ATARI
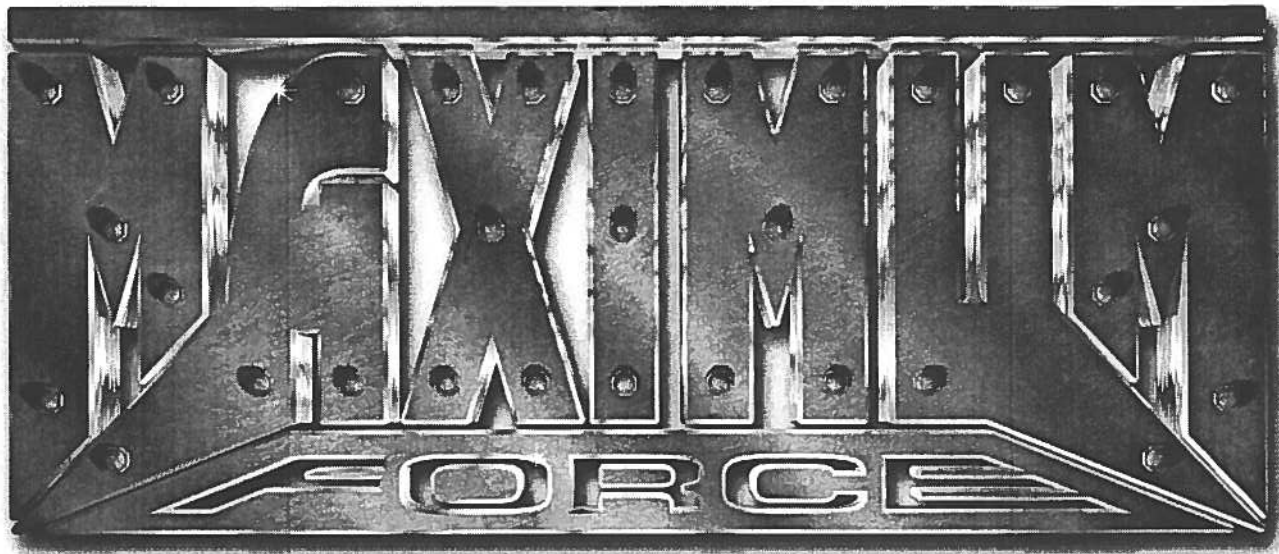GAMES



TM

25" DEDICATED GAME
OPERATION MANUAL

Operation & Adjustments • Testing & Problem Diagnosis
Parts Information • Wiring Diagrams

## WARNINGS & NOTICES

**WARNING**
USE OF NON-ATARI PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE! USE ONLY ATARI AUTHORIZED PARTS.

* For safety and reliability, substitute parts and modifications are not recommended.

* Substitute parts or modifications may void FCC type acceptance.

* Use only authorized components and parts. Failure to do so will void warranty and may result in incorrect and/or unsafe operation.

* This game is protected by federal copyright, trademark and patent laws. Unauthorized modifications may be illegal under federal law. This also applies to ATARI logos, designs, publications and assemblies. Moreover, facsimiles of ATARI equipment (or any feature thereof) may be illegal under federal law, regardless of whether or not such facsimiles are manufactured with ATARI components.

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# MAXIMUM FORCE™

# OPERATION

**NOTICE**
Information in this manual is subject to change without notice. ATARI reserves the right to make improvements in equipment function, design, or components as progress in engineering or manufacturing methods may warrant.

Fill out and mail in the Game Registration card. Be sure to include the game serial number from the label on the rear of the cabinet. For your records, write the game serial number in the manual. SERIAL NUMBER _____

# SAFETY NOTICES

The following safety instructions apply to all game operators and service personnel. Specific warnings and cautions will be found throughout this manual where they apply. We recommend that you read this page before preparing your game for play.

## ⚠ CAUTION

**HARD DISK DRIVE.** The hard disk drive must be packed in an anti-static bag. The disk drive assembly must be packed in an approved shipping container (P/N 08-8068) in order to be sent in for repair or replacement. Do not stack or drop hard disk drives during installation or removal.

**TRANSPORTING GAME:** This game contains glass and fragile electronic devices. Transport this game securely. Avoid rough handling. Do not move this game with power on.

**AC POWER CONNECTION.** Verify that the switch on the power supply is set for 110VAC or 220VAC according to local line voltage. Verify that the fluorescent lamp assembly is correct for local line voltage.

**PROPERLY GROUND THE GAME.** To avoid electrical shocks, do not plug in the game until it has been inspected and properly grounded. This game should only be plugged into a grounded 3-wire outlet. Do not use a "cheater" plug or cut off the ground pin on the line cord.

**POTENTIAL SHOCK HAZARD.** This video game system does not utilize an isolation transformer. No isolation exists between the internal cabinet AC system and the external AC line.

**DISCONNECT POWER DURING REPAIRS.** To avoid electrical shock, turn off the power switch and disconnect the game from the AC power source before removing or repairing any part of the game. After servicing any parts of the unit, be sure that all of the ground wires are secure before restoring power.

**USE PROPER FUSE.** To avoid electrical shock, all replacement fuses must match the original fuse in fuse type, voltage rating, and current rating.

**PROPERLY ATTACH ALL CONNECTORS.** Be sure that the connectors on each printed circuit board (PCB) are properly connected. If they do not slip on easily, do not force them. A reversed connector may damage your game and void the warranty. Connectors are keyed to fit specific pins on each board.

**HANDLE FLUORESCENT 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.

## EPILEPSY WARNING

A very small portion of the population has a condition which may cause them to experience epileptic seizures or have momentary loss of consciousness when viewing certain kinds of flashing lights or patterns that are present in our daily environment. These persons may experience seizures while watching some kinds of television pictures or playing certain video games. People who have not had any previous seizures may nonetheless have an undetected epileptic condition.

If you or anyone in your family has experienced symptoms linked to an epileptic condition (e.g., seizures or loss of awareness), immediately consult your physician before using any video games.

We recommend that parents observe their children while they play video games. If you or your child experience the following symptoms: dizziness, altered vision, eye or muscle twitching, involuntary movements, loss of awareness, disorientation, or convulsions, DISCONTINUE USE IMMEDIATELY and consult your physician.

## PRODUCT SPECIFICATIONS

**Operating Requirements**

| Location | Electrical Power | Temperature | Humidity |
|----------|------------------|-------------|----------|
| Domestic | 120VAC @ 60Hz 3.0 Amps | 32°F to 100°F | Not to exceed 95% relative |
| Foreign | 230VAC @ 50Hz 2.0 Amps | (0°C to 38°C) | |
| Japan | 100VAC @ 50Hz 3.0 Amps | | |

**Cabinet Statistics**

| Shipping Dimensions | Shipping Weight | Design Type |
|---------------------|-----------------|-------------|
| Width   29.25" (75 cm) | 325 Lbs. | Optical Gun Type |
| Depth   34" (87 cm) | 148 kg. | Dedicated Video Game |
| Height  72" (183 cm) | | |

**Equipment Characteristics**

| Video Display Monitor | Audio System | Currency Acceptors |
|-----------------------|--------------|--------------------|
| Standard Resolution RGB | Digital Stereo | Standard Coin Door |
| 25" (63.5 cm) CRT | 6" x 9" Extended Range | 2 Coin Mechanisms |
| | (15.2 cm x 22.8 cm) | 1 Coin Counter |

**Game Characteristics**

| Player Variables | Operator Variables | Diagnostics |
|------------------|--------------------|-------------|
| 1 or 2 players per game | Coinage, Game Options | Automatic Power-Up Self-Test |
| High Score Recognition | Difficulty, Volume, | Manual Multi-Level Menu System |
| | Audits, Statistics | |

## INSTALLATION & INSPECTION

1. Remove all items from the shipping containers and set them aside. Remove all packing material from the guns and cables. Inspect the exterior of the main cabinet and the control section for any damage.

⚠️ **WARNING**
**The cabinet is top heavy.**

2. The cabinet rests on four leg levelers. Lift and move the cabinet to its intended location, maintaining clearance between the cabinet and walls, drapes, other games, etc. Lower each leg leveler until the cabinet is stable and level. Adjust the levelers to distribute weight equally on each corner.

3. The coin door keys are attached to one of the gun holsters on the control section. Unlock and open the coin door. The cash box door and front door keys are located on a key hook attached to the inside of the coin door.

4. Unlock and open the cash box door. Pull the cash tub out of the vault. Remove the spare parts stored in the cash tub.

5. Unlock the rear door and lift it off of the cabinet. Inspect the cabinet interior for any signs of damage. Check that all major assemblies are mounted securely.

6.  Refer to the Cabinet Wiring Diagram (Section 3), and check to see that all cable connectors are correctly secured.  *Do not force connectors; they are keyed to fit in only one location.*  Bent pins and reversed connections may damage your game and void the warranty.

7.  The line cord is with the spare parts.  Match holes on the IEC plug with the prongs in the receptacle and push firmly to seat the line cord.  Route the cord away from cabinet edges and foot traffic areas.

```
                    ┌─ POWER
                    │  SUPPLY
                    │
                    │  ┌─ LINE
                    │  │  CORD
```
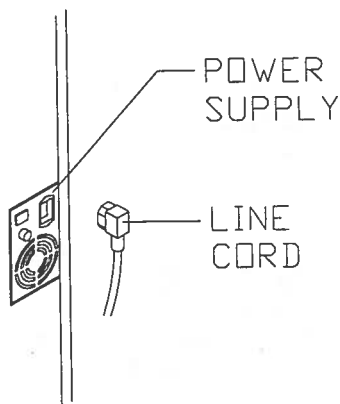
8.  Plug the game into a grounded (3-terminal) AC wall outlet.  Switch ON the game, using the ON/OFF switch located on the center left rear of the cabinet.  The game will power up and begin self-diagnostics.  If no errors are found, the game will automatically enter its "attract" mode of operation.

## MAINTENANCE

◆  **Viewing Glass**
It is not necessary to switch off power to the game to clean the glass.  Apply a mild glass cleaner to a clean cloth or sponge, then use this to wipe the viewing glass.  ***Do not apply the cleaner directly on the glass!***  Liquid could drip down into switch or motor circuits and cause erratic game operation.

◆  **Cabinet**
Use only non-abrasive cleaners to avoid damaging game graphics.  Apply the cleaner to a clean cloth or sponge, then use this to wipe screen clean.  ***Do not apply the cleaner directly on the cabinet!***

◆  **Guns**
Dirt or debris on the gun lens can affect accuracy.  Apply the cleaner to a clean cloth or cotton swab, then use this to wipe the lens clean.  ***Do not apply the cleaner directly into the gun barrel!***

# SERVICING

Maintenance and repairs should only be performed by qualified service personnel. The following product guidelines apply to all game operators and service personnel. Specific notes, cautions and warnings will be found throughout this manual where they apply. We recommend reading the SAFETY pages thoroughly before beginning service.

## ♦ Guns

Switch off power to the game. Open the control panel as described above. Disconnect the gun cable from the wiring harness. Remove locking nuts and pull the gun cable mount off of the control panel. Retain carriage bolts from the mount for reassembly. Ensure that the ground connection is reattached and that the gun cable can rotate freely in its mount before closing control panel and installing screws.

To disassemble an individual gun, lay the gun on a work surface and remove the screws. Separate the parts at the handle end first, using care not to dislodge parts (trigger is spring loaded). Clean the lens to remove fingerprints and dust, then reinstall any shields removed during disassembly. Verify a good connection exists between the static shield and the cable ground when the gun is reassembled.

## ♦ Coin Mechanism

Switch off power to the game. Unlock the coin door and swing it open. Unlatch and remove each coin mechanism separately to clean or replace with a different type. Ensure that mechanism seats fully in the holder upon reinstallation. Close and lock the release latch, then close the door. Turn on the game and change the mechanism setup, then test known good and bad coins to verify operation.

## ♦ Dollar Bill Validator    (Use MARS AE2411-U3 or other U.L. Recognized currency changer)

Dollar bill validators or other currency acceptors may be installed in games that were manufactured with the additional wiring connector. Switch off power to the game and unplug the A.C. line cord. Unlock the coin door and swing it open. Read door label for additional information. Remove nuts, spacers, and cover plate from the door. Change switch setting or other adjustments before mounting the unit. If the manufacturer has supplied an adapter plate, place it over the door cutout at this time. Install spacers on threaded studs, then align the validator mounting holes with the studs and seat the unit in the door opening. Install the nuts and tighten firmly. Attach the ground wire (green with yellow stripe) lug to the door ground stud next to the hinge. Mate the wiring harnesses and press to fully seat connectors. Route wires away from door edges and hinge. Check for proper bill chute alignment. Plug in the line cord and turn on the game. Change the mechanism setup and pricing, then test known good and bad bills to verify proper operation. Close and lock the coin door when correct.

## ♦ Coin Counter

Switch off power to the game. Unlock the cash door and swing it open. The meter is located at the lower right corner of the door opening. Record the meter count before testing or replacement.

Insert finger through access hole and locate the meter wires. Disconnect wiring at the connector. Remove the screws from the front. Ensure that replacement unit has a diode across the terminals.

# CABINET VIEW 1

UPPER BRACKET

SCREENED MARQUEE

FLUORESCENT LAMP ASSEMBLY

FLUORESCENT STARTER

FLUORESCENT BULB

MONITOR

MONITOR GLASS

BEZEL

SPEAKER GRILL AND SPEAKER

HOLSTER

MONITOR CONTROLS

TEST SWITCH BRKT

COIN DOOR

CASHBOX DOOR

COIN METER

LEVELER ADJUSTER
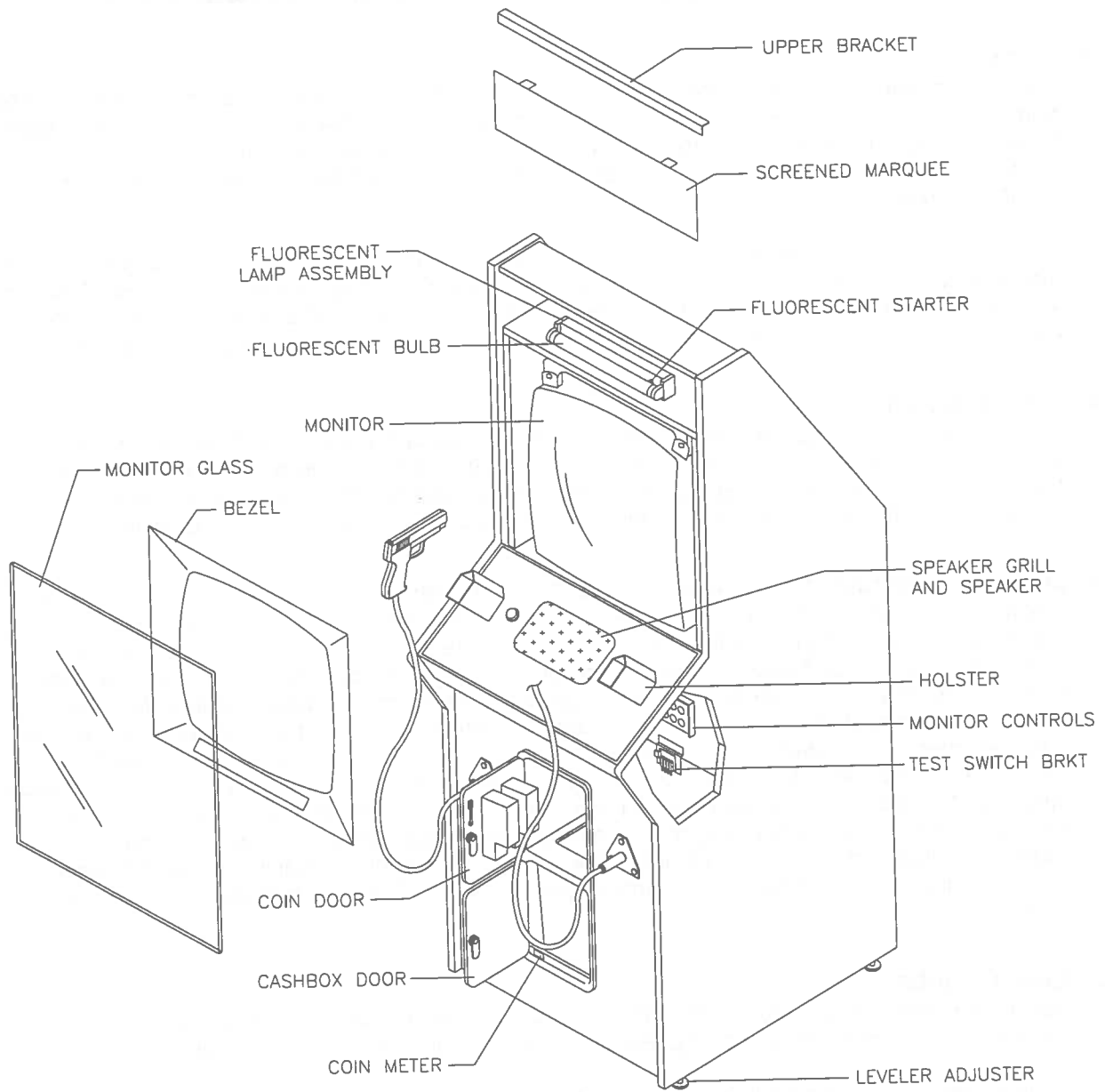
## ◆ Viewing Glass

Switch off power to the game. Remove the metal bracket above the viewing window and the marquee. Loosen but do not remove the metal bracket under the window. Swing view glass out at the top, then lift up and out of the cabinet. Clean the glass before reinstalling. Install bracket and tighten screws, but do not use excess force.

