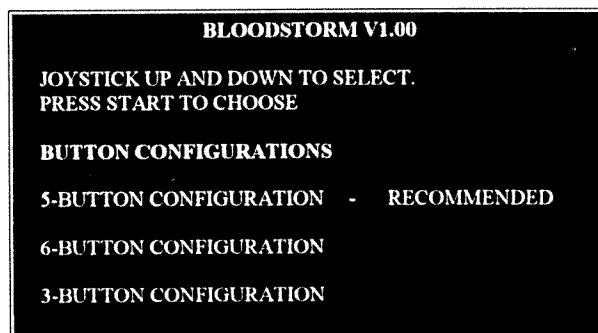
BLOODSTORM allows for changing the level of violence desired for your location.



VIOLENCE SETTING SCREEN

Button Configurations:

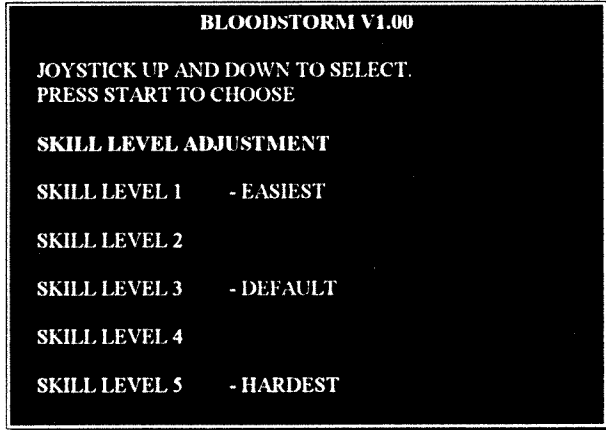
BLOODSTORM allows for changing the button configuration needed to play the game for your particular control panel.



BUTTON CONFIGURATIONS SCREEN

Skill Level Adjustment:

BLOODSTORM allows for changing the level of skill needed to play the game. This feature is good for locations with younger or novice players who are less skilled at the game, or expert or accomplished players who demand a greater challenge.



SKILL LEVEL ADJUSTMENT SCREEN

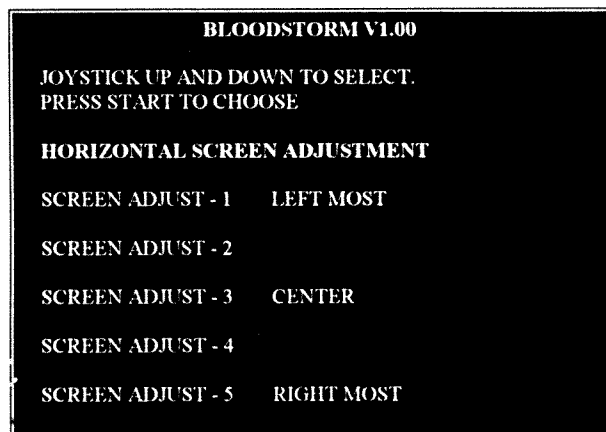
To set the game to an easy skill level, highlight...
SKILL LEVEL 1 - EASIEST.

To set the game to a difficult skill level, highlight...
SKILL LEVEL 5 - HARDEST.

SKILL LEVEL 2, SKILL LEVEL 3, and SKILL LEVEL 4 are settings between the easiest and hardest levels. Some times it is best if the skill level is adjusted gradually over a period of time.

Horizontal Screen Adjustment:

If for some reason the picture is not centered properly on the screen, use this menu to correct the problem.



HORIZONTAL SCREEN ADJUSTMENT SCREEN

SCREEN ADJUST - 1 LEFT MOST
will move the picture far to the left.

SCREEN ADJUST - 3 CENTER
will attempt to center the picture on the monitor.

SCREEN ADJUST - 5 RIGHT MOST
will move the picture far to the right.

GAME AUDITS

The Game Audits section will supply you with a detailed accounting of helpful and informative bookkeeping and statistics. To enter the Audits section, first go to the Main Service Menu by pressing the test switch located just inside the coin door of the cabinet or flip DIP switch 1 to the OFF position on the PCB. From the Main Service Menu, move the Player 1 Joystick down until the word GAME AUDITS MENU appears in white letters. Now press any player start button, and the Game Audits Menu will appear on the screen.



GAME AUDITS SCREEN

To look at the current statistics, highlight **REVIEW AUDITS** and press any player start button.

To set all of the statistics back to zero, highlight **RESET AUDITS** and press any player start button.

Review Audits:

When you choose to review the audits, the Audits Review Screen will appear.

BLOODSTORM V1.00			
PRESS START TO CONTINUE			
REVIEW AUDITS SCREEN 1			
COIN DOOR 1 - COINS	XX		
COIN DOOR 2 - COINS	XX		
COIN DOOR 3 - COINS	XX		
COIN DOOR 4 - COINS	XX		
TOTAL COINS	XX		
GAMES STARTED vs. COMPUTER		XX	
GAMES STARTED vs. PLAYER		XX	
GAMES CONTINUED		XX	
GAMES COMPLETED		XX	

AUDITS REVIEW SCREEN 1

Continued.....

BLOODSTORM V1.00			
PRESS START TO EXIT			
REVIEW AUDITS SCREEN 3			
SECRETS	TIMES FOUND	SECRETS	TIMES FOUND
NUMBER 1	XXXX	NUMBER 17	XXXX
NUMBER 2	XXXX	NUMBER 18	XXXX
NUMBER 3	XXXX	NUMBER 19	XXXX
NUMBER 4	XXXX	NUMBER 20	XXXX
NUMBER 5	XXXX	NUMBER 21	XXXX
NUMBER 6	XXXX	NUMBER 22	XXXX
NUMBER 7	XXXX	NUMBER 23	XXXX
NUMBER 8	XXXX	NUMBER 24	XXXX
NUMBER 9	XXXX	NUMBER 25	XXXX
NUMBER 10	XXXX	NUMBER 26	XXXX
NUMBER 11	XXXX	NUMBER 27	XXXX
NUMBER 12	XXXX	NUMBER 28	XXXX
NUMBER 13	XXXX	NUMBER 29	XXXX
NUMBER 14	XXXX	NUMBER 30	XXXX
NUMBER 15	XXXX	NUMBER 31	XXXX
NUMBER 16	XXXX	NUMBER 32	XXXX

AUDITS REVIEW SCREEN 3

Reset Audits:

When you choose to reset the audits, the Game Resets Screen will appear.

Continued.....

BLOODSTORM V1.00			
PRESS START TO CONTINUE			
REVIEW AUDITS SCREEN 2			
AVERAGE GAME TIME	X:XX		
# OF VERIFIED PASSWORDS	XXX		
FIGHTERS	TIMES CHOSEN	WIN SCREENS SEEN	
HELLHOUND	XXX	XXX	
FREON	XXX	XXX	
TEMPEST	XXX	XXX	
TREMOR	XXX	XXX	
FALLOUT	XXX	XXX	
MIRAGE	XXX	XXX	
RAZOR	XXX	XXX	

AUDITS REVIEW SCREEN 2

BLOODSTORM V1.00	
JOYSTICK UP AND DOWN TO SELECT.	
PRESS START TO CHOOSE	
RESET AUDITS	
NO RESET AUDITS	
RESET AUDITS	

GAME RESETS SCREEN

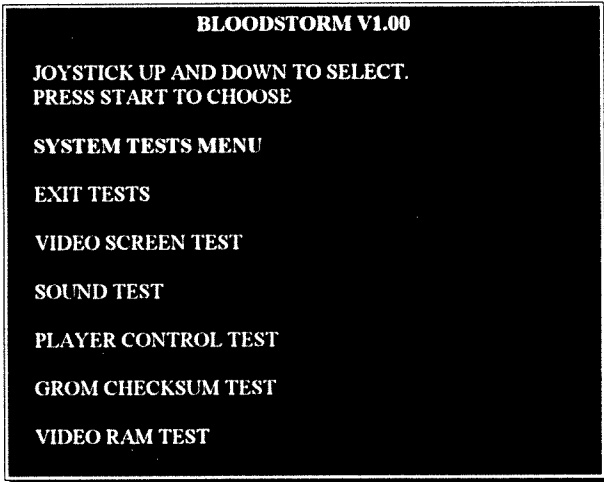
If you wish to set all of the game audits (described above) back to zero, highlight **RESET AUDITS** from this menu and press any player start button. The screen will briefly display **AUDIT RESET**.

If you change your mind and decide not to reset the audits to zero, highlight **NO RESET AUDITS** and you will exit this screen without making any changes to the audits.