## ◆ Marquee

Switch off power to the game. Remove the viewing glass as described above. Lift the marquee up and out of the cabinet. Align tabs when replacing the marquee. Clean the glass before reinstalling. Install bracket and tighten screws, but do not use excess force.

## ◆ Fluorescent Light Assembly

Switch off power to the game. Remove the viewing glass and the marquee. Remove both plastic lamp locks. Grasp the bulb at each end and give it a quarter turn. Gently pull the bulb straight out to remove it from its sockets. The starter also requires a quarter turn for removal. Do not force bulb or starter during reinstallation. Clean the bulb to remove fingerprints and dust, then reinstall both lamp locks. Install the marquee and the viewing glass. Verify that the lamp lights before locking door.

To remove the entire light fixture, remove viewing glass and marquee. Remove the lamp locks and the bulb. Disconnect the fluorescent light assembly connector from its power cable. Remove the screws that hold the assembly to the light cover, then lift out the assembly. The ballast is in the base.

### !! WARNING !!
**If you drop a fluorescent tube or a CRT and it breaks, it will implode! Use care in handling.**

## ◆ Monitor

Switch off power to the game. Remove the viewing glass. Disconnect all monitor cables. Remove the monitor bezel and both barrier panels. Remove the four flange nuts securing the monitor's mounting brackets to its mounting panel. Pull the monitor carefully from the cabinet and set in a safe place. The monitor remote adjustment board is behind the control panel just above the coin vault. Clean the face of the CRT before reinstalling the barrier panels and the monitor bezel.

## ⚠ CAUTION

*THE VIDEO MONITOR IS HEAVY, WITH MOST OF THE WEIGHT TOWARD THE FRONT OF THE ASSEMBLY. BE SURE IT IS FIRMLY SUPPORTED AS IT IS REMOVED FROM THE CABINET.*

*The monitor does not require isolation from the A.C. line voltage in normal operation. However, when operating outside the cabinet or servicing the monitor on a test bench, YOU MUST ISOLATE THE MONITOR FROM LINE VOLTAGE WITH AN ISOLATION TRANSFORMER.*

# CABINET VIEW 2

CAM LOCK

LAMP ACCESS PANEL

UPPER VENT

OPTICAL GUN
ASSEMBLY

DOOR LOCK AND
LOCK BRACKET

PLASTIC CLIP

MONITOR BRACKET

HARD DISK
DRIVE

POWER SUPPLY

LINE CORD

CPU BOARD

ELECTRONICS TRAY

DOOR ASSEMBLY
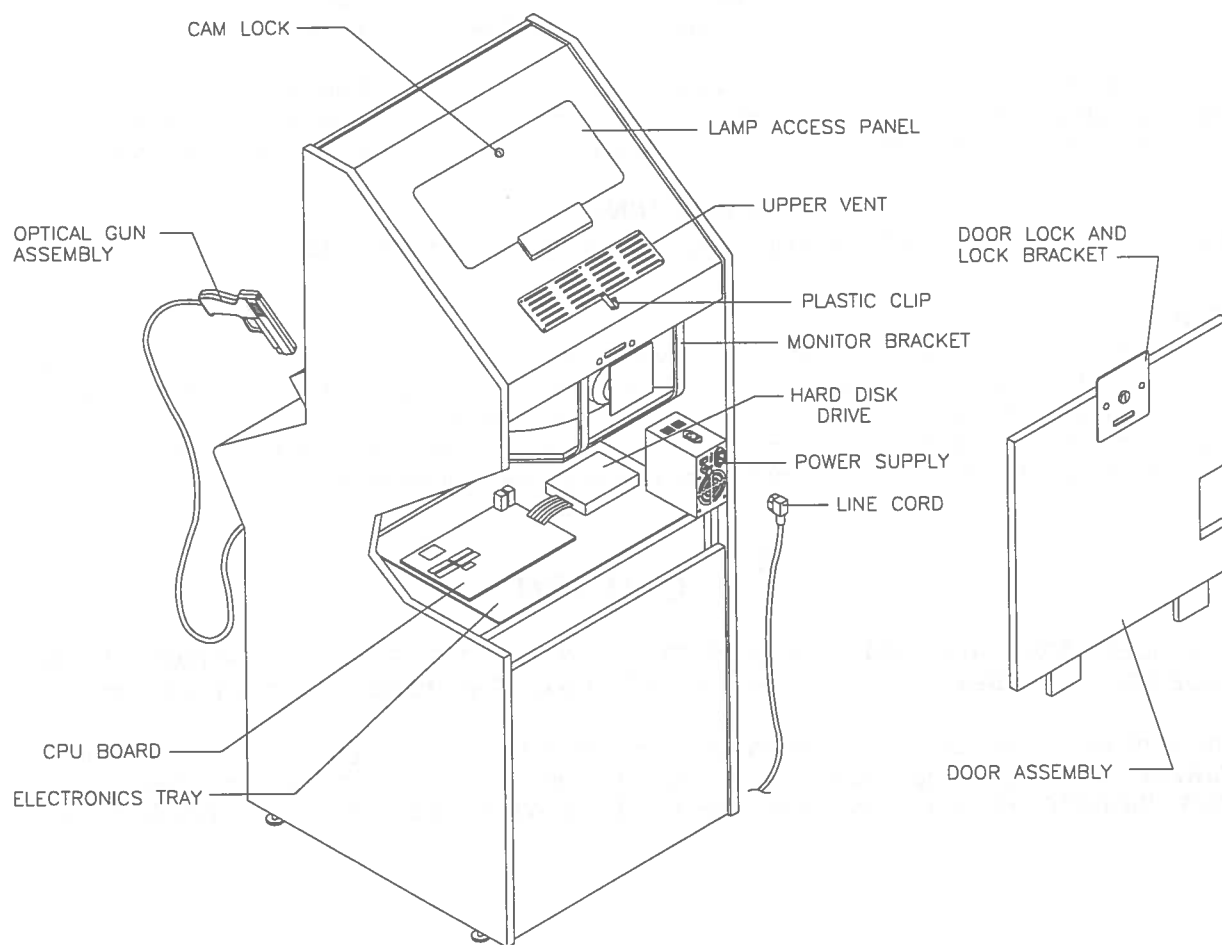
## ◆ Speaker

Switch off power to the game. The speaker is mounted behind a grille on the control panel. The grill and the speakers come out from the front. Remove the screws and set the grille aside. Always remove the upper mounting screws first and replace them last to avoid damage to the speaker.

Remove the speaker from the enclosure and disconnect the wires. Refer to the Wiring Diagram (Section Three) for speaker wiring information. *Do not use excess force when removing or tightening mounting screws threaded into plastic or particle board.*

## ◆ Hard Disk Drive                    *REMEMBER: HARD DISK DRIVES ARE FRAGILE*

**Use an anti-static bag and approved shipping container (P/N 08-8068) to return the hard disk drive assembly to your distributor.**

Switch off power to the game. Unlock the rear door and lift it off of the cabinet. Disconnect the D.C. power cable from the hard disk drive. Unplug the ribbon cable from the hard drive and leave it attached to the CPU board. Carefully remove the screws and lift the drive assembly out of the cabinet. *Do not stack or drop hard disk drives.*

## ◆ Power Supply

Switch off power to the game and disconnect the line cord. Unlock and open the rear door. Unplug the IEC A.C. connector from the top of the supply and the wiring harnesses from the back. Disconnect the D.C. power cable from the hard disk drive. Do not remove the supply mounting bracket. Remove two rear screws from the supply, then slide out of the cabinet. Verify the line voltage switch setting before reinstalling the power supply.

## ◆ CPU Board Assembly

Switch off power to the game. Open the rear door. If used, remove the RF Cage top to expose the CPU Board Assembly. Carefully note the orientation of the JAMMA connector and the other cables. Extract the harness and the hard disk drive ribbon cable from the board connectors. Remove CPU Board Assembly mounting screws. Lift the board out of the cabinet and set in a safe place. Anti-static bags and protective containers from new parts may be used to store the board if it is not reinstalled.

## ◆ Memory

The ROM (Read Only Memory) circuits contain the computer operating instructions for this game.

Switch off power to the game. Carefully note the position, then remove using a chip extraction tool.

To reinstall memory circuits, orient a chip over its socket and press firmly to seat pins. *Do not force.*

⚠ CAUTION     *Discharge any static electricity build up in your body by touching the power supply chassis. This is to be done BEFORE touching or handling the electronic assemblies.*

# GAME OPERATION

## STARTING UP

Each time the game is first turned on or power is restored, it begins executing code out of the boot ROM. These self-diagnostic tests automatically verify and report condition of the hardware and the disk drive. The screen is blank during these tests. If any of the individual tests fails, then an error message will be displayed for each test. The message will be displayed for 30 seconds or until any button is pressed.

* If no buttons are pressed, the system will quickly complete all tests then load and run the game.
* Press and hold the coin door TEST button to skip the boot ROM tests and activate the Menu System.

Once all Power-up tests have been passed, the game goes into its "attract mode". Scenes and sounds from a typical game are alternated with previous high scores in an endless pattern until game play starts.

Insert currency to start the game. Play begins after a mission is chosen. The game will progress until time is exhausted. If no more play is required, the game automatically returns to the "attract mode".

## GAME RULES    *Play instructions are found on the lighted information panel between the speakers.*
### INDIVIDUAL PLAY

Insert currency to start the game. Choose a gun and press the nearest START button. Select a mission.

### MULTIPLE PLAYERS

Insert currency to start the game. Choose guns and press both START buttons. Select a mission.
An indicator bar at the top of the screen shows which player is scoring more points during competiton.

## PLAYER CONTROLS    *(NOTE: Use the gun to shoot through obstacles and enter secret rooms.)*

♦ **START Button**
This button allow players to begin or continue play.
This same button selects items from the menu during service.

♦ **GUNS**
The guns are used to shoot bad guys, make holes in objects, set off explosives, etc.
The guns are used to select items from the menu during service.
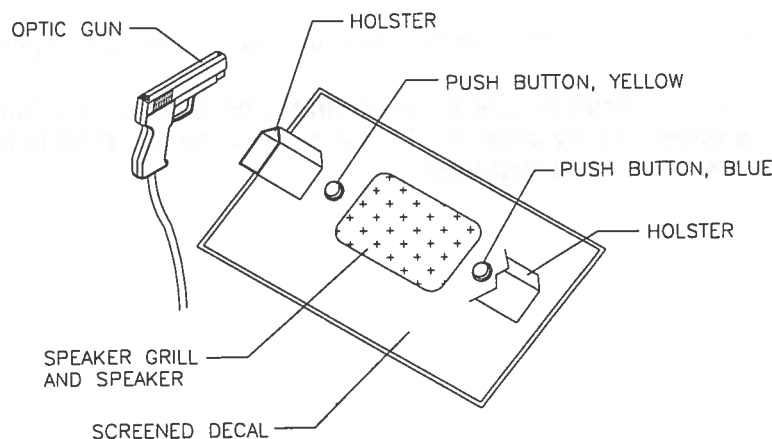


**PLAYER CONTROL LOCATIONS**

## OPERATOR CONTROLS

### CABINET SWITCHES
♦ **Power Switch** (on the power supply at the rear of the cabinet)
The **Power Switch** turns off the game during service. It does not reset the game variables.

♦ **Monitor Remote Adjustments** (behind the coin door and above the vault)
The **Monitor Remote Adjustment Board** sets the video display for optimum viewing.

### CONTROL SWITCHES
♦ **Volume Down and Volume Up Buttons** (mounted on a bracket behind the coin door)
The **Volume Down** and **Volume Up** push-button switches increase or decrease game sound levels.
Press either button briefly to make minor changes. Press and hold a button to make major changes.

### NOTE
The Attract Mode volume is controlled independently of the Game Mode volume.
For greater profits, adjust your volume levels to a loud setting to draw attention to this game.

♦ **Begin Test Button** (mounted on a bracket behind the coin door)
The **Begin Test** push-button switch enters the menu system. Press the Begin Test button briefly to
run automatic tests. To make changes, press and hold Test until the selections screen is displayed.

♦ **Service Credit Buttons** (mounted on a bracket behind the coin door)
The **Service Credit** push-button switch allots credits without changing the game's bookkeeping total.
Press and hold Service Credit to exit from any of the menu selections.

These buttons may also be used instead of the guns when operating the menu system.