SYSTEM TESTS

BLOODSTORM has been inspected and tested at the factory, and most likely the game will be in perfect working order when you plug it in. If you are experiencing any problems with the game, the System Tests are a good place to start when tracking down the problem. To enter the System Tests section, first go to the Main Service Menu by pressing the test switch located just inside the coin door of the cabinet, or set DIP Switch 1 on

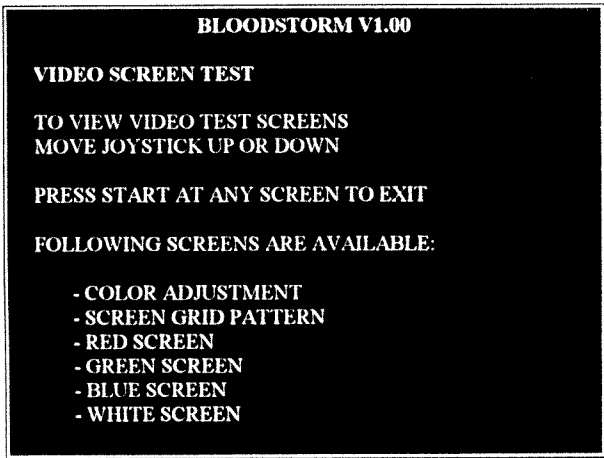
the PCB to the OFF position. From the Main Service Menu, move any player joystick down until the word **SYSTEM TESTS MENU** appears in white letters. Now press any player start button, and the System Tests Menu will appear on the screen.



SYSTEM TESTS MENU

Video Screen Tests:

You can test your monitor and adjust colors by choosing **VIDEO SCREEN TESTS** and pressing any player start button.

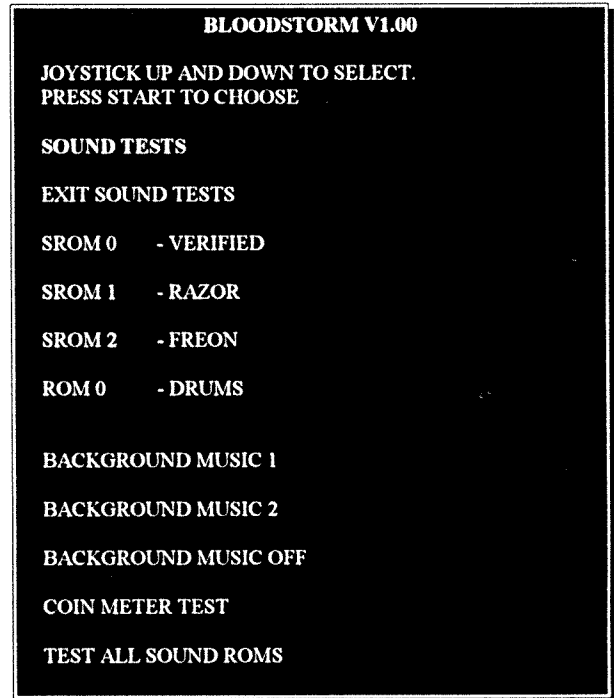


VIDEO SCREEN TEST MENU

When any player joystick is moved up or down, the screen changes to display a grid of colored rectangles. Use these colors as a guide and adjust your monitor so they look as good as possible. This test can be exited at any time by pressing any player start button.

Sound Tests:

Choose **SOUND TEST** from the System Test Menu to test the sounds and speakers in the game. The sound section also controls the coin meter, and you can test it from this section as well.

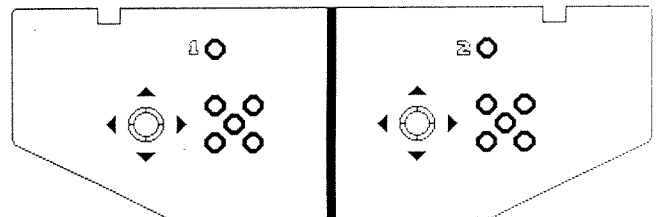


SOUND TESTS SCREEN

To test the coin meter, choose **COIN METER TEST** from this menu. If everything is working properly, the meter should increment each time any player start button is pressed while this line is highlighted.

Player Control Test:

Choose **PLAYER CONTROL TEST** from the System Test Menu to test the switches and controls of your game cabinet.



TEST SERVICE



PLAYER CONTROL TEST SCREEN (5-Buttons)

1. The screen displays a graphic representation of the players' control layout. If you have a cabinet using 5-buttons, this display will show a 5-button control panel layout.

2. Images on the screen will change color when the control is activated. Coin slots can also be tested from this screen.
3. Pressing the test or service button highlights the test or service text located in the lower left part of the screen.
4. To exit the test, Player 1 and Player Start 2 buttons must be pressed at the same time.