*NOTE: The coin door must be open to reach the control switches.*
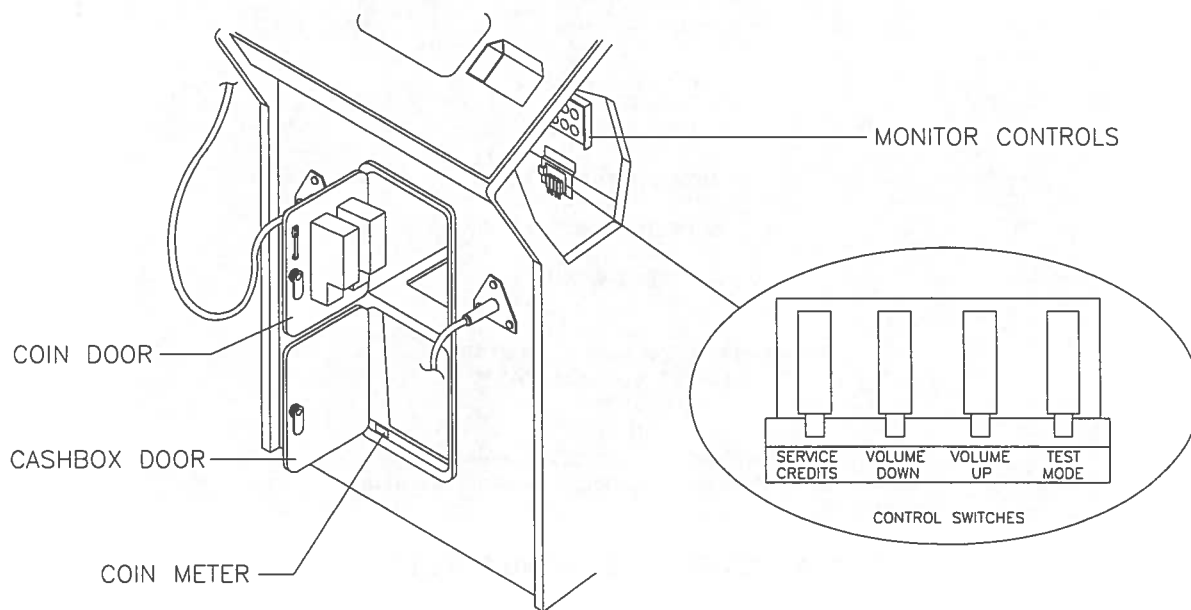


**CONTROL SWITCH LOCATIONS**

# MENU SYSTEM

## SYSTEM OVERVIEW

Game variables and diagnostics are presented in a series of on-screen menus. The Main Menu screen allows the operator to view information, make changes, or verify equipment operation. Each Sub Menu screen displays one specific group of choices. The Detail Menu presents data or runs the required test. You must be at the Detail Menu level to detect errors, make changes, or activate tests. Both the operator controls and the player controls are used to move through the menus and start or stop particular routines.

## SCREEN LAYOUT

Each menu screen is different, but the material presented stays in the same physical location each time.
  The color bar at the top center of each screen displays the current menu title.
  The center of the screen is used for data (menu items, video signals, statistics, reports, etc.)
  The bottom of the screen is reserved for messages (control functions, revision levels, etc.)

## ORGANIZATION

Main Menu screen items fall into two categories: options and tests. Items must be activated manually.

Sub Menu screen items offer the operator choices within a category. Some items have no Sub Menu while others may have more than one. You can get back to the previous menu or go on to the next menu.

Detail Menu screen items contain specific information. The operator must interact with the system to get results or to make changes. There is always a way to go back to the previous menus from this screen.

Use the control indicated to highlight an item on any menu. *Only one highlighted item can be selected at a time.* To return the game to normal, select EXIT TO GAME, then press the indicated button.

```
                    SELECT TEST
                         ⋀

                    ADJUST VOLUME

                     STATISTICS
                    GAME OPTIONS
                    COIN OPTIONS

                   CONTROLS TEST
                     GUN TESTS
                     DISK TESTS
   ⋘                                              ⋙
                   MEMORY TESTS

                   MONITOR TESTS

                   EXIT TEST MENU


          To select test, Use GUN or left START
            To run test, Press right START

                         ⋁
     GUTS: (Day Date Year)    (Hours: Minutes: Seconds)
     MAIN: (Day Date Year)    (Hours: Minutes: Seconds)
     SERIAL NO:
```
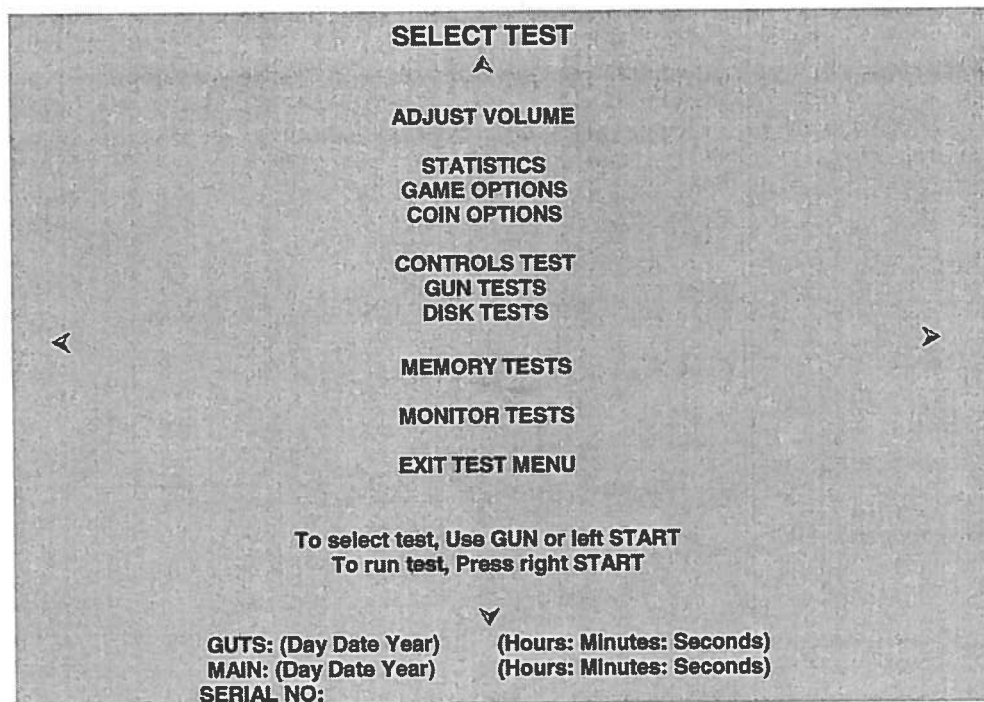
**TYPICAL SELECT TEST MENU SCREEN**

## VOLUME ADJUSTMENT

The Volume Adjust feature allows the operator to determine the sound and music level of the game.

The volume level can be adjusted for either the Attract Mode or the Game. Press the Volume Up button to raise the volume level and the Volume Down button to lower the volume level. Fire a gun at the left or right arrows to raise or lower the volume level. Music is played continuously while this screen is active.



**ADJUST VOLUME**
ʌ

**Game**

‹                                                                    ›

**Attract (100% of Game)**

ᵛ
to ADJUST volume, Use Gun
to RESTORE old setting, Press right START
to SAVE setting and exit, Press left START
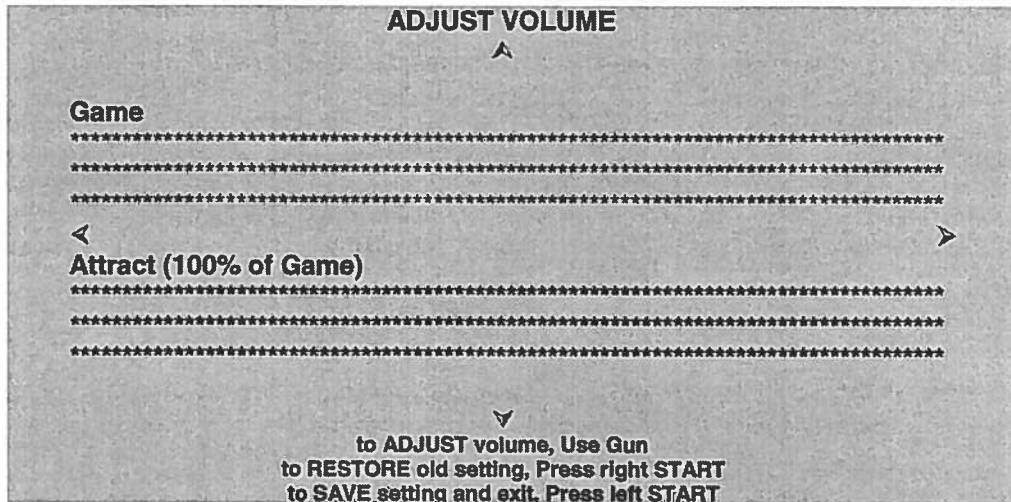
**VOLUME ADJUSTMENT MENU SCREEN**

Shoot a gun at the up or down arrows to choose either "Game" or "Attract" volume adjustment. When the selected variable is flashing on the screen, shoot the left or right arrows to change the level as desired.

The "Game" volume is continuously adjustable from zero to maximum. The game will seem more realistic if the player experiences high volume sounds during play (these weapons do not have silencers).

The "Attract" volume is continuously adjustable from Mute (zero) to maximum. For greater profits, adjust your volume levels to a loud setting to draw attention to this game.

The "Attract" and "Game" volume levels may be adjusted to different values independently, but "Attract" cannot be set higher than the level chosen for normal game play. If the "Game" level is lowered, it will automatically lower the "Attract" level. Lowering the "Attract" level will not affect the "Game" setting.

The current volume level is represented by the length of a bar made of dots. A longer bar indicates a higher volume setting than a short bar. Factory default for "Game" and "Attract" volume levels is 7.

Be certain to press only the left START button after any volume adjustments have been made. The right START button will cancel any settings on the screen and return both levels to the previous screen values.

**NOTE: These adjustments affect the volume of the tests as well as the game play. If the volume levels are set to minimum (zero), there will be no sounds from the speakers during any of the audio tests. It is recommended that the volume levels be set to a moderately high value each time the sound portion of the game or the speakers are checked. The levels may be returned to their previous settings after the tests have been completed.**

# STATISTICS

The Statistics report allows the operator to assess how well the game is being played. In addition to the earnings, various game aspects are tracked to determine the players skill levels.

Use a gun or the left START button to select a menu item. The gun is also used to view the range of choices and change its value. Statistics may be reset to zero or allowed to increase after each viewing.

### STATISTICS

| | |
|---|---|
| Left Coins | :0 |
| Right Coins | :0 |
| Aux Coins | :0 |
| Idle Mins | :0 |
| 1 Player Mins | :0 |
| 2 Player Mins | :0 |
| Session Mins | :0 |
| New Games | :0 |
| Cont Games | :0 |
| Games Won | :0 |
| Left Starts | :0 |
| Left Continues | :0 |
| Right Starts | :0 |
| Right Continues | :0 |
| Games Won | :0 |
| Machine Sessions | :0 |
| Error Count | :0 |
| | |
| Total Coins | :0 |
| | |
| Average Time / Coin | :0 |
| | |
| Percentage Play | :0 |

To clear these counters, hold right START and press left START
For more ststs, Press left START

**STATISTICS REPORT MENU SCREEN**

The illustration shows how the report screen will look after the game has been reset or is first turned on. Most of the statistics will increase in value as the game is played. It is normal for some values to remain at zero: for example, the Aux Coins count will not change unless an additional Currency Acceptor has been installed in the game, and the Error Count will not change if no errors have occurred.

Low counts in both coin and player statistics may indicate that the game is too difficult for the skill levels of the players at this location; high continue counts may indicate that the game is not difficult enough. The difficulty level and other play characteristics may be adjusted from the Game Options menu.

It is recommended that the Statistics be recorded before any service or repairs are done on this game.

Press the left START button to view the additional game statistics. This will present the players progress with different game features such as Missions, Secret Rooms, Ammunition Reloads, etc.

Press the right START button to see HISTOGRAMS or USER MSGS screens. Press both START buttons to cancel any settings on the screen and return all counts to the factory default values.

The HISTOGRAMS screens will have no bar graphs until the system has enough data to plot.

The USER MSGS screen will contain no messages until the system detects an error.

# GAME OPTIONS

These adjustments allow the operator to customize the game. Each of the variables will change some aspect of game appearance or play. Optimum settings cause high player interest and increase earnings.

Use a gun or the left START button to select a menu item. The gun is also used to view the range of choices and change its value. Options may be reset to factory defaults or changed after each viewing.

```
                        GAME OPTIONS
                             A
Reset High Scores:
        No
ResetFactory Options:
        No
Game Difficulty:
        Hard
Number of Lives:
        Four
Innocent Kill Delay:
   <          30 sec.                              >
Language:
        English
Gore:
        On
Special Innocents:
        On
Secret Rooms:
        On
                             Y
            To RESTORE old setting, press right START
            To SAVE setting and exit, press left START
```
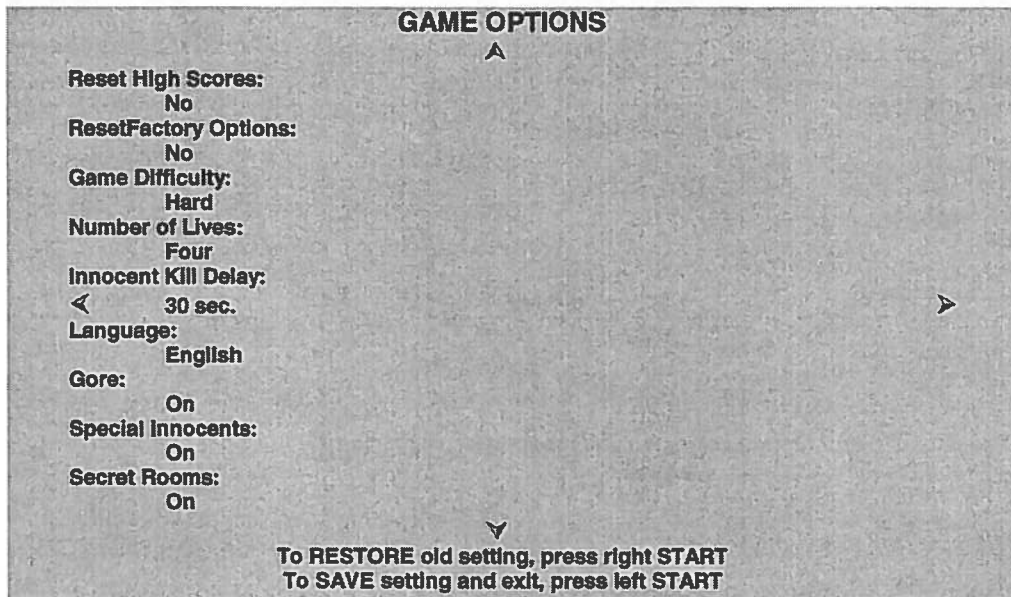
**GAME OPTIONS MENU SCREEN**

The illustration shows how this report screen will look after the game has been reset or is first turned on. Fire a gun at the left or right arrows to advance a variable through its range of choices. Some items have more options than others. It is recommended that all of them be viewed before one is selected.

The effects of these options can be judged by comparing statistics reports before and after changes were made. As players become more familiar with the game, new features or increased difficulty will make the game challenging and continue to generate interest.

Innocents are the unarmed people who appear periodically as they try to escape from the terrorists.

The Secret Rooms allow players to collect extra points by demonstrating their target shooting skills.

Selection of a different Language changes the player information presented on the screen during a game. It does not change any of the voice announcements, menu screens or tests.

It is recommended that the High Scores be recorded before any option changes are done on this game.

**NOTE: Changes to Game Difficulty or Number of lives will automatically reset the Player High Scores, since these variables directly affect the ability to collect points.**

## COIN OPTIONS

The Coin Options are used to set up the coin mechanisms and adjust the pricing of the games. Factory default values can be considered standard.