GROM Checksum Test:

Choose GROM CHECKSUM TEST from the System Test Menu to test the Graphics chips on the PCB. This test performs a complete test of the Graphics ROM's. While the test is in progress the following message is displayed:

```

RUNNING GROM CHECKSUM TEST. 1 MINUTE TO FINISH
  
```

GROM TEST SCREEN (Test In Progress)

When the test is completed the GROM Test Screen is displayed.

```

          BLOODSTORM V1.00

GROM CHECKSUM TEST

GROM CHECKSUM STAT      GROM CHECKSUM STAT
GROM0  XXXXXXXXXXXX GOOD  GROM2  XXXXXXXXXXXX GOOD
GROM5  XXXXXXXXXXXX GOOD  GROM7  XXXXXXXXXXXX GOOD
GROM10 XXXXXXXXXXXX GOOD  GROM12 XXXXXXXXXXXX GOOD
GROM15 XXXXXXXXXXXX GOOD  GROM17 XXXXXXXXXXXX GOOD

GROM1  XXXXXXXXXXXX GOOD  GROM3  XXXXXXXXXXXX GOOD
GROM6  XXXXXXXXXXXX GOOD  GROM8  XXXXXXXXXXXX GOOD
GROM11 XXXXXXXXXXXX GOOD  GROM13 XXXXXXXXXXXX GOOD
GROM16 XXXXXXXXXXXX GOOD  GROM18 XXXXXXXXXXXX GOOD

GROM CHECKSUM TEST: PASSED

PRESS START TO CONTINUE
  
```

GROM TEST SCREEN (Test Completed)

Video Ram Test:

This test performs a complete test of the Graphics video RAM. The video RAM is tested in two pages. The following message will be displayed as each page is tested.

```

RUNNING VIDEO RAM TEST. FIRST PAGE
  
```

When the test is completed the results will be displayed as follows.

```

          BLOODSTORM V1.00

VIDEO RAM TEST

VIDEO RAM FIRST PAGE STATUS      - 0000

VIDEO RAM TEST [PASSED OR FAILED]

PRESS START TO CONTINUE
  
```

VIDEO RAM TEST SCREEN

1. If the game passes this test, zeros will be displayed in white along with a VIDEO RAM TEST PASSED message.
2. If the test fails, a non-zero status and VIDEO RAM TEST FAILED message will be displayed in red. Call your distributor or the Strata Service Department for further help.
3. To exit this test, press any player start button.

1. If all checksums are shown in white, the test passed and your game is in good working order.
2. If any checksums are bad, they will be displayed in red text on this screen. This means that the GROM is defective and needs to be replaced. Call your distributor or the Strata Service Department for further help.
3. To exit this test, press any player start button.

GENERAL TROUBLESHOOTING

VIDEO PROBLEMS

Symptom	Probable Cause	Solution
No picture	Video inputs are not hooked up. (Refer to harness outputs and monitor specifications.) Bad connections Monitor	Make sure Dip switch 4 is in the correct position: ON - for negative sync monitors and OFF - for positive sync monitors. Most monitors are negative sync. Make sure there are good connections from the board's video outputs to the monitor's video inputs. Make sure the monitor is operating correctly. (Check it with another compatible logic board.)
Scrambled Picture	Sync switch set incorrectly	Dip switch 4, OFF - for positive sync, ON - for negative sync.
Missing colors or a washed out color	Bad video connections	Check the video red, green, and blue connections.
Bright, blurry, or rolling picture	Misadjusted monitor	Adjust the monitor, not the board. (Refer to your monitor manual.)
Picture too large, too small, or off center	Misadjusted monitor	Adjust the monitor, not the board. (Refer to your monitor manual.)
Video image is flipped	Misadjusted Monitor	Change Dip Switch 3 or reverse the monitor's convergence wires. (Refer to your monitor manual.)
Bad images in picture	Bad GROM	Do GROM test. Check IC pins to make sure none are bent over.
Diagonal white lines	GND problem	Earth and Logic GND's should be connected at power supply.

SOUND PROBLEMS

<u>Symptom</u>	<u>Probable Cause</u>	<u>Solution</u>
No Sound	+12v power supply is bad Bad connection to the board Miscellaneous	Try another +12v power supply. Check for +12v power on the board. Check for +5v power on the board. Check the volume setting. Check the speaker connections. Make sure the sound status light is flashing on the board.

CONTROL PROBLEMS

<u>Symptom</u>	<u>Probable Cause</u>	<u>Solution</u>
Buttons do not work or are partly inoperable	Switches not properly connected	Make sure that the common post of the switch is connected to ground. Make sure each individual switch is working. Make sure that the signal wire for that particular switch is connected to the normally open post of the switch.
Coin counter not working	Miscellaneous	Make sure that the signal wire has a connection from the switch to the board. Make sure +12v is hooked up to the counter. The signal wire is not connected to coin counter. (Check continuity.) Verify that the counter is good

POWER-UP PROBLEMS

Symptom	Probable Cause	Solution
No reaction when game is turned on	Blown fuse	<p>Power supply is too high. Power should be between +5v & 5.2v. (Measured on the circuit board.)</p> <p>Cabinet is not connected to earth ground. (All metal should be connected to the earth ground.)</p> <p>Short between power and ground. Check for foreign material.</p> <p>Disconnect the harness and measure the resistance between power and ground. It should read around 300 ohms. (0 ohms is a dead short.)</p> <p>Make sure the harness is not shorting to anything, such as bare or frayed wires shorting out each other or hitting bare metal.</p>
	No power from the power supply	Replace power supply.
	Power supply	Power supply too low. (should ideally be between +5v & +5.2v.) (Measured on the circuit board.)
	Short on the board	Check for loose or foreign material on the board.
	Open on socketed IC's	Check for bent pins on socketed parts.
Power-up sounds repeats itself		Make sure that all IC's are seated in their sockets properly.
	+5v setting too low	Check voltage. (Measured on the circuit board.)

MISCELLANEOUS PROBLEMS

Symptom	Probable Cause	Solution
Green L.E.D. not blinking	<p>Program not running</p> <p>No power</p> <p>Bad connections</p> <p>Loose pin on ASIC (U1)</p>	<p>Make sure all socketed I.C.'s are seated correctly. Look for bent pins.</p> <p>Blown fuse. Check for +5v before and after the fuse. Adjust power supply for +5v after the fuse. Use fast blow fuses only.</p> <p>Make sure you have continuity from PCB to power supply.</p> <p>Call Strata.</p>
Buttons do not work	<p>No continuity</p>	<p>Do Player Control test in System Tests.</p> <p>Check continuity from switch to PCB.</p>
Diagonal line in picture	<p>Grounding</p>	<p>Connect field ground to logic ground on power supply.</p>
Operator adjustables keep changing	<p>Low battery voltage</p> <p>Bad static RAM</p>	<p>Battery should be 2 to 3 volts.</p> <p>Replace.</p>
Sounds bad	<p>Mono / Stereo</p> <p>Miscellaneous</p>	<p>Check operator adjustables for the proper setting.</p> <p>Check the speaker connections.</p>
Game comes up in Test Mode	<p>Dip Switch 1 is OFF</p>	<p>Make sure Dip Switch 1 is in the ON position.</p>

JAMMA HARNESS CONNECTIONS For BLOODSTORM

WIRE COLOR	COMPONENT SIDE	
Black	GND	A
Black	GND	B
Red	+5 vdc	C
Red	+5 vdc	D
		E
Orange	+12 vdc	F
	KEY	H
Blue-Green	Ticket Count	J
		K
Yellow-Green	Left Speaker (-)	L
White-Green	Right Speaker (-)	M
Green-Black	Video Green	N
White	Video Sync	P
Orange-Black	Service	R
		S
Green-Blue	Coin 2	T
Red-Yellow	Start 2	U
Green-Yellow	Player 2 - Up	V
Blue-Yellow	Player 2 - Down	W
Black-Yellow	Player 2 - Left	X
Violet-Yellow	Player 2 - Right	Y
Brown-Yellow	Player 2 - Back Arm	Z
White-Yellow	Player 2 - Block	a
Orange-Yellow	Player 2 - Front Arm	b
Grey-Yellow	Player 2 - Back Leg	c
Yellow-Black	Player 2 - Front Leg	d
Black	GND	e
Black	GND	f

	SOLDER SIDE	WIRE COLOR
1	GND	Black
2	GND	Black
3	+5 vdc	Red
4	+5 vdc	Red
5		
6	+12 vdc	Orange
7		KEY
8	Coin Counter	Red-Green
9		
10	Left Speaker (+)	Yellow-Red
11	Right Speaker (+)	White-Red
12	Video Red	Red-Black
13	Video Blue	Blue-Black
14	Video GND	White-Black
15	Test	Blue
16	Coin 1	Red-Blue
17	Start 1	Red-White
18	Player 1 - Up	Green-White
19	Player 1 - Down	Blue-White
20	Player 1 - Left	Black-White
21	Player 1 - Right	Violet-White
22	Player 1 - Back Arm	Brown-White
23	Player 1 - Block	Yellow-White
24	Player 1 - Front Arm	Orange White
25	Player 1 - Back Leg	Grey-White
26	Player 1 - Front Leg	Yellow-Orange
27	GND	Black
28	GND	Black

DIP SWITCH SETTINGS for BLOODSTORM

	ON
1	Test Mode Normal
2	Violence ON
3	Screen Upright
4	negative Video Sync (-)

	OFF
	Strata Test Mode
1	
	Violence OFF
2	
	Screen Flip
3	
	positive Video Sync (+)
4	



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