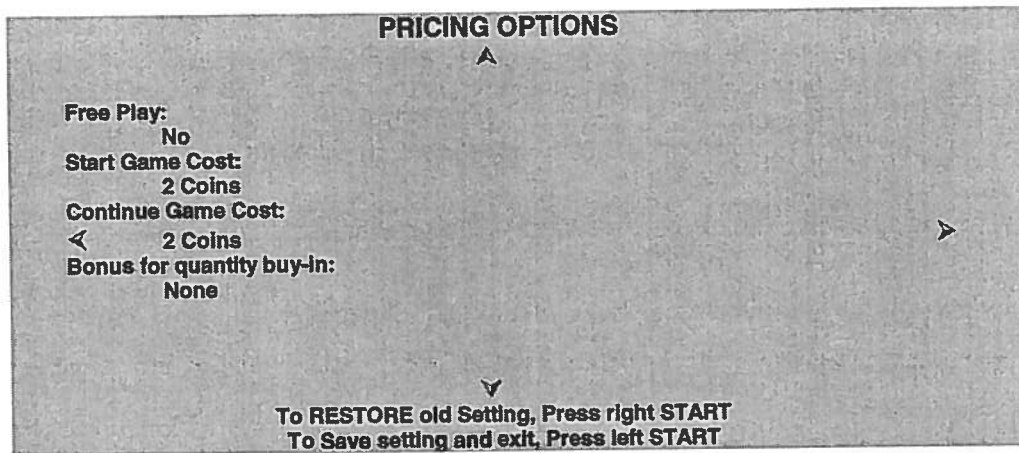Use a gun or the left START button to select a menu item. The gun is also used to view the range of choices and change its value. Options may be reset to factory defaults or changed after each viewing.

```
                         PRICING OPTIONS
                               A

Free Play:
        No
Start Game Cost:
        2 Coins
Continue Game Cost:
◄       2 Coins                                              ►
Bonus for quantity buy-in:
        None




                               V
              To RESTORE old Setting, Press right START
              To Save setting and exit, Press left START
```

PRICING OPTIONS MENU SCREEN

```
                          MECH SETUP
                               A
           Activate mech to test. Current status:
   Mech 1   Mech 2   Mech 3   Mech 4   BILL      Service

   Each Mech 1 pulse worth:
           1 Coin
   Each Mech 2 pulse worth:
           1 Coin
   Each Mech 3 pulse worth:
◄          1 Coin                                           ►
   Each Mech 4 pulse worth:
           1 Coin
   Each Bill pulse worth:
           1 Coin
   Stats and Counters count:
           Coins
                               V
              To RESTORE old Setting, Press right START
              To Save setting and exit, Press left START
```
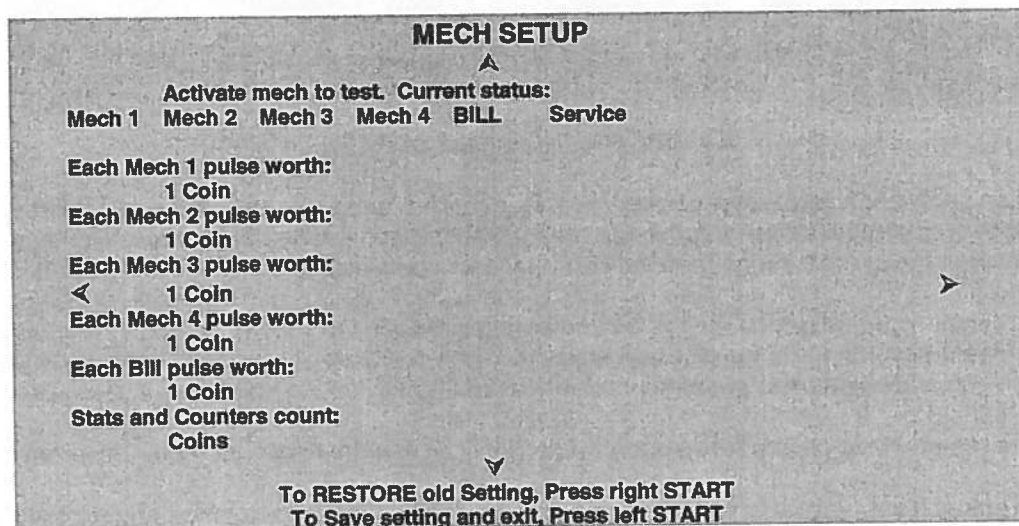
MECH SETUP MENU SCREEN

The illustrations show how these screens will look with all of the factory default settings. Fire a gun at the left or right arrows to advance a variable through its range of choices. Some items have more options than others. It is recommended that all of them be viewed before one is selected.

### PRICING OPTIONS
Custom pricing sets credits required to start and continue a game, rewards for buy-in and winning, etc. There are no other options if free play is selected. Free game player incentives may reduce earnings.

### MECH SETUP
Mech setup permits the operator to add or remove coin or bill mechanisms. Although values are shown for all devices, changes to unused inputs will have no effect if there is no such mechanism in the game.

## CONTROLS TEST

These tests allow the operator to manually check each switch in the game. Gun aim is tested separately.

**<u>NOTE</u>**
*Some switches may not be used with this game. Check the wiring diagram before testing.*

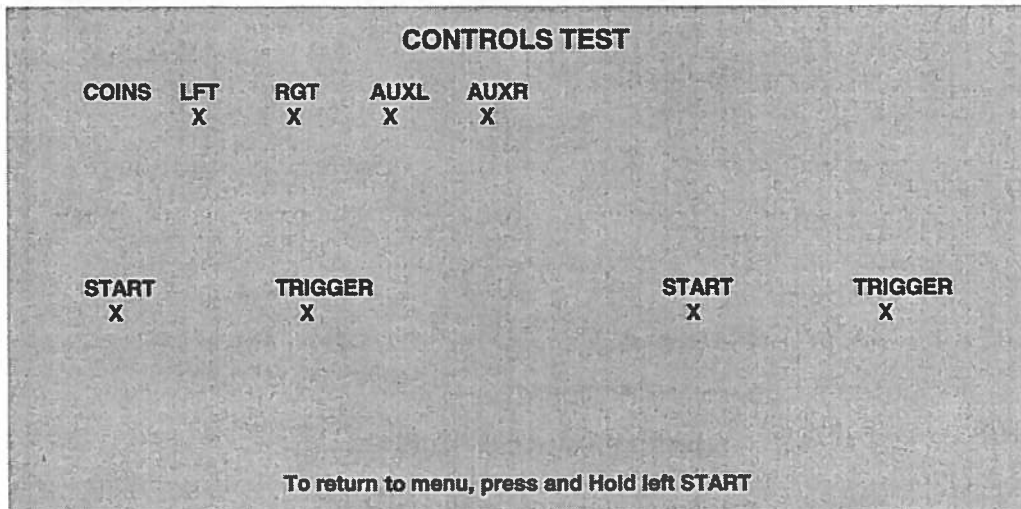Use any gun to select the Controls Test. Press the right START button to begin the test. Activate each switch and the switch indication on the screen changes state. Release the switch and the indicator returns to its previous normally open or closed condition. Switches may be tested in any combination.

```
                        CONTROLS TEST

  COINS   LFT     RGT     AUXL    AUXR
          X       X       X       X




  START         TRIGGER              START         TRIGGER
  X             X                    X             X




            To return to menu, press and Hold left START
```

**CONTROLS TEST MENU SCREEN**

**PLAYER CONTROLS** are shown on the screen just as they are found on the cabinet control panel. Each switch change should be exactly duplicated by a single indication on the menu screen.

The Player Controls Tests are used to verify crossed wires, intermittent conditions, and stuck switches.

**OPERATOR CONTROLS** are shown on the screen just as they are found on the coin door bracket. Each switch change should be exactly duplicated by a single indication on the menu screen.

The Operator Controls Tests are used to verify crossed wires, intermittent conditions, and stuck switches.
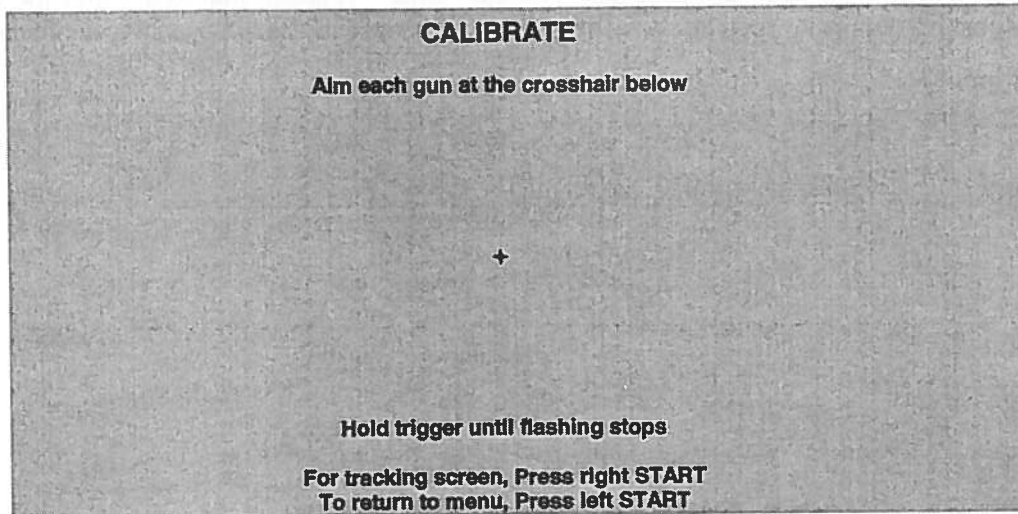
The Coin and Cabinet Switches are shown on the screen without regard for their actual game location. Each switch change should be exactly duplicated by a single indication on the menu screen.

These Switch Tests are used to verify crossed wires, intermittent conditions, and stuck switches.

## GUN TESTS

These tests allow the operator to change gun calibration and verify precise aim for all points on the screen. Inaccurate firing will discourage players quickly and reduce repeat game play.

Use a gun to select the Gun Tests. Press the right START button to begin the test. Aim and fire each gun at the target until the screen indicates successful calibration. Check all guns for tracking after adjustment.

**CALIBRATE**

Aim each gun at the crosshair below

+

Hold trigger until flashing stops

For tracking screen, Press right START
To return to menu, Press left START

**GUN CALIBRATION SCREEN**

**TRACKING**

To calibrate guns, Press right START
To return to menu, Press left START
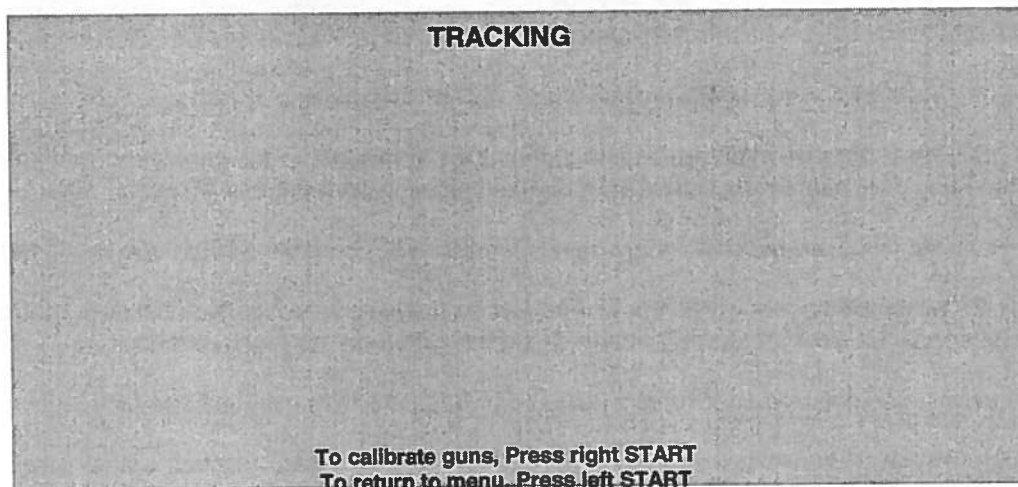
**GUN TRACKING SCREEN**

The illustrations show how these screens will look with all of the factory default settings. Fire guns one at a time to avoid miscalibration. Test and recalibrate guns often to keep the game at maximum earnings.

Before calibrating, it is recommended that the gun barrels be examined for presence of dirt or debris. No amount of calibration and testing can fix a dirty optical system, loose components, defective cables, etc.

Stand directly behind the gun holder and extend the cable to its full length during these gun tests.

**NOTE: Bright overhead lights can occaisionally interfere with proper optical gun operation. Reduce light levels and recalibrate guns to eliminate this problem as a source of inaccuracy.**

# DISK TESTS

The Disk Tests allow the operator to verify the functions of the Hard Disk Drive Assembly.

```
                        DISK TESTS

Hard Drive Connected:      Yes
Data read through:         GPU


QUANTUM FIREBALL               TM2100A

16 Heads 4092 Cylinders        63 SPT

Head          Cylinder Status        Throughput
 XX             XXXX       Good              XXXX    MB/s


Tests completed:           000

Maximum Force   Date    XXXXXX Time    XXXX

              To return to menu, Press left START
```
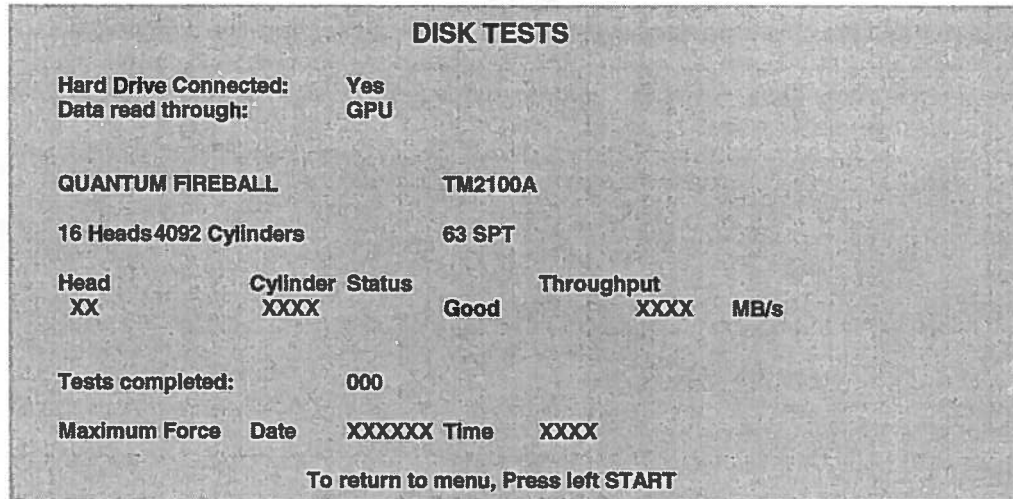
**DISK TESTS MENU SCREEN**

## Hard Drive Connected
This verifies the interface between CPU Board and Hard Disk Drive. The test takes less than 1 second. The processor requests disk information, but data cannot be retrieved successfully if there is a problem. The results of the test will be reported as pass or fail messages; error messages may be included.

## Data read through
This test routine. The test takes less than 1 second.
The results of the test will be reported as pass or fail messages; error messages may be included.

## Drive ID and Logical Sectors Available
These lines report the type of drive and the number of data storage areas found on the hard disk. This number is a result of the disk format which determines how information will be placed on the disk.

## Sector Test
This test will perform a sector by sector read/verify test on the disk drive. As the status of each block of sectors is checked, the speed of the data transfer is compared to its acceptance limits.
The results of the test will be reported as pass or fail messages; error messages may be included.

## Tests Completed
These tests run over and over. The number increases each time the cycle repeats (approx. 10 minutes).

## Program ID
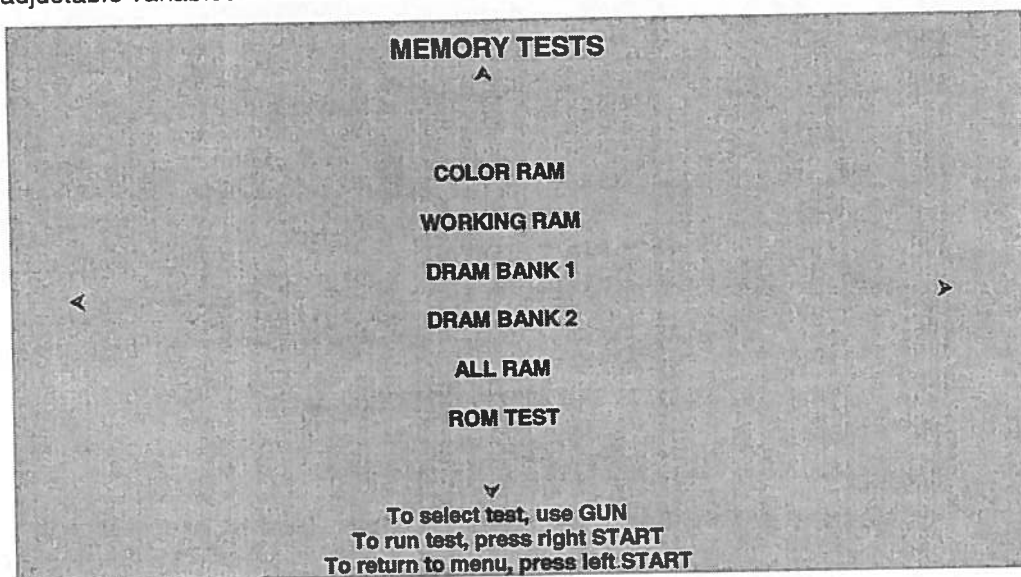This identifies the game revision number and date of the software on the hard disk drive.

# MEMORY TESTS

The Memory Tests allow the operator to verify some functions of CPU Board Assembly memory circuits.

## NOTE

*These tests detect system errors, not actual game errors. The game program is on the Hard Disk Drive.*

Use a gun to select a menu item. Press the right START button to begin the test. There are no custom settings or adjustable variables in these tests.

```
                    MEMORY TESTS
                         ʌ



                     COLOR RAM

                    WORKING RAM

                    DRAM BANK 1

 <                  DRAM BANK 2                  >

                     ALL RAM

                     ROM TEST


                         ᴠ
               To select test, use GUN
             To run test, press right START
            To return to menu, press left START
```

**MEMORY TESTS MENU SCREEN**

**COLOR RAM** performs a fast check of the storage area for the game video images.
This test takes less than 2 seconds to run. After completion, the Memory Tests screen is displayed.
The results of the test will be reported as pass or fail messages; error messages may be included.

**WORKING RAM** performs a fast check of the storage area for the game variables.
This test takes less than 2 seconds to run. After completion, the Memory Tests screen is displayed.
The results of the test will be reported as pass or fail messages; error messages may be included.

**DRAM BANK 1** performs a fast check of the storage area for the game sounds and action.
This test takes less than 5 seconds to run. After completion, the Memory Tests screen is displayed.

**DRAM BANK 2** performs a fast check of the storage area for the game sounds and action.
This test takes less than 5 seconds to run. After completion, the Memory Tests screen is displayed.

**ALL RAM** performs a more thorough check of the storage circuits for the game, one at a time.
This test takes less than 10 seconds to run. After completion, the Memory Tests screen is displayed.
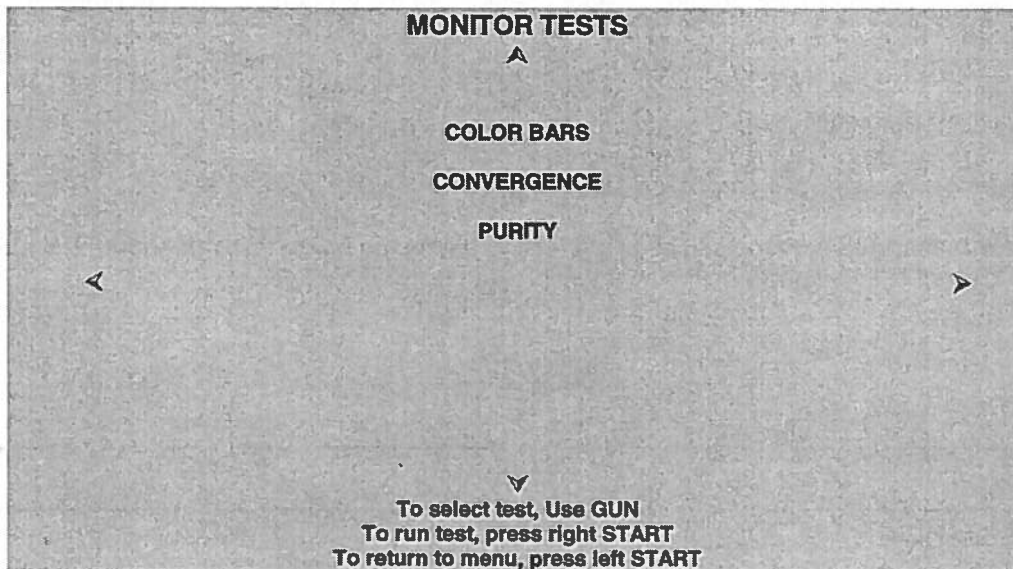The results of the test will be reported as pass or fail messages; error messages may be included.

**ROM TEST** performs a fast check of the storage area for the game instruction set.
This test takes less than 2 seconds to run. After completion, the Memory Tests screen is displayed.
The results of the test will be reported as pass or fail messages; error messages may be included.

# MONITOR TESTS

The Monitor Tests provide patterns for verifying the monitor performance or making adjustments.

Use a gun or the left START button to select a menu item. Press the right START button to begin the test. Once the menu is open, use a gun or the left START button to select an option, and the right START button to begin it. Press the right START button again to return to the Monitor Tests menu screen.

```
                    MONITOR TESTS
                          ∧


                      COLOR BARS

                     CONVERGENCE

                        PURITY

   ◁                                              ▷




                          ∨
                To select test, Use GUN
               To run test, press right START
              To return to menu, press left START
```

**MONITOR TESTS MENU SCREEN**

**COLOR BARS** fills the screen with shades of colors to verify red, green, blue and white level dynamic adjustments. Each color bar should appear sharp, clear, and distinct from bars on either side.

Borders must be visible on top, bottom, and both sides of the screen. The color bars should not change screen position or color as the background or border are removed or restored from the video display.

The Color Bars screen is useful in adjusting the monitor brightness and contrast.

**CONVERGENCE** tests fill the screen with a grid and a series of dots. The grid and the dots should be all one color, with no fringes or parallel images. The lines should be straight and the dots round.

Borders must be visible on top, bottom, and both sides of the screen. Lines and dots should not change screen position or color as the background or border are removed or restored from the video display.

The Convergence tests are useful in verifying the monitor convergence, linearity, and dynamic focus.

**PURITY** tests fill the screen with 100% of the chosen color at normal intensity. Each screen should be absolutely uniform from top to bottom and side to side. No retrace lines or noise should be visible.

Borders must be visible on top, bottom, and both sides of the screen. Image color should not change screen position or color as the background or border are removed or restored from the video display.

The Purity tests are useful in verifying monitor intensity, black level, blanking and automatic degaussing.

## DIP SWITCHES AND JUMPERS

The CPU Board has a number of hardware variables which can be changed to adapt this assembly to other uses. Jumpers determine which circuit paths are active, and DIP switches select instructions.

### Switches

There is one slide switch on the CPU Board. This switch duplicates the coin door TEST switch function. This switch should be set to its OFF position (Factory default) for the program to operate properly.

### Jumpers

Jumpers on the CPU Board are used to control audio and video signals to other components in this game.
These signals are set to match the production audio amplifiers, speaker system, and video monitors.

The active circuit paths have been optimized at the factory during the board test procedure. Each of the jumpers should be left in its original position to avoid program error messages.

## <u>NOTES</u>

_____

_____

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_____

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_____

_____

_____

_____
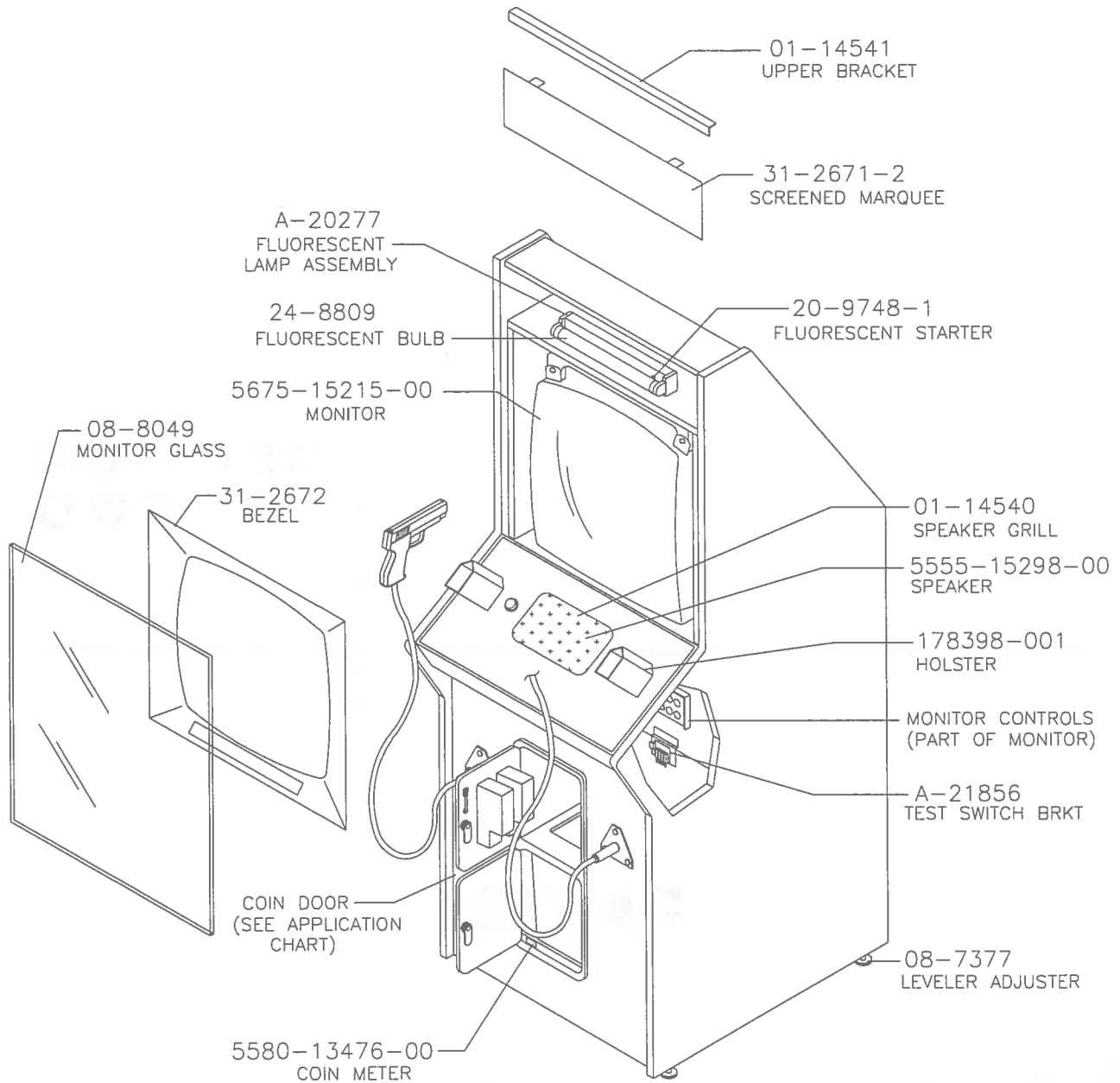
# MAXIMUM FORCE ™

## SECTION TWO

## PARTS

**Warning**

USE OF NON-ATARI PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE! USE ONLY ATARI AUTHORIZED PARTS.

* For safety and reliability, substitute parts and modifications are not recommended.
* Substitute parts or modifications may void FCC type acceptance.

# CABINET FRONT VIEW

**Complete Cabinet Assembly 30013-C**

01—14541
UPPER BRACKET

31—2671—2
SCREENED MARQUEE

A—20277
FLUORESCENT
LAMP ASSEMBLY

24—8809
FLUORESCENT BULB

20—9748—1
FLUORESCENT STARTER

5675—15215—00
MONITOR

08—8049
MONITOR GLASS

31—2672
BEZEL

01—14540
SPEAKER GRILL

5555—15298—00
SPEAKER

178398—001
HOLSTER

MONITOR CONTROLS
(PART OF MONITOR)

A—21856
TEST SWITCH BRKT

COIN DOOR
(SEE APPLICATION
CHART)

08—7377
LEVELER ADJUSTER

5580—13476—00
COIN METER

# CABINET REAR VIEW

20–10187
CAM LOCK

A–21617
LAMP ACCESS PANEL

01–13996
UPPER VENT

03–9599
PLASTIC CLIP

04–10682.1
GREEN OPTICAL
GUN ASSEMBLY

04–10683
MONITOR BRACKET

A–21676
HARD DISK
DRIVE

20–10187
CAM LOCK

01–11285
LOCK PLATE

04–10613
POWER SUPPLY

LINE CORD (SEE
APPLICATION CHART)

A–21640
CPU BOARD

A–21615
ELECTRONICS TRAY

A–21616
REAR DOOR ASS'Y

# COIN DOOR ASSEMBLY

KEY

CAM LOCK

COIN ENTRY
PLATE

27-3729
BUTTON BEZEL

NUT WASHER

CAM LOCK ARM

27-3725
ENTRY/REJECT
BUTTON

LIGHT BULB

SOCKET

27-3730 or
27-3733
REJECT BEZEL

MECH HOLDER

KEY HOOK

27-3731
REJECT FLAP

COIN MECH

COIN SWITCH

03-8863
CASH TUB

NOTE: SEE COIN DOOR
APPLICATION CHART
FOR ASSEMBLY NUMBER

# GUN ASSEMBLY

4604-01145-04
H-L #4 X 1/4 PPH

A051987-01
GUN PCB

23-6622
TAPE

178386-001
LENS

03-9659
LIGHT SHIELD

99-215121
TRIGGER SPRING

99-215129
TORX SCREW
6-32 X 3/8

99-215122
TRIGGER

03-9655
PISTOL, RIGHT HALF

03-9661
GUN SHIELD

99-215123
TRIGGER SWITCH

99-215128
HEX NUT 6-32

99-215127
SCREW #2 X 1/2

03-9654
PISTOL, LEFT HALF

99-215132
HOSE ASSEMBLY

# POWER SUPPLY
## 04-10613
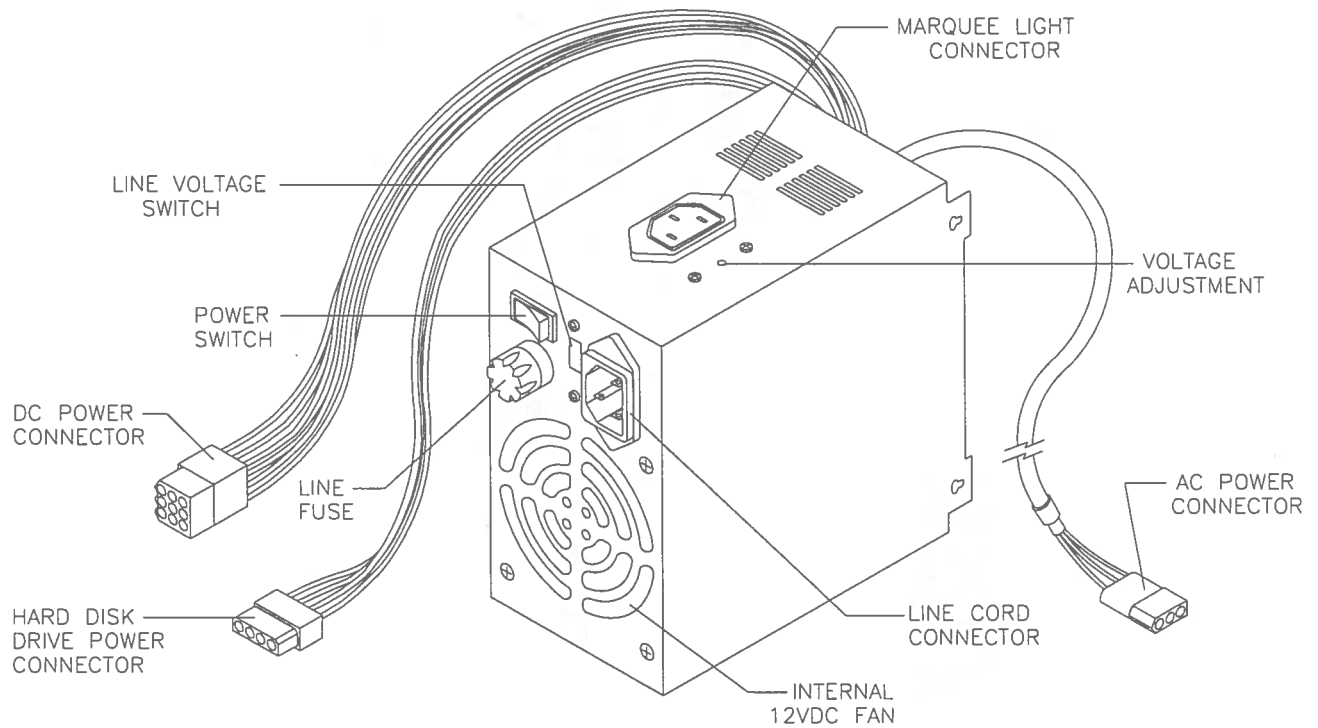


### A.C. AUXILIARY POWER CONNECTOR

| PINS | FUNCTION | COLOR |
|------|----------|-------|
| 1 | LINE | BLACK |
| 2 | GROUND | GREEN |
| 3 | NEUTRAL | WHITE |

**NOTE: Many computer grade power supplies use alternate wire colors. This is acceptable as long as the pinout is correct.**

### D.C. MAIN POWER CONNECTOR

| PINS | FUNCTION | COLOR |
|------|----------|-------|
| 1,2,3 | +5 VDC | RED |
| 4,5,6 | RETURN | BLACK |
| 7 | -5 VDC | BLUE |
| 8 | +12 VDC | YELLOW |
| 9 | -12 VDC | WHITE |

### HARD DISK DRIVE POWER CONNECTOR

| PINS | FUNCTION | COLOR |
|------|----------|-------|
| 1 | +5 VDC | RED |
| 2,3 | RETURN | BLACK |
| 4 | +12 VDC | YELLOW |

# CPU BOARD ASSEMBLY
## Early Production
## A-21640
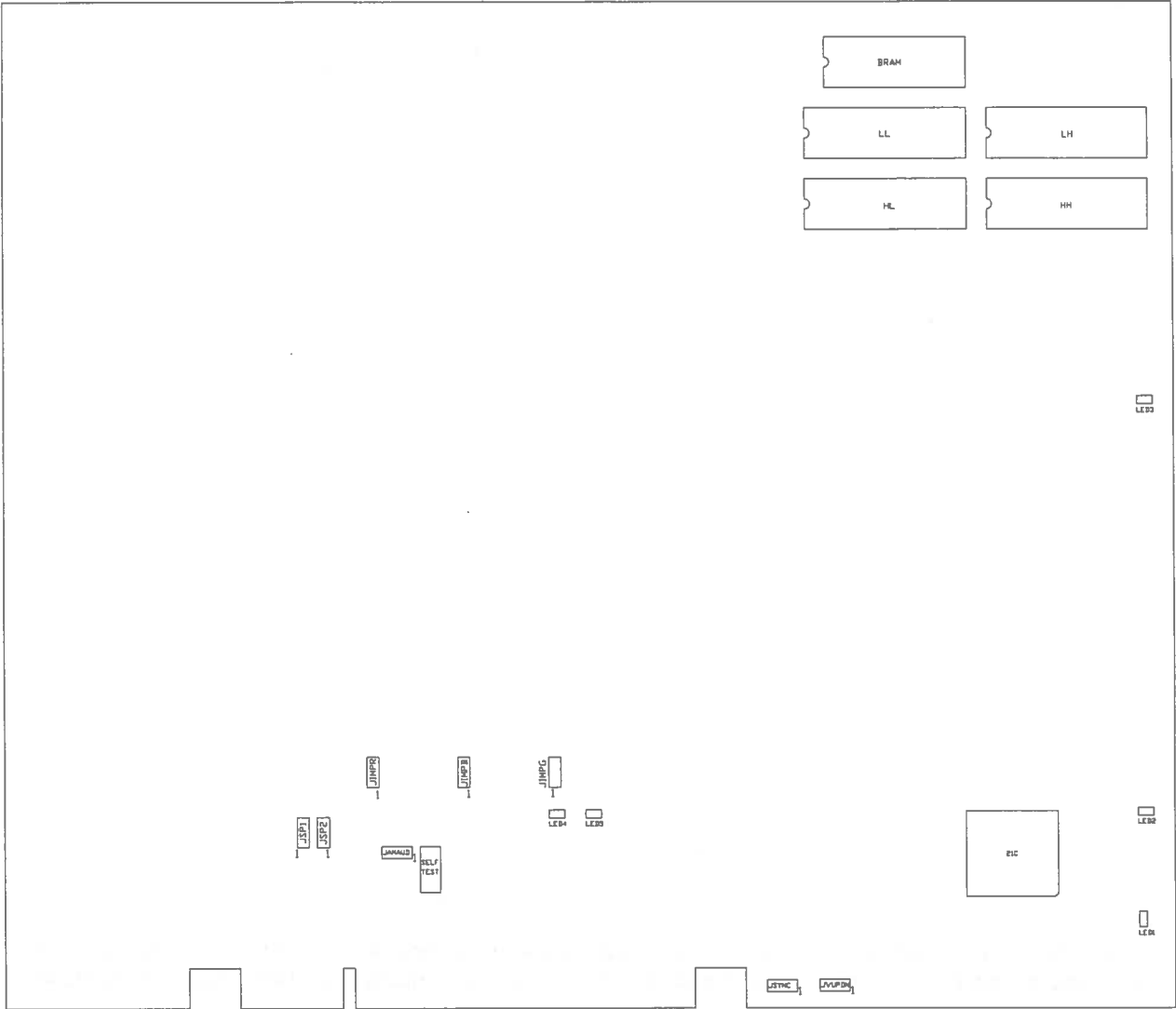


## Field Replaceable Parts

| DESIGNATION | PART NUMBER | FUNCTION | DESCRIPTION |
|---|---|---|---|
| BRAM | 5343-15072-00 | Game Variables | RAM Circuit |
| LL | A-5343-30013-1 | CPU Instructions | EPROM Assembly |
| HH | A-5343-30013-2 | CPU Instructions | EPROM Assembly |
| LH | A-5343-30013-3 | CPU Instructions | EPROM Assembly |
| HL | A-5343-30013-4 | CPU Instructions | EPROM Assembly |
| 21C | A-21673 | Gun Logic | PLD Assembly |

# CPU BOARD ASSEMBLY
## Late Production
## A-21629
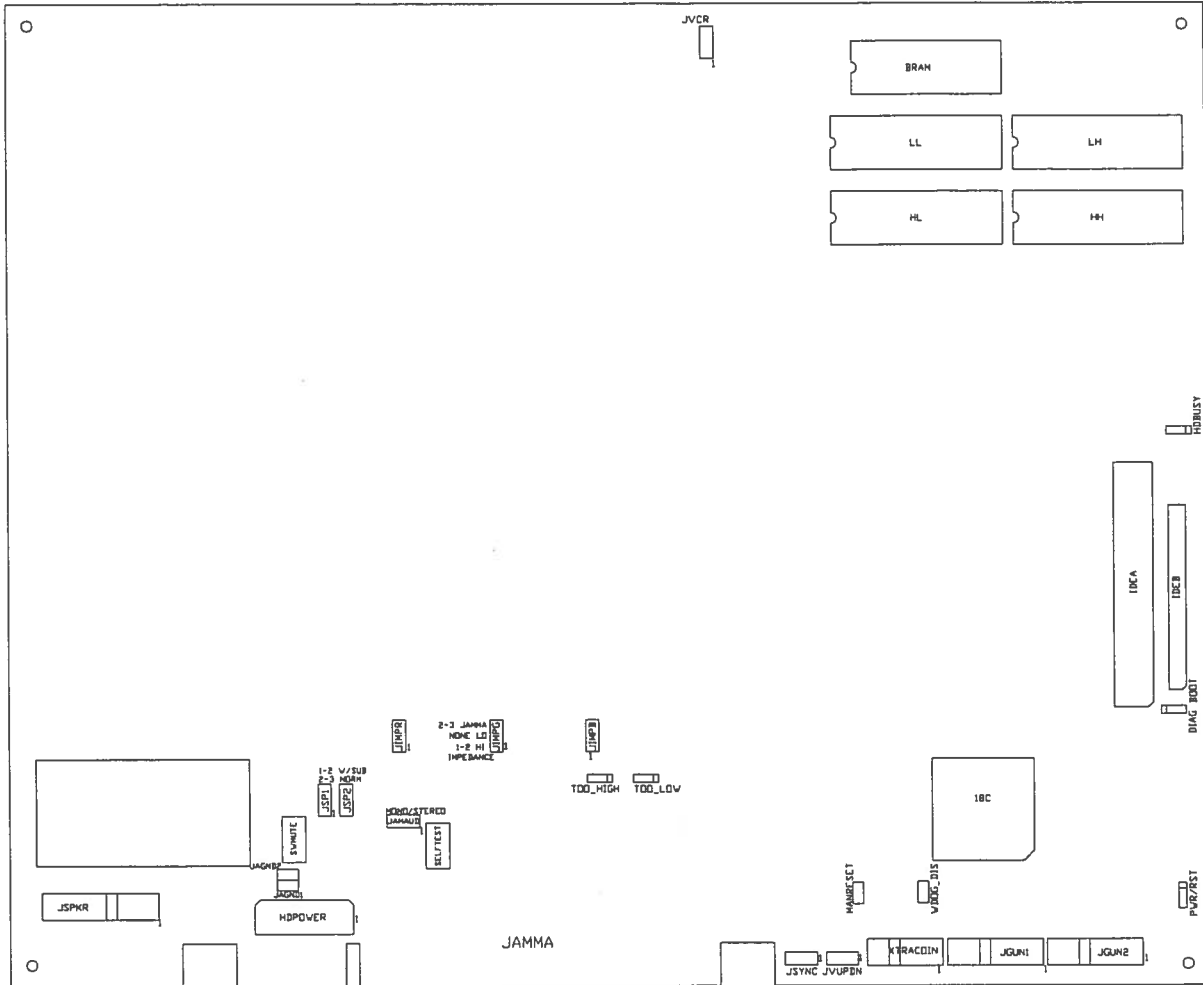


This CPU Board uses slightly different component packages and a modified layout to reduce space. Hole spacing and physical dimensions are changed, but the circuit is electrically interchangeable with A-21640.

## Field Replaceable Parts

| DESIGNATION | PART NUMBER | FUNCTION | DESCRIPTION |
|---|---|---|---|
| BRAM | 5343-15072-00 | Game Variables | RAM Circuit |
| LL | A-5343-30013-1 | CPU Instructions | EPROM Assembly |
| HH | A-5343-30013-2 | CPU Instructions | EPROM Assembly |
| LH | A-5343-30013-3 | CPU Instructions | EPROM Assembly |
| HL | A-5343-30013-4 | CPU Instructions | EPROM Assembly |
| 18C | A-21673 | Gun Logic | PLD Assembly |

## *Other Parts Necessary*

Protection

| | |
|---|---|
| Fuse, 1A, 250V, FB | 5730-15278-00 |
| Fuse, 7A, 250V, SB | 5731-09432-00 |
| Hard Disk Drive Shipping Container | 08-8068 |

Cables

| | |
|---|---|
| Main Harness (JAMMA) Cable | H-21618.1 |
| Display Harness Cable | H-21619 |
| Fluorescent Light Cable | H-21492 |
| Hard Disk Drive Ribbon Cable | 5795-15286-00 |

Documents

| | |
|---|---|
| Game Manual | 16-30013-101 |
| Product Safety Manual | 16-10341 |

**LINE CORD APPLICATION CHART**

| Country \ Part Number | 5850-14699-00 | 5850-14699-01 | 5850-14699-02 | 5850-14699-03 | 5850-14699-04 | 5850-14699-05 | 5850-14699-06 |
|---|---|---|---|---|---|---|---|
| USA | | ■ | | | | | |
| England | | | | ■ | | | |
| Italy | ■ | | | | | | |
| Japan | | | | | | | ■ |
| New Zealand | | | | | | ■ | |
| Germany | | | ■ | | | | |
| Spain | | | ■ | | | | |
| Denmark | | | ■ | | | | |
| Finland | | | ■ | | | | |
| Holland | | | ■ | | | | |
| Norway | | | ■ | | | | |
| Switzerland | | | | | ■ | | |
| Hungary | | | ■ | | | | |
| Canada | | ■ | | | | | |
| Austria | | | ■ | | | | |
| France | | | ■ | | | | |
| Australia | | | | | | ■ | |
| Belgium | | | ■ | | | | |

**COIN DOOR APPLICATION CHART**

| Country \ Part Number | 09-72000-15 | 09-72000-17 | 09-72000-22 | 09-72000-23 | 09-72000-25 | 09-72000-01 | 09-96010-00 |
|---|---|---|---|---|---|---|---|
| USA | | | | | | ■ | |
| England | | | | | | | ■ |
| Italy | | | | | | | ■ |
| Japan | ■ | | | | | | |
| New Zealand | | ■ | | | | | |
| Germany | | | | | | | ■ |
| Spain | | | | | | | ■ |
| Denmark | | | | | | | ■ |
| Finland | | | | | | | ■ |
| Holland | | | | | | | ■ |
| Norway | | | | | | | ■ |
| Switzerland | | | | | | | ■ |
| Hungary | | | | | | | ■ |
| Canada | | | | | | ■ | |
| Austria | | | | | | | ■ |
| France | | | | | | | ■ |
| Australia | | | | | | | ■ |
| Belgium | | | | | | | ■ |

# MAXIMUM FORCE™

SECTION
THREE

## WIRING

**Warning**
Failure to reconnect all ground wires or replace metal shields and covers with each mounting screw installed and securely tightened may result in radio frequency interference.

# JAMMA Chart

| FUNCTION | WIRE COLOR | PIN | PIN | WIRE COLOR | FUNCTION |
|---|---|---|---|---|---|
| Ground | Black | A | 1 | Black | Ground |
| Ground | Black | B | 2 | Black | Ground |
| +5VDC | Red | C | 3 | Red | +5VDC |
| +5VDC | Red | D | 4 | Red | +5VDC |
| -5VDC | Yellow | E | 5 | Yellow | -5VDC |
| +12VDC | Orange | F | 6 | Orange | +12VDC |
| Key | N/C | H | 7 | N/C | Key |
| Coin Counter 2 | Brown-Red | J | 8 | Brown | Coin Counter 1 |
| Not Used | N/C | K | 9 | N/C | Not Used |
| Speaker -, Left | Brown-Gray | L | 10 | Red-Gray | Speaker +, Left |
| Speaker +, Right | Brown-White | M | 11 | Red-White | Speaker -, Right |
| Video Green | Yellow-Green | N | 12 | Yellow-Red | Video Red |
| Video Sync | Yellow-White | P | 13 | Yellow-Blue | Video Blue |
| Service Credits | White-Gray | R | 14 | Yellow-Black | Video Ground |
| Slam Tilt | Black-Green | S | 15 | Black-Blue | Test |
| Coin 2 | Black-Red | T | 16 | Black-Brown | Coin 1 |
| 2 Start | Violet-White | U | 17 | White | 1 Start |
| 2 Up | Violet-Black | V | 18 | White-Black | 1 Up |
| 2 Down | Violet-Brown | W | 19 | White-Brown | 1 Down |
| 2 Left | Violet-Red | X | 20 | White-Red | 1 Left |
| 2 Right | Violet-Orange | Y | 21 | White-Orange | 1 Right |
| 2 Switch A | Violet-Yellow | Z | 22 | White-Yellow | 1 Switch A |
| 2 Switch B | Violet-Green | a | 23 | White-Green | 1 Switch B |
| 2 Switch C | Violet-Blue | b | 24 | White-Blue | 1 Switch C |
| 2 Switch D | Violet | c | 25 | White-Violet | 1 Switch D |
| Not Used | N/C | d | 26 | N/C | Not Used |
| Not Used | N/C | e | 27 | N/C | Not Used |
| Ground | Black | f | 28 | Black | Ground |
| **SOLDER SIDE** | | | | **COMPONENT SIDE** | |

**Control wires that are not part of the Main JAMMA Harness.**

| 4 Start | Grey-White | 6 | 6 | Blue-White | 3 Start |
|---|---|---|---|---|---|
| 4 Up | Grey-Black | 7 | 7 | Blue-Black | 3 Up |
| 4 Down | Grey-Brown | 8 | 8 | Blue-Brown | 3 Down |
| 4 Left | Grey-Red | 9 | 9 | Blue-Red | 3 Left |
| 4 Right | Grey-Orange | 10 | 10 | Blue-Orange | 3 Right |
| 4 Switch A | Grey-Yellow | 11 | 11 | Blue-Yellow | 3 Switch A |
| 4 Switch B | Grey-Green | 12 | 12 | Blue-Green | 3 Switch B |
| 4 Switch C | Grey-Blue | 13 | 13 | Blue | 3 Switch C |
| 4 Switch D | Grey-Violet | 14 | 14 | Blue-Violet | 3 Switch D |

**D.C. Power Source Voltage Limits**

| FUNCTION | RANGE LIMITS | COLOR | FUNCTION | RANGE LIMITS | COLOR |
|---|---|---|---|---|---|
| Digital Circuits | +4.90V to +5.10V | Red | Coin Lights | -4.75V to −5.25V | Yellow |
| Audio, Lights | +11.5V to +12.5V | Orange | Auxillary Power | -11.5V to -12.5V | Blue |

**NOTE: Power Supply has +5V adjustment. Other source voltages are all fixed. Set the voltage so that the TOO HIGH and TOO LOW voltage LED indicators on the CPU Board are both OFF.**

# CABINET WIRING DIAGRAM

# CPU BOARD ASSEMBLY



BRAM

LL

LH

HL

HH

LED3

1IC

JMP17

JMP18

JMP14

LED4

LED5

JSP1

JSP2

JANAUB

SELF
TEST

2IC

LED2

LED1

JSYNC

JVUPDN
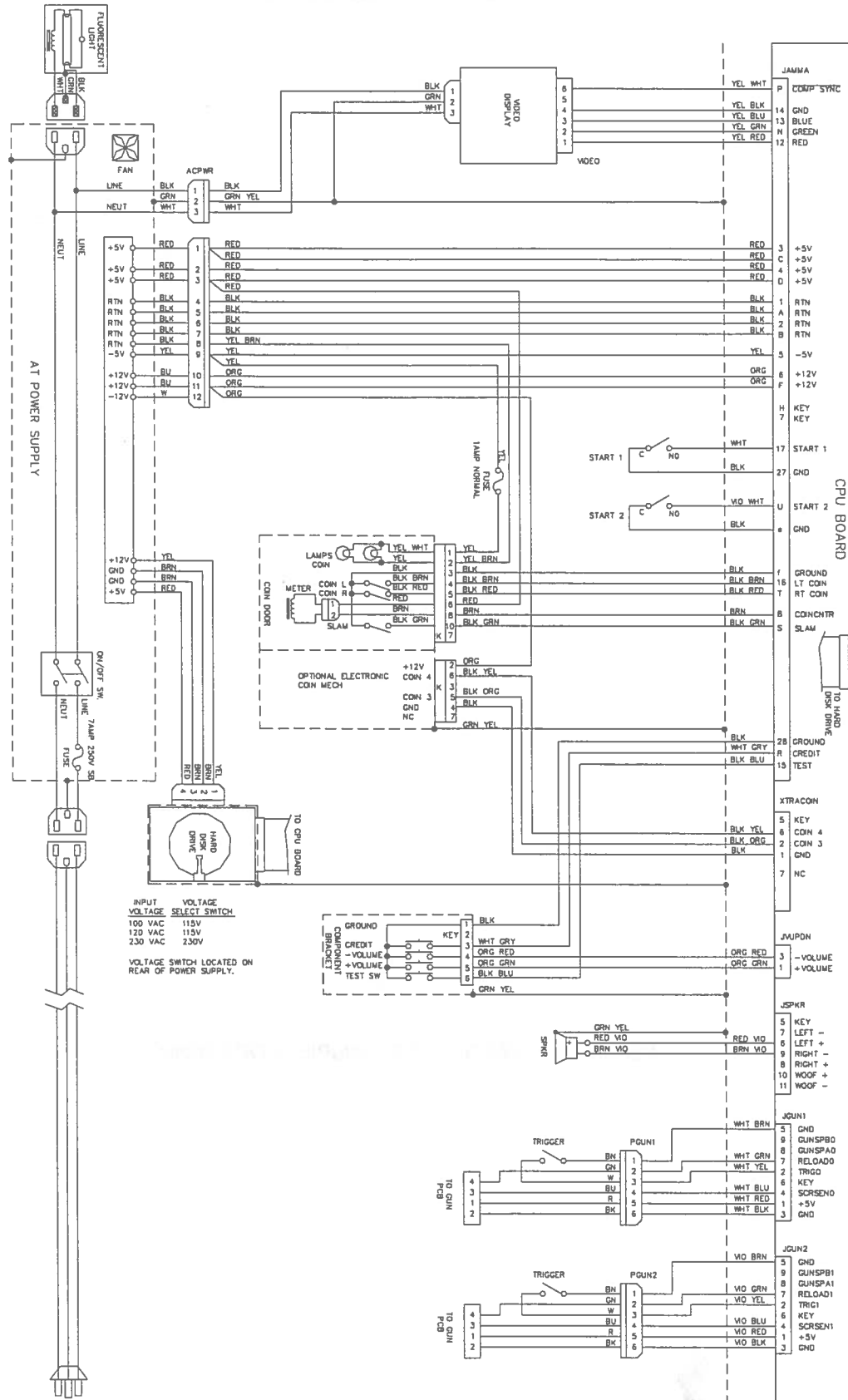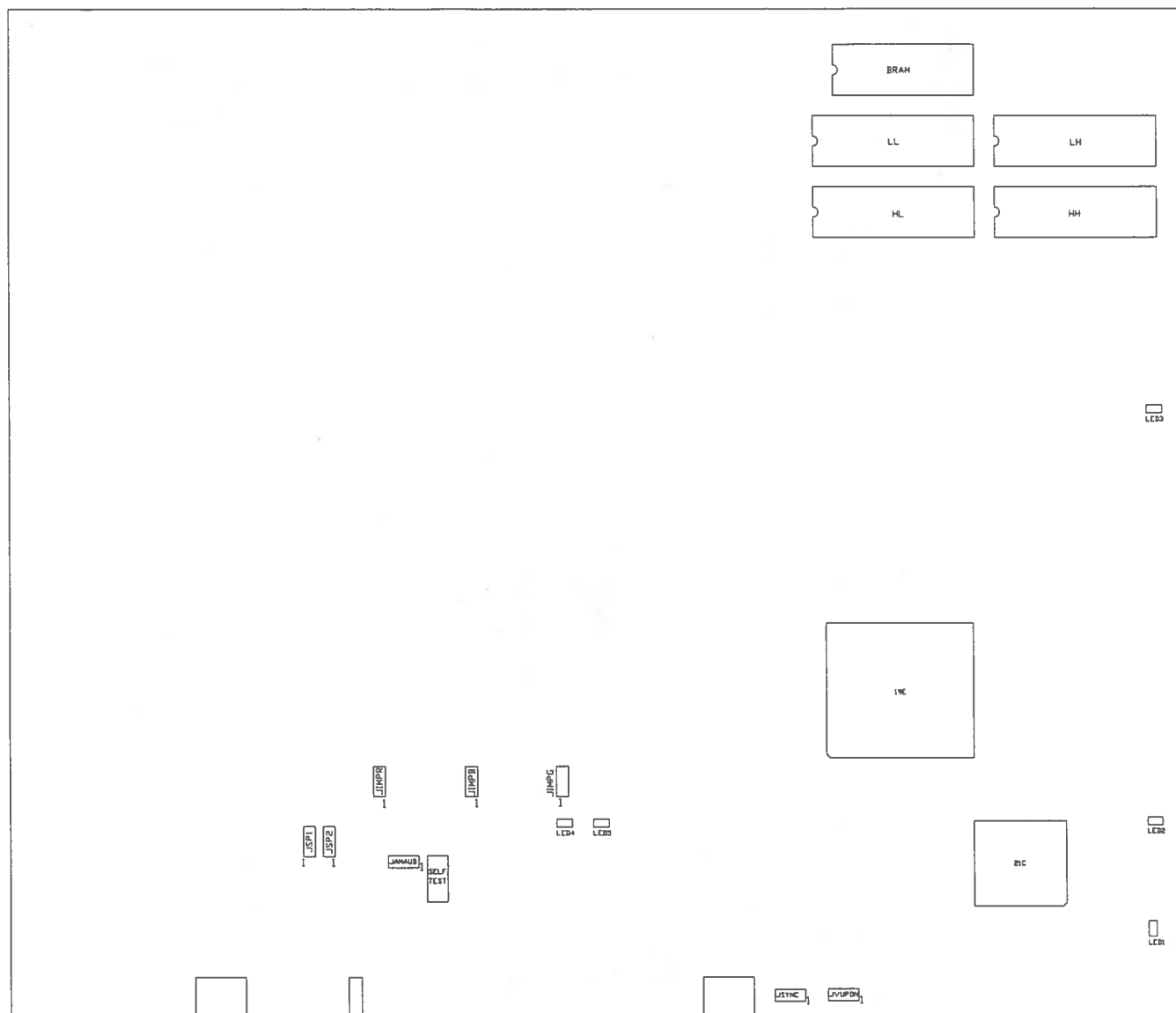
## INDICATOR, SWITCH AND JUMPER LOCATIONS

3-4

# CPU BOARD LED INDICATOR STATUS CHART

| DESIGNATION | LOCATION | FUNCTION | COLOR | STATE | MEANING |
|---|---|---|---|---|---|
| PWR/RST | BOTTOM RIGHT NEAR C66 & R31 | PROCESSOR ACTIVITY | GREEN | OFF | NO POWER APPLIED |
| | | | | ON | NORMAL OPERATION |
| | | | | BLINKING | PROCESSOR RESETTING |
| DIAG | LOWER RIGHT NEAR R108& R119 | DIAGNOSTIC CONDITION | GREEN | OFF | NO POWER APPLIED |
| | | | | ON | NORMAL OPERATION |
| | | | | BLINKING | MEMORY CIRCUIT FAULT |
| HDBUSY | MIDDLE RIGHT NEAR C178 &R243 | HARD DISK ACTIVITY | YELLOW | OFF | NO HARD DISK DRIVE ACTIVITY |
| | | | | ON | HARD DISK DRIVE ERROR |
| | | | | BLINKING | NORMAL OPERATION |
| TOO HIGH | LOWER MIDDLE NEAR R110 & R111 | VOLTAGE LIMITS | RED | OFF | VOLTAGE IS ACCEPTABLE |
| | | | | ON | VOLTAGE IS TOO HIGH |
| | | | | BLINKING | POWER SUPPLY ERROR |
| TOO LOW | LOWER MIDDLE NEAR R110 & R111 | VOLTAGE LIMITS | RED | OFF | VOLTAGE IS ACCEPTABLE |
| | | | | ON | VOLTAGE IS TOO LOW |
| | | | | BLINKING | POWER SUPPLY ERROR |

# <u>NOTES</u>

# MAXIMUM FORCE ™

# TROUBLESHOOTING

This game uses complex electronic components that are very SENSITIVE to static electricity. The following precautions must be observed and followed prior to handling any of the game electronics.

1. Ensure that the A.C. power to the game is turned OFF prior to servicing the electronics.
2. Discharge any static electricity build up in your body by touching the safety ground stud of the power supply chassis while the line cord is connected to a properly grounded outlet. This is to be done BEFORE touching or handling the electronic assemblies.
3. Store the electronic assemblies in an anti-static area. Anti-static bags are to be used to store or transport the game CPU Board Assembly.
4. DO NOT remove or connect any electronic assemblies when the cabinet power is ON. Doing so will damage the electronic assemblies and void the warranty.
5. Always replace ground wires, shields, safety covers, etc. when maintenance or service is completed. Ensure that all ground and mounting screws are installed and tightened firmly.

**GAME DOES NOT START**

1. **Game appears completely non-functional; no audio, no illumination, no video display.**

    A:  Check that the Power Switch has been turned ON (center left rear corner of the cabinet).

    B:  Turn OFF the game power.  Unplug the A.C. line cord.  Examine the Power Supply A.C. fuse. The Power Supply Line Voltage Switch must be set to agree with the local A.C. line voltage.

    C:  Remove the Line Cord.  Test the line cord, power plug and I.E.C. connector for breaks or damage.  Verify the continuity of each wire in the cord.  Fully seat the connector into the supply receptacle.

    D:  Unlock and remove the cabinet rear door.  Ensure that cabinet wiring harness connectors are fully seated in the corresponding power supply and CPU Board connectors (refer to Wiring Diagram, Section Three).

    E:  Examine the D.C. Fuse on the electronic equipment shelf.  If the fuse is faulty, replace it with an identical fuse from the spare parts bag.  Replace the spare fuse when repairs are complete.

    F:  Fully seat the A.C. plug in the power outlet.  Verify that A.C. line voltage is present.  Turn the game power ON.  Check the D.C. wiring harness and connectors if fuse opens the circuit again.


2: **Video game appears non-functional, but currency acceptor price indicator is illuminated.**

    A:  Unlock and remove the cabinet rear door.  Inspect the CPU Board Assembly under low light level conditions.  A glow will be seen from the Light Emitting Diodes if there is voltage in the processor circuits.  This does not mean that voltages or signals are as they should be, but it does indicate that the CPU Board is receiving some D.C. power from the power supply.  The power supply fan should also be operating.

    B:  Turn OFF the game power.  Inspect the CPU Board Assembly.  Ensure that the JAMMA Wire Harness connector is attached and fully seated onto the mating board connector.  Check the other wiring harness connectors in the same way.

*CAUTION:*  **DO NOT REMOVE OR INSTALL ANY CONNECTOR WHEN POWER IS TURNED ON. DOING SO WILL DAMAGE THE GAME CPU BOARD ASSEMBLY AND VOID THE WARRANTY.**

    C:  Verify that the game CPU Switches and jumpers are set as intended.  Refer to the Board Configuration Chart (Section Three) for variables and default settings.

    D:  Turn ON the game power.  Using the 20 Volt D.C. setting on a digital voltmeter, measure D.C. voltages present at the Power connector pins.  Adjust the +5V source if it is necessary.  Refer to the Cabinet Wiring Diagram (Section Three) for specific wiring information and voltage limits.

    E:  Using the 2 Volt A.C. setting on a digital voltmeter, measure the same D.C. voltages as above. Any reading here indicates that the supply voltages are unstable and may contain ripple or noise.

    F:  Verify that the game runs and completes the power-up self-test sequence without any errors. Note errors and/or failures found during these tests.

    G:  Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door.  From the SELECT TEST menu, choose the MONITOR TESTS (refer to Section One for additional details).  Use this set of tests to check the operation of each screen used in the game.

**GAME CAN NOT BE PLAYED**

1. **Game will not accept currency or tokens and cannot be started. Audio and video are present.**

   A: Unlock and open the cash door. Empty the cash box. Inspect the revenue for any counterfeit currency. Check the vault and remove any items that block the path from the mechanism.

   B: Unlock and open the coin door. Check each mechanism by hand to ensure proper mounting. Remove the mechanism and clear the currency path. Reinstall the mechanism and latch it.

   C: Verify that the mechanism is level when the doors are closed. Repair or replace the coin door if it is bent or damaged. Adjust the cabinet leg levelers if necessary to keep mechanisms vertical.

   D: Enter the game Menu System by pressing and holding the TEST MODE switch inside the coin door. From the SELF TEST menu, choose COIN OPTIONS (refer to Section One for additional details). Use these tests to confirm the pricing and setup of each mechanism used in the game.

   E: Enter the game Menu System by pressing and holding the TEST MODE switch inside the coin door. From the SELF TEST menu, choose the CONTROL TESTS (refer to Section One for additional details). Use this set of tests to check the operation of each coin or bill mechanism.

2. **Game accepts currency or tokens, but does not start. Audio and video are present.**

   A: Unlock and open the coin door. Check each mechanism by hand to ensure proper mounting. Verify that each of the release latches is in the closed and locked position. Test known good and bad coins to see if the mechanism accepts and rejects the currency correctly.

   B: Ensure that no loose parts or wires are caught in the hinges, latches, or switch contacts.

   C: Inspect to see if the external coin door indicators (pricing, flashing arrows, etc.) are illuminated. Check connectors and cables for wiring continuity from CPU Board to the coin mechanisms.

   D: Enter the game Menu System by pressing and holding the TEST MODE switch inside the coin door. From the SELF TEST menu, choose COIN OPTIONS (refer to Section One for additional details). Use these tests to confirm the pricing and setup of each mechanism used in the game.

   E: Check for continuity in each of the suspect switch connections (Common to Normally Open or Common to Normally Closed). Replace faulty switches (bent levers, broken actuators, etc.).

   F: Verify that each coin mechanism is operating properly by placing it in a known good unit.

3. **Bill validator does not function after field installation. Coin mechanisms operate properly.**

   A: Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELF TEST menu, choose COIN OPTIONS (refer to Section One). Confirm pricing and setup. Check validator switch settings against manufacturer's instruction sheet.

   B: Inspect to see if the external coin door indicators (pricing, flashing arrows, etc.) are illuminated. Ensure that no loose parts or wires are caught in the hinges, latches, or switch contacts. Verify that the harness connectors are attached and fully seated. Check for validator cable continuity.

   C: Verify that the bill validator is operating properly by placing it in a known good unit.

## GUN PROBLEMS

**1: Players complain that one or more guns do not hit the targets. Game starts normally.**

    A: Unlock and open the coin door. Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELECT TEST menu, choose the GUN TEST (refer to Section One for additional details). Use the TRACKING test to confirm the accuracy of each gun in the game. The crosshair must remain in the gun sight at all points on the screen. Return to this screen each time the guns are cleaned or repaired.

    B: From the SELECT TEST menu, choose the GUN TEST (refer to Section One for additional details). Use the CALIBRATION screen to reset the aim of each gun. Stand directly behind the gun holder and extend the cable to its full length to ensure the greatest accuracy.

    C: Inspect each gun for missing screws, loose or damaged parts, broken cables, etc. Examine the gun barrel and the lens for dirt or debris. ***Do not apply cleaner directly into the gun barrel.***

    D: Unlock and remove the rear cabinet door. The back side of the control panel is accessible just above the coin vault. Ensure that no loose parts or wires are caught in the switch contacts. Check the gun cable ground connections and verify that the harness connectors are attached and fully seated.

    E: Verify that each gun assembly is operating properly by placing it in a known good unit.

**2: Guns fire erratically when trigger is pulled. Problem may be related to firing position of gun.**

    A: Unlock and open the coin door. Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELECT TEST menu, choose the CONTROLS TEST (refer to Section One for additional details). Use these tests to confirm the operation of the gun trigger switches. Hold trigger down and shake gun cable to test the wiring.

    B: From the SELECT TEST menu, choose the GUN TEST (refer to Section One for additional details). Use the TRACKING test to confirm the accuracy of each gun in the game. The crosshair must remain in the gun sight at all points on the screen. Vary the gun angle during these tests.

    C: Reduce or eliminate bright lights from overhead, front or sides of the cabinet and recheck tracking. If this solves the trouble, then the environment is the problem and not the game. Change the lighting or relocate the game. If the problem remains, check the gun switch continuity.

**3. Guns are intermittant or completely non-functional. Game starts normally.**

    A: Unlock and open the coin door. Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELECT TEST menu, choose the GUN TEST (refer to Section One for additional details). Use the CALIBRATION screen to reset the aim of each gun. Stand directly behind the gun holder and extend the cable to its full length to ensure the greatest accuracy. Use the TRACKING test to confirm the accuracy of each gun in the game.

    B: Remove screws from gun (refer to exploded view of gun assembly in Section Two). Separate pieces at handle end first, using care not to dislodge parts (trigger is spring loaded). Check the gun board and switch connectors. Clean lens to remove fingerprints and dust, then reinstall any shields removed during disassembly. Ensure that a good connection exists between the static shield and the cable ground when the gun is reassembled.

    C: Verify that each gun assembly is operating properly by placing it in a known good unit.

## AUDIO PROBLEMS

**1: Audio is non-functional, but video is present and game appears to operate normally.**

A: Unlock and open the coin door. Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELECT TEST menu, choose ADJUST VOLUME (refer to Section One for additional details). Verify that the attract and game volume levels have not been set at Zero. Change the levels if necessary to make the game audible.

B: Follow the on-screen instructions to return to the first menu. From the SELECT TEST menu, choose SOUND TESTS. Use these tests to confirm the operation of the speaker in the cabinet.

C: Turn OFF the game power. Remove the grille and inspect the speaker. Ensure that no loose parts or wires are caught in speaker cones, terminals, mounting screws, or stuck to the magnets.

D: Turn ON the game power. Using the 20 Volt D.C. setting on a digital voltmeter, measure D.C. voltages present at the Power connector pins. Verify the +5V, -5V and +12V sources. Refer to the Cabinet Wiring Diagram (Section Three) for specific wiring information and voltage limits.

E: Using the 2 Volt A.C. setting on a digital voltmeter, measure the same D.C. voltages as above. Any reading here indicates that the supply voltages are unstable and may contain ripple or noise.

F: Verify proper operation of game CPU Board Assembly by placing it in a known good game.


**2: The audio is distorted, muffled or missing frequencies. A constant low hum may be present.**

A: Unlock and open the coin door. Enter the game Menu System by pressing and holding the BEGIN TEST switch inside the coin door. From the SELECT TEST menu, choose SOUND TESTS. These tests will verify some of the functions of the audio circuits in this game.

B: Turn OFF the game power. Remove the grill and check the speaker. This game uses a single speaker with a high frequency "whizzer" cone. Ensure that the speaker is EXTENDED RANGE (50 to 12,000 Hz response) and rated for at least 10 WATTS.

C: Check that the cabinet wiring is correct for this game. Ensure that all cabinet ground wires are connected. Refer to the Cabinet Wiring Diagram (Section Three) for specific wiring information.

E: Turn ON the game power. Using the 20 Volt D.C. setting on a digital voltmeter, measure D.C. voltages present at the Power connector pins. Verify the +5V, -5V and +12V sources. Refer to the Cabinet Wiring Diagram (Section Three) for specific wiring information and voltage limits.

F: Using the 2 Volt A.C. setting on a digital voltmeter, measure voltages at the speaker terminals. Any reading here indicates that the supply voltages are unstable and may contain ripple or noise.

G: Verify that the speaker is operating properly by placing in a known good unit.

## VIDEO PROBLEMS

1.  **Monitor appears non-functional, but audio is present and controls operate as expected.**

    A:  Unlock and remove the rear cabinet door. Verify that A.C. Power is connected to the Video Monitor. Inspect the neck of the CRT under low light level conditions. A glow will be seen near the CRT base if there is voltage in the filament circuits. This does not mean that other voltages or signals are as they should be, but it does indicate that monitor circuits are receiving some power.

    B:  Turn OFF the game power. Verify that the Video Signal and the Remote Adjustment Board connectors are fully seated on the Video Monitor Board Assembly. Check the other monitor connectors in the same way. *Do not operate a monitor without a Remote Adjustment Board.*

    C:  Examine the A.C. line fuse on the Video Monitor Board Assembly. If the fuse is faulty, replace it with an identical fuse of the proper voltage and current rating.

    D:  Ensure that no loose parts or wires are caught on the chassis or the mounting brackets.

    E:  Check that the brightness (intensity) and contrast have not been set to their minimum levels.

    F:  Verify that the Video Monitor is operating correctly by placing it in a known good unit.


2:  **The power-up self-test will run, but the game does not appear. No audio is present.**

    A:  Note and record any error messages that occur during self-test. Open the coin door. Press and hold the BEGIN TEST switch to enter the menu system. From the SELECT TESTS menu, choose DISK TESTS. These tests will verify some of the Hard Disk Drive functions in this game.

    B:  Turn OFF the game power. Unlock and remove the rear door. Inspect the CPU Board Assembly. Ensure that the Hard Disk Drive Assembly ribbon cable connector is fully seated into the mating connector on the CPU Board. Verify that all hard drive mounting screws are installed.

*CAUTION:* DO NOT REMOVE OR INSTALL ANY CONNECTOR WHEN POWER IS TURNED ON. THIS WILL DAMAGE THE CPU BOARD OR HARD DISK DRIVE AND VOID THE WARRANTY.

    C:  Check that the Hard Disk Drive Assembly is the correct part for this game. Each Hard Disk Drive is labeled with the assembly number and the software version. Refer to Parts (Section Two).

    D:  Verify that the ROM instruction set is correct for this game. There is more than one ROM in a game set. Each ROM circuit is labeled with the assembly number and the software version.

    E:  Verify that the CPU Board Assembly is correct for this game. Each CPU Board is marked with the manufacturer name, assembly number and the hardware version.

    F:  Turn ON the game power. Using the 20 Volt D.C. setting on a digital voltmeter, measure D.C. voltages present at the Power connector pins. Verify the +5V source if it is adjustable. Refer to the Cabinet Wiring Diagram (Section Three) for specific wiring information and voltage limits.

    G:  Using the 2 Volt A.C. setting on a digital voltmeter, measure the same D.C. voltages as above. Any reading indicates that the supply voltages are unstable and may contain ripple or noise.

    H:  Compare CPU Board Light Emitting Diode states with the CPU Indicator Chart (Section Three).

3. **Monitor will not lock onto the signal and provide a stable picture, colors are missing, etc.**

A: Check connectors and cables for wiring continuity from the CPU Board to the Video Monitor. Verify all jumpers are set correctly for this monitor. Refer to Board Configuration (Section Three).

B: Ensure that the Video Monitor Assembly is correct for this game. Use of video monitors with different resolution will result in what appears to be horizontal tearing or complete loss of sync.

C: Verify that the Video Monitor is operating correctly by placing it in a known good unit.

4: **Game operates normally, but video picture wavers or rolls, has dark bars, uneven colors, etc.**

A: Check connectors and cables for wiring continuity from the CPU Board to the Video Monitor.

B: Ensure that all the cabinet ground wires are connected, especially at the Video Monitor Chassis.

C: Move the cabinet farther away from machines, appliances, other games, etc. Very strong electrical or magnetic fields are emitted from some equipment when it is operating normally.

D: Verify that the Video Monitor is operating correctly by placing it in a known good unit.

## MISCELLANEOUS

1: **Marquee lamp is intermittent or non-functional. Game starts and plays normally.**

A: Unlock and remove the lamp access panel. Remove the plastic lamp locks and the fluorescent tube from the holders. Install a new lamp if cracks or darkened ends are found. Clean the tube.

B: Verify that the lamp and starter pins are making good connection with their socket contacts.

C: Measure the Fluorescent Lamp Assembly A.C. voltages (Wiring Diagram, Section Three). Check wiring and connector continuity from the Power Supply to the Lamp Assembly.

D: Ensure that the Fluorescent Lamp Ballast is rated for the local A.C. line voltage and frequency.

E: Check for continuity of both fluorescent lamp filaments, the starter, and the ballast. One at a time, verify that the lamp, starter, and ballast operate by placing each in a known good unit.

2. **Game operates normally, but fan is noticeably noisy.**

A: Check bottom and rear of cabinet for blocked air flow. Move game away from sources of heat.

B: Turn OFF the game power. Apply high power vacuum cleaner to vent holes to remove dust.

C: Unlock and remove the rear door. Ensure that all fans are connected and operating.

3. **Error Messages appear on the screen. The game does not start and there is no audio.**

A: Check any assembly (RAM, ROM, Battery, etc.) identified in the Error Messasge.

B: Call your authorized distributor for help with unresolved screen messages.

**NOTES**

# WARNINGS & NOTICES

**WARNING**

USE OF NON-ATARI PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE! USE ONLY ATARI AUTHORIZED PARTS.

* For safety and reliability, substitute parts and modifications are not recommended.

* Substitute parts or modifications may void FCC type acceptance.

* Use only authorized components and parts. Failure to do so will void warranty and may result in incorrect and/or unsafe operation.

* This game is protected by federal copyright, trademark and patent laws. Unauthorized modifications may be illegal under federal law. This also applies to ATARI logos, designs, publications and assemblies. Moreover, facsimiles of ATARI equipment (or any feature thereof) may be illegal under federal law, regardless of whether or not such facsimiles are manufactured with ATARI components.

**NOTE:** This equipment has been tested and found to comply 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 generated, 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.

**When ATARI ships a game, it is in compliance with FCC regulations. Your sticker is proof. If the sticker is missing or damaged, legal repercussions to the owner or distributor of the game may result. If your game does not contain an FCC sticker, call ATARI immediately.**

**WARNING**

Plug this game into a properly grounded outlet to prevent shock hazards and assure proper game operation. Do not use a cheater plug to defeat the power cord's grounding pin. Do not cut off the ground pin.

**WARNING**

A very small portion of the population has a condition which may cause them to experience epileptic seizures or have momentary loss of consciousness when viewing certain kinds of flashing lights or patterns that are present in our daily environment. These persons may experience seizures while watching some kinds of television pictures or playing certain video games. People who have not had any previous seizures may nonetheless have an undetected epileptic condition.

If you or anyone in your family has experienced symptoms linked to an epileptic condition (e.g. seizures or loss of awareness), immediately consult your physician before using any video games.

We recommend that parents observe their children while they play video games. If you or your child experience the following symptoms: dizziness, altered vision, eye or muscle twitching, involuntary movements, loss of awareness, disorientation, or convulsions, DISCONTINUE USE IMMEDIATELY and consult your physician.

**NOTICE**

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